INTERACTION BETWEEN BRIDGE ABUTMENT AND PIERS CONCERNING LOCAL SCOUR

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY
IN
CIVIL ENGINEERING

AUGUST 2020

Approval of the thesis:

INTERACTION BETWEEN BRIDGE ABUTMENT AND PIERS CONCERNING LOCAL SCOUR

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ABSTRACT

INTERACTION BETWEEN BRIDGE ABUTMENT AND PIERS CONCERNING LOCAL SCOUR

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August 2020, 739 pages

Flowing water usually causes transportation of loose non-cohesive materials, called sediment in literature, in natural open channels such as rivers and canals with a transportable material bed. This sediment transportation is observed in two different situations; deposition and erosion. Excessive erosion leads in scouring. Scouring can be classified in three groups; general, contraction and local scour. Scouring namely removal of bed material from bridge sites causes bridge failures. Hence, estimation of scour depth around bridge piers and abutments is essential for safety and economic design in alluvial rivers. Although local scour around bridge piers and abutments has been studied separately by a large number of investigators, there is almost no research in the literature related to interaction between these two structures. Hence, in this study the aim is to investigate the interaction between bridge abutment and pier scours in detail. For this reason bridge abutments and piers of different sizes were placed at various distances from each other in a long sediment channel and tested under clear-water flow conditions with a constant flow intensity. After conducting sufficient number of tests, the related experimental data were obtained. All the important dimensionless parameters involved in the phenomenon were derived from dimensional analysis and the relationships between them were investigated. The analysis of the

available data showed that the presence of pier(s) in the flow medium in addition to an abutment has a certain amount of influence on the formation of scour holes around the structures. The relations between the dimensionless scour parameters and related dimensionless independent parameters were determined graphically. A series of empirical equations were derived to estimate the scour parameters around the pier-abutment arrangements consist of one pier-one abutment and two piers-one abutment cases.

Keywords: Local Scour, Scour Interaction, Bridge Abutment, Bridge Piers

ÖZ

KÖPRÜ KENAR VE ORTA AYAKLARI ARASINDA YEREL OYULMA İLE İLGİLİ ETKİLEŞİM

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Ağustos 2020, 739 sayfa

Taşınabilir yatak malzemesine sahip sulama kanalları ve nehirler gibi doğal açık kanallarda, suyun hareketi genellikle literatürde rüsubat (sediment) olarak adlandırılan gevşek kohezyonsuz malzemelerin taşınmasına sebep olur. Bu rüsubat taşınım hareketi iki şekilde görülmektedir: depolanma ve erozyon. Aşırı erozyon oyulmaya sebep olmaktadır. Oyulma; genel, daralma ve yerel oyulma olmak üzere üç gruba ayrılabilir. Oyulma, yani yatak malzemesinin köprü ayakları etrafından kaldırılması köprülerin hasar görmesine neden olur. Bu sebeple köprü kenar ve orta ayakları etrafındaki oyulma derinliğinin hesaplanması doğal nehirlerde güvenli ve ekonomik tasarımlar yapabilmek için önemlidir. Köprü kenar ve orta ayakları etrafındaki yerel oyulmaların çok sayıda araştırmacı tarafından incelenmesine rağmen, bu yapılar arasındaki etkileşimle ilgili literatürde yeterli çalışma bulunmamaktadır. Bu nedenle, bu çalışmanın amacı köprü kenar ve orta ayakları arasındaki etkileşimi detaylı olarak araştırmaktır. Bu amaç doğrultusunda farklı boyutlardaki köprü kenar ve orta ayakları birbirlerinden farklı uzaklıklarda yerleştirilerek uzun bir rüsubat kanalında temiz su akış koşullarında sabit akış yoğunluğunda deneyler yapılmıştır. Yeterli sayıda deney gerçekleştirildikten sonra ilgili deneysel veriler toplanmıştır. Konu ile ilgili bütün boyutsuz parametreler boyut analizi uygulanarak türetilmiş ve aralarındaki etkileşim araştırılmıştır.

Mevcut verinin analizi, köprü orta ayağı/ayakları ve köprü yan ayağının bulunduğu akım ortamlarında bu yapıların özelliklerinin, yapılar etrafında oluşacak oyulma parametreleri üzerinde belirli bir derecede etkilerinin olduğunu göstermiştir. Boyutsuz oyulma parametreleri ve ilgili boyutsuz bağımsız parametreler arasındaki ilişkiler grafiksel olarak ifade edilmiştir. Tek orta ayak ve bir yan ayak ile iki orta ayak ve bir yan ayak durumlarını içeren köprü orta ayağı – köprü yan ayağı düzenlemeleri etrafında oluşabilecek oyulma parametrelerini tahmin edebilmek için bir dizi ampirik denklem türetilmiştir.

Anahtar Kelimeler: Yerel Oyulma, Oyulma Etkileşimi, Köprü Kenar Ayağı, Köprü Orta Ayakları

To My Family

ACKNOWLEDGEMENTS

This study was suggested and supervised by Prof. Dr. Mustafa Göğüş, and all experiments were conducted in Technical Research and Quality Control Department of State Hydraulic Works in Ankara, Turkey.

The Author would like to thank to supervisor Prof. Dr. Mustafa Göğüş and co-supervisor Prof. Dr. Mehmet Ali Kökpınar for their guidance, patience and encouragement throughout the study.

The Author also thanks to Technical Research and Quality Control Department of State Hydraulic Works members, leading Ahmet Güvenç, Abidin Teke and Mustafa Alkan for their help in the laboratory.

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LIST OF SYMBOLS

SYMBOLS

B	Width of channel
B	Reference point for rear side of the pier
B_a	Abutment width
D	Pier diameter
d	Grain size of sediment
d_{50}	Median grain size of sediment
$(d_s)_{max}$	Maximum scour depth
$[(d_s)_{max}]_p$	Maximum scour depth at pier
$[(d_s)_{max}]_a$	Maximum scour depth at abutment
$[(d_s)_{max}]_{p,0}$	Maximum scour depth at pier for only pier case
$[(d_s)_{max}]_{a,0}$	Maximum scour depth at abutment for only abutment case
F	Reference point for front side of the pier
g	Gravitational acceleration
γ	Specific gravity of water
γ_s	Specific gravity of sand
K_i	Unknown coefficients for equations (i =1 to 6)
L	Reference point for left side of the pier
L_0	Reference point for corner of the abutment for front face
$L_{0\text{-}2}$	Reference point for 2 cm far away from the upstream front corner of the abutment
$L_{0\text{-}4}$	Reference point for 4 cm far away from the upstream front corner of the abutment
$L_{0\text{-}6}$	Reference point for 6 cm far away from the upstream front corner of the abutment
$L_{0\text{-}8}$	Reference point for 8 cm far away from the upstream front corner of the abutment

$L_{0\text{-}10}$	Reference point for 10 cm far away from the upstream front corner of the abutment
$L_{0\text{-}12}$	Reference point for 12 cm far away from the upstream front corner of the abutment
$L_{0\text{-}14}$	Reference point for 14 cm far away from the upstream front corner of the abutment
L_a	Abutment length
λ_x	Net distance between abutment and pier, perpendicular to the flow direction
λ_y	Net distance between abutment corner and pier axis, parallel to the flow direction
λ_p	Distance between two piers in the flow direction
μ	Dynamic viscosity of fluid
R	Reference point for right side of the pier
R^2	Determination coefficient as statistical indicator
RMSE	Root mean square error as statistical indicator
Q	Discharge of the flow
ρ	Density of water
ρ_s	Density of sediment
S	Slope of channel
SB_{pi}	Scour hole border developed around the pier
$SB_{pi,0}$	Scour hole border developed around the pier for only pier case
SB_{pl}	Scour hole border developed at the left of the pier
$SB_{pl,0}$	Scour hole border developed at the left of the pier for only pier case
SB_{pr}	Scour hole border developed at the right of the pier
$SB_{pr,0}$	Scour hole border developed at the right of the pier for only pier case
SB_{pf}	Scour hole border developed at the front of the pier
$SB_{pf,0}$	Scour hole border developed at the front of the pier for only

	pier case
SB_{pb}	Scour hole border developed at the back of the pier
$SB_{pb,0}$	Scour hole border developed at the back of the pier for only pier case
SB_{ai}	Scour hole border developed around the abutment
$SB_{ai,0}$	Scour hole border developed around the abutment for only abutment case
SB_{ar}	Length of the scour hole at the upstream corner of the abutment perpendicular to the flow
$SB_{ar,0}$	Length of the scour hole at the upstream corner of the abutment perpendicular to the flow for only abutment case
SB_{af}	Length of the scour hole at the upstream corner of the abutment in the direction of flow
$SB_{af,0}$	Length of the scour hole at the upstream corner of the abutment in the direction of flow for only abutment case
SB_{af2}	Length of the scour hole at 5 cm away from the channel wall at the upstream face of the abutment along the flow direction
$SB_{af2,0}$	Length of the scour hole at 5 cm away from the channel wall at the upstream face of the abutment along the flow direction for only abutment case
SB_{af3}	Length of the scour hole at 10 cm away from the channel wall at the upstream face of the abutment along the flow direction
$SB_{af3,0}$	Length of the scour hole at 10 cm away from the channel wall at the upstream face of the abutment along the flow direction for only abutment case
SB_{aw}	Length of the scour hole border at upstream of the abutment along the wall in the direction of flow
$SB_{aw,0}$	Length of the scour hole border at the upstream of the abutment along the wall in the direction of flow for only abutment case
SSE	Sum of squares of errors as statistical indicator

σ_g	Geometric standard deviation of sediment size distribution
$(\tau_0)_{cr}$	Critical shear stress
t	Duration of experiment
U	Flow velocity
X_i	Unknown coefficients for equations (i =1 to 6)
Y_i	Unknown coefficients for equations (i =1 to 6)
y	Flow depth
Z_i	Unknown coefficients for equations (i =1 to 6)

CHAPTER 1

INTRODUCTION

1.1 GENERAL

Flowing water usually causes transportation of loose non-cohesive materials, called sediment in literature, in natural open channels such as rivers and canals having erodible beds. This sediment transportation is observed in two different forms; deposition and erosion. Deposition or aggradation is a case which sediment supply rate is greater than the sediment outflow of a specified region. Erosion or degradation is a reverse case of deposition, namely the outflow rate of sediment is greater than supply rate. Excessive erosion leads in scouring.

Scouring is classified in three groups; general, contraction and local scour;

General scour mechanism is continuous scouring at bed level because of morphological conditions of stream. Contraction scour is caused by constriction of channel by means of any natural or human made (bridge, etc.) structure. Local scour can be defined as scour mechanism induced by vortex system around any structure located at the flow area.

Scouring namely removal of bed material from bridge sites causes bridge failures. Hence estimation of scour depth around bridge piers and abutments is essential for safety and economical design in alluvial rivers.

Not only the scour depth but also remedying methods against scouring are important. Remedying this failure can be in a way of taking hydraulic, structural

and monitoring precautions. Different methods were studied by many researchers as structural precautions on or around bridge piers to reduce the scour depth, embedment depth and initial costs; of piles (Chabert and Engeldinger 1956, Vittal et al. 1994, Setia 1997), of slot (Chiew 1992, Setia 1997), of rip-rap (Breusers et al. 1977, Graziano et al. 1990, Parola 1991, Zarrati et al. 2006), of submerged vanes (Odgaard and Wang 1987), of collar plate (Schneible 1951, Chabert and Engeldinger 1956, Thomas 1967, Tanaka and Yano 1967, Ettema 1980, Chiew 1992, Vitall et al. 1994, Setia 1997 and Kumar et al. 1999), of caisson with lip (Shen et al. 1969), of delta wing like passive device (Gangadharaiah and Gupta 1992, Setia 1997).

Besides these remedying methods around piers, some of them were studied for abutments such as rip-rap and collar applications (Schneible 1951, Chabert and Engeldinger 1956, Thomas 1967, Tanaka and Yano 1967, Neill 1973, Ettema 1980, Kumar et al. 1999, Zarrati and Azizi 2001, Zarrati et al. 2004, Kayatürk 2005, Göğüş and Doğan 2010, Daşkın 2011, Tekin 2012, Kumcu et al. 2014).

To protect bridge piers and abutments from scouring; scour mechanism, down-flow, waves and vortices induced by water were also investigated by many researchers. In these studies flow velocity, flow depth, pier width and abutment length, bed material size and aggradation, shape of the pier and abutment, shape, size, place and properties of scour countermeasure materials, bed configuration, ice formation or jam and debris, sediment motion based effects such as clear water and live-bed conditions, time variation and development of scour were considered in calculations and interpretations.

1.2 SCOPE OF THE STUDY

Although local scour around bridge piers and abutments has been studied separately by a large number of investigators, the interaction between these structures has not been investigated widely. Hence, in this study the aim is to

investigate the interaction between a bridge abutment and pier(s) scour in detail. For this reason, an abutment and pier(s) of various sizes placed at various distances from each other in a long sediment channel were tested to investigate the scour interaction between these structures. Dimensional analysis was applied to the problem and all the dimensionless parameters involved in the phenomenon were determined to investigate the relationships between the relevant dimensionless groups. A general relationship giving the proper design consideration on abutments and piers from the hydraulics point of view was proposed to satisfy the condition of minimum scour depth around those structures.

CHAPTER 2

LITERATURE REVIEW

2.1 SCOUR MECHANISM AND LOCAL SCOUR AT PIERS

Flow pattern around a cylindrical pier was the most widely studied case and have been reported by various investigators (Chabert and Engeldinger 1956, Hjorth 1975, Melville and Raudkivi 1977, Dargahi 1990).

Local scour at piers is mainly caused by down-flow at the upstream face of the pier and formation of vortices at the base. The flow decelerates as it approaches the pier coming to rest at the face of the pier. The approach flow velocity, therefore, at the stagnation point on the upstream side of the pier is reduced to zero, which results in a pressure increase at the pier face. The associated stagnation pressures are highest near the surface, where the deceleration is greatest, and decrease downwards (Melville and Raudkivi 1977). As the velocity is decreasing from the surface to the bed, the stagnation pressure on the face of the pier also decreases accordingly which means a downward pressure gradient. Due to pressure gradient, down-flow hits on the streambed and creates a hole in the vicinity of the pier base. The strength of the down-flow reaches a maximum just below the bed level. The down-flow impinging on the bed is the main scouring agent (Melville and Raudkivi 1977).

As illustrated in Figure 2.1, the strong vortex motion caused by the existence of the pier entrains bed sediments within the vicinity of the pier base (Melville and Coleman 2000). The down-flow rolls up as it continues to create a hole and, through interaction with the oncoming flow, develops into a complex vortex

system. The vortex then extends downstream along the sides of the pier. This vortex is often referred to as horseshoe vortex because of its great similarity to a horseshoe (Breusers et al. 1977). Thus the horseshoe vortex developed as a result of separation of flow at the upstream face of the scour hole excavated by the down-flow.

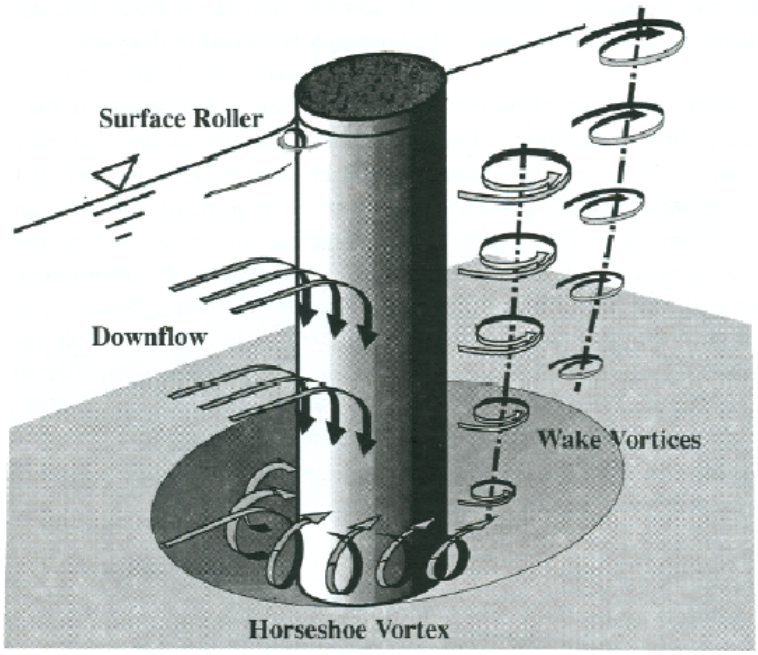


Figure 2.1 Illustration of the flow and scour pattern at a circular pier (Melville and Coleman 2000)

The horseshoe vortex is very effective at transporting the dislodged particles away past the pier. The horseshoe vortex is a result of scour but not the cause of scour (Breusers and Raudkivi 1991). As the scour depth increases, the horseshoe vortex strength diminishes, which automatically leads to a reduction in the sediment transport rate from the base of the pier (Lagasse et al. 2001).

Besides the horseshoe vortex in the vicinity of the pier base, there are also the vertical vortices downstream of the pier referred to as wake vortices (Dargahi 1990). The separation of the flow at the sides of the pier produces the so-called wake vortices. These wake vortices are not stable and shed alternately from one side of the pier to the other. It should be noted, however, that both of the horseshoe and wake vortices erode material from the base region of the pier. The intensity of the wake vortices is drastically reduced with distance downstream, such that sediment deposition is common immediately downstream of the pier (Richardson and Davis 1995).

In case of having scour countermeasure around bridge piers scour mechanism develops differently. For example, when a collar is used as a scour countermeasure then the collar divides the downflow into two parts. For the part above the collar, it acts as an obstacle against the downflow in which the downflow looses its strength. For the part below the collar, the downflow and the principal vortex are reduced (Kayatürk 2005).

2.2 SCOUR MECHANISM AND LOCAL SCOUR AT ABUTMENTS

Flow pattern around an abutment was also studied by various investigators (Graf 1996, Chang and Davis 1999, Melville and Coleman 2000, Sturm 2006).

Local scour mechanism at abutments is nearly the same as local scour around piers. So the flow decelerates as it approaches the abutment and comes to rest at the face of the abutment which stands as obstacle against flow. The approach flow velocity, at the upstream side of the abutment is reduced to zero, which results in a pressure increase at the abutment face. The associated stagnation pressures are highest near the surface, where the deceleration is greatest, and decrease downwards. As the velocity is decreasing from the surface to the bed, the stagnation pressure on the face of the abutment also decreases accordingly which

means a downward pressure gradient. Due to pressure gradient down-flow hits on the streambed and creates a hole in the vicinity of the abutment base. The strength of the down-flow reaches a maximum just below the bed level.

As illustrated in Figure 2.2, the down-flow rolls up as it continues to create a hole and, through interaction with the oncoming flow, develops into a complex vortex system which is called principal vortex system. The vortex then extends downstream side of the abutment. And scour hole develops by along the side of the abutment.

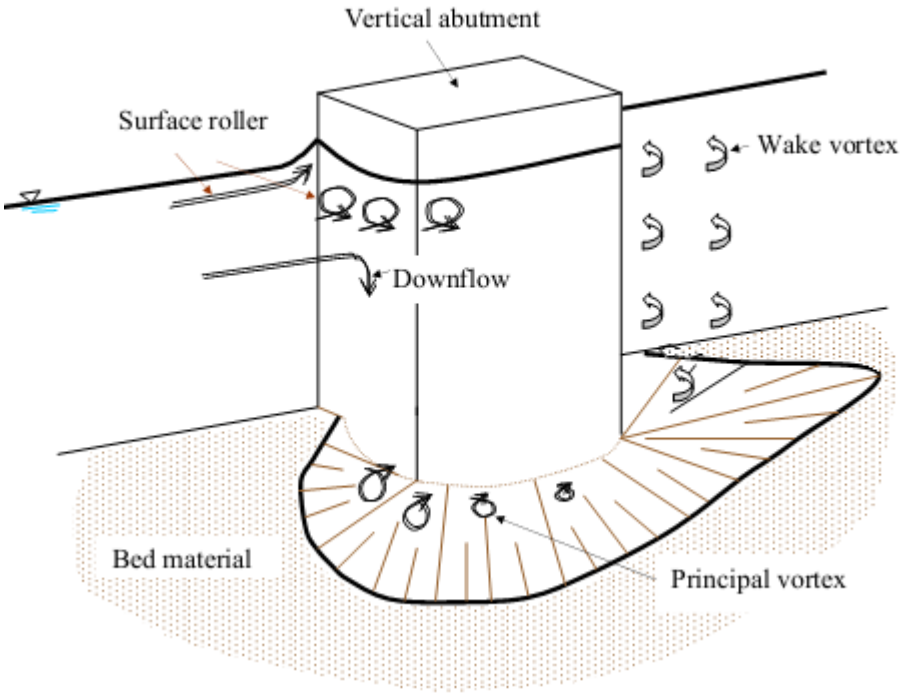


Figure 2.2 Illustration of the flow and scour pattern at a vertical abutment (Graf 1996)

At downstream side of abutment wake vortices are introduced also, because of the same complexity of vortices as around piers.

Yanmaz and Köse (2007) studied temporal variation of geometric characteristics of scour holes at abutments with respect to time. They conducted experiments in a flume with 30 m long, 1.25 m wide and 1.0 m deep. Two different bed materials which were quartz sand with d_{50} = 1.8 mm and 0.9 mm were used at 20 cm thickness. Experiments were conducted under clear-water conditions for 6 hour test run which was decided by considering advice of Yanmaz and Altınbilek (1991) for sufficient experiment duration. And two different abutments were used in experiments at length of 10 and 12.5 cm.

They stated that the maximum scour depths occurred at the upstream face of the abutments and the distance between the locations of maximum depth of scour and deposition point decreased with decreasing abutment length. They proposed empirical relations for scour depths around abutments and for scour hole volume with respect to dimensionless time parameter.

Yanmaz and Köse (2009) also studied the temporal variation of scour depths at abutments by using the same experimental setup mentioned above with an abutment of 5 cm length. They proposed a semi empirical model for the temporal variation of maximum scour depth for abutments. They stated that shape of the scour hole remained almost unchanged with time and the side angles of the scour hole were nearly equal to the angle of repose of bed material except the rear of the abutment.

2.3 LITERATURE REVIEW ON SCOUR INTERACTION BETWEEN BRIDGE STRUCTURES

Başak et al. (1977) studied the maximum scour depths around pier groups and effect of the distances between them and angle of attack of flow. They stated that for the pier group parallel to the flow the scour depth was observed as minimum when the distances between piers were 4D and for the greater than 40D the piers acted like single one where D is the diameter of three identical piers.

They concluded that for the pier group perpendicular to the flow case the maximum scour depth occurred at a distance of 0.05D and for the values greater than 7D piers act as independent piers. The scour depths for inner piers were larger than %16 comparing to outer ones when the distance less than D which is the diameter of six identical piers. The scour depths for the inner and outer piers were equal when the distance was greater than 2D.

Elliott and Baker (1985) worked on rounded rectangular piers and they stated while the distances between piers getting smaller scour depth increases.

Vittal et al. (1994) studied pier groups which has three cylindrical piers angularly spaced at 120^0. They changed the angle between the flow upstream and piers axes from 0^0 to 60^0 with 15^0 degrees intervals. They stated that the best spacing for minimum scour depth was 30^0 angle from flow line. They also worked with collar and stated that a collar on a pier group is much more effective than a collar on a solid pier.

Luigi et al. (2001) conducted experiments on the scour process around round-nosed piers under clear-water conditions. The experimental runs were conducted using a rectangular laboratory flume which has dimensions of 6 m long, 1.2 m wide and 0.3 m deep. The flume was filled with a 10 cm thick layer of uniform sand with d_{50}=1.5 mm.

Three round-nosed piers with a length and width of 8 and 2 cm, respectively were used in the experiments and they had been settled in the test section, located 3 m downstream to the entry point of the flume. The piers were based on a rectangular foundation whose dimensions were 15 cm in length, 10 cm in width, 3 cm in height with ten circular poles whose dimensions were 1 cm in diameter and 10 cm in length. The initial bed level coincides with the top of the rectangular foundation and the three piers were aligned to each other with a spacing of 40 cm. Experiments were conducted under an approach angle between the longitudinal direction of the stream and the piers axis as given in Table 2.1.

Table 2.1 Maximum scour depths (in cm) for the investigated alignments

Approach Angle	0°	15°	35°	45°	60°	80°
Left pier	1.2	3.5	4.6	3.3	3.0	3.7
Center pier	1.1	2.4	4.9	4.2	4.1	2.2
Right pier	1.0	2.8	5.0	4.3	5.2	3.6

Every run was carried out for 5 hours and they stated that in this interval the scour practically reached a stable geometric form and over 90% of the final depth. And also they supported their idea by claiming a long run at about 12 hours had been confirmed this hypothesis (Hannah 1978) so that 5 hours was always considered as the final time of the experiments. The scour was measured in more than four hundred points for every run.

As the approach angle increases, the points of maximum scour depth moves along the exposed side of the pier and in particular it is possible to notice two zones of relative maximum depth. The first zone is located downstream to the left of the

pier while the second one is upstream to the right of the pier.

In some cases the maximum scour depth for the right pier can be 30% over the maximum depth for the left pier. Moreover it can be seen that the erosion increases from pier to pier and moves along with the stream. It would therefore seem that interaction cannot be neglected.

They conducted experiments on a system of three round-nosed piers over a rectangular foundation to verify the mutual influence between the piers and how this depends on the different alignments of the piers themselves with respect to the stream. They stated that the experiments showed cases where the interaction between the piers cannot be considered negligible.

Choi and Ahn (2001) also investigated the local scour depth variations at piers, which is affected by the bed configuration change depending upon the interaction between bridge piers.

The experiments were conducted in a 12 m long rectangular experimental flume. The maximum slope was 0.02. Five elliptical piers having width and length of 1.24 cm and 1.73 cm, respectively were used to investigate the effect by the successive bridges piers. The longitudinal distance between bridge piers were 5L, 10L, 15L, 20L, 25L, and the distortion width between piers were 0, 2d, 4d, 6d, 8d, where L and d indicate the length and width of the pier, respectively. Chosen Froude Numbers (Fr) were 0.2, 0.4, 0.6, 0.8.

About 100 experiments were conducted to measure maximum scour depth changes at five piers by increasing Froude Numbers.

When the distance was 5L and the distortion width was not existed, the maximum scour was occurred in the upstream pier. However, when the distortion width exists (6d), the maximum scour depth occurred at the downstream piers.

The scour depths usually increased by increasing Froude Numbers. However the increment rates of the maximum scour depths were comparatively small at high Froude Numbers.

The maximum scour depth compared to the pier width does not exceed 3.0 even though the maximum scour depths occurred around the different piers by changing the distance between the piers. The maximum scour width compared to the maximum scour depth does not exceed 1.6 in the experiments. The maximum scour depth occurred at the distorted piers and the scour depth decreased by increasing the distortion width when the distance between the bridge piers was relatively short (5L, 10L).

Consequently; they stated that the local scour depth at a pier, when the interaction between bridge piers exists, was severely affected by the scours at the other piers.

When the interaction between bridge piers exists, the maximum scour depth is increased by about 60% compared to that of a single pier. However, the increasing rate is changed depending upon the pier distance and the distorted width in the cross sectional direction.

In low Froude Number flows, the maximum scour depth is obtained when piers are installed on a straight line in the flow direction. However, by increasing Froude Number the maximum scour depth is obtained when the piers are installed with some distortion to the flow direction.

They claimed that existing equations to predict the maximum scour depth at bridge piers should be adjusted when the interaction between bridge piers exists.

Kayatürk (2005) studied interaction between bridge pier and abutment, and also application of a collar as a countermeasure. The author applied dimensional

analysis to the phenomenon and presented a relationship for scour depths as a function of abutment length, width, pier diameter, distance between pier and abutment and depth of flow.

The author used a laboratory flume in the experimental work, which has dimensions 30 m in length and 1.5 m in width. The experiments were conducted at a slope of 0.001 and with a sediment of median diameter d_{50} = 1.48 mm. The recession section was 10 m long and 0.50 m in depth. All tests were performed near the threshold flow condition which was obtained experimentally as Q = 0.055 m^3/s and y = 9.60 cm. The abutment lengths were 15 cm and 25 cm, and the pier diameters were 5 cm and 10 cm.

For interaction experiments, proportion of distance measured between the abutment and pier to abutment length was used. These values were 1, 1.5, 2, and 2.5 for the abutment length of 25 cm and 1.5, 2, 2.5, 3 for the abutment length of 15 cm. Four cases were studied, i.e.;

i) both the abutment and the pier have no collar around them,
ii) the abutment has the collar but the pier didn't have collar around it,
iii) the abutment had a collar around it at 5 cm below the bed level and the pier with a collar at the bed level, and
iv) both the abutment and the pier had collars around them at 5 cm below the bed level.

The author conducted 64 experiments on scour interaction between bridge piers and abutments and stated that the distance between the bridge abutment and pier was very important parameter influencing the flow conditions and the scour depths around these structures.

It was also stated that even though the scour depths around abutments and piers can be reduced by means of collars used on them, these collars did not show the same performance in reducing the scour depths around the structures when piers

and abutments were tested together. Hence it was concluded that there was a strong interaction between abutments and piers in terms of scour development.

Zarrati et al. (2006) studied the local scour around bridge pier groups under clear water conditions. They stated additional parameters for two piers in line as aligned with the flow, reinforcement and sheltering. Reinforcement occurs when a downstream pier is placed so that piers' scour holes overlap which increases scour depth. The presence of the upstream pier causes a sheltering effect which reduces the scouring of the downstream pier.

Experiments were conducted in a flume whose dimensions were 12 m in length, 0.75 m in width, and 0.8 m in depth. The working section was 2 m long with a 0.25 m recess in depth and situated 6.5 m downstream from the entrance of the flume. The recess was filled with uniform sediment with a diameter of 0.95 mm. Model piers with diameter of 40 mm were selected so that the effect of flume sidewalls and sediment size on the depth of scour hole becomes negligible.

Experiments were conducted at flow depth of 0.195 m and a flow rate of 0.05 m^3/s, which referred as the incipient motion condition for bed material. Two different arrangements were tested on a group of two piers in line and transversely aligned. For each arrangement the distance between the piers and pier diameter ratio was varied.

Collars were installed at the streambed level with an effective width 3 times the pier diameter for all experiments. Application of independent and continuous collars was studied.

When piers are placed transverse to the flow, except for very close spacing, each pier has own horseshoe vortices. The interaction between piers in the group increases strength of horseshoe vortices and scour depth increases. They suggested using the graphs given by Raudkivi (1990) to estimate depth of the local scour

around pier groups.

In all experiments on two piers in line, the maximum scour depth measured at the upstream face of the front pier (Table 2.2).

Table 2.2 Experimental results of Zarrati et al.(2006) at collar usage for scour countermeasure

	Distance / Pier diameter ratio	Type of the collar	Pier scour reduction (%)		Time (hour)
			Front	Rear	
In Line	3	Independent	30	75	65
	4	Independent	25	70	30
	2	Continuous	25	—	18
	3	Continuous	25	35	51
	3	Continuous and riprap	50	60	16

	Distance / Pier diameter ratio	Type of the collar	Pier scour reduction (%) Overall	Time (hour)
Transverse	3	Independent	0	37
	4	Independent	10	60
	2	Continuous	Slight increase in scouring	13
	3	Continuous	Slight increase in scouring	60

Collars which divert the down-flow and protect the riverbed from its direct impact were used on bridge piers to reduce local scouring. They stated that in all experiments scouring started from downstream of the piers under the action of

wake vortices and extended toward upstream and undermined the collars.

Collars were effective on two piers in line with the flow, and independent collars had a better efficiency compared to continuous collars. When distance between piers and pier diameter ratio is 3, a combination of continuous collar and riprap caused the greatest scour depth reduction of about 50% for the front pier; whereas independent and continuous collars reduced the scour depth at the front pier by about 30 and 25%, respectively. For the rear pier and for the same pier spacing, 75 and 35% scour reduction was observed for the independent collars and continuous collar respectively.

It was also shown that in a similar test condition the efficiency of collar is greater on a rectangular pier aligned with the flow than for two piers in line.

For two piers transverse to the flow, a deep scour hole forms at the downstream of the piers at the first stages of scouring and then develops and undermines the upstream edge of the collars deeply. With flow penetrating below the collars at their upstream edge, the rate of scouring is increased. Consequently they stated that collars were not effective in the case of two piers transverse.

Nyarko and Ettema (2011) studied pier and abutment scour interaction at noncohesive boundary. He stated if the distance between abutment and pier is 10 times the flow depth, pier scour is not affected by abutment. And also it was concluded that when pier and abutment are close, wide scour hole is reached.

Lança et al. (2013) stated pile group experiments up to 7 days test duration cause uncertainities for equilibrium scour depth. He also stated when spacing and pier diameter is the same between pier groups, they act like one big pier.

Mubeen (2015) studied local scour around staggered piers which placed as two of three piers at the upstream and the other one at the downstream. The center to

center distance between upstream piers was 18D and constant to maintain minimum lateral effect. And the third pier was placed on the axis which passes through the midpoint of the distance between upstream piers. Center to center distance along the flow between upstream piers and downstream pier was 5D, 10D, 15D, 20D, 25D, 30D, 35D, 40D, 50D, 60D, 70D, 80D and 90D where D (3.3 cm) is the diameter of identical three piers.

He stated that maximum scour depth measured for all piers at 10D spacing between two rows. This arrangement also caused 45^0 angle of attack which was the most critical situation for local scour. The minimum scour depth for downstream pier measured at 40D spacing which was recommended for design. He also indicated that for the greater spacing than 65D between two rows the scour depth was constant.

Selamoğlu et al. (2015) studied temporal variation of local scour topography around dual piers. Experiments were conducted in a flume with 14 m long, 0.72 m wide and the bed material was uniform sand with d_{50} = 0.88 mm. Experiments were conducted under clear water conditions. The piers were placed in line as center to center distance was 3D and 4D where D is the diameter as 7.5, 6.3 and 4 cm for three different cylindrical piers. They chose 6 hour run for test duration at which the maximum scour depth reached 85-95% of the equilibrium scour depth. They measured bed topography at certain time intervals up to 6 hours and stated the maximum scour depths occurred at the front side of the upstream pier while maximum deposition occurred at the rear of the downstream pier. They also stated that the maximum scour depth decreased when spacing between piers increased. They proposed a dimensionless equation for time dependent surface area and scour hole volume around dual piers.

Yılmaz et al. (2017) conducted experiments in a flume with 15.2 m long, 0.72 m wide and 1.0 m deep. The flume had a sediment recession section which was 4.5 m long and located 5.6 m downstream from the flume inlet. At the recession section

layer thickness was 300 mm and the bed material was uniform quartz sand with d_{50} = 0.85 mm. Experiments were conducted under clear water conditions, with identical two piers aligned with the flow. Different pier sets of diameters 7.5 cm, 6.3 cm and 4.0 cm were used. In the experiments three different pier to pier distances were tested as 2D, 3D and 4D where D is the diameter of identical piers.

First group of tests were conducted for observing temporal variation of scour hole topography around piers for duration of 6 hours run according to the findings of Melville and Chiew (1999) as development time reaches 10% of the equilibrium time, scour depth around a single cylindrical pier reaches its 50-80% of the equilibrium scour depth. Second group of tests were conducted for observing temporal evolution of scour depths for duration of 42 hours run.

They proposed a semi-empirical formula to predict the volume of scour hole around tandem piers as a function of pier diameter, distance between pier axes, time and scour depths. They stated that shape of scour hole around upstream pier remained constant in time and as the distance between piers decreases, the scour depth decreases.

Keshavarzi et al. (2018) conducted experiments in a flume with 19 m long, 0.61 m wide and 0.60 m deep. The flume had a sediment recession section which was 5.0 m long and 0.15 m deep, and located 9.0 m downstream from the flume inlet. Experiments were conducted with a single circular pier and two circular piers along with flow having zero angle of attack. Two piers were installed at distances 1D, 2D, 2.5D, 3D, 4D, 5D, 6D, 8D, 10D and 12D where D was the pier diameter.

At the recession section non cohesive sand layer thickness was 150 mm. The mean particle size was 0.85 mm. The experiments were conducted at 72 ~ 75 hour duration under clear water condition.

They stated that the scour at the upstream pier was always greater than

downstream one. The largest maximum scour depths two in-line piers occurred at 2.5D distance and scour was 22% higher than that of the single pier. At distance 1D and 10D the maximum scour depth at upstream pier was nearly equal to that of the single pier. But the distance 1D to 2.5D the maximum scour depth at upstream pier increased rapidly while distance increasing.

They proposed two semi-empirical formulas for the prediction of the maximum scour depths around two in-line piers as a function of dimensionless distance parameter and the formula had ±12% difference with Sheppard/Melville equation.

Memar et al. (2018) studied local scour around in line piers with skew angles. They conducted experiments in a flume 9 m long, 1.3 m wide and 0.66 m deep. The flume had a sediment recession section which was 5.0 m long and 0.25 m deep, and located 4.0 m downstream from the flume inlet. The bed material was uniform quartz sand with d_{50} = 1.78 mm while the circular piers diameters were 6.3 cm.

The distance between center axes of in line (tandem) piers was 3D where D was the diameter of pier. The tandem piers placed with skew angle 0^o, 30^o, 45^o, 60^o and 90^o. The experiments conducted under clear water conditions.

They conducted first experiment with skew angle 0^o for duration of 70 hours and stated the presence of the second pier and the interaction between them caused increase in the equilibrium time to reach the maximum scour depth. Rest of the experiments at skew angles of 30^o, 45^o, 60^o and 90^o were conducted for duration of 28 hours, since %80 of the maximum scour depth occurred in first 28 hours.

They stated that the minimum scour depth at downstream pier was obtained for a skew angle of 0° since the upstream pier had a protection effect. The maximum scour depths at both piers were occurred at skew angle of 45°. The minimum scour depth for upstream pier was observed at the skew angle of 60°.

Hassan et al. (2020) conducted experiments in a flume 14 m long, 1 m wide and 1 m deep. The flume had a sediment recession section which was 2.5 m long and 0.30 m deep and located 5.0 m downstream from the flume inlet. Experiments were conducted using a single pier and two in-line (tandem) piers placed parallel to the flow direction with circular piers of diameters of 5 cm. Two piers were installed at distances 2D, 2.5D, 3D, 4D, 6D and 8D where D was the pier diameter.

In the experiments a cohesive soil mixture which composed of 30% kaolinite clay and 70% fine sand by dry weight was used as the bed material which has of d_{50} = 0.15 mm finally. 3 hours before each experiments the flume were filled with water to saturate the soil hence the mixture to form cohesive bonds. The experiments were conducted at 24 hour duration under clear water conditions.

They stated that in all experiments the scour depth at the upstream pier was greater than that of downstream ones. The maximum scour depth for the two in-line piers was observed at less than 2.5D distance and scour value was 10% higher than that of single one. For greater than 3D distance the upstream pier scour depth approximates to the single pier one. They also stated the scour hole geometry and downstream sediment deposition characteristics were affected by piers interaction. After comparing experimental results with TAMU (Texas A&M University) scour equation used to predict scour depths, they stated that this equation overestimates the scour depths of both upstream and downstream piers.

CHAPTER 3

THEORETICAL STUDY

3.1 INTRODUCTION

In this chapter the theoretical studies carried out for the maximum scour depths occurring around the bridge piers and abutments due to the scour interaction between piers and abutments under clear water conditions were presented. In a row, maximum relative scour depths at piers and abutments and then the dimensionless relations for scour borders around the pier and abutment were derived by using dimensional analysis.

3.2 DIMENSIONAL ANALYSIS

For maximum scour depth, $(d_s)_{max}$, which will form at piers and abutments due to the scour interaction between piers and abutments under clear water conditions (Figure 3.1) the following equations can be written;

$$(\mathrm{d_s})_{\max} = f\left(L_a, B_a, D, U, y, g, \rho, \rho_s, \mu, d_{50}, \sigma_g, S, B, \lambda_x, \lambda_y, \lambda_p, t\right) \tag{3.1}$$

where, L_a is abutment length, B_a is abutment width, D is pier diameter, U is approach flow velocity, y is flow depth, g is gravitational acceleration, ρ is density of water, ρ_s is density of sediment, μ is the dynamic viscosity of fluid, d_{50} is median grain size of sediment, σ_g is geometric standard deviation of sediment size distribution, S is slope of channel, B is width of channel, λ_x is the net distance between pier and abutment perpendicular to flow direction, λ_y is the net distance

between abutment upstream side and pier in the flow direction, λ_p is the distance between two piers in the flow direction and t is time.

Applying dimensional analysis to Eq.(3.1) the following relationship can be written as;

$$\frac{(d_s)_{\max}}{y} = f\left(\frac{L_a}{y}, \frac{B_a}{y}, \frac{\lambda_x}{y}, \frac{\lambda_y}{y}, \frac{\lambda_p}{y}, \frac{U}{\sqrt{gy}}, \frac{D}{y}, \frac{\rho_s}{\rho}, \frac{\mu}{\rho y U}, \frac{d_{50}}{y}, \sigma_g, S, \frac{B}{y}, \frac{Ut}{y}\right) \qquad (3.2)$$

Considering that all the experiments were conducted under the same conditions of clear-water, one sediment size, constant test duration; bed slope, approach flow velocity, channel width and depth of flow, Eq.(3.3) and Eq.(3.4) can be written from Eq.(3.2) for the maximum relative scour depths at piers and abutments, respectively.

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{\max}]_{p,0}} = f\left(\frac{L_a}{D}, \frac{\lambda_x}{D}, \frac{\lambda_x}{L_a}, \frac{\lambda_y}{B_a}, \frac{\lambda_p}{D}\right) \qquad \text{for scour at piers} \qquad (3.3)$$

and;

$$\frac{[(d_s)_{\max}]_a}{[(d_s)_{\max}]_{a,0}} = f\left(\frac{L_a}{D}, \frac{\lambda_x}{D}, \frac{\lambda_x}{L_a}, \frac{\lambda_y}{B_a}, \frac{\lambda_p}{D}\right) \qquad \text{for scour at abutments} \qquad (3.4)$$

where "*a*" and "*p*" indices represent abutment and pier, respectively, and "*0*" indices represents the maximum scour depth for one pier or one abutment case.

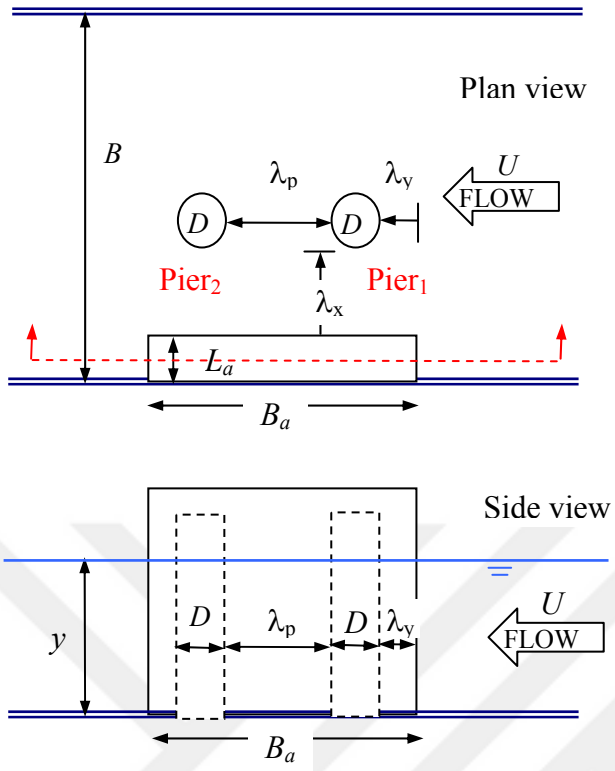


Figure 3.1 Sketches showing the physical parameters involved in pier and abutment scour interaction

Due to scour effect, the initial bed level in the channel changes around the pier and abutment, and scour holes form around the structures as seen in Figure 3.2. To investigate the dimensions of these scour holes, the following dimensionless equations similar to Eq.(3.3) and Eq.(3.4) can be written in terms of related parameters.

$$\frac{SB_{pi}}{SB_{pi,0}} = f\left(\frac{L_a}{D}, \frac{\lambda_x}{D}, \frac{\lambda_x}{L_a}, \frac{\lambda_y}{B_a}, \frac{\lambda_p}{D}\right) \qquad \text{for scour borders around piers} \qquad (3.5)$$

and;

$$\frac{SB_{ai}}{SB_{ai,0}} = f\left(\frac{L_a}{D}, \frac{\lambda_x}{D}, \frac{\lambda_x}{L_a}, \frac{\lambda_y}{B_a}, \frac{\lambda_p}{D}\right) \quad \text{for scour borders around abutments} \qquad (3.6)$$

where "*SB*" represents scour borders, and "*p*" for the pier, "*a*" for the abutment, "*i*" is variable indicating the directional location of "*SB*", as "*r*", "*l*", "*f*", "*b*" designating "right", "left", front" and "back" of the pier, and as "*r*", "*f*", "f_2", "f_3", "*w*" designating "right of the corner", "front of the corner", "5 cm away from the front of the corner", "10 cm away from the front of the corner" and "wall side" of the abutment, respectively.

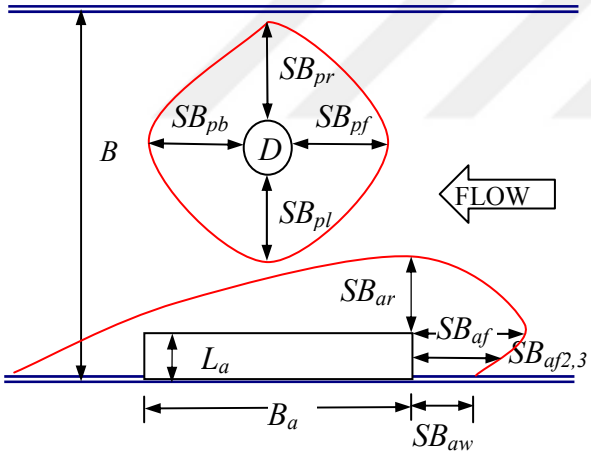


Figure 3.2 Plan view of pier and abutment scour borders

CHAPTER 4

EXPERIMENTAL SETUP AND PROCEDURE

4.1 EXPERIMENTAL SETUP

Experiments were conducted in the Hydraulic Model Laboratory of Technical Research and Quality Control Department of State Hydraulic Works (DSİ). The test flume is a rectangular channel, which has dimensions of 30 m in length, 1.50 m in width and 1.00 m in depth. The channel slope is S=0.001. The recession section has dimensions as 7 m in length, 1.50 m in width, 1.00 m in depth and has plexiglass side walls on both sides (Figures 4.1 to 4.7). The flume was filled with sand as sediment having median size of d_{50} = 0.90 mm and density of ρ_s = 2.64 gr/cm^3. Erodible sediment was placed all over the flume at 5 cm thickness but in recession section it was 45 cm.

Figure 4.1 View of the flume from downstream

Figure 4.2 View of the recession section from upstream

Figure 4.3 Side view of the recession section

Figure 4.4 View of the recession section from downstream

Figure 4.5 Downstream control cover of the flume

Figure 4.6 Discharge control and measuring mechanism of the flume

Figure 4.7 Discharge regulation mechanism of the flume

The time period of each experiment conducted was kept constant as 6 hours. Clearwater conditions were tried to be maintained during the experiments. Three different rectangular abutments at lengths of 5 cm, 10 cm and 15 cm and two different cylindrical piers at diameters of 5 cm and 10 cm were used in the experiments. The abutment width was kept constant in all the experiments as B_a = 75 cm. Totally 3 abutments and 8 piers were tested within the scope of this study (Figure 4.8 to Figure 4.11).

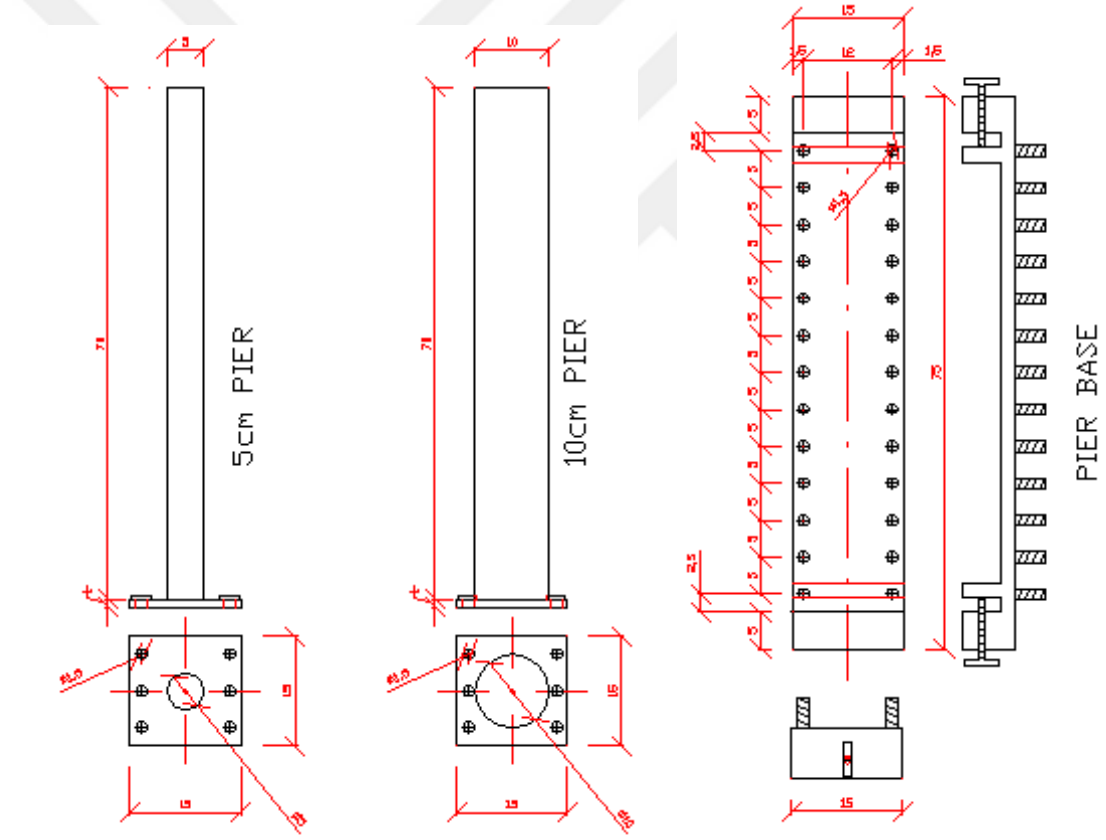


Figure 4.8 Sketches of the piers and pier bases used in the experiments

Figure 4.9 Pier bases and pipes used in the experiments as piers

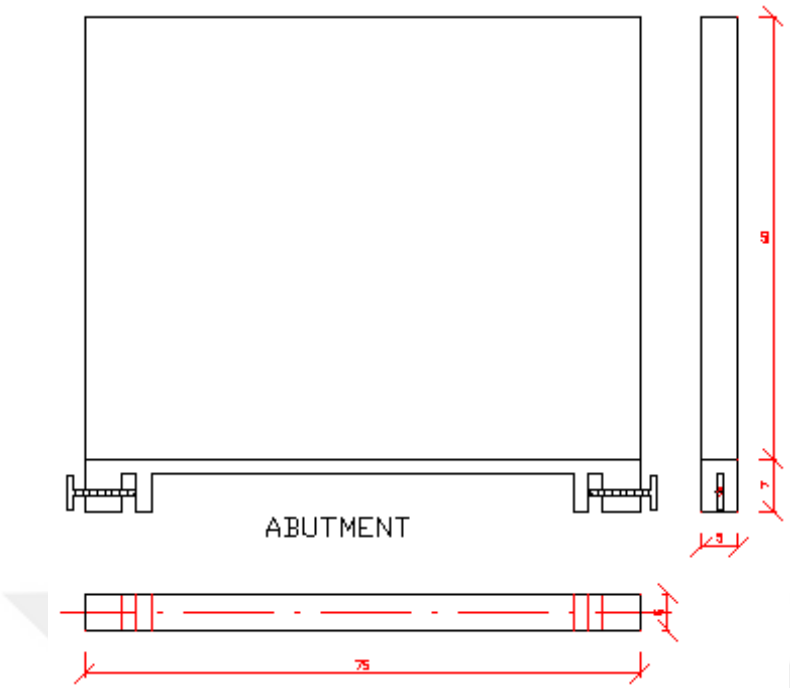


Figure 4.10 Sketches of the abutments used in the experiments

Figure 4.11 5 cm long abutment used in the experiments

4.2 EXPERIMENTAL PROCEDURE

4.2.1 Preliminary Experiments

First preliminary experiments were performed to find out the incipient motion characteristics of the sand material used at the channel bottom. For this reason in these experiments only sand movement was observed without any obstacle in or on the flume bed. At the end of the experiments, the incipient motion of the bed material was observed at lower than flow depth of 6.20 cm for the discharge of 30 l/s.

To compare this critical flow depth obtained from the preliminary experiments with the one to be calculated from the Shields' diagram for d_{50} = 0.90 mm, the following process was applied: first, the critical shear stress $(\tau_0)_{cr}$ was determined as 0.0126 kgf/m^2 from $(\tau_0)_{cr}/[(\gamma_s-\gamma)d] = 0.035$ where γ_s = 2640 kgf/m^3 and γ = 1000 kgf/m^3. From the relation of $(\tau_0)_{cr} = \gamma RS$ for S = 0.001 the hydraulic radius was calculated as 0.0526 m from which y_{cr} = 5.60 cm. The deviation in the value of y_{cr} obtained from the experiments is about 9.78%.

Flow velocity and critical flow velocity ratio was determined as 96% to be in safe side and the critical depth of the flow was chosen as 6.45 cm in all experiments to satisfy the condition of clear-water for flow of 30 l/s required for the incipient motion of the sediment at the channel bottom. Hence the flow velocity U and Froude Number were calculated as 0.31 m/s and 0.3897, respectively.

4.2.2 Experiments

At the beginning of each experiment, first, the case of experimental setup to be tested (Figure 4.12) was mounted on the channel bottom. The time period of each experiment was kept constant as 6 hours. The flow discharge of 30 l/s was provided and the corresponding flow depth of 6.45 cm was maintained in the flume by adjusting the tail gate.

In the first set of experiments only one pier and one abutment were tested for three

different cases as shown in Figure 4.12 to provide the scour data to use them later to compare the scour results of other sets of experiments to be conducted with two piers and one abutment. In all of the experiments conducted, the diameters of the piers tested were D = 5 cm and 10 cm, and the lengths of abutments were L_a = 5 cm, 10 cm and 15 cm while the widths of the abutments were kept constant as B_a = 75 cm. List of experiments tabulated in Table 4.1 to Table 4.4.

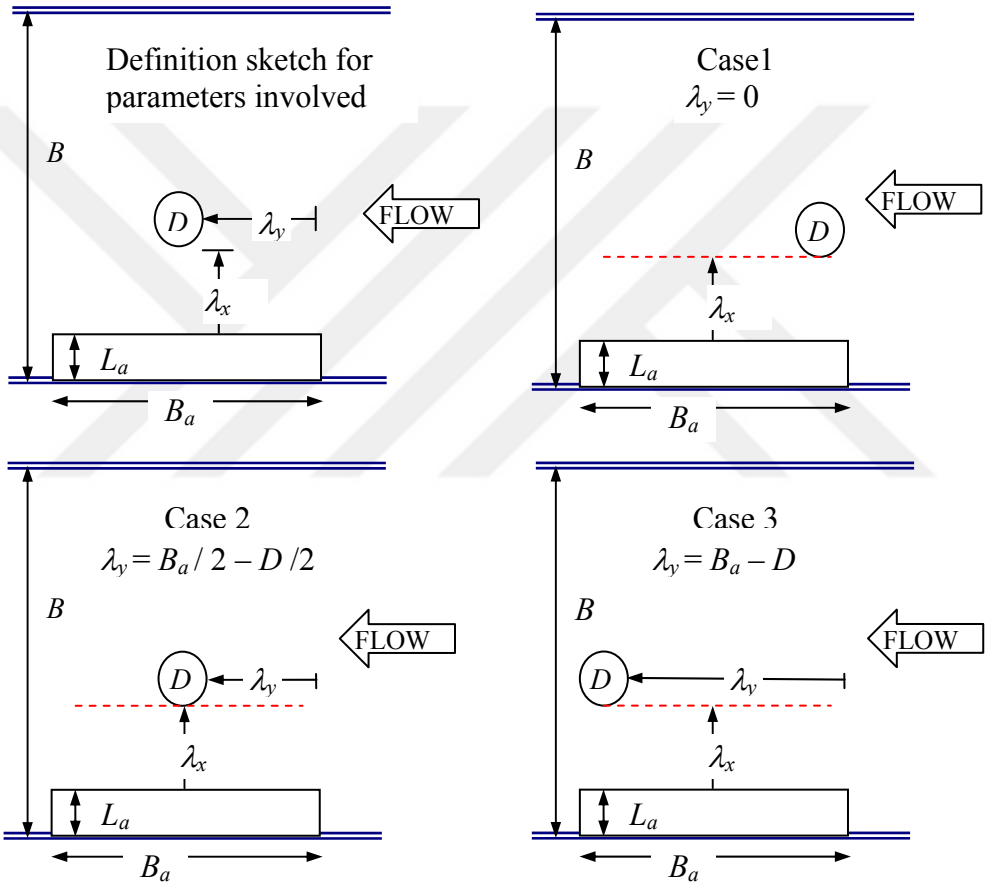
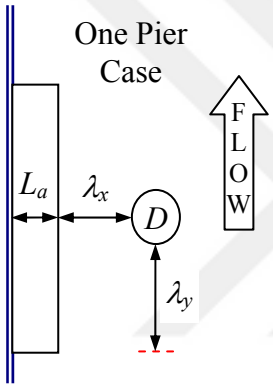


Figure 4.12 Abutment and pier interaction cases

As seen in Figure 4.12, in each case tested the value of λ_y was kept constant as $\lambda_y = 0$ for Case 1, $\lambda_y = B_a / 2 - D / 2$ for Case 2 and $\lambda_y = B_a - D$ for Case 3 while the value of λ_x was changed from 1.1D to 10D. The channel was wide enough so that the effect of right channel wall did not influence the shapes and depths of the scour holes forming around the pier-abutment arrangements used in the experiments.

Table 4.1 Preliminary experiment arrangements



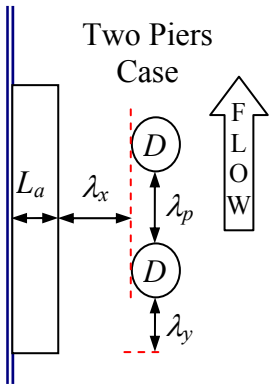
L_a Rectangular abutment width

D Circular pier width

λ_x Pier to abutment distance

λ_y Pier distance from the upstream corner of the abutment in the flow direction

λ_p Pier to pier distance (only for two piers case)



Preliminary Experiments					
Exp. No.	L_a (cm)	λ_x (cm)	D (cm)	λ_y (cm)	λ_p (cm)
E0	-		-		
E1	5		-		
E2	10		-		
E3	15		-		
E4	-	75	5		
E5	-	70	10		
E168	-	70	10	10	35
E169	-	70	5	5	55
E170	-	70	5	15	35

Table 4.2 Experiment arrangements for one pier case (D = 5 cm)

Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)	Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)	Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)
E6	5	5.5	0	E36	10	50	0	E66	15	10	0
E7	5	5.5	35	E37	10	50	35	E67	15	10	35
E8	5	5.5	70	E38	10	50	70	E68	15	10	70
E9	5	10	70	E39	10	45	70	E69	15	15	70
E10	5	10	35	E40	10	45	35	E70	15	15	35
E11	5	10	0	E41	10	45	0	E71	15	15	0
E12	5	15	0	E42	10	40	0	E72	15	20	0
E13	5	15	35	E43	10	40	35	E73	15	20	35
E14	5	15	70	E44	10	40	70	E74	15	20	70
E15	5	20	70	E45	10	35	70	E75	15	25	70
E16	5	20	35	E46	10	35	35	E76	15	25	35
E17	5	20	0	E47	10	35	0	E77	15	25	0
E18	5	25	0	E48	10	30	0	E78	15	30	0
E19	5	25	35	E49	10	30	35	E79	15	30	35
E20	5	25	70	E50	10	30	70	E80	15	30	70
E21	5	30	70	E51	10	25	70	E81	15	35	70
E22	5	30	35	E52	10	25	35	E82	15	35	35
E23	5	30	0	E53	10	25	0	E83	15	35	0
E24	5	35	0	E54	10	20	0	E84	15	40	0
E25	5	35	35	E55	10	20	35	E85	15	40	35
E26	5	35	70	E56	10	20	70	E86	15	40	70
E27	5	40	70	E57	10	15	70	E87	15	45	70
E28	5	40	35	E58	10	15	35	E88	15	45	35
E29	5	40	0	E59	10	15	0	E89	15	45	0
E30	5	45	0	E60	10	10	0	E90	15	50	0
E31	5	45	35	E61	10	10	35	E91	15	50	35
E32	5	45	70	E62	10	10	70	E92	15	50	70
E33	5	50	70	E63	10	5.5	70				
E34	5	50	35	E64	10	5.5	35				
E35	5	50	0	E65	10	5.5	0				

Table 4.3 Experiment arrangements for one pier case (D = 10 cm)

Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)	Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)	Exp. No.	L_a (cm)	λ_x (cm)	λ_y (cm)
E93	5	10	0	E108	10	10	0	E123	15	10	0
E94	5	10	32.5	E109	10	10	32.5	E124	15	10	32.5
E95	5	10	65	E110	10	10	65	E125	15	10	65
E96	5	20	0	E111	10	20	0	E126	15	20	0
E97	5	20	32.5	E112	10	20	32.5	E127	15	20	32.5
E98	5	20	65	E113	10	20	65	E128	15	20	65
E99	5	30	0	E114	10	30	0	E129	15	30	0
E100	5	30	32.5	E115	10	30	32.5	E130	15	30	32.5
E101	5	30	65	E116	10	30	65	E131	15	30	65
E102	5	40	0	E117	10	40	0	E132	15	40	0
E103	5	40	32.5	E118	10	40	32.5	E133	15	40	32.5
E104	5	40	65	E119	10	40	65	E134	15	40	65
E105	5	50	0	E120	10	50	0	E135	15	50	65
E106	5	50	32.5	E121	10	50	32.5	E136	15	50	32.5
E107	5	50	65	E122	10	50	65	E137	15	50	0

At the end of the experiments the valve of the intake pipe providing the flow to the channel was slowly closed and the drain valve of the recession section was opened. After having the channel fully drained, scour profiles along the axes shown in Figure 4.13; A-A, B-B, C-C and D-D were provided by point gauge. From these scour profiles the maximum scour depths occurring around the piers and abutments and also the scour boundaries shown in Figure 3.2 were determined. The total number of experiments conducted in this group is 132 and experimental arrangements were tabulated in Table 4.2. The measured data of these experiments were presented in Appendix A. Figure 4.14 shows the plan view of the experimental setup with one pier and one abutment for experiment no.15, along with the related scour profiles taken at different axes as an example.

Table 4.4 Experiment arrangements for two piers case

Exp. No.	L_a (cm)	λ_x (cm)	D (cm)	λ_y (cm)	λ_p (cm)	Exp. No.	L_a (cm)	λ_x (cm)	D (cm)	λ_y (cm)	λ_p (cm)
E138	15	10	5	15	35	E153	10	10	10	10	35
E139	15	20	5	15	35	E154	10	20	10	10	35
E140	15	30	5	15	35	E155	10	30	10	10	35
E141	15	40	5	15	35	E156	10	40	10	10	35
E142	15	50	5	15	35	E157	10	50	10	10	35
E143	5	10	5	15	35	E158	15	10	10	10	35
E144	5	20	5	15	35	E159	15	20	10	10	35
E145	5	30	5	15	35	E160	15	30	10	10	35
E146	5	40	5	15	35	E161	15	40	10	10	35
E147	5	50	5	15	35	E162	15	50	10	10	35
E148	10	50	5	15	35	E163	5	10	10	10	35
E149	10	40	5	15	35	E164	5	20	10	10	35
E150	10	30	5	15	35	E165	5	30	10	10	35
E151	10	20	5	15	35	E166	5	40	10	10	35
E152	10	10	5	15	35	E167	5	50	10	10	35

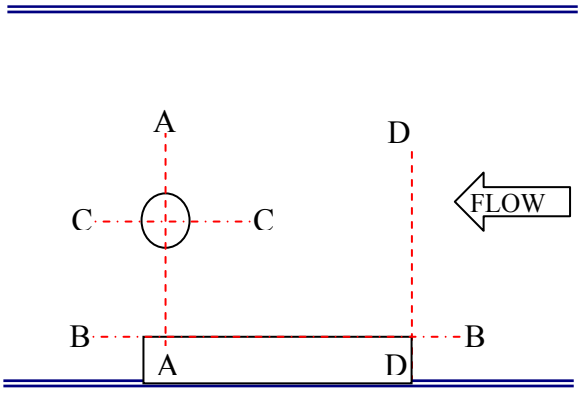


Figure 4.13 Axes along which scour readings were made in the experiments

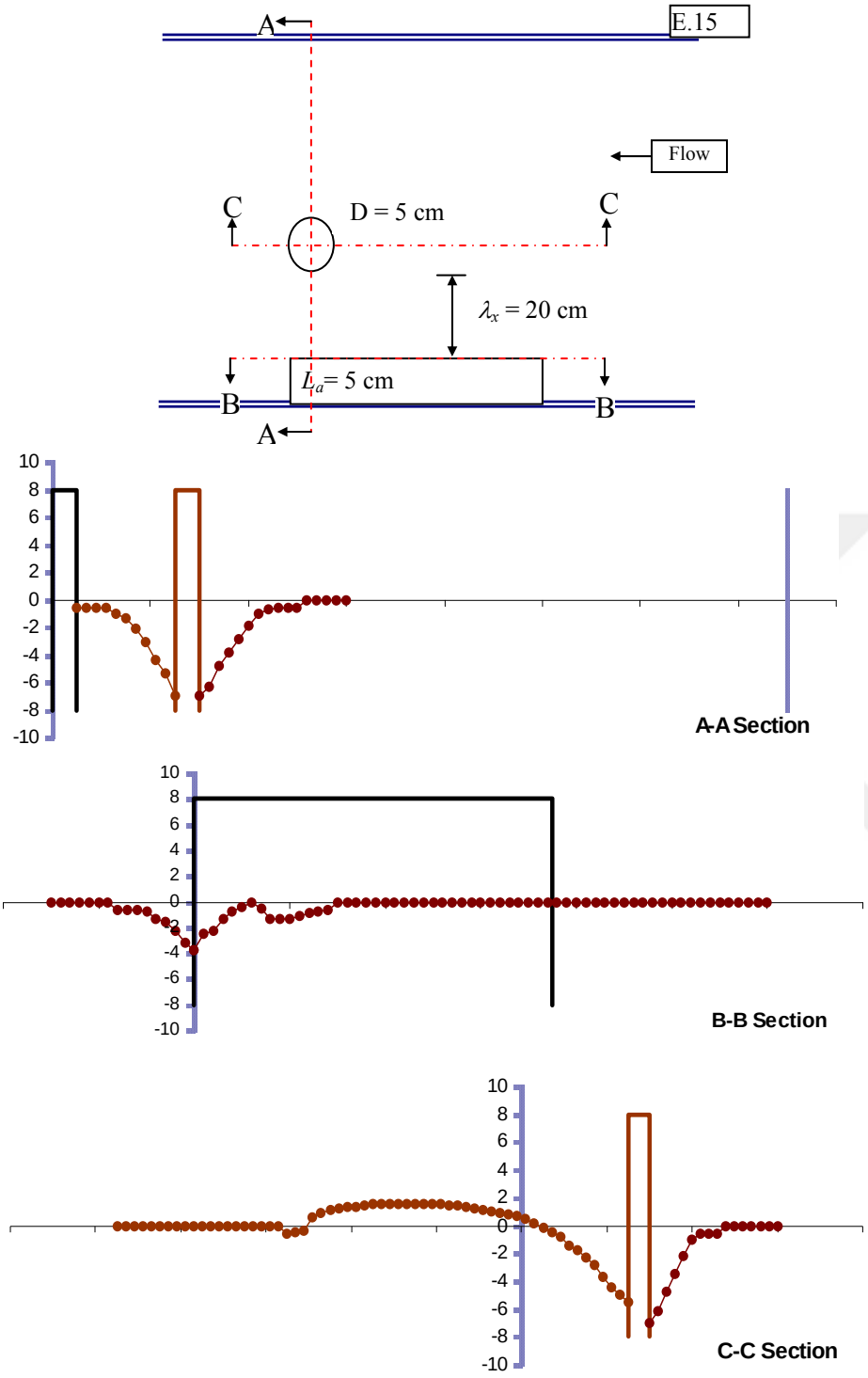


Figure 4.14 Scour profiles for experiment no. 15

Figure 4.15 to 4.20 show the photographs of the scoured channel bed around the pier and abutment for some of the experiments carried out.

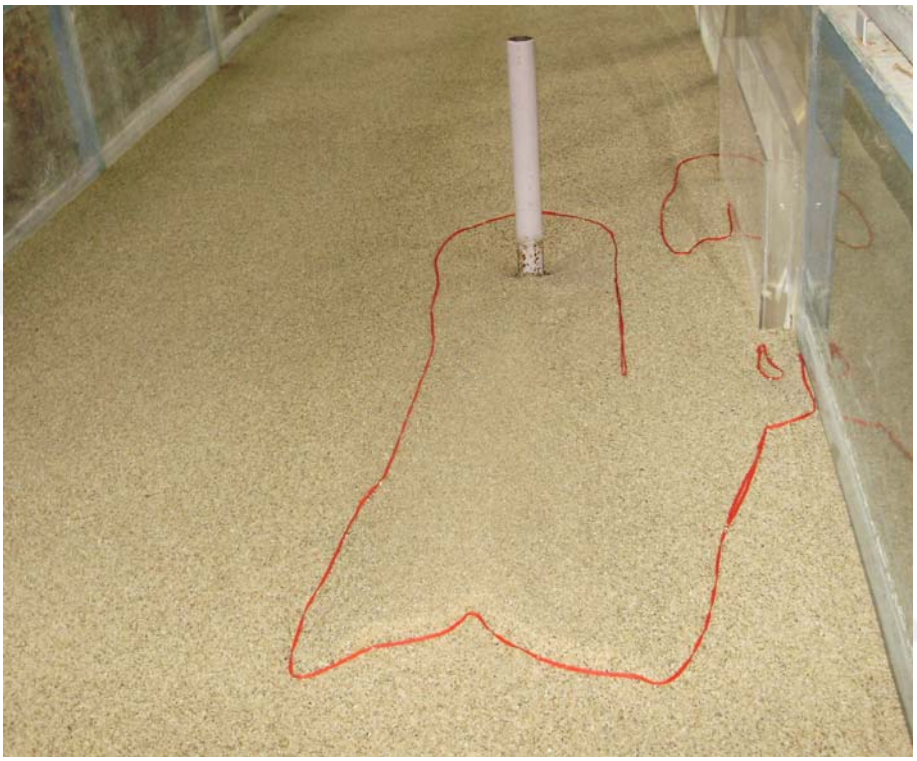


Figure 4.15 Downstream view of the scoured channel for experiment no.25 (D = 5 cm, L_a = 5 cm, λ_x = 35 cm)

Figure 4.16 Downstream view of the scoured channel for experiment no.105 (D = 10 cm, L_a = 5 cm, λ_x = 50 cm)

Figure 4.17 Downstream view of the scoured channel for experiment no.48 (D = 5 cm, L_a = 10 cm, λ_x = 30 cm)

Figure 4.18 Downstream view of the scoured channel for experiment no.118 (D = 10 cm, L_a = 10 cm, λ_x = 40 cm)

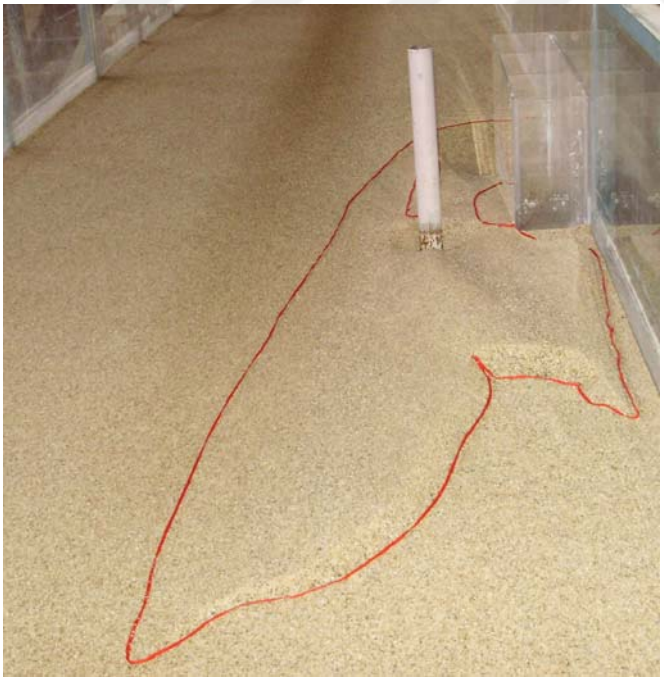


Figure 4.19 Downstream view of the scoured channel for experiment no.69 (D = 5 cm, L_a = 15 cm, λ_x = 15 cm)

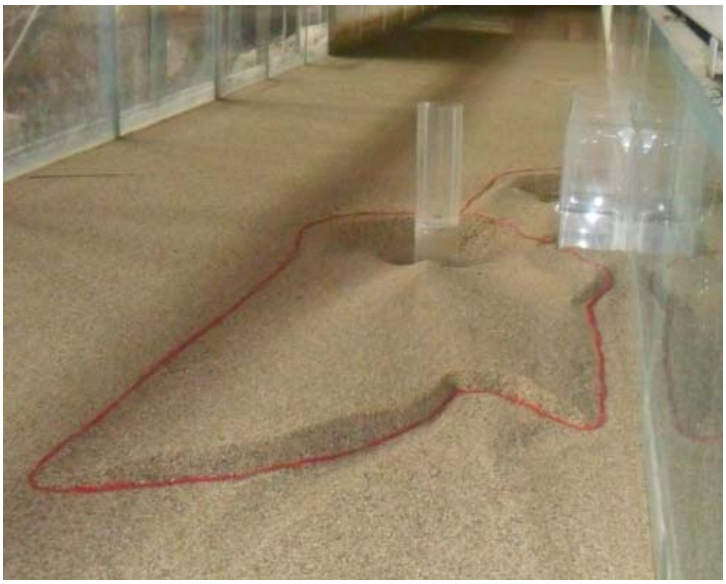


Figure 4.20 Downstream view of the scoured channel for experiment no.128 (D = 10 cm, L_a = 15 cm, λ_x = 20 cm)

In the second set of experiments two piers line in the flow direction across the abutment were installed. In these group of tests the experiments were conducted with the values of L_a = 5 cm, 10 cm and 15 cm; D = 5 cm and 10 cm; λ_x between 2D and 10D with 2D increments for D = 5 cm (between D and 5D with D increments for D = 10 cm); and λ_y = 10 cm and 15 cm. The plan view of the piers and abutments used in the experiments with related parameters are shown in Figure 4.21.

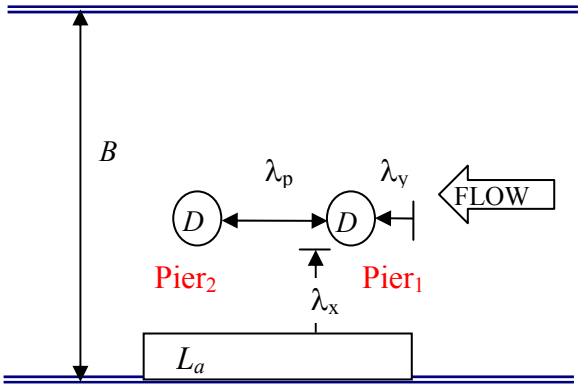


Figure 4.21 Plan view of the experimental setup with one abutment and two piers

Figure 4.22 to 4.24 show the photographs of the scoured channel bed around the pier and abutment for some of the experiments conducted.

Figure 4.22 Downstream view of the scoured channel for experiment no.142 (D = 5 cm, L_a = 15 cm, λ_x = 50 cm, λ_p = 35 cm)

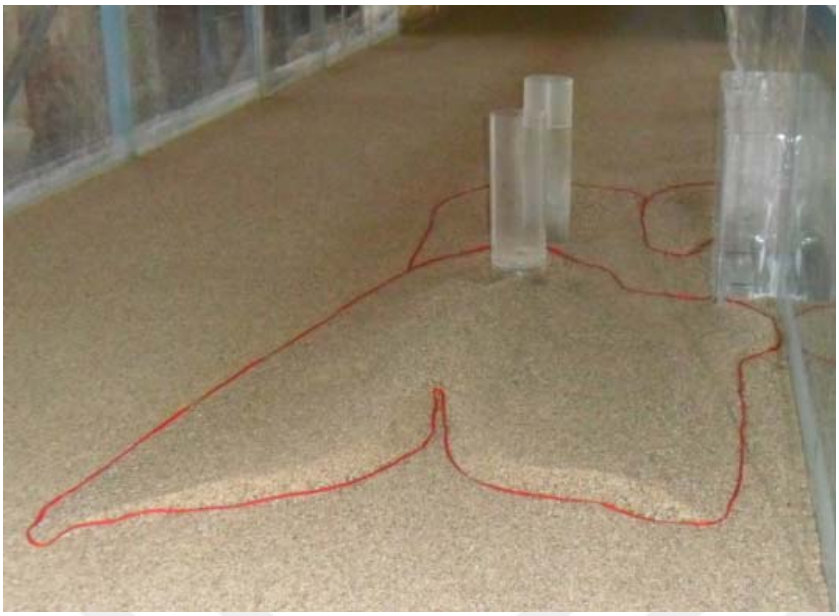


Figure 4.23 Downstream view of the scoured channel for experiment no.155 (D = 10 cm, L_a = 10 cm, λ_x = 50 cm, λ_p = 35 cm)

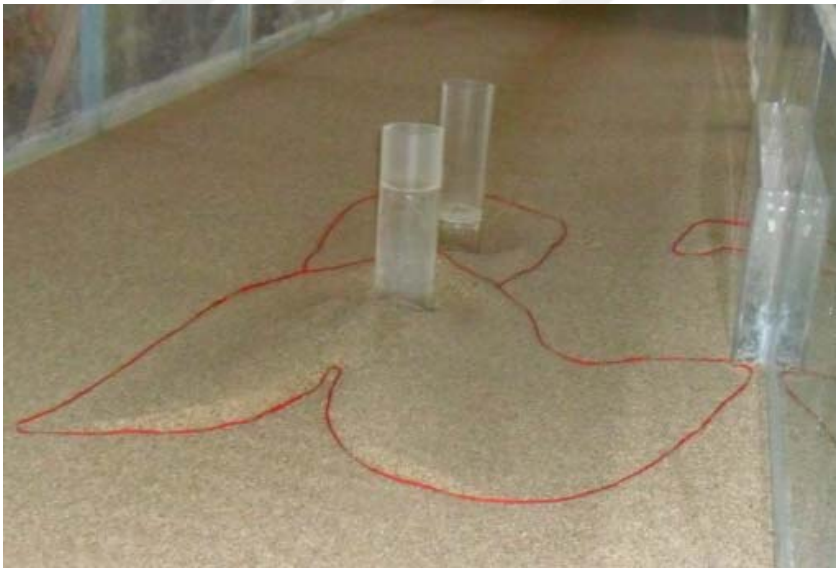


Figure 4.24 Downstream view of the scoured channel for experiment no.167 (D = 10 cm, L_a = 5 cm, λ_x = 50 cm, λ_p = 35 cm)

To flatten the sand bed after providing the data of scour profiles for each experiment, a mechanism which comprises a roller body on rails on the sides of the channel and smooth blade over the sand bed was used. This mechanism works with men power by sliding from downstream to upstream of the channel (Figure 4.25 to 4.27).

Figure 4.25 Installation of the new pier and abutment set to the bottom of the recession section

Figure 4.26 Sand bed leveling mechanism out of the recession section

Figure 4.27 Sand bed leveling mechanism at the recession section

4.3 EXPERIMENTAL CHALLENGES

4.3.1 Time Management

As stated previously, the duration of each experiment was kept constant at 6 hours. However, it took a total of 15-20 hours to complete one experiment, with the additional time spent for the preparations and measurements made before and after the experiment. Transactions carried out in this time period can be summarized as; excavating the sand bed in the experimental section, placing the experimental elements in desired locations, introducing the water flow to the system, waiting for the sand bed to become fully saturated, performing the test, draining the model at the end of the experiment, and finally measuring the depth and distances of the scour holes and sand depositions.

Considering that a daily working time in the laboratory is 8 hours, the average time required for each experiment to be fully completed can be given as 2.0-2.5 working days.

4.3.2 Laboratory Conditions

In order for the experiments to be carried out without disruption and consequently to obtain reliable data, laboratory conditions must be appropriate. In this context, the most important points to ensure that the desired amount of flow can be given to the model properly during the experiment, the pumps can work continuously without power interruption, and the experiments can be carried out safely with the provision of experienced technicians. Problems to be experienced in these listed items require repetition of the experiments.

4.3.3 Workers Experience

The technicians in the laboratory took part in making the experiments possible. The assembling of the elements to be used in the experiments to their places on the model, the preparation of the sandbox, its leveling and the saturation with water were done by the same technicians in each experiment. In this way, errors that may

arise from personnel errors are minimized. The experiments that were thought to have not obtained reliable data were repeated.

4.3.4 Confidence in Reading

After each experiment, the raw data, which consist of the scour holes formed around the piers and the abutment, and the areas covered by the sand piles on the depth and plan, were read by the technicians using a point gauge. This point gauge, on a wheeled system mounted on rails on the channel, can move in the direction of the flow and perpendicular to the flow at the desired distances, and the biggest error in these measurements is between +1 and -1 mm (Figure 4.28).

Figure 4.28 Point gauge as a measurement device

CHAPTER 5

ANALYSIS OF THE EXPERIMENTAL DATA

5.1 INITIAL EXPERIMENTS

The first five experiments were named as "initial experiments" in which one abutment and one pier cases were tested separately to get reference maximum scour depth values to be used in the calculation of the dimensionless scour parameters.

In all these experiments the piers and abutments were tested one by one along the center line and side wall of the flume, respectively. In the experiments conducted with piers, the maximum scour depths occurring around the piers at points R, L and F which refer to right, left and front faces of the pier, respectively, in the flow direction as designated in the sketch given in Table 5.1, were measured and presented in Table 5.1. Since the scour depths at the rear of the piers were less than the other points stated above, they were not considered as critical and not taken into consideration.

However, in the cases of abutment scour measurements it was observed that the location of the maximum scour depth changed along the front face of the abutment. To describe the locations of the maximum scour depths the symbols of L_0, $L_{0\text{-}2}$, $L_{0\text{-}4}$, $L_{0\text{-}6}$, $L_{0\text{-}8}$, $L_{0\text{-}10}$, $L_{0\text{-}12}$, $L_{0\text{-}14}$, $L_{0\text{-}15}$ were used along the front face of the abutment. Here L_0 stands for the corner point of the abutment front face and each subscript following "0" refers to the distance from the corner towards the sidewall of the channel in terms of "cm". As an example $L_{0\text{-}10}$ shows the point on the front face of the abutment which is 10 cm far away from the upstream front corner of

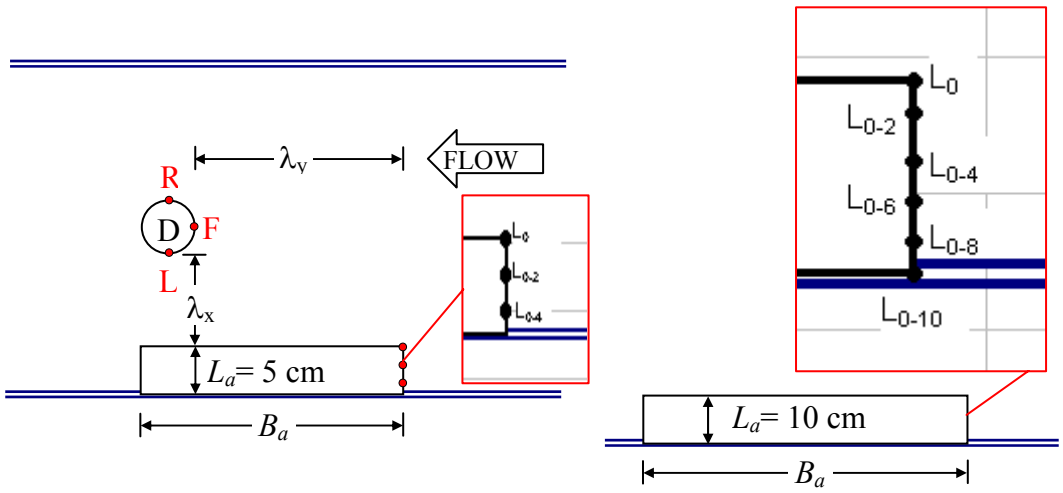
the abutment towards the sidewall of the flume.

The data of the initial experiments were given in Table 5.1 while the data of the other experiments were presented in the Appendix A.

Table 5.1 Initial experimental data with the sketches of the measurement points

One pier		$[(d_s)_{max}]_{p,0}$ (cm)		
Exp. No.	D (cm)	Measurement Points		
		L	R	F
E4	5	6.00	5.60	7.30
E5	10	8.35	8.10	8.75

One abut.		$[(d_s)_{max}]_{a,0}$ (cm)								
Exp. No.	L_a (cm)	Measurement Points								
		L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_{0-15}
E1	5	4.05	4.50	4.35						
E2	10	7.15	7.50	7.55	7.35	6.85	6.50			
E3	15	9.60	10.60	10.60	10.40	10.10	9.80	10.00	9.90	9.80



5.2 PIER AND ABUTMENT SCOUR INTERACTION CASES

In this section, the results of the experiments conducted for scour interaction between piers and abutments; first for one pier and one abutment and then two piers and one abutment cases are presented.

5.2.1 One Pier and One Abutment Case for Scour Depths

Set I : D = 5 cm, L_a = 5 cm (L_a / D = 1.00)

The measured maximum pier scour depths as a function of pier positions which were denoted in terms of the transverse distance between the abutment and pier, λ_x, and the distance between the upstream face of the abutment and pier in the flow direction, λ_y, for D = 5 cm pier diameter and L_a = 5 cm abutment length were tabulated in Table 5.2 at three measurement points (L, R, F). Figures 5.1 – 5.3 were sketched by using dimensionless pier position parameter λ_x / D and dimensionless scour parameter $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ as a function of λ_y / B_a. The data points given in Figures 5.1 – 5.3 for a known λ_y / B_a show almost the same trend regardless of the points around the pier, L, R or F, at which scour measurements were made. The value of the dimensionless scour parameter varies between 0.93 and 1.27 for point L, 1.05 and 1.36 for point R and 0.82 and 1.00 for point F, for all tested values of λ_y / B_a and λ_x / D. The maximum relative scour depths compared to the case of one single bridge pier occur at points; L as 1.27, R as 1.36 and F as 1.00 at λ_x / D values of 5 for λ_y / B_a = 0.47.

On the other hand, the minimum relative scour depths compared to the case of one single bridge pier occur at points; L as 1.00, R as 1.05 and F as 0.85 at λ_x / D values of 1.1 for λ_y / B_a = 0.93.

From these results it can be concluded that in general, the presence of the abutment does not affect the scour depth at point F of the pier compared to that of single pier case while it increases the scour depths at points L and R at most by 27% and 36% for λ_y / B_a = 0.47, respectively. The pier location corresponding to λ_y / B_a = 0.47

causes the maximum relative scour depths around the pier; at points L, R and F, almost for any λ_x / D value tested compared to other λ_y / B_a values. Consequently, it may also be stated that for λ_x / D is equal to 8 or 9, the relative scour depths obtained around the pier are almost minimum for any λ_y / B_a values tested.

Table 5.2 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 5 cm and D = 5 cm (L_a / D = 1.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y / B_a = 0.00			L	R	F	L	R	F
E6	5.5	1.1	5.60	6.20	6.00	**0.93**	1.11	**0.82**
E11	10	2	5.70	6.20	6.10	0.95	1.11	0.84
E12	15	3	6.30	6.30	6.40	1.05	1.13	0.88
E17	20	4	6.10	6.30	6.10	1.02	1.13	0.84
E18	25	5	6.60	6.20	6.50	**1.10**	1.11	0.89
E23	30	6	6.40	6.40	6.80	1.07	1.14	0.93
E24	35	7	6.60	6.60	7.20	**1.10**	**1.18**	0.99
E29	40	8	6.15	6.20	6.90	1.03	1.11	0.95
E30	45	9	6.20	6.20	6.80	1.03	1.11	0.93
E35	50	10	6.10	6.60	6.60	1.02	**1.18**	0.90
λ_y = 35 cm, λ_y /B_a = 0.47			L	R	F	L	R	F
E7	5.5	1.1	6.10	6.10	6.60	1.02	1.09	0.90
E10	10	2	6.10	5.90	5.90	1.02	1.05	0.81
E13	15	3	6.50	6.50	6.20	1.08	1.16	0.85
E16	20	4	6.60	6.60	6.45	1.10	1.18	0.88
E19	25	5	7.60	7.60	7.30	**1.27**	**1.36**	**1.00**
E22	30	6	6.80	6.80	6.80	1.13	1.21	0.93
E25	35	7	7.10	7.10	6.90	1.18	1.27	0.95
E28	40	8	6.60	5.90	6.70	1.10	1.05	0.92
E31	45	9	6.50	6.50	6.60	1.08	1.16	0.90
E34	50	10	6.10	6.70	6.80	1.02	1.20	0.93
λ_y = 70 cm, λ_y /B_a = 0.93			L	R	F	L	R	F
E8	5.5	1.1	6.00	5.90	6.20	1.00	1.05	**0.85**
E9	10	2	6.20	6.50	6.55	1.03	1.16	0.90
E14	15	3	6.20	6.20	6.20	1.03	1.11	**0.85**
E15	20	4	6.60	6.60	6.60	**1.10**	**1.18**	0.90
E20	25	5	6.50	6.40	7.00	1.08	1.14	0.96
E21	30	6	6.20	5.90	6.30	1.03	1.05	0.86
E26	35	7	6.50	6.50	6.50	1.08	1.16	0.89
E27	40	8	6.30	6.30	6.30	1.05	1.13	0.86
E32	45	9	6.40	6.50	6.50	1.07	1.16	0.89
E33	50	10	6.60	6.60	6.80	**1.10**	1.18	0.93

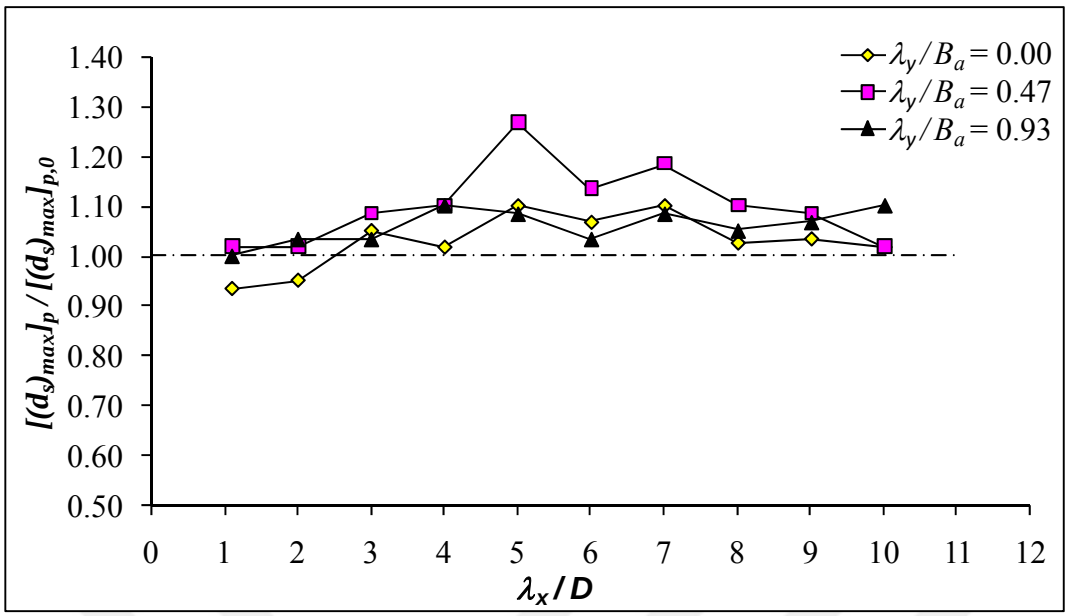


Figure 5.1 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

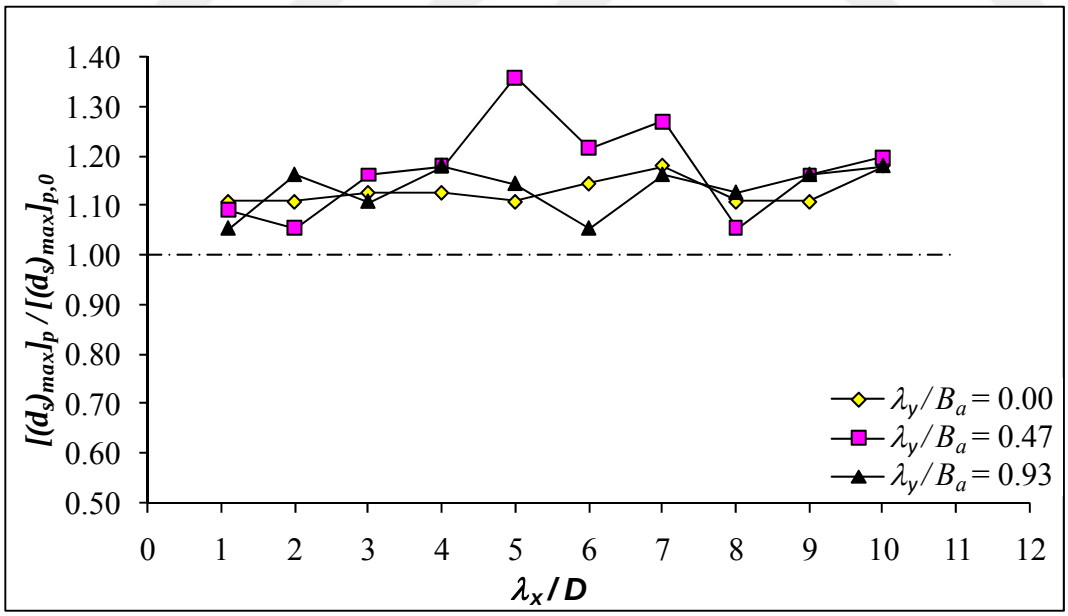


Figure 5.2 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

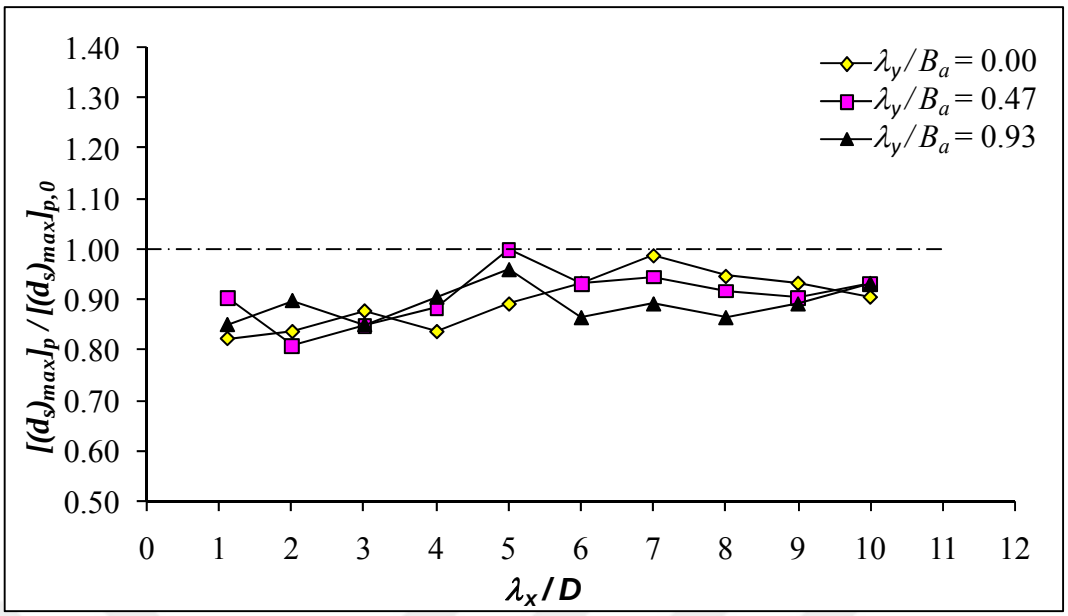


Figure 5.3 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

Maximum scour depths measured around the abutment as a function of pier positions for D = 5 cm pier and L_a = 5 cm abutment were tabulated in Table 5.3. Using dimensionless pier position parameter λ_x / L_a and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ Figures 5.4 – 5.6 were plotted as a function of λ_y / B_a. From the inspection of these figures it can be stated that almost all of the data, except a few of them, of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ fall below the line of 1.0. That means, in general, the presence of the single pier in the flow medium does not increase the scour depth around the abutment front face with respect to the case of a single abutment. Minimum dimensionless scour depths around the abutment are observed for the bridge pier of λ_y / B_a = 0.47 almost at any λ_x / L_a value tested. The highest scour reduction was observed at point L_0 for λ_y / B_a = 0.47 and λ_x / L_a = 4.

Table 5.3 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}4}$ and their comparison with those of a single abutment data for L_a = 5 cm and D = 5 cm (L_a / D = 1.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)			$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y / B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E6	5	1.0	5.00	4.80	3.60	**1.23**	1.07	**0.83**
E11	10	2.0	3.90	3.60	3.90	0.96	**0.80**	0.90
E12	15	3.0	4.40	5.40	5.30	1.09	**1.20**	**1.22**
E17	20	4.0	3.40	4.20	3.85	**0.84**	0.93	0.89
E18	25	5.0	3.80	4.30	4.10	0.94	0.96	0.94
E23	30	6.0	4.00	4.50	4.60	0.99	1.00	1.06
E24	35	7.0	3.90	4.50	4.40	0.96	1.00	1.01
E29	40	8.0	3.80	4.60	4.30	0.94	1.02	0.99
E30	45	9.0	4.20	4.60	4.35	1.04	1.02	1.00
E35	50	10.0	3.60	4.50	4.20	0.89	1.00	0.97
λ_y = 35 cm, λ_y / B_a = 0.47			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E7	5	1.0	4.30	4.50	4.65	**1.06**	1.00	1.07
E10	10	2.0	3.70	4.30	3.75	0.91	0.96	0.86
E13	15	3.0	3.35	3.80	3.40	0.83	0.84	0.78
E16	20	4.0	2.90	3.75	3.40	**0.72**	0.83	0.78
E19	25	5.0	3.80	4.50	3.50	0.94	1.00	0.80
E22	30	6.0	3.80	4.00	3.60	0.94	0.89	0.83
E25	35	7.0	3.60	4.40	4.00	0.89	0.98	0.92
E28	40	8.0	3.90	3.50	3.10	0.96	**0.78**	**0.71**
E31	45	9.0	3.85	4.15	4.20	0.95	0.92	0.97
E34	50	10.0	3.70	4.85	4.70	0.91	**1.08**	**1.08**
λ_y = 70 cm, λ_y / B_a = 0.93			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E8	5	1.0	4.10	4.30	4.50	1.01	0.96	**1.03**
E9	10	2.0	3.65	4.50	4.00	0.90	1.00	0.92
E14	15	3.0	4.10	4.60	4.50	1.01	1.02	**1.03**
E15	20	4.0	3.30	3.70	3.30	**0.81**	**0.82**	**0.76**
E20	25	5.0	4.25	4.70	4.50	**1.05**	1.04	**1.03**
E21	30	6.0	3.50	4.10	3.40	0.86	0.91	0.78
E26	35	7.0	3.70	4.30	4.10	0.91	0.96	0.94
E27	40	8.0	4.20	4.45	4.20	1.04	0.99	0.97
E32	45	9.0	3.60	4.30	4.10	0.89	0.96	0.94
E33	50	10.0	3.90	4.75	4.50	0.96	**1.06**	**1.03**

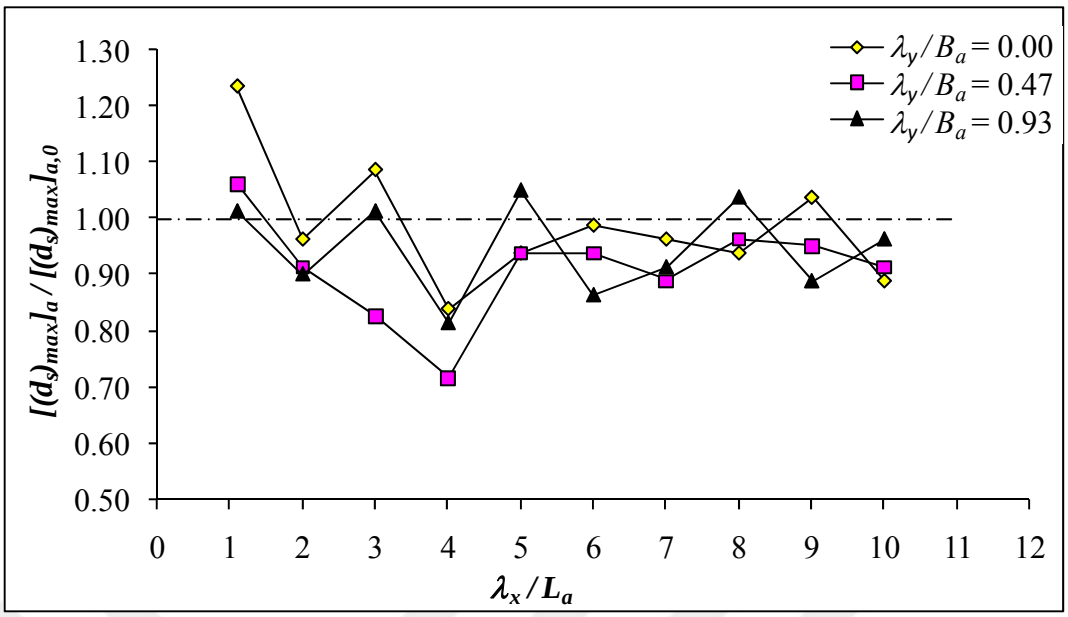


Figure 5.4 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

The maximum values of the dimensionless scour parameter are 1.23, 1.20 and 1.22 at measurement points of L_0, $L_{0\text{-}2}$ and $L_{0\text{-}4}$, respectively, among the total measured data of 30 for λ_y / B_a = 0.00. The rest of the data are either around 1.0 or less than 1.0.

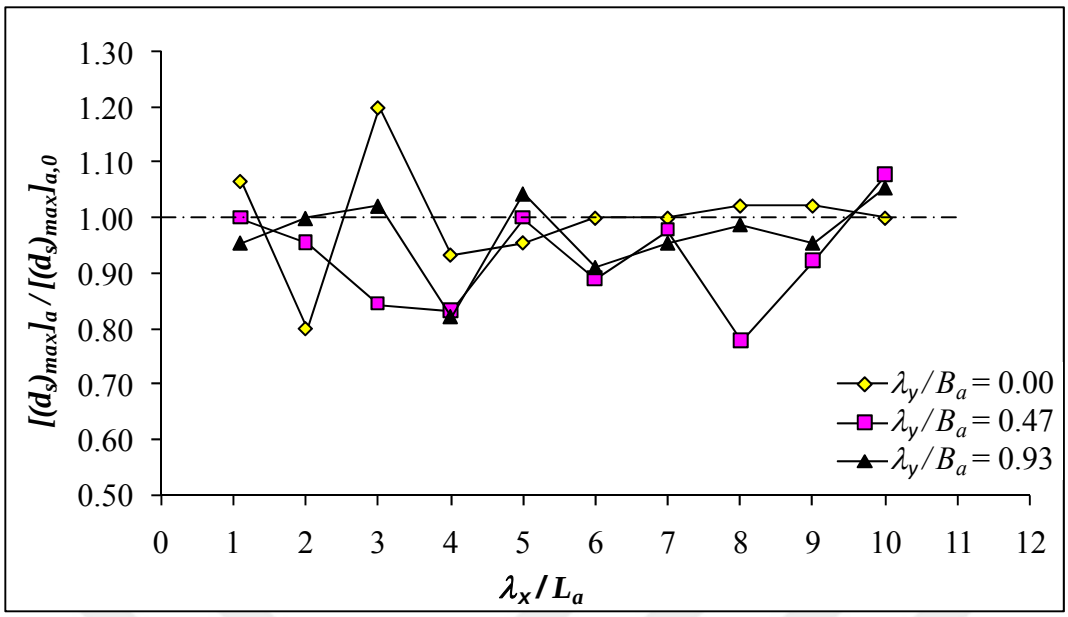


Figure 5.5 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

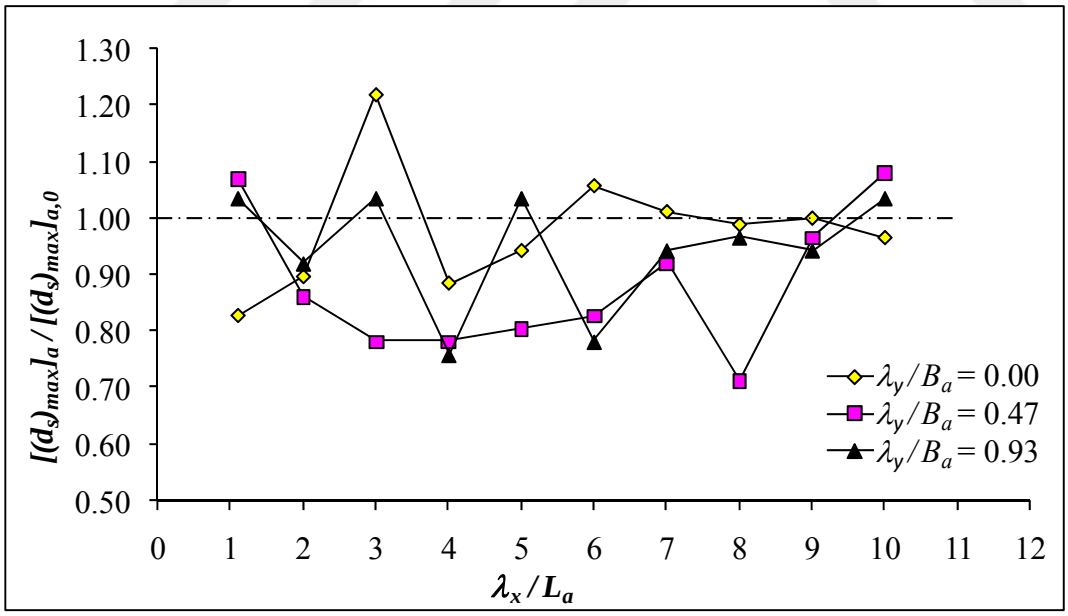


Figure 5.6 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 5 cm and D = 5 cm (L_a / D = 1.00)

Set II : D = 5 cm, L_a = 10 cm (L_a / D = 2.00)

The measured maximum pier scour depths, the calculated dimensionless pier scour parameters and pier positions for an arrangement of 5 cm pier and 10 cm abutment were tabulated in Table 5.4 at three points L, R and F of the pier. Variation of the dimensionless scour parameter $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with dimensionless pier position λ_x / D were presented in Figures 5.7 – 5.9 as a function of λ_y / B_a.

Table 5.4 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 10 cm and D = 5 cm (L_a / D = 2.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x/D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y / B_a = 0.00			L	R	F	L	R	F
E65	5	1	8.60	7.90	8.20	**1.43**	1.41	1.12
E60	10	2	8.10	8.10	8.20	1.35	1.45	1.12
E59	15	3	7.50	8.40	8.40	1.25	**1.50**	**1.15**
E54	20	4	6.80	6.70	7.05	1.13	1.20	0.97
E53	25	5	6.80	6.70	7.20	1.13	1.20	0.99
E48	30	6	6.60	6.40	7.10	1.10	1.14	0.97
E47	35	7	6.60	6.70	7.10	1.10	1.20	0.97
E42	40	8	6.10	6.45	6.90	1.02	1.15	0.95
E41	45	9	6.60	6.50	7.40	1.10	1.16	1.01
E36	50	10	6.10	6.40	6.60	1.02	1.14	**0.90**
λ_y = 35 cm, λ_y /B_a = 0.47			L	R	F	L	R	F
E64	5	1	5.40	6.40	5.60	0.90	1.14	0.77
E61	10	2	4.70	5.20	5.20	**0.78**	**0.93**	**0.71**
E58	15	3	5.50	5.50	5.90	0.92	0.98	0.81
E55	20	4	7.10	7.10	7.15	1.18	1.27	0.98
E52	25	5	8.10	8.10	7.90	**1.35**	**1.45**	**1.08**
E49	30	6	7.60	7.60	7.70	1.27	1.36	1.05
E46	35	7	7.50	7.50	7.50	1.25	1.34	1.03
E43	40	8	7.10	6.20	7.20	1.18	1.11	0.99
E40	45	9	7.50	7.60	7.30	1.25	1.36	1.00
E37	50	10	6.50	6.70	6.80	1.08	1.20	0.93
λ_y = 70 cm, λ_y /B_a = 0.93			L	R	F	L	R	F
E63	5	1	5.00	6.30	5.60	0.83	1.13	0.77
E62	10	2	4.60	5.10	5.00	**0.77**	**0.91**	**0.68**
E57	15	3	5.40	5.60	6.30	0.90	1.00	0.86
E56	20	4	6.10	6.60	6.80	1.02	1.18	0.93
E51	25	5	6.50	6.80	7.20	1.08	1.21	0.99
E50	30	6	7.10	7.30	7.10	1.18	**1.30**	0.97
E45	35	7	7.20	7.10	7.70	**1.20**	1.27	**1.05**
E44	40	8	6.60	7.10	6.90	1.10	1.27	0.95
E39	45	9	6.10	6.90	7.10	1.02	1.23	0.97
E38	50	10	7.20	7.30	7.40	**1.20**	**1.30**	1.01

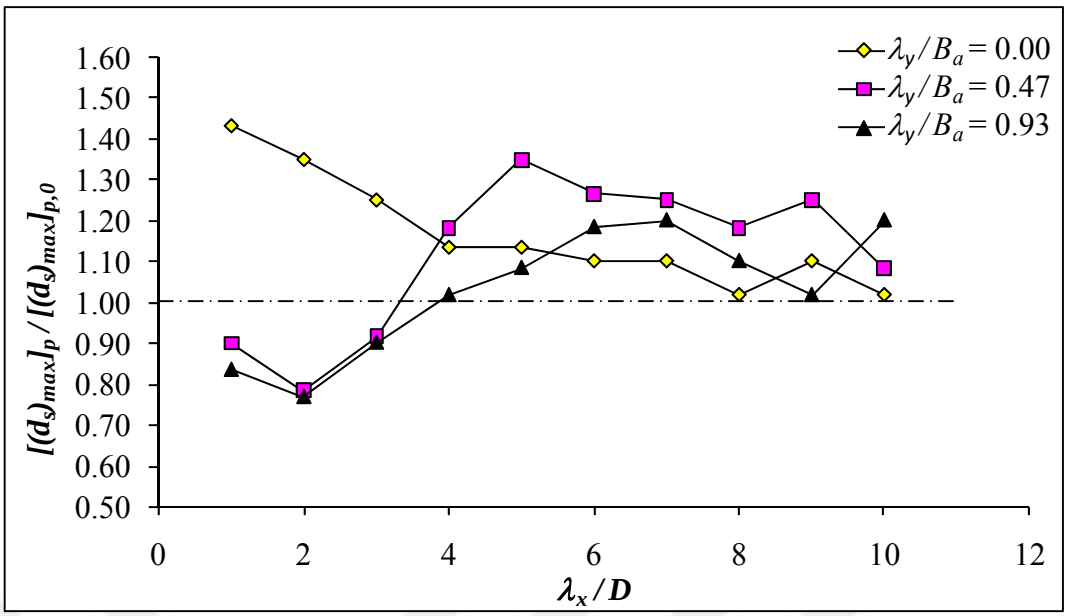


Figure 5.7 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

In all these figures, in general, the trends of the data points for a given λ_y / B_a are very similar. For λ_y / B_a = 0, the value of the dimensionless scour parameter is quite high at small λ_x / D values up to about 4, and then decreases very slowly with increasing λ_x / D. In Figure 5.7, the maximum and the minimum values of the dimensionless scour parameter vary between 1.43 and 1.02, respectively, at point L for λ_y / B_a = 0 while the corresponding values are 1.50 and 1.14 at point R, and 1.15 and 0.90 at point F.

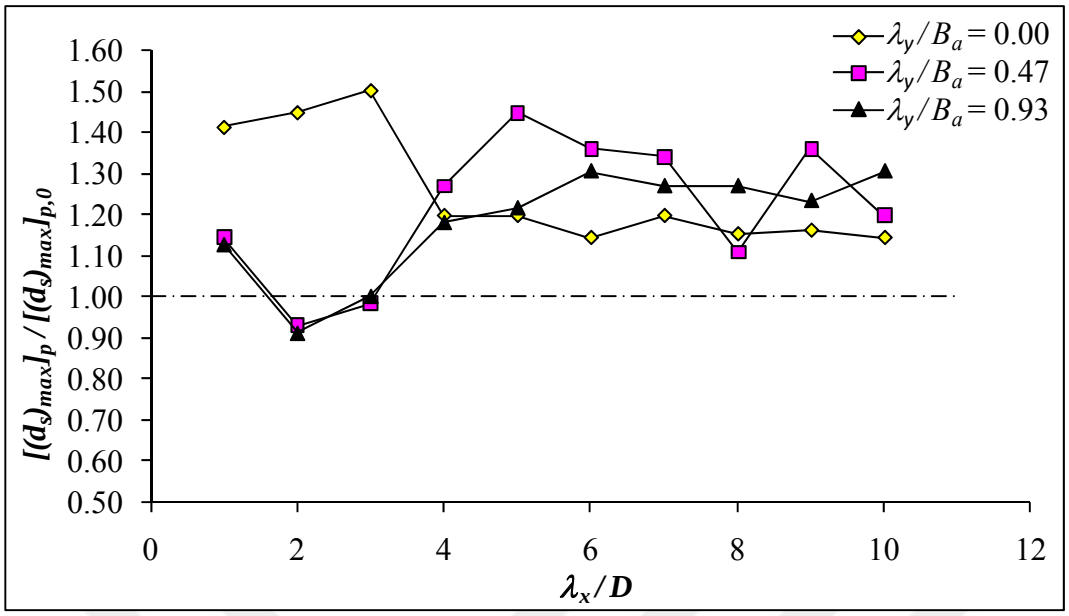


Figure 5.8 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

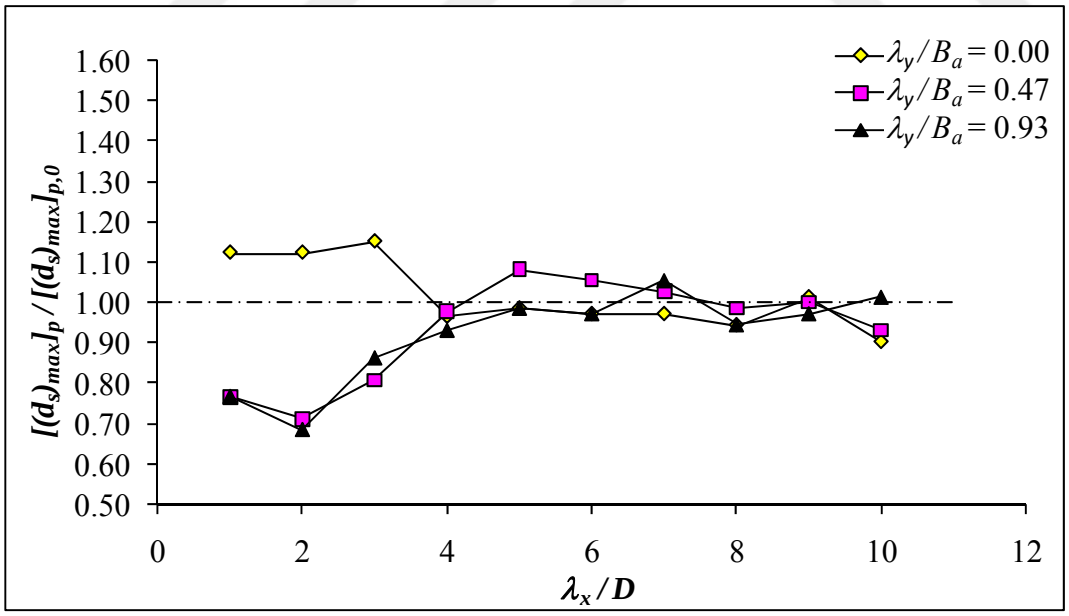


Figure 5.9 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

At λ_y / B_a = 0.47, the minimum and the maximum values of the dimensionless scour parameter are; 0.78 at λ_x / D = 2 and 1.35 at λ_x / D = 5 at point L, 0.93 at λ_x / D = 2 and 1.45 at λ_x / D = 5 at point R, and 0.71 at λ_x / D = 2 and 1.08 at λ_x / D = 5 at point F (Figure 5.8). Similarly at λ_y / B_a = 0.93, the corresponding values are; 0.77 at λ_x / D = 2 and 1.20 at λ_x / D = 7 at point L, 0.91 at λ_x / D = 2 and 1.30 at λ_x / D = 6 and 10 at point R, and 0.68 at λ_x / D = 2 and 1.05 at λ_x / D = 7 at point F (Figure 5.9).

At pier locations of λ_y / B_a = 0.47 and 0.93 the dimensionless scour parameters are minimum at the measurement points around the pier for the small values of λ_x / D = up to about 3.

At larger λ_x / D values, λ_x / D > about 3, for λ_y / B_a = 0.47 much higher dimensionless scour parameters are obtained around the pier compared to those of λ_y / B_a = 0 and 0.93 cases.

The maximum scour depths measured around the abutment as a function of pier positions for D = 5 cm pier and L_a = 10 cm abutment were presented in Table 5.5 for λ_y = 0, 35 and 70 cm. Figures 5.10 – 5.15 show variation of the pier position parameter λ_x / L_a with dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ as a function of λ_y / B_a, for points on the upstream face of the abutment with 2 cm intervals starting from the abutment corner across the pier to the channel wall side, which are designated by L_0, L_{0-2}, L_{0-4}, L_{0-6}, L_{0-8} and L_{0-10}, respectively.

Table 5.5 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}10}$ and their comparison with those of a single abutment data for L_a = 10 cm and D = 5 cm (L_a / D = 2.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)						$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$					
			Measurement Points											
λ_y = 0 cm, λ_y / B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E65	5	0.5	7.75	8.20	7.85	7.50	7.35	7.20	**1.08**	**1.09**	1.04	1.02	1.07	1.11
E60	10	1.0	6.70	7.20	6.90	6.60	6.50	6.40	0.94	0.96	0.91	0.90	0.95	0.98
E59	15	1.5	5.90	6.70	6.50	6.30	6.10	6.10	**0.83**	**0.89**	**0.86**	**0.86**	**0.89**	**0.94**
E54	20	2.0	6.30	7.10	7.00	6.85	6.70	6.60	0.88	0.95	0.93	0.93	0.98	1.02
E53	25	2.5	7.20	7.50	7.80	7.70	7.60	7.50	1.01	1.00	1.03	1.05	1.11	1.15
E48	30	3.0	7.10	7.70	7.75	7.80	7.75	7.70	0.99	1.03	1.03	1.06	1.13	1.18
E47	35	3.5	6.90	8.00	7.85	7.70	7.65	7.60	0.97	1.07	1.04	1.05	1.12	1.17
E42	40	4.0	7.20	8.00	7.85	7.75	7.60	7.60	1.01	1.07	1.04	1.05	1.11	1.17
E41	45	4.5	7.40	8.20	8.50	8.50	8.50	8.40	1.03	**1.09**	**1.13**	**1.16**	**1.24**	**1.29**
E36	50	5.0	7.50	7.60	7.60	7.30	7.30	7.30	1.05	1.01	1.01	0.99	1.07	1.12
λ_y = 35 cm, λ_y / B_a = 0.47			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E64	5	0.5	6.60	7.40	7.23	7.05	6.93	6.80	0.92	0.99	0.96	0.96	1.01	1.05
E61	10	1.0	6.70	7.20	7.10	7.00	6.90	6.80	0.94	**0.96**	**0.94**	**0.95**	1.01	1.05
E58	15	1.5	6.50	7.50	7.35	7.20	7.15	7.10	**0.91**	1.00	0.97	0.98	1.04	1.09
E55	20	2.0	7.20	7.80	7.80	7.80	7.80	7.80	1.01	1.04	1.03	1.06	1.14	1.20
E52	25	2.5	7.50	8.10	8.10	8.10	8.05	8.00	1.05	1.08	1.07	1.10	1.18	1.23
E49	30	3.0	6.50	7.25	7.10	6.95	6.83	6.70	**0.91**	0.97	**0.94**	**0.95**	1.00	1.03

Table 5.5. (Continued) Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}10}$ and their comparison with those of a single abutment data for L_a = 10 cm and D = 5 cm (L_a / D = 2.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x/L_a	$[(d_s)_{max}]_a$ (cm)						$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$					
			Measurement Points											
λ_y = 35 cm, λ_y/B_a = 0.47			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E46	35	3.5	7.80	8.50	8.50	8.50	8.45	8.40	**1.09**	**1.13**	**1.13**	**1.16**	**1.23**	**1.29**
E43	40	4.0	7.50	8.30	8.20	8.15	8.10	8.10	1.05	1.11	1.09	1.11	1.18	1.25
E40	45	4.5	7.10	8.10	8.20	8.20	8.20	8.10	0.99	1.08	1.09	1.12	1.20	1.25
E37	50	5.0	6.85	7.60	7.70	7.45	7.45	7.30	0.96	1.01	1.02	1.01	1.09	1.12
λ_y = 70 cm, λ_y/B_a = 0.93			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E63	5	0.5	6.70	7.10	7.20	6.70	6.70	6.70	**0.94**	**0.95**	**0.95**	**0.91**	**0.98**	1.03
E62	10	1.0	7.50	8.10	8.00	7.90	7.95	8.00	1.05	1.08	1.06	1.07	1.16	1.23
E57	15	1.5	6.70	7.30	7.15	7.00	6.90	6.80	**0.94**	0.97	**0.95**	0.95	1.01	1.05
E56	20	2.0	7.70	8.20	8.20	8.20	8.20	8.20	1.08	1.09	1.09	1.12	**1.20**	**1.26**
E51	25	2.5	6.70	7.40	7.25	7.10	6.90	6.70	**0.94**	0.99	0.96	0.97	1.01	1.03
E50	30	3.0	7.20	8.00	8.00	8.00	8.00	8.00	1.01	1.07	1.06	1.09	1.17	1.23
E45	35	3.5	7.00	7.85	7.88	7.90	7.65	7.40	0.98	1.05	1.04	1.07	1.12	1.14
E44	40	4.0	7.20	8.20	8.20	8.20	8.05	7.90	1.01	1.09	1.09	1.12	1.18	1.22
E39	45	4.5	7.00	7.60	7.45	7.20	7.00	7.00	0.98	1.01	0.99	0.98	1.02	1.08
E38	50	5.0	7.55	8.35	8.40	8.30	8.20	8.20	**1.06**	**1.11**	**1.11**	**1.13**	**1.20**	**1.26**

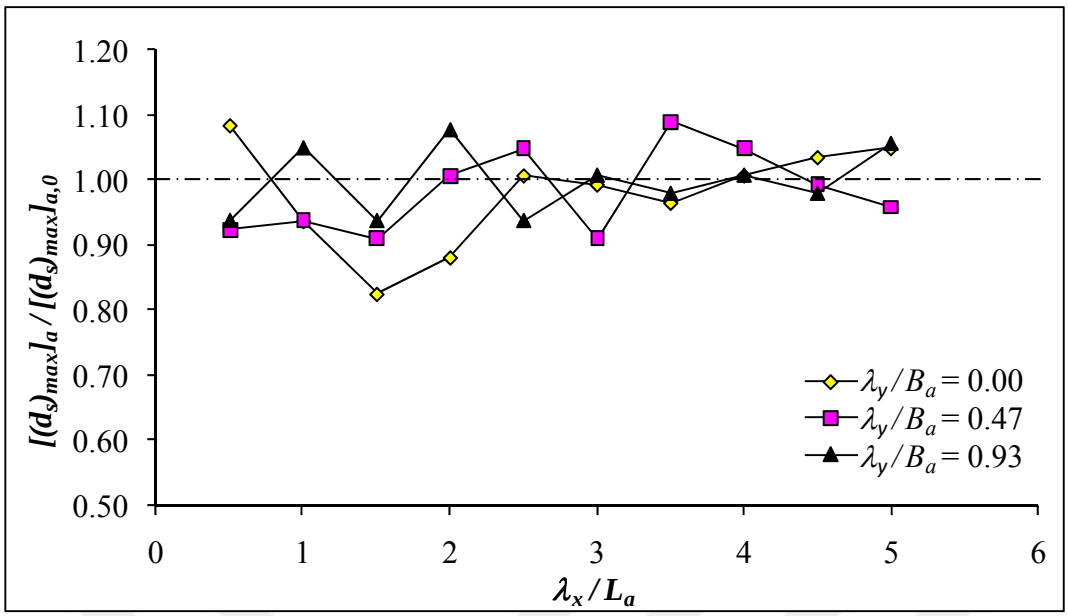


Figure 5.10 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

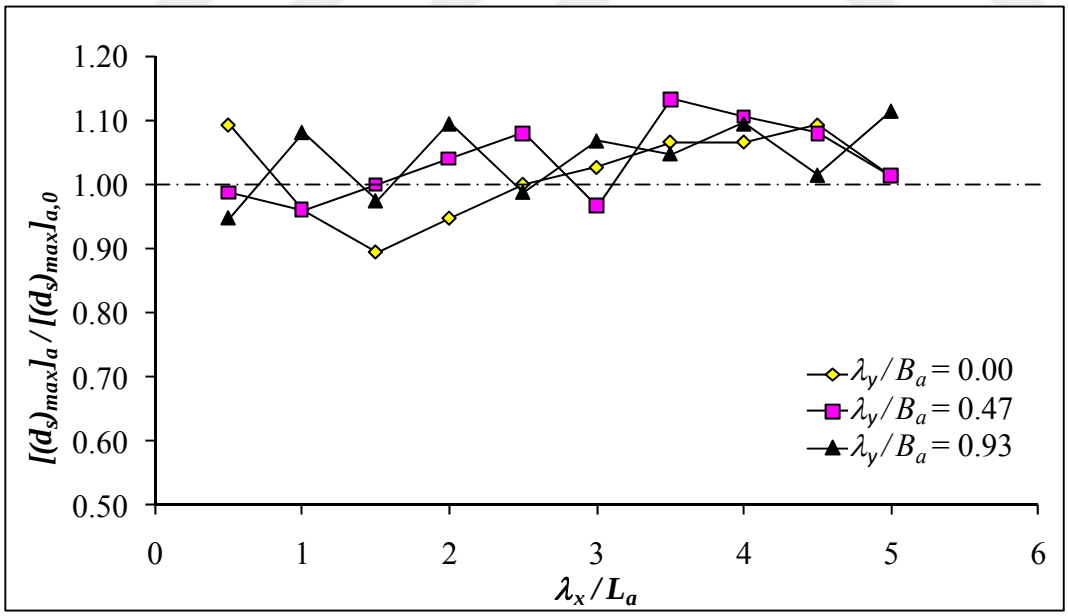


Figure 5.11 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

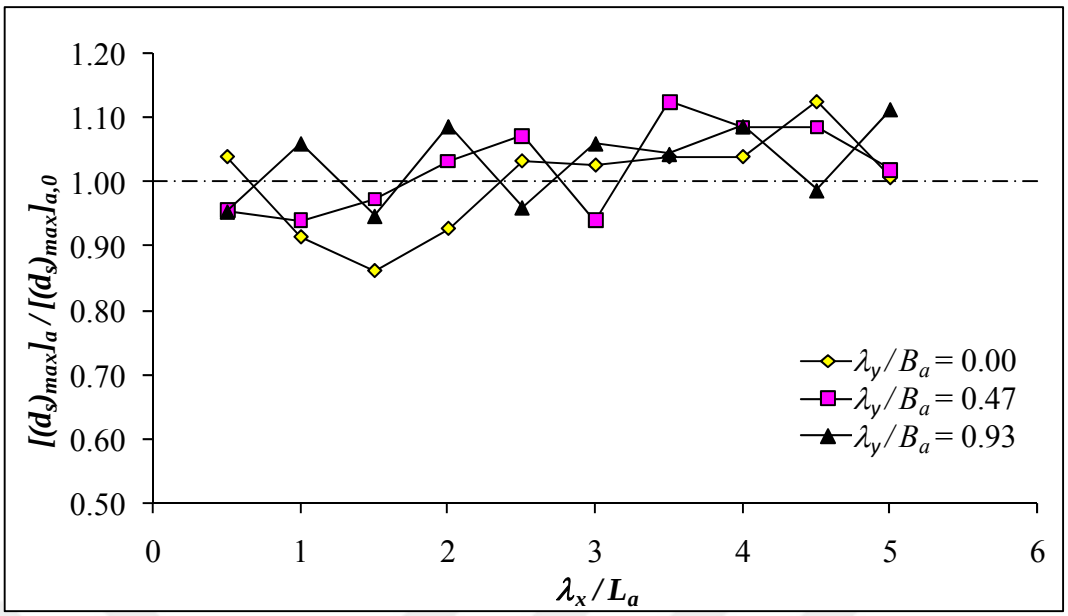


Figure 5.12 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

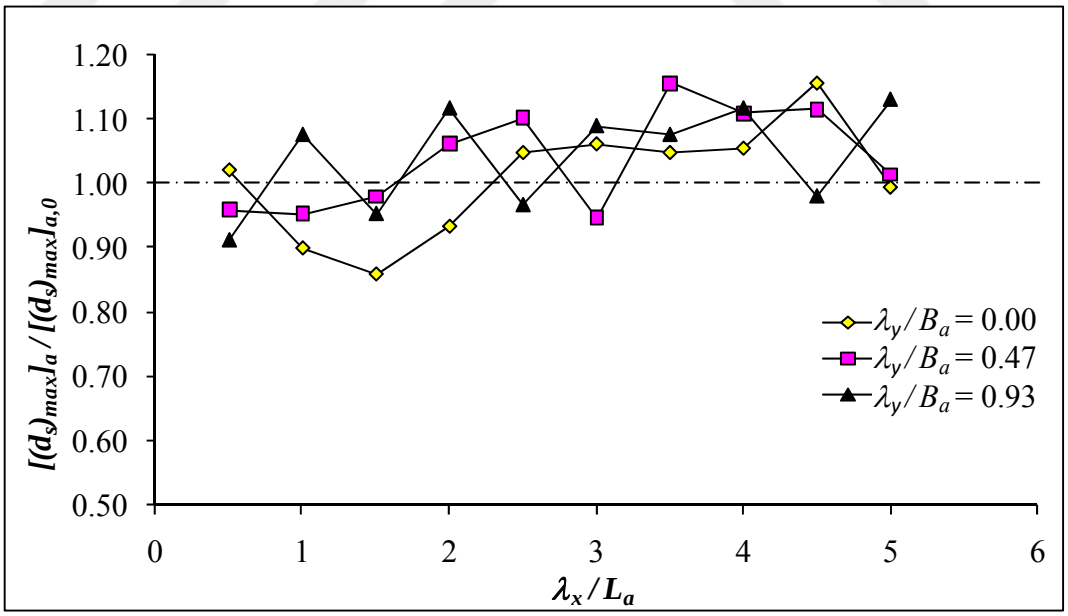


Figure 5.13 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

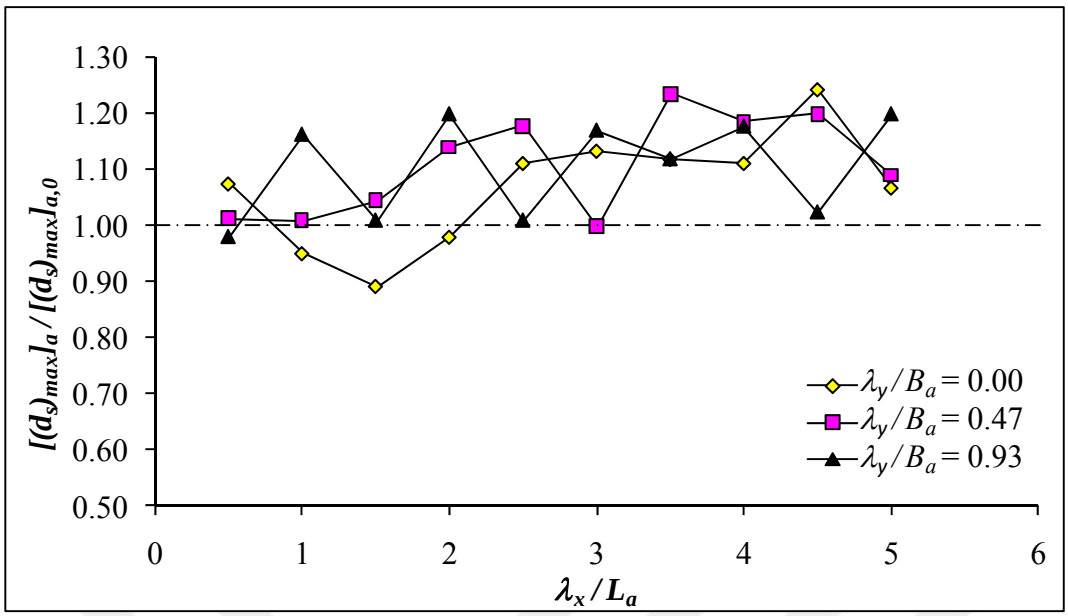


Figure 5.14 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

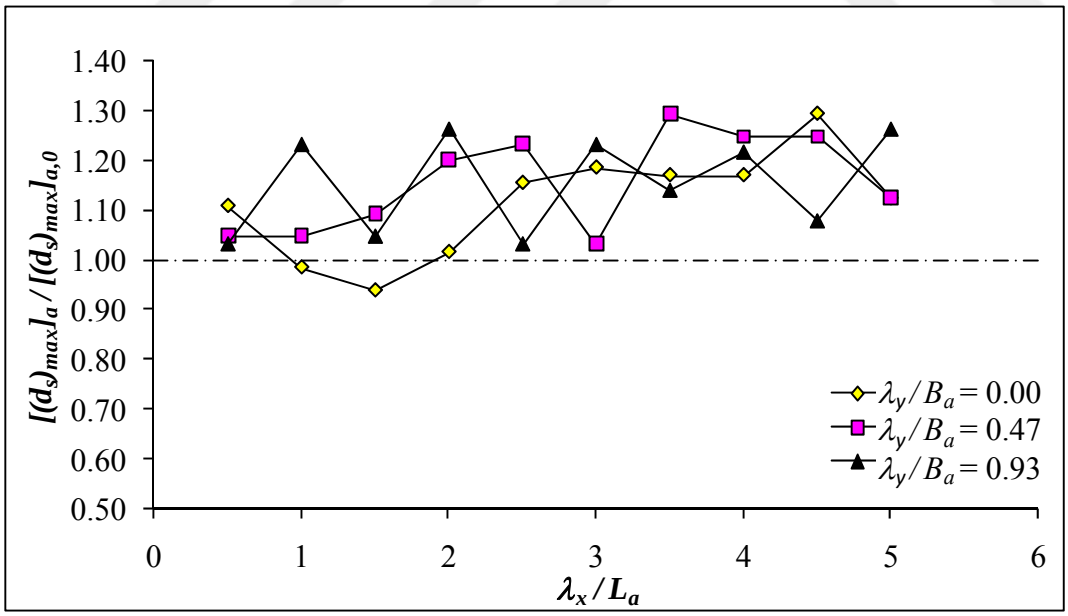


Figure 5.15 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 10 cm and D = 5 cm (L_a / D = 2.00)

The general trends of the data points shown in Figures 5.10 – 5.15 are almost the same for a given λ_y / B_a as the value of λ_x / L_a increases. In general, the value of dimensionless scour parameter varies around unity for a given λ_y / B_a and for the range of λ_x / L_a tested. The minimum and maximum values of the dimensionless scour parameter determined are; 0.83 (at point L_0 for $\lambda_y / B_a = 0$ and $\lambda_x / L_a = 1.5$) and 1.29 (at point $L_{0\text{-}10}$ for $\lambda_y / B_a = 0$ and $\lambda_x / L_a = 4.5$ and for $\lambda_y / B_a = 0.47$ and $\lambda_x / L_a = 3.5$), respectively.

Upstream corner of the abutment, L_0, is not much affected from the location of the pier regarding the dimensionless scour parameter which varies around unity with small fluctuations. On the other hand, at locations close to the channel wall; $L_{0\text{-}6}$ and $L_{0\text{-}8}$, the dimensionless scour parameter is much above the unity.

Set III : D = 5 cm, L_a = 15 cm (L_a / D = 3.00)

The measured maximum pier scour depths, the calculated dimensionless pier scour parameters and pier positions for an arrangement of D = 5 cm pier and L_a = 15 cm abutment were tabulated in Table 5.6 at three points L, R and F of the pier.

Variation of the dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with the dimensionless pier position parameter λ_x / D were shown in Figures 5.16 – 5.18 as a function of λ_y / B_a.

Table 5.6 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 15 cm and D = 5 cm (L_a / D = 3.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y/B_a = 0.00			L	R	F	L	R	F
E66	10	2	6.90	6.60	6.55	1.15	1.18	0.90
E71	15	3	8.10	8.50	8.70	1.35	1.52	1.19
E72	20	4	9.00	8.90	8.90	**1.50**	1.59	**1.22**
E77	25	5	8.40	9.00	8.40	1.40	**1.61**	1.15
E78	30	6	6.60	7.00	6.50	1.10	1.25	0.89
E83	35	7	7.50	7.20	7.20	1.25	1.29	0.99
E84	40	8	6.40	6.00	6.80	1.07	1.07	0.93
E89	45	9	5.40	6.00	5.60	**0.90**	1.07	**0.77**
E90	50	10	5.40	5.00	5.90	**0.90**	**0.89**	0.81
λ_y = 35 cm, λ_y/B_a = 0.47			L	R	F	L	R	F
E67	10	2	5.50	5.80	6.00	0.92	1.04	0.82
E70	15	3	4.50	5.10	5.20	**0.75**	**0.91**	**0.71**
E73	20	4	6.00	6.00	6.00	1.00	1.07	0.82
E76	25	5	7.60	7.60	7.30	**1.27**	1.36	1.00
E79	30	6	6.90	8.10	6.80	1.15	**1.45**	0.93
E82	35	7	7.30	6.70	6.70	1.22	1.20	0.92
E85	40	8	7.30	7.00	7.80	1.22	1.25	**1.07**
E88	45	9	6.00	6.90	7.10	1.00	1.23	0.97
E91	50	10	6.60	6.70	6.70	1.10	1.20	0.92
λ_y = 70 cm, λ_y/B_a = 0.93			L	R	F	L	R	F
E68	10	2	5.00	4.80	5.20	0.83	**0.86**	0.71
E69	15	3	4.50	5.00	5.30	**0.75**	0.89	0.73
E74	20	4	5.10	4.90	5.30	0.85	0.88	0.73
E75	25	5	6.60	6.00	6.00	1.10	1.07	0.82
E80	30	6	6.90	6.80	7.00	**1.15**	**1.21**	**0.96**
E81	35	7	6.10	6.80	6.00	1.02	**1.21**	0.82
E86	40	8	5.90	6.40	4.90	0.98	1.14	**0.67**
E87	45	9	5.40	6.10	7.00	0.90	1.09	**0.96**
E92	50	10	6.80	6.80	6.60	1.13	1.21	0.90

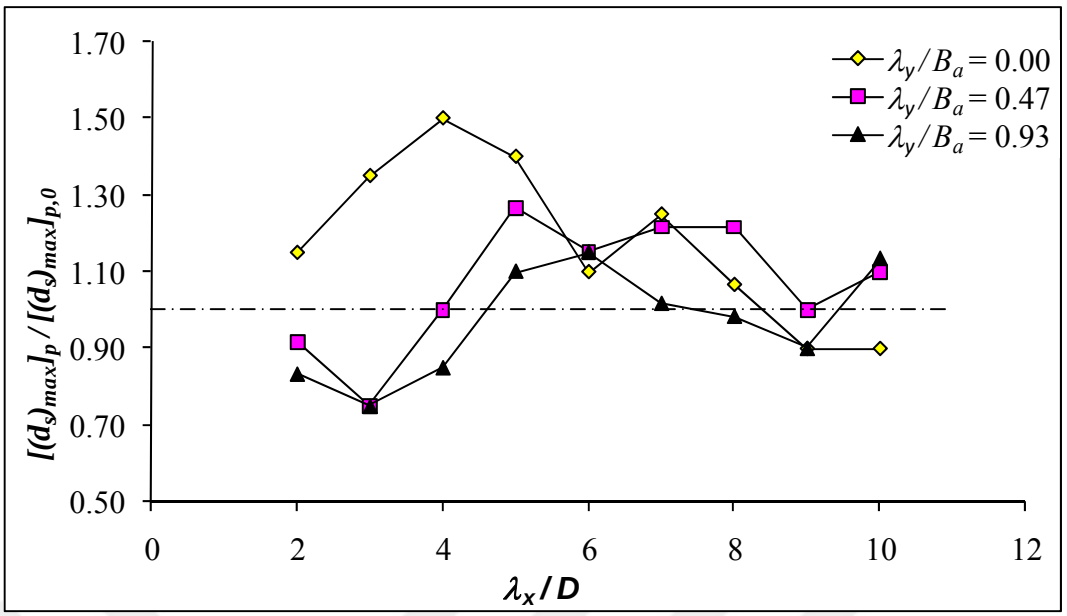


Figure 5.16 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

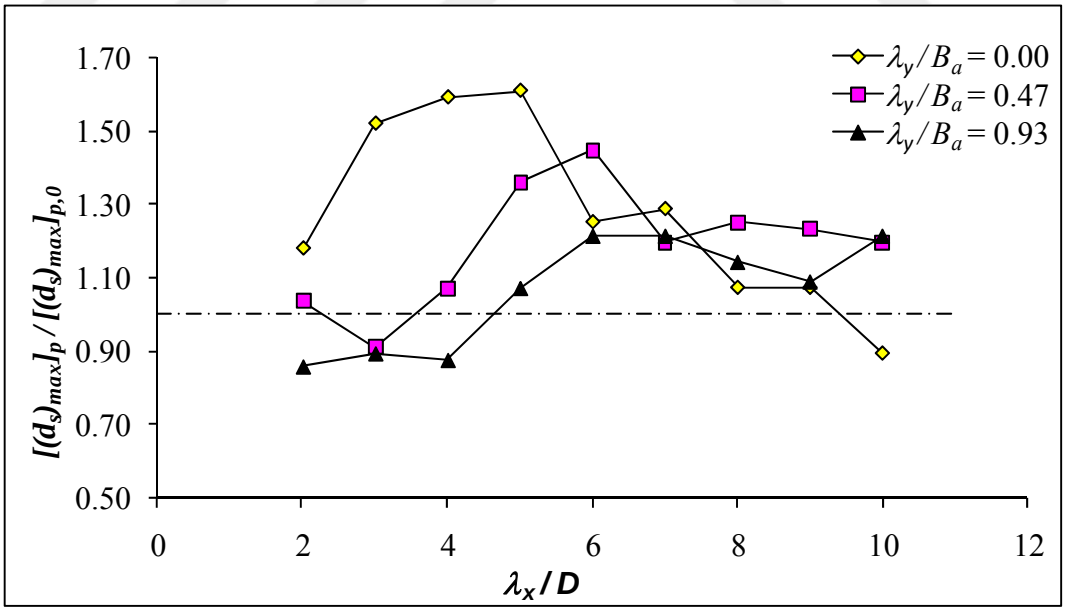


Figure 5.17 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

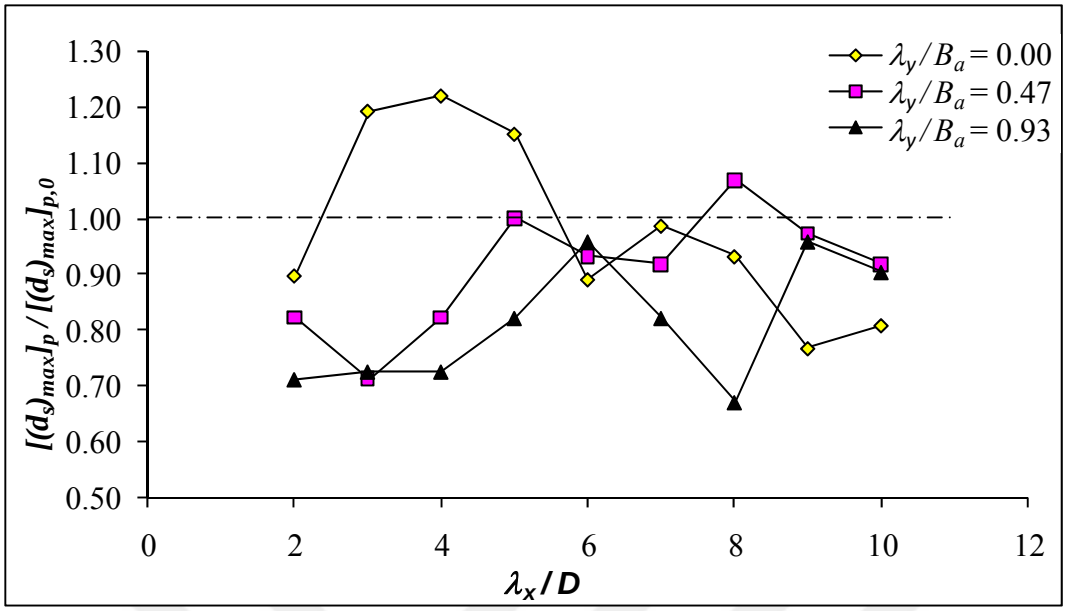


Figure 5.18 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

In this arrangement of the pier and abutment where L_a = 15 cm is the largest abutment length tested, most of the dimensionless scour parameter data presented in Figures 5.16 and 5.17 have the values rather above unity. On the other hand, at point F (Figure 5.18) of the pier, the values of the dimensionless scour parameter are less then unity except those of λ_y / B_a = 0 and λ_x / D between 2 and 5. Among the data set given in Table 5.6 the maximum and the minimum values of the dimensionless scour parameter are 1.61 (for λ_x / D = 5 and λ_y / B_a = 0 at point R) and 0.67 (for λ_x / D = 8 and λ_y / B_a = 0.93 at point F), respectively. From these results it can be concluded that as the length of the abutment increases, the effect of the abutment on the scour depth at points L and R of the pier become significant. In general, it can also be stated that the minimum dimensionless scour parameters which are less than 1.00 are obtained at points L, F and R for λ_y / B_a = 0.47 at λ_x / D values between 2 and 4.

Maximum scour depths measured around the abutment as a function of pier positions for D = 5 cm pier and L_a = 15 cm abutment were tabulated in Table 5.7 for λ_y = 0, 35 and 70 cm. Figures 5.19 to 5.26 were sketched with pier position parameter λ_x / L_a and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ as a function of λ_y / B_a, for points on the upstream face of the abutment with 2 cm intervals starting from the abutment corner across the pier to the channel wall side, which are designated by L_0, $L_{0\text{-}2}$, $L_{0\text{-}4}$, $L_{0\text{-}6}$, $L_{0\text{-}8}$, $L_{0\text{-}10}$, $L_{0\text{-}12}$ and $L_{0\text{-}14}$, respectively. $L_{0\text{-}14}$ is the final point on the abutments upstream face that coincides with the channel wall.

Table 5.7 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}14}$, and their comparison with those of a single abutment data for L_a = 15 cm and D = 5 cm (L_a / D = 3.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)								$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$							
			Measurement Points															
λ_y = 0 cm, λ_y / B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E66	10	0.7	9.50	9.90	9.75	9.30	8.85	8.50	7.90	7.40	0.99	0.93	0.92	0.89	0.88	0.87	0.79	0.75
E71	15	1.0	9.90	10.00	9.75	9.50	9.25	9.00	8.95	8.90	1.03	0.94	0.92	0.91	0.92	0.92	0.90	0.90
E72	20	1.3	8.90	9.90	9.65	9.40	9.15	8.90	8.70	8.50	0.93	0.93	0.91	0.90	0.91	0.91	0.87	0.86
E77	25	1.7	10.40	10.10	10.40	10.60	10.15	9.70	9.80	9.20	1.08	0.95	0.98	1.02	1.00	0.99	0.98	0.93
E78	30	2.0	10.10	10.50	10.10	9.80	9.70	7.40	9.60	9.10	1.05	0.99	0.95	0.94	0.96	0.76	0.96	0.92
E83	35	2.3	10.60	10.70	10.70	10.70	10.30	10.10	10.60	10.70	**1.10**	**1.01**	**1.01**	**1.03**	**1.02**	**1.03**	**1.06**	**1.08**
E84	40	2.7	8.90	8.80	8.50	8.00	7.80	7.50	7.10	6.70	0.93	0.83	0.80	0.77	0.77	0.77	0.71	0.68
E89	45	3.0	8.40	8.40	8.20	7.60	7.20	6.80	6.20	5.70	**0.88**	**0.79**	**0.77**	**0.73**	**0.71**	0.69	0.62	0.58
E90	50	3.3	8.80	8.70	8.30	7.80	7.20	6.70	6.10	5.40	0.92	0.82	0.78	0.75	**0.71**	**0.68**	**0.61**	**0.55**
λ_y = 35 cm, λ_y / B_a = 0.47			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E67	10	0.7	10.90	11.20	11.15	11.10	11.05	11.00	11.25	11.50	**1.14**	**1.06**	**1.05**	**1.07**	**1.09**	**1.12**	**1.13**	**1.16**
E70	15	1.0	10.40	11.00	10.80	10.60	10.45	10.30	10.35	10.40	1.08	1.04	1.02	1.02	1.03	1.05	1.04	1.05
E73	20	1.3	10.50	10.20	10.60	11.00	10.75	10.50	10.90	11.30	1.09	0.96	1.00	1.06	1.06	1.07	1.09	1.14
E76	25	1.7	8.80	8.10	7.85	7.60	7.40	6.50	4.60	4.90	0.92	0.76	**0.74**	**0.73**	0.73	**0.66**	**0.46**	0.49
E79	30	2.0	10.80	10.80	10.75	10.70	11.00	10.10	10.00	9.90	1.13	1.02	1.01	1.03	**1.09**	1.03	1.00	1.00

Table 5.7. (Continued) Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}4}$ and their comparison with those of a single abutment data for L_a = 15 cm and D = 5 cm (L_a / D = 3.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x/L_a	$[(d_s)_{max}]_a$ (cm)								$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$							
			Measurement Points															
λ_y = 35 cm, λ_y/B_a = 0.47			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E82	35	2.3	9.40	9.30	9.00	8.70	8.40	8.10	7.90	7.60	0.98	0.88	0.85	0.84	0.83	0.83	0.79	0.77
E85	40	2.7	9.10	8.70	9.00	8.50	8.30	8.00	7.60	7.20	0.95	0.82	0.85	0.82	0.82	0.82	0.76	0.73
E88	45	3.0	8.50	8.00	8.10	7.70	7.60	6.90	6.00	5.20	**0.89**	**0.75**	0.76	0.74	0.75	0.70	0.60	0.53
E91	50	3.3	8.70	8.40	8.00	7.80	7.30	6.60	5.80	4.70	0.91	0.79	0.75	0.75	**0.72**	0.67	0.58	**0.47**
λ_y = 70 cm, λ_y/B_a = 0.93			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E68	10	0.7	10.50	10.65	10.50	10.45	10.40	10.25	10.35	10.35	1.09	1.00	0.99	1.00	1.03	1.05	1.04	1.05
E69	15	1.0	10.60	11.20	11.10	11.00	10.75	10.50	10.35	10.65	1.10	1.06	1.05	1.06	1.06	1.07	1.04	1.08
E74	20	1.3	10.70	11.40	11.40	11.40	11.20	11.00	11.20	11.40	**1.11**	**1.08**	**1.08**	**1.10**	**1.11**	**1.12**	**1.12**	**1.15**
E75	25	1.7	10.35	10.40	10.40	10.40	9.90	9.80	9.84	9.88	1.08	0.98	0.98	1.00	0.98	1.00	0.98	1.00
E80	30	2.0	9.00	9.00	8.70	8.20	8.00	7.30	6.50	5.40	0.94	0.85	0.82	0.79	0.79	0.74	0.65	0.55
E81	35	2.3	10.00	10.00	9.80	9.60	9.50	9.50	9.20	9.50	1.04	0.94	0.92	0.92	0.94	0.97	0.92	0.96
E86	40	2.7	9.10	9.10	8.50	8.10	7.90	7.60	7.20	7.40	0.95	0.86	0.80	0.78	0.78	0.78	0.72	0.75
E87	45	3.0	8.90	9.00	8.50	8.40	8.30	7.90	7.40	7.10	0.93	0.85	0.80	0.81	0.82	0.81	0.74	0.72
E92	50	3.3	8.40	8.00	7.70	7.70	7.00	6.60	5.90	5.20	**0.88**	**0.75**	**0.73**	**0.74**	**0.69**	**0.67**	**0.59**	**0.53**

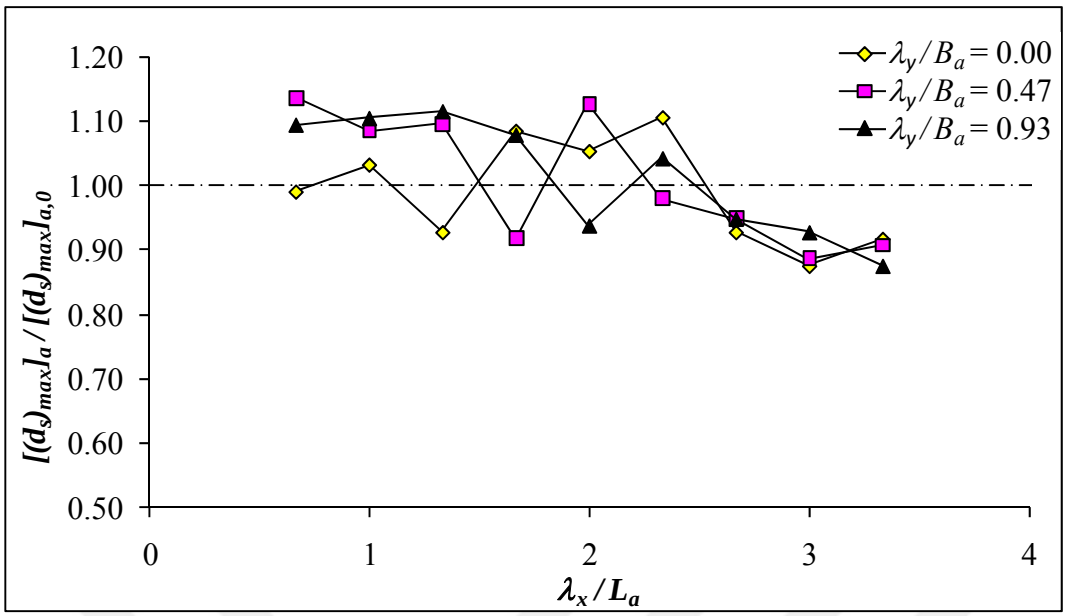


Figure 5.19 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

From the analysis of Figures 5.19 – 5.26 it can be stated that the general trends of all the data given for a known value of λ_y / B_a are very similar with increasing value of λ_x / L_a and the dimensionless scour parameter has a decreasing tendency starting with the maximum values for small λ_x / L_a up to about 1.5 and reaching the minimum values for the largest λ_x / L_a values about 3.5. Except the data set of λ_y / B_a = 0, the maximum scour depths occur at point L_0 which is the upstream corner of the abutment for the other values of λ_y / B_a tested. Effect of λ_y / B_a on the value of dimensionless scour parameter cannot be clearly explained how it changes with increasing or decreasing value of λ_y / B_a for a given λ_x / L_a at any measurement point on the upstream face of the abutment; sometimes increases and sometimes decreases, there is a random variation, as the cases observed so far for the other types of pier-abutment arrangements tested. The maximum value of the dimensionless scour parameter determined is 1.16 at point $L_{0\text{-}14}$ for λ_y / B_a = 0.47

and $\lambda_x / L_a = 0.7$, while the minimum value is 0.46 at point $L_{0\text{-}14}$ for $\lambda_y / B_a = 0.47$ and $\lambda_x / L_a = 1.7$. As the value of λ_x / L_a increases starting with about 2.5, the dimensionless scour parameter decreases and has a value much smaller than unity, around 0.5 – 0.6.

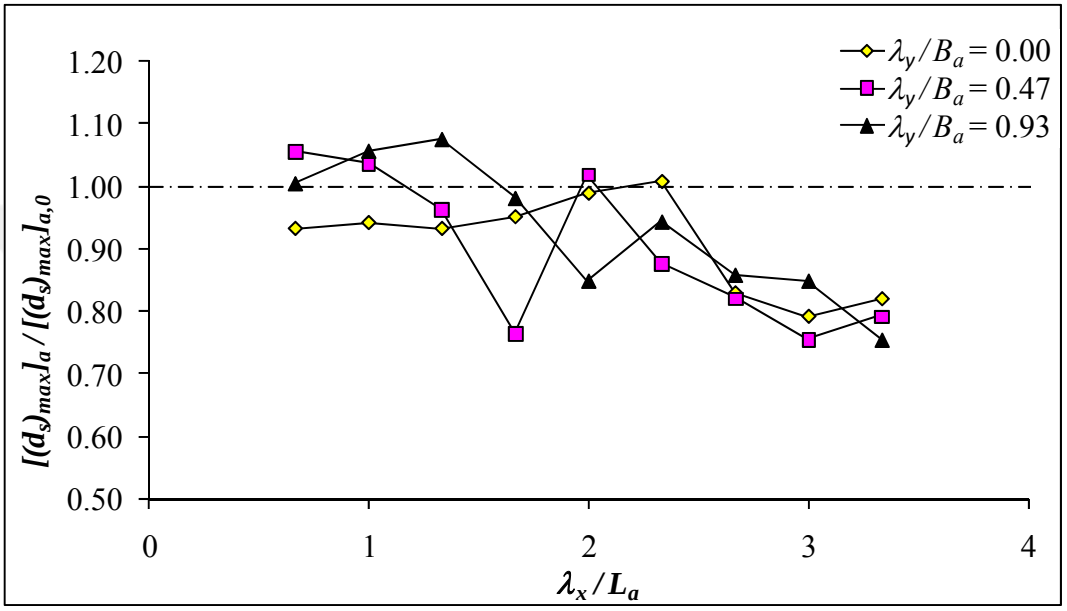


Figure 5.20 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for $L_a = 15$ cm and $D = 5$ cm ($L_a / D = 3.00$)

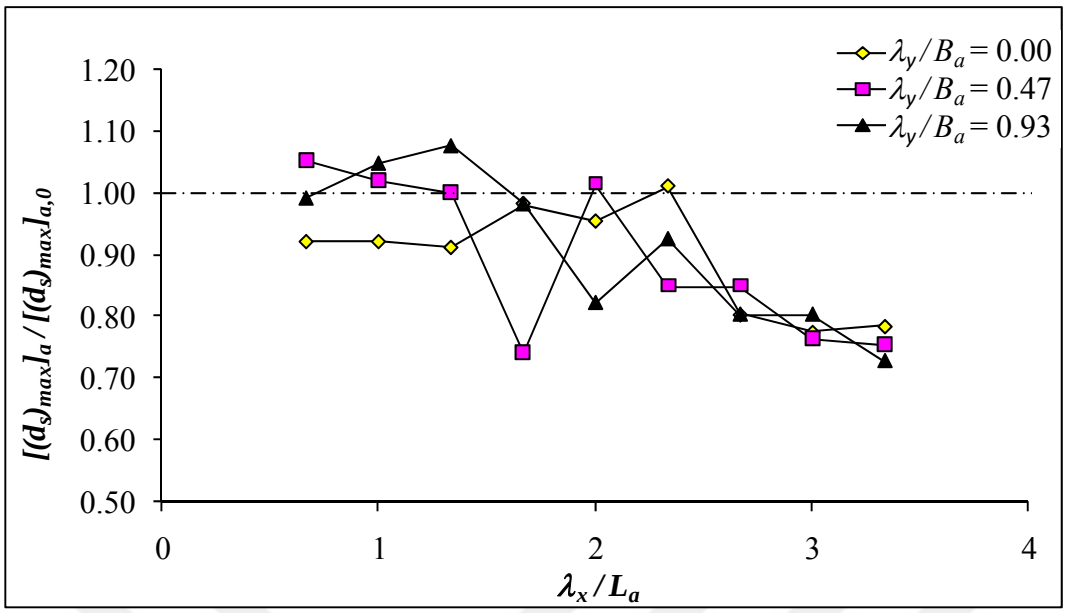


Figure 5.21 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

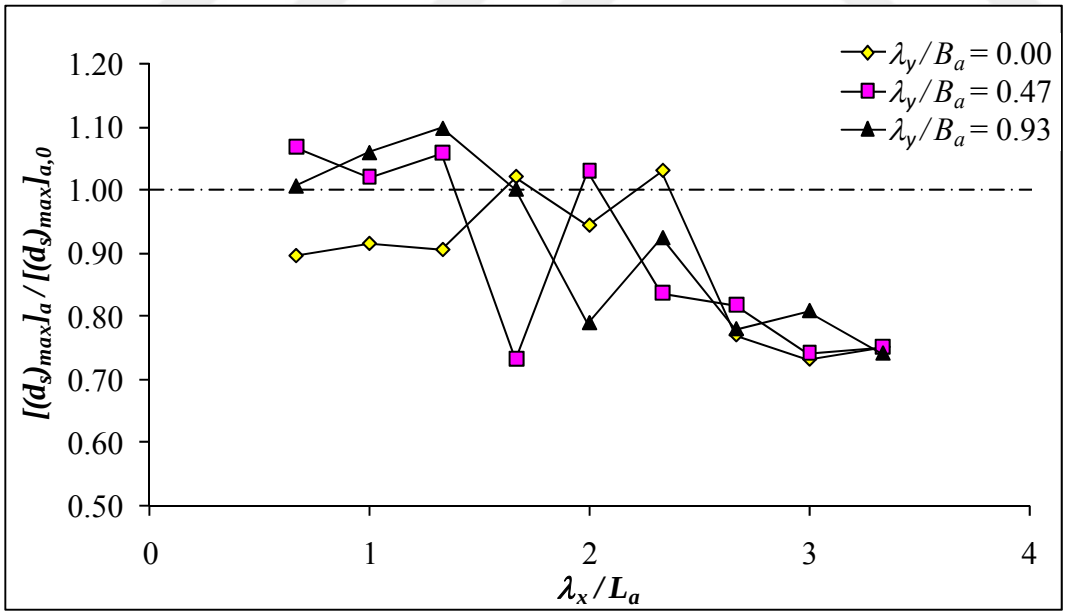


Figure 5.22 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

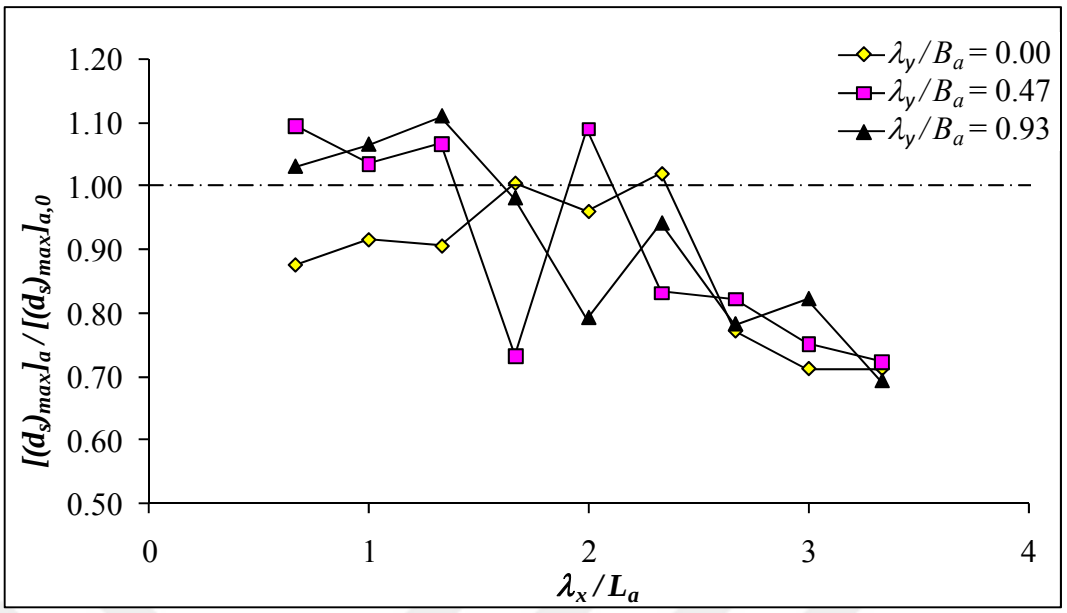


Figure 5.23 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

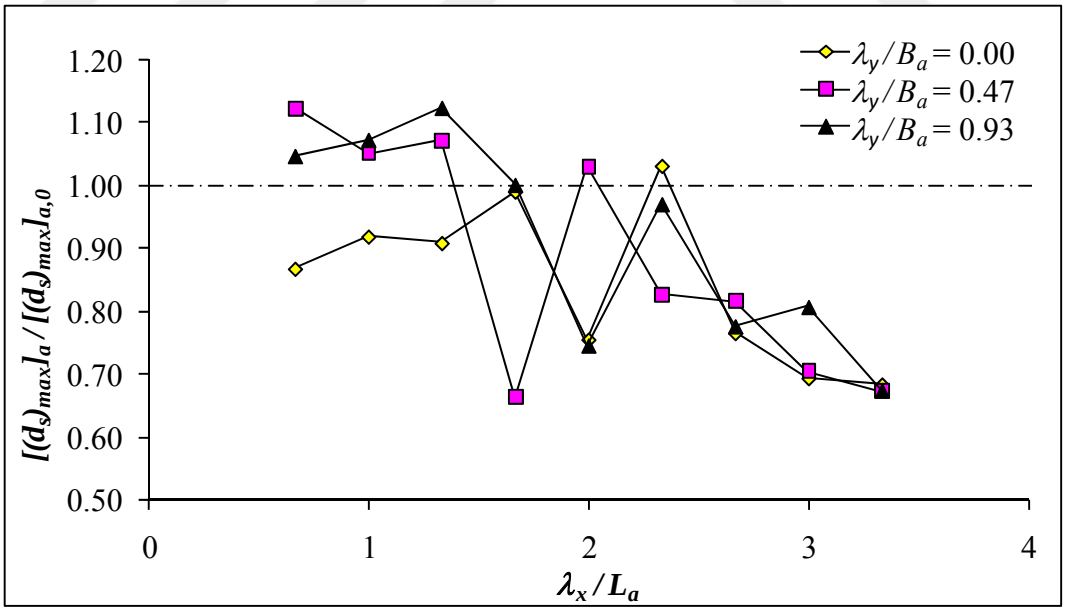


Figure 5.24 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

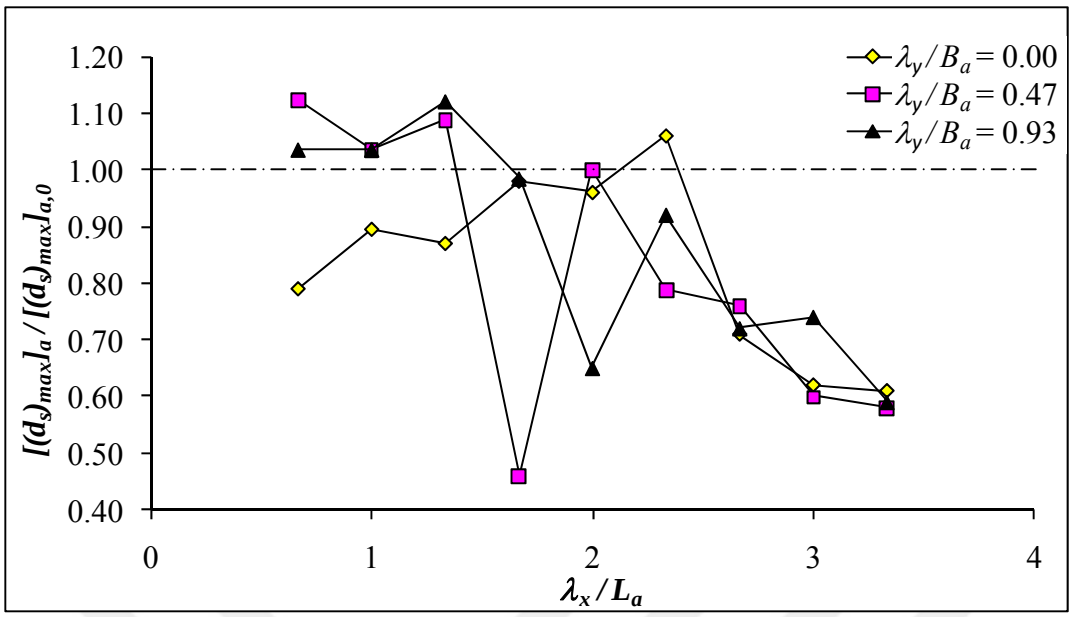


Figure 5.25 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}12}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

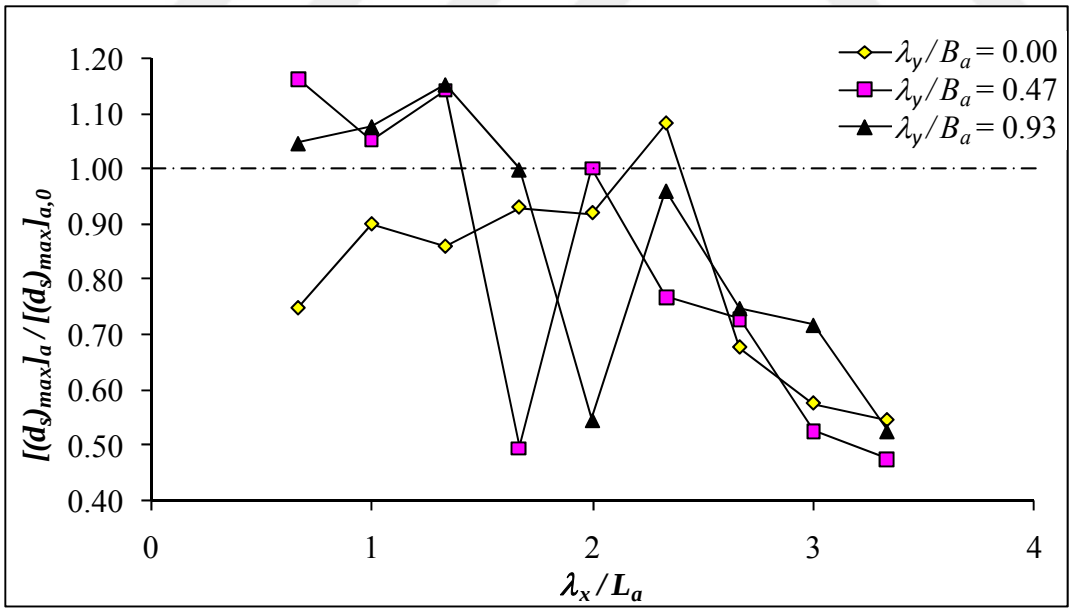


Figure 5.26 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}14}$ of the abutment for L_a = 15 cm and D = 5 cm (L_a / D = 3.00)

Set IV : D = 10 cm, L_a = 5 cm (L_a / D = 0.50)

The measured maximum pier scour depths, the calculated dimensionless pier scour parameter and pier positions for the fourth experimental set which is an arrangement of D = 10 cm pier and L_a = 5 cm abutment were presented in Table 5.8 at three points L, R and F of the pier. Variation of the dimensionless pier position parameter λ_x / D with the dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$, were shown in Figures 5.27 – 5.29 as a function of λ_y / B_a.

Because of the increased pier diameter, D = 10 cm, in this new pier-abutment arrangement, compared to the first arrangement studied with D = 5 cm, the values of λ_y used in the experiments became 0, 32.5 and 65 cm.

Table 5.8 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 5 cm and D = 10 cm (L_a / D = 0.50, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y/B_a = 0.00			L	R	F	L	R	F
E93	10	1	8.50	8.20	7.90	1.02	1.01	**0.90**
E96	20	2	8.20	9.40	9.40	**0.98**	**1.16**	**1.07**
E99	30	3	8.20	7.70	9.70	**0.98**	0.95	1.11
E102	40	4	8.60	8.70	9.40	**1.03**	1.07	**1.07**
E105	50	5	8.20	6.80	9.20	**0.98**	**0.84**	1.05
λ_y = 32.5 cm, λ_y/B_a = 0.43			L	R	F	L	R	F
E94	10	1	7.60	7.50	9.30	0.91	**0.93**	1.06
E97	20	2	7.90	8.00	9.70	0.95	0.99	**1.11**
E100	30	3	8.00	8.30	9.60	0.96	1.02	1.10
E103	40	4	8.40	8.50	9.70	**1.01**	**1.05**	**1.11**
E106	50	5	6.60	8.00	8.50	**0.79**	0.99	**0.97**
λ_y = 65 cm, λ_y/B_a = 0.87			L	R	F	L	R	F
E95	10	1	8.10	7.60	9.10	0.97	0.94	1.04
E98	20	2	8.30	7.30	9.40	0.99	0.90	1.07
E101	30	3	6.80	8.00	9.30	**0.81**	0.99	1.06
E104	40	4	7.70	8.60	9.50	0.92	**1.06**	**1.09**
E107	50	5	7.10	6.60	9.30	0.85	**0.81**	1.06

The general trends of the data points in Figures 5.27 – 5.29 are similar to those of D = 5 cm experimental setup analyzed earlier; there is no a regular variation on the value of dimensionless scour parameter with increasing λ_x / D and λ_y / B_a. However, at the maximum value of λ_x / D = 5 the dimensionless scour parameter gets a value less than unity at points L and R of the pier except two data of point F for λ_y / B_a = 0.00 and λ_y / B_a = 0.87. This situation means that as the pier is located far away from the abutment, the interaction between them becomes minimum. In this experimental arrangement the maximum and the minimum values of the

dimensionless scour parameter are 1.16 (at point R for $\lambda_y / B_a = 0.00$ and $\lambda_x / D = 2$) and 0.79 (at point L for $\lambda_y / B_a = 0.43$ and $\lambda_x / D = 5$), respectively.

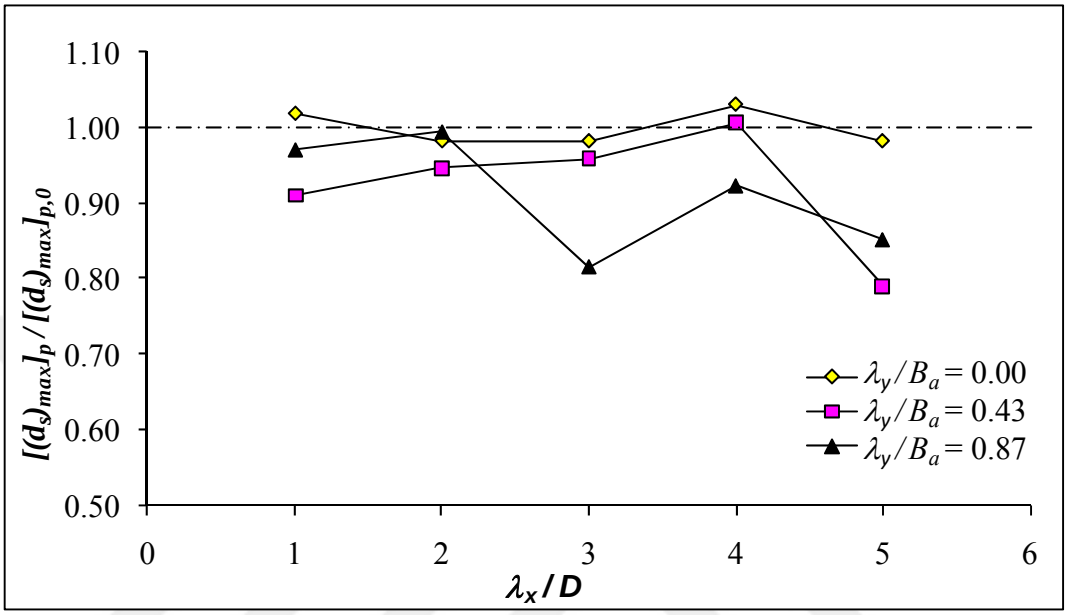


Figure 5.27 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

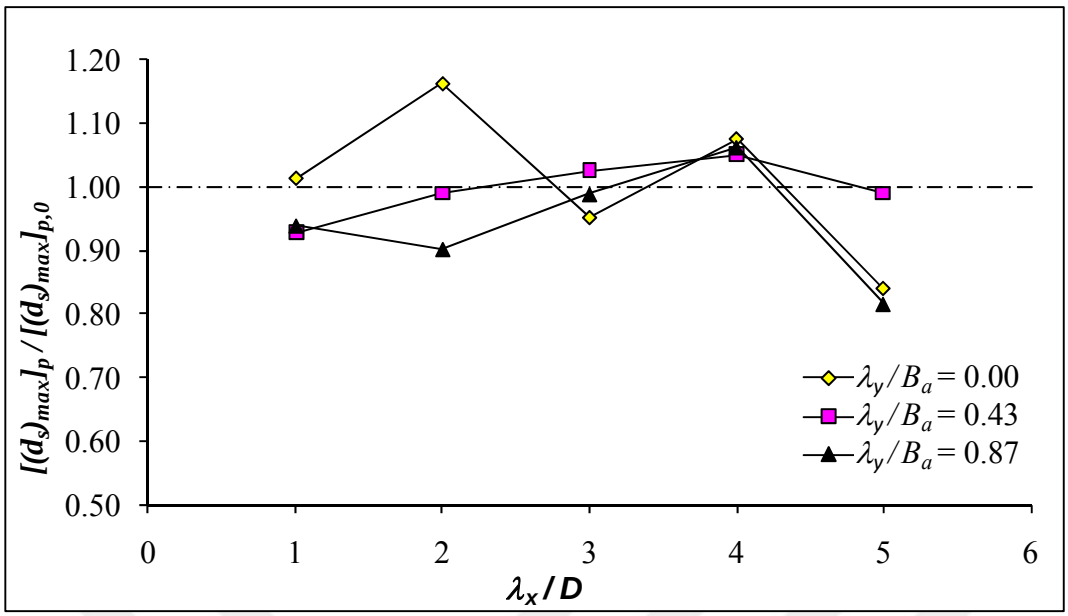


Figure 5.28 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

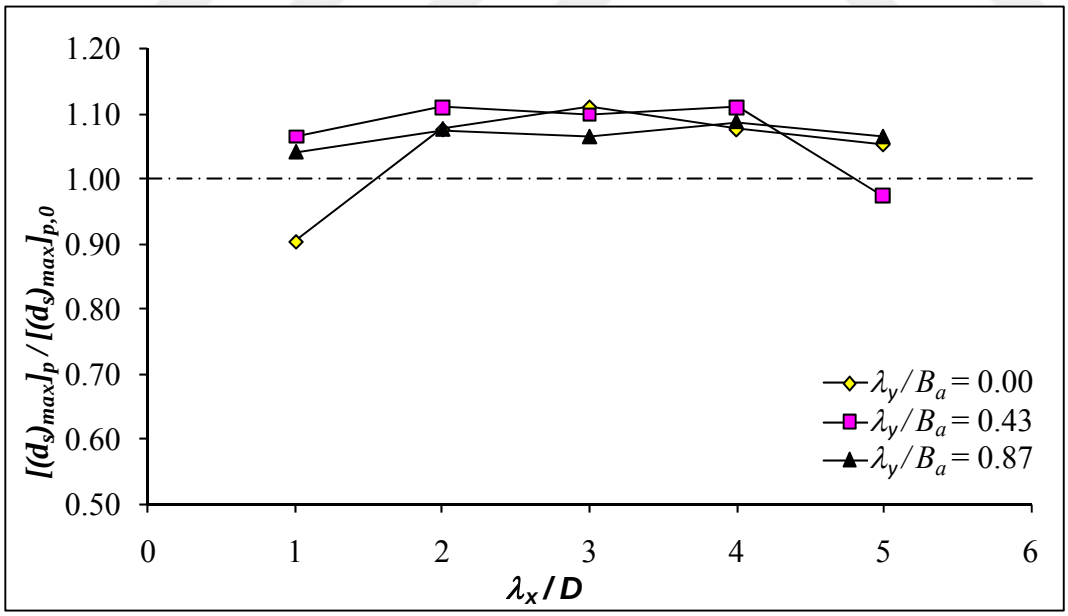


Figure 5.29 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

Maximum scour depths measured around the abutment as a function of pier positions for D = 10 cm pier and L_a = 5 cm abutment were tabulated in Table 5.9 for λ_y = 0, 32.5 and 65 cm. Figures 5.30 – 5.32 were sketched with pier position parameter λ_x / L_a and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ as a function of λ_y / B_a, for points on the upstream face of the abutment with 2 cm intervals starting from the pier side abutment corner to the channel wall side, which are denoted by L_0, $L_{0\text{-}2}$ and $L_{0\text{-}4}$, respectively.

From Figures 5.30 – 5.32 it can be pointed out that at any points along the upstream face of the abutment where measurements were made, the value of dimensionless scour parameter decreases with increasing λ_x / L_a for any λ_y / B_a tested. The maximum scour depths are observed at point L_0 which is the upstream corner of the abutment. If the measurement point moves towards the channel wall from the upstream corner of the abutment, it is clearly seen that the magnitude of the maximum scour depth decreases and becomes minimum at the channel wall, at point $L_{0\text{-}4}$.

In this experimental setup the maximum dimensionless scour parameter is obtained at point L_0 as 1.31 for λ_y / B_a = 0 and λ_x / L_a = 2 while the minimum dimensionless scour parameter is 0.39 at point $L_{0\text{-}4}$ for λ_y / B_a = 0.87 and λ_x / L_a = 10.

Table 5.9 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}4}$ and their comparison with those of a single abutment data for L_a = 5 cm and D = 10 cm (L_a / D = 0.50, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)			$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y/B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E93	10	2.0	5.30	5.50	5.40	**1.31**	**1.22**	**1.24**
E96	20	4.0	3.50	3.00	2.30	**0.86**	0.67	**0.53**
E99	30	6.0	3.80	3.60	3.50	0.94	0.80	0.80
E102	40	8.0	4.10	2.60	3.20	1.01	**0.58**	0.74
E105	50	10.0	3.50	3.60	2.70	**0.86**	0.80	0.62
λ_y = 32.5 cm, λ_y/B_a = 0.43			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E94	10	2.0	3.70	3.20	2.90	0.91	0.71	0.67
E97	20	4.0	3.40	3.20	3.10	0.84	0.71	0.71
E100	30	6.0	3.40	2.80	2.60	0.84	0.62	0.60
E103	40	8.0	3.70	3.20	2.40	0.91	0.71	0.55
E106	50	10.0	3.00	2.50	1.70	**0.74**	**0.56**	**0.39**
λ_y = 65 cm, λ_y/B_a = 0.87			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$
E95	10	2.0	4.30	4.20	3.70	**1.06**	0.93	0.85
E98	20	4.0	4.00	3.60	2.80	0.99	0.80	0.64
E101	30	6.0	4.10	3.70	3.10	1.01	0.82	0.71
E104	40	8.0	3.60	3.50	2.70	0.89	**0.78**	**0.62**
E107	50	10.0	3.50	3.60	2.80	**0.86**	0.80	0.64

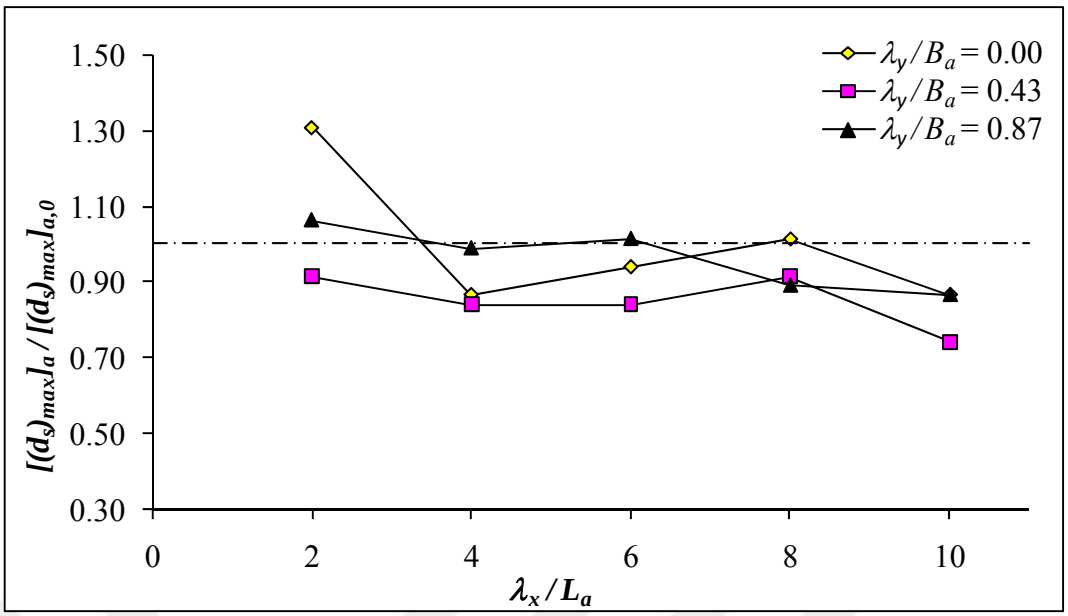


Figure 5.30 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

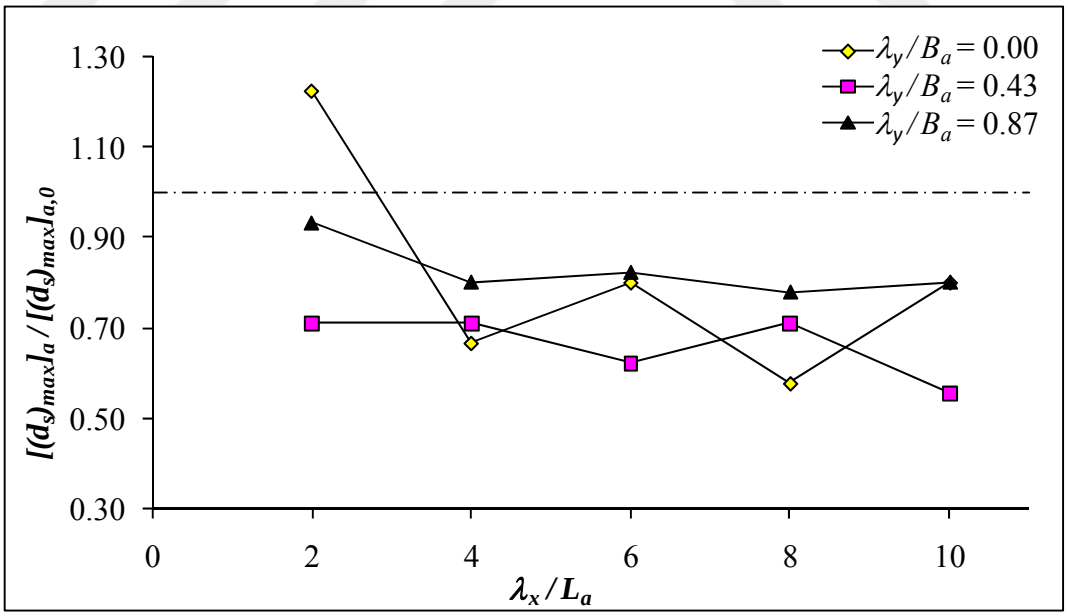


Figure 5.31 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

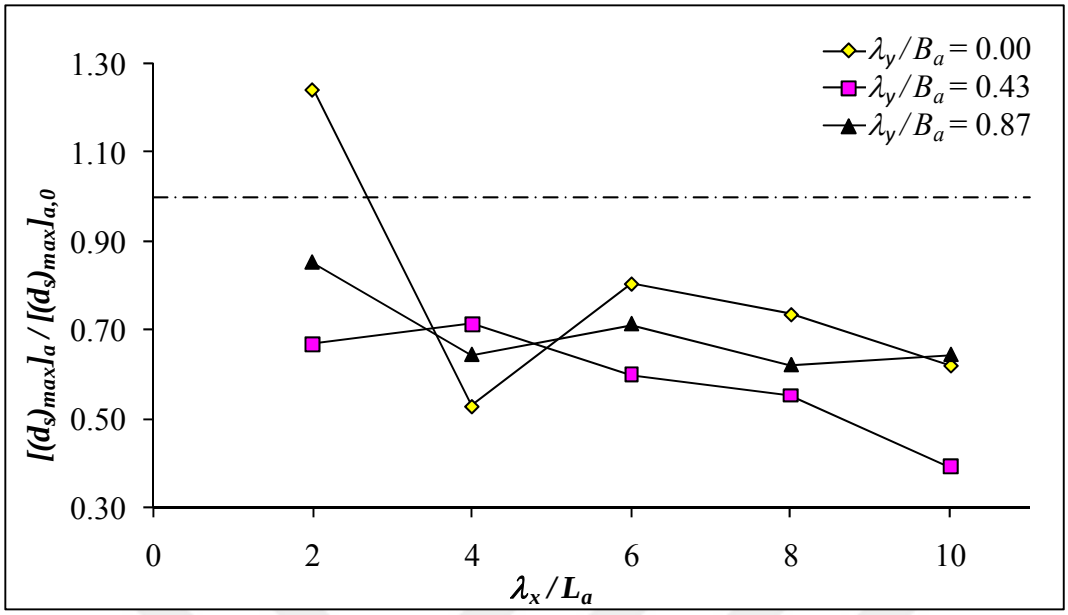


Figure 5.32 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 5 cm and D = 10 cm (L_a / D = 0.50)

Set V : D = 10 cm, L_a = 10 cm (L_a / D = 1.00)

The measured maximum pier scour depths, the calculated dimensionless scour parameter and the pier positions for an arrangement of D = 10 cm pier and L_a = 10 cm abutment were listed in Table 5.10 at three points L, R and F of the pier. Figures 5.33 – 5.35 show the variation of the λ_x / D with the dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ as a function of λ_y / B_a.

Except two data points in Figure 5.33, at three scour measurement points, L, R and F, the value of the dimensionless scour parameter is always larger than unity for any value of λ_y / B_a and λ_x / D tested (Figures 5.34 and 5.35). At point L (Figure 5.33) while the value of dimensionless scour parameter is varying between 0.96 and 1.21, the corresponding minimum and maximum values are 1.04 and 1.25 for point R and 1.15 and 1.27 for point F, respectively. The presence of the abutment

results in an increment on the value of maximum scour depth around the pier at an amount of roughly 10 to 20%.

Table 5.10 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 10 cm and D = 10 cm (L_a / D = 1.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y / B_a = 0.00			L	R	F	L	R	F
E108	10	1	10.10	9.80	9.90	**1.21**	**1.21**	1.13
E111	20	2	8.00	9.40	10.30	**0.96**	1.16	1.18
E114	30	3	10.00	9.70	10.80	1.20	1.20	**1.23**
E117	40	4	8.90	8.90	10.20	1.07	1.10	1.17
E120	50	5	8.80	9.40	10.10	1.05	1.16	1.15
λ_y = 32.5 cm, λ_y / B_a = 0.43			L	R	F	L	R	F
E109	10	1	8.80	9.20	10.40	1.05	1.14	1.19
E112	20	2	9.70	10.00	10.80	**1.16**	**1.23**	1.23
E115	30	3	9.10	9.60	11.10	1.09	1.19	**1.27**
E118	40	4	8.80	9.30	10.50	1.05	1.15	1.20
E121	50	5	8.90	9.00	10.30	1.07	1.11	1.18
λ_y = 65 cm, λ_y / B_a = 0.87			L	R	F	L	R	F
E110	10	1	8.00	8.40	10.30	**0.96**	1.04	1.18
E113	20	2	8.90	9.40	10.30	1.07	1.16	1.18
E116	30	3	8.90	10.10	10.70	1.07	**1.25**	1.22
E119	40	4	8.90	9.60	10.40	1.07	1.19	1.19
E122	50	5	9.00	9.10	10.80	**1.08**	1.12	**1.23**

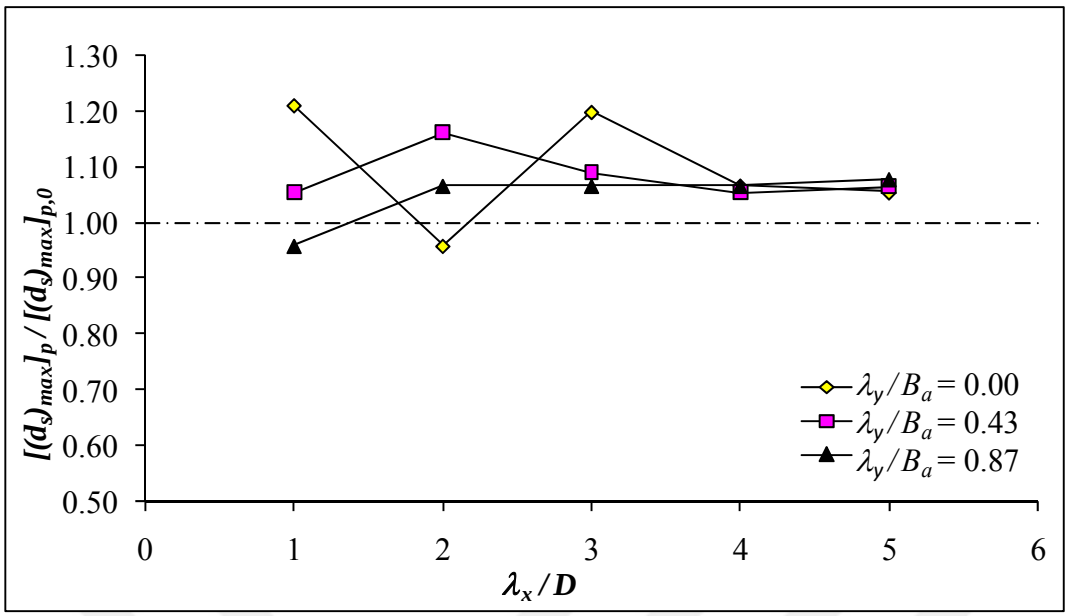


Figure 5.33 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

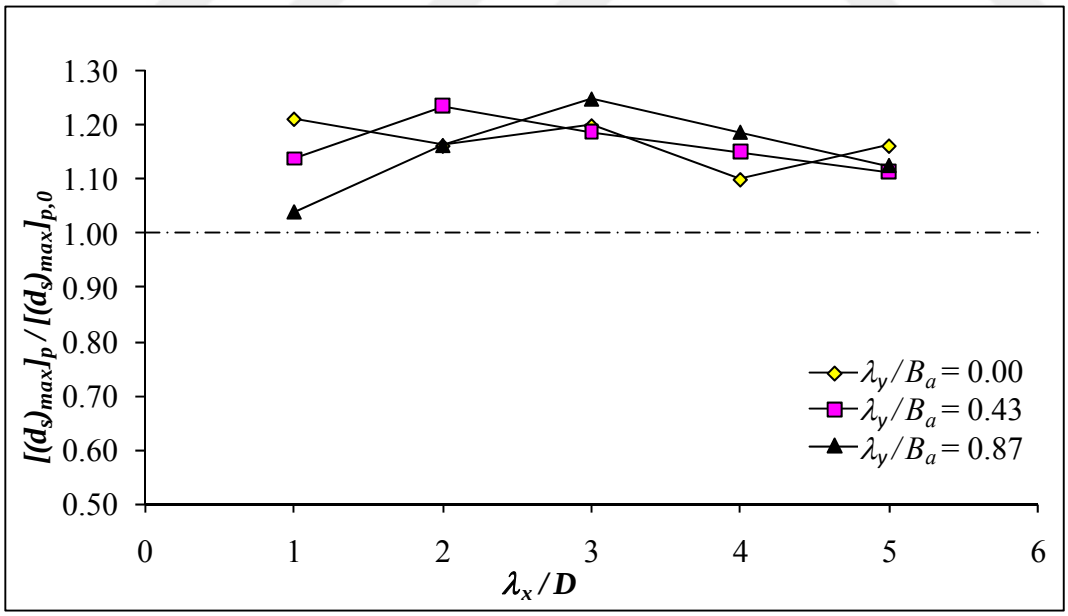


Figure 5.34 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

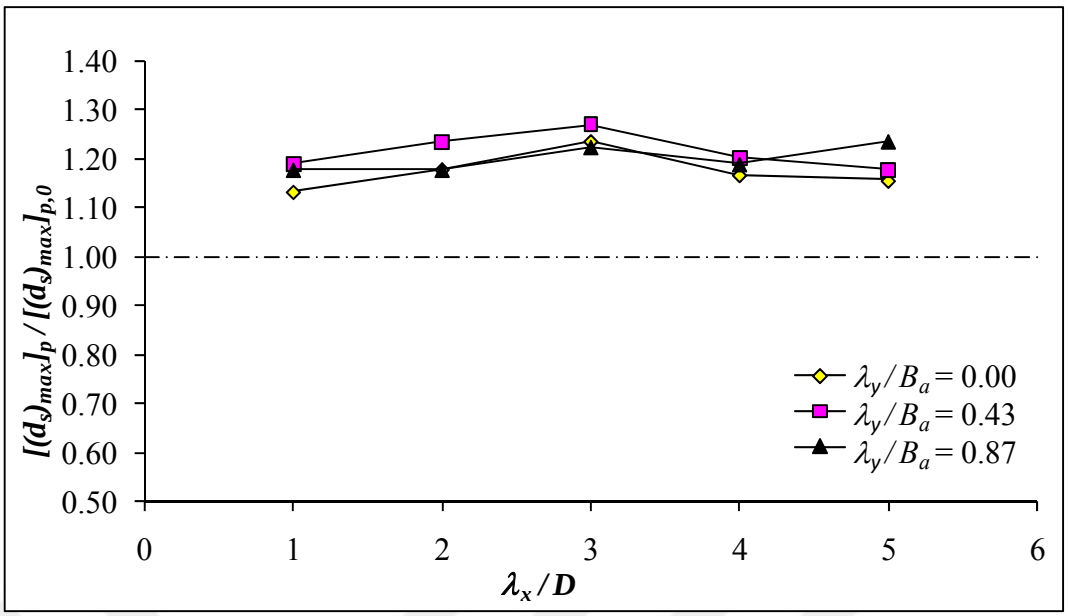


Figure 5.35 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

Maximum scour depths measured around the abutment as a function of the pier positions for D = 10 cm pier and L_a = 10 cm abutment were tabulated in Table 5.11 for λ_y = 0, 32.5 and 65 cm. Figures 5.36 – 5.41 show the variation of the pier position parameter λ_x / L_a with the dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ as a function of λ_y / B_a for points at the upstream face of the abutment with 2 cm intervals starting from the pier-side abutment corner to the channel wall side, which are L_0, $L_{0\text{-}2}$, $L_{0\text{-}4}$, $L_{0\text{-}6}$, $L_{0\text{-}8}$ and $L_{0\text{-}10}$, respectively.

As in the similar cases previously discussed, the general distribution of the data given in Figures 5.36 – 5.41 are not regular as a function of λ_y / B_a and λ_x / L_a. Maximum scour depths occur at the upstream corner of the abutment, at point L_0, compared to the other measurement points with the value of dimensionless scour parameter between 0.80 and 1.02. As the measurement point moves towards the channel wall, the value of maximum scour depth decreases rapidly. The minimum

and maximum dimensionless scour parameters at the measurement points are as follows; 0.71 and 0.92 at $L_{0\text{-}2,}$ 0.66 and 0.89 at $L_{0\text{-}4}$, 0.60 and 0.86 at $L_{0\text{-}6,}$ 0.53 and 0.86 at $L_{0\text{-}8}$ and 0.52 and 0.86 at $L_{0\text{-}10}$. These numbers also indicate that the presence of the pier in the flow medium does not result in an increase on the values of scour depth around the upstream face of the abutment compared to the scour depth values of the case of single abutment.

Table 5.11 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}10}$ and their comparison with those of a single abutment data for L_a = 10 cm and D = 10 cm (L_a / D = 1.00, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)						$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$					
			Measurement Points											
λ_y = 0 cm, λ_y/B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E108	10	1.0	7.30	6.90	6.50	6.00	5.40	5.00	**1.02**	0.92	0.86	0.82	0.79	0.77
E111	20	2.0	6.00	6.70	6.40	5.80	5.40	5.30	**0.84**	0.89	0.85	0.79	0.79	0.82
E114	30	3.0	6.50	6.60	6.30	5.50	4.80	4.40	0.91	0.88	0.83	**0.75**	**0.70**	**0.68**
E117	40	4.0	6.40	6.30	6.10	5.80	5.70	4.90	0.90	0.84	**0.81**	0.79	0.83	0.75
E120	50	5.0	6.30	6.20	6.20	6.10	5.70	5.60	0.88	**0.83**	0.82	0.83	0.83	0.86
λ_y = 32.5 cm, λ_y/B_a = 0.43			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E109	10	1.0	5.80	5.30	5.00	4.40	3.60	3.40	0.81	**0.71**	**0.66**	**0.60**	**0.53**	**0.52**
E112	20	2.0	5.70	5.60	5.20	4.80	4.20	3.40	**0.80**	0.75	0.69	0.65	0.61	**0.52**
E115	30	3.0	6.20	5.90	5.80	5.10	4.80	4.20	0.87	0.79	0.77	0.69	0.70	0.65
E118	40	4.0	6.40	5.90	5.70	5.30	4.90	4.60	0.90	0.79	0.75	0.72	0.72	0.71
E121	50	5.0	5.70	5.80	5.90	5.60	5.10	4.90	0.80	0.77	0.78	0.76	0.74	0.75
λ_y = 65 cm, λ_y/B_a = 0.87			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$
E110	10	1.0	6.00	6.40	6.10	5.40	4.90	5.40	0.84	0.85	0.81	0.73	0.72	0.83
E113	20	2.0	6.30	6.20	5.80	5.70	5.40	4.70	0.88	0.83	0.77	0.78	0.79	0.72
E116	30	3.0	6.90	6.60	6.70	6.30	5.90	5.50	0.97	0.88	0.89	0.86	0.86	0.85
E119	40	4.0	6.20	6.00	5.90	5.40	5.30	4.20	0.87	0.80	0.78	0.73	0.77	**0.65**
E122	50	5.0	5.80	5.60	5.40	4.80	4.60	4.40	**0.81**	**0.75**	**0.72**	**0.65**	**0.67**	0.68

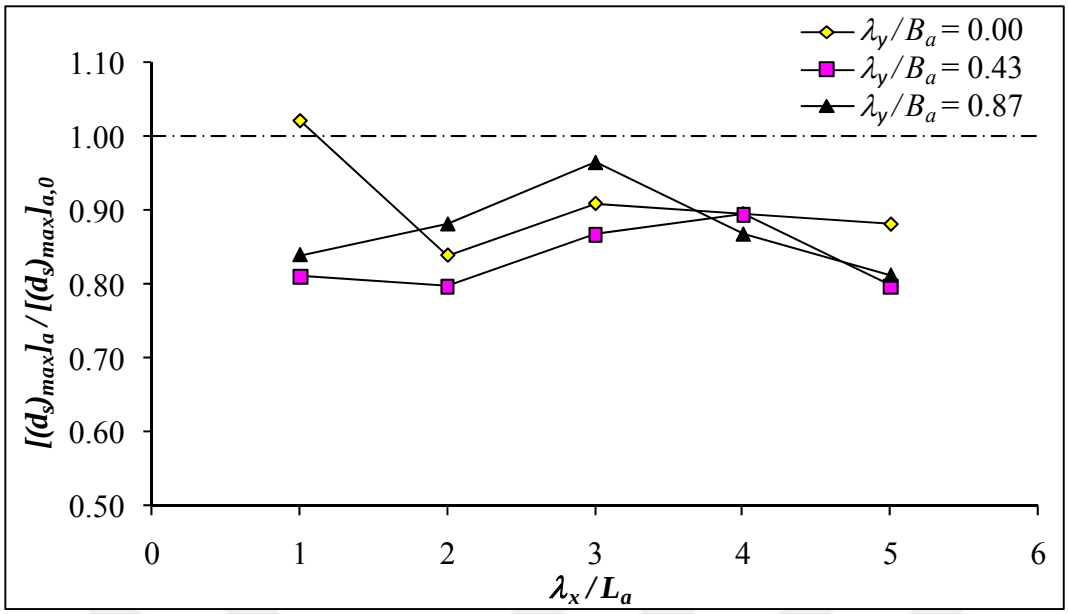


Figure 5.36 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

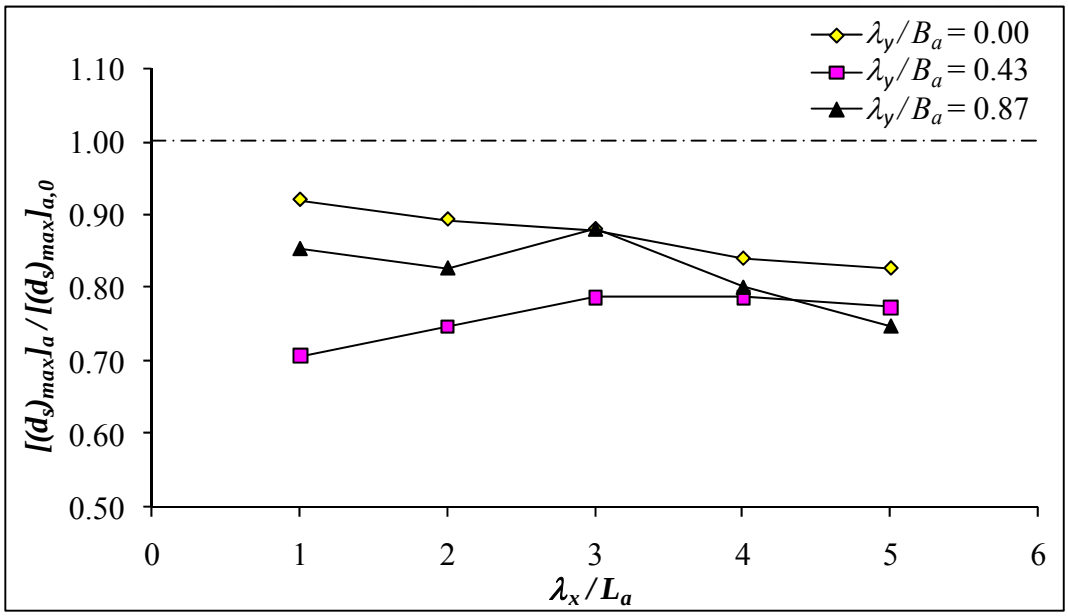


Figure 5.37 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

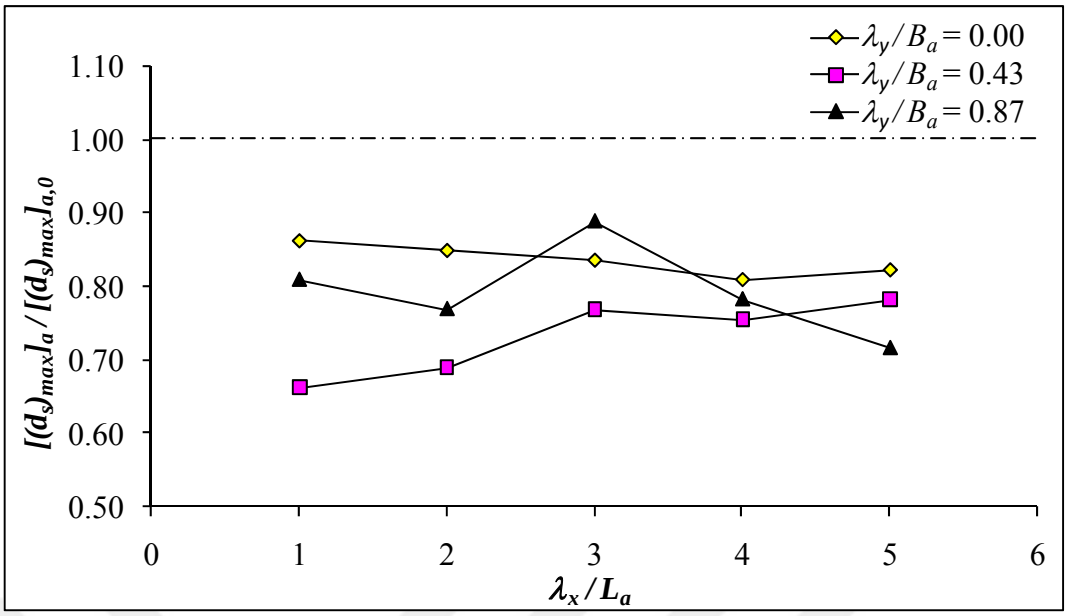


Figure 5.38 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

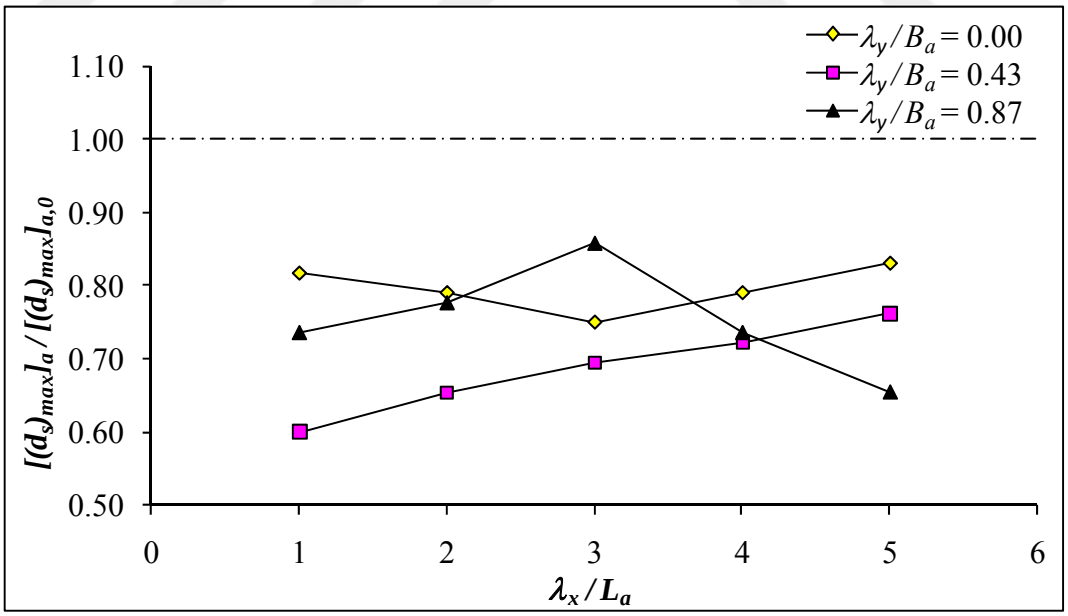


Figure 5.39 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

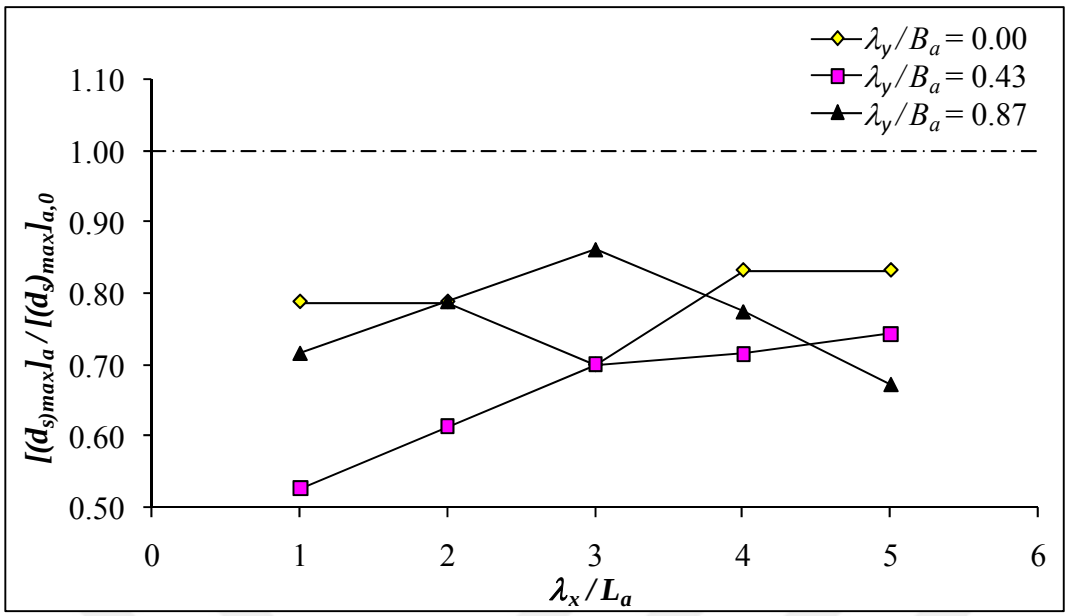


Figure 5.40 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

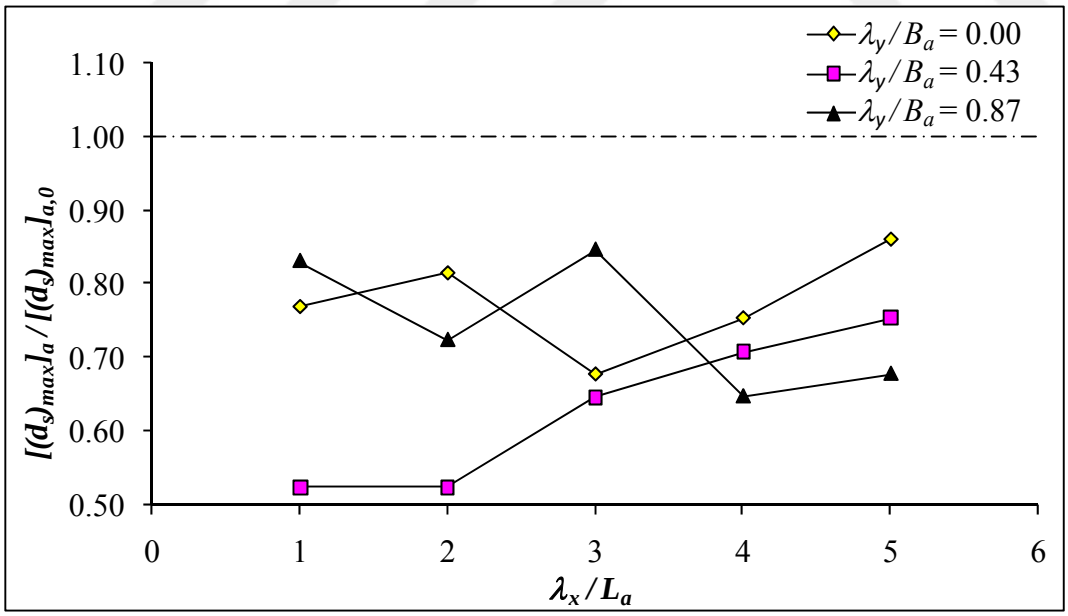


Figure 5.41 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 10 cm and D = 10 cm (L_a / D = 1.00)

Set VI : D = 10 cm, L_a = 15 cm (L_a / D = 1.50)

The measured maximum pier scour depths, the calculated dimensionless scour parameters and the pier positions for an arrangement of D = 10 cm pier and L_a = 15 cm abutment were presented in Table 5.12 at three points L, R and F of the pier. Using the dimensionless pier position parameter λ_x / D and dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ Figures 5.42 – 5.44 were plotted as a function of λ_y / B_a.

The interaction between pier and abutment scours is clearly seen in Figure 5.42 – 5.43. Except a few data, the rest of the data points in these figures lie above the dimensionless scour parameter value of unity. The general trends of the data for λ_y / B_a and λ_x / D values tested are very similar to those of discussed in the previous sections. The values of the dimensionless scour parameter vary between; 0.81 and 1.25 at point L, 0.80 and 1.28 at point R and 0.90 and 1.35 at point F of the pier. To have minimum scour depth around the pier, the location of the pier with respect to the abutment should have the parameters of $1.0 \leq \lambda_x / D \leq 2.0$ and $0.43 \leq \lambda_y / B_a \leq 0.87$.

Table 5.12 Measured maximum scour depths around the bridge pier at points L, R, and F, and their comparison with those of a single bridge pier data for L_a = 15 cm and D = 10 cm (L_a / D = 1.50, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_p$ (cm)			$[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$		
			Measurement Points					
λ_y = 0 cm, λ_y / B_a = 0.00			L	R	F	L	R	F
E123	10	1	9.10	9.10	10.70	1.09	1.12	1.22
E126	20	2	10.10	10.20	10.90	**1.21**	**1.26**	**1.25**
E129	30	3	8.90	9.10	10.40	1.07	1.12	1.19
E132	40	4	10.00	9.90	10.90	1.20	1.22	**1.25**
E137	50	5	8.50	10.00	10.00	1.02	1.23	1.14
λ_y = 32.5 cm, λ_y /B_a = 0.43			L	R	F	L	R	F
E124	10	1	7.60	8.30	9.30	**0.91**	1.02	1.06
E127	20	2	8.70	9.20	9.90	1.04	1.14	1.13
E130	30	3	10.40	10.30	11.80	**1.25**	1.27	**1.35**
E133	40	4	9.60	10.40	11.70	1.15	**1.28**	1.34
E136	50	5	9.30	9.60	10.70	1.11	1.19	1.22
λ_y = 65 cm, λ_y /B_a = 0.87			L	R	F	L	R	F
E125	10	1	6.80	6.50	7.90	**0.81**	**0.80**	**0.90**
E128	20	2	7.50	9.50	9.80	0.90	1.17	1.12
E131	30	3	8.60	10.90	11.10	1.03	**1.35**	1.27
E134	40	4	9.70	10.80	11.00	**1.16**	1.33	1.26
E135	50	5	9.00	10.70	11.30	1.08	1.32	**1.29**

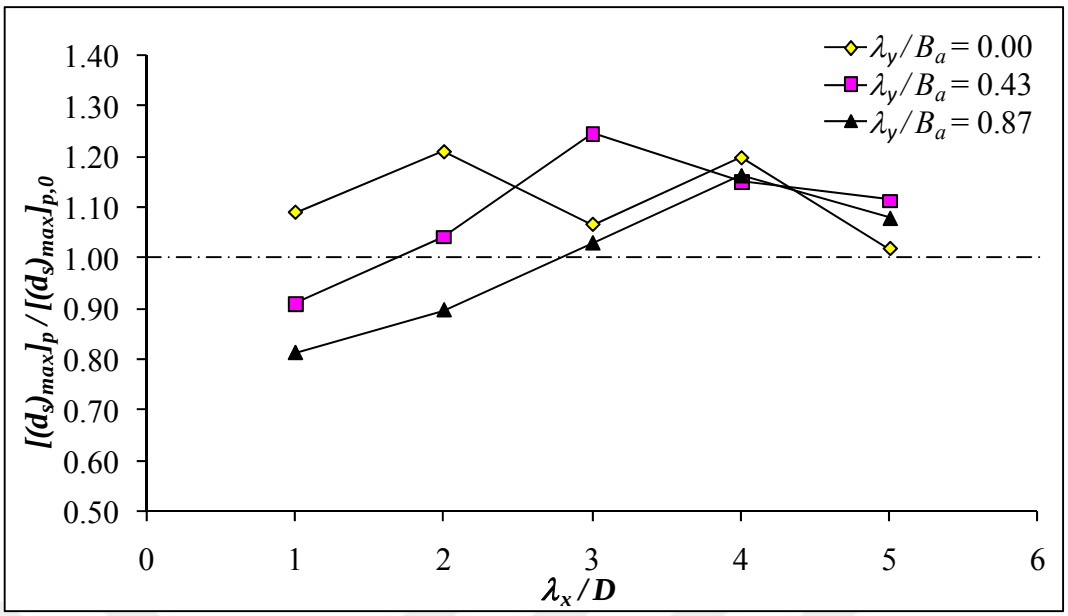


Figure 5.42 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

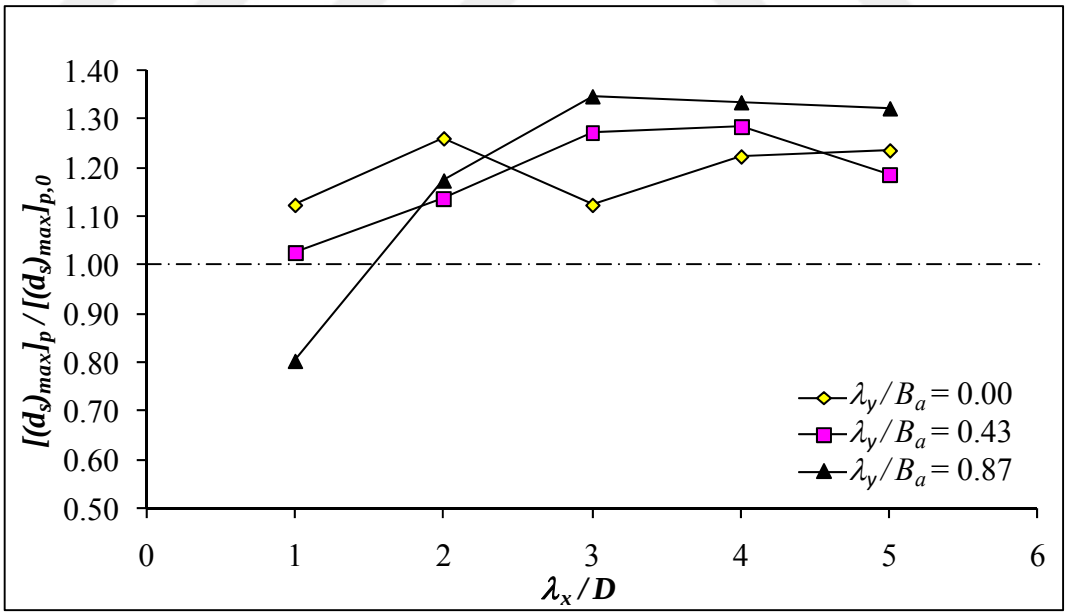


Figure 5.43 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

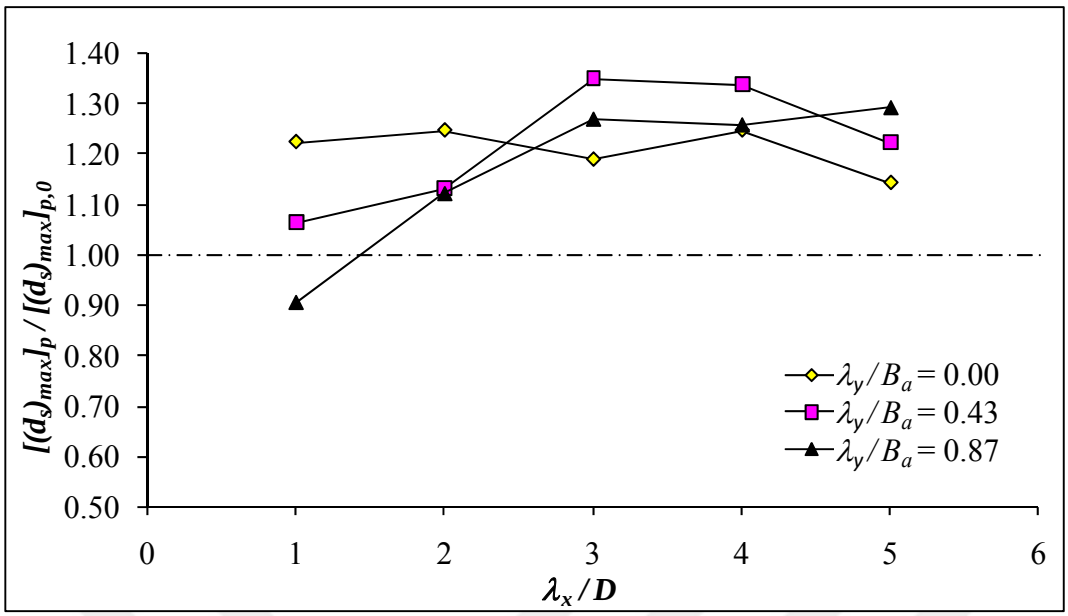


Figure 5.44 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

Maximum scour depths measured around the abutment as a function of the pier positions for D = 10 cm pier and L_a = 15 cm abutment were tabulated in Table 5.13 for λ_y = 0, 32.5 and 65 cm. Figures 5.45 – 5.52 were sketched to show the relationship between the pier position parameter λ_x / L_a and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ as a function of λ_y / B_a for points on the upstream face of the abutment with 2 cm intervals starting from the pier-side abutment corner to the channel wall side, which are L_0, $L_{0\text{-}2}$, $L_{0\text{-}4}$, $L_{0\text{-}6}$, $L_{0\text{-}8}$, $L_{0\text{-}10}$, $L_{0\text{-}12}$ and $L_{0\text{-}14}$, respectively. $L_{0\text{-}14}$ is the final point on the abutments upstream face that coincides with the channel wall.

Figures 5.45 – 5.52 prevail that the values of the dimensionless scour parameter are always less than 1.0 regardless of the measurement points, λ_y / B_a and λ_x / L_a. In this experimental setup, the maximum value of the dimensionless scour parameter is achieved at point L_0 as 0.99 while the minimum value is 0.79. As the

measurement point moves towards the channel wall from the upstream corner of the abutment, the value of the dimensionless scour parameter decreases slowly and finally reaches the maximum and minimum values of 0.71 and 0.34, respectively, at point $L_{0\text{-}14}$. Finally it can be stated that there is a positive effect of pier of D = 10 cm to reduce the scour depth in front of the abutment upstream face compared to that of a single abutment case. At the most critical point of L_0 on the abutment the minimum scour depths are achieved for $\lambda_y / B_a = 0.43$.

Table 5.13 Measured maximum scour depths around the abutment at points L_0 – $L_{0\text{-}14}$ and their comparison with those of a single abutment data for L_a = 15 cm and D = 10 cm (L_a / D = 1.50, B_a = 75 cm)

Exp. No.	λ_x (cm)	λ_x / L_a	$[(d_s)_{max}]_a$ (cm)								$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$							
			Measurement Points															
λ_y = 0 cm, λ_y / B_a = 0.00			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E123	10	0.7	9.50	8.90	8.00	7.30	6.70	6.00	5.30	5.65	0.99	0.84	0.75	0.70	0.66	0.61	0.53	0.57
E126	20	1.3	7.90	7.60	7.50	7.10	6.40	5.60	4.40	3.90	0.82	0.72	0.71	0.68	0.63	0.57	**0.44**	0.39
E129	30	2.0	7.60	7.10	7.00	6.40	5.80	5.30	4.50	3.70	**0.79**	**0.67**	**0.66**	**0.62**	**0.57**	**0.54**	0.45	**0.37**
E132	40	2.7	9.30	8.90	8.30	7.90	7.50	7.10	6.20	5.90	0.97	0.84	0.78	0.76	0.74	0.72	0.62	0.60
E137	50	3.3	9.10	9.00	9.20	8.70	8.20	7.50	7.40	7.00	0.95	0.85	0.87	0.84	0.81	0.77	0.74	0.71
λ_y = 32.5 cm, λ_y / B_a = 0.43			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E124	10	0.7	8.30	7.80	7.50	7.00	6.20	5.60	4.70	3.80	0.86	0.74	0.71	0.67	0.61	0.57	0.47	0.38
E127	20	1.3	7.80	7.70	7.30	6.80	6.10	5.40	3.50	3.40	0.81	**0.73**	**0.69**	**0.65**	**0.60**	**0.55**	**0.35**	**0.34**
E130	30	2.0	7.70	7.80	7.30	6.80	6.40	5.60	3.60	3.50	**0.80**	0.74	**0.69**	**0.65**	0.63	0.57	0.36	0.35
E133	40	2.7	8.20	7.80	7.40	7.10	6.60	5.60	4.80	4.00	0.85	0.74	0.70	0.68	0.65	0.57	0.48	0.40
E136	50	3.3	8.30	8.00	7.80	7.30	6.60	5.90	5.00	4.20	0.86	0.75	0.74	0.70	0.65	0.60	0.50	0.42
λ_y = 65 cm, λ_y / B_a = 0.87			L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$	L_0	$L_{0\text{-}2}$	$L_{0\text{-}4}$	$L_{0\text{-}6}$	$L_{0\text{-}8}$	$L_{0\text{-}10}$	$L_{0\text{-}12}$	$L_{0\text{-}14}$
E125	10	0.7	9.00	8.70	8.40	7.50	7.20	6.50	6.00	5.70	0.94	0.82	0.79	0.72	0.71	0.66	0.60	0.58
E128	20	1.3	8.30	7.90	7.30	7.00	6.10	5.60	4.30	4.00	**0.86**	0.75	0.69	0.67	0.60	0.57	0.43	0.40
E131	30	2.0	8.70	8.20	7.90	7.60	7.30	6.90	6.20	5.60	0.91	0.77	0.75	0.73	0.72	0.70	0.62	0.57
E134	40	2.7	8.90	9.00	8.70	8.20	7.90	7.10	6.30	6.00	0.93	0.85	0.82	0.79	0.78	0.72	0.63	0.61
E135	50	3.3	8.70	7.50	7.00	6.60	5.90	5.20	3.60	3.50	0.91	**0.71**	**0.66**	**0.63**	**0.58**	**0.53**	**0.36**	**0.35**

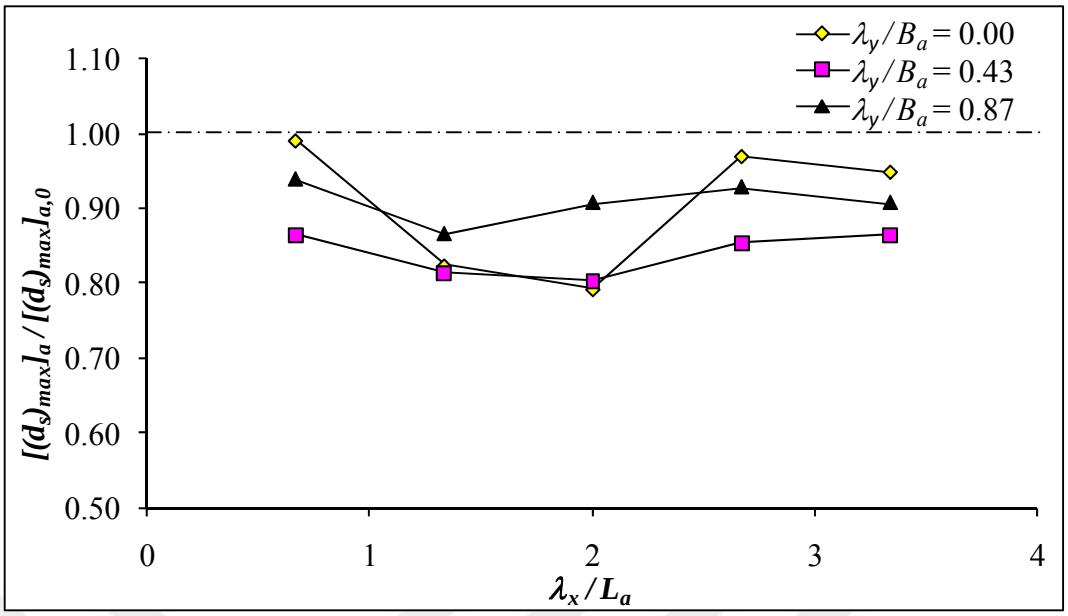


Figure 5.45 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

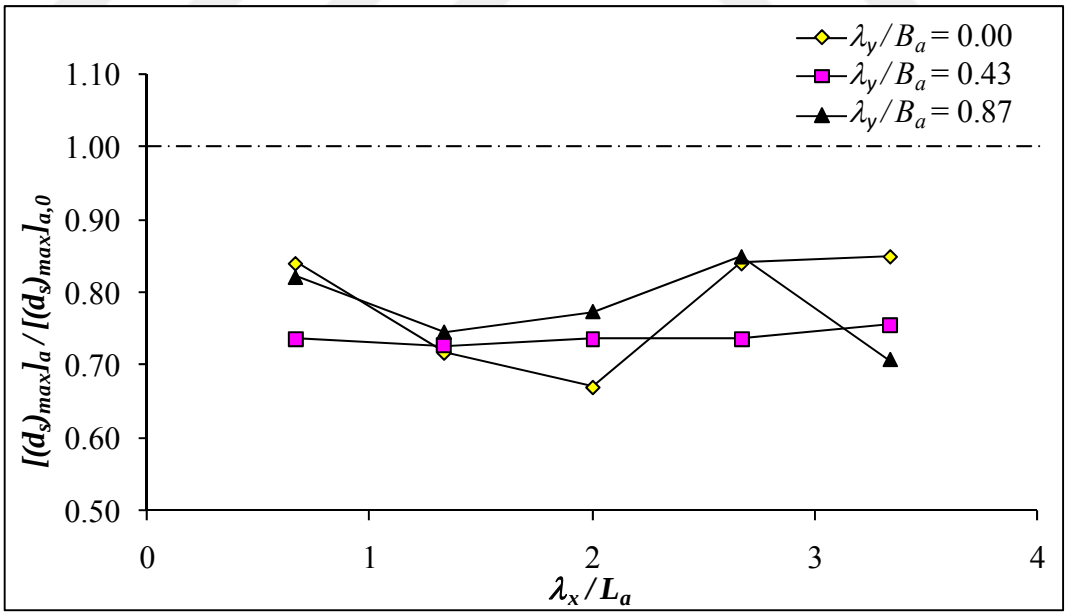


Figure 5.46 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

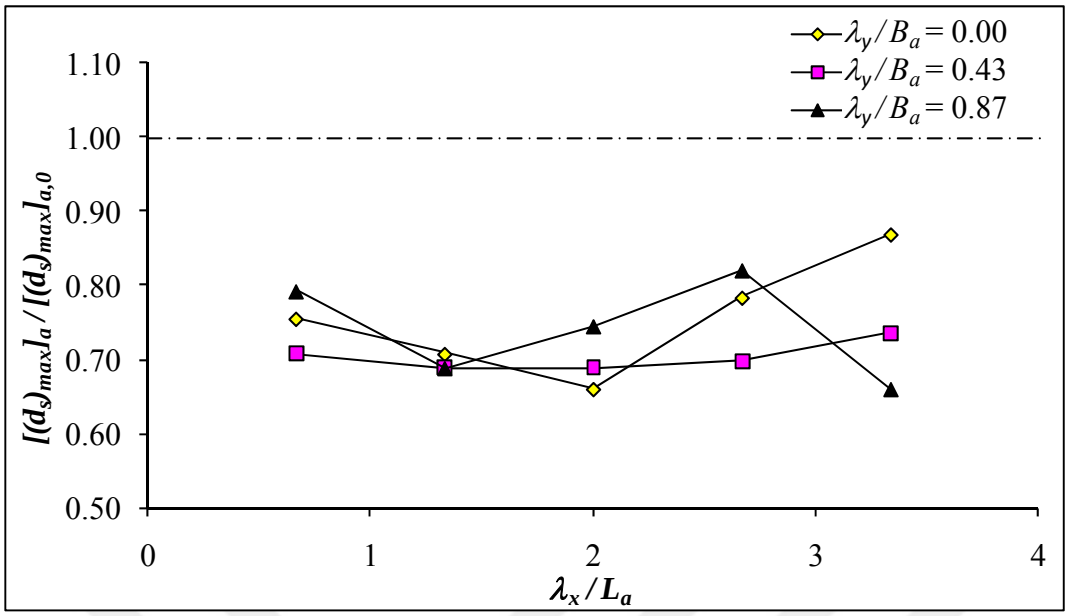


Figure 5.47 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

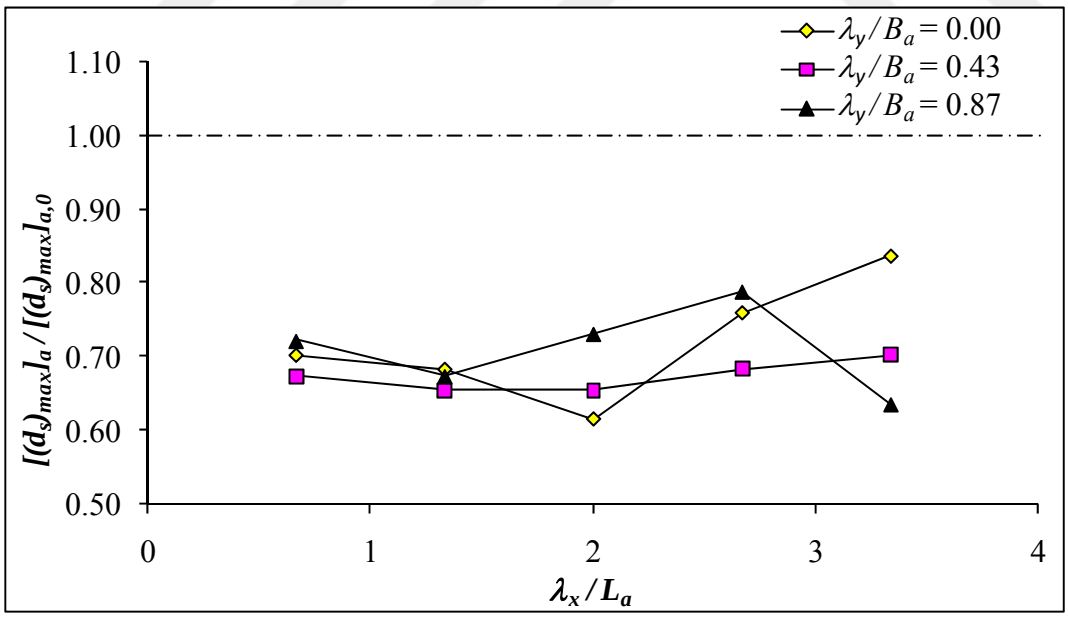


Figure 5.48 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

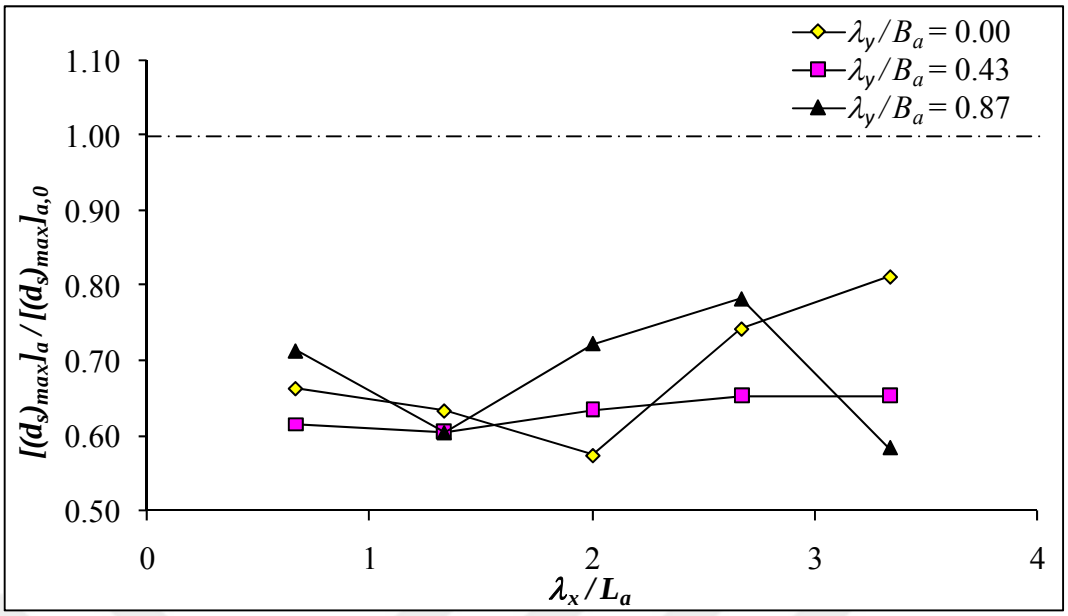


Figure 5.49 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

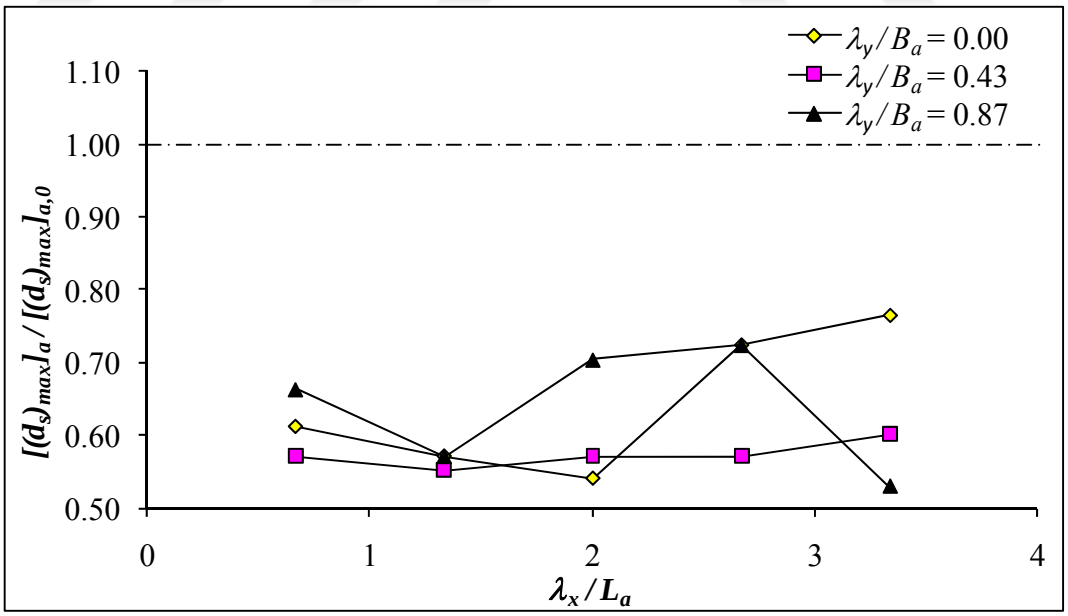


Figure 5.50 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

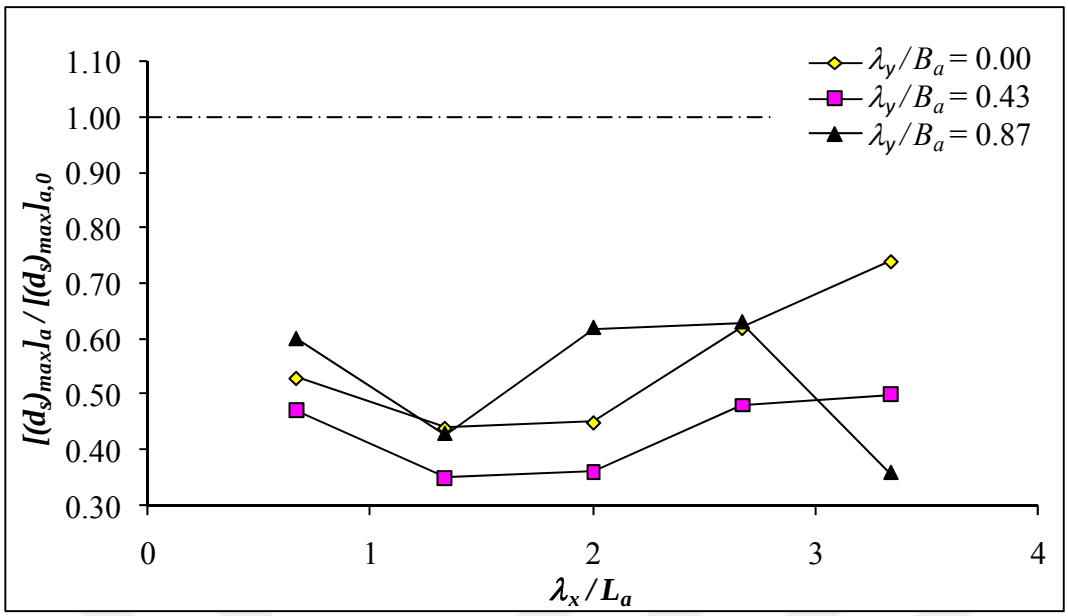


Figure 5.51 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}12}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

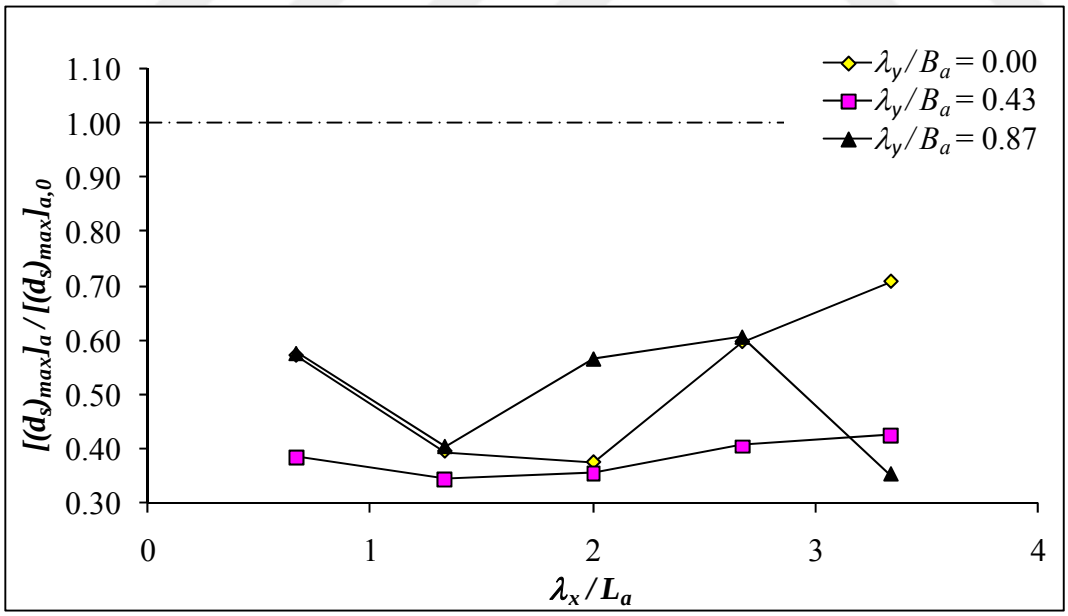


Figure 5.52 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}14}$ of the abutment for L_a = 15 cm and D = 10 cm (L_a / D = 1.50)

Comparison of all the sets

Variation of the dimensionless scour parameter with λ_x / D at point L of the pier as a function of pier diameters tested; D = 5 cm and 10 cm and abutment lengths; L_a = 5 cm, 10 cm and 15 cm, for given λ_y / B_a values were presented in Figures 5.53 – 5.67. The similar figures are Figure 5.68 – 5.82 for point R and Figures 5.83 – 5.97 for point F around the pier. The common points of all these figures are that there is no a regular trend between the dimensionless scour parameter and λ_x / D for a given D or L_a of a constant value of λ_y / B_a; with increasing λ_x / D the value of the dimensionless scour parameter either increases or decreases with the values of around unity. The maximum and minimum values of the dimensionless scour parameter at points L, R and F are; ≈ 1.50 (for L_a = 15 cm, D = 5 cm, λ_y / B_a = 0 and λ_x / D = 4, Figure 5.53) and 0.70 (for L_a = 15 cm, D = 5 cm, λ_y / B_a = 0.47 and λ_x / D = 3, Figure 5.54), 1.60 (for L_a = 15 cm, D = 5 cm, λ_y / B_a = 0 and λ_x / D = 5, Figure 5.68) and 0.80 (for L_a = 5 cm, D = 10 cm, λ_y / B_a = 0 and λ_x / D = 5, Figure 5.71), 1.35 (for L_a = 15 cm, D = 10 cm, λ_y / B_a = 0.87 or 0.93 and λ_x / D = 3, Figure 5.82) and 0.65 (for L_a = 15 cm, D = 5 cm, λ_y / B_a = 0.87 or 0.93 and λ_x / D = 8, Figure 5.97), respectively.

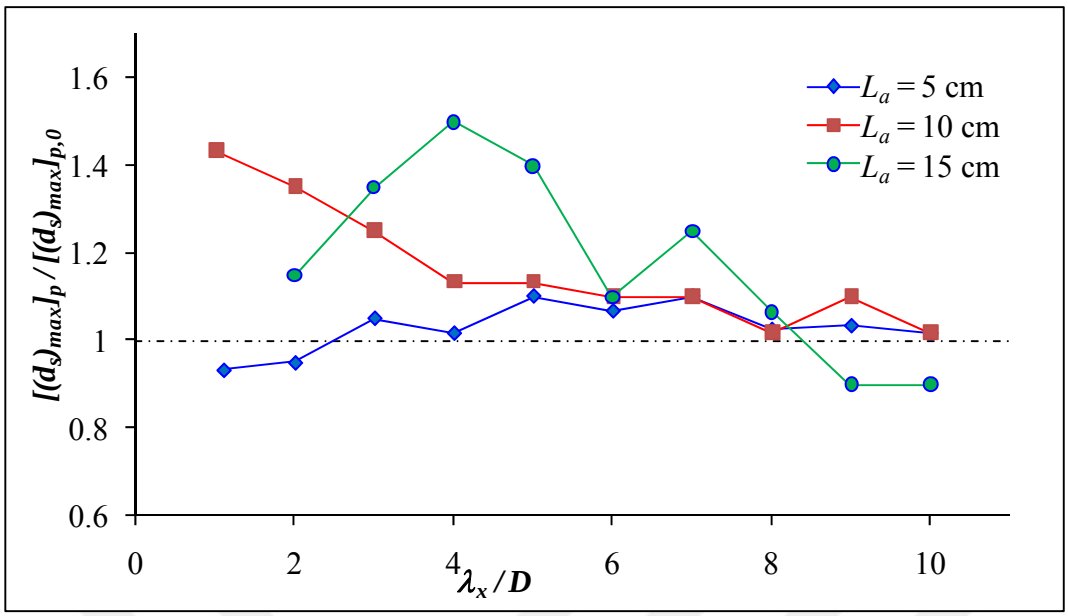


Figure 5.53 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for $D = 5$ cm and $\lambda_y / B_a = 0.00$

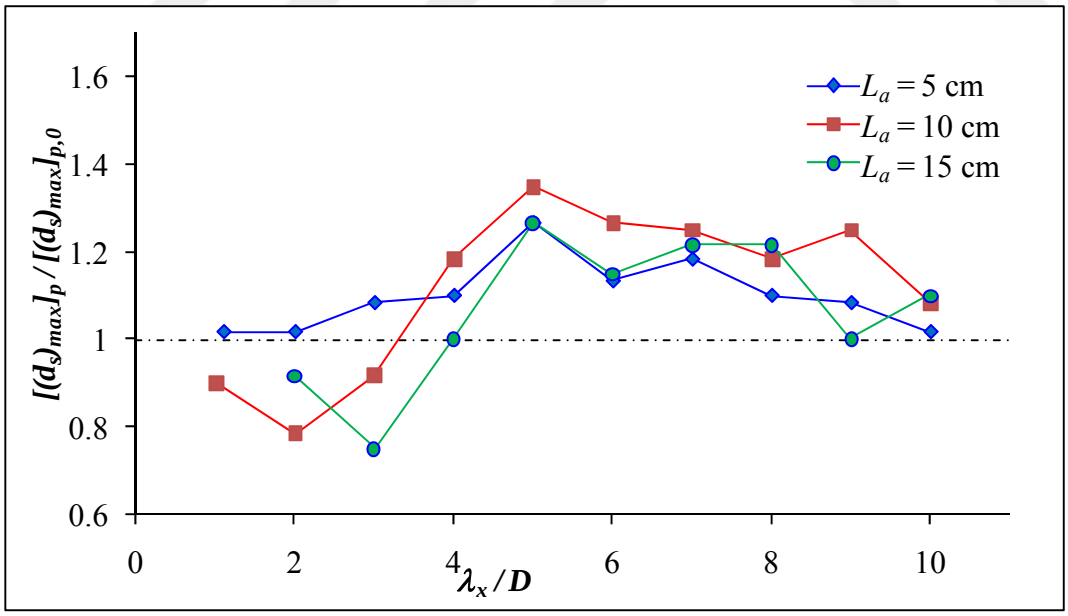


Figure 5.54 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for $D = 5$ cm and $\lambda_y / B_a = 0.47$

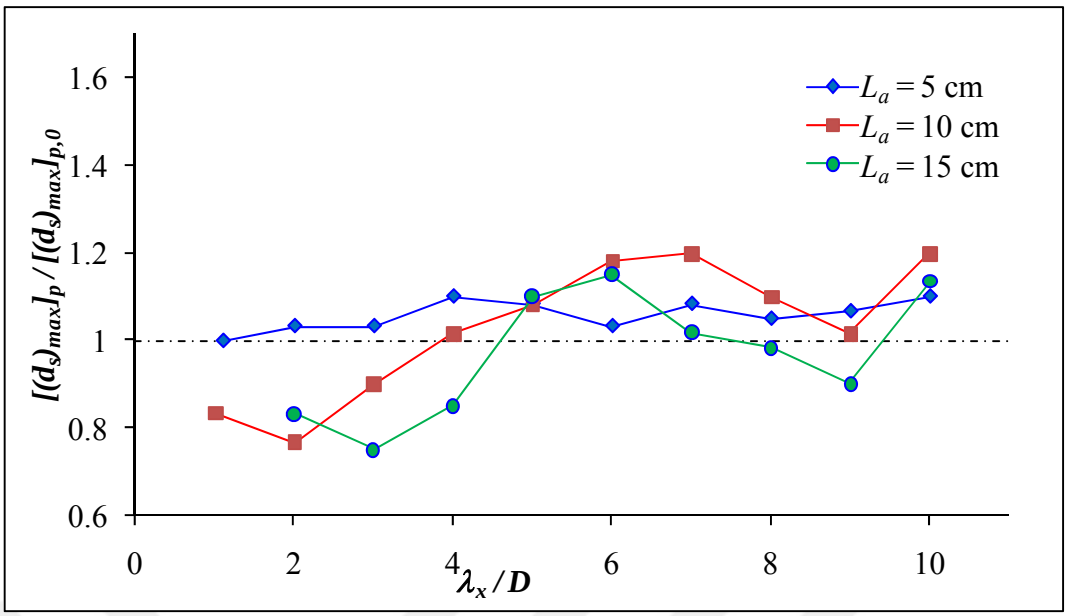


Figure 5.55 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for D = 5 cm and λ_y / B_a = 0.93

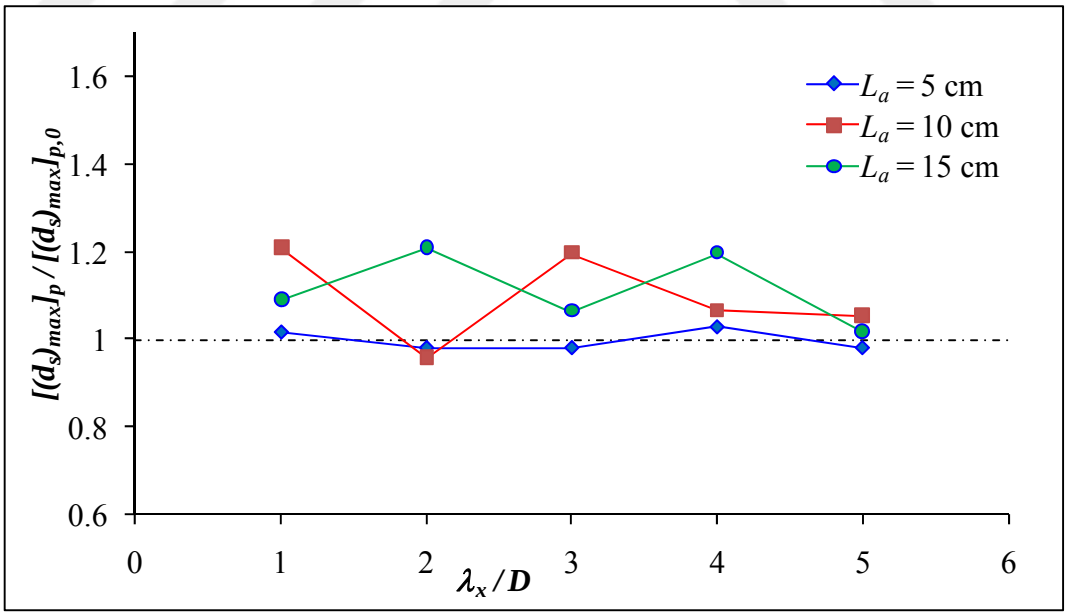


Figure 5.56 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for D = 10 cm and λ_y / B_a = 0.00

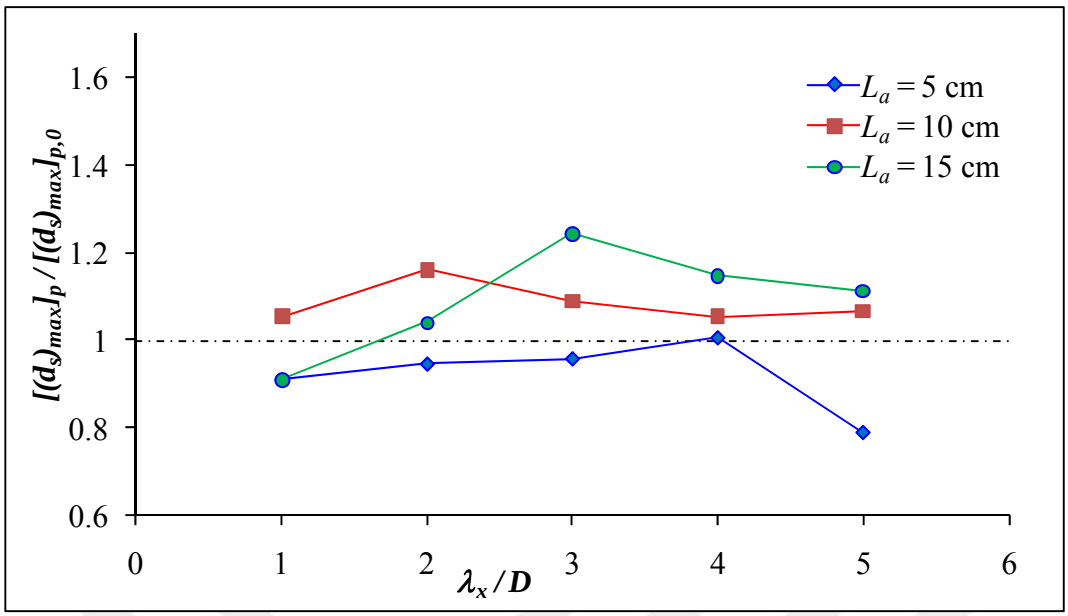


Figure 5.57 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.43$

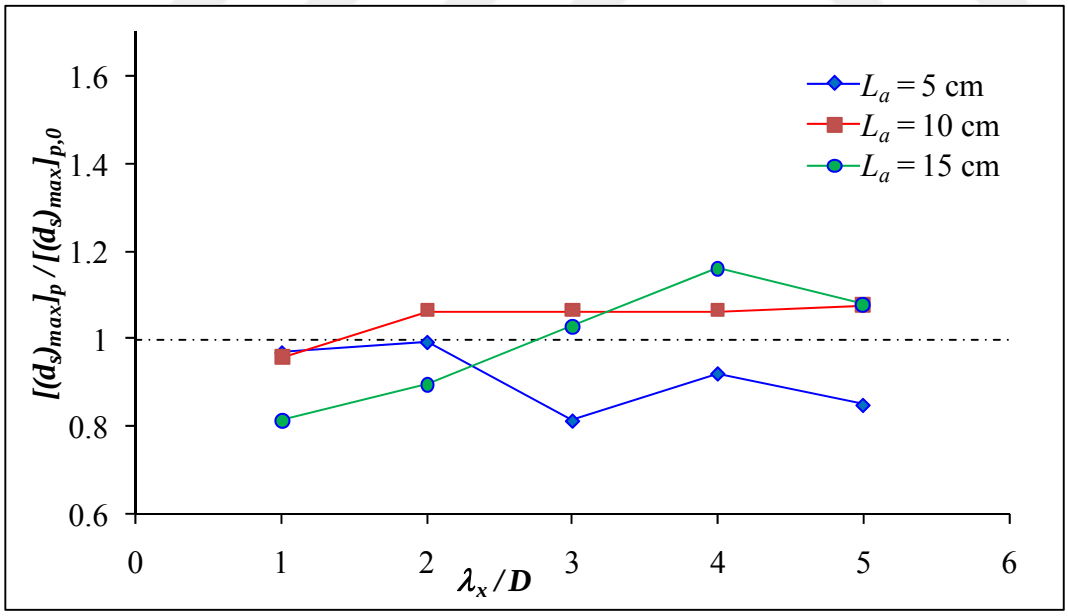


Figure 5.58 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.87$

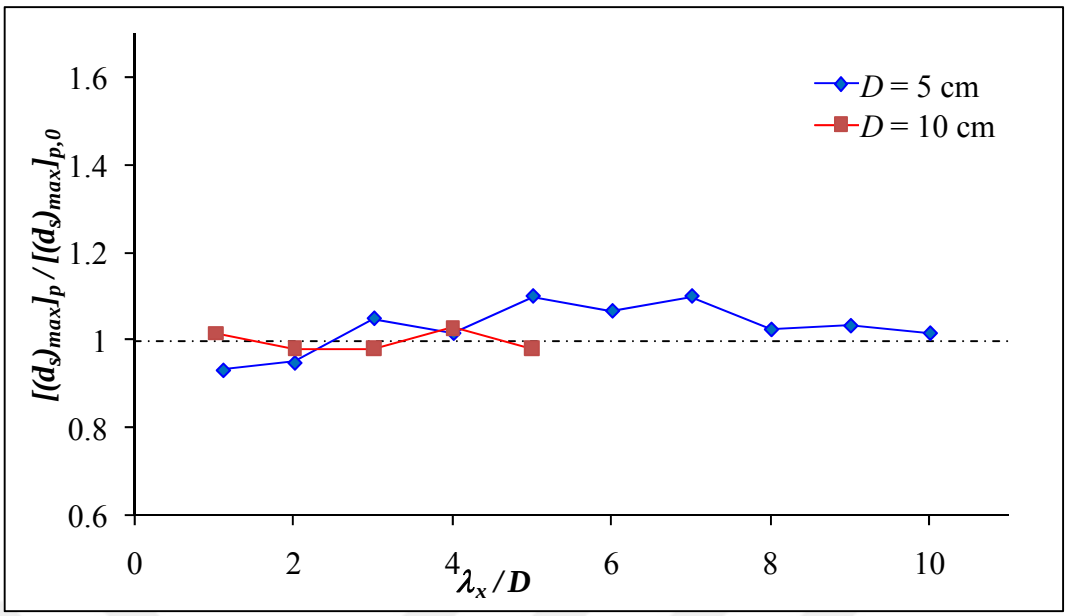


Figure 5.59 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 5 cm and λ_y / B_a = 0.00

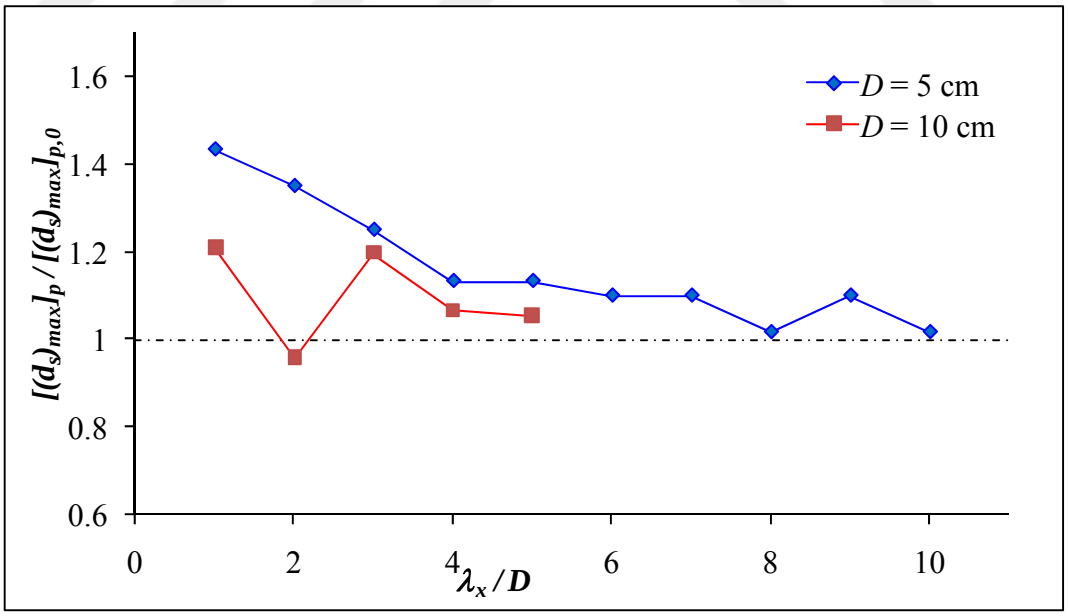


Figure 5.60 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 10 cm and λ_y / B_a = 0.00

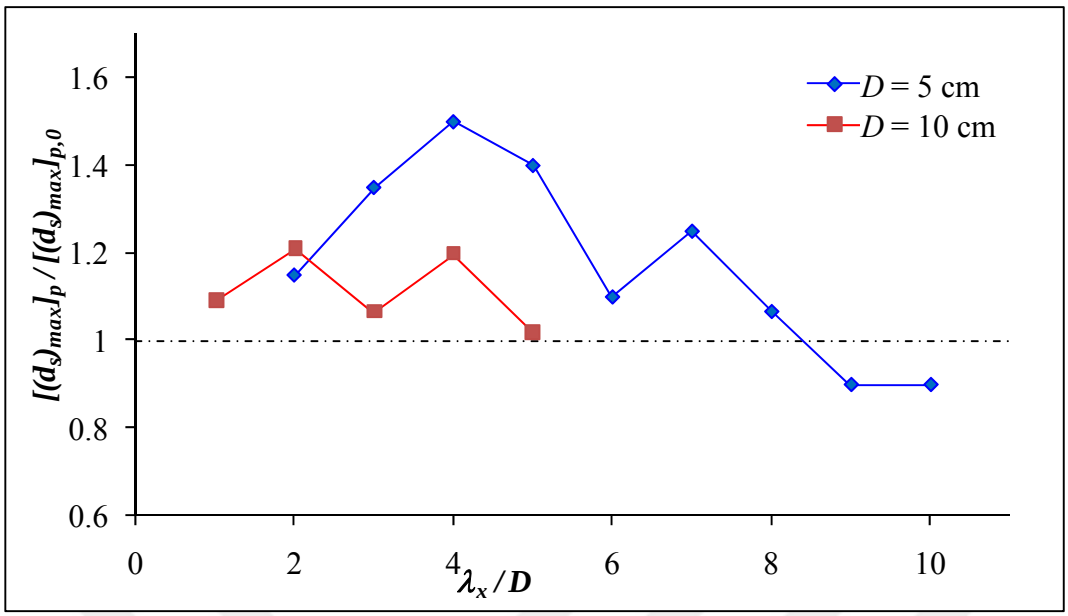


Figure 5.61 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 15 cm and λ_y / B_a = 0.00

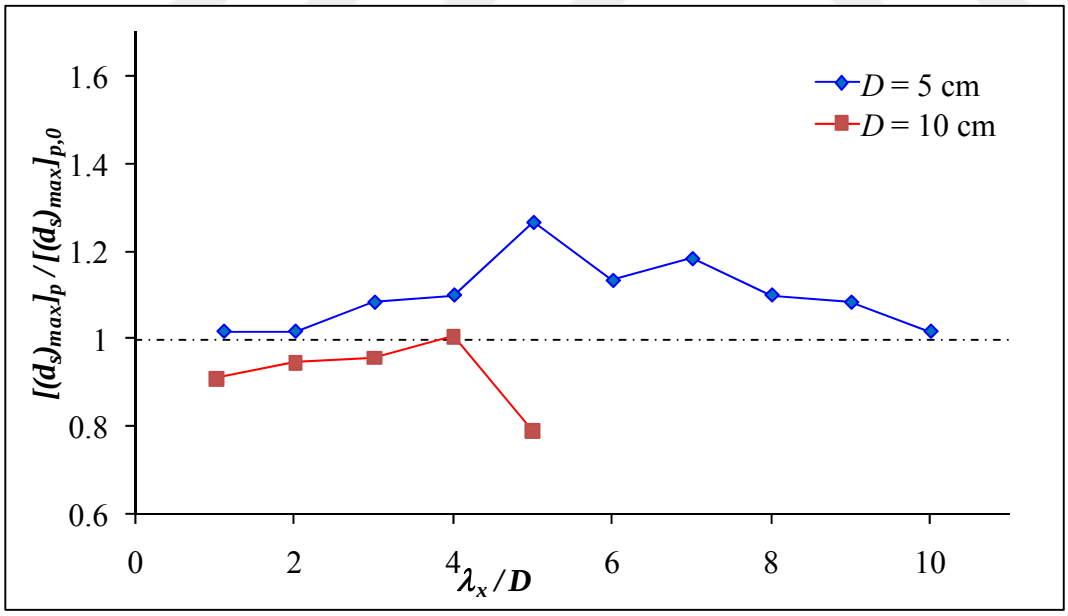


Figure 5.62 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

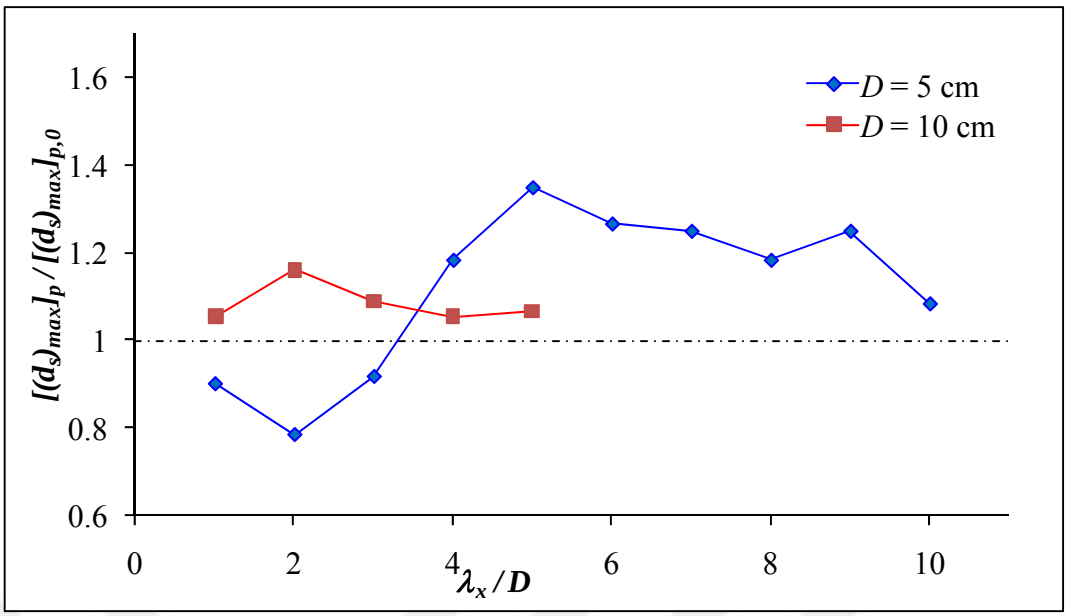


Figure 5.63 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

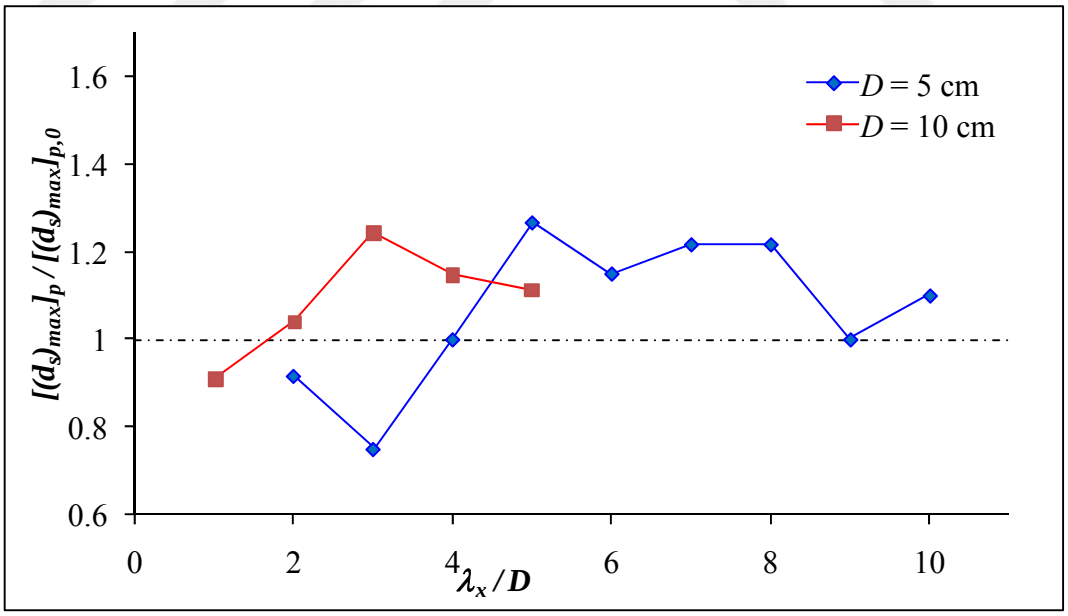


Figure 5.64 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

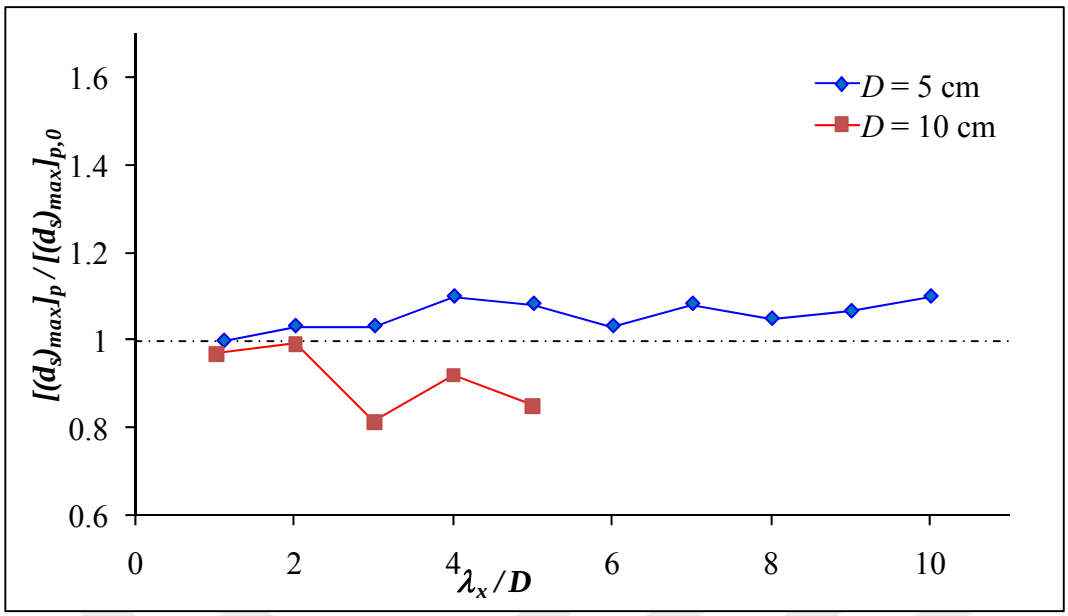


Figure 5.65 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

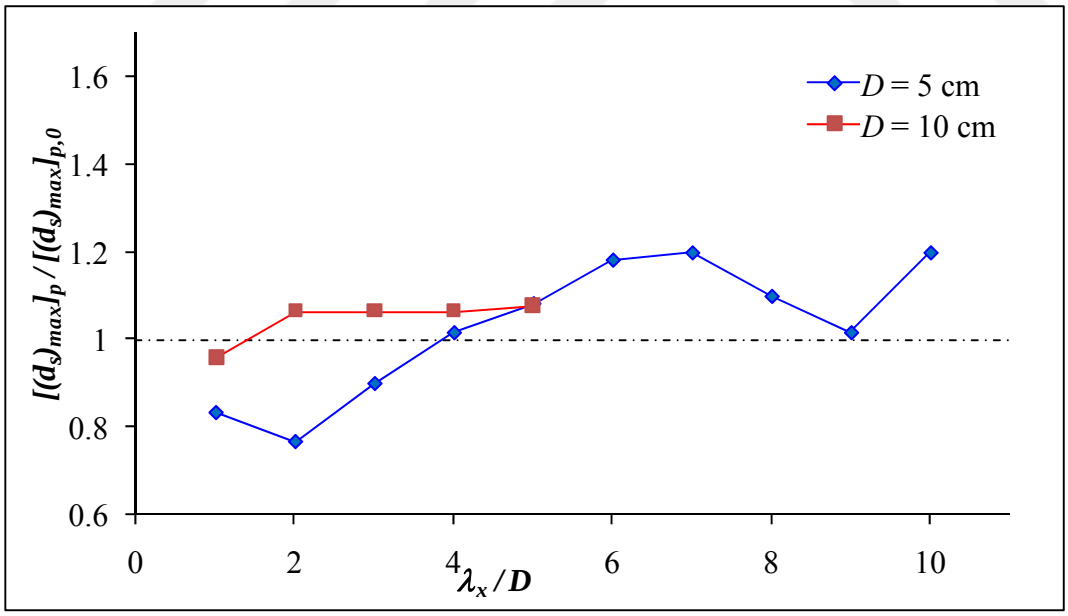


Figure 5.66 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

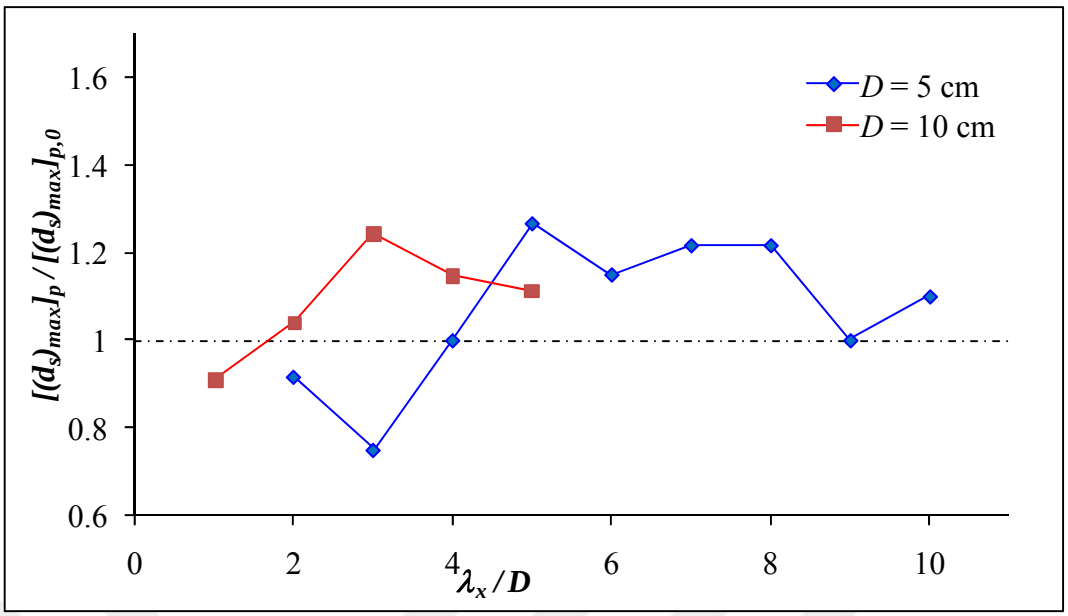


Figure 5.67 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point L of the pier for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

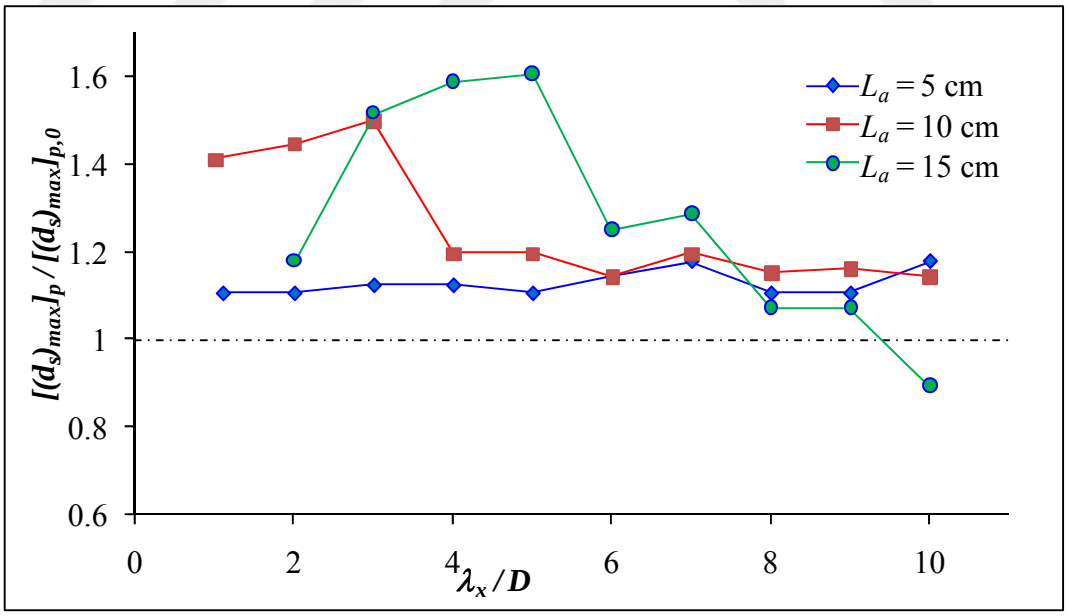


Figure 5.68 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.00

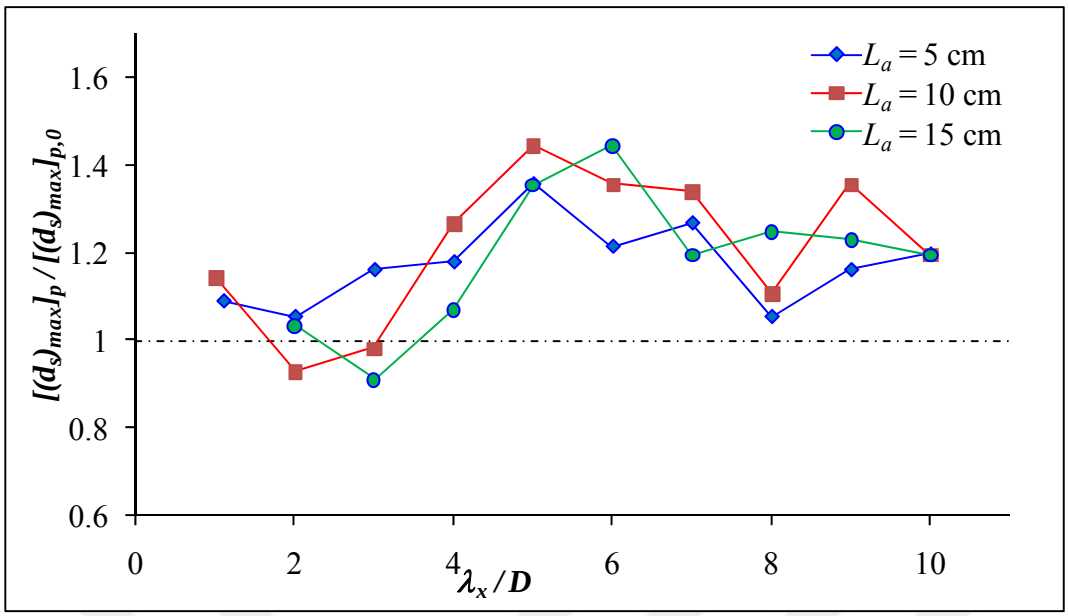


Figure 5.69 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.47

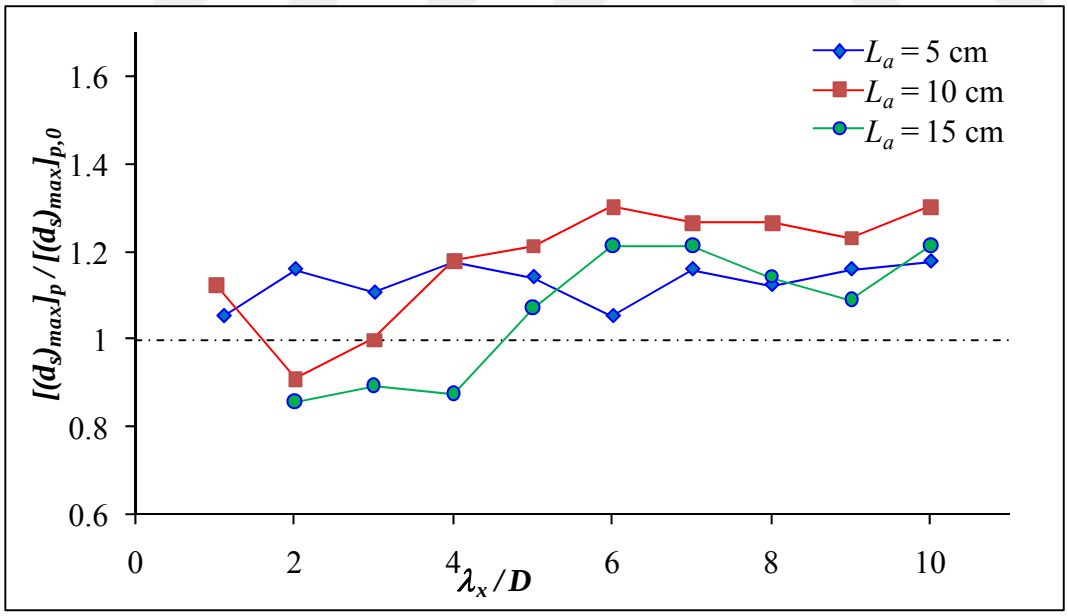


Figure 5.70 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.93

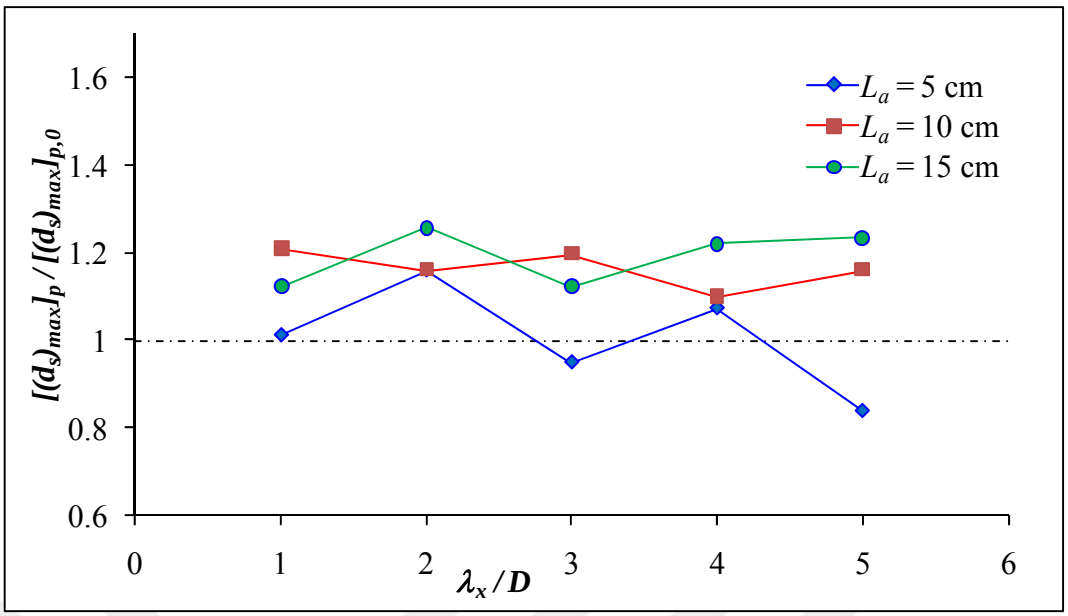


Figure 5.71 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.00$

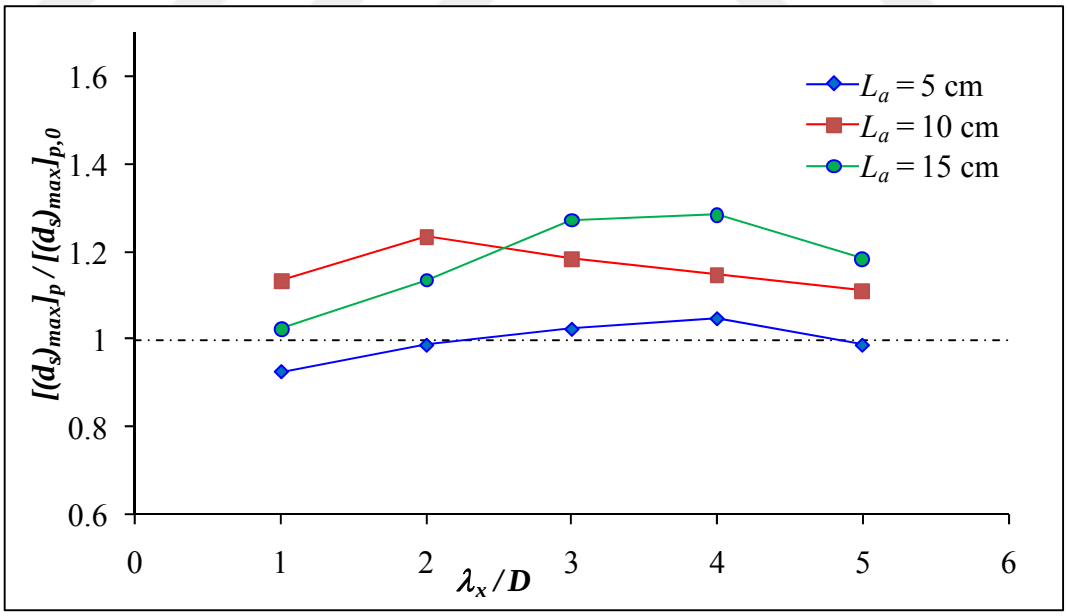


Figure 5.72 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.43$

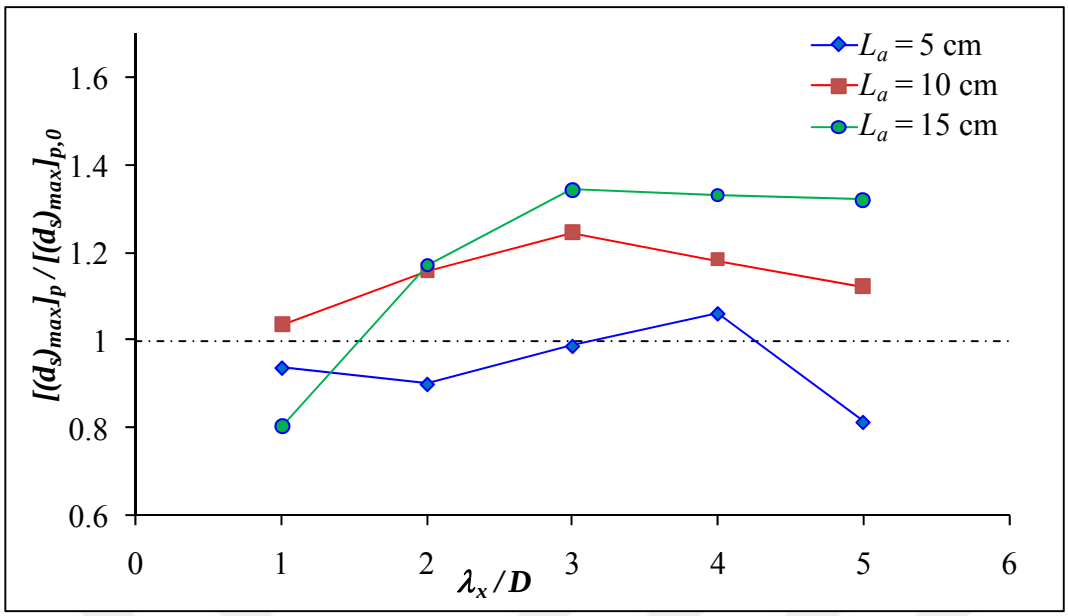


Figure 5.73 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for D = 10 cm and λ_y / B_a = 0.87

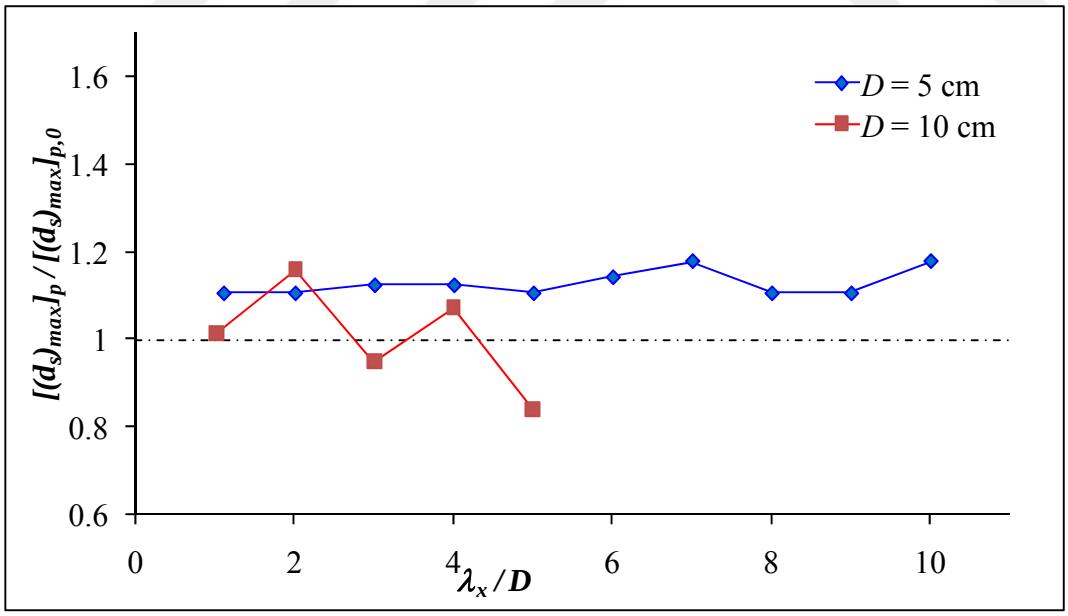


Figure 5.74 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 5 cm and λ_y / B_a = 0.00

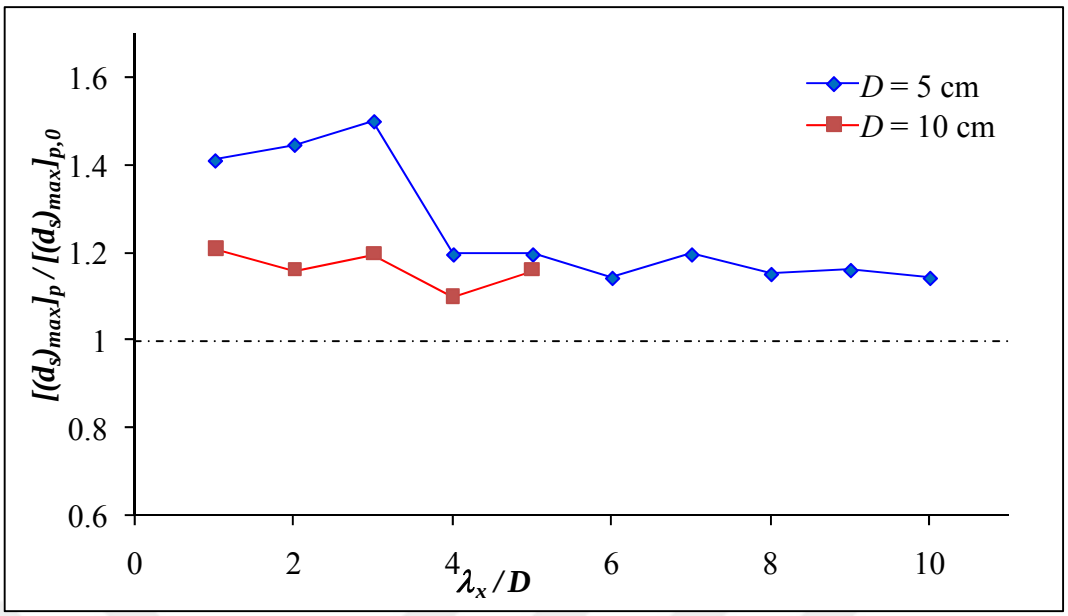


Figure 5.75 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 10 cm and λ_y / B_a = 0.00

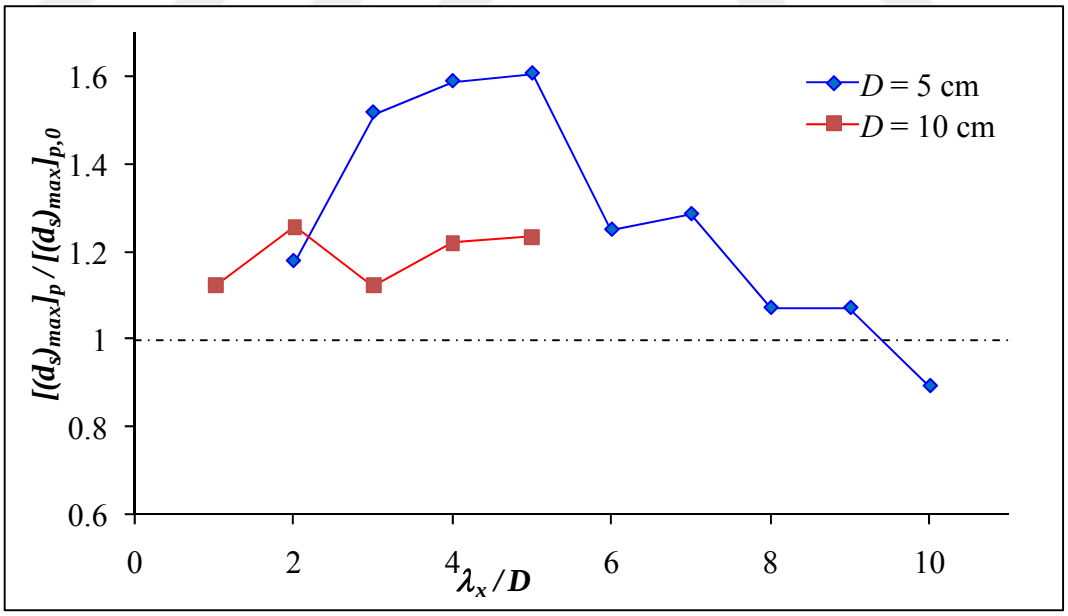


Figure 5.76 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 15 cm and λ_y / B_a = 0.00

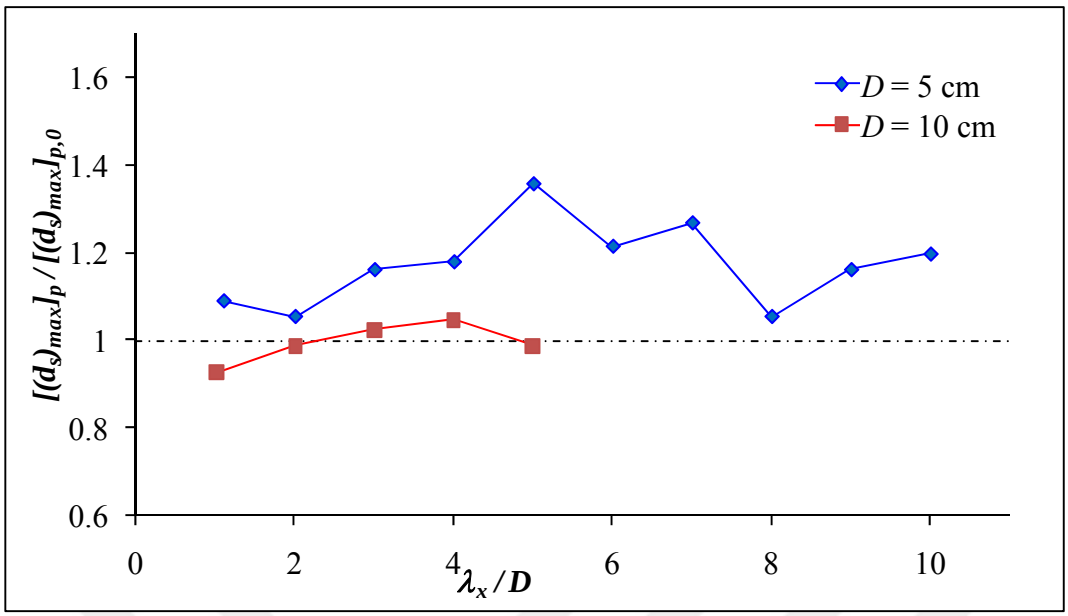


Figure 5.77 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

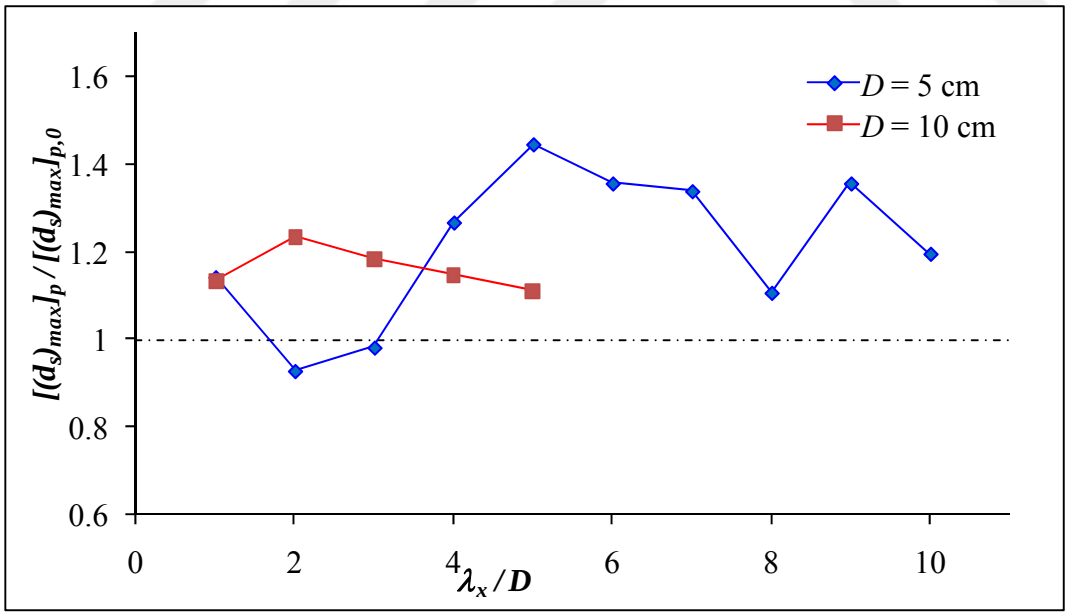


Figure 5.78 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

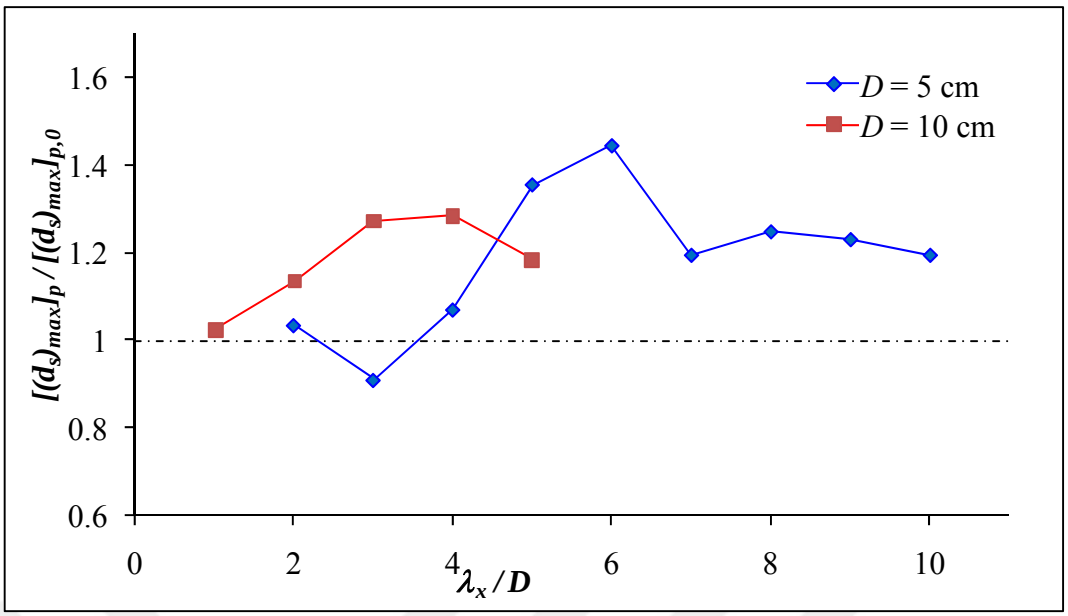


Figure 5.79 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

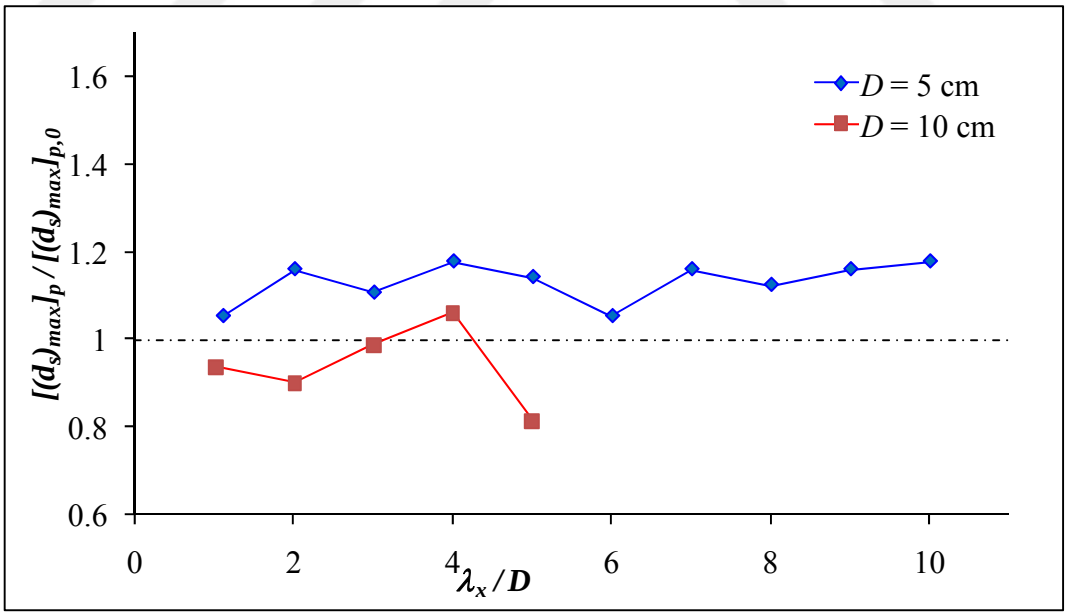


Figure 5.80 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

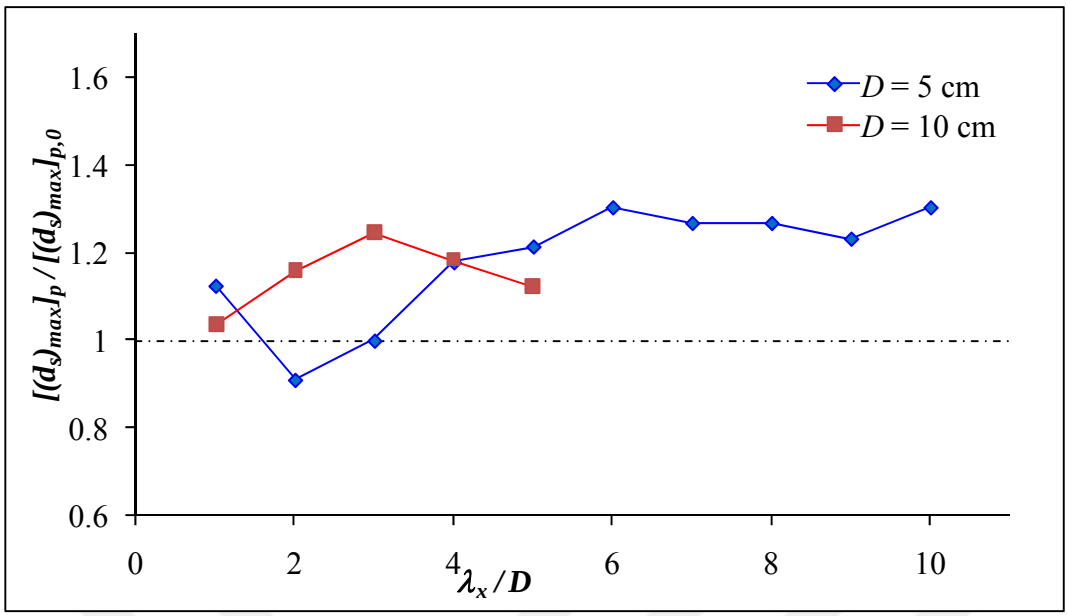


Figure 5.81 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

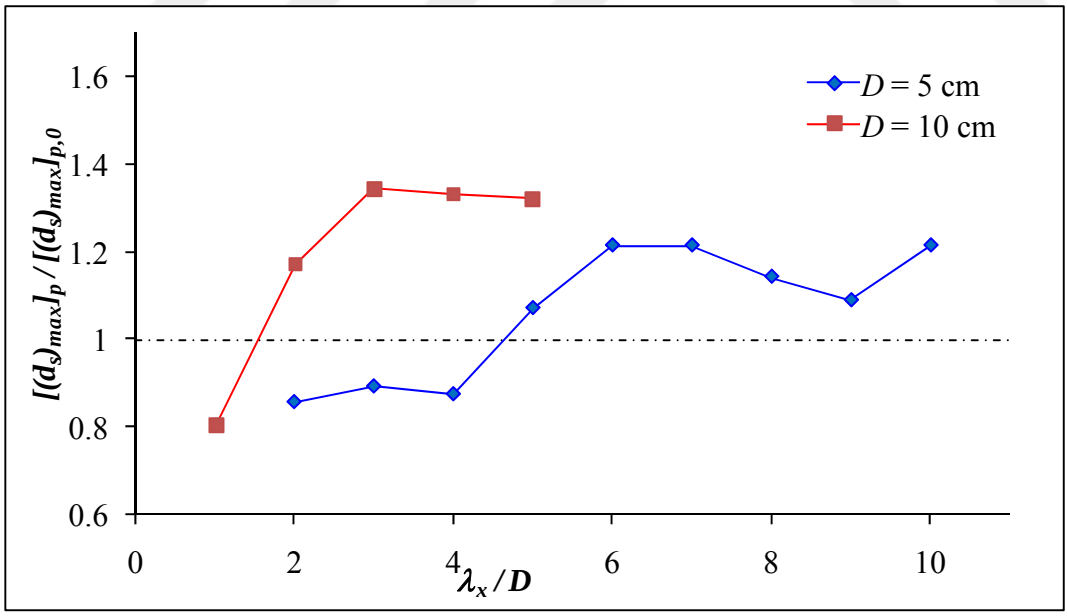


Figure 5.82 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point R of the pier for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

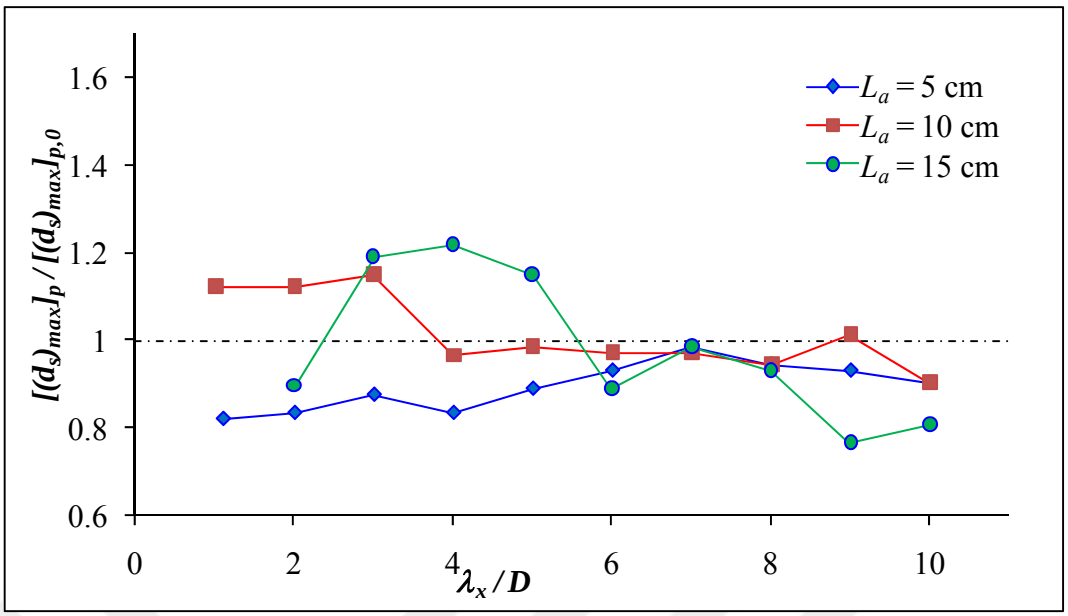


Figure 5.83 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 5$ cm and $\lambda_y / B_a = 0.00$

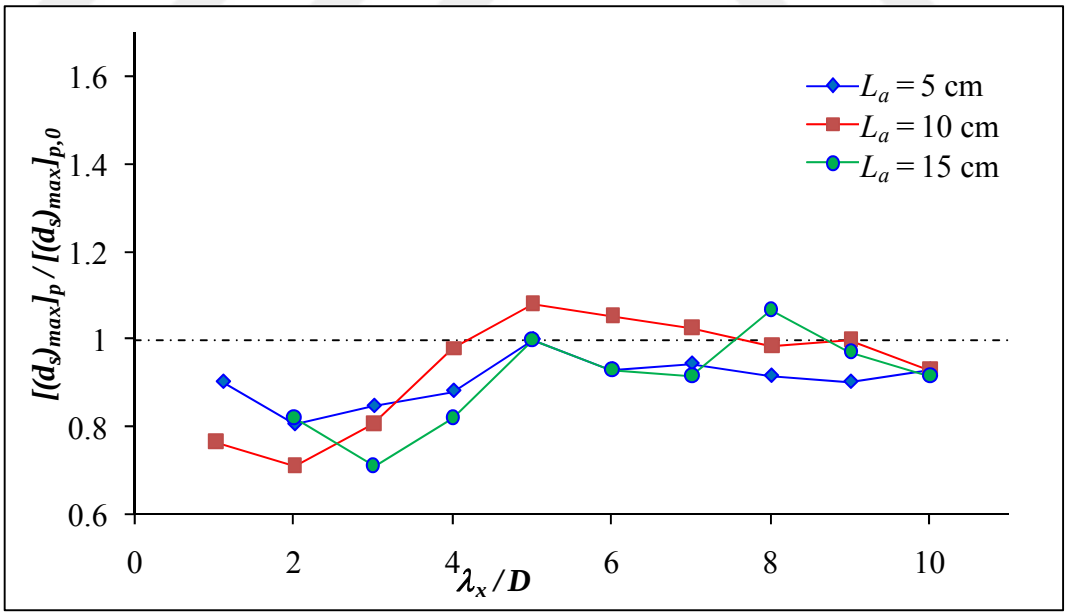


Figure 5.84 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 5$ cm and $\lambda_y / B_a = 0.47$

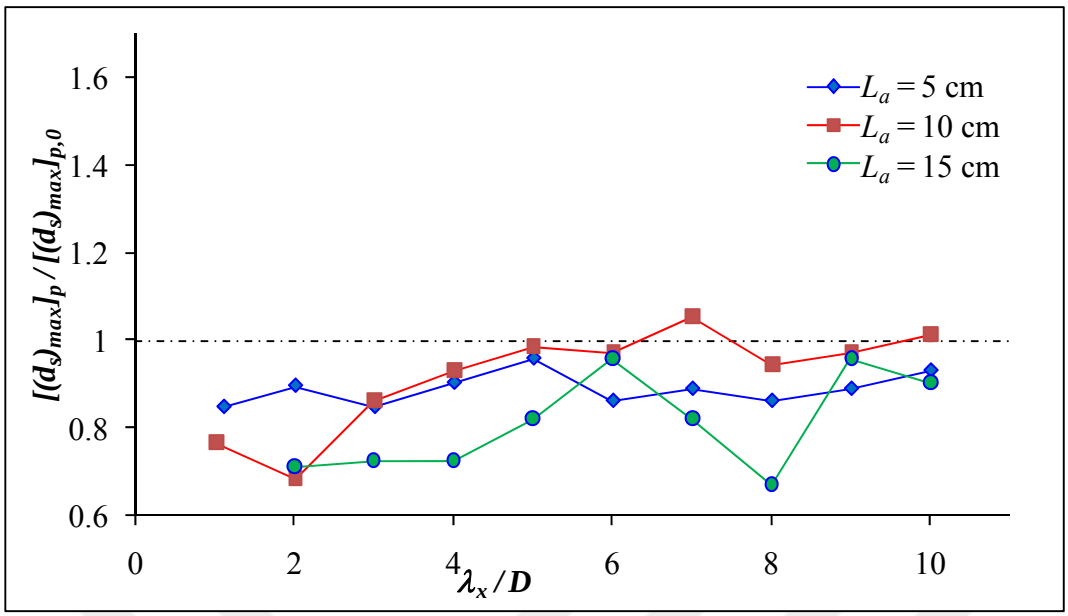


Figure 5.85 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 5$ cm and $\lambda_y / B_a = 0.93$

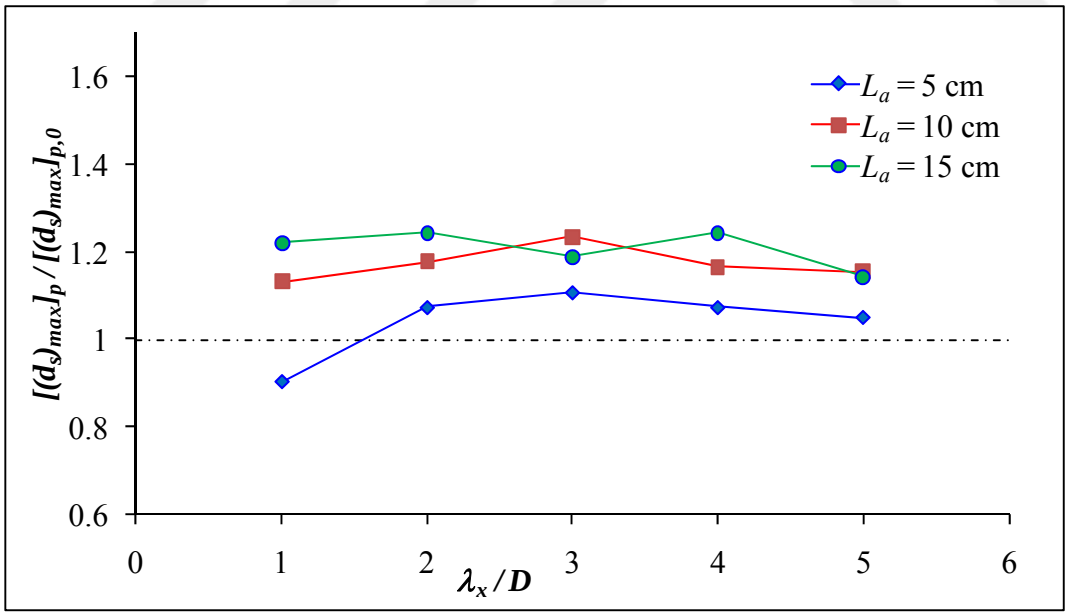


Figure 5.86 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.00$

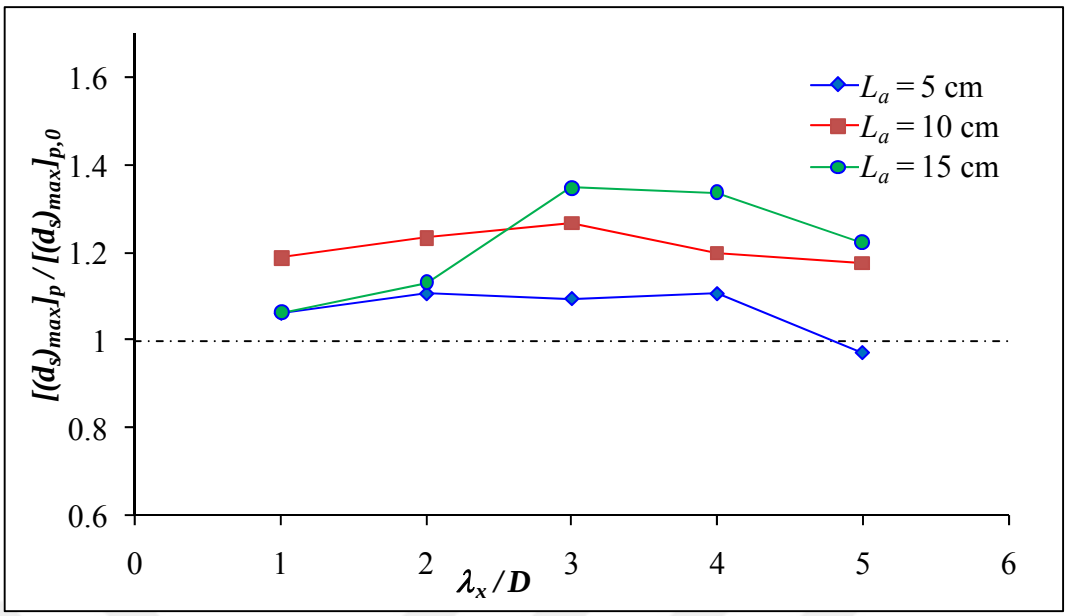


Figure 5.87 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.43$

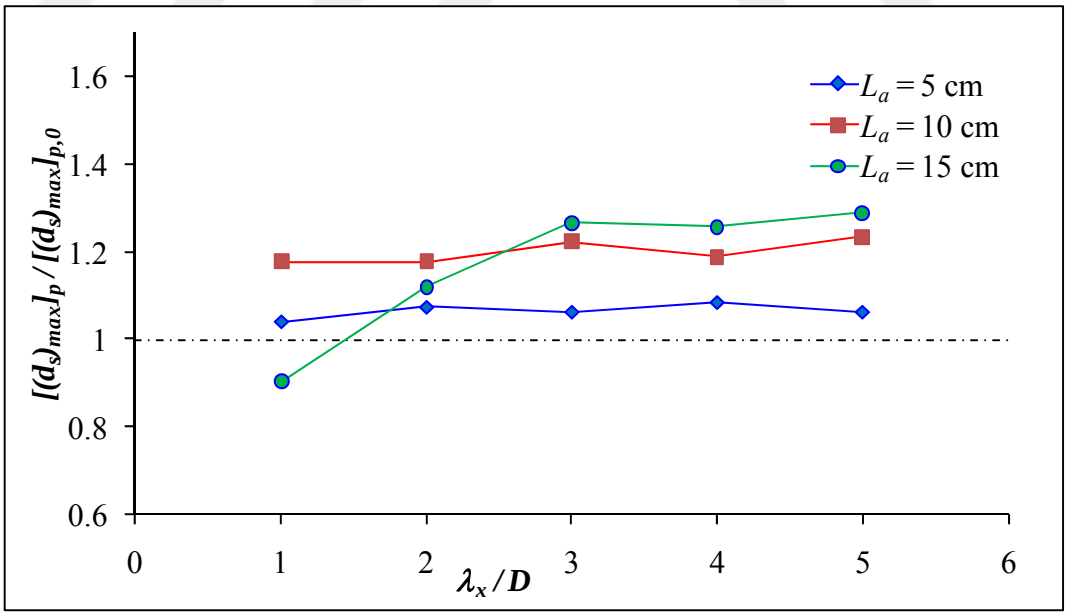


Figure 5.88 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for $D = 10$ cm and $\lambda_y / B_a = 0.87$

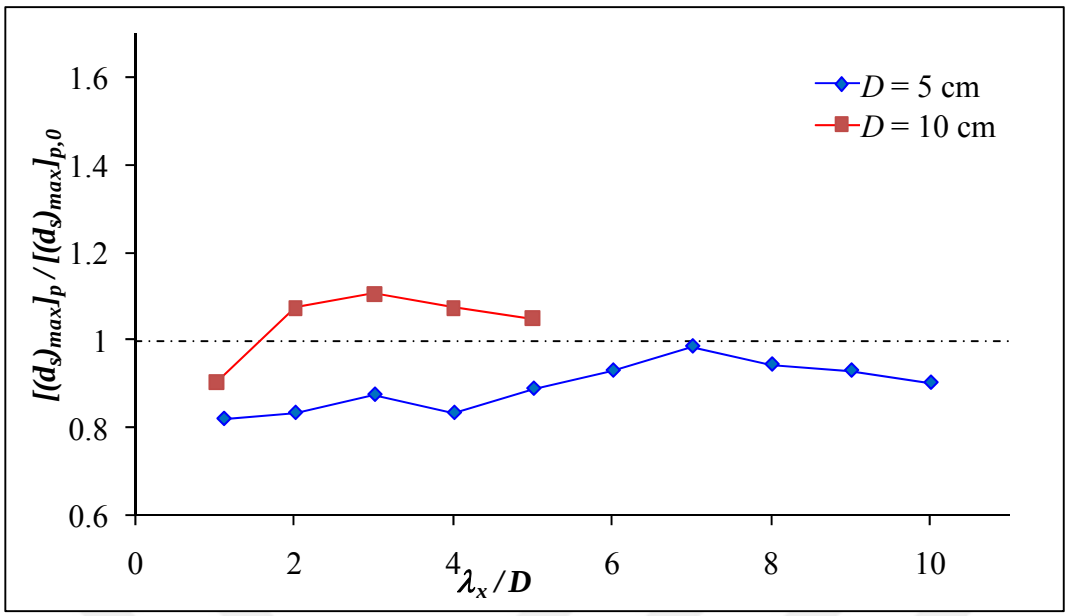


Figure 5.89 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 5 cm and λ_y / B_a = 0.00

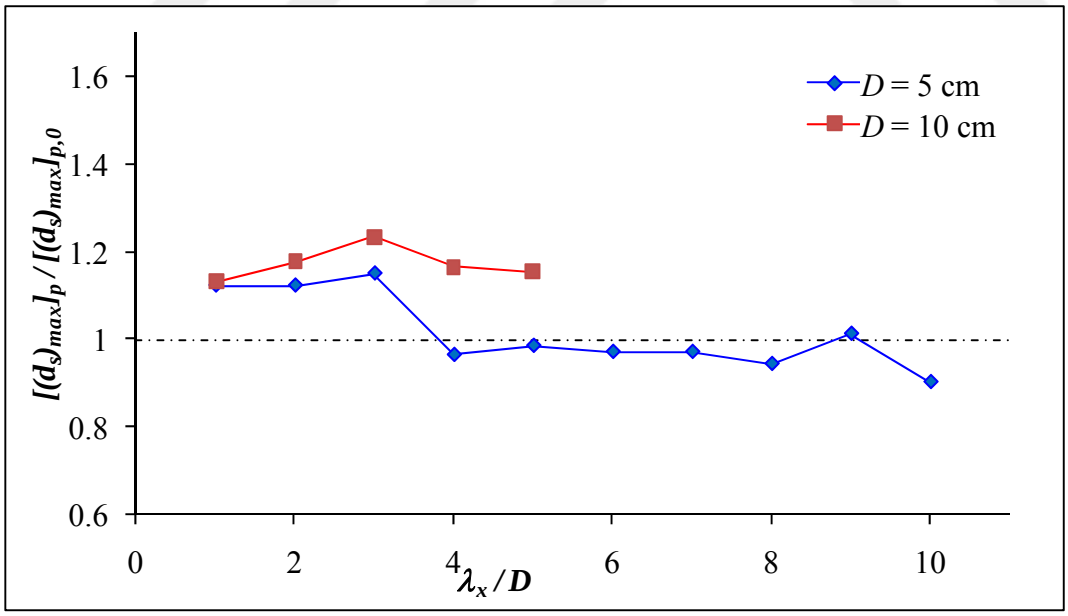


Figure 5.90 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 10 cm and λ_y / B_a = 0.00

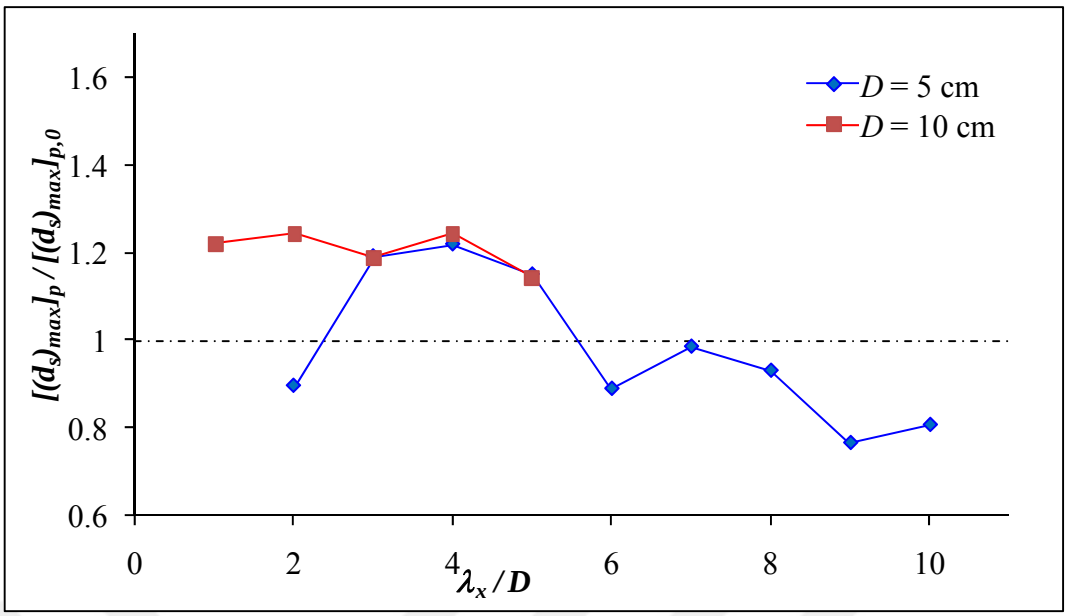


Figure 5.91 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 15 cm and λ_y/B_a = 0.00

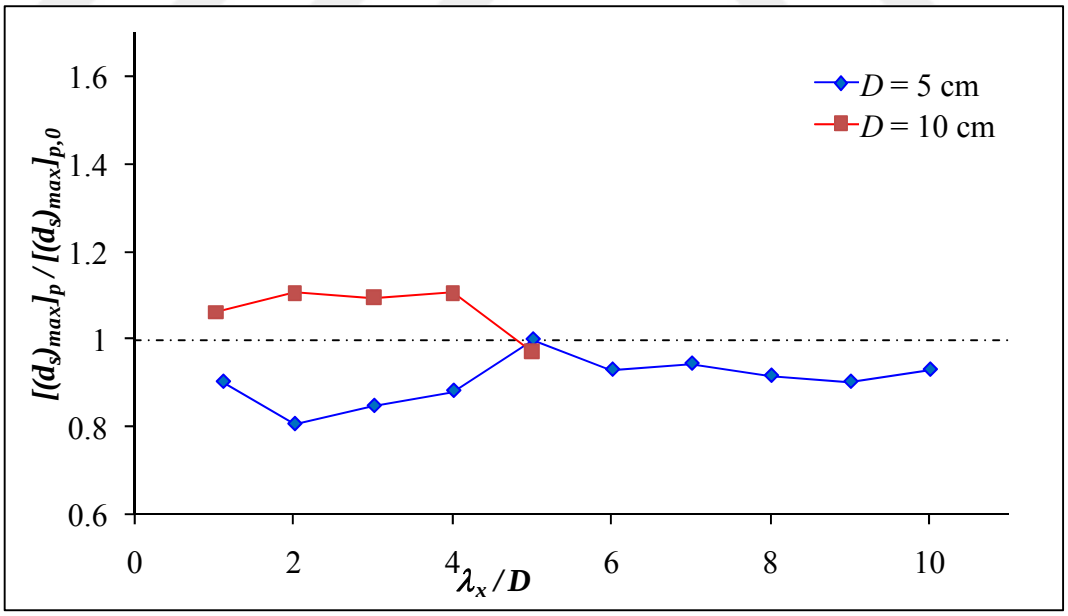


Figure 5.92 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

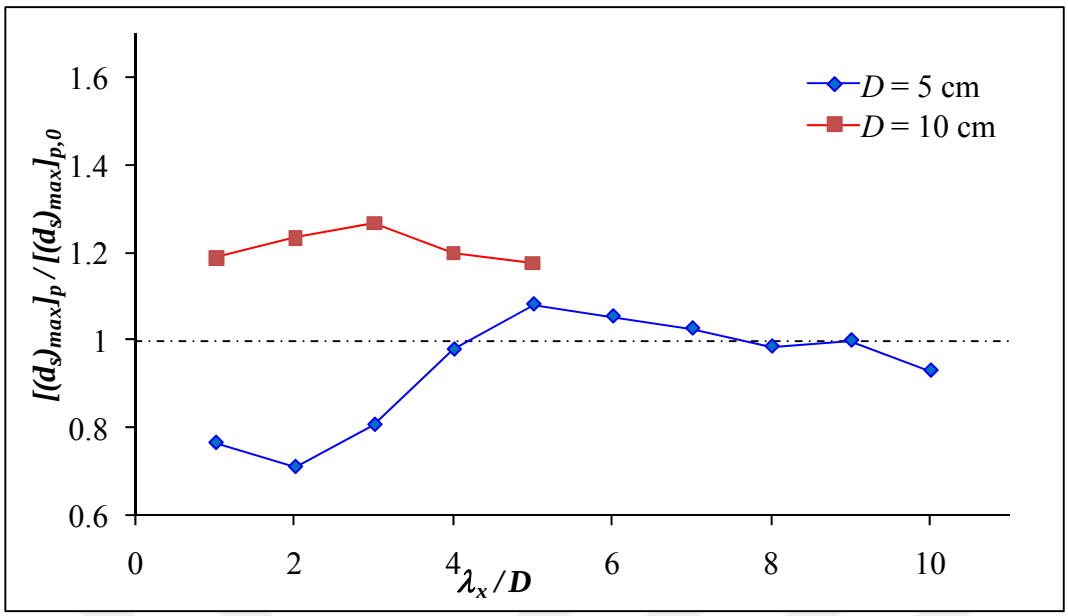


Figure 5.93 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

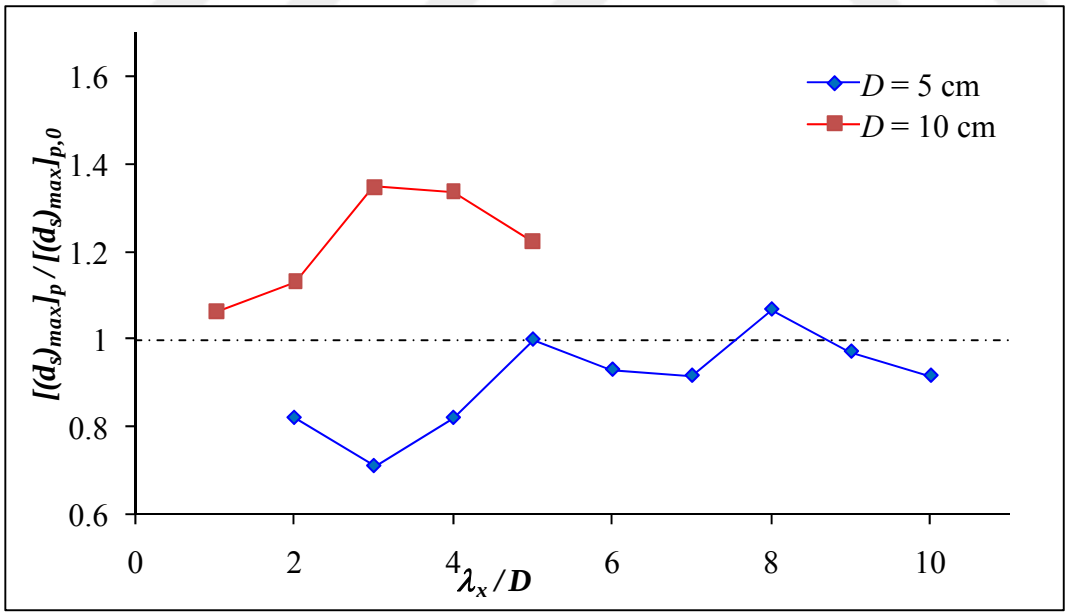


Figure 5.94 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

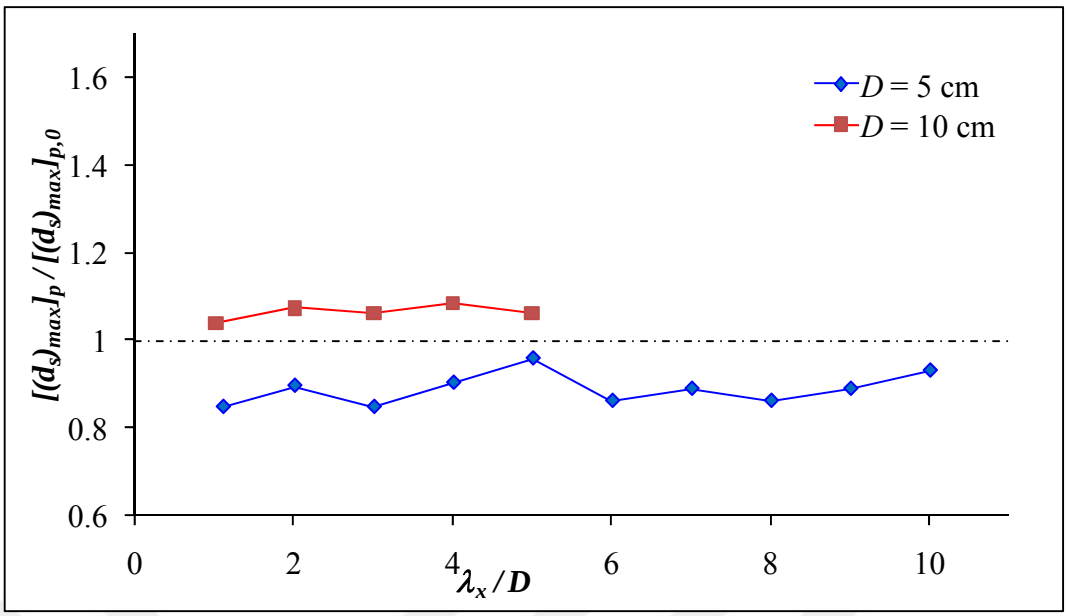


Figure 5.95 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

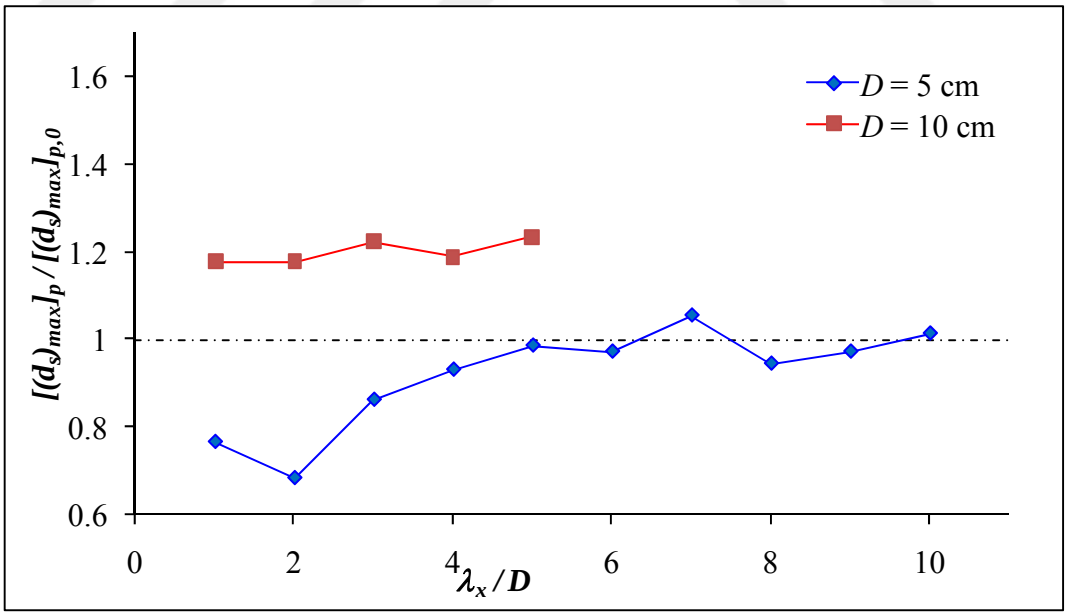


Figure 5.96 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

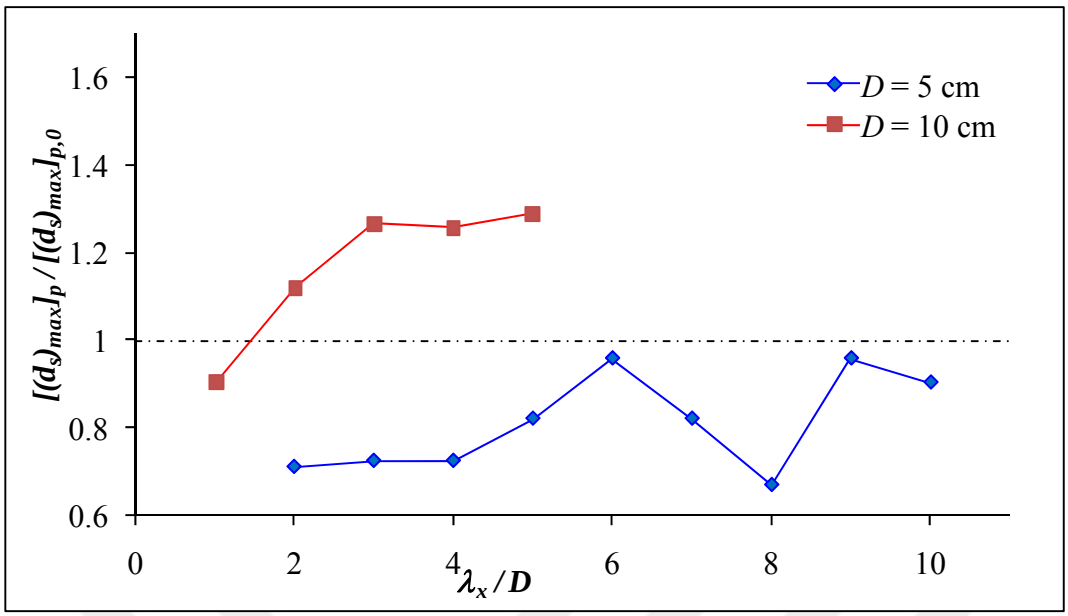


Figure 5.97 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D at point F of the pier for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

Figures 5.98 – 5.184 show the variation of dimensionless scour parameter with λ_x / L_a at points L_0 – $L_{0\text{-}14}$ along the upstream face of the abutments as a function of L_a and D values at various λ_y / B_a values tested. For a given L_a or D the distribution of the related data points is, in general, random with the dimensionless scour parameter having the values around unity with increasing value of λ_x / L_a. In some cases the dimensionless scour parameter increases with increasing L_a as a function of λ_x / L_a, but sometimes the reverse situation can be observed. In most of the experiments conducted, the measured values of the dimensionless scour parameter are less than unity. As the scour measurement point approaches to the channel wall, the value of the dimensionless scour parameter gets much smaller than unity. In general, the maximum scour depths occur around point L_0 for almost any value of D and L_a tested.

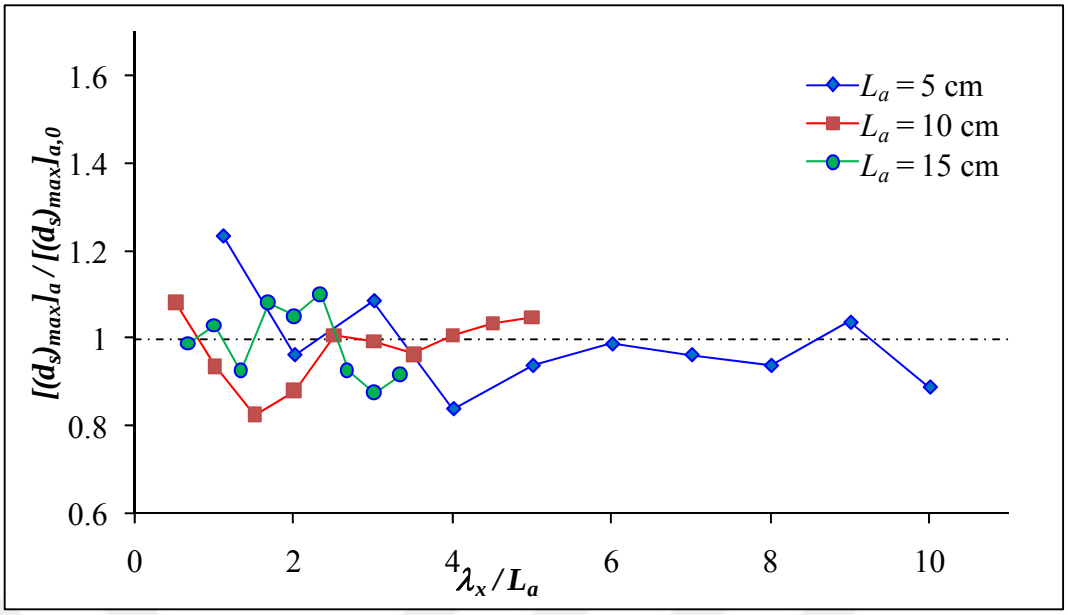


Figure 5.98 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.00$

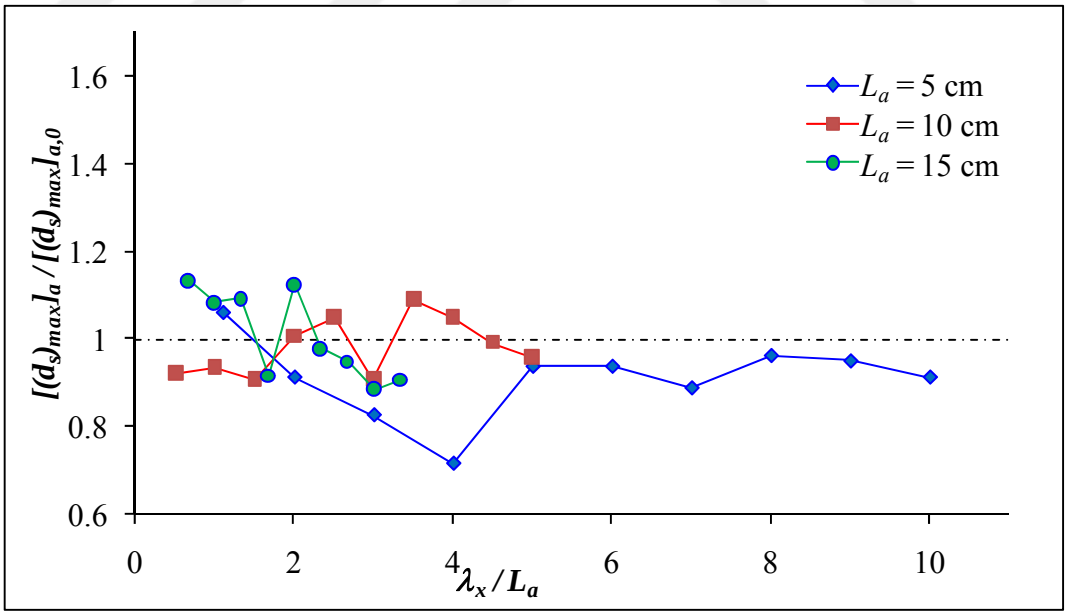


Figure 5.99 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.47$

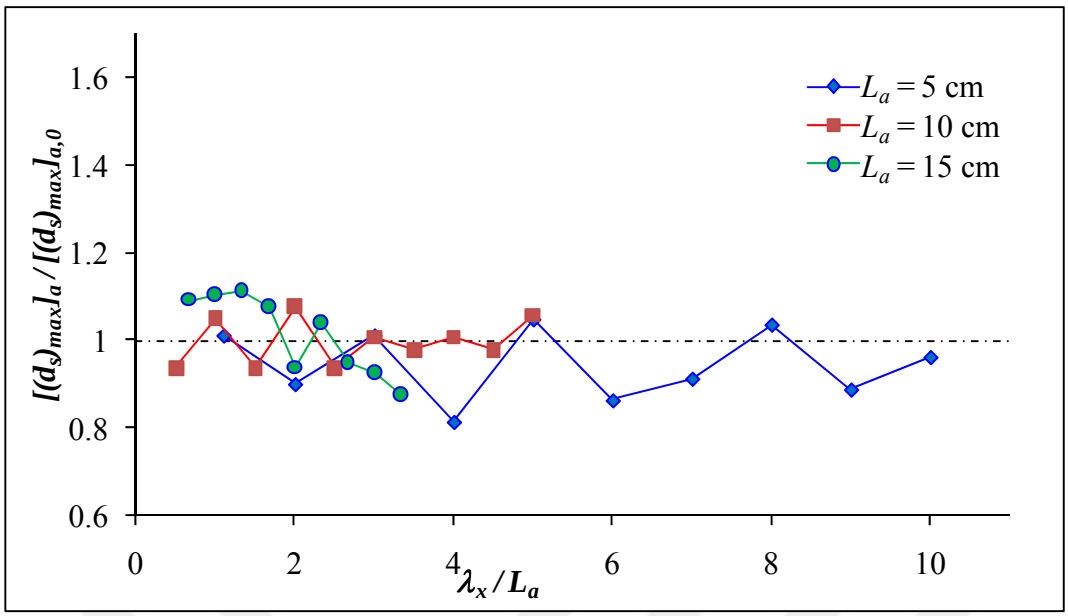


Figure 5.100 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for D = 5 cm and λ_y / B_a = 0.93

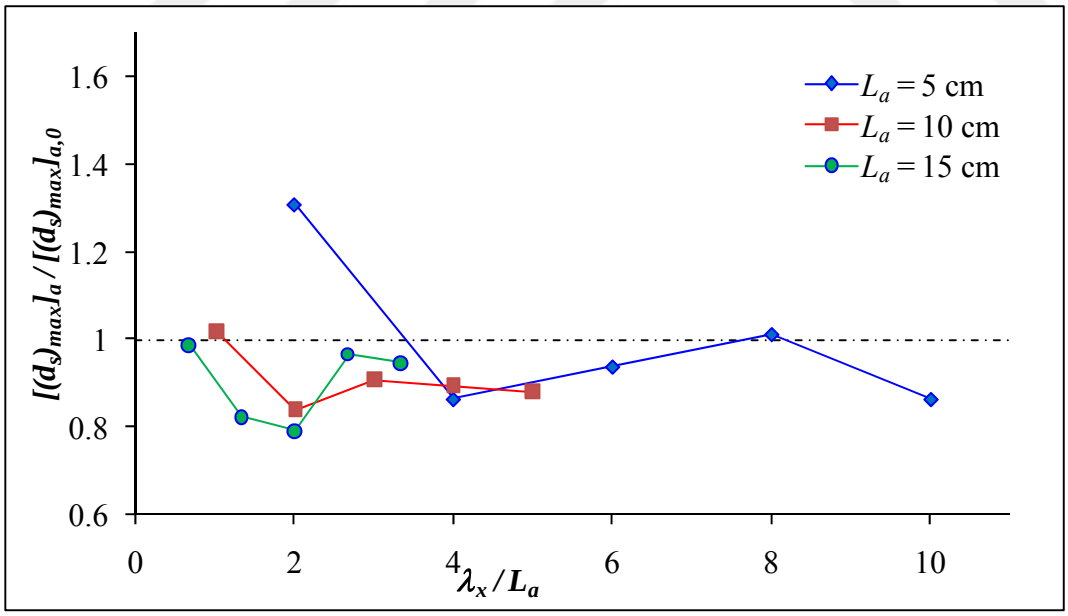


Figure 5.101 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for D = 10 cm and λ_y / B_a = 0.00

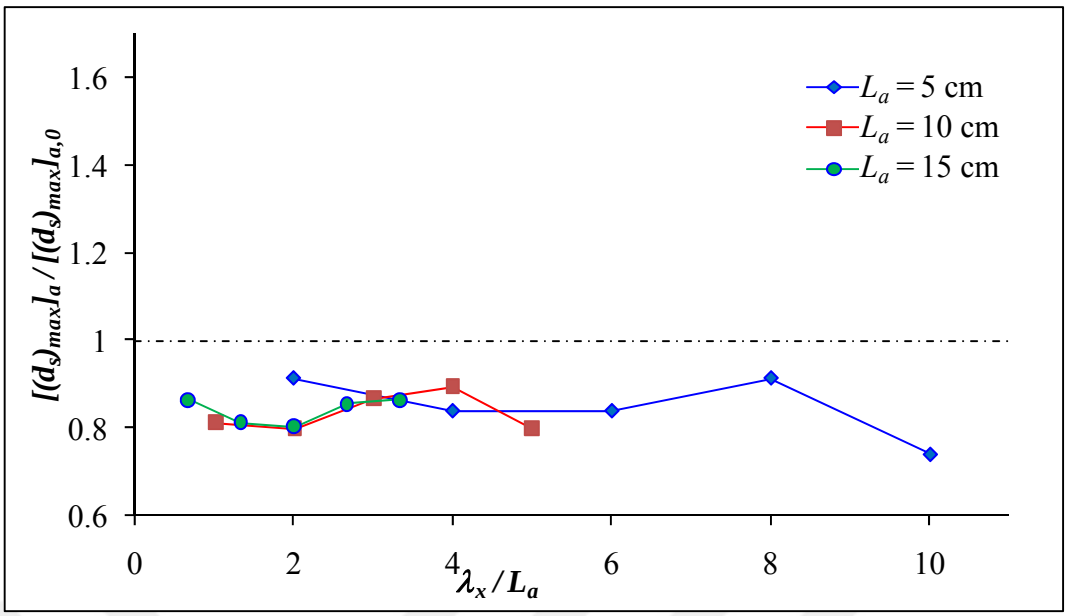


Figure 5.102 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for D = 10 cm and λ_y / B_a = 0.43

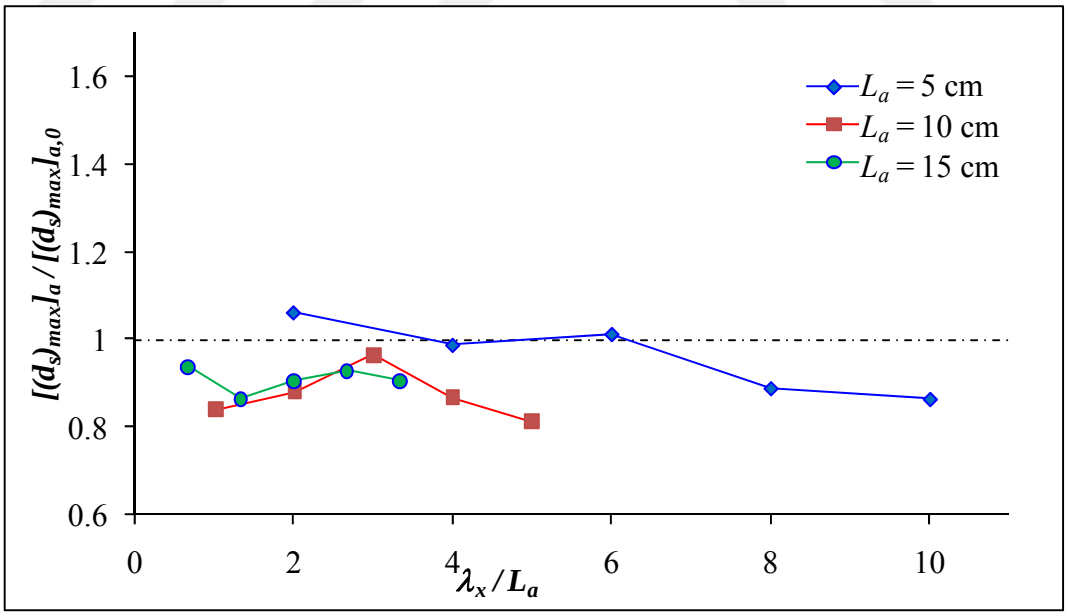


Figure 5.103 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for D = 10 cm and λ_y / B_a = 0.87

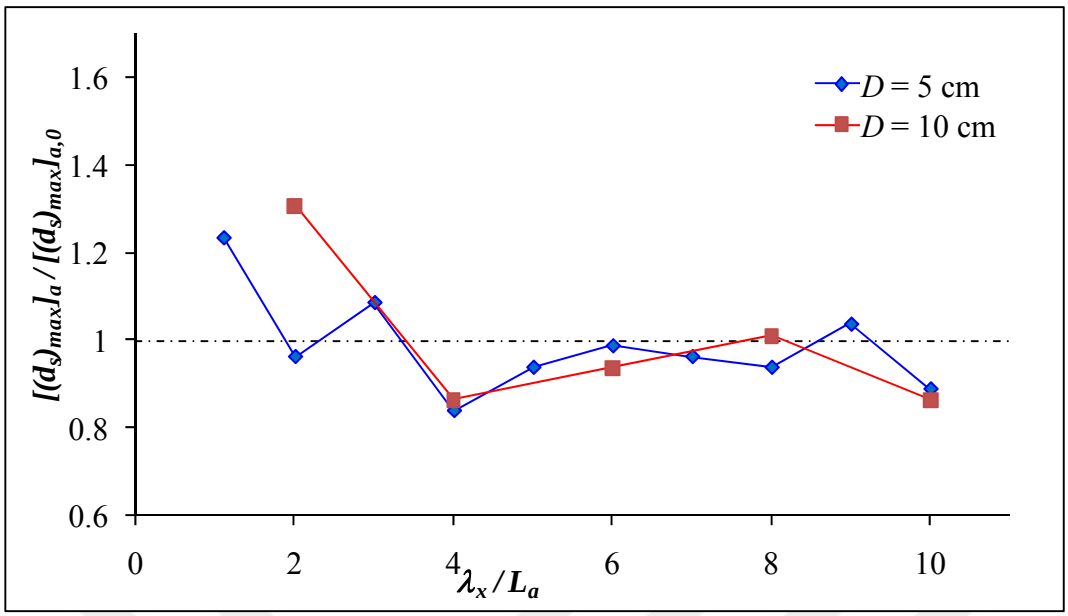


Figure 5.104 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 5 cm and λ_y / B_a = 0.00

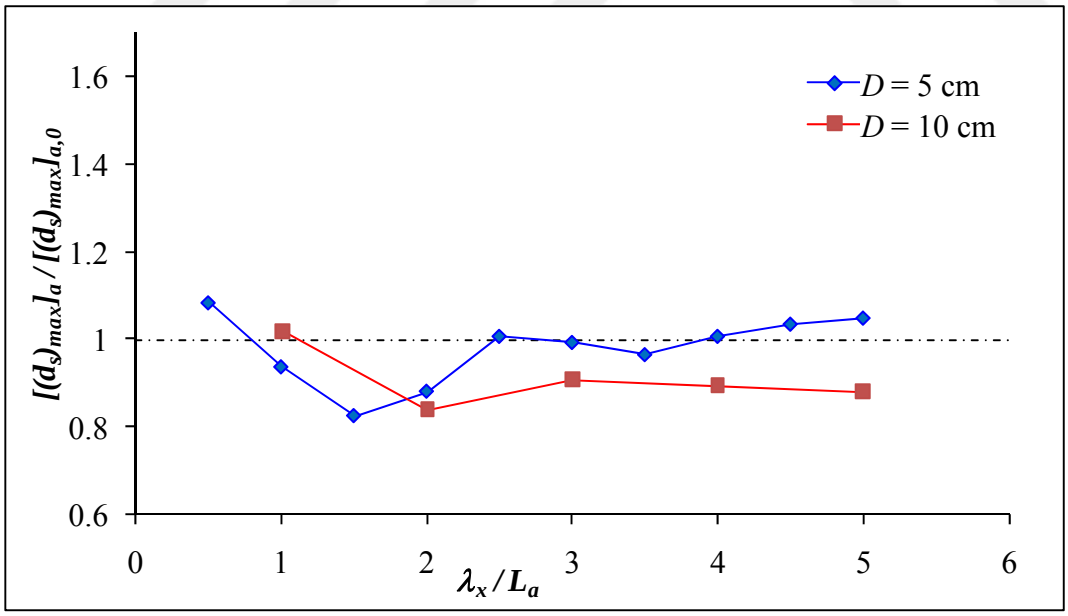


Figure 5.105 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 10 cm and λ_y / B_a = 0.00

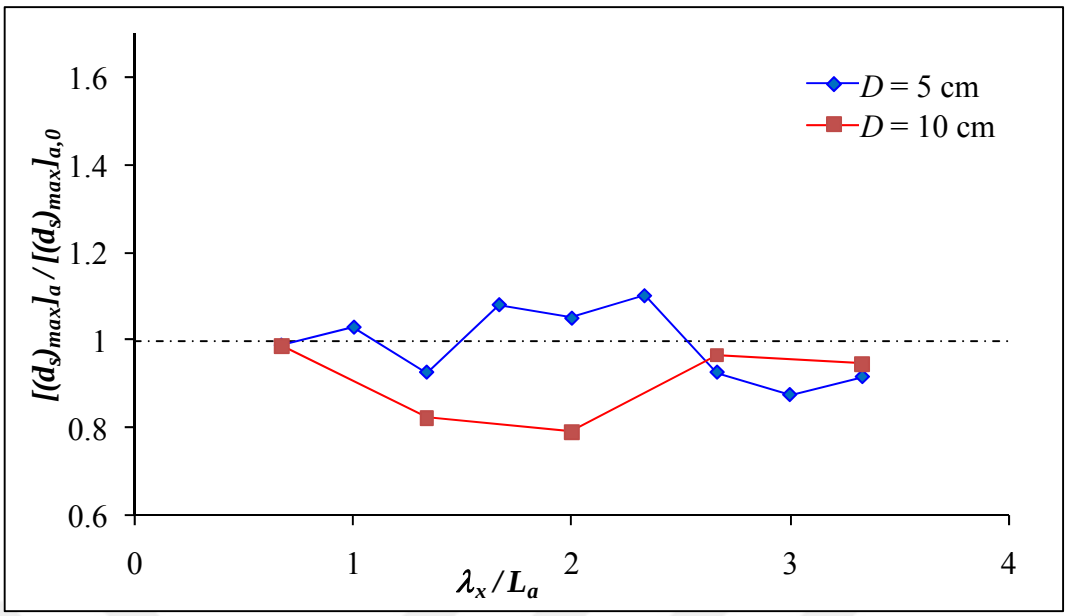


Figure 5.106 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

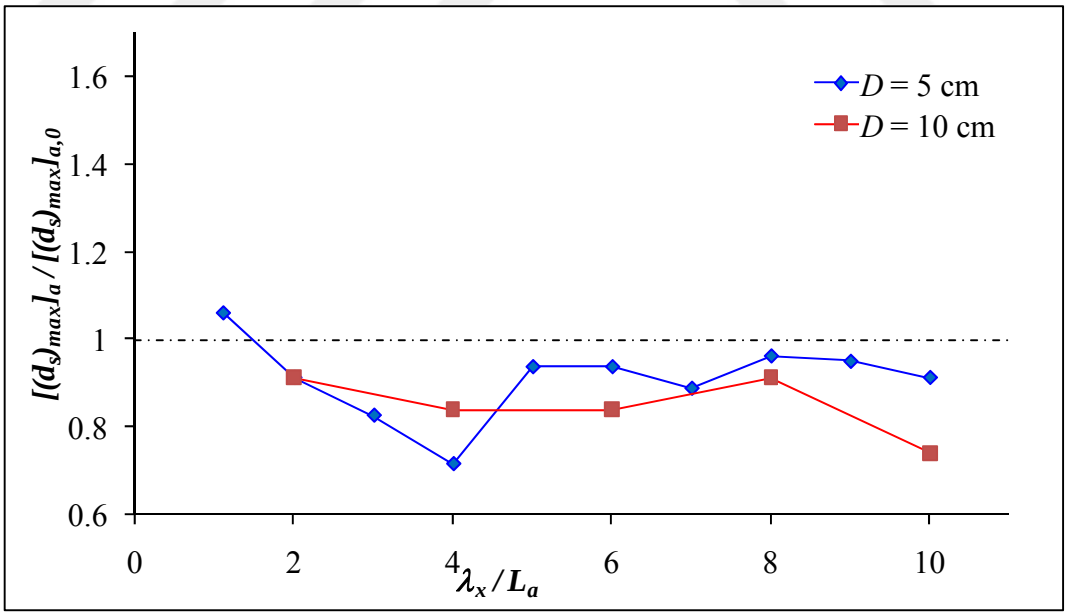


Figure 5.107 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

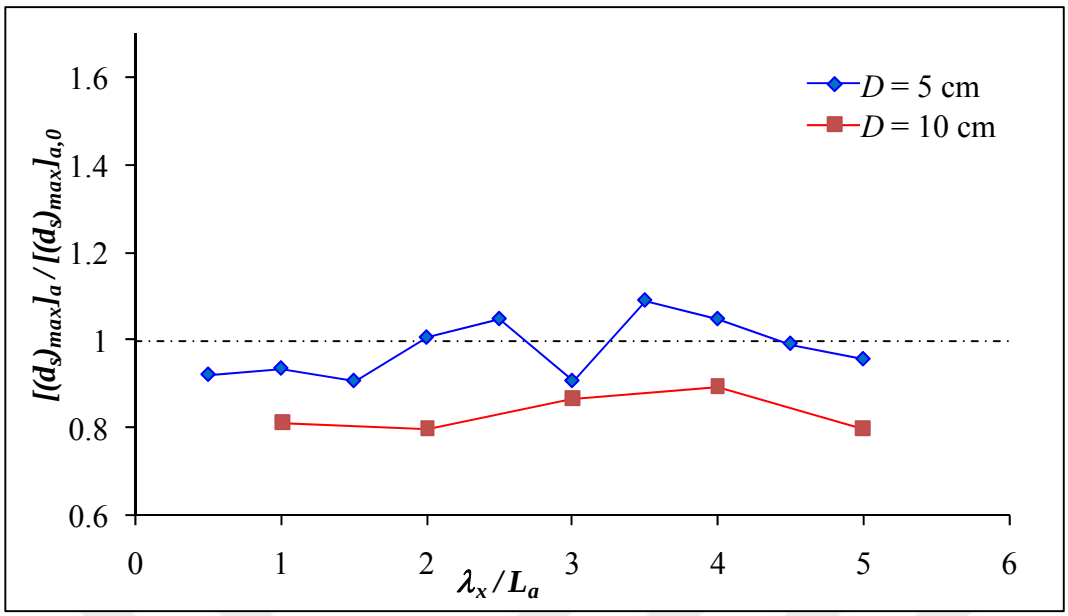


Figure 5.108 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

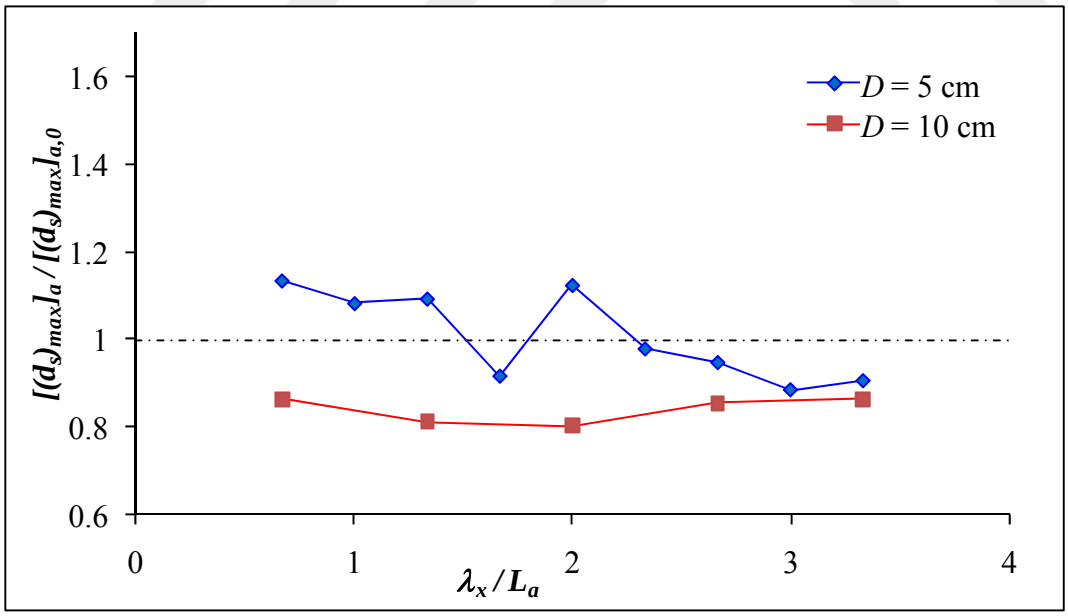


Figure 5.109 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

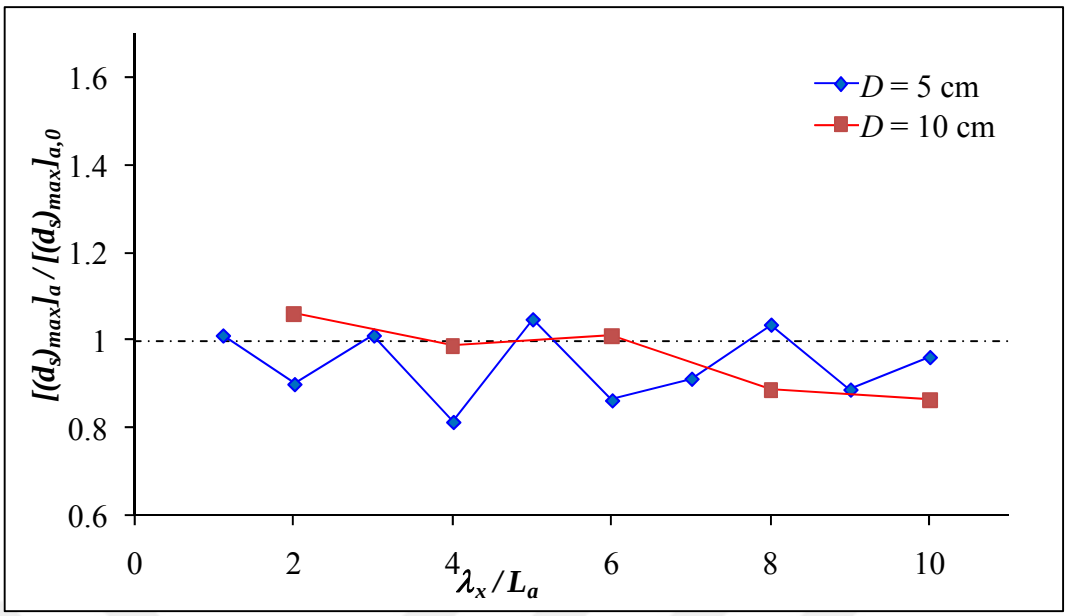


Figure 5.110 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

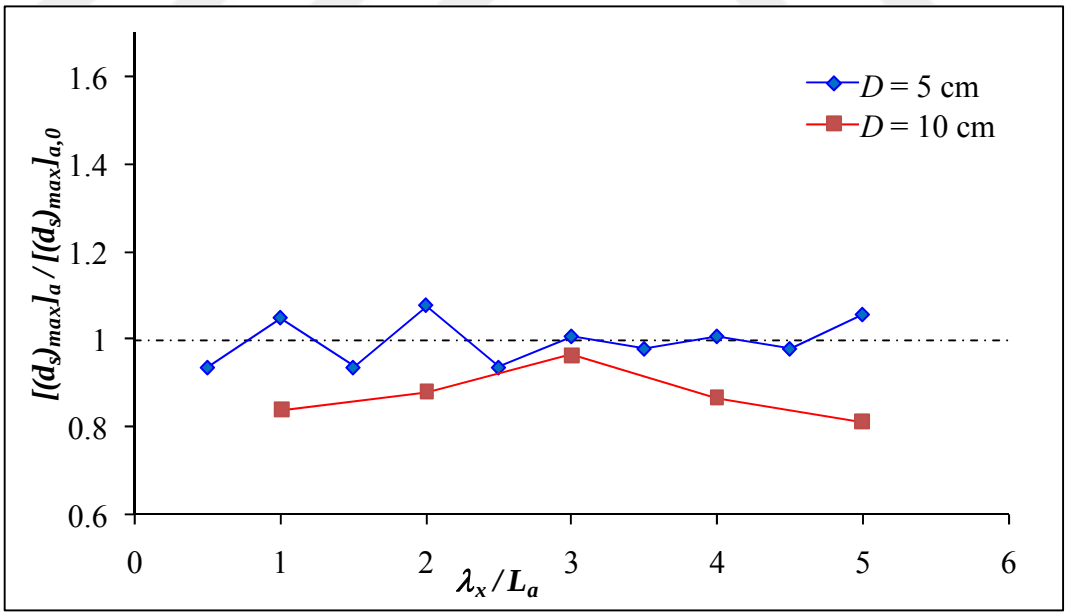


Figure 5.111 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

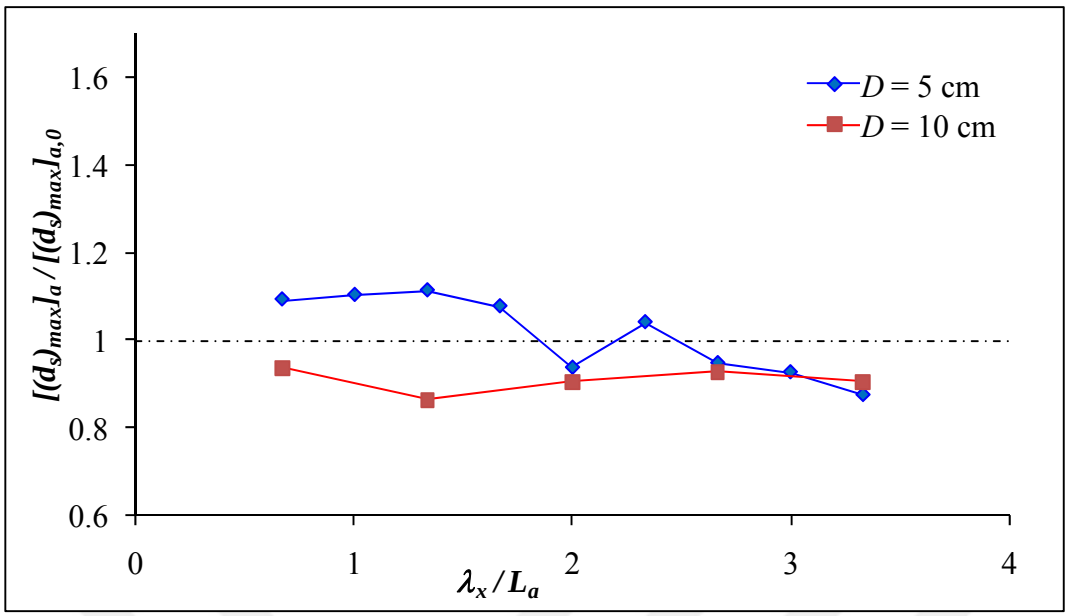


Figure 5.112 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point L_0 of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

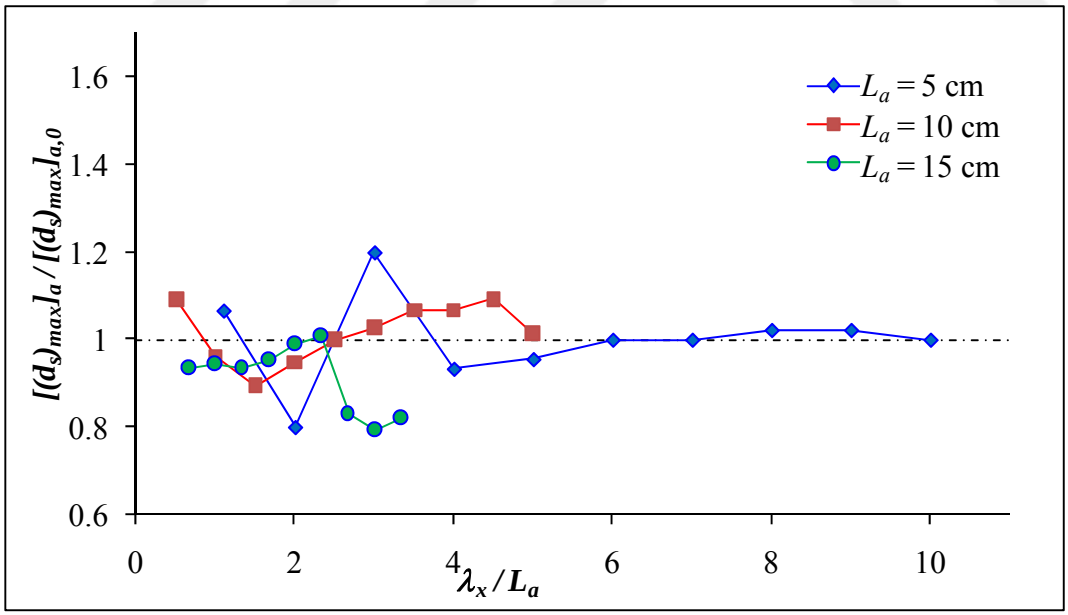


Figure 5.113 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 5 cm and λ_y / B_a = 0.00

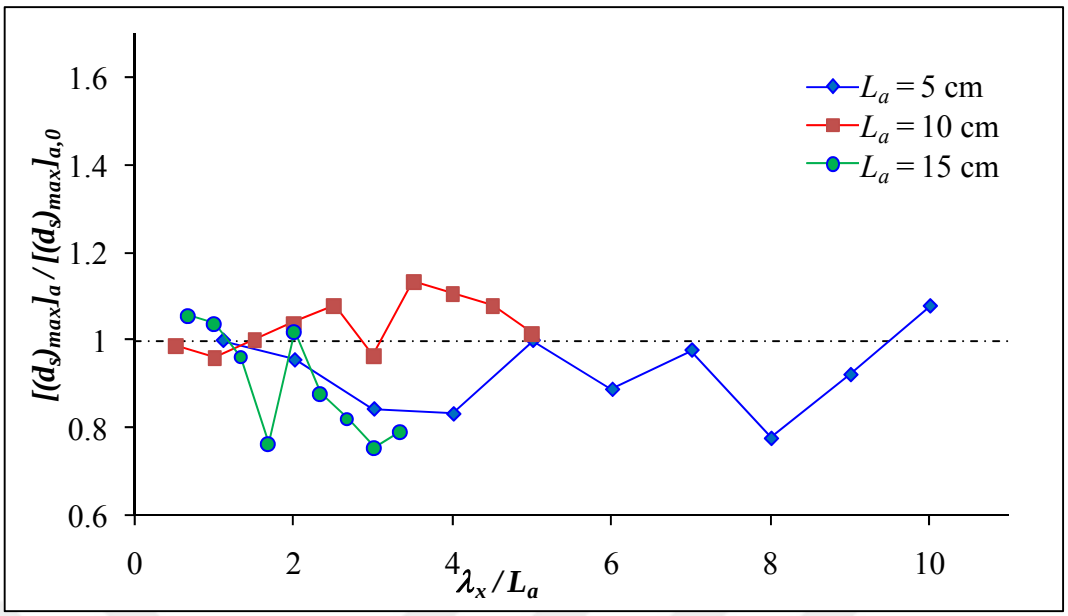


Figure 5.114 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 5 cm and λ_y / B_a = 0.47

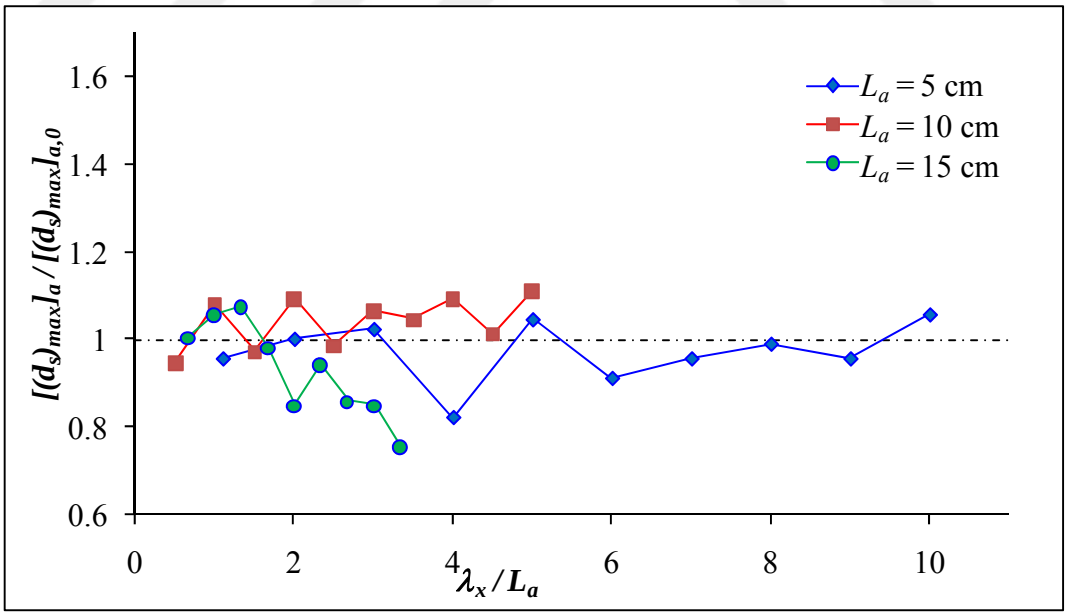


Figure 5.115 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 5 cm and λ_y / B_a = 0.93

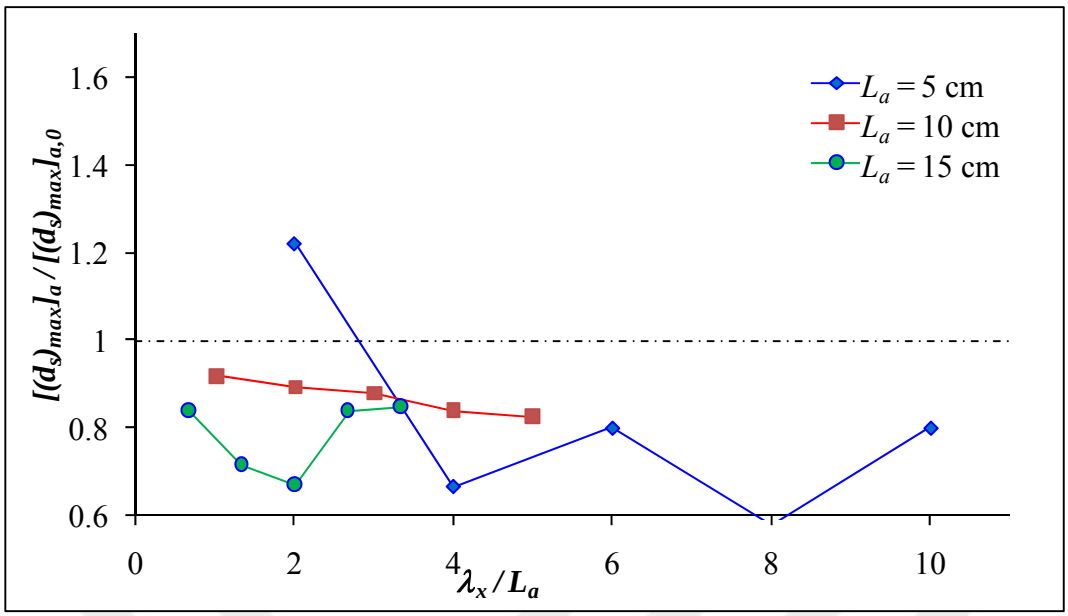


Figure 5.116 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 10 cm and λ_y / B_a = 0.00

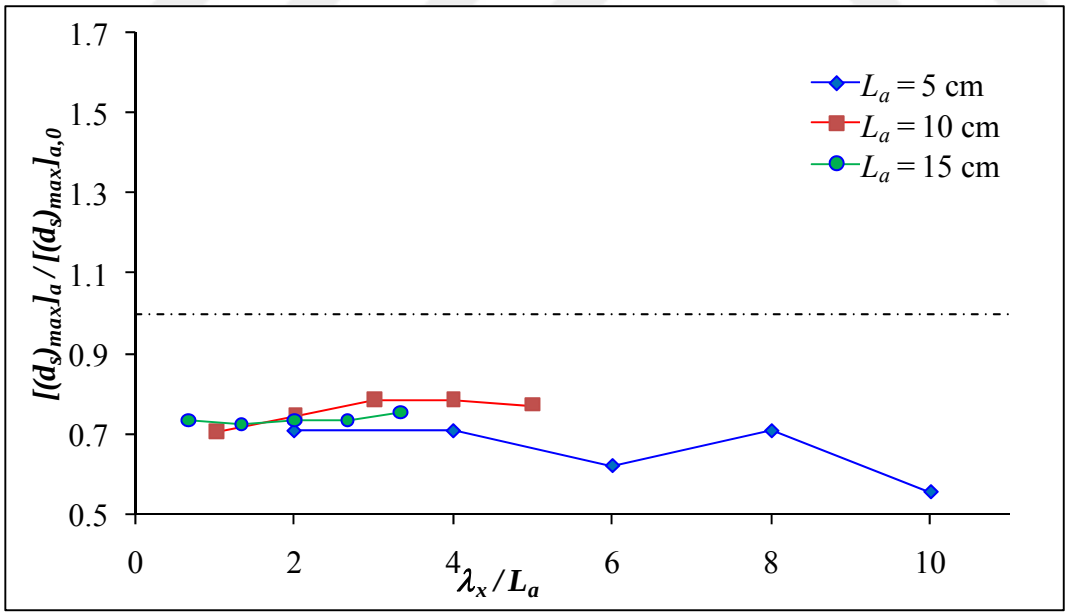


Figure 5.117 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 10 cm and λ_y / B_a = 0.43

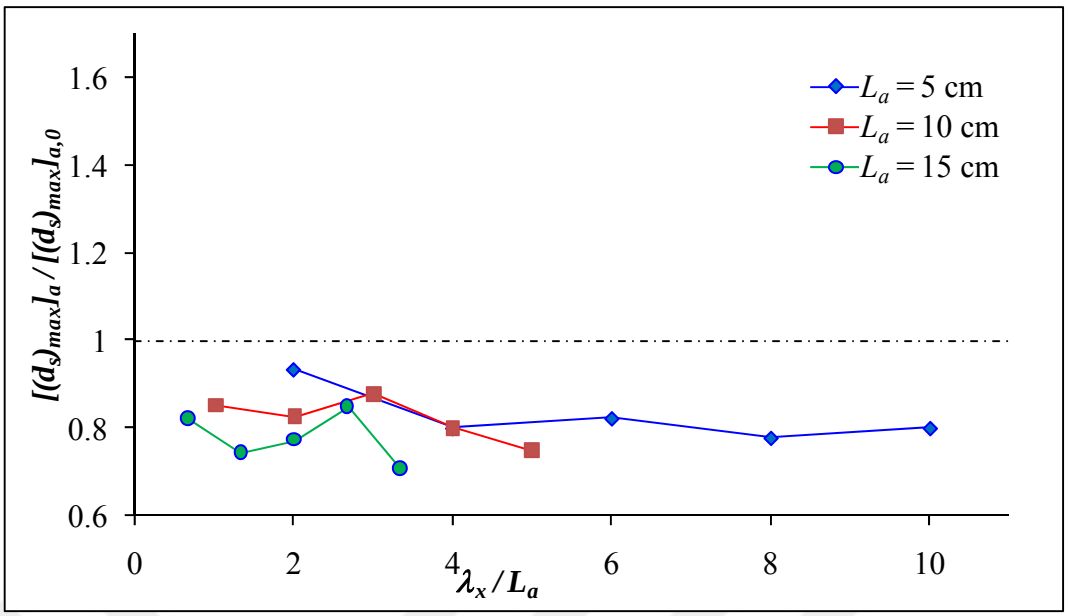


Figure 5.118 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for D = 10 cm and λ_y / B_a = 0.87

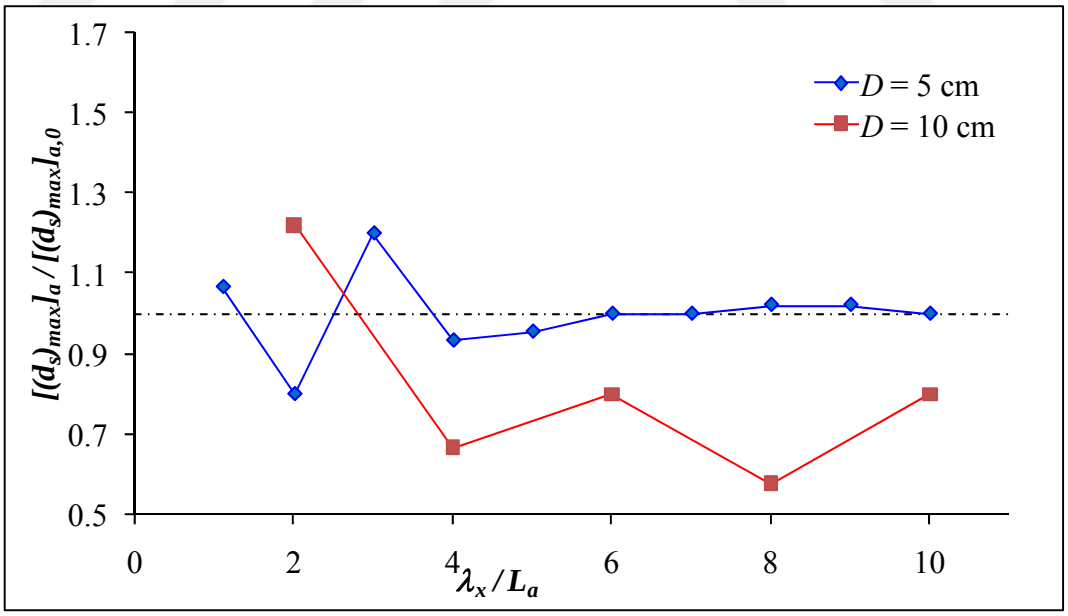


Figure 5.119 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.00

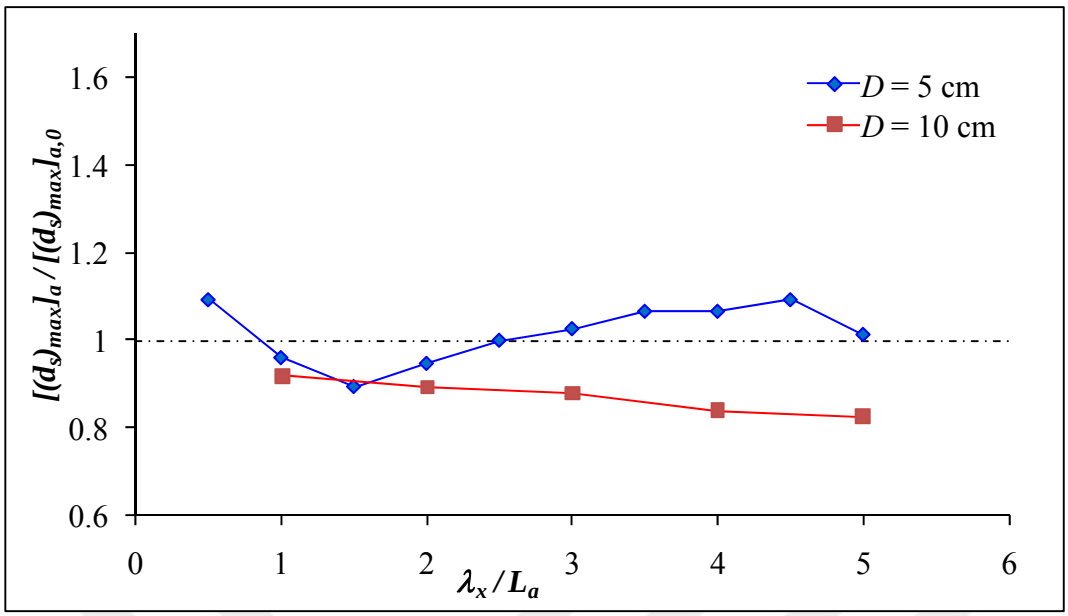


Figure 5.120 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.00

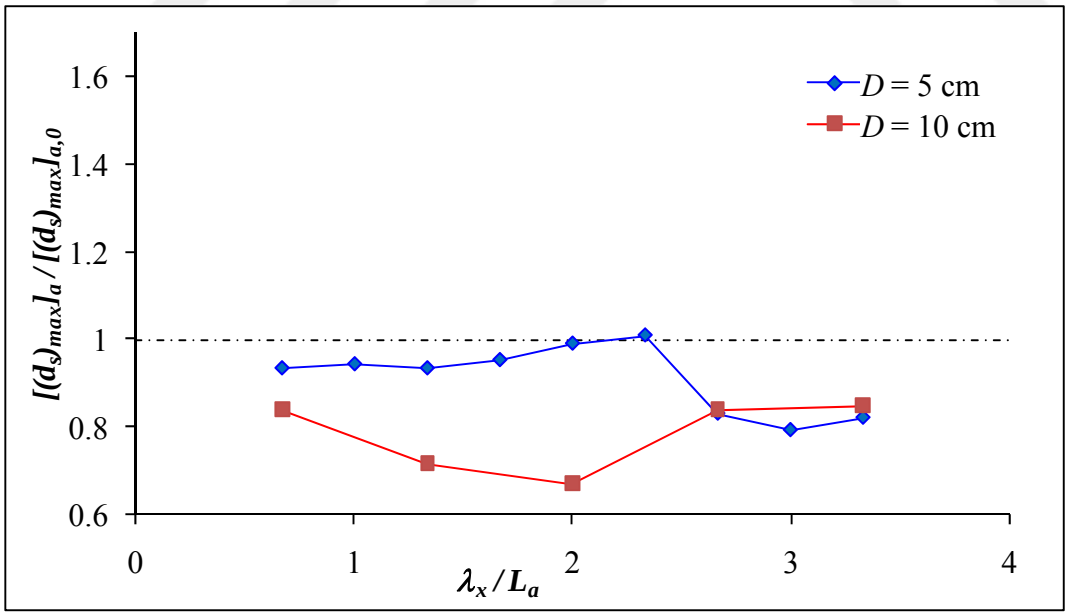


Figure 5.121 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

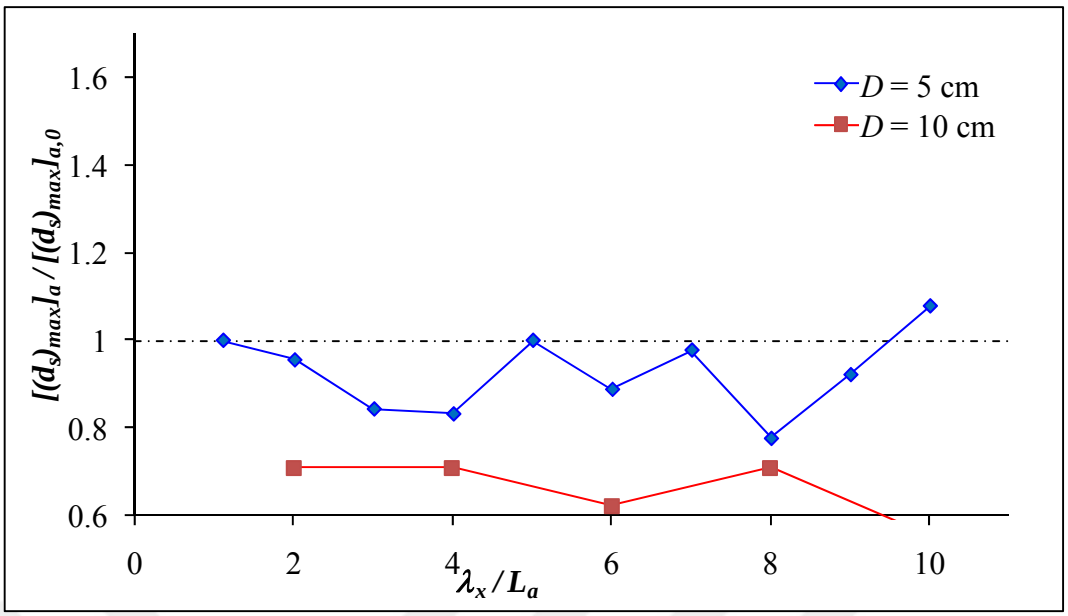


Figure 5.122 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

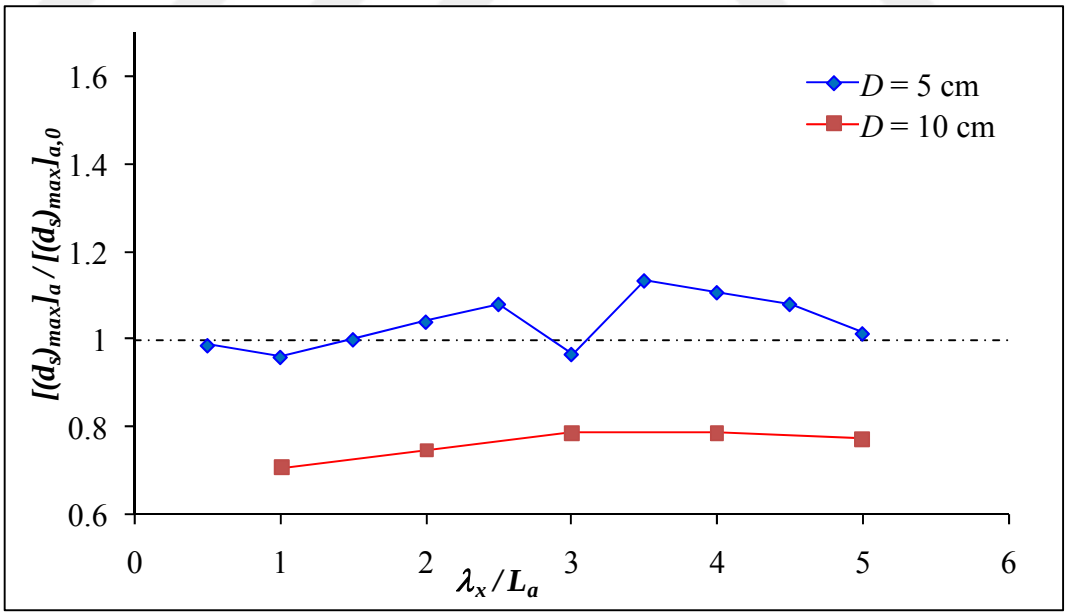


Figure 5.123 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

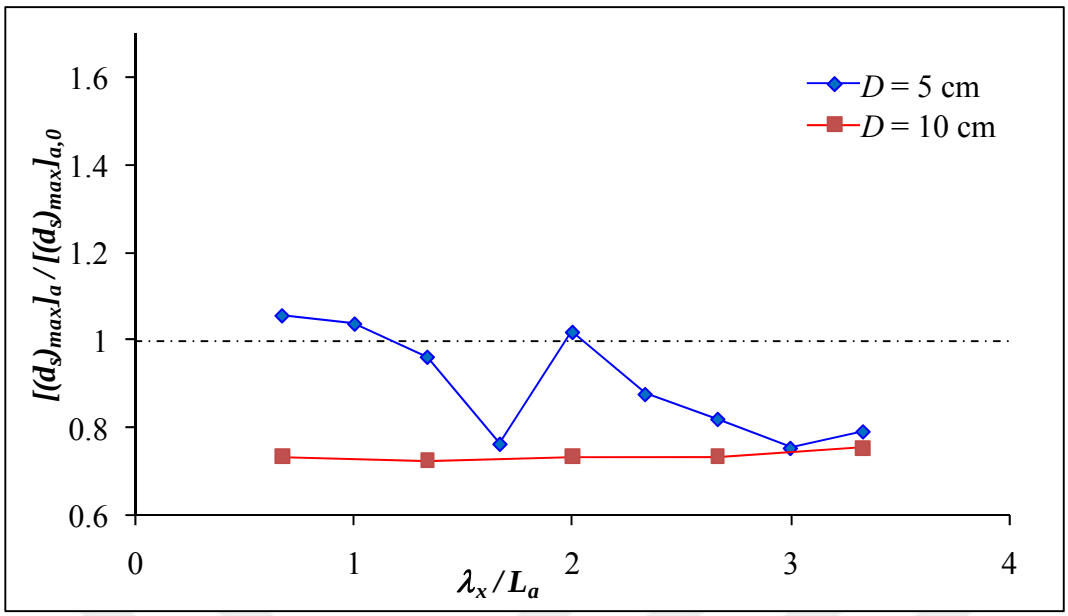


Figure 5.124 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

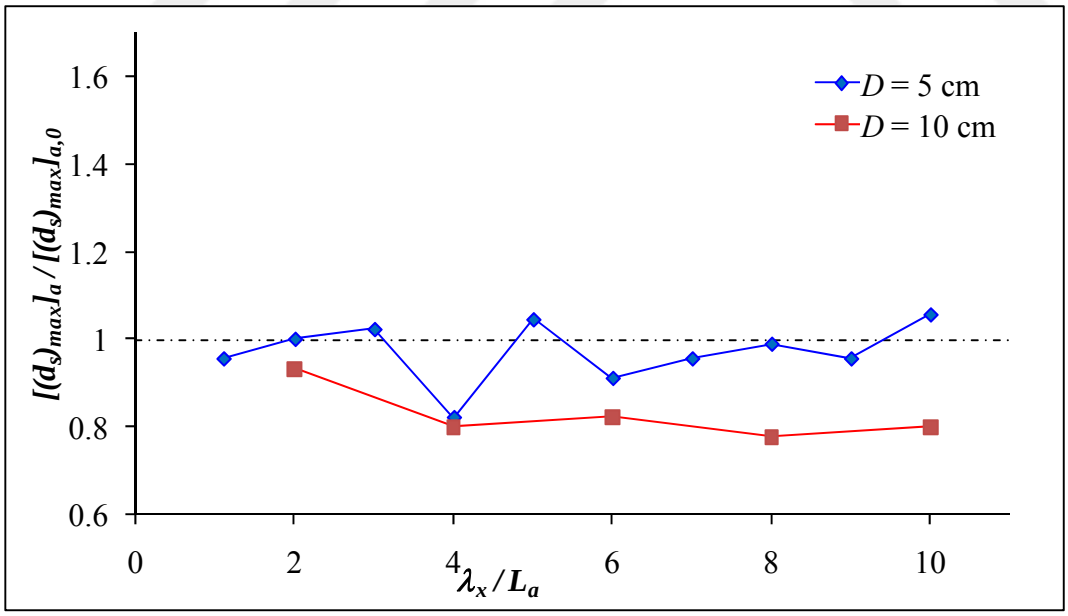


Figure 5.125 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

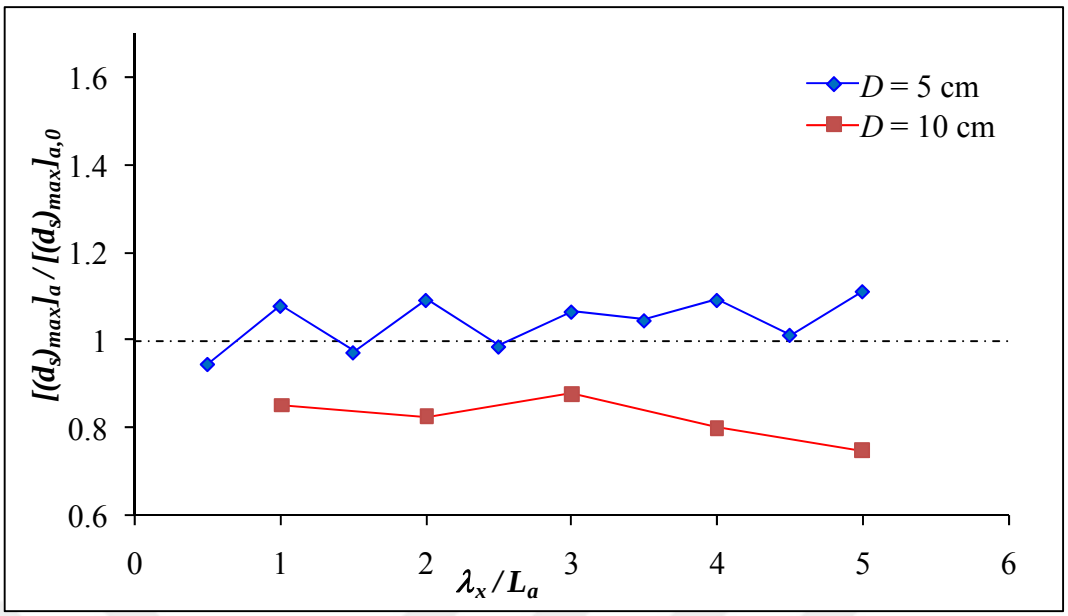


Figure 5.126 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

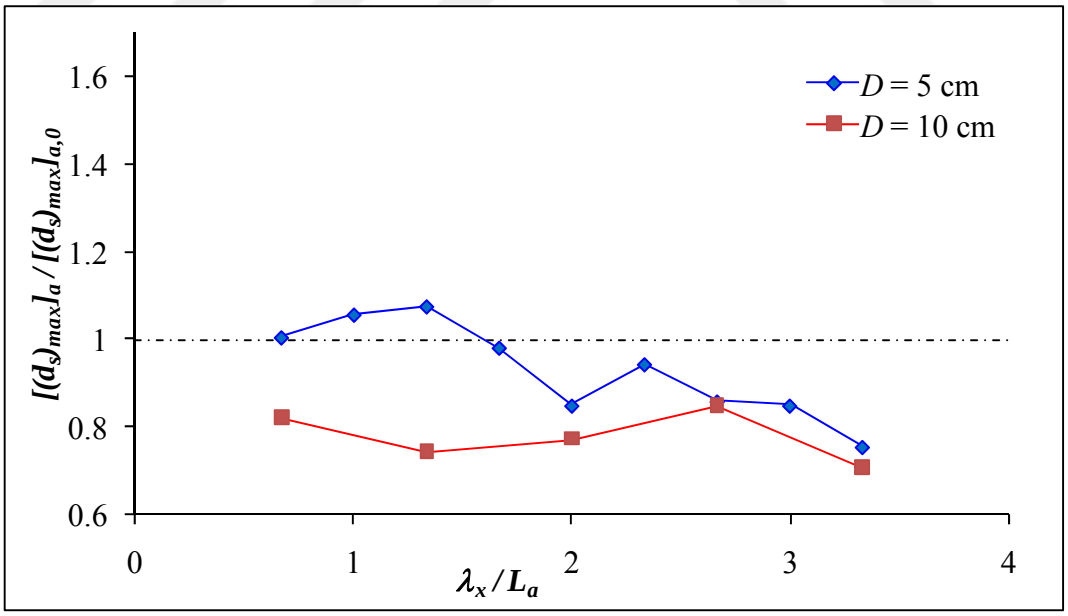


Figure 5.127 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}2}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

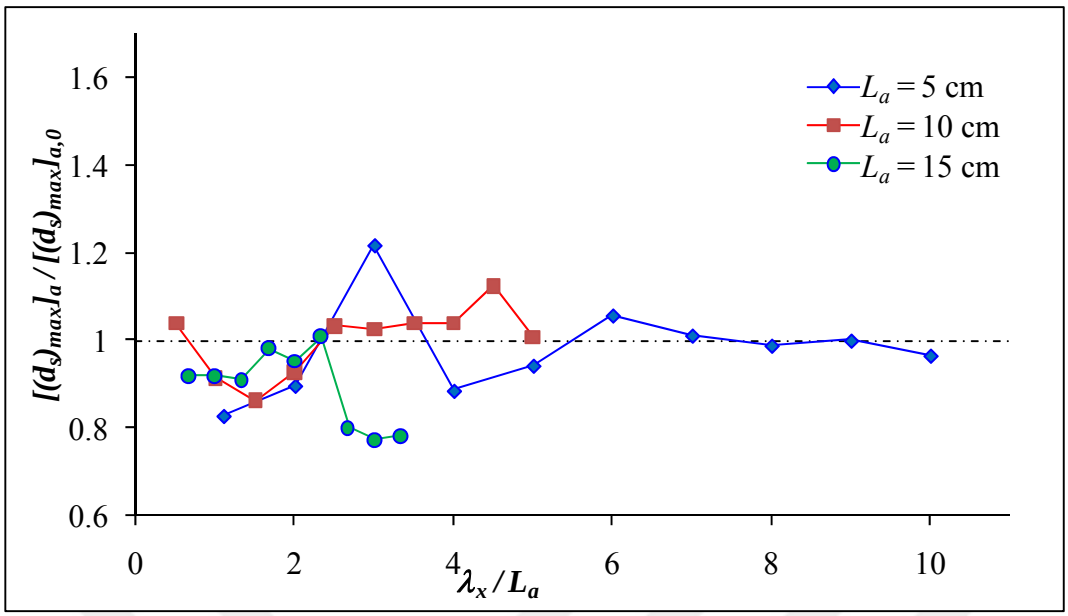


Figure 5.128 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 5 cm and λ_y / B_a = 0.00

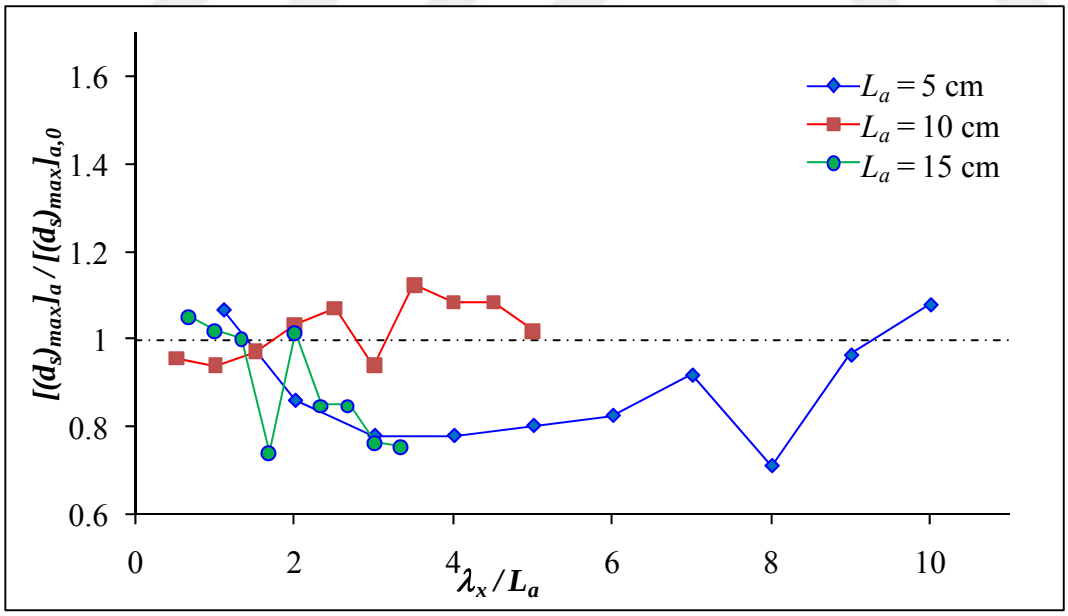


Figure 5.129 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 5 cm and λ_y / B_a = 0.47

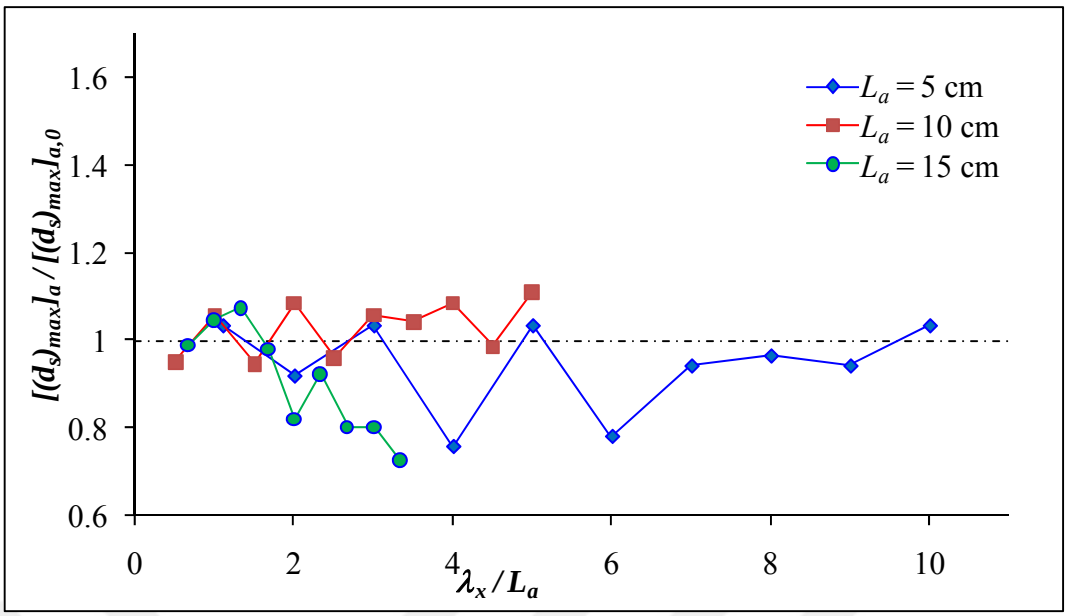


Figure 5.130 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 5 cm and λ_y / B_a = 0.93

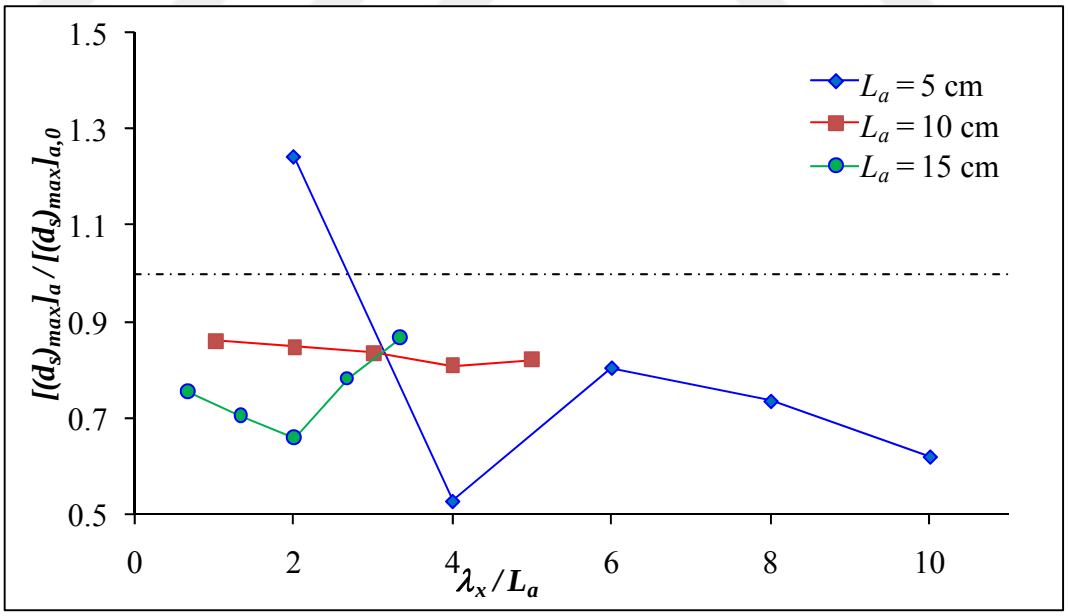


Figure 5.131 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 10 cm and λ_y / B_a = 0.00

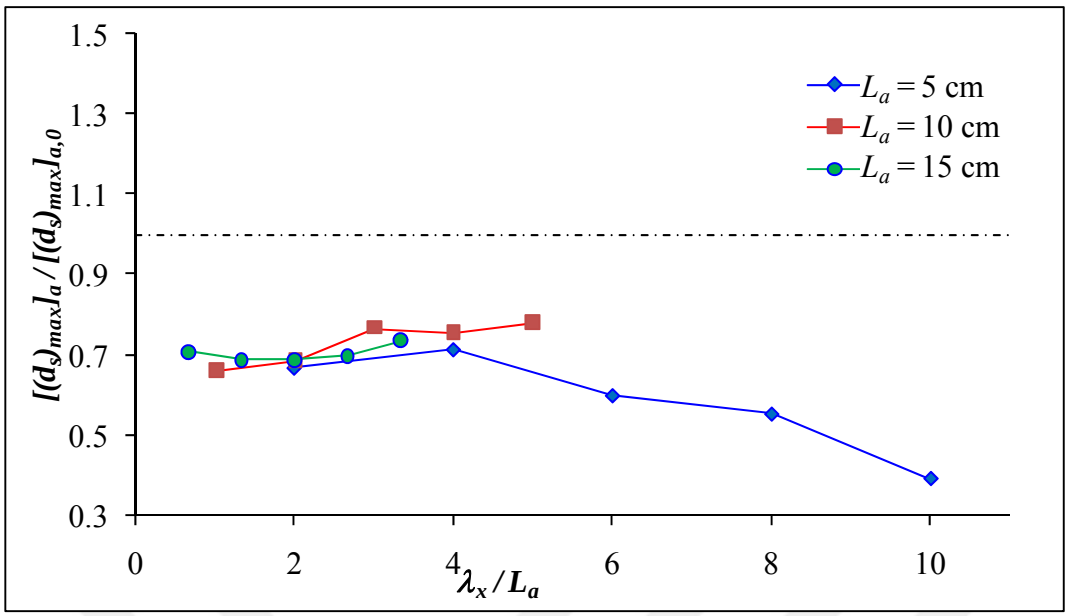


Figure 5.132 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 10 cm and λ_y / B_a = 0.43

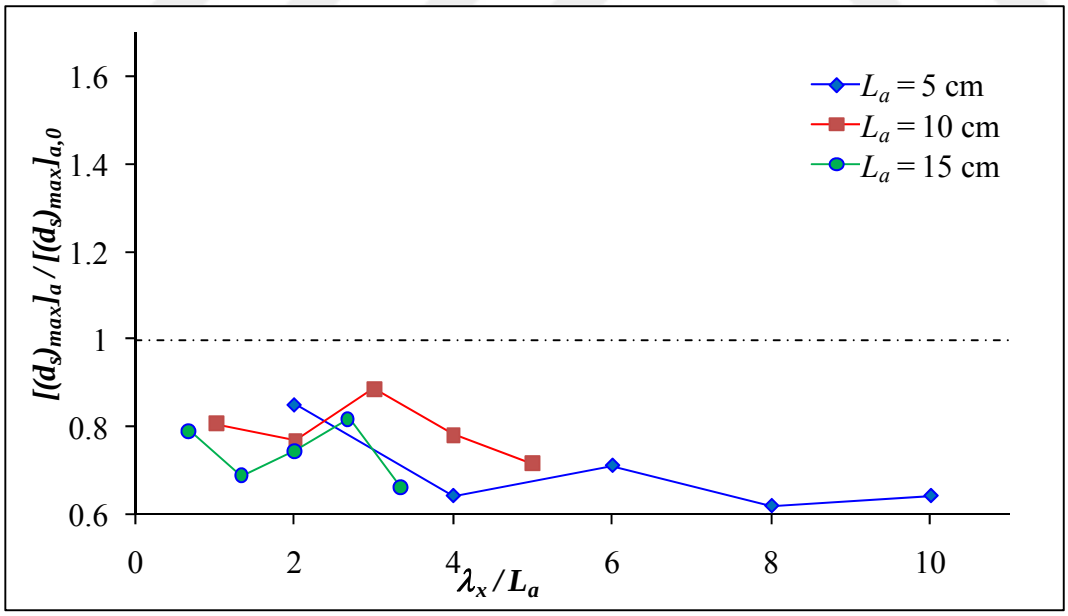


Figure 5.133 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for D = 10 cm and λ_y / B_a = 0.87

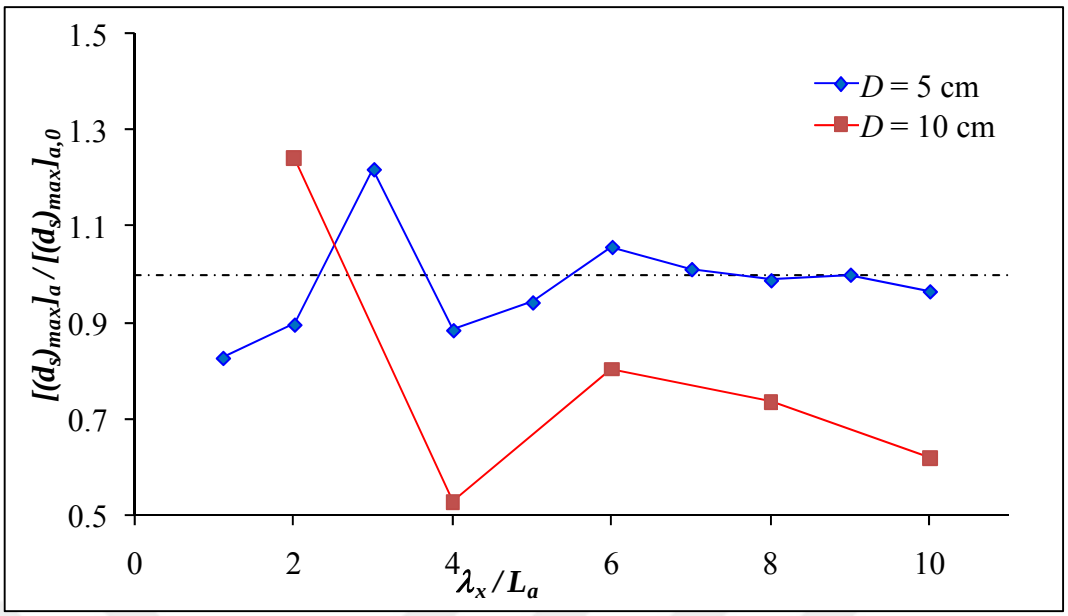


Figure 5.134 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.00

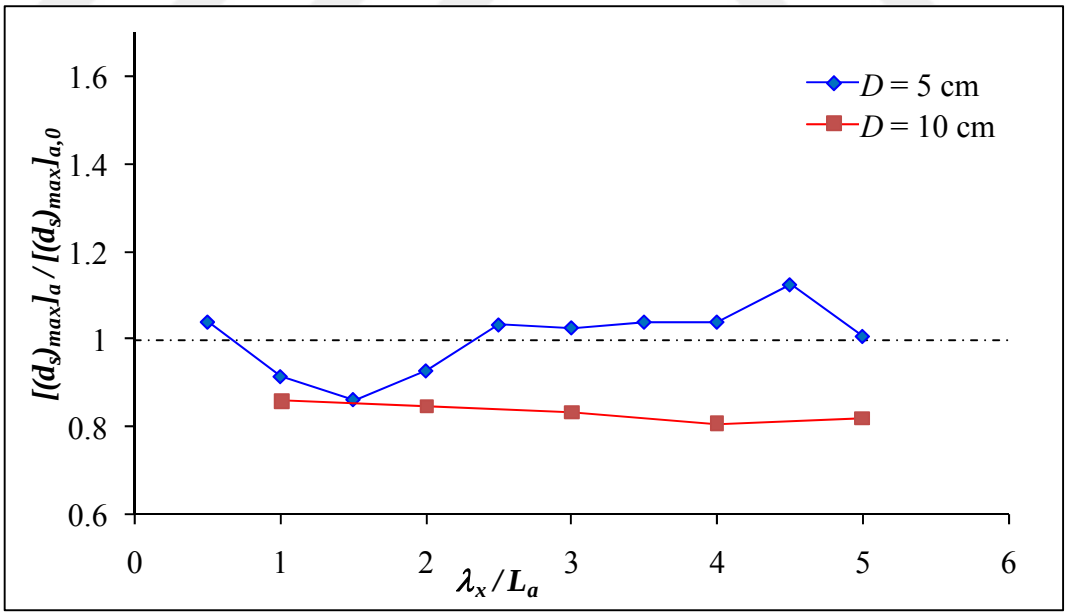


Figure 5.135 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.00

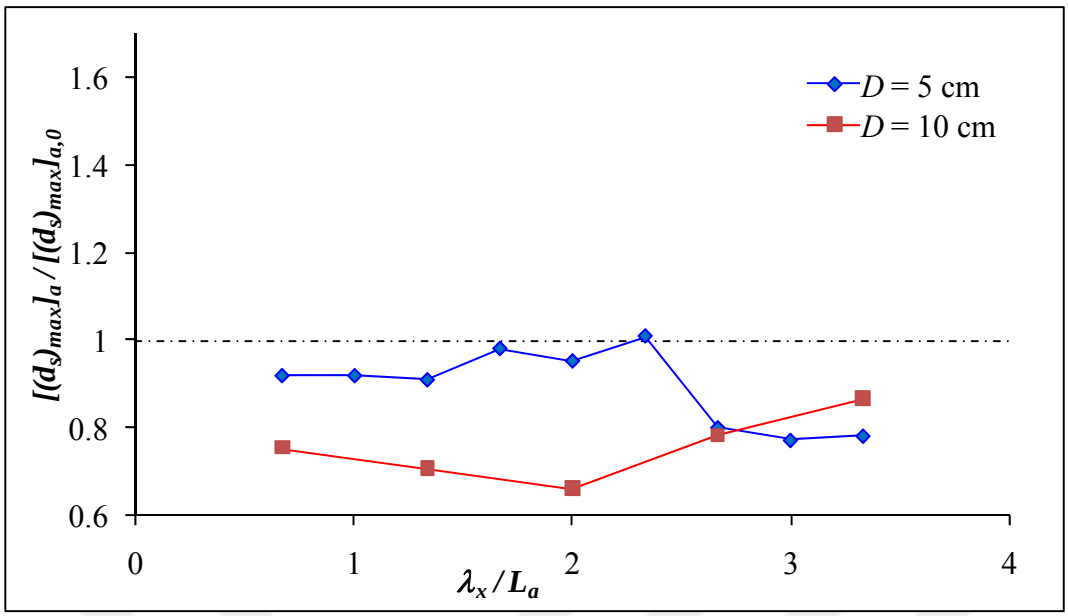


Figure 5.136 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

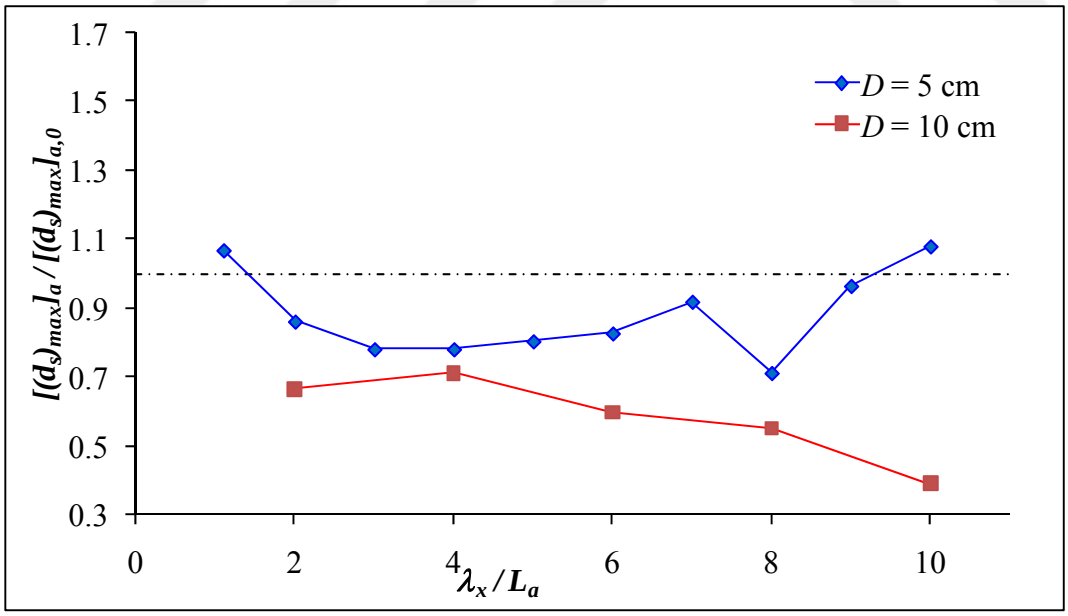


Figure 5.137 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.43 or 0.47

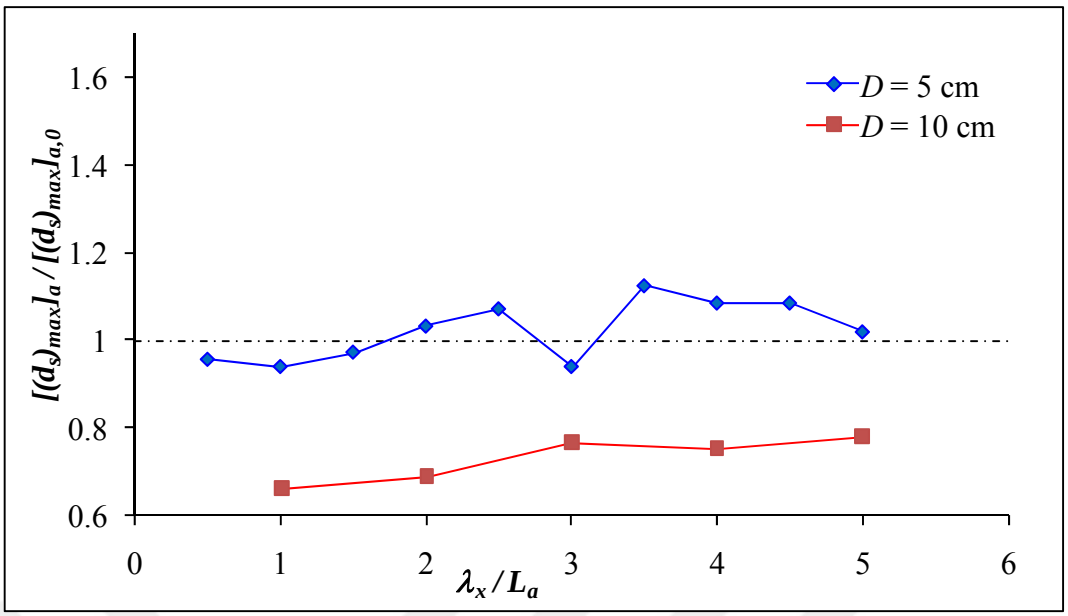


Figure 5.138 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

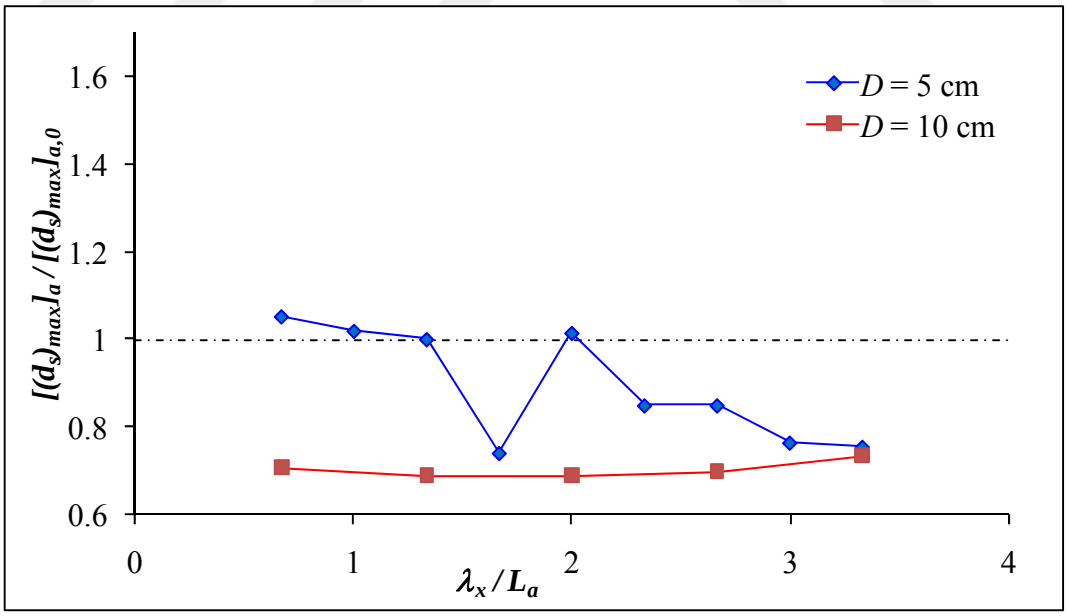


Figure 5.139 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

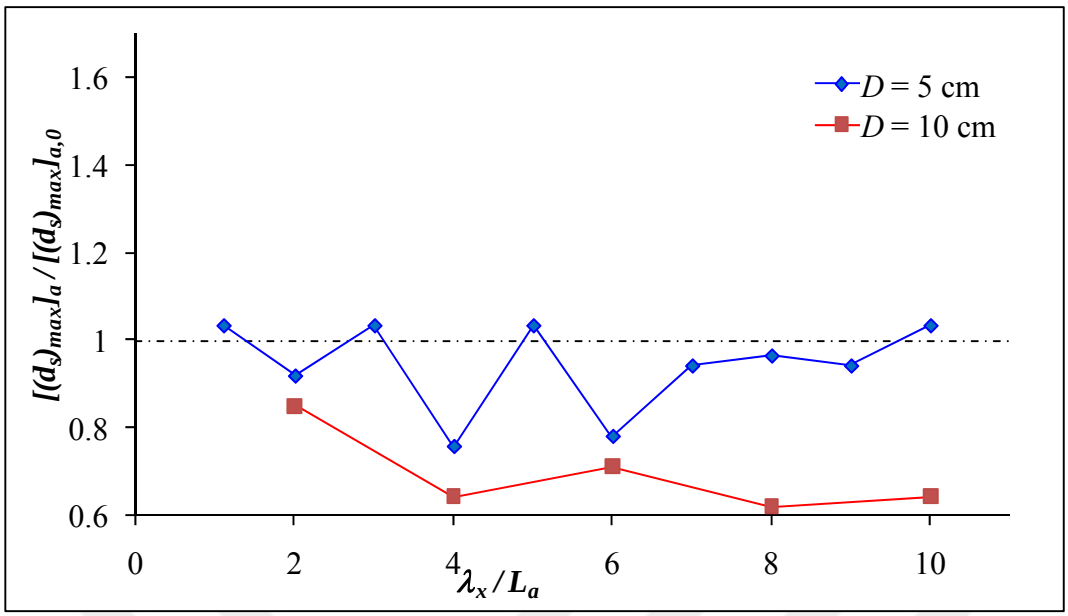


Figure 5.140 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 5 cm and λ_y / B_a = 0.87 or 0.93

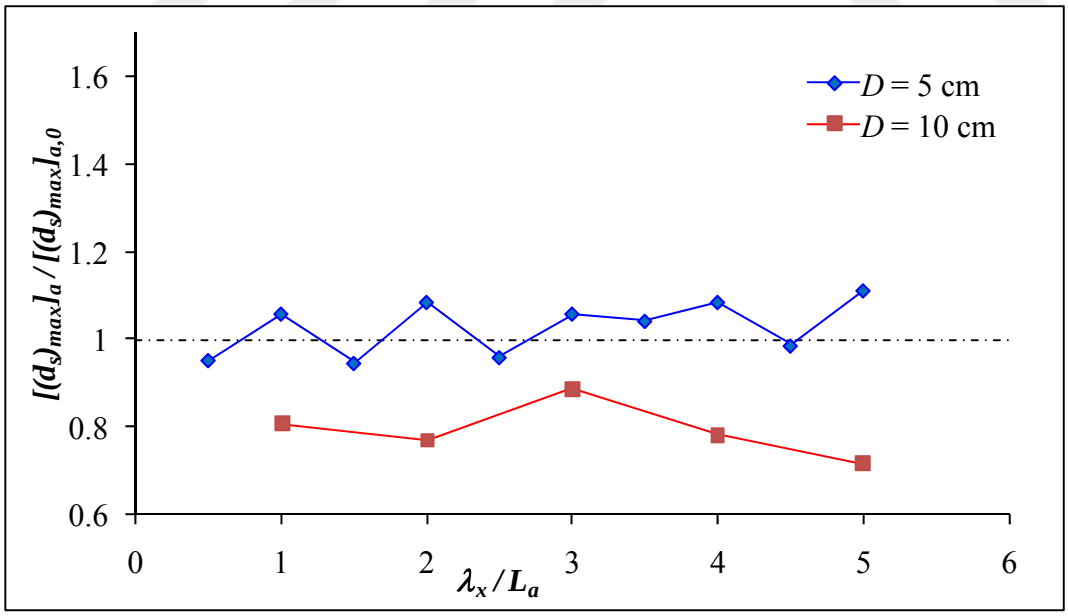


Figure 5.141 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

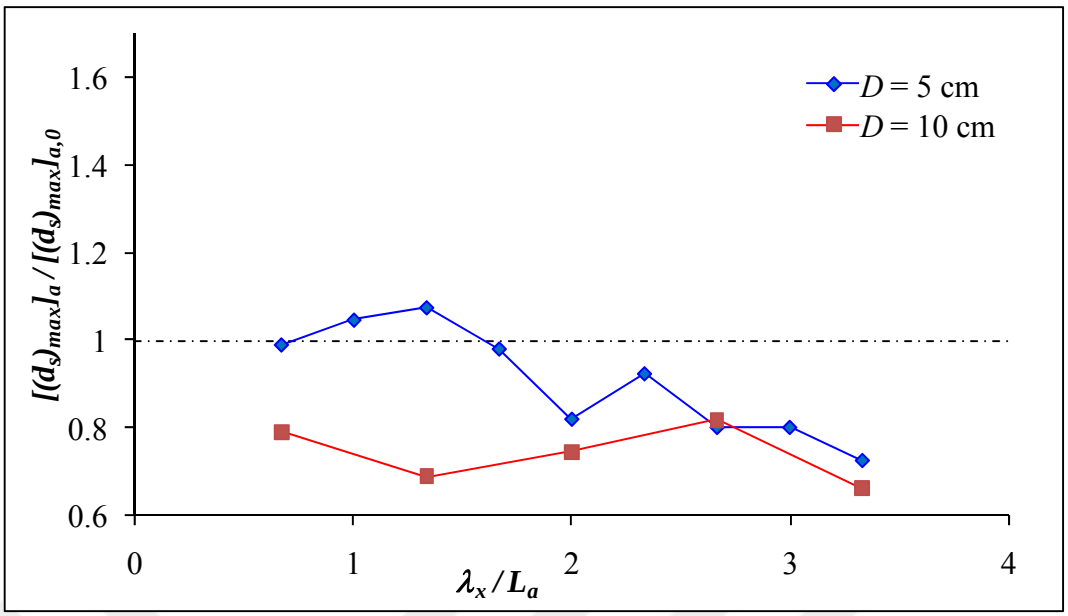


Figure 5.142 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}4}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

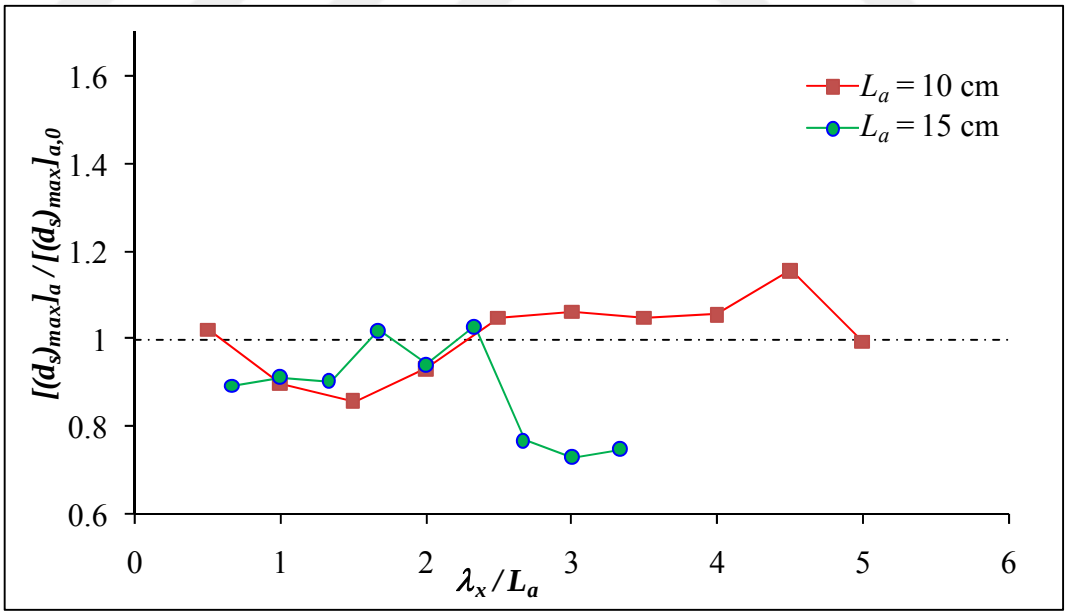


Figure 5.143 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 5 cm and λ_y / B_a = 0.00

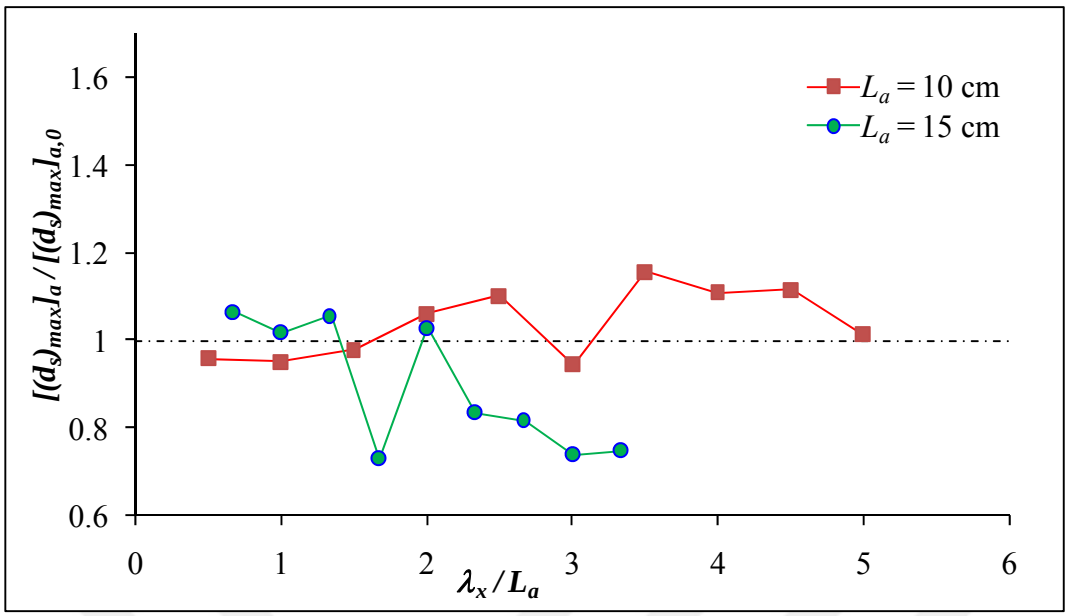


Figure 5.144 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 5 cm and λ_y / B_a = 0.47

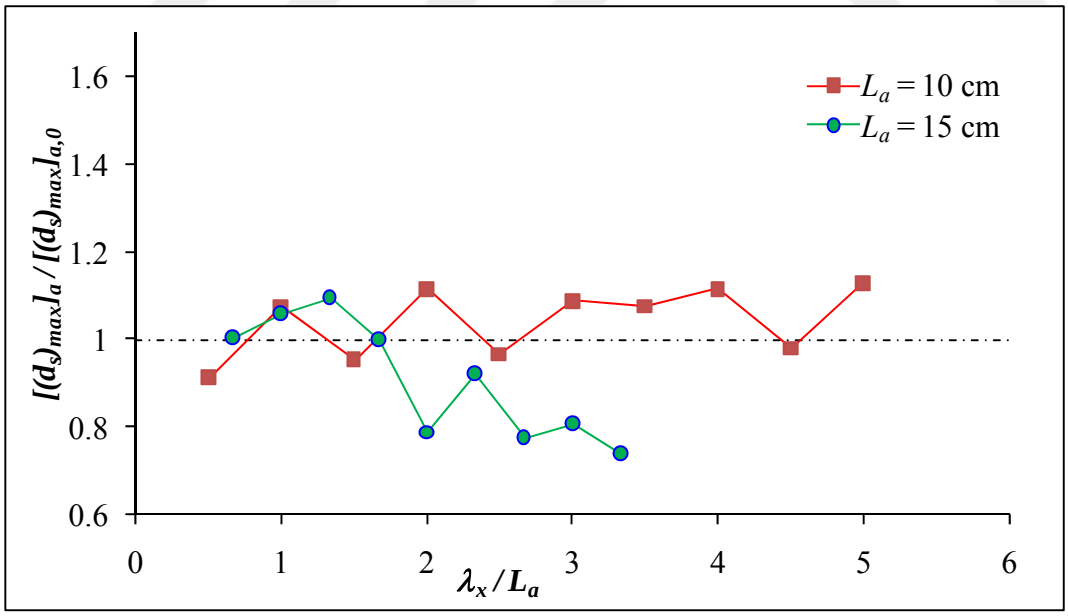


Figure 5.145 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 5 cm and λ_y / B_a = 0.93

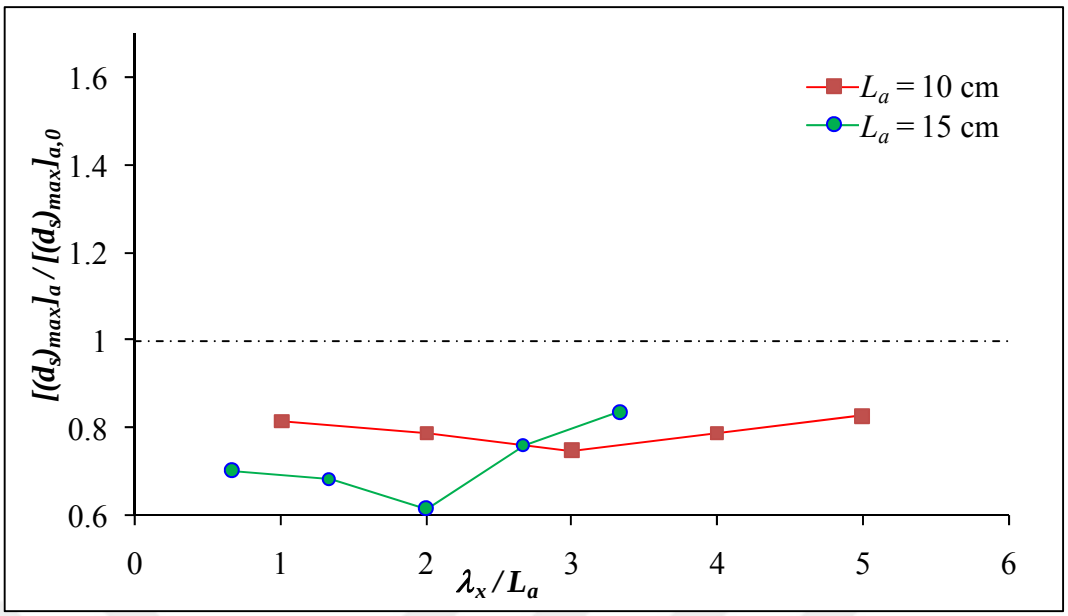


Figure 5.146 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 10 cm and λ_y / B_a = 0.00

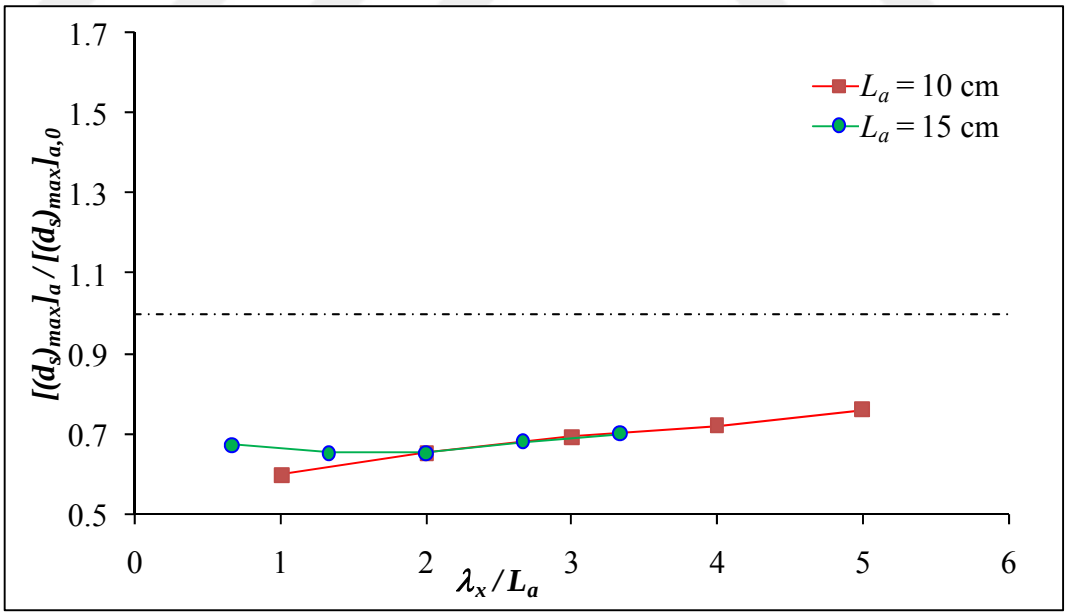


Figure 5.147 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 10 cm and λ_y / B_a = 0.43

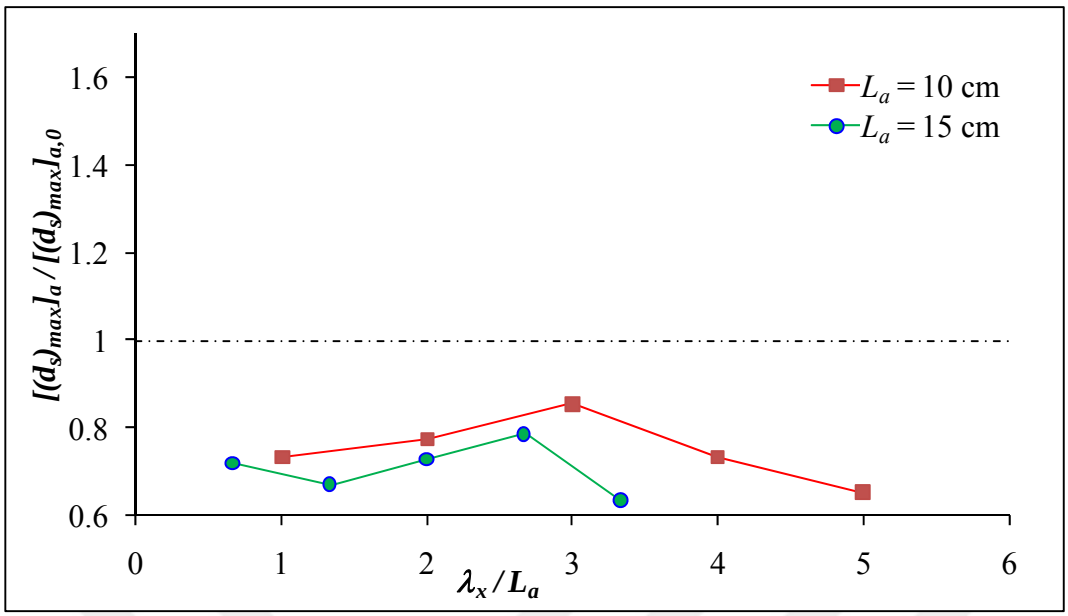


Figure 5.148 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for D = 10 cm and λ_y / B_a = 0.87

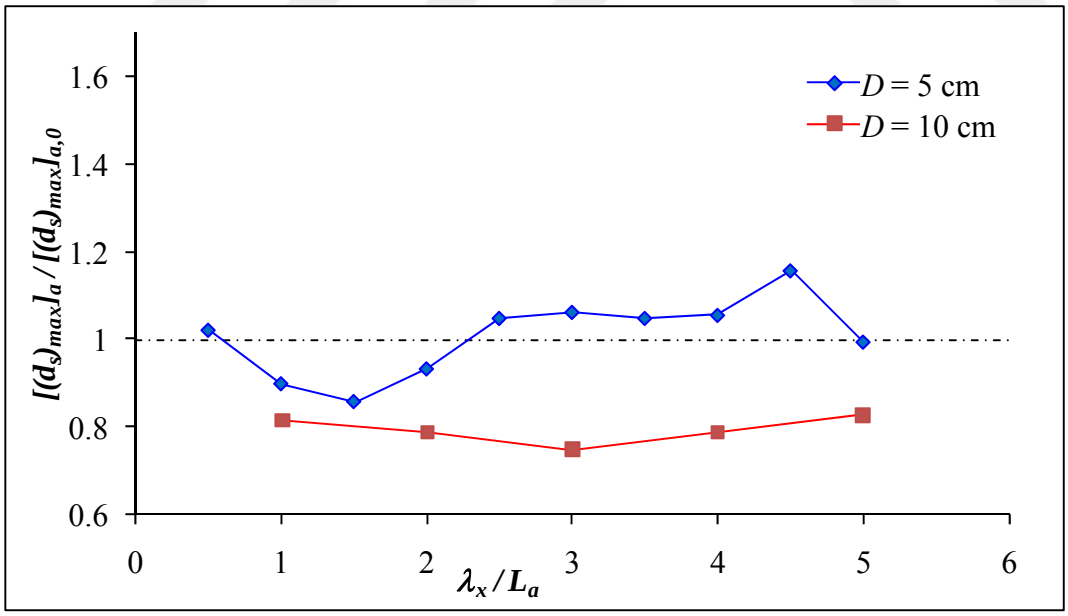


Figure 5.149 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.00

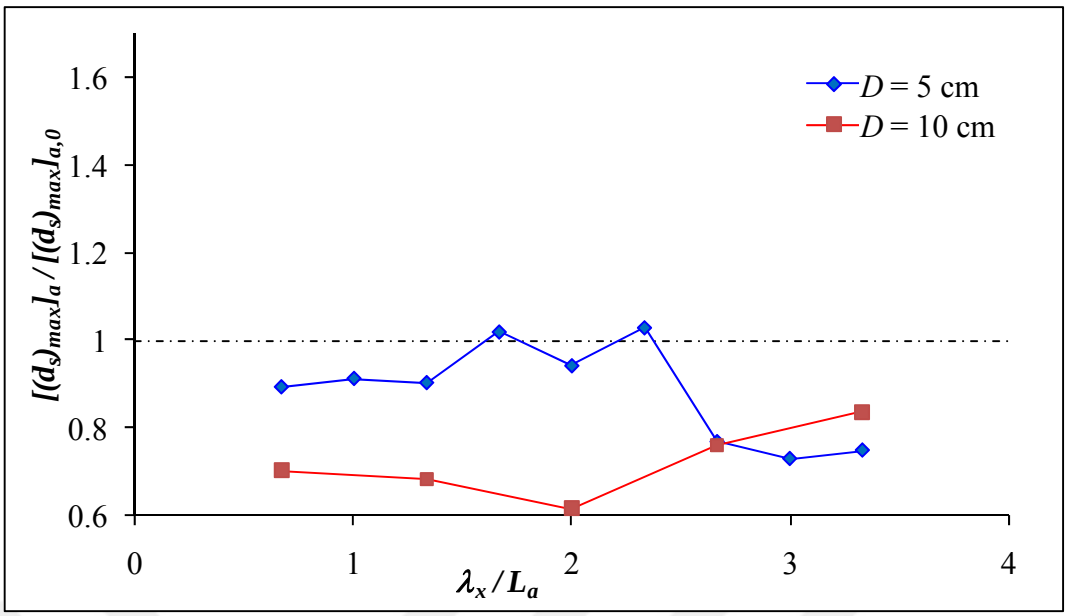


Figure 5.150 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

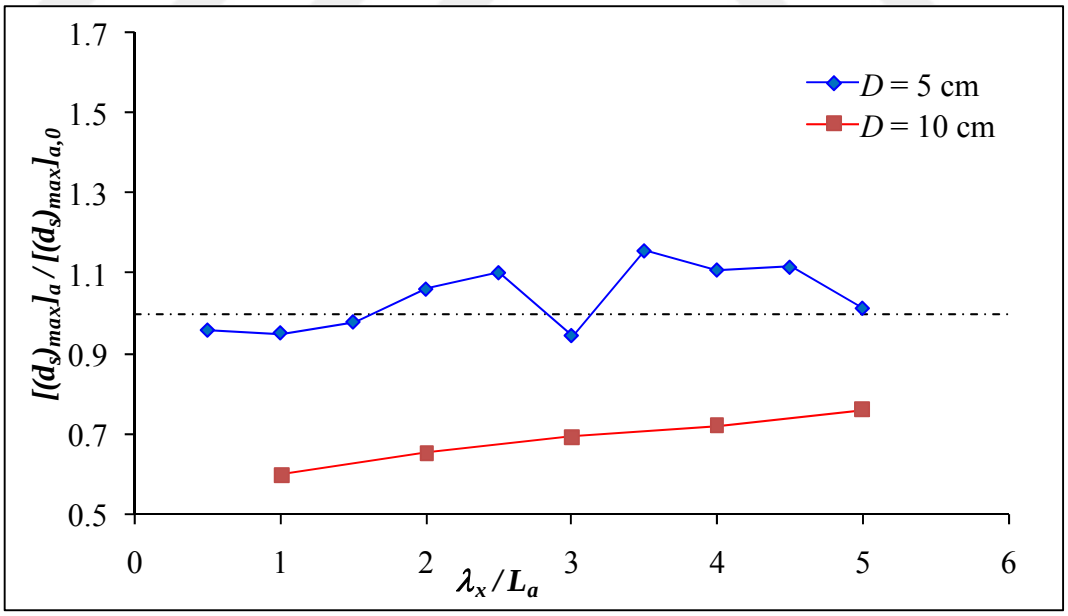


Figure 5.151 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

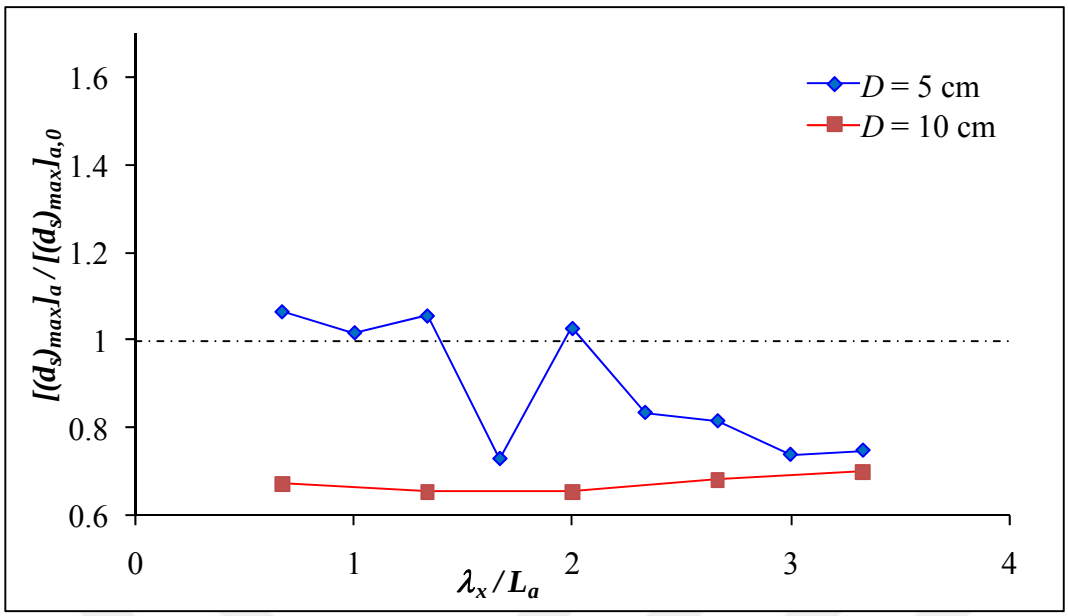


Figure 5.152 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

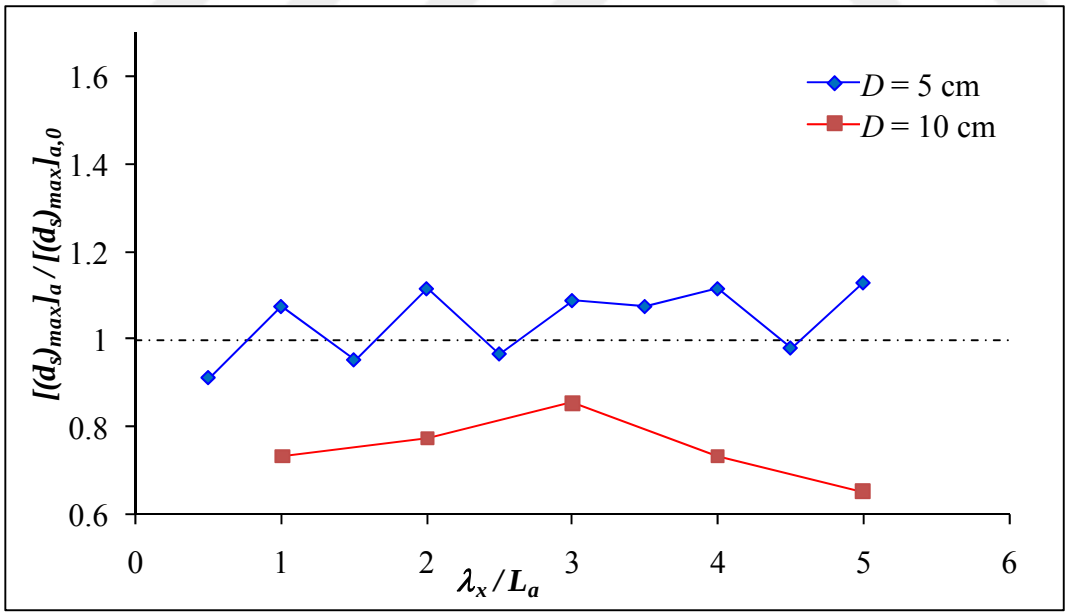


Figure 5.153 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

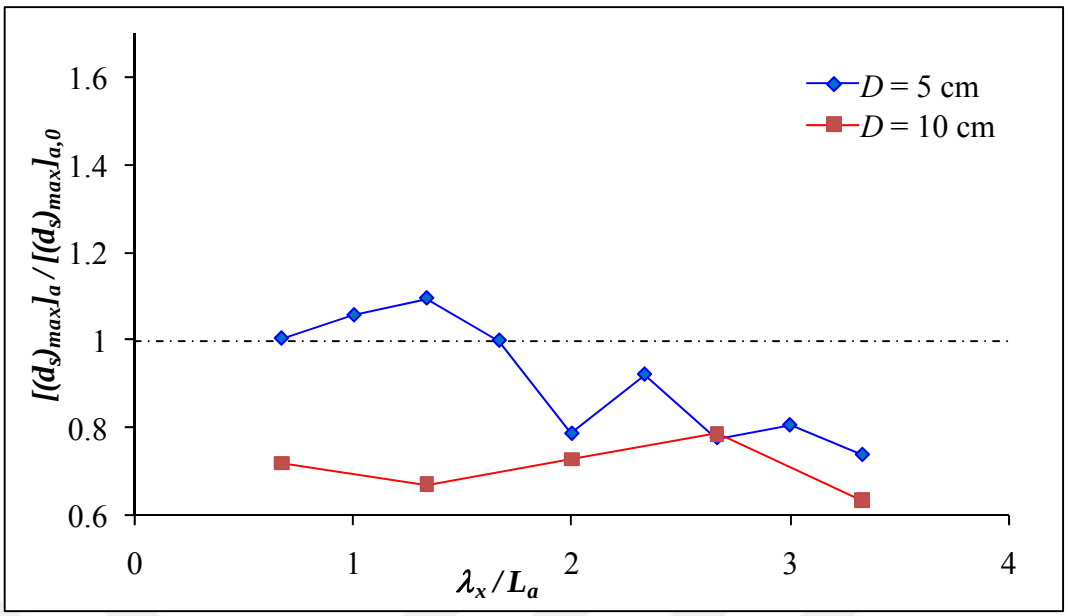


Figure 5.154 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}6}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

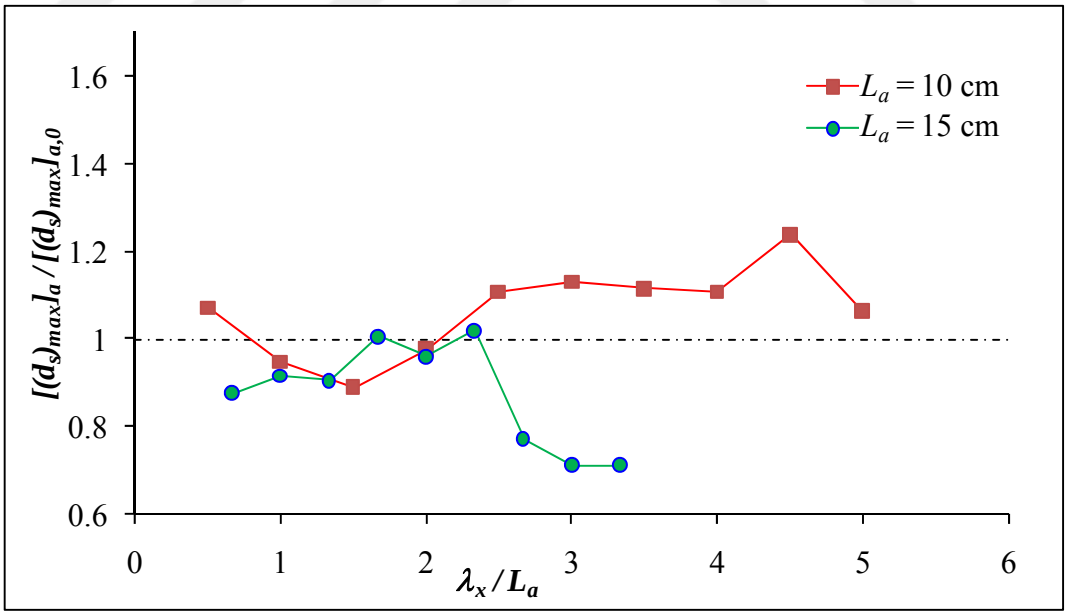


Figure 5.155 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for D = 5 cm and λ_y / B_a = 0.00

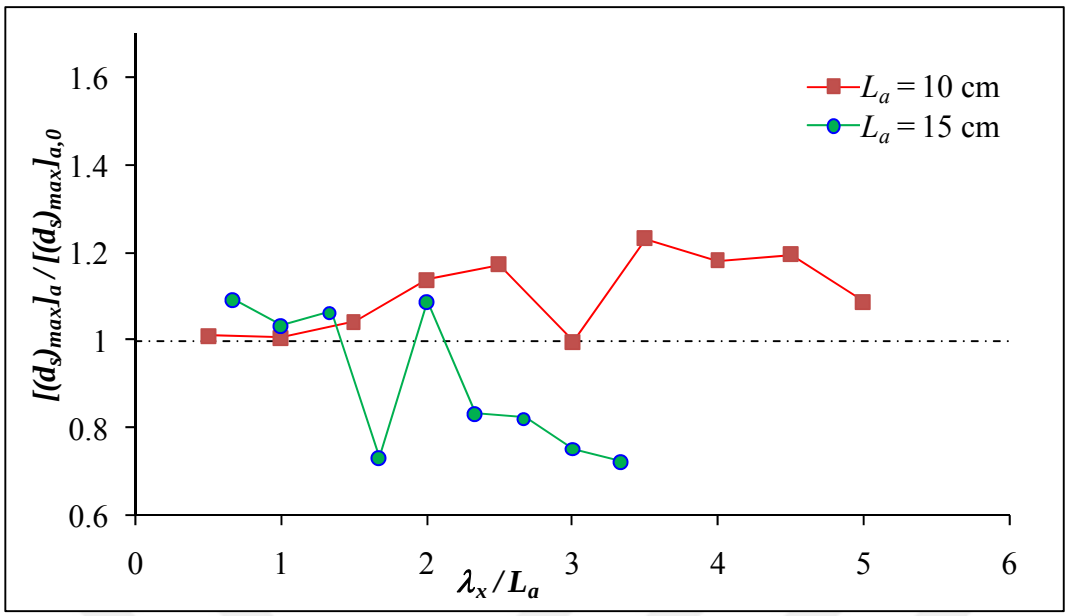


Figure 5.156 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.47$

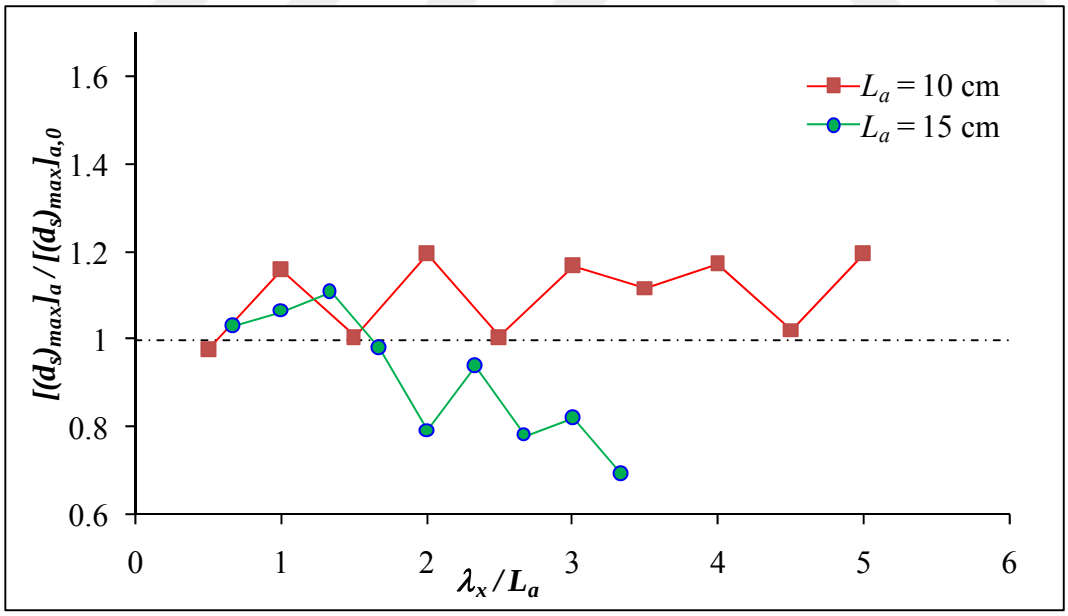


Figure 5.157 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.93$

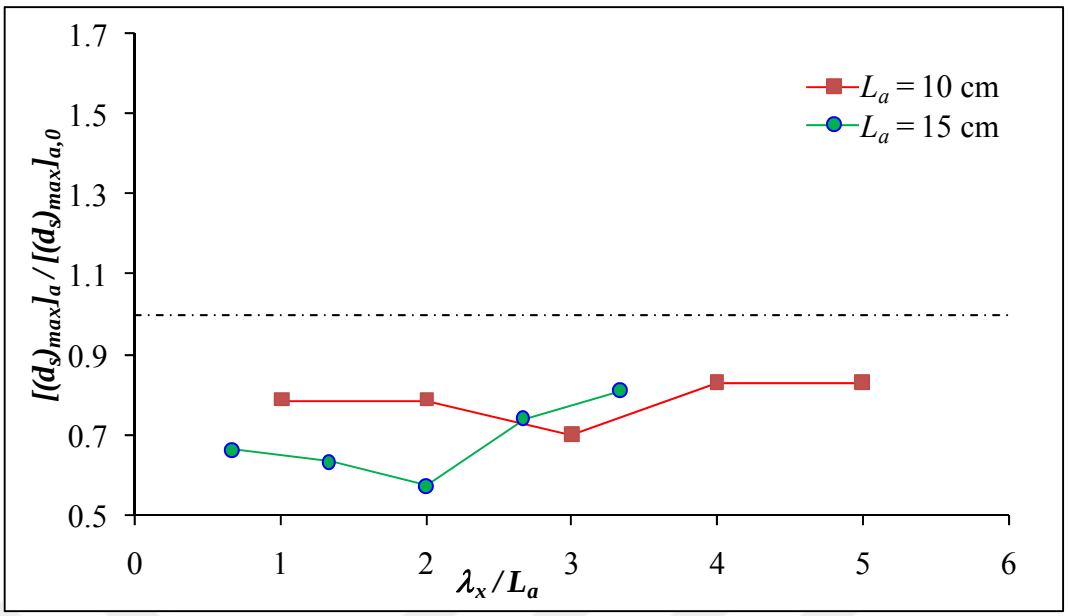


Figure 5.158 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for D = 10 cm and λ_y / B_a = 0.00

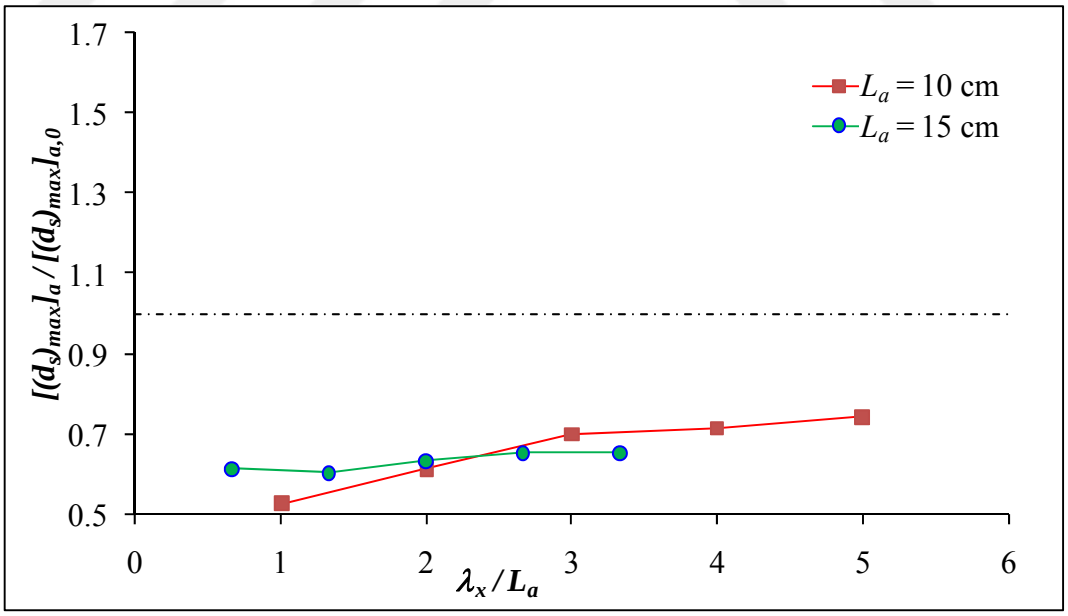


Figure 5.159 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for D = 10 cm and λ_y / B_a = 0.43

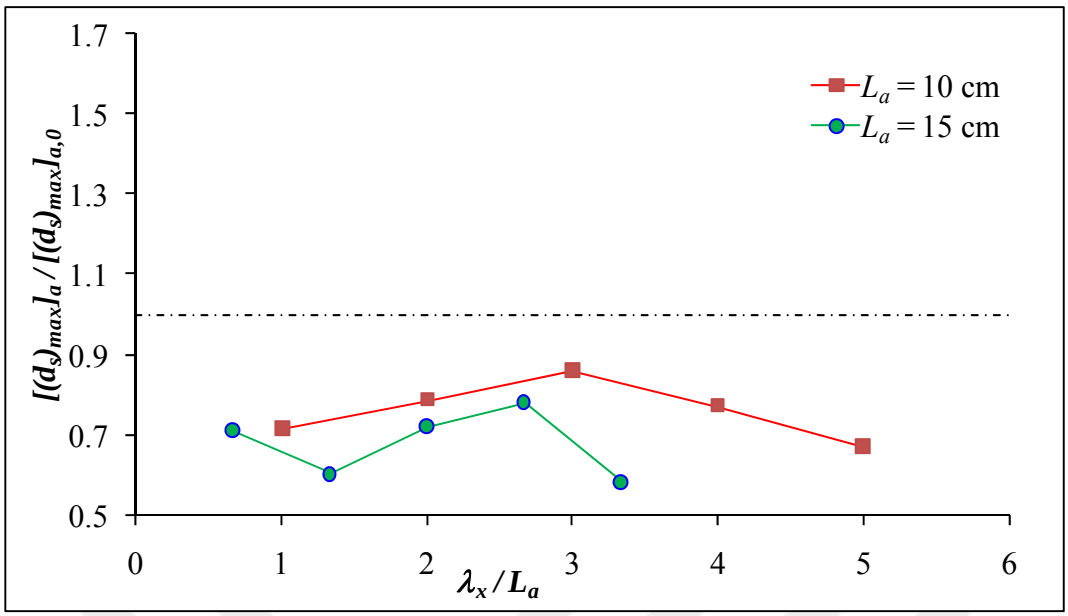


Figure 5.160 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for D = 10 cm and λ_y / B_a = 0.87

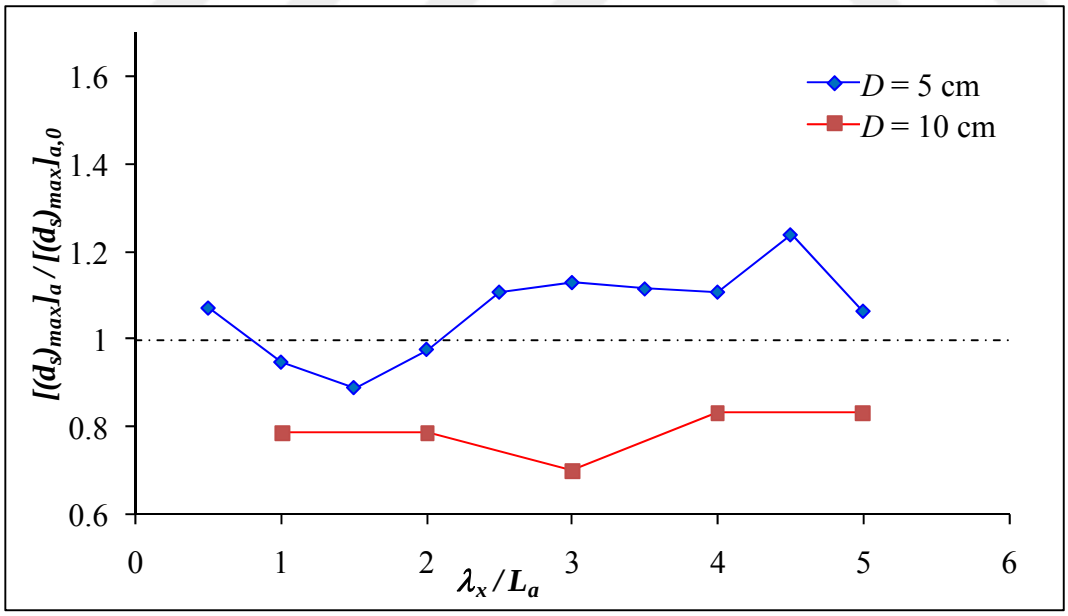


Figure 5.161 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.00

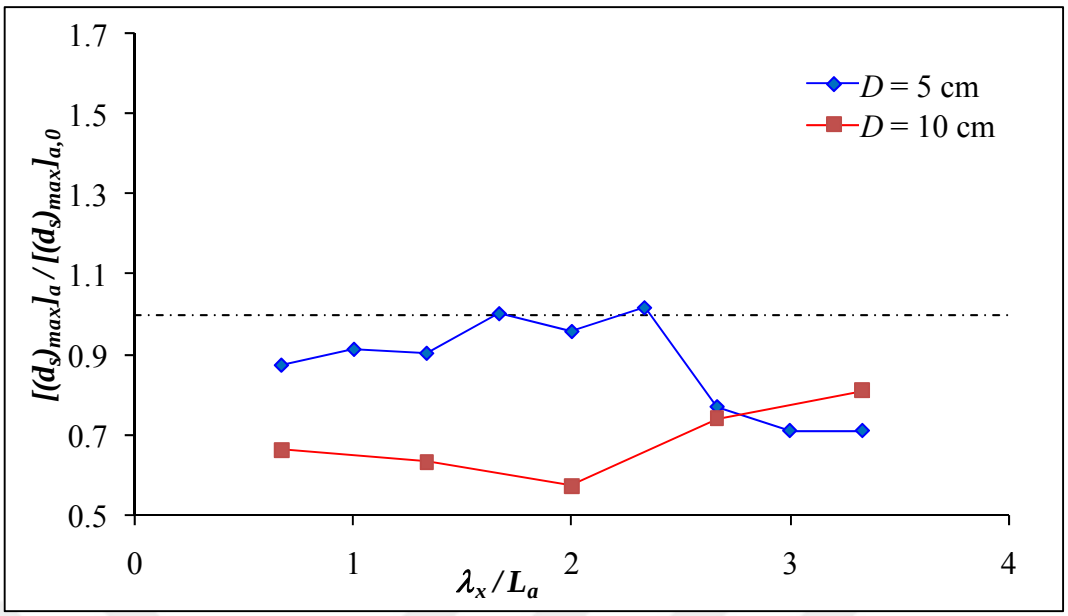


Figure 5.162 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

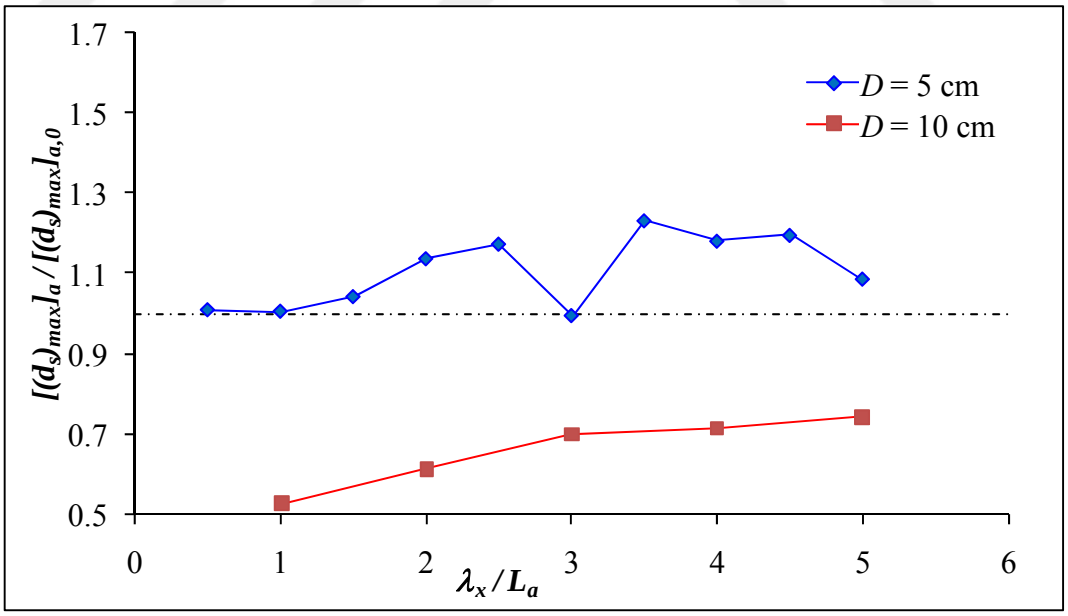


Figure 5.163 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

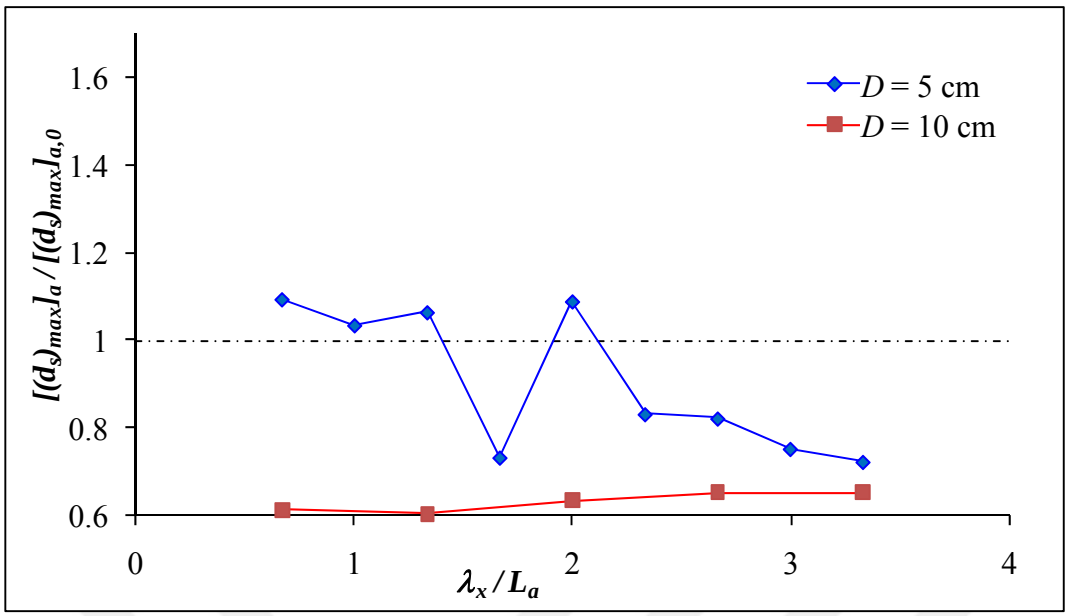


Figure 5.164 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

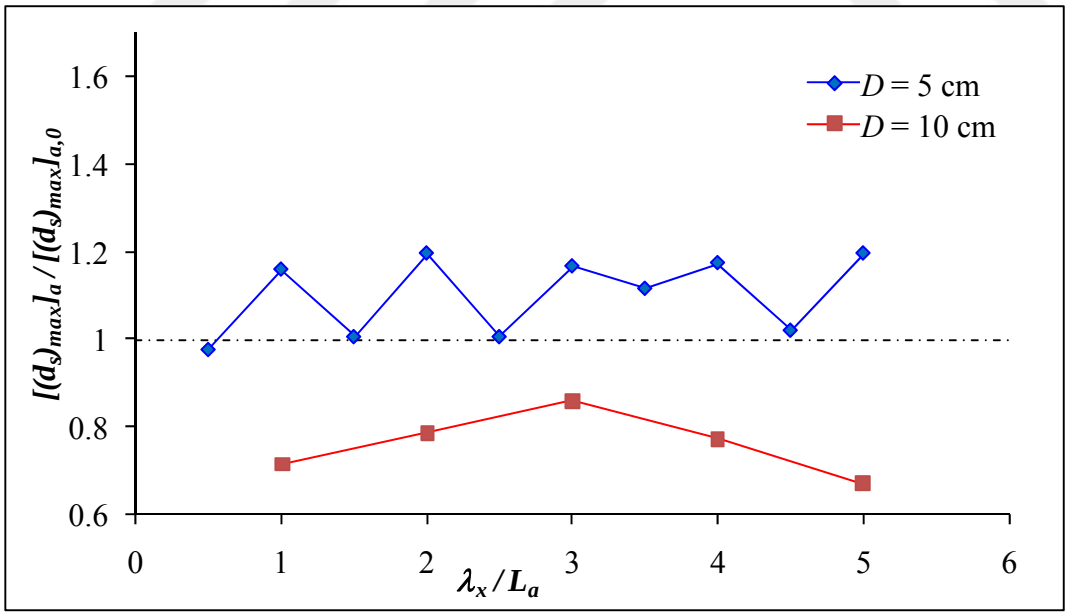


Figure 5.165 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

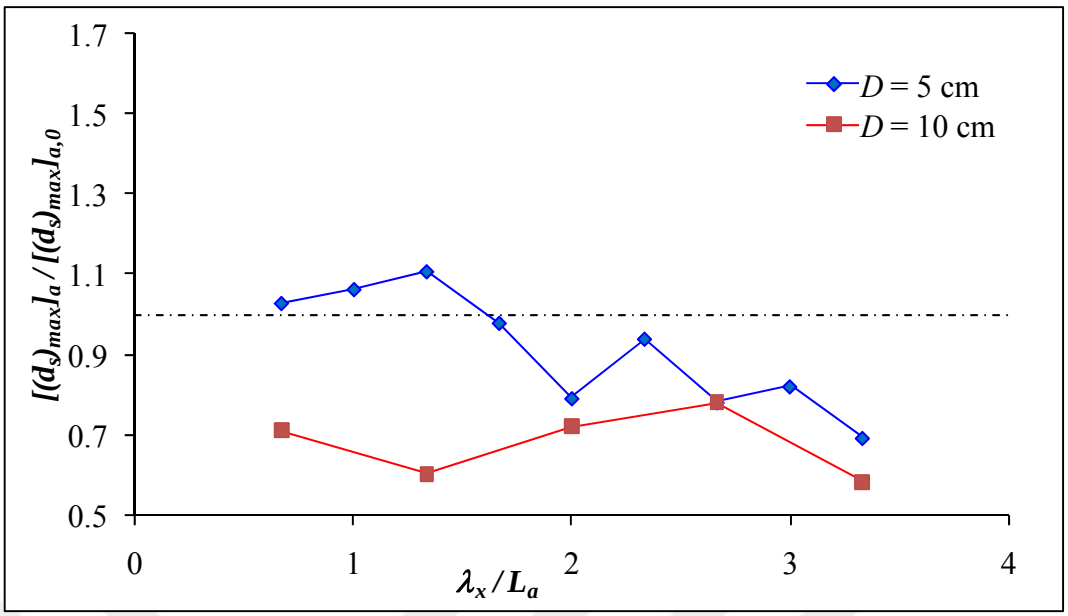


Figure 5.166 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}8}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

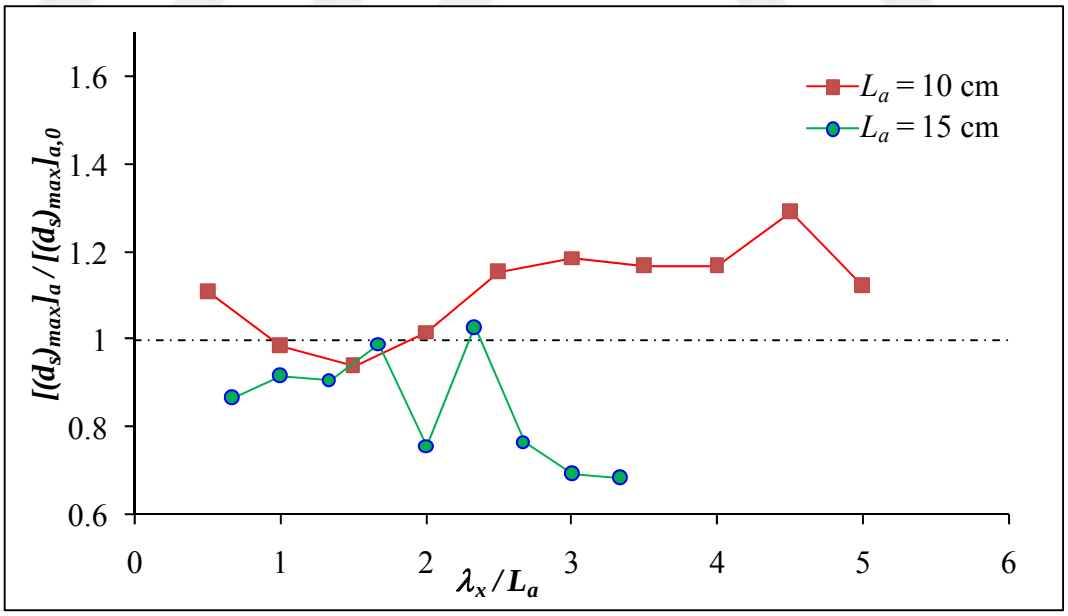


Figure 5.167 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for D = 5 cm and λ_y / B_a = 0.00

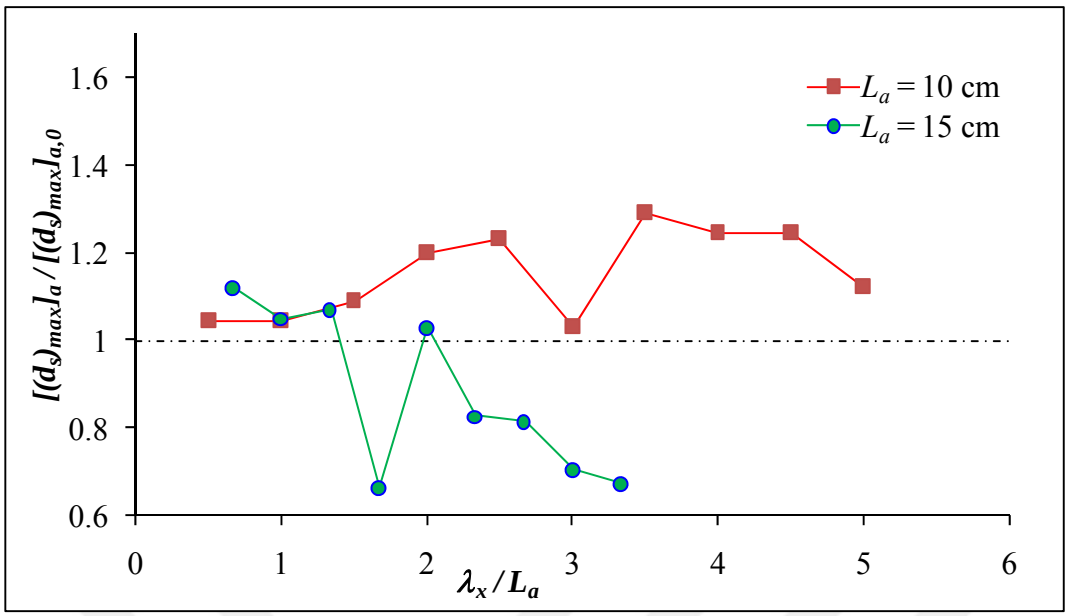


Figure 5.168 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.47$

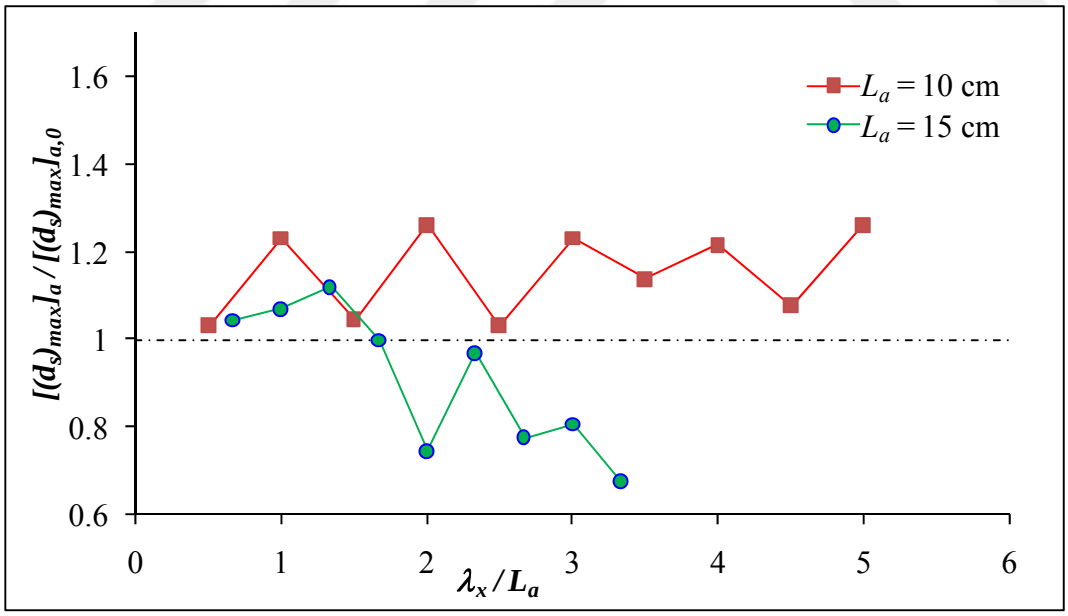


Figure 5.169 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for $D = 5$ cm and $\lambda_y / B_a = 0.93$

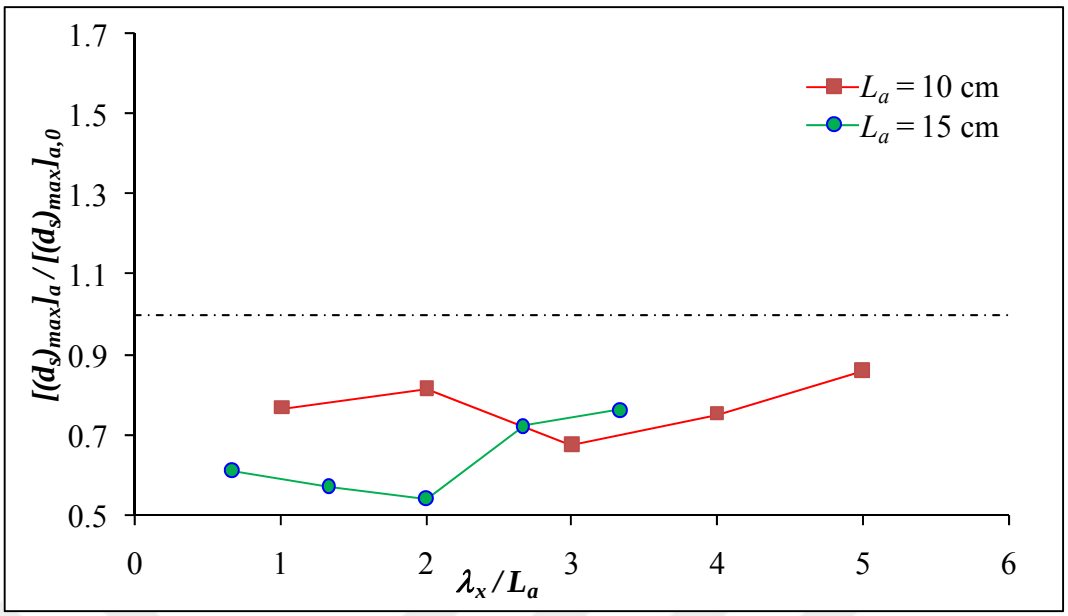


Figure 5.170 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for D = 10 cm and λ_y / B_a = 0.00

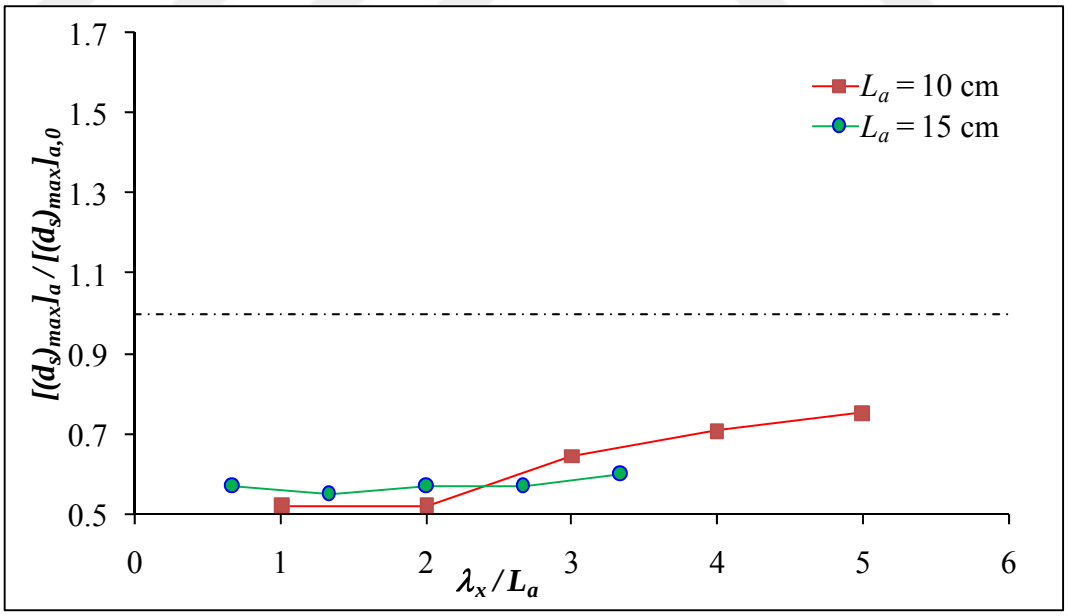


Figure 5.171 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for D = 10 cm and λ_y / B_a = 0.43

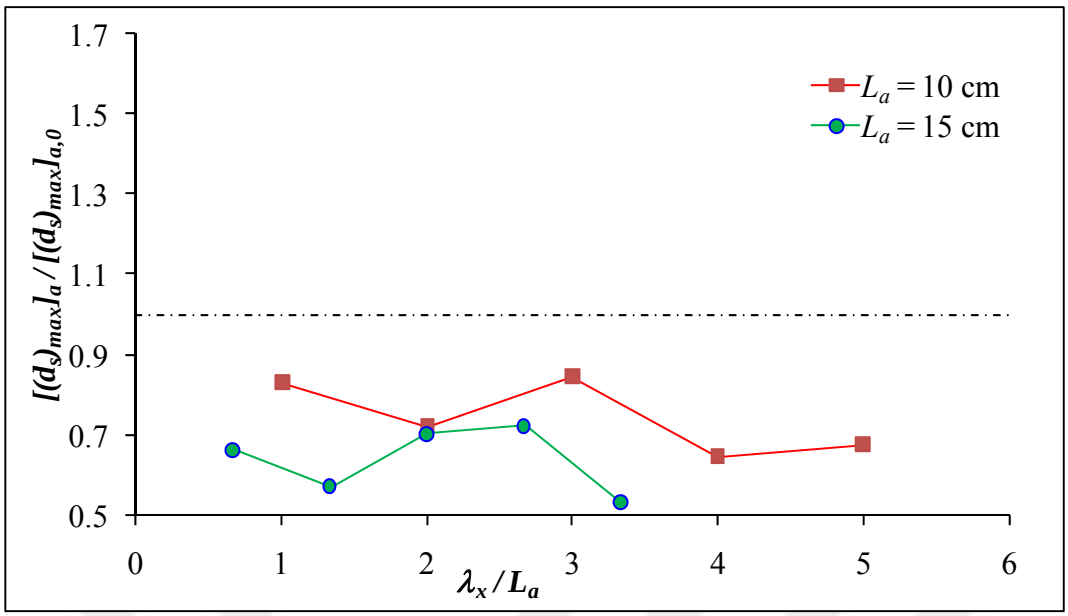


Figure 5.172 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for $D = 10$ cm and $\lambda_y / B_a = 0.87$

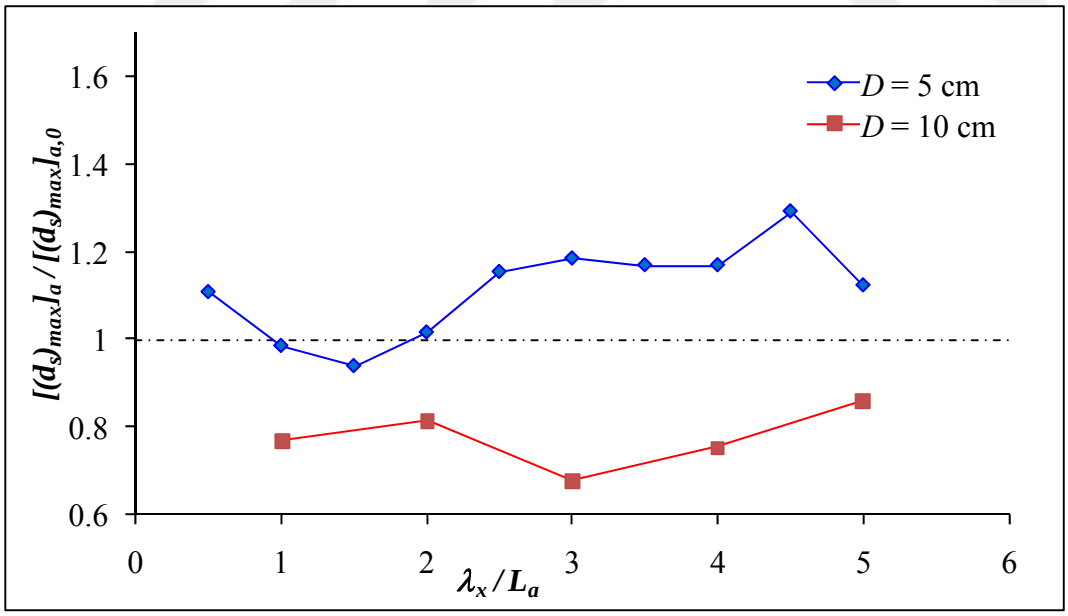


Figure 5.173 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for $L_a = 10$ cm and $\lambda_y / B_a = 0.00$

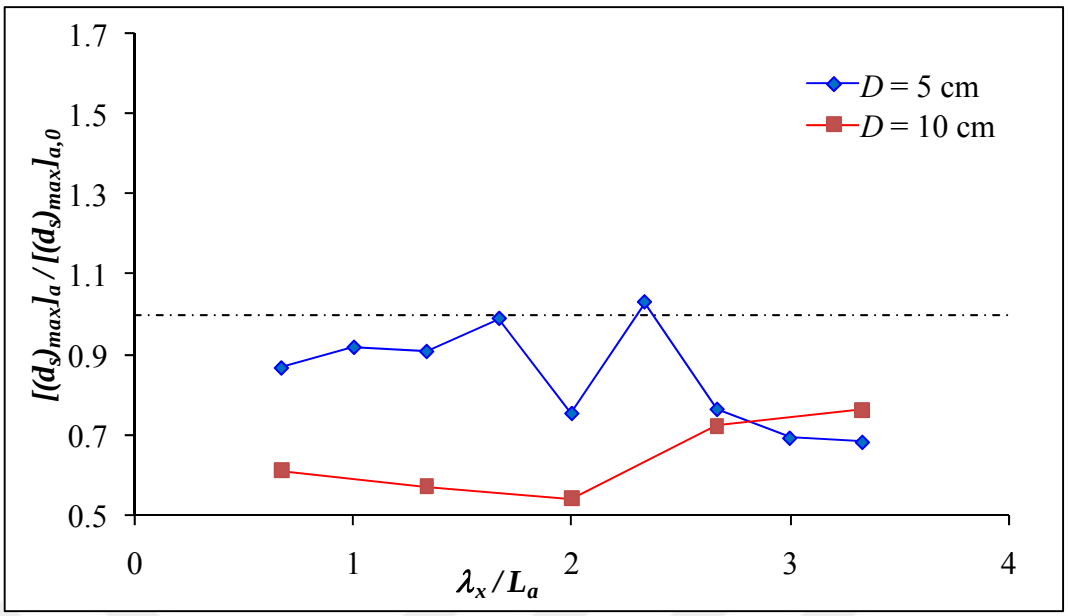


Figure 5.174 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

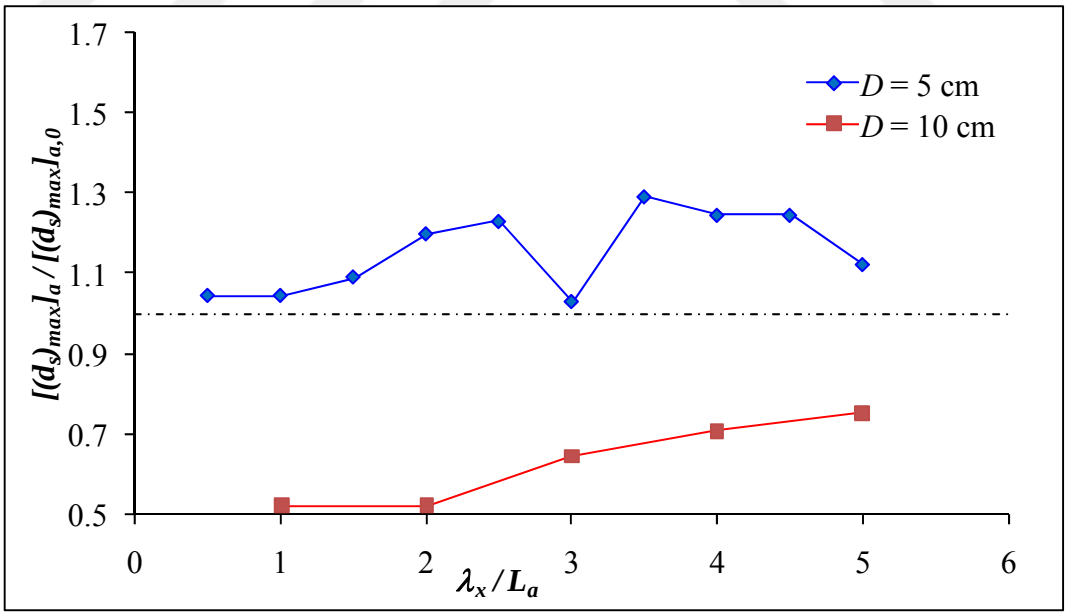


Figure 5.175 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.43 or 0.47

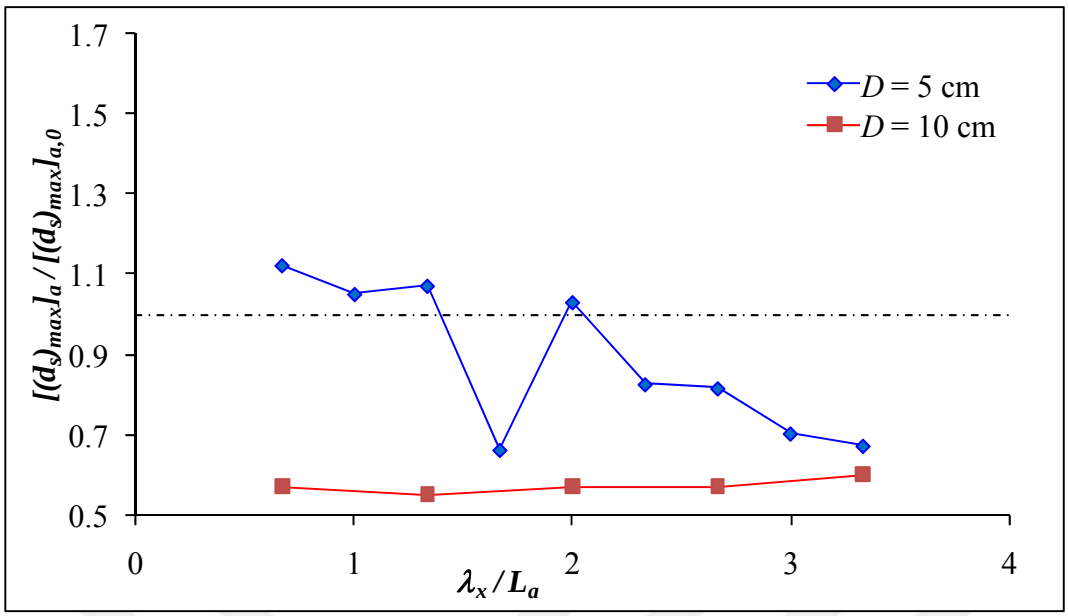


Figure 5.176 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

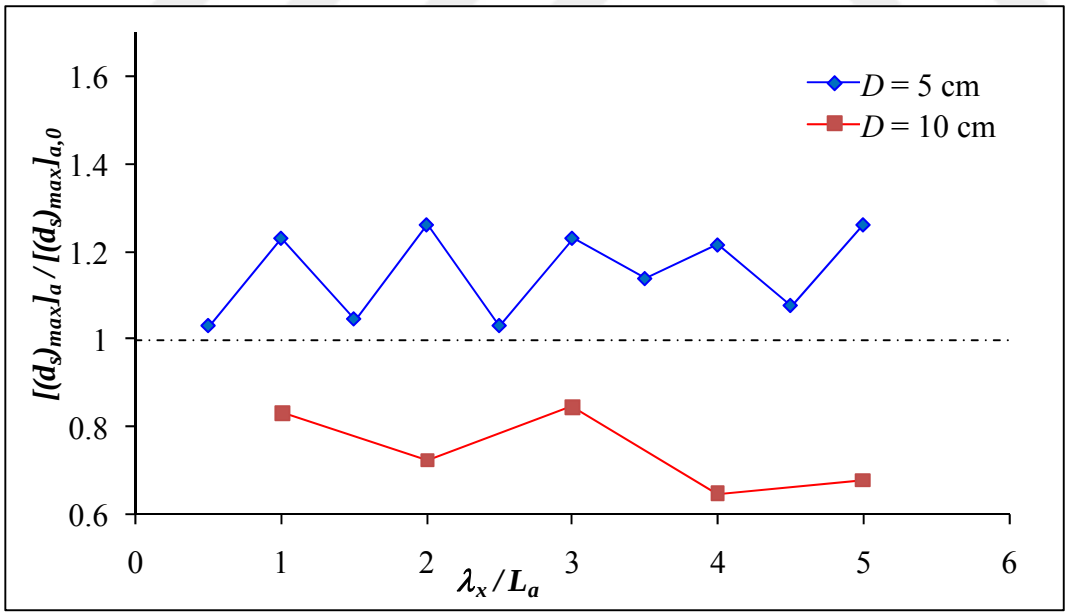


Figure 5.177 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 10 cm and λ_y / B_a = 0.87 or 0.93

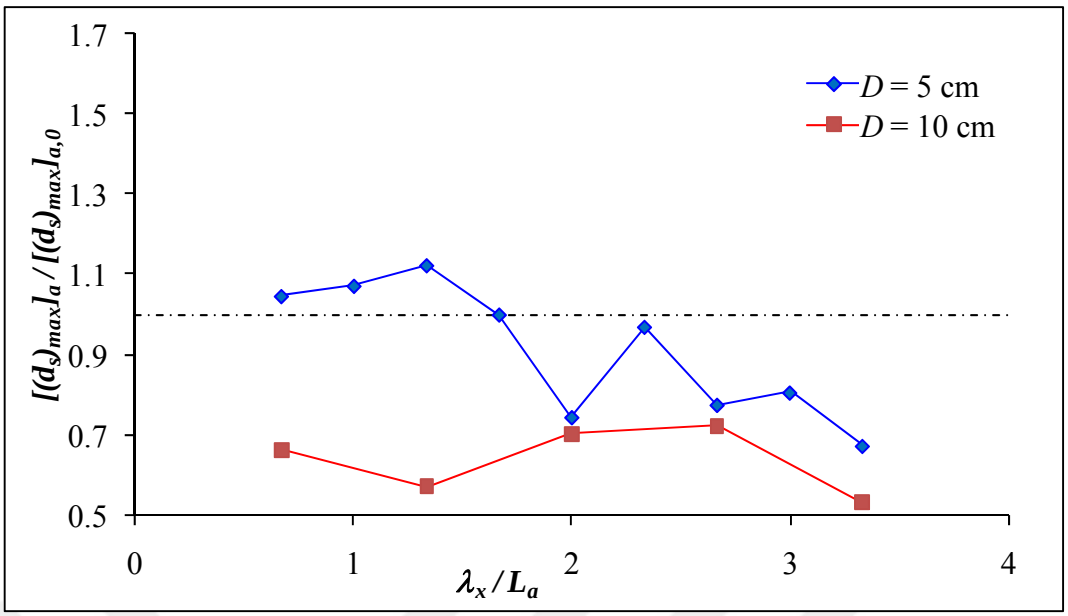


Figure 5.178 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}10}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

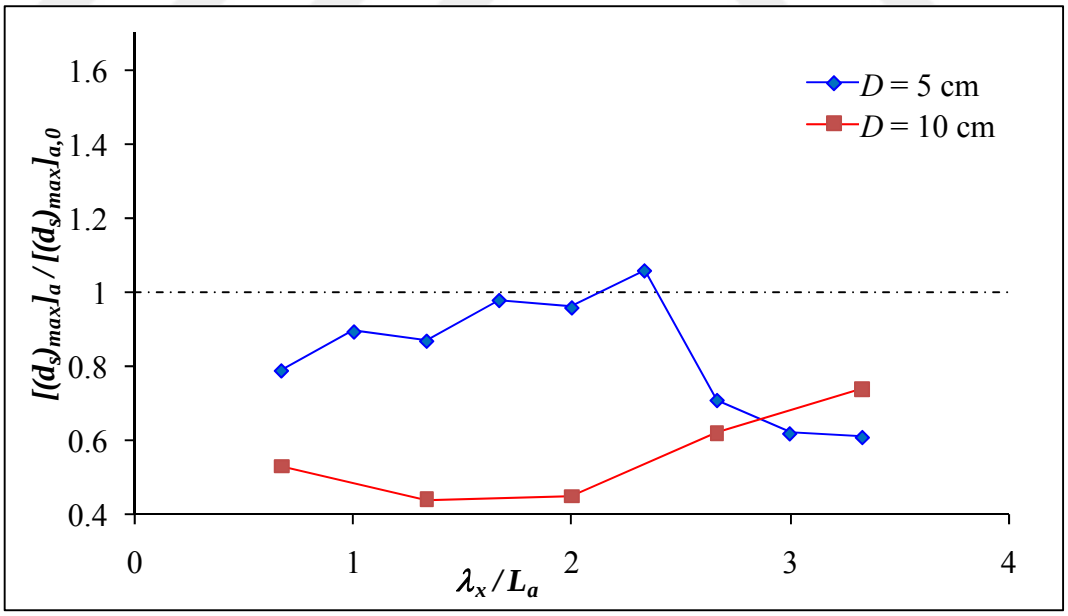


Figure 5.179 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}12}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

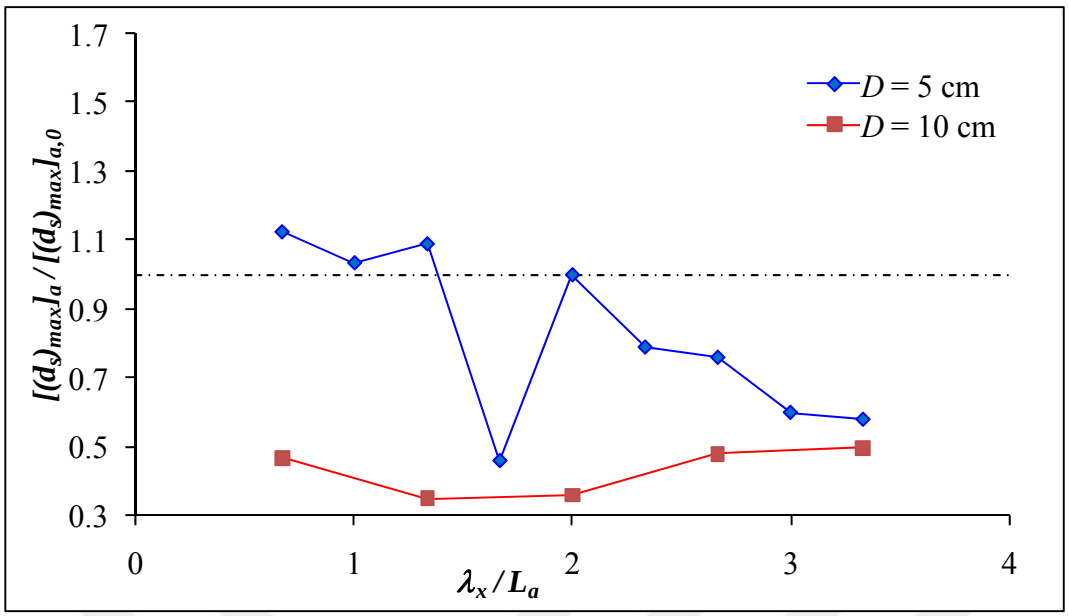


Figure 5.180 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}12}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

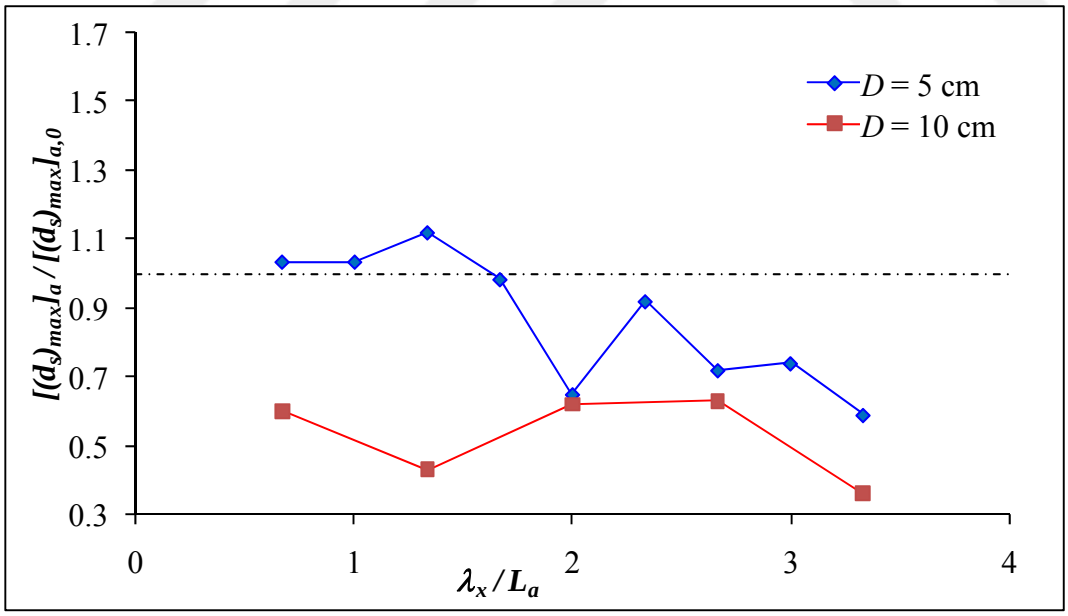


Figure 5.181 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}12}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

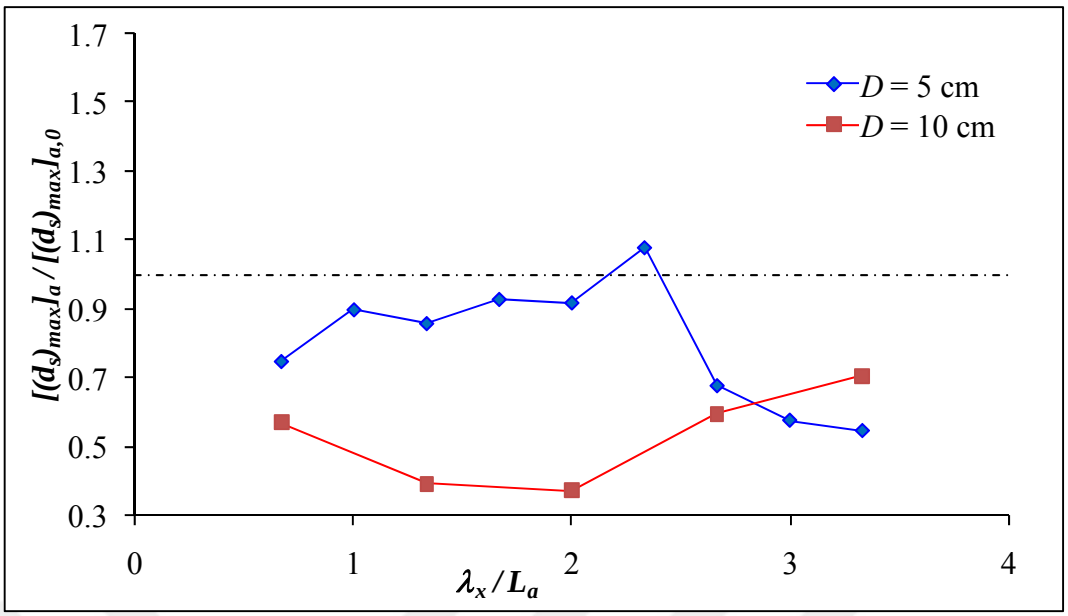


Figure 5.182 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}14}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.00

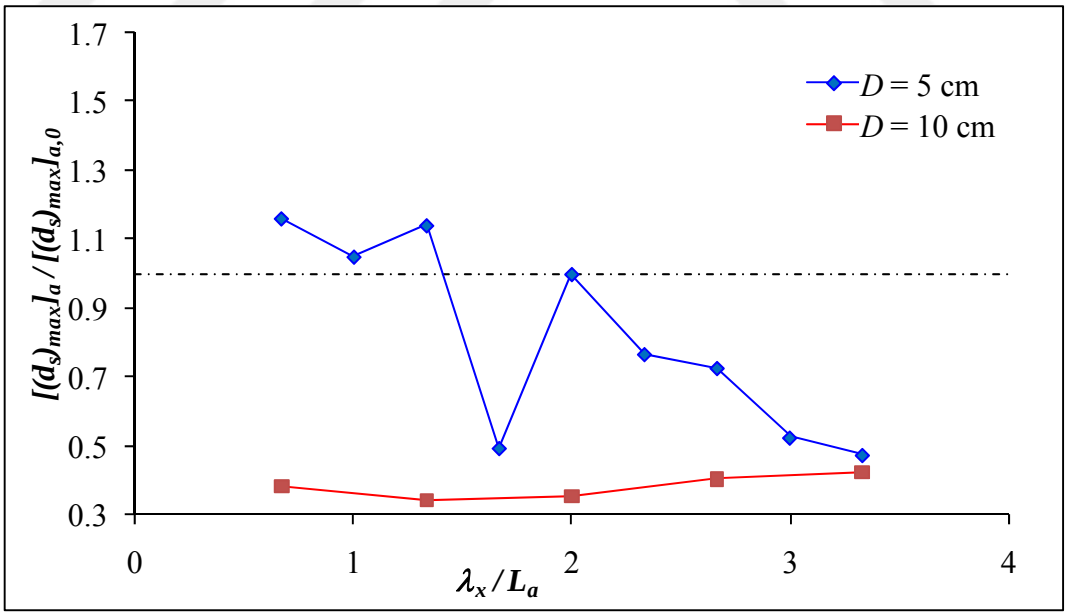


Figure 5.183 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}14}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.43 or 0.47

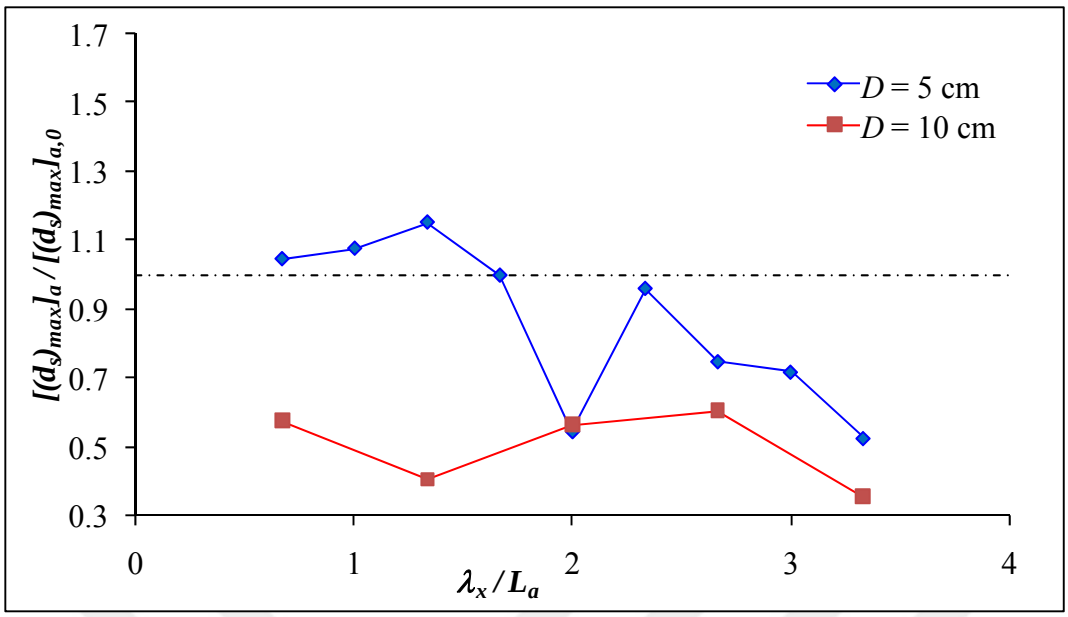


Figure 5.184 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / L_a at point $L_{0\text{-}14}$ of the abutment for L_a = 15 cm and λ_y / B_a = 0.87 or 0.93

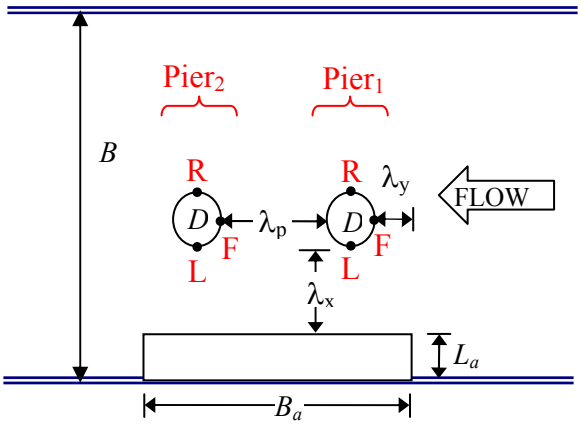
5.2.2 Two Piers and One Abutment Case for Scour Depths

In this study two piers were used for investigation of interaction between the piers and abutment concerning local scour. To find uninteracted case scour data, two piers were installed in the middle of the channel while the distance to channel wall λ_x was 70 cm and the distance between two piers λ_p was 35 cm. D = 5 cm and D = 10 cm piers were used in these experiments but both piers had the same diameter.

Initial maximum scour data were recorded for three points of each pier as for one pier experiments. These values were given in Table 5.14.

Table 5.14 Initial experimental data for two piers without abutment, λ_x =70 cm and λ_p = 35 cm

Two piers (without abutment)			$[(d_s)_{max}]_{p,0}$ (cm)					
Exp. No.	D (cm)	λ_y (cm)	Measurement Points					
			Pier$_1$			Pier$_2$		
			L	R	F	L	R	F
E168	10	10	7.10	5.50	8.60	3.20	3.70	4.30
E170	5	15	4.50	3.30	5.80	3.50	3.70	4.30



Maximum scour depths for both piers and pier positions by means of distance to the abutment as λ_x, the distance to the abutment corner in the flow direction as λ_y = 15 cm, D = 5 cm pier and L_a = 5, 10 and 15 cm abutments were tabulated in Table 5.15.

$[(d_s)_{max}]_{p,0}$ values presented in Table 5.14 were used to get the dimensionless scour parameter given in Table 5.15. Using dimensionless pier position parameter λ_x / D and dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$, Figures 5.185, 5.187 and 5.189 for $Pier_1$ and Figures 5.186, 5.188 and 5.190 for $Pier_2$ were sketched as a function of abutment length L_a.

Figure 5.185 shows that the dimensionless scour parameter has the maximum values at point L of $Pier_1$ for almost all of the λ_x / D values for the abutment of L_a = 15 cm, compared to the other abutments tested. Even though the value of the dimensionless scour parameter does not change significantly for an abutment of known length as a function of λ_x / D, it is clearly seen that as the length of the abutment increases, the dimensionless scour parameter increases at point L of $Pier_1$ for a given value of λ_x / D. The situation is a little bit different at point L of $Pier_2$ (Figure 5.186). At large values of λ_x / D, $6 \leq \lambda_x / D \leq 10$, the dimensionless scour parameter attains the maximum values around 1.50 compared to the other abutment lengths tested. However, the scour depth measurements of the other abutments, L_a = 5 cm and 10 cm, do not follow a regular trend as a function of λ_x / D. Data points of L_a = 5 cm and L_a = 10 cm intersect each other at two different λ_x / D values.

Dimensionless scour parameter attains the maximum values at point R of $Pier_1$ with the values between about 1.50 and 2.00 for all the abutment lengths tested (Figure 5.187). Although the variation of the scour parameter with λ_x / D is not so significant for a given L_a, the abutments of lengths L_a = 10 cm and 15 cm result in maximum dimensionless scour parameters.

Table 5.15 Measured maximum scour depths around the piers with their location parameters and abutment lengths used in the experiments (D = 5 cm, λ_y = 15 cm and two piers case)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_{p,0}$ (cm)						$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$					
			$Pier_1$			$Pier_2$			$Pier_1$			$Pier_2$		
L_a = 5 cm			L	R	F	L	R	F	L	R	F	L	R	F
E143	10	2	6.00	5.80	6.40	4.70	4.70	4.70	**1.33**	1.76	**1.10**	1.34	**1.27**	**1.09**
E144	20	4	5.60	5.60	6.30	5.00	4.60	4.50	1.24	1.70	1.09	**1.43**	1.24	1.05
E145	30	6	5.10	5.80	6.40	4.10	4.30	4.50	1.13	1.76	**1.10**	1.17	1.16	1.05
E146	40	8	5.50	5.00	5.90	3.50	3.90	3.80	1.22	1.52	1.02	1.00	1.05	**0.88**
E147	50	10	4.90	6.00	6.20	4.20	4.50	4.70	1.09	**1.82**	1.07	1.20	1.22	**1.09**
L_a = 10 cm			L	R	F	L	R	F	L	R	F	L	R	F
E148	50	10	5.00	6.10	6.40	4.00	4.30	4.70	1.11	1.85	1.10	1.14	1.16	1.09
E149	40	8	6.20	6.10	6.80	4.80	4.90	4.70	**1.38**	1.85	1.17	**1.37**	**1.32**	1.09
E150	30	6	6.20	6.20	7.30	3.80	4.20	4.80	**1.38**	1.88	1.26	1.09	1.14	**1.12**
E151	20	4	6.10	6.80	7.60	3.50	4.00	4.00	1.36	**2.06**	**1.31**	1.00	1.08	0.93
E152	10	2	7.20	6.50	7.20	4.20	4.00	3.90	1.60	1.97	1.24	1.20	1.08	**0.91**
L_a = 15 cm			L	R	F	L	R	F	L	R	F	L	R	F
E138	10	2	4.70	5.10	5.90	3.10	4.00	3.90	1.04	1.55	1.02	**0.89**	1.08	**0.91**
E139	20	4	6.60	6.10	7.00	3.50	4.50	4.90	1.47	1.85	1.21	1.00	1.22	1.14
E140	30	6	6.70	6.80	8.00	5.60	5.70	5.60	1.49	**2.06**	**1.38**	**1.60**	1.54	**1.30**
E141	40	8	6.80	5.80	7.10	5.60	6.40	5.60	**1.51**	1.76	1.22	**1.60**	**1.73**	**1.30**
E142	50	10	6.50	6.00	7.50	4.60	4.70	4.80	1.44	1.82	1.29	1.31	1.27	1.12

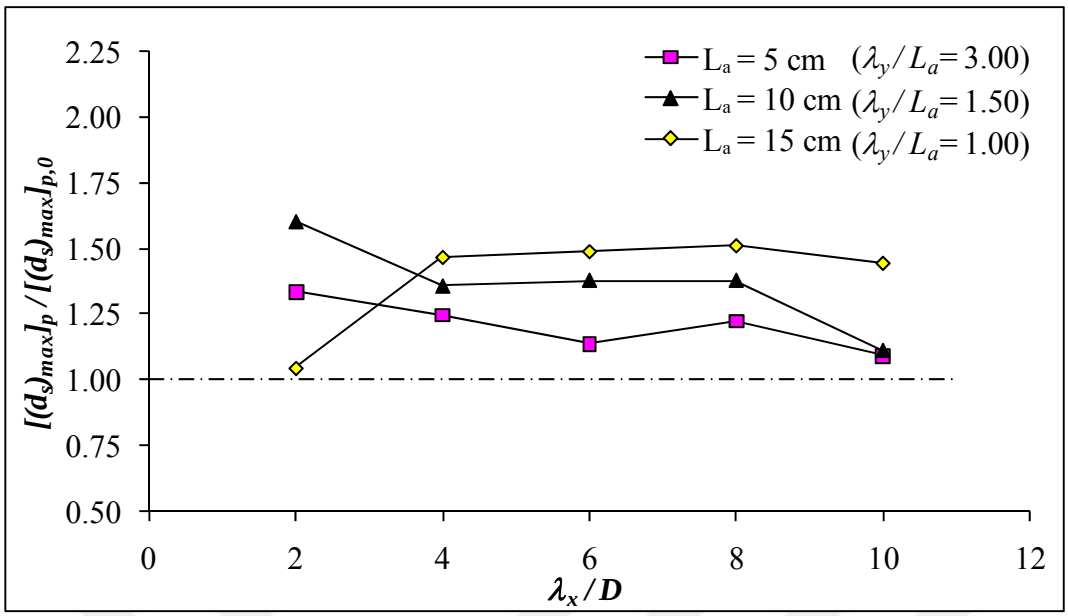


Figure 5.185 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point L of Pier$_1$ (λ_y / D = 3.00)

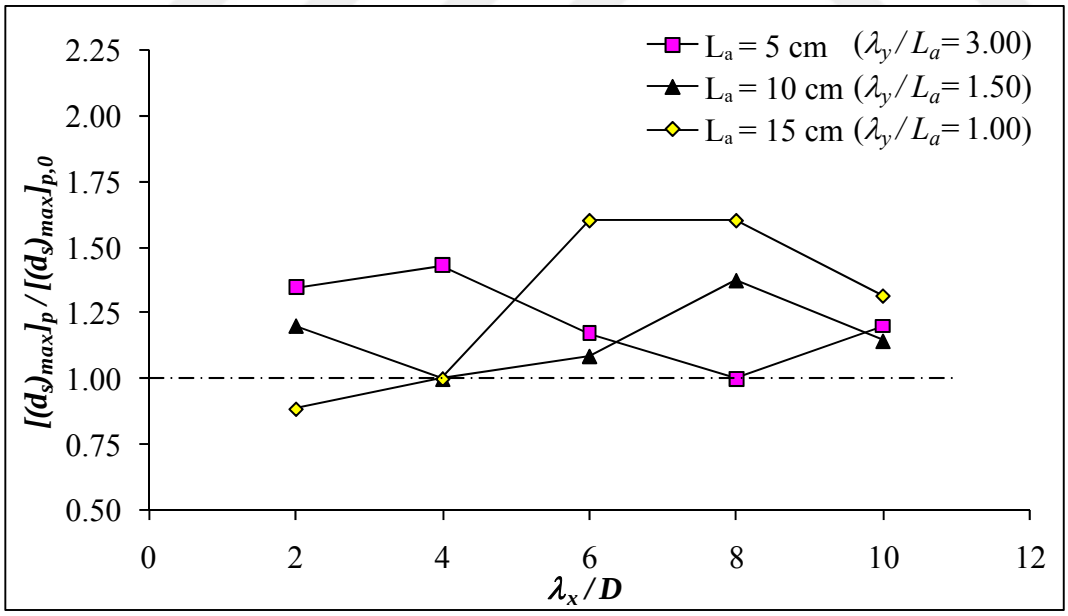


Figure 5.186 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point L of Pier$_2$ (λ_y / D = 3.00)

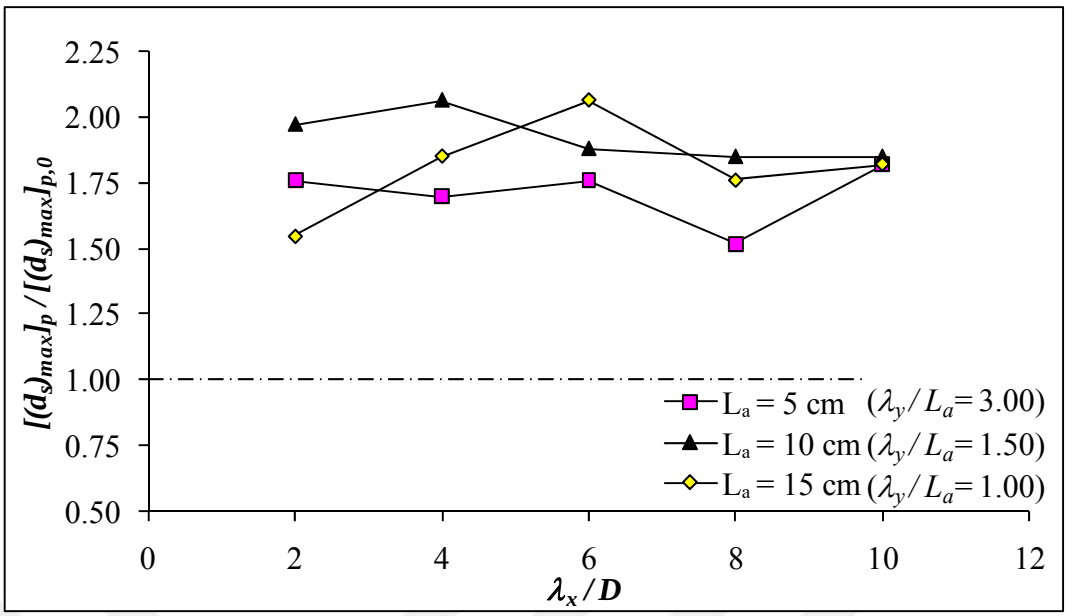


Figure 5.187 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point R of Pier$_1$ (λ_y / D = 3.00)

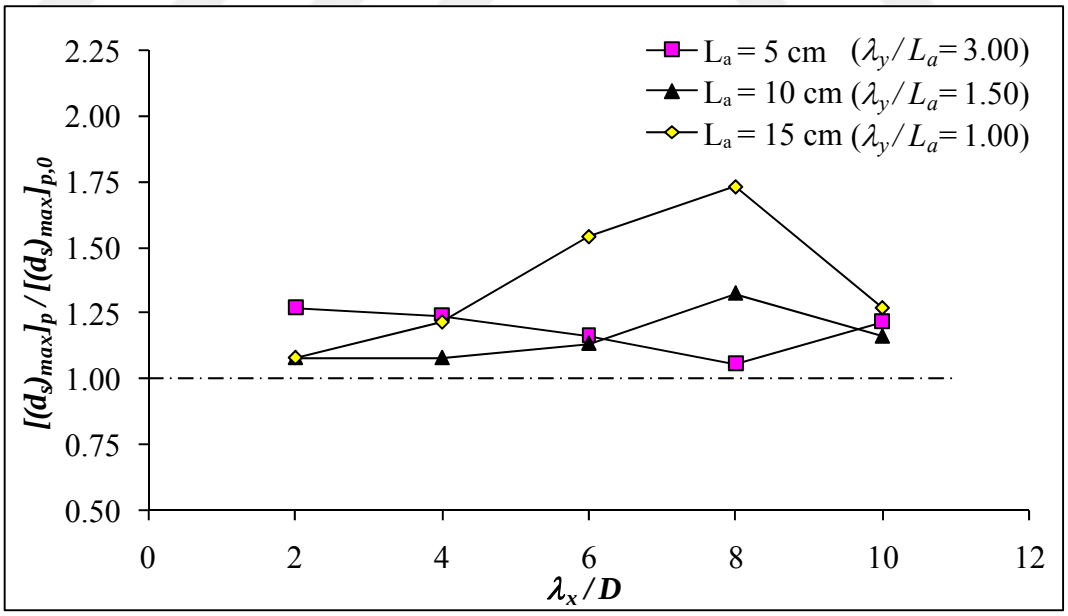


Figure 5.188 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point R of Pier$_2$ (λ_y / D = 3.00)

The measured maximum dimensionless scour parameter at point R of $Pier_2$ is about 1.75 at $\lambda_x / D = 8$ for the abutment of L_a = 15 cm (Figure 5.189). The corresponding scour parameter values for the other two abutments do not exceed 1.25. From these findings it can be concluded that the most severe scour is observed at point R of $Pier_1$.

At point F of $Pier_1$ and $Pier_2$ the variation of the dimensionless scour parameter with λ_x / D shows almost the same trend; for most of the λ_x / D values tested, the abutment of L_a = 15 cm yields the maximum scour parameter compared to the other abutments. The measured scour depths at point F of $Pier_2$ are slightly less than those of $Pier_1$.

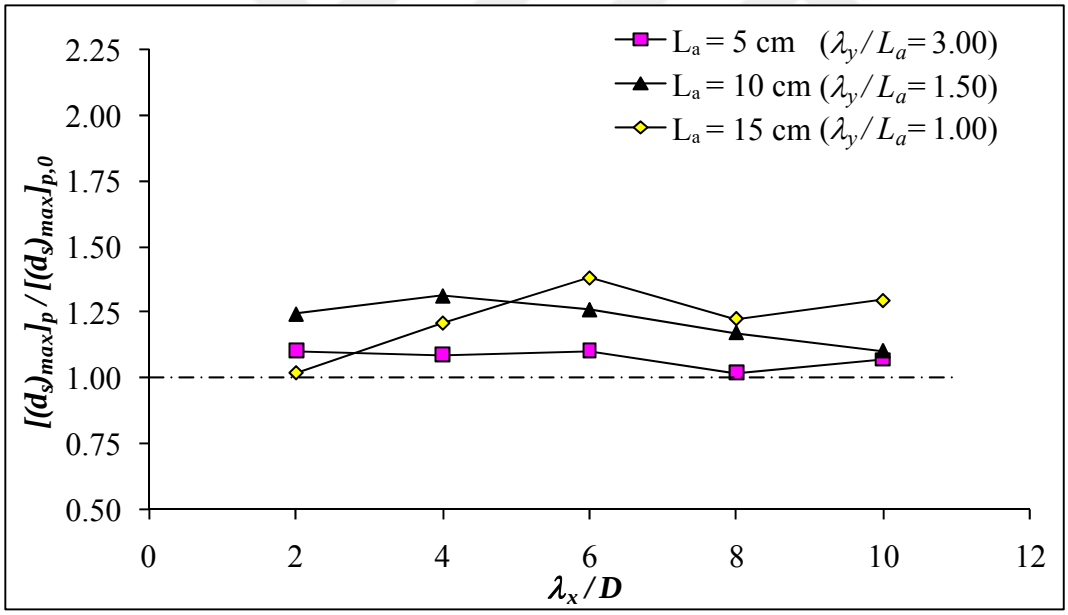


Figure 5.189 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point F of $Pier_1$ (λ_y / D = 3.00)

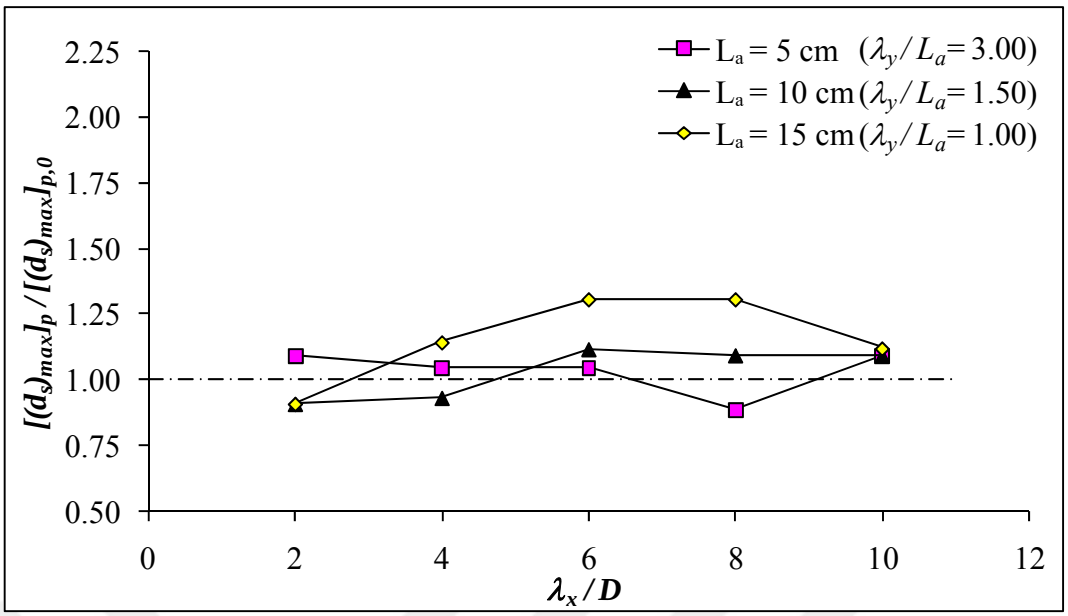


Figure 5.190 Variation of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point F of Pier$_2$ (λ_y / D = 3.00)

Results of the scour parameters conducted with two identical piers of diameters D = 5 cm and one abutment with length of L_a (= 5 cm, 10 cm and 15 cm) along the abutment's upstream face at point L_0 – $L_{0\text{-}14}$ were presented in Table 5.16.

$[(d_s)_{max}]_{a,0}$ values given in Table 5.1 were used to get the values of dimensionless scour parameter shown in Table 5.16. Using dimensionless pier position parameter λ_x / D and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$, Figure 5.191 – 5.193 were plotted as a function of abutment length L_a. These figures were sketched only up to point $L_{0\text{-}4}$ because point $L_{0\text{-}6}$ was not available for L_a = 5 cm case and point $L_{0\text{-}10}$ was not available for both L_a = 5 cm and L_a = 10 cm cases. This table also clearly shows that at the other measurement points, $L_{0\text{-}6}$ – $L_{0\text{-}14}$, the dimensionless scour parameter has the values rather smaller than those of L_0 – $L_{0\text{-}4}$ points.

Table 5.16 Measured maximum scour depths along the front face of the abutments with pier location parameters (D = 5 cm, λ_y = 15 cm and two piers case)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_a$ (cm)								$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$							
			Measurement Points															
L_a = 5 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E143	10	2	3.60	3.30	2.30						0.89	0.73	0.53					
E144	20	4	4.40	4.10	3.50						**1.09**	0.91	0.80					
E145	30	6	4.20	3.60	3.10						1.04	0.80	0.71					
E146	40	8	3.20	2.80	2.30						0.79	**0.62**	0.53					
E147	50	10	3.00	3.10	2.20						**0.74**	0.69	**0.51**					
L_a = 10 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E148	50	10	6.90	6.60	6.30	5.60	5.00	5.10			0.97	0.88	0.83	0.76	0.73	0.78		
E149	40	8	5.40	5.30	5.00	4.40	3.50	3.00			**0.76**	**0.71**	**0.66**	**0.60**	**0.51**	**0.46**		
E150	30	6	5.70	5.40	5.10	4.90	4.20	3.70			0.80	0.72	0.68	0.67	0.61	0.57		
E151	20	4	5.80	5.70	5.00	4.80	4.00	3.40			0.81	0.76	0.66	0.65	0.58	0.52		
E152	10	2	7.00	6.60	6.00	5.60	4.80	4.70			0.98	0.88	0.79	0.76	0.70	0.72		
L_a = 15 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E138	10	2	8.80	8.40	8.20	7.60	7.00	6.40	5.50	5.00	0.92	0.79	0.77	0.73	0.69	0.65	0.55	0.51
E139	20	4	8.30	8.00	7.70	7.50	6.90	5.90	5.20	4.70	**0.86**	**0.75**	**0.73**	**0.72**	0.68	**0.60**	0.52	0.47
E140	30	6	8.30	8.00	8.00	7.50	6.80	6.10	4.70	4.30	**0.86**	**0.75**	0.75	**0.72**	**0.67**	0.62	**0.47**	**0.43**
E141	40	8	8.20	8.40	8.20	8.20	7.40	6.90	6.20	6.10	0.85	0.79	0.77	0.79	0.73	0.70	0.62	0.62
E142	50	10	9.10	8.90	9.00	8.60	8.30	7.60	6.90	6.10	0.95	0.84	0.85	0.83	0.82	0.78	0.69	0.62

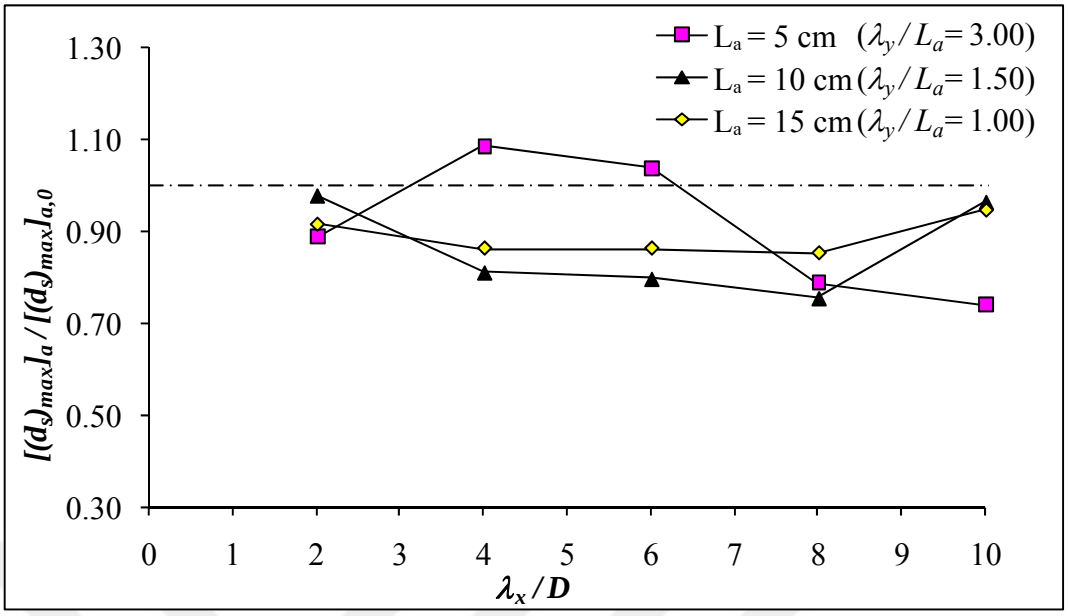


Figure 5.191 Variation of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point L_0 (λ_y / D = 3.00)

The arbitrary trends of the data points given in Figures 5.191 – 5.193 for different abutment lengths are very similar to each other. They intersect each other at various λ_x / D values. Therefore, it is difficult to conclude that the scour parameter increases or decreases with increasing λ_x / D. The maximum dimensionless scour depth values are obtained from the experiments of L_a = 5 cm abutment with values above unity, which are less than 1.10, at only two points of λ_x / D (Figure 5.191). The most of the data given in that figure have scour parameter values between 0.75 and 1.00. At the points following L_0, $L_{0\text{-}2}$ and $L_{0\text{-}4}$, the value of the dimensionless scour parameter gets much smaller than unity; between about 0.60 and 0.90 at $L_{0\text{-}2}$ and 0.50 and 0.80 at $L_{0\text{-}4}$ (Figures 5.192 and 5.193).

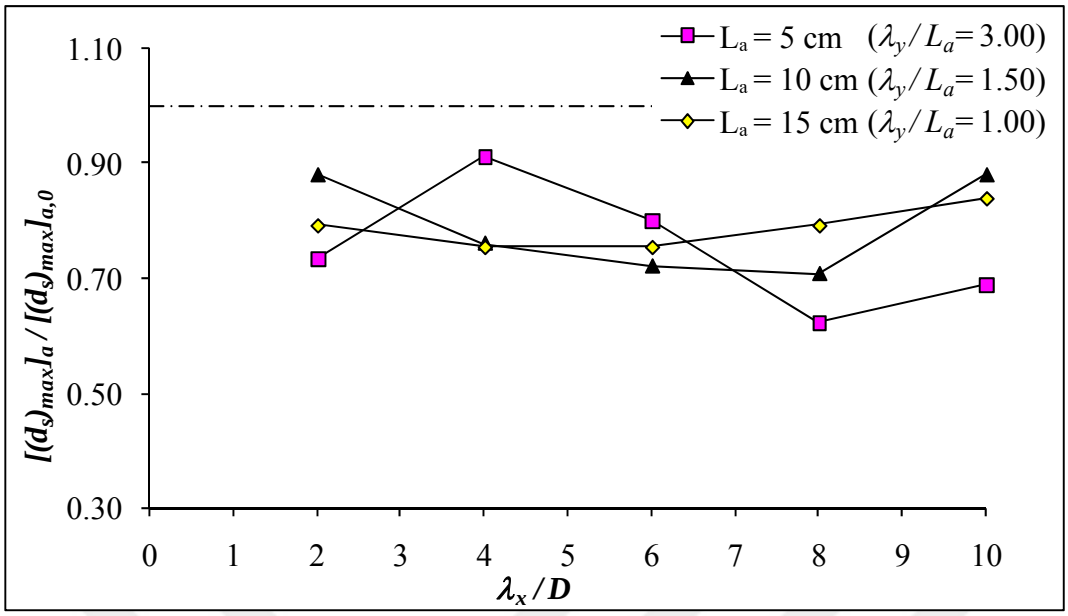


Figure 5.192 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point $L_{0\text{-}2}$ (λ_y / D = 3.00)

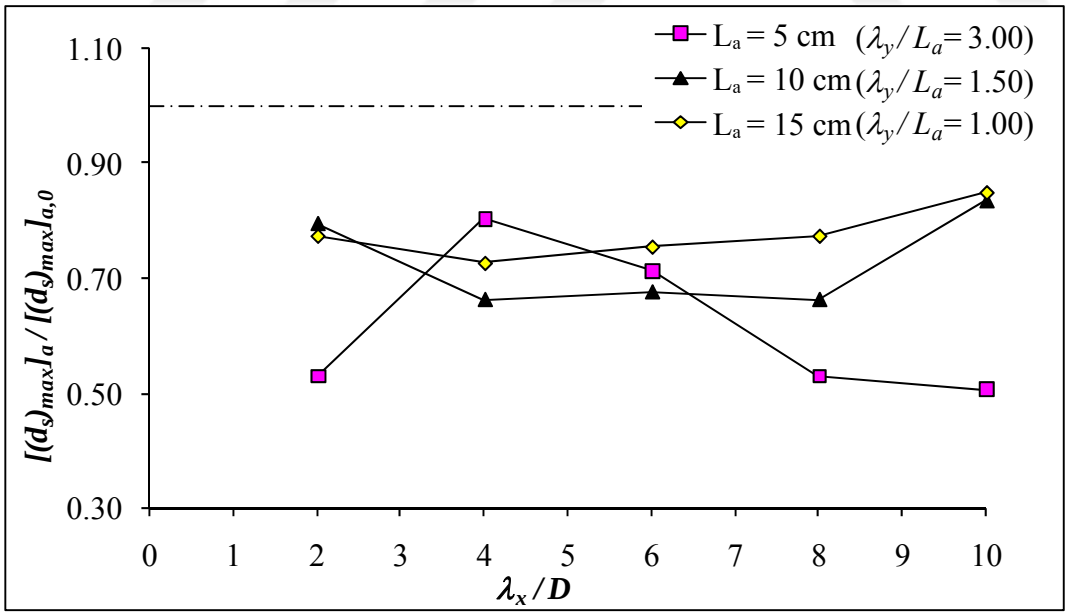


Figure 5.193 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 5 cm and λ_y = 15 cm at point $L_{0\text{-}4}$ (λ_y / D = 3.00)

The results of the experiments conducted with two piers of diameters D = 10 cm and an abutment of L_a = 5 cm, 10 cm and 15 cm with constant λ_y = 15 cm and varying values of λ_x were presented in Table 5.17 along with $[(d_s)_{max}]_{p,0}$ values taken from Table 5.14. Using the dimensionless pier position parameter λ_x/D and dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$, Figures 5.194, 5.196 and 5.198 for $Pier_1$ and Figures 5.195, 5.197 and 5.199 for $Pier_2$ were plotted as a function of abutment length L_a.

In Figure 5.194, it can be seen that the dimensionless scour parameter does not change too much with increasing λ_x / D at point L of $Pier_1$. However as the abutment length increases, the value of the dimensionless scour parameter increases with values of above unity. As for the point L of $Pier_2$, the distribution of the related parameters in Figure 5.195 are quite random while the abutment of L_a = 15 cm yields the maximum scour compared to the other abutment lengths tested. If Figure 5.194 is compared with Figure 5.195, it can be stated that point L of $Pier_2$ is subject to more scour than that of $Pier_1$.

When the dimensionless scour parameters of $Pier_1$ and $Pier_2$ at point R are compared with each other it is seen that, in general, the aforementioned parameter has larger values in $Pier_1$ than that of $Pier_2$.

In Figures 5.198 and 5.199 the effect of abutment length on the dimensionless scour parameter with varying λ_x / D is clearly seen at point F of both $Pier_1$ and $Pier_2$. As the abutment length increases, for a given λ_x / D the value of the dimensionless scour parameter increases. While the measured values of the dimensionless scour parameter varies between about 1.00 and 1.25 for $Pier_1$ at point F, the corresponding values of $Pier_2$ are 1.25 and 1.75.

Table 5.17 Measured maximum scour depths around the piers with their location parameters and abutment lengths (D = 10 cm, λ_y = 10 cm and two piers case)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_{p,0}$ (cm)						$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$					
			$Pier_1$			$Pier_2$			$Pier_1$			$Pier_2$		
L_a = 5 cm			L	R	F	L	R	F	L	R	F	L	R	F
E163	10	1	7.80	7.00	8.80	5.70	4.20	5.80	**1.10**	1.27	1.02	**1.78**	1.14	1.35
E164	20	2	7.50	7.50	9.40	4.40	4.40	5.50	1.06	1.36	**1.09**	1.38	1.19	1.28
E165	30	3	7.60	7.80	8.80	4.10	4.10	5.40	1.07	**1.42**	1.02	1.28	1.11	1.26
E166	40	4	7.50	7.50	8.90	3.60	4.40	5.50	1.06	1.36	1.03	1.13	1.19	1.28
E167	50	5	7.20	6.00	9.40	2.80	5.00	5.90	1.01	1.09	**1.09**	**0.88**	**1.35**	**1.37**
L_a = 10 cm			L	R	F	L	R	F	L	R	F	L	R	F
E153	10	1	8.20	7.10	9.70	3.50	3.80	5.60	1.15	1.29	1.13	1.09	1.03	1.30
E154	20	2	9.10	7.60	10.00	4.40	4.50	6.50	**1.28**	1.38	1.16	**1.38**	1.22	**1.51**
E155	30	3	8.60	9.10	10.20	3.00	4.90	6.40	1.21	1.65	**1.19**	**0.94**	1.32	1.49
E156	40	4	8.50	8.60	10.10	4.00	6.00	6.30	1.20	1.56	1.17	1.25	**1.62**	1.47
E157	50	5	8.30	10.20	9.30	3.40	4.80	5.90	1.17	**1.85**	1.08	1.06	1.30	1.37
L_a = 15 cm			L	R	F	L	R	F	L	R	F	L	R	F
E158	10	1	8.30	9.10	10.40	5.40	4.90	6.00	1.17	1.65	1.21	1.69	1.32	1.40
E159	20	2	9.90	9.70	10.90	5.20	5.60	6.90	**1.39**	**1.76**	1.27	1.63	**1.51**	1.60
E160	30	3	9.90	8.70	11.30	6.40	5.20	7.90	**1.39**	1.58	**1.31**	**2.00**	1.41	**1.84**
E161	40	4	9.00	8.90	10.50	4.30	5.30	7.10	1.27	1.62	1.22	1.34	1.43	1.65
E162	50	5	8.90	8.80	10.20	4.70	4.30	6.90	1.25	1.60	1.19	1.47	1.16	1.60

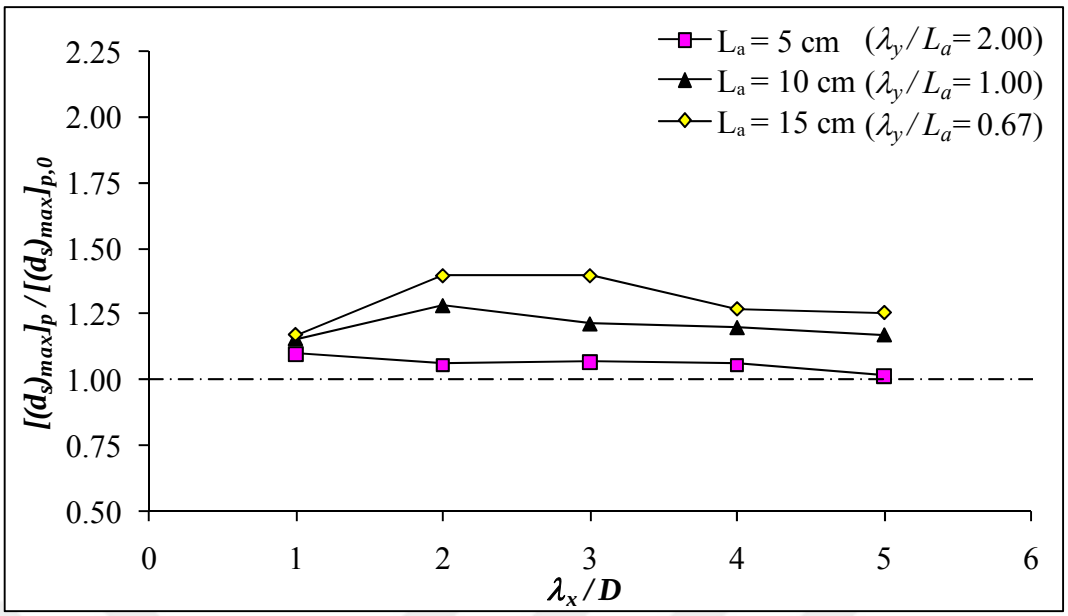


Figure 5.194 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point L of Pier$_1$ (λ_y / D = 1.00)

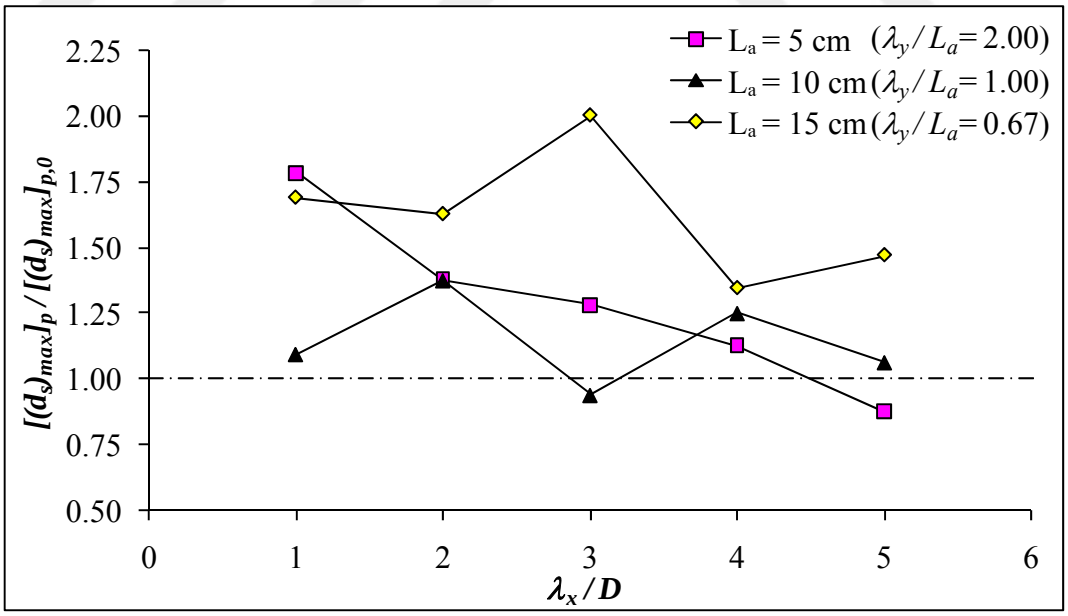


Figure 5.195 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point L of Pier$_2$ (λ_y / D = 1.00)

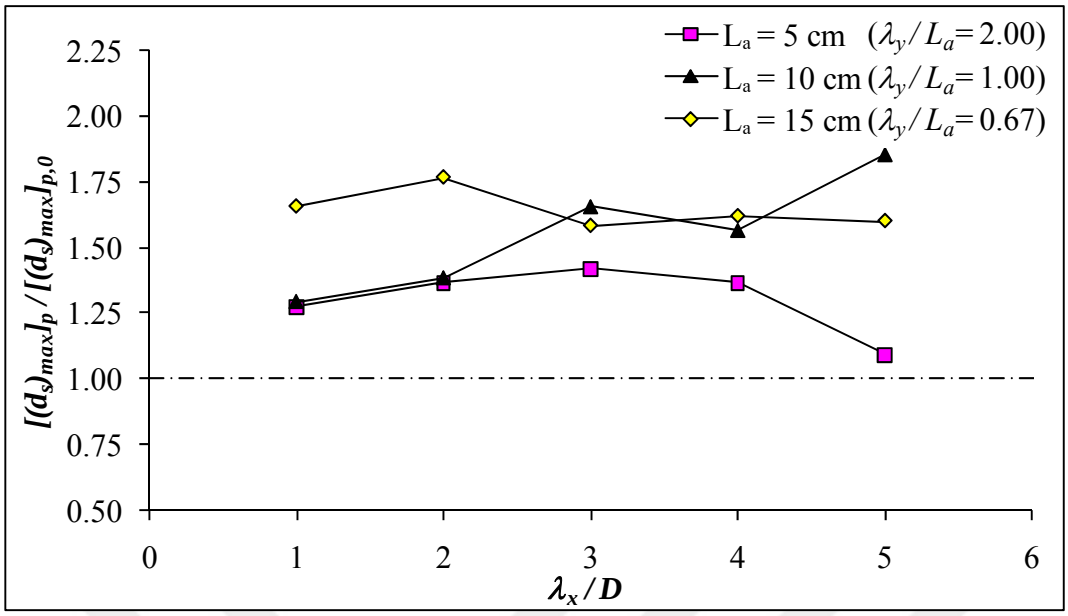


Figure 5.196 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point R of Pier$_1$ (λ_y / D = 1.00)

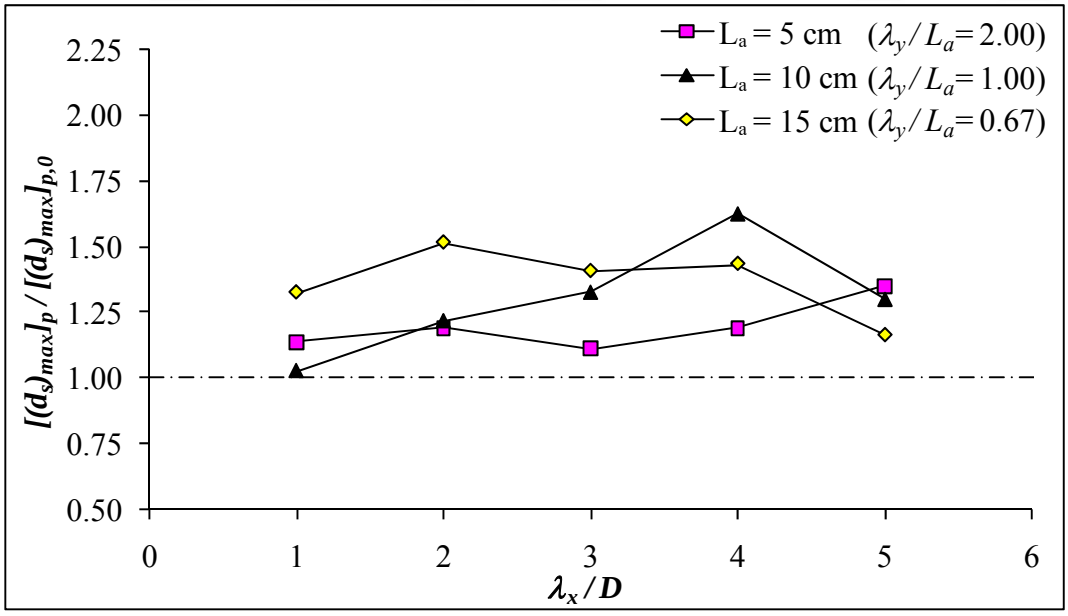


Figure 5.197 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point R of Pier$_2$ (λ_y / D = 1.00)

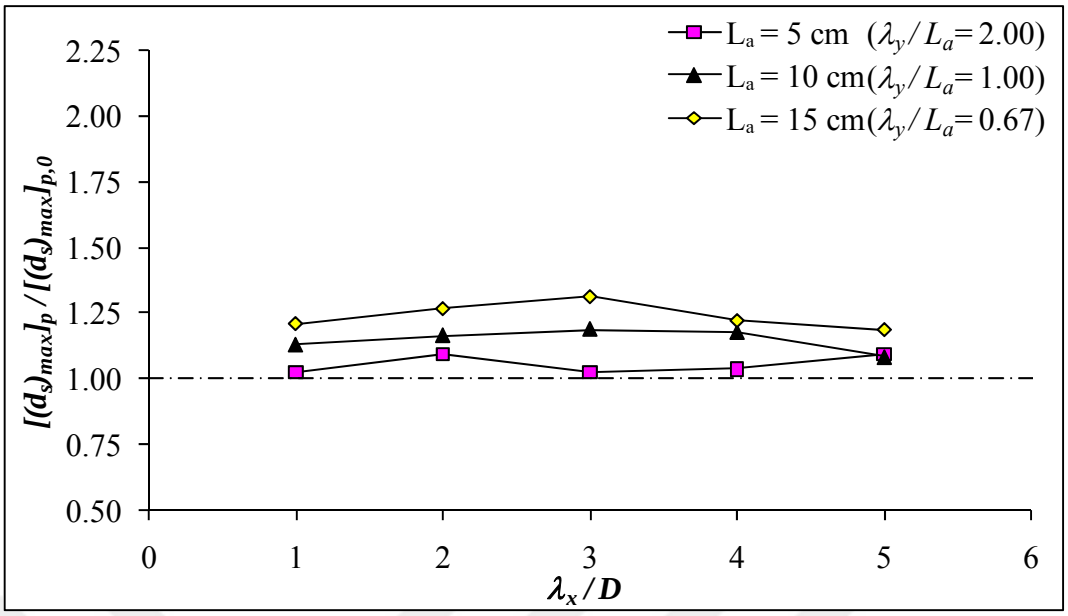


Figure 5.198 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point F of Pier$_1$ (λ_y / D = 1.00)

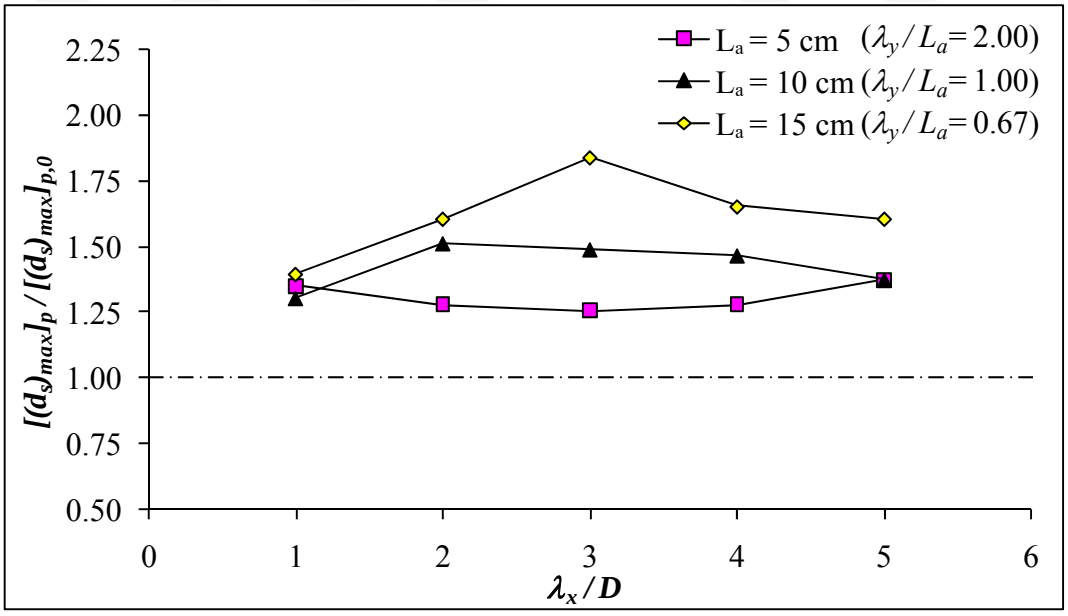


Figure 5.199 Variation of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point F of Pier$_2$ (λ_y / D = 1.00)

Maximum scour depths around abutments of lengths L_a = 5 cm, 10 cm and 15 cm with two piers of diameters D = 10 cm were measured for λ_y = 15 cm and the related parameters were given in Table 5.18 with $[(d_s)_{max}]_{a,0}$ values taken from Table 5.1.

Using dimensionless pier position parameter λ_x/D and dimensionless scour parameter $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$, Figure 5.200 – 5.202 were prepared as a function of abutment length L_a at points L_0, $L_{0\text{-}2}$ and $L_{0\text{-}4}$ of the abutments tested, respectively.

These figures reveal that maximum scour depths occur at point L_0 of the abutments. Although the lines connecting the data points of the abutments tested intersect each other at various λ_x / L_a values, in general, all of the data points are below the line of dimensionless scour parameter equal to unity.

The presence of two piers across the abutment has a positive effect on the value of maximum scour depth which form at point L_0, upstream corner of the abutment. It is not clear at which λ_x / D value the dimensionless scour parameter has a minimum value, which varies from abutment to abutment.

Table 5.18 Measured maximum scour depths along the front face of the abutments with pier location parameters (D = 10 cm, λ_y = 10 cm and two piers case)

Exp. No.	λ_x (cm)	λ_x / D	$[(d_s)_{max}]_a$ (cm)								$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$							
			Measurement Points															
L_a = 5 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E163	10	1.0	3.60	3.30	2.40						0.89	0.73	0.55					
E164	20	2.0	3.20	2.40	2.30						0.79	**0.53**	0.53					
E165	30	3.0	3.10	2.80	2.00						**0.77**	0.62	0.46					
E166	40	4.0	3.50	3.40	2.60						0.86	0.76	0.60					
E167	50	5.0	3.30	2.80	1.90						0.81	0.62	**0.44**					
L_a = 10 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E153	10	1.0	6.40	6.20	5.70	5.30	4.50	4.00			0.90	0.83	0.75	0.72	0.66	0.62		
E154	20	2.0	4.90	4.60	4.20	3.50	2.30	2.20			**0.69**	**0.61**	**0.56**	**0.48**	**0.34**	**0.34**		
E155	30	3.0	5.60	5.30	5.00	4.30	3.60	3.10			0.78	0.71	0.66	0.59	0.53	0.48		
E156	40	4.0	5.60	5.60	5.00	4.90	3.80	3.50			0.78	0.75	0.66	0.67	0.55	0.54		
E157	50	5.0	6.20	5.80	5.40	4.80	4.00	4.10			0.87	0.77	0.72	0.65	0.58	0.63		
L_a = 15 cm			L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}	L_0	L_{0-2}	L_{0-4}	L_{0-6}	L_{0-8}	L_{0-10}	L_{0-12}	L_{0-14}
E158	10	1.0	8.90	7.80	7.50	6.70	5.80	5.30	4.00	3.70	0.93	0.74	0.71	0.64	0.57	0.54	0.40	0.37
E159	20	2.0	8.40	7.90	7.30	7.00	6.40	5.60	3.70	3.40	0.88	0.75	0.69	0.67	0.63	0.57	**0.37**	**0.34**
E160	30	3.0	8.30	7.90	7.30	6.60	6.10	5.00	4.00	3.60	0.86	0.75	0.69	**0.63**	0.60	0.51	0.40	0.36
E161	40	4.0	8.00	7.70	7.50	6.80	6.10	5.80	3.90	3.80	0.83	0.73	0.71	0.65	0.60	0.59	0.39	0.38
E162	50	5.0	7.70	7.30	6.90	6.50	5.90	4.80	3.70	3.60	**0.80**	**0.69**	**0.65**	**0.63**	**0.58**	**0.49**	**0.37**	0.36

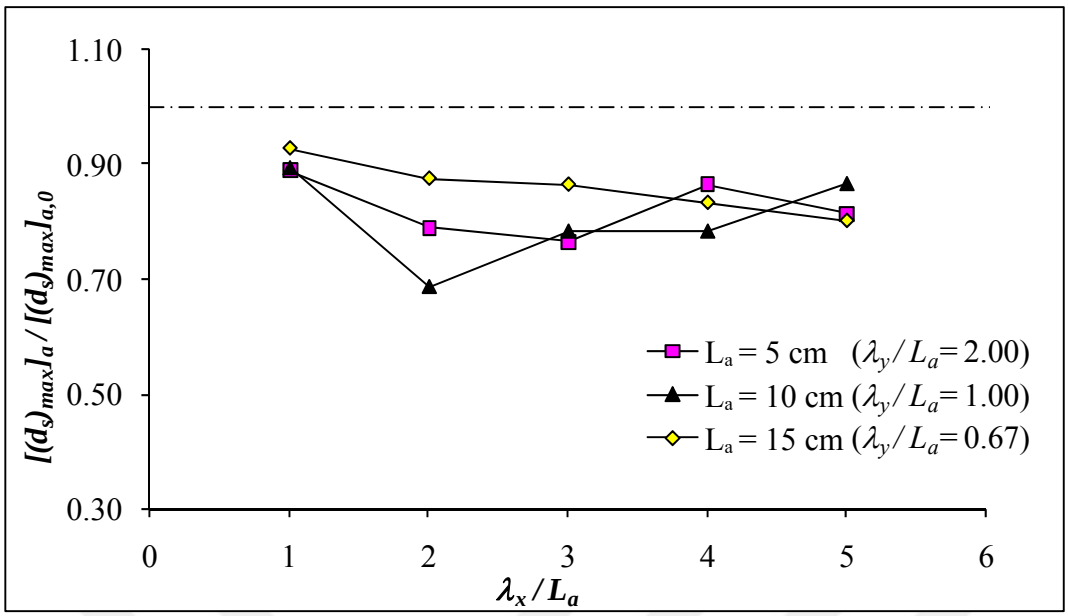


Figure 5.200 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point L_0 (λ_y / D = 1.00)

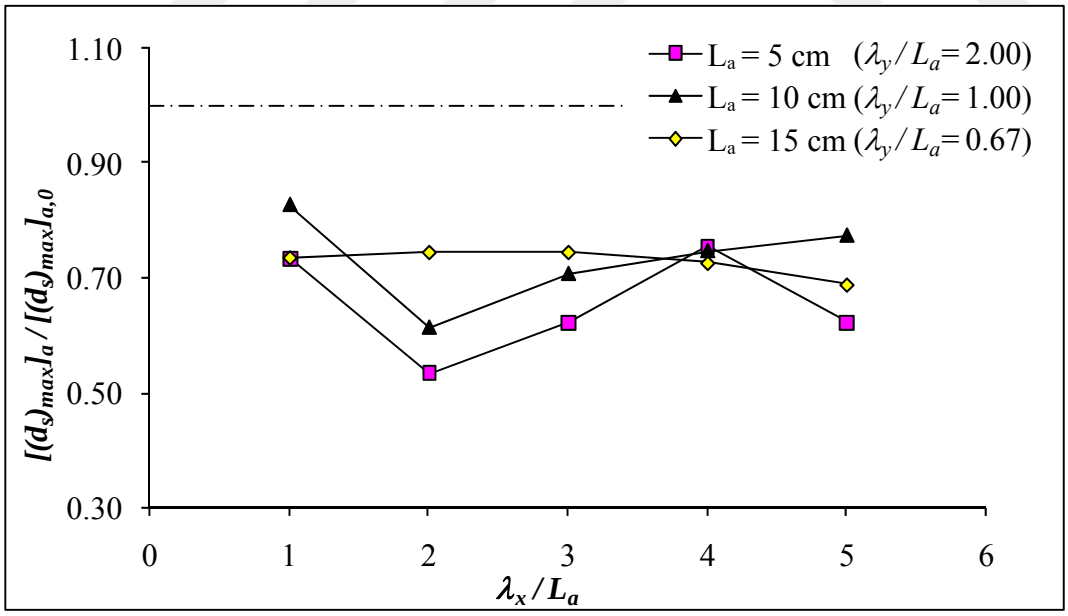


Figure 5.201 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point $L_{0\text{-}2}$ (λ_y / D = 1.00)

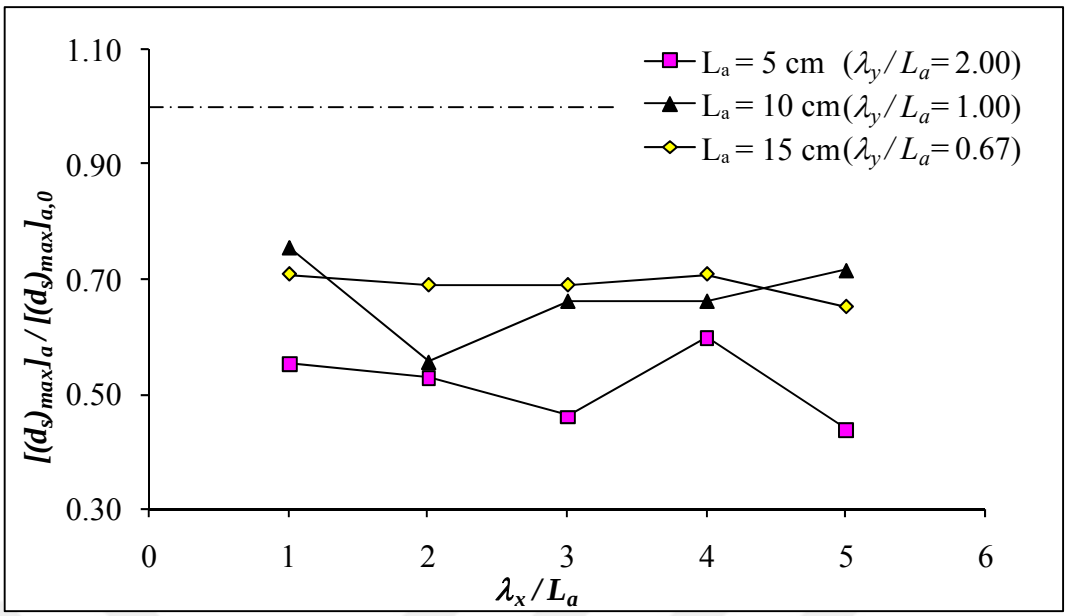


Figure 5.202 Variation of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ with λ_x / D as a function L_a for D = 10 cm and λ_y = 10 cm at point $L_{0\text{-}4}$ (λ_y / D = 1.00)

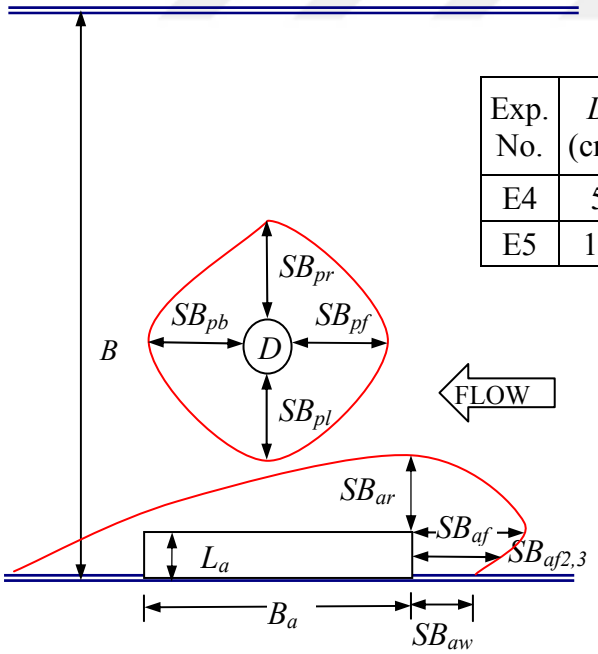
5.2.3 One Pier and One Abutment Case for Scour Borders

Boundaries of the scour holes forming around the piers and abutments are called "Scour Borders (*SB*)" in this study as shown in Table 5.19. For example, scour hole border developed at the left of the pier was named as SB_{pl} where subscript "*p*" stands for pier and subscript "*l*" stands for left. Similar criteria were used for other directions around the pier. The related initial experimental data were designated with subscript "*0*" and tabulated in Table 5.19.

Table 5.19 Scour borders obtained from initial experiments

Exp. No.	L_a (cm)	$SB_{aw,0}$ (cm)	$SB_{af2,0}$ (cm)	$SB_{af3,0}$ (cm)	$SB_{af,0}$ (cm)	$SB_{ar,0}$ (cm)
E1	5	9.00			8.50	9.50
E2	10	12.00	12.50		12.50	13.00
E3	15	20.50	20.50	21.00	21.50	21.00

Exp. No.	D (cm)	$SB_{pl,0}$ (cm)	$SB_{pf,0}$ (cm)	$SB_{pr,0}$ (cm)	$SB_{pb,0}$ (cm)
E4	5	11.50	10.00	11.50	68.00
E5	10	16.50	16.50	17.00	110.00



For abutment case instead of using left, right, front and back terms, SB_{aw} is the length of the scour hole upstream of the abutment along the wall in the direction of flow, SB_{af} is the length of the scour hole measured from the upstream corner of the abutment in the direction of flow and SB_{ar} is the one measured from the upstream corner of the abutment perpendicular to the flow direction. In all these descriptions subscript "*a*" stands for abutment. Furthermore, SB_{af2} was used for scour border at 5 cm away from the channel wall at upstream face of the abutment along the flow direction for the sets of L_a = 10 cm and SB_{af3} was used for scour borders 10 cm away from the channel wall for L_a = 15 cm sets.

To investigate the developments of the scour holes the measured scour dimensions were divided by the corresponding values obtained from the initial studies to get dimensionless scour hole parameters. As an example for the experimental set of L_a = 5 cm and D = 5 cm, for the initial data of abutment and pier, the related parameters given in Table 5.19 under the experimental number of E1 and E4 were used, respectively. For the other pier diameter, D = 10 cm, and abutment of L_a = 10 cm, the required initial study scour hole dimensions were presented in the same Table as experimental numbers of E2 and E5.

Set I : D = 5 cm, L_a = 5 cm (L_a / D = 1.00)

The dimensions of the measured scour borders around the pier at four points for D = 5 cm and L_a = 5 cm along with the position of the pier were presented in Table 5.20.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{pl} / SB_{pl,0}$, $SB_{pr} / SB_{pr,0}$, $SB_{pf} / SB_{pf,0}$ and $SB_{pb} / SB_{pb,0}$, Figures 5.203 – 5.206 were plotted as a function of λ_y / B_a, respectively.

Table 5.20 Parameters of the scour holes forming around the pier (L_a = 5 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E6	5.5	1.1	5.5	14.5	18.0	106.0	**0.48**	1.45	1.57	1.56
E11	10	2	10.0	15.0	20.0	104.0	0.87	**1.50**	**1.74**	1.53
E12	15	3	15.0	13.5	16.5	70.5	1.30	1.35	1.43	1.04
E17	20	4	20.0	12.0	15.0	105.0	**1.74**	1.20	1.30	1.54
E18	25	5	13.5	12.0	13.5	134.0	1.17	1.20	1.17	**1.97**
E23	30	6	13.0	12.5	13.5	125.0	1.13	1.25	1.17	1.84
E24	35	7	13.5	11.5	13.0	122.0	1.17	1.15	1.13	1.79
E29	40	8	12.0	11.0	12.5	113.0	1.04	1.10	1.09	1.66
E30	45	9	12.5	11.5	13.0	113.0	1.09	1.15	1.13	1.66
E35	50	10	13.0	11.5	13.0	107.0	1.13	1.15	1.13	1.57
λ_y = 35 cm, λ_y / B_a = 0.47										
E7	5.5	1.1	5.5	10.0	13.0	87.0	**0.48**	1.00	1.13	1.28
E10	10	2	10.0	10.0	13.0	90.0	0.87	1.00	1.13	1.32
E13	15	3	15.0	11.3	14.0	113.0	**1.30**	1.13	1.22	1.66
E16	20	4	12.5	11.0	13.0	82.0	1.09	1.10	1.13	1.21
E19	25	5	15.0	14.0	15.0	130.0	**1.30**	1.40	1.30	**1.91**
E22	30	6	12.0	11.5	14.0	105.0	1.04	1.15	1.22	1.54
E25	35	7	13.0	12.0	14.0	113.0	1.13	1.20	1.22	1.66
E28	40	8	12.5	15.0	16.0	94.5	1.09	**1.50**	**1.39**	1.39
E31	45	9	13.0	12.0	14.0	98.0	1.13	1.20	1.22	1.44
E34	50	10	14.0	12.0	15.0	106.0	1.22	1.20	1.30	1.56
λ_y = 70 cm, λ_y / B_a = 0.93										
E8	5.5	1.1	5.5	10.5	12.0	78.0	**0.48**	1.05	1.04	1.15
E9	10	2	10.0	12.5	13.5	90.0	0.87	**1.25**	1.17	1.32
E14	15	3	12.0	11.0	14.0	84.0	1.04	1.10	1.22	1.24
E15	20	4	11.0	11.5	13.5	87.0	0.96	1.15	1.17	1.28
E20	25	5	12.5	12.0	15.0	110.0	1.09	1.20	**1.30**	**1.62**
E21	30	6	12.5	11.5	12.5	88.0	1.09	1.15	1.09	1.29
E26	35	7	12.5	11.5	13.5	90.0	1.09	1.15	1.17	1.32
E27	40	8	13.0	11.5	14.0	95.0	**1.13**	1.15	1.22	1.40
E32	45	9	12.5	11.0	13.0	87.0	1.09	1.10	1.13	1.28
E33	50	10	12.5	11.0	13.5	87.0	1.09	1.10	1.17	1.28

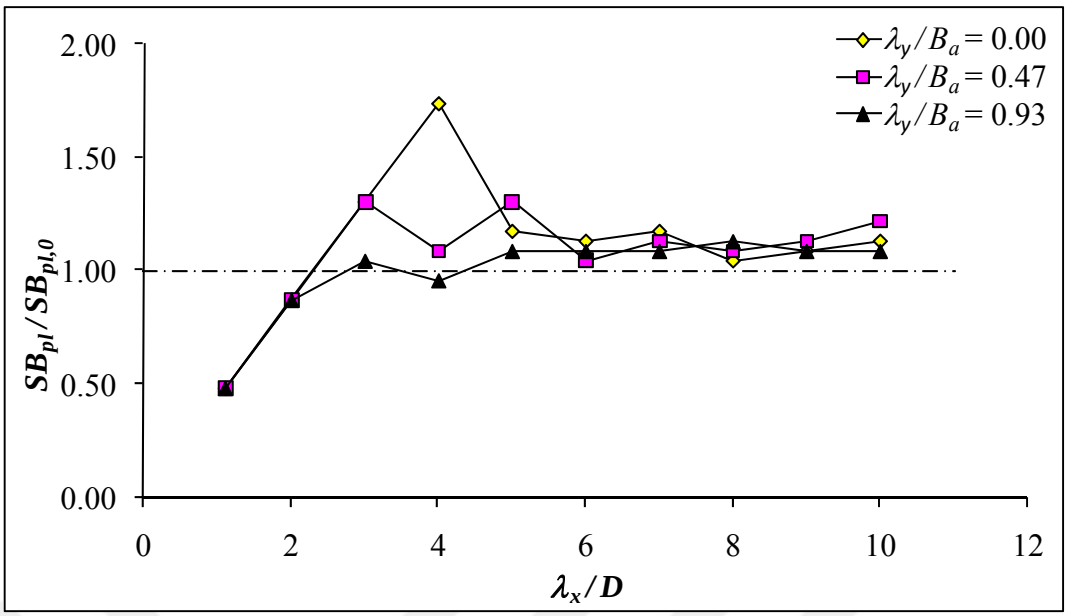


Figure 5.203 Variations of SB_{pl} / $SB_{pl,0}$ with λ_x / D as a function of λ_y / B_a for L_a = 5 cm and D = 5 cm at left side of the pier

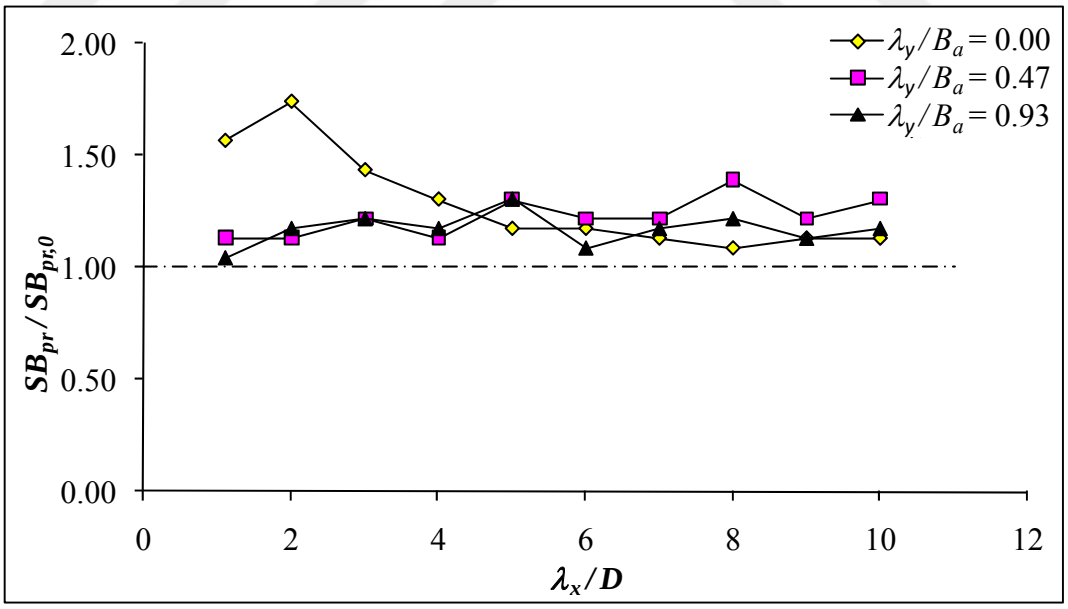


Figure 5.204 Variations of SB_{pr} / $SB_{pr,0}$ with λ_x / D as a function of λ_y / B_a for L_a = 5 cm and D = 5 cm at right side of the pier

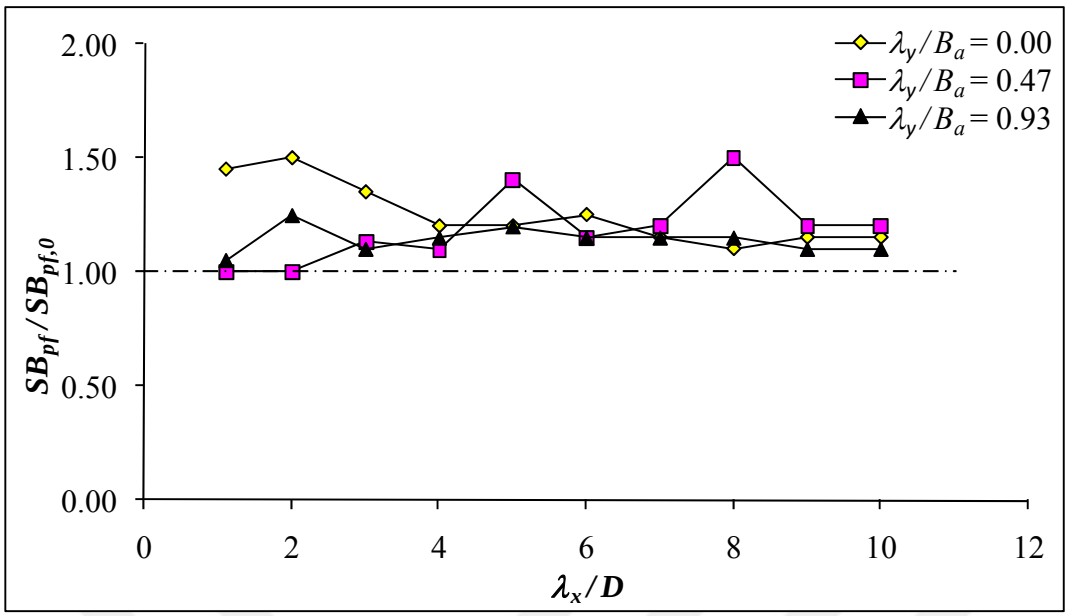


Figure 5.205 Variations of SB_{pf} / $SB_{pf,0}$ with λ_x / D as a function of λ_y / B_a for L_a = 5 cm and D = 5 cm at front side of the pier

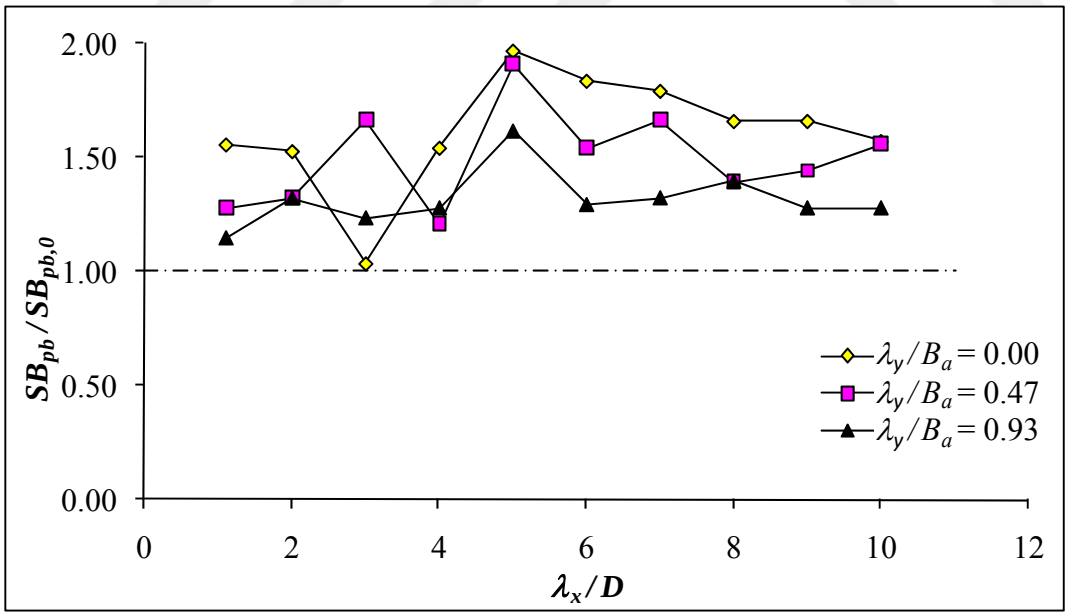


Figure 5.206 Variations of SB_{pb} / $SB_{pb,0}$ with λ_x / D as a function of λ_y / B_a for L_a = 5 cm and D = 5 cm at back side of the pier

From the inspection of figures 5.203 – 5.206 it can be concluded that regardless of the point around the pier the effect of λ_x / D is not so significant on the values of the dimensionless pier scour border. Except some small values of λ_x / D up to about 3-4, in general, the values of the dimensionless pier scour border are pretty close to each other for a given λ_y / B_a.

While the dimensionless scour border parameter having almost the minimum values at four points around the pier for $\lambda_y / B_a = 0.93$ and the whole range of λ_x / D tested, the maximum scour border parameters are obtained at $\lambda_y / B_a = 0.47$ and 0.00. The maximum scour interaction between pier and abutment is observed at the rear of the pier, at point B, with dimensionless scour border parameter of between 1.57 and 1.97 for $5 \leq \lambda_x/D \leq 10$.

The dimensions of the measured scour borders around the abutment for $D = 5$ cm pier and $L_a = 5$ cm abutment with the position of the pier were given in Table 5.21. Variation of dimensionless scour border parameters; $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$, $SB_{ar} / SB_{ar,0}$, with λ_x / D, as a function of λ_y / B_a was shown in Figures 5.207 – 5.209.

These figures clearly show that most of the dimensionless scour border parameters are less than unity at any point around the abutment for the range of λ_y / B_a and λ_x / D values tested except just a few data of $\lambda_y / B_a = 0.00$ and 0.47 where the dimensionless scour parameters' values are larger than unity.

This means that the presence of a pier does not affect the dimensions of the scour hole forming around the abutment compared to the case where there is no pier. The case of $\lambda_y / B_a = 0.00$ is the unity at which the dimensions of the scour hole around the abutment are larger than those of $\lambda_y / B_a = 0.47$ and 0.93.

Table 5.21 Parameters of the scour holes forming around the abutment (L_a = 5 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E6	5.5	1.1	10.0	11.0	5.5	1.11	**1.29**	**0.58**
E11	10	2	9.0	8.5	10.0	1.00	1.00	1.05
E12	15	3	6.5	7.0	11.0	**0.72**	**0.82**	**1.16**
E17	20	4	9.5	8.5	9.0	1.06	1.00	0.95
E18	25	5	9.5	8.0	9.0	1.06	0.94	0.95
E23	30	6	11.0	9.5	10.0	**1.22**	1.12	1.05
E24	35	7	8.5	8.0	9.0	0.94	0.94	0.95
E29	40	8	9.5	8.0	9.0	1.06	0.94	0.95
E30	45	9	9.0	8.0	9.0	1.00	0.94	0.95
E35	50	10	7.5	8.0	8.5	0.83	0.94	0.89
λ_y = 35 cm, λ_y / B_a = 0.47								
E7	5.5	1.1	7.5	7.0	8.0	0.83	0.82	0.84
E10	10	2	8.0	7.5	8.0	0.89	0.88	0.84
E13	15	3	9.0	8.0	10.0	1.00	0.94	**1.05**
E16	20	4	6.5	7.0	7.5	**0.72**	0.82	0.79
E19	25	5	8.0	7.5	8.5	0.89	0.88	0.89
E22	30	6	6.5	6.5	7.0	**0.72**	**0.76**	**0.74**
E25	35	7	8.0	7.5	8.5	0.89	0.88	0.89
E28	40	8	10.0	10.5	11.5	**1.11**	**1.24**	1.21
E31	45	9	9.0	8.0	8.5	1.00	0.94	0.89
E34	50	10	8.5	8.0	9.0	0.94	0.94	0.95
λ_y = 70 cm, λ_y / B_a = 0.93								
E8	5.5	1.1	8.5	8.5	9.5	0.94	1.00	1.00
E9	10	2	8.0	7.5	8.0	0.89	0.88	0.84
E14	15	3	9.0	7.5	8.5	1.00	0.88	0.89
E15	20	4	5.5	6.0	6.5	**0.61**	**0.71**	**0.68**
E20	25	5	10.0	9.5	10.0	**1.11**	**1.12**	**1.05**
E21	30	6	7.5	7.0	7.5	0.83	0.82	0.79
E26	35	7	9.0	8.5	9.5	1.00	1.00	1.00
E27	40	8	8.5	8.0	8.5	0.94	0.94	0.89
E32	45	9	9.0	8.5	9.0	1.00	1.00	0.95
E33	50	10	9.0	8.0	9.0	1.00	0.94	0.95

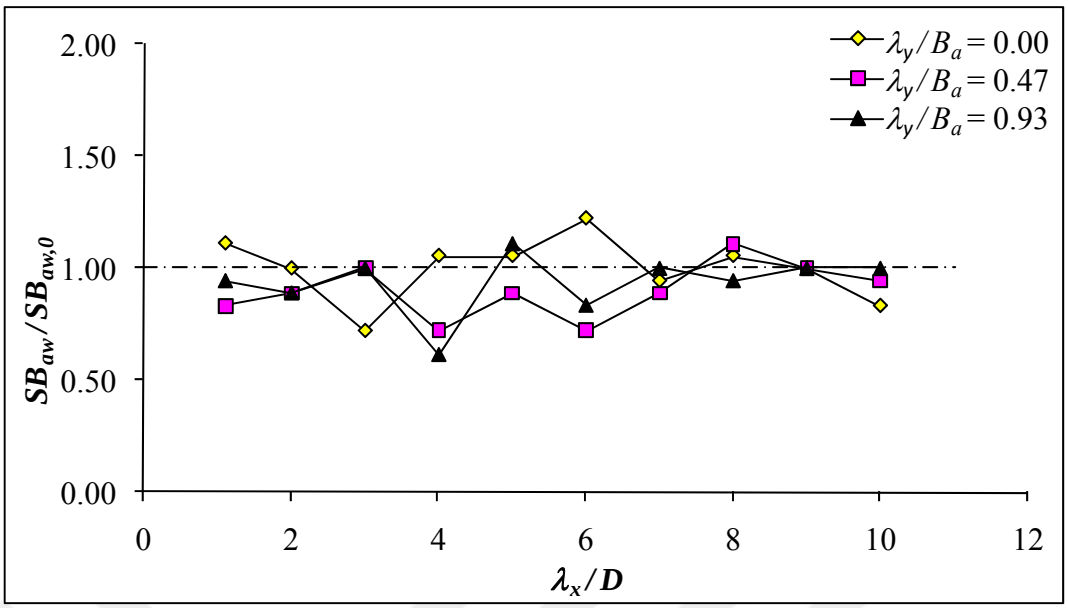


Figure 5.207 Relationship between abutment scour border and pier position with respect to the abutment for L_a = 5 cm and D = 5 cm at channel wall side of the abutment

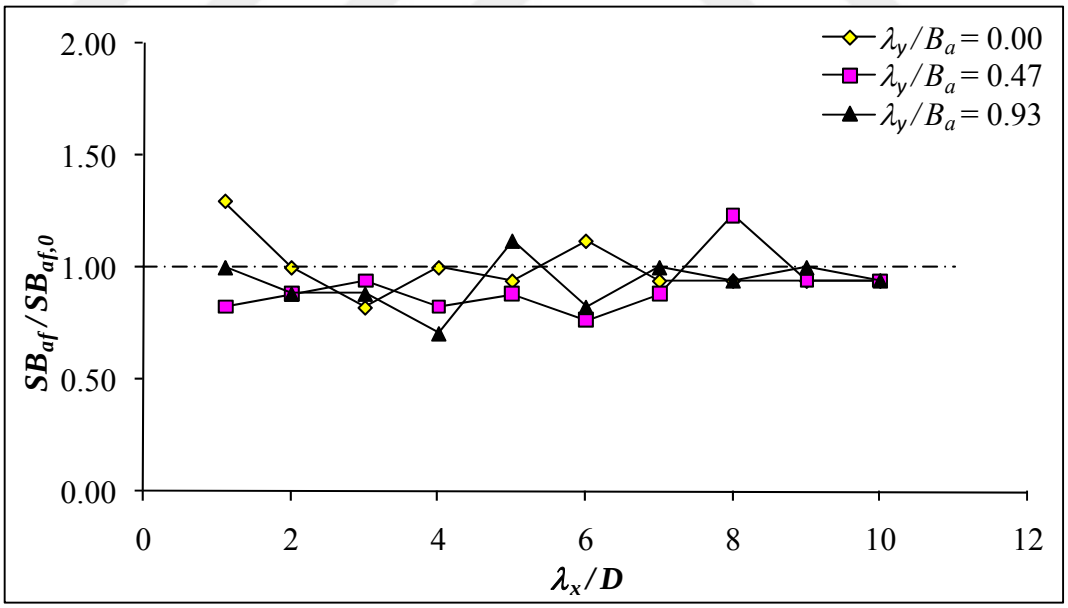


Figure 5.208 Relationship between abutment scour border and pier position with respect to the abutment for L_a = 5 cm and D = 5 cm at upstream side of the abutment corner

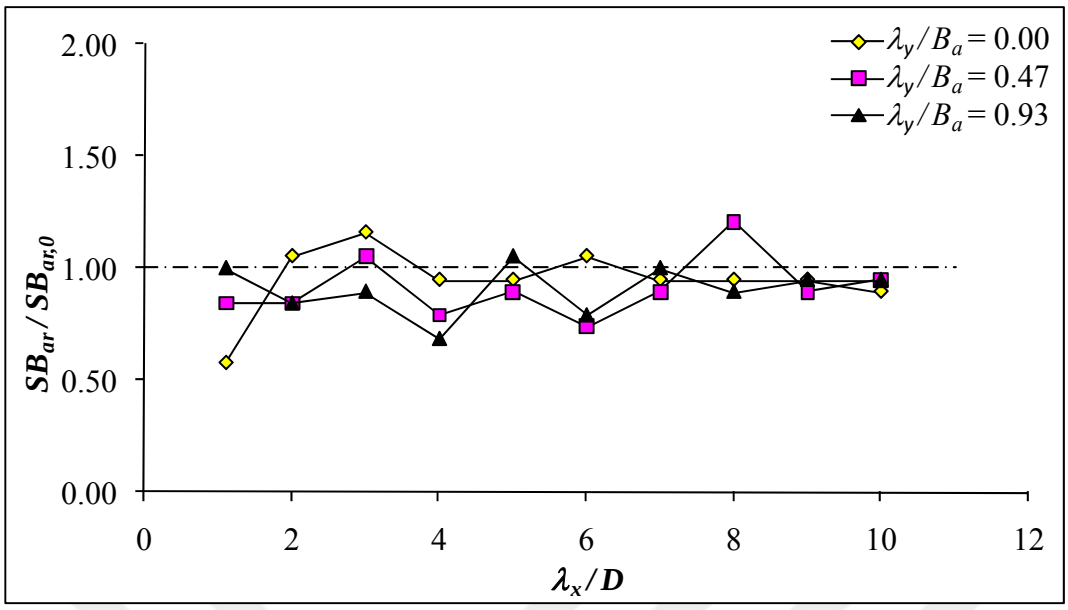


Figure 5.209 Relationship between abutment scour border and pier position with respect to the abutment for L_a = 5 cm and D = 5 cm at pier side of the abutment corner

Set II : D = 5 cm, L_a = 10 cm (L_a / D = 2.00)

In this second set the dimensions of the pier and abutment used together are D = 5 cm and L_a = 10 cm, respectively. The measured scour hole dimensions forming around the pier at four different points along with those of initial experiments were presented in Table 5.22. Figures 5.210 – 5.213 show the variation of dimensionless scour parameters around the pier with dimensionless pier positions of λ_y / B_a and λ_x / D.

From Figures 5.210 – 5.213 it can be stated that the dimensionless scour border parameter slightly increases with increasing λ_x / D and varies between a band; 0.43 and 2.18, with varying λ_y / B_a. In general maximum values are obtained at the back side of the pier where the value of the dimensionless scour border increases as λ_y / B_a decreases.

Table 5.22 Parameters of the scour holes forming around the pier (L_a = 10 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E65	5	1	5.0	15.0	15.0	157.0	**0.43**	**1.50**	**1.30**	2.31
E60	10	2	10.0	12.0	12.5	150.0	0.87	1.20	1.09	2.21
E59	15	3	12.0	12.0	14.5	140.0	1.04	1.20	1.26	2.06
E54	20	4	10.0	12.0	12.5	132.0	0.87	1.20	1.09	1.94
E53	25	5	12.0	11.5	13.5	143.0	1.04	1.15	1.17	2.10
E48	30	6	13.0	11.5	14.0	146.0	**1.13**	1.15	1.22	2.15
E47	35	7	12.5	12.0	14.0	145.0	1.09	1.20	1.22	2.13
E42	40	8	12.5	11.5	12.5	138.0	1.09	1.15	1.09	2.03
E41	45	9	13.5	12.0	13.5	158.0	1.17	1.20	1.17	**2.32**
E36	50	10	13.0	12.0	13.5	142.5	**1.13**	1.20	1.17	2.10
λ_y = 35 cm, λ_y / B_a = 0.47										
E64	5	1	5.0	8.5	13.5	115.0	**0.43**	**0.85**	1.17	1.69
E61	10	2	8.0	9.0	14.0	105.0	0.70	0.90	1.22	1.54
E58	15	3	9.0	9.0	14.5	111.0	0.78	0.90	1.26	1.63
E55	20	4	11.0	11.5	15.5	114.0	0.96	1.15	1.35	1.68
E52	25	5	10.0	12.5	17.0	134.0	0.87	1.25	**1.48**	1.97
E49	30	6	12.0	12.5	16.5	118.0	1.04	1.25	1.43	1.74
E46	35	7	13.0	12.0	15.5	148.0	1.13	1.20	1.35	**2.18**
E43	40	8	14.5	13.0	15.5	147.0	**1.26**	**1.30**	1.35	2.16
E40	45	9	14.0	12.5	16.0	138.0	1.22	1.25	1.39	2.03
E37	50	10	13.6	12.0	14.5	145.0	1.18	1.20	1.26	2.13
λ_y = 70 cm, λ_y / B_a = 0.93										
E63	5	1	5.0	9.5	11.0	70.0	**0.43**	0.95	**0.96**	1.03
E62	10	2	10.0	8.5	12.0	82.0	0.87	**0.85**	1.04	1.21
E57	15	3	10.0	9.5	13.0	97.0	0.87	0.95	1.13	1.43
E56	20	4	11.0	11.0	15.5	96.0	0.96	1.10	1.35	1.41
E51	25	5	11.5	11.0	16.0	103.0	1.00	1.10	**1.39**	1.51
E50	30	6	11.0	12.5	14.5	112.0	0.96	**1.25**	1.26	1.65
E45	35	7	13.0	12.5	15.0	120.0	1.13	**1.25**	1.30	1.76
E44	40	8	14.0	12.5	14.5	124.0	**1.22**	**1.25**	1.26	1.82
E39	45	9	12.5	10.0	14.5	121.0	1.09	1.00	1.26	1.78
E38	50	10	14.0	12.5	15.5	140.0	**1.22**	**1.25**	1.35	**2.06**

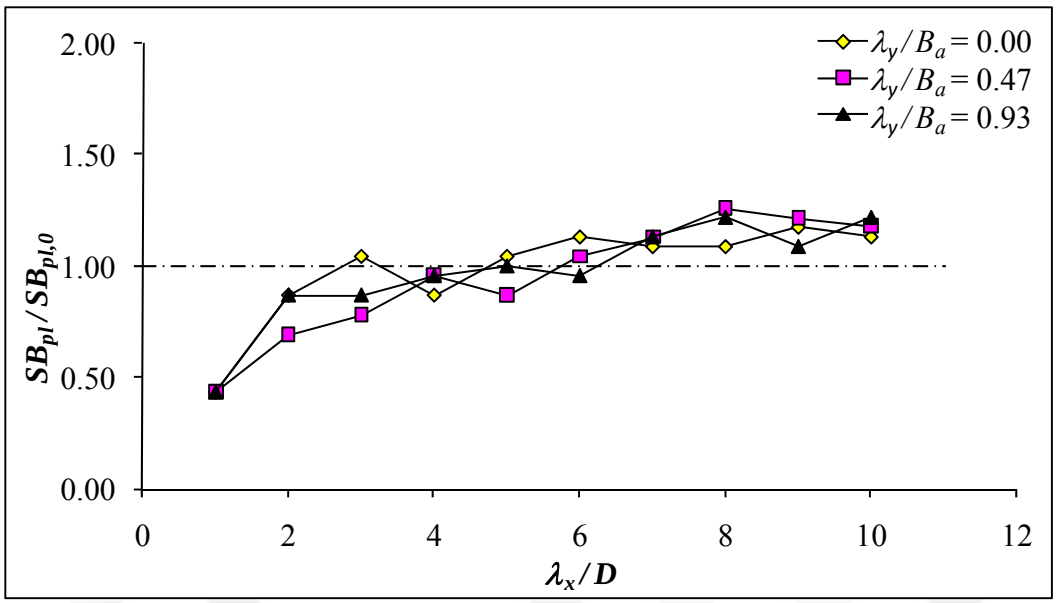


Figure 5.210 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the left side of the pier for L_a = 10 cm and D = 5 cm

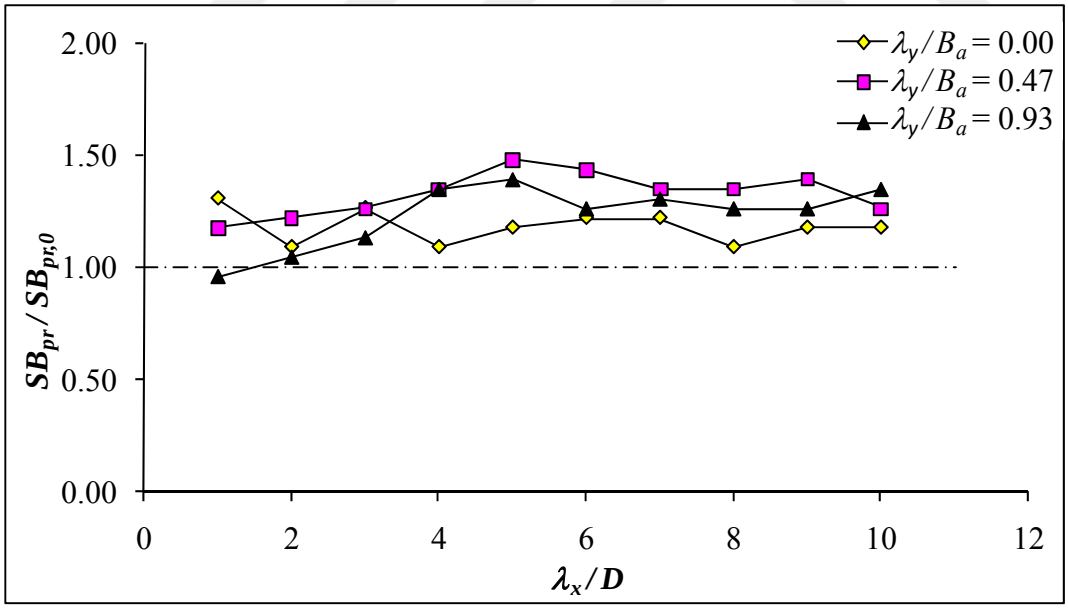


Figure 5.211 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the right side of the pier for L_a = 10 cm and D = 5 cm

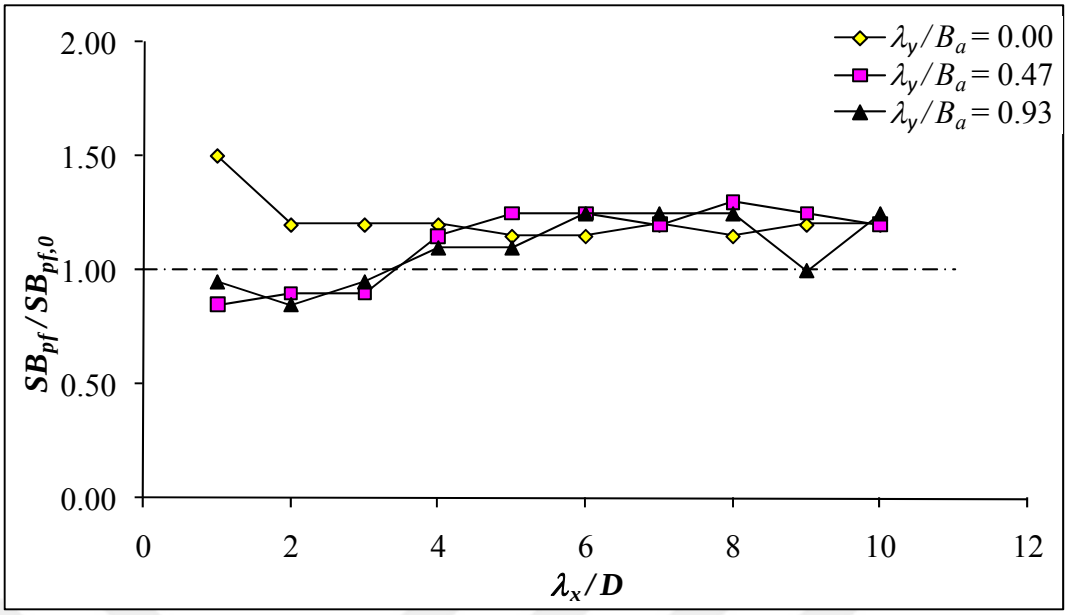


Figure 5.212 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the front side of the pier for L_a = 10 cm and D = 5 cm

For the abutment – pier arrangement of L_a = 10 cm and D = 5 cm, the parameters of the scour holes forming around the abutment and the pier position were tabulated in Table 5.23.

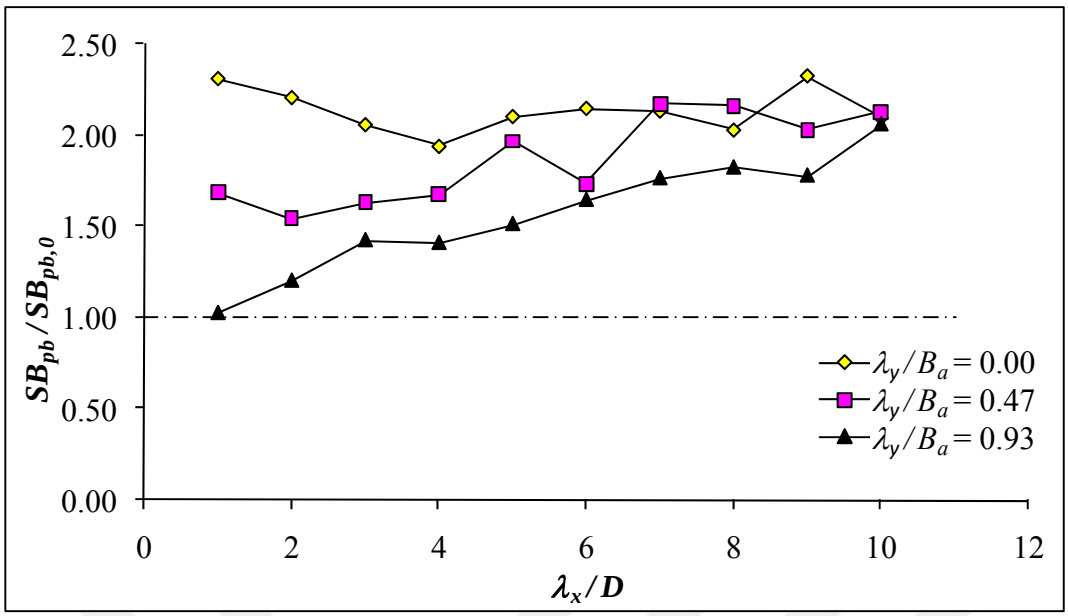


Figure 5.213 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the back side of the pier for L_a = 10 cm and D = 5 cm

Table 5.23 Parameters of the scour holes forming around the abutment (L_a = 10 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E65	5	1	13.5	18.5	5.0	1.13	**1.48**	**0.38**
E60	10	2	12.0	15.0	10.0	1.00	1.20	0.77
E59	15	3	12.0	11.5	15.0	1.00	**0.92**	**1.15**
E54	20	4	12.5	12.0	10.0	1.04	0.96	0.77
E53	25	5	15.0	14.0	13.5	1.25	1.12	1.04
E48	30	6	15.0	14.0	14.0	1.25	1.12	1.08
E47	35	7	14.5	14.0	14.5	1.21	1.12	1.12
E42	40	8	15.5	14.0	14.5	1.29	1.12	1.12
E41	45	9	17.0	15.0	15.0	**1.42**	1.20	**1.15**
E36	50	10	15.0	15.0	14.0	1.25	1.20	1.08
λ_y = 35 cm, λ_y / B_a = 0.47								
E64	5	1	14.0	14.5	14.0	1.17	1.16	1.08
E61	10	2	13.5	13.0	12.5	1.13	1.04	**0.96**
E58	15	3	14.5	14.0	14.0	1.21	1.12	1.08
E55	20	4	15.0	13.5	14.0	1.25	1.08	1.08
E52	25	5	15.0	14.5	13.5	1.25	1.16	1.04
E49	30	6	13.5	13.5	14.0	1.13	1.08	1.08
E46	35	7	16.0	15.0	15.0	1.33	**1.20**	**1.15**
E43	40	8	16.0	14.5	15.0	1.33	1.16	1.15
E40	45	9	16.0	15.0	14.0	1.33	**1.20**	1.08
E37	50	10	16.5	15.0	14.5	**1.38**	**1.20**	1.12
λ_y = 70 cm, λ_y / B_a = 0.93								
E63	5	1	12.5	12.5	11.5	1.04	1.00	**0.88**
E62	10	2	15.5	14.5	14.0	1.29	1.16	1.08
E57	15	3	14.0	13.5	13.5	1.17	1.08	1.04
E56	20	4	16.0	14.0	15.0	1.33	1.12	1.15
E51	25	5	13.5	13.0	12.5	1.13	1.04	0.96
E50	30	6	15.0	14.5	14.0	1.25	1.16	1.08
E45	35	7	15.5	14.0	14.5	1.29	1.12	1.12
E44	40	8	16.5	15.0	16.0	**1.38**	1.20	**1.23**
E39	45	9	16.0	14.5	15.0	1.33	1.16	1.15
E38	50	10	16.5	15.5	15.0	**1.38**	**1.24**	1.15

Using the dimensionless pier position parameter λ_x / D and dimensionless scour border parameter; $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$ and $SB_{ar} / SB_{ar,0}$, Figures 5.214 – 5.216 were plotted as a function of λ_y / B_a, respectively.

From these figures it can be pointed out that the dimensionless scour border parameter, regardless of the point around the abutment where measurements were made, slightly increases with increasing λ_x / D. Except the first data values of λ_y / B_a = 0.00 (Figures 5.215 and 5.216), the most of the dimensionless scour border parameters vary between 0.88 and 1.24. As an average about 10% increment at the scour hole forming around the abutment is observed due to the presence of the pier. The effect of the parameter λ_y / B_a on the development of the scour hole around the abutment may be assumed to be negligible.

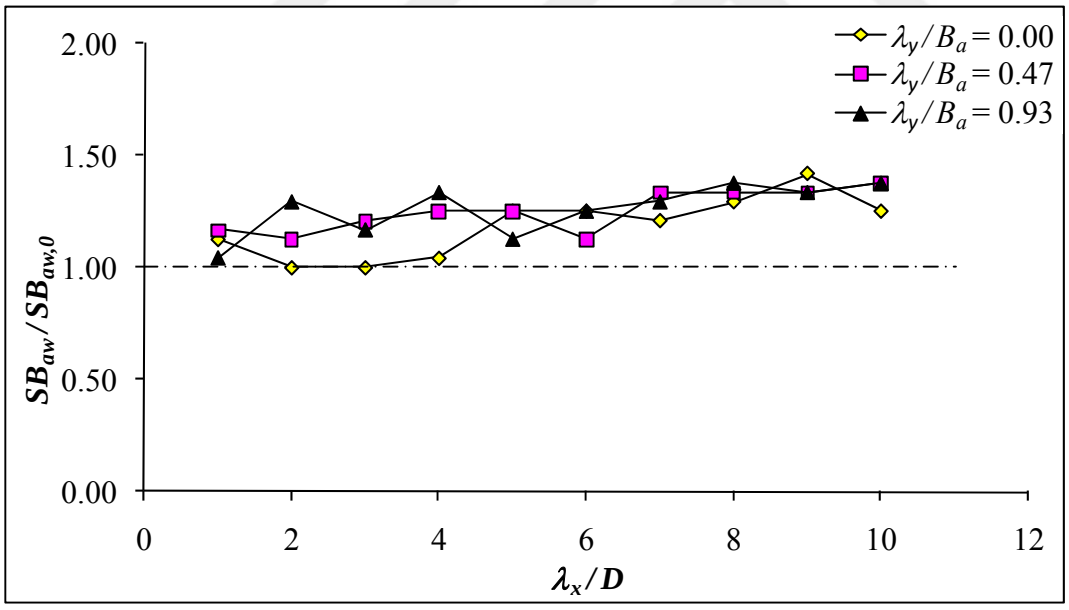


Figure 5.214 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the channel wall side of the abutment for L_a = 10 cm and D = 5 cm

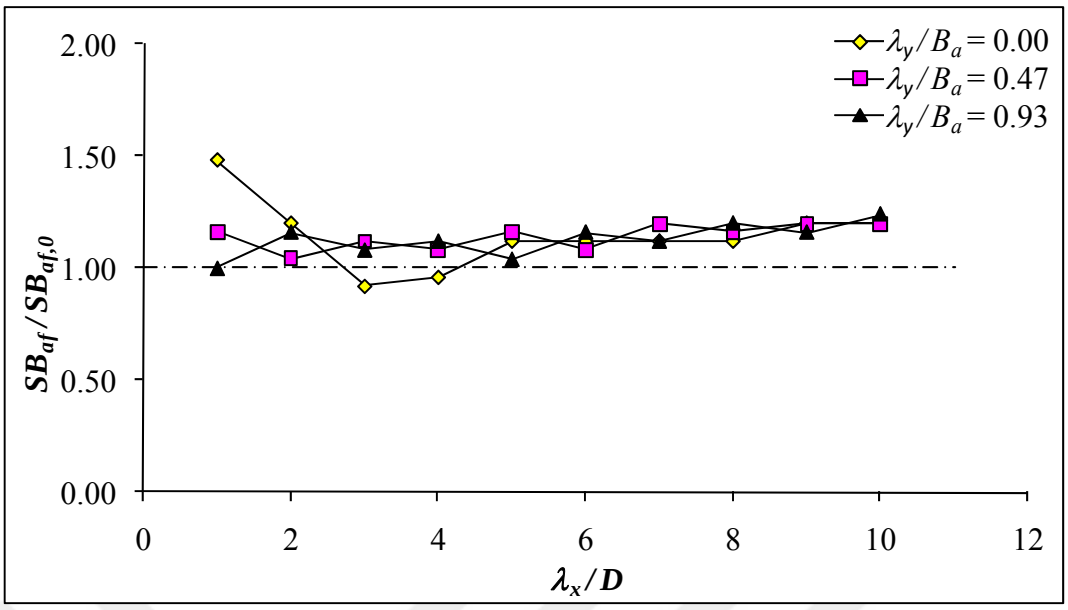


Figure 5.215 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the upstream corner of the abutment for L_a = 10 cm and D = 5 cm

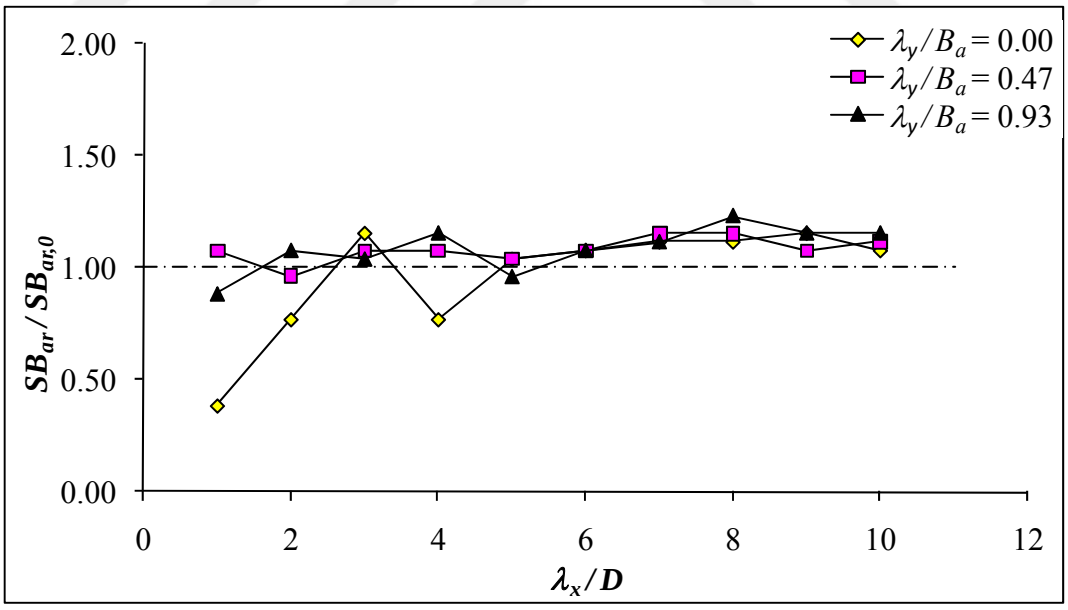


Figure 5.216 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the pier side of the abutment for L_a = 10 cm and D = 5 cm

Set III : D = 5 cm, L_a = 15 cm (L_a / D = 3.00)

The parameters of the scour borders around the pier and pier positions where tabulated in Table 5.24 for D = 5 cm and L_a = 15 cm.

Using dimensionless pier position parameters λ_x / D and dimensionless scour border parameter; SB_{pl} / $SB_{pl,0}$, SB_{pr} / $SB_{pr,0}$, SB_{pf} / $SB_{pf,0}$, SB_{pb} / $SB_{pb,0}$, Figures 5.217 – 5.220 were plotted as a function of λ_y / B_a, respectively.

In Figure 5.217 it is seen that at the left side of the pier the first few data of SB_{pl} / $SB_{pl,0}$ for λ_y / B_a (=0.93, 0.47 and 0.00) values tested coincide with each other for λ_x / D values up to about 5, 6 and 8, respectively, and then SB_{pl} / $SB_{pl,0}$ values rapidly drops down to values over unity and start increasing gradually with increasing λ_x / D (Figure 5.217). The data of λ_y / B_a = 0.93 has the minimum SB_{pl} / $SB_{pl,0}$ values amount the other λ_y / B_a cases tested.

At the right side of the pier, the general trend of the data of λ_y / B_a cases tested is very similar to each other (Figure 5.218). SB_{pr} / $SB_{pr,0}$ values are all larger than unity and vary between 1.13 and 1.70. For λ_x / $D \geq 4$, λ_y / B_a = 0.93 case gives minimum SB_{pr} / $SB_{pr,0}$ values.

At the front side of the pier, the relationship between pier scour borders and pier position is given in Figure 5.219. Except the data of λ_y / B_a cases tested for λ_x / D less than about 5, SB_{pf} / $SB_{pf,0}$ values, which are larger than unity, significantly change with increasing λ_x / D for λ_y / B_a cases.

As for the back side of the pier, a random variation is observed between the data of SB_{pb} / $SB_{pb,0}$ and λ_x / D for tested λ_y / B_a cases. SB_{pb} / $SB_{pb,0}$ values are much larger than unity and vary between 1.65 and 3.53. At λ_x / D values much larger than about 5, SB_{pb} / $SB_{pb,0}$ values get closer to each other for tested λ_y / B_a cases and with minimum values for λ_y / B_a = 0.93.

Table 5.24 Parameters of the scour holes forming around the pier (L_a = 15 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E66	10	2	10.0	12.5	13.5	125.0	**0.87**	1.25	1.17	1.84
E71	15	3	15.0	13.5	14.5	202.0	1.30	1.35	1.26	2.97
E72	20	4	15.0	13.0	14.5	240.0	1.30	1.30	1.26	**3.53**
E77	25	5	25.0	16.0	18.0	174.0	2.17	**1.60**	1.57	2.56
E78	30	6	30.0	15.0	14.5	179.0	2.61	1.50	1.26	2.63
E83	35	7	35.0	15.5	16.5	205.0	3.04	1.55	1.43	3.01
E84	40	8	40.0	14.5	19.5	167.0	**3.48**	1.45	**1.70**	2.46
E89	45	9	16.0	14.5	15.5	150.5	1.39	1.45	1.35	2.21
E90	50	10	16.0	14.5	16.0	135.0	1.39	1.45	1.39	1.99
λ_y = 35 cm, λ_y / B_a = 0.47										
E67	10	2	10.0	50.0	23.0	230.0	**0.87**	**5.00**	**2.00**	**3.38**
E70	15	3	15.0	44.0	14.0	126.0	1.30	4.40	1.22	1.85
E73	20	4	20.0	32.0	13.5	183.0	1.74	3.20	1.17	2.69
E76	25	5	25.0	12.5	15.5	120.0	2.17	1.25	1.35	1.76
E79	30	6	30.0	13.5	16.5	166.5	**2.61**	1.35	1.43	2.45
E82	35	7	13.5	15.5	18.0	137.0	1.17	1.55	1.57	2.01
E85	40	8	13.5	15.5	18.5	147.0	1.17	1.55	1.61	2.16
E88	45	9	15.5	14.0	15.0	128.5	1.35	1.40	1.30	1.89
E91	50	10	16.0	16.0	17.5	122.5	1.39	1.60	1.52	1.80
λ_y = 70 cm, λ_y / B_a = 0.93										
E68	10	2	10.0	84.0	21.0	122.0	**0.87**	**8.40**	**1.83**	1.79
E69	15	3	15.0	79.0	18.0	134.0	1.30	7.90	1.57	1.97
E74	20	4	20.0	75.0	13.0	133.0	1.74	7.50	1.13	1.96
E75	25	5	25.0	12.0	16.5	112.0	**2.17**	1.20	1.43	1.65
E80	30	6	12.5	12.5	15.0	118.0	1.09	1.25	1.30	1.74
E81	35	7	12.5	14.0	17.0	155.5	1.09	1.40	1.48	**2.29**
E86	40	8	13.5	16.0	17.0	145.0	1.17	1.60	1.48	2.13
E87	45	9	15.5	16.5	12.5	121.0	1.35	1.65	1.09	1.78
E92	50	10	17.5	15.5	17.0	120.0	1.52	1.55	1.48	1.76

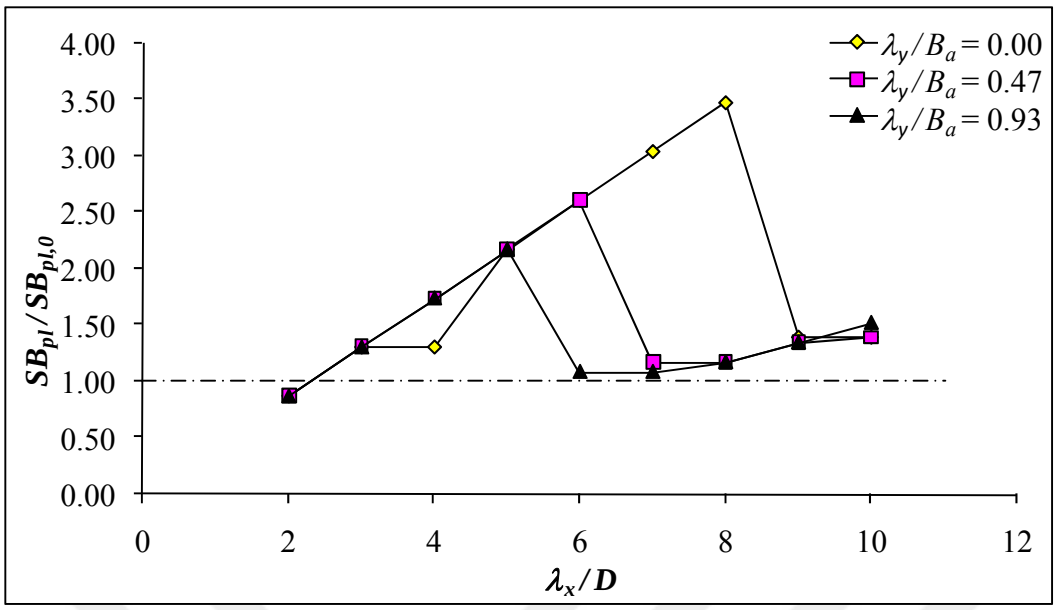


Figure 5.217 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the left side of the pier for L_a = 15 cm and D = 5 cm

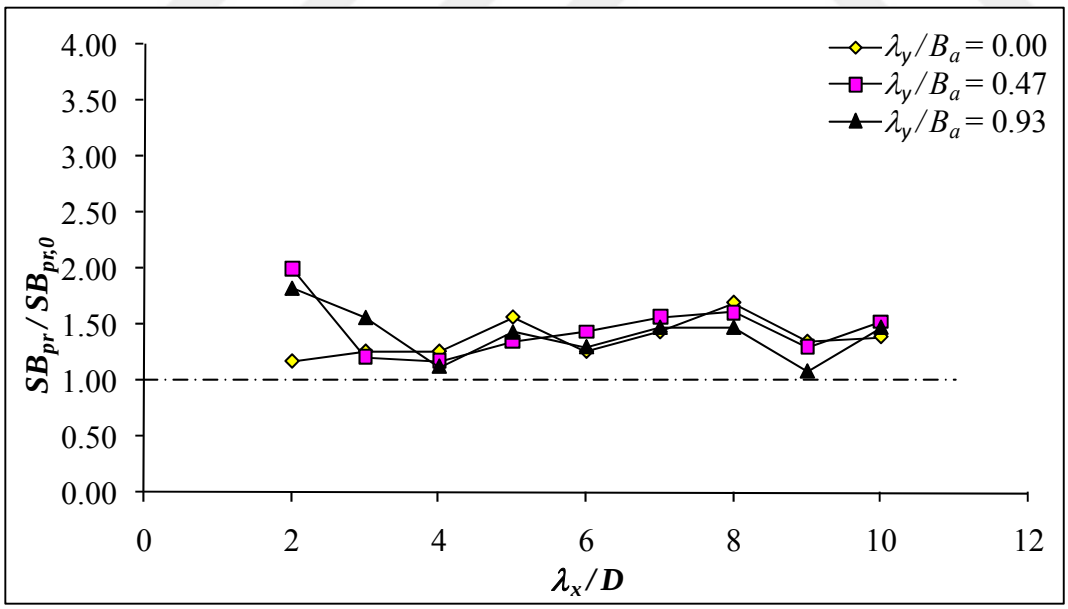


Figure 5.218 Variation of the dimensionless scour border with the dimensionless pier position parameter at the right side of the pier for L_a = 15 cm and D = 5 cm

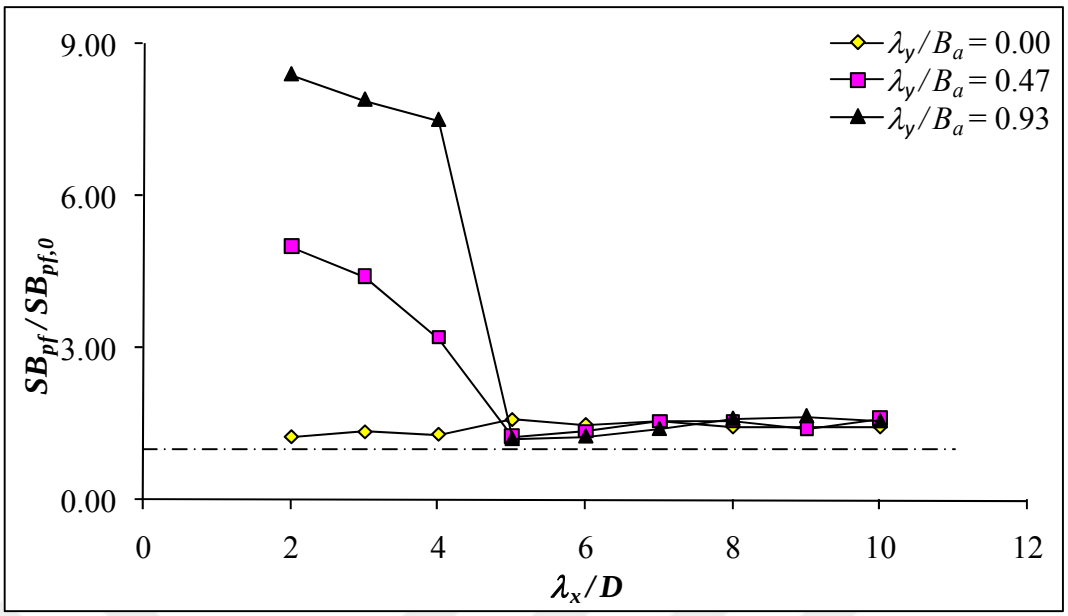


Figure 5.219 Variation of the dimensionless scour border with the dimensionless pier position parameter at the front side of the pier for L_a = 15 cm and D = 5 cm

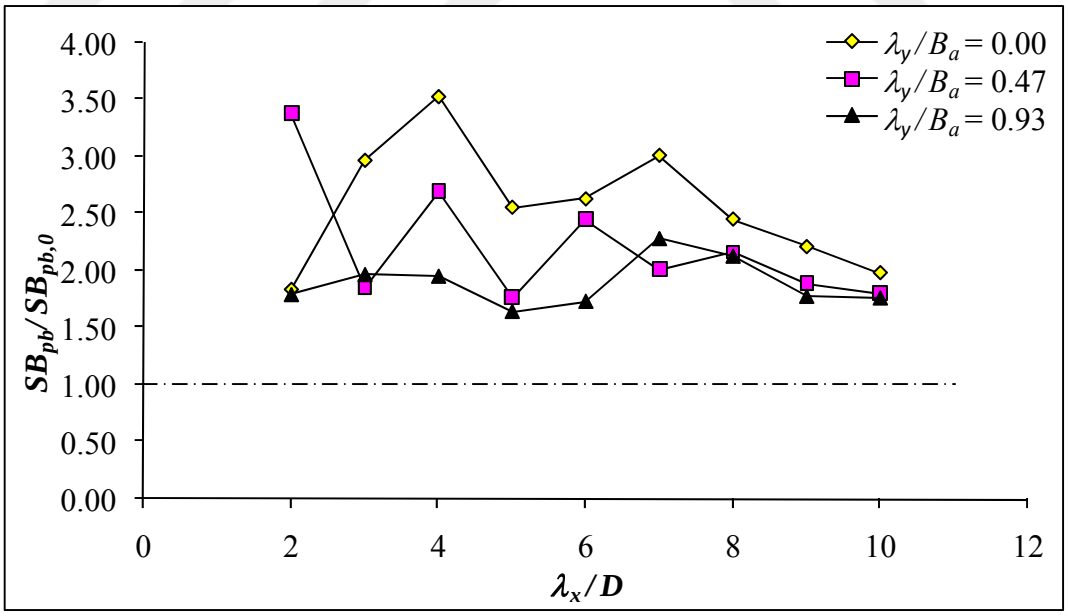


Figure 5.220 Variation of the dimensionless scour border with the dimensionless pier position parameter at the back side of the pier for L_a = 15 cm and D = 5 cm

The observed and calculated scour border parameters for the abutment – pier arrangement of L_a = 15 cm and D = 5 cm at three points around the abutment were given in Table 5.25.

Using the dimensionless pier position parameter λ_x / D and dimensionless scour border parameters, $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$, $SB_{ar} / SB_{ar,0}$, Figures 5.221 – 5.223 were sketched as a function of λ_y / B_a, respectively.

The variation of $SB_{aw} / SB_{aw,0}$ with λ_x / D for all the λ_y / B_a values tested looks like each other with an average value of $SB_{aw} / SB_{aw,0}$ around unity (Figure 5.221). This parameter, in general, is less than unity for λ_y / B_a = 0.00 and 0.93 for most of the λ_x / D values tested.

Similar to Figure 5.221, Figures 5.222 and 5.223 show the relationship between dimensionless abutment scour parameter and the dimensionless pier position parameter at the upstream face and pier side of the abutment, respectively. The general trend of the data presented in Figure 5.222 is similar to that given in Figure 5.221 with numerical values of $SB_{af} / SB_{af,0}$ around unity. As a function of λ_x / D sometimes the case of λ_y / B_a = 0.00 and sometimes λ_y / B_a = 0.47 show $SB_{af} / SB_{af,0}$ data less than unity.

In Figure 5.223 the situation is rather different up to the value of λ_x / D equal to about 5, the relation between the relevant parameters is linear, but later on the case of λ_y / B_a = 0.00 results in much larger values of $SB_{ar} / SB_{ar,0}$, compared to other λ_y / B_a tested. Among all these λ_y / B_a values tested, the one of λ_y / B_a = 0.93 gives the minimum values for $SB_{ar} / SB_{ar,0}$ within the λ_x / D values used.

Table 5.25 Parameters of the scour holes forming around the abutment (L_a = 15 cm and D = 5 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E66	10	2	14.5	17.5	10.0	**0.71**	**0.81**	**0.48**
E71	15	3	18.0	19.0	15.0	0.88	0.88	0.71
E72	20	4	18.5	19.5	20.0	0.90	0.91	0.95
E77	25	5	20.0	20.5	25.0	0.98	0.95	1.19
E78	30	6	21.5	21.5	30.0	1.05	1.00	1.43
E83	35	7	26.5	24.5	35.0	**1.29**	**1.14**	1.67
E84	40	8	20.5	19.5	40.0	1.00	0.91	**1.90**
E89	45	9	19.0	21.0	23.5	0.93	0.98	1.12
E90	50	10	19.5	19.5	21.5	0.95	0.91	1.02
λ_y = 35 cm, λ_y / B_a = 0.47								
E67	10	2	23.0	21.0	10.0	1.12	0.98	**0.48**
E70	15	3	22.0	20.5	15.0	1.07	0.95	0.71
E73	20	4	22.0	20.5	20.0	1.07	0.95	0.95
E76	25	5	15.5	14.5	25.0	0.76	**0.67**	1.19
E79	30	6	24.0	23.5	30.0	**1.17**	**1.09**	**1.43**
E82	35	7	22.5	23.5	22.5	1.10	**1.09**	1.07
E85	40	8	20.0	22.0	25.0	0.98	1.02	1.19
E88	45	9	15.0	18.5	22.0	**0.73**	0.86	1.05
E91	50	10	18.5	19.0	21.5	0.90	0.88	1.02
λ_y = 70 cm, λ_y / B_a = 0.93								
E68	10	2	21.0	20.0	10.0	1.02	0.93	**0.48**
E69	15	3	22.0	20.0	15.0	1.07	0.93	0.71
E74	20	4	23.5	21.5	20.0	**1.15**	1.00	0.95
E75	25	5	21.5	23.5	25.0	1.05	**1.09**	**1.19**
E80	30	6	15.0	18.5	19.0	**0.73**	**0.86**	0.90
E81	35	7	21.5	21.0	22.5	1.05	0.98	1.07
E86	40	8	21.0	22.5	23.5	1.02	1.05	1.12
E87	45	9	20.0	22.0	19.0	0.98	1.02	0.90
E92	50	10	19.0	21.0	17.5	0.93	0.98	0.83

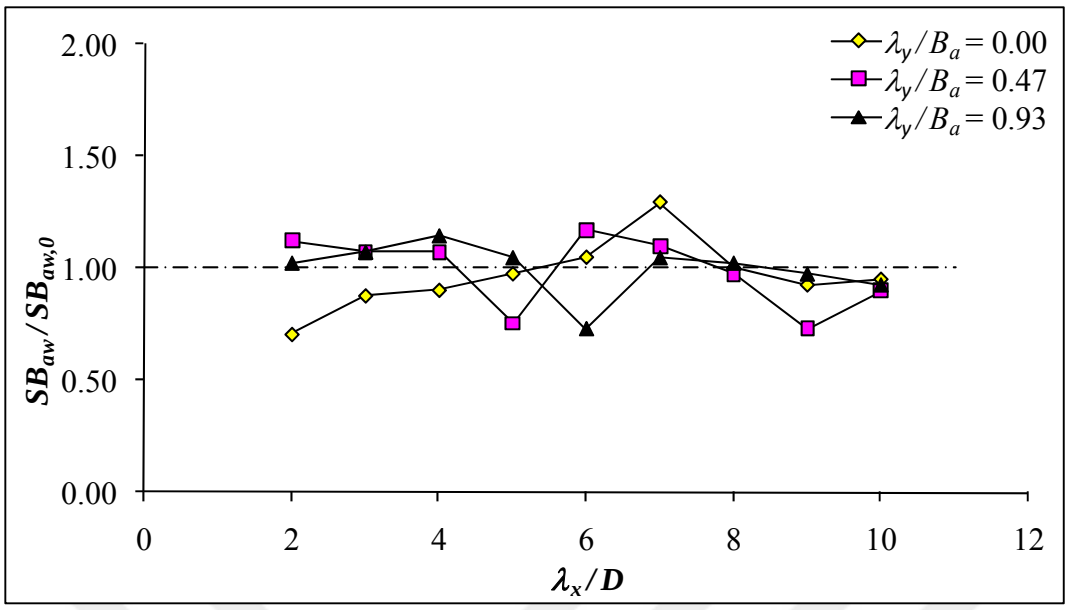


Figure 5.221 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the channel wall side of the abutment for L_a = 15 cm and D = 5 cm

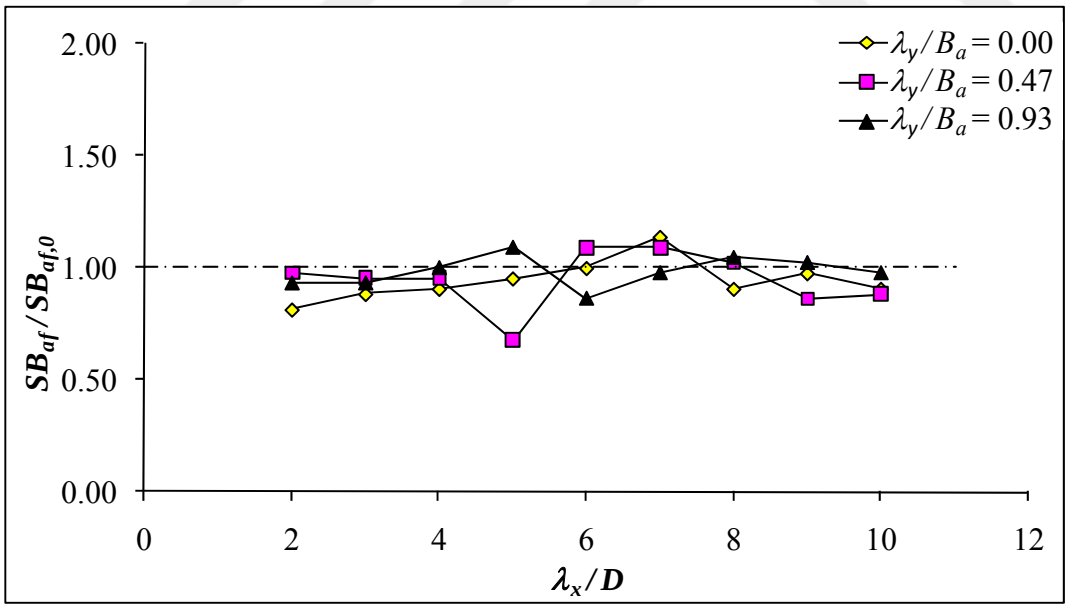


Figure 5.222 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the upstream corner of the abutment for L_a = 15 cm and D = 5 cm

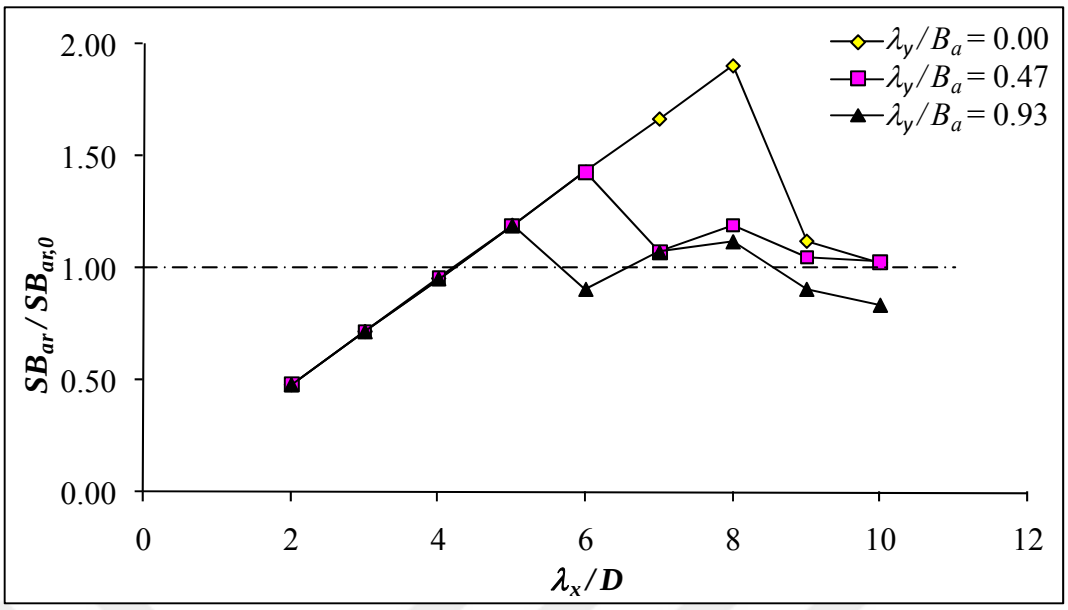


Figure 5.223 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the pier side of the abutment corner for L_a = 15 cm and D = 5 cm

Set IV : D = 10 cm, L_a = 5 cm (L_a / D = 0.50)

The dimensions of the measured scour borders around the pier at four points along with the position of the pier for D = 10 cm and L_a = 5 cm were presented in Table 5.26.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{pl} / SB_{pl,0}$, $SB_{pr} / SB_{pr,0}$, $SB_{pf} / SB_{pf,0}$ and $SB_{pb} / SB_{pb,0}$, Figures 5.224 – 5.227 were plotted as a function of λ_y / B_a, respectively.

$SB_{pl} / SB_{pl,0}$ is less than unity at small λ_x / D values less than about 1.70 at the left side of the pier (Figure 5.224). At λ_x / D values larger than about 1.70, in general, $SB_{pl} / SB_{pl,0}$ varies between 1.00 and 1.21 for tested λ_y / B_a values. Variation of the

Table 5.26 Parameters of the scour holes forming around the pier (L_a = 5 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E93	10	1	10.0	17.5	21.5	98.5	**0.61**	1.06	**1.26**	0.90
E96	20	2	20.0	18.5	17.5	98.5	**1.21**	1.12	1.03	0.90
E99	30	3	16.5	19.5	18.5	89.5	1.00	1.18	1.09	**0.81**
E102	40	4	17.0	19.5	18.0	105.5	1.03	1.18	1.06	0.96
E105	50	5	18.5	20.0	19.5	99.0	1.12	**1.21**	1.15	0.90
λ_y = 32.5 cm, λ_y / B_a = 0.43										
E94	10	1	10.0	20.5	19.5	94.5	**0.61**	1.24	1.15	0.86
E97	20	2	20.0	19.0	19.5	85.5	**1.21**	1.15	1.15	0.78
E100	30	3	19.0	23.0	20.0	98.5	1.15	**1.39**	1.18	0.90
E103	40	4	18.5	21.5	21.0	98.5	1.12	1.30	**1.24**	0.90
E106	50	5	15.0	18.0	17.5	78.5	0.91	1.09	1.03	**0.71**
λ_y = 65 cm, λ_y / B_a = 0.87										
E95	10	1	10.0	19.5	20.0	86.5	**0.61**	1.18	**1.18**	0.79
E98	20	2	15.5	19.0	18.5	85.5	0.94	1.15	1.09	0.78
E101	30	3	17.5	21.0	18.5	86.0	1.06	1.27	1.09	0.78
E104	40	4	19.0	21.5	18.5	92.5	**1.15**	**1.30**	1.09	0.84
E107	50	5	18.5	19.5	19.5	82.5	1.12	1.18	1.15	**0.75**

dimensionless scour border parameter with λ_y / B_a does not follow a regular trend, the related trends of λ_y / B_a values intersect each other at various λ_x / D values. The similar relations are seen between the related parameters given in Figures 5.225 – 5.227. While the calculated dimensionless scour parameters are larger than unity and varying between 1.03 and 1.26 in Figure 5.225 and between 1.06 and 1.39 in Figure 5.226, in Figure 5.227 the dimensionless scour parameter is always less than unity and varies between 0.71 and 0.90.

If Figures 5.224 – 5.226 are compared with each other, it is seen that the dimensionless scour border parameter is minimum at $\lambda_y / B_a = 0.00$ at the left, right and front side of the pier regardless of λ_x / D values tested. Since the $SB_{pb} / SB_{pb,0}$ values given in Figure 5.227 are always less than unity for tested λ_y / B_a values, one may also state that for the situation of $\lambda_y / B_a = 0.00$, minimum scour borders are obtained around the pier for any λ_x / D tested.

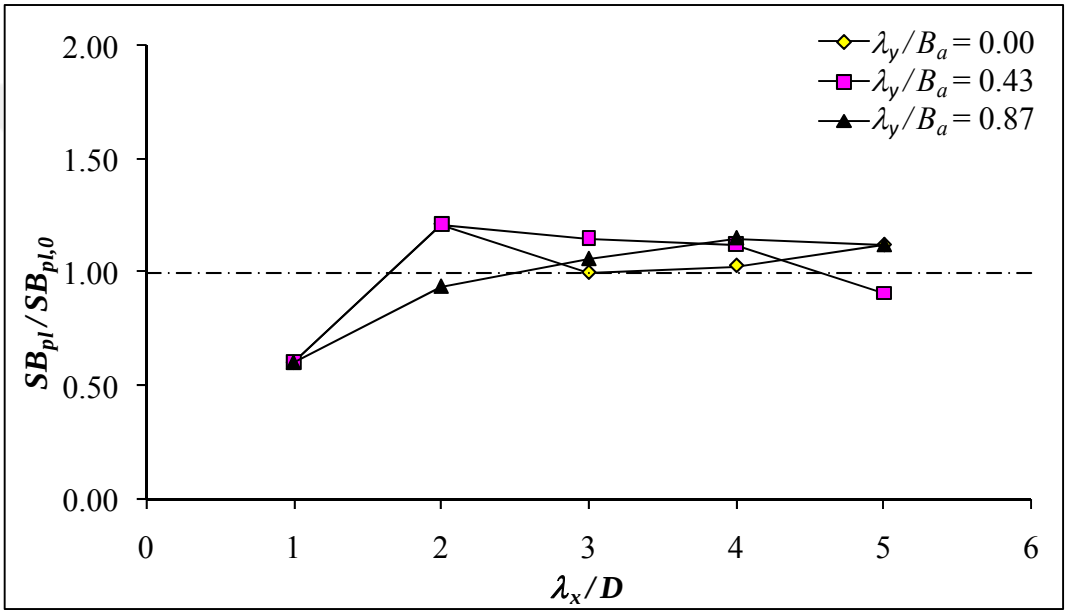


Figure 5.224 Relationship between pier scour border and pier position at the left side of the pier for L_a = 5 cm and D = 10 cm

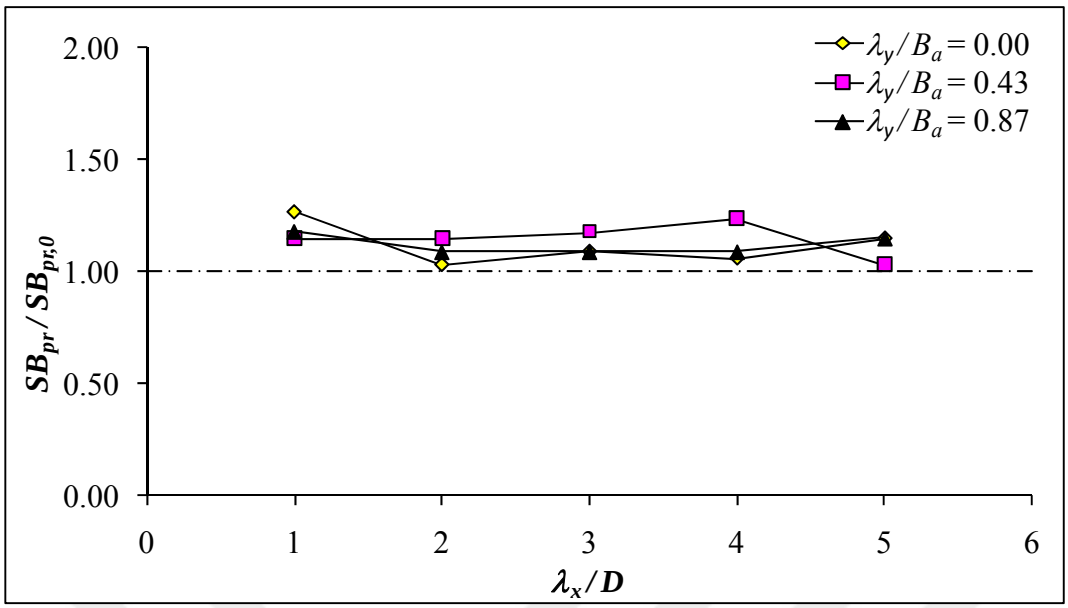


Figure 5.225 Relationship between pier scour border and pier position at the right side of the pier for L_a = 5 cm and D = 10 cm

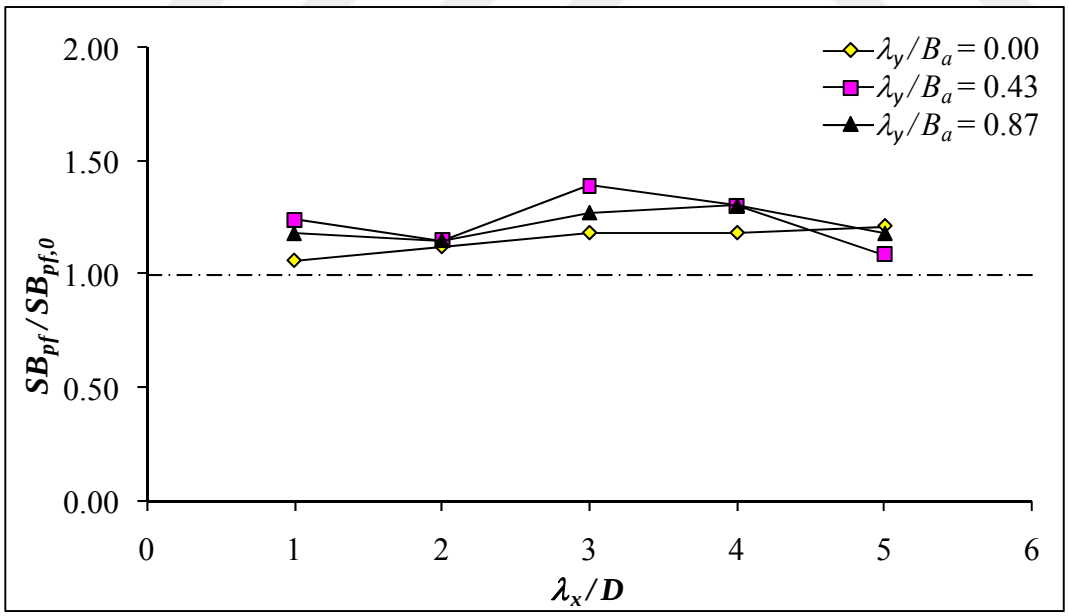


Figure 5.226 Relationship between pier scour border and pier position at the front side of the pier for L_a = 5 cm and D = 10 cm

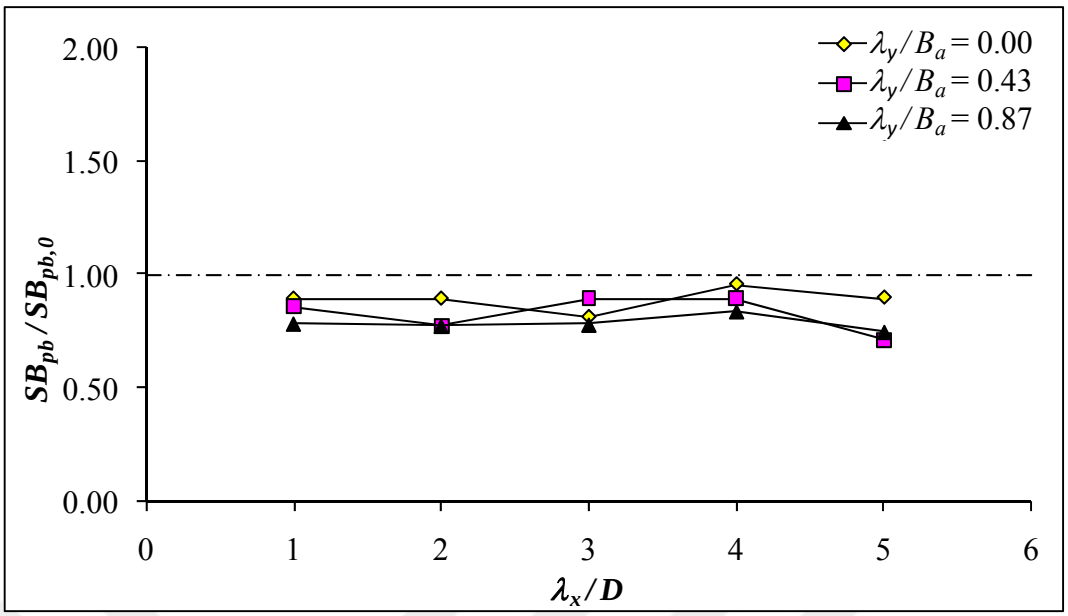


Figure 5.227 Relationship between pier scour border and pier position at the back side of the pier for L_a = 5 cm and D = 10 cm

The dimensions of the measured scour borders around the abutment at three points along with the position of the pier for D = 10 cm pier and L_a = 5 cm abutment were tabulated in Table 5.27.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$ and $SB_{ar} / SB_{ar,0}$, Figures 5.228 – 5.230 were plotted as a function of λ_y / B_a, respectively.

From the assessments of Figures 5.228 – 5.230 it can be stated that the spread of the data points of a given λ_y / B_a do not follow a regular trend as a function of λ_x / D. The curves of λ_y / B_a intersect each other at various λ_x / D values. However, it may be concluded that the trend of λ_y / B_a = 0.43 gives minimum dimensionless abutment scour parameters with a value of around unity for λ_x / D values tested.

Table 5.27 Parameters of the scour holes forming around the abutment (L_a = 5 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E93	10	1	9.0	10.0	10.0	1.00	1.18	1.05
E96	20	2	5.5	6.0	11.0	**0.61**	**0.71**	**1.16**
E99	30	3	8.5	8.0	9.0	0.94	0.94	**0.95**
E102	40	4	11.5	11.0	11.5	**1.28**	**1.29**	1.21
E105	50	5	10.5	11.5	11.5	1.17	1.35	1.21
λ_y = 32.5 cm, λ_y / B_a = 0.43								
E94	10	1	6.5	8.0	9.0	**0.72**	**0.94**	**0.95**
E97	20	2	9.0	8.5	9.5	**1.00**	**1.00**	1.00
E100	30	3	8.5	8.5	10.0	0.94	**1.00**	1.05
E103	40	4	7.5	8.0	10.5	0.83	**0.94**	**1.11**
E106	50	5	7.5	8.0	10.5	0.83	**0.94**	**1.11**
λ_y = 65 cm, λ_y / B_a = 0.87								
E95	10	1	9.0	5.0	11.0	1.00	**0.59**	1.16
E98	20	2	10.0	10.5	12.0	**1.11**	**1.24**	**1.26**
E101	30	3	10.0	9.5	10.5	**1.11**	1.12	1.11
E104	40	4	8.5	9.0	11.0	**0.94**	1.06	1.16
E107	50	5	10.0	9.5	13.0	**1.11**	1.12	1.37

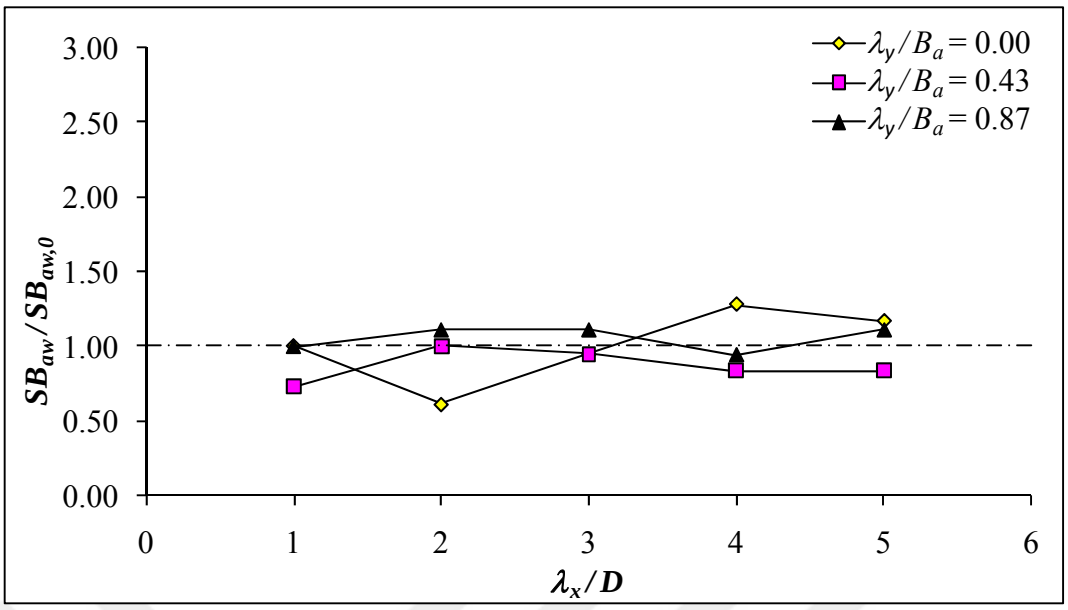


Figure 5.228 Relationship between abutment scour border and pier position with respect to the abutment at the channel wall side of the abutment for L_a = 5 cm and D = 10 cm

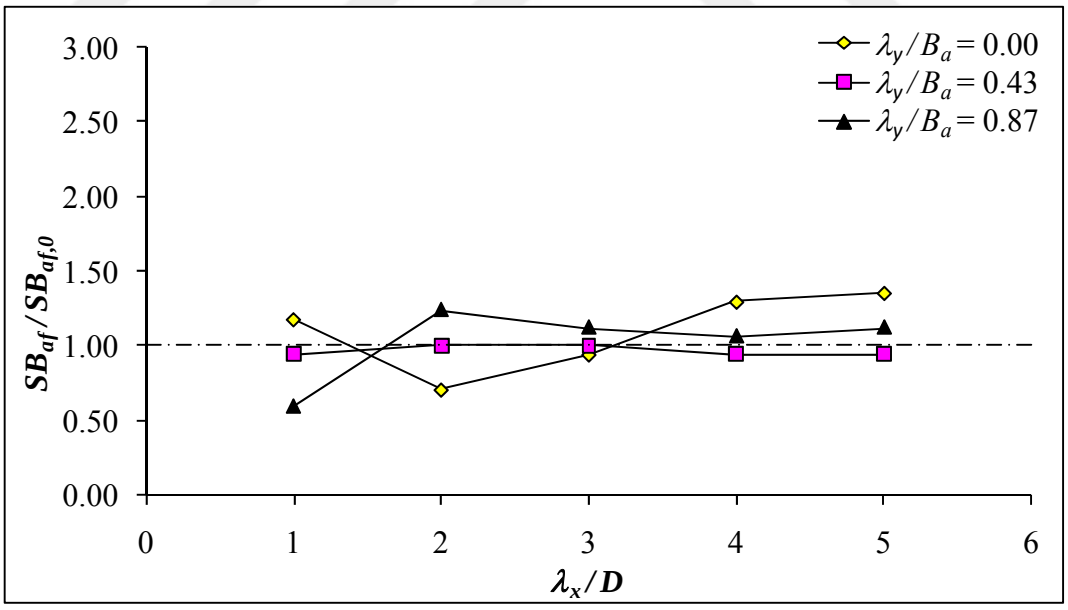


Figure 5.229 Relationship between abutment scour border and pier position with respect to the abutment at the upstream corner of the abutment for L_a = 5 cm and D = 10 cm

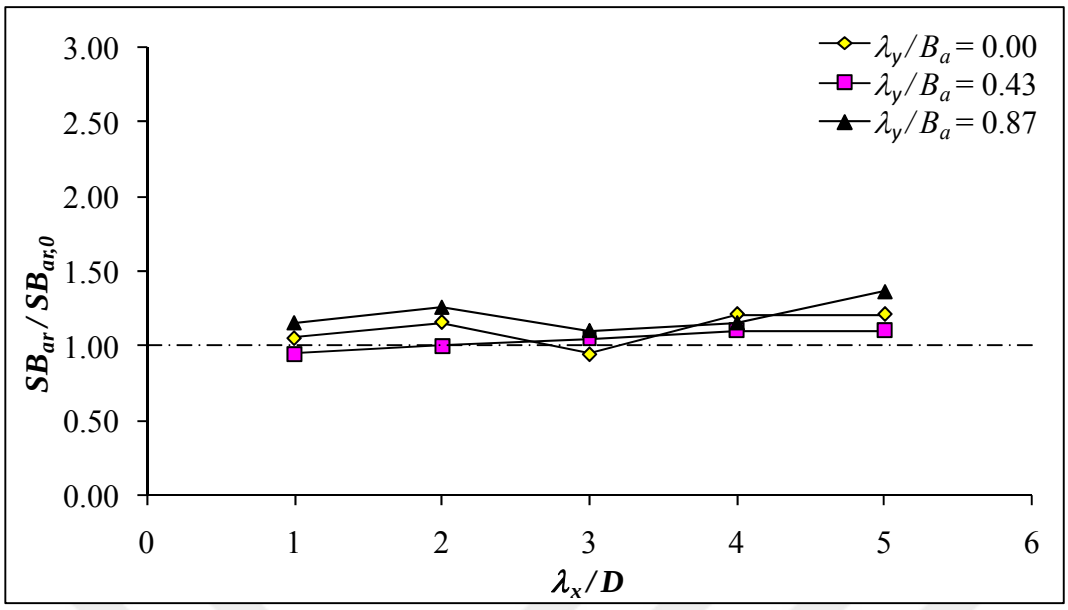


Figure 5.230 Relationship between abutment scour border and pier position with respect to the abutment at the pier side of the abutment for L_a = 5 cm and D = 10 cm

Set V : D = 10 cm, L_a = 10 cm (L_a / D = 1.00)

The parameters of the scour borders around the pier and pier positions were presented in Table 5.28 for D = 10 cm and L_a = 10 cm.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{pl} / SB_{pl,0}$, $SB_{pr} / SB_{pr,0}$, $SB_{pf} / SB_{pf,0}$ and $SB_{pb} / SB_{pb,0}$, Figures 5.231 – 5.234 were plotted as a function of λ_y / B_a, respectively.

In Figure 5.231, which shows the variation of the dimensionless scour border parameter with λ_x / D for tested λ_y / B_a values, only the first data of λ_y / B_a = 0.87 is less than unity while all of the others are above unity and vary between 1.00 and 1.50. The minimum $SB_{pl} / SB_{pl,0}$ values are observed for λ_y / B_a = 0.00. The effect

of λ_y / B_a on the dimensionless scour parameter is not clear for the range λ_x / D tested.

Table 5.28 Parameters of the scour holes forming around the pier (L_a = 10 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E108	10	1	10.0	19.0	19.5	105.5	**0.61**	1.15	1.15	**0.96**
E111	20	2	20.0	20.0	17.0	106.5	1.21	1.21	1.00	0.97
E114	30	3	16.5	21.0	20.0	110.5	1.00	1.27	1.18	1.00
E117	40	4	19.0	21.0	20.5	111.5	1.15	1.27	1.21	**1.01**
E120	50	5	22.0	21.5	21.3	105.5	**1.33**	**1.30**	**1.25**	**0.96**
λ_y = 32.5 cm, λ_y / B_a = 0.43										
E109	10	1	10.0	19.0	22.0	100.5	**0.61**	1.15	1.29	**0.91**
E112	20	2	20.0	20.0	24.5	110.5	1.21	1.21	**1.44**	1.00
E115	30	3	21.0	23.0	23.5	120.5	1.27	**1.39**	1.38	**1.10**
E118	40	4	26.0	23.0	20.5	110.0	**1.58**	**1.39**	1.21	1.00
E121	50	5	18.5	21.5	20.5	117.5	1.12	1.30	1.21	1.07
λ_y = 65 cm, λ_y / B_a = 0.87										
E110	10	1	10.0	19.0	20.0	71.5	**0.61**	1.15	1.18	**0.65**
E113	20	2	20.0	20.0	22.5	94.5	1.21	1.21	**1.32**	0.86
E116	30	3	25.0	20.0	22.5	95.5	**1.52**	1.21	**1.32**	0.87
E119	40	4	20.0	22.0	22.5	107.5	1.21	1.33	**1.32**	0.98
E122	50	5	20.5	23.0	21.5	115.5	1.24	**1.39**	1.26	**1.05**

The similar conclusions can be made for the other figures where the variation of the dimensionless scour border parameter with λ_x / D is given around the pier (Figures 5.232 – 5.234).

Dimensionless scour border parameters vary; between 1.00 and 1.44 at the right side of the pier (Figure 5.232), 1.15 – 1.39 at the front side of the pier (Figure 5.233) and 0.65 – 1.10 at the back side of the pier (Figure 5.234). If all of these

figures are compared with each other it may be said that the case of $\lambda_y / B_a = 0.00$ almost always gives minimum dimensionless scour border parameters for the whole range of λ_x / D tested.

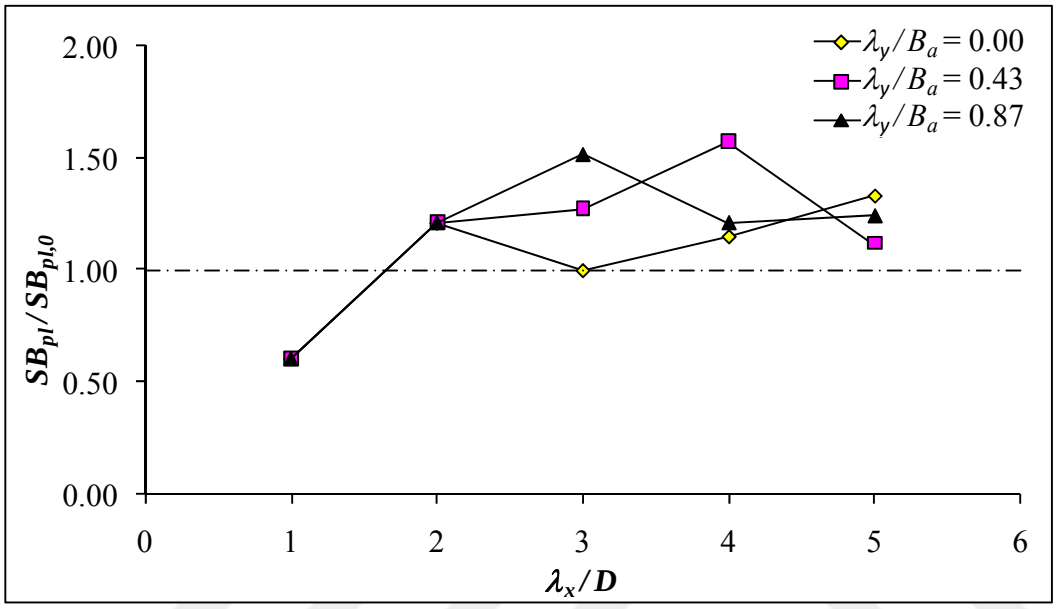


Figure 5.231 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the left side of the pier for L_a = 10 cm and D = 10 cm

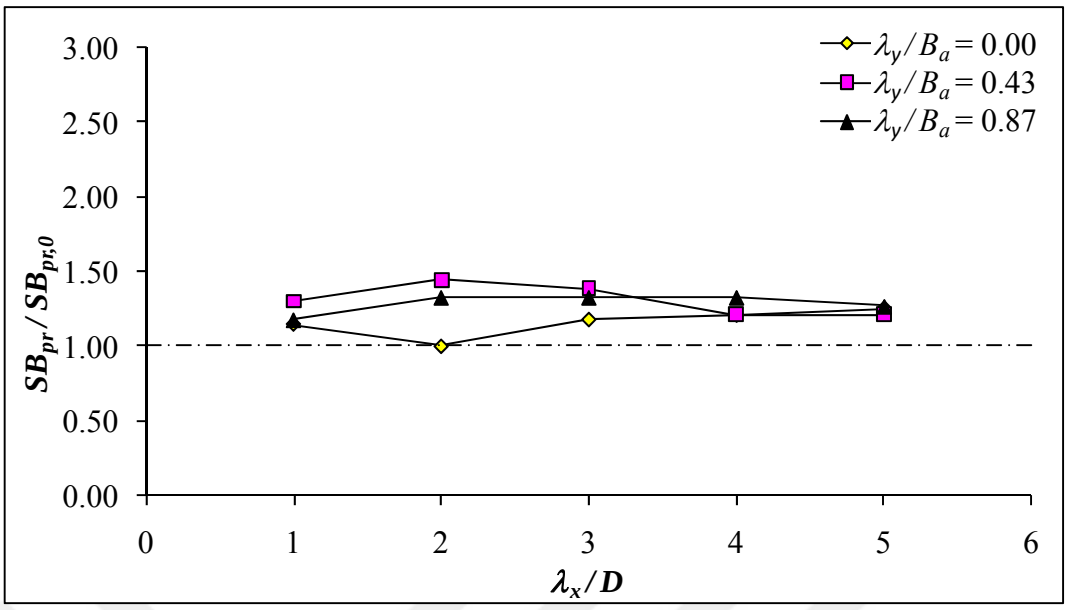


Figure 5.232 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the right side of the pier for L_a = 10 cm and D = 10 cm

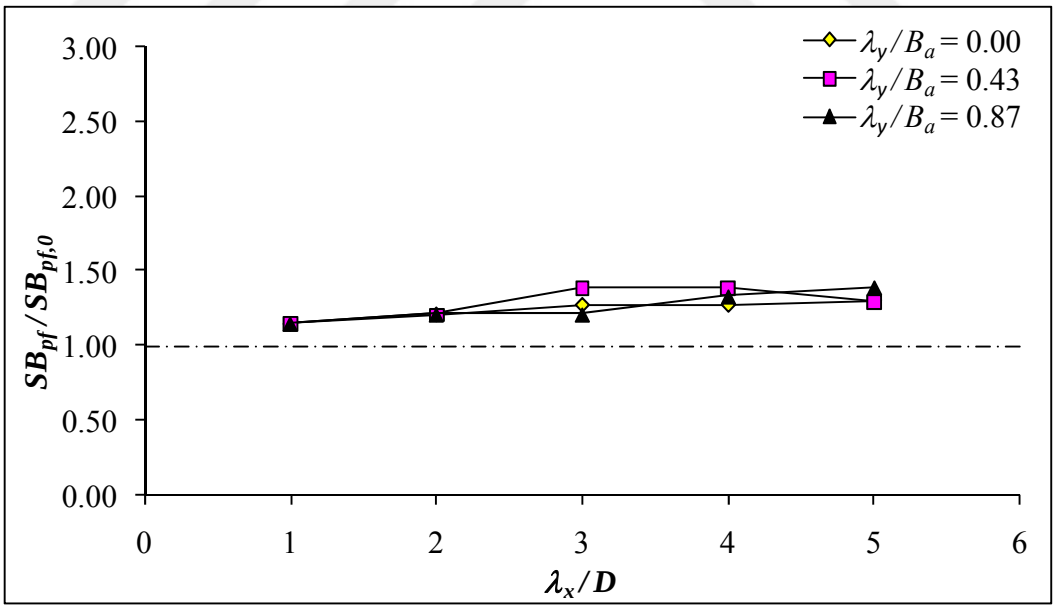


Figure 5.233 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the front side of the pier for L_a = 10 cm and D = 10 cm

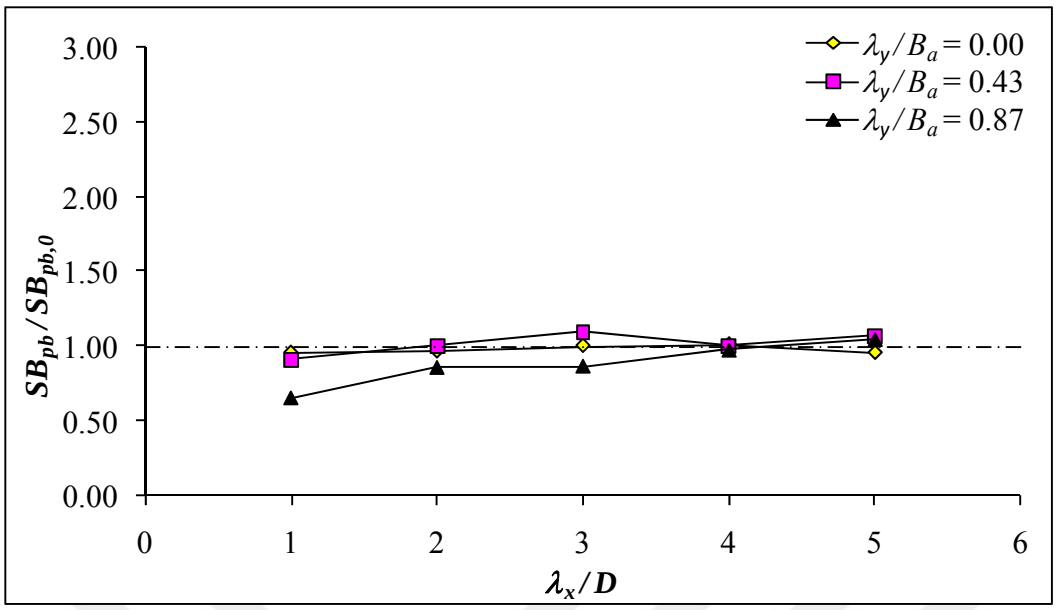


Figure 5.234 Variation of the dimensionless pier scour border with the dimensionless pier position parameter at the back side of the pier for L_a = 10 cm and D = 10 cm

The observed and calculated scour border parameters for the abutment – pier arrangement of L_a = 10 cm and D = 10 cm at three points around the abutment were given in Table 5.29. Using dimensionless pier position parameters λ_x / D and dimensionless scour border parameters $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$ and $SB_{ar} / SB_{ar,0}$, Figures 5.235 - 5237 were plotted as a function of λ_y / B_a, respectively.

In all these figures it is seen that λ_y / B_a values tested do not follow a regular trend and sometimes increase with increasing λ_x / D and sometimes decrease, similar to the cases discussed earlier. Almost all of the data points of dimensionless scour border parameters are above unity.

From the inspection of Figures 5.235 – 5.237 it may be pointed out that the data of λ_y / B_a = 0.43 give almost minimum values for the dimensionless scour border

parameters around the abutment compared to other λ_y / B_a values used in this study for the whole range of λ_x / D tested.

Table 5.29 Parameters of the scour holes forming around the abutment (L_a = 10 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E108	10	1	10.0	12.5	10.0	**0.83**	1.00	**0.77**
E111	20	2	16.0	15.5	15.0	**1.33**	1.24	**1.15**
E114	30	3	14.0	13.5	12.0	1.17	1.08	0.92
E117	40	4	16.0	16.0	14.5	**1.33**	**1.28**	1.12
E120	50	5	15.5	16.0	14.0	1.29	**1.28**	1.08
λ_y = 32.5 cm, λ_y / B_a = 0.43								
E109	10	1	14.5	14.0	13.5	1.21	1.12	1.04
E112	20	2	12.5	12.5	13.0	1.04	1.00	1.00
E115	30	3	15.5	16.0	15.0	**1.29**	1.28	1.15
E118	40	4	13.5	14.5	14.5	1.13	1.16	1.12
E121	50	5	15.0	17.0	15.5	1.25	**1.36**	**1.19**
λ_y = 65 cm, λ_y / B_a = 0.87								
E110	10	1	13.5	14.5	14.0	1.13	1.16	1.08
E113	20	2	15.5	16.5	17.0	1.29	**1.32**	1.31
E116	30	3	15.0	15.5	15.5	1.25	1.24	1.19
E119	40	4	14.5	16.0	17.5	1.21	1.28	**1.35**
E122	50	5	16.0	15.5	16.5	**1.33**	1.24	1.27

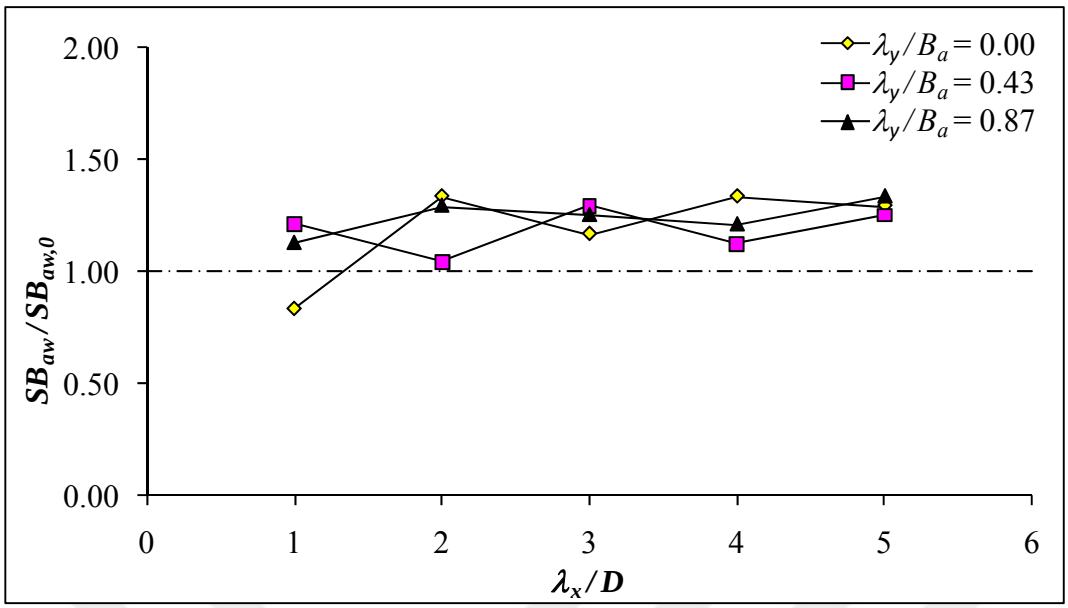


Figure 5.235 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the channel wall side of the abutment for L_a = 10 cm and D = 10 cm

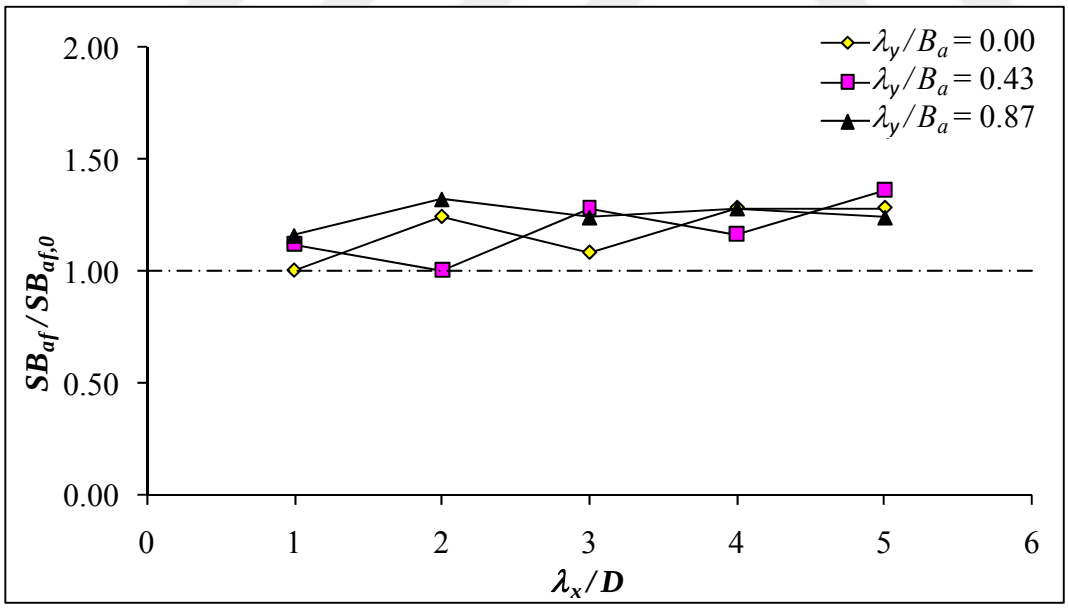


Figure 5.236 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the upstream corner of the abutment for L_a = 10 cm and D = 10 cm

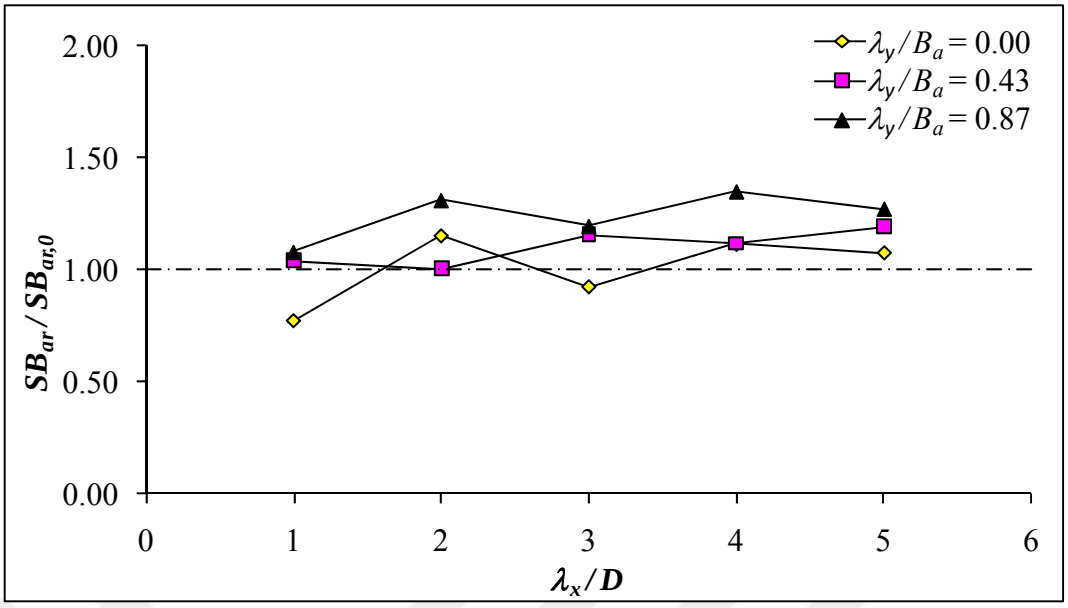


Figure 5.237 Variation of the dimensionless abutment scour parameter with the dimensionless pier position parameter at the pier side of the abutment corner for L_a = 10 cm and D = 10 cm

Set VI : D = 10 cm, L_a = 15 cm (L_a / D = 1.50)

The dimensions of the measured scour borders around the pier at four points along with the position of the pier for D = 10 cm and L_a = 15 cm were presented in Table 5.30.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{pl} / SB_{pl,0}$, $SB_{pr} / SB_{pr,0}$, $SB_{pf} / SB_{pf,0}$ and $SB_{pb} / SB_{pb,0}$, Figures 5.238 – 5.241 were plotted as a function of λ_y / B_a, respectively.

In Figure 5.238 it is seen that except the first data points of λ_y / B_a values tested, all the others are above unity with very close values to each other for a given λ_x / D. Among these data sets the one of λ_y / B_a = 0.00 gives minimum values for $SB_{pl} / SB_{pl,0}$.

Table 5.30 Parameters of the scour holes forming around the pier (L_a = 15 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl} / SB_{pl,0}$	$SB_{pf} / SB_{pf,0}$	$SB_{pr} / SB_{pr,0}$	$SB_{pb} / SB_{pb,0}$
λ_y = 0 cm, λ_y / B_a = 0.00										
E123	10	1	10.0	21.0	22.0	141.5	**0.61**	1.27	1.29	1.29
E126	20	2	20.0	22.5	22.5	144.5	**1.21**	**1.36**	**1.32**	1.31
E129	30	3	18.0	21.0	22.0	158.0	1.09	1.27	1.29	1.44
E132	40	4	19.5	19.5	21.5	141.5	1.18	1.18	1.26	1.29
E137	50	5	19.0	22.5	19.5	161.5	1.15	**1.36**	1.15	**1.47**
λ_y = 32.5 cm, λ_y / B_a = 0.43										
E124	10	1	10.0	16.5	24.5	92.5	**0.61**	1.00	**1.44**	**0.84**
E127	20	2	20.0	20.5	22.5	117.5	1.21	1.24	1.32	1.07
E130	30	3	20.0	21.5	23.0	148.5	1.21	1.30	1.35	1.35
E133	40	4	20.0	22.5	22.5	156.5	1.21	**1.36**	1.32	**1.42**
E136	50	5	21.5	22.5	21.5	130.5	**1.30**	**1.36**	1.26	1.19
λ_y = 65 cm, λ_y / B_a = 0.87										
E125	10	1	10.0	15.0	20.0	72.0	**0.61**	**0.91**	1.18	**0.65**
E128	20	2	20.0	18.0	23.5	114.5	1.21	1.09	**1.38**	1.04
E131	30	3	20.5	21.5	23.5	126.5	1.24	1.30	**1.38**	1.15
E134	40	4	21.5	23.5	23.5	145.5	1.30	1.42	**1.38**	**1.32**
E135	50	5	23.5	25.0	21.5	133.0	**1.42**	**1.52**	1.26	1.21

Figure 5.239 – 5.241 show that, at the right, front and back sides of the pier, the dimensionless scour border parameters vary with λ_x / D for a given λ_y / B_a tested by following almost the similar trends. Except the first a few data in Figure 5.241, all of the other data points are above unity. Since the trend lines of the data of λ_y / B_a intersect each other, it is difficult to say which λ_y / B_a gives the minimum scour border parameters. In Figure 5.239 λ_y / B_a = 0.00, in Figure 5.240 λ_y / B_a = 0.87 for λ_x / D values up to about 3.00 and then for larger λ_x / D values λ_y / B_a = 0.00, and

finally in Figure 5.241 λ_y / B_a = 0.87 may be stated as the λ_y / B_a values giving minimum $SB_{pl} / SB_{pl,0}$ around the pier.

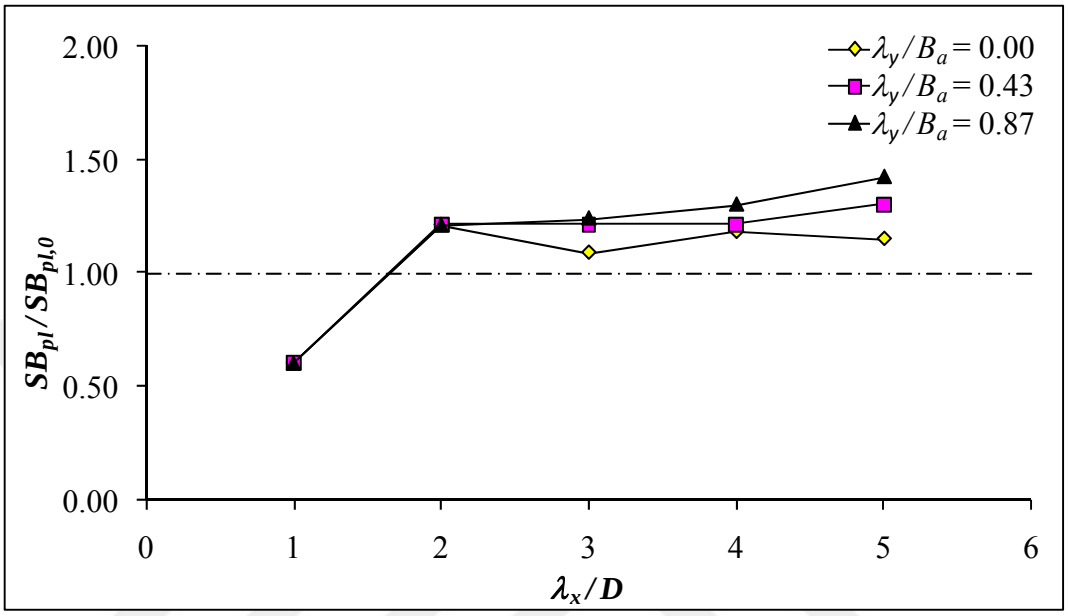


Figure 5.238 Relationship between pier scour border and pier position at the left side of the pier for L_a = 15 cm and D = 10 cm

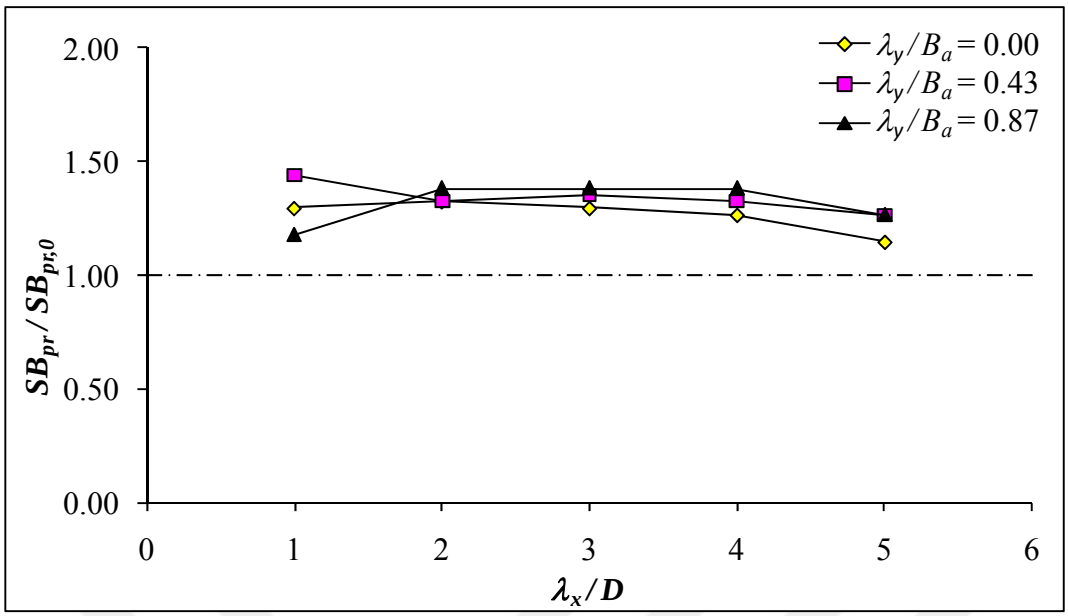


Figure 5.239 Relationship between pier scour border and pier position at the right side of the pier for L_a = 15 cm and D = 10 cm

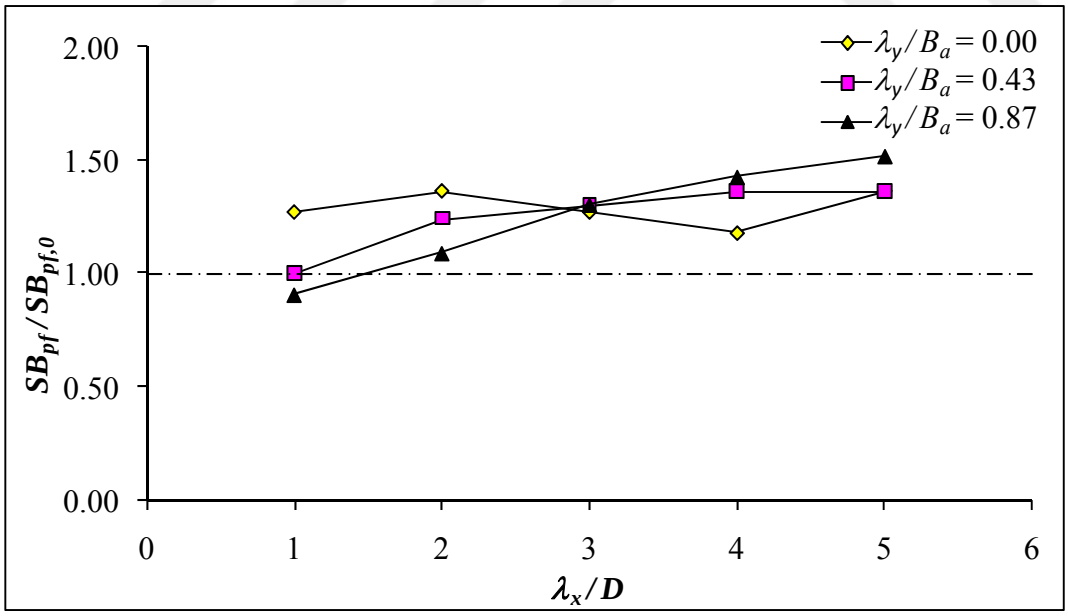


Figure 5.240 Relationship between pier scour border and pier position at the front side of the pier for L_a = 15 cm and D = 10 cm

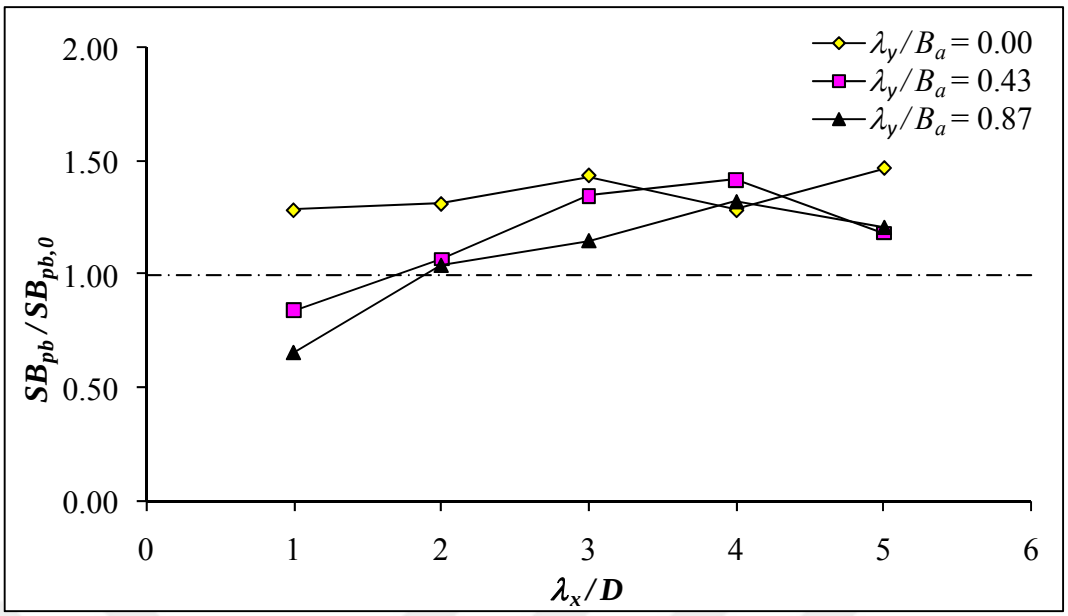


Figure 5.241 Relationship between pier scour border and pier position at the back side of the pier for L_a = 15 cm and D = 10 cm

The observed and calculated scour border parameters for the abutment – pier arrangement of L_a = 15 cm and D = 10 cm at three points around the abutment were presented in Table 5.31. Using dimensionless pier position parameters λ_x / D and dimensionless scour border parameter $SB_{aw}/SB_{aw,0}$, $SB_{af}/SB_{af,0}$ and $SB_{ar}/SB_{ar,0}$, Figures 5.242 – 5.244 were plotted as a function of λ_y / B_a, respectively. From these figures it is clearly seen that almost all of the data points given in the figures have dimensionless scour border parameters with the values of less than unity. That means the presence of the pier with values of λ_y / B_a and λ_x / D tested result in smaller scour borders around the abutment compared to the case of without pier.

Table 5.31 Parameters of the scour holes forming around the abutment (L_a = 15 cm and D = 10 cm)

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
λ_y = 0 cm, λ_y / B_a = 0.00								
E123	10	1	14.5	18.0	10.0	0.71	0.84	**0.48**
E126	20	2	12.5	17.0	20.0	**0.61**	**0.79**	0.95
E129	30	3	16.5	20.0	23.0	0.80	0.93	**1.10**
E132	40	4	17.0	19.5	19.0	0.83	0.91	0.90
E137	50	5	19.5	23.0	23.0	0.95	**1.07**	**1.10**
λ_y = 32.5 cm, λ_y / B_a = 0.43								
E124	10	1	17.0	17.5	19.0	0.83	0.81	0.90
E127	20	2	12.5	17.0	18.0	**0.61**	**0.79**	**0.86**
E130	30	3	13.0	18.0	19.5	0.63	0.84	0.93
E133	40	4	16.0	19.5	22.0	0.78	0.91	**1.05**
E136	50	5	18.0	20.0	19.5	0.88	0.93	0.93
λ_y = 65 cm, λ_y / B_a = 0.87								
E125	10	1	21.0	21.5	20.5	1.02	1.00	0.98
E128	20	2	22.5	22.5	20.0	**1.10**	**1.05**	0.95
E131	30	3	18.5	20.0	21.0	0.90	0.93	1.00
E134	40	4	21.5	20.5	19.5	1.05	0.95	**0.93**
E135	50	5	16.0	19.5	21.5	**0.78**	**0.91**	**1.02**

The case of λ_y / B_a = 0.43 yields almost the minimum dimensionless scour border parameters around the abutment at these points where the measurements were done.

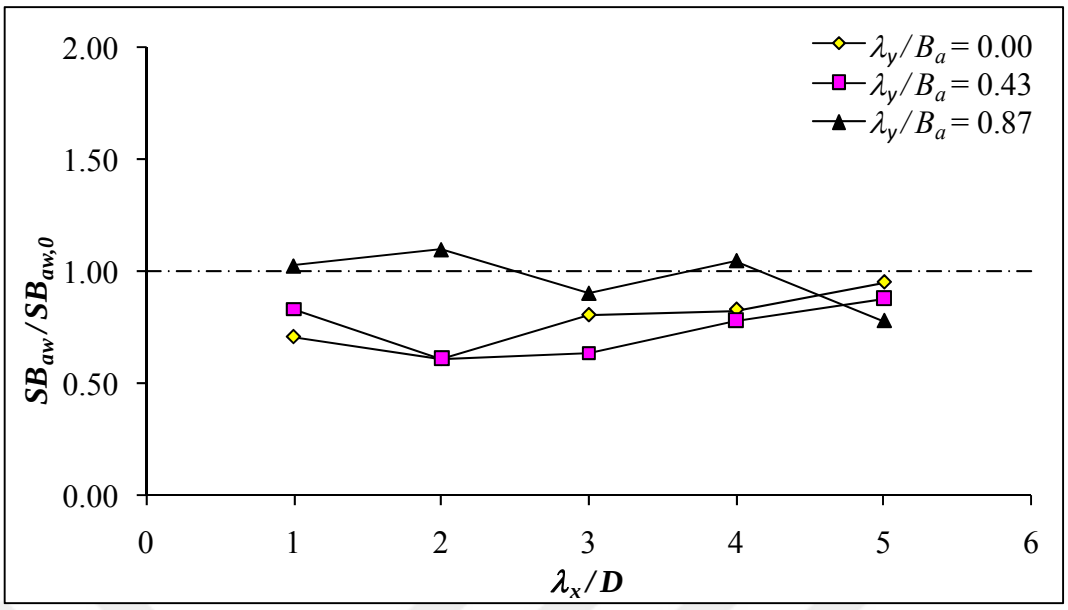


Figure 5.242 Relationship between abutment scour border and pier position with respect to abutment for L_a = 15 cm and D = 10 cm for channel wall side of abutment

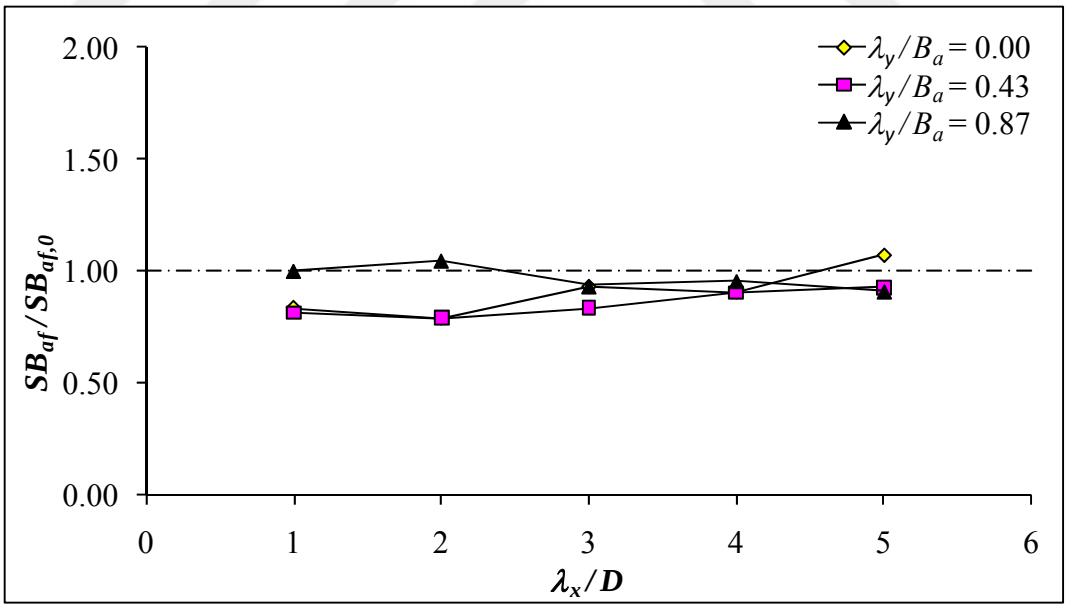


Figure 5.243 Relationship between abutment scour border and pier position with respect to abutment for L_a = 15 cm and D = 10 cm for upstream side of abutment corner

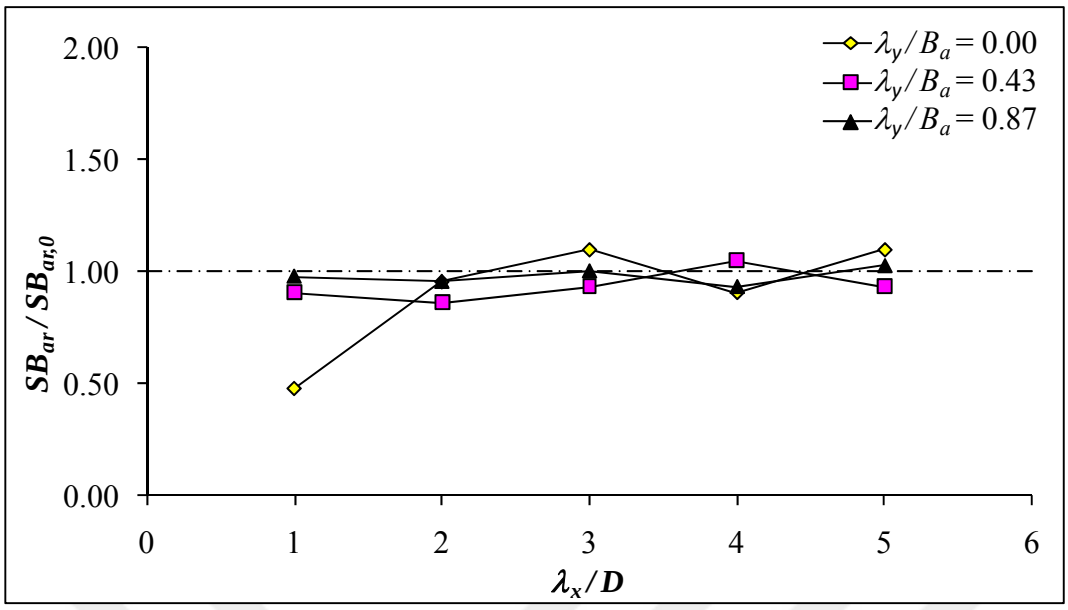


Figure 5.244 Relationship between abutment scour border and pier position with respect to abutment for L_a = 15 cm and D = 10 cm for pier side of abutment corner

5.2.4 Effect of Abutment Length and Pier Diameter on the Scour Borders of the Piers and Abutments

To show the effect of abutment length L_a and pier diameter D on the dimensionless scour border parameters around the pier as a function of pier position parameters λ_x / D and λ_y / B_a the Figures 5.245 – 5.286 were presented.

For a given pier diameter, D = 5 cm (L_a / D = 1.00), and constant λ_y / B_a ($0.00 \leq \lambda_y / B_a \leq 0.93$) the abutment having the largest length (L_a = 15 cm, L_a / D = 3.00) has more influence on the dimensionless scour border parameter at point L of the pier then the other tested abutments (L_a = 5 cm and 10 cm with L_a / D = 1.00 and 2.00) (Figures 5.245 – 5.247). Except a few small values of λ_x / D less than about 5.00, the abutments of L_a / D = 1.00 and 2.00 result in almost the minimum $SB_{pl} / SB_{pl,0}$ values within the tested ranges of λ_x / D and λ_y / B_a.

As the diameter of the pier becomes D = 10 cm, the abutment of L_a = 15 cm (L_a / D = 1.50) gives maximum SB_{pl} / $SB_{pl,0}$ values for most of the λ_x / D values tested at λ_y / B_a = 0.00 (Figure 5.248). The related data of the other abutments, L_a = 5 cm and 10 cm, almost coincide with each other. At other values of λ_y / B_a when D = 10 cm, the data values of all the abutments tested, L_a = 5 cm, 10 cm and 15 cm, are very close to each other for a given λ_x / D at λ_y / B_a = 0.43 and 0.87 (Figures 5.248 – 5.250). From these last six figures it can be concluded that at point L of the pier the pier – abutment arrangements of L_a / D = 1.00, 1.50 and 2.00 give minimum SB_{pl} / $SB_{pl,0}$ values of around unity.

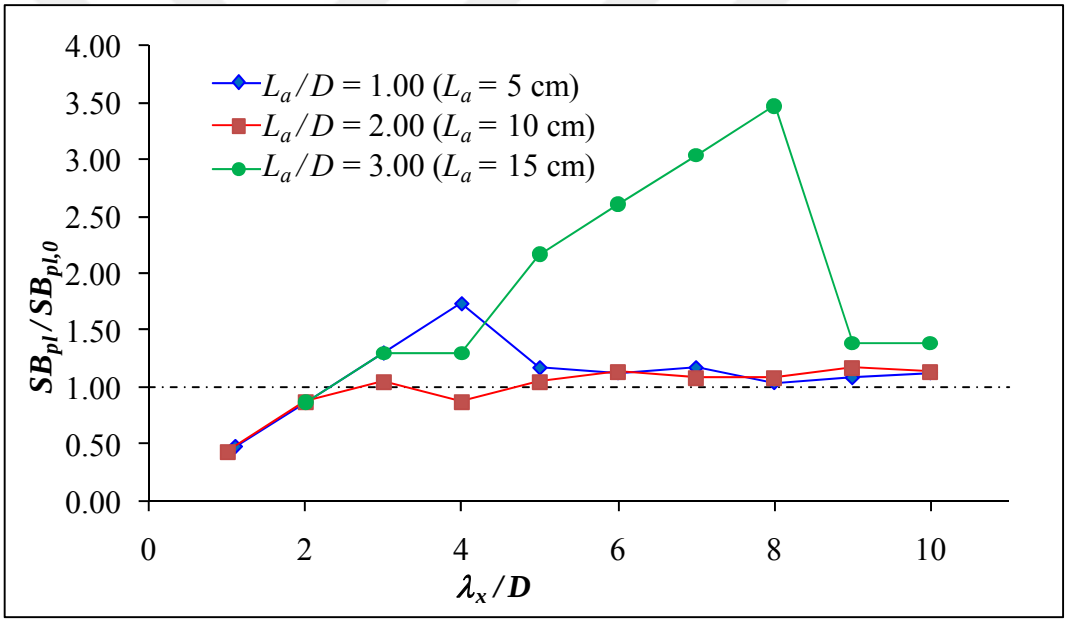


Figure 5.245 Variation of SB_{pl} / $SB_{pl,0}$ with λ_x / D at point L of the pier for D = 5 cm and λ_y / B_a = 0.00

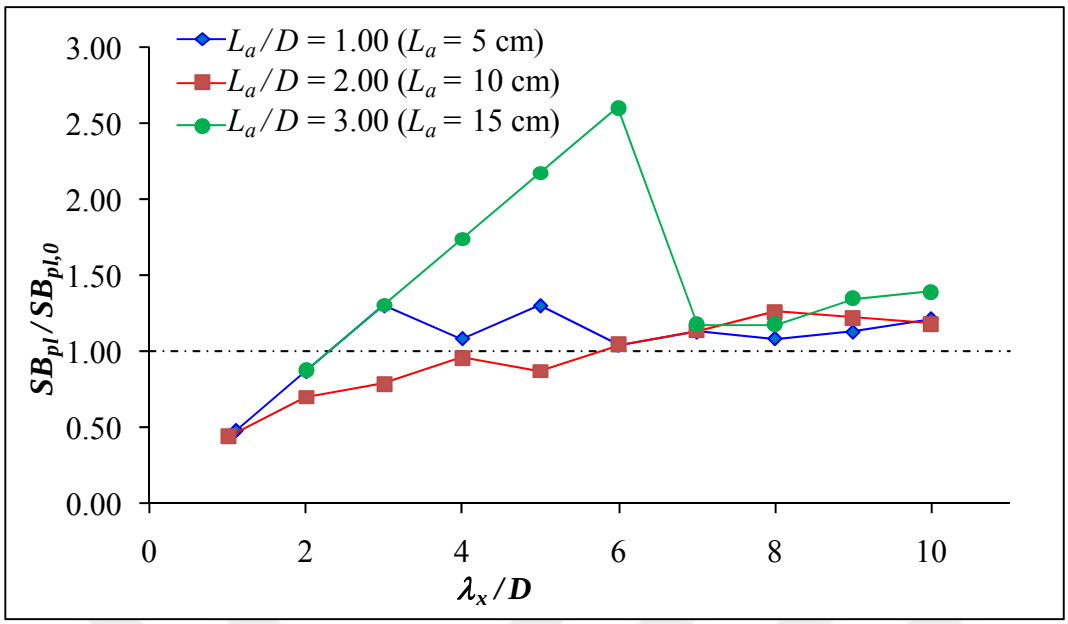


Figure 5.246 Variation of SB_{pl} / $SB_{pl,0}$ with λ_x/D at point L of the pier for D = 5 cm and λ_y/B_a = 0.47

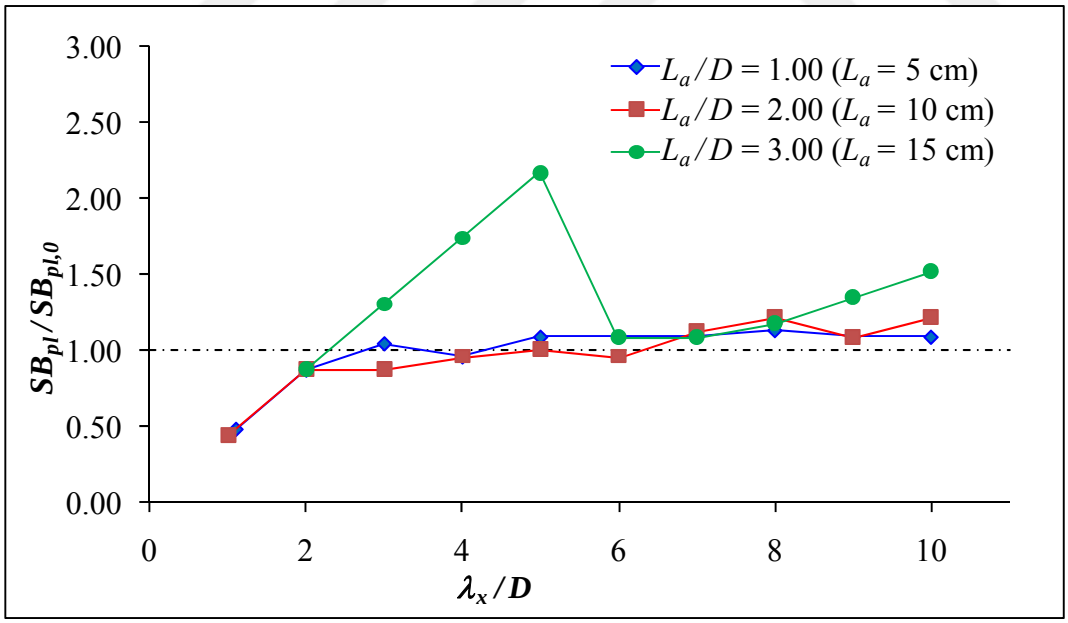


Figure 5.247 Variation of SB_{pl} / $SB_{pl,0}$ with λ_x/D at point L of the pier for D = 5 cm and λ_y/B_a = 0.93

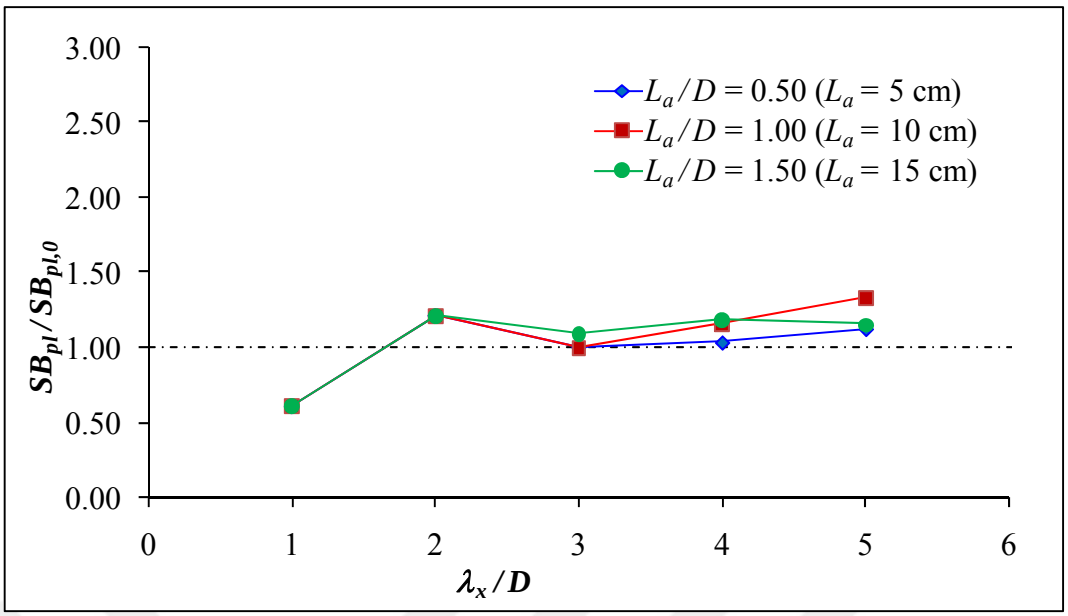


Figure 5.248 Variation of SB_{pl} / $SB_{pl,0}$ with λ_x / D at point L of the pier for D = 10 cm and λ_y / B_a = 0.00

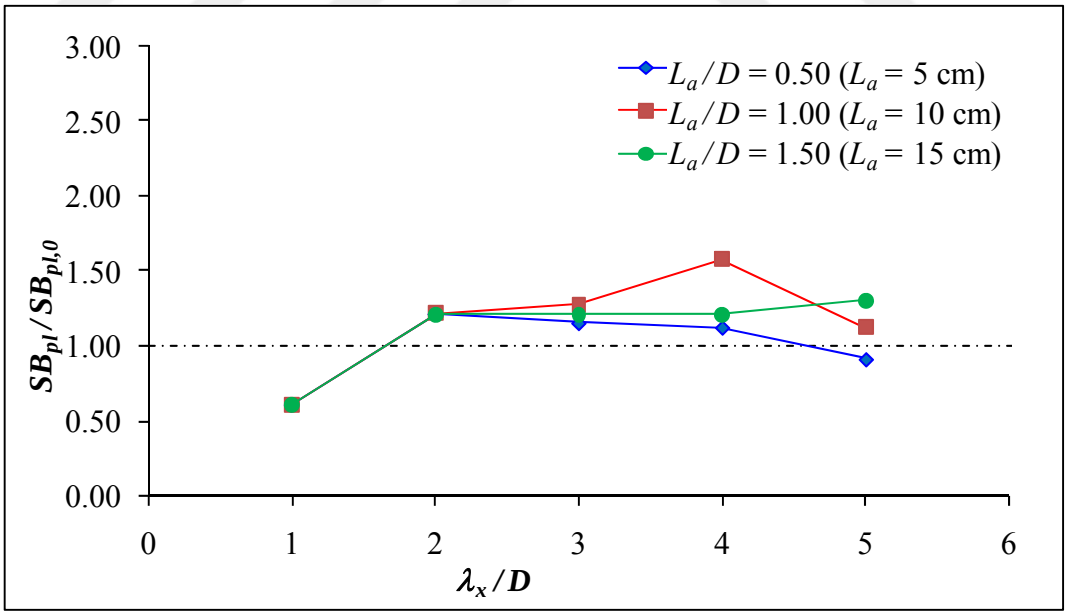


Figure 5.249 Variation of SB_{pl} / $SB_{pl,0}$ with λ_x / D at point L of the pier for D = 10 cm and λ_y / B_a = 0.43

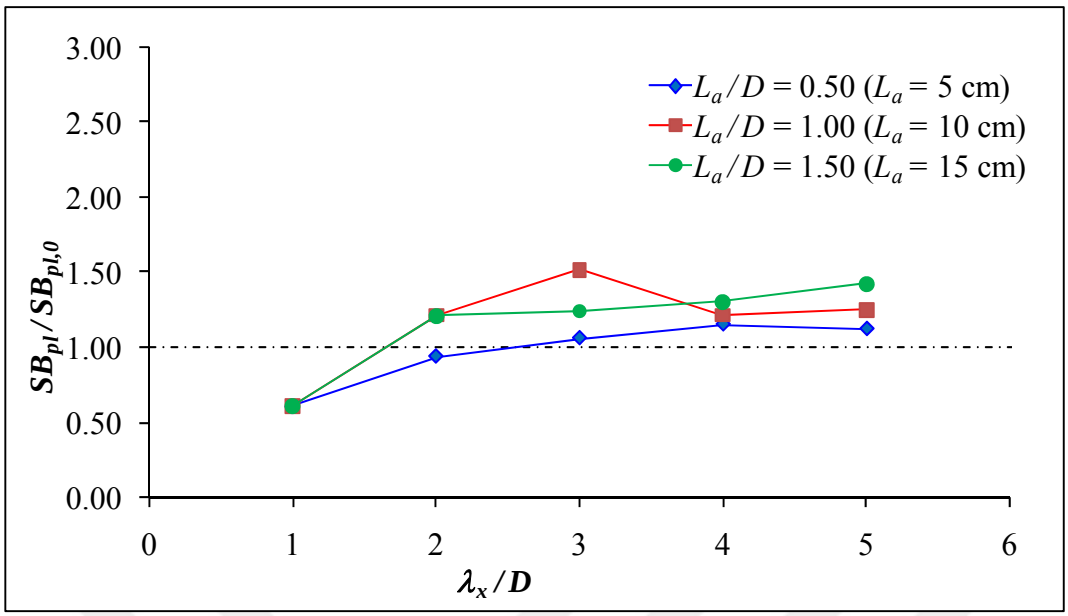


Figure 5.250 Variation of $SB_{pl} / SB_{pl,0}$ with λ_x / D at point L of the pier for D = 10 cm and λ_y / B_a = 0.87

Figures 5.251 – 5.253 show the variation of $SB_{pr} / SB_{pr,0}$ with λ_x / D at point R of the pier as a function of abutment length for constant pier diameter of D = 5 cm and λ_y / B_a = 0.00, 0.47 and 0.93, respectively. The general trend of the data points of L_a values tested are very similar. The dimensionless scour border parameter does not vary significantly with increasing λ_x / D for a given L_a.

The abutment of L_a = 15 cm (L_a/D = 3.00) shows $SB_{pr} / SB_{pr,0}$ values larger than the others tested almost for the whole range of λ_x / D, except a few data points, tested. From these figures one may state that the abutments of L_a = 5 cm (L_a / D = 1.00) and L_a = 10 cm (L_a / D = 2.00) yield minimum $SB_{pr} / SB_{pr,0}$ values regardless of λ_x / D and λ_y / B_a values tested.

As the diameter of the pier becomes D = 10 cm, the abutment of L_a = 15 cm (L_a / D = 1.50) gives maximum $SB_{pr} / SB_{pr,0}$ values for most of the λ_x / D values tested at

λ_y / B_a = 0.00, 0.43 and 0.87 similar to the cases described in the last three figures (Figures 5.254 – 5.256). Minimum $SB_{pr} / SB_{pr,0}$ values are obtained with the abutment of L_a = 5 cm (L_a / D = 0.50) for the whole range of λ_x / D at each λ_y / B_a tested.

At point F of the pier of diameter D = 5 cm the scour border parameters show almost the same trend as of diameter D = 5 cm those described before for points R, except for the data set of L_a = 15 cm (L_a / D = 3.00), for λ_y / B_a = 0.47 and 0.93 (Figures 5.257 – 5.259). At λ_y / B_a = 0.47 and 0.93, $SB_{pf} / SB_{pf,0}$ has maximum values at λ_x / D = 2.00 and then decreases with increasing λ_x / D and attains almost a stabilized value at $\lambda_x / D \geq 5$. At λ_x/D larger than 5, the abutment of L_a = 15 cm gives larger $SB_{pf} / SB_{pf,0}$ values than those of other abutments tested. Minimum dimensionless scour border parameters very close to each other are obtained with the abutments of L_a = 5 cm (L_a / D = 1.00) and L_a = 10 cm (L_a / D = 2.00) for the whole range of λ_x / D and λ_y / B_a tested.

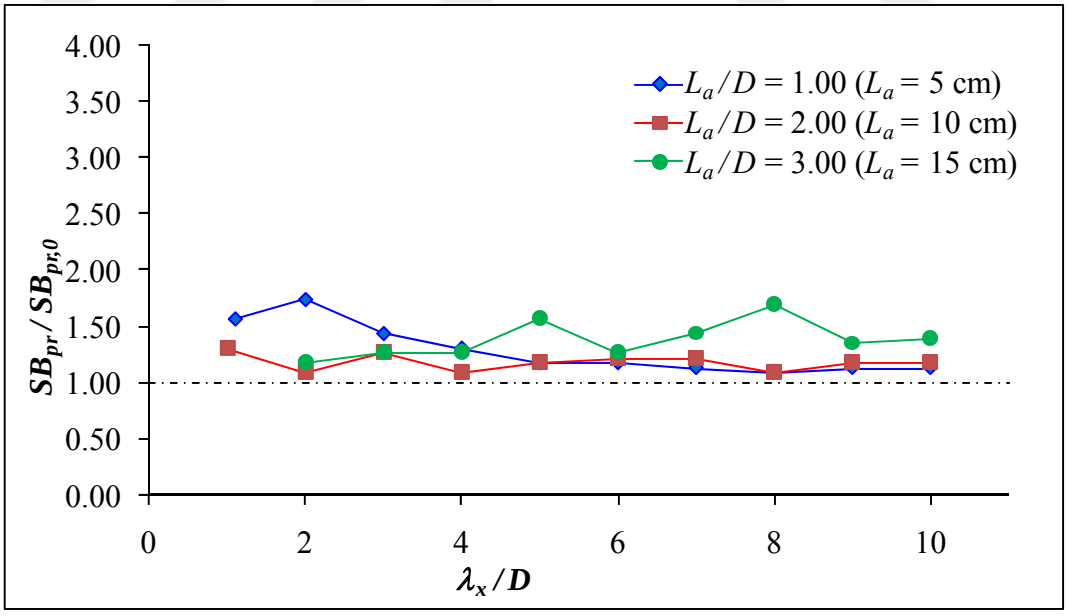


Figure 5.251 Variation of $SB_{pr} / SB_{pr,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.00

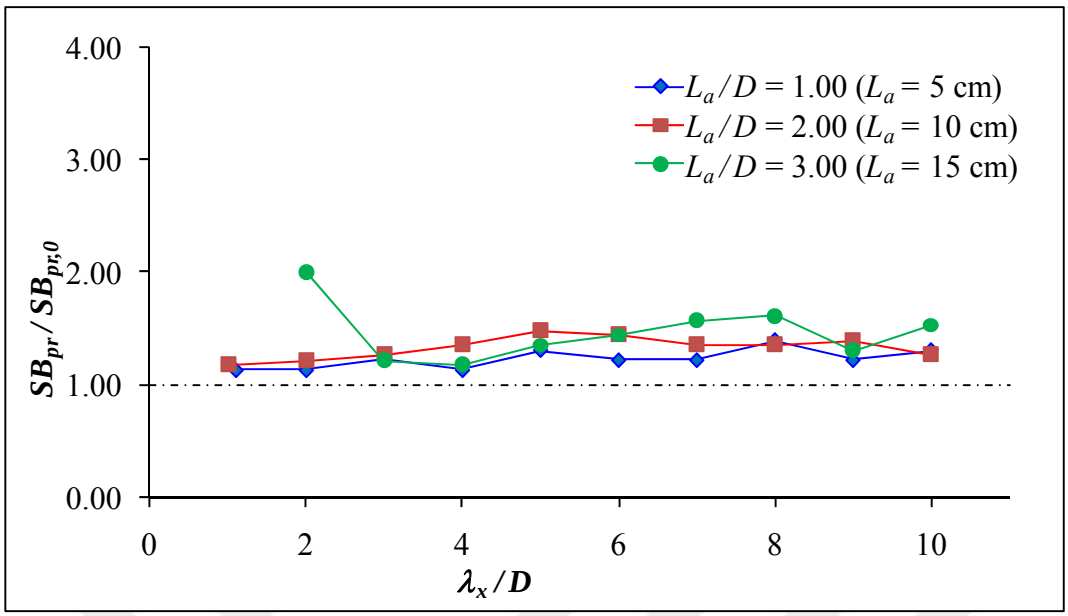


Figure 5.252 Variation of SB_{pr} / $SB_{pr,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.47

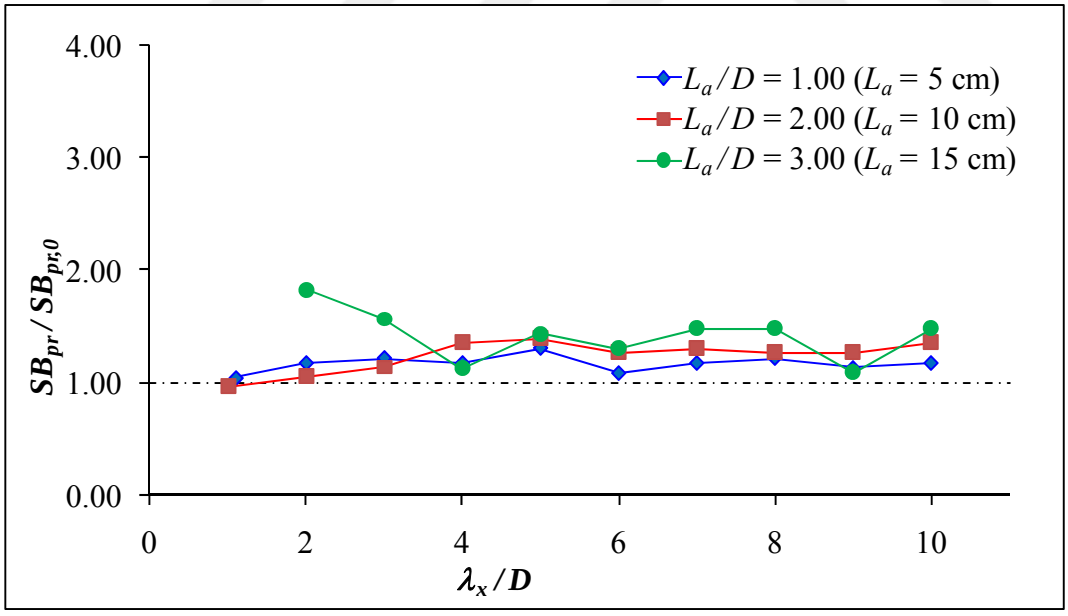


Figure 5.253 Variation of SB_{pr} / $SB_{pr,0}$ with λ_x / D at point R of the pier for D = 5 cm and λ_y / B_a = 0.93

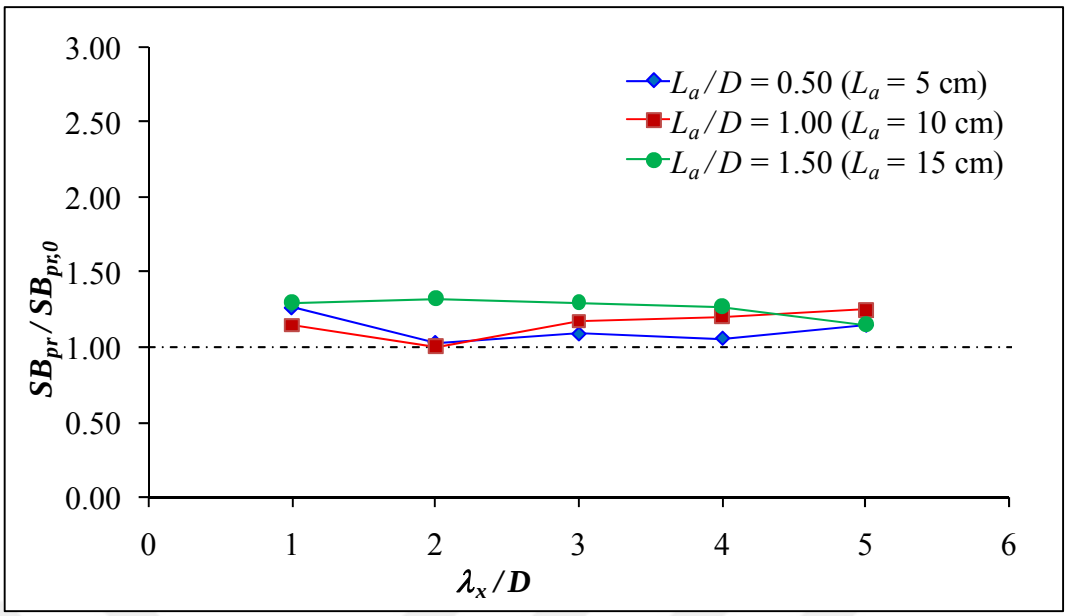


Figure 5.254 Variation of $SB_{pr}/SB_{pr,0}$ with λ_x/D at point R of the pier for D = 10 cm and λ_y/B_a = 0.00

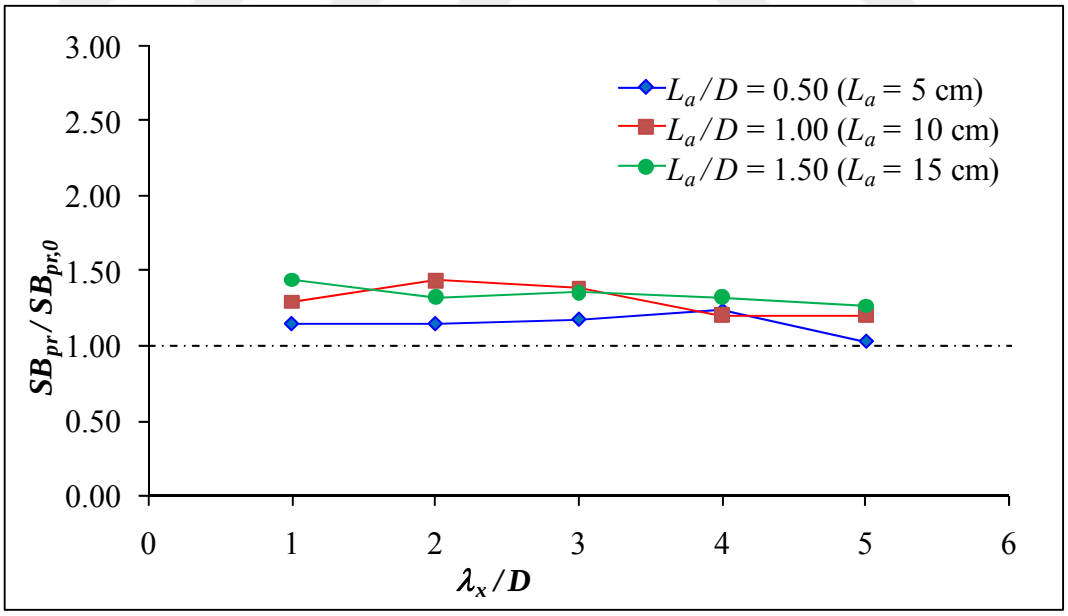


Figure 5.255 Variation of $SB_{pr}/SB_{pr,0}$ with λ_x/D at point R of the pier for D = 10 cm and λ_y/B_a = 0.43

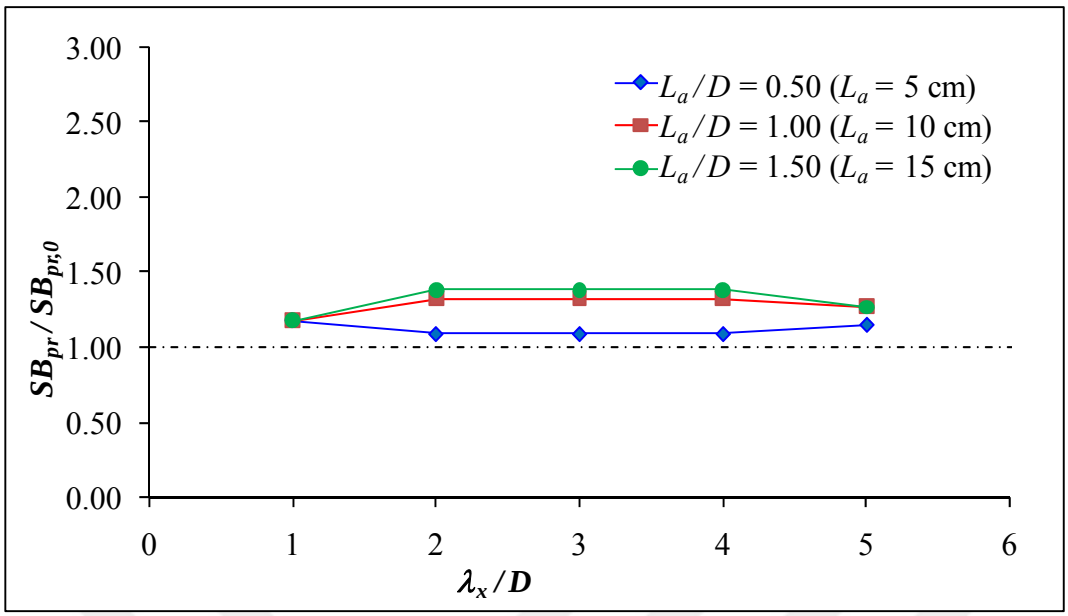


Figure 5.256 Variation of $SB_{pr} / SB_{pr,0}$ with λ_x / D at point R of the pier for D = 10 cm and λ_y / B_a = 0.87

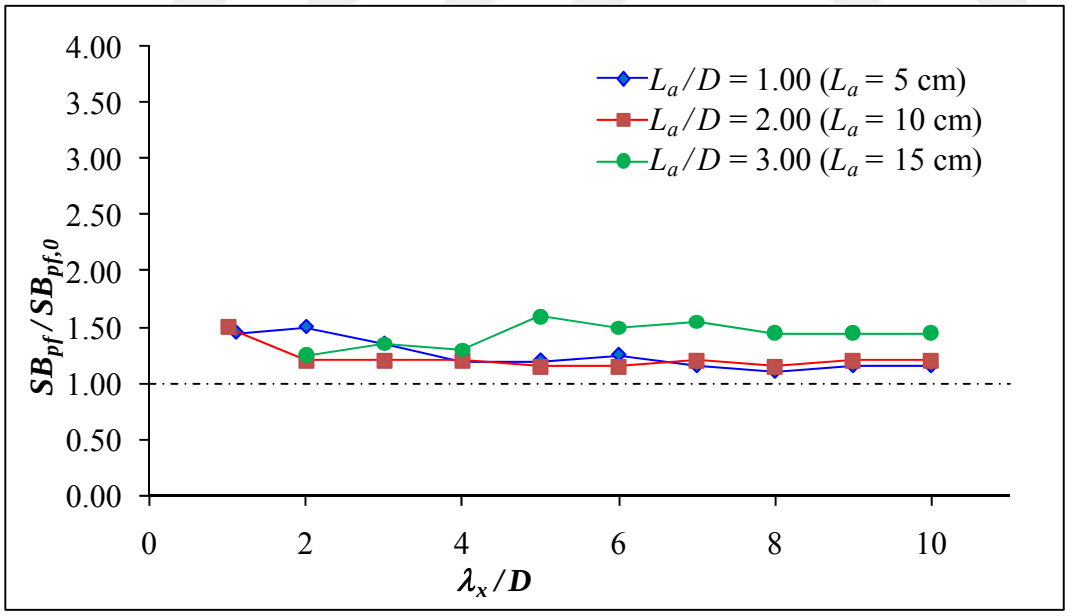


Figure 5.257 Variation of $SB_{pf} / SB_{pf,0}$ with λ_x / D at point F of the pier for D = 5 cm and λ_y / B_a = 0.00

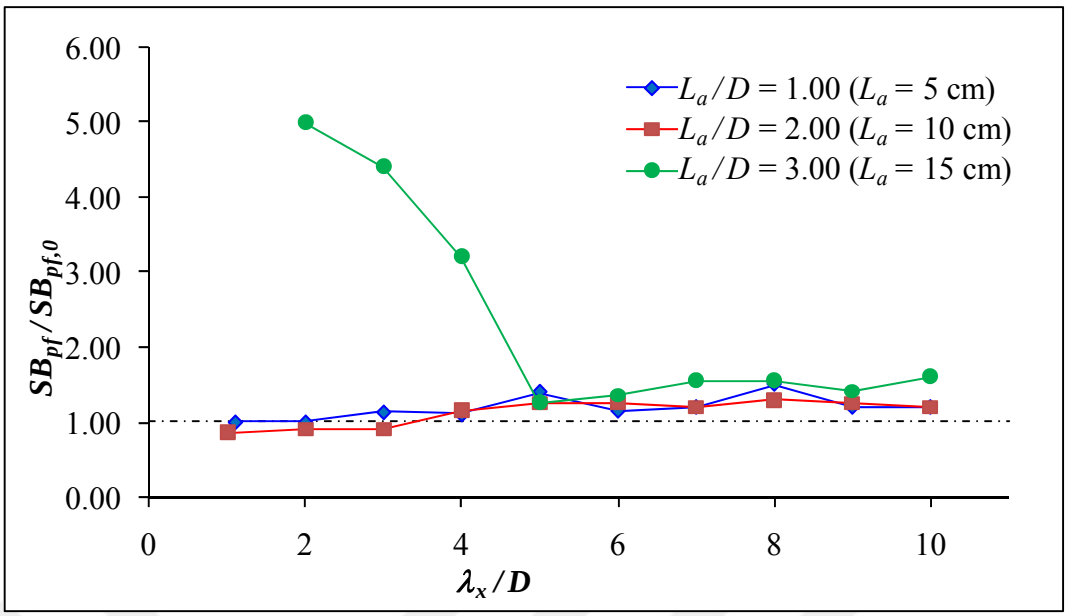


Figure 5.258 Variation of SB_{pf} / $SB_{pf,0}$ with λ_x / D at point F of the pier for D = 5 cm and λ_y / B_a = 0.47

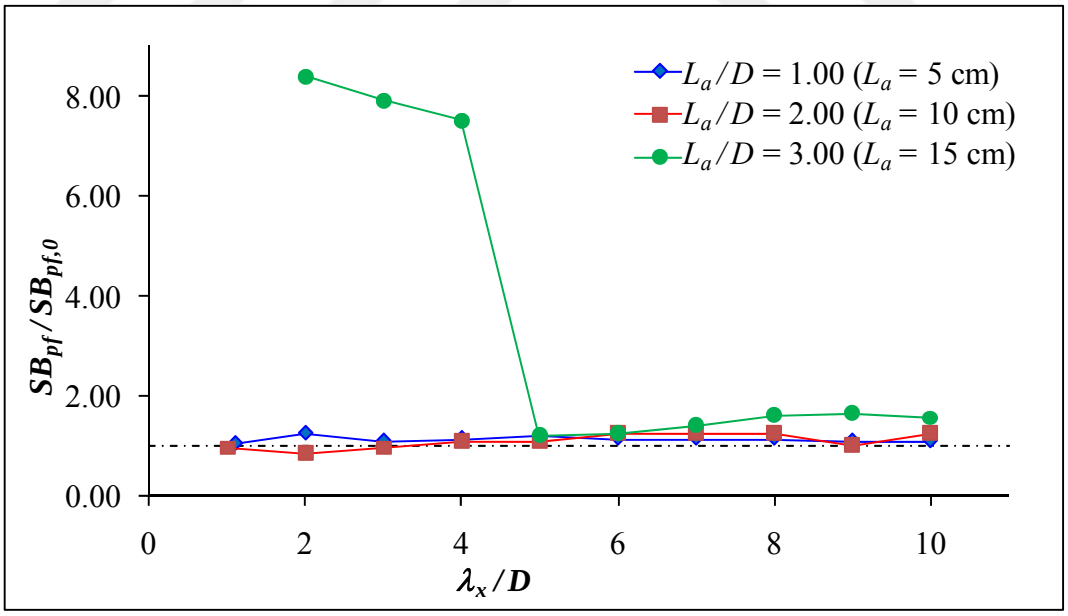


Figure 5.259 Variation of SB_{pf} / $SB_{pf,0}$ with λ_x / D at point F of the pier for D = 5 cm and λ_y / B_a = 0.93

In the case of D = 10 cm, the dimensionless scour border parameter at point F of the pier shows almost the same trend as those given in Figure 5.257; with very close numerical values to each other for all the abutment lengths tested (Figures 5.260 – 5.262). From these figures it may be stated that among the abutment lengths tested the one of L_a = 15 cm gives slightly larger $SB_{pf}/SB_{pf,0}$ values at most of the λ_x/D values for each λ_y/B_a tested. The other two abutments of L_a = 5 cm and 10 cm may be considered as those given minimum dimensionless scour border parameters.

As for the back side of the pier, the variation of the dimensionless scour border parameter with λ_x/D for a given L_a shows different trends than those described so far; for points L, R and F of the pier, with much larger numerical values (Figures 5.263 – 5.265). The abutment of L_a = 15 cm (L_a/D = 3.00) gives maximum scour borders compared to the other abutments tested with numerical values varying between about 2.00 and 3.50 for the whole range of λ_x/D tested λ_y/B_a = 0.00. At other λ_y/B_a values 0.47 and 0.93, the scour borders are still much larger for L_a = 15 cm than those of other abutments. The minimum scour borders are obtained with the abutment of L_a = 5 cm (L_a/D = 1.00).

When the pier diameter becomes D = 10 cm, at the rear of the pier much more stabilized data distribution is obtained for the dimensionless scour border parameter with varying λ_x/D and λ_y/B_a (Figures 5.266 – 5.268). The abutment of L_a = 15 cm (L_a/D = 1.50) yields the maximum values for the scour border while the one of L_a = 5 cm (L_a/D = 0.50) gives the minimum values always less than unity with varying λ_x/D and λ_y/B_a.

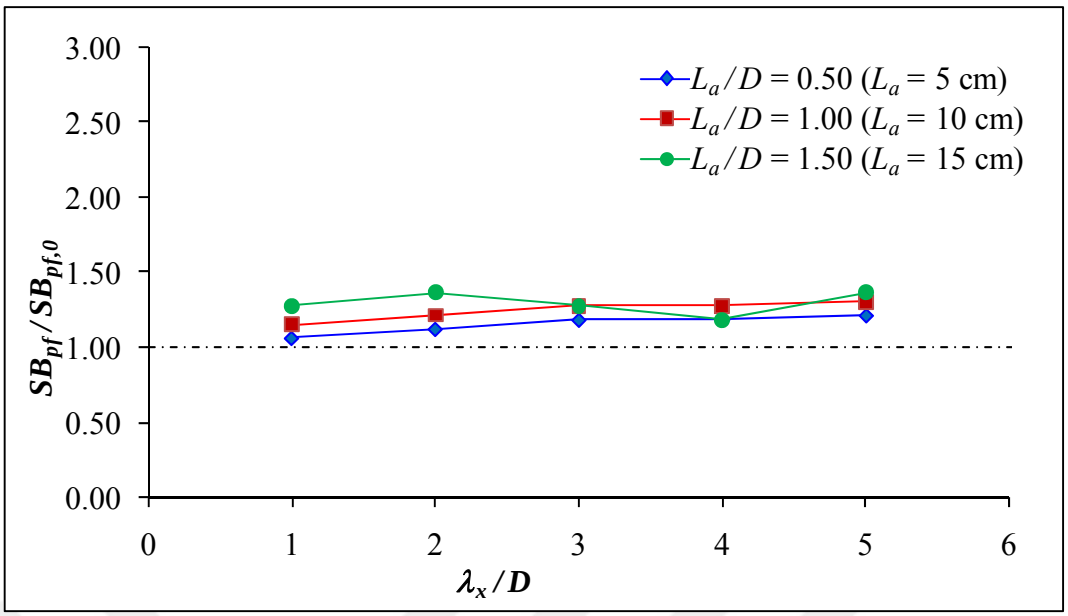


Figure 5.260 Variation of $SB_{pf}/SB_{pf,0}$ with λ_x/D at point F of the pier for D = 10 cm and λ_y/B_a = 0.00

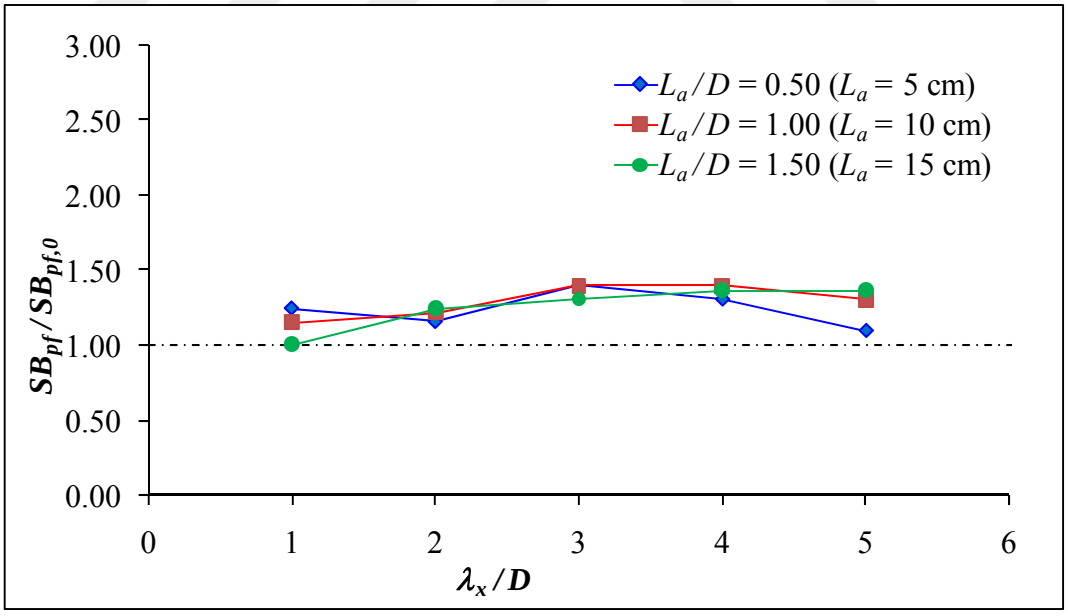


Figure 5.261 Variation of $SB_{pf}/SB_{pf,0}$ with λ_x/D at point F of the pier for D = 10 cm and λ_y/B_a = 0.43

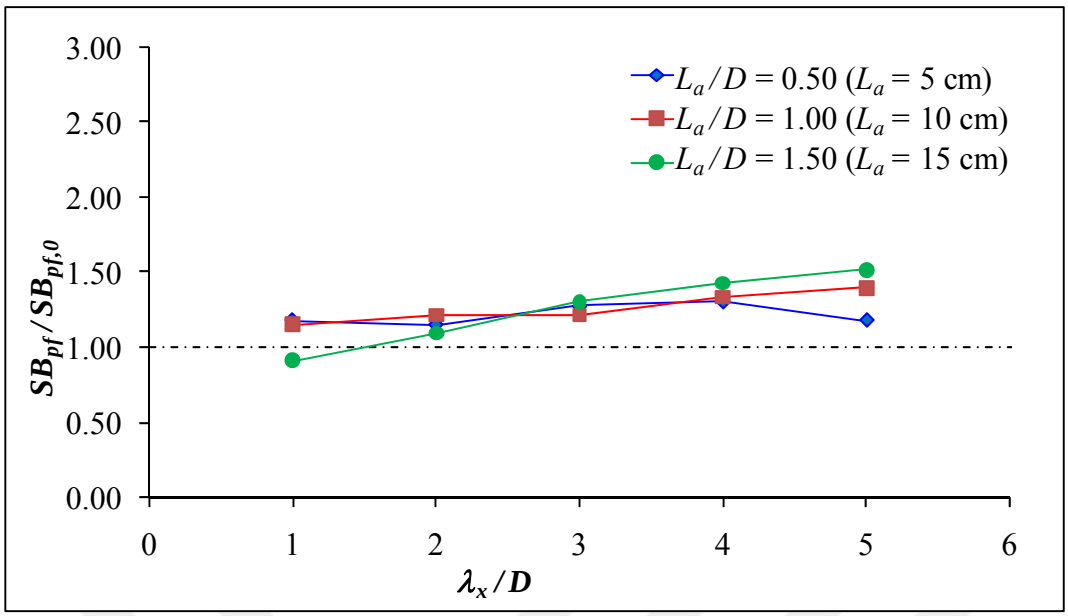


Figure 5.262 Variation of $SB_{pf}/SB_{pf,0}$ with λ_x/D at point F of the pier for D = 10 cm and λ_y/B_a = 0.87

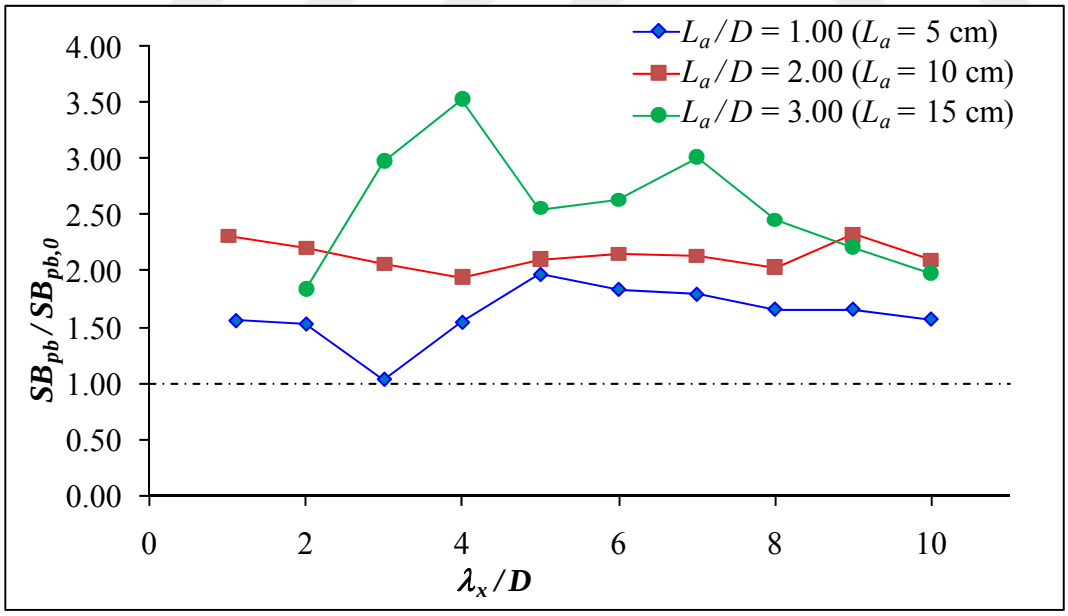


Figure 5.263 Variation of $SB_{pb}/SB_{pb,0}$ with λ_x/D at the rear of the pier for D = 5 cm and λ_y/B_a = 0.00

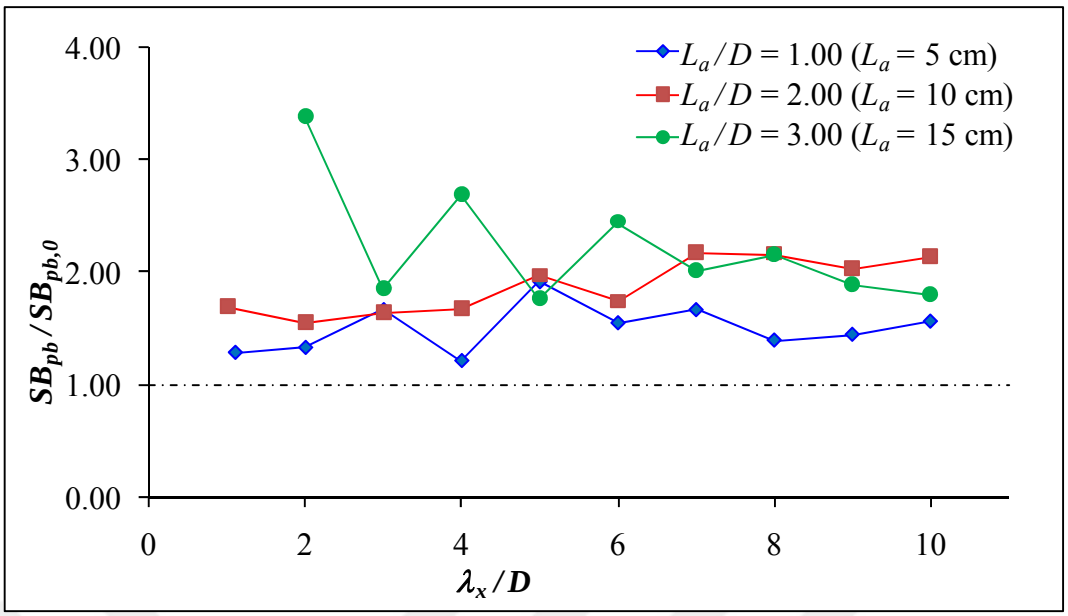


Figure 5.264 Variation of SB_{pb} / $SB_{pb,0}$ with λ_x / D at the rear of the pier for D = 5 cm and λ_y / B_a = 0.47

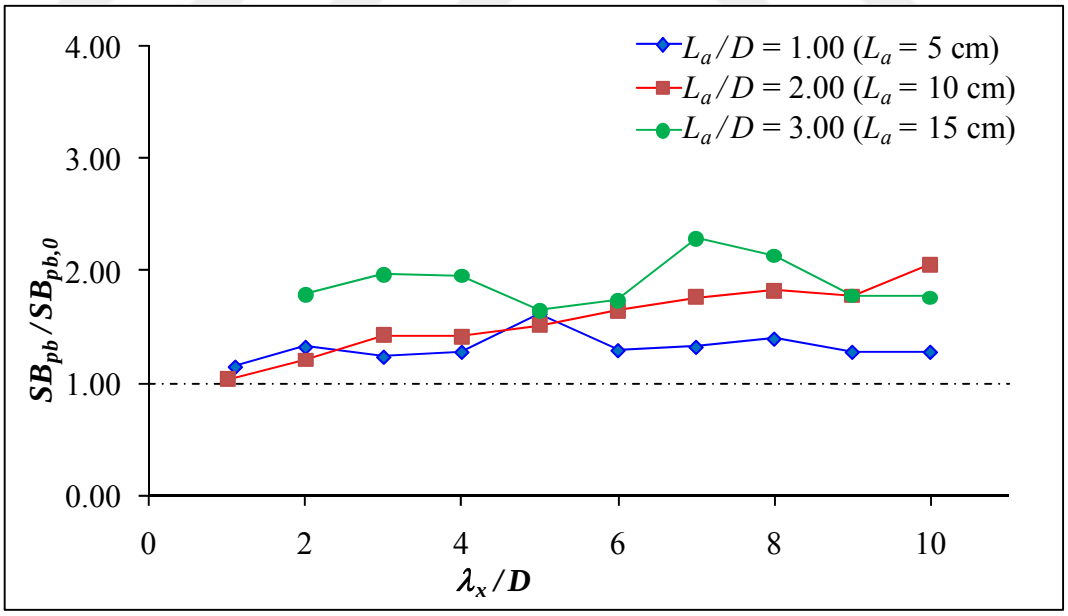


Figure 5.265 Variation of SB_{pb} / $SB_{pb,0}$ with λ_x / D at the rear of the pier for D = 5 cm and λ_y / B_a = 0.93

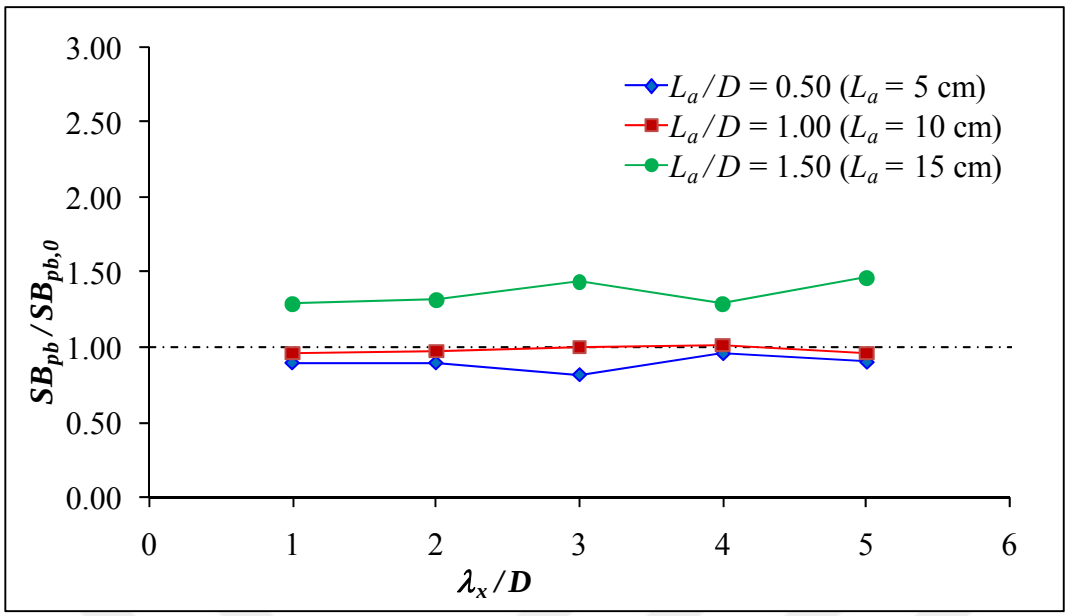


Figure 5.266 Variation of SB_{pb} / $SB_{pb,0}$ with λ_x / D at the rear of the pier for D = 10 cm and λ_y / B_a = 0.00

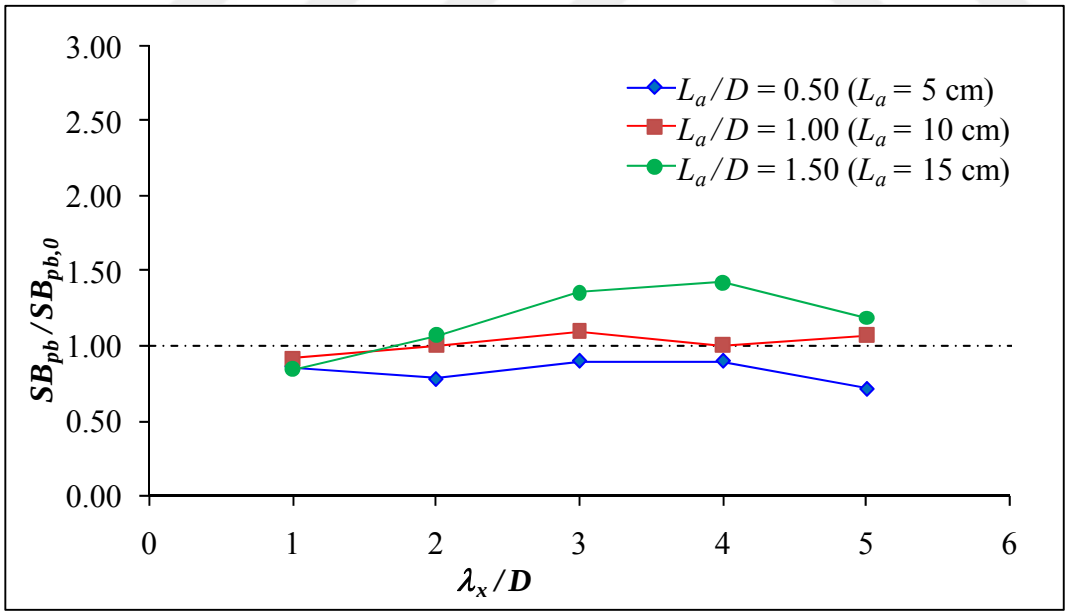


Figure 5.267 Variation of SB_{pb} / $SB_{pb,0}$ with λ_x / D at the rear of the pier for D = 10 cm and λ_y / B_a = 0.43

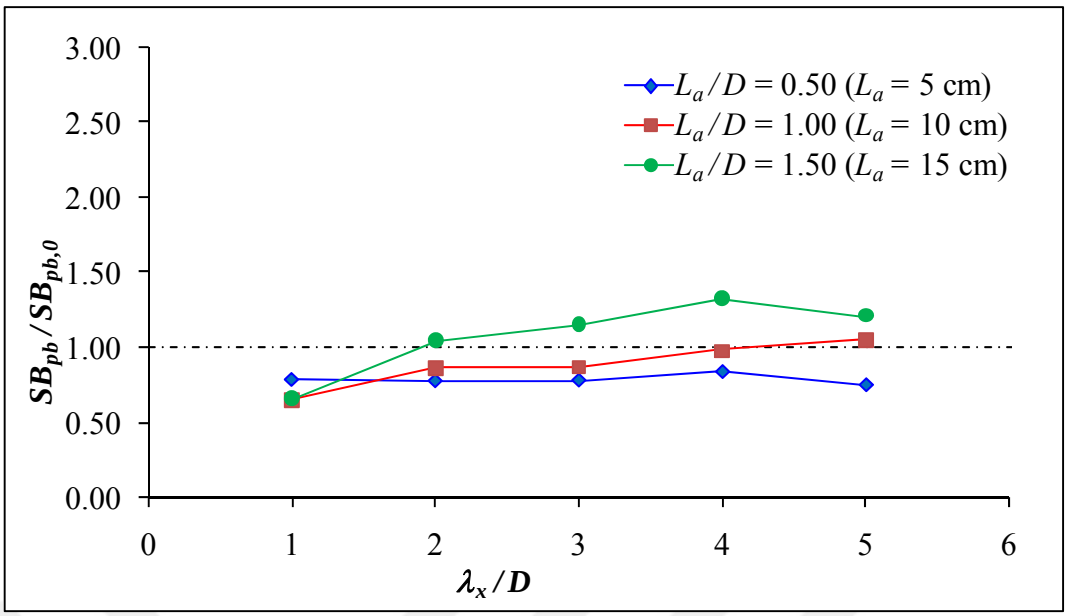


Figure 5.268 Variation of $SB_{pb} / SB_{pb,0}$ with λ_x / D at the rear of the pier for D = 10 cm and λ_y / B_a = 0.87

The related data of scour borders forming around the abutments for one abutment one pier case were presented in Figures 5.269 – 5.286. Figures 5.269 – 5.271 show the variation of the dimensionless scour border parameter at the channel wall side of the abutment with λ_x / D for pier diameter of D = 5 cm and λ_y / B_a = 0.00, 0.47 and 0.93. While the data of L_a = 10 cm shows maximum $SB_{aw} / SB_{aw,0}$ for all λ_y / B_a cases tested, the minimum $SB_{aw} / SB_{aw,0}$ data are obtain from the abutments of L_a = 5 cm and L_a = 10 cm with very close values to each other for a given λ_x / D when λ_y / B_a = 0.00, 0.47 and 0.93.

In the case of D = 10 cm variation of $SB_{aw} / SB_{aw,0}$ with λ_x / D as a function of L_a are shown in Figures 5.272 – 5.274. The data of L_a = 10 cm (L_a / D = 2.00) gives almost maximum values at any λ_x / D among the data of other L_a values tested. The data of L_a = 15 cm (L_a / D = 1.50) gives the minimum $SB_{aw} / SB_{aw,0}$ values almost

at any λ_x / D compared to those of other abutments tested for λ_y / B_a = 0.00, 0.43 and 0.87.

Variation of dimensionless scour border parameter $SB_{af} / SB_{af,0}$ at upstream corner of the abutment (point L_0) with λ_x / D are shown in Figures 5.275 – 5.277 for pier of D = 5 cm and λ_y / B_a = 0.00, 0.47 and 0.93, respectively. In these figures maximum $SB_{af} / SB_{af,0}$ values belong to the abutment of L_a = 10 cm (L_a / D = 2.00), and minimum $SB_{af} / SB_{af,0}$ values are seen for the abutments of L_a = 5 cm (L_a / D = 1.00) and L_a = 15 cm (L_a / D = 3.00) for the whole range of λ_x / D and λ_y / B_a tested.

The data of $SB_{af} / SB_{af,0}$ versus λ_x / D are depicted in Figures 5.278 – 5.280 as a function of abutment length for pier of D = 10 cm and λ_y / B_a = 0.00, 0.43 and 0.87, respectively. In these figures it is seen that the abutment of L_a = 10 cm (L_a / D = 1.00) gives maximum $SB_{af} / SB_{af,0}$ values while the abutment of L_a = 15 cm (L_a / D = 1.50) shows minimum dimensionless scour border parameters almost for all λ_x / D and λ_y / B_a values tested.

The data of dimensionless scour border at point L_0 of the abutment perpendicular to the flow direction are plotted with respect to λ_x / D for each abutment length tested in Figures 5.281 – 5.283 for D = 5 cm and λ_y / B_a = 0.00, 0.47 and 0.93 respectively. A random distribution of the data points is observed in Figures 5.281 for almost all the abutments tested. Excluding the zone where λ_x / D less than about four, for the remaining values of λ_x / D, the data of L_a = 15 cm (L_a / D = 3.00) gives maximum $SB_{ar} / SB_{ar,0}$ values compared to the other abutment lengths; while L_a = 5 cm (L_a / D = 1.00) shows minimum values. Even for the other figures; where λ_y / B_a = 0.47 and 0.93, one may state that, in general, L_a = 15 cm (L_a / D = 3.00) gives maximum and L_a = 5 cm (L_a / D = 1.00) gives minimum $SB_{ar} / SB_{ar,0}$ values for almost all values of λ_x / D tested.

Variation of $SB_{ar} / SB_{ar,0}$ with λ_x/D at point L_0 of the abutment perpendicular to the flow direction for D = 10 cm and λ_y / B_a = 0.00, 0.43 and 0.87 are shown in Figures 5.284 – 5.286, respectively. In Figure 5.284 almost for the whole range of λ_x / D and in Figure 5.286 for λ_x / D values less than about 3, the distribution of the related data points is quite random. Therefore, it is difficult to make a conclusion about the general trends of the data. At larger values of λ_x / D, $\lambda_x / D \geq 4.00$, the abutment of L_a = 15 cm (L_a / D = 1.50) gives minimum $SB_{ar} / SB_{ar,0}$ for λ_y / B_a = 0.00. However, in Figures 5.285 (λ_y / B_a = 0.43) and 5.286 (λ_y / B_a = 0.87) it is seen that the abutment of L_a = 15 cm (L_a / D = 1.50) gives minimum $SB_{ar} / SB_{ar,0}$ values for the whole range of λ_x / D tested.

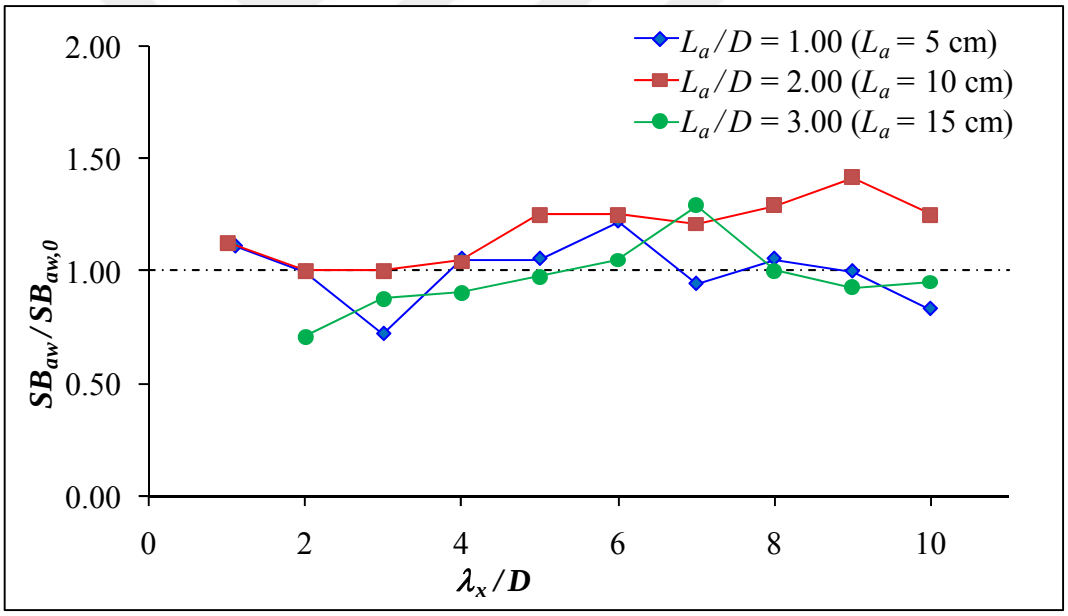


Figure 5.269 Variation of $SB_{aw} / SB_{aw,0}$ with λ_x / D at the channel wall side of the abutment for D = 5 cm and λ_y / B_a = 0.00

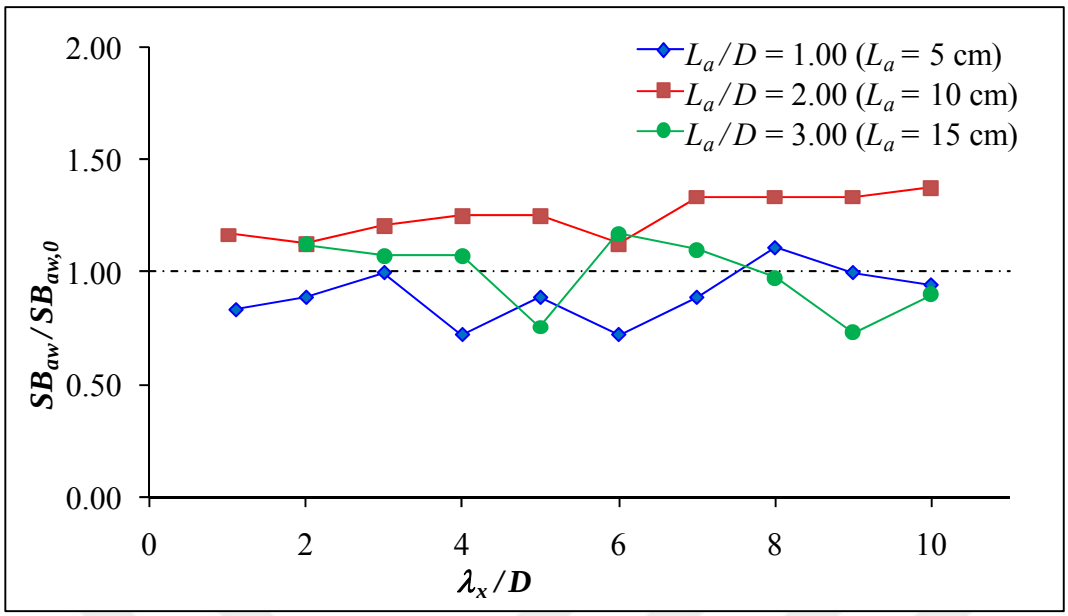


Figure 5.270 Variation of SB_{aw} / $SB_{aw,0}$ with λ_x / D at the channel wall side of the abutment for D = 5 cm and λ_y / B_a = 0.47

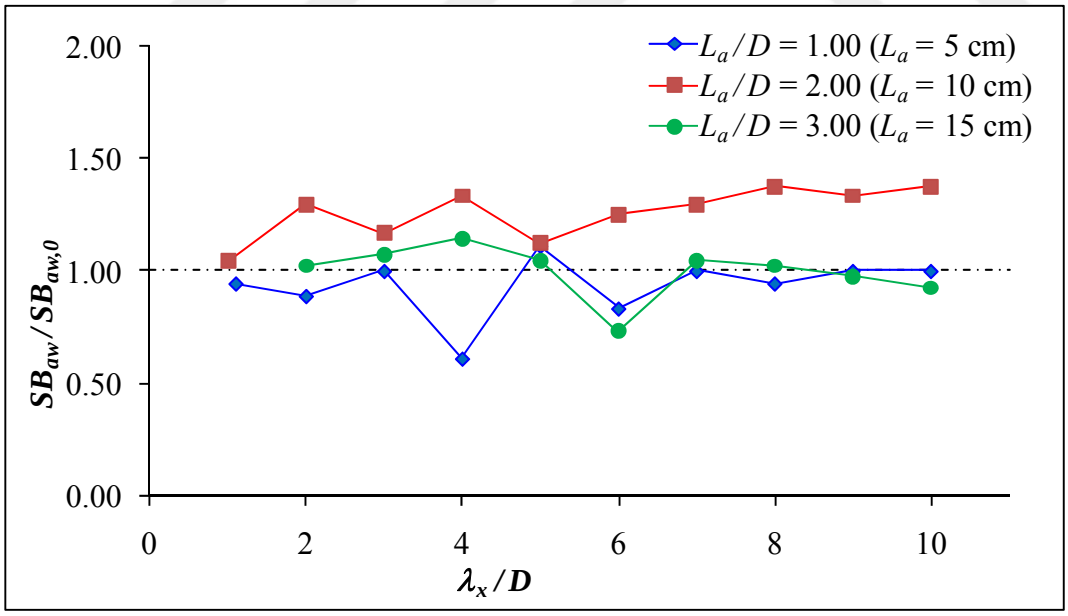


Figure 5.271 Variation of SB_{aw} / $SB_{aw,0}$ with λ_x / D at the channel wall side of the abutment for D = 5 cm and λ_y / B_a = 0.93

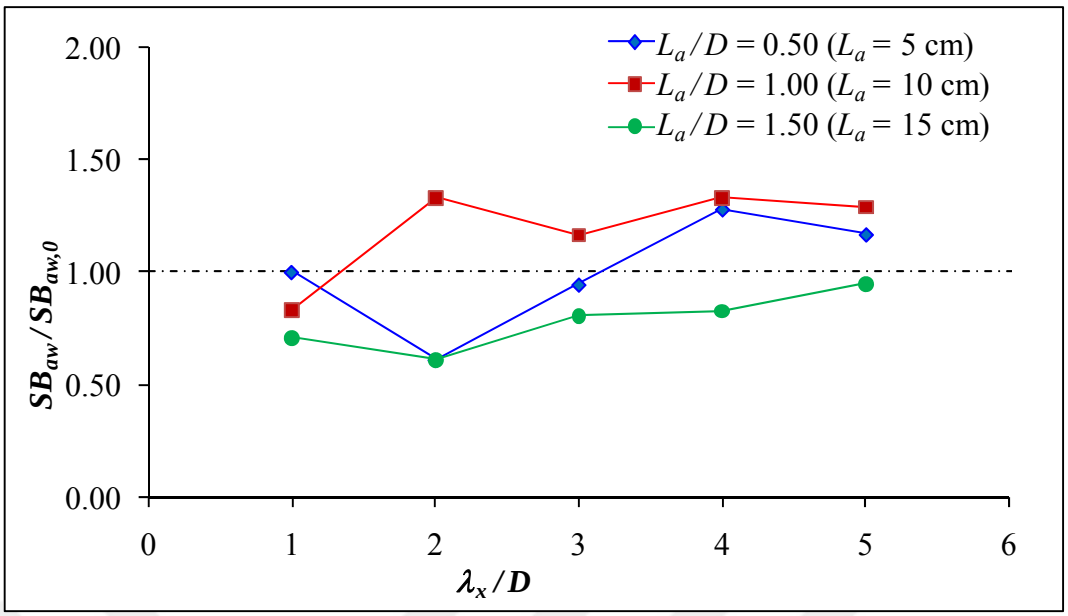


Figure 5.272 Variation of SB_{aw} / $SB_{aw,0}$ with λ_x / D at the channel wall side of the abutment for D = 10 cm and λ_y / B_a = 0

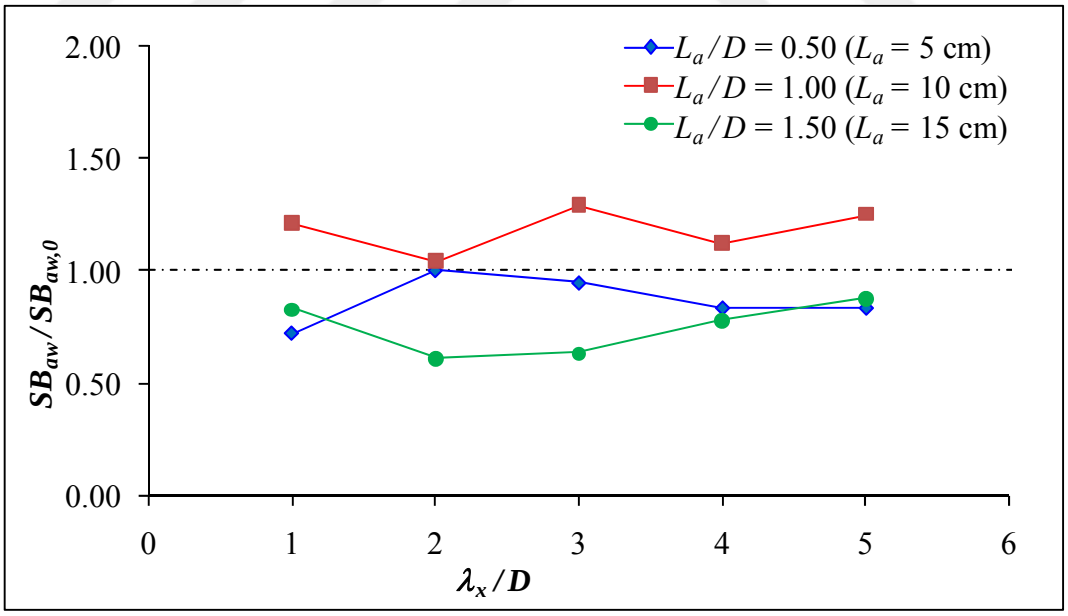


Figure 5.273 Variation of SB_{aw} / $SB_{aw,0}$ with λ_x / D at the channel wall side of the abutment for D = 10 cm and λ_y / B_a = 0.43

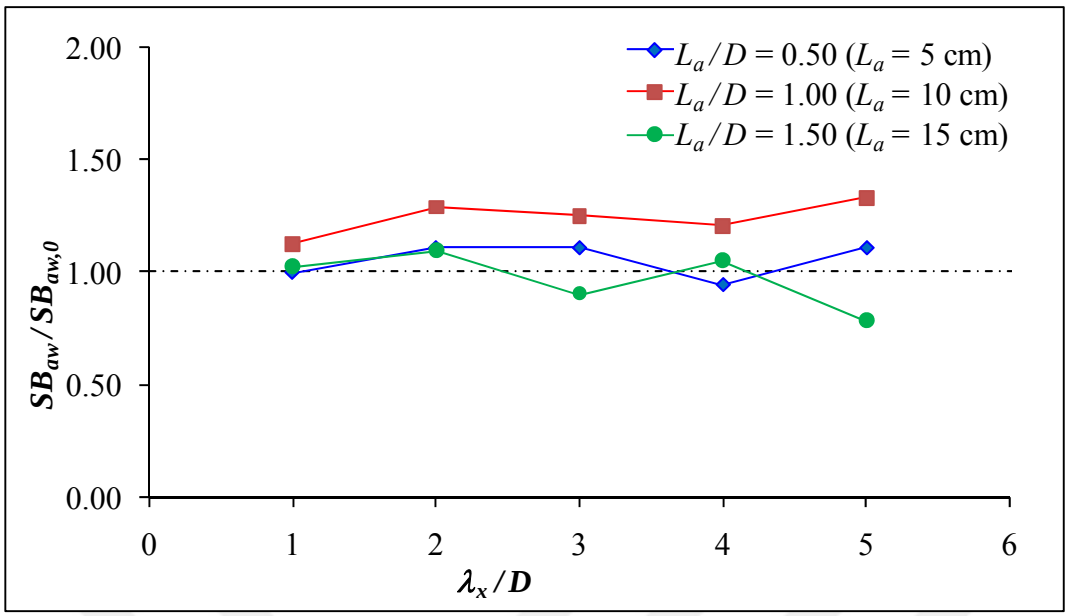


Figure 5.274 Variation of SB_{aw} / $SB_{aw,0}$ with λ_x/D at the channel wall side of the abutment for D = 10 cm and λ_y/B_a = 0.87

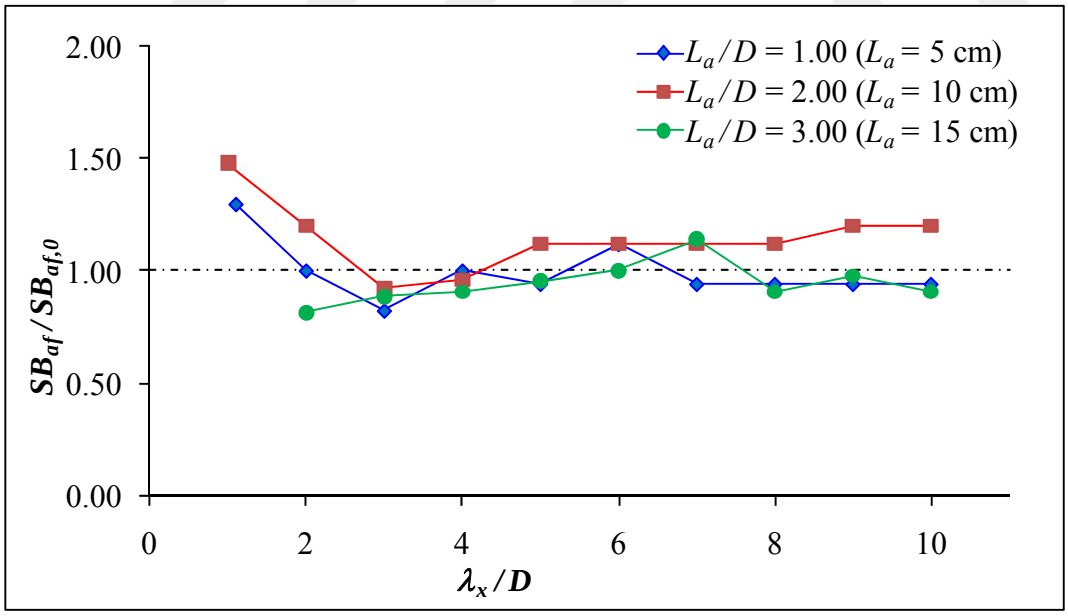


Figure 5.275 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.00

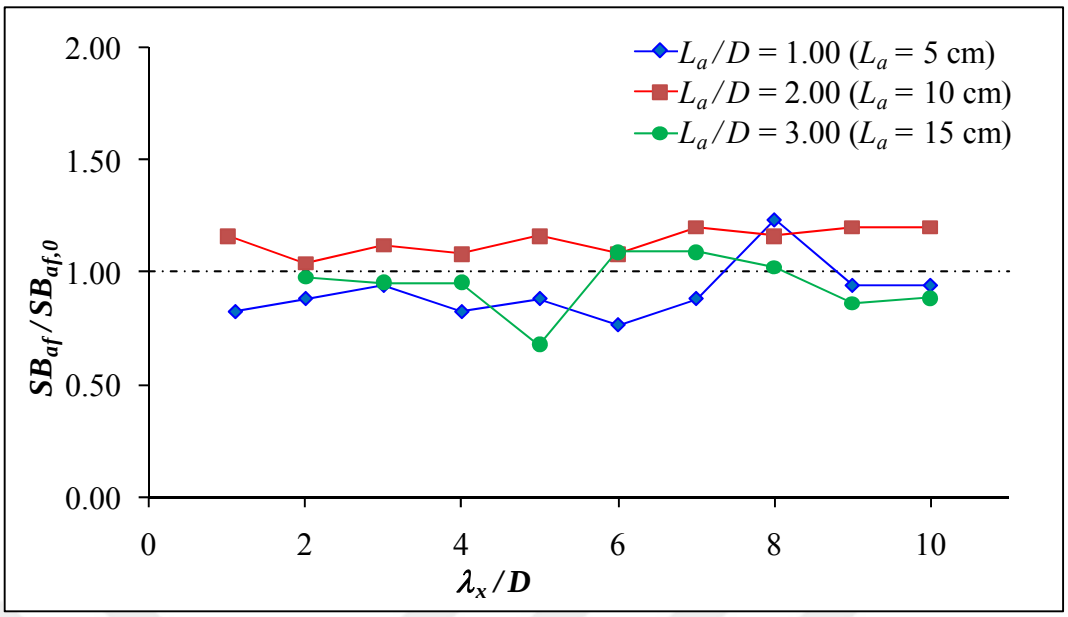


Figure 5.276 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.47

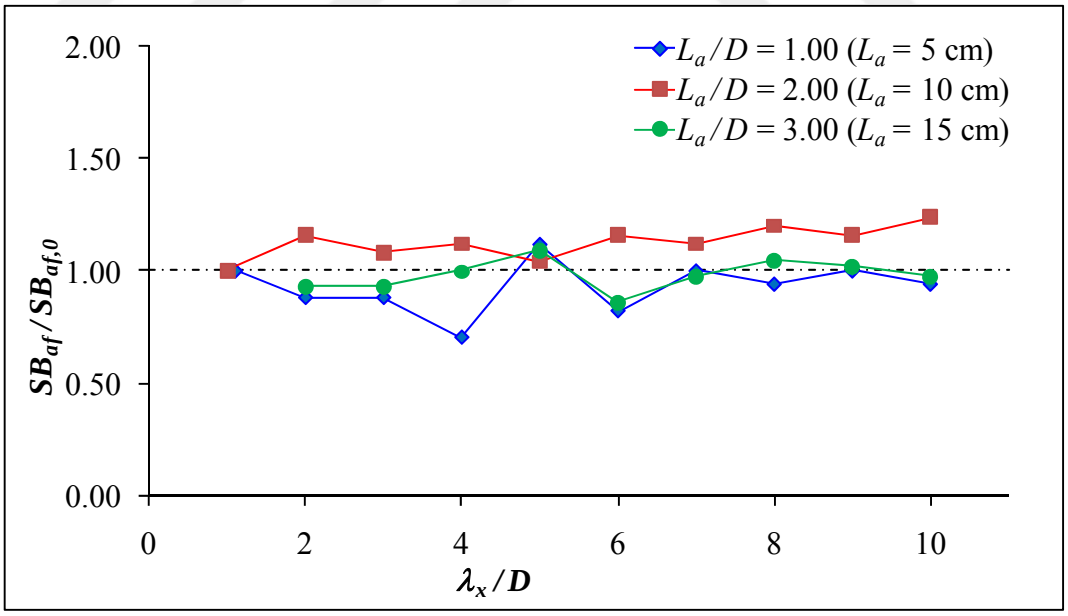


Figure 5.277 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.93

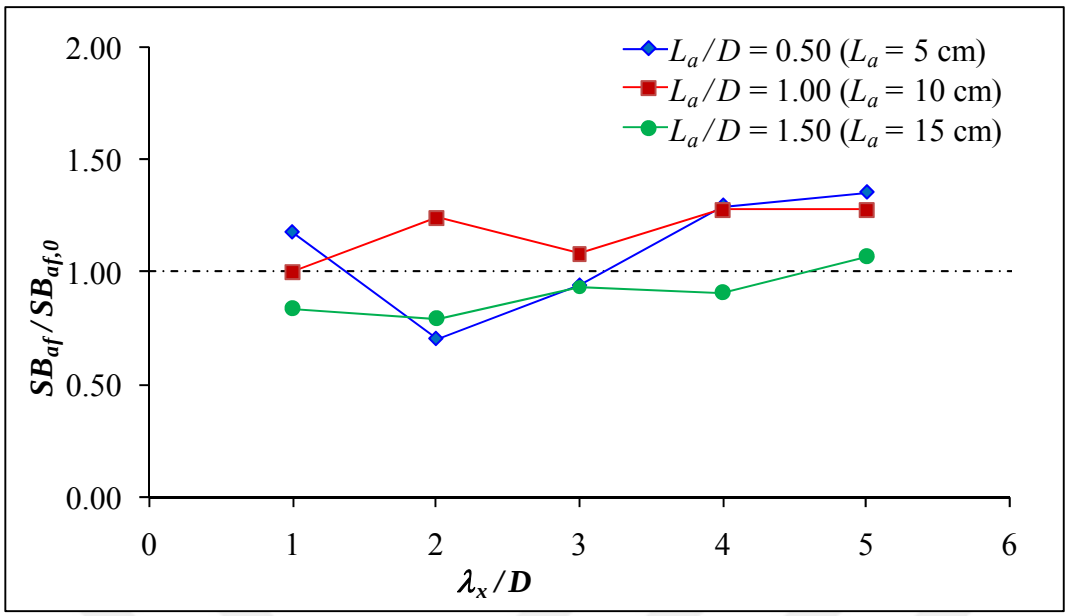


Figure 5.278 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 10 cm and λ_y/B_a = 0.00

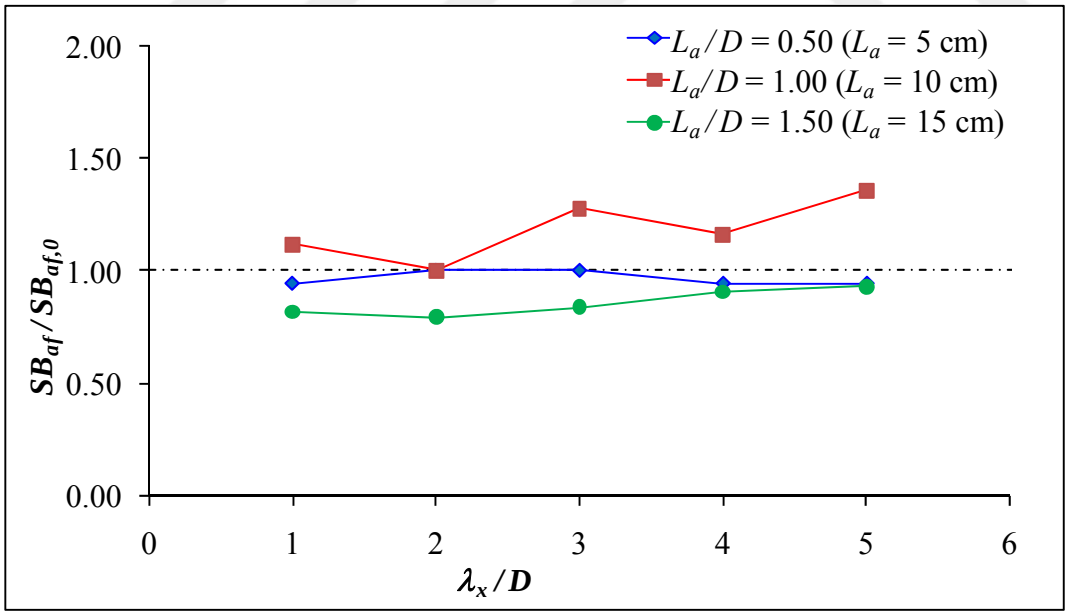


Figure 5.279 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 10 cm and λ_y/B_a = 0.43

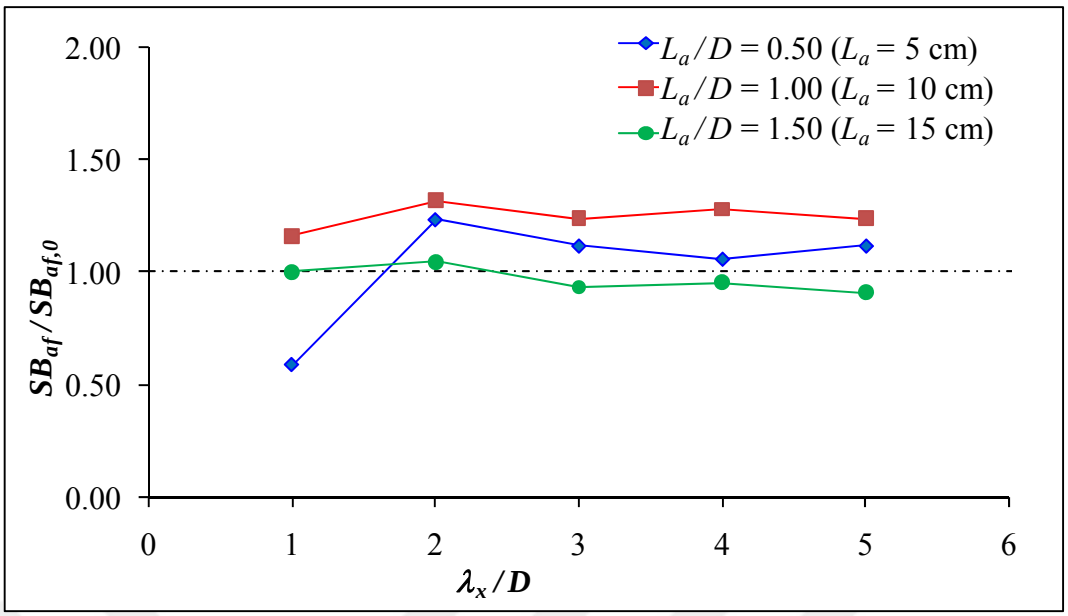


Figure 5.280 Variation of SB_{af} / $SB_{af,0}$ with λ_x/D at point L_0 of the abutment for D = 10 cm and λ_y/B_a = 0.87

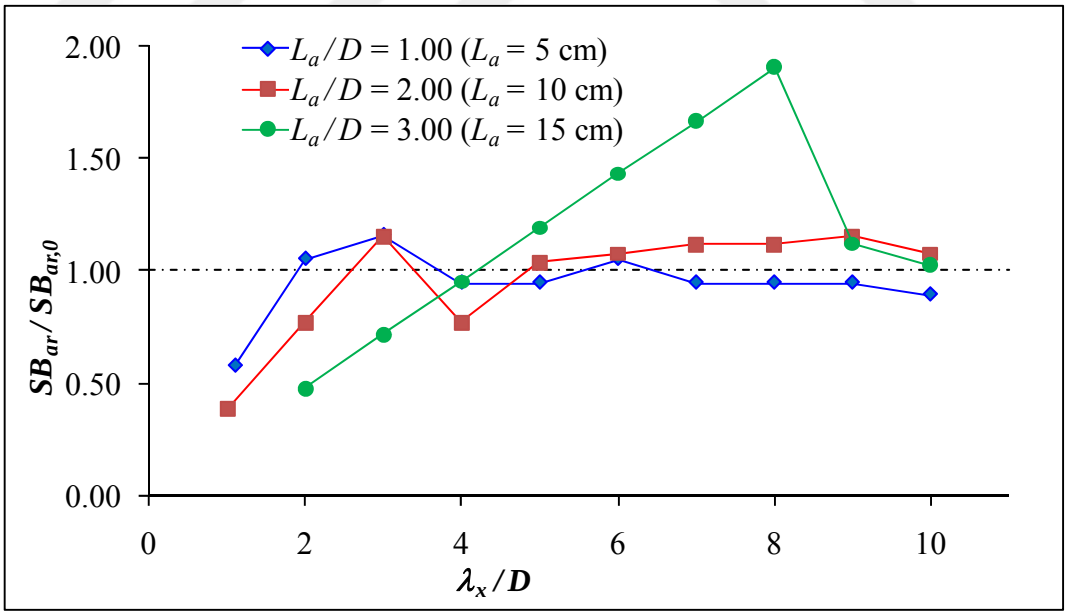


Figure 5.281 Variation of SB_{ar} / $SB_{ar,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.00

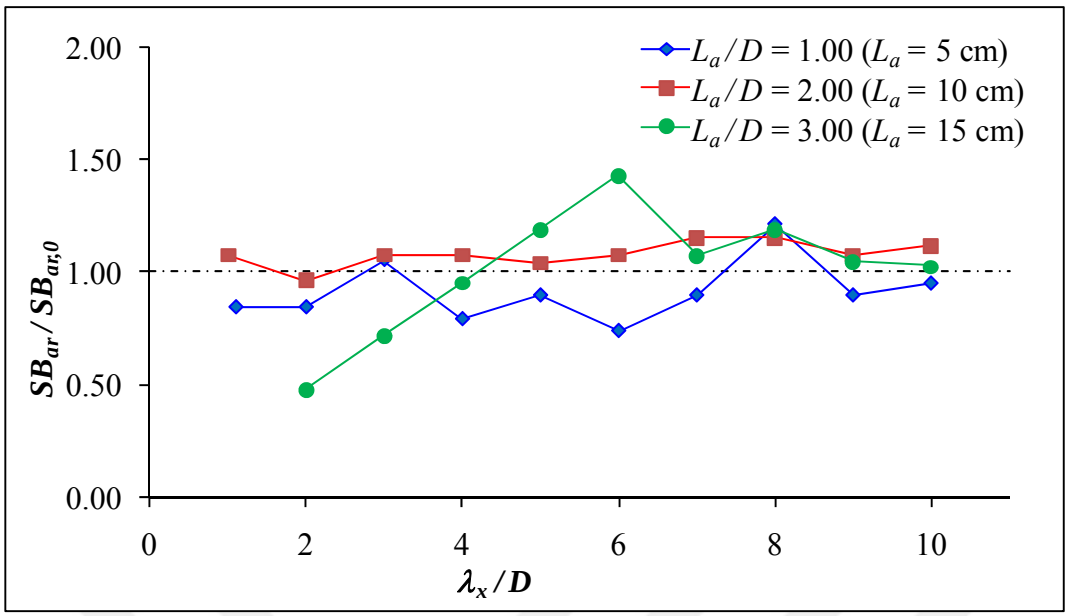


Figure 5.282 Variation of SB_{ar} / $SB_{ar,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.47

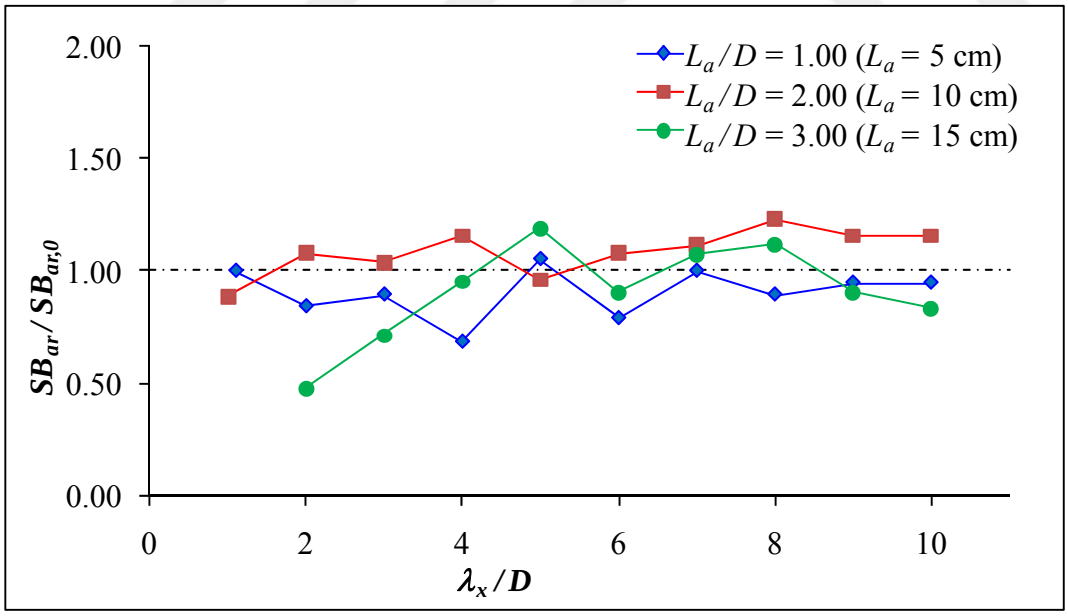


Figure 5.283 Variation of SB_{ar} / $SB_{ar,0}$ with λ_x/D at point L_0 of the abutment for D = 5 cm and λ_y/B_a = 0.93

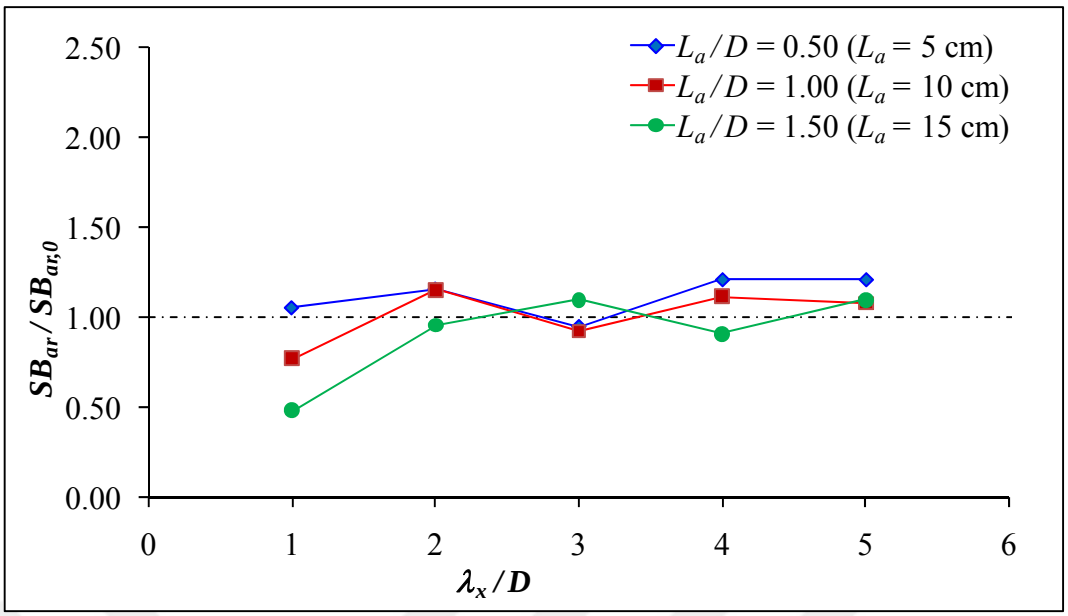


Figure 5.284 Variation of SB_{ar} / $SB_{ar,0}$ with λ_x/D at point L_0 of the abutment for D = 10 cm and λ_y/B_a = 0.00

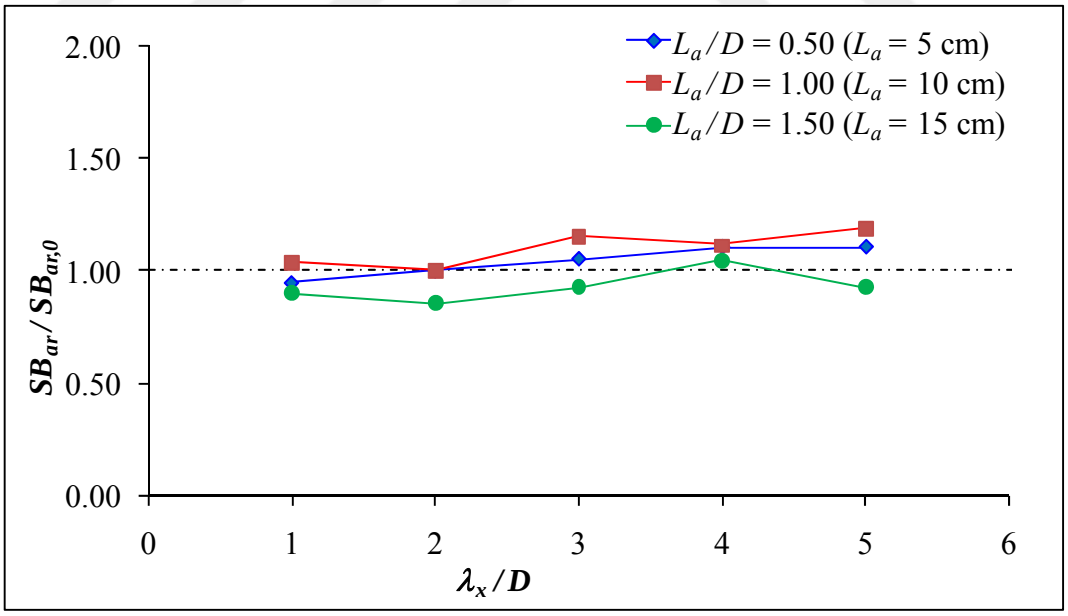


Figure 5.285 Variation of SB_{ar} / $SB_{ar,0}$ with λ_x/D at point L_0 of the abutment for D = 10 cm and λ_y/B_a = 0.43

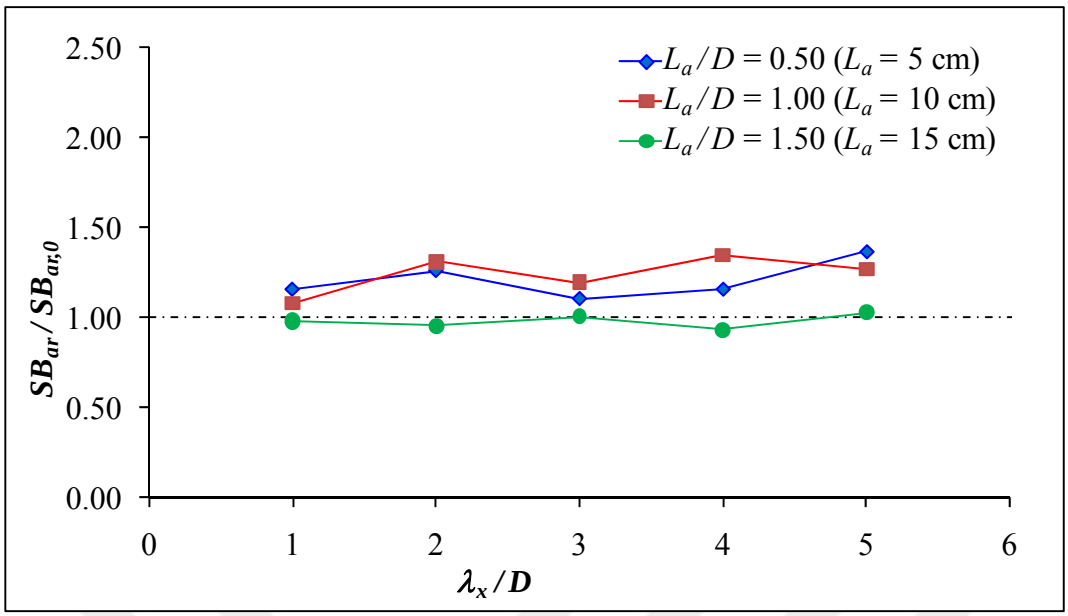


Figure 5.286 Variation of $SB_{ar} / SB_{ar,0}$ with λ_x / D at point L_0 of the abutment for D = 10 cm and λ_y / B_a = 0.87

5.2.5 Two Piers and One Abutment Case for Scour Borders

The measured scour border parameters of two piers and one abutment obtained from the initial experiments were listed in Table 5.32 along with the sketch of them showing how they were located in the channel. In those initial experiments first two piers and then abutments were tested. Later on the experiments were conducted with the two piers and one abutment arrangements and the measured scour border parameters were divided by those corresponding ones of the initial experiments to get the dimensionless scour border parameters (Table 5.33). Figures 5.287 – 5.290 show the variation of dimensionless scour border parameters at the; left, right, front and back side of the two piers with λ_x / D as function of abutment length, respectively.

Table 5.32 Scour border parameters obtained from initial experiments conducted with two piers and one abutment

Exp. No.	D (cm)	Pier$_1$				Pier$_2$			
		$SB_{pl,0}$ (cm)	$SB_{pf,0}$ (cm)	$SB_{pr,0}$ (cm)	$SB_{pb,0}$ (cm)	$SB_{pl,0}$ (cm)	$SB_{pf,0}$ (cm)	$SB_{pr,0}$ (cm)	$SB_{pb,0}$ (cm)
E168	10	14.0	15.0	13.0	23.0	16.5	12.5	14.0	50.5
E170	5	10.5	12.0	10.5	22.0	13.5	13.0	14.0	23.0

Exp. No.	L_a (cm)	$SB_{aw,0}$ (cm)	$SB_{af2,0}$ (cm)	$SB_{af3,0}$ (cm)	$SB_{af,0}$ (cm)	$SB_{ar,0}$ (cm)
E1	5	9.00			8.50	9.50
E2	10	12.00	12.50		12.50	13.00
E3	15	20.50	20.50	21.00	21.50	21.00

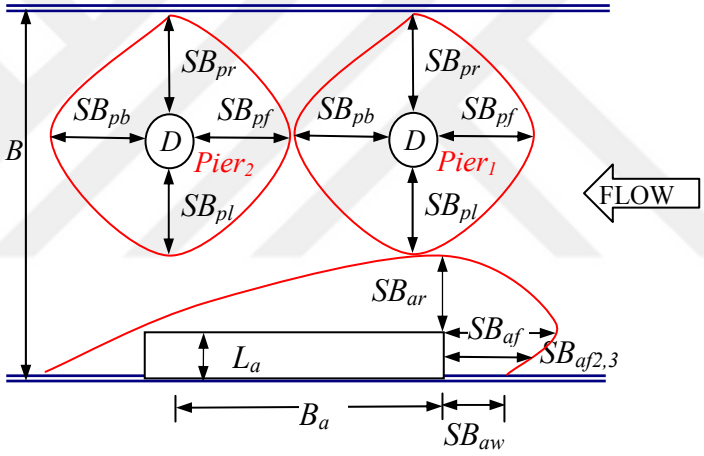


Table 5.33 Measured and calculated scour borders for two piers of D = 5 cm and λ_y = 15 cm

Exp. No.	λ_x (cm)	λ_x / D	Pier$_1$				Pier$_2$				Pier$_1$				Pier$_2$			
			SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$
L_a = 5 cm																		
E143	10	2	10.0	10.0	13.0	23.0	10.0	12.0	14.0	42.0	0.95	**0.83**	**1.24**	1.05	**0.74**	0.92	**1.00**	1.83
E144	20	4	9.5	11.5	13.0	24.5	11.0	11.0	13.5	43.5	**0.90**	0.96	**1.24**	**1.11**	0.81	**0.85**	0.96	1.89
E145	30	6	13.0	12.5	13.0	24.0	12.0	11.0	11.5	57.0	**1.24**	**1.04**	**1.24**	1.09	0.89	**0.85**	**0.82**	**2.48**
E146	40	8	11.0	12.5	11.0	24.0	11.0	11.0	12.5	48.0	1.05	**1.04**	1.05	1.09	0.81	**0.85**	0.89	2.09
E147	50	10	11.5	11.5	11.5	24.0	11.5	11.0	12.5	45.5	1.10	0.96	1.10	1.09	0.85	**0.85**	0.89	1.98
L_a = 10 cm																		
E148	50	10	14.5	14.5	14.0	24.5	13.0	10.5	13.5	64.5	**1.38**	**1.21**	1.33	1.11	0.96	0.81	0.96	2.80
E149	40	8	11.0	12.0	14.0	24.0	12.5	11.0	15.0	68.5	1.05	1.00	1.33	1.09	0.93	0.85	**1.07**	2.98
E150	30	6	12.5	14.0	13.5	25.0	10.0	9.5	12.5	75.5	1.19	1.17	1.29	**1.14**	0.74	0.73	0.89	3.28
E151	20	4	13.5	14.5	15.0	25.0	8.5	9.5	14.0	79.5	1.29	**1.21**	**1.43**	**1.14**	**0.63**	0.73	1.00	**3.46**
E152	10	2	10.0	11.5	14.0	25.0	10.0	9.0	12.0	64.0	**0.95**	**0.96**	1.33	**1.14**	0.74	**0.69**	**0.86**	2.78
L_a = 15 cm																		
E138	10	2	10.0	8.0	17.5	27.0	10.0	8.0	10.5	50.5	**0.95**	**0.67**	1.67	**1.23**	0.74	**0.62**	**0.75**	2.20
E139	20	4	16.0	14.0	15.5	25.0	10.0	8.0	14.0	89.5	**1.52**	1.17	1.48	1.14	0.74	**0.62**	1.00	3.89
E140	30	6	13.0	13.5	17.0	23.5	8.0	8.0	15.0	92.0	1.24	1.13	**1.62**	1.07	**0.59**	**0.62**	**1.07**	4.00
E141	40	8	14.5	13.0	14.5	22.5	13.5	10.0	14.0	103.5	1.38	1.08	1.38	1.02	**1.00**	0.77	1.00	**4.50**
E142	50	10	15.5	15.5	15.0	25.0	12.5	10.0	15.0	100.5	1.48	**1.29**	1.43	1.14	0.93	0.77	**1.07**	4.37

The effect of an abutment on the scour borders at the left sides of two piers of D = 5 cm with λ_y = 15 cm is shown in Figure 5.287. This figure reveals that since the dimensionless scour border parameter $SB_{pl} / SB_{pl,0}$ is less than unity for the range of λ_x / D tested, the scour borders at the left side of $Pier_1$ are reduced. On the other hand, the dimensionless scour parameters are larger than unity at the left side of the $Pier_2$ that is the presence of the abutment has an increasing effect on the scour borders. Although there is a certain deviation between the scour border parameters at $Pier_1$ and $Pier_2$ at various λ_x / D values, as a function of the abutment length, these deviations get smaller as λ_x / D increases.

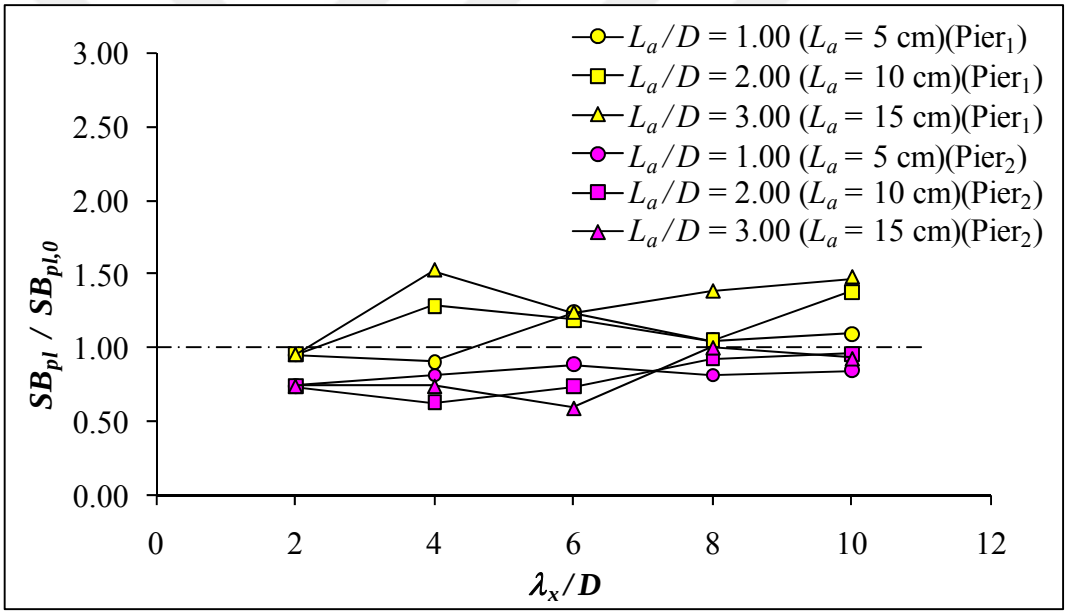


Figure 5.287 Relationship between pier scour border and pier position as a function of abutment length at the left sides of the piers for D = 5 cm and λ_y = 15 cm

To show the variation of the scour borders at right, front and back sides of the piers with the related parameters Figures 5.288 – 5.290 were plotted. The general trends of the data points for a given L_a and pier type are very similar to each other in Figures 5.288 – 5.289 and look like those presented in Figure 5.287. At the right and front sides of the piers the scour border parameter of Pier_1 at any λ_x / D is larger than unity whereas at Pier_2 those values are less than unity. Effect of L_a on the scour border parameter for a given λ_x / D is not so significant at most of the λ_x / D values. At values of λ_x / D larger than about 8, scour border parameters get closer to each other.

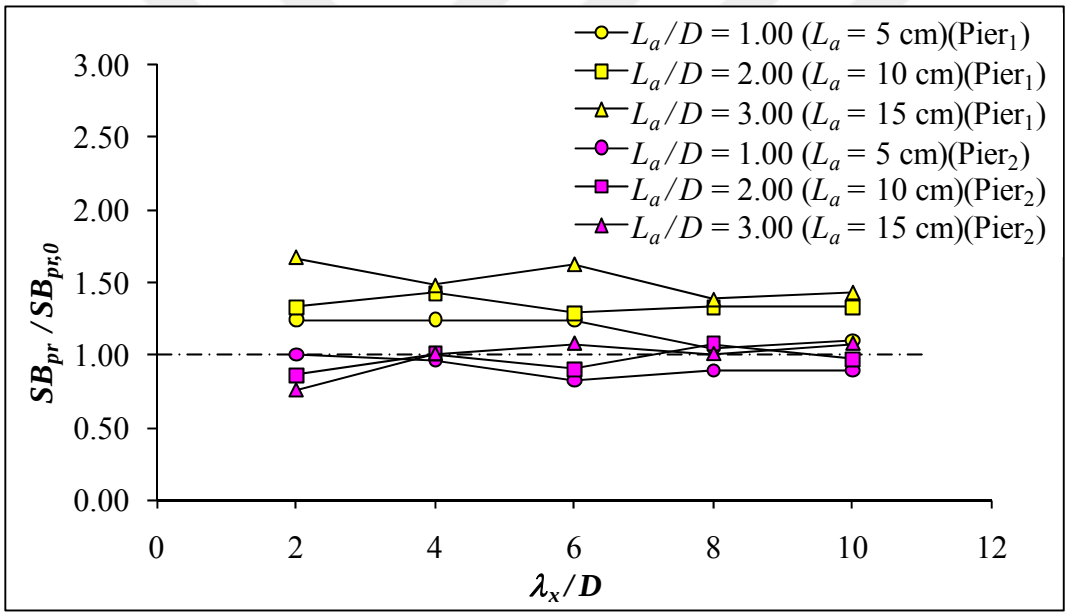


Figure 5.288 Relationship between pier scour border and pier position as a function of abutment length at the right sides of the piers for D = 5 cm and λ_y = 15 cm

At the back sides of the piers the situation changes (Figure 5.290); for $Pier_1$ the related data points almost coincide with the line of $SB_{pb} / SB_{pb,0}$ equal to unity, and for $Pier_2$ very large $SB_{pb} / SB_{pb,0}$ values are observed. At $Pier_2$ $SB_{pb} / SB_{pb,0}$ values increase significantly with increasing abutment length for a given λ_x / D.

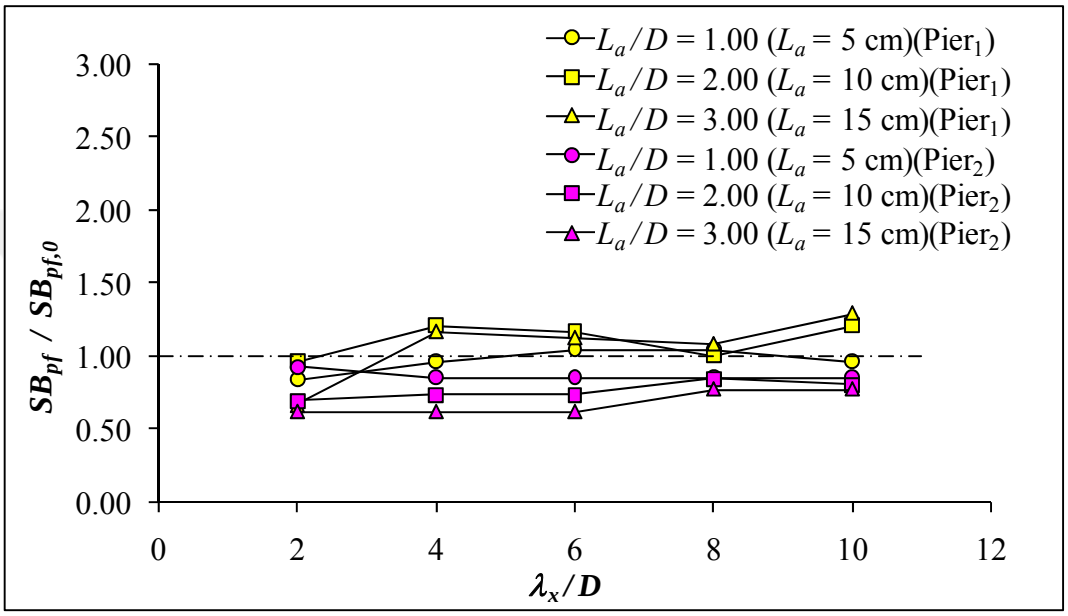


Figure 5.289 Relationship between pier scour border and pier position as a function of abutment length at the front sides of the piers for D = 5 cm and λ_y = 15 cm

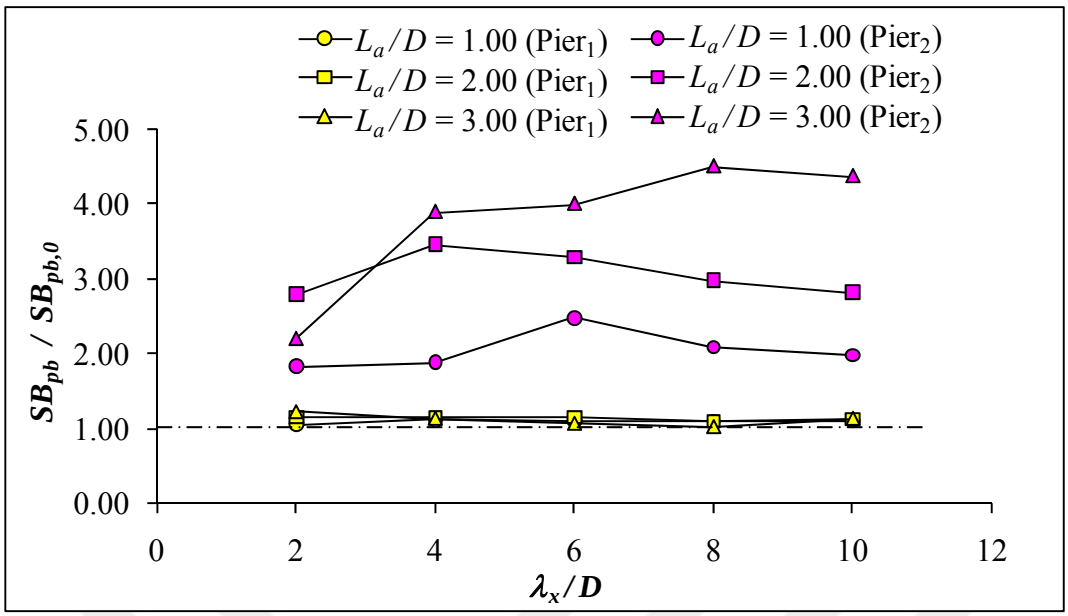


Figure 5.290 Relationship between pier scour border and pier position as a function of abutment length at the back sides of the piers for D = 5 cm and λ_y = 15 cm

Measured and calculated scour border parameters around the abutments of L_a = 5 cm, 10 cm and 15 cm with the locations of two piers of D = 5 cm were presented in Table 5.34.

Using dimensionless pier position parameter λ_x/D and dimensionless scour border parameters $SB_{aw}/SB_{aw,0}$, $SB_{af}/SB_{af,0}$ and $SB_{ar}/SB_{ar,0}$ Figures 5.291 – 5.293 were plotted as a function of L_a, respectively.

Figure 5.291 shows that $SB_{aw}/SB_{aw,0}$ values of only some data points of L_a = 10 cm exceeds unity with the maximum value of 1.29 for λ_x/D = 10. All the others have values of less than unity which means that the presence of two piers across the abutment does not affect the scour borders of the abutment at the channel wall side significantly.

At the upstream side of the abutment the situation regarding the scour borders is almost the same as described above (Figure 5.292). The abutment of L_a = 10 cm shows the $SB_{af} / SB_{af,0}$ values varying between 1.00 – 1.32, while the other abutments have the values of between 0.76 – 1.12 for L_a = 5 cm and 0.88 – 1.00 for L_a = 15 cm.

At the pier side of the abutment (Figure 5.293) the abutment of L_a = 15 cm shows values of $SB_{ar} / SB_{ar,0}$ always less than unity for the range of λ_x / D tested while the abutment of L_a = 10 cm shows the scour parameter values of above unity, as the previous ones.

Table 5.34 Measured and calculated scour borders for abutments of L_a = 5 cm, 10 cm and 15 cm with the presence of two piers of D = 5 cm, λ_y = 15 cm

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af2} (cm)	SB_{af3} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af2} / SB_{af2,0}$	$SB_{af3} / SB_{af3,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
L_a = 5 cm												
E143	10	2	6.0			6.5	7.5	0.67			**0.76**	**0.79**
E144	20	4	5.5			7.0	8.5	**0.61**			0.82	0.89
E145	30	6	10.5			9.5	9.5	**1.17**			**1.12**	1.00
E146	40	8	7.5			8.5	9.5	0.83			1.00	1.00
E147	50	10	6.5			7.0	10.0	0.72			0.82	**1.05**
L_a = 10 cm												
E148	50	10	15.5	17.0		16.5	16.0	**1.29**	**1.36**		**1.32**	**1.23**
E149	40	8	13.0	13.5		14.0	14.0	1.08	1.08		1.12	1.08
E150	30	6	11.5	12.5		13.0	15.5	**0.96**	1.00		1.04	1.19
E151	20	4	13.0	13.5		14.5	12.5	1.08	1.08		1.16	0.96
E152	10	2	11.5	12.0		12.5	12.0	**0.96**	**0.96**		1.00	**0.92**
L_a = 15 cm												
E138	10	2	14.5	16.5	18.0	19.0	19.0	**0.71**	**0.80**	**0.86**	**0.88**	0.90
E139	20	4	19.5	20.0	19.5	19.0	20.0	0.95	0.98	0.93	0.88	0.95
E140	30	6	16.0	17.5	19.0	19.0	17.0	0.78	0.85	0.90	0.88	**0.81**
E141	40	8	18.0	19.0	20.0	19.5	18.5	0.88	0.93	0.95	0.91	0.88
E142	50	10	17.5	19.0	21.5	21.5	19.0	0.85	0.93	**1.02**	1.00	0.90

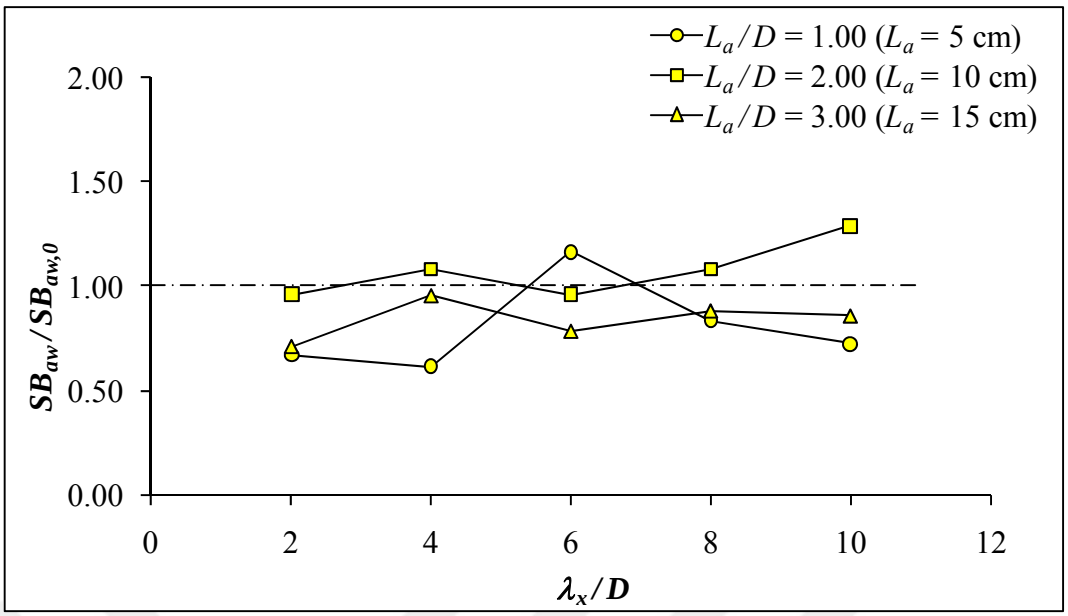


Figure 5.291 Variation of $SB_{aw}/SB_{aw,0}$ with λ_x/D at the channel wall side of the abutment with the presence of two piers for D = 5 cm and λ_y = 15 cm

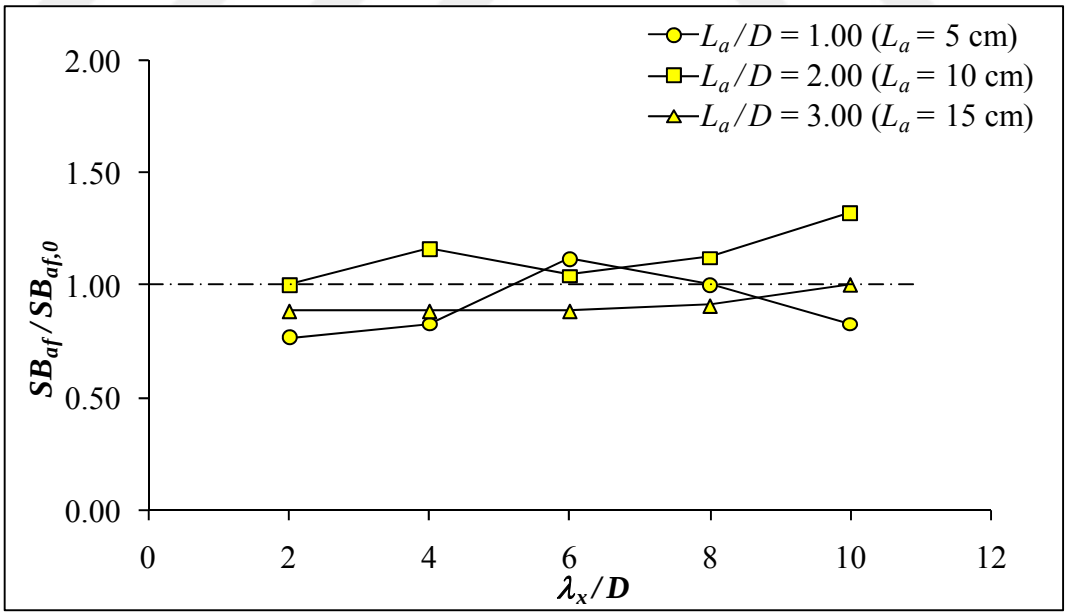


Figure 5.292 Variation of $SB_{af}/SB_{af,0}$ with λ_x/D at the upstream side of the abutment with the presence of two piers for D = 5 cm and λ_y = 15 cm

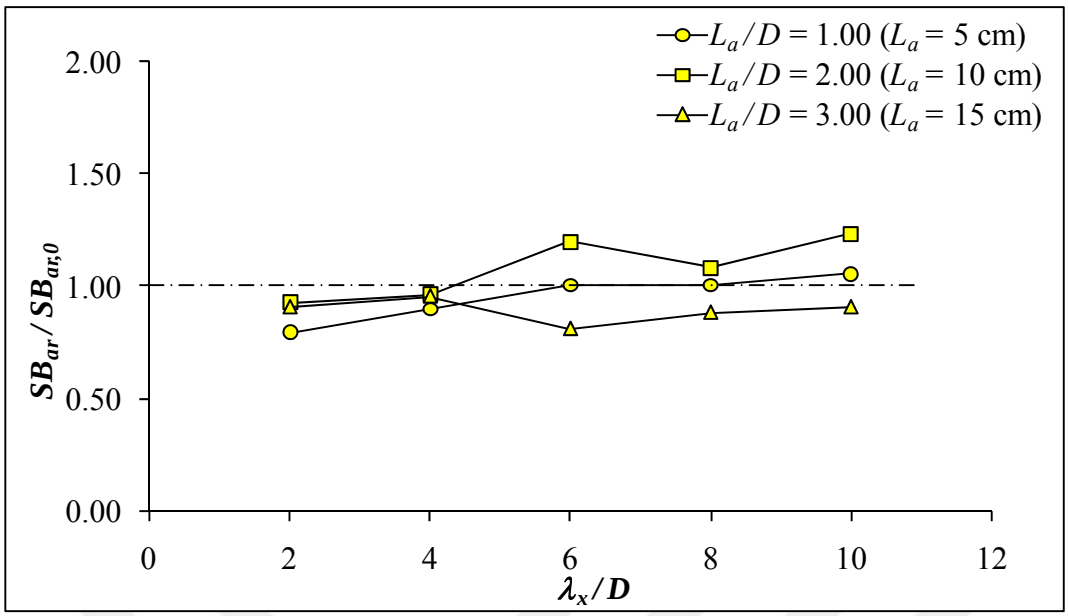


Figure 5.293 Variation of $SB_{ar}/SB_{ar,0}$ with λ_x/D at the pier side of the abutment with the presence of two piers for D = 5 cm and λ_y = 15 cm

Measured and calculated scour border parameters and those of pier locations and abutment lengths tested were presented in Table 5.35 for two piers of D = 10 cm and λ_y = 10 cm at four points around the each pier. The variation of the dimensionless pier position parameter λ_x/D with the scour border parameters $SB_{pl}/SB_{pl,0}$, $SB_{pr}/SB_{pr,0}$, $SB_{pf}/SB_{pf,0}$ and $SB_{pb}/SB_{pb,0}$ are shown in Figures 5.294 – 5.297 for two piers as a function of L_a, respectively.

From the analyses of Figures 5.294 – 5.296 the following comments can be made: the presence of an abutment across two piers in a channel is more effective on the scour borders of $Pier_1$ than those of $Pier_2$ at left, right and front sides while a reverse situation is observed at the back sides of the piers. Although the effect of abutment length on the scour borders at back side of $Pier_2$ is clearly seen, $SB_{pb}/SB_{pb,0}$ values increase with increasing abutment length for a given λ_x/D at the back side of $Pier_1$. $SB_{pb}/SB_{pb,0}$ values are very close to each other and equal to almost unity for all the abutment lengths tested.

Table 5.35 Measured and calculated scour borders for two piers of D = 10 cm and λ_y = 10 cm

Exp. No.	λ_x (cm)	λ_x / D	Pier$_1$				Pier$_2$				Pier$_1$				Pier$_2$			
			SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	SB_{pl} (cm)	SB_{pf} (cm)	SB_{pr} (cm)	SB_{pb} (cm)	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$
L_a = 5 cm																		
E163	10	1	10.0	16.0	15.5	23.0	10.0	12.5	20.5	47.0	**0.71**	1.07	1.19	**1.00**	**0.61**	1.00	1.46	0.93
E164	20	2	12.0	17.0	16.0	22.0	12.0	14.0	21.5	60.0	0.86	1.13	1.23	**0.96**	0.73	**1.12**	**1.54**	1.19
E165	30	3	14.5	19.5	16.5	23.0	12.0	13.0	14.0	68.5	1.04	**1.30**	1.27	**1.00**	0.73	1.04	1.00	**1.36**
E166	40	4	16.0	18.0	18.0	23.0	14.0	12.5	16.5	55.5	1.14	1.20	**1.38**	**1.00**	0.85	1.00	1.18	1.10
E167	50	5	17.5	18.5	17.5	23.0	13.5	12.5	13.5	59.5	**1.25**	1.23	1.35	**1.00**	0.82	1.00	**0.96**	1.18
L_a = 10 cm																		
E153	10	1	10.0	21.5	15.0	25.0	10.0	10.5	12.0	70.5	**0.71**	**1.43**	1.15	**1.09**	**0.61**	**0.84**	**0.86**	1.40
E154	20	2	20.0	21.5	19.5	23.5	11.0	12.5	13.0	90.0	**1.43**	**1.43**	**1.50**	1.02	0.67	1.00	0.93	**1.78**
E155	30	3	15.5	20.5	18.0	23.5	12.0	12.5	13.5	85.5	1.11	1.37	1.38	1.02	0.73	1.00	0.96	1.69
E156	40	4	16.5	20.0	18.5	21.5	13.0	14.5	18.0	80.5	1.18	1.33	1.42	**0.93**	0.79	**1.16**	**1.29**	1.59
E157	50	5	18.0	17.5	18.5	23.5	12.0	13.0	13.5	80.0	1.29	1.17	1.42	1.02	0.73	1.04	0.96	1.58
L_a = 15 cm																		
E158	10	1	10.0	21.5	16.5	24.0	10.0	12.0	19.5	95.0	**0.71**	**1.43**	1.27	**1.04**	0.61	**0.96**	1.39	1.88
E159	20	2	20.0	19.0	19.5	23.0	9.0	12.5	16.5	110.0	1.43	1.27	1.50	1.00	**0.55**	1.00	1.18	**2.18**
E160	30	3	22.0	19.5	22.0	22.0	15.5	14.0	24.0	102.5	**1.57**	1.30	**1.69**	0.96	0.94	1.12	**1.71**	2.03
E161	40	4	20.5	21.0	19.5	21.5	12.5	14.5	20.0	95.5	1.46	1.40	1.50	**0.93**	0.76	**1.16**	1.43	1.89
E162	50	5	20.0	19.5	18.5	23.5	16.0	12.5	18.5	102.5	1.43	1.30	1.42	1.02	0.97	1.00	1.32	2.03

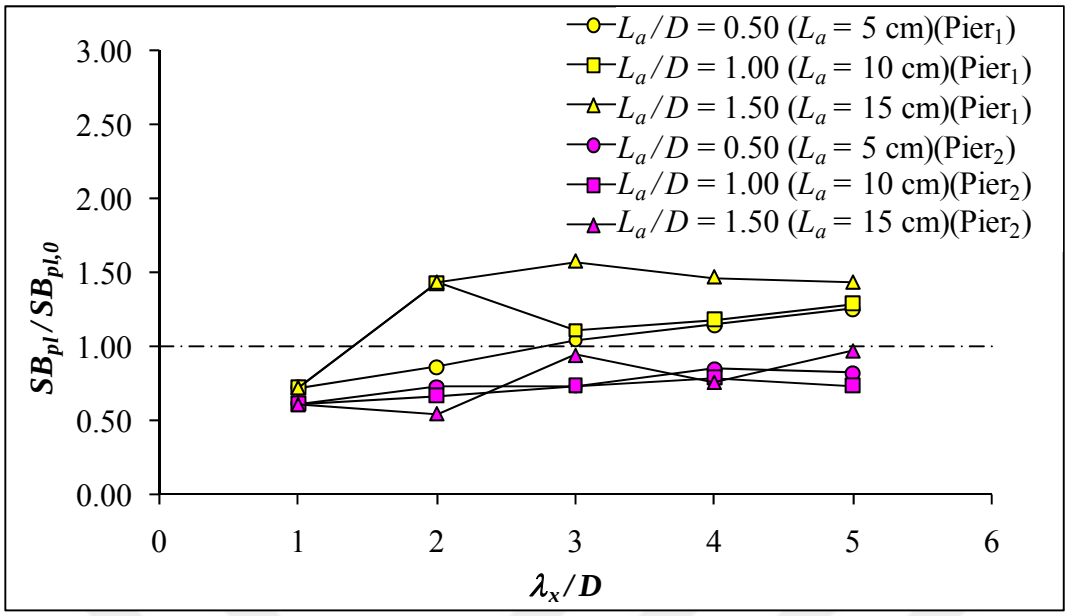


Figure 5.294 Relationship between pier scour border and pier position as a function of abutment length at left sides of the piers for D = 10 cm and λ_y = 10 cm

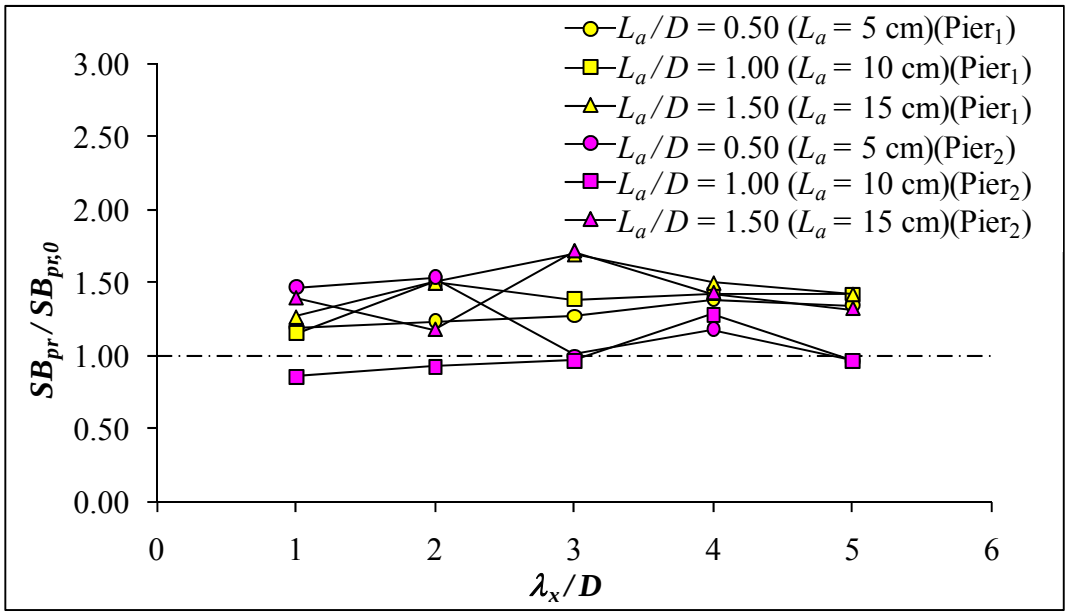


Figure 5.295 Relationship between pier scour border and pier position as a function of abutment length at right sides of the piers for D = 10 cm and λ_y =10 cm

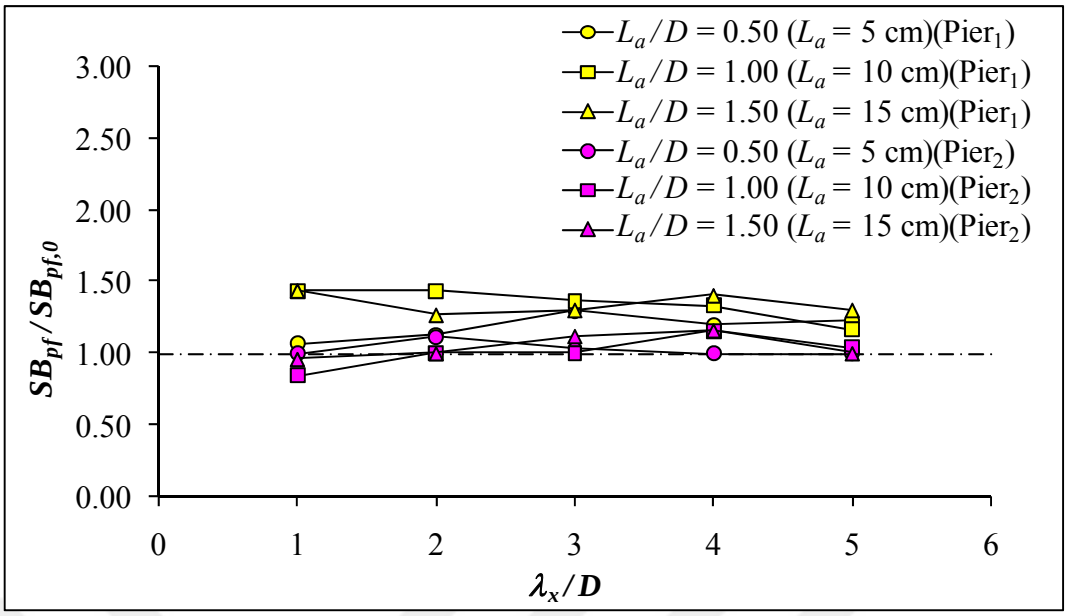


Figure 5.296 Relationship between pier scour border and pier position as a function of abutment length at front sides of the piers for D = 10 cm and λ_y =10 cm

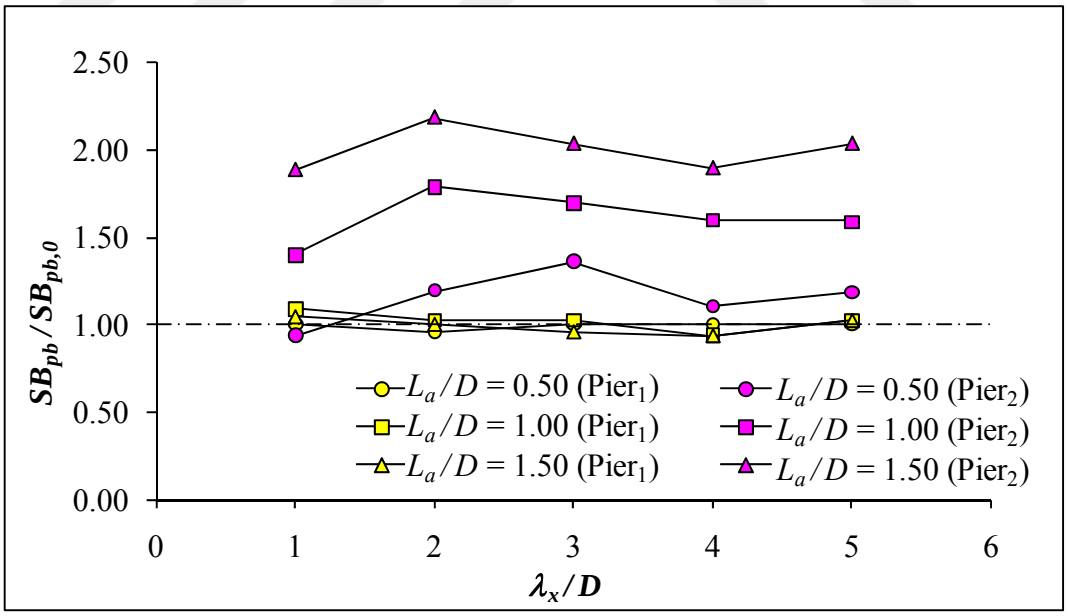


Figure 5.297 Relationship between pier scour border and pier position as a function of abutment length at back sides of the piers for D = 10 cm and λ_y =10 cm

Measured and calculated scour border parameters around the abutments of L_a = 5 cm, 10 cm and 15 cm with the locations of two piers of D = 10 cm were presented in Table 5.36.

Using dimensionless pier position parameter λ_x / D and dimensionless scour border parameters $SB_{aw} / SB_{aw,0}$, $SB_{af} / SB_{af,0}$ and $SB_{ar} / SB_{ar,0}$, Figures 5.298 – 5.300 were plotted as a function of L_a, respectively.

Table 5.36 Measured and calculated scour borders for abutments of L_a = 5 cm, 10 cm and 15 cm with the presence of two piers of D = 10 cm and λ_y = 10 cm

Exp. No.	λ_x (cm)	λ_x / D	SB_{aw} (cm)	SB_{af2} (cm)	SB_{af3} (cm)	SB_{af} (cm)	SB_{ar} (cm)	$SB_{aw} / SB_{aw,0}$	$SB_{af2} / SB_{af2,0}$	$SB_{af3} / SB_{af3,0}$	$SB_{af} / SB_{af,0}$	$SB_{ar} / SB_{ar,0}$
L_a = 5 cm												
E163	10	1	6.5			6.0	10.0	**0.72**			**0.71**	**1.05**
E164	20	2	7.0			7.5	7.0	0.78			0.88	0.74
E165	30	3	6.5			7.0	8.0	**0.72**			0.82	**0.84**
E166	40	4	8.5			8.5	9.0	0.94			1.00	0.95
E167	50	5	9.0			9.0	10.0	**1.00**			**1.06**	**1.05**
L_a = 10 cm												
E153	10	1	14.5	15.0		14.5	10.0	**1.21**	**1.20**		**1.16**	**0.77**
E154	20	2	10.5	11.5		12.0	16.0	**0.88**	**0.92**		**0.96**	**1.23**
E155	30	3	11.0	12.5		13.5	14.0	0.92	1.00		1.08	1.08
E156	40	4	11.5	12.0		12.0	13.5	0.96	0.96		**0.96**	1.04
E157	50	5	12.0	13.0		14.0	14.5	1.00	1.04		1.12	1.12
L_a = 15 cm												
E158	10	1	14.0	15.5	16.5	17.0	10.0	0.68	0.76	**0.79**	**0.79**	**0.48**
E159	20	2	12.5	15.0	18.0	19.0	20.0	**0.61**	**0.73**	0.86	0.88	0.95
E160	30	3	14.0	16.5	18.5	18.5	25.0	0.68	0.80	0.88	0.86	**1.19**
E161	40	4	15.0	16.5	18.0	18.0	19.5	0.73	0.80	0.86	0.84	0.93
E162	50	5	14.5	15.5	17.0	17.5	17.5	0.71	0.76	0.81	0.81	0.83

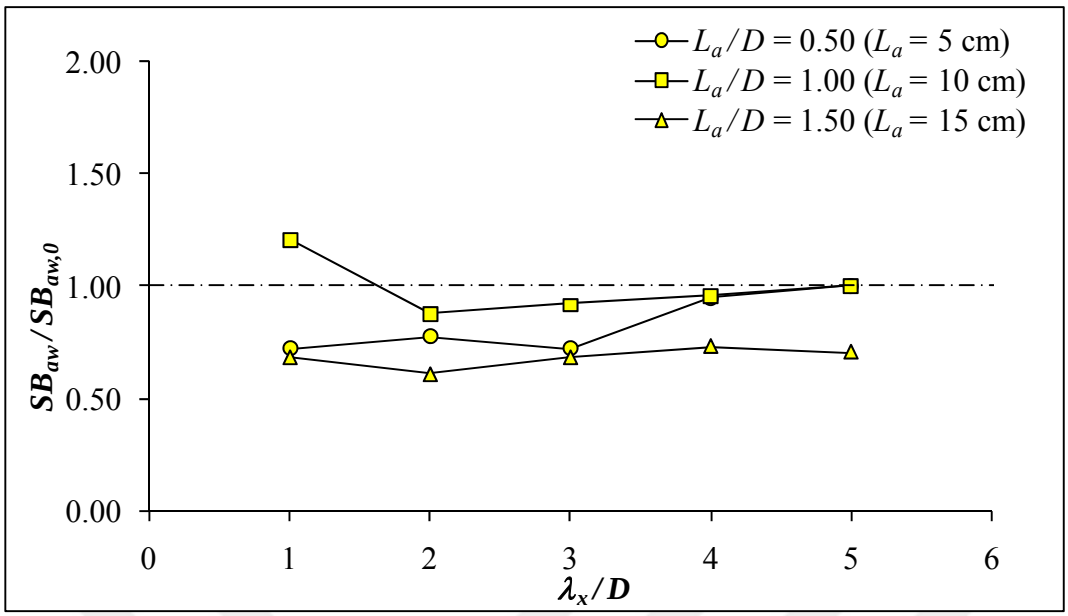


Figure 5.298 Relationship between abutment scour border and pier position with respect to abutment for D = 10 cm and λ_y = 10 cm for channel wall side of abutment for two pier case

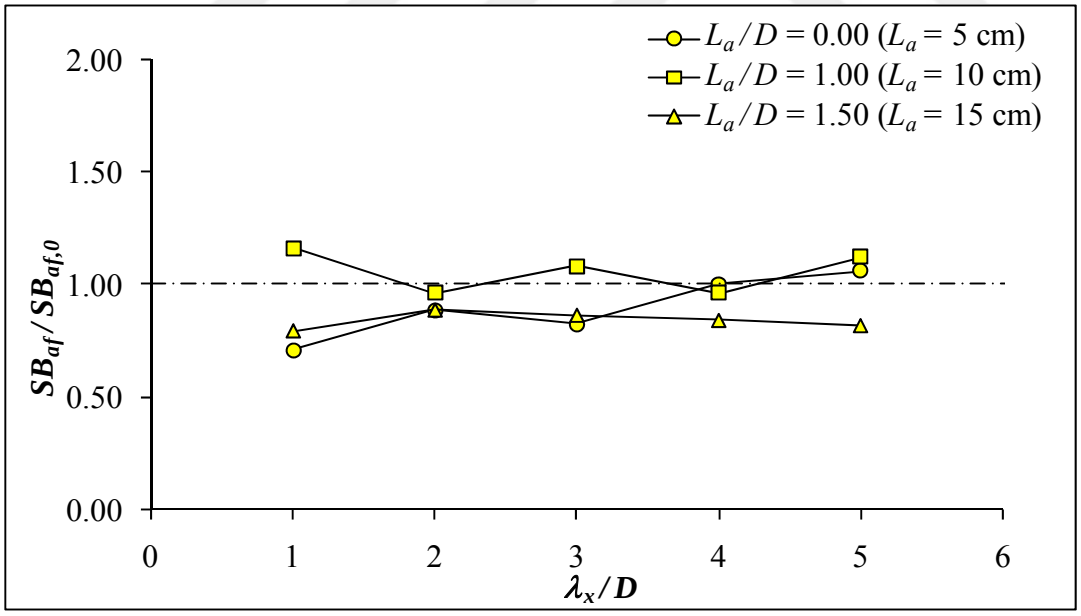


Figure 5.299 Relationship between abutment scour border and pier position with respect to abutment for D = 10 cm and λ_y = 10 cm for upstream side of abutment corner for two pier case

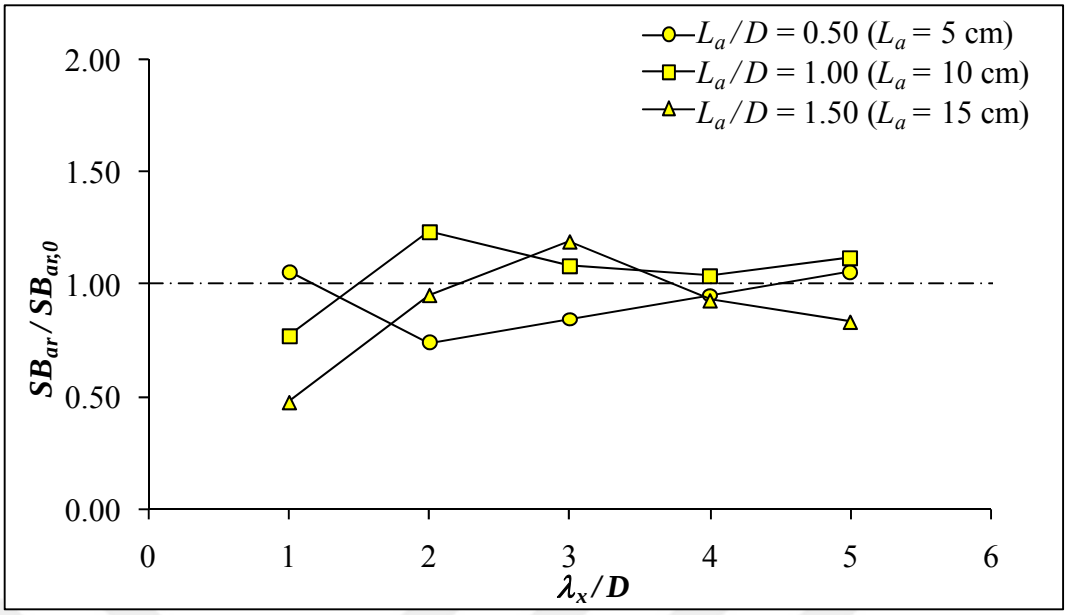


Figure 5.300 Relationship between abutment scour border and pier position with respect to abutment for D = 10 cm and λ_y = 10 cm for pier side of abutment corner for two pier case

5.2.6 Investigation of Scour Depths and Scour Borders for Two Piers and One Abutment Case

The effect of the abutment length on the dimensionless scour border parameters does not show a regular pattern with varying λ_x/D. The curves connecting the data of given L_a intersects each other at various values of λ_x/D, similar to those cases we have seen so far. However, from Figures 5.298 – 5.300 it can be stated that most of the data points of dimensionless scour borders have the values less than unity. It means that the presence of the piers do not have negative effect on the scour border parameters around the abutments.

Using scour border data along the centerlines of the piers in the flow and lateral directions for the case of two piers; first with the values of D = 5 cm and λ_y = 15 cm with metric dimension from Table 5.33 and then with the values of D = 10 cm

and λ_y = 10 cm from Table 5.35, top views of the scour borders were sketched in Figures 5.301 and 5.302, respectively.

From these two figures it can be stated that for a given pier diameter and λ_y the length of the sediment deposition zone just downstream of the second pier in the flow direction extends towards downstream with increasing abutment length. In this zone the length of the deposited sediment is minimum for the cases of experiments conducted without abutment. In these experiments conducted with two piers the first pier plays a protective role on the second pier in such a way that the depths of scour holes occurring around the second pier are much smaller than those of the first pier. The first pier is directly subject to the incoming flow and the second pier is in the wake zone of the first pier where the flow velocities and intensities of the wake vortices are less than those around the first pier (Figures 5.303 and 5.304).

From the scour data presented in Table 5.15 for D = 5 cm and λ_y = 15 cm and in Table 5.17 for D = 10 cm and λ_y = 10 cm, Figures 5.305 and 5.306 were prepared to show the profiles of the scour holes around the piers in the flow direction for two piers and one abutment cases. These two figures clearly show that the scour depths forming around the first pier are larger than those of second pier due to the reasons discussed earlier. While the scour depths around the both piers are small for the cases of experiments without abutment compared to those obtained from the experiments of abutments, the effect of abutment length and λ_x on the depth of scour is not so clear. However, in general it can be concluded that as the abutment length increases, depth and size of the scour holes increase around the piers. Most of the eroded material is deposited between the piers and downstream zone of the second pier. The side slopes of the scour holes around the piers are almost the same for each experimental run; whatever the L_a and λ_x values are.

To see the effect of λ_x on the formation of scour holes around the piers for a given abutment length and λ_y Figures 5.307 – 5.312 were prepared. These figures reveal

that almost in each figure the scour holes forming around the piers for the cases of without abutment have the minimum depths compared to those obtained from the experiments conducted with an abutment. Although the data points of a given abutment and varying λ_x values do not follow a regular trend and intersect each other at various points, in general, it may be stated that for a given L_a and λ_y, scour depths have a decreasing tendency as value of λ_x increases. It can also be concluded that the slopes of the upstream faces of the scour holes forming around the piers are almost the same; approximately 31^o at the upstream faces of the $Pier_1$ and $Pier_2$ for both diameter, D = 5 cm and 10 cm which is very close to the angle of repose of the sediment used in the experiments (~%30) (Tables 5.37 and 5.38). But the slopes at the downstream faces are approximately; 20^o at D = 5 cm and 9^o at D = 10 cm for $Pier_1$ and 20^o at D = 5 cm and 10^o at D = 10 cm for $Pier_2$. At the downstream side of the piers due to the presence of wake zone and vortices the slopes of the scour holes are different than the angle of repose of the sand material and have values of about 70% of the angle of repose.

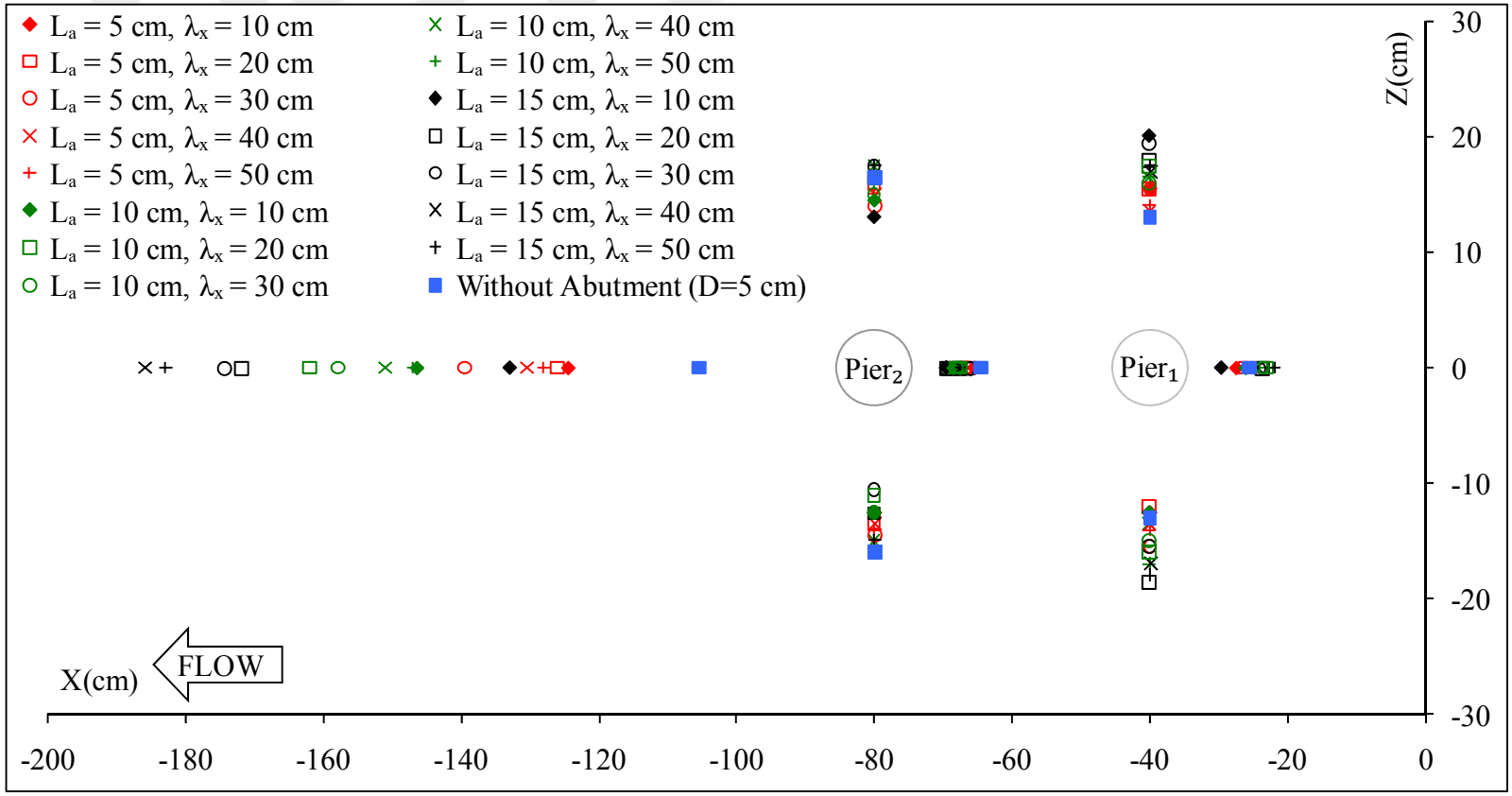


Figure 5.301 Top views of the scour borders along the centerlines of the piers in the flow and lateral directions for the case of two piers (D = 5 cm) with an abutment and λ_y = 15 cm

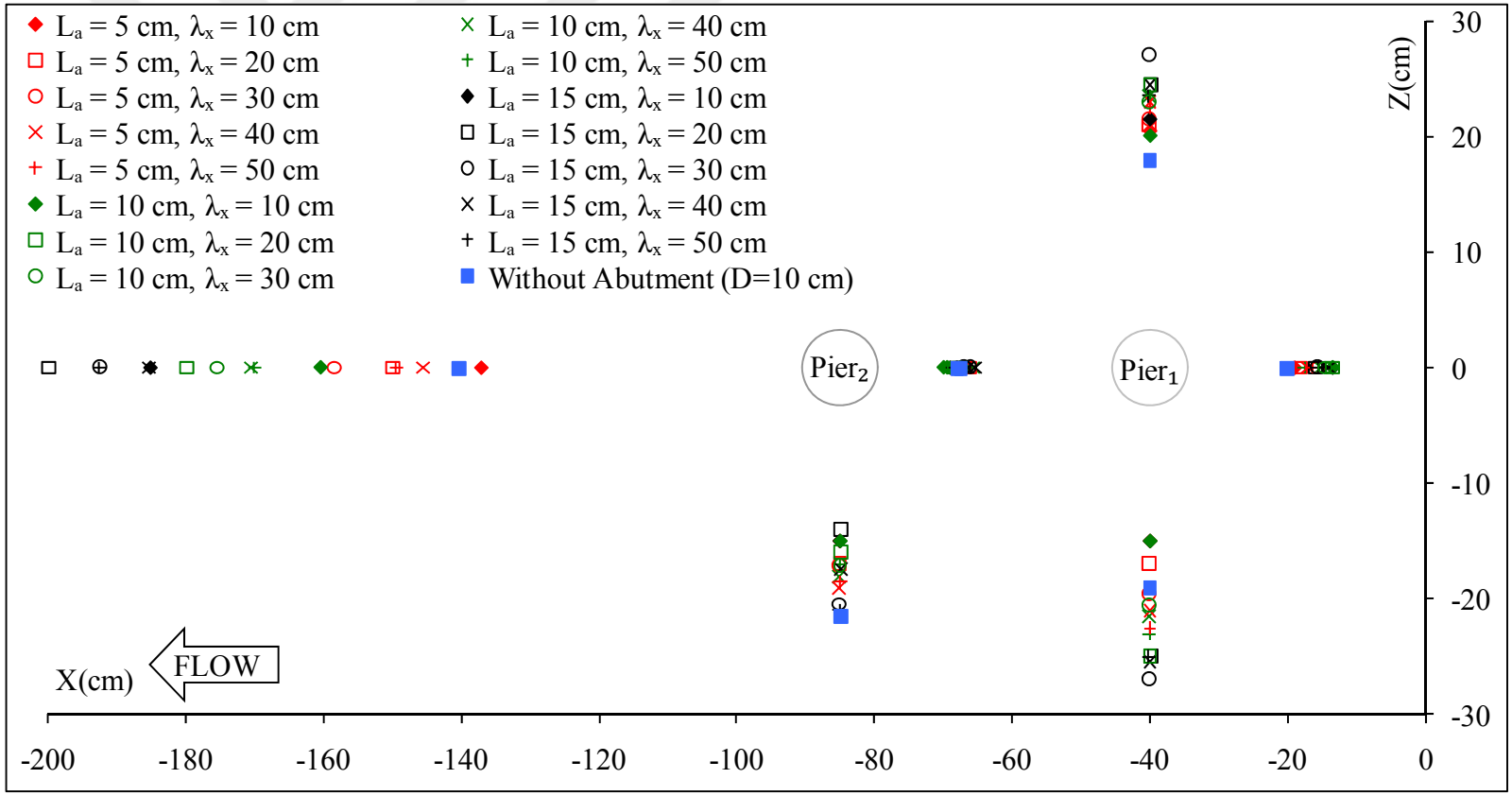


Figure 5.302 Top views of the scour borders along the centerlines of the piers in the flow and lateral directions for the case of two piers (D = 10 cm) with an abutment and λ_y = 10 cm

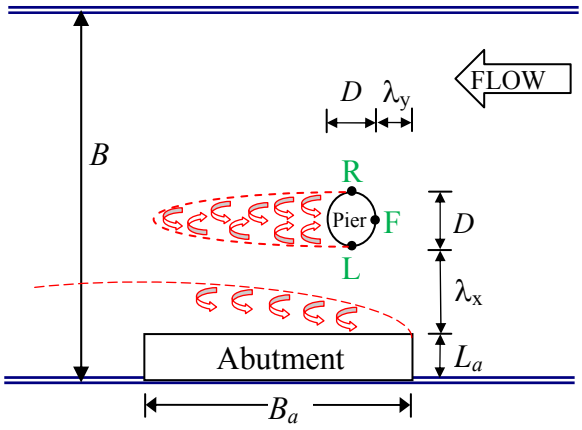


Figure 5.303 Flow pattern around the one pier – one abutment case

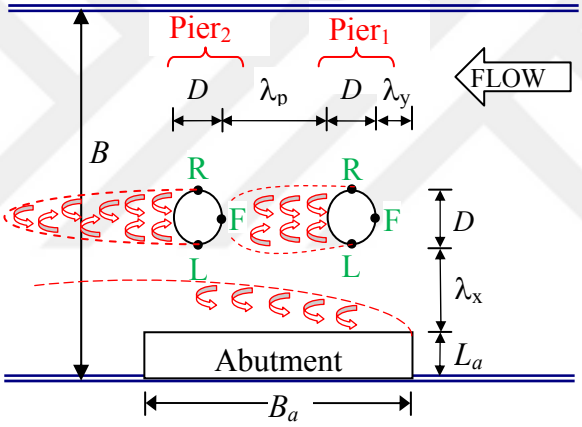


Figure 5.304 Flow pattern around the two piers – one abutment case

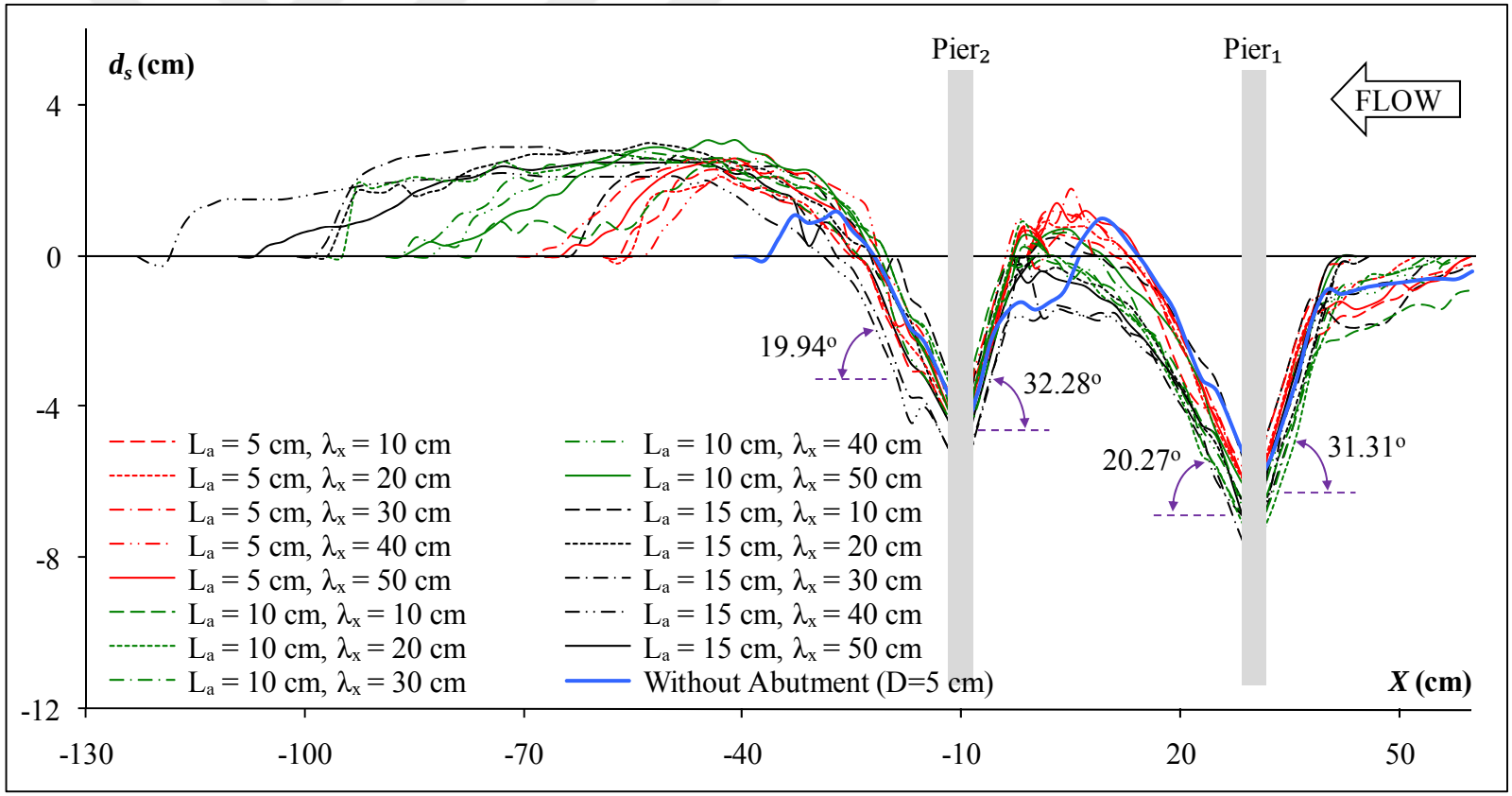


Figure 5.305 Profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers (D = 5 cm) and an abutment case for λ_y = 15 cm

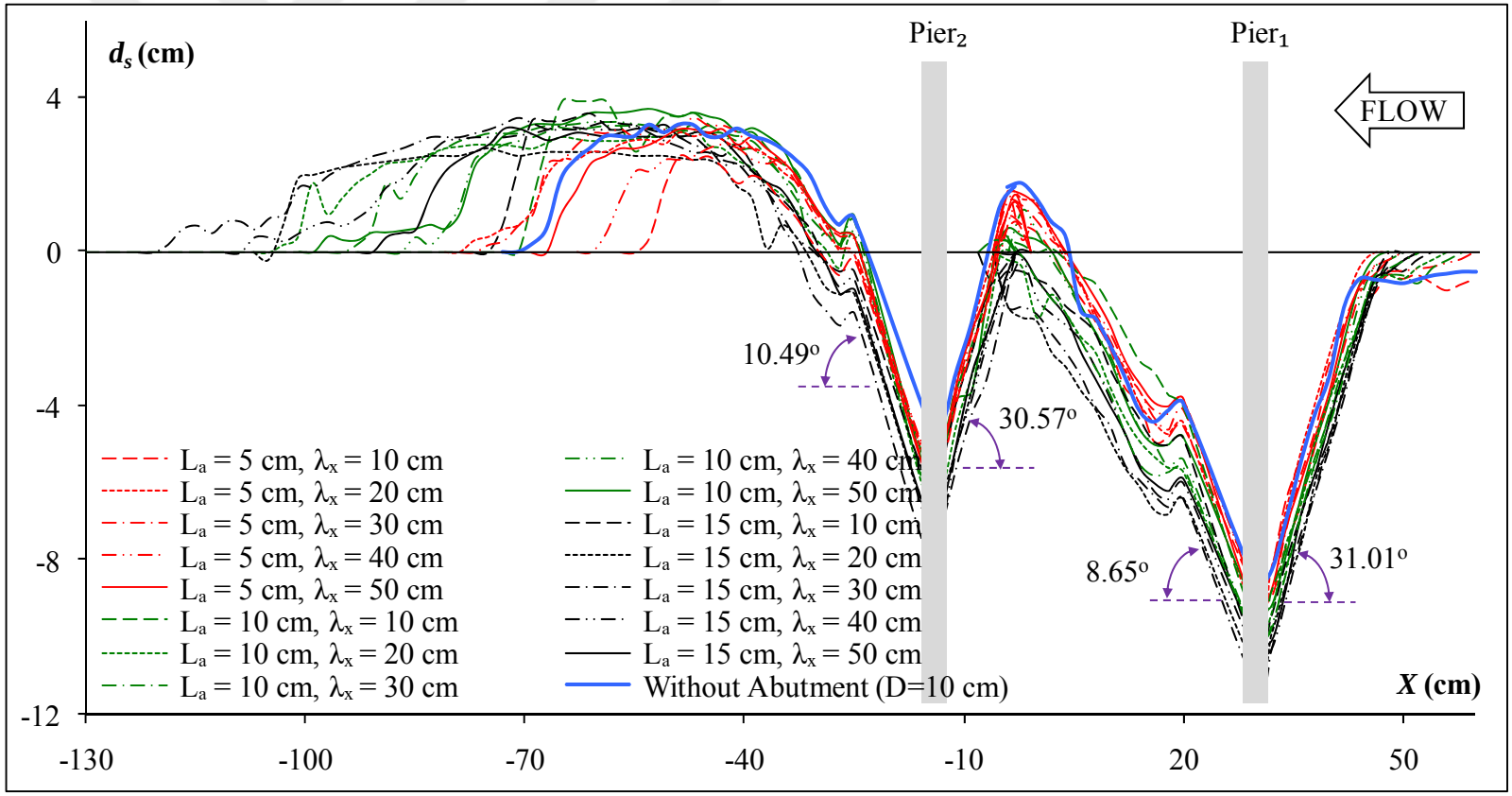


Figure 5.306 Profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers (D = 10 cm) and an abutment case for λ_y = 10 cm

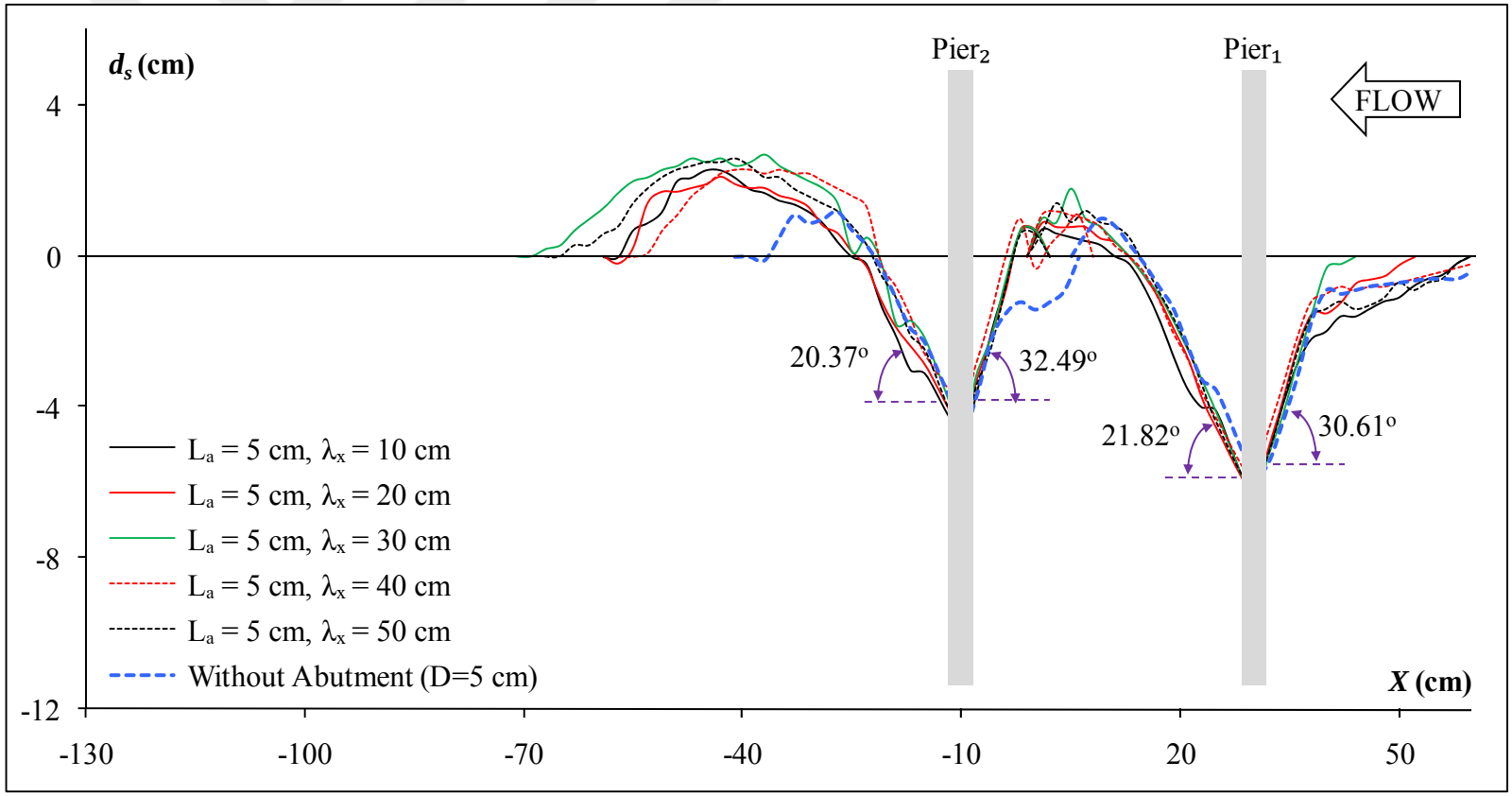


Figure 5.307 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 5 cm, L_a = 5 cm and λ_y = 15 cm)

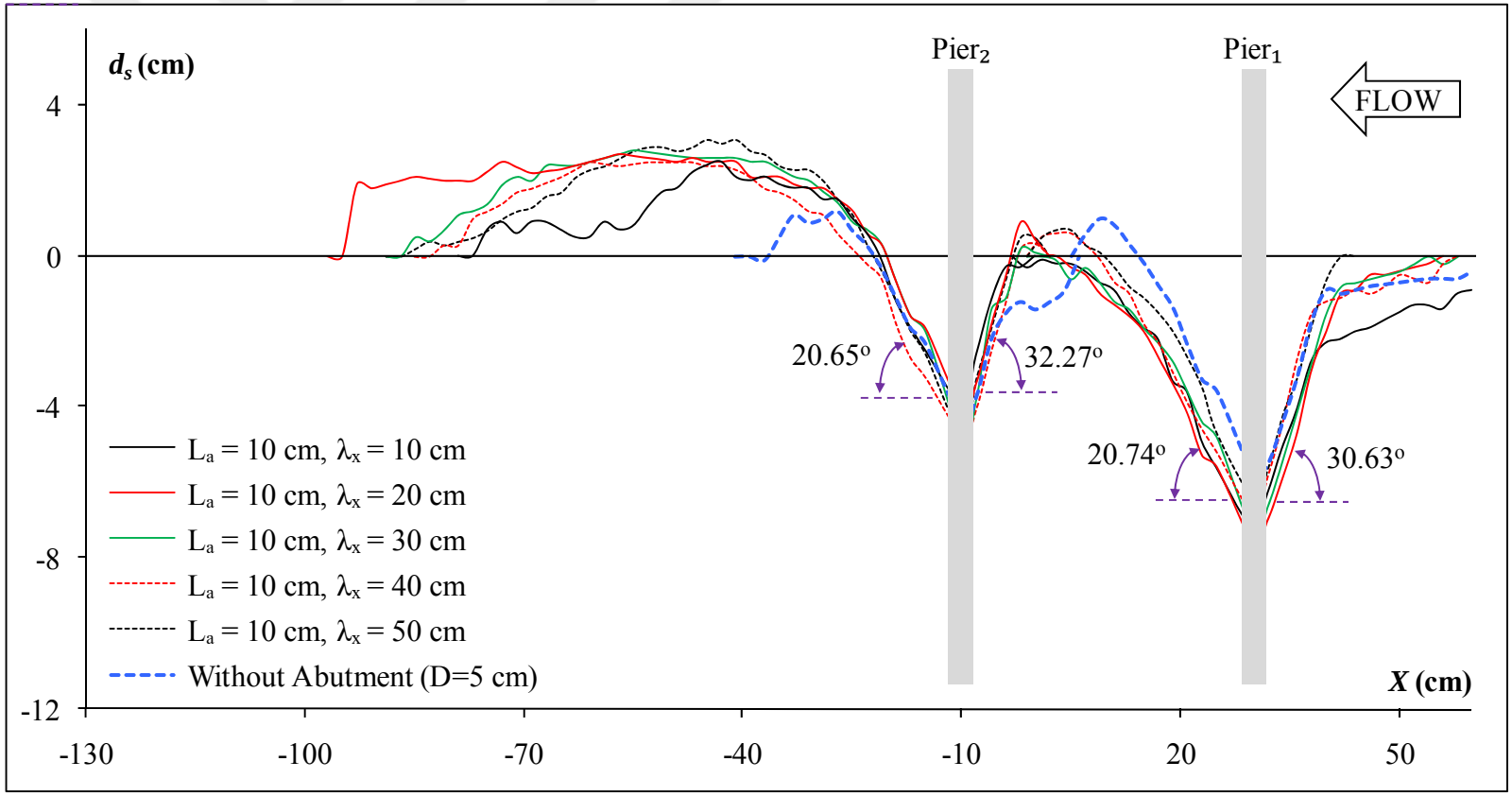


Figure 5.308 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 5 cm, L_a = 10 cm and λ_y = 15 cm)

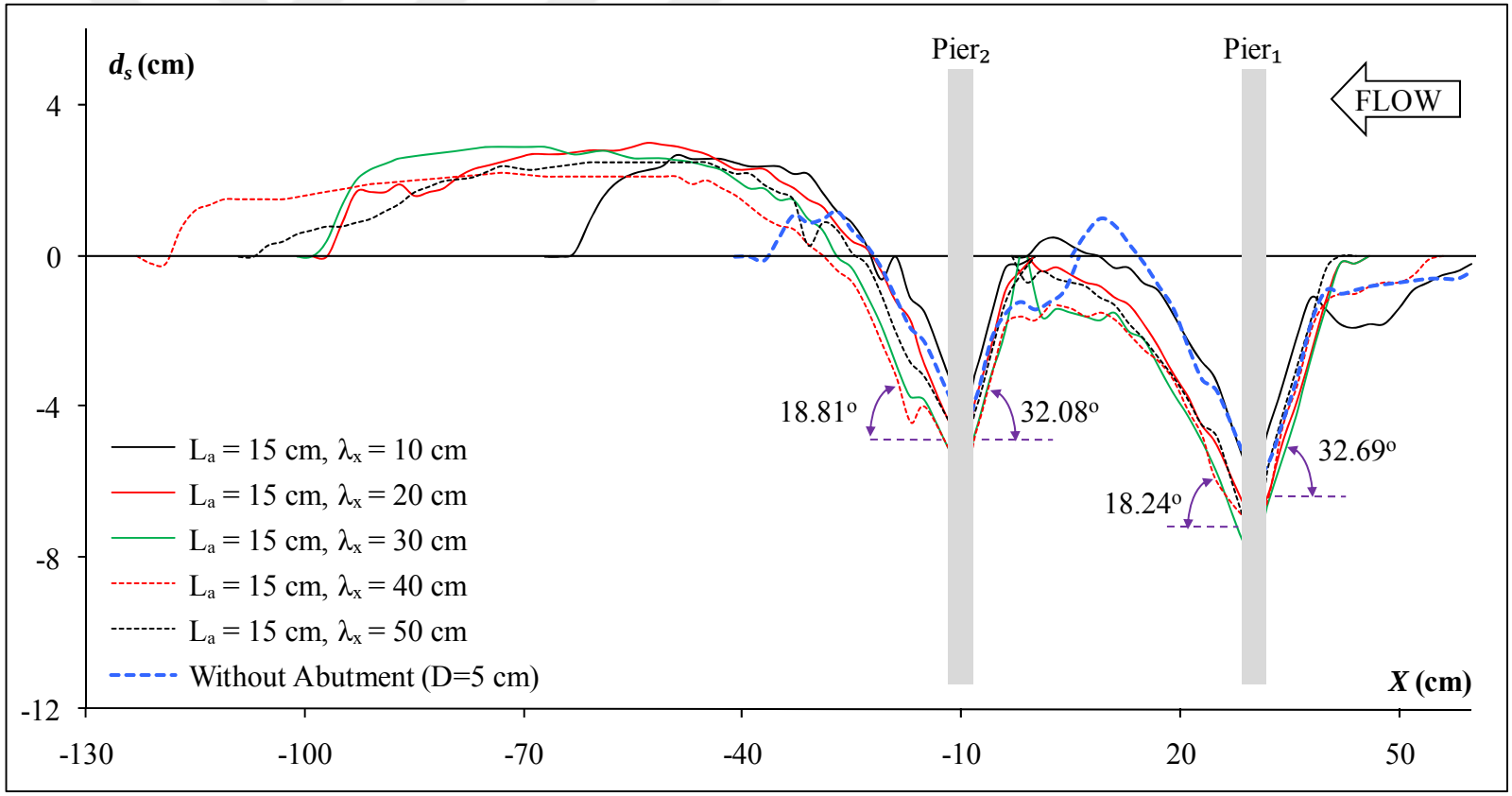


Figure 5.309 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 5 cm, L_a = 15 cm and λ_y = 15 cm)

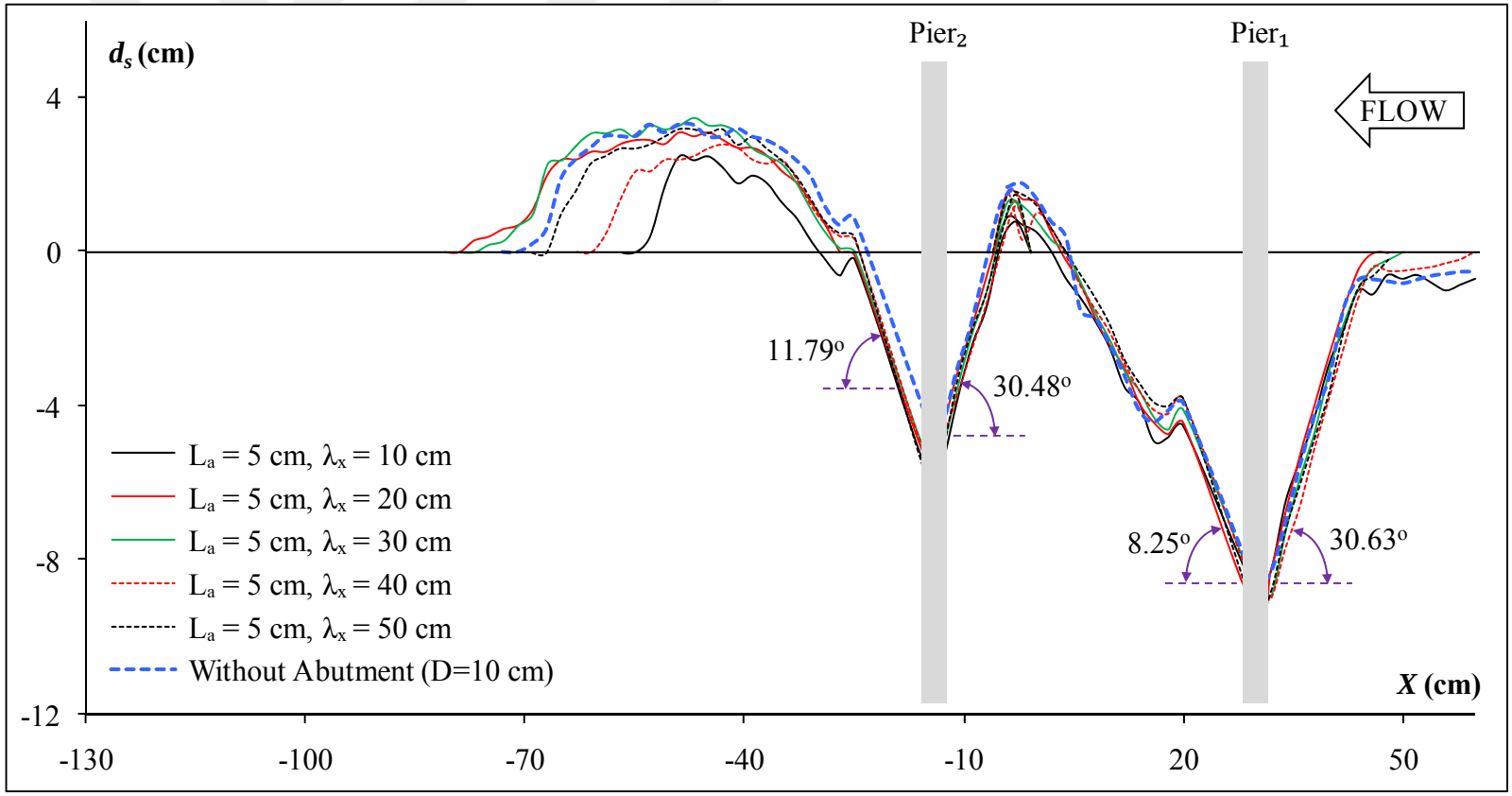


Figure 5.310 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 10 cm, L_a = 5 cm and λ_y = 10 cm)

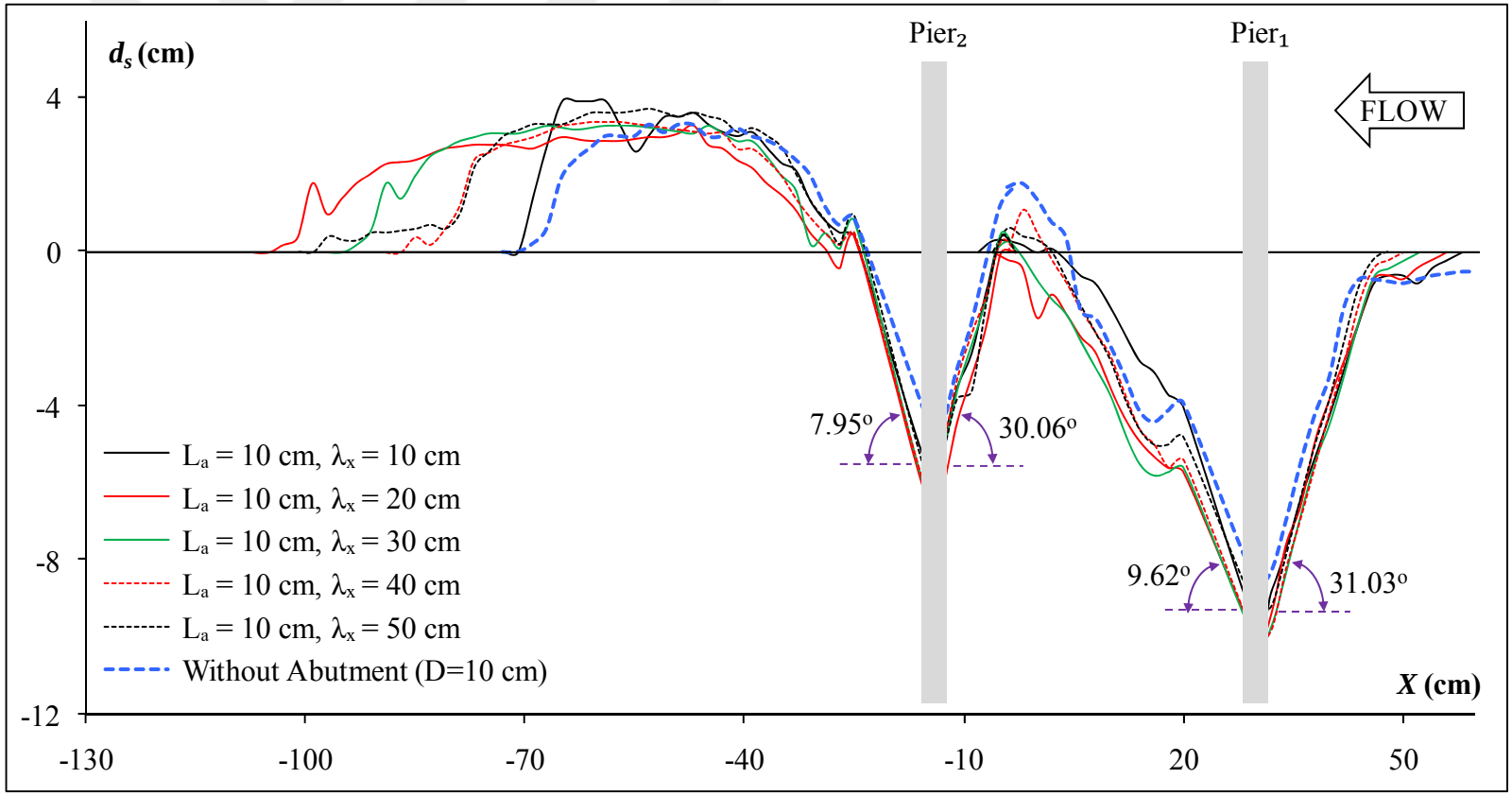


Figure 5.311 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 10 cm, L_a = 10 cm and λ_y = 10 cm)

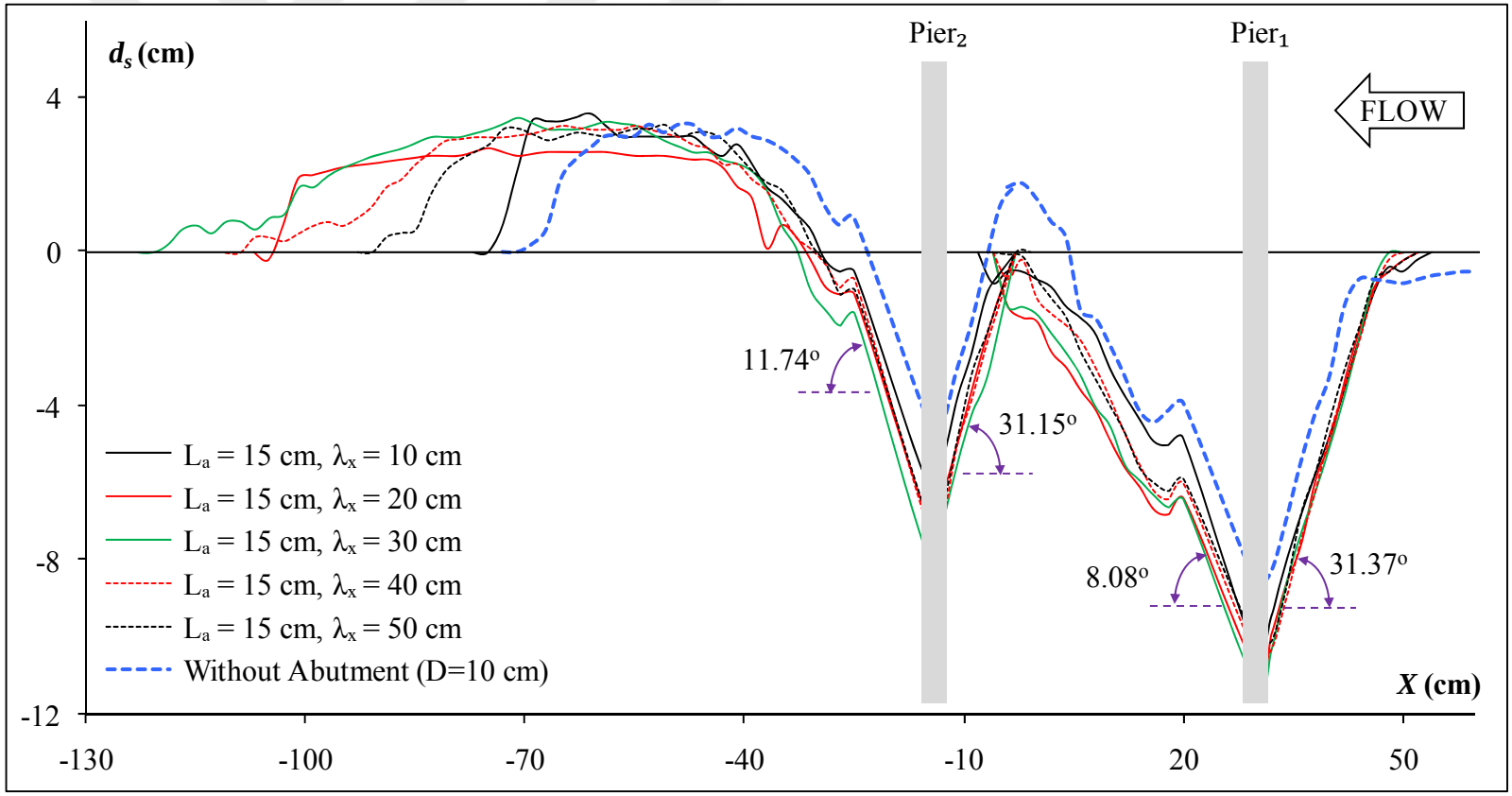


Figure 5.312 Longitudinal profiles of the scour holes and deposition zones around the piers in the flow direction for the two piers and an abutment case (D = 10 cm, L_a = 15 cm and λ_y = 10 cm)

Table 5.37 Measured and calculated slope angles for D = 5 cm and λ_y = 15 cm

Exp. No.	L_a (cm)	λ_x (cm)	D (cm)	λ_y (cm)	λ_p (cm)	Slope Angle (in degree)				Mean Slope Angle (in degree)			
						$Pier_1$		$Pier_2$		$Pier_1$		$Pier_2$	
						Front	Rear	Front	Rear	Front	Rear	Front	Rear
138	15	10	5	15	35	31.17	-16.96	31.38	-11.59	32.69	-18.24	32.08	-18.81
139	15	20	5	15	35	29.47	-18.26	33.62	-20.56				
140	15	30	5	15	35	33.02	-19.03	31.38	-20.56				
141	15	40	5	15	35	33.82	-21.55	32.62	-20.05				
142	15	50	5	15	35	35.94	-15.38	31.38	-21.31				
143	5	10	5	15	35	28.37	-17.74	34.22	-20.56	30.61	-21.82	32.49	-20.37
144	5	20	5	15	35	31.59	-23.99	30.96	-17.74				
145	5	30	5	15	35	31.59	-21.80	32.42	-19.03				
146	5	40	5	15	35	30.75	-21.80	32.42	-24.70				
147	5	50	5	15	35	30.75	-23.75	32.42	-19.80				
148	10	50	5	15	35	30.11	-21.55	34.22	-20.30	30.63	-20.74	32.27	-20.65
149	10	40	5	15	35	34.41	-20.05	30.96	-22.05				
150	10	30	5	15	35	29.90	-18.26	33.82	-20.05				
151	10	20	5	15	35	29.90	-21.06	30.96	-19.03				
152	10	10	5	15	35	28.81	-22.78	31.38	-21.80				
Mean Slope Angle										**31.31**	**-20.27**	**32.28**	**-19.94**
170	0	70	5	15	35	27.70	-20.56	26.34	-18.78				

Table 5.38 Measured and calculated slope angles for D = 10 cm and λ_y = 10 cm

Exp. No.	L_a (cm)	λ_x (cm)	D (cm)	λ_y (cm)	λ_p (cm)	Slope Angle (in degree)				Mean Slope Angle (in degree)			
						$Pier_1$		$Pier_2$		$Pier_1$		$Pier_2$	
						Front	Rear	Front	Rear	Front	Rear	Front	Rear
153	10	10	10	10	35	29.25	-13.22	27.47	-11.86	31.03	-9.62	30.06	-7.95
154	10	20	10	10	35	33.02	-9.93	30.11	-6.56				
155	10	30	10	10	35	32.01	-5.71	34.41	-4.86				
156	10	40	10	10	35	31.17	-12.41	35.75	-7.13				
157	10	50	10	10	35	29.68	-6.84	22.54	-9.37				
158	15	10	10	10	35	30.54	-8.25	30.54	-11.59	31.37	-8.08	31.15	-11.74
159	15	20	10	10	35	31.59	-6.56	29.25	-11.03				
160	15	30	10	10	35	33.42	-7.13	32.21	-12.13				
161	15	40	10	10	35	29.68	-9.93	30.54	-9.09				
162	15	50	10	10	35	31.59	-8.53	33.22	-14.84				
163	5	10	10	10	35	30.75	-8.25	30.54	-8.81	30.63	-8.25	30.48	-11.79
164	5	20	10	10	35	34.99	-10.20	31.38	-14.31				
165	5	30	10	10	35	29.90	-8.53	29.68	-12.95				
166	5	40	10	10	35	26.57	-6.84	26.79	-11.31				
167	5	50	10	10	35	30.96	-7.41	34.02	-11.59				
Mean Slope Angle										**31.01**	**-8.65**	**30.57**	**-10.49**
168	0	70	10	10	35	30.11	-4.00	23.27	-12.13				

CHAPTER 6

EMPIRICAL EQUATIONS FOR DIMENSIONLESS SCOUR DEPTHS AND SCOUR BORDER PARAMETERS

6.1 GENERAL

In the earlier related sections of this study it was stated that the relations between the dependent and independent dimensionless parameters given in Equations 3.3 – 3.4 and 3.5 – 3.6 for scour depths and scour borders, respectively, are mostly random. For this reason, in this section an attempt was made to derive empirical equations for the aforementioned dependent dimensionless parameters.

6.2 EMPIRICAL EQUATIONS FOR DIMENSIONLESS SCOUR PARAMETERS

From Equations 3.3 and 3.4 one can write the following relations.

$$\frac{\left[(d_s)_{max}\right]_p}{\left[(d_s)_{\max}\right]_{p,0}} = X_1\left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{X_6} \tag{6.1}$$

and;

$$\frac{\left[(d_s)_{max}\right]_a}{\left[(d_s)_{\max}\right]_{a,0}} = Y_1\left(\frac{L_a}{D}\right)^{Y_2}\left(\frac{\lambda_x}{D}\right)^{Y_3}\left(\frac{\lambda_y}{B_a}\right)^{Y_4}\left(\frac{\lambda_x}{L_a}\right)^{Y_5}\left(\frac{\lambda_p}{D}\right)^{Y_6} \tag{6.2}$$

where X_1, X_2, … X_6 and Y_1, Y_2, … Y_6 are unknown coefficients to be found from multi-parametric regression analysis to be applied to the above given relations.

The total number of the experiments conducted with one pier – one abutment arrangement, which is 132, were used in the development of the empirical relationship. In this process all dimensionless parameters related to the location of the pier and geometrical parameters of the pier and abutment, L_a / D, λ_x / D, λ_y / B_a, λ_x / L_a, were considered as independent variables. And dimensionless maximum scour depth parameters $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for points L, R, F and B of the pier and $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ for point L_0 of the abutment were considered as dependent variables. With these variables statistical investigations were initiated with defining minimum, maximum and mean values of the variables listed in Table 6.1 and box plots for dependent variables and independent variables were presented in Figure 6.1 and Figure 6.2, respectively.

Table 6.1 Minimum, maximum and mean values of variables

	Dependent Variables					Independent Variables			
	$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$				$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$	L_a / D	λ_x / D	λ_y / B_a	λ_x / L_a
	L	R	F	B	L_0				
Min.	0.75	0.80	0.67	0.55	0.72	0.50	1.00	0.00	0.55
Max.	1.50	1.61	1.35	1.84	1.31	3.00	10.00	0.93	10.00
Mean	1.06	1.16	1.00	1.14	0.95	1.64	4.75	0.46	3.54

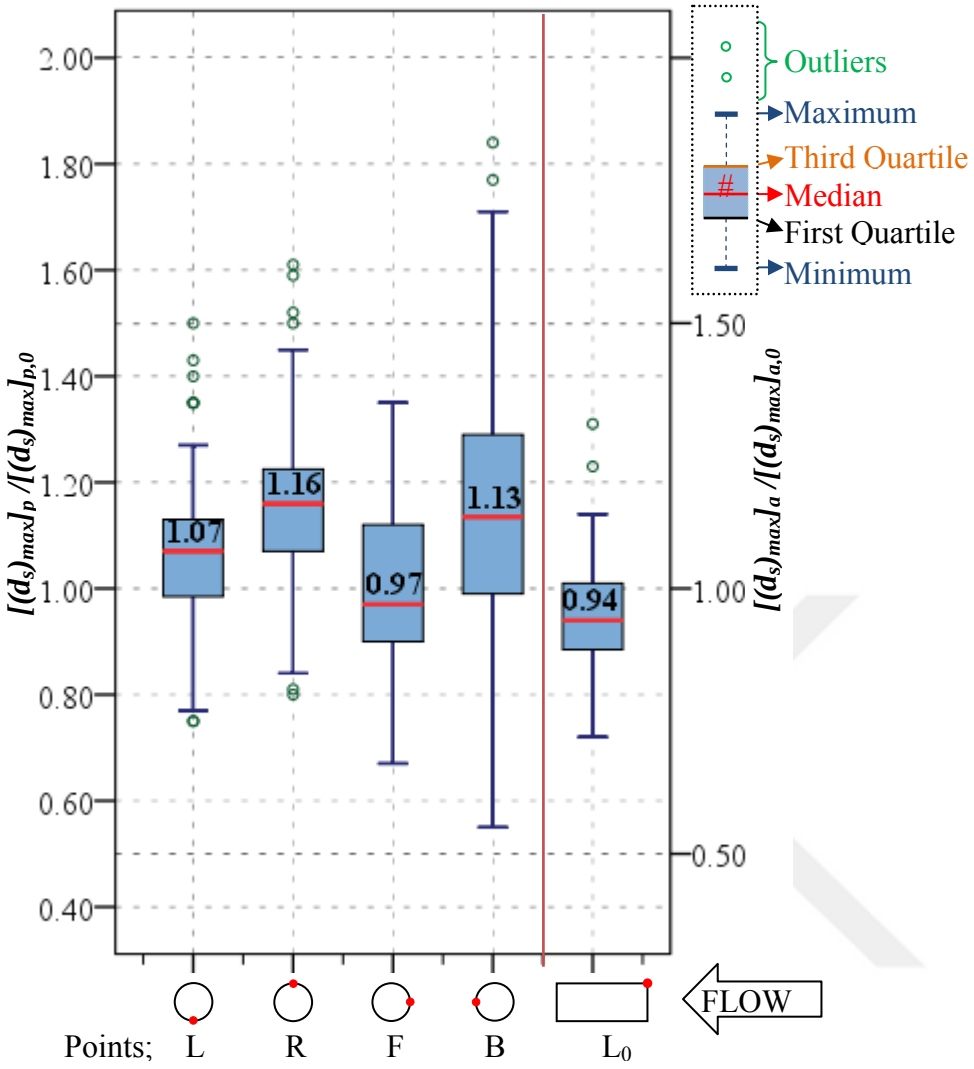


Figure 6.1 Box plots of the dependent variables for dimensionless scour depths

In Figure 6.1 the box plots give some clues for data dispersion of dimensionless scour depth parameters. As it is seen from the legend of Figure 6.1 green circles show the outliers, lower T shape lines show the minimum and upper T shape lines show the maximum points of the data set. The minimum and maximum points were defined after excluding outliers. The blue bar shows interquartile range between first quartile which is 25% and third quartile which is 75%. The red line in the blue bar shows median of the data set and the value of it which is also

known as second quartile.

The bigger blue bar shows more dispersed data and the bigger distance between T shape lines indicates more scattered data. Consequently it can be said that dimensionless scour depths have more distributed data and larger range at point B of the pier as seen in Figure 6.1 while λ_x / D has more distributed data among the other independent variables as seen in Figure 6.2.

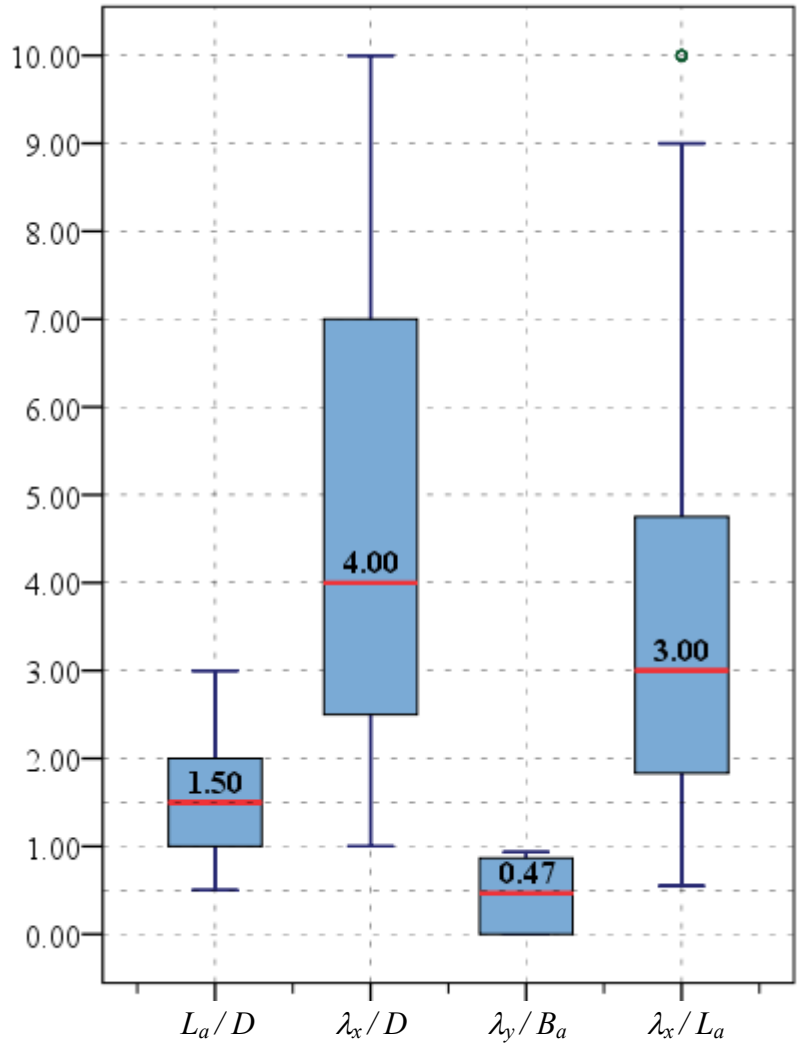


Figure 6.2 Box plots of the independent variables for dimensionless scour depths

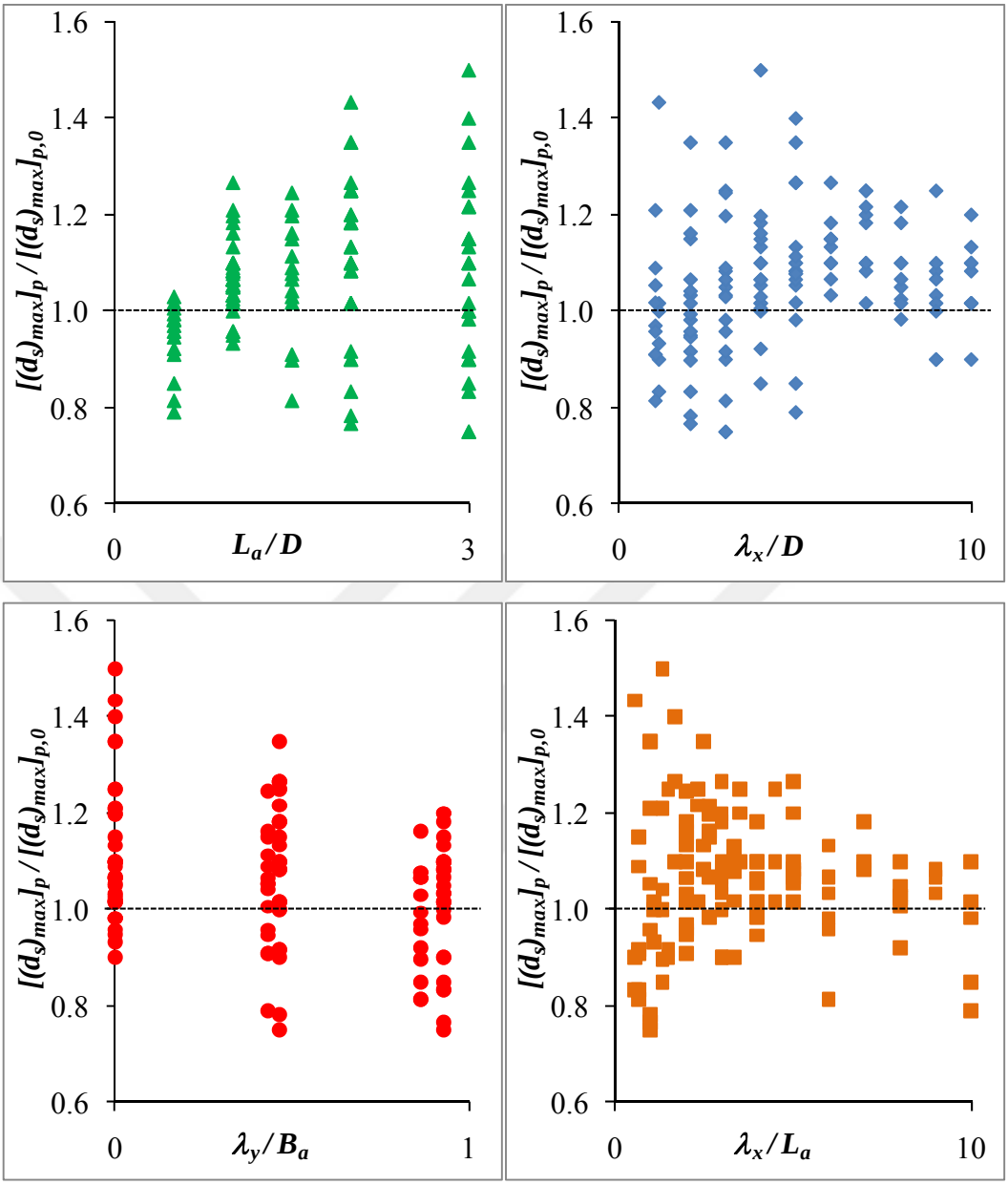


Figure 6.3 Scatter plot of independent variables versus dependent variable $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point L of the pier

Figure 6.3 shows the scattering of the dependent dimensionless parameters as a function of independent dimensionless parameters for point L of the pier as an

example. From scatter plot it is seen that the relation between the dependent and independent parameters are not clear and it is obvious that the dependent parameter is somehow function of all of the independent parameters. Therefore the model must contain all the independent variables. Table 6.2 shows the variation of the values of the independent dimensionless parameters presented in Figure 6.3.

Table 6.2 Variation of values for independent parameters

Parameter	Number of Values	Values
L_a / D	5	0.50 , 1.00 , 1.50 , 2.00 , 3.00
λ_x / D	11	1.00 , 1.10 , 2.00 , 3.00 , 4.00 , 5.00 , 6.00 , 7.00 , 8.00 , 9.00 , 10.00
λ_y / B_a	5	0.00 , 0.43 , 0.47 , 0.87 , 0.93
λ_x / L_a	22	0.55 , 0.67 , 1.00 , 1.10 , 1.33 , 1.50 , 1.67 , 2.00 , 2.33 , 2.50 , 2.67 , 3.00 , 3.33 , 3.50 , 4.00 , 4.50 , 5.00 , 6.00 , 7.00 , 8.00 , 9.00 , 10.00

To define the model, first of all, one parameter relation was investigated. For this reason a statistical computer program SPSS (Statistical Package for the Social Sciences) was used. In this procedure all simple relations as linear, logarithmic, inverse, quadratic, cubic, power and exponential relations were investigated and the relation was accounted by higher determination coefficient, R^2. Table 6.3 shows that although the best relation is obtained from a cubic equation, the value of R^2 is so small with a value of 9.9%. From this table it can be stated that again; any independent variable presented in the table is the most important parameter to define the value of dependent variable by itself. Also the significance of the parameters was observed by F test served by SPSS easily. In the statistical trials

95% confidence level was used, so the top limit value for the significance was (p = 1 – 95%) 5%. Not only the R^2 must be near to "1" but also Sig. (p) value must be less than "0.05". As an example λ_x / L_a has no significance on the value of dependent parameter when the relation was linear, logarithmic, inverse, power or exponential (Table 6.3).

Table 6.3 Significance of the independent variables for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point L of the pier

At point L		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.032	0.042	0.037	0.026	0.079	0.001	0.005	**0.443**
	Logarithmic	0.058	0.006	0.058	0.005	-	-	0.002	**0.642**
	Inverse	0.085	0.001	0.058	0.005	-	-	0.018	**0.126**
	Quadratic	0.089	0.002	0.093	0.002	0.081	0.004	0.059	0.020
	Cubic	**0.099**	0.004	**0.098**	0.004	**0.084**	0.010	**0.071**	0.024
	Power	0.044	0.016	0.069	0.002	-	-	0.007	**0.350**
	Exponential	0.021	**0.101**	0.047	0.013	0.078	0.001	0.002	**0.659**
Importance				**0.319**		**0.425**		0.206	
Tendency				+		-		-	

λ_y / B_a has no relation as logarithmic, inverse or power from Table 6.3 because this parameter has value of "0".

In Table 6.3 the term of "importance" was used to show the importance of the independent parameters on the value of the dependent variable. For local scour prediction model at point L of the pier, it can be stated that λ_y / B_a is the most important parameter with the value of 0.425 while L_a / D has no importance for the

model. In the final equation the coefficients of any parameter which has high importance can not be round off nearest decimal point easily because of its sensitivity. Very small change to be made in the magnitude of the coefficient even after three decimal points will highly affects the statistical indicators as negative manner.

The term "tendency" in Table 6.3 shows the signs of parameters or influence on the model as positive or negative.

By these findings, linear approach was not adequate to establish a model, so nonlinear modeling was tried to improve by trial and error methods.

The other approach for better modeling is to find outliers of the dependent variable which cause distortion on the model. For this purpose again automatic linear modeling function of SPSS was used and the results were tabulated in Table 6.4 on the bases of Cook's Distance. In literature there is no certain rule for top limit but some suggestions are available as three times mean value (3 x 1.06) or four over sample size (4 / 132) or "1" or "0.50", so it is up to researcher to chose the best distance which cannot distort the model.

Table 6.4 Top outliers of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point L of the pier

Experiment No.	E72	E90	E71	E65	E70	E89	E69
Cook's Distance	0.121	0.085	0.068	0.065	0.064	0.060	0.054
$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$	1.50	0.90	1.35	1.43	0.75	0.90	0.75

It is not suitable to discard much of data and cause smooth regression which goes far away from real data. Except the first two values, Cook's Distance values get close to each other as seen in Table 6.4, so it becomes harder to define the limit. On the other hand the worst distance or the furthest was also the maximum value of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point L of the pier. Hence the criterion was chosen as 0.100 for limit to drop data from regression. From Table 6.4 the data for experiment #72 was dropped to have the better model, and sample size was dropped to 131.

By using Equation 6.1 and findings from Table 6.3 which shows that all parameters should be cubic and λ_y / B_a and λ_x / D should have strong representation in the model, Equation 6.3 was obtained by ordinary least squares method. For this modeling technique the main idea is to minimize the sum of squares of error terms or residuals (SSE) which is the sum of squared difference between calculated or estimated dimensionless scour depth parameter values with respect to dimensionless other parameters (L_a / D, λ_x / D, λ_y / B_a, λ_x / L_a) and the same dimensionless scour depth parameter from experimental observations. Taking square of this difference is for avoiding negative values. SSE's derivatives for each coefficient were equaled to "0" to get roots of it and the rest was solved by linear algebra. The found roots were used for next iteration until to have minimum SSE. As computer was used for this technique, the found coefficients had much more precision such as 15 decimal points and then some trade offs were done for coefficients to have better appearance such as 3 or 2 decimal points without changing statistical indicators.

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{\max}]_{p,0}} = \left[-0.011\left(\frac{L_a}{D}\right)^{1.055}\right]\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5} + 1.018 \qquad (6.3)$$

$$\left(\frac{\lambda_x}{D}\right)^{X_3} = \left[0.028\left(\frac{\lambda_x}{D}\right)^3 - 0.450\left(\frac{\lambda_x}{D}\right)^2 + 1.450\left(\frac{\lambda_x}{D}\right) + 3.060\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4} = \left[-2.175\left(\frac{\lambda_y}{B_a}\right)^3 - 0.275\left(\frac{\lambda_y}{B_a}\right)^2 + 4.275\left(\frac{\lambda_y}{B_a}\right) - 0.725\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[0.024\left(\frac{\lambda_x}{L_a}\right)^3 - 1.3\left(\frac{\lambda_x}{L_a}\right) + 2.8\right]$$

For the accuracy or success of the model, some statistical indicators were used as determination coefficient (R^2), root mean square error (RMSE) and sum of squares of errors (SSE). RMSE is the square root of SSE divided by sample size. RMSE is more common indicator for nonlinear equations rather than R^2.

Without violating the procedure, in order to have better statistical indicators, different combinations of independent variables with various coefficients in one relation were tried for each case. After making the trials totally more than one thousand, only the models having the best indicators for each case were presented in this study.

The statistical indicators of the model; R^2, RMSE and SSE for Equation 6.3 are 0.405, 0.102 and 1.369, respectively. By using Equation 6.3, estimated values of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point L of the pier were plotted against dimensionless data which obtained from observations of the experiments in Figure 6.4. Counting 1 data as outlier, 5 data out of 132 fall out of the error band of ± 20% although determination coefficient R^2 is not good enough.

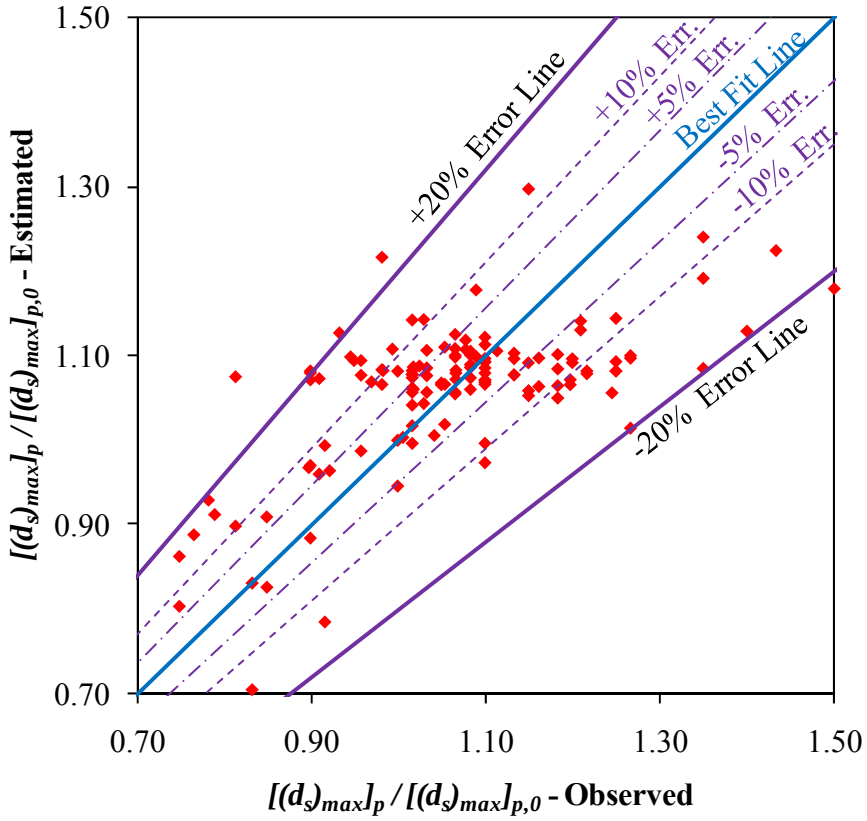


Figure 6.4 Accuracy of Equation 6.3 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point L of the pier

For point R of the pier the same procedure was applied for the development of the model and the relations tested were presented in Table 6.5 in terms of related independent dimensionless parameters. The most important parameter is λ_x / D while L_a / D has no importance for the model. The outliers were listed in Table 6.6 and the same criterion was used as point L. Hence E90 and E72 data were dropped and final sample size became 130.

Table 6.5 Significance of the independent variables for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point R of the pier

At point R		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.075	0.002	0.041	0.020	**0.033**	0.036	0.021	**0.098**
	Logarithmic	0.128	0.000	0.063	0.004	-	-	0.001	**0.665**
	Inverse	0.177	0.000	0.070	0.002	-	-	0.004	**0.447**
	Quadratic	0.189	0.000	**0.083**	0.004	0.035	**0.102**	0.062	0.016
	Cubic	**0.203**	0.000	**0.083**	0.011	0.036	**0.198**	**0.080**	0.013
	Power	0.117	0.000	0.071	0.002	-	-	0.000	**0.882**
	Exponential	0.062	0.004	0.049	0.011	**0.033**	0.037	0.017	**0.141**
Importance				**0.423**		0.219		**0.324**	
Tendency				+		-		-	

Table 6.6 Top outliers of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point R of the pier

Experiment No.	E90	E72	E71	E77	E105	E68	E74
Cook's Distance	0.141	0.100	0.096	0.083	0.060	0.059	0.041
$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$	0.89	1.59	1.52	1.61	0.84	0.86	0.88

Equation 6.4 was derived by ordinary least squares method. The statistical indicators of the model; R^2, RMSE and SSE were found to be as 0.300, 0.119 and 1.838, respectively. By using Equation 6.4 estimated values of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point R of the pier were determined and plotted against dimensionless data which obtained from observations of the experiments in Figure

6.5. Counting 2 data as outliers, 10 data out of 132 fall out of the error band of ± 20% although determination coefficient R^2 is not good enough.

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{0.75}\left(\frac{\lambda_x}{D}\right)^{X_3}\left[0.042\frac{\lambda_y}{B_a} - 0.005\right]\left(\frac{\lambda_x}{L_a}\right)^{X_5} + 1.174 \qquad (6.4)$$

$$\left(\frac{\lambda_x}{D}\right)^{X_3} = \left[0.061\left(\frac{\lambda_x}{D}\right)^3 - 1.261\left(\frac{\lambda_x}{D}\right)^2 + 6.612\left(\frac{\lambda_x}{D}\right) - 1.736\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[0.01\left(\frac{\lambda_x}{L_a}\right)^3 - 0.222\left(\frac{\lambda_x}{L_a}\right)^2 + 1.144\left(\frac{\lambda_x}{L_a}\right) - 1.467\right]$$

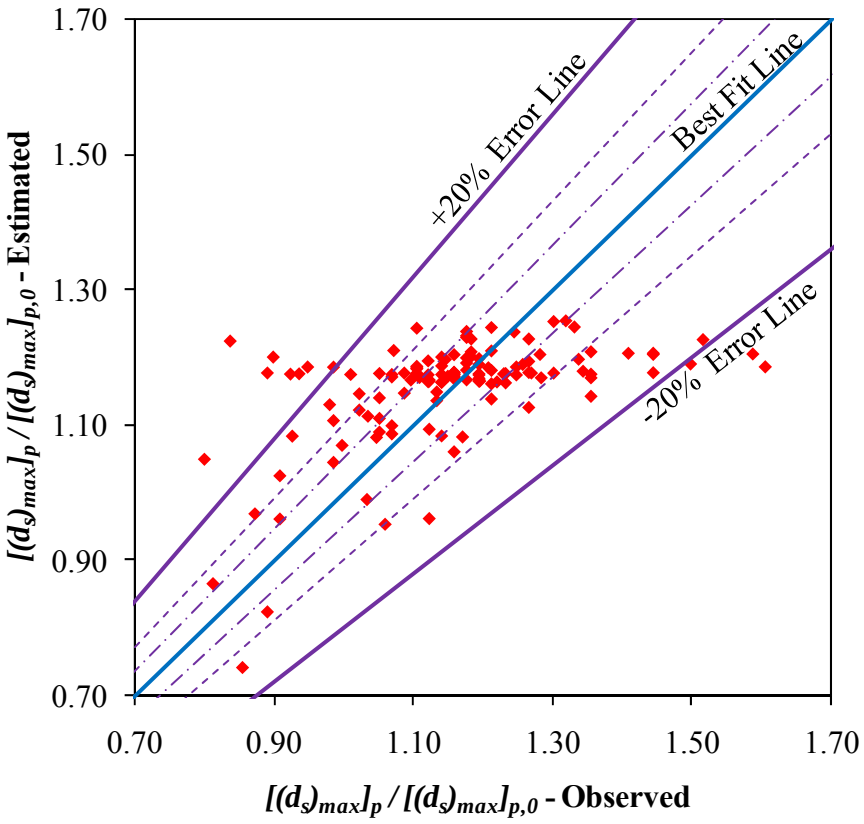


Figure 6.5 Accuracy of Equation 6.4 for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ at point R of the pier

For the point F of the pier tested relations were tabulated in Table 6.7. Cubic relation is still dominant and λ_x / L_a has no significant relation statistically. The most important parameter is L_a / D while λ_x / D has no importance for the model. The outliers were listed in Table 6.8 and the same criterion was used as point L, hence no data were dropped.

Table 6.7 Significance of the independent variables for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point F of the pier

At point F		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.104	0.000	0.044	0.016	0.036	0.030	0.000	**0.989**
	Logarithmic	0.079	0.001	0.020	**0.108**	-	-	0.007	**0.346**
	Inverse	0.052	0.009	0.005	**0.427**	-	-	0.023	**0.085**
	Quadratic	**0.124**	0.000	0.076	0.006	0.045	**0.052**	0.030	**0.140**
	Cubic	**0.124**	0.001	**0.090**	0.007	**0.149**	0.000	0.046	**0.108**
	Power	0.090	0.000	0.013	**0.190**	-	-	0.014	**0.170**
	Exponential	0.114	0.000	0.032	0.040	0.040	0.021	0.001	**0.679**
Importance		**0.549**				0.228		0.180	
Tendency		-				-		-	

Table 6.8 Outliers of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point F of the pier

Experiment No.	E71	E72	E6	E93
Cook's Distance	0.051	0.049	0.040	0.034
$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$	1.19	1.22	0.82	0.90

Equation 6.5 was derived by ordinary least squares method. The statistical indicators of the model; R^2, RMSE and SSE were found to be as 0.357, 0.123 and 1.992, respectively. Although some parameters were seen as statistically insignificant, they were still used by simple form. By using Equation 6.5 estimated values of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point F of the pier were calculated and plotted against dimensionless data which obtained from observations of the experiments in Figure 6.6. 14 data out of 132 fall out of the error band of ± 20% although determination coefficient R^2 is not good enough.

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{\max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{-3.284} + 1.078 \qquad (6.5)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[1.065\left(\frac{L_a}{D}\right)^3 - 6.534\left(\frac{L_a}{D}\right)^2 + 12.481\left(\frac{L_a}{D}\right) - 7.424\right]$$

$$\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4} = \left[-0.035\left(\frac{\lambda_y}{B_a}\right)^3 - 0.034\right]\left[-5.94\left(\frac{\lambda_x}{D}\right)^3 + 3.28\right]$$

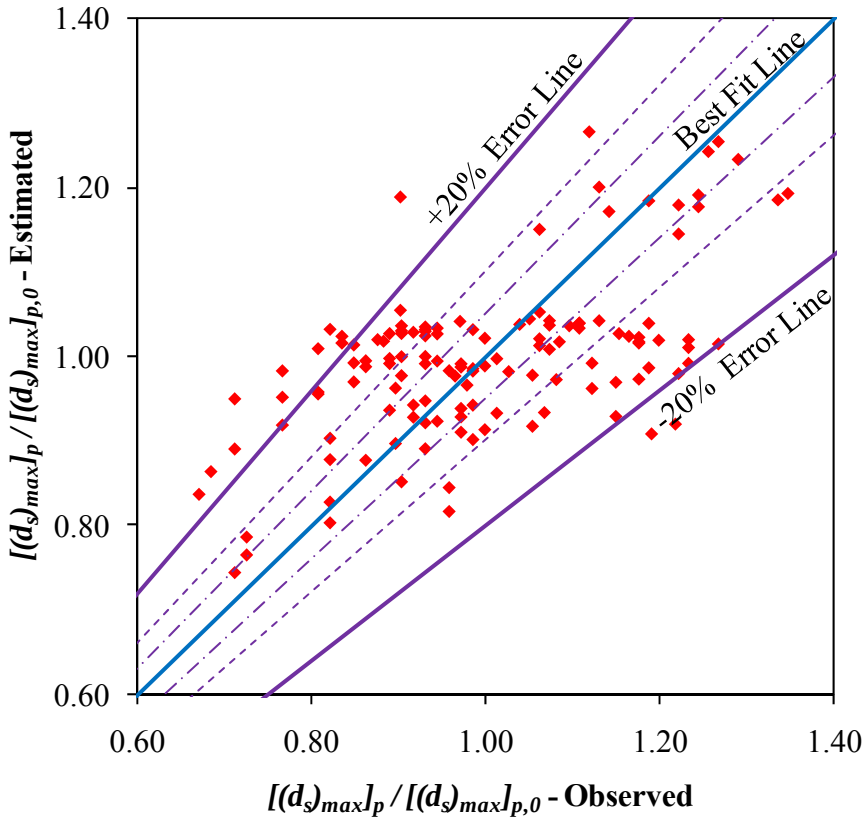


Figure 6.6 Accuracy of Equation 6.5 for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ at point F of the pier

By using the data summarized in Tables A.1, A.2 and A.3 for point B of the pier, the tested relations with the independent variables were tabulated in Table 6.9. Cubic relation is still dominant and the most important parameter is λ_x / D. The outliers were listed in Table 6.10 and the same criterion was used as point L, hence E72 data was dropped and final sample size became 131.

Table 6.9 Significance of the independent variables for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point B of the pier

At point B		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.051	0.009	0.046	0.013	0.081	0.001	0.017	0.137
	Logarithmic	0.088	0.001	0.057	0.006	-	-	0.000	**0.960**
	Inverse	0.120	0.000	0.046	0.014	-	-	0.015	**0.161**
	Quadratic	0.136	0.000	0.073	0.008	0.083	0.004	0.072	0.008
	Cubic	**0.143**	0.000	**0.079**	0.015	**0.089**	0.007	**0.105**	0.003
	Power	0.072	0.002	0.078	0.001	-	-	0.003	**0.536**
	Exponential	0.037	0.027	0.067	0.003	0.075	0.001	0.008	**0.295**
Importance		0.081		**0.363**		**0.270**		**0.285**	
Tendency		-		+		-		-	

Table 6.10 Top outliers of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point B of the pier

Experiment No.	E72	E77	E105	E90	E89	E108	E71
Cook's Distance	0.100	0.092	0.065	0.062	0.058	0.057	0.050
$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$	1.77	1.84	0.65	1.01	0.94	1.71	1.52

The statistical indicators of Equation 6.6; R^2, RMSE and SSE were found to be as 0.362, 0.182 and 4.360, respectively. By using Equation 6.6 the estimated values of $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point B of the pier were determined and plotted against dimensionless data which obtained from observations of the experiments in Figure 6.7. Counting 1 data as outlier 21 data out of 132 fall out of the error band of ± 20%.

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{0.72}\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5} + 1.17 \qquad (6.6)$$

$$\left(\frac{\lambda_x}{D}\right)^{X_3} = \left[0.013\left(\frac{\lambda_x}{D}\right)^3 - 0.216\left(\frac{\lambda_x}{D}\right)^2 + 0.423\left(\frac{\lambda_x}{D}\right) + 2.095\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4} = \left[-0.798\left(\frac{\lambda_y}{B_a}\right)^3 + 0.912\left(\frac{\lambda_y}{B_a}\right)^2 - 0.003\left(\frac{\lambda_y}{B_a}\right) - 0.06\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[-0.001\left(\frac{\lambda_x}{L_a}\right)^3 + 0.32\left(\frac{\lambda_x}{L_a}\right) - 1.47\right]$$

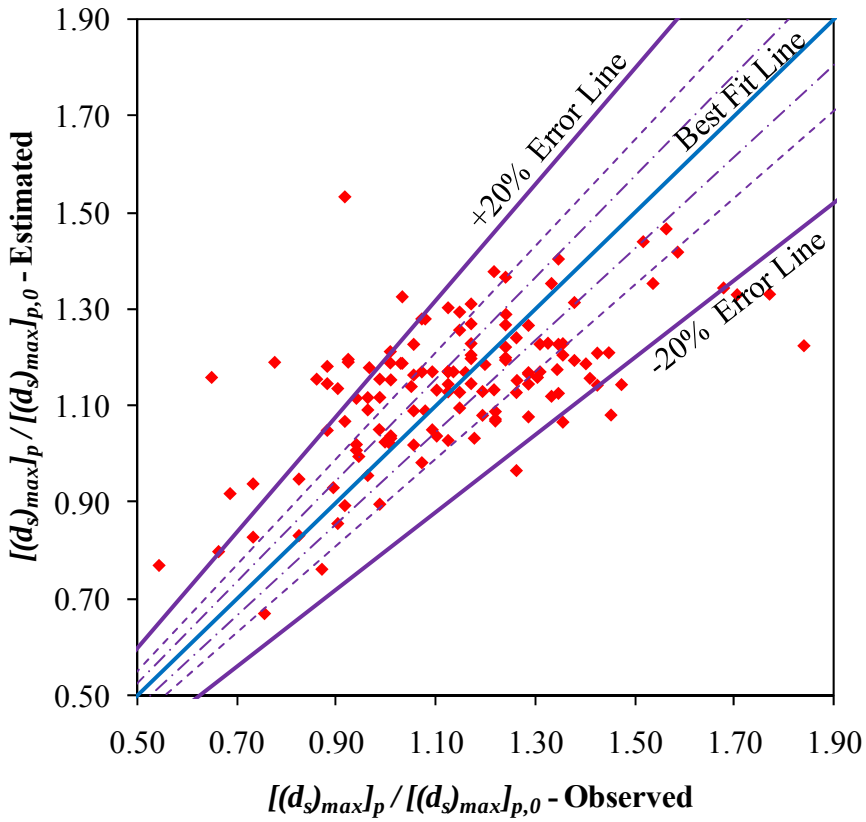


Figure 6.7 Accuracy of Equation 6.6 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point B of the pier

For the point L_0 of the abutment the tested relations were tabulated in Table 6.11. Cubic relation appears to be dominant and the most important parameter is L_a / D. The outliers were listed in Table 6.12 and the same criterion was used as point L, hence E93 data was dropped and final sample size became 131.

Table 6.11 Significance of the independent variables for $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ for point L_0 of the abutment

At point L_0		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.113	0.000	0.002	**0.635**	0.000	**0.863**	0.045	0.014
	Logarithmic	0.088	0.001	0.000	**0.878**	-	-	0.055	0.007
	Inverse	0.050	0.010	0.007	**0.354**	-	-	0.048	0.012
	Quadratic	0.119	0.000	0.010	**0.521**	**0.054**	0.028	0.050	0.037
	Cubic	**0.145**	0.000	**0.061**	0.045	0.057	**0.055**	**0.069**	0.027
	Power	0.096	0.000	0.000	**0.935**	-	-	0.051	0.009
	Exponential	0.121	0.000	0.004	**0.476**	0.000	**0.930**	0.042	0.018
Importance		**0.954**							
Tendency		+							

Table 6.12 Outliers of $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ for point L_0 of the abutment

Experiment No.	E93	E6	E106	E67
Cook's Distance	0.208	0.094	0.093	0.032
$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$	1.31	1.23	0.74	1.14

The statistical indicators of Equation 6.7; R^2, RMSE and SSE were found to be 0.326, 0.075 and 0.739, respectively. By using Equation 6.7 estimated values of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ at point L_0 of the abutment were calculated and plotted against dimensionless data which obtained from observations of the experiments in Figure 6.8. Counting 1 data as outlier total 2 data out of 132 fall out of the error band of ± 20%.

$$\frac{[(d_s)_{max}]_a}{[(d_s)_{\max}]_{a,0}} = \left[0.5\left(\frac{L_a}{D}\right)^3 - 1.2\left(\frac{L_a}{D}\right)^2 + 0.3\right]\left(\frac{\lambda_x}{D}\right)^{Y_3}\left(\frac{\lambda_y}{B_a}\right)^{Y_4}\left(\frac{\lambda_x}{L_a}\right)^{Y_5} + 0.97 \qquad (6.7)$$

$$\left(\frac{\lambda_x}{D}\right)^{Y_3} = \left[-0{,}004\left(\frac{\lambda_x}{D}\right)^3 + 0.055\left(\frac{\lambda_x}{D}\right)^2 - 1.40\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Y_4} = \left[0.1\left(\frac{\lambda_y}{B_a}\right)^2 - 0.1\left(\frac{\lambda_y}{B_a}\right) - 0.02\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{Y_5} = \left[-0.3\left(\frac{\lambda_x}{L_a}\right)^3 + 2.6\left(\frac{\lambda_x}{L_a}\right)^2 - 4{,}17\left(\frac{\lambda_x}{L_a}\right) + 2.7\right]$$

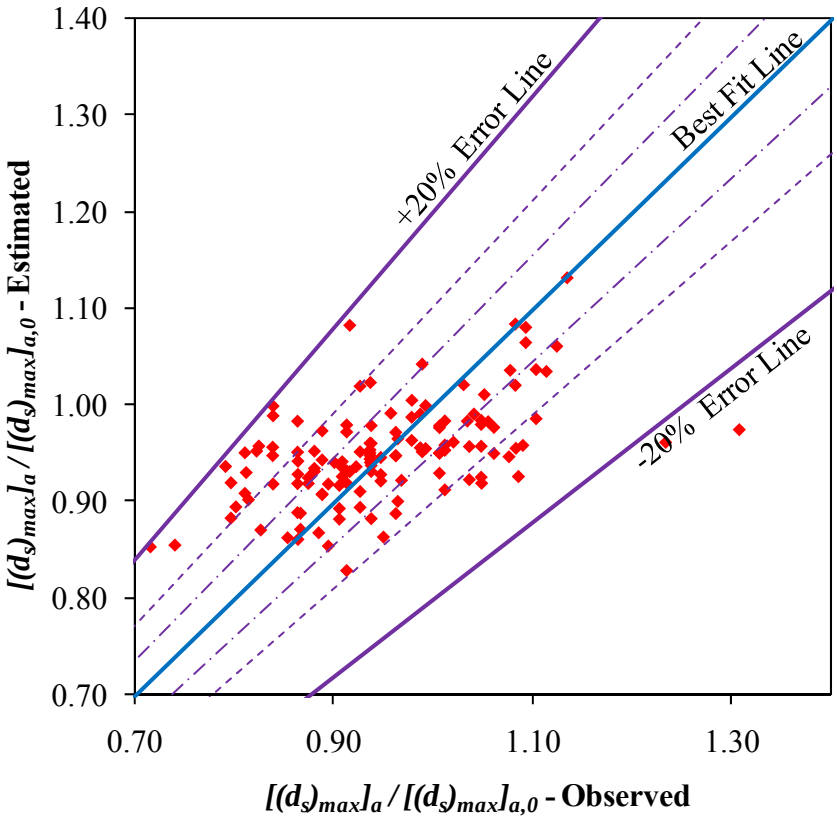


Figure 6.8 Accuracy of Equation 6.7 for $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ for point L_0 of the abutment

To apply the same procedure to two piers case; first, minimum, maximum and mean values and the range of independent parameters were investigated and tabulated in Tables 6.13 and 6.14 and box plots were presented for dependent and independent variables in Figure 6.9 and Figure 6.10, respectively. The outputs of the general linear modeling analysis and outliers were tabulated in Appendix B. The proposed equations and models defined by statistical analysis were presented as follows. In each case the equations giving better results were selected and listed in Table 6.15 with statistical characteristics. The accuracy figures and equations were given afterwards.

Table 6.13 Minimum, maximum and mean values of dependent variables for two piers case

	$[(d_s)max]_p / [(d_s)max]_{p,0}$; $[(d_s)max]_a / [(d_s)max]_{a,0}$								
	$Pier_1$				$Pier_2$				
	L	R	F	B	L	R	F	B	L_0
Min.	1.01	1.09	1.02	0.92	0.88	1.03	0.88	-1.78	0.69
Max.	1.60	2.06	1.38	1.67	2.00	1.73	1.84	1.74	1.09
Mean	1.25	1.66	1.16	1.32	1.29	1.26	1.26	0.54	0.86

Table 6.14 Variation of values for parameters in two piers case

Parameter	Number of Values	Values
L_a / D	5	0.50 , 1.00 , 1.50 , 2.00 , 3.00
λ_x / D	8	1.00 , 2.00 , 3.00 , 4.00 , 5.00 , 6.00 , 8.00 , 10.00
λ_y / B_a	2	0.13 , 0.20
λ_x / L_a	12	0.67 , 1.00 , 1.33 , 2.00 , 2.67 , 3.00 , 3.33 , 4.00 , 5.00 , 6.00 , 8.00 , 10.00
λ_p / D	2	3.50 , 7.00

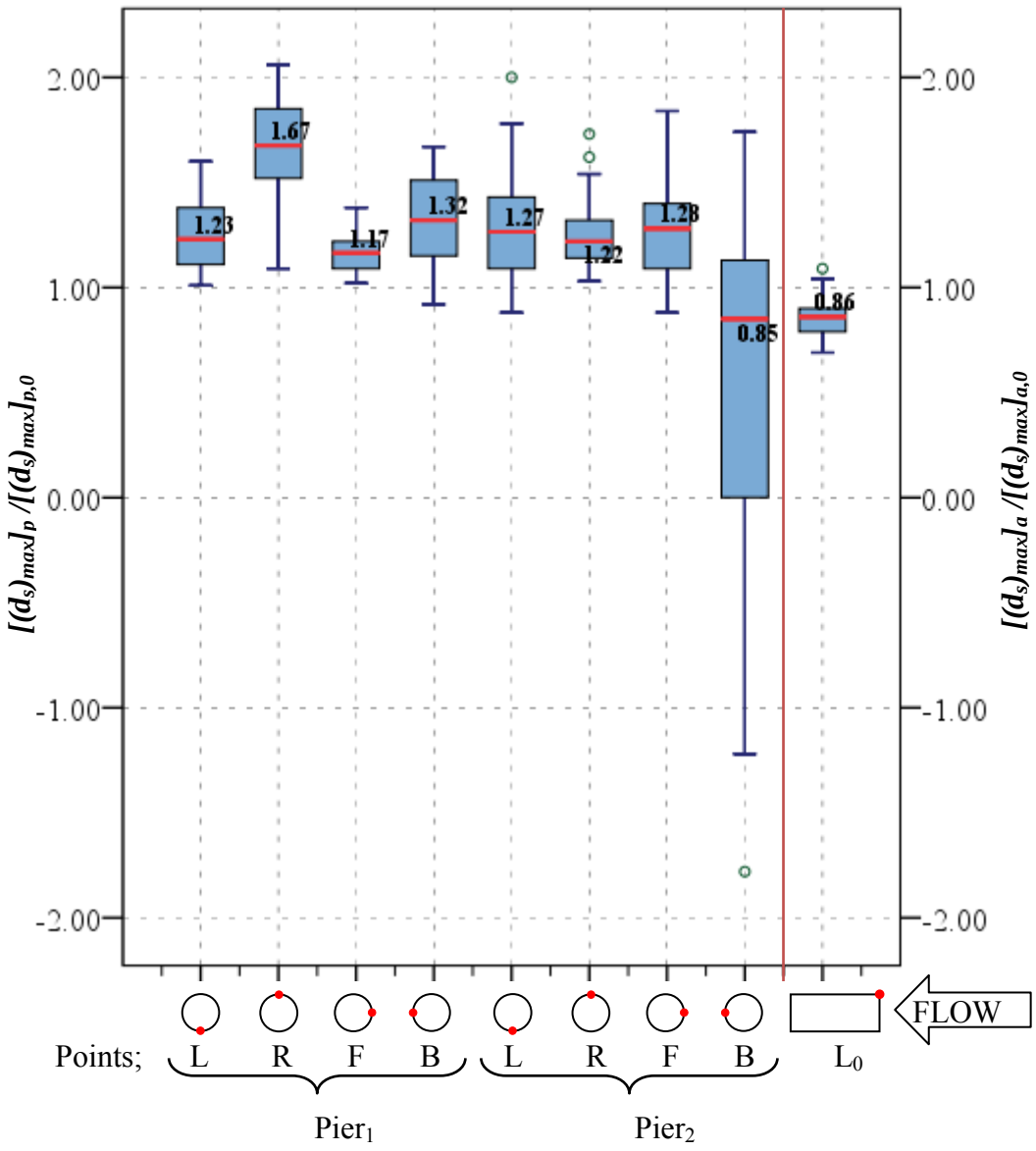


Figure 6.9 Box plots of the dependent variables for dimensionless scour depths in two piers case

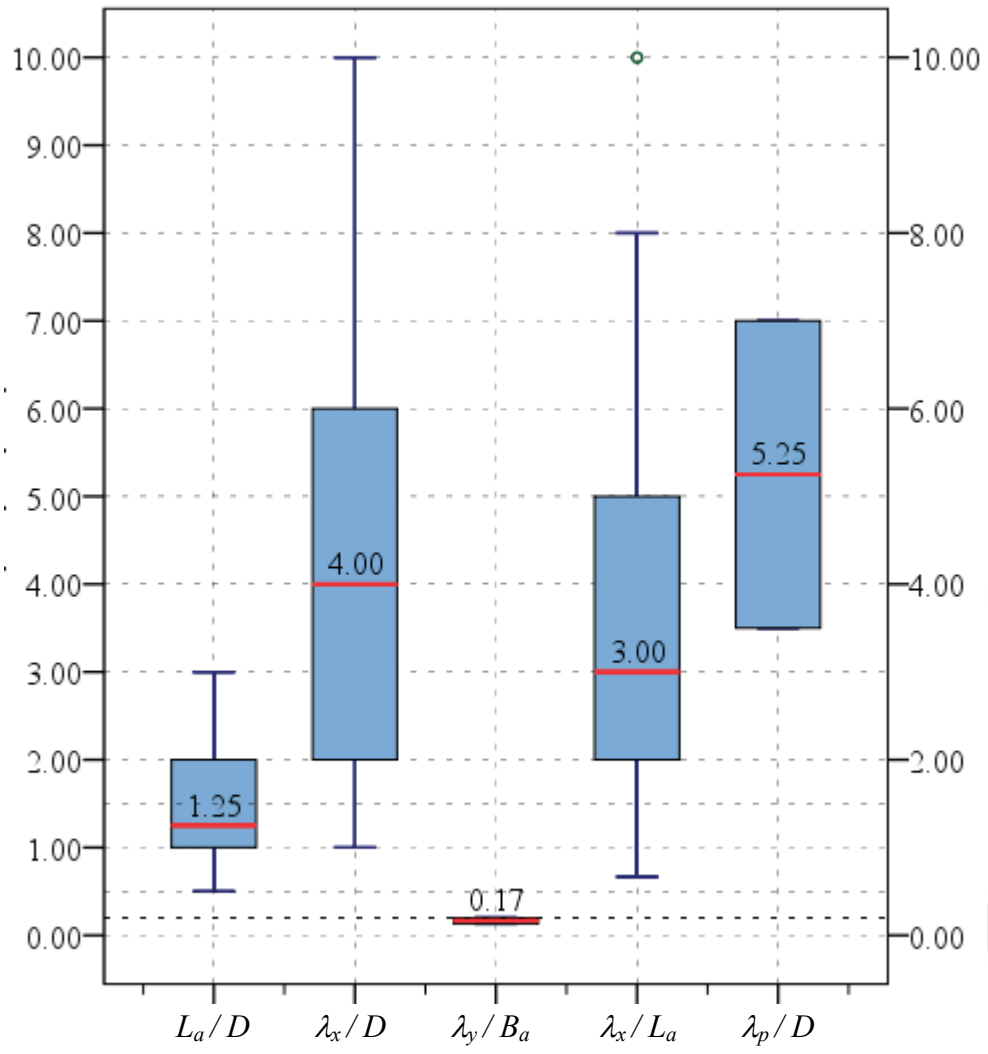


Figure 6.10 Box plots of the independent variables for dimensionless scour depths in two piers case

In two piers case, despite the fact that there were outliers in each case no outlier was taken into account due to less data. Because the total number of data was 30 and dropping the outliers for the purpose of having statistically better equation might cause weak modeling with inadequate data.

The modeling, finding equations was started from the point of general linear modeling analysis but to go further some other criteria were applied. Those criteria were as follows;

- Simple form was preferred while there was an option to chose model (choosing with descending order by linear, logarithmic, quadratic, cubic, power, exponential). And linear one was thought to be better comparing with nonlinear ones by considering nonlinearity was because of unknown coefficients of the independent parameters which were dimensionless in this study.
- The model with the least number of coefficients was preferred under the same statistical environment.
- Working space was three decimal points, so the unknown coefficients were seen longer in display. After choosing the model, unknown coefficients were traded for having one or two decimal points without changing statistical indicators too much. This could be accepted as round off figures. But it was obvious that some coefficients must be very sensitive whose importance values which were seen from corresponding table in Appendix B, were higher than others. It was hard to round that figures off because one unit change even in third decimal point could distort whole modeling statistical indicators.
- To understand which model was the best some statistical indicators were observed. The largest R^2, the lowest error terms and the least number of data out of 30 data fall out of the error band of ± 20% were preferred as statistical indicators.

In two piers case, because dimensionless parameters λ_y / B_a and λ_p / D were similar positioning parameters and their values had two possibilities (Table 6.14), they were highly correlated and they nearly had the same statistical analysis results.

Table 6.15 Proposed equation characteristics for one pier scour border

Dependent variable	Proposed equation	R^2	RMSE	SSE	# of data out of 30 falling out of the error band of ±20% (outliers in analysis)
$[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$					
L of $Pier_1$	6.8	0.806	0.069	0.144	0
R of $Pier_1$	6.9	0.733	0.122	0.445	0
F of $Pier_1$	6.10	0.755	0.048	0.070	0
B of $Pier_1$	6.11	0.762	0.104	0.327	1
L of $Pier_2$	6.12	0.639	0.163	0.799	3
R of $Pier_2$	6.13	0.321	0.139	0.583	1
F of $Pier_2$	6.14	0.876	0.084	0.210	1
B of $Pier_2$	6.15	0.870	0.318	3.027	16
$[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$					
L_0 of Abutment	6.16	0.360	0.069	0.144	0

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left[11.6\left(\frac{\lambda_x}{D}\right)^{-2} - 0.007\right]\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{X_6} \quad (6.8)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[3.7\left(\frac{L_a}{D}\right)^{2} - 1.1\left(\frac{L_a}{D}\right) + 0.25\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_p}{D}\right)^{X_6} = \left[2\left(\frac{\lambda_y}{B_a}\right) - 0.319\right]\left[-0.033\left(\frac{\lambda_p}{D}\right) + 0.185\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[-0.1\left(\frac{\lambda_x}{L_a}\right)^{3} - 8.2\left(\frac{\lambda_x}{L_a}\right)^{2} - 6.4\left(\frac{\lambda_x}{L_a}\right) + 4.4\right]$$

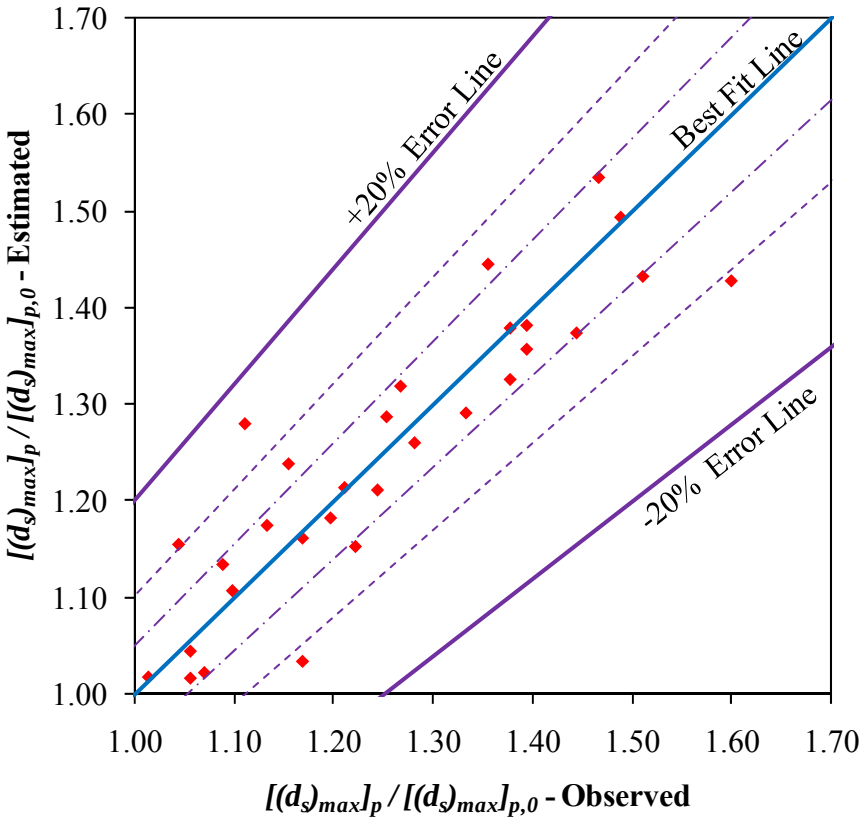


Figure 6.11 Accuracy of Equation 6.8 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point L of Pier$_1$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left[\ln\left(\frac{\lambda_x}{D}\right)+2.65\right]\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{X_6} \quad (6.9)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[-0.09\left(\frac{L_a}{D}\right)^2 + 0.024\left(\frac{L_a}{D}\right) + 3.3\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_p}{D}\right)^{X_6} = \left[6.76\left(\frac{\lambda_y}{B_a}\right) - 1.612\right]\left[-1.5\left(\frac{\lambda_p}{D}\right) + 2.72\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[\left(\frac{\lambda_x}{L_a}\right)^{-0.018} - 0.908\right]$$

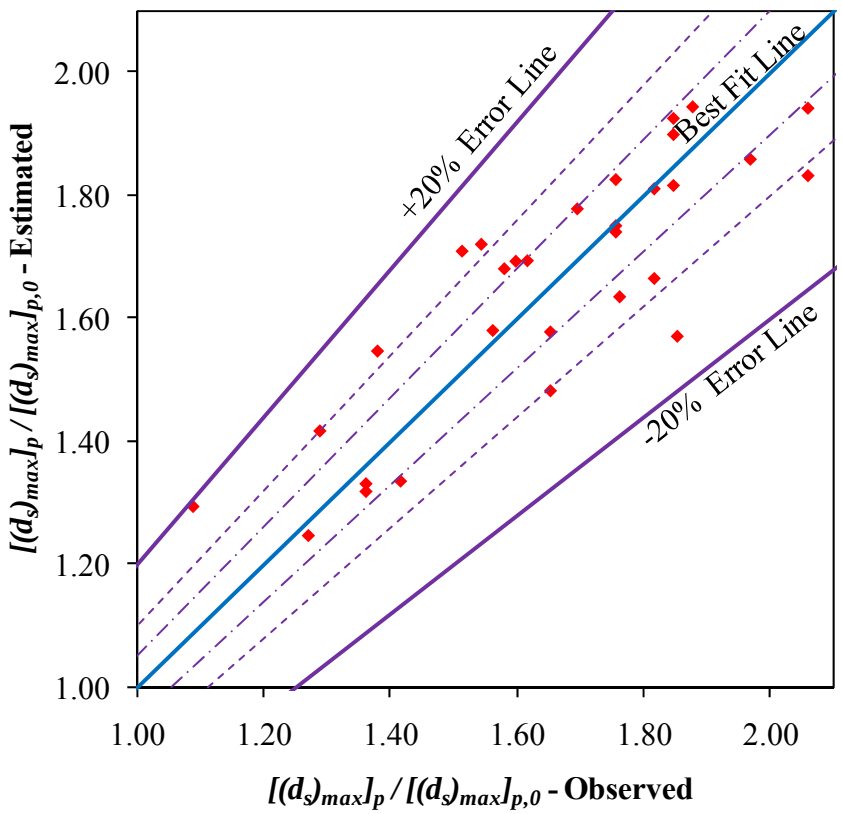


Figure 6.12 Accuracy of Equation 6.9 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point R of Pier$_1$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{\max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{-1.9}\left(\frac{\lambda_y}{B_a}\right)^{2.7}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{0.6} - 0.07 \qquad (6.10)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[0.057\left(\frac{L_a}{D}\right)^3 - 0.2\left(\frac{L_a}{D}\right)^2 - 3.26\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[0.004\left(\frac{\lambda_x}{L_a}\right)^3 - 0.046\left(\frac{\lambda_x}{L_a}\right)^2 - 0.035\left(\frac{\lambda_x}{L_a}\right) + 5.5\right]$$

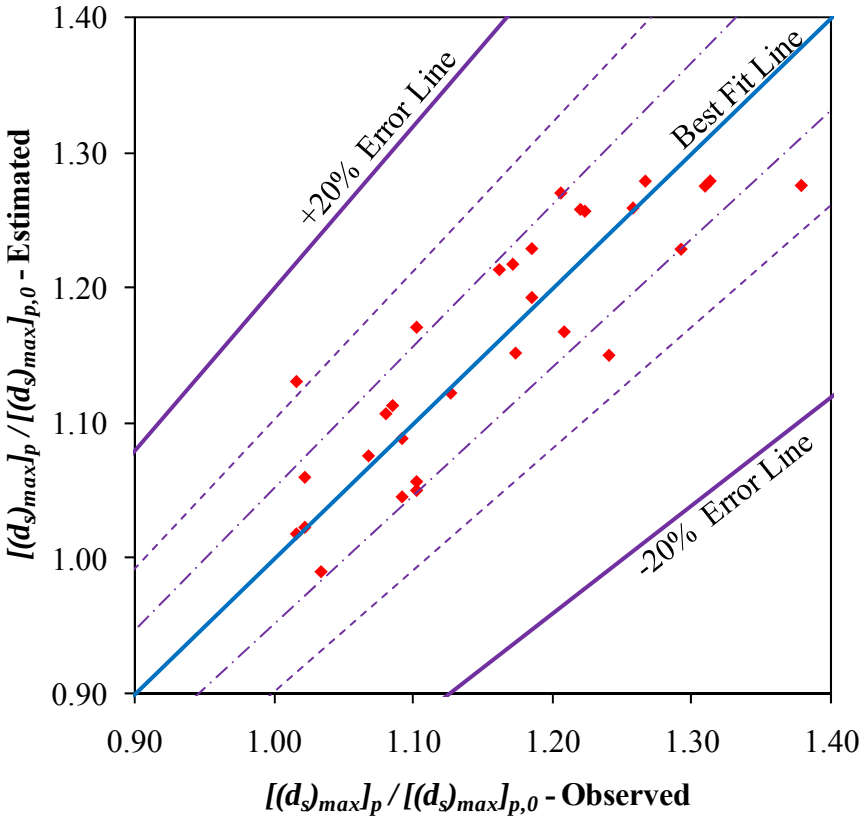


Figure 6.13 Accuracy of Equation 6.10 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point F of $Pier_1$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{-1.43}\left(\frac{\lambda_y}{B_a}\right)^{2.33}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{-0.11} - 0.023 \qquad (6.11)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[-0.007\left(\frac{L_a}{D}\right)^3 - 0.41\left(\frac{L_a}{D}\right)^2 + 1.57\left(\frac{L_a}{D}\right) + 4.7\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[-0.012\left(\frac{\lambda_x}{L_a}\right)^3 + 0.12\left(\frac{\lambda_x}{L_a}\right)^2 + 0.5\left(\frac{\lambda_x}{L_a}\right) - 13.8\right]$$

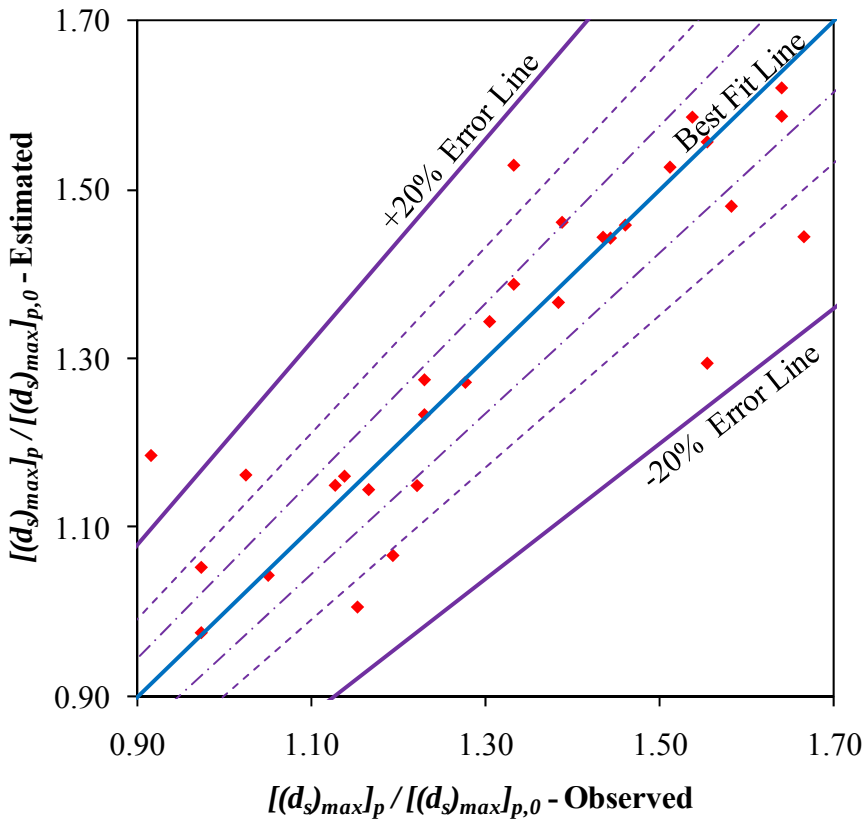


Figure 6.14 Accuracy of Equation 6.11 for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ at point B of $Pier_1$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left[\left(\frac{\lambda_x}{D}\right)^{-1} - 0.16\right]\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{X_6} + 1.23 \qquad (6.12)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[1.9\left(\frac{L_a}{D}\right)^3 - 4.6\left(\frac{L_a}{D}\right) + 2.55\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_p}{D}\right)^{X_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{1.69} - 0.065\right]\left[\left(\frac{\lambda_p}{D}\right)^{1.25} + 0.9\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[0.13\left(\frac{\lambda_x}{L_a}\right)^3 - 4.8\left(\frac{\lambda_x}{L_a}\right) + 1.65\right]$$

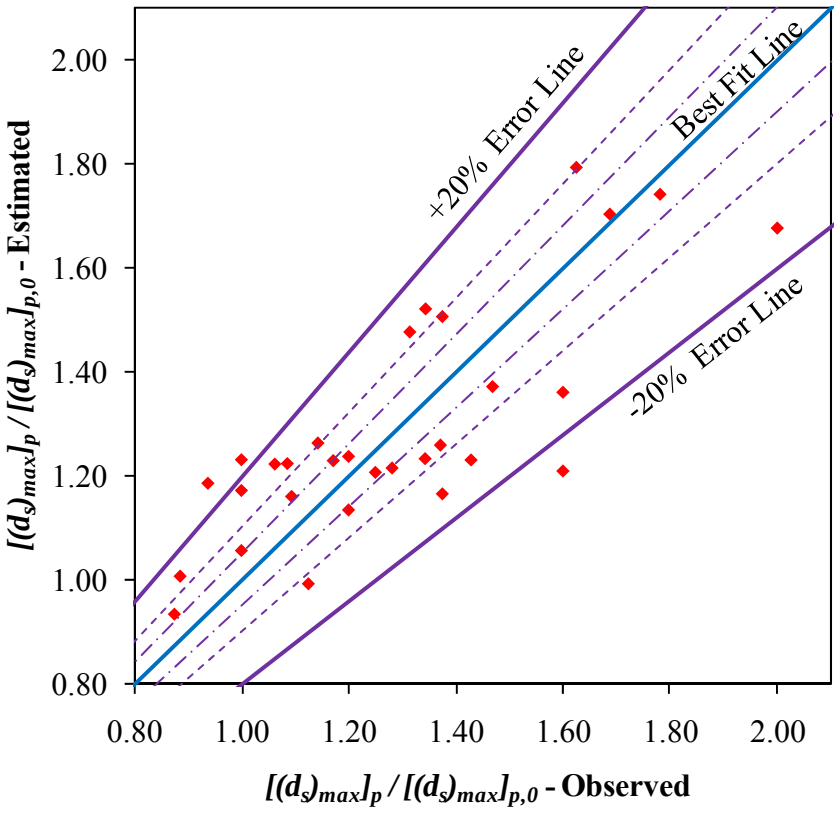


Figure 6.15 Accuracy of Equation 6.12 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point L of Pier$_2$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{\max}]_{p,0}} = \left[0.4\left(\frac{L_a}{D}\right)^{0.5} - 0.03\left(\frac{\lambda_x}{D}\right)^{-10}\right] + \left[5.6\left(\frac{\lambda_y}{B_a}\right)^{3.2} - 0.18\left(\frac{\lambda_x}{L_a}\right)^{-1.2} + 1.6\left(\frac{\lambda_p}{D}\right)^{-4}\right] \quad (6.13)$$

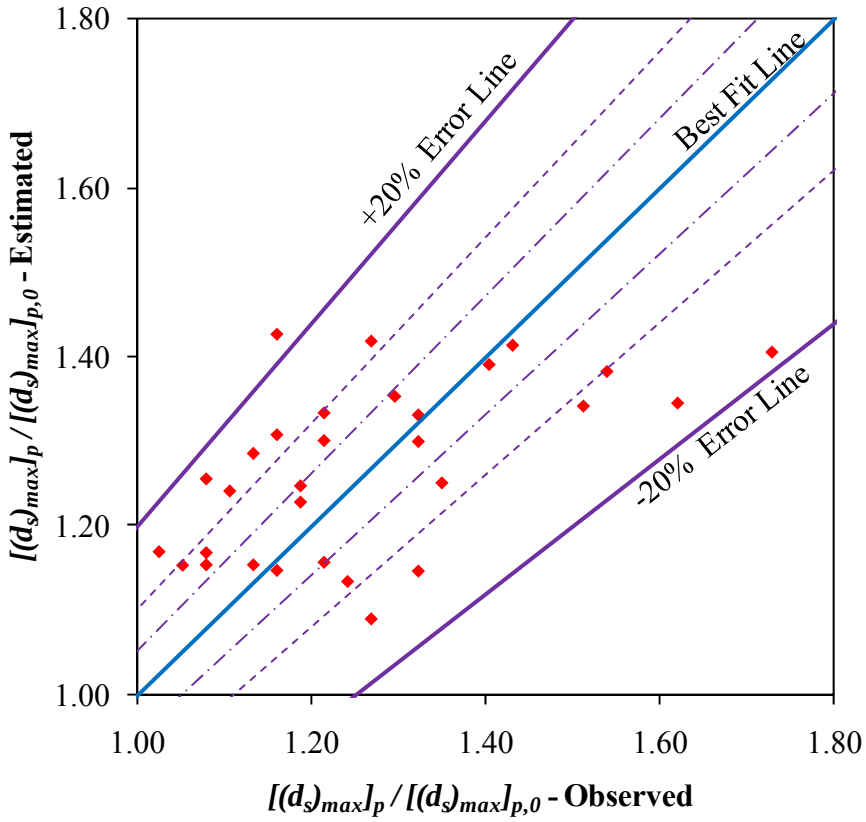


Figure 6.16 Accuracy of Equation 6.13 for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ at point R of Pier$_2$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left[\left(\frac{\lambda_x}{D}\right)^{-0.083} + 0.38\right]\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_x}{L_a}\right)^{X_5}\left(\frac{\lambda_p}{D}\right)^{X_6} + 10.85 \quad (6.14)$$

$$\left(\frac{L_a}{D}\right)^{X_2} = \left[-0.03\left(\frac{L_a}{D}\right)^3 + 0.85\left(\frac{L_a}{D}\right) + 20.6\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_p}{D}\right)^{X_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{0.2} + 0.12\right]\left[\left(\frac{\lambda_p}{D}\right)^{-6} + 0.039\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{X_5} = \left[0.001\left(\frac{\lambda_x}{L_a}\right)^3 - 0.26\left(\frac{\lambda_x}{L_a}\right) - 10\right]$$

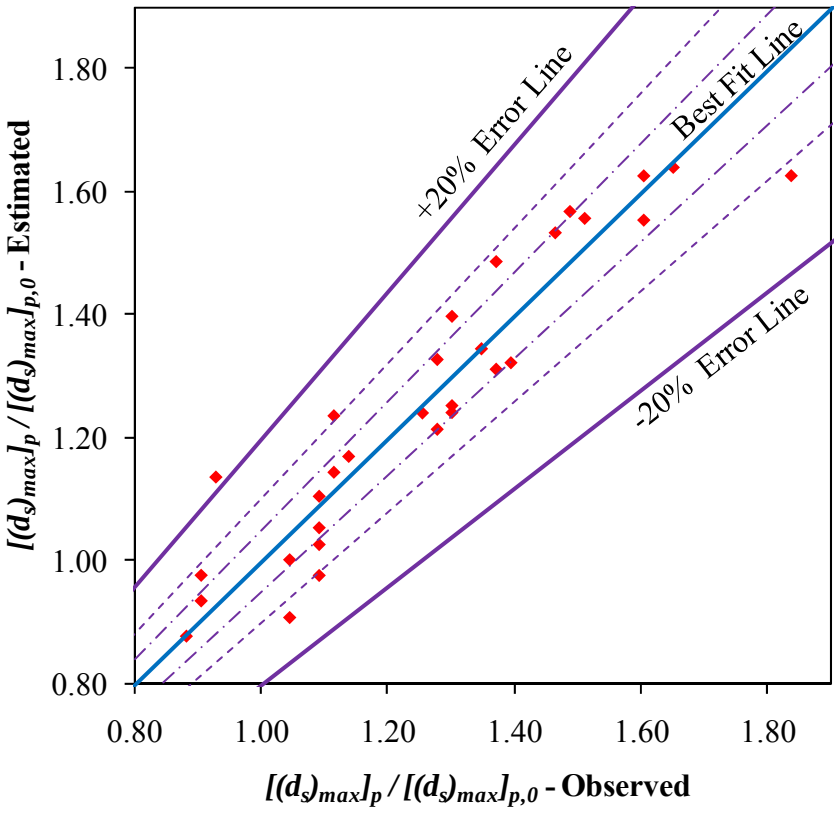


Figure 6.17 Accuracy of Equation 6.14 for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ at point F of Pier$_2$

$$\frac{[(d_s)_{max}]_p}{[(d_s)_{max}]_{p,0}} = \left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{X_3}\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left[\left(\frac{\lambda_x}{L_a}\right)^{0.17} - 0.7\right]\left(\frac{\lambda_p}{D}\right)^{X_6} + 1.2 \qquad (6.15)$$

$$\left(\frac{L_a}{D}\right)^{X_2}\left(\frac{\lambda_x}{D}\right)^{X_3} = \left[\left(\frac{L_a}{D}\right)^{0.7} + 17\right]\left[-0.006\left(\frac{\lambda_x}{D}\right)^{3} + 1.46\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{X_4}\left(\frac{\lambda_p}{D}\right)^{X_6} = \left[2.9\left(\frac{\lambda_y}{B_a}\right) - 0.58\right]\left[3.9 - \left(\frac{\lambda_p}{D}\right)\right]$$

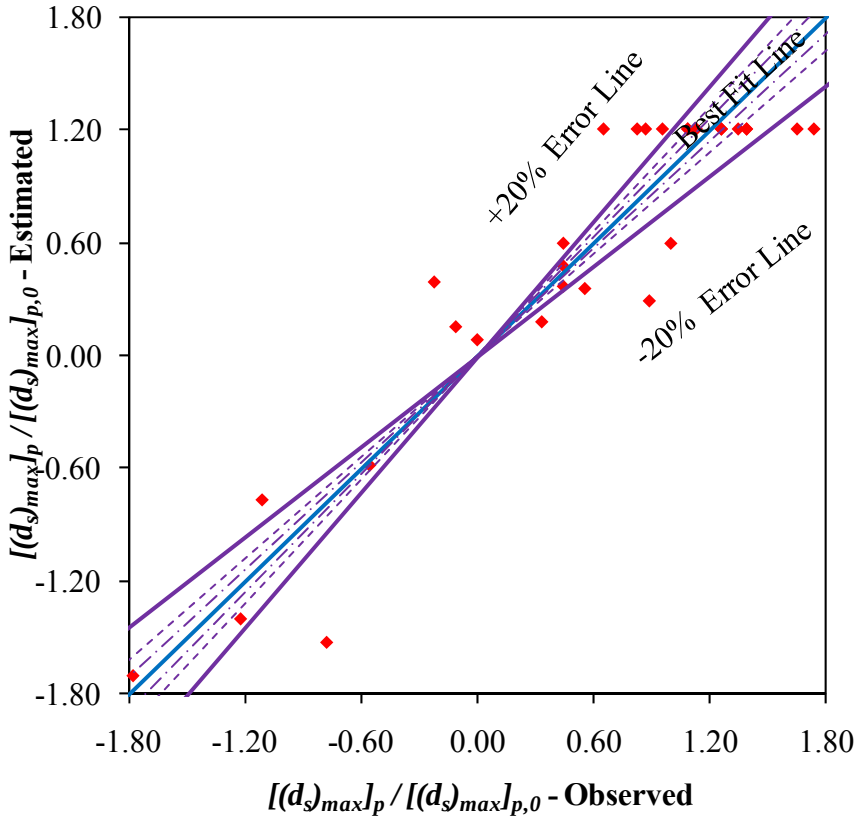


Figure 6.18 Accuracy of Equation 6.15 for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ at point B of Pier$_2$

$$\frac{[(d_s)_{max}]_a}{[(d_s)_{max}]_{a,0}} = \left(\frac{L_a}{D}\right)^{Y_2}\left(\frac{\lambda_x}{D}\right)^{Y_3}\left(\frac{\lambda_y}{B_a}\right)^{Y_4}\left(\frac{\lambda_x}{L_a}\right)^{Y_5}\left(\frac{\lambda_p}{D}\right)^{Y_6} + 0.81 \qquad (6.16)$$

$$\left(\frac{L_a}{D}\right)^{Y_2}\left(\frac{\lambda_x}{D}\right)^{Y_3} = \left[\left(\frac{L_a}{D}\right)^{-1} + 0.09\right]\left[\left(\frac{\lambda_x}{D}\right)^{-11} + 0.015\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Y_4}\left(\frac{\lambda_p}{D}\right)^{Y_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{0.663} - 0.262\right]\left[\left(\frac{\lambda_p}{D}\right)^{-1.93} + 10\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{Y_5} = \left[-0.055\left(\frac{\lambda_x}{L_a}\right)^{3} + 0.37\left(\frac{\lambda_x}{L_a}\right)^{2} + 9\right]$$

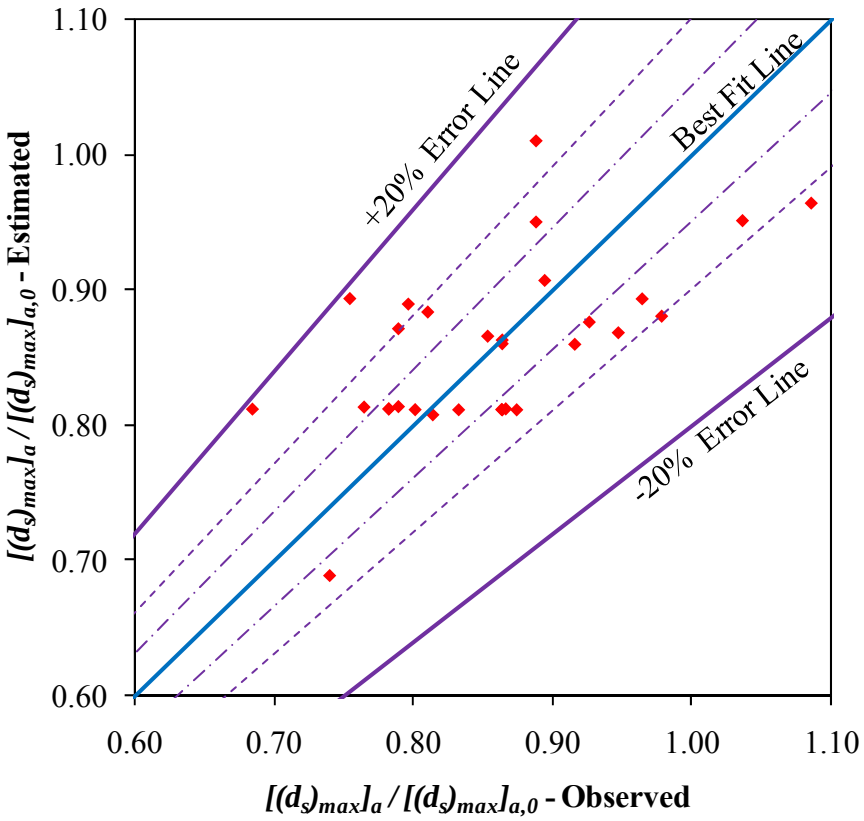


Figure 6.19 Accuracy of Equation 6.16 for $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ at point L_0 of the abutment

6.3 EMPIRICAL EQUATION FOR DIMENSIONLESS SCOUR BORDER PARAMETERS

From Equations 3.5 and 3.6 the following relations can be written.

$$\frac{SB_{pi}}{SB_{pi,0}} = Z_1\left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_x}{L_a}\right)^{Z_5}\left(\frac{\lambda_p}{D}\right)^{Z_6} \tag{6.17}$$

and;

$$\frac{SB_{ai}}{SB_{ai,0}} = K_1\left(\frac{L_a}{D}\right)^{K_2}\left(\frac{\lambda_x}{D}\right)^{K_3}\left(\frac{\lambda_y}{B_a}\right)^{K_4}\left(\frac{\lambda_x}{L_a}\right)^{K_5}\left(\frac{\lambda_p}{D}\right)^{K_6} \tag{6.18}$$

Where Z_1, Z_2, … Z_6 and K_1, K_2, … K_6 are unknown coefficients to be found from multiple regression analysis to be applied to the above given relations.

All data of one pier experiments which are 132 experiments were used to develop a mathematical model. For this aim all the parameters related to the positions of the piers and dimensions of them and abutments in dimensionless forms were considered as independent variables L_a/D, λ_x/D, λ_y/B_a, λ_x/L_a. And dimensionless scour border parameters $SB_{pl}/SB_{pl,0}$, $SB_{pf}/SB_{pf,0}$, $SB_{pr}/SB_{pr,0}$, $SB_{pb}/SB_{pb,0}$ for points L, R, F and B of the pier and $SB_{aw}/SB_{aw,0}$, $SB_{af}/SB_{af,0}$, $SB_{ar}/SB_{ar,0}$ for the points around the abutment were considered as dependent variables. After defining the minimum, maximum and mean values of the dependent variables presented in Table 6.16, with these variables statistical investigations were initiated. Box plots of all the dependent parameters were shown in Figure 6.20. As an example Figure 6.21 shows scattering all the dependent parameters as a function of the independent parameters for point L of the pier.

Table 6.16 Minimum, maximum and mean values of dependent variables for scour border case

	$SB_{aw}/SB_{aw,0}$	$SB_{af}/SB_{af,0}$	$SB_{ar}/SB_{ar,0}$	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$
Minimum	0.61	0.59	0.38	0.43	0.85	0.96	0.65
Maximum	1.42	1.48	1.90	3.48	8.40	2.00	3.53
Mean	1.04	1.03	1.02	1.16	1.46	1.27	1.56

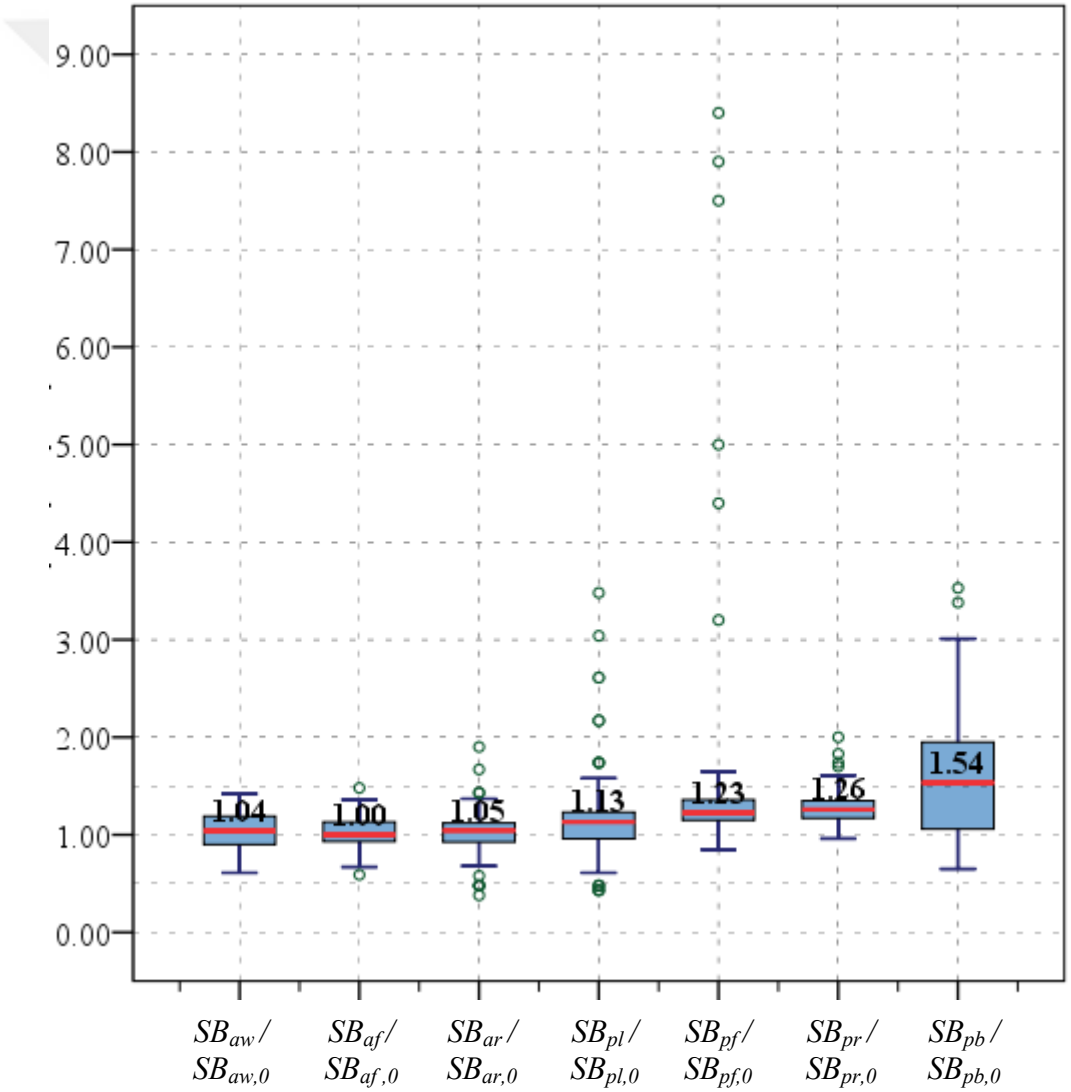


Figure 6.20 Box plots of dependent variables for scour borders for one pier case

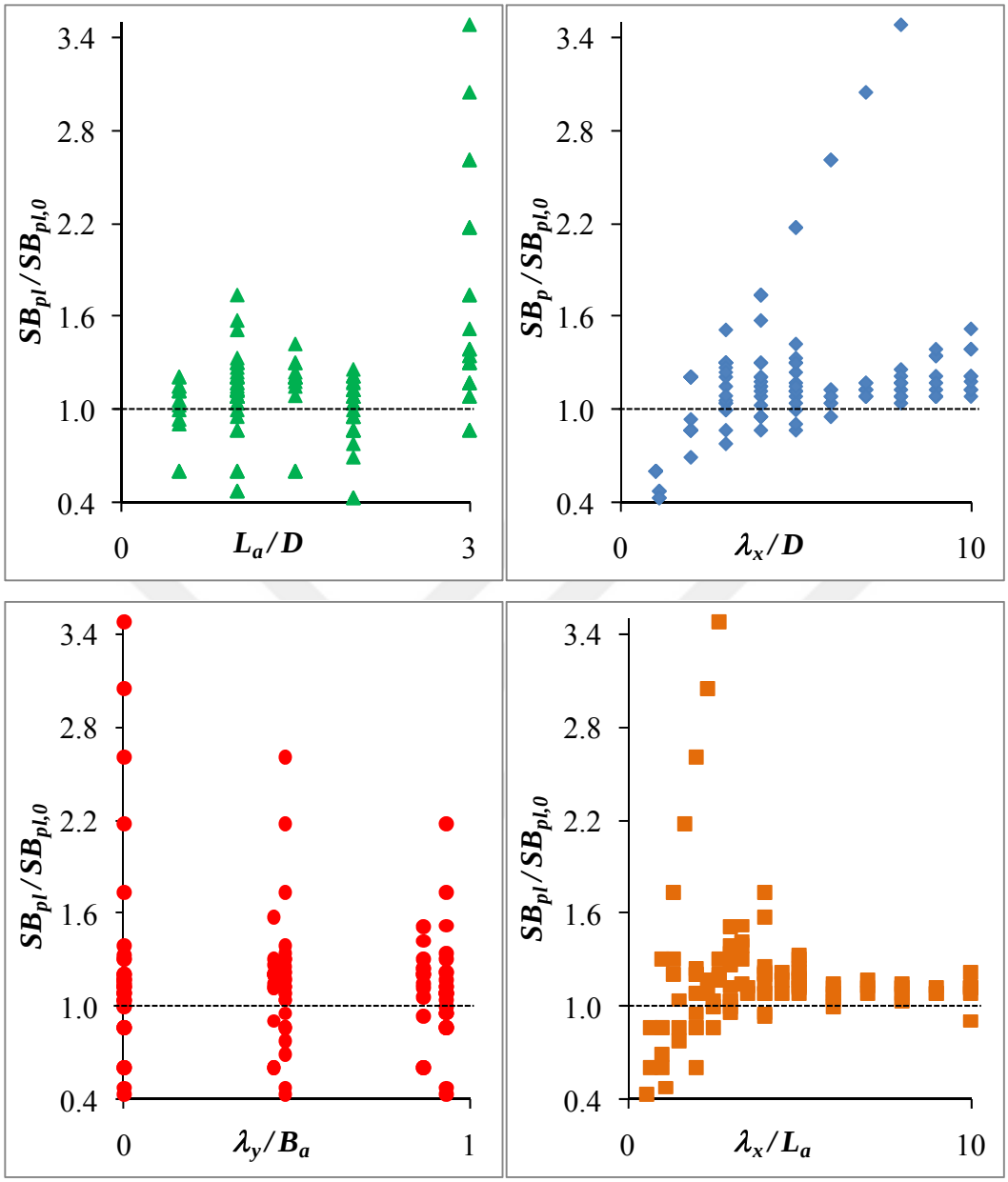


Figure 6.21 Scatter plot of independent variables versus dependent variable $SB_{pl}/SB_{pl,0}$ for point L of the pier

As the same procedure was applied as done before, general linear modeling analysis outputs and outliers were obtained and tabulated in Appendix B. The

proposed equations and models defined by statistical analysis are presented as follows. In each case better equation alternatives were selected and listed in Table 6.17 with statistical characteristics. The accuracy figures and equations were given afterwards.

Table 6.17 Proposed equation characteristics for one pier scour border

Dependent variable	Proposed equation	R^2	RMSE	SSE	# of data out of 132 falling out of the error band of ±20% (outliers in analysis)
$SB_{pl} / SB_{pl,0}$	6.19	0.588	0.230	6.889	34 (E84, E83)
$SB_{pf} / SB_{pf,0}$	6.20	0.756	0.241	7.474	21 (E68, E69, E74)
$SB_{pr} / SB_{pr,0}$	6.21	0.325	0.118	1.825	8 (E67, E68)
$SB_{pb} / SB_{pb,0}$	6.22	0.764	0.254	8.420	32 (E67, E72)
$SB_{aw} / SB_{aw,0}$	6.23	0.402	0.151	3.003	21
$SB_{af} / SB_{af,0}$	6.24	0.108	0.146	2.774	24 (E105)
$SB_{ar} / SB_{ar,0}$	6.25	0.458	0.141	2.578	19 (E84, E107)

$$\frac{SB_{pl}}{SB_{pl,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[-0.003\left(\frac{\lambda_x}{L_a}\right)^3 + 1.03\right] + 1.1 \qquad (6.19)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[2\left(\frac{L_a}{D}\right)^3 - 7.08\left(\frac{L_a}{D}\right)^2 + 7.61\left(\frac{L_a}{D}\right) - 1.54\right]$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4} = \left[-1.48\left(\frac{\lambda_x}{D}\right)^{-3.3} + 0.1\right]\left[-0.17\left(\frac{\lambda_y}{B_a}\right) + 0.53\right]$$

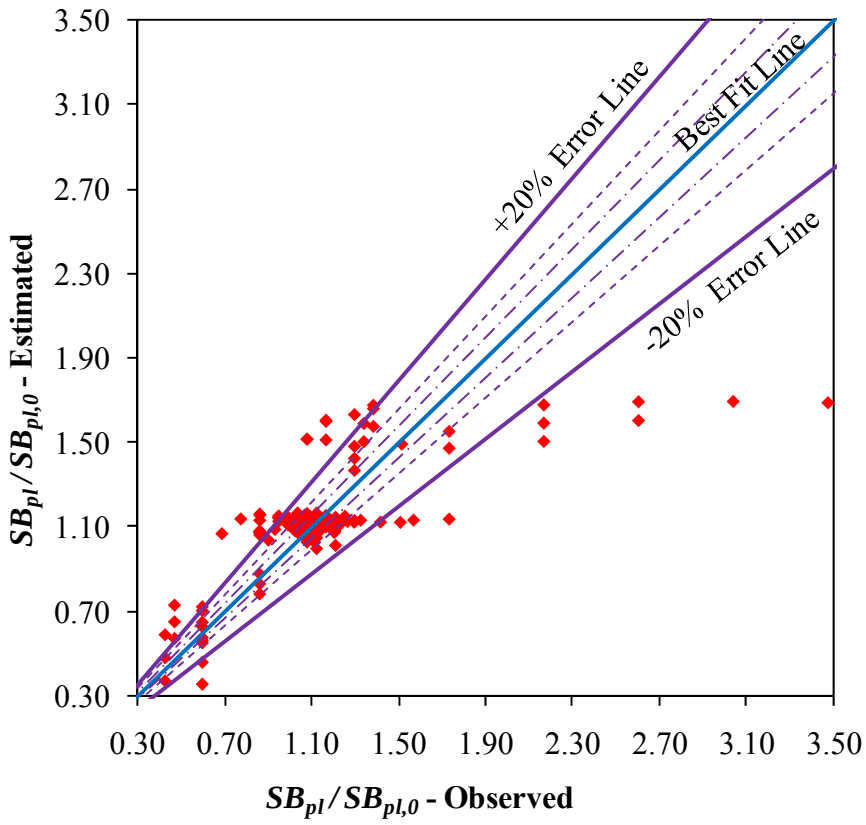


Figure 6.22 Accuracy of Equation 6.19 for $SB_{pl}/SB_{pl,0}$ at the pier for one pier case

$$\frac{SB_{pf}}{SB_{pf,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{-1.65}\left[0.001\left(\frac{\lambda_y}{B_a}\right)^{0.35}\right]\left[-0.2\left(\frac{\lambda_x}{L_a}\right)^3 + 8.3\right] + 1.25 \qquad (6.20)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[0.41\left(\frac{L_a}{D}\right)^3 - 1.48\left(\frac{L_a}{D}\right)^2 + 1.52\left(\frac{L_a}{D}\right) - 0.45\right]$$

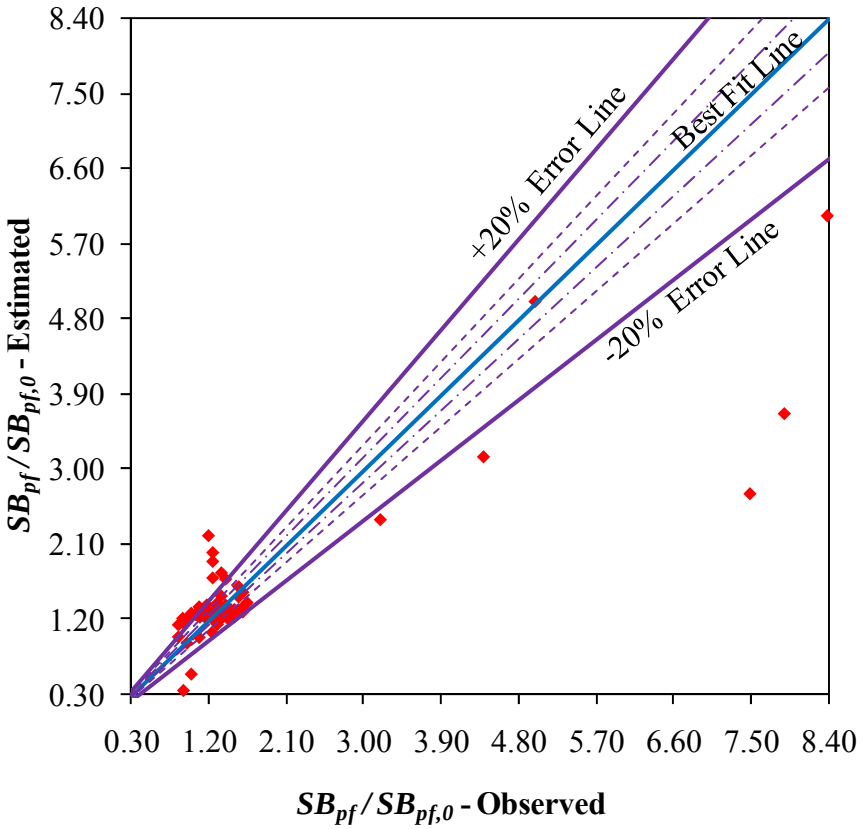


Figure 6.23 Accuracy of Equation 6.20 for $SB_{pf}/SB_{pf,0}$ at the pier for one pier case

$$\frac{SB_{pr}}{SB_{pr,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_x}{L_a}\right)^{Z_5} + 1.05 \qquad (6.21)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[0.9\left(\frac{L_a}{D}\right)^3 - 4.75\left(\frac{L_a}{D}\right)^2 + 8.5\left(\frac{L_a}{D}\right) - 2.6\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{Z_5} = \left[0.008\left(\frac{\lambda_x}{L_a}\right)^3 - 0.13\left(\frac{\lambda_x}{L_a}\right)^2 + 0.625\left(\frac{\lambda_x}{L_a}\right) - 0.14\right]$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4} = \left[11.32\left(\frac{\lambda_x}{D}\right)^{-1..25} + 6.4\right]\left[0.19\left(0.001 + \frac{\lambda_y}{B_a}\right)^{0.001} - 0.174\right]$$

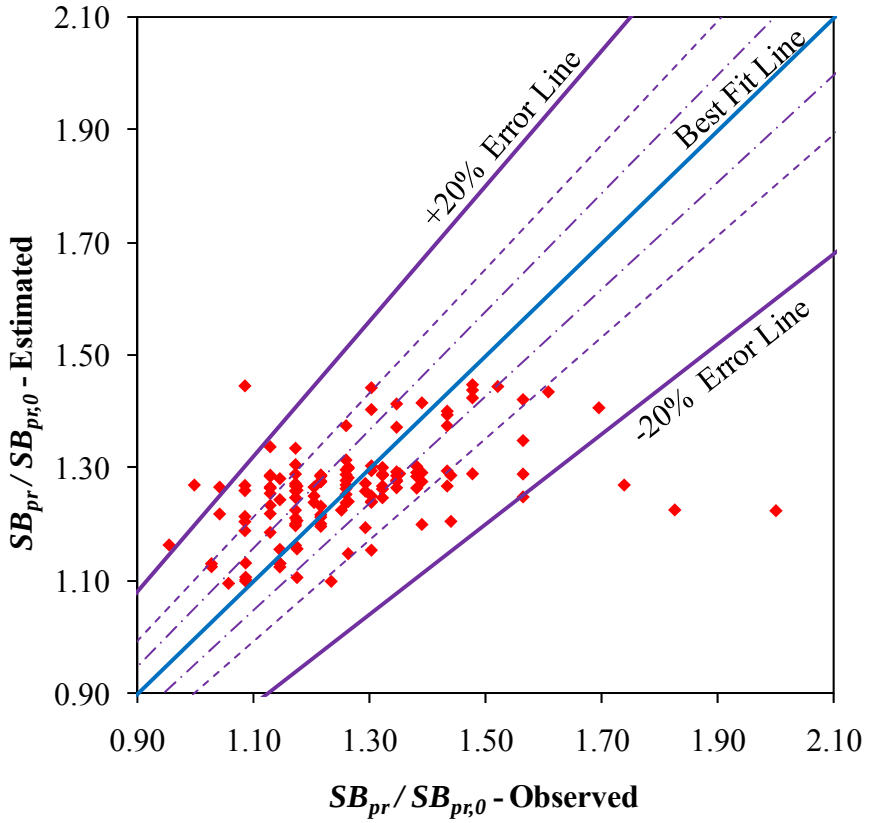


Figure 6.24 Accuracy of Equation 6.21 for $SB_{pr}/SB_{pr,0}$ at the pier for one pier case

$$\frac{SB_{pb}}{SB_{pb,0}} = \left[1.08\left(\frac{L_a}{D}\right)^{0.68} - 0.415\right]\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[\left(\frac{\lambda_x}{D}\right)^{-0.97}\left(\frac{\lambda_x}{L_a}\right)^{1.31} + 1.36\right] \tag{6.22}$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4} = \left[2.105\left(\frac{\lambda_y}{B_a}\right)^{3} - 2.87\left(\frac{\lambda_y}{B_a}\right)^{2} + 0.69\left(\frac{\lambda_y}{B_a}\right) + 0.73\right]$$

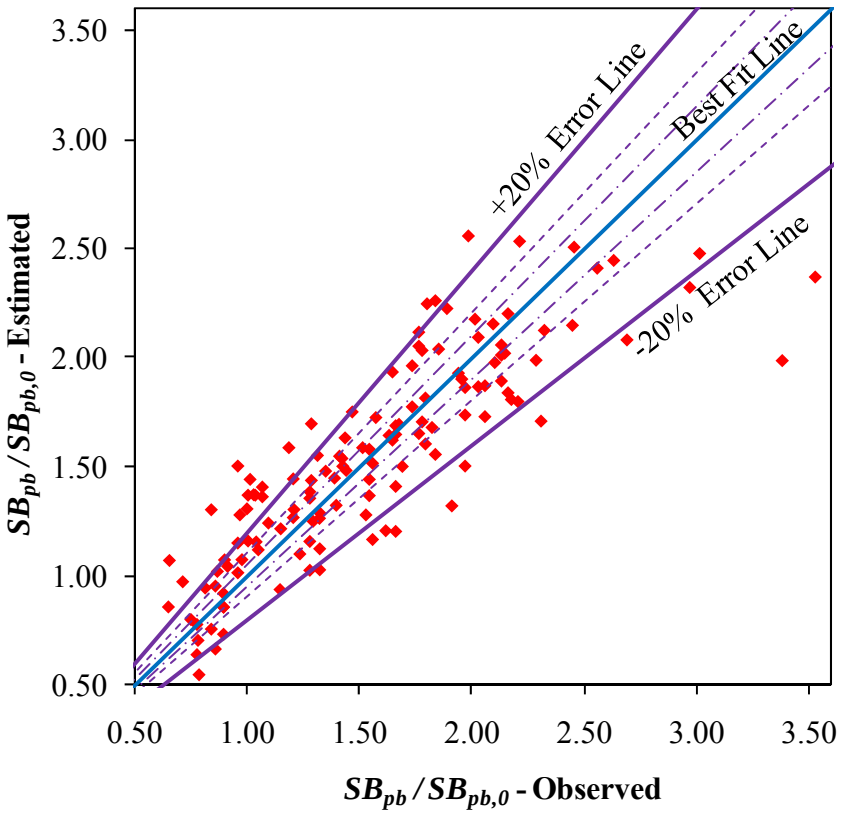


Figure 6.25 Accuracy of Equation 6.22 for $SB_{pb}/SB_{pb,0}$ at the pier for one pier case

$$\frac{SB_{aw}}{SB_{aw,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[\left(\frac{\lambda_x}{L_a}\right)^{-2.04} - 0.004\right] + 0.77 \qquad (6.23)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[7.322\left(\frac{L_a}{D}\right)^3 - 44.682\left(\frac{L_a}{D}\right)^2 + 85.88\left(\frac{L_a}{D}\right) - 53.567\right]$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4} = \left[0.145\left(\frac{\lambda_x}{D}\right)^2 - 0.186\left(\frac{\lambda_x}{D}\right) + 0.114\right]\left[\left(0.001 + \frac{\lambda_y}{B_a}\right)^{-0.003} - 1.6\right]$$

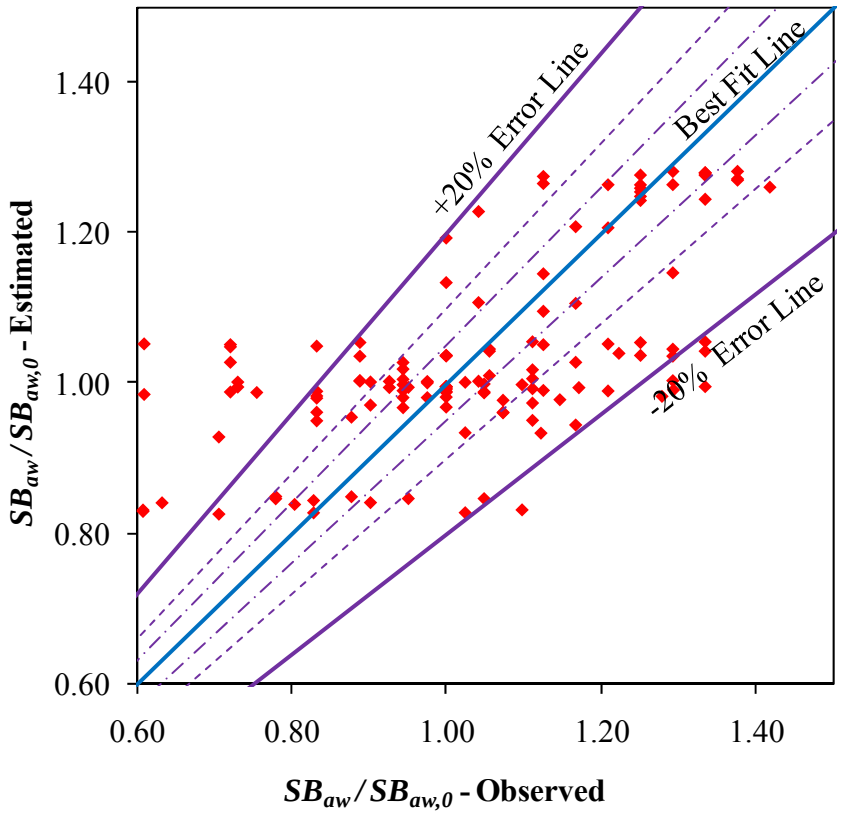


Figure 6.26 Accuracy of Equation 6.23 for $SB_{aw} / SB_{aw,0}$ at the abutment for one pier case

$$\frac{SB_{af}}{SB_{af,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left[\left(\frac{\lambda_x}{D}\right)^{-16}\left(0{,}001+\frac{\lambda_y}{B_a}\right)^{54}\left(\frac{\lambda_x}{L_a}\right)^{-0.78}+3.75\right] \qquad (6.24)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[-0.026\left(\frac{L_a}{D}\right)^{3}+0.123\left(\frac{L_a}{D}\right)^{2}-0.158\left(\frac{L_a}{D}\right)+0.326\right]$$

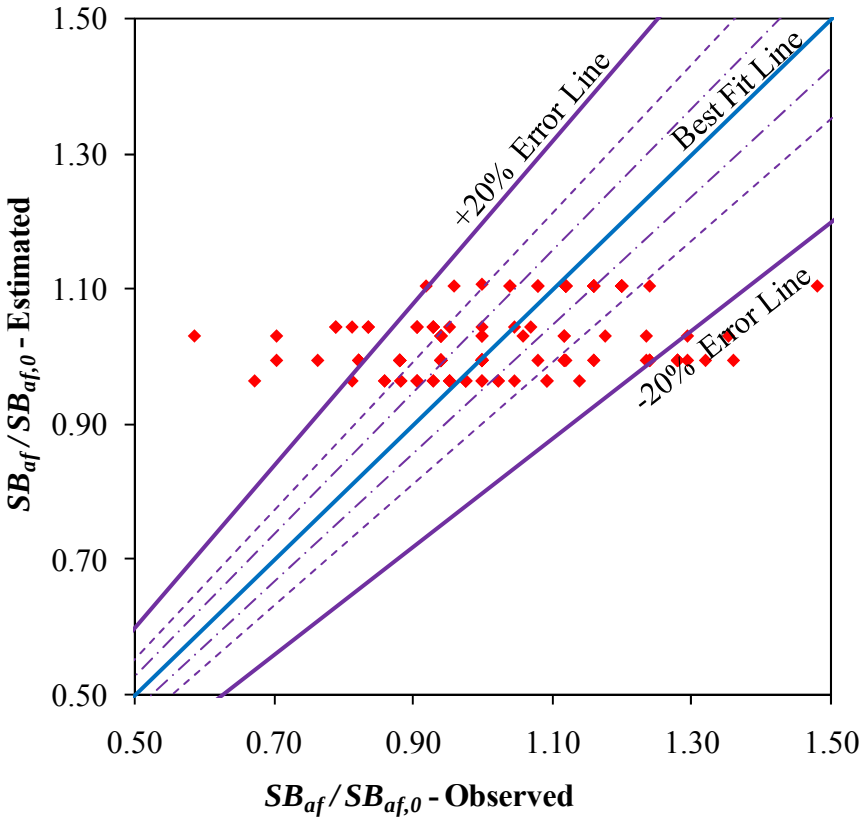


Figure 6.27 Accuracy of Equation 6.24 for $SB_{af}/SB_{af,0}$ at the abutment for one pier case

$$\frac{SB_{ar}}{SB_{ar,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_x}{L_a}\right)^{Z_5} + 1 \qquad (6.25)$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[-0.065\left(\frac{\lambda_x}{D}\right)^3 + 1.07\left(\frac{\lambda_x}{D}\right)^2 - 5.4\left(\frac{\lambda_x}{D}\right) + 10.68\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{Z_5} = \left[0.21\left(\frac{\lambda_x}{L_a}\right)^3 - 3.3\left(\frac{\lambda_x}{L_a}\right)^2 + 14.7\left(\frac{\lambda_x}{L_a}\right) - 15\right]$$

$$\left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_y}{B_a}\right)^{Z_4} = \left[0.014\left(\frac{L_a}{D}\right)^{6.3} + 4.6\right]\left[-0.003\left(0.001 + \frac{\lambda_y}{B_a}\right)^{0.06} + 0.004\right]$$

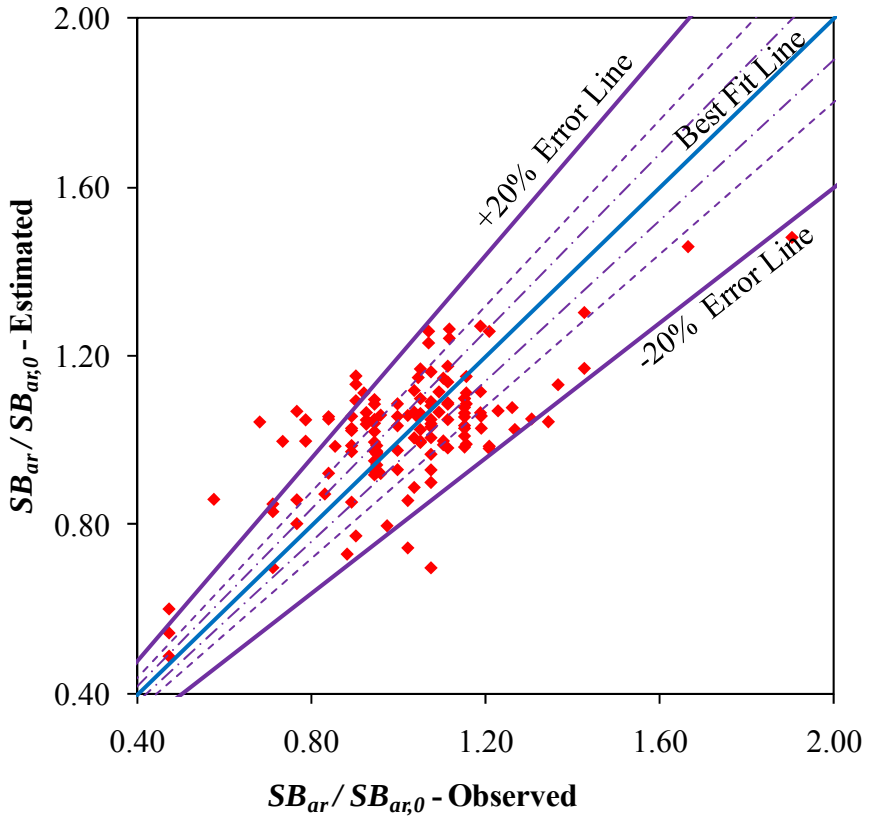


Figure 6.28 Accuracy of Equation 6.25 for $SB_{ar} / SB_{ar,0}$ at the abutment for one pier case

For two piers case the same statistical procedure was applied and minimum, maximum and mean values were investigated and tabulated in Table 6.18 and box plots were presented in Figure 6.29. General linear modeling analysis outputs and outliers were tabulated in Appendix B. The proposed equations and models defined by statistical analysis were presented as follows. In each case better equation alternatives were selected and listed in Table 6.19 with statistical characteristics. The accuracy figures and equations were given afterwards.

Table 6.18 Minimum, maximum and mean values of dependent variables for two piers scour border case

	Pier$_1$				Pier$_2$			
	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$	$SB_{pl}/SB_{pl,0}$	$SB_{pf}/SB_{pf,0}$	$SB_{pr}/SB_{pr,0}$	$SB_{pb}/SB_{pb,0}$
Minimum	0.71	0.67	1.05	0.93	0.55	0.62	0.75	0.93
Maximum	1.57	1.43	1.69	1.23	1.00	1.16	1.71	4.50
Mean	1.17	1.17	1.36	1.05	0.77	0.90	1.08	2.28
	Abutment							
	$SB_{aw}/SB_{aw,0}$	$SB_{af}/SB_{af,0}$	$SB_{ar}/SB_{ar,0}$					
Minimum	0.61	0.71	0.48					
Maximum	1.29	1.32	1.23					
Mean	0.87	0.96	0.96					

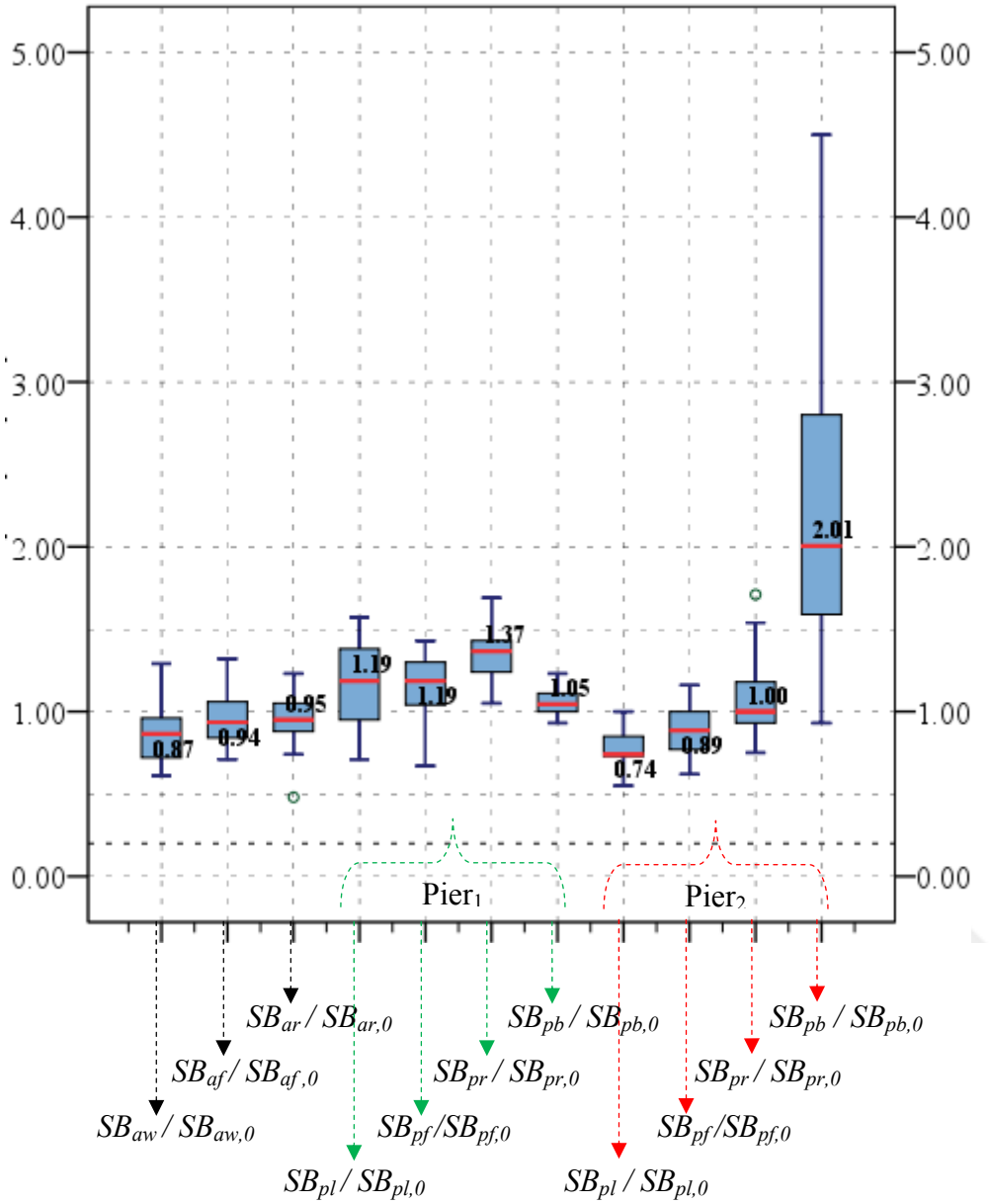


Figure 6.29 Box plots of the dependent variables for scour borders for two piers case

Table 6.19 Proposed equation characteristics for one pier scour border

	Dependent variable	Proposed equation	R^2	RMSE	SSE	# of data out of 30 falling out of the error band of ±20%
$Pier_1$	$SB_{pl}/SB_{pl,0}$	6.26	0.754	0.121	0.434	0
	$SB_{pf}/SB_{pf,0}$	6.27	0.851	0.070	0.148	0
	$SB_{pr}/SB_{pr,0}$	6.28	0.545	0.102	0.314	0
	$SB_{pb}/SB_{pb,0}$	6.29	0.764	0.034	0.034	0
$Pier_2$	$SB_{pl}/SB_{pl,0}$	6.30	0.614	0.076	0.172	1
	$SB_{pf}/SB_{pf,0}$	6.31	0.828	0.066	0.129	0
	$SB_{pr}/SB_{pr,0}$	6.32	0.666	0.133	0.535	2
	$SB_{pb}/SB_{pb,0}$	6.33	0.920	0.273	2.230	2
Abutment	$SB_{aw}/SB_{aw,0}$	6.34	0.326	0.146	0.637	7
	$SB_{af}/SB_{af,0}$	6.35	0.253	0.121	0.439	4
	$SB_{ar}/SB_{ar,0}$	6.36	0.402	0.123	0.455	4

$$\frac{SB_{pl}}{SB_{pl,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[\left(\frac{\lambda_x}{L_a}\right)^{-0.44} - 0.025\right]\left(\frac{\lambda_p}{D}\right)^{Z_6} \tag{6.26}$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[-0.075\ln\left(\frac{L_a}{D}\right) + 0.36\right]$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[-0.06\left(\frac{\lambda_x}{D}\right)^3 + 1.1\left(\frac{\lambda_x}{D}\right)^2 - 7.76\left(\frac{\lambda_x}{D}\right) + 2.4\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{0.653} - 0.4\right]\left[\left(\frac{\lambda_p}{D}\right)^{1.03} + 0.05\right]$$

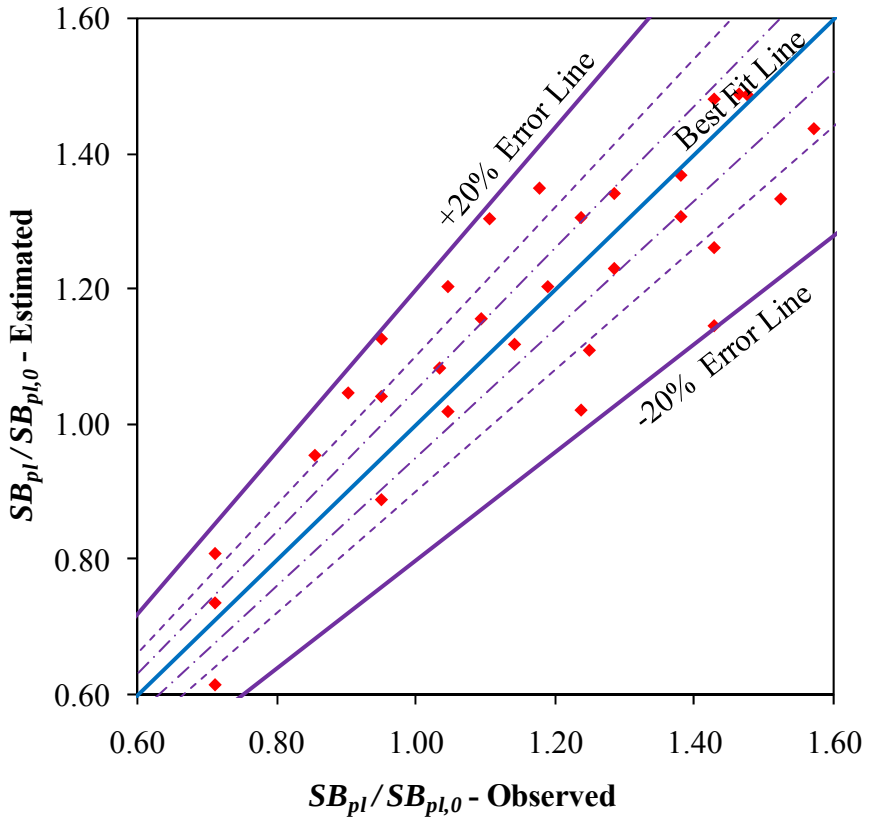


Figure 6.30 Accuracy of Equation 6.26 for $SB_{pl}/SB_{pl,0}$ of Pier$_1$

$$\frac{SB_{pf}}{SB_{pf,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[\left(\frac{\lambda_x}{L_a}\right)^{-3.7}+3\right]\left(\frac{\lambda_p}{D}\right)^{Z_6}+1.343 \qquad (6.27)$$

$$\left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[\left(\frac{L_a}{D}\right)^{-11.5}+1.2\right]\left[\left(\frac{\lambda_x}{D}\right)^{-1.8}+0.5\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[0.488\left(\frac{\lambda_y}{B_a}\right)-0.064\right]\left[-0.832\left(\frac{\lambda_p}{D}\right)+2.89\right]$$

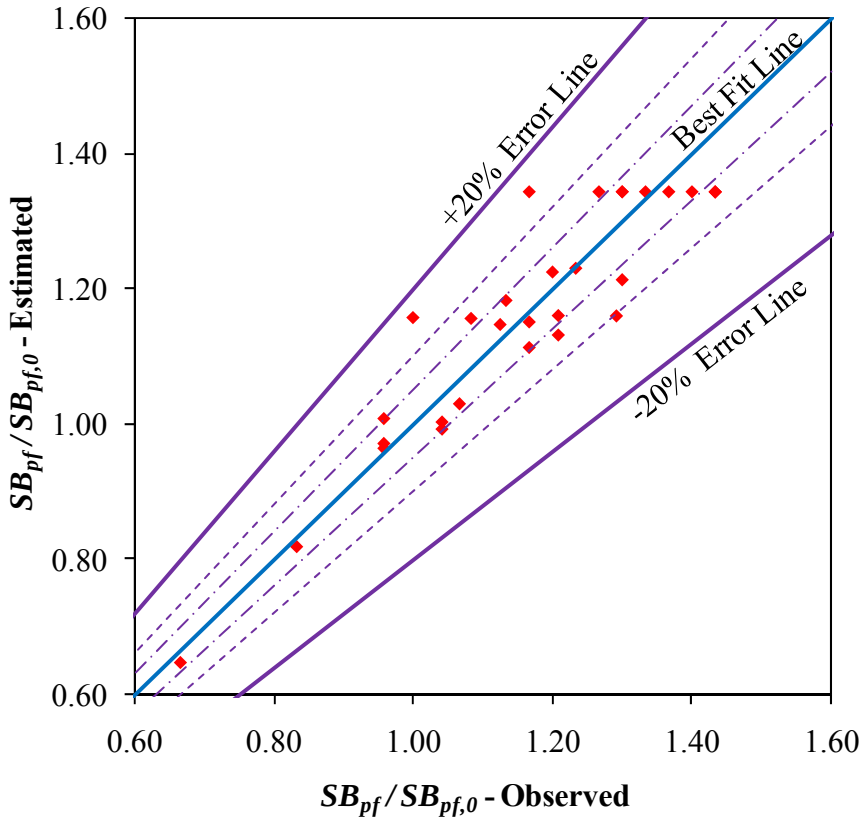


Figure 6.31 Accuracy of Equation 6.27 for $SB_{pf}/SB_{pf,0}$ of Pier$_1$

$$\frac{SB_{pr}}{SB_{pr,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left[-0.002e^{\left(\frac{\lambda_x}{L_a}\right)}+2.07\right]\left(\frac{\lambda_p}{D}\right)^{Z_6}+1.26 \qquad (6.28)$$

$$\left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[0.24\left(\frac{L_a}{D}\right)^{3}-0.04\right]\left[\left(\frac{\lambda_x}{D}\right)^{-0.001}-0.48\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{6.78}+1.59\right]\left[\left(\frac{\lambda_p}{D}\right)^{-0.44}-0.4\right]$$

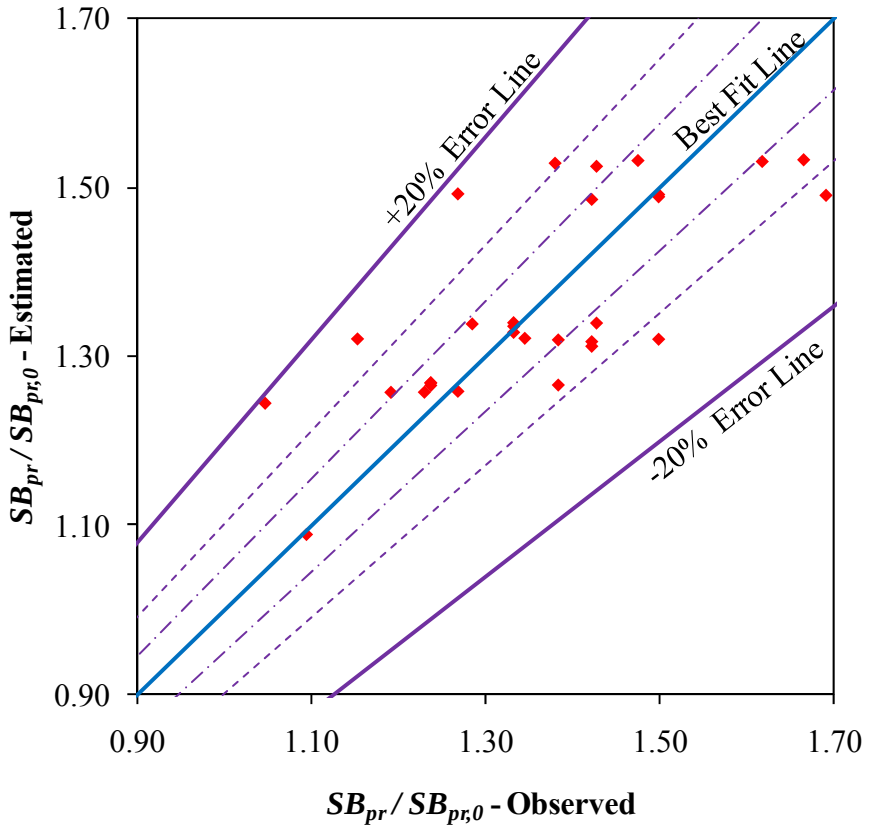


Figure 6.32 Accuracy of Equation 6.28 for $SB_{pr}/SB_{pr,0}$ of Pier$_1$

$$\frac{SB_{pb}}{SB_{pb,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{0.64}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_x}{L_a}\right)^{-2.5}\left(\frac{\lambda_p}{D}\right)^{Z_6} + 32.2 \qquad (6.29)$$

$$\left(\frac{L_a}{D}\right)^{Z_2} = \left[0.002\left(\frac{L_a}{D}\right)^{3} - 2.87\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[8.14\left(\frac{\lambda_y}{B_a}\right)^{3.485} - 0.061\right]\left[-7\left(\frac{\lambda_p}{D}\right)^{-2.78} + 0.413\right]$$

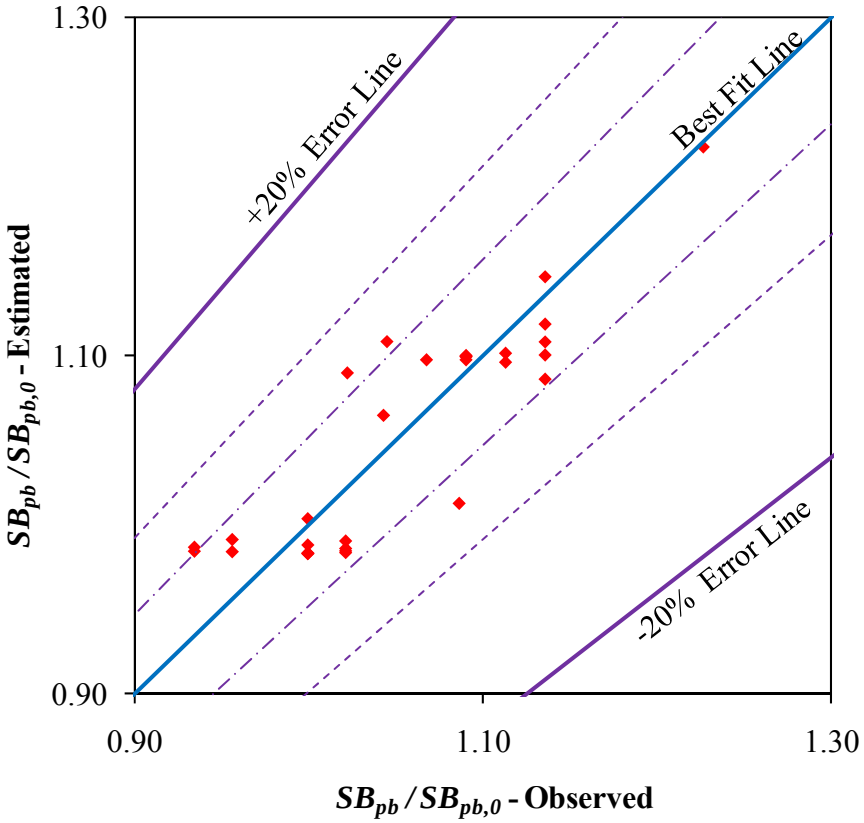


Figure 6.33 Accuracy of Equation 6.29 for $SB_{pb}/SB_{pb,0}$ of Pier$_1$

$$\frac{SB_{pl}}{SB_{pl,0}} = \left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_x}{L_a}\right)^{Z_5}\left[\left(\frac{L_a}{D}\right)^{-0.28}\left(\frac{\lambda_y}{B_a}\right)^{5.54}\left(\frac{\lambda_p}{D}\right)^{3.01} - 0.032\right] + 0.75 \qquad (6.30)$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[0.42\left(\frac{\lambda_x}{D}\right)^3 - 3.82\left(\frac{\lambda_x}{D}\right)^2 + 8.66\left(\frac{\lambda_x}{D}\right) - 3.9\right]$$

$$\left(\frac{\lambda_x}{L_a}\right)^{Z_5} = \left[-0.013\left(\frac{\lambda_x}{L_a}\right)^3 + 0.291\left(\frac{\lambda_x}{L_a}\right)^2 - 2.13\left(\frac{\lambda_x}{L_a}\right) + 5.27\right]$$

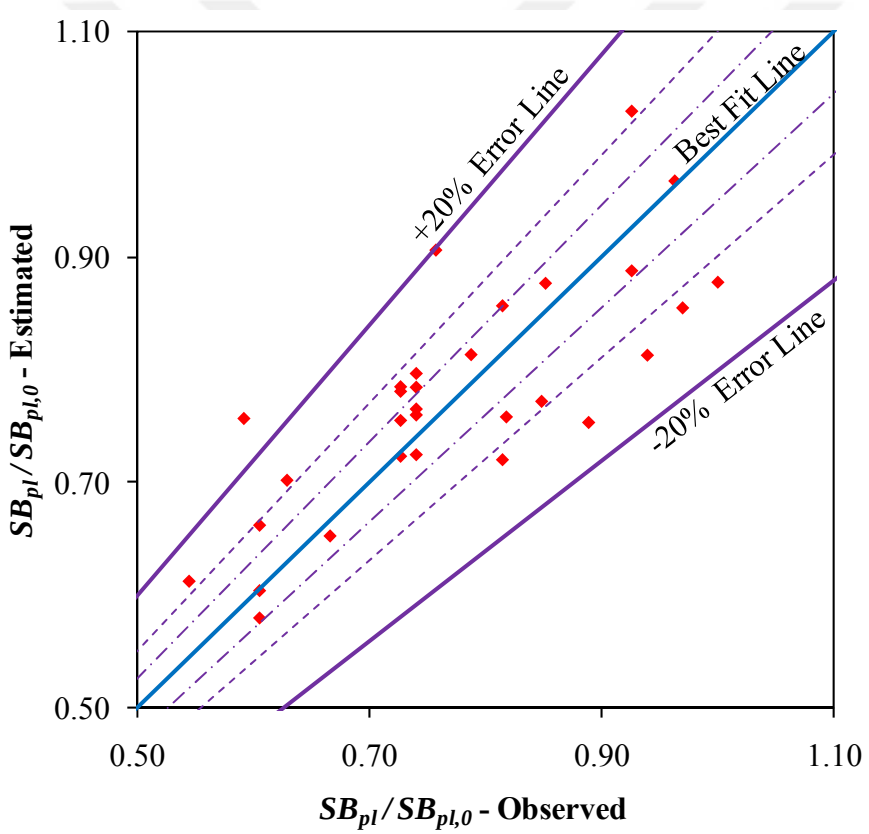


Figure 6.34 Accuracy of Equation 6.30 for $SB_{pl}/SB_{pl,0}$ of Pier$_2$

$$\frac{SB_{pf}}{SB_{pf,0}} = \left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6}\left[-0.007e^{\left(\frac{L_a}{D}\right)}+0.61\right]\left[\left(\frac{\lambda_x}{D}\right)^{0.28}\left(\frac{\lambda_x}{L_a}\right)^{-0.08}+2.75\right] \quad (6.31)$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[0.5\left(\frac{\lambda_y}{B_a}\right)+0.23\right]\left[-0.13\left(\frac{\lambda_p}{D}\right)+1.93\right]$$

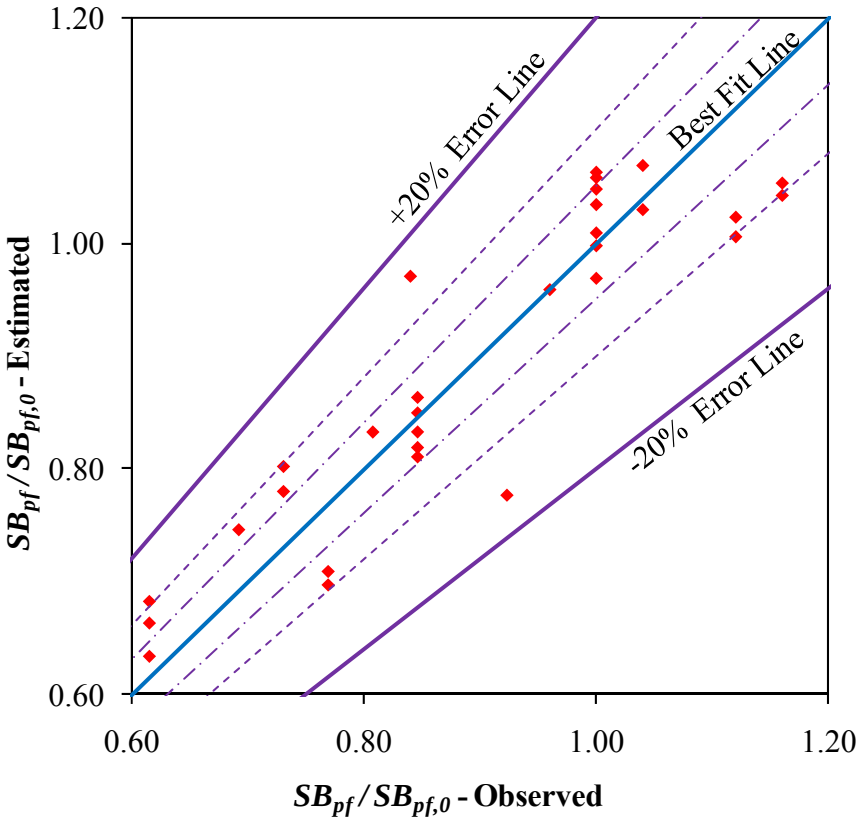


Figure 6.35 Accuracy of Equation 6.31 for $SB_{pf}/SB_{pf,0}$ of Pier$_2$

$$\frac{SB_{pr}}{SB_{pr,0}} = \left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_x}{L_a}\right)^{Z_5}\left(\frac{\lambda_p}{D}\right)^{Z_6} + 0.92 \tag{6.32}$$

$$\left(\frac{L_a}{D}\right)^{Z_2}\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_x}{L_a}\right)^{Z_5} = \left[1.95\left(\frac{L_a}{D}\right)^{0.6} + 45.85\left(\frac{\lambda_x}{D}\right)^{-0.024} - 13.75\left(\frac{\lambda_x}{L_a}\right)^{-0.083} - 34.04\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{Z_4}\left(\frac{\lambda_p}{D}\right)^{Z_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{2} - 9\right]\left[-5.72\left(\frac{\lambda_p}{D}\right)^{-1.72} + 0.19\right]$$

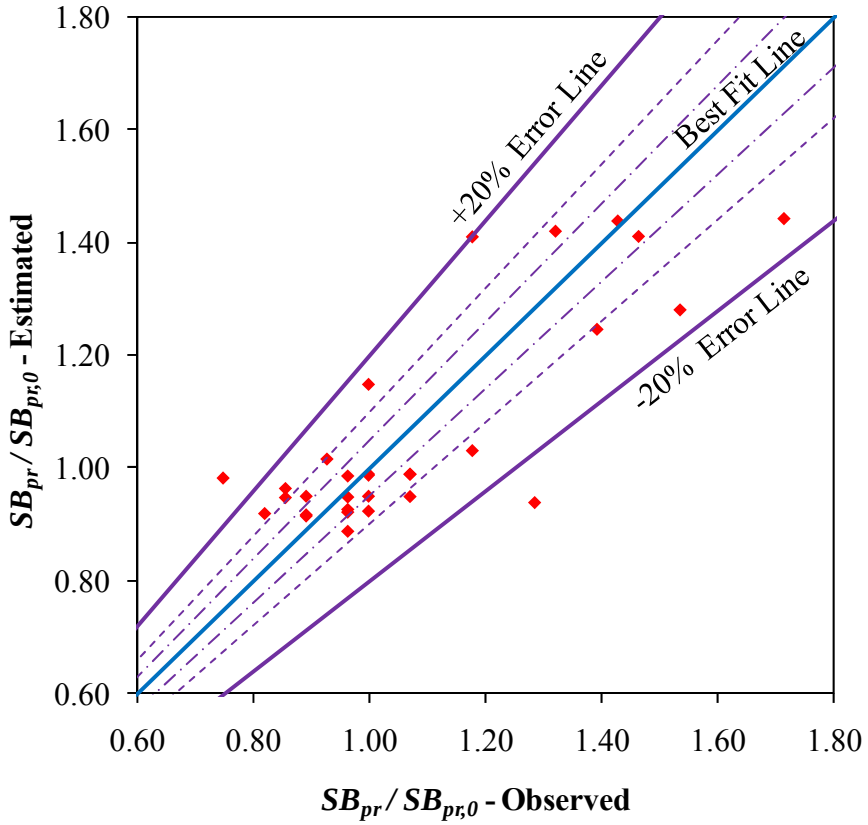


Figure 6.36 Accuracy of Equation 6.32 for $SB_{pr}/SB_{pr,0}$ of Pier$_2$

$$\frac{SB_{pb}}{SB_{pb,0}} = \left[-0.2\left(\frac{L_a}{D}\right)+1.66\right]\left(\frac{\lambda_x}{D}\right)^{Z_3}\left(\frac{\lambda_y}{B_a}\right)^{1.3}\left(\frac{\lambda_x}{L_a}\right)^{-1.23}\left(\frac{\lambda_p}{D}\right)^{-0.32} + 0.95 \qquad (6.33)$$

$$\left(\frac{\lambda_x}{D}\right)^{Z_3} = \left[-0.27\left(\frac{\lambda_x}{D}\right)^{3} + 4.6\left(\frac{\lambda_x}{D}\right)^{2} + 2.27\right]$$

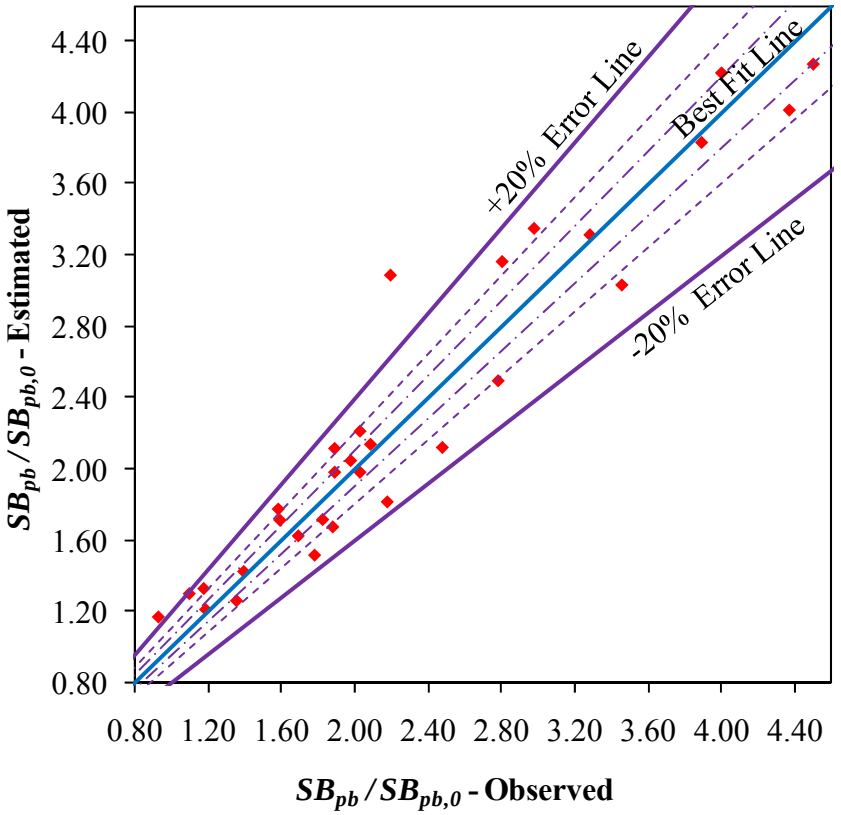


Figure 6.37 Accuracy of Equation 6.33 for $SB_{pb}/SB_{pb,0}$ of Pier$_2$

After statistical analysis despite most of the parameters seemed insignificant simple forms of parameters were involved following equations. Hence scour border at wall side of abutment was geometrically far away from pier location, all the parameters were found statistically insignificant by statistical analysis.

$$\frac{SB_{aw}}{SB_{aw,0}} = \left(\frac{L_a}{D}\right)^{K_2}\left(\frac{\lambda_x}{D}\right)^{K_3}\left(\frac{\lambda_y}{B_a}\right)^{K_4}\left[28\left(\frac{\lambda_x}{L_a}\right)^{-1.855} - 0.57\right]\left(\frac{\lambda_p}{D}\right)^{K_6} + 0.85 \qquad (6.34)$$

$$\left(\frac{L_a}{D}\right)^{K_2}\left(\frac{\lambda_x}{D}\right)^{K_3} = \left[-0.105\left(\frac{L_a}{D}\right)^{3} + 2.9\right]\left[0.001\left(\frac{\lambda_x}{D}\right)^{3} - 0.001\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{K_4}\left(\frac{\lambda_p}{D}\right)^{K_6} = \left[4.06\left(\frac{\lambda_y}{B_a}\right)^{0.37} - 2.03\right]\left[0.21\left(\frac{\lambda_p}{D}\right)^{-0.03} + 0.63\right]$$

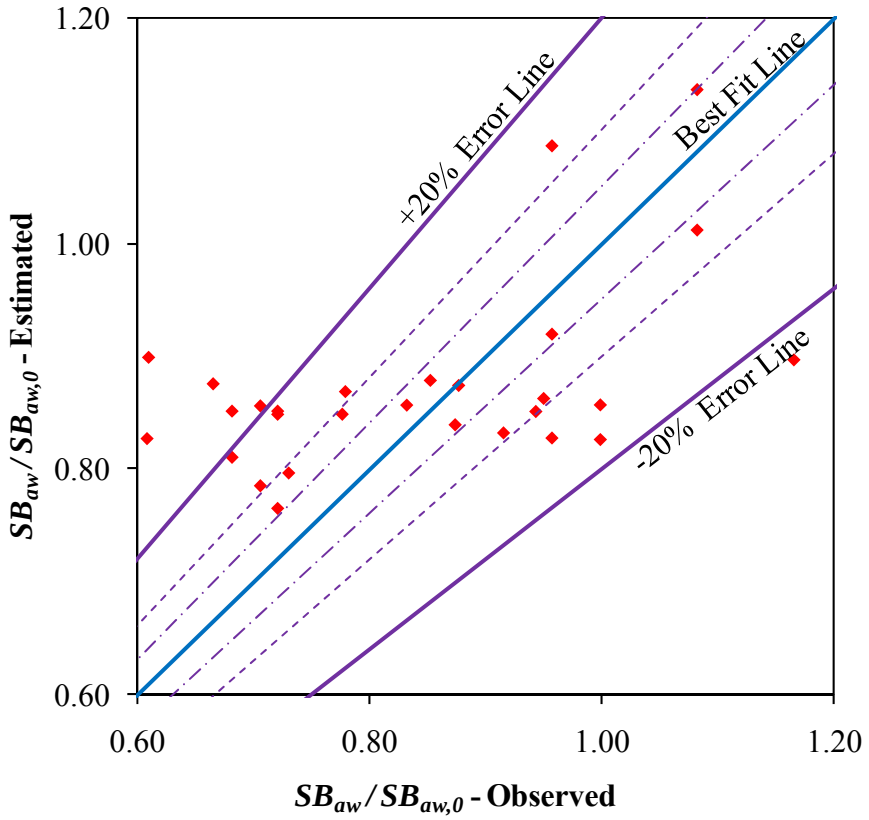


Figure 6.38 Accuracy of Equation 6.34 for $SB_{aw}/SB_{aw,0}$ of the abutment

$$\frac{SB_{af}}{SB_{af,0}} = \left(\frac{L_a}{D}\right)^{K_2}\left(\frac{\lambda_x}{D}\right)^{K_3}\left(\frac{\lambda_y}{B_a}\right)^{K_4}\left[\left(\frac{\lambda_x}{L_a}\right)^{-1.48} - 0.036\right]\left(\frac{\lambda_p}{D}\right)^{K_6} + 1.03 \qquad (6.35)$$

$$\left(\frac{L_a}{D}\right)^{K_2}\left(\frac{\lambda_x}{D}\right)^{K_3} = \left[\left(\frac{L_a}{D}\right)^{-7.6} + 23\right]\left[-1.7\left(\frac{\lambda_x}{D}\right)^{-0.054} + 1.73\right]$$

$$\left(\frac{\lambda_y}{B_a}\right)^{K_4}\left(\frac{\lambda_p}{D}\right)^{K_6} = \left[\left(\frac{\lambda_y}{B_a}\right)^{1.23} - 0.165\right]\left[\left(\frac{\lambda_p}{D}\right)^{-4.1} + 1.6\right]$$

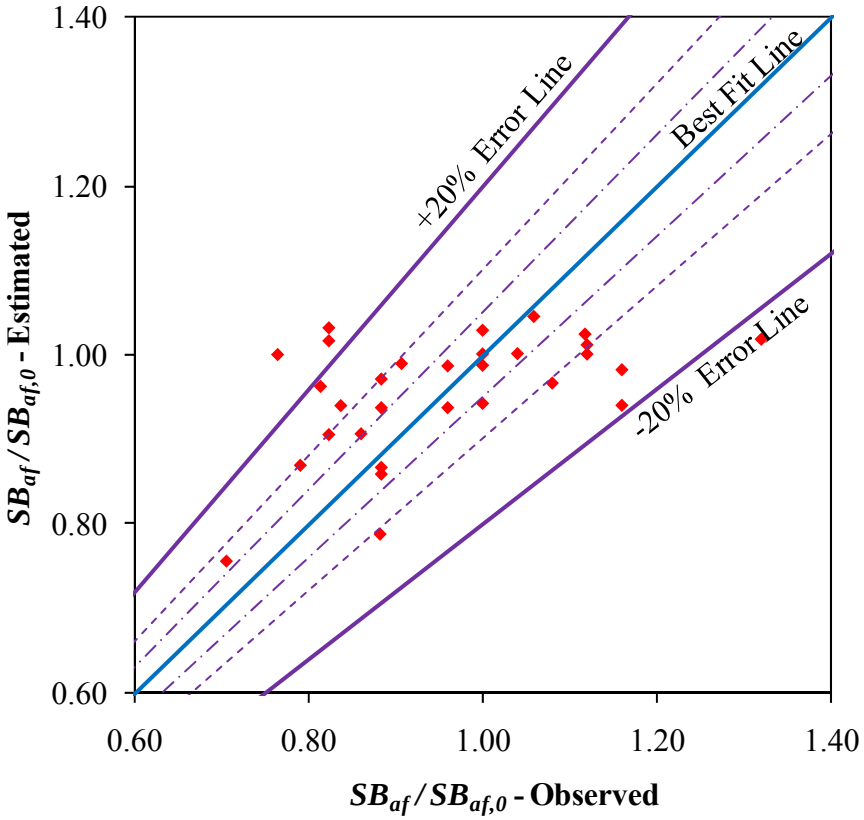


Figure 6.39 Accuracy of Equation 6.35 for $SB_{af}/SB_{af,0}$ of the abutment

$$\frac{SB_{ar}}{SB_{ar,0}} = \left(\frac{\lambda_x}{D}\right)^{K_3}\left(\frac{\lambda_x}{L_a}\right)^{K_5}\left[\left(\frac{L_a}{D}\right)^{0.2}\left(\frac{\lambda_y}{B_a}\right)^{4}\left(\frac{\lambda_p}{D}\right)^{-1.85} + 1.32\right] + 0.96 \qquad (6.36)$$

$$\left(\frac{\lambda_x}{D}\right)^{K_3}\left(\frac{\lambda_x}{L_a}\right)^{K_5} = \left[0.4\left(\frac{\lambda_x}{D}\right)^{-18} + 0.06\right]\left[-1.02\left(\frac{\lambda_x}{L_a}\right)^{-0.94} + 0.7\right]$$

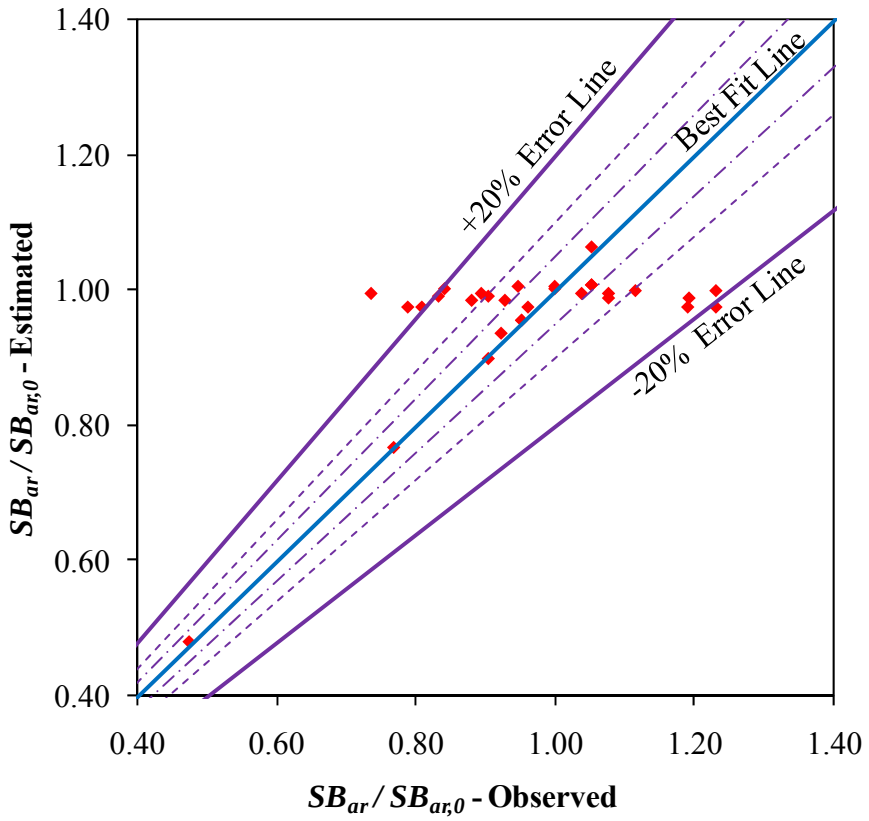


Figure 6.40 Accuracy of Equation 6.36 for $SB_{ar} / SB_{ar,0}$ of the abutment

CHAPTER 7

CONCLUSIONS AND FURTHER RECOMENDATIONS

7.1 CONCLUSIONS

From the analysis of the experimental results the following conclusions can be drawn;

One Pier and One Abutment Case for Scour Depths

- The dimensionless scour parameter $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ does not change significantly with λ_x / D for a given λ_y / B_a at scour depth measurement points of the pier L, R and F, and in general, has the values over unity at points L and R and less than unity at point F for L_a / D = 1.0, 1.5, 2.0 and 3.0.

- For L_a / D = 0.5, the dimensionless scour parameter at points L and R of the pier is almost less than unity for λ_x / D and λ_y / B_a values tested while is above unity at point F.

- The presence of the abutment and an increment on its length does not increase the scour depth at point F of the pier compared to that of single pier case while it increases the scour depths at points L and R at most up to the value of 45% for λ_y / B_a = 0.47 and L_a / D = 1.0, 2.0 and 3.0.

- The dimensionless scour parameter is larger than unity at all the points around the pier while its average value is around 1.10 at point L and the corresponding average values are about 1.2 at points R and F for λ_x / D and

λ_y / B_a values tested at L_a / D = 1.0 (D = 10 cm, L_a = 10 cm).

- The presence of the single pier in the flow medium does not increase the scour depth around the abutment front face corner with respect to the case of a single abutment; $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ is, in general, less than unity or around unity with small fluctuations for L_a / D = 0.5, 1.0, 1.5, 2.0 and 3.0.

- An increment at the abutment length while the pier diameter is kept constant (L_a / D = 2.0 and 3.0), results in the minimum dimensionless scour parameters around the pier for the small values of λ_x / D up to about 3 for the pier locations of λ_y / B_a = 0.47 and 0.93. At larger values of λ_x / D, the data of λ_y / B_a = 0.93 give the minimum dimensionless scour parameters less than unity among the other λ_y / B_a values tested.

- For a given D and λ_y / B_a, there is no regular trend between the values of the dimensionless scour parameter for point L of the pier and abutment length L_a. In most cases, the smallest pier diameter (D = 5 cm) gives minimum values for the dimensionless scour parameter.

- As the pier diameter increases for a given L_a and λ_y / B_a, the dimensionless scour parameter at point L of the pier decreases in most of the cases tested.

- The effect of abutment length L_a and pier diameter D on the values of dimensionless scour parameter at points R and F of the pier for a given λ_y / B_a is random.

- For a given L_a and λ_x / L_a, as the diameter of the pier increases, the dimensionless scour parameter at any measurement point along the upstream face of the abutment decreases at any value of λ_y / B_a tested.

Two Piers and One Abutment Case for Scour Depths

- For a given pier diameter (D = 5 cm) and λ_y (λ_y / D = 3.00), the

dimensionless scour border parameters for both of the piers have the values always larger than unity at measurement points of L, R and F, and the effect of abutment length (λ_y / L_a) on those values are random. However, the dimensionless scour parameter at point F of the downstream pier ($Pier_2$) has the minimum values just around unity compared to those of other measurement points. As the pier diameter is increased (D = 10 cm, λ_y / D = 1.00), the dimensionless scour parameter becomes much larger than unity at point F of $Pier_2$.

- The presence of two piers causes less scour depths along the upstream face of the abutment compared to the case of without piers regardless of the abutment length (λ_y / L_a) and λ_x / D.

One Pier and One Abutment Case for Scour Borders

- Dimensionless scour border parameters for L_a / D = 1.00 at each measurement point of the pier; L, R, F and B, are;
  - mostly larger than unity and randomly vary with λ_x / D and λ_y / B_a (for L_a / D = 1.00, 2.00)
  - much larger than unity and vary with λ_y / B_a significantly as a function of λ_x / D (for L_a / D = 3.00)
  - mostly larger than unity but less than unity at the back of the pier and do not vary much with λ_x / D and λ_y / B_a
  - in general larger than unity, except back of the pier where its value is just around unity (L_a / D = 1.00, D = 10 cm)
  - larger than unity (less than 1.50) and do not change much with λ_x / D and λ_y / B_a (L_a / D = 1.50).

- Dimensionless scour border parameters around the abutment are;
  - usually less than unity and do not change much with λ_x / D and λ_y / B_a (L_a / D = 1.00)
  - mostly larger than unity (for L_a / D = 1.00 and 2.00)

- around unity (for L_a / D = 0.50 and 3.00)
- less than unity and larger than 0.50 (for L_a / D = 1.50).

- For a given pier diameter D and pier location λ_y / B_a, the dimensionless scour border parameters measured;
  - around the pier are mostly larger than unity, and, in general, increase with increasing abutment length for any λ_x / D value tested.
  - around the abutment are mostly larger than unity and attain the maximum values for L_a / D = 2.00 while the abutment – pier arrangement of L_a / D = 0.50 and 1.50 mostly having the minimum values almost for any λ_x / D value tested.

Two Piers and One Abutment Case for Scour Borders

- In the case of two piers ($D_1 = D_2$ = 5 cm; 10 cm) and one abutment (L_a = 5 cm, 10 cm, 15 cm) the dimensionless scour border parameters;
  - at the left, right and front sides of $Pier_2$ are always less than unity (except the case of D = 10 cm; in this case the dimensionless scour border parameter at the right side of $Pier_2$ is mostly larger than unity) and those of $Pier_1$ of which values are mostly larger than unity. On the other hand, at the back of the piers the situation is different. The dimensionless scour border parameters of $Pier_2$ are much larger than unity (between about 2.00 and 4.00, and between about 1.00 and 2.00 for D = 10 cm) while the corresponding values for $Pier_1$ are almost equal to unity.
  - around the abutment show a random distribution with L_a / D and numerically vary around unity for λ_x / D value tested.

- For a given pier diameter and λ_y, the length of the sediment deposition zone just downstream of the second pier in the flow direction extends towards downstream with increasing abutment length.

- In the experiments conducted with two piers the first pier plays a protective role on the second pier in such a way that the depths of the scour holes occurring around the second pier are much smaller than those of the first pier.

- For a given abutment length L_a and pier location λ_y, the scour depths have a decreasing tendency as the value of the pier location λ_x increases.

- The upstream and downstream faces of the scour holes forming around $Pier_1$ and $Pier_2$ are almost constant and about 31^o and 20^o for D = 5 cm and about 31^o and 9^o for D = 10 cm, respectively. Slopes at the upstream side of the scour holes more or less are equal to the angle of repose of the sand material which is around 30%.

Conclusions Drawned from Regression Analysis

Several empirical equations were derived for dimensionless scour parameters valid at various points around the piers and abutment as a function of independent dimensionless parameters. By using one of these equations one can determine the numerical values of dimensionless scour parameters at desired points around the piers or abutment within the limit values of the parameters used in this study.

Anticipated Contribution to the Field

Although the most of the findings are case specific, by the results of this study it is possible to control or design the local scour dimensions in depth, in lateral and in line with flow direction by the knowledge of diameters of cylindrical bridge piers, length of the vertical bridge abutment and the distance between them which are supplied by structural designer. In other words this study will help the engineers for designing bridges hydraulically and give opportunity to take necessary precautions against local scour before constructing bridge.

7.2 RECOMMENDATIONS FOR FUTURE STUDIES

Recommendations for future studies are as follows;

Experiments similar to those conducted in this study should be repeated using sediment of different sizes, piers and abutments having larger dimensions than those used in this study. In this case more general relations between the relevant dimensionless parameters can be determined.

Findings of the study should be compared with the results of any fluid dynamic software for not only crosscheck of the results but also to figure out the accuracy of the software.

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APPENDIX A

DATA SHEETS FOR EXPERIMENTS

Sieve analysis of sediment which was used in the experiments was presented in Figure A.1.

Following pages show the readings of each experiment tabulated in Table 4.1, 4.2, 4.3 and 4.4. Two pages give the details of one experiment. At left hand side readings were presented while sketches and pictures of the experiment were shown at right hand side.

At the left hand side; upper left corner of page experiment number, experiment date, discharge in l/s, flow depth in cm, pier and abutment dimensions and pier position data were given. Under this data schematic views of variables were presented. At the column-wise section experimental readings were listed. In the first two columns distance scale with 2 cm intervals is given. The zero point represents the place of the pier or abutment. In the first column upward direction shows the left side while downward direction shows the right side distances of the abutment. In the second column upward direction shows rear side while downward direction shows the front side distances of the abutment. Third and fourth columns show raw data readings corresponding to the distances while fifth and sixth ones show the corrected data with zero line reading (mostly 12 cm) which is used for converting base readings to scour depths. Seventh column shows the distances of the pier and rest for raw data readings and scour depths of the pier. For two pier case; 5 more columns listed for the second pier. At the right side of the left page scour readings were tabulated. Under this table scour border readings were listed.

At the right hand side; section views were produced from readings with MS Excel features. And two pictures of experiments were presented, one from upstream side and one from downstream side.

At some points to draw the section views some unreaded data were created with interpolation of known data of the nearest location in two different directions.

The scour depth data and dimensionless scour depth parameters which were used for point B of piers in Chapter 6 were presented in Tables A.1 to A.4.

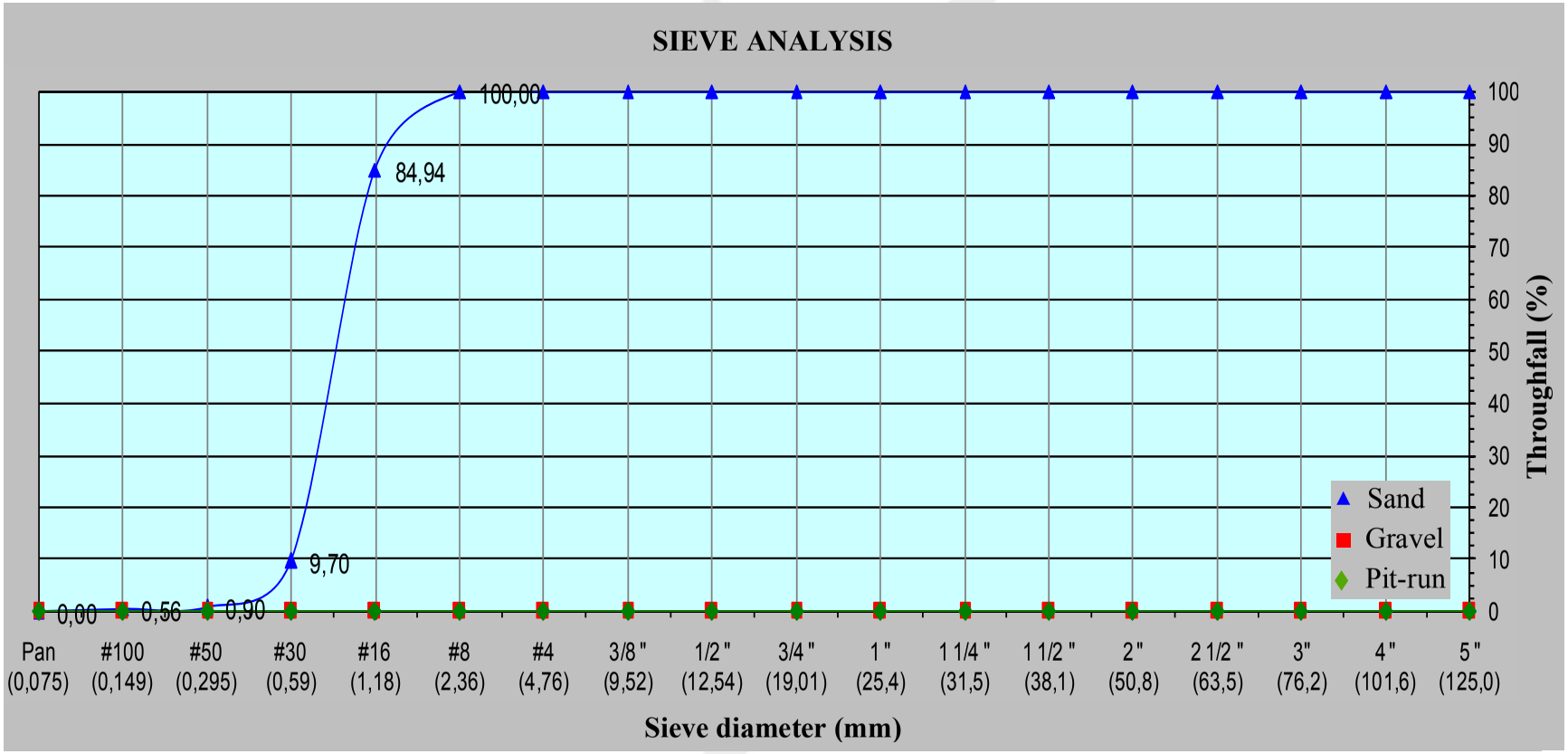
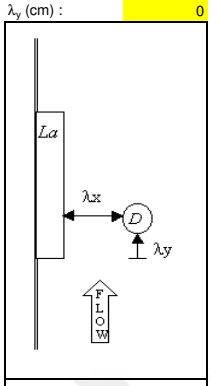
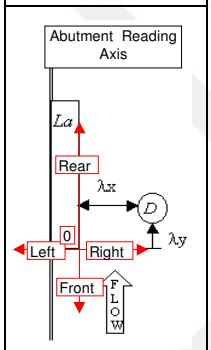


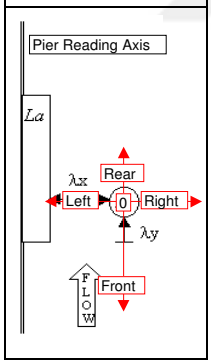
Figure A.1 Sieve analysis of the sediment which was used in the experiments

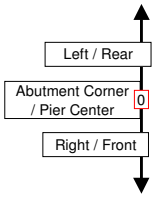
Experiment No : **E1**

Date :	26.05.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	0
λ_x (cm) :	0
λ_y (cm) :	0









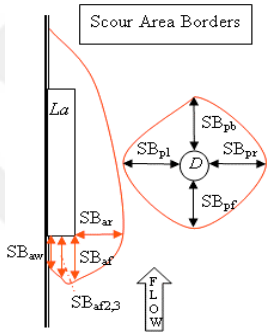
This color was used for raw data readings

This color was used for values enterpolated to sketch

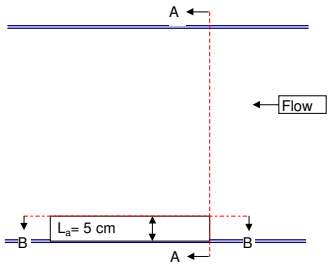
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-135.00				
-138	138					-133.00				
-136	136					-131.00				
-134	134					-129.00				
-132	132					-127.00				
-130	130					-125.00				
-128	128					-123.00				
-126	126					-121.00				
-124	124					-119.00				
-122	122					-117.00				
-120	120					-115.00				
-118	118					-113.00				
-116	116					-111.00				
-114	114					-109.00				
-112	112					-107.00				
-110	110					-105.00				
-108	108					-103.00				
-106	106					-101.00				
-104	104					-99.00				
-102	102					-97.00				
-100	100					-95.00				
-98	98					-93.00				
-96	96					-91.00				
-94	94					-89.00				
-92	92					-87.00				
-90	90					-85.00				
-88	88					-83.00				
-86	86					-81.00				
-84	84					-79.00				
-82	82					-77.00				
-80	80					-75.00				
-78	78					-73.00				
-76	76					-71.00				
-74	74					-69.00				
-72	72					-67.00				
-70	70					-65.00				
-68	68					-63.00				
-66	66					-61.00				
-64	64					-59.00				
-62	62					-57.00				
-60	60					-55.00				
-58	58					-53.00				
-56	56					-51.00				
-54	54		9.60		0.00	-49.00				
-52	52		*9.60*		0.00	-47.00				
-50	50		*9.60*		0.00	-45.00				
-48	48		*9.60*		0.00	-43.00				
-46	46		9.60		0.00	-41.00				
-44	44		*9.60*		0.00	-39.00				
-42	42		*9.60*		0.00	-37.00				
-40	40		*9.60*		0.00	-35.00				
-38	38		9.60		0.00	-33.00				
-36	36		*9.60*		0.00	-31.00				
-34	34		9.60		0.00	-29.00				
-32	32		*9.58*		-0.03	-27.00				
-30	30		9.55		-0.05	-25.00				
-28	28		*9.63*		0.03	-23.00				
-26	26		9.70		0.10	-21.00				
-24	24		*9.90*		0.30	-19.00				
-22	22		10.10		0.50	-17.00				
-20	20		*10.30*		0.70	-15.00				
-18	18		10.50		0.90	-13.00				
-16	16		*10.55*		0.95	-11.00				
-14	14		10.60		1.00	-9.00				
-12	12		10.30		0.70	-7.00				
-10	10		9.70		0.10	-5.00				
-8	8		9.15		-0.45	-3.00				
-6	6	5.60	8.60	-4.00	-1.00	-1.00				
-4	4	5.25	*8.18*	-4.35	-1.43	1.00				
-2	2	5.10	7.75	-4.50	-1.85	3.00				
0	0	5.55	6.35	-4.05	-3.25	5.00				
0	0	5.55	5.55	-4.05	-4.05	5.00				
2	-2	6.10	6.00	-3.50	-3.60	7.00				
4	-4	7.10	7.20	-2.50	-2.40	9.00				
6	-6	8.20	8.75	-1.40	-0.85	11.00				
8	-8	9.10	9.70	-0.50	0.10	13.00				
10	-10	9.40	*9.75*	-0.20	0.15	15.00				
12	-12	9.50	9.80	-0.10	0.20	17.00				
14	-14	9.50		-0.10		19.00				
16	-16					21.00				
18	-18					23.00				
20	-20					25.00				
22	-22					27.00				
24	-24					29.00				
26	-26					31.00				
28	-28					33.00				
30	-30					35.00				

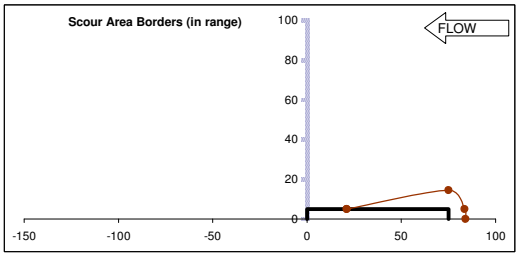
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	9.90	0.30
2	9.80	0.20
4	9.80	0.20
6	*9.80*	0.20
8	9.80	0.20
10	9.45	-0.15
12	8.20	-1.40
14	7.15	-2.45
16	6.40	-3.20
18	5.80	-3.80
20		

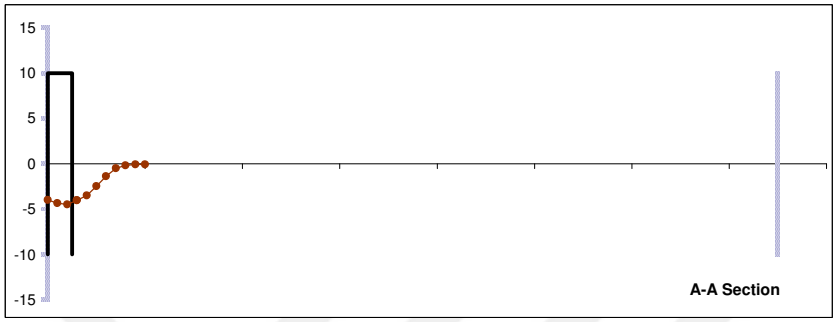
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	9.5
SB_{pl}	Pier Left	
SB_{pf}	Pier Front	
SB_{pr}	Pier Right	
SB_{pb}	Pier Rear	

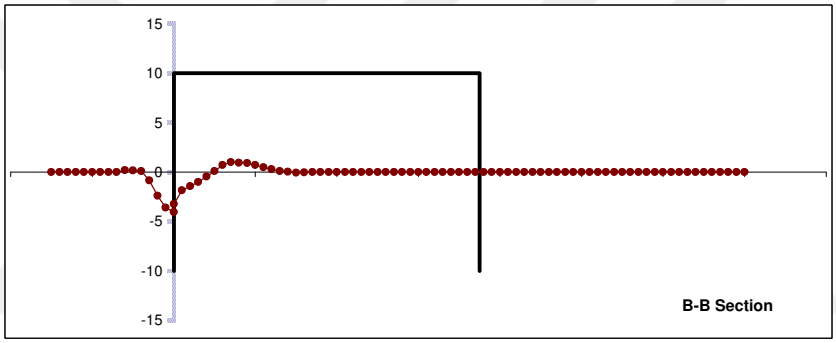


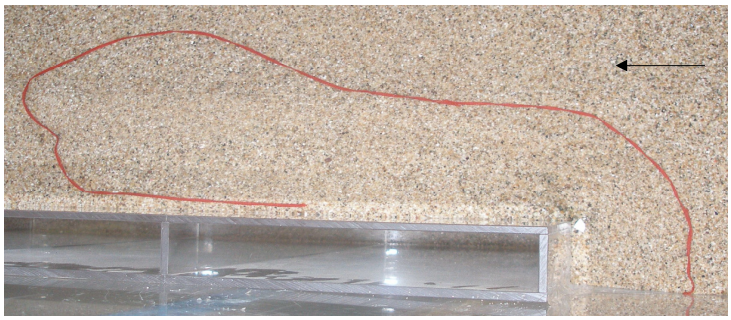
Experiment No : **E1**











Experiment No : **E2**

Date :	07.06.2010
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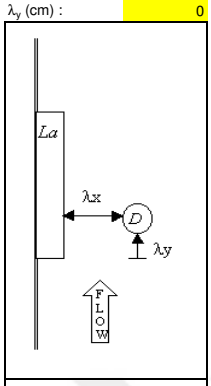
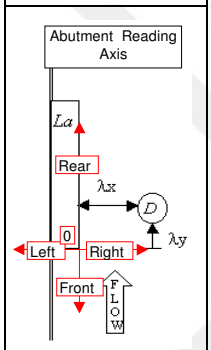
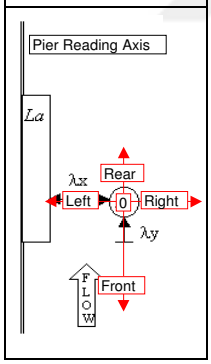
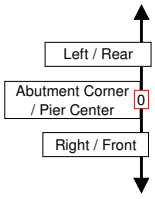
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	0
λ_x (cm) :	0
λ_y (cm) :	0









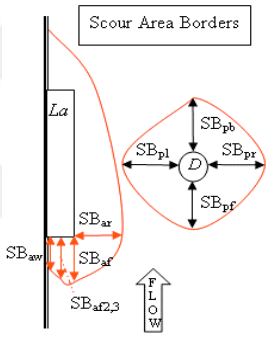
This color was used for raw data readings

This color was used for values enterpolated to sketch

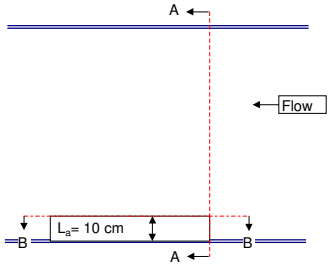
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-130.00				
-138	138					-128.00				
-136	136					-126.00				
-134	134					-124.00				
-132	132					-122.00				
-130	130					-120.00				
-128	128					-118.00				
-126	126					-116.00				
-124	124					-114.00				
-122	122					-112.00				
-120	120					-110.00				
-118	118					-108.00				
-116	116					-106.00				
-114	114					-104.00				
-112	112		9.10		-0.50	-102.00				
-110	110		*9.05*		-0.55	-100.00				
-108	108		9.00		-0.60	-98.00				
-106	106		*8.95*		-0.65	-96.00				
-104	104		8.90		-0.70	-94.00				
-102	102		*8.88*		-0.73	-92.00				
-100	100		8.85		-0.75	-90.00				
-98	98		*8.80*		-0.80	-88.00				
-96	96		8.75		-0.85	-86.00				
-94	94		*8.73*		-0.88	-84.00				
-92	92		8.70		-0.90	-82.00				
-90	90		*8.55*		-1.05	-80.00				
-88	88		8.40		-1.20	-78.00				
-86	86		*8.30*		-1.30	-76.00				
-84	84		8.20		-1.40	-74.00				
-82	82		*8.55*		-1.05	-72.00				
-80	80		8.90		-0.70	-70.00				
-78	78		*8.83*		-0.78	-68.00				
-76	76		8.75		-0.85	-66.00				
-74	74		*8.80*		-0.80	-64.00				
-72	72		8.85		-0.75	-62.00				
-70	70		*9.08*		-0.53	-60.00				
-68	68		9.30		-0.30	-58.00				
-66	66		*9.38*		-0.23	-56.00				
-64	64		9.45		-0.15	-54.00				
-62	62		*9.53*		-0.08	-52.00				
-60	60		9.60		0.00	-50.00				
-58	58		*9.83*		0.23	-48.00				
-56	56		10.05		0.45	-46.00				
-54	54		*10.10*		0.50	-44.00				
-52	52		10.15		0.55	-42.00				
-50	50		*10.35*		0.75	-40.00				
-48	48		10.55		0.95	-38.00				
-46	46		*10.55*		0.95	-36.00				
-44	44		10.55		0.95	-34.00				
-42	42		*10.55*		0.95	-32.00				
-40	40		10.55		0.95	-30.00				
-38	38		*10.43*		0.83	-28.00				
-36	36		10.30		0.70	-26.00				
-34	34		*10.20*		0.60	-24.00				
-32	32		10.10		0.50	-22.00				
-30	30		*10.05*		0.45	-20.00				
-28	28		10.00		0.40	-18.00				
-26	26		*9.95*		0.35	-16.00				
-24	24		9.90		0.30	-14.00				
-22	22		*9.85*		0.25	-12.00				
-20	20		9.80		0.20	-10.00				
-18	18		9.30		-0.30	-8.00				
-16	16		9.00		-0.60	-6.00				
-14	14		8.40		-1.20	-4.00				
-12	12		7.85		-1.75	-2.00				
-10	10	3.10	7.40	-6.50	-2.20	0.00				
-8	8	2.75	6.70	-6.85	-2.90	2.00				
-6	6	2.25	5.75	-7.35	-3.85	4.00				
-4	4	2.05	4.50	-7.55	-5.10	6.00				
-2	2	2.10	3.45	-7.50	-6.15	8.00				
0	0	2.45	2.45	-7.15	-7.15	10.00				
0	0	2.45	2.45	-7.15	-7.15	10.00				
2	-2	2.50	2.50	-7.10	-7.10	12.00				
4	-4	2.85	4.00	-6.75	-5.60	14.00				
6	-6	4.35	4.70	-5.25	-4.90	16.00				
8	-8	5.75	5.65	-3.85	-3.95	18.00				
10	-10	6.80	6.00	-2.80	-3.60	20.00				
12	-12	7.90	8.35	-1.70	-1.25	22.00				
14	-14	8.85	8.80	-0.75	-0.80	24.00				
16	-16	9.10	*9.00*	-0.50	-0.60	26.00				
18	-18	*9.35*	9.20	-0.25	-0.40	28.00				
20	-20	9.60	*9.40*	0.00	-0.20	30.00				
22	-22	*9.60*	9.60	0.00	0.00	32.00				
24	-24	9.60	*9.60*	0.00	0.00	34.00				
26	-26		9.60		0.00	36.00				
28	-28					38.00				
30	-30					40.00				

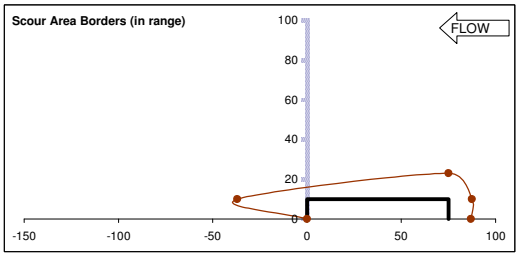
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	3.15	-6.45
2	3.20	-6.40
4	4.25	-5.35
6	5.60	-4.00
8	6.80	-2.80
10	8.20	-1.40
12	9.40	-0.20
14	*9.50*	-0.10
16	9.60	0.00
18	*9.60*	0.00
20	9.60	0.00

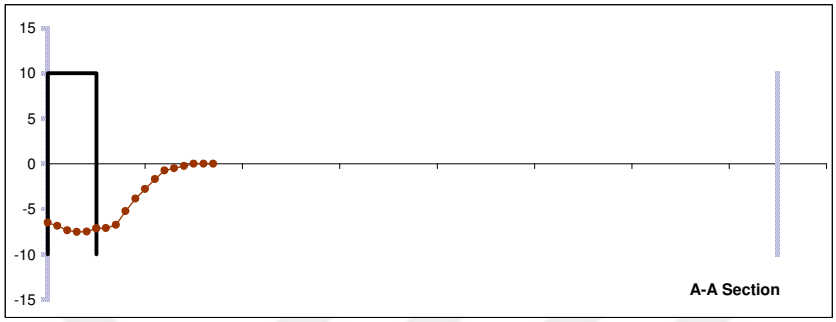
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12
SB_{af}	Abutment Corner Front	12.5
SB_{ar}	Abutment Corner Right	13
SB_{pl}	Pier Left	
SB_{pf}	Pier Front	
SB_{pr}	Pier Right	
SB_{pb}	Pier Rear	

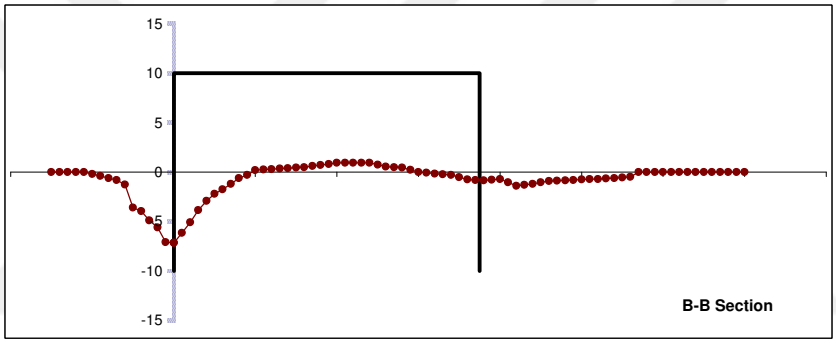


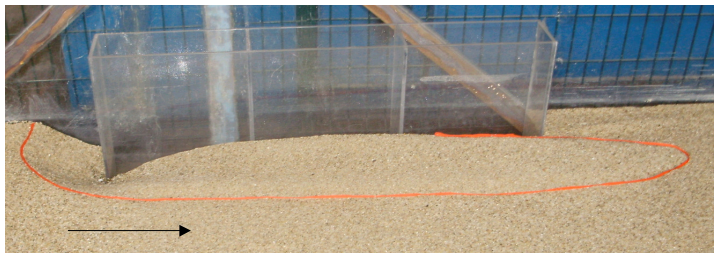
Experiment No : **E2**

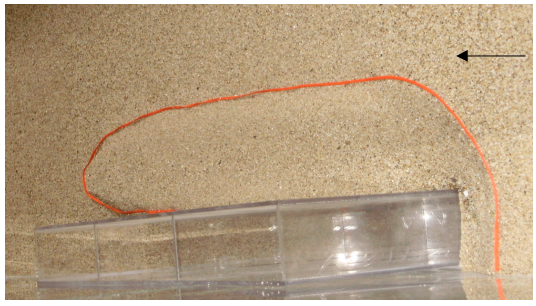






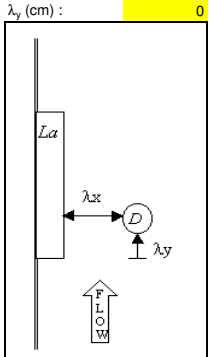


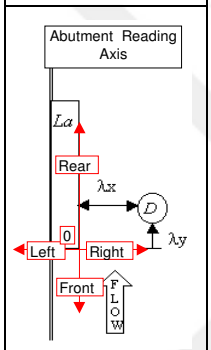


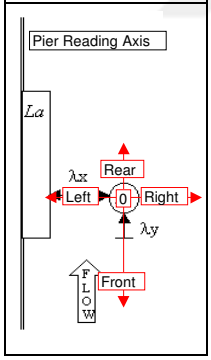


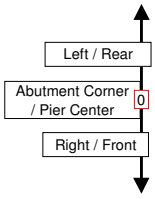
Experiment No : **E3**

Date :	11.06.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	0
λ_x (cm) :	0
λ_y (cm) :	0









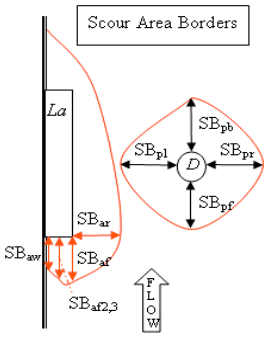
This color was used for raw data readings

This color was used for values enterpolated to sketch

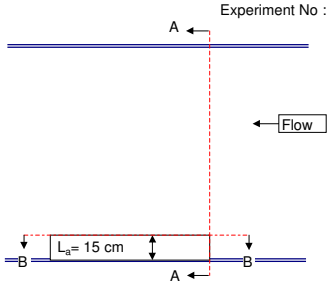
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140		10.00		0.40	-125.00				
-138	138		10.80		1.20	-123.00				
-136	136		*11.08*		1.48	-121.00				
-134	134		11.35		1.75	-119.00				
-132	132		*11.73*		2.13	-117.00				
-130	130		12.10		2.50	-115.00				
-128	128		12.70		3.10	-113.00				
-126	126		*12.78*		3.18	-111.00				
-124	124		12.85		3.25	-109.00				
-122	122		*12.78*		3.18	-107.00				
-120	120		12.70		3.10	-105.00				
-118	118		*12.63*		3.03	-103.00				
-116	116		12.55		2.95	-101.00				
-114	114		*12.53*		2.93	-99.00				
-112	112		12.50		2.90	-97.00				
-110	110		*12.50*		2.90	-95.00				
-108	108		12.50		2.90	-93.00				
-106	106		*12.35*		2.75	-91.00				
-104	104		12.20		2.60	-89.00				
-102	102		*12.08*		2.48	-87.00				
-100	100		11.95		2.35	-85.00				
-98	98		*11.78*		2.18	-83.00				
-96	96		11.60		2.00	-81.00				
-94	94		*11.60*		2.00	-79.00				
-92	92		11.60		2.00	-77.00				
-90	90		*11.10*		1.50	-75.00				
-88	88		10.60		1.00	-73.00				
-86	86		*10.30*		0.70	-71.00				
-84	84		10.00		0.40	-69.00				
-82	82		*9.88*		0.28	-67.00				
-80	80		9.75		0.15	-65.00				
-78	78		*9.93*		0.33	-63.00				
-76	76		10.10		0.50	-61.00				
-74	74		*10.10*		0.50	-59.00				
-72	72		10.10		0.50	-57.00				
-70	70		*10.18*		0.58	-55.00				
-68	68		10.25		0.65	-53.00				
-66	66		*10.33*		0.73	-51.00				
-64	64		10.40		0.80	-49.00				
-62	62		*10.40*		0.80	-47.00				
-60	60		10.40		0.80	-45.00				
-58	58		*10.45*		0.85	-43.00				
-56	56		10.50		0.90	-41.00				
-54	54		*10.43*		0.83	-39.00				
-52	52		10.35		0.75	-37.00				
-50	50		*10.33*		0.73	-35.00				
-48	48		10.30		0.70	-33.00				
-46	46		*10.25*		0.65	-31.00				
-44	44		10.20		0.60	-29.00				
-42	42		*10.05*		0.45	-27.00				
-40	40		9.90		0.30	-25.00				
-38	38		9.90		0.30	-23.00				
-36	36		9.35		-0.25	-21.00				
-34	34		9.20		-0.40	-19.00				
-32	32		8.90		-0.70	-17.00				
-30	30		8.60		-1.00	-15.00				
-28	28		8.40		-1.20	-13.00				
-26	26		8.10		-1.50	-11.00				
-24	24		7.50		-2.10	-9.00				
-22	22		7.10		-2.50	-7.00				
-20	20		6.80		-2.80	-5.00				
-18	18		6.35		-3.25	-3.00				
-16	16	-0.20	5.80	-9.80	-3.80	-1.00				
-14	14	-0.30	5.35	-9.90	-4.25	1.00				
-12	12	-0.40	4.70	-10.00	-4.90	3.00				
-10	10	-0.20	3.90	-9.80	-5.70	5.00				
-8	8	-0.50	2.90	-10.10	-6.70	7.00				
-6	6	-0.80	1.60	-10.40	-8.00	9.00				
-4	4	-1.00	0.85	-10.60	-8.75	11.00				
-2	2	-1.00	0.00	-10.60	-9.60	13.00				
0	0	0.00	0.00	-9.60	-9.60	15.00				
0	0	0.00	0.00	-9.60	-9.60	15.00				
2	-2	-0.70	-0.70	-10.30	-10.30	17.00				
4	-4	0.35	0.50	-9.25	-9.10	19.00				
6	-6	1.90	1.80	-7.70	-7.80	21.00				
8	-8	3.30	2.80	-6.30	-6.80	23.00				
10	-10	4.45	3.20	-5.15	-6.40	25.00				
12	-12	5.40	4.15	-4.20	-5.45	27.00				
14	-14	6.45	4.90	-3.15	-4.70	29.00				
16	-16	7.50	6.10	-2.10	-3.50	31.00				
18	-18	8.30	7.60	-1.30	-2.00	33.00				
20	-20	9.00	8.80	-0.60	-0.80	35.00				
22	-22	9.50	9.40	-0.10	-0.20	37.00				
24	-24	*9.55*	*9.50*	-0.05	-0.10	39.00				
26	-26	9.60	9.60	0.00	0.00	41.00				
28	-28	*9.60*	*9.60*	0.00	0.00	43.00				
30	-30	9.60	9.60	0.00	0.00	45.00				

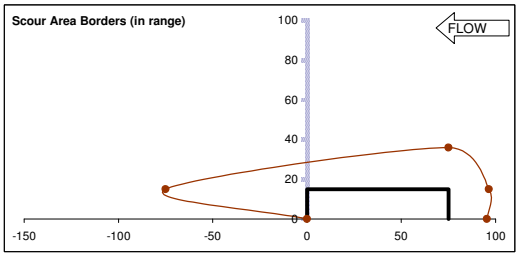
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	0.10	-9.50
2	0.00	-9.60
4	0.15	-9.45
6	1.25	-8.35
8	2.45	-7.15
10	3.75	-5.85
12	4.55	-5.05
14	5.60	-4.00
16	6.90	-2.70
18	8.15	-1.45
20	9.15	-0.45

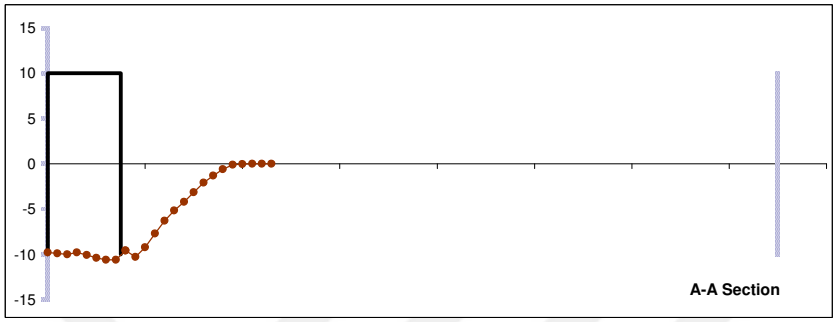
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	20.5
SB_{af}	Abutment Corner Front	21.5
SB_{ar}	Abutment Corner Right	21
SB_{pl}	Pier Left	
SB_{pf}	Pier Front	
SB_{pr}	Pier Right	
SB_{pb}	Pier Rear	

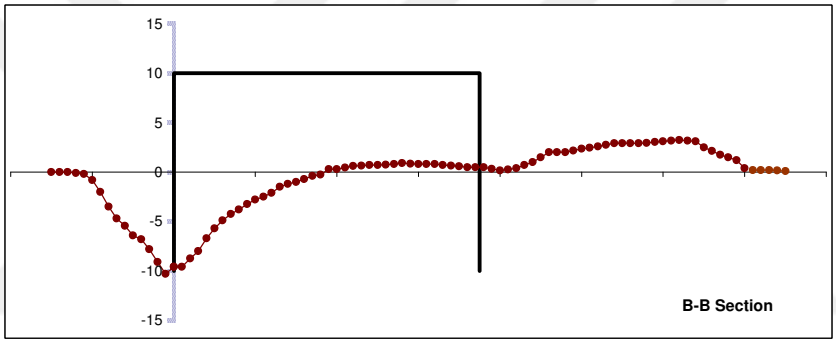


Experiment No : **E3**



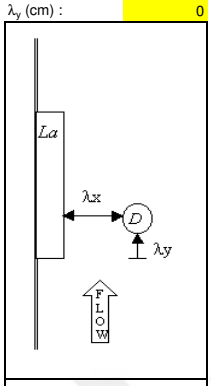


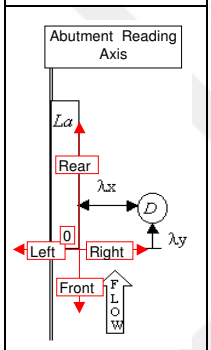


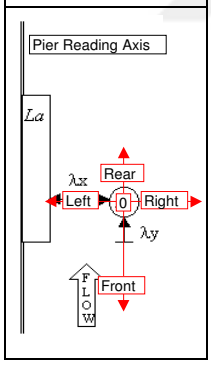


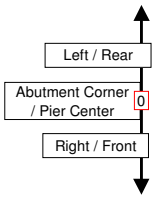
Experiment No : **E4**

Date :	18.08.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	0
Abutment Lg. :	0
D (cm) :	5
λ_x (cm) :	72.5
λ_y (cm) :	0









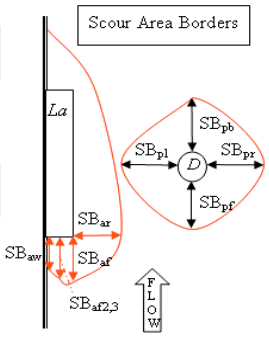
This color was used for raw data readings

This color was used for values enterpolated to sketch

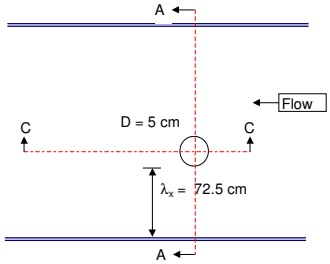
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-67.50				
-138	138					-65.50				
-136	136					-63.50				
-134	134					-61.50				
-132	132					-59.50				
-130	130					-57.50				
-128	128					-55.50				
-126	126					-53.50				
-124	124					-51.50				
-122	122					-49.50				
-120	120					-47.50				
-118	118					-45.50				
-116	116					-43.50				
-114	114					-41.50				
-112	112					-39.50				
-110	110					-37.50				
-108	108					-35.50				
-106	106					-33.50				
-104	104					-31.50				
-102	102					-29.50				
-100	100					-27.50				
-98	98					-25.50				
-96	96					-23.50				
-94	94					-21.50				
-92	92					-19.50				
-90	90					-17.50				
-88	88					-15.50				
-86	86					-13.50				
-84	84					-11.50				
-82	82					-9.50				
-80	80					-7.50				
-78	78					-5.50				
-76	76					-3.50				
-74	74					-1.50		9.30		-0.30
-72	72					0.50		*9.40*		-0.20
-70	70					2.50		9.50		-0.10
-68	68					4.50		10.00		0.40
-66	66					6.50		10.40		0.80
-64	64					8.50		*10.55*		0.95
-62	62					10.50		10.70		1.10
-60	60					12.50		*10.83*		1.23
-58	58					14.50		10.95		1.35
-56	56					16.50		*11.00*		1.40
-54	54					18.50		11.05		1.45
-52	52					20.50		*11.08*		1.48
-50	50					22.50		11.10		1.50
-48	48					24.50		*11.10*		1.50
-46	46					26.50		11.10		1.50
-44	44					28.50		*11.18*		1.58
-42	42					30.50		11.25		1.65
-40	40					32.50		*11.20*		1.60
-38	38					34.50		11.15		1.55
-36	36					36.50		*11.15*		1.55
-34	34					38.50		11.15		1.55
-32	32					40.50		10.95		1.35
-30	30					42.50		10.90		1.30
-28	28					44.50		10.85		1.25
-26	26					46.50		10.75		1.15
-24	24					48.50		10.70		1.10
-22	22					50.50		10.35		0.75
-20	20					52.50		10.25		0.65
-18	18					54.50	9.30	10.15	-0.30	0.55
-16	16					56.50	*9.30*	9.80	-0.30	0.20
-14	14					58.50	9.30	9.40	-0.30	-0.20
-12	12					60.50	9.20	9.00	-0.40	-0.60
-10	10					62.50	8.55	8.70	-1.05	-0.90
-8	8					64.50	7.50	8.05	-2.10	-1.55
-6	6					66.50	6.85	7.35	-2.75	-2.25
-4	4					68.50	5.50	6.10	-4.10	-3.50
-2	2					70.50	4.30	5.60	-5.30	-4.00
0	0					72.50	3.60	5.25	-6.00	-4.35
0	0					77.50	4.00	2.30	-5.60	-7.30
2	-2					79.50	5.45	4.30	-4.15	-5.30
4	-4					81.50	6.10	5.90	-3.50	-3.70
6	-6					83.50	7.15	7.20	-2.45	-2.40
8	-8					85.50	7.70	8.55	-1.90	-1.05
10	-10					87.50	8.70	9.20	-0.90	-0.40
12	-12					89.50	9.10	9.20	-0.50	-0.40
14	-14					91.50	*9.20*	*9.20*	-0.40	-0.40
16	-16					93.50	9.30	9.20	-0.30	-0.40
18	-18					95.50				
20	-20					97.50				
22	-22					99.50				
24	-24					101.50				
26	-26					103.50				
28	-28					105.50				
30	-30					107.50				

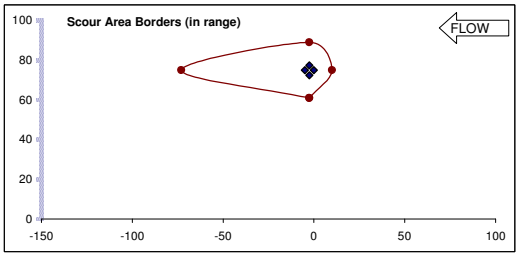
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0		
2		
4		
6		
8		
10		
12		
14		
16		
18		
20		

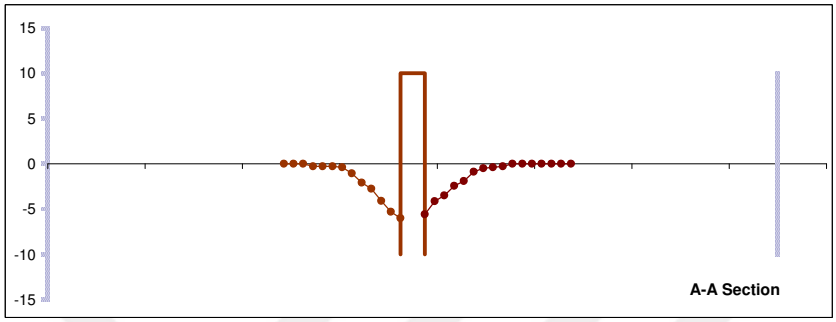
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	
SB_{af}	Abutment Corner Front	
SB_{ar}	Abutment Corner Right	
SB_{pl}	Pier Left	11.5
SB_{pf}	Pier Front	10
SB_{pr}	Pier Right	11.5
SB_{pb}	Pier Rear	68

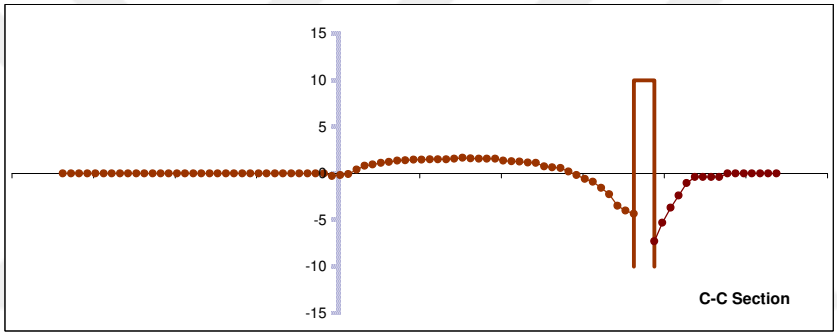


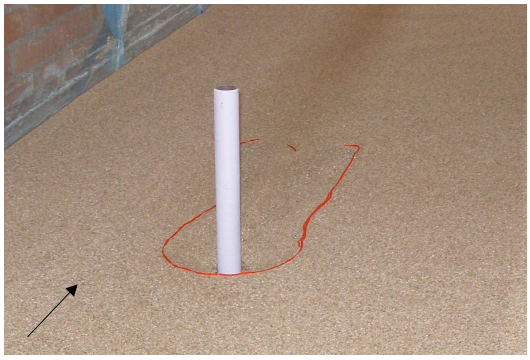
Experiment No : **E4**

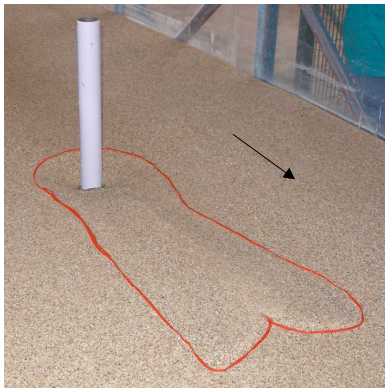






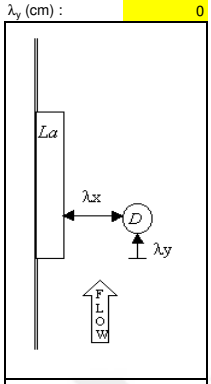


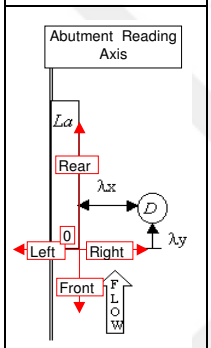


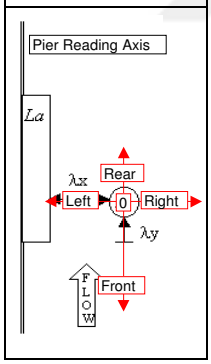


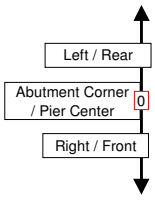
Experiment No : **E5**

Date :	19.08.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	0
Abutment Lg. :	0
D (cm) :	10
λ_x (cm) :	70
λ_y (cm) :	0









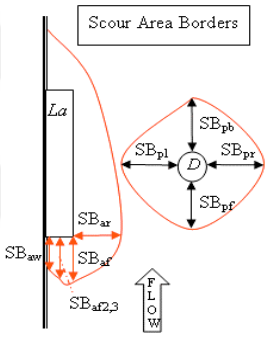
This color was used for raw data readings

This color was used for values enterpolated to sketch

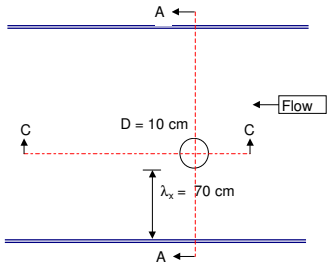
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-70.00				
-138	138					-68.00				
-136	136					-66.00				
-134	134					-64.00				
-132	132					-62.00				
-130	130					-60.00				
-128	128					-58.00				
-126	126					-56.00				
-124	124					-54.00				
-122	122					-52.00				
-120	120					-50.00				
-118	118					-48.00				
-116	116					-46.00				
-114	114					-44.00		9.50		-0.10
-112	112					-42.00		*9.45*		-0.15
-110	110					-40.00		9.40		-0.20
-108	108					-38.00		9.95		0.35
-106	106					-36.00		10.45		0.85
-104	104					-34.00		*10.63*		1.03
-102	102					-32.00		10.80		1.20
-100	100					-30.00		*10.90*		1.30
-98	98					-28.00		11.00		1.40
-96	96					-26.00		*11.05*		1.45
-94	94					-24.00		11.10		1.50
-92	92					-22.00		*11.10*		1.50
-90	90					-20.00		11.10		1.50
-88	88					-18.00		*11.13*		1.53
-86	86					-16.00		11.15		1.55
-84	84					-14.00		*11.25*		1.65
-82	82					-12.00		11.35		1.75
-80	80					-10.00		*11.38*		1.78
-78	78					-8.00		11.40		1.80
-76	76					-6.00		*11.40*		1.80
-74	74					-4.00		11.40		1.80
-72	72					-2.00		*11.40*		1.80
-70	70					0.00		11.40		1.80
-68	68					2.00		*11.43*		1.83
-66	66					4.00		11.45		1.85
-64	64					6.00		*11.45*		1.85
-62	62					8.00		11.45		1.85
-60	60					10.00		*11.45*		1.85
-58	58					12.00		11.45		1.85
-56	56					14.00		*11.53*		1.93
-54	54					16.00		11.60		2.00
-52	52					18.00		*11.58*		1.98
-50	50					20.00		11.55		1.95
-48	48					22.00		*11.58*		1.98
-46	46					24.00		11.60		2.00
-44	44					26.00		*11.58*		1.98
-42	42					28.00		11.55		1.95
-40	40					30.00		*11.53*		1.93
-38	38					32.00		11.50		1.90
-36	36					34.00		*11.43*		1.83
-34	34					36.00		11.35		1.75
-32	32					38.00		*11.20*		1.60
-30	30					40.00		*11.05*		1.45
-28	28					42.00		10.90		1.30
-26	26					44.00		10.70		1.10
-24	24					46.00		10.35		0.75
-22	22					48.00	9.40	10.20	-0.20	0.60
-20	20					50.00	*9.35*	9.90	-0.25	0.30
-18	18					52.00	9.30	9.60	-0.30	0.00
-16	16					54.00	9.25	9.25	-0.35	-0.35
-14	14					56.00	8.05	8.75	-1.55	-0.85
-12	12					58.00	7.10	8.15	-2.50	-1.45
-10	10					60.00	6.45	7.45	-3.15	-2.15
-8	8					62.00	5.55	6.60	-4.05	-3.00
-6	6					64.00	4.30	5.75	-5.30	-3.85
-4	4					66.00	3.25	5.15	-6.35	-4.45
-2	2					68.00	2.20	4.75	-7.40	-4.85
0	0					70.00	1.25	4.85	-8.35	-4.75
0	0					80.00	1.50	0.85	-8.10	-8.75
2	-2					82.00	1.85	1.45	-7.75	-8.15
4	-4					84.00	3.50	2.70	-6.10	-6.90
6	-6					86.00	4.70	4.15	-4.90	-5.45
8	-8					88.00	5.85	5.35	-3.75	-4.25
10	-10					90.00	6.65	6.60	-2.95	-3.00
12	-12					92.00	7.65	7.75	-1.95	-1.85
14	-14					94.00	8.75	8.90	-0.85	-0.70
16	-16					96.00	9.30	9.25	-0.30	-0.35
18	-18					98.00	*9.35*	9.40	-0.25	-0.20
20	-20					100.00	9.40	*9.40*	-0.20	-0.20
22	-22					102.00		9.40		-0.20
24	-24					104.00				
26	-26					106.00				
28	-28					108.00				
30	-30					110.00				

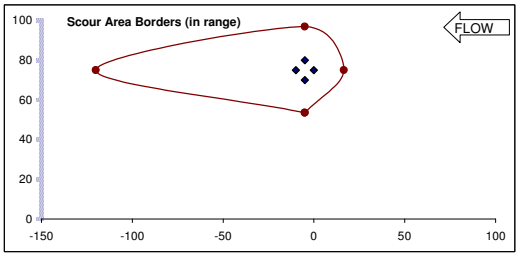
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0		
2		
4		
6		
8		
10		
12		
14		
16		
18		
20		

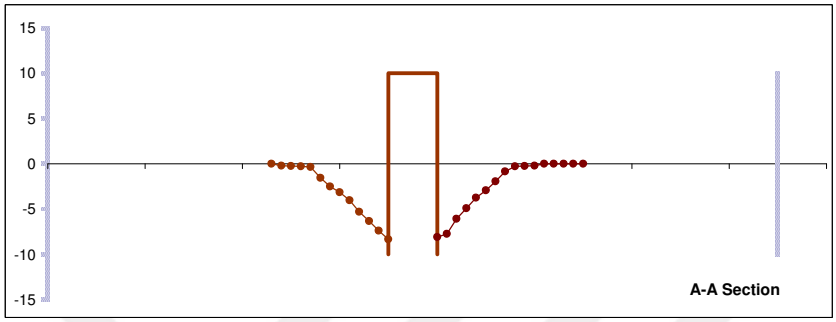
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	
SB_{af}	Abutment Corner Front	
SB_{ar}	Abutment Corner Right	
SB_{pl}	Pier Left	16.5
SB_{pf}	Pier Front	16.5
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	110

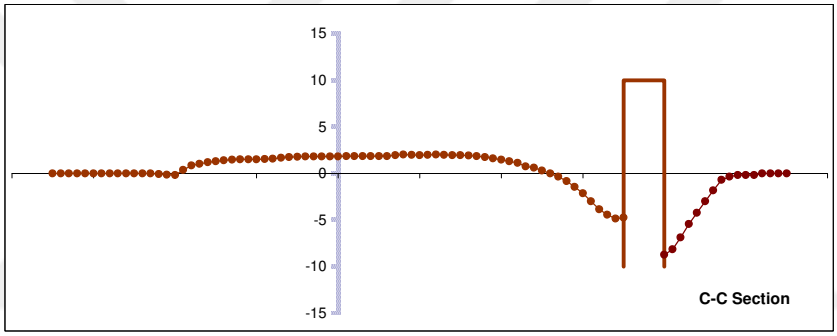


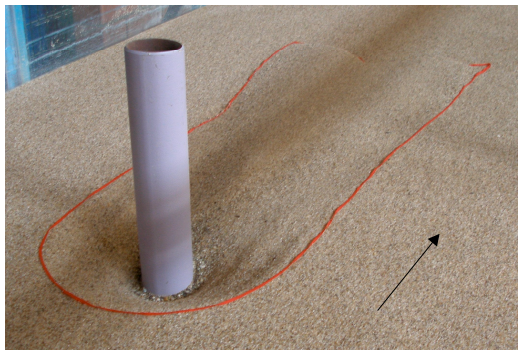
Experiment No : **E5**

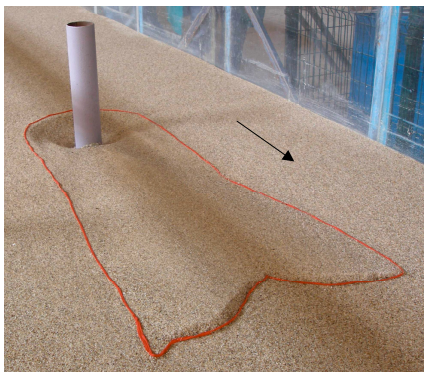






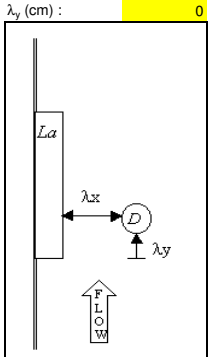


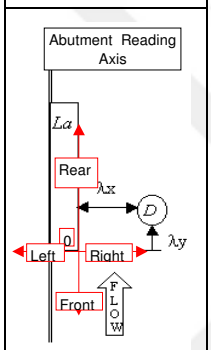


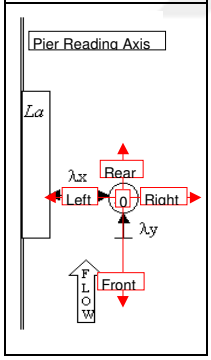


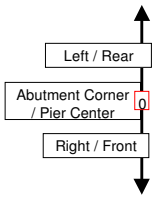
Experiment No : **E6**

Date :	06.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5.5
λ_y (cm) :	0









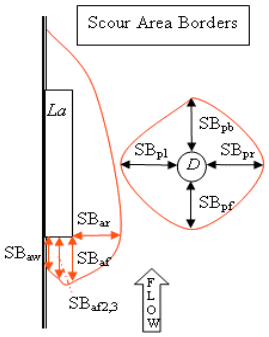
This color was used for raw data readings

This color was used for values enterpolated to sketch

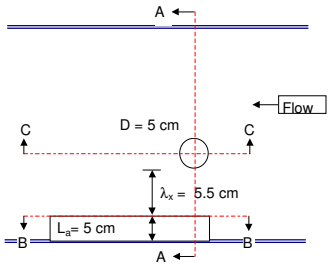
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-129.50				
-138	138					-127.50				
-136	136					-125.50				
-134	134					-123.50				
-132	132					-121.50				
-130	130					-119.50				
-128	128					-117.50				
-126	126					-115.50				
-124	124					-113.50				
-122	122					-111.50				
-120	120					-109.50				
-118	118					-107.50				
-116	116					-105.50				
-114	114					-103.50				
-112	112					-101.50		12.20		0.20
-110	110					-99.50		13.80		1.80
-108	108					-97.50		12.90		0.90
-106	106		12.20		0.20	-95.50		12.50		0.50
-104	104		12.50		0.50	-93.50		12.60		0.60
-102	102		12.30		0.30	-91.50		13.80		1.80
-100	100		12.50		0.50	-89.50		14.70		2.70
-98	98		13.10		1.10	-87.50		14.80		2.80
-96	96		13.40		1.40	-85.50		15.00		3.00
-94	94		13.50		1.50	-83.50		15.10		3.10
-92	92		13.10		1.10	-81.50		15.30		3.30
-90	90		13.00		1.00	-79.50		15.60		3.60
-88	88		12.80		0.80	-77.50		15.00		3.00
-86	86		12.80		0.80	-75.50		14.70		2.70
-84	84		12.80		0.80	-73.50		15.10		3.10
-82	82		12.70		0.70	-71.50		15.10		3.10
-80	80		12.90		0.90	-69.50		14.30		2.30
-78	78		12.80		0.80	-67.50		14.30		2.30
-76	76		12.70		0.70	-65.50		14.70		2.70
-74	74		12.80		0.80	-63.50		14.70		2.70
-72	72		12.50		0.50	-61.50		14.70		2.70
-70	70		12.80		0.80	-59.50		14.60		2.60
-68	68		12.60		0.60	-57.50		14.90		2.90
-66	66		13.00		1.00	-55.50		14.60		2.60
-64	64		12.90		0.90	-53.50		14.90		2.90
-62	62		12.80		0.80	-51.50		15.00		3.00
-60	60		13.20		1.20	-49.50		14.50		2.50
-58	58		13.00		1.00	-47.50		14.40		2.40
-56	56		13.10		1.10	-45.50		15.00		3.00
-54	54		12.90		0.90	-43.50		14.80		2.80
-52	52		13.10		1.10	-41.50		14.40		2.40
-50	50		12.60		0.60	-39.50		14.80		2.80
-48	48		12.90		0.90	-37.50		14.60		2.60
-46	46		12.80		0.80	-35.50		14.40		2.40
-44	44		13.00		1.00	-33.50		14.20		2.20
-42	42		13.20		1.20	-31.50		14.40		2.40
-40	40		13.20		1.20	-29.50		13.90		1.90
-38	38		12.80		0.80	-27.50		13.90		1.90
-36	36		13.00		1.00	-25.50		13.60		1.60
-34	34		12.80		0.80	-23.50		13.70		1.70
-32	32		13.10		1.10	-21.50		13.20		1.20
-30	30		12.90		0.90	-19.50		13.20		1.20
-28	28		12.80		0.80	-17.50		12.90		0.90
-26	26		12.80		0.80	-15.50		12.50		0.50
-24	24		13.00		1.00	-13.50		12.30		0.30
-22	22		12.90		0.90	-11.50		12.50		0.50
-20	20		12.70		0.70	-9.50		12.10		0.10
-18	18		12.20		0.20	-7.50		12.10		0.10
-16	16		11.70		-0.30	-5.50		11.80		-0.20
-14	14		11.00		-1.00	-3.50		11.80		-0.20
-12	12		10.40		-1.60	-1.50		11.30		-0.70
-10	10		9.70		-2.30	0.50		11.50		-0.50
-8	8		8.80		-3.20	2.50		11.00		-1.00
-6	6	8.10	7.90	-3.90	-4.10	4.50		10.20		-1.80
-4	4	8.40	7.60	-3.60	-4.40	6.50	7.30	9.20	-4.70	-2.80
-2	2	7.20	7.40	-4.80	-4.60	8.50	7.20	7.80	-4.80	-4.20
0	0	7.00	7.00	-5.00	-5.00	10.50	6.40	7.50	-5.60	-4.50
0	0	7.00	7.00	-5.00	-5.00	15.50	5.80	6.00	-6.20	-6.00
2	-2	6.80	7.80	-5.20	-4.20	17.50	6.70	6.60	-5.30	-5.40
4	-4	6.70	9.00	-5.30	-3.00	19.50	7.90	8.50	-4.10	-3.50
6	-6	6.10	10.00	-5.90	-2.00	21.50	9.00	9.10	-3.00	-2.90
8	-8	5.00	10.70	-7.00	-1.30	23.50	10.10	10.10	-1.90	-1.90
10	-10	5.10	11.30	-6.90	-0.70	25.50	11.10	11.00	-0.90	-1.00
12	-12	5.40	11.60	-6.60	-0.40	27.50	11.50	12.00	-0.50	0.00
14	-14	6.60	11.50	-5.40	-0.50	29.50	12.10		0.10	
16	-16	7.80	11.80	-4.20	-0.20	31.50				
18	-18	9.00	11.90	-3.00	-0.10	33.50				
20	-20	9.70	12.00	-2.30	0.00	35.50				
22	-22	10.70		-1.30		37.50				
24	-24	11.60		-0.40		39.50				
26	-26	12.00		0.00		41.50				
28	-28					43.50				
30	-30					45.50				

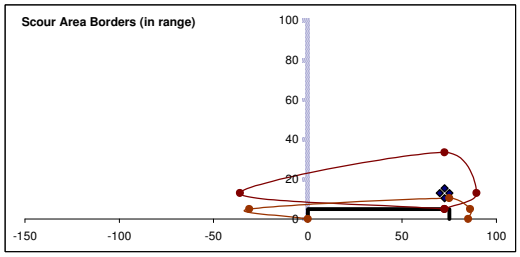
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	8.10	-3.90
2	8.00	-4.00
4	8.90	-3.10
6	10.10	-1.90
8	10.80	-1.20
10	11.50	-0.50
12	11.70	-0.30
14	11.90	-0.10
16	12.00	0.00
18		
20		

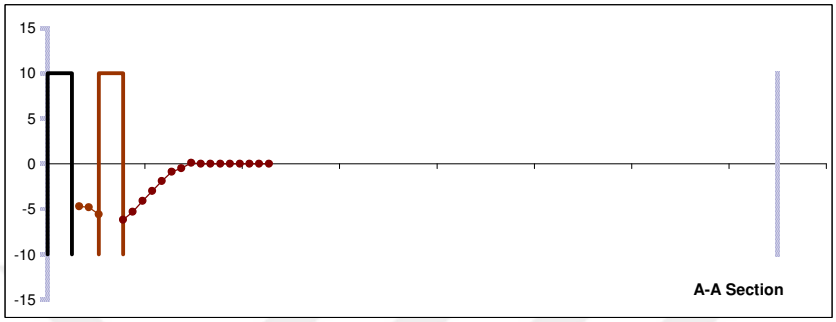
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	11
SB_{ar}	Abutment Corner Right	5.5
SB_{pl}	Pier Left	5.5
SB_{pf}	Pier Front	14.5
SB_{pr}	Pier Right	18
SB_{pb}	Pier Rear	106

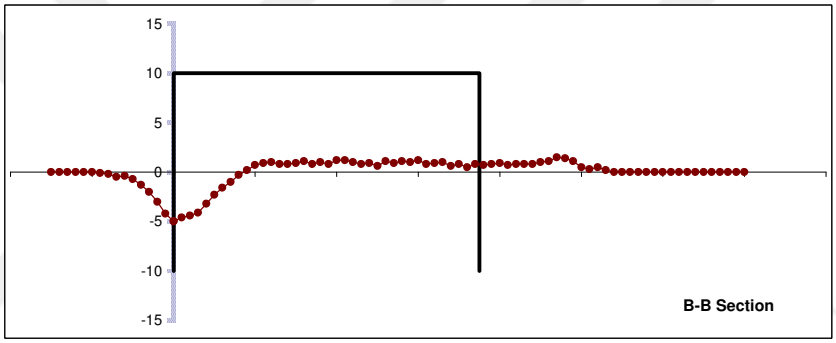


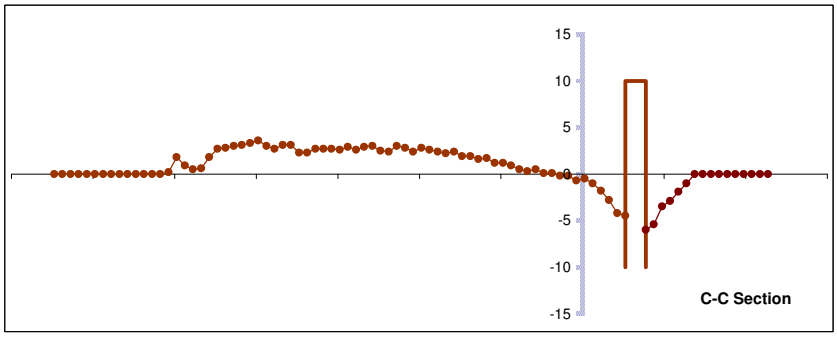
Experiment No : **E6**

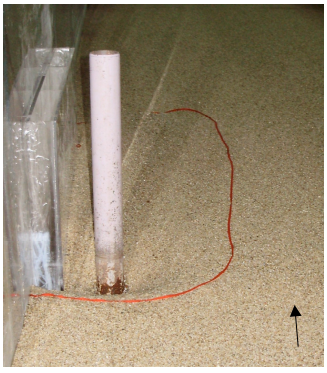


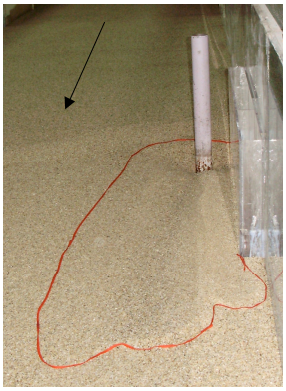






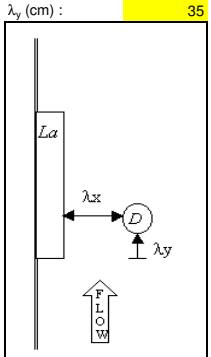


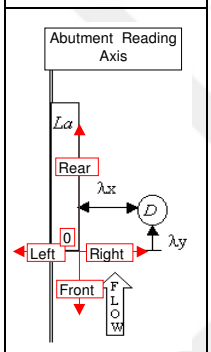


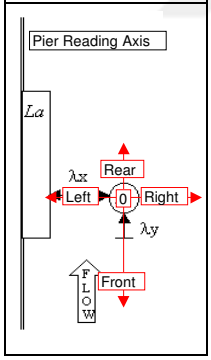


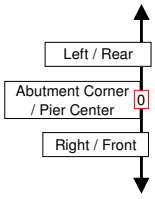
Experiment No : **E7**

Date :	26.08.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5.5
λ_y (cm) :	35









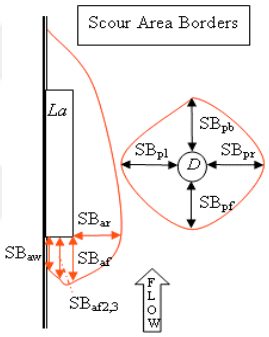
This color was used for raw data readings

This color was used for values enterpolated to sketch

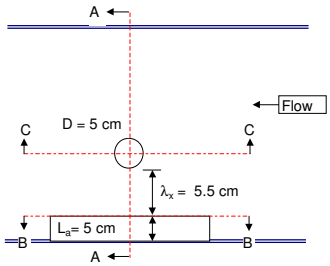
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-129.50				
-138	138					-127.50				
-136	136					-125.50				
-134	134					-123.50				
-132	132					-121.50				
-130	130					-119.50				
-128	128					-117.50				
-126	126					-115.50				
-124	124					-113.50				
-122	122					-111.50				
-120	120					-109.50				
-118	118					-107.50				
-116	116		9.40		-0.20	-105.50				
-114	114		9.80		0.20	-103.50				
-112	112		10.45		0.85	-101.50				
-110	110		10.60		1.00	-99.50				
-108	108		10.90		1.30	-97.50				
-106	106		11.10		1.50	-95.50				
-104	104		11.50		1.90	-93.50				
-102	102		12.05		2.45	-91.50				
-100	100		*12.10*		2.50	-89.50				
-98	98		12.15		2.55	-87.50				
-96	96		*12.03*		2.43	-85.50				
-94	94		11.90		2.30	-83.50				
-92	92		*11.60*		2.00	-81.50				
-90	90		11.30		1.70	-79.50				
-88	88		*11.05*		1.45	-77.50				
-86	86		10.80		1.20	-75.50				
-84	84		*10.50*		0.90	-73.50		9.50		-0.10
-82	82		10.20		0.60	-71.50		9.55		-0.05
-80	80		*10.05*		0.45	-69.50		11.00		1.40
-78	78		9.90		0.30	-67.50		11.75		2.15
-76	76		*10.00*		0.40	-65.50		11.85		2.25
-74	74		10.10		0.50	-63.50		12.05		2.45
-72	72		*10.20*		0.60	-61.50		*12.10*		2.50
-70	70		*10.30*		0.70	-59.50		12.15		2.55
-68	68		10.40		0.80	-57.50		*12.13*		2.53
-66	66		*10.43*		0.83	-55.50		12.10		2.50
-64	64		10.45		0.85	-53.50		*11.98*		2.38
-62	62		*10.45*		0.85	-51.50		11.85		2.25
-60	60		10.45		0.85	-49.50		*11.80*		2.20
-58	58		*10.35*		0.75	-47.50		11.75		2.15
-56	56		10.25		0.65	-45.50		*11.70*		2.10
-54	54		10.15		0.55	-43.50		11.65		2.05
-52	52		9.80		0.20	-41.50		*11.45*		1.85
-50	50		9.00		-0.60	-39.50		11.25		1.65
-48	48		8.35		-1.25	-37.50		*11.18*		1.58
-46	46		7.90		-1.70	-35.50		11.10		1.50
-44	44		7.10		-2.50	-33.50		*10.90*		1.30
-42	42		6.80		-2.80	-31.50		10.70		1.10
-40	40		6.00		-3.60	-29.50		*10.55*		0.95
-38	38		5.70		-3.90	-27.50		10.40		0.80
-36	36		5.30		-4.30	-25.50		*10.38*		0.78
-34	34		5.40		-4.20	-23.50		10.35		0.75
-32	32		6.10		-3.50	-21.50		*10.28*		0.67
-30	30		6.60		-3.00	-19.50		10.20		0.60
-28	28		7.60		-2.00	-17.50		*9.90*		0.30
-26	26		8.65		-0.95	-15.50		9.60		0.00
-24	24		9.05		-0.55	-13.50		*9.45*		-0.15
-22	22		8.80		-0.80	-11.50		9.30		-0.30
-20	20		8.95		-0.65	-9.50		*9.10*		-0.50
-18	18		9.35		-0.25	-7.50		8.90		-0.70
-16	16		9.55		-0.05	-5.50		*8.83*		-0.78
-14	14		9.50		-0.10	-3.50		8.75		-0.85
-12	12		9.50		-0.10	-1.50		8.65		-0.95
-10	10		9.80		0.20	0.50		8.40		-1.20
-8	8		9.50		-0.10	2.50		7.60		-2.00
-6	6		9.15		-0.45	4.50		7.55		-2.05
-4	4	4.95	8.30	-4.65	-1.30	6.50	5.30	6.90	-4.30	-2.70
-2	2	5.10	7.35	-4.50	-2.25	8.50	4.65	5.85	-4.95	-3.75
0	0	5.30	6.20	-4.30	-3.40	10.50	3.50	5.25	-6.10	-4.35
0	0	5.75	5.75	-3.85	-3.85	15.50	3.50	3.00	-6.10	-6.60
2	-2	7.30	6.65	-2.30	-2.95	17.50	4.20	4.75	-5.40	-4.85
4	-4	8.10	7.15	-1.50	-2.45	19.50	5.55	6.15	-4.05	-3.45
6	-6	9.00	8.60	-0.60	-1.00	21.50	6.85	7.45	-2.75	-2.15
8	-8	9.30	9.10	-0.30	-0.50	23.50	7.50	8.80	-2.10	-0.80
10	-10	9.30	9.40	-0.30	-0.20	25.50	8.50	9.60	-1.10	0.00
12	-12					27.50	9.20	*9.60*	-0.40	0.00
14	-14					29.50	9.40	9.60	-0.20	0.00
16	-16					31.50	9.40		-0.20	
18	-18					33.50				
20	-20					35.50				
22	-22					37.50				
24	-24					39.50				
26	-26					41.50				
28	-28					43.50				
30	-30					45.50				

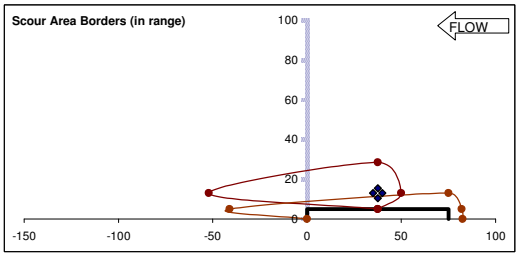
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.30	-4.30
2	6.40	-3.20
4	7.85	-1.75
6	9.00	-0.60
8	9.40	-0.20
10	*9.45*	-0.15
12	9.50	-0.10
14		
16		
18		
20		

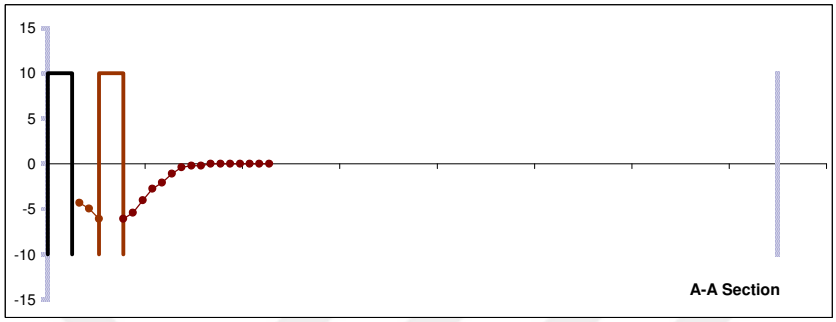
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	7.5
SB_{af}	Abutment Corner Front	7
SB_{ar}	Abutment Corner Right	8
SB_{pl}	Pier Left	*5.5*
SB_{pf}	Pier Front	10
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	87

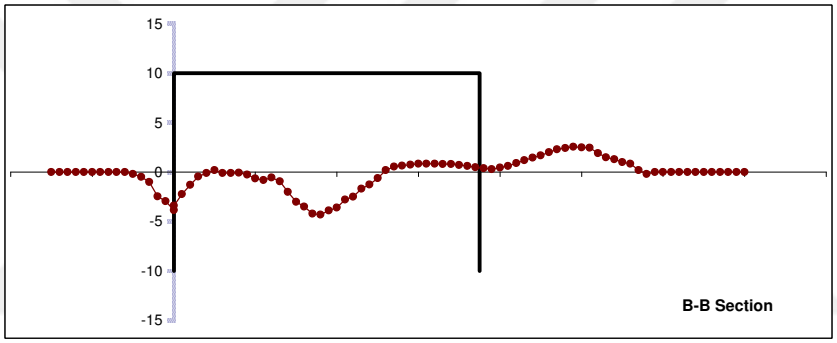


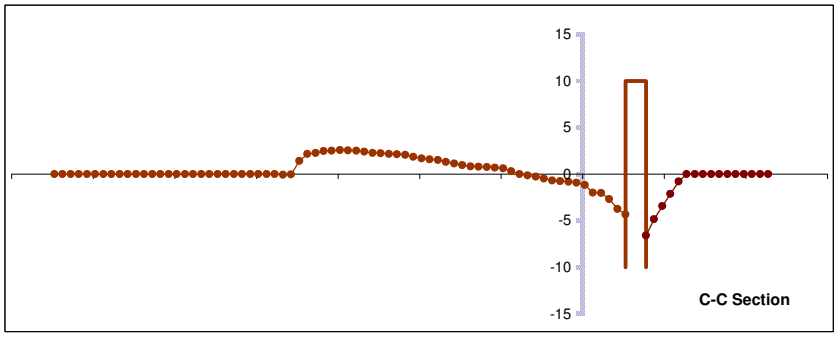
Experiment No : **E7**

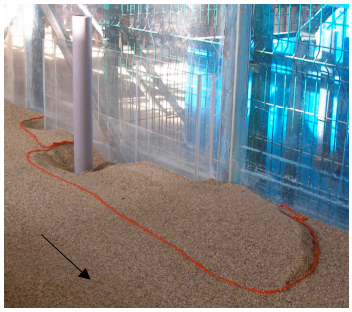




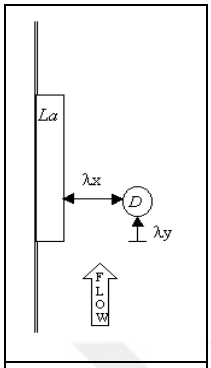


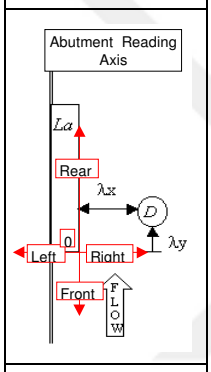


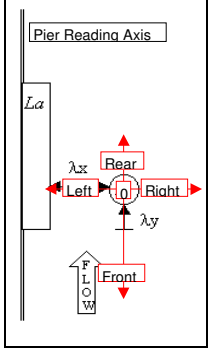


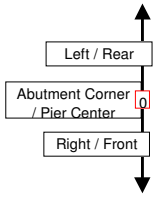


Experiment No :	**E8**
Date :	31.08.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5.5
λ_y (cm) :	70









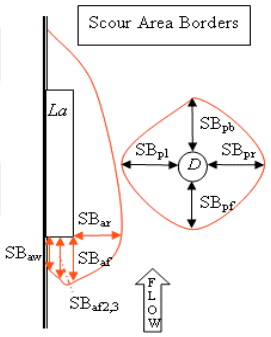
This color was used for raw data readings

This color was used for values enterpolated to sketch

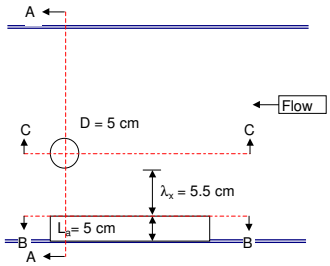
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-129.50				
-138	138					-127.50				
-136	136					-125.50				
-134	134					-123.50				
-132	132					-121.50				
-130	130					-119.50				
-128	128					-117.50				
-126	126					-115.50				
-124	124					-113.50				
-122	122					-111.50				
-120	120					-109.50				
-118	118					-107.50				
-116	116					-105.50				
-114	114					-103.50				
-112	112					-101.50				
-110	110					-99.50				
-108	108					-97.50				
-106	106					-95.50				
-104	104					-93.50				
-102	102					-91.50				
-100	100					-89.50				
-98	98					-87.50				
-96	96					-85.50				
-94	94					-83.50				
-92	92					-81.50				
-90	90					-79.50				
-88	88					-77.50				
-86	86					-75.50				
-84	84					-73.50				
-82	82					-71.50				
-80	80					-69.50				
-78	78					-67.50				
-76	76					-65.50				
-74	74					-63.50		9.40		-0.20
-72	72					-61.50		10.10		0.50
-70	70					-59.50		10.85		1.25
-68	68					-57.50		11.00		1.40
-66	66					-55.50		11.30		1.70
-64	64					-53.50		*11.35*		1.75
-62	62					-51.50		11.40		1.80
-60	60		9.15		-0.45	-49.50		*11.35*		1.75
-58	58		*9.13*		-0.48	-47.50		11.30		1.70
-56	56		9.10		-0.50	-45.50		*11.30*		1.70
-54	54		*9.05*		-0.55	-43.50		11.30		1.70
-52	52		9.00		-0.60	-41.50		*11.20*		1.60
-50	50		*8.90*		-0.70	-39.50		11.10		1.50
-48	48		8.80		-0.80	-37.50		*11.08*		1.48
-46	46		*8.80*		-0.80	-35.50		11.05		1.45
-44	44		8.80		-0.80	-33.50		*10.95*		1.35
-42	42		*8.80*		-0.80	-31.50		10.85		1.25
-40	40		8.80		-0.80	-29.50		*10.75*		1.15
-38	38		9.35		-0.25	-27.50		10.65		1.05
-36	36		9.70		0.10	-25.50		*10.58*		0.98
-34	34		*9.75*		0.15	-23.50		10.50		0.90
-32	32		9.80		0.20	-21.50		*10.43*		0.83
-30	30		*9.85*		0.25	-19.50		10.35		0.75
-28	28		9.90		0.30	-17.50		*10.25*		0.65
-26	26		9.90		0.30	-15.50		10.15		0.55
-24	24		9.90		0.30	-13.50		*9.95*		0.35
-22	22		9.95		0.35	-11.50		9.75		0.15
-20	20		10.00		0.40	-9.50		9.55		-0.05
-18	18		10.05		0.45	-7.50		9.35		-0.25
-16	16		10.10		0.50	-5.50		9.05		-0.55
-14	14		9.90		0.30	-3.50		8.90		-0.70
-12	12		9.70		0.10	-1.50		8.55		-1.05
-10	10		9.40		-0.20	0.50		7.90		-1.70
-8	8		9.00		-0.60	2.50		7.45		-2.15
-6	6		8.30		-1.30	4.50	5.90	6.60	-3.70	-3.00
-4	4	5.10	7.15	-4.50	-2.45	6.50	5.10	5.80	-4.50	-3.80
-2	2	5.30	6.35	-4.30	-3.25	8.50	4.10	5.45	-5.50	-4.15
0	0	5.50	5.50	-4.10	-4.10	10.50	3.60	5.40	-6.00	-4.20
0	0	5.50	5.50	-4.10	-4.10	15.50	3.70	3.40	-5.90	-6.20
2	-2	5.70	6.20	-3.90	-3.40	17.50	4.95	4.50	-4.65	-5.10
4	-4	6.70	7.05	-2.90	-2.55	19.50	6.10	5.95	-3.50	-3.65
6	-6	7.90	8.05	-1.70	-1.55	21.50	6.75	7.45	-2.85	-2.15
8	-8	9.00	9.00	-0.60	-0.60	23.50	7.80	8.40	-1.80	-1.20
10	-10	*9.20*	*9.20*	-0.40	-0.40	25.50	8.50	9.05	-1.10	-0.55
12	-12	9.40	9.40	-0.20	-0.20	27.50	9.00	*9.23*	-0.60	-0.37
14	-14					29.50	*9.20*	9.40	-0.40	-0.20
16	-16					31.50	9.40		-0.20	
18	-18					33.50				
20	-20					35.50				
22	-22					37.50				
24	-24					39.50				
26	-26					41.50				
28	-28					43.50				
30	-30					45.50				

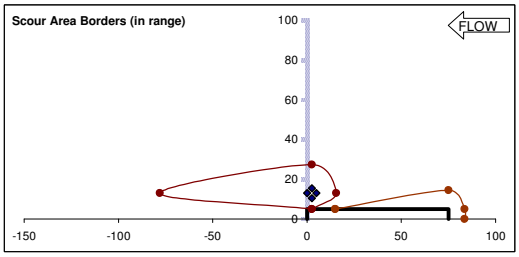
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.30	-4.30
2	5.60	-4.00
4	6.50	-3.10
6	8.00	-1.60
8	9.10	-0.50
10	*9.25*	-0.35
12	9.40	-0.20
14		
16		
18		
20		

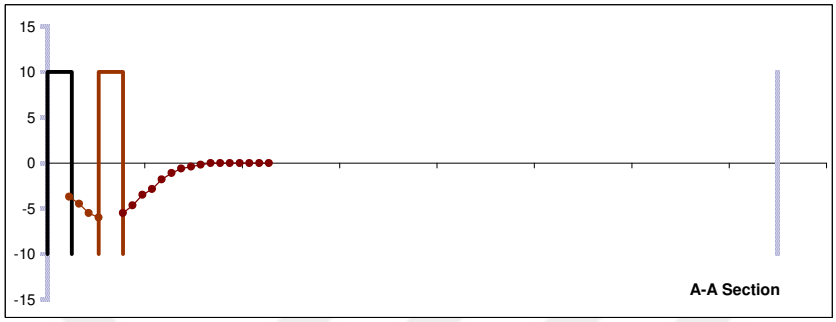
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	*8.5*
SB_{ar}	Abutment Corner Right	9.5
SB_{pl}	Pier Left	*5.5*
SB_{pf}	Pier Front	10.5
SB_{pr}	Pier Right	12
SB_{pb}	Pier Rear	78

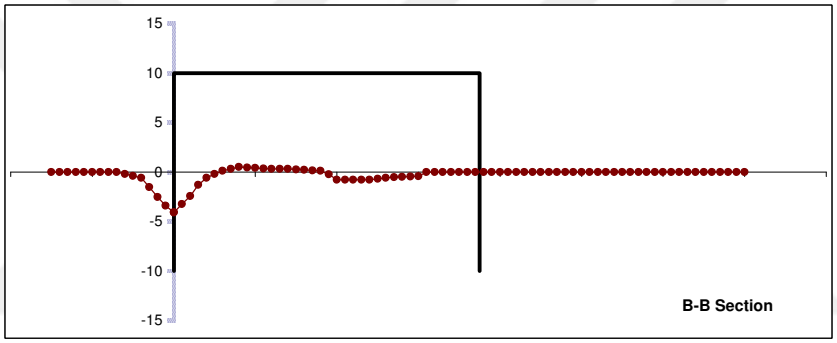


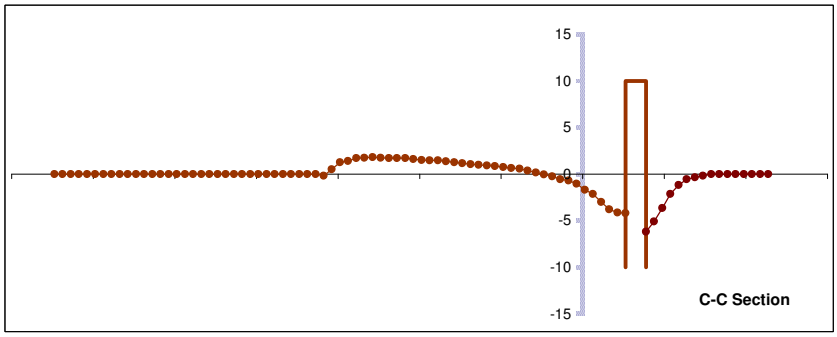
Experiment No : **E8**

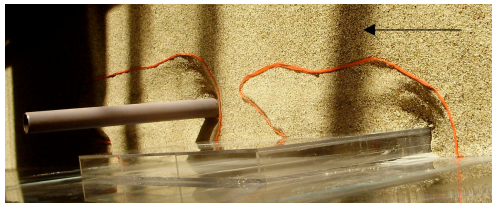


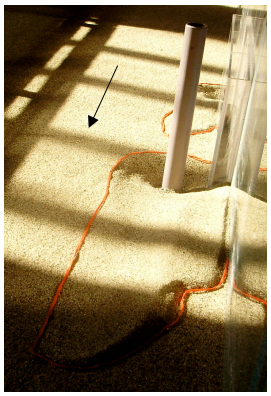






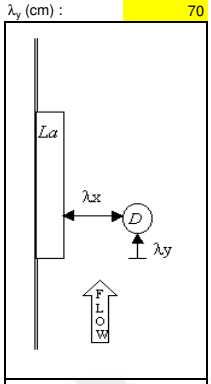


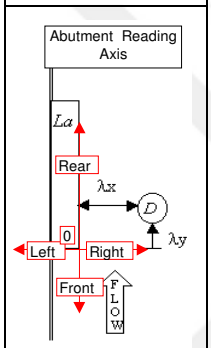


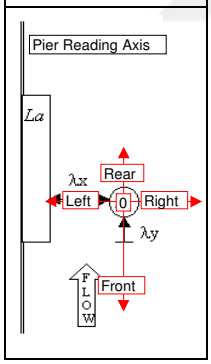


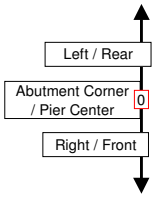
Experiment No : **E9**

Date :	02.09.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	70









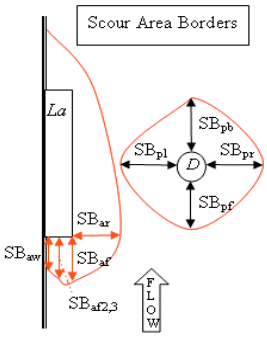
This color was used for raw data readings

This color was used for values enterpolated to sketch

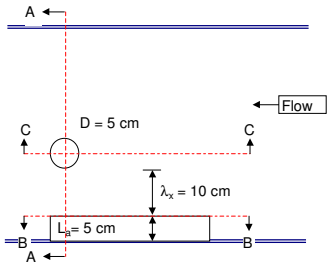
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-125.00				
-138	138					-123.00				
-136	136					-121.00				
-134	134					-119.00				
-132	132					-117.00				
-130	130					-115.00				
-128	128					-113.00				
-126	126					-111.00				
-124	124					-109.00				
-122	122					-107.00				
-120	120					-105.00				
-118	118					-103.00				
-116	116					-101.00				
-114	114					-99.00				
-112	112					-97.00				
-110	110					-95.00				
-108	108					-93.00				
-106	106					-91.00				
-104	104					-89.00				
-102	102					-87.00				
-100	100					-85.00				
-98	98					-83.00				
-96	96					-81.00				
-94	94					-79.00				
-92	92					-77.00				
-90	90					-75.00				
-88	88					-73.00				
-86	86					-71.00				
-84	84					-69.00		9.50		-0.10
-82	82					-67.00		*9.50*		-0.10
-80	80					-65.00		9.50		-0.10
-78	78					-63.00		9.60		0.00
-76	76					-61.00		9.80		0.20
-74	74					-59.00		10.25		0.65
-72	72					-57.00		10.70		1.10
-70	70					-55.00		11.45		1.85
-68	68					-53.00		11.65		2.05
-66	66					-51.00		11.65		2.05
-64	64					-49.00		*11.65*		2.05
-62	62					-47.00		11.65		2.05
-60	60		9.40		-0.20	-45.00		*11.65*		2.05
-58	58		*9.40*		-0.20	-43.00		11.65		2.05
-56	56		9.40		-0.20	-41.00		*11.63*		2.03
-54	54		*9.40*		-0.20	-39.00		11.60		2.00
-52	52		9.40		-0.20	-37.00		*11.55*		1.95
-50	50		*9.40*		-0.20	-35.00		11.50		1.90
-48	48		9.40		-0.20	-33.00		*11.50*		1.90
-46	46		*9.40*		-0.20	-31.00		11.50		1.90
-44	44		9.40		-0.20	-29.00		*11.50*		1.90
-42	42		*9.40*		-0.20	-27.00		11.50		1.90
-40	40		9.40		-0.20	-25.00		*11.33*		1.73
-38	38		*9.40*		-0.20	-23.00		11.15		1.55
-36	36		9.40		-0.20	-21.00		*11.08*		1.48
-34	34		*9.40*		-0.20	-19.00		11.00		1.40
-32	32		9.40		-0.20	-17.00		*10.93*		1.33
-30	30		*9.40*		-0.20	-15.00		10.85		1.25
-28	28		9.40		-0.20	-13.00		*10.78*		1.18
-26	26		*9.40*		-0.20	-11.00		10.70		1.10
-24	24		9.40		-0.20	-9.00		10.45		0.85
-22	22		8.60		-1.00	-7.00		10.25		0.65
-20	20		8.20		-1.40	-5.00		9.90		0.30
-18	18		8.80		-0.80	-3.00		9.60		0.00
-16	16		8.90		-0.70	-1.00		9.30		-0.30
-14	14		9.30		-0.30	1.00		9.00		-0.60
-12	12		9.45		-0.15	3.00		8.45		-1.15
-10	10		9.25		-0.35	5.00	7.40	8.00	-2.20	-1.60
-8	8		8.75		-0.85	7.00	7.05	7.40	-2.55	-2.20
-6	6		8.10		-1.50	9.00	6.10	6.60	-3.50	-3.00
-4	4	5.60	7.30	-4.00	-2.30	11.00	5.20	5.80	-4.40	-3.80
-2	2	5.10	6.45	-4.50	-3.15	13.00	4.05	5.10	-5.55	-4.50
0	0	5.95	5.95	-3.65	-3.65	15.00	3.40	5.00	-6.20	-4.60
0	0	5.95	5.95	-3.65	-3.65	20.00	3.10	3.05	-6.50	-6.55
2	-2	6.25	6.20	-3.35	-3.40	22.00	4.25	4.20	-5.35	-5.40
4	-4	7.20	7.20	-2.40	-2.40	24.00	5.50	5.50	-4.10	-4.10
6	-6	8.10	8.10	-1.50	-1.50	26.00	6.45	6.55	-3.15	-3.05
8	-8	8.50	8.55	-1.10	-1.05	28.00	7.40	7.65	-2.20	-1.95
10	-10	9.10	9.10	-0.50	-0.50	30.00	8.25	8.60	-1.35	-1.00
12	-12	9.40	*9.25*	-0.20	-0.35	32.00	9.00	9.10	-0.60	-0.50
14	-14		9.40		-0.20	34.00	9.20	9.40	-0.40	-0.20
16	-16					36.00	9.40	9.40	-0.20	-0.20
18	-18					38.00	9.40		-0.20	
20	-20					40.00				
22	-22					42.00				
24	-24					44.00				
26	-26					46.00				
28	-28					48.00				
30	-30					50.00				

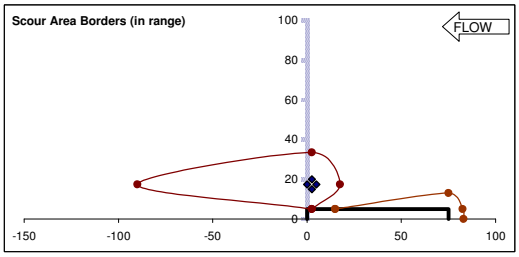
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.90	-3.70
2	6.40	-3.20
4	7.55	-2.05
6	8.25	-1.35
8	8.50	-1.10
10	9.10	-0.50
12	*9.25*	-0.35
14	9.40	-0.20
16		
18		
20		

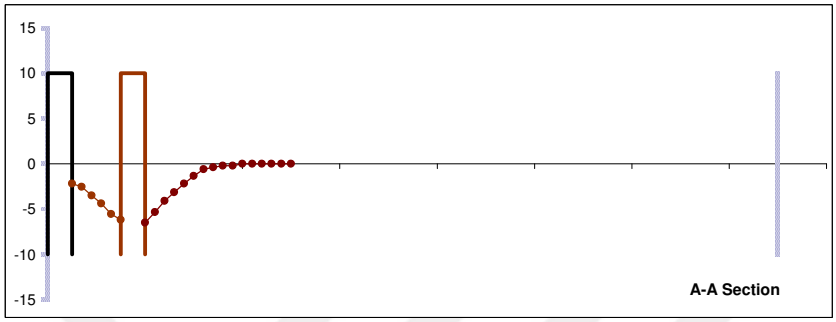
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8
SB_{af}	Abutment Corner Front	7.5
SB_{ar}	Abutment Corner Right	8
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	90

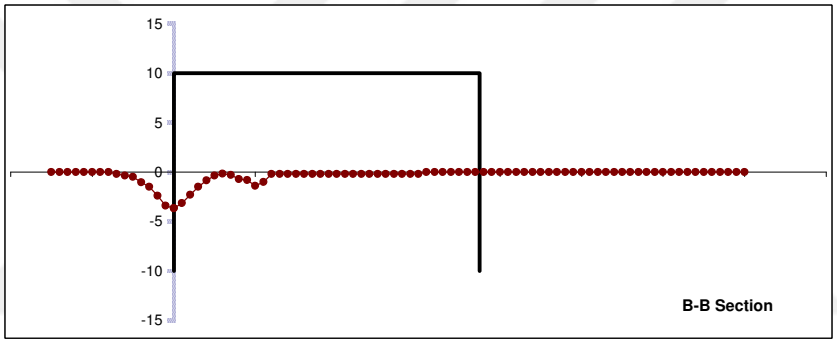


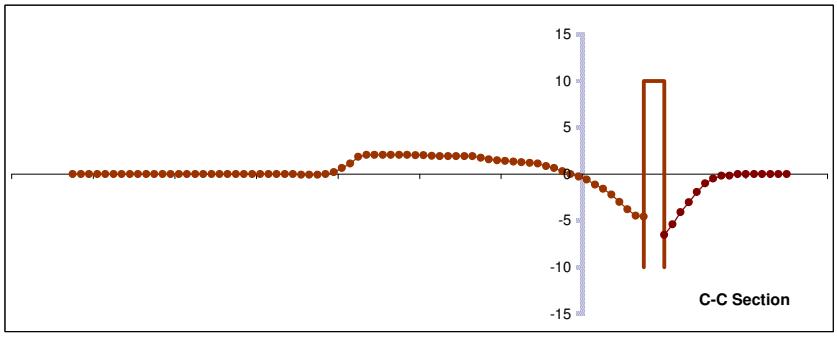
Experiment No : **E9**

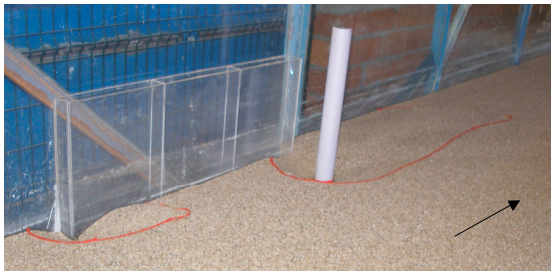






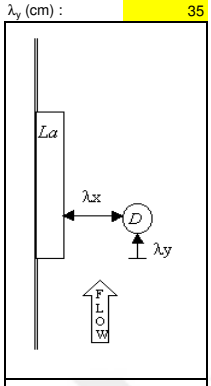


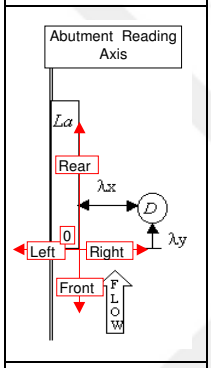


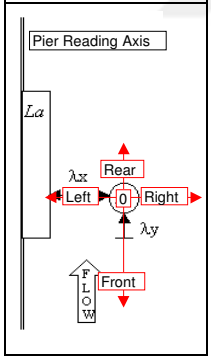


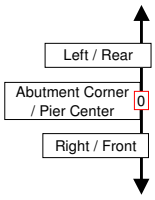
Experiment No : **E10**

Date :	06.09.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	35









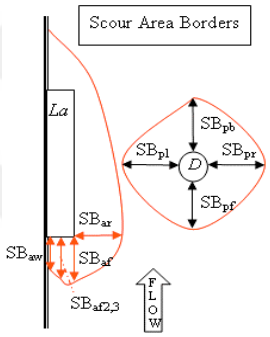
This color was used for raw data readings

This color was used for values enterpolated to sketch

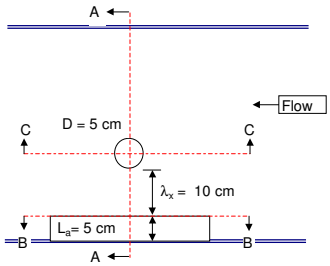
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-125.00				
-138	138					-123.00				
-136	136					-121.00				
-134	134					-119.00				
-132	132					-117.00				
-130	130					-115.00				
-128	128					-113.00				
-126	126					-111.00				
-124	124					-109.00				
-122	122					-107.00				
-120	120					-105.00				
-118	118					-103.00				
-116	116					-101.00				
-114	114					-99.00				
-112	112					-97.00				
-110	110					-95.00				
-108	108					-93.00				
-106	106					-91.00				
-104	104					-89.00				
-102	102					-87.00				
-100	100					-85.00				
-98	98					-83.00				
-96	96					-81.00				
-94	94					-79.00				
-92	92					-77.00				
-90	90					-75.00				
-88	88					-73.00				
-86	86					-71.00				
-84	84					-69.00				
-82	82					-67.00		11.90		2.30
-80	80					-65.00		*11.90*		2.30
-78	78					-63.00		11.90		2.30
-76	76					-61.00		*11.90*		2.30
-74	74					-59.00		11.90		2.30
-72	72					-57.00		*11.88*		2.28
-70	70					-55.00		11.85		2.25
-68	68					-53.00		*11.85*		2.25
-66	66					-51.00		11.85		2.25
-64	64					-49.00		*11.85*		2.25
-62	62					-47.00		11.85		2.25
-60	60					-45.00		*11.85*		2.25
-58	58					-43.00		11.85		2.25
-56	56					-41.00		*11.83*		2.23
-54	54					-39.00		11.80		2.20
-52	52					-37.00		*11.73*		2.13
-50	50					-35.00		11.65		2.05
-48	48					-33.00		*11.55*		1.95
-46	46					-31.00		11.45		1.85
-44	44					-29.00		*11.38*		1.78
-42	42					-27.00		11.30		1.70
-40	40					-25.00		*11.23*		1.63
-38	38		8.00		-1.60	-23.00		11.15		1.55
-36	36		8.40		-1.20	-21.00		*10.98*		1.38
-34	34		9.00		-0.60	-19.00		10.80		1.20
-32	32		9.70		0.10	-17.00		*10.75*		1.15
-30	30		10.05		0.45	-15.00		10.70		1.10
-28	28		10.10		0.50	-13.00		*10.55*		0.95
-26	26		*10.10*		0.50	-11.00		10.40		0.80
-24	24		10.10		0.50	-9.00		10.30		0.70
-22	22		*10.15*		0.55	-7.00		10.00		0.40
-20	20		10.20		0.60	-5.00		9.85		0.25
-18	18		*10.28*		0.67	-3.00		9.60		0.00
-16	16		10.35		0.75	-1.00		9.30		-0.30
-14	14		10.35		0.75	1.00		8.90		-0.70
-12	12		10.25		0.65	3.00		8.10		-1.50
-10	10		9.90		0.30	5.00	8.10	7.95	-1.50	-1.65
-8	8		9.30		-0.30	7.00	7.40	7.35	-2.20	-2.25
-6	6		8.70		-0.90	9.00	6.20	6.75	-3.40	-2.85
-4	4	5.85	7.55	-3.75	-2.05	11.00	5.55	6.20	-4.05	-3.40
-2	2	5.30	6.70	-4.30	-2.90	13.00	4.60	5.80	-5.00	-3.80
0	0	5.90	5.90	-3.70	-3.70	15.00	3.50	5.60	-6.10	-4.00
0	0	5.90	5.90	-3.70	-3.70	20.00	3.70	3.70	-5.90	-5.90
2	-2	6.10	6.30	-3.50	-3.30	22.00	4.80	4.75	-4.80	-4.85
4	-4	7.20	7.55	-2.40	-2.05	24.00	5.70	6.10	-3.90	-3.50
6	-6	8.20	8.85	-1.40	-0.75	26.00	6.35	7.40	-3.25	-2.20
8	-8	9.00	9.20	-0.60	-0.40	28.00	6.90	8.85	-2.70	-0.75
10	-10	*9.20*	*9.30*	-0.40	-0.30	30.00	8.20	9.20	-1.40	-0.40
12	-12	9.40	9.40	-0.20	-0.20	32.00	9.10	9.50	-0.50	-0.10
14	-14					34.00	*9.25*	*9.50*	-0.35	-0.10
16	-16					36.00	9.40	9.50	-0.20	-0.10
18	-18					38.00				
20	-20					40.00				
22	-22					42.00				
24	-24					44.00				
26	-26					46.00				
28	-28					48.00				
30	-30					50.00				

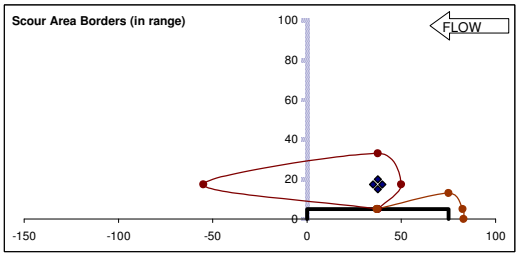
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.85	-3.75
2	6.60	-3.00
4	7.60	-2.00
6	8.70	-0.90
8	9.20	-0.40
10	*9.30*	-0.30
12	9.40	-0.20
14		
16		
18		
20		

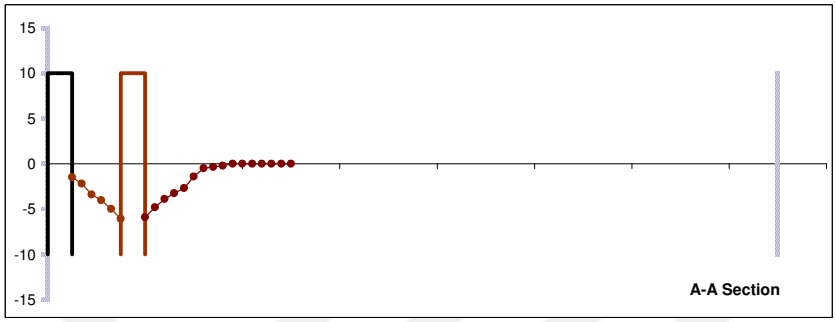
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8
SB_{af}	Abutment Corner Front	7.5
SB_{ar}	Abutment Corner Right	8
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	10
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	90

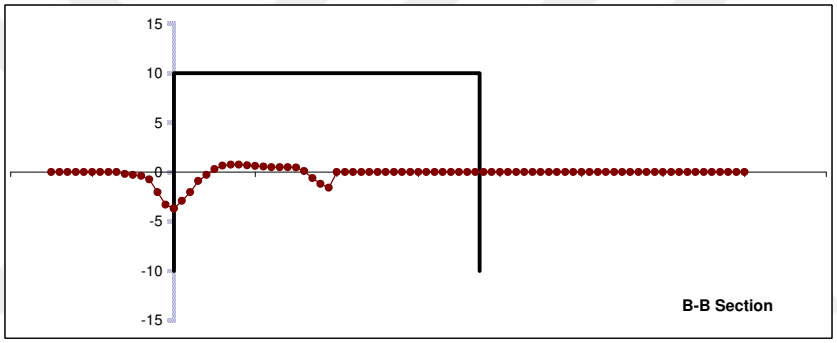


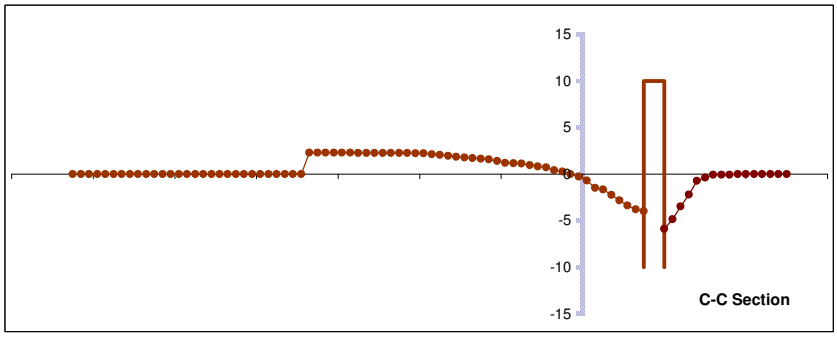
Experiment No : **E10**





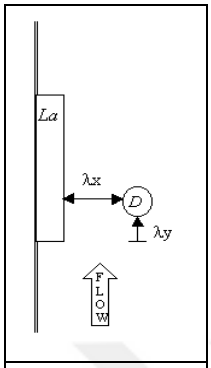


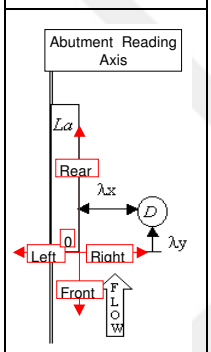


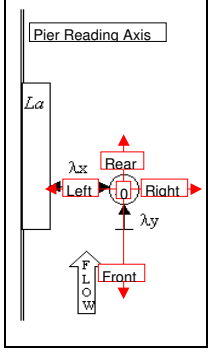


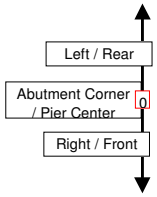
Experiment No : **E11**

Date :	08.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	0









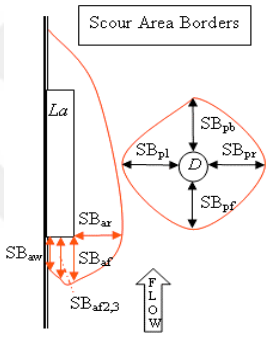
This color was used for raw data readings

This color was used for values enterpolated to sketch

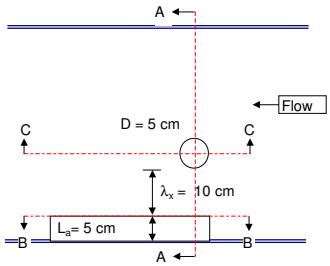
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-125.00				
-138	138					-123.00				
-136	136					-121.00				
-134	134					-119.00				
-132	132					-117.00				
-130	130					-115.00				
-128	128					-113.00				
-126	126					-111.00				
-124	124					-109.00				
-122	122					-107.00				
-120	120					-105.00				
-118	118					-103.00				
-116	116					-101.00				
-114	114					-99.00				
-112	112					-97.00				
-110	110					-95.00				
-108	108					-93.00		12.00		0.00
-106	106		12.00		0.00	-91.00		12.80		0.80
-104	104		12.60		0.60	-89.00		12.60		0.60
-102	102		13.90		1.90	-87.00		12.80		0.80
-100	100		14.00		2.00	-85.00		12.70		0.70
-98	98		14.00		2.00	-83.00		12.50		0.50
-96	96		13.70		1.70	-81.00		12.40		0.40
-94	94		13.50		1.50	-79.00		13.30		1.30
-92	92		13.20		1.20	-77.00		13.90		1.90
-90	90		13.10		1.10	-75.00		14.10		2.10
-88	88		12.80		0.80	-73.00		14.40		2.40
-86	86		12.60		0.60	-71.00		14.20		2.20
-84	84		12.50		0.50	-69.00		13.90		1.90
-82	82		12.50		0.50	-67.00		14.00		2.00
-80	80		12.50		0.50	-65.00		14.10		2.10
-78	78		12.40		0.40	-63.00		14.40		2.40
-76	76		12.00		0.00	-61.00		14.10		2.10
-74	74		12.00		0.00	-59.00		14.30		2.30
-72	72		12.50		0.50	-57.00		14.10		2.10
-70	70		12.70		0.70	-55.00		14.00		2.00
-68	68		12.70		0.70	-53.00		14.00		2.00
-66	66		13.00		1.00	-51.00		14.00		2.00
-64	64		12.60		0.60	-49.00		14.30		2.30
-62	62		12.50		0.50	-47.00		14.10		2.10
-60	60		12.20		0.20	-45.00		14.30		2.30
-58	58		12.50		0.50	-43.00		14.10		2.10
-56	56		12.70		0.70	-41.00		13.90		1.90
-54	54		12.50		0.50	-39.00		13.80		1.80
-52	52		12.70		0.70	-37.00		13.90		1.90
-50	50		12.80		0.80	-35.00		13.90		1.90
-48	48		12.50		0.50	-33.00		14.00		2.00
-46	46		12.50		0.50	-31.00		13.90		1.90
-44	44		12.40		0.40	-29.00		14.00		2.00
-42	42		12.30		0.30	-27.00		13.90		1.90
-40	40		12.20		0.20	-25.00		13.90		1.90
-38	38		12.30		0.30	-23.00		13.70		1.70
-36	36		12.40		0.40	-21.00		14.00		2.00
-34	34		12.40		0.40	-19.00		13.80		1.80
-32	32		12.30		0.30	-17.00		13.80		1.80
-30	30		12.20		0.20	-15.00		13.60		1.60
-28	28		12.20		0.20	-13.00		13.70		1.70
-26	26		12.20		0.20	-11.00		13.80		1.80
-24	24		12.80		0.80	-9.00		13.20		1.20
-22	22		12.00		0.00	-7.00		13.30		1.30
-20	20		12.10		0.10	-5.00		12.80		0.80
-18	18		12.30		0.30	-3.00		12.80		0.80
-16	16		11.20		-0.80	-1.00		12.20		0.20
-14	14		11.80		-0.20	1.00		12.30		0.30
-12	12		11.60		-0.40	3.00		12.20		0.20
-10	10		11.30		-0.70	5.00	*8.77*	11.10	-3.23	-0.90
-8	8		10.80		-1.20	7.00	10.00	10.10	-2.00	-1.90
-6	6	8.30	10.00	-3.70	-2.00	9.00	9.50	9.20	-2.50	-2.80
-4	4	8.10	9.00	-3.90	-3.00	11.00	9.20	8.50	-2.80	-3.50
-2	2	8.40	8.70	-3.60	-3.30	13.00	8.00	7.60	-4.00	-4.40
0	0	8.10	8.10	-3.90	-3.90	15.00	6.30	7.30	-5.70	-4.70
0	0	8.10	8.10	-3.90	-3.90	20.00	5.80	5.90	-6.20	-6.10
2	-2	8.40	8.90	-3.60	-3.10	22.00	6.60	7.60	-5.40	-4.40
4	-4	8.80	10.10	-3.20	-1.90	24.00	8.00	8.90	-4.00	-3.10
6	-6	9.40	11.00	-2.60	-1.00	26.00	8.80	9.80	-3.20	-2.20
8	-8	8.60	11.70	-3.40	-0.30	28.00	9.80	10.60	-2.20	-1.40
10	-10	6.70	11.80	-5.30	-0.20	30.00	11.00	11.10	-1.00	-0.90
12	-12	6.20	11.70	-5.80	-0.30	32.00	11.60	11.60	-0.40	-0.40
14	-14	5.60	11.90	-6.40	-0.10	34.00	12.00	12.00	0.00	0.00
16	-16	5.40	12.00	-6.60	0.00	36.00				
18	-18	6.40		-5.60		38.00				
20	-20	7.40		-4.60		40.00				
22	-22	7.40		-4.60		42.00				
24	-24	8.50		-3.50		44.00				
26	-26	8.50		-3.50		46.00				
28	-28	9.50		-2.50		48.00				
30	-30	10.40		-1.60		50.00				

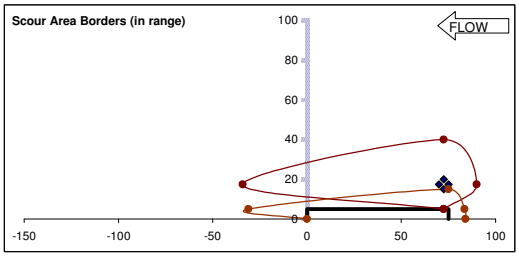
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	8.30	-3.70
2	9.10	-2.90
4	10.10	-1.90
6	10.90	-1.10
8	11.50	-0.50
10	11.70	-0.30
12	11.80	-0.20
14	12.10	0.10
16		
18		
20		

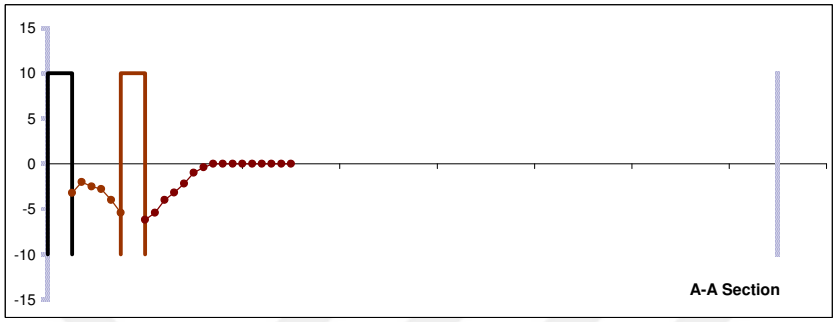
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	15
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	104

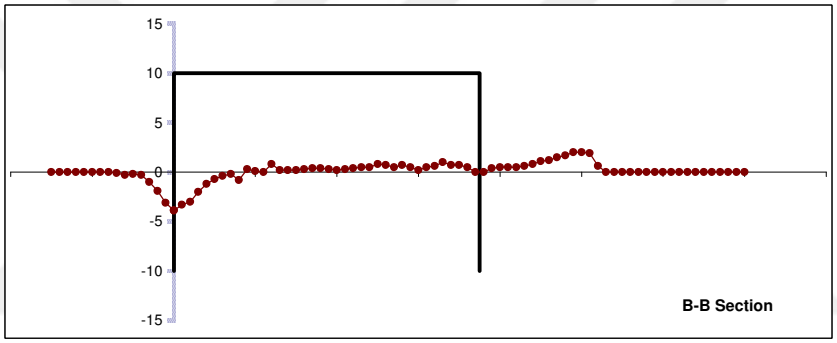


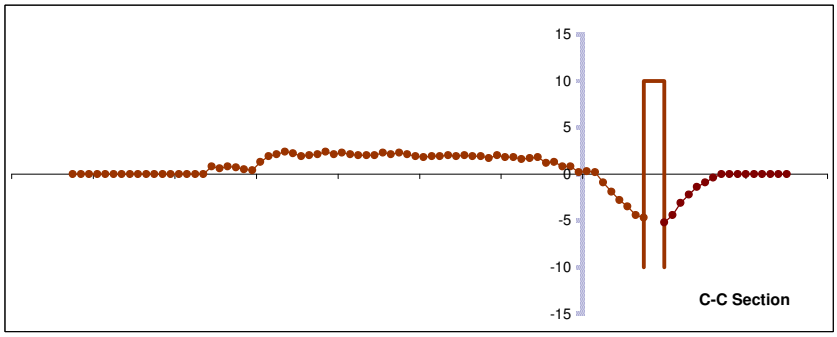
Experiment No : **E11**

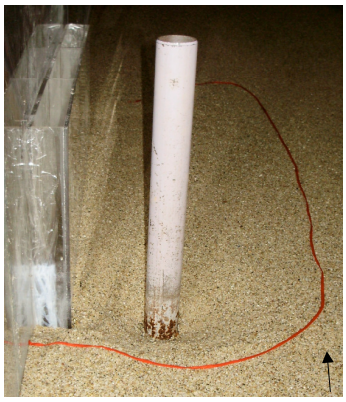


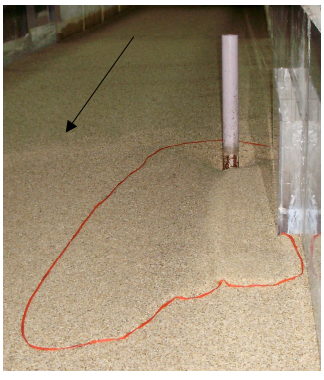






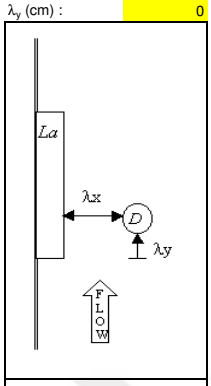


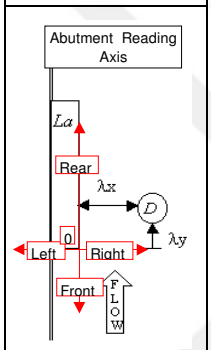


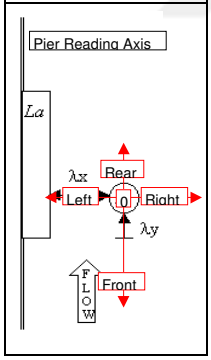


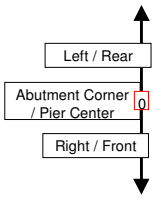
Experiment No : **E12**

Date :	12.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	0









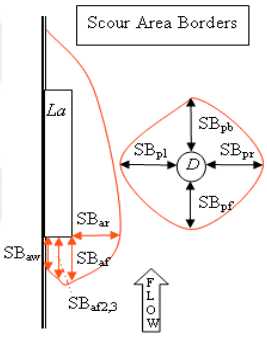
This color was used for raw data readings

This color was used for values enterpolated to sketch

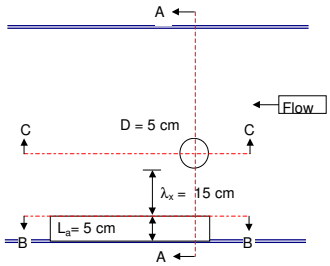
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-120.00				
-138	138					-118.00				
-136	136					-116.00				
-134	134					-114.00				
-132	132					-112.00				
-130	130					-110.00				
-128	128					-108.00				
-126	126					-106.00				
-124	124					-104.00				
-122	122					-102.00				
-120	120					-100.00				
-118	118					-98.00				
-116	116					-96.00				
-114	114					-94.00				
-112	112					-92.00				
-110	110					-90.00				
-108	108					-88.00				
-106	106					-86.00				
-104	104					-84.00				
-102	102					-82.00				
-100	100					-80.00				
-98	98					-78.00				
-96	96					-76.00				
-94	94		12.00		0.00	-74.00				
-92	92		11.70		-0.30	-72.00				
-90	90		11.60		-0.40	-70.00				
-88	88		11.40		-0.60	-68.00				
-86	86		11.40		-0.60	-66.00				
-84	84		11.30		-0.70	-64.00				
-82	82		11.30		-0.70	-62.00				
-80	80		11.10		-0.90	-60.00				
-78	78		10.90		-1.10	-58.00				
-76	76		10.70		-1.30	-56.00				
-74	74		10.70		-1.30	-54.00				
-72	72		10.50		-1.50	-52.00				
-70	70		10.30		-1.70	-50.00		12.00		0.00
-68	68		10.70		-1.30	-48.00		12.10		0.10
-66	66		10.80		-1.20	-46.00		12.20		0.20
-64	64		10.80		-1.20	-44.00		12.10		0.10
-62	62		10.90		-1.10	-42.00		12.10		0.10
-60	60		11.00		-1.00	-40.00		12.30		0.30
-58	58		11.10		-0.90	-38.00		12.90		0.90
-56	56		10.90		-1.10	-36.00		13.00		1.00
-54	54		11.40		-0.60	-34.00		13.20		1.20
-52	52		10.90		-1.10	-32.00		13.40		1.40
-50	50		10.70		-1.30	-30.00		13.50		1.50
-48	48		10.30		-1.70	-28.00		13.70		1.70
-46	46		10.30		-1.70	-26.00		12.50		0.50
-44	44		10.40		-1.60	-24.00		13.70		1.70
-42	42		10.30		-1.70	-22.00		13.70		1.70
-40	40		10.10		-1.90	-20.00		13.60		1.60
-38	38		9.90		-2.10	-18.00		13.70		1.70
-36	36		9.90		-2.10	-16.00		13.40		1.40
-34	34		9.90		-2.10	-14.00		13.40		1.40
-32	32		9.80		-2.20	-12.00		13.30		1.30
-30	30		9.90		-2.10	-10.00		13.20		1.20
-28	28		9.70		-2.30	-8.00		13.20		1.20
-26	26		9.90		-2.10	-6.00		13.10		1.10
-24	24		9.60		-2.40	-4.00		12.90		0.90
-22	22		9.00		-3.00	-2.00		12.90		0.90
-20	20		8.70		-3.30	0.00		12.40		0.40
-18	18		8.70		-3.30	2.00		12.40		0.40
-16	16		8.80		-3.20	4.00	8.50	12.10	-3.50	0.10
-14	14		9.00		-3.00	6.00	8.40	11.90	-3.60	-0.10
-12	12		8.90		-3.10	8.00	8.80	11.60	-3.20	-0.40
-10	10		9.20		-2.80	10.00	9.70	11.30	-2.30	-0.70
-8	8		10.30		-1.70	12.00	9.80	10.40	-2.20	-1.60
-6	6	6.80	9.50	-5.20	-2.50	14.00	8.80	9.40	-3.20	-2.60
-4	4	6.70	8.30	-5.30	-3.70	16.00	7.60	8.70	-4.40	-3.30
-2	2	6.60	7.80	-5.40	-4.20	18.00	6.60	7.60	-5.40	-4.40
0	0	7.60	7.60	-4.40	-4.40	20.00	5.70	7.40	-6.30	-4.60
0	0	7.60	7.60	-4.40	-4.40	25.00	5.70	5.60	-6.30	-6.40
2	-2	7.80	7.90	-4.20	-4.10	27.00	6.00	6.50	-6.00	-5.50
4	-4	8.30	9.10	-3.70	-2.90	29.00	7.50	7.60	-4.50	-4.40
6	-6	9.30	10.10	-2.70	-1.90	31.00	8.60	9.10	-3.40	-2.90
8	-8	9.60	10.60	-2.40	-1.40	33.00	8.70	10.40	-3.30	-1.60
10	-10	9.30	10.70	-2.70	-1.30	35.00	10.60	11.40	-1.40	-0.60
12	-12	8.10	11.10	-3.90	-0.90	37.00	11.80	12.00	-0.20	0.00
14	-14	7.00	11.00	-5.00	-1.00	39.00	11.90		-0.10	
16	-16	6.20	12.00	-5.80	0.00	41.00	12.00		0.00	
18	-18	5.60		-6.40		43.00				
20	-20	5.00		-7.00		45.00				
22	-22	5.20		-6.80		47.00				
24	-24	6.20		-5.80		49.00				
26	-26	7.40		-4.60		51.00				
28	-28	8.80		-3.20		53.00				
30	-30	9.80		-2.20		55.00				

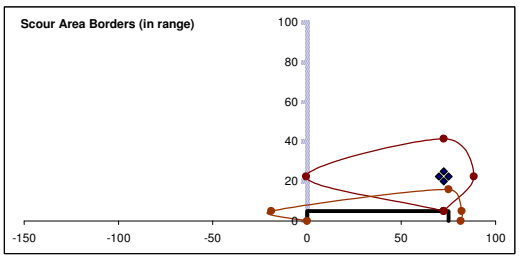
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.50	-5.50
2	8.30	-3.70
4	9.30	-2.70
6	10.30	-1.70
8	10.60	-1.40
10	10.90	-1.10
12	11.00	-1.00
14	11.20	-0.80
16	11.10	-0.90
18	11.10	-0.90
20	12.00	0.00

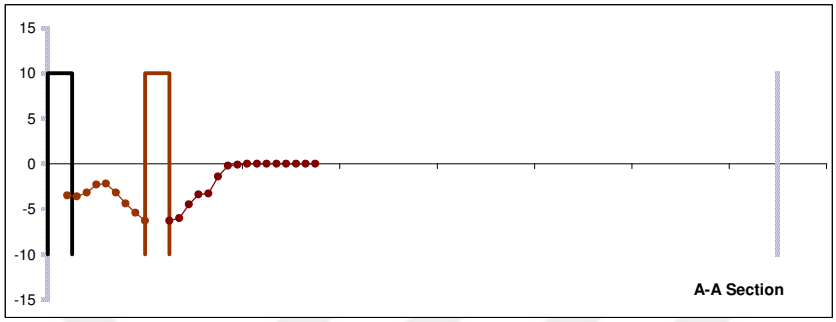
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	6.5
SB_{af}	Abutment Corner Front	7
SB_{ar}	Abutment Corner Right	11
SB_{pl}	Pier Left	15
SB_{pf}	Pier Front	13.5
SB_{pr}	Pier Right	16.5
SB_{pb}	Pier Rear	70.5

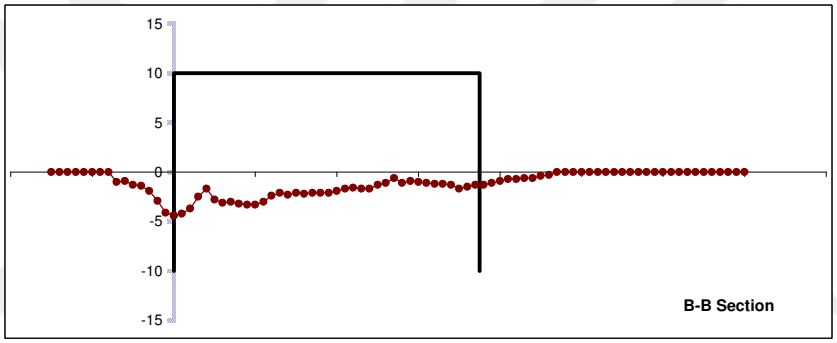


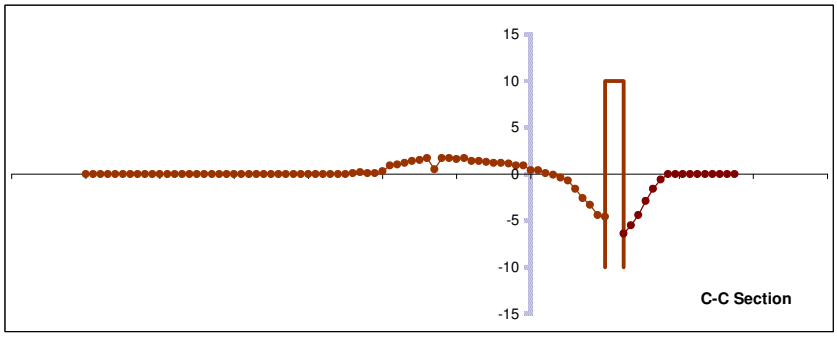
Experiment No : **E12**

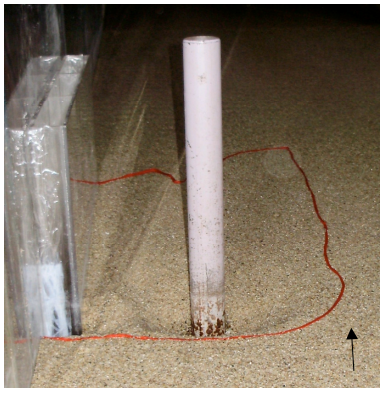


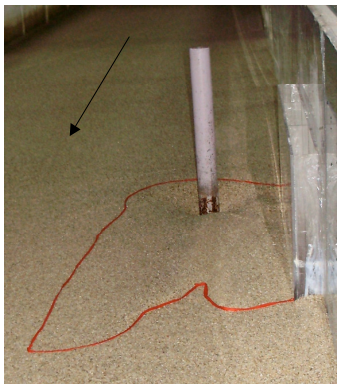






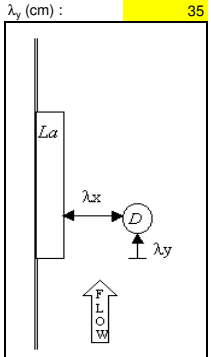


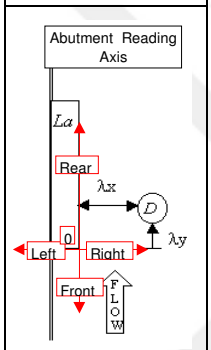


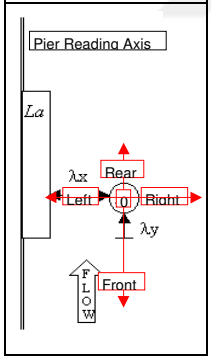


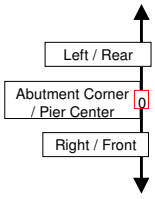
Experiment No : **E13**

Date :	23.09.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	35









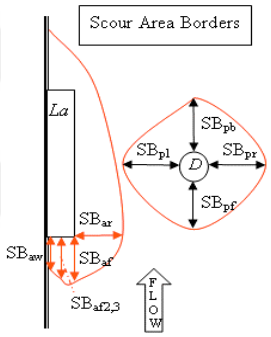
This color was used for raw data readings

This color was used for values enterpolated to sketch

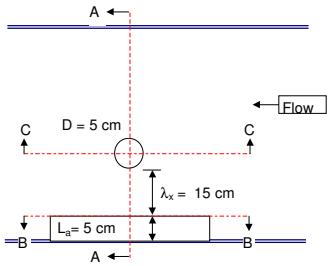
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-120.00				
-138	138					-118.00				
-136	136					-116.00				
-134	134					-114.00				
-132	132					-112.00				
-130	130					-110.00				
-128	128					-108.00				
-126	126					-106.00				
-124	124					-104.00				
-122	122					-102.00				
-120	120					-100.00				
-118	118					-98.00				
-116	116					-96.00				
-114	114					-94.00				
-112	112					-92.00				
-110	110					-90.00				
-108	108					-88.00		9.40		-0.20
-106	106					-86.00		*9.50*		-0.10
-104	104					-84.00		9.60		0.00
-102	102					-82.00		*9.95*		0.35
-100	100					-80.00		10.30		0.70
-98	98					-78.00		12.30		2.70
-96	96					-76.00		11.40		1.80
-94	94					-74.00		11.40		1.80
-92	92					-72.00		*11.40*		1.80
-90	90					-70.00		11.40		1.80
-88	88					-68.00		*11.40*		1.80
-86	86					-66.00		11.40		1.80
-84	84					-64.00		*11.40*		1.80
-82	82					-62.00		11.40		1.80
-80	80					-60.00		*11.35*		1.75
-78	78					-58.00		11.30		1.70
-76	76					-56.00		*11.30*		1.70
-74	74					-54.00		11.30		1.70
-72	72					-52.00		*11.33*		1.73
-70	70					-50.00		*11.37*		1.77
-68	68					-48.00		11.40		1.80
-66	66					-46.00		*11.40*		1.80
-64	64					-44.00		11.40		1.80
-62	62					-42.00		*11.40*		1.80
-60	60					-40.00		11.40		1.80
-58	58					-38.00		*11.35*		1.75
-56	56					-36.00		11.30		1.70
-54	54					-34.00		*11.23*		1.63
-52	52					-32.00		11.15		1.55
-50	50					-30.00		*11.03*		1.43
-48	48					-28.00		10.90		1.30
-46	46					-26.00		*10.88*		1.28
-44	44					-24.00		10.85		1.25
-42	42					-22.00		*10.83*		1.23
-40	40					-20.00		10.80		1.20
-38	38					-18.00		*10.73*		1.13
-36	36		9.80		0.20	-16.00		10.65		1.05
-34	34		*9.90*		0.30	-14.00		*10.53*		0.93
-32	32		10.00		0.40	-12.00		10.40		0.80
-30	30		*10.25*		0.65	-10.00		*10.20*		0.60
-28	28		10.50		0.90	-8.00		10.00		0.40
-26	26		*10.50*		0.90	-6.00		9.90		0.30
-24	24		10.50		0.90	-4.00		9.70		0.10
-22	22		*10.50*		0.90	-2.00		9.65		0.05
-20	20		10.50		0.90	0.00		9.45		-0.15
-18	18		*10.50*		0.90	2.00		9.30		-0.30
-16	16		10.50		0.90	4.00		9.10		-0.50
-14	14		10.60		1.00	6.00	9.40	8.65	-0.20	-0.95
-12	12		10.30		0.70	8.00	9.00	8.30	-0.60	-1.30
-10	10		*9.85*		0.25	10.00	8.30	8.00	-1.30	-1.60
-8	8		9.40		-0.20	12.00	7.50	7.10	-2.10	-2.50
-6	6		8.80		-0.80	14.00	6.40	6.50	-3.20	-3.10
-4	4	6.20	8.20	-3.40	-1.40	16.00	5.40	5.70	-4.20	-3.90
-2	2	5.80	7.20	-3.80	-2.40	18.00	4.30	5.55	-5.30	-4.05
0	0	6.25	6.25	-3.35	-3.35	20.00	3.10	5.40	-6.50	-4.20
0	0	6.25	6.25	-3.35	-3.35	25.00	3.10	3.40	-6.50	-6.20
2	-2	7.00	6.65	-2.60	-2.95	27.00	4.10	4.80	-5.50	-4.80
4	-4	8.10	7.80	-1.50	-1.80	29.00	5.10	6.15	-4.50	-3.45
6	-6	8.80	8.70	-0.80	-0.90	31.00	6.10	7.00	-3.50	-2.60
8	-8	9.00	9.40	-0.60	-0.20	33.00	7.00	8.30	-2.60	-1.30
10	-10	9.20	*9.40*	-0.40	-0.20	35.00	8.10	9.30	-1.50	-0.30
12	-12	9.40	9.40	-0.20	-0.20	37.00	8.80	9.40	-0.80	-0.20
14	-14	*9.40*		-0.20		39.00	9.30	*9.40*	-0.30	-0.20
16	-16	9.40		-0.20		41.00	9.40	9.40	-0.20	-0.20
18	-18					43.00	*9.40*		-0.20	
20	-20					45.00	9.40		-0.20	
22	-22					47.00				
24	-24					49.00				
26	-26					51.00				
28	-28					53.00				
30	-30					55.00				

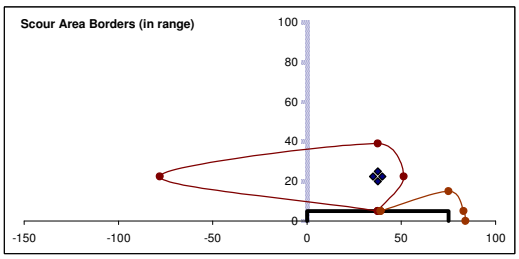
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.25	-3.35
2	7.05	-2.55
4	8.00	-1.60
6	8.65	-0.95
8	9.20	-0.40
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

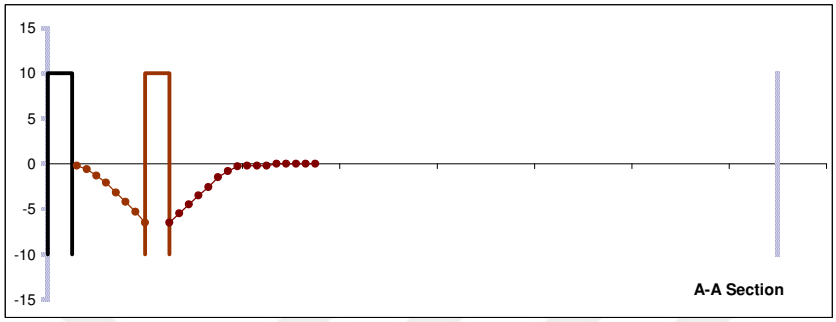
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*15*
SB_{pf}	Pier Front	11.3
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	113

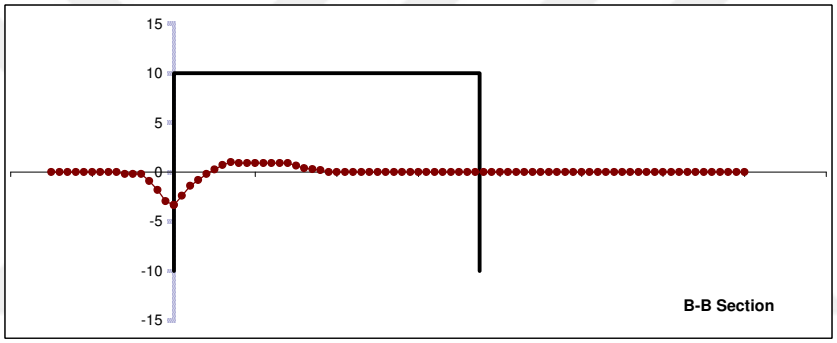


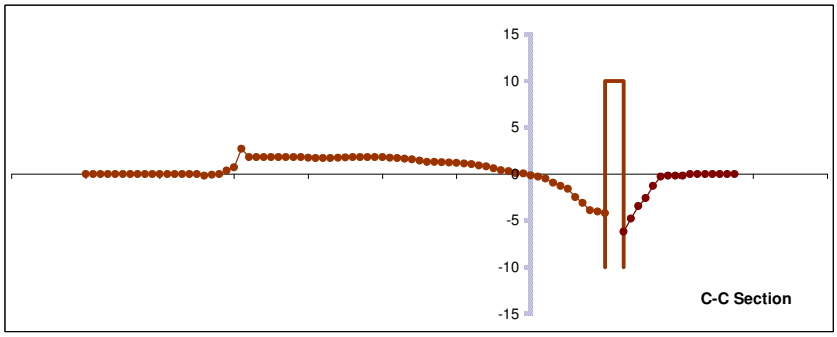
Experiment No : **E13**





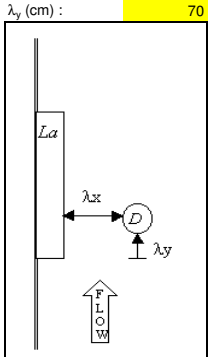


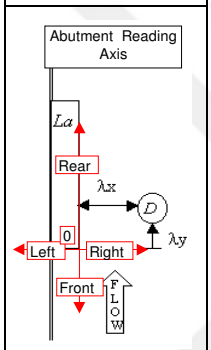


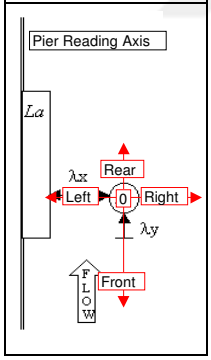


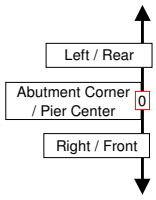
Experiment No : **E14**

Date :	05.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	70









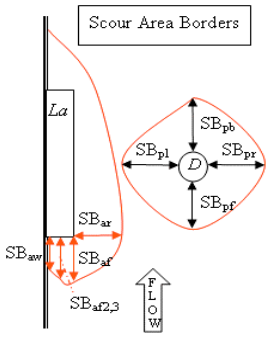
This color was used for raw data readings

This color was used for values enterpolated to sketch

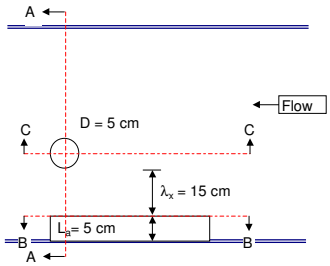
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-120.00				
-138	138					-118.00				
-136	136					-116.00				
-134	134					-114.00				
-132	132					-112.00				
-130	130					-110.00				
-128	128					-108.00				
-126	126					-106.00				
-124	124					-104.00				
-122	122					-102.00				
-120	120					-100.00				
-118	118					-98.00				
-116	116					-96.00				
-114	114					-94.00				
-112	112					-92.00				
-110	110					-90.00				
-108	108					-88.00				
-106	106					-86.00				
-104	104					-84.00				
-102	102					-82.00				
-100	100					-80.00				
-98	98					-78.00				
-96	96					-76.00				
-94	94					-74.00				
-92	92					-72.00				
-90	90					-70.00				
-88	88					-68.00				
-86	86					-66.00				
-84	84					-64.00				
-82	82					-62.00				
-80	80					-60.00		9.40		-0.20
-78	78					-58.00		*9.45*		-0.15
-76	76					-56.00		9.50		-0.10
-74	74					-54.00		9.70		0.10
-72	72					-52.00		10.20		0.60
-70	70					-50.00		10.55		0.95
-68	68					-48.00		11.25		1.65
-66	66					-46.00		11.30		1.70
-64	64					-44.00		*11.40*		1.80
-62	62					-42.00		11.50		1.90
-60	60					-40.00		*11.50*		1.90
-58	58					-38.00		11.50		1.90
-56	56					-36.00		*11.50*		1.90
-54	54					-34.00		11.50		1.90
-52	52					-32.00		*11.50*		1.90
-50	50					-30.00		11.50		1.90
-48	48					-28.00		*11.58*		1.98
-46	46					-26.00		11.65		2.05
-44	44					-24.00		*11.63*		2.03
-42	42					-22.00		11.60		2.00
-40	40					-20.00		*11.55*		1.95
-38	38					-18.00		11.50		1.90
-36	36					-16.00		*11.40*		1.80
-34	34					-14.00		11.30		1.70
-32	32					-12.00		*11.15*		1.55
-30	30					-10.00		11.00		1.40
-28	28					-8.00		*10.85*		1.25
-26	26		9.40		-0.20	-6.00		10.70		1.10
-24	24		9.50		-0.10	-4.00		10.50		0.90
-22	22		9.50		-0.10	-2.00		10.40		0.80
-20	20		9.70		0.10	0.00		9.90		0.30
-18	18		10.20		0.60	2.00		9.50		-0.10
-16	16		10.40		0.80	4.00		9.30		-0.30
-14	14		10.30		0.70	6.00	9.40	9.00	-0.20	-0.60
-12	12		10.10		0.50	8.00	9.30	8.30	-0.30	-1.30
-10	10		9.70		0.10	10.00	8.40	8.00	-1.20	-1.60
-8	8		9.10		-0.50	12.00	7.40	7.50	-2.20	-2.10
-6	6		8.35		-1.25	14.00	6.70	6.70	-2.90	-2.90
-4	4	5.10	7.50	-4.50	-2.10	16.00	5.55	6.00	-4.05	-3.60
-2	2	5.00	6.50	-4.60	-3.10	18.00	4.10	5.50	-5.50	-4.10
0	0	5.50	5.50	-4.10	-4.10	20.00	3.40	5.40	-6.20	-4.20
0	0	5.50	5.50	-4.10	-4.10	25.00	3.40	3.40	-6.20	-6.20
2	-2	5.60	6.00	-4.00	-3.60	27.00	3.50	4.30	-6.10	-5.30
4	-4	6.70	7.05	-2.90	-2.55	29.00	5.00	5.50	-4.60	-4.10
6	-6	8.20	8.25	-1.40	-1.35	31.00	6.40	6.95	-3.20	-2.65
8	-8	8.80	9.20	-0.80	-0.40	33.00	7.00	8.15	-2.60	-1.45
10	-10	9.10	*9.30*	-0.50	-0.30	35.00	7.60	9.30	-2.00	-0.30
12	-12	9.40	9.40	-0.20	-0.20	37.00	8.90	9.40	-0.70	-0.20
14	-14	*9.40*	*9.40*	-0.20	-0.20	39.00	9.30	*9.40*	-0.30	-0.20
16	-16	9.40	9.40	-0.20	-0.20	41.00	*9.35*	9.40	-0.25	-0.20
18	-18					43.00	9.40		-0.20	
20	-20					45.00				
22	-22					47.00				
24	-24					49.00				
26	-26					51.00				
28	-28					53.00				
30	-30					55.00				

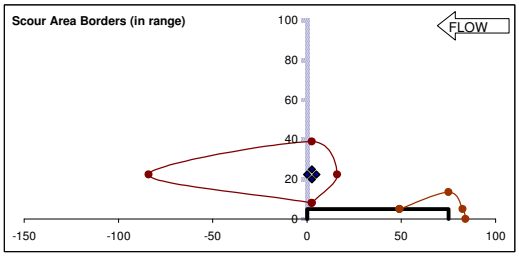
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.10	-4.50
2	5.85	-3.75
4	6.65	-2.95
6	7.80	-1.80
8	8.90	-0.70
10	9.30	-0.30
12	9.40	-0.20
14	*9.40*	-0.20
16	9.40	-0.20
18		
20		

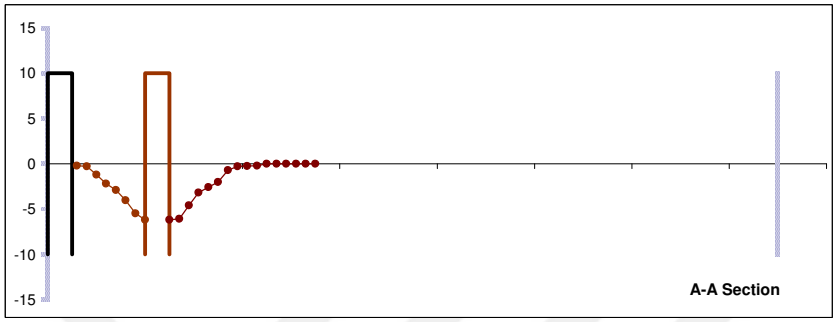
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	7.5
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	12
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	84

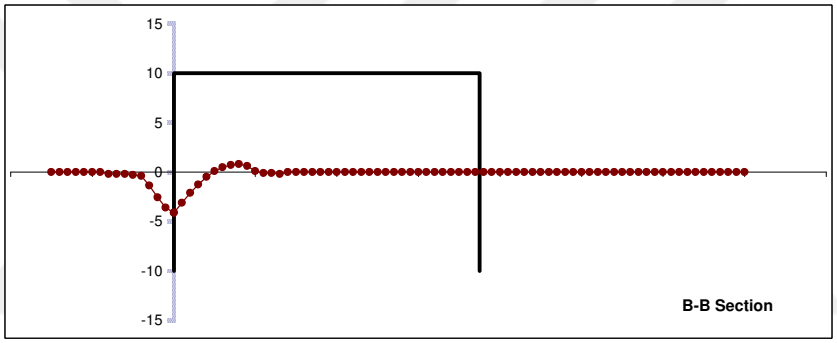


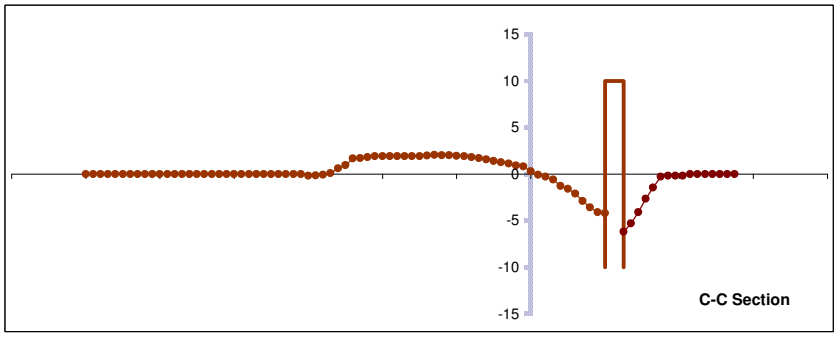
Experiment No : **E14**

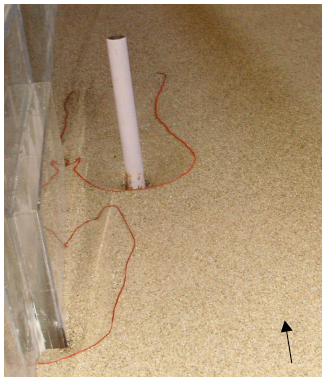


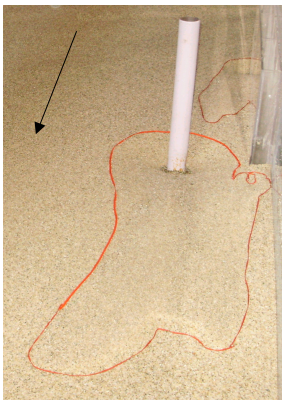






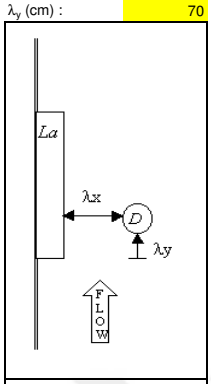


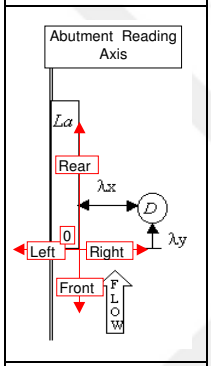


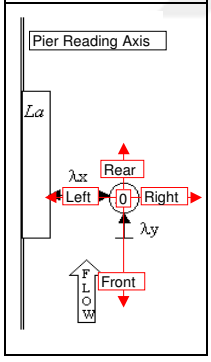


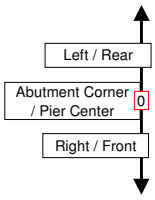
Experiment No : **E15**

Date :	07.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	70









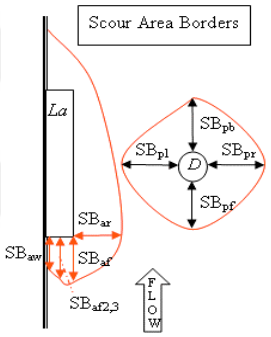
This color was used for raw data readings

This color was used for values enterpolated to sketch

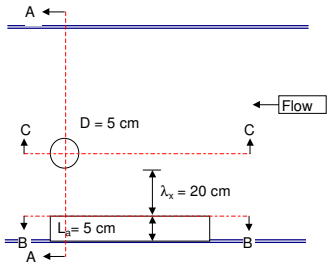
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-115.00				
-138	138					-113.00				
-136	136					-111.00				
-134	134					-109.00				
-132	132					-107.00				
-130	130					-105.00				
-128	128					-103.00				
-126	126					-101.00				
-124	124					-99.00				
-122	122					-97.00				
-120	120					-95.00				
-118	118					-93.00				
-116	116					-91.00				
-114	114					-89.00				
-112	112					-87.00				
-110	110					-85.00				
-108	108					-83.00				
-106	106					-81.00				
-104	104					-79.00				
-102	102					-77.00				
-100	100					-75.00				
-98	98					-73.00				
-96	96					-71.00				
-94	94					-69.00				
-92	92					-67.00				
-90	90					-65.00				
-88	88					-63.00				
-86	86					-61.00				
-84	84					-59.00				
-82	82					-57.00				
-80	80					-55.00		9.40		-0.20
-78	78					-53.00		9.50		-0.10
-76	76					-51.00		9.65		0.05
-74	74					-49.00		10.60		1.00
-72	72					-47.00		10.90		1.30
-70	70					-45.00		*11.08*		1.48
-68	68					-43.00		11.25		1.65
-66	66					-41.00		*11.30*		1.70
-64	64					-39.00		11.35		1.75
-62	62					-37.00		*11.43*		1.83
-60	60					-35.00		11.50		1.90
-58	58					-33.00		*11.50*		1.90
-56	56					-31.00		11.50		1.90
-54	54					-29.00		*11.50*		1.90
-52	52					-27.00		11.50		1.90
-50	50					-25.00		*11.50*		1.90
-48	48					-23.00		11.50		1.90
-46	46					-21.00		*11.50*		1.90
-44	44					-19.00		11.50		1.90
-42	42					-17.00		*11.45*		1.85
-40	40					-15.00		11.40		1.80
-38	38					-13.00		*11.33*		1.73
-36	36					-11.00		11.25		1.65
-34	34					-9.00		*11.13*		1.53
-32	32					-7.00		11.00		1.40
-30	30					-5.00		*10.90*		1.30
-28	28		9.40		-0.20	-3.00		10.80		1.20
-26	26		*9.25*		-0.35	-1.00		10.65		1.05
-24	24		9.10		-0.50	1.00		10.45		0.85
-22	22		*8.90*		-0.70	3.00		10.20		0.60
-20	20		8.70		-0.90	5.00	9.40	9.80	-0.20	0.20
-18	18		8.70		-0.90	7.00	9.40	9.50	-0.20	-0.10
-16	16		8.70		-0.90	9.00	*9.40*	9.20	-0.20	-0.40
-14	14		9.50		-0.10	11.00	9.40	8.60	-0.20	-1.00
-12	12		9.90		0.30	13.00	9.00	8.25	-0.60	-1.35
-10	10		9.55		-0.05	15.00	8.65	7.70	-0.95	-1.90
-8	8		9.30		-0.30	17.00	7.90	7.15	-1.70	-2.45
-6	6		8.70		-0.90	19.00	6.90	6.30	-2.70	-3.30
-4	4	6.30	7.70	-3.30	-1.90	21.00	5.65	5.55	-3.95	-4.05
-2	2	5.90	7.50	-3.70	-2.10	23.00	4.65	5.00	-4.95	-4.60
0	0	6.30	6.30	-3.30	-3.30	25.00	3.00	4.50	-6.60	-5.10
0	0	6.30	6.30	-3.30	-3.30	30.00	3.00	3.00	-6.60	-6.60
2	-2	6.30	6.85	-3.30	-2.75	32.00	3.65	3.90	-5.95	-5.70
4	-4	7.15	7.70	-2.45	-1.90	34.00	5.15	5.20	-4.45	-4.40
6	-6	8.00	8.45	-1.60	-1.15	36.00	6.15	6.50	-3.45	-3.10
8	-8	8.70	8.70	-0.90	-0.90	38.00	7.15	7.85	-2.45	-1.75
10	-10	9.10	9.20	-0.50	-0.40	40.00	8.10	9.00	-1.50	-0.60
12	-12	9.40	9.40	-0.20	-0.20	42.00	8.95	9.40	-0.65	-0.20
14	-14	*9.40*	*9.40*	-0.20	-0.20	44.00	9.30	*9.40*	-0.30	-0.20
16	-16	9.40	9.40	-0.20	-0.20	46.00	9.40	9.40	-0.20	-0.20
18	-18					48.00	*9.40*		-0.20	
20	-20					50.00	9.40		-0.20	
22	-22					52.00				
24	-24					54.00				
26	-26					56.00				
28	-28					58.00				
30	-30					60.00				

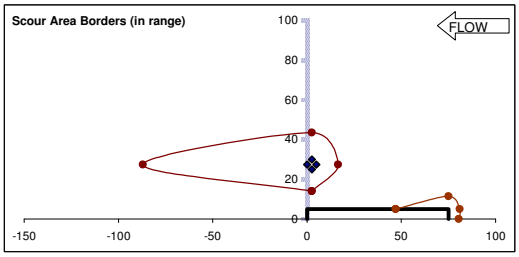
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.50	-3.10
2	7.35	-2.25
4	8.60	-1.00
6	8.90	-0.70
8	9.40	-0.20
10	*9.40*	-0.20
12	9.40	-0.20
14		
16		
18		
20		

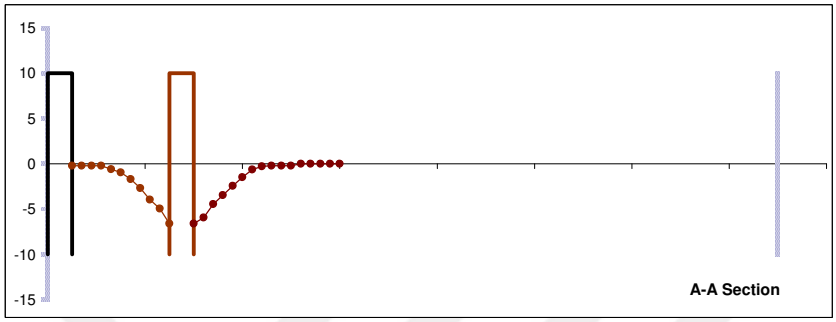
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	5.5
SB_{af}	Abutment Corner Front	6
SB_{ar}	Abutment Corner Right	6.5
SB_{pl}	Pier Left	11
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	87

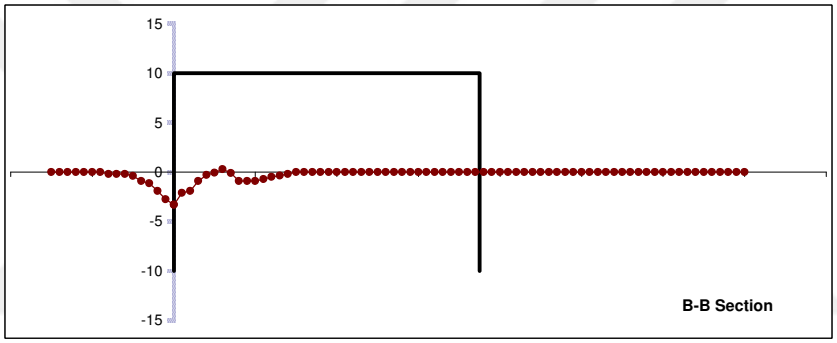


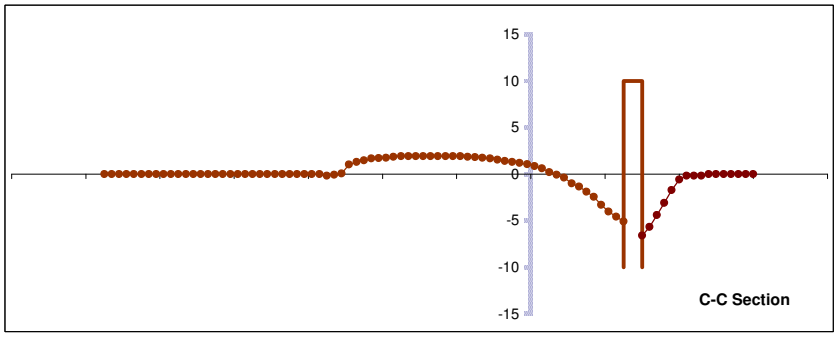
Experiment No : **E15**

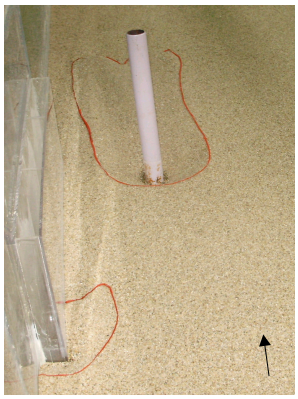


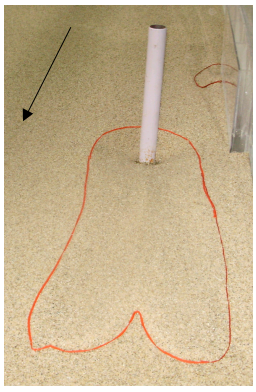






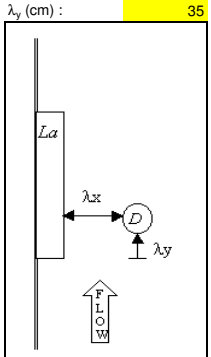


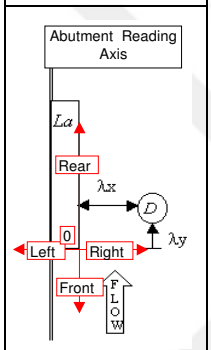


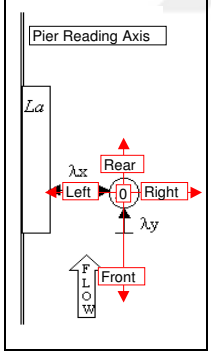


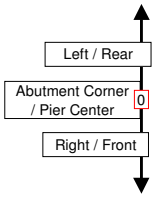
Experiment No : **E16**

Date :	11.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	35









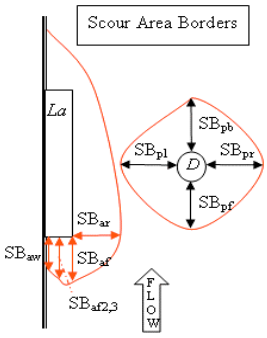
This color was used for raw data readings

This color was used for values enterpolated to sketch

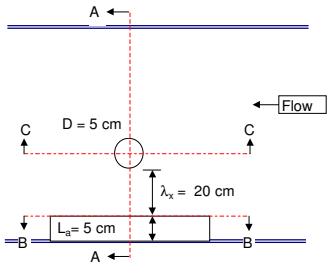
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-115.00				
-138	138					-113.00				
-136	136					-111.00				
-134	134					-109.00				
-132	132					-107.00				
-130	130					-105.00				
-128	128					-103.00				
-126	126					-101.00				
-124	124					-99.00				
-122	122					-97.00				
-120	120					-95.00				
-118	118					-93.00				
-116	116					-91.00				
-114	114					-89.00				
-112	112					-87.00				
-110	110					-85.00				
-108	108					-83.00				
-106	106					-81.00				
-104	104					-79.00				
-102	102					-77.00				
-100	100					-75.00				
-98	98					-73.00				
-96	96					-71.00				
-94	94					-69.00				
-92	92					-67.00		9.40		-0.20
-90	90					-65.00		*9.40*		-0.20
-88	88					-63.00		9.40		-0.20
-86	86					-61.00		9.20		-0.40
-84	84					-59.00		9.90		0.30
-82	82					-57.00		10.25		0.65
-80	80					-55.00		10.85		1.25
-78	78					-53.00		11.20		1.60
-76	76					-51.00		*11.25*		1.65
-74	74					-49.00		11.30		1.70
-72	72					-47.00		*11.35*		1.75
-70	70					-45.00		11.40		1.80
-68	68					-43.00		*11.50*		1.90
-66	66					-41.00		11.60		2.00
-64	64					-39.00		*11.60*		2.00
-62	62					-37.00		11.60		2.00
-60	60					-35.00		*11.60*		2.00
-58	58					-33.00		11.60		2.00
-56	56					-31.00		*11.60*		2.00
-54	54					-29.00		11.60		2.00
-52	52					-27.00		*11.60*		2.00
-50	50					-25.00		11.60		2.00
-48	48					-23.00		*11.55*		1.95
-46	46					-21.00		11.50		1.90
-44	44					-19.00		*11.45*		1.85
-42	42					-17.00		11.40		1.80
-40	40					-15.00		*11.25*		1.65
-38	38					-13.00		11.10		1.50
-36	36		9.70		0.10	-11.00		*11.05*		1.45
-34	34		*9.70*		0.10	-9.00		11.00		1.40
-32	32		9.70		0.10	-7.00		*10.85*		1.25
-30	30		*9.65*		0.05	-5.00		10.70		1.10
-28	28		9.60		0.00	-3.00		10.65		1.05
-26	26		*9.55*		-0.05	-1.00		10.60		1.00
-24	24		9.50		-0.10	1.00		10.40		0.80
-22	22		*9.50*		-0.10	3.00		10.20		0.60
-20	20		9.50		-0.10	5.00	9.70	9.85	0.10	0.25
-18	18		10.05		0.45	7.00	9.70	9.50	0.10	-0.10
-16	16		10.60		1.00	9.00	9.70	9.15	0.10	-0.45
-14	14		10.60		1.00	11.00	9.50	8.65	-0.10	-0.95
-12	12		10.60		1.00	13.00	9.20	8.10	-0.40	-1.50
-10	10		10.50		0.90	15.00	8.50	7.80	-1.10	-1.80
-8	8		9.90		0.30	17.00	7.70	7.25	-1.90	-2.35
-6	6		9.20		-0.40	19.00	6.80	6.45	-2.80	-3.15
-4	4	6.20	8.05	-3.40	-1.55	21.00	5.65	5.55	-3.95	-4.05
-2	2	5.85	7.05	-3.75	-2.55	23.00	4.40	5.40	-5.20	-4.20
0	0	6.70	6.70	-2.90	-2.90	25.00	3.00	5.20	-6.60	-4.40
0	0	6.70	6.70	-2.90	-2.90	30.00	3.00	3.15	-6.60	-6.45
2	-2	6.55	6.80	-3.05	-2.80	32.00	3.90	4.50	-5.70	-5.10
4	-4	7.75	7.80	-1.85	-1.80	34.00	5.10	5.60	-4.50	-4.00
6	-6	8.70	9.20	-0.90	-0.40	36.00	6.10	6.60	-3.50	-3.00
8	-8	9.30	9.50	-0.30	-0.10	38.00	6.80	8.20	-2.80	-1.40
10	-10	9.40	*9.50*	-0.20	-0.10	40.00	7.80	9.20	-1.80	-0.40
12	-12	*9.40*	9.50	-0.20	-0.10	42.00	8.70	*9.30*	-0.90	-0.30
14	-14	9.40		-0.20		44.00	9.10	9.40	-0.50	-0.20
16	-16					46.00	9.40	*9.40*	-0.20	-0.20
18	-18					48.00	*9.40*	9.40	-0.20	-0.20
20	-20					50.00	9.40		-0.20	
22	-22					52.00				
24	-24					54.00				
26	-26					56.00				
28	-28					58.00				
30	-30					60.00				

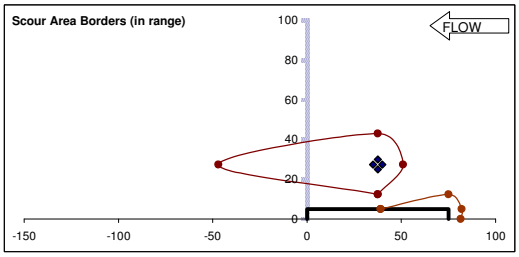
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.20	-3.40
2	7.05	-2.55
4	7.90	-1.70
6	8.90	-0.70
8	9.05	-0.55
10	9.20	-0.40
12	9.40	-0.20
14	*9.40*	-0.20
16	9.40	-0.20
18		
20		

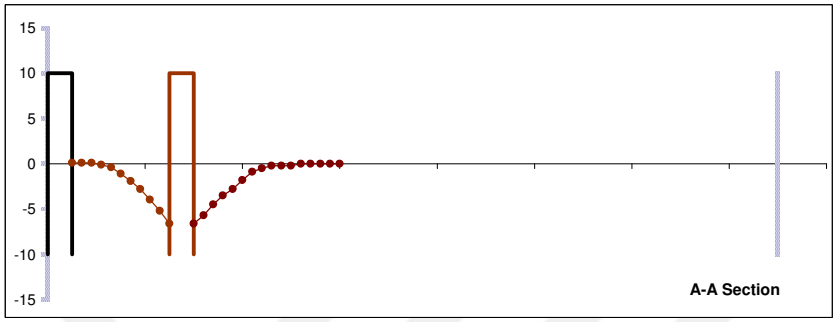
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	6.5
SB_{af}	Abutment Corner Front	7
SB_{ar}	Abutment Corner Right	7.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	82

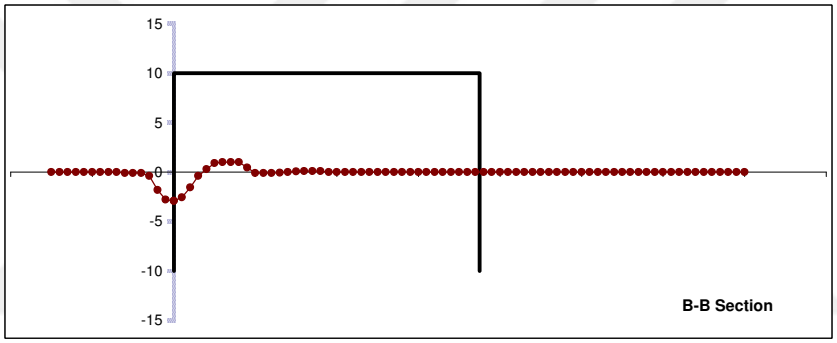


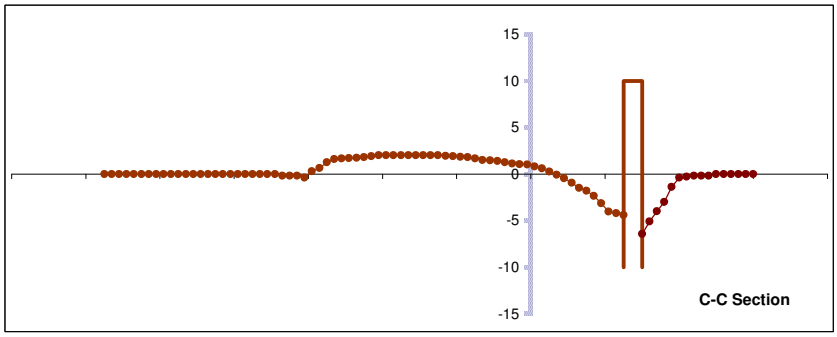
Experiment No : **E16**

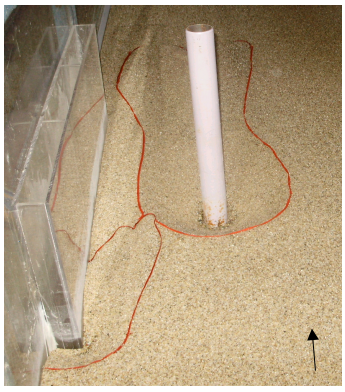


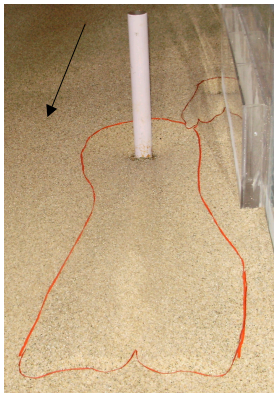






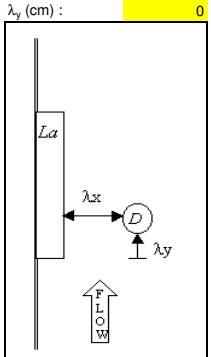


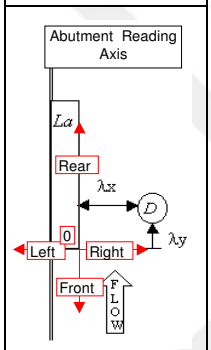


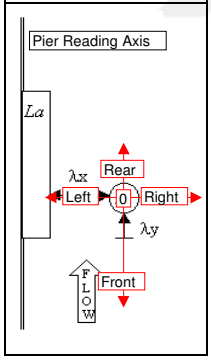


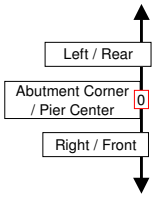
Experiment No : **E17**

Date :	13.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	0









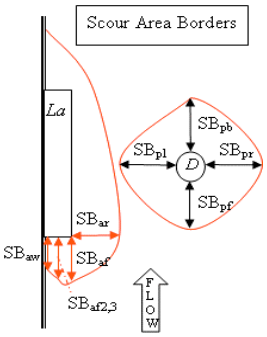
This color was used for raw data readings

This color was used for values enterpolated to sketch

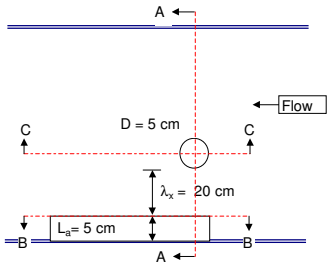
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-115.00				
-138	138					-113.00				
-136	136					-111.00				
-134	134					-109.00				
-132	132					-107.00				
-130	130					-105.00				
-128	128					-103.00				
-126	126					-101.00				
-124	124					-99.00				
-122	122					-97.00				
-120	120					-95.00				
-118	118					-93.00				
-116	116					-91.00				
-114	114					-89.00				
-112	112					-87.00				
-110	110					-85.00				
-108	108					-83.00				
-106	106					-81.00		9.50		-0.10
-104	104					-79.00		*9.50*		-0.10
-102	102					-77.00		9.50		-0.10
-100	100					-75.00		9.70		0.10
-98	98					-73.00		10.20		0.60
-96	96					-71.00		10.60		1.00
-94	94					-69.00		*10.75*		1.15
-92	92					-67.00		10.90		1.30
-90	90					-65.00		*11.00*		1.40
-88	88					-63.00		11.10		1.50
-86	86					-61.00		*11.13*		1.53
-84	84					-59.00		11.15		1.55
-82	82					-57.00		*11.18*		1.58
-80	80					-55.00		11.20		1.60
-78	78					-53.00		*11.20*		1.60
-76	76					-51.00		11.20		1.60
-74	74					-49.00		*11.20*		1.60
-72	72					-47.00		11.20		1.60
-70	70					-45.00		*11.20*		1.60
-68	68					-43.00		11.20		1.60
-66	66					-41.00		*11.20*		1.60
-64	64					-39.00		11.20		1.60
-62	62					-37.00		*11.20*		1.60
-60	60					-35.00		11.20		1.60
-58	58					-33.00		*11.15*		1.55
-56	56					-31.00		11.10		1.50
-54	54					-29.00		*11.10*		1.50
-52	52					-27.00		11.10		1.50
-50	50					-25.00		*11.05*		1.45
-48	48		9.50		-0.10	-23.00		11.00		1.40
-46	46		*9.55*		-0.05	-21.00		*10.95*		1.35
-44	44		9.60		0.00	-19.00		10.90		1.30
-42	42		*9.70*		0.10	-17.00		*10.80*		1.20
-40	40		9.80		0.20	-15.00		10.70		1.10
-38	38		*9.80*		0.20	-13.00		*10.65*		1.05
-36	36		9.80		0.20	-11.00		10.60		1.00
-34	34		*9.85*		0.25	-9.00		*10.55*		0.95
-32	32		9.90		0.30	-7.00		10.50		0.90
-30	30		*9.90*		0.30	-5.00		10.35		0.75
-28	28		9.90		0.30	-3.00		10.25		0.65
-26	26		*9.90*		0.30	-1.00		9.95		0.35
-24	24		9.90		0.30	1.00		9.80		0.20
-22	22		*9.90*		0.30	3.00		9.50		-0.10
-20	20		9.90		0.30	5.00	6.70	9.15	-2.90	-0.45
-18	18		*10.13*		0.53	7.00	7.00	8.95	-2.60	-0.65
-16	16		10.35		0.75	9.00	7.60	8.55	-2.00	-1.05
-14	14		*10.50*		0.90	11.00	8.65	8.15	-0.95	-1.45
-12	12		10.65		1.05	13.00	9.10	7.65	-0.50	-1.95
-10	10		10.55		0.95	15.00	7.90	7.30	-1.70	-2.30
-8	8		10.15		0.55	17.00	6.80	6.95	-2.80	-2.65
-6	6		9.40		-0.20	19.00	6.40	6.25	-3.20	-3.35
-4	4	5.75	8.65	-3.85	-0.95	21.00	5.20	5.70	-4.40	-3.90
-2	2	5.40	7.75	-4.20	-1.85	23.00	4.00	5.20	-5.60	-4.40
0	0	6.20	6.20	-3.40	-3.40	25.00	3.50	5.10	-6.10	-4.50
0	0	6.20	6.20	-3.40	-3.40	30.00	3.30	3.50	-6.30	-6.10
2	-2	6.35	6.55	-3.25	-3.05	32.00	4.00	4.35	-5.60	-5.25
4	-4	7.40	7.35	-2.20	-2.25	34.00	5.10	5.25	-4.50	-4.35
6	-6	8.50	8.50	-1.10	-1.10	36.00	6.60	6.50	-3.00	-3.10
8	-8	9.40	9.40	-0.20	-0.20	38.00	6.70	8.00	-2.90	-1.60
10	-10		*9.45*		-0.15	40.00	7.80	9.25	-1.80	-0.35
12	-12		9.50		-0.10	42.00	8.50	9.50	-1.10	-0.10
14	-14					44.00	9.40	*9.50*	-0.20	-0.10
16	-16					46.00	*9.40*	9.50	-0.20	-0.10
18	-18					48.00	9.40		-0.20	
20	-20					50.00				
22	-22					52.00				
24	-24					54.00				
26	-26					56.00				
28	-28					58.00				
30	-30					60.00				

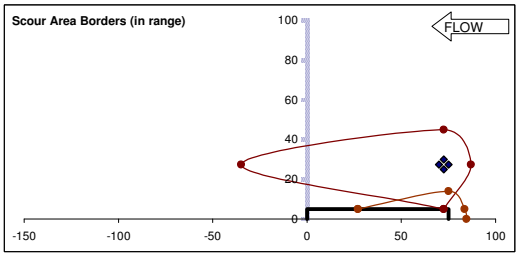
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.80	-3.80
2	6.00	-3.60
4	7.10	-2.50
6	7.80	-1.80
8	9.20	-0.40
10	9.50	-0.10
12	*9.50*	-0.10
14	9.50	-0.10
16		
18		
20		

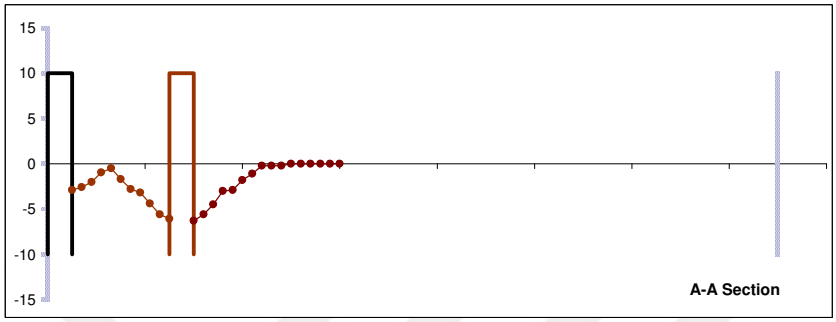
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9.5
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	105

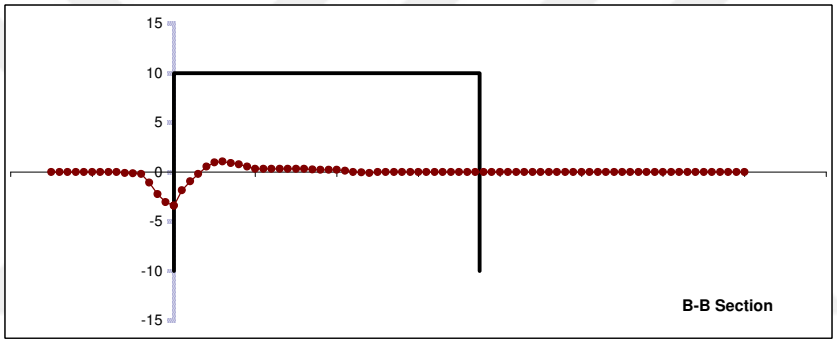


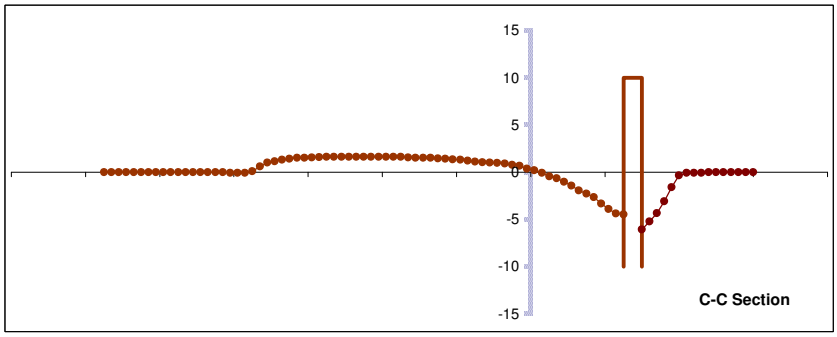
Experiment No : **E17**

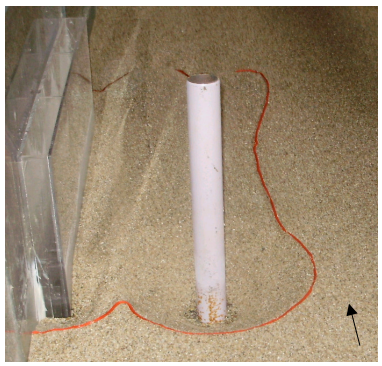


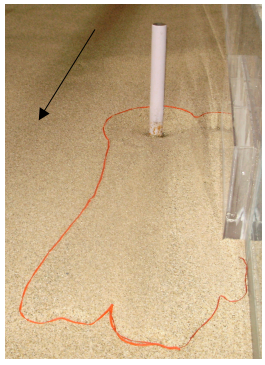






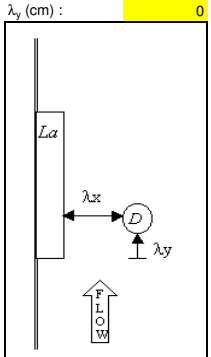


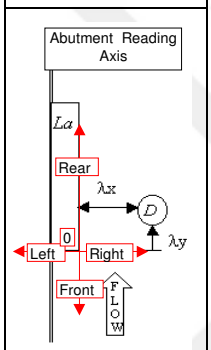


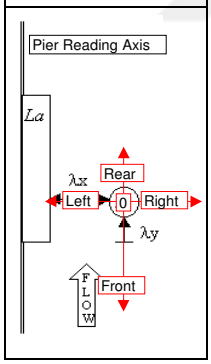


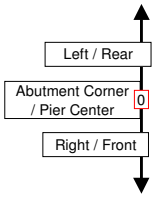
Experiment No : **E18**

Date :	18.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	0









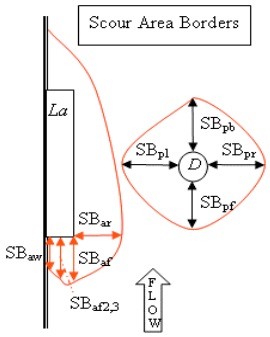
This color was used for raw data readings

This color was used for values enterpolated to sketch

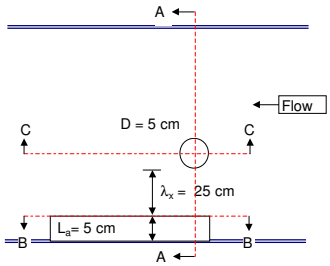
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-110.00				
-138	138					-108.00				
-136	136					-106.00				
-134	134					-104.00				
-132	132					-102.00				
-130	130					-100.00		9.40		-0.20
-128	128					-98.00		*9.40*		-0.20
-126	126					-96.00		9.40		-0.20
-124	124					-94.00		10.00		0.40
-122	122					-92.00		*10.60*		1.00
-120	120					-90.00		10.80		1.20
-118	118					-88.00		10.90		1.30
-116	116					-86.00		*11.00*		1.40
-114	114					-84.00		11.10		1.50
-112	112					-82.00		*11.10*		1.50
-110	110					-80.00		11.10		1.50
-108	108					-78.00		*11.18*		1.58
-106	106					-76.00		11.25		1.65
-104	104					-74.00		*11.25*		1.65
-102	102					-72.00		11.25		1.65
-100	100					-70.00		*11.30*		1.70
-98	98					-68.00		11.35		1.75
-96	96					-66.00		*11.33*		1.73
-94	94					-64.00		11.30		1.70
-92	92					-62.00		*11.30*		1.70
-90	90					-60.00		11.30		1.70
-88	88					-58.00		*11.33*		1.73
-86	86					-56.00		11.35		1.75
-84	84					-54.00		*11.35*		1.75
-82	82					-52.00		11.35		1.75
-80	80					-50.00		*11.28*		1.68
-78	78					-48.00		11.20		1.60
-76	76					-46.00		*11.18*		1.58
-74	74					-44.00		11.15		1.55
-72	72					-42.00		*11.15*		1.55
-70	70					-40.00		11.15		1.55
-68	68					-38.00		*11.10*		1.50
-66	66					-36.00		11.05		1.45
-64	64					-34.00		*11.05*		1.45
-62	62					-32.00		11.05		1.45
-60	60					-30.00		*11.05*		1.45
-58	58					-28.00		11.05		1.45
-56	56					-26.00		*10.95*		1.35
-54	54					-24.00		10.85		1.25
-52	52					-22.00		*10.80*		1.20
-50	50					-20.00		10.75		1.15
-48	48					-18.00		*10.70*		1.10
-46	46					-16.00		10.65		1.05
-44	44					-14.00		*10.63*		1.03
-42	42		10.10		0.50	-12.00		10.60		1.00
-40	40		*10.10*		0.50	-10.00		*10.55*		0.95
-38	38		10.10		0.50	-8.00		10.50		0.90
-36	36		*10.10*		0.50	-6.00		*10.40*		0.80
-34	34		10.10		0.50	-4.00		10.30		0.70
-32	32		*10.10*		0.50	-2.00		*10.08*		0.48
-30	30		10.10		0.50	0.00		9.85		0.25
-28	28		*10.10*		0.50	2.00		*9.68*		0.08
-26	26		10.10		0.50	4.00		9.50		-0.10
-24	24		*10.10*		0.50	6.00	5.80	9.45	-3.80	-0.15
-22	22		10.10		0.50	8.00	7.20	9.15	-2.40	-0.45
-20	20		10.15		0.55	10.00	8.40	8.85	-1.20	-0.75
-18	18		10.25		0.65	12.00	8.80	8.70	-0.80	-0.90
-16	16		10.45		0.85	14.00	9.40	8.25	-0.20	-1.35
-14	14		10.40		0.80	16.00	9.40	8.00	-0.20	-1.60
-12	12		10.10		0.50	18.00	8.50	7.80	-1.10	-1.80
-10	10		9.80		0.20	20.00	7.20	7.25	-2.40	-2.35
-8	8		9.10		-0.50	22.00	6.50	6.85	-3.10	-2.75
-6	6		8.50		-1.10	24.00	5.80	6.30	-3.80	-3.30
-4	4	5.50	7.50	-4.10	-2.10	26.00	4.20	5.35	-5.40	-4.25
-2	2	5.30	6.50	-4.30	-3.10	28.00	3.30	4.90	-6.30	-4.70
0	0	5.80	5.80	-3.80	-3.80	30.00	3.00	4.70	-6.60	-4.90
0	0	5.80	5.80	-3.80	-3.80	35.00	3.40	3.10	-6.20	-6.50
2	-2	6.00	6.20	-3.60	-3.40	37.00	4.40	4.35	-5.20	-5.25
4	-4	7.50	7.50	-2.10	-2.10	39.00	5.50	5.00	-4.10	-4.60
6	-6	8.45	8.50	-1.15	-1.10	41.00	6.55	6.50	-3.05	-3.10
8	-8	9.00	9.40	-0.60	-0.20	43.00	7.50	7.60	-2.10	-2.00
10	-10	9.40	9.40	-0.20	-0.20	45.00	8.30	8.90	-1.30	-0.70
12	-12					47.00	9.20	9.40	-0.40	-0.20
14	-14					49.00	9.40	*9.40*	-0.20	-0.20
16	-16					51.00	*9.40*	9.40	-0.20	-0.20
18	-18					53.00	9.40		-0.20	
20	-20					55.00				
22	-22					57.00				
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

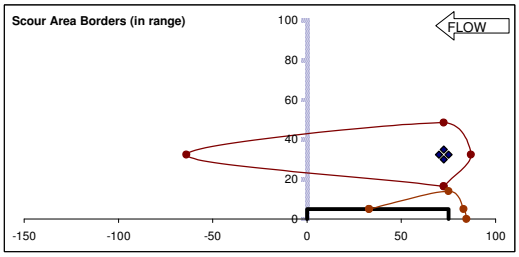
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	6.30	-3.30
4	7.10	-2.50
6	8.10	-1.50
8	9.20	-0.40
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

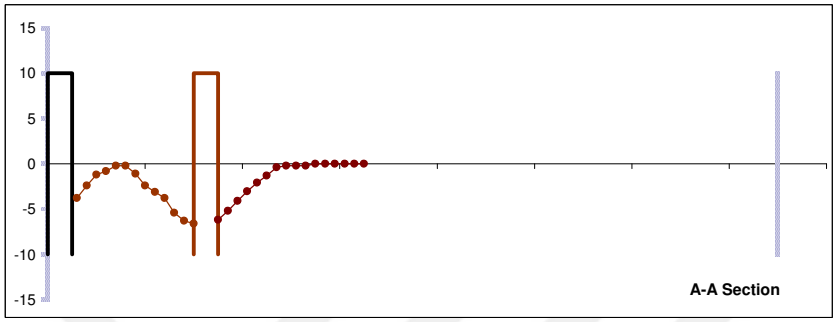
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	134

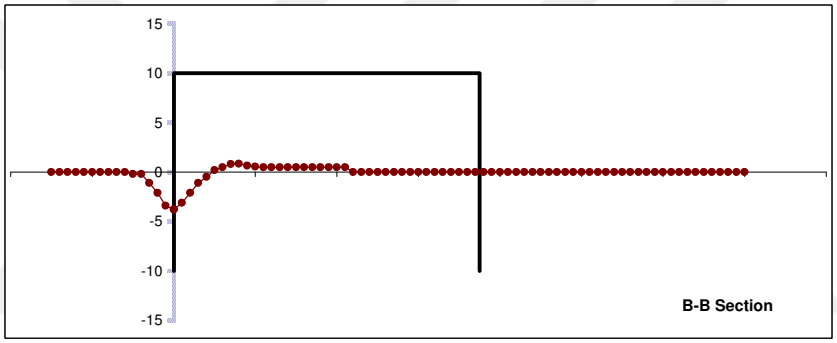


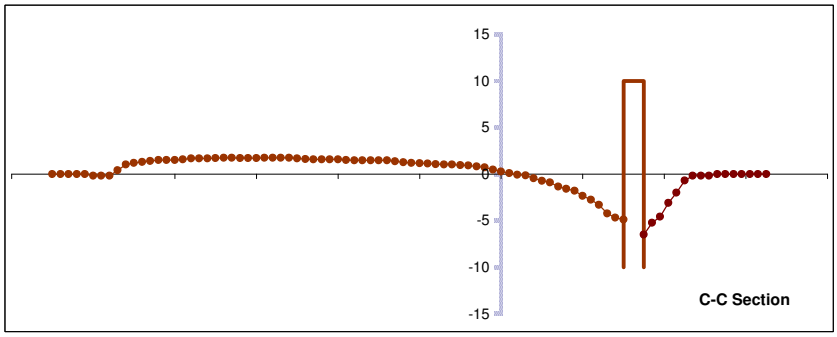
Experiment No : **E18**

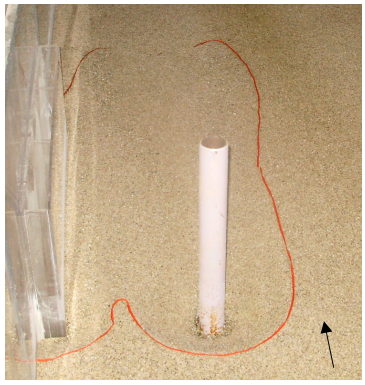


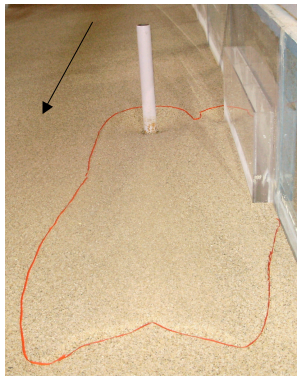




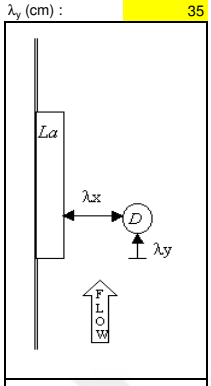


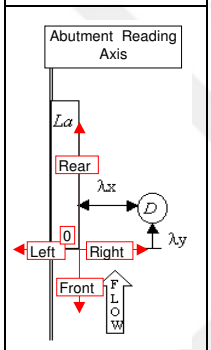


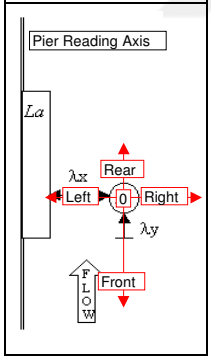


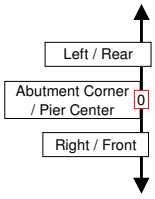


Experiment No :	**E19**
Date :	20.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	35









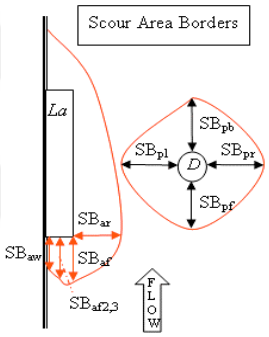
This color was used for raw data readings

This color was used for values enterpolated to sketch

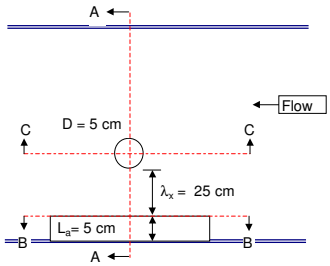
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-110.00				
-138	138					-108.00				
-136	136					-106.00				
-134	134					-104.00				
-132	132					-102.00				
-130	130					-100.00				
-128	128					-98.00				
-126	126					-96.00				
-124	124					-94.00				
-122	122					-92.00				
-120	120					-90.00				
-118	118					-88.00		9.40		-0.20
-116	116					-86.00		9.40		-0.20
-114	114					-84.00		10.00		0.40
-112	112					-82.00		10.70		1.10
-110	110					-80.00		11.00		1.40
-108	108					-78.00		*11.05*		1.45
-106	106					-76.00		11.10		1.50
-104	104					-74.00		*11.15*		1.55
-102	102					-72.00		11.20		1.60
-100	100					-70.00		*11.30*		1.70
-98	98					-68.00		11.40		1.80
-96	96					-66.00		*11.45*		1.85
-94	94					-64.00		11.50		1.90
-92	92					-62.00		*11.60*		2.00
-90	90					-60.00		11.70		2.10
-88	88					-58.00		*11.70*		2.10
-86	86					-56.00		11.70		2.10
-84	84					-54.00		*11.70*		2.10
-82	82					-52.00		11.70		2.10
-80	80					-50.00		*11.65*		2.05
-78	78					-48.00		11.60		2.00
-76	76					-46.00		*11.55*		1.95
-74	74					-44.00		11.50		1.90
-72	72					-42.00		*11.50*		1.90
-70	70					-40.00		11.50		1.90
-68	68					-38.00		*11.50*		1.90
-66	66					-36.00		11.50		1.90
-64	64					-34.00		*11.50*		1.90
-62	62					-32.00		11.50		1.90
-60	60					-30.00		*11.50*		1.90
-58	58					-28.00		11.50		1.90
-56	56		9.50		-0.10	-26.00		*11.50*		1.90
-54	54		*9.65*		0.05	-24.00		11.50		1.90
-52	52		9.80		0.20	-22.00		*11.45*		1.85
-50	50		*9.80*		0.20	-20.00		11.40		1.80
-48	48		9.80		0.20	-18.00		*11.30*		1.70
-46	46		*9.80*		0.20	-16.00		11.20		1.60
-44	44		9.80		0.20	-14.00		*11.03*		1.43
-42	42		*9.80*		0.20	-12.00		10.85		1.25
-40	40		9.80		0.20	-10.00		*10.80*		1.20
-38	38		*9.85*		0.25	-8.00		10.75		1.15
-36	36		9.90		0.30	-6.00		*10.68*		1.08
-34	34		*9.90*		0.30	-4.00		10.60		1.00
-32	32		9.90		0.30	-2.00		10.40		0.80
-30	30		*9.95*		0.35	0.00		10.30		0.70
-28	28		10.00		0.40	2.00		9.95		0.35
-26	26		*10.00*		0.40	4.00		9.80		0.20
-24	24		10.00		0.40	6.00	9.60	9.45	0.00	-0.15
-22	22		*10.15*		0.55	8.00	10.00	9.20	0.40	-0.40
-20	20		10.30		0.70	10.00	10.10	8.90	0.50	-0.70
-18	18		10.50		0.90	12.00	10.10	8.70	0.50	-0.90
-16	16		10.60		1.00	14.00	9.70	8.30	0.10	-1.30
-14	14		10.60		1.00	16.00	9.50	7.85	-0.10	-1.75
-12	12		10.40		0.80	18.00	8.80	7.40	-0.80	-2.20
-10	10		9.90		0.30	20.00	7.60	6.75	-2.00	-2.85
-8	8		9.40		-0.20	22.00	6.40	6.30	-3.20	-3.30
-6	6		8.65		-0.95	24.00	4.80	5.50	-4.80	-4.10
-4	4	6.10	7.25	-3.50	-2.35	26.00	3.80	4.80	-5.80	-4.80
-2	2	5.10	6.60	-4.50	-3.00	28.00	2.50	4.20	-7.10	-5.40
0	0	5.80	5.80	-3.80	-3.80	30.00	2.00	3.90	-7.60	-5.70
0	0	5.80	5.80	-3.80	-3.80	35.00	2.00	2.30	-7.60	-7.30
2	-2	7.20	6.60	-2.40	-3.00	37.00	2.70	4.10	-6.90	-5.50
4	-4	8.20	7.25	-1.40	-2.35	39.00	3.80	4.90	-5.80	-4.70
6	-6	9.10	8.60	-0.50	-1.00	41.00	4.90	6.50	-4.70	-3.10
8	-8	*9.25*	9.40	-0.35	-0.20	43.00	6.10	7.90	-3.50	-1.70
10	-10	9.40	*9.40*	-0.20	-0.20	45.00	7.35	9.10	-2.25	-0.50
12	-12	*9.40*	9.40	-0.20	-0.20	47.00	8.00	*9.25*	-1.60	-0.35
14	-14	9.40		-0.20		49.00	9.00	9.40	-0.60	-0.20
16	-16					51.00	9.20	*9.40*	-0.40	-0.20
18	-18					53.00	9.40	9.40	-0.20	-0.20
20	-20					55.00	*9.40*		-0.20	
22	-22					57.00	9.40		-0.20	
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

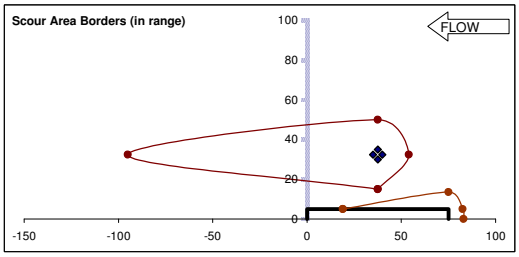
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	5.90	-3.70
4	7.10	-2.50
6	8.40	-1.20
8	9.10	-0.50
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

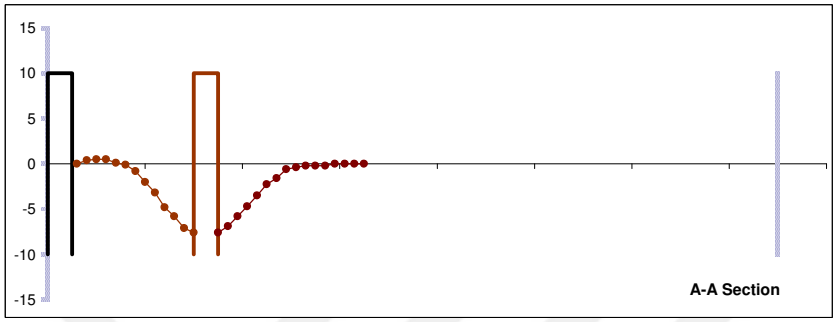
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8
SB_{af}	Abutment Corner Front	7.5
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	15
SB_{pf}	Pier Front	14
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	130

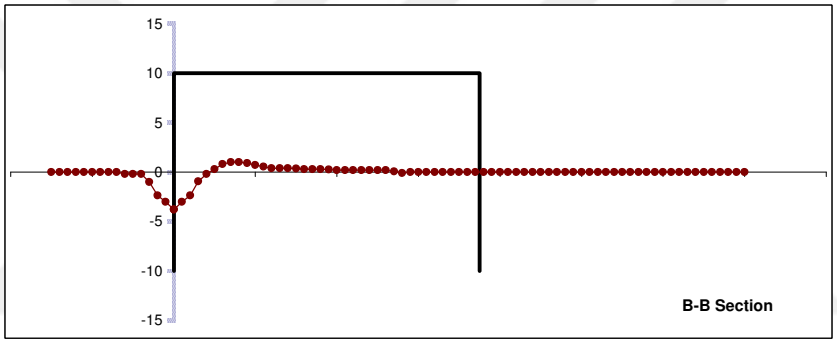


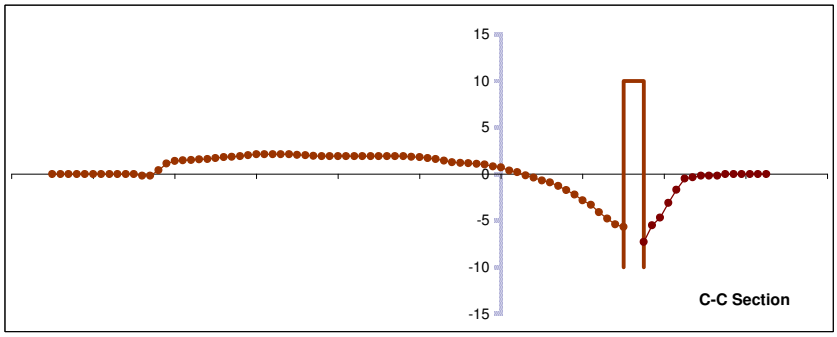
Experiment No : **E19**

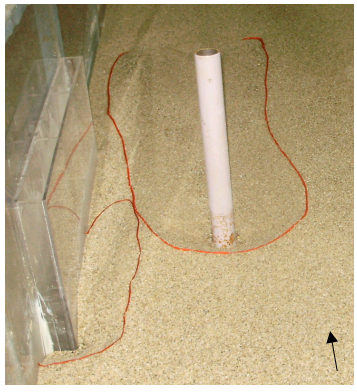


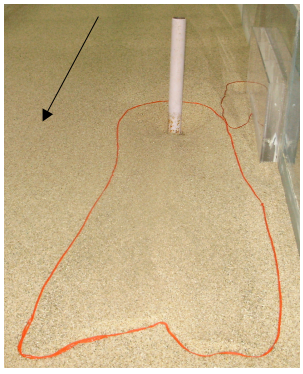






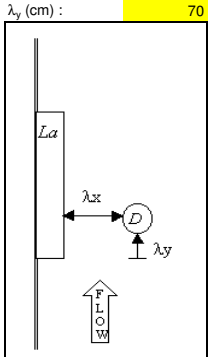


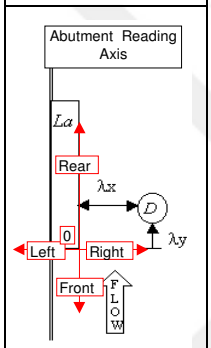


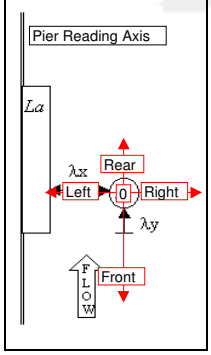


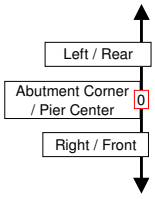
Experiment No : **E20**

Date :	22.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	70









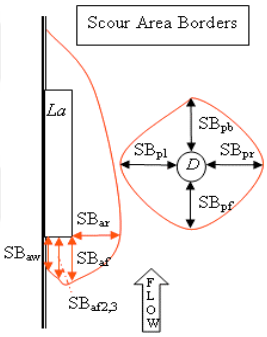
This color was used for raw data readings

This color was used for values enterpolated to sketch

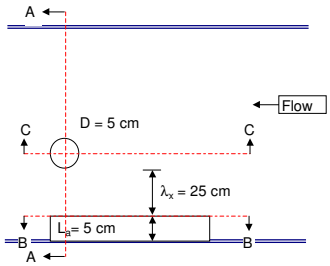
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-110.00				
-138	138					-108.00				
-136	136					-106.00				
-134	134					-104.00				
-132	132					-102.00				
-130	130					-100.00				
-128	128					-98.00				
-126	126					-96.00				
-124	124					-94.00				
-122	122					-92.00				
-120	120					-90.00				
-118	118					-88.00				
-116	116					-86.00				
-114	114					-84.00				
-112	112					-82.00				
-110	110					-80.00				
-108	108					-78.00				
-106	106					-76.00				
-104	104					-74.00				
-102	102					-72.00		9.50		-0.10
-100	100					-70.00		*9.50*		-0.10
-98	98					-68.00		9.50		-0.10
-96	96					-66.00		10.10		0.50
-94	94					-64.00		10.40		0.80
-92	92					-62.00		10.80		1.20
-90	90					-60.00		*10.95*		1.35
-88	88					-58.00		*11.10*		1.50
-86	86					-56.00		*11.25*		1.65
-84	84					-54.00		11.40		1.80
-82	82					-52.00		*11.45*		1.85
-80	80					-50.00		11.50		1.90
-78	78					-48.00		*11.55*		1.95
-76	76					-46.00		11.60		2.00
-74	74					-44.00		*11.65*		2.05
-72	72					-42.00		11.70		2.10
-70	70					-40.00		*11.70*		2.10
-68	68					-38.00		11.70		2.10
-66	66					-36.00		*11.70*		2.10
-64	64					-34.00		11.70		2.10
-62	62					-32.00		*11.70*		2.10
-60	60					-30.00		11.70		2.10
-58	58					-28.00		*11.70*		2.10
-56	56					-26.00		11.70		2.10
-54	54		9.50		-0.10	-24.00		*11.60*		2.00
-52	52		*9.50*		-0.10	-22.00		11.50		1.90
-50	50		9.50		-0.10	-20.00		*11.50*		1.90
-48	48		*9.75*		0.15	-18.00		11.50		1.90
-46	46		10.00		0.40	-16.00		*11.38*		1.78
-44	44		*10.00*		0.40	-14.00		11.25		1.65
-42	42		10.00		0.40	-12.00		*11.18*		1.58
-40	40		*10.00*		0.40	-10.00		11.10		1.50
-38	38		10.00		0.40	-8.00		*11.05*		1.45
-36	36		*9.95*		0.35	-6.00		11.00		1.40
-34	34		9.90		0.30	-4.00		*10.80*		1.20
-32	32		*9.90*		0.30	-2.00		10.60		1.00
-30	30		9.90		0.30	0.00		10.55		0.95
-28	28		*9.90*		0.30	2.00		10.45		0.85
-26	26		9.90		0.30	4.00		10.00		0.40
-24	24		*9.90*		0.30	6.00	9.50	9.85	-0.10	0.25
-22	22		9.90		0.30	8.00	9.50	9.40	-0.10	-0.20
-20	20		*10.05*		0.45	10.00	*9.50*	9.15	-0.10	-0.45
-18	18		10.20		0.60	12.00	9.50	8.95	-0.10	-0.65
-16	16		*10.10*		0.50	14.00	*9.50*	8.65	-0.10	-0.95
-14	14		10.00		0.40	16.00	9.50	8.25	-0.10	-1.35
-12	12		9.60		0.00	18.00	8.70	7.85	-0.90	-1.75
-10	10		9.00		-0.60	20.00	7.60	7.20	-2.00	-2.40
-8	8		8.60		-1.00	22.00	6.45	6.90	-3.15	-2.70
-6	6		7.75		-1.85	24.00	5.60	6.20	-4.00	-3.40
-4	4	5.10	6.60	-4.50	-3.00	26.00	4.60	5.60	-5.00	-4.00
-2	2	4.90	6.00	-4.70	-3.60	28.00	3.25	4.90	-6.35	-4.70
0	0	5.35	5.35	-4.25	-4.25	30.00	3.10	4.70	-6.50	-4.90
0	0	5.35	5.35	-4.25	-4.25	35.00	3.20	2.60	-6.40	-7.00
2	-2	5.60	5.90	-4.00	-3.70	37.00	4.60	3.50	-5.00	-6.10
4	-4	6.85	6.85	-2.75	-2.75	39.00	5.80	4.90	-3.80	-4.70
6	-6	7.90	7.90	-1.70	-1.70	41.00	6.35	6.40	-3.25	-3.20
8	-8	8.70	9.10	-0.90	-0.50	43.00	6.90	7.55	-2.70	-2.05
10	-10	9.10	*9.30*	-0.50	-0.30	45.00	7.95	9.05	-1.65	-0.55
12	-12	9.50	9.50	-0.10	-0.10	47.00	9.10	9.50	-0.50	-0.10
14	-14	*9.50*		-0.10		49.00	9.50	*9.50*	-0.10	-0.10
16	-16	9.50		-0.10		51.00	*9.50*	9.50	-0.10	-0.10
18	-18					53.00	9.50		-0.10	
20	-20					55.00				
22	-22					57.00				
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

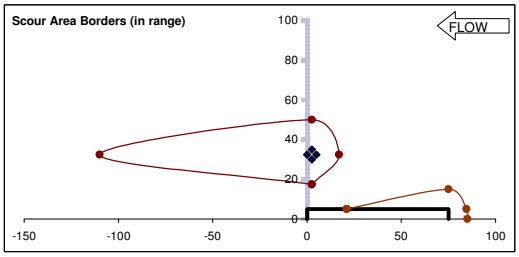
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.10	-4.50
2	5.75	-3.85
4	6.50	-3.10
6	7.40	-2.20
8	8.50	-1.10
10	9.50	-0.10
12	*9.50*	-0.10
14	9.50	-0.10
16		
18		
20		

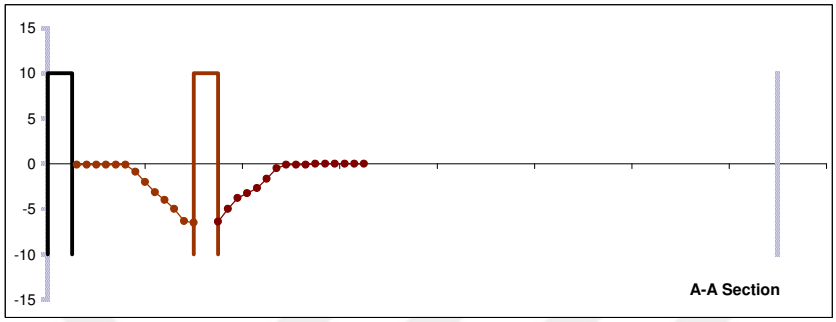
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	9.5
SB_{ar}	Abutment Corner Right	10
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	110

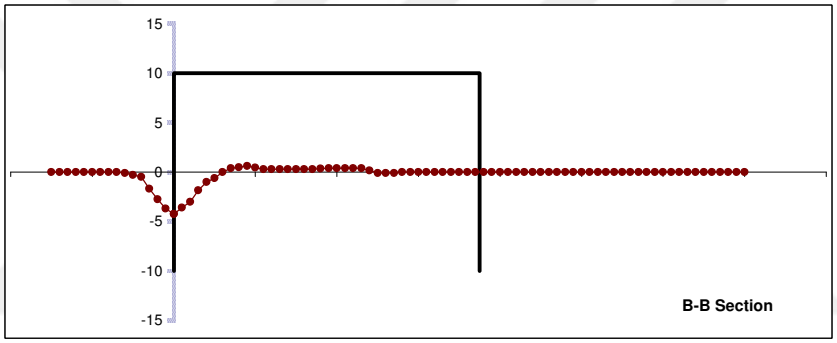


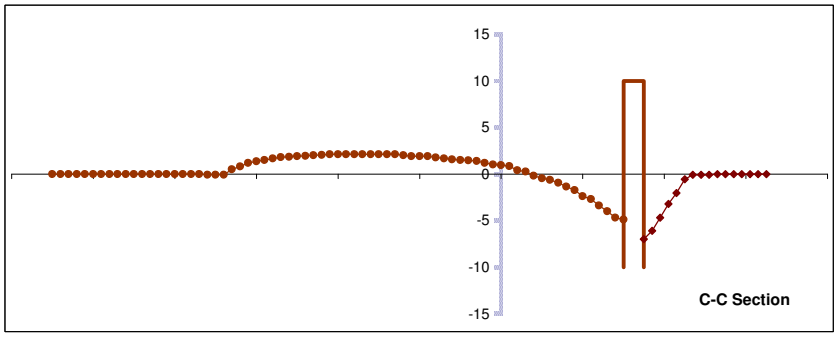
Experiment No : **E20**

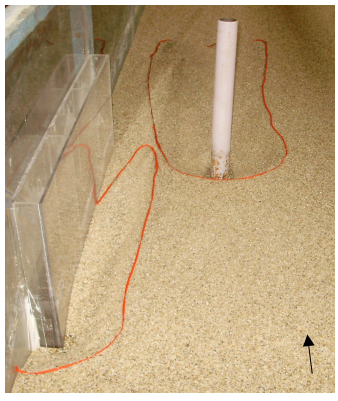


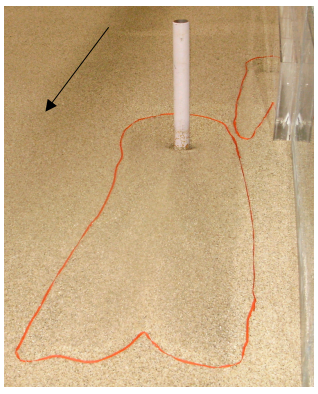






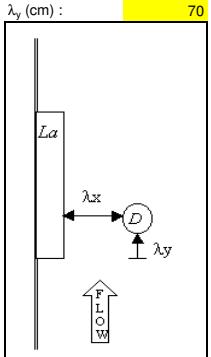


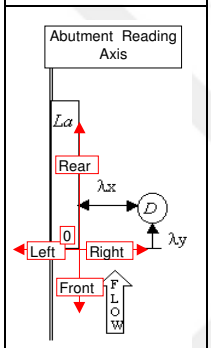


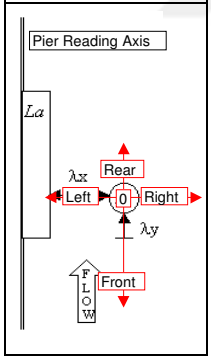


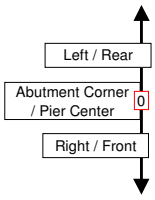
Experiment No : **E21**

Date :	26.10.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	70









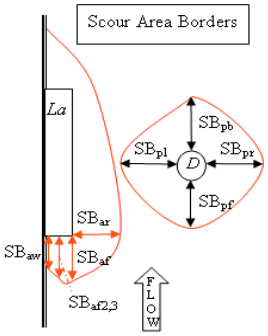
This color was used for raw data readings

This color was used for values enterpolated to sketch

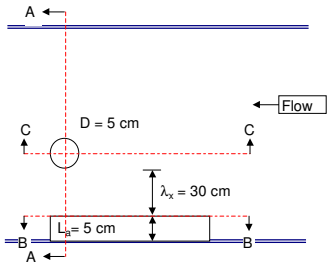
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-105.00				
-138	138					-103.00				
-136	136					-101.00				
-134	134					-99.00				
-132	132					-97.00				
-130	130					-95.00				
-128	128					-93.00				
-126	126					-91.00				
-124	124					-89.00				
-122	122					-87.00				
-120	120					-85.00				
-118	118					-83.00				
-116	116					-81.00				
-114	114					-79.00				
-112	112					-77.00				
-110	110					-75.00				
-108	108					-73.00				
-106	106					-71.00				
-104	104					-69.00				
-102	102					-67.00				
-100	100					-65.00				
-98	98					-63.00				
-96	96					-61.00				
-94	94					-59.00				
-92	92					-57.00				
-90	90					-55.00				
-88	88					-53.00				
-86	86					-51.00				
-84	84					-49.00		9.50		-0.10
-82	82					-47.00		*9.50*		-0.10
-80	80					-45.00		9.50		-0.10
-78	78					-43.00		9.80		0.20
-76	76					-41.00		10.35		0.75
-74	74					-39.00		10.75		1.15
-72	72					-37.00		11.00		1.40
-70	70					-35.00		*11.18*		1.58
-68	68					-33.00		11.35		1.75
-66	66		9.80		0.20	-31.00		*11.48*		1.88
-64	64		*9.80*		0.20	-29.00		11.60		2.00
-62	62		9.80		0.20	-27.00		*11.60*		2.00
-60	60		*9.80*		0.20	-25.00		11.60		2.00
-58	58		9.80		0.20	-23.00		*11.65*		2.05
-56	56		*9.80*		0.20	-21.00		11.70		2.10
-54	54		9.80		0.20	-19.00		*11.70*		2.10
-52	52		*9.80*		0.20	-17.00		11.70		2.10
-50	50		9.80		0.20	-15.00		*11.60*		2.00
-48	48		*9.80*		0.20	-13.00		11.50		1.90
-46	46		9.80		0.20	-11.00		*11.50*		1.90
-44	44		*9.80*		0.20	-9.00		11.50		1.90
-42	42		9.80		0.20	-7.00		*11.43*		1.83
-40	40		*9.80*		0.20	-5.00		11.35		1.75
-38	38		9.80		0.20	-3.00		*11.28*		1.68
-36	36		*9.80*		0.20	-1.00		11.20		1.60
-34	34		9.80		0.20	1.00		*11.10*		1.50
-32	32		*9.80*		0.20	3.00		11.00		1.40
-30	30		9.80		0.20	5.00	9.80	10.80	0.20	1.20
-28	28		*9.90*		0.30	7.00	9.40	10.70	-0.20	1.10
-26	26		10.00		0.40	9.00	*9.40*	10.50	-0.20	0.90
-24	24		*10.25*		0.65	11.00	9.40	10.15	-0.20	0.55
-22	22		10.50		0.90	13.00	*9.40*	9.70	-0.20	0.10
-20	20		*10.50*		0.90	15.00	9.40	9.40	-0.20	-0.20
-18	18		10.50		0.90	17.00	*9.40*	9.00	-0.20	-0.60
-16	16		*10.50*		0.90	19.00	9.40	8.85	-0.20	-0.75
-14	14		10.50		0.90	21.00	9.20	8.50	-0.40	-1.10
-12	12		10.50		0.90	23.00	8.50	8.20	-1.10	-1.40
-10	10		10.30		0.70	25.00	7.85	7.70	-1.75	-1.90
-8	8		9.50		-0.10	27.00	6.70	7.10	-2.90	-2.50
-6	6		8.80		-0.80	29.00	5.85	6.55	-3.75	-3.05
-4	4	6.20	7.80	-3.40	-1.80	31.00	4.80	5.85	-4.80	-3.75
-2	2	5.50	6.80	-4.10	-2.80	33.00	3.60	5.25	-6.00	-4.35
0	0	6.10	6.10	-3.50	-3.50	35.00	3.40	5.00	-6.20	-4.60
0	0	6.10	6.10	-3.50	-3.50	40.00	3.70	3.30	-5.90	-6.30
2	-2	6.50	7.00	-3.10	-2.60	42.00	5.30	4.45	-4.30	-5.15
4	-4	7.65	7.90	-1.95	-1.70	44.00	6.60	5.55	-3.00	-4.05
6	-6	8.50	8.90	-1.10	-0.70	46.00	7.35	6.85	-2.25	-2.75
8	-8	9.00	9.40	-0.60	-0.20	48.00	7.70	8.25	-1.90	-1.35
10	-10	9.40	9.40	-0.20	-0.20	50.00	8.80	9.40	-0.80	-0.20
12	-12	*9.40*		-0.20		52.00	9.50	9.50	-0.10	-0.10
14	-14	9.40		-0.20		54.00	*9.50*	*9.50*	-0.10	-0.10
16	-16					56.00	9.50	9.50	-0.10	-0.10
18	-18					58.00				
20	-20					60.00				
22	-22					62.00				
24	-24					64.00				
26	-26					66.00				
28	-28					68.00				
30	-30					70.00				

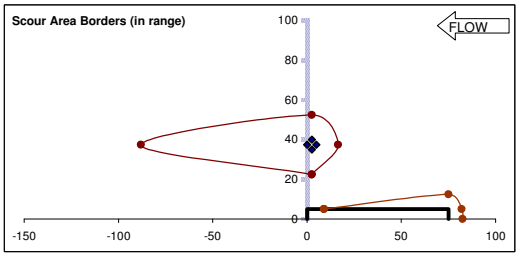
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.20	-3.40
2	6.90	-2.70
4	8.20	-1.40
6	9.00	-0.60
8	9.40	-0.20
10	9.40	-0.20
12		
14		
16		
18		
20		

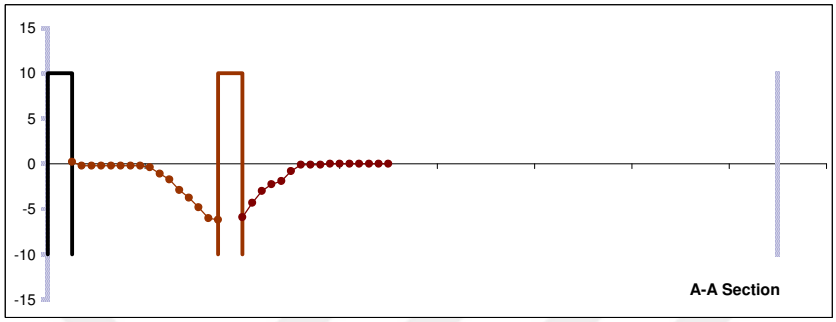
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	7.5
SB_{af}	Abutment Corner Front	7
SB_{ar}	Abutment Corner Right	7.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	88

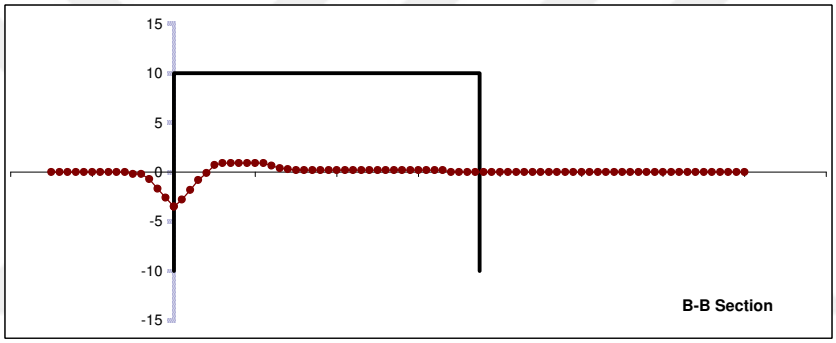


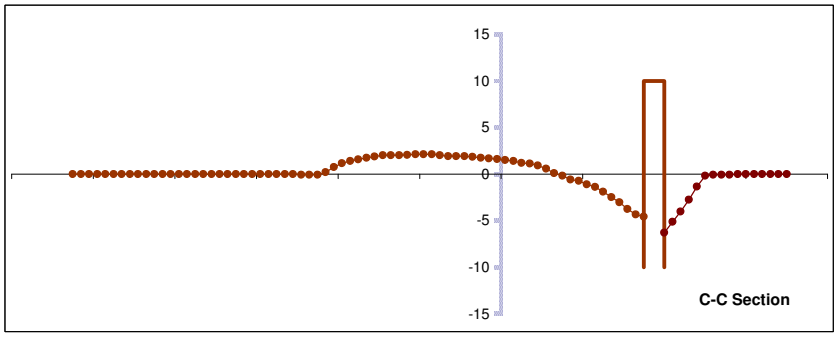
Experiment No : **E21**

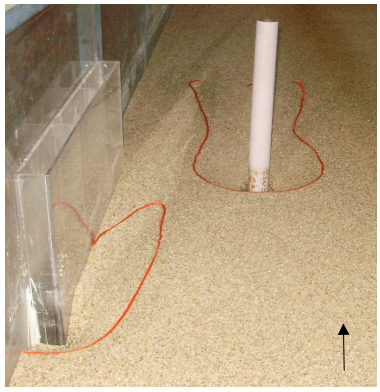


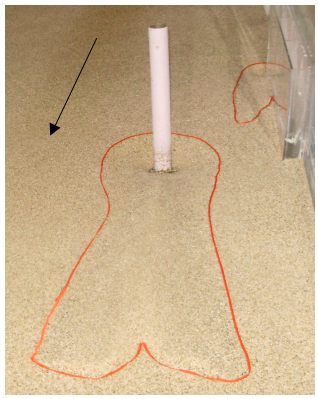






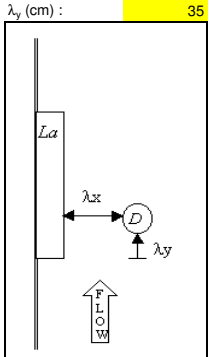


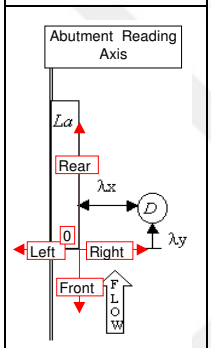


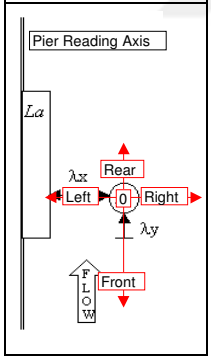


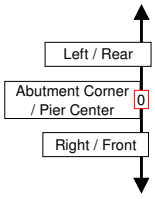
Experiment No : **E22**

Date :	23.11.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	35









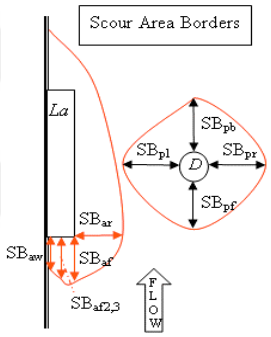
This color was used for raw data readings

This color was used for values enterpolated to sketch

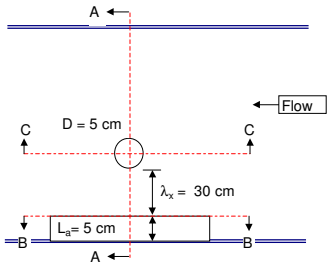
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-105.00				
-138	138					-103.00				
-136	136					-101.00				
-134	134					-99.00				
-132	132					-97.00				
-130	130					-95.00				
-128	128					-93.00				
-126	126					-91.00				
-124	124					-89.00				
-122	122					-87.00				
-120	120					-85.00				
-118	118					-83.00				
-116	116					-81.00				
-114	114					-79.00				
-112	112					-77.00				
-110	110					-75.00				
-108	108					-73.00				
-106	106					-71.00				
-104	104					-69.00				
-102	102					-67.00				
-100	100					-65.00		9.40		-0.20
-98	98					-63.00		*9.40*		-0.20
-96	96					-61.00		9.40		-0.20
-94	94					-59.00		9.50		-0.10
-92	92					-57.00		10.40		0.80
-90	90					-55.00		11.00		1.40
-88	88					-53.00		*11.10*		1.50
-86	86					-51.00		11.20		1.60
-84	84					-49.00		*11.25*		1.65
-82	82					-47.00		11.30		1.70
-80	80					-45.00		*11.35*		1.75
-78	78					-43.00		11.40		1.80
-76	76					-41.00		*11.50*		1.90
-74	74					-39.00		11.60		2.00
-72	72					-37.00		*11.60*		2.00
-70	70					-35.00		*11.60*		2.00
-68	68					-33.00		11.60		2.00
-66	66					-31.00		*11.50*		1.90
-64	64					-29.00		11.40		1.80
-62	62					-27.00		*11.40*		1.80
-60	60					-25.00		11.40		1.80
-58	58					-23.00		*11.40*		1.80
-56	56					-21.00		11.40		1.80
-54	54					-19.00		*11.30*		1.70
-52	52					-17.00		11.20		1.60
-50	50					-15.00		*11.15*		1.55
-48	48					-13.00		11.10		1.50
-46	46					-11.00		*11.05*		1.45
-44	44					-9.00		11.00		1.40
-42	42					-7.00		*10.90*		1.30
-40	40					-5.00		10.80		1.20
-38	38					-3.00		*10.75*		1.15
-36	36		8.80		-0.80	-1.00		10.70		1.10
-34	34		*8.80*		-0.80	1.00		*10.65*		1.05
-32	32		8.80		-0.80	3.00		10.60		1.00
-30	30		*8.80*		-0.80	5.00	8.80	10.40	-0.80	0.80
-28	28		8.80		-0.80	7.00	*8.80*	10.20	-0.80	0.60
-26	26		*8.73*		-0.87	9.00	8.80	10.00	-0.80	0.40
-24	24		8.65		-0.95	11.00	*8.80*	9.70	-0.80	0.10
-22	22		*8.58*		-1.03	13.00	8.80	9.50	-0.80	-0.10
-20	20		8.50		-1.10	15.00	*8.80*	9.35	-0.80	-0.25
-18	18		*8.80*		-0.80	17.00	8.80	8.90	-0.80	-0.70
-16	16		9.10		-0.50	19.00	8.80	8.40	-0.80	-1.20
-14	14		9.60		0.00	21.00	8.70	8.00	-0.90	-1.60
-12	12		10.30		0.70	23.00	8.60	7.30	-1.00	-2.30
-10	10		9.80		0.20	25.00	7.50	7.05	-2.10	-2.55
-8	8		9.50		-0.10	27.00	6.40	6.30	-3.20	-3.30
-6	6		8.60		-1.00	29.00	5.90	5.40	-3.70	-4.20
-4	4	6.00	7.70	-3.60	-1.90	31.00	4.80	4.45	-4.80	-5.15
-2	2	5.60	6.80	-4.00	-2.80	33.00	3.35	4.05	-6.25	-5.55
0	0	5.80	5.80	-3.80	-3.80	35.00	2.80	4.00	-6.80	-5.60
0	0	5.80	5.80	-3.80	-3.80	40.00	2.80	2.80	-6.80	-6.80
2	-2	6.20	6.60	-3.40	-3.00	42.00	3.40	4.10	-6.20	-5.50
4	-4	7.70	7.70	-1.90	-1.90	44.00	4.70	5.45	-4.90	-4.15
6	-6	8.40	9.10	-1.20	-0.50	46.00	5.90	6.85	-3.70	-2.75
8	-8	9.10	9.40	-0.50	-0.20	48.00	6.90	8.00	-2.70	-1.60
10	-10	9.40	*9.40*	-0.20	-0.20	50.00	7.90	8.80	-1.70	-0.80
12	-12	*9.40*	9.40	-0.20	-0.20	52.00	8.90	*9.10*	-0.70	-0.50
14	-14	9.40		-0.20		54.00	9.40	9.40	-0.20	-0.20
16	-16					56.00	*9.40*	*9.40*	-0.20	-0.20
18	-18					58.00	9.40	9.40	-0.20	-0.20
20	-20					60.00				
22	-22					62.00				
24	-24					64.00				
26	-26					66.00				
28	-28					68.00				
30	-30					70.00				

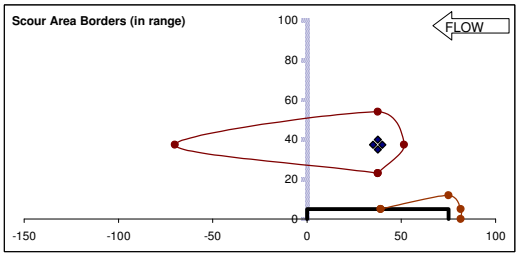
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	6.00	-3.60
2	6.80	-2.80
4	8.00	-1.60
6	8.90	-0.70
8	9.10	-0.50
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

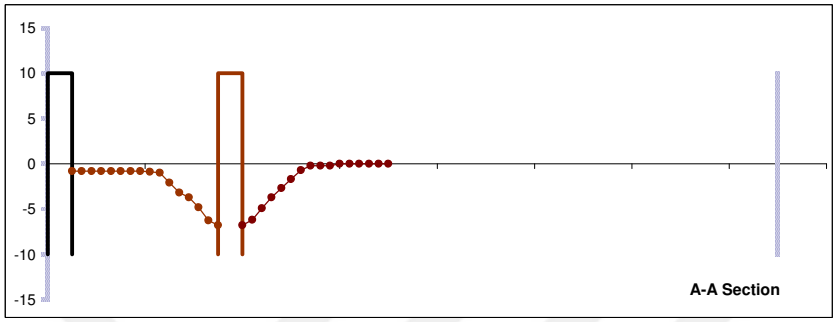
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	6.5
SB_{af}	Abutment Corner Front	6.5
SB_{ar}	Abutment Corner Right	7
SB_{pl}	Pier Left	12
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	105

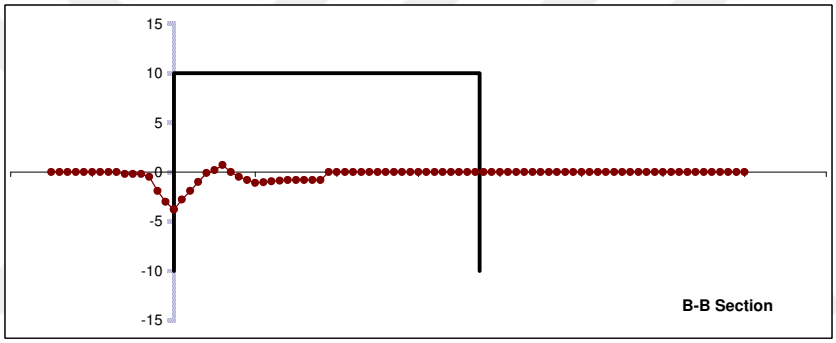


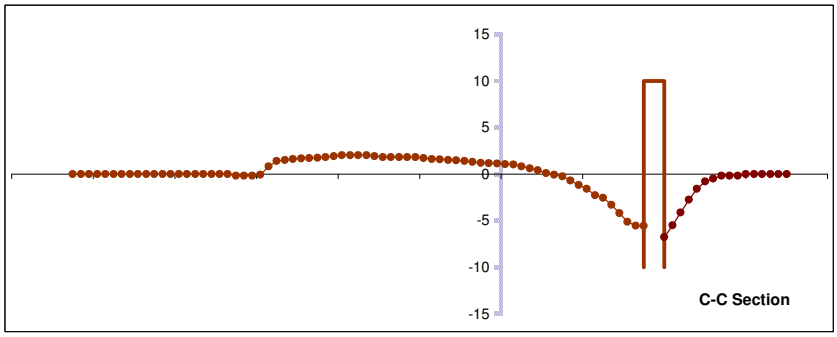
Experiment No : **E22**

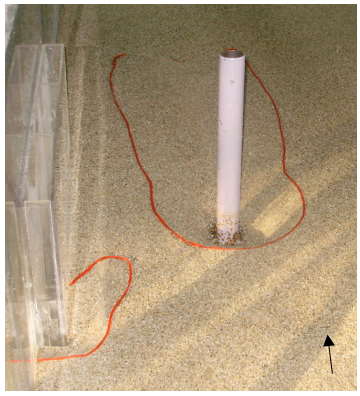


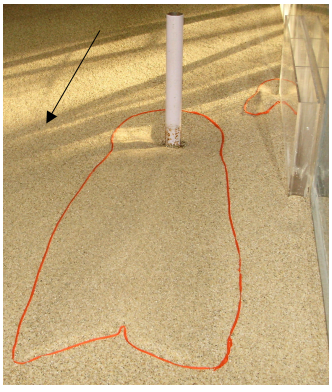






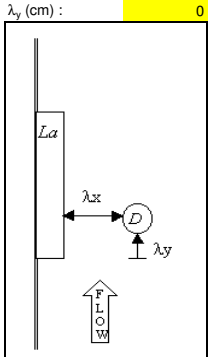


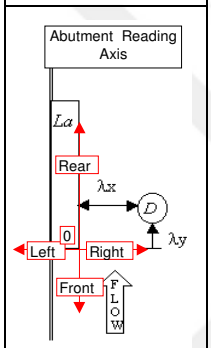


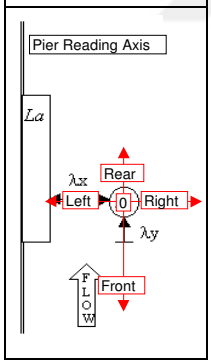


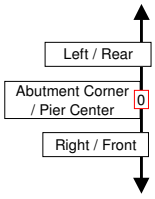
Experiment No : **E23**

Date :	25.11.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	0









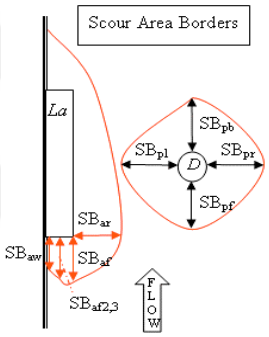
This color was used for raw data readings

This color was used for values enterpolated to sketch

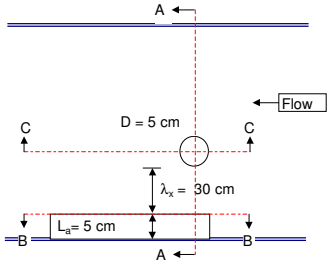
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-105.00				
-138	138					-103.00				
-136	136					-101.00				
-134	134					-99.00				
-132	132					-97.00				
-130	130					-95.00				
-128	128					-93.00				
-126	126					-91.00				
-124	124					-89.00				
-122	122					-87.00				
-120	120					-85.00				
-118	118					-83.00				
-116	116					-81.00		9.40		-0.20
-114	114					-79.00		9.40		-0.20
-112	112					-77.00		9.20		-0.40
-110	110					-75.00		10.40		0.80
-108	108					-73.00		*10.60*		1.00
-106	106					-71.00		10.80		1.20
-104	104					-69.00		*10.90*		1.30
-102	102					-67.00		11.00		1.40
-100	100					-65.00		*11.00*		1.40
-98	98					-63.00		11.00		1.40
-96	96					-61.00		*11.10*		1.50
-94	94					-59.00		11.20		1.60
-92	92					-57.00		*11.20*		1.60
-90	90					-55.00		11.20		1.60
-88	88					-53.00		*11.25*		1.65
-86	86					-51.00		11.30		1.70
-84	84					-49.00		*11.30*		1.70
-82	82					-47.00		11.30		1.70
-80	80					-45.00		*11.28*		1.68
-78	78					-43.00		11.25		1.65
-76	76					-41.00		*11.25*		1.65
-74	74					-39.00		11.25		1.65
-72	72					-37.00		*11.25*		1.65
-70	70					-35.00		11.25		1.65
-68	68					-33.00		*11.23*		1.63
-66	66					-31.00		11.20		1.60
-64	64					-29.00		*11.20*		1.60
-62	62					-27.00		11.20		1.60
-60	60					-25.00		*11.20*		1.60
-58	58					-23.00		11.20		1.60
-56	56					-21.00		*11.20*		1.60
-54	54					-19.00		11.20		1.60
-52	52					-17.00		*11.15*		1.55
-50	50					-15.00		11.10		1.50
-48	48					-13.00		*11.00*		1.40
-46	46					-11.00		10.90		1.30
-44	44					-9.00		*10.78*		1.18
-42	42					-7.00		10.65		1.05
-40	40					-5.00		*10.65*		1.05
-38	38					-3.00		10.65		1.05
-36	36		9.80		0.20	-1.00		*10.60*		1.00
-34	34		*9.80*		0.20	1.00		10.55		0.95
-32	32		9.80		0.20	3.00		*10.38*		0.78
-30	30		*9.80*		0.20	5.00	6.20	10.20	-3.40	0.60
-28	28		9.80		0.20	7.00	*6.25*	10.10	-3.35	0.50
-26	26		*9.90*		0.30	9.00	6.30	9.80	-3.30	0.20
-24	24		10.00		0.40	11.00	6.50	9.70	-3.10	0.10
-22	22		*10.15*		0.55	13.00	7.00	9.50	-2.60	-0.10
-20	20		10.30		0.70	15.00	8.35	9.30	-1.25	-0.30
-18	18		10.35		0.75	17.00	8.80	9.10	-0.80	-0.50
-16	16		10.50		0.90	19.00	9.15	8.65	-0.45	-0.95
-14	14		10.35		0.75	21.00	9.15	8.30	-0.45	-1.30
-12	12		10.05		0.45	23.00	9.10	8.10	-0.50	-1.50
-10	10		9.60		0.00	25.00	8.00	7.60	-1.60	-2.00
-8	8		9.10		-0.50	27.00	6.95	7.10	-2.65	-2.50
-6	6		8.20		-1.40	29.00	6.30	6.50	-3.30	-3.10
-4	4	5.00	7.60	-4.60	-2.00	31.00	4.80	5.70	-4.80	-3.90
-2	2	5.10	6.45	-4.50	-3.15	33.00	3.85	5.10	-5.75	-4.50
0	0	5.60	5.60	-4.00	-4.00	35.00	3.20	3.75	-6.40	-5.85
0	0	5.60	5.60	-4.00	-4.00	40.00	3.20	2.80	-6.40	-6.80
2	-2	6.05	6.00	-3.55	-3.60	42.00	3.85	4.20	-5.75	-5.40
4	-4	7.30	6.90	-2.30	-2.70	44.00	5.00	5.40	-4.60	-4.20
6	-6	8.05	8.10	-1.55	-1.50	46.00	6.20	6.60	-3.40	-3.00
8	-8	8.80	9.10	-0.80	-0.50	48.00	6.90	7.70	-2.70	-1.90
10	-10	9.15	9.50	-0.45	-0.10	50.00	7.70	8.80	-1.90	-0.80
12	-12	9.15	*9.50*	-0.45	-0.10	52.00	9.10	9.50	-0.50	-0.10
14	-14	9.15	9.50	-0.45	-0.10	54.00	9.50	*9.50*	-0.10	-0.10
16	-16					56.00	*9.50*	9.50	-0.10	-0.10
18	-18					58.00	9.50		-0.10	
20	-20					60.00				
22	-22					62.00				
24	-24					64.00				
26	-26					66.00				
28	-28					68.00				
30	-30					70.00				

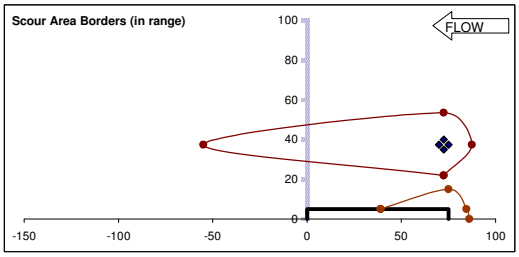
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.00	-4.60
2	5.70	-3.90
4	6.70	-2.90
6	7.35	-2.25
8	8.60	-1.00
10	9.40	-0.20
12	9.50	-0.10
14		
16		
18		
20		

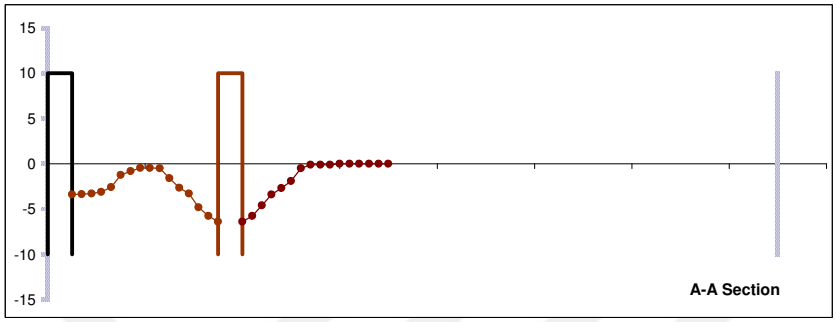
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	11
SB_{af}	Abutment Corner Front	9.5
SB_{ar}	Abutment Corner Right	10
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	125

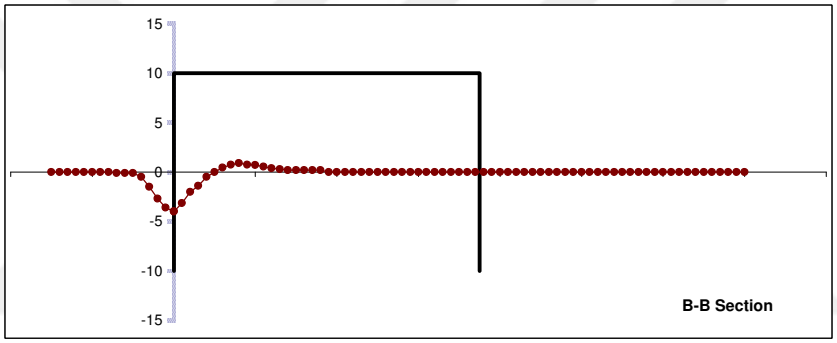


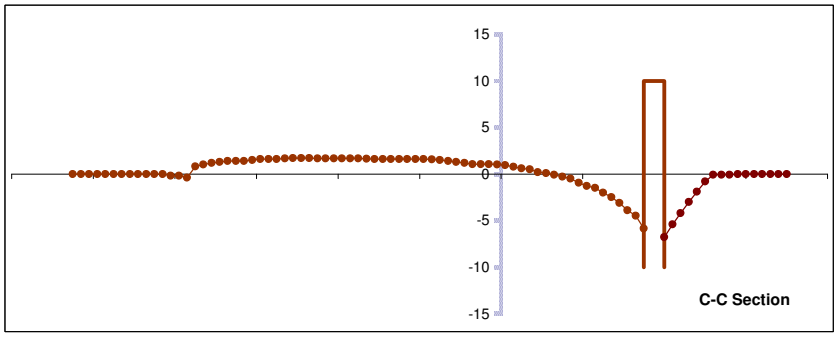
Experiment No : **E23**

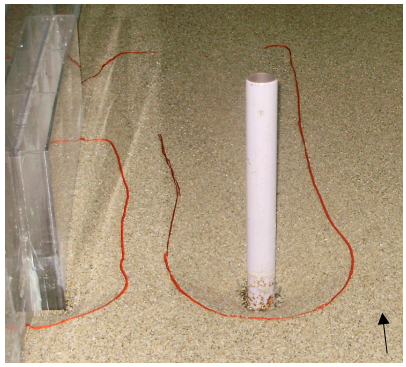


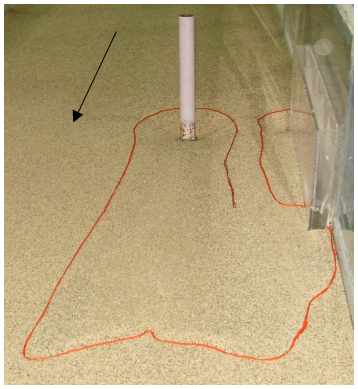






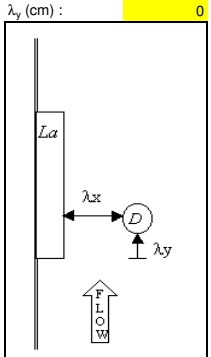


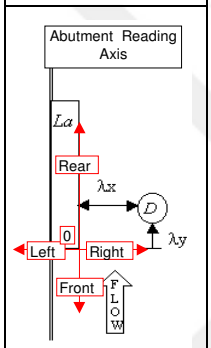


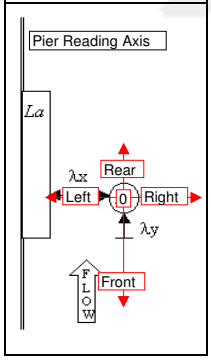


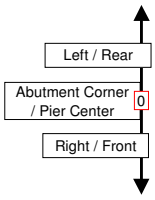
Experiment No : **E24**

Date :	30.11.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	0









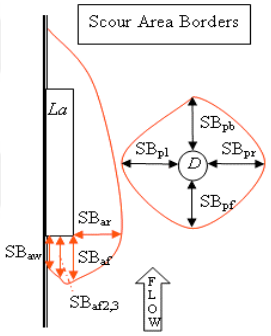
This color was used for raw data readings

This color was used for values enterpolated to sketch

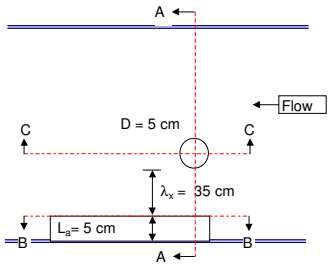
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-100.00				
-138	138					-98.00				
-136	136					-96.00				
-134	134					-94.00				
-132	132					-92.00				
-130	130					-90.00				
-128	128					-88.00				
-126	126					-86.00				
-124	124					-84.00				
-122	122					-82.00				
-120	120					-80.00				
-118	118					-78.00				
-116	116					-76.00				
-114	114					-74.00				
-112	112					-72.00				
-110	110					-70.00				
-108	108					-68.00		9.40		-0.20
-106	106					-66.00		*9.40*		-0.20
-104	104					-64.00		9.40		-0.20
-102	102					-62.00		10.05		0.45
-100	100					-60.00		10.50		0.90
-98	98					-58.00		11.00		1.40
-96	96					-56.00		*11.08*		1.48
-94	94					-54.00		11.15		1.55
-92	92					-52.00		*11.23*		1.63
-90	90					-50.00		11.30		1.70
-88	88					-48.00		*11.35*		1.75
-86	86					-46.00		11.40		1.80
-84	84					-44.00		*11.43*		1.83
-82	82					-42.00		11.45		1.85
-80	80					-40.00		*11.48*		1.88
-78	78					-38.00		11.50		1.90
-76	76					-36.00		*11.55*		1.95
-74	74					-34.00		11.60		2.00
-72	72					-32.00		*11.60*		2.00
-70	70					-30.00		*11.60*		2.00
-68	68					-28.00		11.60		2.00
-66	66					-26.00		*11.65*		2.05
-64	64					-24.00		11.70		2.10
-62	62					-22.00		*11.53*		1.93
-60	60					-20.00		11.35		1.75
-58	58					-18.00		*11.33*		1.73
-56	56					-16.00		11.30		1.70
-54	54					-14.00		*11.20*		1.60
-52	52					-12.00		11.10		1.50
-50	50					-10.00		*11.05*		1.45
-48	48					-8.00		11.00		1.40
-46	46					-6.00		*11.00*		1.40
-44	44					-4.00		11.00		1.40
-42	42					-2.00		*10.90*		1.30
-40	40					0.00		10.80		1.20
-38	38		9.90		0.30	2.00		*10.70*		1.10
-36	36		*9.90*		0.30	4.00		10.60		1.00
-34	34		9.90		0.30	6.00	6.20	*10.60*	-3.40	1.00
-32	32		*9.90*		0.30	8.00	6.75	10.60	-2.85	1.00
-30	30		9.90		0.30	10.00	7.80	10.40	-1.80	0.80
-28	28		*9.90*		0.30	12.00	8.70	10.20	-0.90	0.60
-26	26		9.90		0.30	14.00	*9.05*	10.10	-0.55	0.50
-24	24		10.00		0.40	16.00	9.40	9.85	-0.20	0.25
-22	22		10.25		0.65	18.00	*9.40*	9.65	-0.20	0.05
-20	20		10.50		0.90	20.00	9.40	9.40	-0.20	-0.20
-18	18		10.60		1.00	22.00	*9.40*	9.10	-0.20	-0.50
-16	16		10.60		1.00	24.00	9.40	8.90	-0.20	-0.70
-14	14		10.60		1.00	26.00	*9.40*	8.60	-0.20	-1.00
-12	12		10.20		0.60	28.00	9.40	8.30	-0.20	-1.30
-10	10		9.70		0.10	30.00	8.35	7.90	-1.25	-1.70
-8	8		9.10		-0.50	32.00	7.10	7.25	-2.50	-2.35
-6	6		8.30		-1.30	34.00	6.35	6.70	-3.25	-2.90
-4	4	5.20	7.30	-4.40	-2.30	36.00	5.00	6.10	-4.60	-3.50
-2	2	5.10	6.70	-4.50	-2.90	38.00	3.80	5.20	-5.80	-4.40
0	0	5.70	5.70	-3.90	-3.90	40.00	3.00	4.50	-6.60	-5.10
0	0	5.70	5.70	-3.90	-3.90	45.00	3.00	2.40	-6.60	-7.20
2	-2	6.00	6.40	-3.60	-3.20	47.00	3.50	3.80	-6.10	-5.80
4	-4	7.00	7.10	-2.60	-2.50	49.00	4.80	5.10	-4.80	-4.50
6	-6	8.30	8.20	-1.30	-1.40	51.00	6.15	6.40	-3.45	-3.20
8	-8	8.80	9.40	-0.80	-0.20	53.00	7.05	7.65	-2.55	-1.95
10	-10	9.40	*9.40*	-0.20	-0.20	55.00	8.00	8.80	-1.60	-0.80
12	-12	*9.40*	9.40	-0.20	-0.20	57.00	9.05	9.10	-0.55	-0.50
14	-14	9.40		-0.20		59.00	9.40	*9.25*	-0.20	-0.35
16	-16					61.00	*9.40*	9.40	-0.20	-0.20
18	-18					63.00	9.40	*9.40*	-0.20	-0.20
20	-20					65.00		9.40		-0.20
22	-22					67.00				
24	-24					69.00				
26	-26					71.00				
28	-28					73.00				
30	-30					75.00				

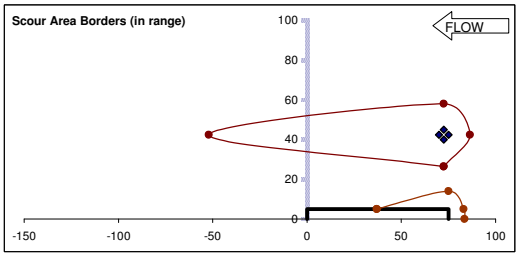
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.20	-4.40
2	5.70	-3.90
4	6.90	-2.70
6	7.80	-1.80
8	9.10	-0.50
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

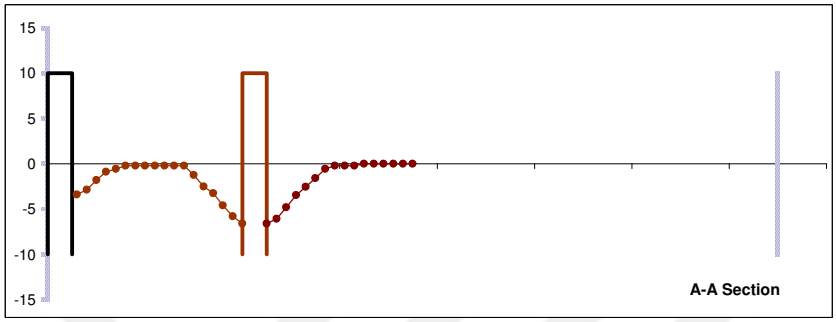
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	122

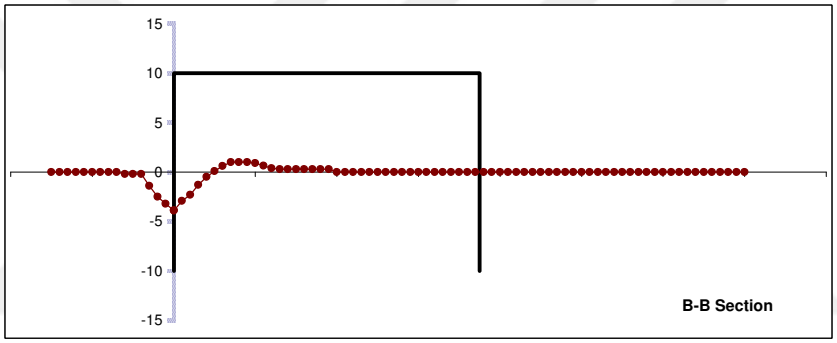


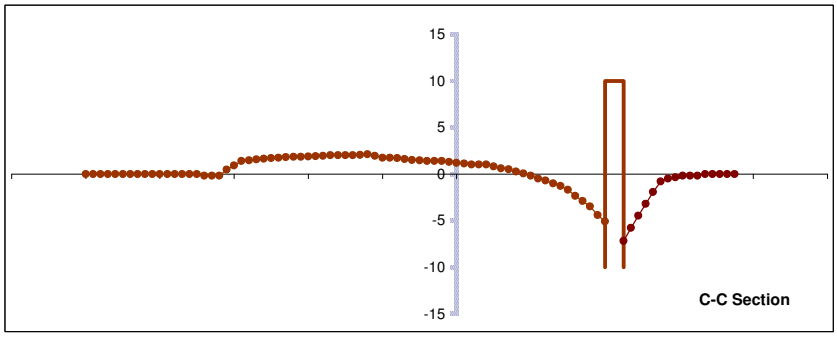
Experiment No : **E24**

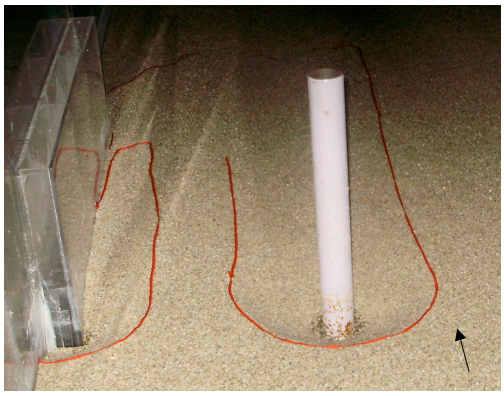






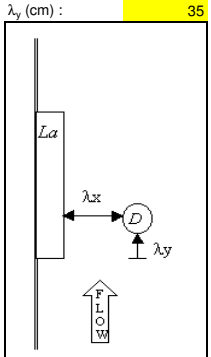


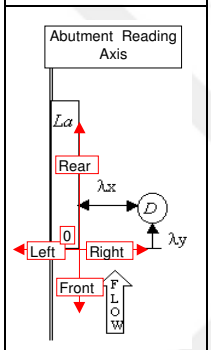


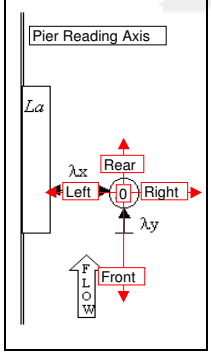


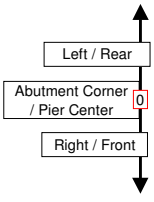
Experiment No : **E25**

Date :	02.12.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	35









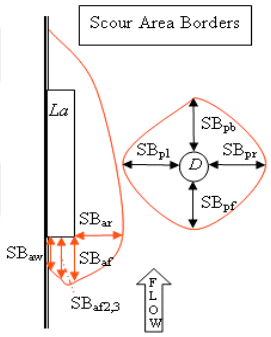
This color was used for raw data readings

This color was used for values enterpolated to sketch

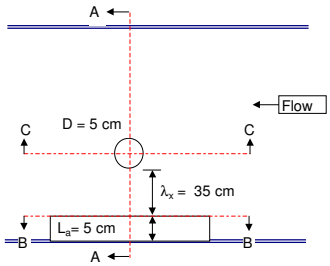
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front	
-140	140					-100.00					
-138	138					-98.00					
-136	136					-96.00					
-134	134					-94.00					
-132	132					-92.00					
-130	130					-90.00					
-128	128					-88.00					
-126	126					-86.00					
-124	124					-84.00					
-122	122					-82.00					
-120	120					-80.00					
-118	118					-78.00					
-116	116					-76.00					
-114	114					-74.00					
-112	112					-72.00					
-110	110					-70.00		9.40		-0.20	
-108	108					-68.00		*9.40*		-0.20	
-106	106					-66.00		9.40		-0.20	
-104	104					-64.00		9.20		-0.40	
-102	102					-62.00		9.20		-0.40	
-100	100					-60.00		9.70		0.10	
-98	98					-58.00		10.90		1.30	
-96	96					-56.00		*11.00*		1.40	
-94	94					-54.00		11.10		1.50	
-92	92					-52.00		*11.23*		1.63	
-90	90					-50.00		11.35		1.75	
-88	88					-48.00		*11.38*		1.78	
-86	86					-46.00		11.40		1.80	
-84	84					-44.00		*11.40*		1.80	
-82	82					-42.00		11.40		1.80	
-80	80					-40.00		*11.40*		1.80	
-78	78					-38.00		11.40		1.80	
-76	76					-36.00		*11.40*		1.80	
-74	74					-34.00		*11.40*		1.80	
-72	72					-32.00		11.40		1.80	
-70	70					-30.00		*11.40*		1.80	
-68	68					-28.00		11.40		1.80	
-66	66					-26.00		*11.40*		1.80	
-64	64					-24.00		11.40		1.80	
-62	62					-22.00		*11.40*		1.80	
-60	60					-20.00		11.40		1.80	
-58	58					-18.00		*11.40*		1.80	
-56	56					-16.00		11.40		1.80	
-54	54					-14.00		*11.40*		1.80	
-52	52					-12.00		11.40		1.80	
-50	50					-10.00		*11.40*		1.80	
-48	48					-8.00		11.40		1.80	
-46	46					-6.00		*11.33*		1.73	
-44	44					-4.00		11.25		1.65	
-42	42		9.90		0.30	-2.00		*11.18*		1.58	
-40	40		*9.90*		0.30	0.00		11.10		1.50	
-38	38		9.90		0.30	2.00		*11.00*		1.40	
-36	36		*9.90*		0.30	4.00		10.90		1.30	
-34	34		9.90		0.30	6.00	9.90	*10.80*	0.30	1.20	
-32	32		*9.90*		0.30	8.00	9.90	10.70	0.30	1.10	
-30	30		9.90		0.30	10.00	9.90	*10.55*	0.30	0.95	
-28	28		*9.90*		0.30	12.00	9.90	10.40	0.30	0.80	
-26	26		9.90		0.30	14.00	10.00	10.10	0.40	0.50	
-24	24		*9.90*		0.30	16.00	9.80	9.85	0.20	0.25	
-22	22		9.90		0.30	18.00	*9.60*	9.50	0.00	-0.10	
-20	20		10.00		0.40	20.00	9.40	9.40	-0.20	-0.20	
-18	18		10.30		0.70	22.00	*9.40*	9.20	-0.20	-0.40	
-16	16		10.60		1.00	24.00	9.40	8.85	-0.20	-0.75	
-14	14		10.60		1.00	26.00	*9.40*	8.70	-0.20	-0.90	
-12	12		10.60		1.00	28.00	9.40	8.25	-0.20	-1.35	
-10	10		10.10		0.50	30.00	8.65	7.85	-0.95	-1.75	
-8	8		9.45		-0.15	32.00	7.30	7.30	-2.30	-2.30	
-6	6		8.70		-0.90	34.00	6.20	6.60	-3.40	-3.00	
-4	4	5.60	7.75	-4.00	-1.85	36.00	5.25	5.90	-4.35	-3.70	
-2	2	5.20	6.60	-4.40	-3.00	38.00	3.70	5.30	-5.90	-4.30	
0	0	6.00	6.00	-3.60	-3.60	40.00	2.50	4.70	-7.10	-4.90	
0	0	6.00	6.00	-3.60	-3.60	45.00	2.50	2.70	-7.10	-6.90	
2	-2	6.10	6.40	-3.50	-3.20	47.00	3.40	4.10	-6.20	-5.50	
4	-4	7.45	7.30	-2.15	-2.30	49.00	4.85	5.55	-4.75	-4.05	
6	-6	8.20	8.70	-1.40	-0.90	51.00	5.90	6.75	-3.70	-2.85	
8	-8	9.00	9.40	-0.60	-0.20	53.00	6.75	8.05	-2.85	-1.55	
10	-10	*9.20*	*9.40*	-0.40	-0.20	55.00	7.80	9.20	-1.80	-0.40	
12	-12	9.40	9.40	-0.20	-0.20	57.00	8.80	9.40	-0.80	-0.20	
14	-14	*9.40*		-0.20		59.00	9.40	*9.40*	-0.20	-0.20	
16	-16	9.40		-0.20		61.00	*9.40*	9.40	-0.20	-0.20	
18	-18					63.00	9.40		-0.20		
20	-20					65.00					
22	-22					67.00					
24	-24					69.00					
26	-26					71.00					
28	-28					73.00					
30	-30					75.00					

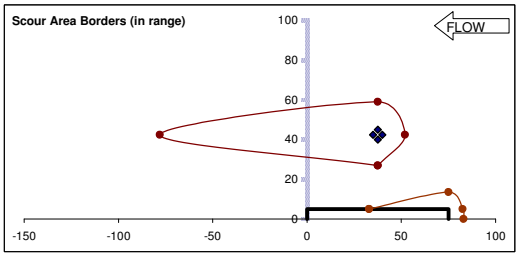
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	6.10	-3.50
4	7.10	-2.50
6	8.30	-1.30
8	9.10	-0.50
10	9.40	-0.20
12	9.40	-0.20
14	*9.40*	-0.20
16	9.40	-0.20
18		
20		

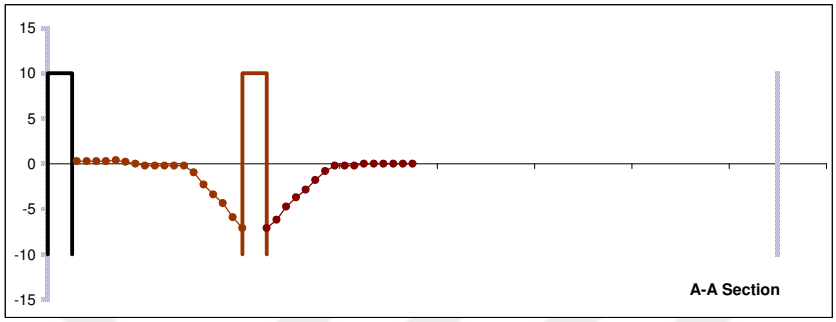
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8
SB_{af}	Abutment Corner Front	7.5
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	113

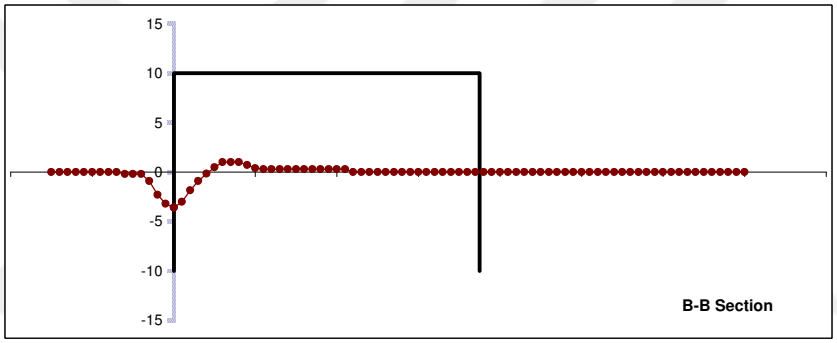


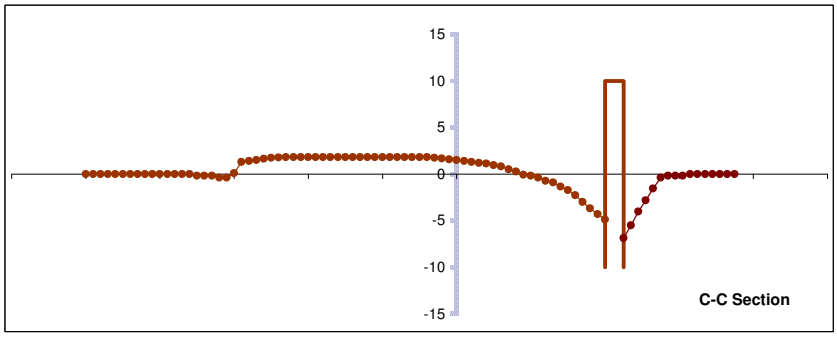
Experiment No : **E25**

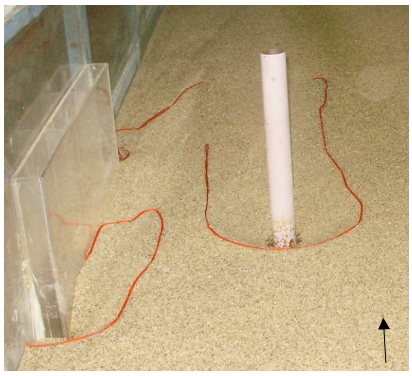


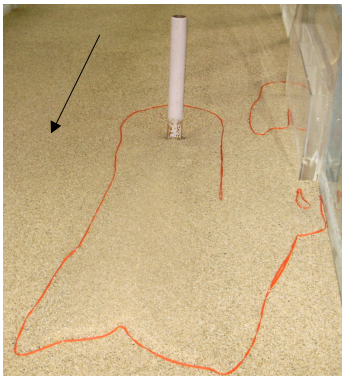






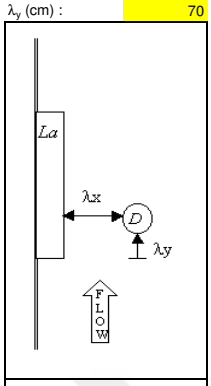


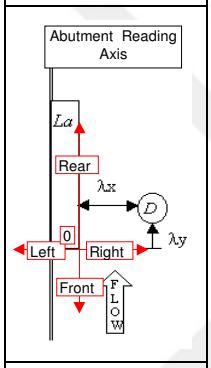


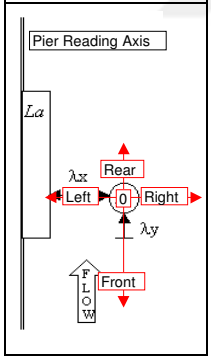


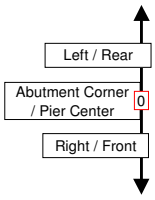
Experiment No : **E26**

Date :	07.12.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	70









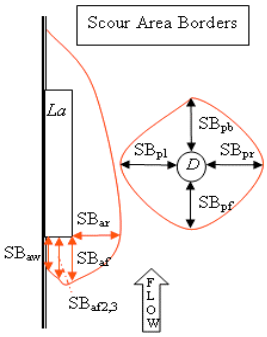
This color was used for raw data readings

This color was used for values enterpolated to sketch

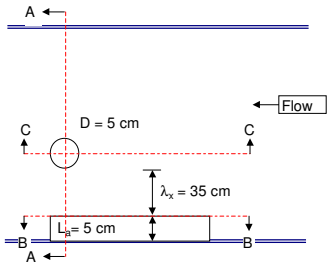
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-100.00				
-138	138					-98.00				
-136	136					-96.00				
-134	134					-94.00				
-132	132					-92.00				
-130	130					-90.00				
-128	128					-88.00				
-126	126					-86.00				
-124	124					-84.00				
-122	122					-82.00				
-120	120					-80.00				
-118	118					-78.00				
-116	116					-76.00				
-114	114					-74.00				
-112	112					-72.00				
-110	110					-70.00				
-108	108					-68.00				
-106	106					-66.00				
-104	104					-64.00				
-102	102					-62.00				
-100	100					-60.00				
-98	98					-58.00				
-96	96					-56.00				
-94	94					-54.00				
-92	92					-52.00				
-90	90					-50.00				
-88	88					-48.00				
-86	86					-46.00		9.40		-0.20
-84	84					-44.00		9.00		-0.60
-82	82					-42.00		*9.50*		-0.10
-80	80					-40.00		*10.00*		0.40
-78	78					-38.00		10.50		0.90
-76	76					-36.00		*11.15*		1.55
-74	74					-34.00		11.80		2.20
-72	72					-32.00		*11.48*		1.88
-70	70					-30.00		11.15		1.55
-68	68					-28.00		*11.18*		1.58
-66	66					-26.00		11.20		1.60
-64	64					-24.00		*11.25*		1.65
-62	62					-22.00		11.30		1.70
-60	60					-20.00		*11.35*		1.75
-58	58					-18.00		11.40		1.80
-56	56					-16.00		*11.45*		1.85
-54	54					-14.00		11.50		1.90
-52	52					-12.00		*11.50*		1.90
-50	50					-10.00		11.50		1.90
-48	48					-8.00		*11.45*		1.85
-46	46					-6.00		11.40		1.80
-44	44		9.50		-0.10	-4.00		*11.38*		1.78
-42	42		*9.50*		-0.10	-2.00		11.35		1.75
-40	40		9.50		-0.10	0.00		*11.30*		1.70
-38	38		*9.70*		0.10	2.00		11.25		1.65
-36	36		9.90		0.30	4.00		*11.15*		1.55
-34	34		*9.90*		0.30	6.00	9.40	11.05	-0.20	1.45
-32	32		9.90		0.30	8.00	*9.40*	*10.93*	-0.20	1.33
-30	30		*9.90*		0.30	10.00	*9.40*	10.80	-0.20	1.20
-28	28		9.90		0.30	12.00	*9.40*	*10.70*	-0.20	1.10
-26	26		*9.90*		0.30	14.00	*9.40*	10.60	-0.20	1.00
-24	24		9.90		0.30	16.00	*9.40*	10.45	-0.20	0.85
-22	22		10.10		0.50	18.00	*9.40*	10.20	-0.20	0.60
-20	20		10.40		0.80	20.00	*9.40*	10.00	-0.20	0.40
-18	18		10.60		1.00	22.00	9.40	9.65	-0.20	0.05
-16	16		10.70		1.10	24.00	*9.40*	9.50	-0.20	-0.10
-14	14		10.60		1.00	26.00	9.40	9.10	-0.20	-0.50
-12	12		10.10		0.50	28.00	9.10	8.70	-0.50	-0.90
-10	10		9.80		0.20	30.00	8.20	8.30	-1.40	-1.30
-8	8		9.20		-0.40	32.00	7.35	7.75	-2.25	-1.85
-6	6		8.50		-1.10	34.00	6.30	7.10	-3.30	-2.50
-4	4	5.50	7.50	-4.10	-2.10	36.00	5.30	6.40	-4.30	-3.20
-2	2	5.30	6.60	-4.30	-3.00	38.00	3.90	5.45	-5.70	-4.15
0	0	5.90	5.90	-3.70	-3.70	40.00	3.10	4.80	-6.50	-4.80
0	0	5.90	5.90	-3.70	-3.70	45.00	3.10	3.10	-6.50	-6.50
2	-2	5.80	6.15	-3.80	-3.45	47.00	3.75	4.10	-5.85	-5.50
4	-4	7.20	7.80	-2.40	-1.80	49.00	5.00	5.60	-4.60	-4.00
6	-6	8.10	8.00	-1.50	-1.60	51.00	6.20	6.90	-3.40	-2.70
8	-8	8.90	9.15	-0.70	-0.45	53.00	7.10	8.30	-2.50	-1.30
10	-10	9.10	*9.28*	-0.50	-0.32	55.00	8.10	9.15	-1.50	-0.45
12	-12	9.40	9.40	-0.20	-0.20	57.00	8.90	9.50	-0.70	-0.10
14	-14		*9.40*		-0.20	59.00	9.10	*9.50*	-0.50	-0.10
16	-16		9.40		-0.20	61.00	9.40	9.50	-0.20	-0.10
18	-18					63.00				
20	-20					65.00				
22	-22					67.00				
24	-24					69.00				
26	-26					71.00				
28	-28					73.00				
30	-30					75.00				

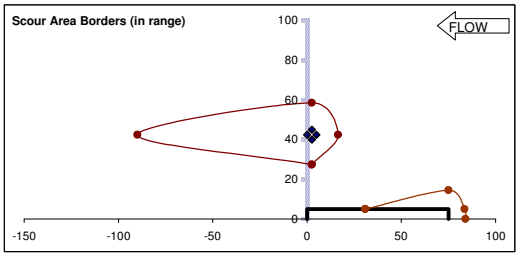
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.60	-4.00
2	6.20	-3.40
4	6.90	-2.70
6	8.10	-1.50
8	9.10	-0.50
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

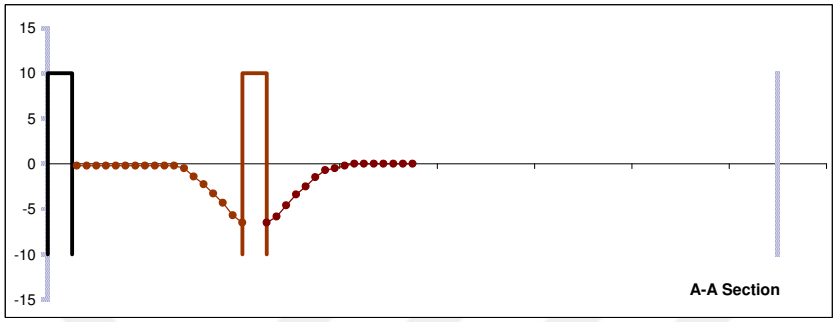
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	9.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	90

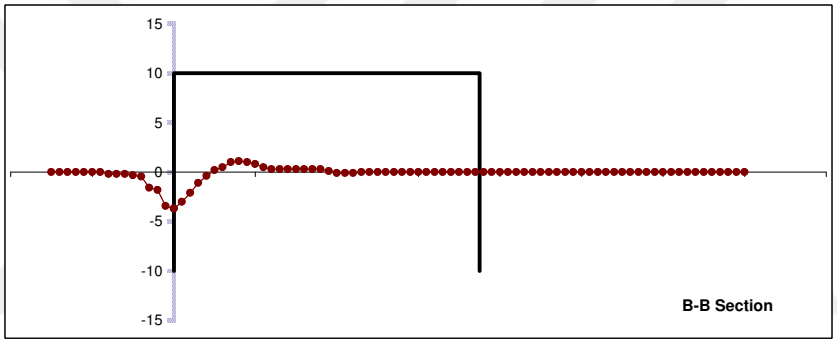


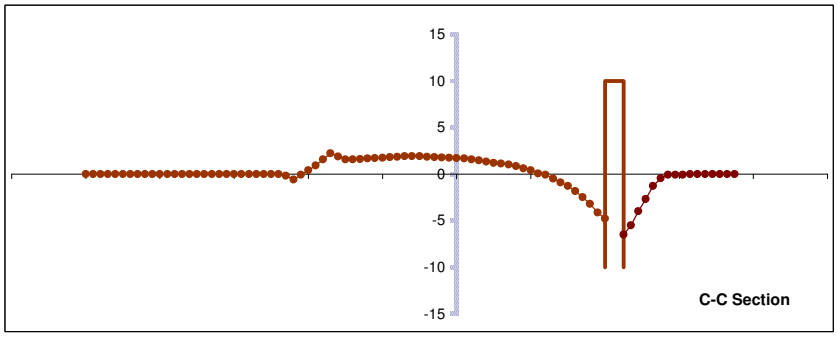
Experiment No : **E26**

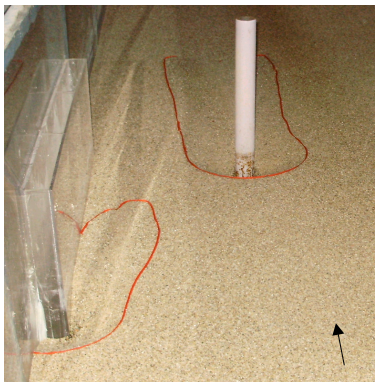


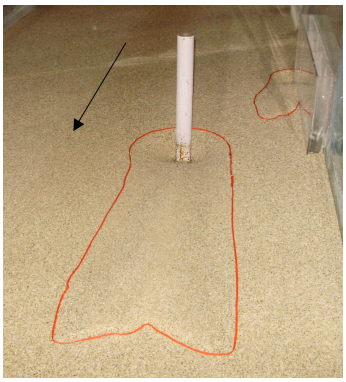






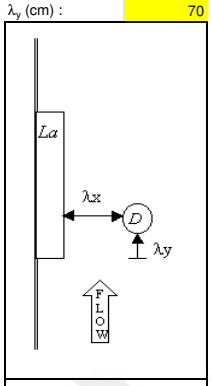


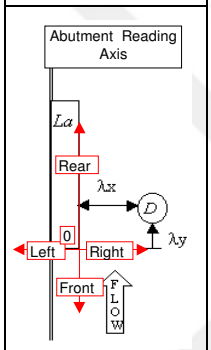


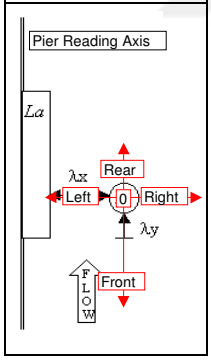


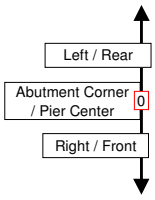
Experiment No : **E27**

Date :	09.12.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	70









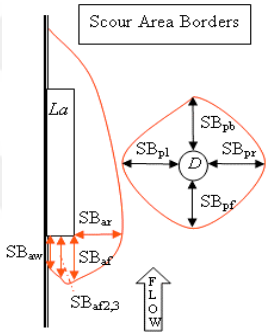
This color was used for raw data readings

This color was used for values enterpolated to sketch

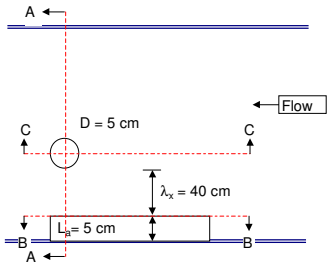
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-95.00				
-138	138					-93.00				
-136	136					-91.00				
-134	134					-89.00				
-132	132					-87.00				
-130	130					-85.00				
-128	128					-83.00				
-126	126					-81.00				
-124	124					-79.00				
-122	122					-77.00				
-120	120					-75.00				
-118	118					-73.00				
-116	116					-71.00				
-114	114					-69.00				
-112	112					-67.00				
-110	110					-65.00				
-108	108					-63.00				
-106	106					-61.00				
-104	104					-59.00				
-102	102					-57.00				
-100	100					-55.00				
-98	98					-53.00				
-96	96					-51.00				
-94	94					-49.00				
-92	92					-47.00				
-90	90					-45.00				
-88	88					-43.00		9.40		-0.20
-86	86					-41.00		*9.40*		-0.20
-84	84					-39.00		9.40		-0.20
-82	82					-37.00		9.80		0.20
-80	80					-35.00		10.65		1.05
-78	78					-33.00		11.00		1.40
-76	76					-31.00		11.30		1.70
-74	74					-29.00		*11.43*		1.83
-72	72					-27.00		11.55		1.95
-70	70					-25.00		*11.63*		2.03
-68	68					-23.00		11.70		2.10
-66	66					-21.00		*11.75*		2.15
-64	64					-19.00		11.80		2.20
-62	62					-17.00		*11.80*		2.20
-60	60					-15.00		11.80		2.20
-58	58					-13.00		*11.78*		2.18
-56	56					-11.00		11.75		2.15
-54	54					-9.00		*11.73*		2.13
-52	52		9.80		0.20	-7.00		11.70		2.10
-50	50		*9.80*		0.20	-5.00		*11.68*		2.08
-48	48		9.80		0.20	-3.00		11.65		2.05
-46	46		*9.80*		0.20	-1.00		*11.63*		2.03
-44	44		9.80		0.20	1.00		11.60		2.00
-42	42		*9.80*		0.20	3.00		*11.60*		2.00
-40	40		9.80		0.20	5.00	9.50	11.60	-0.10	2.00
-38	38		*9.80*		0.20	7.00	9.50	*11.43*	-0.10	1.83
-36	36		9.80		0.20	9.00	*9.50*	11.25	-0.10	1.65
-34	34		*9.80*		0.20	11.00	*9.50*	*11.15*	-0.10	1.55
-32	32		9.80		0.20	13.00	*9.50*	11.05	-0.10	1.45
-30	30		*9.80*		0.20	15.00	*9.50*	11.00	-0.10	1.40
-28	28		9.80		0.20	17.00	*9.50*	9.90	-0.10	0.30
-26	26		*9.80*		0.20	19.00	9.50	9.65	-0.10	0.05
-24	24		9.80		0.20	21.00	*9.50*	10.40	-0.10	0.80
-22	22		*9.95*		0.35	23.00	9.50	10.05	-0.10	0.45
-20	20		10.10		0.50	25.00	*9.50*	9.65	-0.10	0.05
-18	18		*10.28*		0.67	27.00	9.50	9.40	-0.10	-0.20
-16	16		10.45		0.85	29.00	*9.50*	9.05	-0.10	-0.55
-14	14		10.45		0.85	31.00	9.50	8.70	-0.10	-0.90
-12	12		10.30		0.70	33.00	9.10	8.30	-0.50	-1.30
-10	10		9.80		0.20	35.00	8.05	7.65	-1.55	-1.95
-8	8		9.20		-0.40	37.00	7.30	7.30	-2.30	-2.30
-6	6		8.30		-1.30	39.00	6.30	6.75	-3.30	-2.85
-4	4	5.40	7.45	-4.20	-2.15	41.00	5.00	6.15	-4.60	-3.45
-2	2	5.15	6.30	-4.45	-3.30	43.00	3.75	5.40	-5.85	-4.20
0	0	5.40	5.40	-4.20	-4.20	45.00	3.30	5.00	-6.30	-4.60
0	0	5.40	5.40	-4.20	-4.20	50.00	3.30	3.30	-6.30	-6.30
2	-2	5.95	6.20	-3.65	-3.40	52.00	4.30	4.70	-5.30	-4.90
4	-4	7.50	7.20	-2.10	-2.40	54.00	5.45	5.90	-4.15	-3.70
6	-6	8.30	8.20	-1.30	-1.40	56.00	6.60	7.25	-3.00	-2.35
8	-8	9.10	9.10	-0.50	-0.50	58.00	7.20	8.60	-2.40	-1.00
10	-10	9.40	*9.30*	-0.20	-0.30	60.00	8.30	9.30	-1.30	-0.30
12	-12		9.50		-0.10	62.00	9.20	9.50	-0.40	-0.10
14	-14		*9.50*		-0.10	64.00	9.50	*9.50*	-0.10	-0.10
16	-16		9.50		-0.10	66.00		9.50		-0.10
18	-18					68.00				
20	-20					70.00				
22	-22					72.00				
24	-24					74.00				
26	-26					76.00				
28	-28					78.00				
30	-30					80.00				

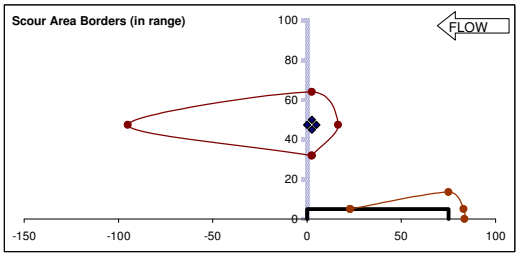
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	6.10	-3.50
4	6.85	-2.75
6	7.85	-1.75
8	9.20	-0.40
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

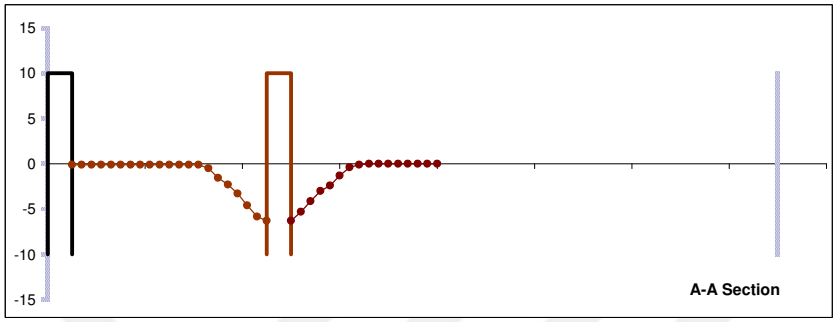
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	95

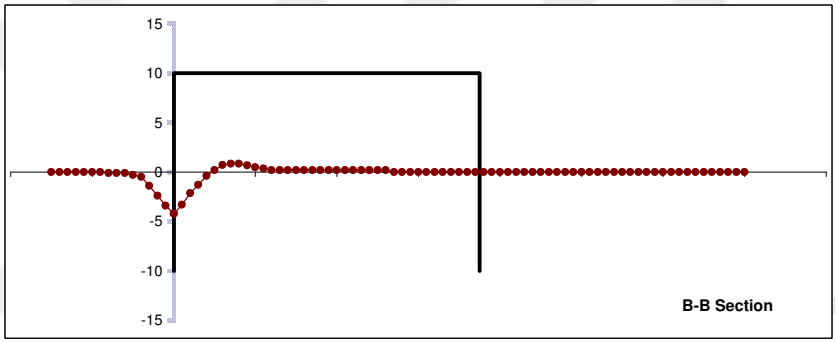


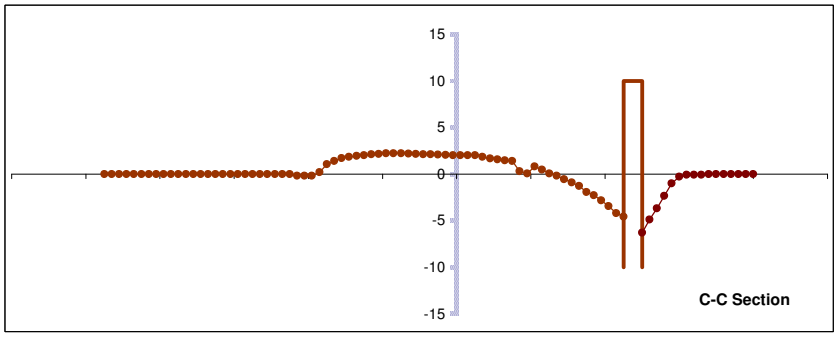
Experiment No : **E27**

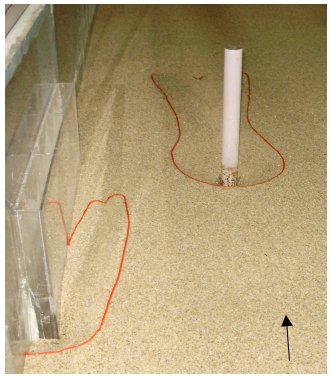


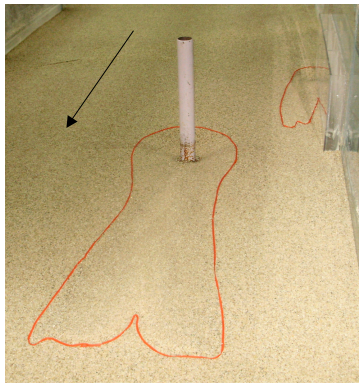






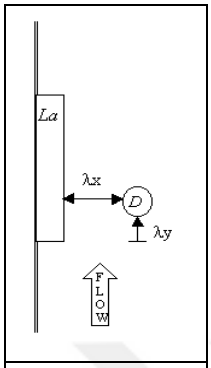


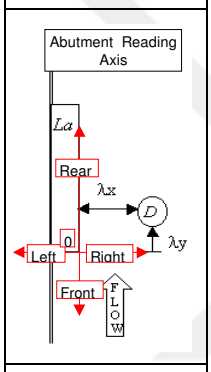


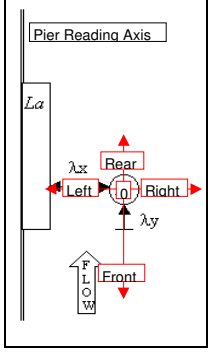


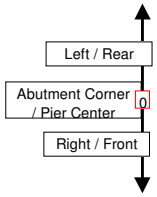
Experiment No : **E28**

Date :	14.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	35









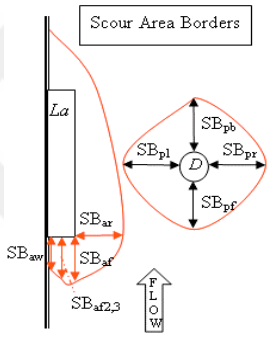
This color was used for raw data readings

This color was used for values enterpolated to sketch

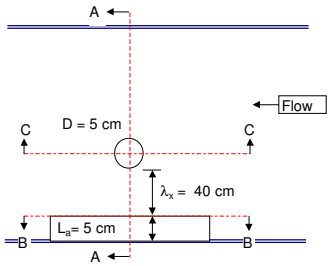
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-95.00				
-138	138					-93.00				
-136	136					-91.00				
-134	134					-89.00				
-132	132					-87.00				
-130	130					-85.00				
-128	128					-83.00				
-126	126					-81.00				
-124	124					-79.00				
-122	122					-77.00				
-120	120					-75.00				
-118	118					-73.00				
-116	116					-71.00				
-114	114					-69.00				
-112	112					-67.00				
-110	110					-65.00				
-108	108					-63.00				
-106	106					-61.00				
-104	104					-59.00		12.00		0.00
-102	102					-57.00		12.50		0.50
-100	100					-55.00		12.50		0.50
-98	98					-53.00		12.70		0.70
-96	96					-51.00		12.60		0.60
-94	94					-49.00		12.60		0.60
-92	92					-47.00		12.70		0.70
-90	90					-45.00		12.80		0.80
-88	88					-43.00		13.20		1.20
-86	86					-41.00		13.30		1.30
-84	84					-39.00		13.30		1.30
-82	82					-37.00		13.30		1.30
-80	80					-35.00		13.40		1.40
-78	78					-33.00		13.30		1.30
-76	76					-31.00		13.30		1.30
-74	74					-29.00		13.50		1.50
-72	72					-27.00		*13.53*		1.53
-70	70					-25.00		*13.57*		1.57
-68	68					-23.00		13.60		1.60
-66	66					-21.00		*13.65*		1.65
-64	64					-19.00		13.70		1.70
-62	62					-17.00		*13.70*		1.70
-60	60					-15.00		13.70		1.70
-58	58					-13.00		*13.80*		1.80
-56	56					-11.00		13.90		1.90
-54	54					-9.00		*13.90*		1.90
-52	52					-7.00		13.90		1.90
-50	50					-5.00		*13.95*		1.95
-48	48					-3.00		14.00		2.00
-46	46					-1.00		*14.00*		2.00
-44	44					1.00		14.00		2.00
-42	42					3.00		*13.90*		1.90
-40	40					5.00	11.80	13.80	-0.20	1.80
-38	38					7.00	11.50	*13.75*	-0.50	1.75
-36	36					9.00	10.00	13.70	-2.00	1.70
-34	34					11.00	11.20	*13.65*	-0.80	1.65
-32	32		12.00		0.00	13.00	11.50	13.60	-0.50	1.60
-30	30		12.20		0.20	15.00	11.40	13.80	-0.60	1.80
-28	28		11.60		-0.40	17.00	11.30	13.50	-0.70	1.50
-26	26		11.70		-0.30	19.00	11.50	13.40	-0.50	1.40
-24	24		11.70		-0.30	21.00	11.50	13.20	-0.50	1.20
-22	22		11.80		-0.20	23.00	11.70	13.10	-0.30	1.10
-20	20		12.60		0.60	25.00	11.30	12.90	-0.70	0.90
-18	18		12.90		0.90	27.00	11.30	12.70	-0.70	0.70
-16	16		13.00		1.00	29.00	11.40	12.60	-0.60	0.60
-14	14		13.00		1.00	31.00	11.30	12.15	-0.70	0.15
-12	12		12.70		0.70	33.00	11.20	12.10	-0.80	0.10
-10	10		12.20		0.20	35.00	11.10	11.70	-0.90	-0.30
-8	8		11.60		-0.40	37.00	10.40	10.70	-1.60	-1.30
-6	6	9.00	10.10	-3.00	-1.90	39.00	9.70	9.90	-2.30	-2.10
-4	4	8.90	9.50	-3.10	-2.50	41.00	8.80	9.10	-3.20	-2.90
-2	2	8.50	8.70	-3.50	-3.30	43.00	7.90	8.40	-4.10	-3.60
0	0	8.10	8.10	-3.90	-3.90	45.00	5.40	7.90	-6.60	-4.10
0	0	8.10	8.10	-3.90	-3.90	50.00	6.10	5.30	-5.90	-6.70
2	-2	9.00	9.10	-3.00	-2.90	52.00	7.60	6.80	-4.40	-5.20
4	-4	9.00	10.30	-3.00	-1.70	54.00	8.60	8.00	-3.40	-4.00
6	-6	10.20	11.20	-1.80	-0.80	56.00	8.30	9.30	-3.70	-2.70
8	-8	10.70	11.90	-1.30	-0.10	58.00	10.40	10.40	-1.60	-1.60
10	-10	11.40	12.00	-0.60	0.00	60.00	11.30	11.30	-0.70	-0.70
12	-12	11.60		-0.40		62.00	11.90	11.80	-0.10	-0.20
14	-14	11.60		-0.40		64.00	12.00	12.00	0.00	0.00
16	-16	11.70		-0.30		66.00				
18	-18	11.60		-0.40		68.00				
20	-20	11.70		-0.30		70.00				
22	-22	11.60		-0.40		72.00				
24	-24	11.60		-0.40		74.00				
26	-26	11.60		-0.40		76.00				
28	-28	12.00		0.00		78.00				
30	-30					80.00				

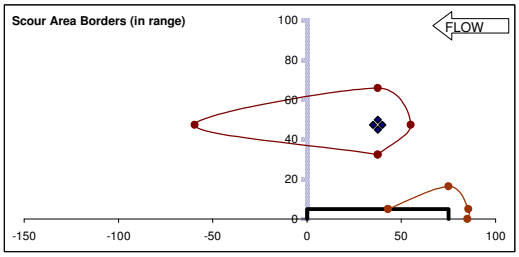
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	8.70	-3.30
2	9.40	-2.60
4	10.20	-1.80
6	11.00	-1.00
8	11.70	-0.30
10	12.00	0.00
12		
14		
16		
18		
20		

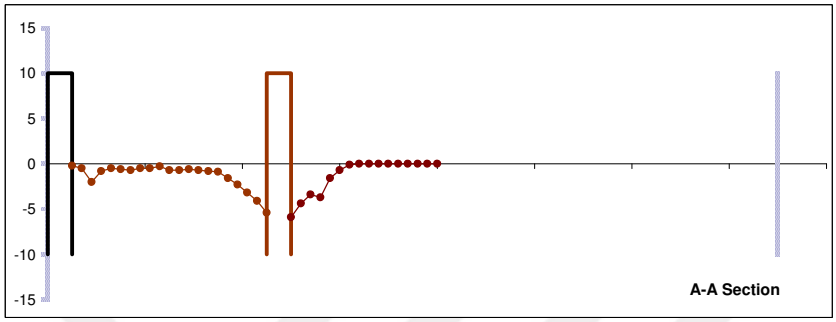
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	10.5
SB_{ar}	Abutment Corner Right	11.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	15
SB_{pr}	Pier Right	16
SB_{pb}	Pier Rear	94.5

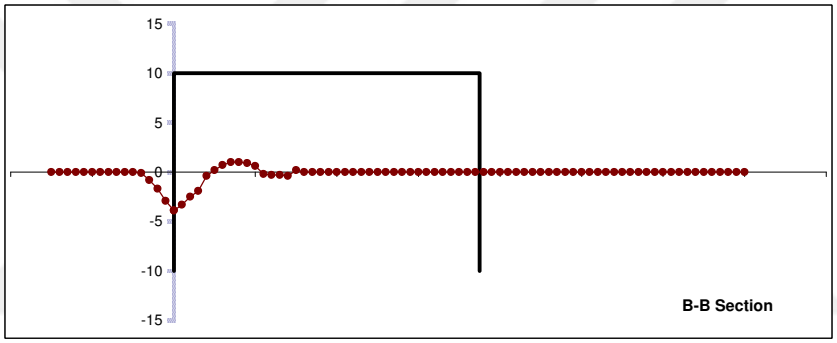


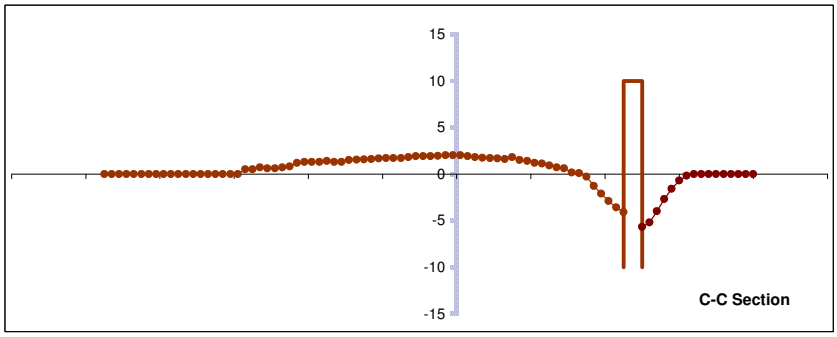
Experiment No : **E28**

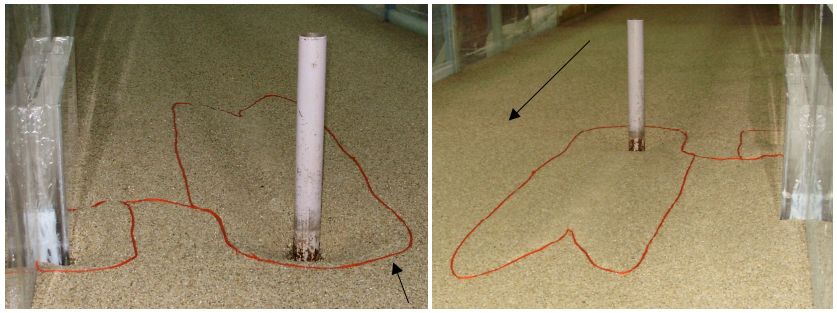






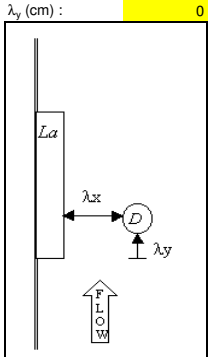


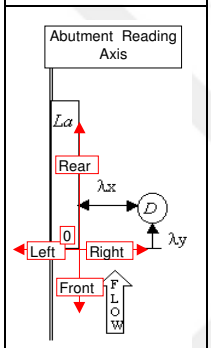


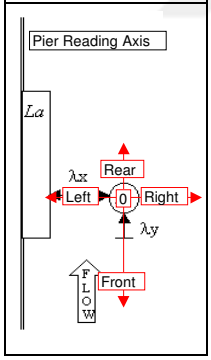


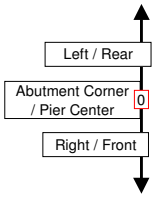
Experiment No : **E29**

Date :	21.12.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	0









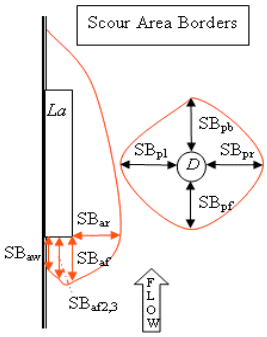
This color was used for raw data readings

This color was used for values enterpolated to sketch

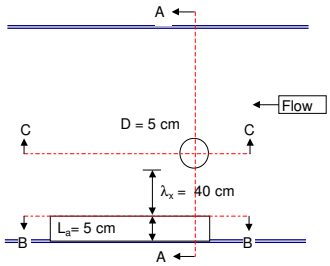
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front	
-140	140					-95.00					
-138	138					-93.00					
-136	136					-91.00					
-134	134					-89.00					
-132	132					-87.00					
-130	130					-85.00					
-128	128					-83.00					
-126	126					-81.00					
-124	124					-79.00					
-122	122					-77.00					
-120	120					-75.00					
-118	118					-73.00					
-116	116					-71.00					
-114	114					-69.00					
-112	112					-67.00					
-110	110					-65.00					
-108	108					-63.00					
-106	106					-61.00					
-104	104					-59.00					
-102	102					-57.00		9.50		-0.10	
-100	100					-55.00		*9.50*		-0.10	
-98	98					-53.00		9.50		-0.10	
-96	96					-51.00		9.75		0.15	
-94	94					-49.00		10.70		1.10	
-92	92					-47.00		*10.85*		1.25	
-90	90					-45.00		11.00		1.40	
-88	88					-43.00		*11.10*		1.50	
-86	86					-41.00		11.20		1.60	
-84	84					-39.00		*11.20*		1.60	
-82	82					-37.00		11.20		1.60	
-80	80					-35.00		*11.25*		1.65	
-78	78					-33.00		11.30		1.70	
-76	76					-31.00		*11.30*		1.70	
-74	74					-29.00		11.30		1.70	
-72	72					-27.00		*11.30*		1.70	
-70	70					-25.00		11.30		1.70	
-68	68					-23.00		*11.30*		1.70	
-66	66					-21.00		11.30		1.70	
-64	64					-19.00		*11.30*		1.70	
-62	62					-17.00		11.30		1.70	
-60	60					-15.00		*11.30*		1.70	
-58	58					-13.00		11.30		1.70	
-56	56					-11.00		*11.30*		1.70	
-54	54					-9.00		11.30		1.70	
-52	52					-7.00		*11.25*		1.65	
-50	50					-5.00		11.20		1.60	
-48	48					-3.00		*11.10*		1.50	
-46	46					-1.00		11.00		1.40	
-44	44					1.00		*10.95*		1.35	
-42	42					3.00		10.90		1.30	
-40	40					5.00	6.40	*10.83*	-3.20	1.23	
-38	38					7.00	6.50	10.75	-3.10	1.15	
-36	36					9.00	6.60	*10.68*	-3.00	1.08	
-34	34					11.00	7.65	10.60	-1.95	1.00	
-32	32					13.00	8.65	*10.53*	-0.95	0.92	
-30	30					15.00	8.80	10.45	-0.80	0.85	
-28	28		9.50		-0.10	17.00	9.40	*10.30*	-0.20	0.70	
-26	26		*9.50*		-0.10	19.00	*9.40*	10.15	-0.20	0.55	
-24	24		9.50		-0.10	21.00	9.40	*9.95*	-0.20	0.35	
-22	22		9.65		0.05	23.00	*9.40*	9.75	-0.20	0.15	
-20	20		10.00		0.40	25.00	9.40	9.60	-0.20	0.00	
-18	18		10.25		0.65	27.00	*9.40*	9.30	-0.20	-0.30	
-16	16		10.35		0.75	29.00	9.40	8.90	-0.20	-0.70	
-14	14		10.45		0.85	31.00	*9.40*	8.70	-0.20	-0.90	
-12	12		10.20		0.60	33.00	9.40	8.15	-0.20	-1.45	
-10	10		9.70		0.10	35.00	8.10	7.65	-1.50	-1.95	
-8	8		8.90		-0.70	37.00	7.30	6.75	-2.30	-2.85	
-6	6		8.10		-1.50	39.00	6.15	6.05	-3.45	-3.55	
-4	4	5.30	7.20	-4.30	-2.40	41.00	4.90	5.20	-4.70	-4.40	
-2	2	5.00	6.60	-4.60	-3.00	43.00	3.85	4.70	-5.75	-4.90	
0	0	5.80	5.80	-3.80	-3.80	45.00	3.45	4.50	-6.15	-5.10	
0	0	5.80	5.80	-3.80	-3.80	50.00	3.40	2.70	-6.20	-6.90	
2	-2	6.10	6.30	-3.50	-3.30	52.00	4.60	3.80	-5.00	-5.80	
4	-4	6.90	7.00	-2.70	-2.60	54.00	5.90	4.90	-3.70	-4.70	
6	-6	8.00	8.20	-1.60	-1.40	56.00	6.90	6.00	-2.70	-3.60	
8	-8	8.65	9.40	-0.95	-0.20	58.00	7.40	7.70	-2.20	-1.90	
10	-10	9.40	*9.40*	-0.20	-0.20	60.00	8.70	8.90	-0.90	-0.70	
12	-12	*9.40*	9.40	-0.20	-0.20	62.00	9.40	9.40	-0.20	-0.20	
14	-14	9.40		-0.20		64.00	*9.40*	9.40	-0.20	-0.20	
16	-16					66.00	9.40	*9.40*	-0.20	-0.20	
18	-18					68.00		9.40		-0.20	
20	-20					70.00					
22	-22					72.00					
24	-24					74.00					
26	-26					76.00					
28	-28					78.00					
30	-30					80.00					

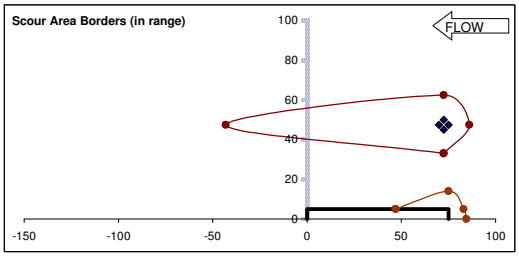
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.40	-4.20
2	6.00	-3.60
4	6.85	-2.75
6	7.50	-2.10
8	8.70	-0.90
10	9.50	-0.10
12	*9.50*	-0.10
14	9.50	-0.10
16		
18		
20		

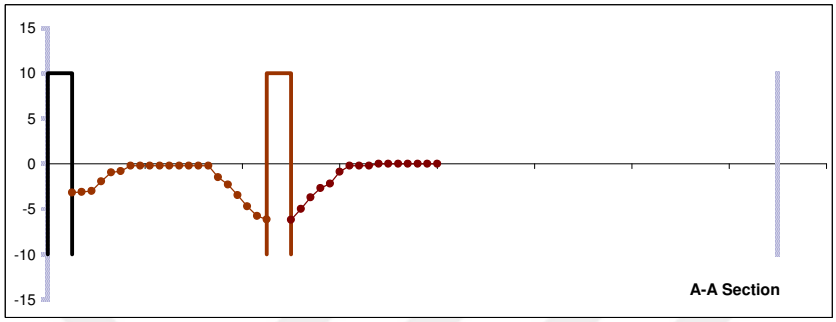
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	12
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	113

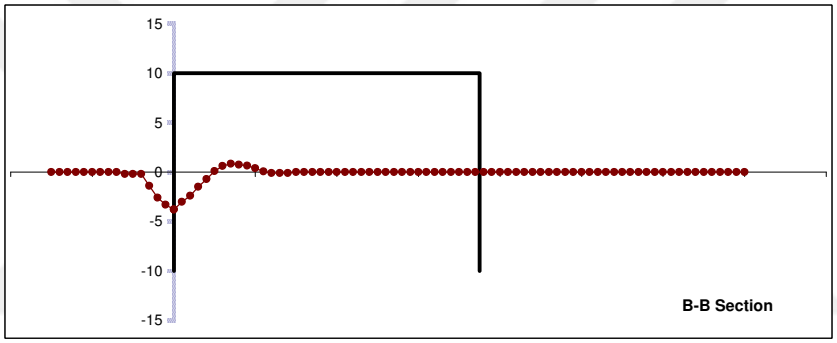


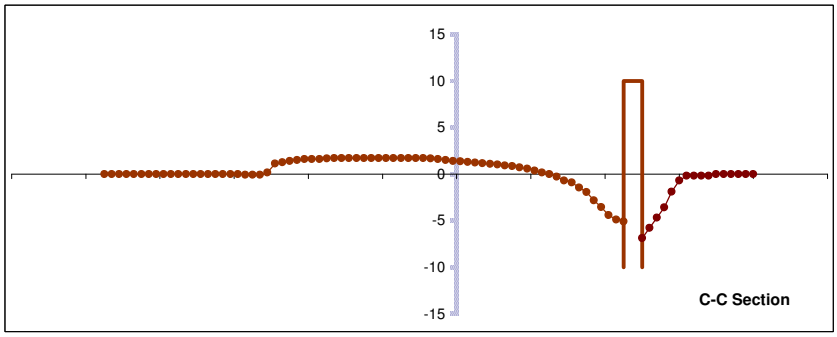
Experiment No : **E29**

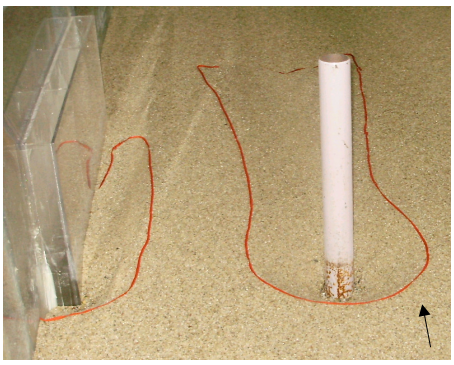


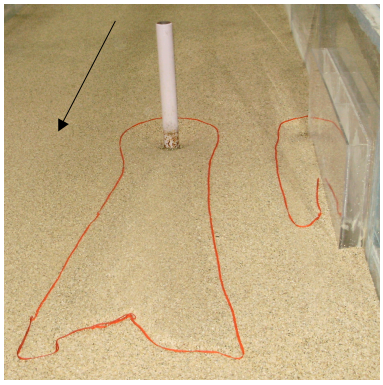






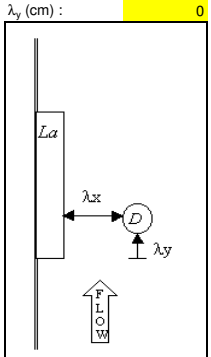


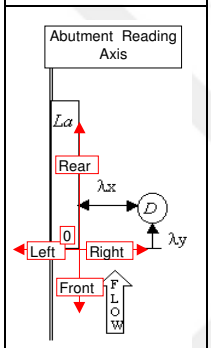


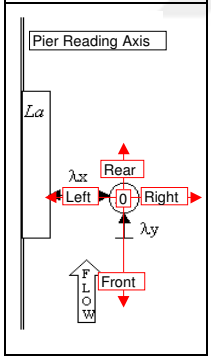


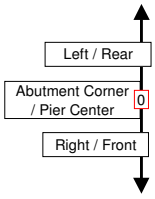
Experiment No : **E30**

Date :	23.12.2010
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	0









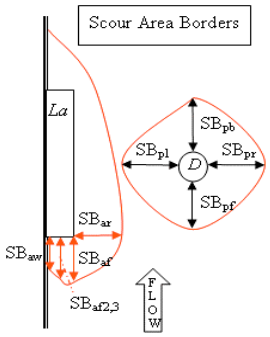
This color was used for raw data readings

This color was used for values enterpolated to sketch

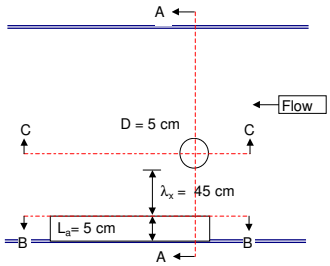
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-90.00				
-138	138					-88.00				
-136	136					-86.00				
-134	134					-84.00				
-132	132					-82.00				
-130	130					-80.00				
-128	128					-78.00				
-126	126					-76.00				
-124	124					-74.00				
-122	122					-72.00				
-120	120					-70.00				
-118	118					-68.00				
-116	116					-66.00				
-114	114					-64.00				
-112	112					-62.00				
-110	110					-60.00				
-108	108					-58.00				
-106	106					-56.00				
-104	104					-54.00				
-102	102					-52.00		9.40		-0.20
-100	100					-50.00		*9.40*		-0.20
-98	98					-48.00		9.40		-0.20
-96	96					-46.00		10.35		0.75
-94	94					-44.00		10.70		1.10
-92	92					-42.00		*10.90*		1.30
-90	90					-40.00		11.10		1.50
-88	88					-38.00		*11.20*		1.60
-86	86					-36.00		11.30		1.70
-84	84					-34.00		*11.33*		1.73
-82	82					-32.00		11.35		1.75
-80	80					-30.00		*11.38*		1.78
-78	78					-28.00		11.40		1.80
-76	76					-26.00		*11.40*		1.80
-74	74					-24.00		11.40		1.80
-72	72					-22.00		*11.40*		1.80
-70	70					-20.00		11.40		1.80
-68	68					-18.00		*11.40*		1.80
-66	66					-16.00		11.40		1.80
-64	64					-14.00		*11.30*		1.70
-62	62					-12.00		11.20		1.60
-60	60					-10.00		*11.20*		1.60
-58	58					-8.00		11.20		1.60
-56	56					-6.00		*11.20*		1.60
-54	54					-4.00		11.20		1.60
-52	52		9.50		-0.10	-2.00		*11.20*		1.60
-50	50		*9.65*		0.05	0.00		11.20		1.60
-48	48		9.80		0.20	2.00		*11.10*		1.50
-46	46		*9.80*		0.20	4.00	*6.57*	11.00	-3.03	1.40
-44	44		9.80		0.20	6.00	*6.43*	*10.93*	-3.17	1.33
-42	42		*9.80*		0.20	8.00	*6.32*	10.85	-3.29	1.25
-40	40		9.80		0.20	10.00	6.20	*10.78*	-3.40	1.18
-38	38		*9.80*		0.20	12.00	6.30	10.70	-3.30	1.10
-36	36		9.80		0.20	14.00	6.40	*10.68*	-3.20	1.08
-34	34		*9.80*		0.20	16.00	6.50	10.65	-3.10	1.05
-32	32		9.80		0.20	18.00	7.80	10.50	-1.80	0.90
-30	30		*9.80*		0.20	20.00	8.90	10.35	-0.70	0.75
-28	28		9.80		0.20	22.00	*9.15*	10.10	-0.45	0.50
-26	26		*9.85*		0.25	24.00	9.40	9.90	-0.20	0.30
-24	24		9.90		0.30	26.00	*9.40*	9.75	-0.20	0.15
-22	22		10.10		0.50	28.00	9.40	9.55	-0.20	-0.05
-20	20		10.45		0.85	30.00	*9.40*	9.20	-0.20	-0.40
-18	18		10.60		1.00	32.00	9.40	9.10	-0.20	-0.50
-16	16		10.70		1.10	34.00	*9.40*	8.90	-0.20	-0.70
-14	14		10.60		1.00	36.00	9.40	8.50	-0.20	-1.10
-12	12		10.10		0.50	38.00	9.10	8.05	-0.50	-1.55
-10	10		9.65		0.05	40.00	8.40	7.55	-1.20	-2.05
-8	8		8.90		-0.70	42.00	7.20	7.00	-2.40	-2.60
-6	6		8.00		-1.60	44.00	6.45	6.30	-3.15	-3.30
-4	4	5.25	7.40	-4.35	-2.20	46.00	5.20	5.55	-4.40	-4.05
-2	2	5.00	6.25	-4.60	-3.35	48.00	4.10	5.00	-5.50	-4.60
0	0	5.40	5.40	-4.20	-4.20	50.00	3.40	4.60	-6.20	-5.00
0	0	5.40	5.40	-4.20	-4.20	55.00	3.40	2.80	-6.20	-6.80
2	-2	5.60	6.15	-4.00	-3.45	57.00	4.10	3.90	-5.50	-5.70
4	-4	6.90	7.20	-2.70	-2.40	59.00	5.35	5.10	-4.25	-4.50
6	-6	7.80	8.35	-1.80	-1.25	61.00	6.40	6.40	-3.20	-3.20
8	-8	8.95	9.20	-0.65	-0.40	63.00	7.15	7.75	-2.45	-1.85
10	-10	9.40	9.50	-0.20	-0.10	65.00	8.10	8.80	-1.50	-0.80
12	-12	*9.40*		-0.20		67.00	9.10	9.50	-0.50	-0.10
14	-14	9.40		-0.20		69.00	9.50	*9.50*	-0.10	-0.10
16	-16					71.00	*9.50*	9.50	-0.10	-0.10
18	-18					73.00	9.50		-0.10	
20	-20					75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

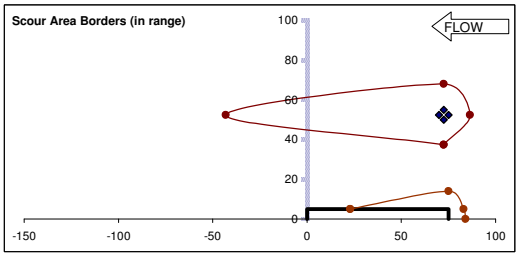
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.25	-4.35
2	5.70	-3.90
4	6.75	-2.85
6	7.75	-1.85
8	9.00	-0.60
10	9.50	-0.10
12	*9.50*	-0.10
14	9.50	-0.10
16		
18		
20		

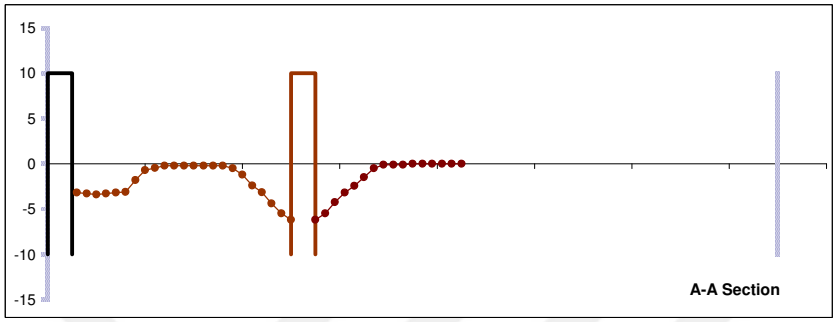
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	113

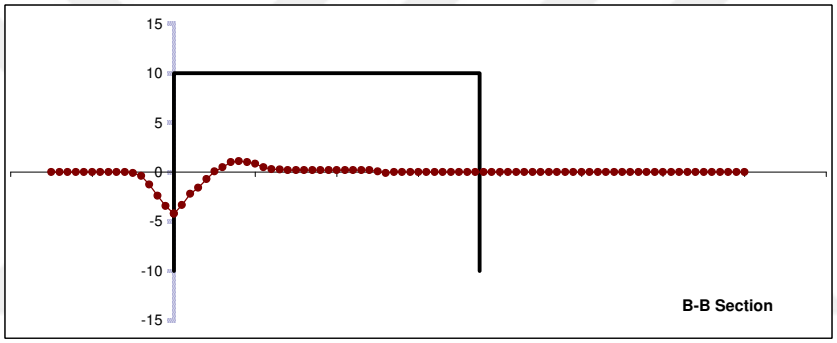


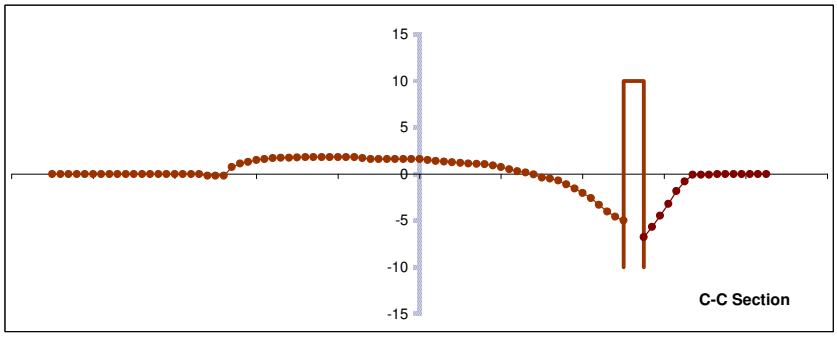
Experiment No : **E30**

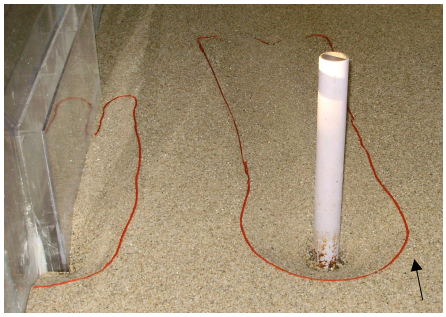


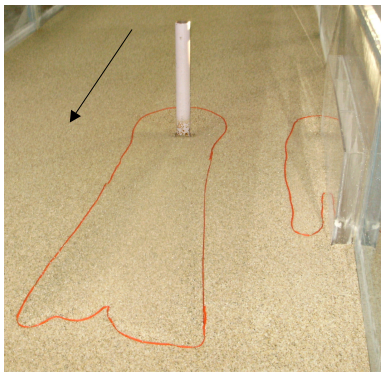






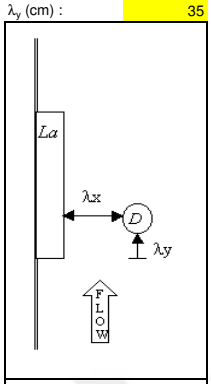


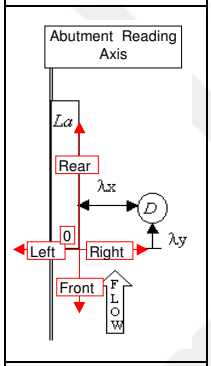


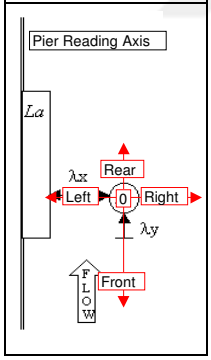


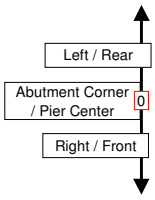
Experiment No : **E31**

Date :	03.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	35









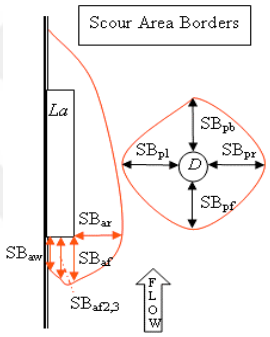
This color was used for raw data readings

This color was used for values enterpolated to sketch

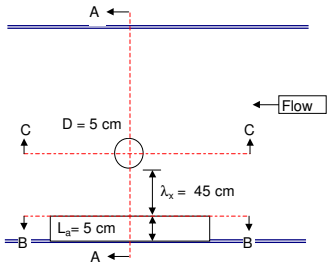
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-90.00				
-138	138					-88.00				
-136	136					-86.00				
-134	134					-84.00				
-132	132					-82.00				
-130	130					-80.00				
-128	128					-78.00				
-126	126					-76.00				
-124	124					-74.00				
-122	122					-72.00				
-120	120					-70.00				
-118	118					-68.00				
-116	116					-66.00				
-114	114					-64.00				
-112	112					-62.00				
-110	110					-60.00				
-108	108					-58.00				
-106	106					-56.00				
-104	104					-54.00				
-102	102					-52.00				
-100	100					-50.00				
-98	98					-48.00				
-96	96					-46.00				
-94	94					-44.00				
-92	92					-42.00				
-90	90					-40.00		9.50		-0.10
-88	88					-38.00		9.20		-0.40
-86	86					-36.00		9.20		-0.40
-84	84					-34.00		9.80		0.20
-82	82					-32.00		11.15		1.55
-80	80					-30.00		11.35		1.75
-78	78					-28.00		*11.38*		1.78
-76	76					-26.00		11.40		1.80
-74	74					-24.00		*11.40*		1.80
-72	72					-22.00		11.40		1.80
-70	70					-20.00		*11.45*		1.85
-68	68					-18.00		11.50		1.90
-66	66					-16.00		*11.50*		1.90
-64	64					-14.00		11.50		1.90
-62	62					-12.00		*11.55*		1.95
-60	60					-10.00		11.60		2.00
-58	58					-8.00		*11.60*		2.00
-56	56					-6.00		11.60		2.00
-54	54					-4.00		*11.60*		2.00
-52	52					-2.00		11.60		2.00
-50	50		9.60		0.00	0.00		*11.60*		2.00
-48	48		*9.70*		0.10	2.00		11.60		2.00
-46	46		9.80		0.20	4.00		*11.48*		1.88
-44	44		9.90		0.30	6.00	9.90	11.35	0.30	1.75
-42	42		9.90		0.30	8.00	9.90	*11.35*	0.30	1.75
-40	40		9.90		0.30	10.00	9.90	11.35	0.30	1.75
-38	38		9.90		0.30	12.00	10.20	*11.35*	0.60	1.75
-36	36		10.20		0.60	14.00	*10.00*	11.35	0.40	1.75
-34	34		*10.05*		0.45	16.00	9.80	*11.18*	0.20	1.58
-32	32		9.90		0.30	18.00	9.50	11.00	-0.10	1.40
-30	30		*9.90*		0.30	20.00	*9.50*	*10.88*	-0.10	1.28
-28	28		9.90		0.30	22.00	9.50	10.75	-0.10	1.15
-26	26		*9.95*		0.35	24.00	*9.50*	10.65	-0.10	1.05
-24	24		10.00		0.40	26.00	9.50	10.35	-0.10	0.75
-22	22		10.20		0.60	28.00	*9.50*	10.10	-0.10	0.50
-20	20		10.60		1.00	30.00	9.50	9.80	-0.10	0.20
-18	18		10.80		1.20	32.00	*9.50*	9.40	-0.10	-0.20
-16	16		10.90		1.30	34.00	9.50	9.20	-0.10	-0.40
-14	14		10.70		1.10	36.00	*9.50*	8.75	-0.10	-0.85
-12	12		10.45		0.85	38.00	9.50	8.30	-0.10	-1.30
-10	10		9.90		0.30	40.00	8.30	7.80	-1.30	-1.80
-8	8		9.20		-0.40	42.00	7.15	7.30	-2.45	-2.30
-6	6		8.40		-1.20	44.00	6.40	6.75	-3.20	-2.85
-4	4	5.40	7.30	-4.20	-2.30	46.00	5.10	6.00	-4.50	-3.60
-2	2	5.45	6.50	-4.15	-3.10	48.00	3.60	5.40	-6.00	-4.20
0	0	5.75	5.75	-3.85	-3.85	50.00	3.10	4.90	-6.50	-4.70
0	0	5.75	5.75	-3.85	-3.85	55.00	3.10	3.00	-6.50	-6.60
2	-2	6.00	6.35	-3.60	-3.25	57.00	3.65	4.60	-5.95	-5.00
4	-4	7.40	7.30	-2.20	-2.30	59.00	5.30	5.75	-4.30	-3.85
6	-6	8.10	8.45	-1.50	-1.15	61.00	6.50	7.35	-3.10	-2.25
8	-8	9.00	9.40	-0.60	-0.20	63.00	7.50	8.70	-2.10	-0.90
10	-10	9.50	*9.40*	-0.10	-0.20	65.00	8.30	9.50	-1.30	-0.10
12	-12	9.50	9.40	-0.10	-0.20	67.00	9.20	*9.50*	-0.40	-0.10
14	-14					69.00	9.50	9.50	-0.10	-0.10
16	-16					71.00	9.50		-0.10	
18	-18					73.00				
20	-20					75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

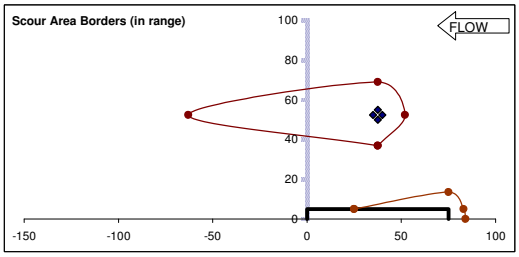
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	6.10	-3.50
4	7.10	-2.50
6	8.55	-1.05
8	9.50	-0.10
10	*9.50*	-0.10
12	9.50	-0.10
14		
16		
18		
20		

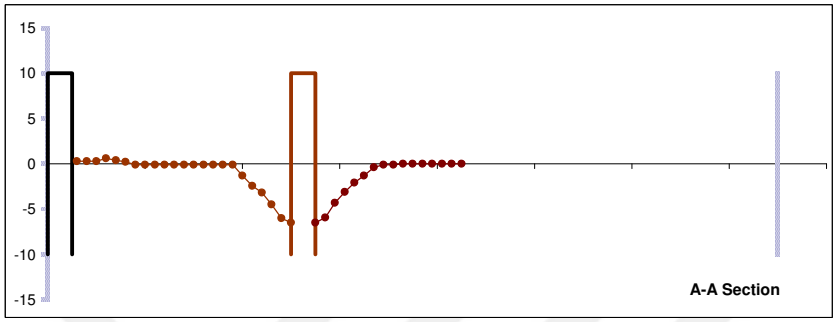
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	98

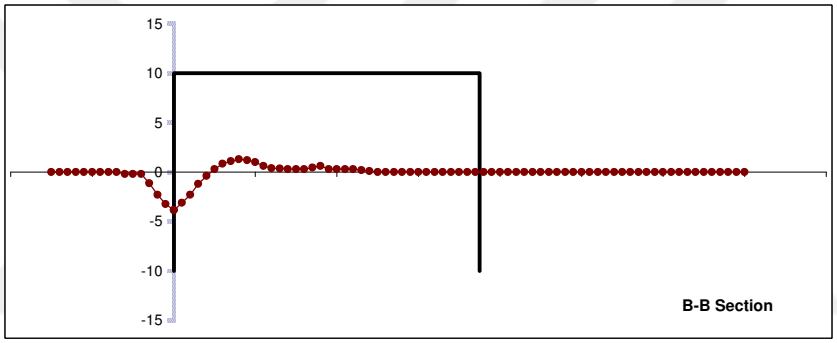


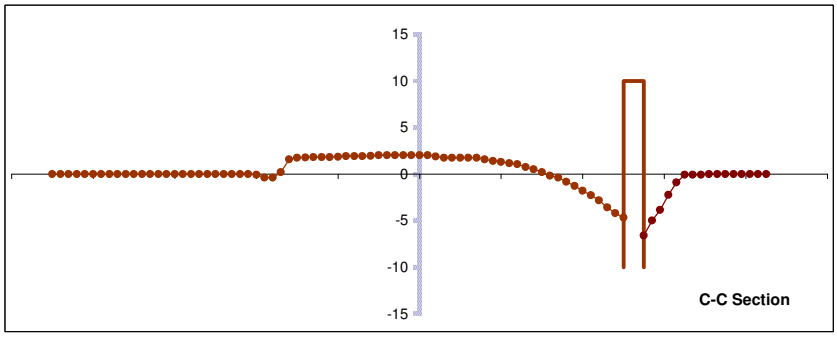
Experiment No : **E31**

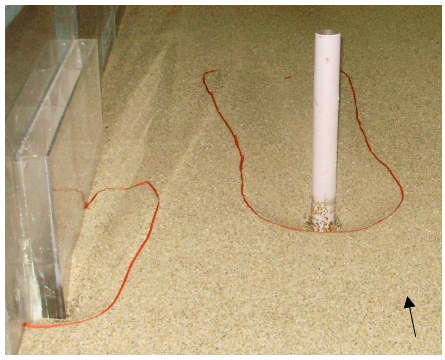


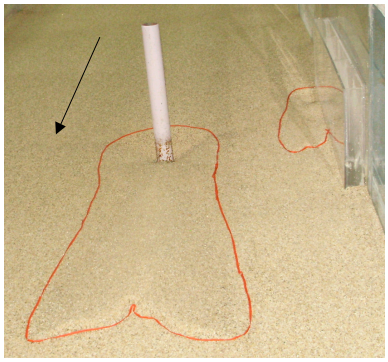






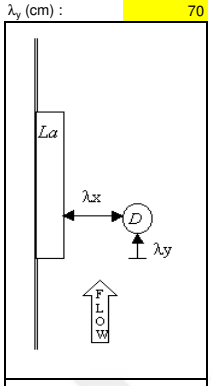


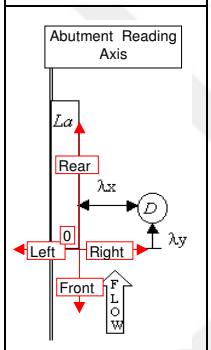


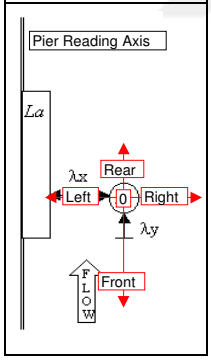


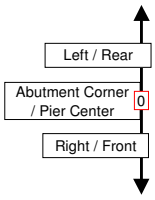
Experiment No : **E32**

Date :	06.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	70









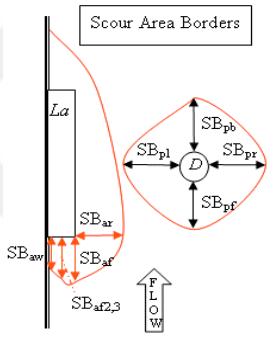
This color was used for raw data readings

This color was used for values enterpolated to sketch

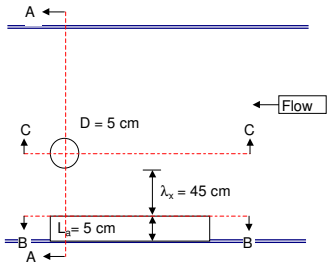
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-90.00				
-138	138					-88.00				
-136	136					-86.00				
-134	134					-84.00				
-132	132					-82.00				
-130	130					-80.00				
-128	128					-78.00				
-126	126					-76.00				
-124	124					-74.00				
-122	122					-72.00				
-120	120					-70.00				
-118	118					-68.00				
-116	116					-66.00				
-114	114					-64.00				
-112	112					-62.00				
-110	110					-60.00				
-108	108					-58.00				
-106	106					-56.00				
-104	104					-54.00				
-102	102					-52.00				
-100	100					-50.00				
-98	98					-48.00				
-96	96					-46.00				
-94	94					-44.00				
-92	92					-42.00				
-90	90					-40.00				
-88	88					-38.00				
-86	86					-36.00				
-84	84					-34.00				
-82	82					-32.00				
-80	80					-30.00				
-78	78					-28.00				
-76	76					-26.00		9.50		-0.10
-74	74					-24.00		9.60		0.00
-72	72					-22.00		10.00		0.40
-70	70					-20.00		10.90		1.30
-68	68		9.70		0.10	-18.00		*11.08*		1.48
-66	66		*9.70*		0.10	-16.00		11.25		1.65
-64	64		9.70		0.10	-14.00		*11.30*		1.70
-62	62		*9.75*		0.15	-12.00		11.35		1.75
-60	60		9.80		0.20	-10.00		*11.35*		1.75
-58	58		*9.80*		0.20	-8.00		11.35		1.75
-56	56		9.80		0.20	-6.00		*11.38*		1.78
-54	54		*9.80*		0.20	-4.00		11.40		1.80
-52	52		9.80		0.20	-2.00		*11.40*		1.80
-50	50		*9.85*		0.25	0.00		11.40		1.80
-48	48		9.90		0.30	2.00		*11.40*		1.80
-46	46		*10.00*		0.40	4.00		11.40		1.80
-44	44		10.10		0.50	6.00	9.40	*11.45*	-0.20	1.85
-42	42		*10.15*		0.55	8.00	9.40	11.50	-0.20	1.90
-40	40		10.20		0.60	10.00	*9.40*	*11.43*	-0.20	1.83
-38	38		*10.20*		0.60	12.00	9.40	11.35	-0.20	1.75
-36	36		10.20		0.60	14.00	*9.40*	*11.23*	-0.20	1.63
-34	34		*10.15*		0.55	16.00	9.40	11.10	-0.20	1.50
-32	32		10.10		0.50	18.00	*9.40*	*11.00*	-0.20	1.40
-30	30		*10.10*		0.50	20.00	9.40	10.90	-0.20	1.30
-28	28		10.10		0.50	22.00	*9.40*	*10.83*	-0.20	1.23
-26	26		*10.10*		0.50	24.00	9.40	10.75	-0.20	1.15
-24	24		10.10		0.50	26.00	*9.40*	10.65	-0.20	1.05
-22	22		10.30		0.70	28.00	9.40	10.35	-0.20	0.75
-20	20		10.60		1.00	30.00	*9.40*	10.10	-0.20	0.50
-18	18		10.60		1.00	32.00	9.40	9.70	-0.20	0.10
-16	16		10.80		1.20	34.00	*9.40*	9.50	-0.20	-0.10
-14	14		10.60		1.00	36.00	9.40	9.15	-0.20	-0.45
-12	12		10.10		0.50	38.00	9.10	8.70	-0.50	-0.90
-10	10		9.40		-0.20	40.00	8.30	8.20	-1.30	-1.40
-8	8		8.80		-0.80	42.00	7.40	7.80	-2.20	-1.80
-6	6		8.00		-1.60	44.00	6.70	7.10	-2.90	-2.50
-4	4	5.50	7.25	-4.10	-2.35	46.00	5.40	6.65	-4.20	-2.95
-2	2	5.30	6.40	-4.30	-3.20	48.00	4.60	5.85	-5.00	-3.75
0	0	6.00	6.00	-3.60	-3.60	50.00	3.20	5.30	-6.40	-4.30
0	0	6.00	6.00	-3.60	-3.60	55.00	3.10	3.10	-6.50	-6.50
2	-2	5.95	6.35	-3.65	-3.25	57.00	4.30	4.50	-5.30	-5.10
4	-4	6.80	7.30	-2.80	-2.30	59.00	5.60	5.55	-4.00	-4.05
6	-6	7.80	8.40	-1.80	-1.20	61.00	6.80	7.05	-2.80	-2.55
8	-8	8.80	9.50	-0.80	-0.10	63.00	7.55	8.35	-2.05	-1.25
10	-10	9.40	*9.50*	-0.20	-0.10	65.00	8.55	9.50	-1.05	-0.10
12	-12	*9.40*	9.50	-0.20	-0.10	67.00	9.50	9.50	-0.10	-0.10
14	-14	9.40		-0.20		69.00				
16	-16					71.00				
18	-18					73.00				
20	-20					75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

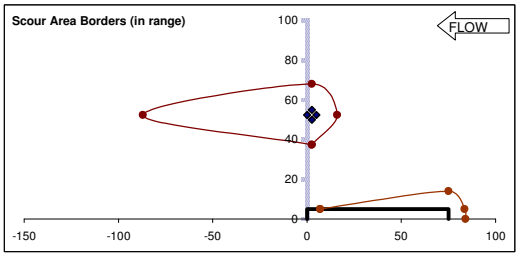
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.50	-4.10
2	6.15	-3.45
4	6.90	-2.70
6	7.80	-1.80
8	9.10	-0.50
10	*9.30*	-0.30
12	9.50	-0.10
14	9.50	-0.10
16	9.50	-0.10
18		
20		

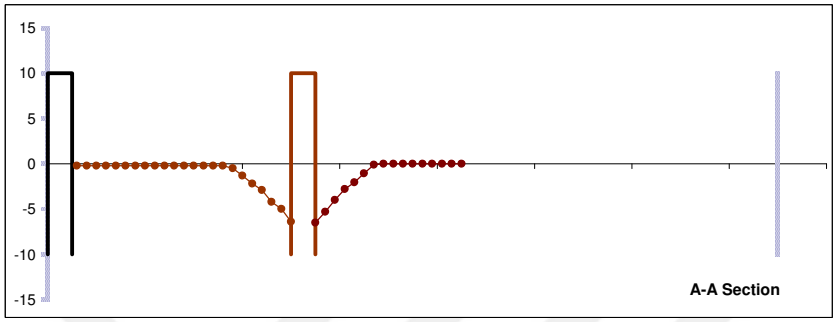
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	87

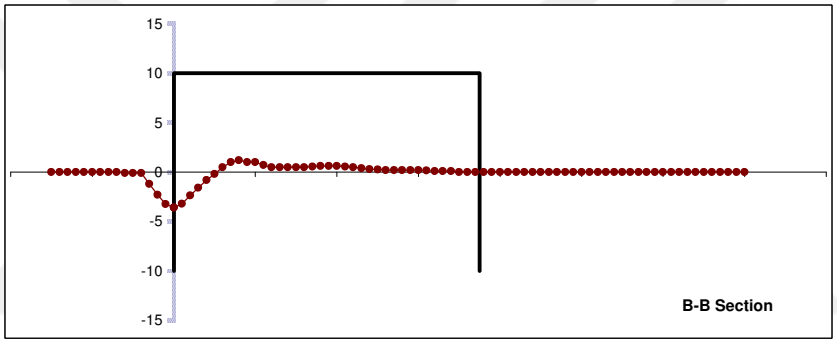


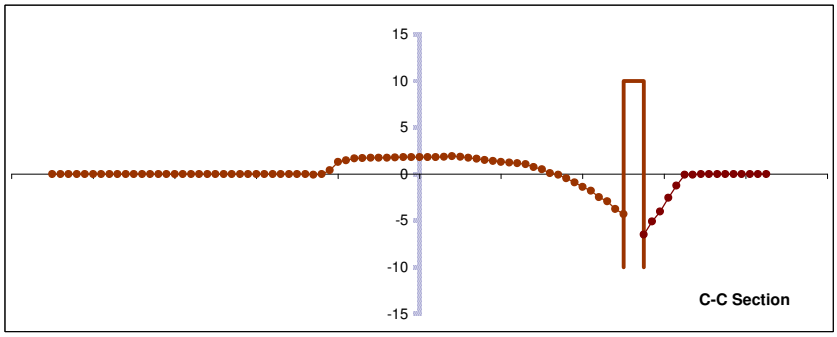
Experiment No : **E32**

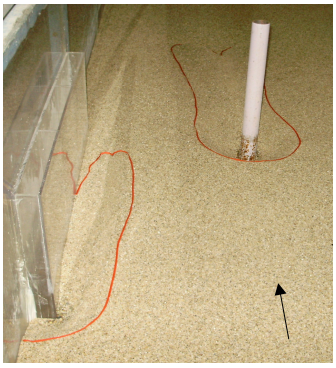


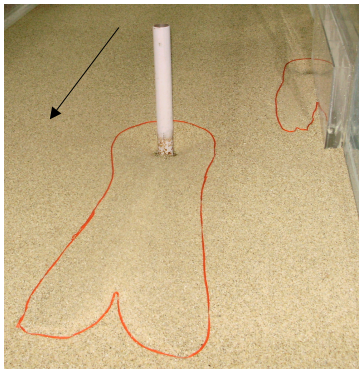






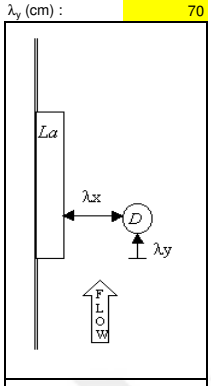


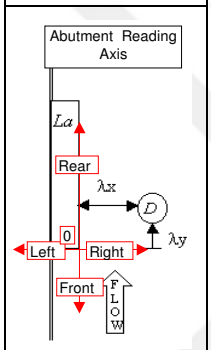


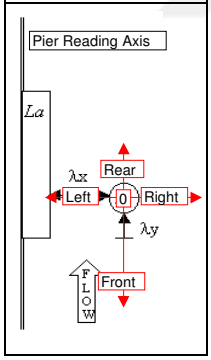


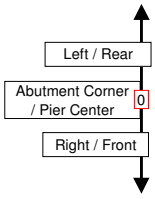
Experiment No : **E33**

Date :	10.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	70









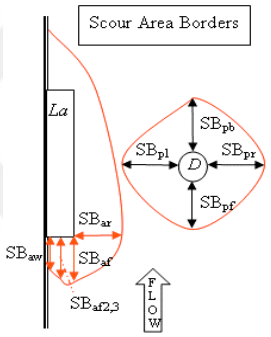
This color was used for raw data readings

This color was used for values enterpolated to sketch

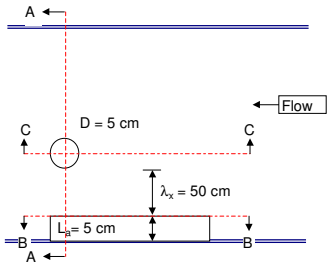
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-85.00				
-138	138					-83.00				
-136	136					-81.00				
-134	134					-79.00				
-132	132					-77.00				
-130	130					-75.00				
-128	128					-73.00				
-126	126					-71.00				
-124	124					-69.00				
-122	122					-67.00				
-120	120					-65.00				
-118	118					-63.00				
-116	116					-61.00				
-114	114					-59.00				
-112	112					-57.00				
-110	110					-55.00				
-108	108					-53.00				
-106	106					-51.00				
-104	104					-49.00				
-102	102					-47.00				
-100	100					-45.00				
-98	98					-43.00				
-96	96					-41.00				
-94	94					-39.00				
-92	92					-37.00				
-90	90					-35.00				
-88	88					-33.00				
-86	86					-31.00				
-84	84					-29.00				
-82	82					-27.00				
-80	80					-25.00		9.50		-0.10
-78	78					-23.00		9.50		-0.10
-76	76					-21.00		9.70		0.10
-74	74					-19.00		10.60		1.00
-72	72					-17.00		*10.93*		1.33
-70	70					-15.00		11.25		1.65
-68	68					-13.00		*11.38*		1.78
-66	66					-11.00		11.50		1.90
-64	64					-9.00		*11.55*		1.95
-62	62					-7.00		11.60		2.00
-60	60					-5.00		*11.65*		2.05
-58	58		9.40		-0.20	-3.00		11.70		2.10
-56	56		*9.40*		-0.20	-1.00		*11.70*		2.10
-54	54		9.40		-0.20	1.00		11.70		2.10
-52	52		*9.40*		-0.20	3.00		*11.70*		2.10
-50	50		9.40		-0.20	5.00	9.40	11.70	-0.20	2.10
-48	48		*9.60*		0.00	7.00	*9.40*	*11.70*	-0.20	2.10
-46	46		9.80		0.20	9.00	*9.40*	11.70	-0.20	2.10
-44	44		9.80		0.20	11.00	*9.40*	*11.65*	-0.20	2.05
-42	42		*9.80*		0.20	13.00	*9.40*	11.60	-0.20	2.00
-40	40		9.80		0.20	15.00	*9.40*	*11.60*	-0.20	2.00
-38	38		*9.80*		0.20	17.00	9.40	11.60	-0.20	2.00
-36	36		9.80		0.20	19.00	*9.40*	*11.45*	-0.20	1.85
-34	34		*9.80*		0.20	21.00	9.40	11.30	-0.20	1.70
-32	32		9.80		0.20	23.00	*9.40*	*11.20*	-0.20	1.60
-30	30		*9.80*		0.20	25.00	9.40	11.10	-0.20	1.50
-28	28		9.80		0.20	27.00	*9.40*	11.00	-0.20	1.40
-26	26		*9.90*		0.30	29.00	9.40	10.70	-0.20	1.10
-24	24		10.00		0.40	31.00	*9.40*	10.60	-0.20	1.00
-22	22		10.00		0.40	33.00	9.40	10.40	-0.20	0.80
-20	20		10.45		0.85	35.00	*9.40*	10.10	-0.20	0.50
-18	18		10.80		1.20	37.00	9.40	9.65	-0.20	0.05
-16	16		10.90		1.30	39.00	*9.40*	9.35	-0.20	-0.25
-14	14		10.75		1.15	41.00	9.40	8.80	-0.20	-0.80
-12	12		10.35		0.75	43.00	9.00	8.70	-0.60	-0.90
-10	10		9.65		0.05	45.00	8.10	8.10	-1.50	-1.50
-8	8		9.00		-0.60	47.00	7.35	7.55	-2.25	-2.05
-6	6		8.30		-1.30	49.00	6.85	7.05	-2.75	-2.55
-4	4	5.10	7.30	-4.50	-2.30	51.00	5.70	6.40	-3.90	-3.20
-2	2	4.85	6.50	-4.75	-3.10	53.00	4.25	5.50	-5.35	-4.10
0	0	5.70	5.70	-3.90	-3.90	55.00	3.00	5.20	-6.60	-4.40
0	0	5.70	5.70	-3.90	-3.90	60.00	3.00	2.80	-6.60	-6.80
2	-2	7.15	6.35	-2.45	-3.25	62.00	3.60	4.40	-6.00	-5.20
4	-4	7.85	7.15	-1.75	-2.45	64.00	5.00	5.60	-4.60	-4.00
6	-6	8.80	8.40	-0.80	-1.20	66.00	6.30	7.00	-3.30	-2.60
8	-8	9.40	9.40	-0.20	-0.20	68.00	7.20	8.40	-2.40	-1.20
10	-10	*9.40*	*9.40*	-0.20	-0.20	70.00	7.85	9.50	-1.75	-0.10
12	-12	9.40	9.40	-0.20	-0.20	72.00	8.90	*9.50*	-0.70	-0.10
14	-14					74.00	9.40	9.50	-0.20	-0.10
16	-16					76.00	*9.40*		-0.20	
18	-18					78.00	9.40		-0.20	
20	-20					80.00				
22	-22					82.00				
24	-24					84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

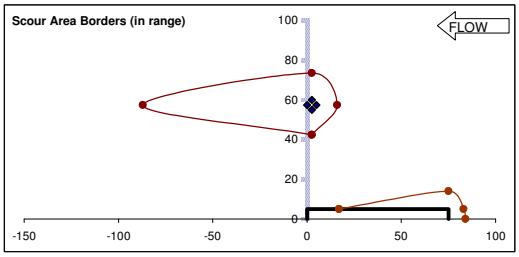
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.30	-4.30
2	6.00	-3.60
4	6.80	-2.80
6	7.70	-1.90
8	9.15	-0.45
10	9.40	-0.20
12	*9.40*	-0.20
14	9.40	-0.20
16		
18		
20		

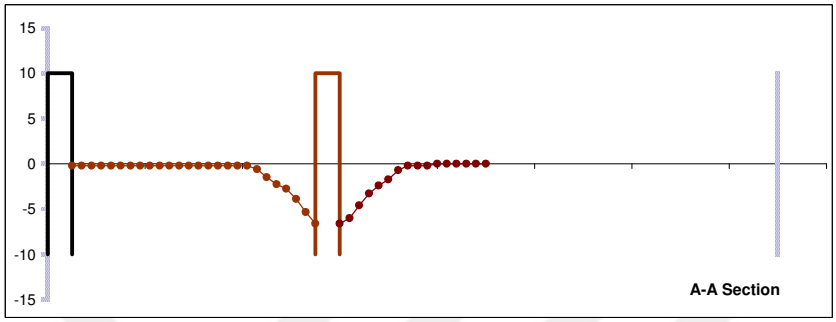
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	87

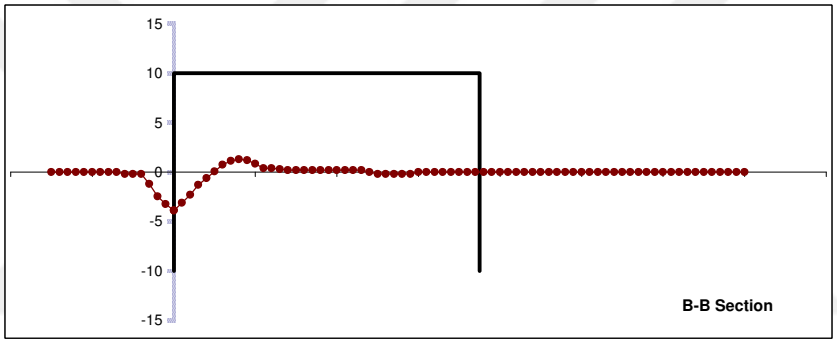


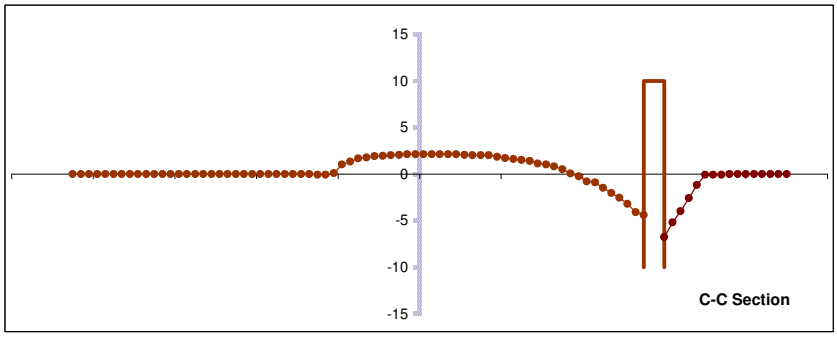
Experiment No : **E33**

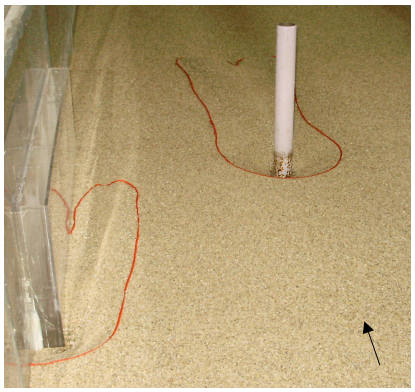






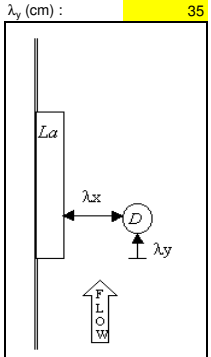


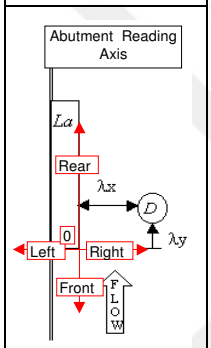


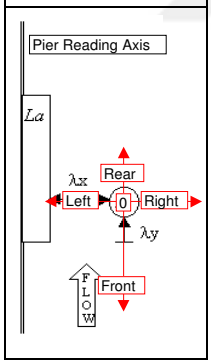


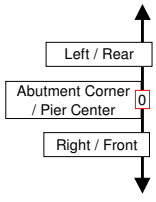
Experiment No : **E34**

Date :	12.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	35









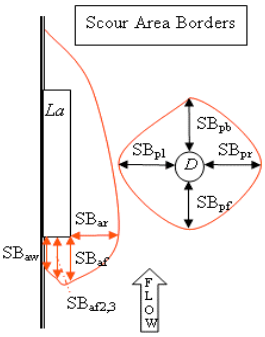
This color was used for raw data readings

This color was used for values enterpolated to sketch

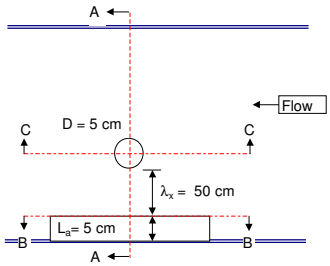
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-85.00				
-138	138					-83.00				
-136	136					-81.00				
-134	134					-79.00				
-132	132					-77.00				
-130	130					-75.00				
-128	128					-73.00				
-126	126					-71.00				
-124	124					-69.00				
-122	122					-67.00				
-120	120					-65.00				
-118	118					-63.00				
-116	116					-61.00				
-114	114					-59.00				
-112	112					-57.00				
-110	110					-55.00				
-108	108					-53.00				
-106	106					-51.00				
-104	104					-49.00		9.50		-0.10
-102	102					-47.00		9.50		-0.10
-100	100					-45.00		9.90		0.30
-98	98					-43.00		10.90		1.30
-96	96					-41.00		11.20		1.60
-94	94					-39.00		11.20		1.60
-92	92					-37.00		*11.28*		1.68
-90	90					-35.00		11.35		1.75
-88	88					-33.00		*11.48*		1.88
-86	86					-31.00		11.60		2.00
-84	84					-29.00		*11.68*		2.08
-82	82					-27.00		11.75		2.15
-80	80					-25.00		*11.75*		2.15
-78	78					-23.00		11.75		2.15
-76	76					-21.00		*11.75*		2.15
-74	74					-19.00		11.75		2.15
-72	72					-17.00		*11.75*		2.15
-70	70					-15.00		11.75		2.15
-68	68					-13.00		*11.75*		2.15
-66	66					-11.00		11.75		2.15
-64	64					-9.00		*11.75*		2.15
-62	62					-7.00		11.75		2.15
-60	60					-5.00		*11.75*		2.15
-58	58					-3.00		11.75		2.15
-56	56					-1.00		*11.75*		2.15
-54	54					1.00		11.75		2.15
-52	52					3.00		*11.75*		2.15
-50	50					5.00	10.00	11.75	0.40	2.15
-48	48		9.90		0.30	7.00	*10.00*	*11.65*	0.40	2.05
-46	46		*9.93*		0.33	9.00	10.00	11.55	0.40	1.95
-44	44		9.95		0.35	11.00	*10.00*	*11.45*	0.40	1.85
-42	42		9.95		0.35	13.00	10.00	11.35	0.40	1.75
-40	40		10.00		0.40	15.00	9.80	*11.35*	0.20	1.75
-38	38		*10.00*		0.40	17.00	9.50	11.35	-0.10	1.75
-36	36		10.00		0.40	19.00	*9.50*	*11.18*	-0.10	1.58
-34	34		*10.00*		0.40	21.00	9.50	11.00	-0.10	1.40
-32	32		10.00		0.40	23.00	*9.50*	10.95	-0.10	1.35
-30	30		*10.00*		0.40	25.00	9.50	10.80	-0.10	1.20
-28	28		10.00		0.40	27.00	*9.50*	10.35	-0.10	0.75
-26	26		10.00		0.40	29.00	9.50	10.20	-0.10	0.60
-24	24		10.00		0.40	31.00	*9.50*	9.90	-0.10	0.30
-22	22		10.10		0.50	33.00	9.50	9.65	-0.10	0.05
-20	20		10.35		0.75	35.00	*9.50*	9.20	-0.10	-0.40
-18	18		10.45		0.85	37.00	9.50	8.95	-0.10	-0.65
-16	16		10.55		0.95	39.00	*9.50*	8.60	-0.10	-1.00
-14	14		10.45		0.85	41.00	9.50	7.90	-0.10	-1.70
-12	12		10.30		0.70	43.00	9.00	7.55	-0.60	-2.05
-10	10		9.65		0.05	45.00	7.85	6.95	-1.75	-2.65
-8	8		8.90		-0.70	47.00	7.10	6.60	-2.50	-3.00
-6	6		8.25		-1.35	49.00	6.35	5.95	-3.25	-3.65
-4	4	4.90	7.60	-4.70	-2.00	51.00	5.30	5.35	-4.30	-4.25
-2	2	4.75	6.35	-4.85	-3.25	53.00	4.10	4.75	-5.50	-4.85
0	0	5.90	5.90	-3.70	-3.70	55.00	3.50	4.00	-6.10	-5.60
0	0	5.90	5.90	-3.70	-3.70	60.00	2.90	2.80	-6.70	-6.80
2	-2	5.40	6.05	-4.20	-3.55	62.00	3.80	3.90	-5.80	-5.70
4	-4	6.70	6.85	-2.90	-2.75	64.00	4.90	4.95	-4.70	-4.65
6	-6	7.80	8.00	-1.80	-1.60	66.00	6.25	6.35	-3.35	-3.25
8	-8	8.40	9.10	-1.20	-0.50	68.00	6.95	7.90	-2.65	-1.70
10	-10	9.10	*9.25*	-0.50	-0.35	70.00	7.80	8.95	-1.80	-0.65
12	-12	*9.25*	9.40	-0.35	-0.20	72.00	8.60	9.40	-1.00	-0.20
14	-14	9.40		-0.20		74.00	9.50	*9.40*	-0.10	-0.20
16	-16					76.00	*9.50*	9.40	-0.10	-0.20
18	-18					78.00	9.50		-0.10	
20	-20					80.00				
22	-22					82.00				
24	-24					84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

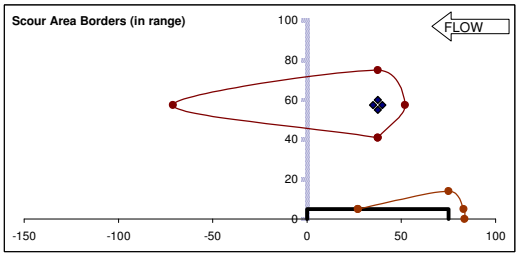
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.10	-4.50
2	5.80	-3.80
4	6.80	-2.80
6	8.00	-1.60
8	9.10	-0.50
10	9.40	-0.20
12	9.40	-0.20
14	9.40	-0.20
16		
18		
20		

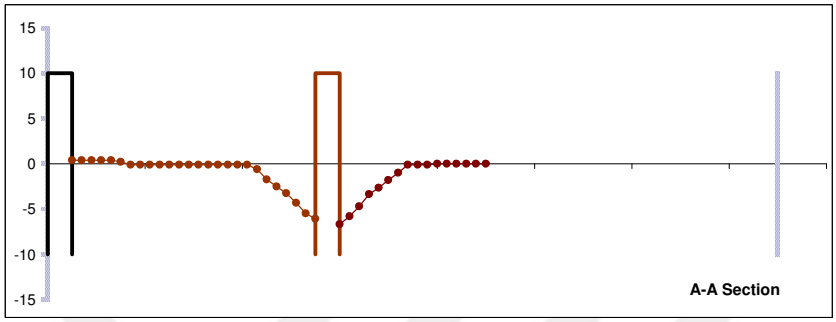
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	14
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	106

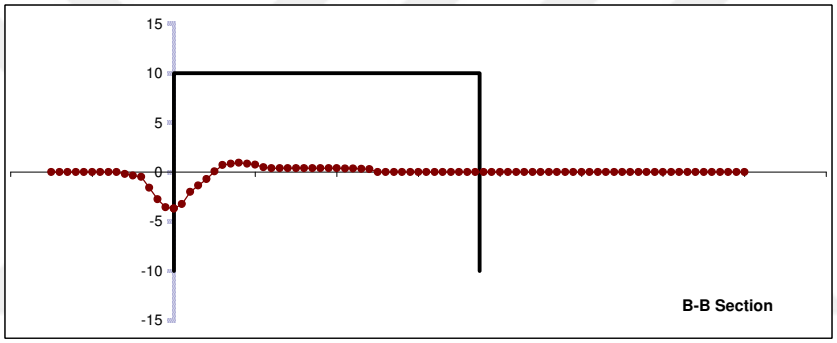


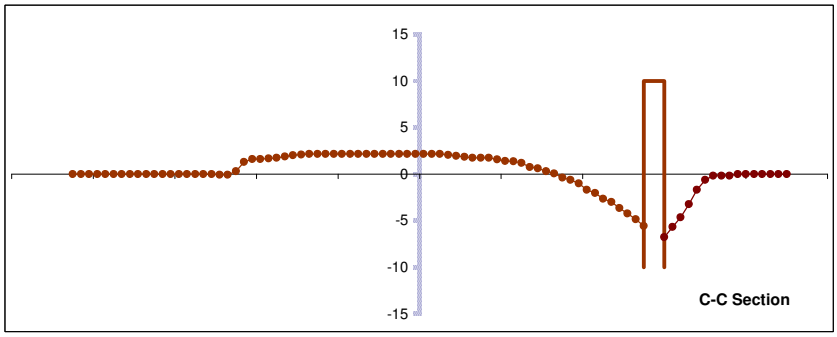
Experiment No : **E34**

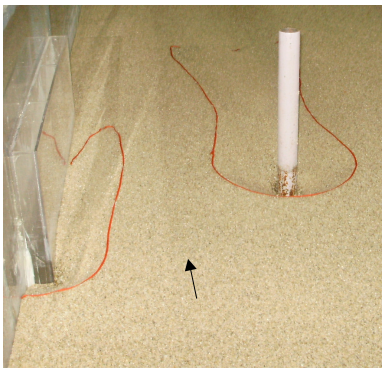






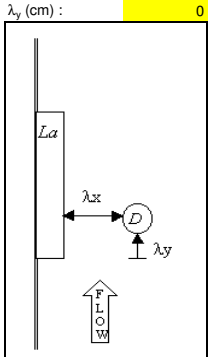


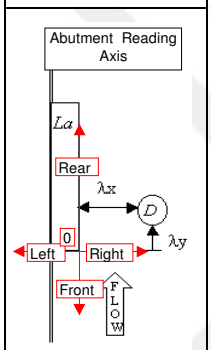


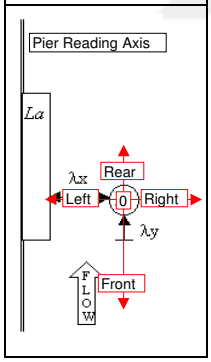


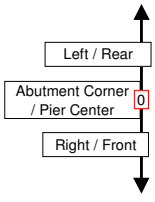
Experiment No : **E35**

Date :	14.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	0









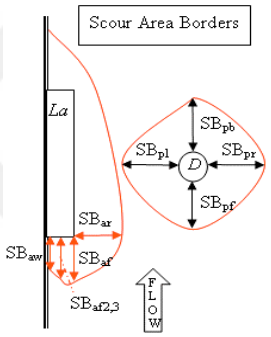
This color was used for raw data readings

This color was used for values enterpolated to sketch

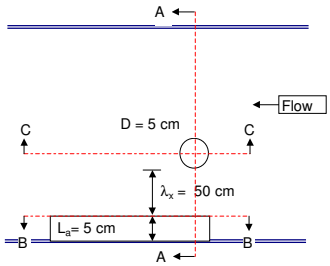
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-85.00				
-138	138					-83.00				
-136	136					-81.00				
-134	134					-79.00				
-132	132					-77.00				
-130	130					-75.00				
-128	128					-73.00				
-126	126					-71.00				
-124	124					-69.00				
-122	122					-67.00				
-120	120					-65.00				
-118	118					-63.00				
-116	116					-61.00				
-114	114					-59.00				
-112	112					-57.00				
-110	110					-55.00				
-108	108					-53.00				
-106	106					-51.00				
-104	104					-49.00				
-102	102					-47.00				
-100	100					-45.00		9.40		-0.20
-98	98					-43.00		9.40		-0.20
-96	96					-41.00		9.60		0.00
-94	94					-39.00		10.30		0.70
-92	92					-37.00		10.50		0.90
-90	90					-35.00		*10.75*		1.15
-88	88					-33.00		11.00		1.40
-86	86					-31.00		*11.05*		1.45
-84	84					-29.00		11.10		1.50
-82	82					-27.00		*11.20*		1.60
-80	80					-25.00		11.30		1.70
-78	78					-23.00		*11.30*		1.70
-76	76					-21.00		11.30		1.70
-74	74					-19.00		*11.30*		1.70
-72	72					-17.00		11.30		1.70
-70	70					-15.00		*11.35*		1.75
-68	68					-13.00		11.40		1.80
-66	66					-11.00		*11.40*		1.80
-64	64					-9.00		11.40		1.80
-62	62					-7.00		*11.40*		1.80
-60	60					-5.00		11.40		1.80
-58	58					-3.00		*11.35*		1.75
-56	56					-1.00		11.30		1.70
-54	54					1.00		*11.25*		1.65
-52	52					3.00		11.20		1.60
-50	50					5.00	6.50	*11.20*	-3.10	1.60
-48	48					7.00	6.60	11.20	-3.00	1.60
-46	46					9.00	7.50	*11.15*	-2.10	1.55
-44	44					11.00	9.40	11.10	-0.20	1.50
-42	42					13.00	9.40	*10.98*	-0.20	1.38
-40	40		10.00		0.40	15.00	*9.40*	10.85	-0.20	1.25
-38	38		*10.00*		0.40	17.00	9.40	*10.78*	-0.20	1.18
-36	36		10.00		0.40	19.00	*9.40*	10.70	-0.20	1.10
-34	34		*10.00*		0.40	21.00	9.40	*10.63*	-0.20	1.03
-32	32		10.00		0.40	23.00	*9.40*	10.55	-0.20	0.95
-30	30		*10.00*		0.40	25.00	9.40	*10.50*	-0.20	0.90
-28	28		10.00		0.40	27.00	*9.40*	10.45	-0.20	0.85
-26	26		*10.00*		0.40	29.00	9.40	10.30	-0.20	0.70
-24	24		10.00		0.40	31.00	*9.40*	10.00	-0.20	0.40
-22	22		10.10		0.50	33.00	9.40	9.70	-0.20	0.10
-20	20		10.40		0.80	35.00	*9.40*	9.55	-0.20	-0.05
-18	18		10.70		1.10	37.00	9.40	9.45	-0.20	-0.15
-16	16		10.80		1.20	39.00	*9.40*	9.05	-0.20	-0.55
-14	14		10.80		1.20	41.00	9.40	8.60	-0.20	-1.00
-12	12		10.40		0.80	43.00	9.15	8.10	-0.45	-1.50
-10	10		9.90		0.30	45.00	8.05	7.80	-1.55	-1.80
-8	8		9.20		-0.40	47.00	7.10	7.45	-2.50	-2.15
-6	6		8.40		-1.20	49.00	6.45	6.55	-3.15	-3.05
-4	4	5.40	7.80	-4.20	-1.80	51.00	5.50	5.80	-4.10	-3.80
-2	2	5.10	6.60	-4.50	-3.00	53.00	4.50	5.00	-5.10	-4.60
0	0	6.00	6.00	-3.60	-3.60	55.00	3.50	4.50	-6.10	-5.10
0	0	6.00	6.00	-3.60	-3.60	60.00	3.00	3.00	-6.60	-6.60
2	-2	5.80	6.05	-3.80	-3.55	62.00	4.20	3.25	-5.40	-6.35
4	-4	7.10	7.00	-2.50	-2.60	64.00	5.30	4.60	-4.30	-5.00
6	-6	7.85	7.80	-1.75	-1.80	66.00	6.70	6.05	-2.90	-3.55
8	-8	8.80	9.10	-0.80	-0.50	68.00	7.40	7.55	-2.20	-2.05
10	-10	9.40	*9.25*	-0.20	-0.35	70.00	8.30	8.80	-1.30	-0.80
12	-12	*9.40*	9.40	-0.20	-0.20	72.00	9.40	9.40	-0.20	-0.20
14	-14	9.40		-0.20		74.00	*9.40*	*9.40*	-0.20	-0.20
16	-16					76.00	9.40	9.40	-0.20	-0.20
18	-18					78.00				
20	-20					80.00				
22	-22					82.00				
24	-24					84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

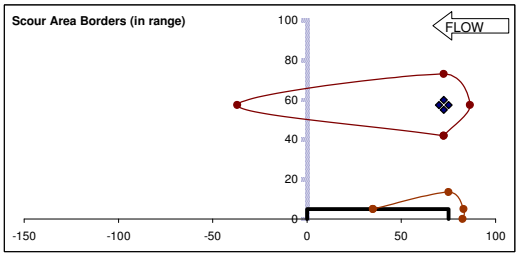
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	5.35	-4.25
2	6.20	-3.40
4	7.00	-2.60
6	8.00	-1.60
8	9.10	-0.50
10	*9.25*	-0.35
12	9.40	-0.20
14		
16		
18		
20		

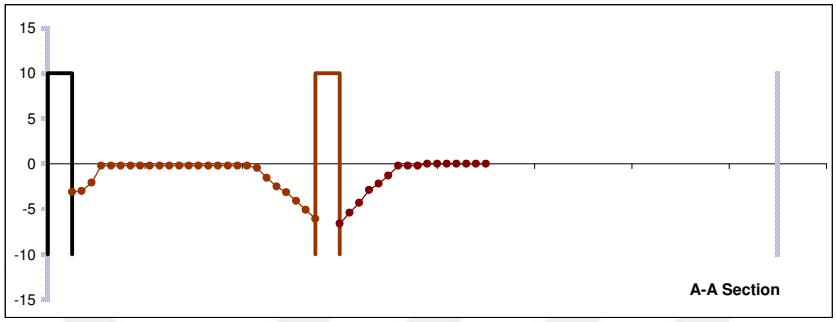
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	7.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	8.5
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	107

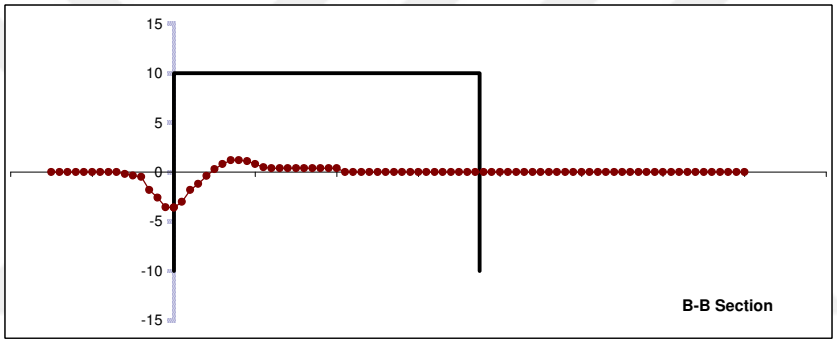


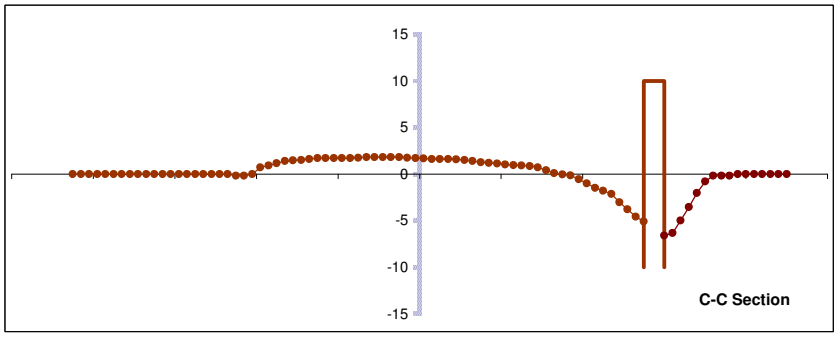
Experiment No : **E35**

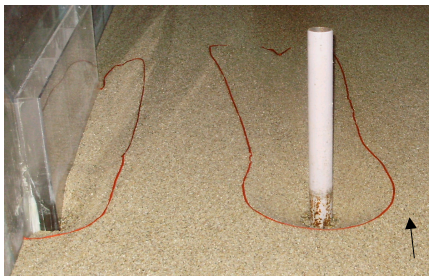


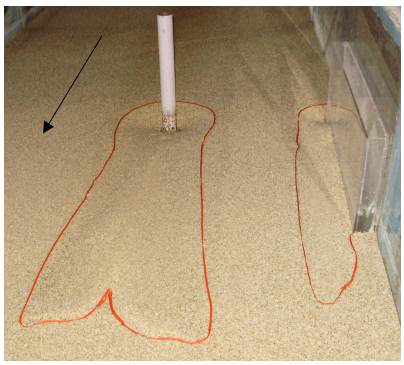




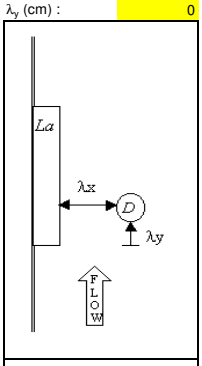


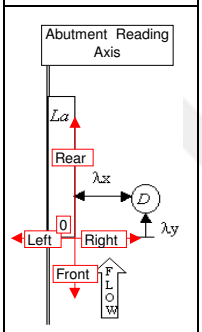


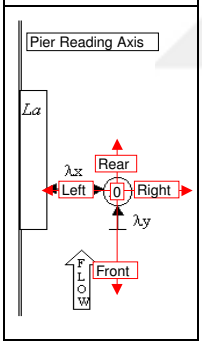


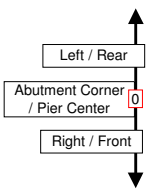


Experiment No :	**E36**
Date :	25.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	0









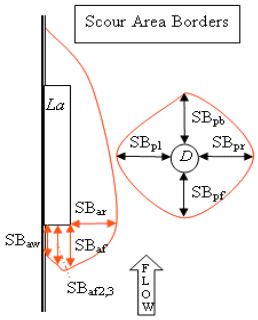
This color was used for raw data readings

This color was used for values enterpolated to sketch

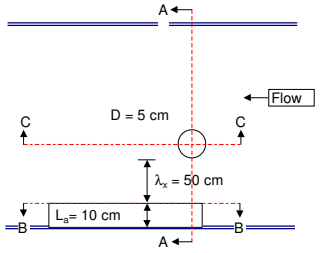
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-80.00				
-138	138					-78.00		9.80		0.20
-136	136					-76.00		*9.80*		0.20
-134	134					-74.00		9.80		0.20
-132	132					-72.00		*9.98*		0.38
-130	130					-70.00		10.15		0.55
-128	128					-68.00		*10.33*		0.73
-126	126					-66.00		10.50		0.90
-124	124		9.70		0.10	-64.00		*10.55*		0.95
-122	122		*10.03*		0.42	-62.00		10.60		1.00
-120	120		10.35		0.75	-60.00		*10.63*		1.03
-118	118		10.75		1.15	-58.00		10.65		1.05
-116	116		11.40		1.80	-56.00		*10.68*		1.08
-114	114		11.50		1.90	-54.00		10.70		1.10
-112	112		*11.55*		1.95	-52.00		*10.70*		1.10
-110	110		11.60		2.00	-50.00		10.70		1.10
-108	108		*11.50*		1.90	-48.00		*10.75*		1.15
-106	106		11.40		1.80	-46.00		10.80		1.20
-104	104		*11.38*		1.78	-44.00		*10.80*		1.20
-102	102		11.35		1.75	-42.00		10.80		1.20
-100	100		*11.28*		1.68	-40.00		*10.80*		1.20
-98	98		11.20		1.60	-38.00		10.80		1.20
-96	96		*11.15*		1.55	-36.00		*10.80*		1.20
-94	94		11.10		1.50	-34.00		10.80		1.20
-92	92		*10.90*		1.30	-32.00		*10.85*		1.25
-90	90		10.70		1.10	-30.00		10.90		1.30
-88	88		*10.63*		1.03	-28.00		*10.90*		1.30
-86	86		10.55		0.95	-26.00		10.90		1.30
-84	84		*10.28*		0.68	-24.00		*10.90*		1.30
-82	82		10.00		0.40	-22.00		10.90		1.30
-80	80		*10.00*		0.40	-20.00		*10.90*		1.30
-78	78		10.00		0.40	-18.00		10.90		1.30
-76	76		*10.00*		0.40	-16.00		*10.90*		1.30
-74	74		10.00		0.40	-14.00		10.90		1.30
-72	72		*10.00*		0.40	-12.00		*10.90*		1.30
-70	70		10.00		0.40	-10.00		10.90		1.30
-68	68		*10.13*		0.53	-8.00		*10.90*		1.30
-66	66		10.25		0.65	-6.00		10.90		1.30
-64	64		*10.38*		0.78	-4.00		*10.90*		1.30
-62	62		10.50		0.90	-2.00		10.90		1.30
-60	60		*10.55*		0.95	0.00		*10.90*		1.30
-58	58		10.60		1.00	2.00		10.90		1.30
-56	56		*10.60*		1.00	4.00		*10.90*		1.30
-54	54		10.60		1.00	6.00		10.90		1.30
-52	52		*10.60*		1.00	8.00		*10.85*		1.25
-50	50		10.60		1.00	10.00	3.65	10.80	-5.95	1.20
-48	48		*10.60*		1.00	12.00	3.60	*10.75*	-6.00	1.15
-46	46		10.60		1.00	14.00	3.45	10.70	-6.15	1.10
-44	44		*10.55*		0.95	16.00	4.40	*10.60*	-5.20	1.00
-42	42		10.50		0.90	18.00	6.10	10.50	-3.50	0.90
-40	40		*10.45*		0.85	20.00	6.85	*10.45*	-2.75	0.85
-38	38		10.40		0.80	22.00	7.40	10.40	-2.20	0.80
-36	36		*10.25*		0.65	24.00	7.70	*10.33*	-1.90	0.73
-34	34		10.10		0.50	26.00	8.75	10.25	-0.85	0.65
-32	32		*10.00*		0.40	28.00	*9.08*	*10.18*	-0.53	0.58
-30	30		9.90		0.30	30.00	9.40	10.10	-0.20	0.50
-28	28		*9.90*		0.30	32.00	*9.40*	*9.88*	-0.20	0.28
-26	26		9.90		0.30	34.00	9.40	9.65	-0.20	0.05
-24	24		9.80		0.20	36.00	*9.40*	9.60	-0.20	0.00
-22	22		9.65		0.05	38.00	9.40	9.30	-0.20	-0.30
-20	20		9.30		-0.30	40.00	*9.40*	9.15	-0.20	-0.45
-18	18		9.00		-0.60	42.00	9.40	9.00	-0.20	-0.60
-16	16		8.50		-1.10	44.00	*9.40*	8.70	-0.20	-0.90
-14	14		8.05		-1.55	46.00	9.40	8.40	-0.20	-1.20
-12	12		7.60		-2.00	48.00	9.10	8.20	-0.50	-1.40
-10	10	2.30	7.00	-7.30	-2.60	50.00	8.10	7.70	-1.50	-1.90
-8	8	2.30	6.50	-7.30	-3.10	52.00	7.15	7.15	-2.45	-2.45
-6	6	2.30	5.70	-7.30	-3.90	54.00	6.25	6.40	-3.35	-3.20
-4	4	2.00	4.65	-7.60	-4.95	56.00	5.30	5.85	-4.30	-3.75
-2	2	2.00	3.60	-7.60	-6.00	58.00	4.10	5.15	-5.50	-4.45
0	0	2.10	2.80	-7.50	-6.80	60.00	3.50	4.70	-6.10	-4.90
0	0	2.90	2.80	-6.70	-6.80	65.00	3.20	3.00	-6.40	-6.60
2	-2	4.00	3.00	-5.60	-6.60	67.00	3.75	3.80	-5.85	-5.80
4	-4	5.55	4.25	-4.05	-5.35	69.00	4.85	5.25	-4.75	-4.35
6	-6	6.20	5.00	-3.40	-4.60	71.00	6.50	6.10	-3.10	-3.50
8	-8	6.90	5.70	-2.70	-3.90	73.00	7.15	7.00	-2.45	-2.60
10	-10	7.70	6.70	-1.90	-2.90	75.00	8.10	8.25	-1.50	-1.35
12	-12	9.10	7.65	-0.50	-1.95	77.00	8.08	9.10	-1.52	-0.50
14	-14	*9.25*	8.60	-0.35	-1.00	79.00	8.10	*9.30*	-1.50	-0.30
16	-16	9.40	9.10	-0.20	-0.50	81.00	*8.80*	9.50	-0.80	-0.10
18	-18		9.50		-0.10	83.00	9.50		-0.10	
20	-20		*9.50*		-0.10	85.00				
22	-22		9.50		-0.10	87.00				
24	-24					89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

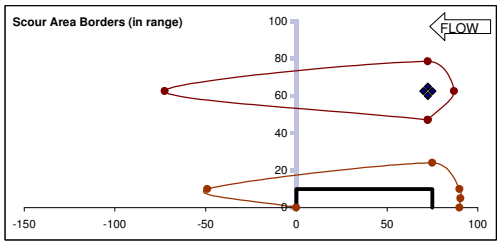
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.30	-7.30
2	2.60	-7.00
4	3.75	-5.85
6	4.85	-4.75
8	6.00	-3.60
10	7.15	-2.45
12	8.00	-1.60
14	9.00	-0.60
16	9.50	-0.10
18	*9.50*	-0.10
20	9.50	-0.10

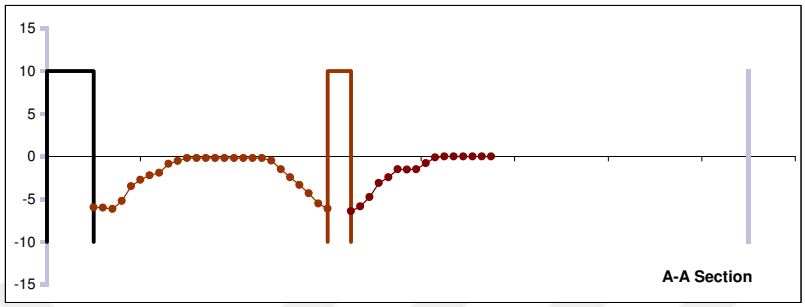
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	142.5

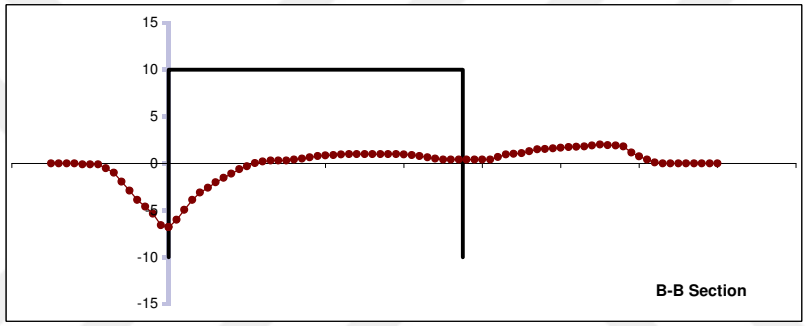


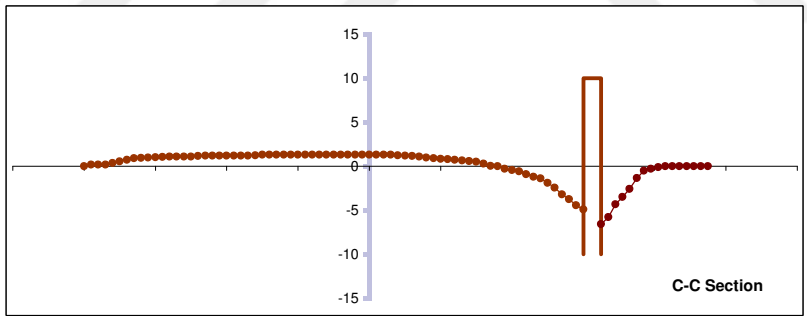
Experiment No : **E36**

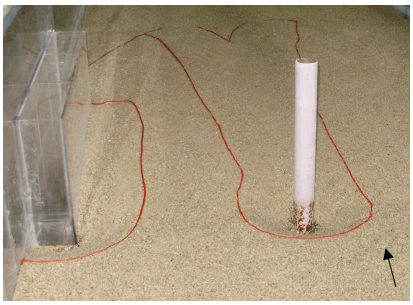


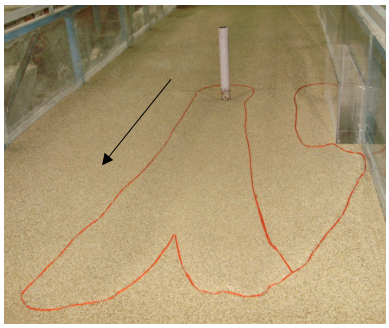






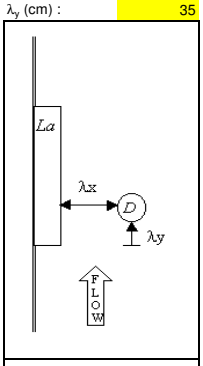


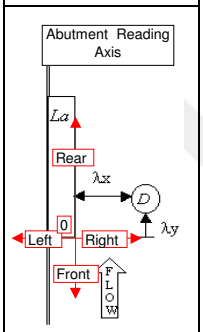


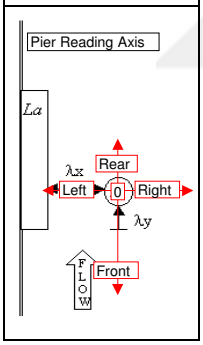


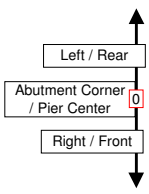
Experiment No : **E37**

Date :	27.01.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	35









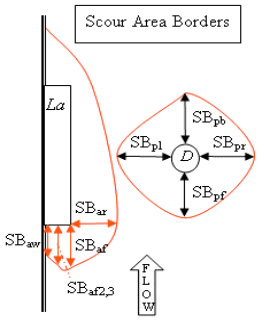
This color was used for raw data readings

This color was used for values enterpolated to sketch

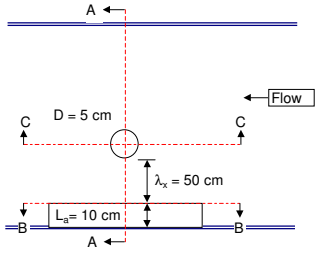
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-80.00				
-138	138					-78.00				
-136	136					-76.00				
-134	134					-74.00				
-132	132					-72.00				
-130	130					-70.00				
-128	128					-68.00				
-126	126					-66.00				
-124	124		9.70		0.10	-64.00				
-122	122		10.50		0.90	-62.00				
-120	120		11.40		1.80	-60.00		9.70		0.10
-118	118		11.45		1.85	-58.00		10.20		0.60
-116	116		*11.53*		1.93	-56.00		10.50		0.90
-114	114		11.60		2.00	-54.00		10.85		1.25
-112	112		*11.60*		2.00	-52.00		*10.98*		1.38
-110	110		11.60		2.00	-50.00		11.10		1.50
-108	108		*11.53*		1.93	-48.00		*11.10*		1.50
-106	106		11.45		1.85	-46.00		*11.10*		1.50
-104	104		*11.40*		1.80	-44.00		*11.10*		1.50
-102	102		11.35		1.75	-42.00		11.10		1.50
-100	100		*11.23*		1.63	-40.00		*11.15*		1.55
-98	98		11.10		1.50	-38.00		11.20		1.60
-96	96		*11.00*		1.40	-36.00		*11.20*		1.60
-94	94		10.90		1.30	-34.00		11.20		1.60
-92	92		*10.78*		1.18	-32.00		*11.20*		1.60
-90	90		10.65		1.05	-30.00		11.20		1.60
-88	88		*10.48*		0.88	-28.00		*11.20*		1.60
-86	86		10.30		0.70	-26.00		11.20		1.60
-84	84		*10.25*		0.65	-24.00		*11.20*		1.60
-82	82		10.20		0.60	-22.00		11.20		1.60
-80	80		*10.10*		0.50	-20.00		*11.20*		1.60
-78	78		10.00		0.40	-18.00		11.20		1.60
-76	76		*10.25*		0.65	-16.00		*11.20*		1.60
-74	74		10.50		0.90	-14.00		11.20		1.60
-72	72		*10.57*		0.97	-12.00		*11.20*		1.60
-70	70		*10.64*		1.04	-10.00		11.20		1.60
-68	68		10.70		1.10	-8.00		*11.20*		1.60
-66	66		*10.75*		1.15	-6.00		11.20		1.60
-64	64		10.80		1.20	-4.00		*11.20*		1.60
-62	62		*10.85*		1.25	-2.00		11.20		1.60
-60	60		10.90		1.30	0.00		*11.20*		1.60
-58	58		*10.90*		1.30	2.00		11.20		1.60
-56	56		10.90		1.30	4.00		*11.20*		1.60
-54	54		*10.95*		1.35	6.00		11.20		1.60
-52	52		11.00		1.40	8.00		*11.20*		1.60
-50	50		*10.95*		1.35	10.00	10.20	11.20	0.60	1.60
-48	48		10.90		1.30	12.00	10.20	*11.03*	0.60	1.43
-46	46		*10.90*		1.30	14.00	9.90	10.85	0.30	1.25
-44	44		10.89		1.29	16.00	9.55	*10.78*	-0.05	1.18
-42	42		*10.80*		1.20	18.00	9.50	10.70	-0.10	1.10
-40	40		10.70		1.10	20.00	9.40	*10.60*	-0.20	1.00
-38	38		*10.60*		1.00	22.00	9.50	10.50	-0.10	0.90
-36	36		10.50		0.90	24.00	9.80	*10.45*	0.20	0.85
-34	34		*10.50*		0.90	26.00	9.70	10.40	0.10	0.80
-32	32		10.50		0.90	28.00	*9.55*	*10.30*	-0.05	0.70
-30	30		*10.38*		0.78	30.00	9.40	10.20	-0.20	0.60
-28	28		10.25		0.65	32.00	*9.40*	10.00	-0.20	0.40
-26	26		10.10		0.50	34.00	9.40	9.65	-0.20	0.05
-24	24		9.85		0.25	36.00	*9.40*	9.50	-0.20	-0.10
-22	22		9.45		-0.15	38.00	9.40	9.40	-0.20	-0.20
-20	20		9.00		-0.60	40.00	*9.40*	9.00	-0.20	-0.60
-18	18		8.80		-0.80	42.00	9.40	8.85	-0.20	-0.75
-16	16		8.40		-1.20	44.00	*9.40*	8.60	-0.20	-1.00
-14	14		7.80		-1.80	46.00	9.40	8.45	-0.20	-1.15
-12	12		7.15		-2.45	48.00	8.55	8.30	-1.05	-1.30
-10	10	2.30	6.55	-7.30	-3.05	50.00	7.85	7.55	-1.75	-2.05
-8	8	2.15	6.00	-7.45	-3.60	52.00	7.00	7.05	-2.60	-2.55
-6	6	2.15	5.40	-7.45	-4.20	54.00	6.05	6.55	-3.55	-3.05
-4	4	1.90	4.40	-7.70	-5.20	56.00	5.00	5.90	-4.60	-3.70
-2	2	2.00	3.25	-7.60	-6.35	58.00	3.75	5.30	-5.85	-4.30
0	0	2.75	2.75	-6.85	-6.85	60.00	3.10	4.55	-6.50	-5.05
0	0	2.75	2.75	-6.85	-6.85	65.00	2.90	2.80	-6.70	-6.80
2	-2	2.90	3.00	-6.70	-6.60	67.00	4.00	4.00	-5.60	-5.60
4	-4	4.40	4.10	-5.20	-5.50	69.00	5.15	5.10	-4.45	-4.50
6	-6	5.65	4.80	-3.95	-4.80	71.00	6.35	6.35	-3.25	-3.25
8	-8	6.40	5.55	-3.20	-4.05	73.00	7.20	7.55	-2.40	-2.05
10	-10	7.15	6.70	-2.45	-2.90	75.00	8.10	8.70	-1.50	-0.90
12	-12	8.05	7.85	-1.55	-1.75	77.00	8.80	9.40	-0.80	-0.20
14	-14	8.80	8.75	-0.80	-0.85	79.00	9.50	*9.40*	-0.10	-0.20
16	-16	9.40	9.40	-0.20	-0.20	81.00	*9.50*	9.40	-0.10	-0.20
18	-18	*9.40*	*9.40*	-0.20	-0.20	83.00	9.50		-0.10	
20	-20	9.40	9.40	-0.20	-0.20	85.00				
22	-22					87.00				
24	-24					89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

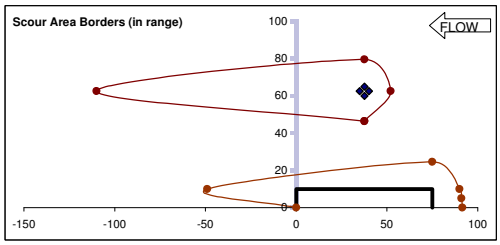
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.30	-7.30
2	2.60	-7.00
4	3.50	-6.10
6	4.75	-4.85
8	5.70	-3.90
10	6.90	-2.70
12	8.00	-1.60
14	8.80	-0.80
16	9.40	-0.20
18	9.40	-0.20
20		

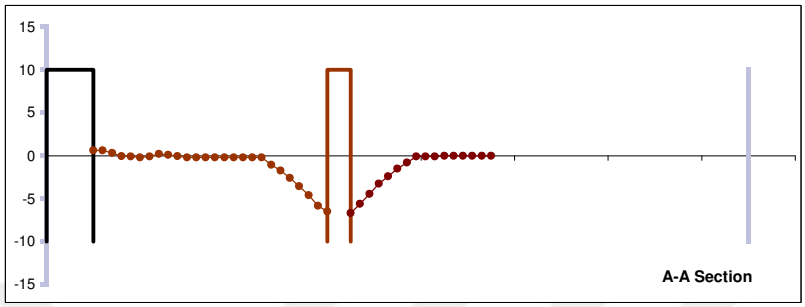
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	13.6
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	145

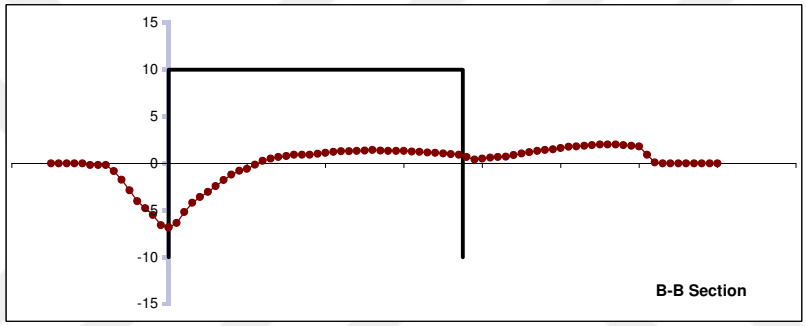


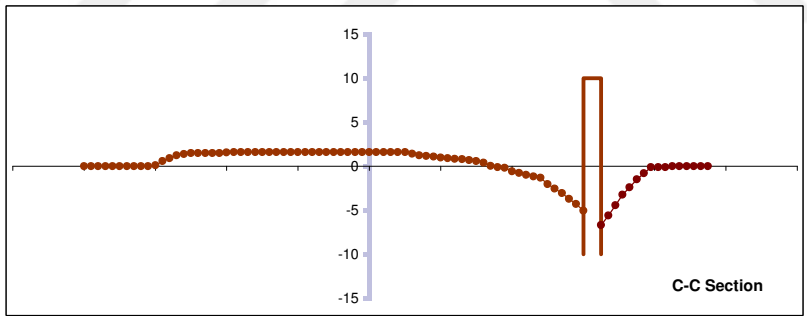
Experiment No : **E37**

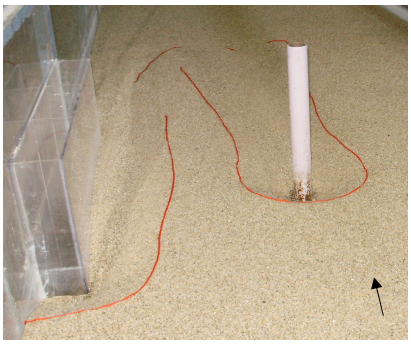


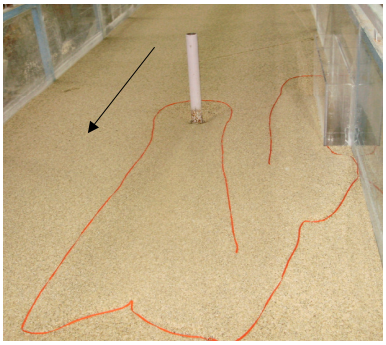




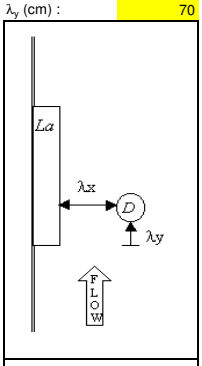


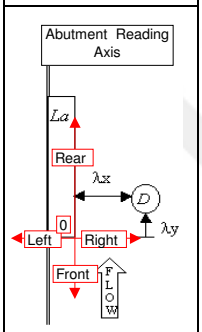


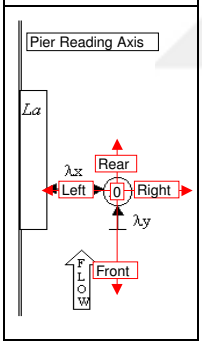


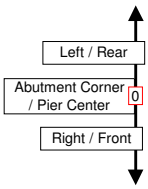


Experiment No :	**E38**
Date :	02.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	70









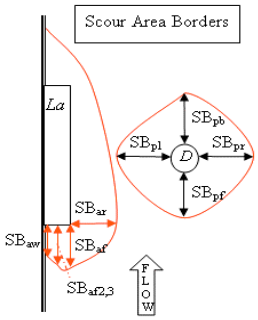
This color was used for raw data readings

This color was used for values enterpolated to sketch

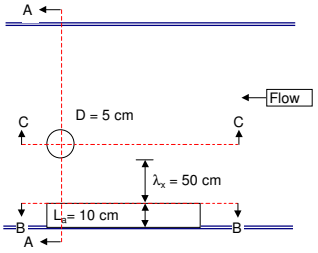
	ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-80.00				
-138	138					-78.00				
-136	136					-76.00				
-134	134					-74.00				
-132	132					-72.00				
-130	130					-70.00		9.50		-0.10
-128	128					-68.00		9.70		0.10
-126	126					-66.00		10.30		0.70
-124	124					-64.00		11.10		1.50
-122	122					-62.00		11.10		1.50
-120	120					-60.00		*11.15*		1.55
-118	118		9.50		-0.10	-58.00		11.20		1.60
-116	116		9.80		0.20	-56.00		*11.30*		1.70
-114	114		11.25		1.65	-54.00		11.40		1.80
-112	112		*11.68*		2.08	-52.00		*11.40*		1.80
-110	110		12.10		2.50	-50.00		11.40		1.80
-108	108		*12.10*		2.50	-48.00		*11.40*		1.80
-106	106		12.10		2.50	-46.00		11.40		1.80
-104	104		*12.10*		2.50	-44.00		*11.40*		1.80
-102	102		12.10		2.50	-42.00		11.40		1.80
-100	100		*12.10*		2.50	-40.00		*11.40*		1.80
-98	98		12.10		2.50	-38.00		11.40		1.80
-96	96		*12.00*		2.40	-36.00		*11.40*		1.80
-94	94		11.90		2.30	-34.00		11.40		1.80
-92	92		*11.70*		2.10	-32.00		*11.40*		1.80
-90	90		11.50		1.90	-30.00		11.40		1.80
-88	88		*11.30*		1.70	-28.00		*11.40*		1.80
-86	86		11.10		1.50	-26.00		*11.40*		1.80
-84	84		*10.60*		1.00	-24.00		*11.40*		1.80
-82	82		10.10		0.50	-22.00		*11.40*		1.80
-80	80		*10.15*		0.55	-20.00		*11.40*		1.80
-78	78		10.20		0.60	-18.00		11.40		1.80
-76	76		*10.33*		0.73	-16.00		*11.37*		1.77
-74	74		10.45		0.85	-14.00		*11.33*		1.73
-72	72		*10.58*		0.98	-12.00		11.30		1.70
-70	70		10.70		1.10	-10.00		*11.25*		1.65
-68	68		*10.75*		1.15	-8.00		11.20		1.60
-66	66		10.80		1.20	-6.00		*11.15*		1.55
-64	64		*10.90*		1.30	-4.00		11.10		1.50
-62	62		11.00		1.40	-2.00		*11.10*		1.50
-60	60		*11.00*		1.40	0.00		11.10		1.50
-58	58		11.00		1.40	2.00		*11.05*		1.45
-56	56		*10.95*		1.35	4.00		11.00		1.40
-54	54		10.90		1.30	6.00		*10.95*		1.35
-52	52		*10.85*		1.25	8.00		10.90		1.30
-50	50		10.80		1.20	10.00	10.20	*10.88*	0.60	1.28
-48	48		*10.70*		1.10	12.00	*10.10*	10.85	0.50	1.25
-46	46		10.60		1.00	14.00	10.00	*10.80*	0.40	1.20
-44	44		*10.55*		0.95	16.00	*9.95*	10.75	0.35	1.15
-42	42		10.50		0.90	18.00	9.90	*10.63*	0.30	1.03
-40	40		*10.50*		0.90	20.00	*9.85*	10.50	0.25	0.90
-38	38		10.50		0.90	22.00	9.80	*10.35*	0.20	0.75
-36	36		*10.40*		0.80	24.00	*9.75*	10.20	0.15	0.60
-34	34		10.30		0.70	26.00	9.70	10.10	0.10	0.50
-32	32		*10.15*		0.55	28.00	*9.55*	9.95	-0.05	0.35
-30	30		10.00		0.40	30.00	9.40	9.80	-0.20	0.20
-28	28		9.90		0.30	32.00	*9.40*	9.50	-0.20	-0.10
-26	26		9.70		0.10	34.00	9.40	9.15	-0.20	-0.45
-24	24		9.40		-0.20	36.00	*9.40*	8.95	-0.20	-0.65
-22	22		9.10		-0.50	38.00	9.40	8.70	-0.20	-0.90
-20	20		8.50		-1.10	40.00	*9.40*	8.40	-0.20	-1.20
-18	18		8.00		-1.60	42.00	9.40	8.20	-0.20	-1.40
-16	16		7.70		-1.90	44.00	*9.40*	7.75	-0.20	-1.85
-14	14		7.20		-2.40	46.00	9.40	7.50	-0.20	-2.10
-12	12		6.70		-2.90	48.00	8.90	7.10	-0.70	-2.50
-10	10	1.40	5.90	-8.20	-3.70	50.00	7.90	6.40	-1.70	-3.20
-8	8	1.40	5.50	-8.20	-4.10	52.00	7.15	6.10	-2.45	-3.50
-6	6	1.30	4.90	-8.30	-4.70	54.00	6.15	5.40	-3.45	-4.20
-4	4	1.20	3.90	-8.40	-5.70	56.00	4.90	4.85	-4.70	-4.75
-2	2	1.25	2.90	-8.35	-6.70	58.00	3.30	4.10	-6.30	-5.50
0	0	2.05	2.05	-7.55	-7.55	60.00	2.40	4.00	-7.20	-5.60
0	0	2.05	2.05	-7.55	-7.55	65.00	2.30	2.20	-7.30	-7.40
2	-2	1.90	2.80	-7.70	-6.80	67.00	3.25	3.80	-6.35	-5.80
4	-4	3.40	3.70	-6.20	-5.90	69.00	4.60	4.60	-5.00	-5.00
6	-6	4.80	4.50	-4.80	-5.10	71.00	5.20	6.10	-4.40	-3.50
8	-8	6.00	5.40	-3.60	-4.20	73.00	6.25	7.60	-3.35	-2.00
10	-10	6.80	6.40	-2.80	-3.20	75.00	7.40	8.50	-2.20	-1.10
12	-12	7.65	7.70	-1.95	-1.90	77.00	8.20	9.10	-1.40	-0.50
14	-14	8.70	8.80	-0.90	-0.80	79.00	9.10	*9.25*	-0.50	-0.35
16	-16	9.40	9.40	-0.20	-0.20	81.00	9.40	9.40	-0.20	-0.20
18	-18	*9.40*		-0.20		83.00	*9.40*		-0.20	
20	-20	9.40		-0.20		85.00	9.40		-0.20	
22	-22					87.00				
24	-24					89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

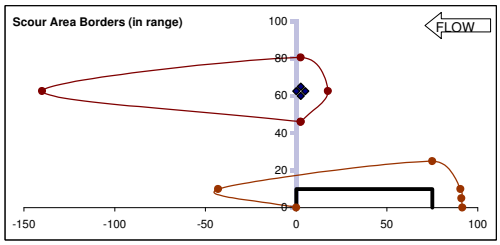
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.40	-8.20
2	1.60	-8.00
4	2.50	-7.10
6	3.60	-6.00
8	4.70	-4.90
10	5.70	-3.90
12	6.90	-2.70
14	8.20	-1.40
16	9.10	-0.50
18	9.40	-0.20
20		

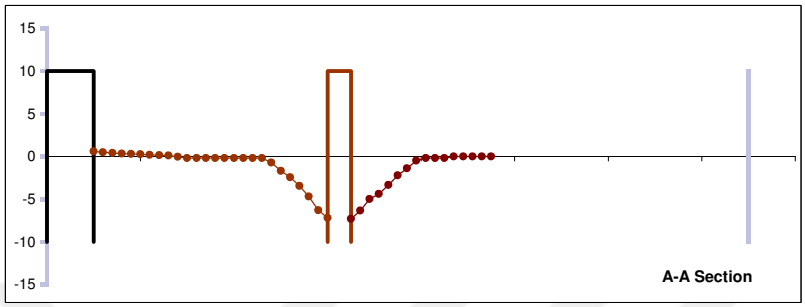
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15.5
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	14
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	140

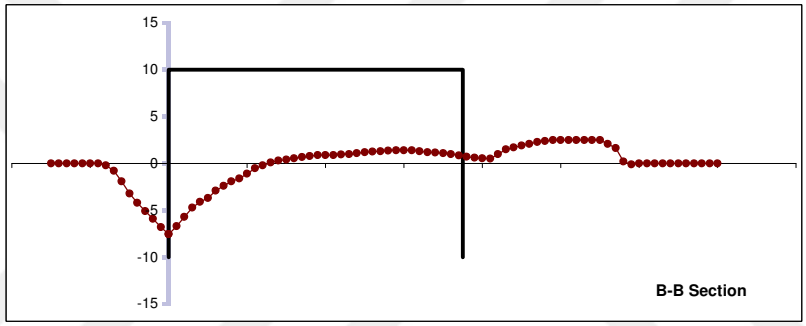


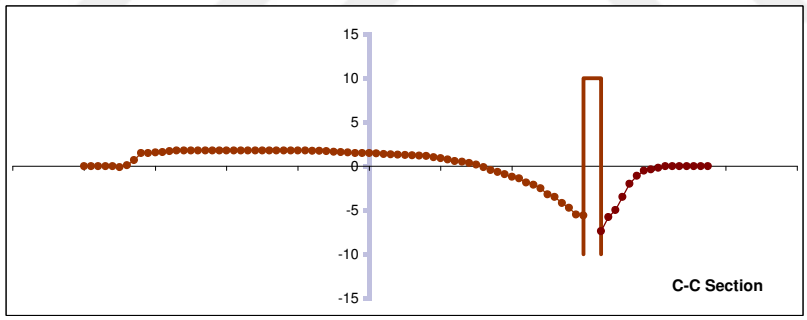
Experiment No : **E38**

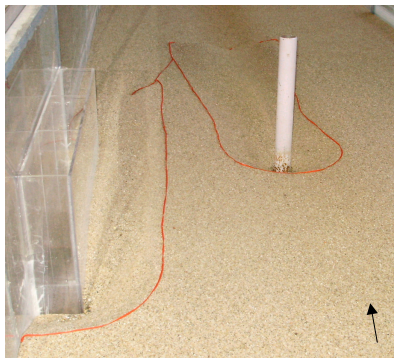


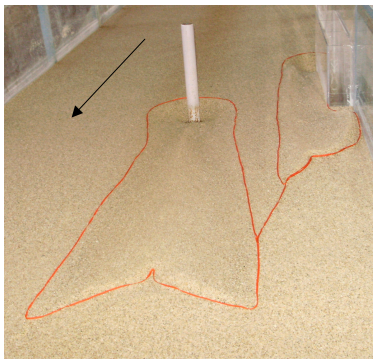




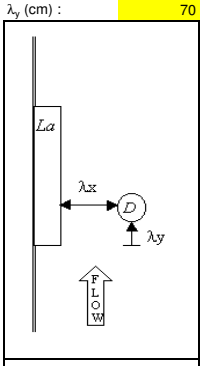


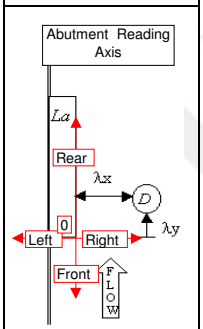


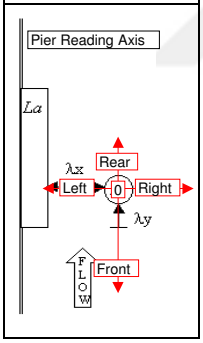


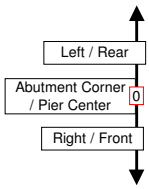


Experiment No :	**E39**
Date :	07.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	70









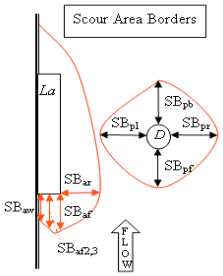
This color was used for raw data readings

This color was used for values enterpolated to sketch

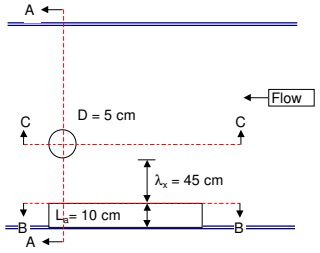
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-85.00				
-138	138					-83.00				
-136	136					-81.00				
-134	134					-79.00				
-132	132					-77.00				
-130	130					-75.00				
-128	128					-73.00				
-126	126					-71.00				
-124	124					-69.00				
-122	122					-67.00				
-120	120					-65.00				
-118	118					-63.00				
-116	116					-61.00				
-114	114		9.90		0.30	-59.00				
-112	112		10.70		1.10	-57.00				
-110	110		11.70		2.10	-55.00				
-108	108		11.90		2.30	-53.00				
-106	106		11.90		2.30	-51.00				
-104	104		*11.85*		2.25	-49.00				
-102	102		11.80		2.20	-47.00		9.40		-0.20
-100	100		*11.70*		2.10	-45.00		10.40		0.80
-98	98		11.60		2.00	-43.00		10.90		1.30
-96	96		*11.40*		1.80	-41.00		11.00		1.40
-94	94		11.20		1.60	-39.00		*11.08*		1.48
-92	92		*11.00*		1.40	-37.00		11.15		1.55
-90	90		10.80		1.20	-35.00		*11.18*		1.58
-88	88		*10.70*		1.10	-33.00		11.20		1.60
-86	86		10.60		1.00	-31.00		*11.28*		1.68
-84	84		*10.60*		1.00	-29.00		11.35		1.75
-82	82		10.60		1.00	-27.00		*11.37*		1.77
-80	80		*10.40*		0.80	-25.00		*11.38*		1.78
-78	78		10.20		0.60	-23.00		11.40		1.80
-76	76		*10.23*		0.63	-21.00		*11.48*		1.88
-74	74		10.25		0.65	-19.00		11.55		1.95
-72	72		*10.34*		0.74	-17.00		*11.55*		1.95
-70	70		*10.42*		0.82	-15.00		*11.55*		1.95
-68	68		10.50		0.90	-13.00		11.55		1.95
-66	66		*10.63*		1.03	-11.00		*11.55*		1.95
-64	64		10.75		1.15	-9.00		11.55		1.95
-62	62		*10.83*		1.23	-7.00		*11.50*		1.90
-60	60		10.90		1.30	-5.00		11.45		1.85
-58	58		*11.08*		1.48	-3.00		*11.40*		1.80
-56	56		11.25		1.65	-1.00		11.35		1.75
-54	54		*11.18*		1.58	1.00		*11.30*		1.70
-52	52		11.10		1.50	3.00		11.25		1.65
-50	50		*10.95*		1.35	5.00		*11.18*		1.58
-48	48		10.80		1.20	7.00		11.10		1.50
-46	46		*10.80*		1.20	9.00		*11.05*		1.45
-44	44		10.80		1.20	11.00	10.40	11.00	0.80	1.40
-42	42		*10.80*		1.20	13.00	10.50	*10.90*	0.90	1.30
-40	40		10.80		1.20	15.00	10.10	10.80	0.50	1.20
-38	38		*10.80*		1.20	17.00	*9.75*	*10.65*	0.15	1.05
-36	36		10.80		1.20	19.00	9.40	10.50	-0.20	0.90
-34	34		*10.70*		1.10	21.00	*9.40*	*10.48*	-0.20	0.88
-32	32		10.60		1.00	23.00	9.40	10.45	-0.20	0.85
-30	30		*10.55*		0.95	25.00	*9.40*	10.45	-0.20	0.85
-28	28		10.50		0.90	27.00	9.40	10.00	-0.20	0.40
-26	26		*10.25*		0.65	29.00	*9.40*	9.85	-0.20	0.25
-24	24		10.00		0.40	31.00	9.40	*9.63*	-0.20	0.03
-22	22		9.60		0.00	33.00	*9.40*	9.40	-0.20	-0.20
-20	20		9.20		-0.40	35.00	9.40	9.00	-0.20	-0.60
-18	18		8.90		-0.70	37.00	*9.40*	8.90	-0.20	-0.70
-16	16		8.40		-1.20	39.00	9.40	8.75	-0.20	-0.85
-14	14		7.80		-1.80	41.00	*9.40*	8.40	-0.20	-1.20
-12	12		7.30		-2.30	43.00	9.40	8.25	-0.20	-1.35
-10	10	2.60	6.90	-7.00	-2.70	45.00	8.70	7.75	-0.90	-1.85
-8	8	2.60	6.30	-7.00	-3.30	47.00	7.30	7.30	-2.30	-2.30
-6	6	2.40	5.50	-7.20	-4.10	49.00	6.40	6.60	-3.20	-3.00
-4	4	2.15	4.15	-7.45	-5.45	51.00	5.00	6.10	-4.60	-3.50
-2	2	2.00	3.20	-7.60	-6.40	53.00	4.00	4.80	-5.60	-4.80
0	0	2.60	2.60	-7.00	-7.00	55.00	3.50	4.50	-6.10	-5.10
0	0	2.60	2.60	-7.00	-7.00	60.00	2.70	2.50	-6.90	-7.10
2	-2	2.90	2.80	-6.70	-6.80	62.00	3.85	4.00	-5.75	-5.60
4	-4	4.40	4.20	-5.20	-5.40	64.00	5.25	5.50	-4.35	-4.10
6	-6	5.70	4.70	-3.90	-4.90	66.00	6.20	6.80	-3.40	-2.80
8	-8	6.60	5.65	-3.00	-3.95	68.00	7.15	8.40	-2.45	-1.20
10	-10	7.40	7.00	-2.20	-2.60	70.00	8.35	9.00	-1.25	-0.60
12	-12	8.10	8.15	-1.50	-1.45	72.00	9.10	*9.20*	-0.50	-0.40
14	-14	9.10	9.10	-0.50	-0.50	74.00	9.40	9.40	-0.20	-0.20
16	-16	9.40	*9.25*	-0.20	-0.35	76.00				
18	-18		9.40		-0.20	78.00				
20	-20		*9.40*		-0.20	80.00				
22	-22		9.40		-0.20	82.00				
24	-24					84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

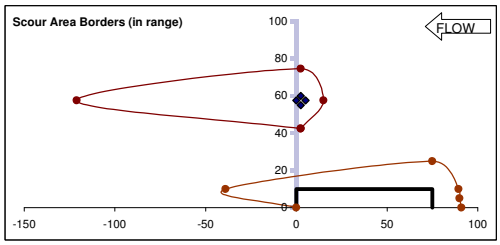
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.60	-7.00
2	2.75	-6.85
4	3.90	-5.70
6	5.00	-4.60
8	6.00	-3.60
10	7.00	-2.60
12	8.00	-1.60
14	8.90	-0.70
16	9.40	-0.20
18	*9.40*	-0.20
20	9.40	-0.20

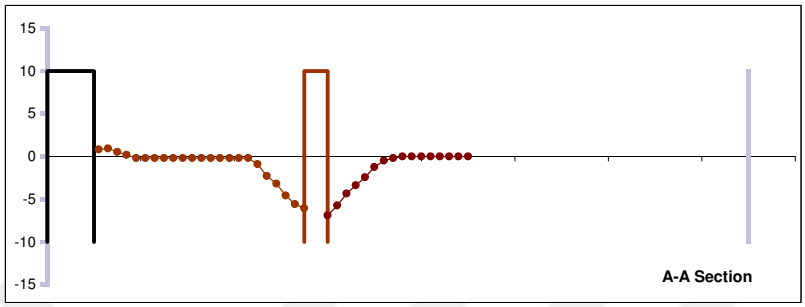
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	10
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	121

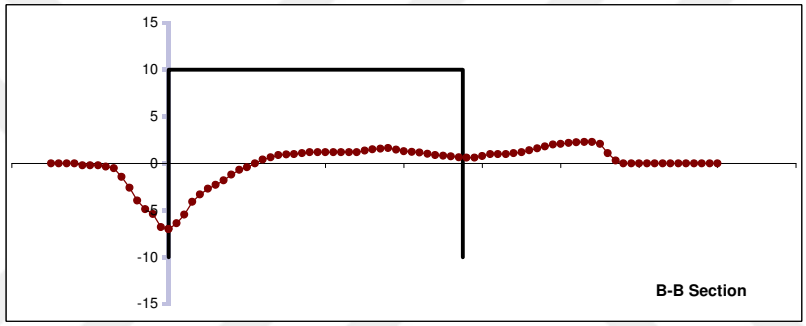


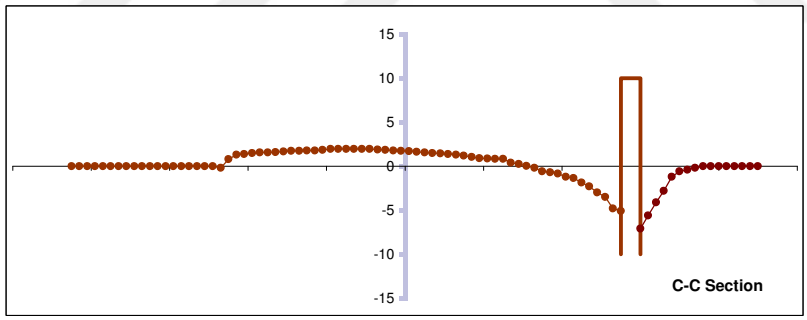
Experiment No : **E39**

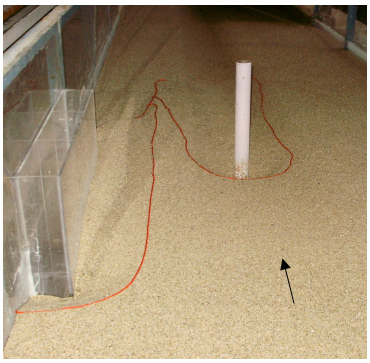


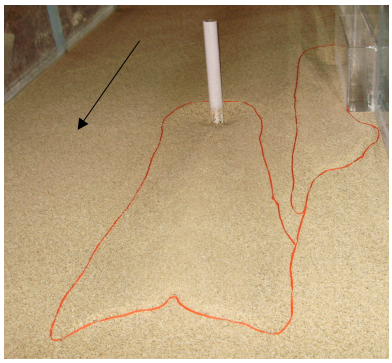






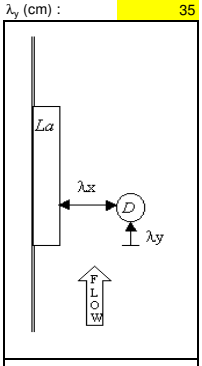


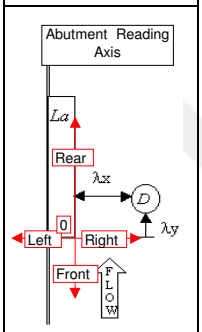


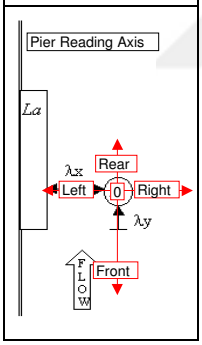


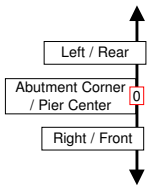
Experiment No : **E40**

Date :	14.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	35









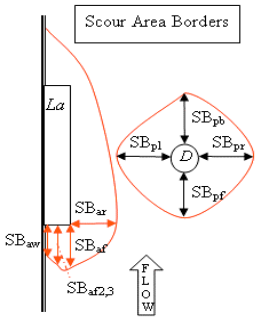
This color was used for raw data readings

This color was used for values enterpolated to sketch

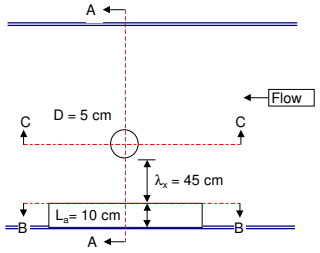
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	
-140	140					-85.00					
-138	138					-83.00					
-136	136					-81.00					
-134	134					-79.00					
-132	132					-77.00					
-130	130					-75.00					
-128	128					-73.00		9.50			-0.10
-126	126					-71.00		*9.25*			-0.35
-124	124		9.50		-0.10	-69.00		9.00			-0.60
-122	122		9.90		0.30	-67.00		8.65			-0.95
-120	120		11.00		1.40	-65.00		8.60			-1.00
-118	118		11.80		2.20	-63.00		9.70			0.10
-116	116		*11.85*		2.25	-61.00		10.80			1.20
-114	114		11.90		2.30	-59.00		10.85			1.25
-112	112		*11.85*		2.25	-57.00		*10.93*			1.33
-110	110		11.80		2.20	-55.00		11.00			1.40
-108	108		*11.75*		2.15	-53.00		*11.05*			1.45
-106	106		11.70		2.10	-51.00		11.10			1.50
-104	104		*11.65*		2.05	-49.00		*11.15*			1.55
-102	102		11.60		2.00	-47.00		11.20			1.60
-100	100		*11.45*		1.85	-45.00		*11.30*			1.70
-98	98		11.30		1.70	-43.00		11.40			1.80
-96	96		*11.13*		1.53	-41.00		*11.45*			1.85
-94	94		10.95		1.35	-39.00		11.50			1.90
-92	92		*10.78*		1.18	-37.00		*11.50*			1.90
-90	90		10.60		1.00	-35.00		11.50			1.90
-88	88		*10.35*		0.75	-33.00		*11.45*			1.85
-86	86		10.10		0.50	-31.00		11.40			1.80
-84	84		*9.95*		0.35	-29.00		*11.35*			1.75
-82	82		9.80		0.20	-27.00		11.30			1.70
-80	80		*9.80*		0.20	-25.00		*11.30*			1.70
-78	78		9.80		0.20	-23.00		11.30			1.70
-76	76		*9.95*		0.35	-21.00		*11.25*			1.65
-74	74		10.10		0.50	-19.00		11.20			1.60
-72	72		*10.20*		0.60	-17.00		*11.25*			1.65
-70	70		*10.30*		0.70	-15.00		11.30			1.70
-68	68		10.40		0.80	-13.00		*11.30*			1.70
-66	66		*10.50*		0.90	-11.00		11.30			1.70
-64	64		10.60		1.00	-9.00		*11.35*			1.75
-62	62		*10.70*		1.10	-7.00		11.40			1.80
-60	60		10.80		1.20	-5.00		*11.40*			1.80
-58	58		*10.80*		1.20	-3.00		11.40			1.80
-56	56		10.80		1.20	-1.00		*11.35*			1.75
-54	54		*10.80*		1.20	1.00		11.30			1.70
-52	52		10.80		1.20	3.00		*11.10*			1.50
-50	50		*10.80*		1.20	5.00		10.90			1.30
-48	48		10.80		1.20	7.00		*10.85*			1.25
-46	46		*10.75*		1.15	9.00		10.80			1.20
-44	44		10.70		1.10	11.00	9.80	*10.80*	0.20		1.20
-42	42		*10.55*		0.95	13.00	9.50	10.80	-0.10		1.20
-40	40		10.40		0.80	15.00	9.10	*10.70*	-0.50		1.10
-38	38		*10.25*		0.65	17.00	9.00	10.60	-0.60		1.00
-36	36		10.10		0.50	19.00	9.00	*10.35*	-0.60		0.75
-34	34		*10.10*		0.50	21.00	9.40	10.10	-0.20		0.50
-32	32		10.10		0.50	23.00	9.90	*9.93*	0.30		0.33
-30	30		*10.10*		0.50	25.00	9.80	9.75	0.20		0.15
-28	28		10.10		0.50	27.00	9.40	9.65	-0.20		0.05
-26	26		10.10		0.50	29.00	*9.40*	9.40	-0.20		-0.20
-24	24		9.80		0.20	31.00	9.40	8.80	-0.20		-0.80
-22	22		9.30		-0.30	33.00	*9.40*	8.55	-0.20		-1.05
-20	20		8.90		-0.70	35.00	9.40	8.30	-0.20		-1.30
-18	18		8.40		-1.20	37.00	*9.40*	8.10	-0.20		-1.50
-16	16		7.75		-1.85	39.00	9.40	7.70	-0.20		-1.90
-14	14		7.00		-2.60	41.00	9.20	7.40	-0.40		-2.20
-12	12		6.50		-3.10	43.00	8.25	7.05	-1.35		-2.55
-10	10	1.50	6.00	-8.10	-3.60	45.00	7.20	6.55	-2.40		-3.05
-8	8	1.40	5.40	-8.20	-4.20	47.00	6.20	6.20	-3.40		-3.40
-6	6	1.40	4.20	-8.20	-5.40	49.00	5.30	5.45	-4.30		-4.15
-4	4	1.40	3.20	-8.20	-6.40	51.00	3.90	5.10	-5.70		-4.50
-2	2	1.50	2.50	-8.10	-7.10	53.00	2.60	4.20	-7.00		-5.40
0	0	2.50	2.50	-7.10	-7.10	55.00	2.10	3.60	-7.50		-6.00
0	0	2.50	2.50	-7.10	-7.10	60.00	2.00	2.30	-7.60		-7.30
2	-2	2.00	2.70	-7.60	-6.90	62.00	2.90	2.80	-6.70		-6.80
4	-4	3.55	3.70	-6.05	-5.90	64.00	4.25	5.20	-5.35		-4.40
6	-6	4.90	4.40	-4.70	-5.20	66.00	5.50	6.35	-4.10		-3.25
8	-8	5.90	5.40	-3.70	-4.20	68.00	6.55	7.70	-3.05		-1.90
10	-10	6.80	6.30	-2.80	-3.30	70.00	7.15	9.00	-2.45		-0.60
12	-12	7.80	7.60	-1.80	-2.00	72.00	8.10	9.40	-1.50		-0.20
14	-14	9.00	8.90	-0.60	-0.70	74.00	9.40	*9.40*	-0.20		-0.20
16	-16	9.40	9.40	-0.20	-0.20	76.00	*9.40*	9.40	-0.20		-0.20
18	-18	*9.40*		-0.20		78.00	9.40		-0.20		
20	-20	9.40		-0.20		80.00					
22	-22					82.00					
24	-24					84.00					
26	-26					86.00					
28	-28					88.00					
30	-30					90.00					

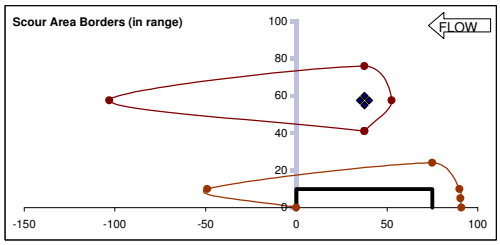
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.50	-8.10
2	1.60	-8.00
4	2.40	-7.20
6	3.60	-6.00
8	4.90	-4.70
10	5.90	-3.70
12	7.30	-2.30
14	8.60	-1.00
16	9.40	-0.20
18	*9.40*	-0.20
20	9.40	-0.20

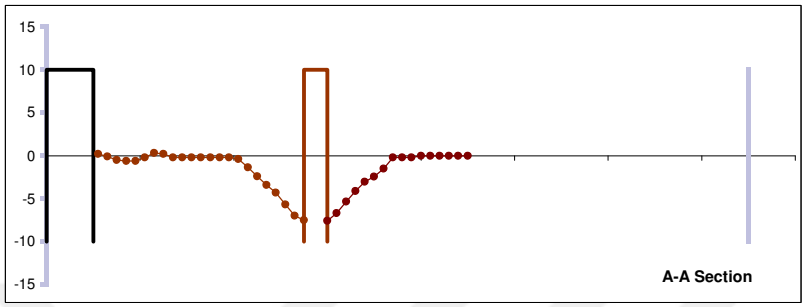
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	14
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	16
SB_{pb}	Pier Rear	138

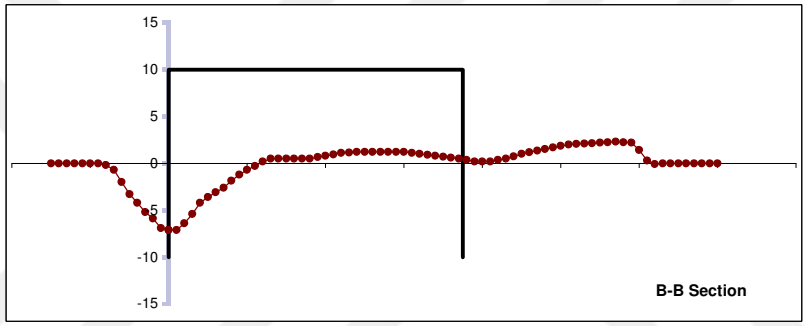


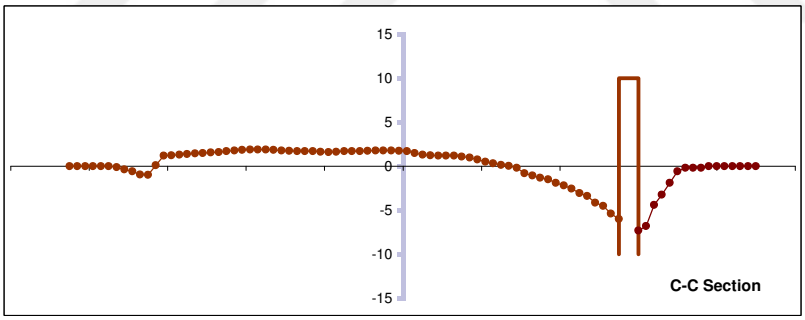
Experiment No : **E40**

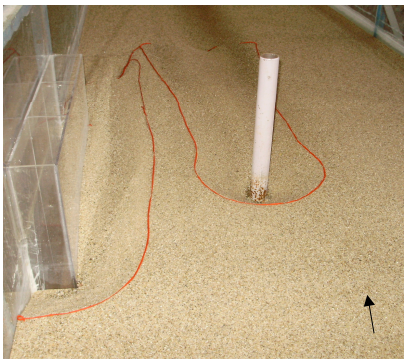


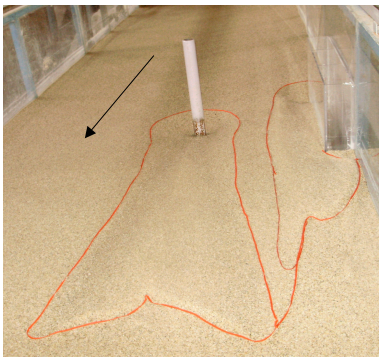






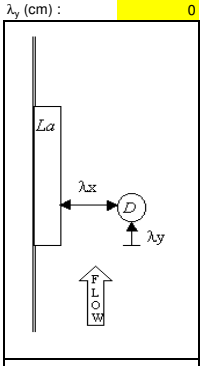


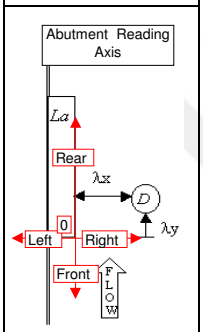


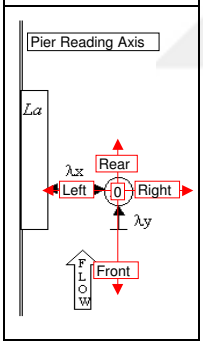


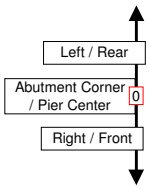
Experiment No : **E41**

Date :	16.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	0









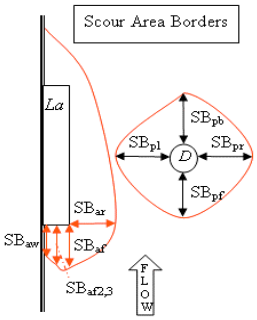
This color was used for raw data readings

This color was used for values enterpolated to sketch

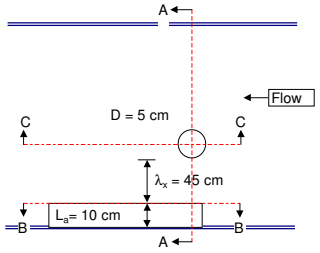
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	
-140	140					-85.00					
-138	138					-83.00					
-136	136					-81.00					
-134	134					-79.00					
-132	132					-77.00		9.40		-0.20	
-130	130		9.65		0.05	-75.00		*9.40*		-0.20	
-128	128		11.30		1.70	-73.00		9.40		-0.20	
-126	126		11.90		2.30	-71.00		9.90		0.30	
-124	124		*11.90*		2.30	-69.00		10.20		0.60	
-122	122		11.90		2.30	-67.00		10.55		0.95	
-120	120		*11.90*		2.30	-65.00		*10.70*		1.10	
-118	118		11.90		2.30	-63.00		10.85		1.25	
-116	116		*11.90*		2.30	-61.00		*10.93*		1.33	
-114	114		11.90		2.30	-59.00		11.00		1.40	
-112	112		*11.80*		2.20	-57.00		*11.00*		1.40	
-110	110		11.70		2.10	-55.00		11.00		1.40	
-108	108		*11.68*		2.08	-53.00		*11.05*		1.45	
-106	106		11.65		2.05	-51.00		11.10		1.50	
-104	104		*11.58*		1.98	-49.00		*11.10*		1.50	
-102	102		11.50		1.90	-47.00		11.10		1.50	
-100	100		*11.30*		1.70	-45.00		*11.10*		1.50	
-98	98		11.10		1.50	-43.00		11.10		1.50	
-96	96		*10.93*		1.33	-41.00		*11.15*		1.55	
-94	94		10.75		1.15	-39.00		11.20		1.60	
-92	92		*10.48*		0.88	-37.00		*11.25*		1.65	
-90	90		10.20		0.60	-35.00		11.30		1.70	
-88	88		*9.90*		0.30	-33.00		*11.30*		1.70	
-86	86		9.60		0.00	-31.00		11.30		1.70	
-84	84		*9.60*		0.00	-29.00		*11.25*		1.65	
-82	82		9.60		0.00	-27.00		11.20		1.60	
-80	80		*9.80*		0.20	-25.00		*11.20*		1.60	
-78	78		10.00		0.40	-23.00		11.20		1.60	
-76	76		*10.18*		0.58	-21.00		*11.20*		1.60	
-74	74		10.35		0.75	-19.00		11.20		1.60	
-72	72		*10.44*		0.83	-17.00		*11.15*		1.55	
-70	70		*10.52*		0.92	-15.00		11.10		1.50	
-68	68		10.60		1.00	-13.00		*11.10*		1.50	
-66	66		*10.65*		1.05	-11.00		11.10		1.50	
-64	64		10.70		1.10	-9.00		*11.05*		1.45	
-62	62		*10.73*		1.13	-7.00		11.00		1.40	
-60	60		10.75		1.15	-5.00		*10.95*		1.35	
-58	58		*10.78*		1.18	-3.00		10.90		1.30	
-56	56		10.80		1.20	-1.00		*10.90*		1.30	
-54	54		*10.80*		1.20	1.00		10.90		1.30	
-52	52		10.80		1.20	3.00		*10.85*		1.25	
-50	50		*10.75*		1.15	5.00		10.80		1.20	
-48	48		10.70		1.10	7.00		*10.80*		1.20	
-46	46		*10.70*		1.10	9.00		10.80		1.20	
-44	44		10.70		1.10	11.00	2.10	*10.75*	-7.50	1.15	
-42	42		*10.60*		1.00	13.00	3.55	10.70	-6.05	1.10	
-40	40		10.50		0.90	15.00	4.80	*10.68*	-4.80	1.08	
-38	38		*10.30*		0.70	17.00	5.80	10.65	-3.80	1.05	
-36	36		10.10		0.50	19.00	6.65	*10.60*	-2.95	1.00	
-34	34		*10.05*		0.45	21.00	7.40	10.55	-2.20	0.95	
-32	32		10.00		0.40	23.00	8.35	10.20	-1.25	0.60	
-30	30		*9.80*		0.20	25.00	9.40	9.80	-0.20	0.20	
-28	28		9.60		0.00	27.00	*9.40*	*9.65*	-0.20	0.05	
-26	26		9.60		0.00	29.00	9.40	9.50	-0.20	-0.10	
-24	24		9.20		-0.40	31.00	*9.40*	*9.40*	-0.20	-0.20	
-22	22		9.00		-0.60	33.00	9.40	9.30	-0.20	-0.30	
-20	20		8.70		-0.90	35.00	*9.40*	9.15	-0.20	-0.45	
-18	18		8.25		-1.35	37.00	9.40	8.95	-0.20	-0.65	
-16	16		7.80		-1.80	39.00	*9.40*	8.50	-0.20	-1.10	
-14	14		7.10		-2.50	41.00	9.40	8.25	-0.20	-1.35	
-12	12		6.45		-3.15	43.00	8.95	7.70	-0.65	-1.90	
-10	10	1.20	5.80	-8.40	-3.80	45.00	7.85	7.35	-1.75	-2.25	
-8	8	1.10	5.40	-8.50	-4.20	47.00	6.85	6.60	-2.75	-3.00	
-6	6	1.10	4.65	-8.50	-4.95	49.00	6.25	6.00	-3.35	-3.60	
-4	4	1.10	3.50	-8.50	-6.10	51.00	4.80	5.40	-4.80	-4.20	
-2	2	1.40	2.90	-8.20	-6.70	53.00	3.40	4.50	-6.20	-5.10	
0	0	2.20	2.20	-7.40	-7.40	55.00	3.00	4.00	-6.60	-5.60	
0	0	2.20	2.20	-7.40	-7.40	60.00	3.10	2.20	-6.50	-7.40	
2	-2	1.90	2.45	-7.70	-7.15	62.00	3.90	3.40	-5.70	-6.20	
4	-4	3.30	3.75	-6.30	-5.85	64.00	5.10	4.70	-4.50	-4.90	
6	-6	4.80	4.40	-4.80	-5.20	66.00	6.20	5.70	-3.40	-3.90	
8	-8	5.80	5.55	-3.80	-4.05	68.00	7.10	7.10	-2.50	-2.50	
10	-10	6.65	6.35	-2.95	-3.25	70.00	8.10	8.60	-1.50	-1.00	
12	-12	7.40	7.55	-2.20	-2.05	72.00	9.05	9.40	-0.55	-0.20	
14	-14	8.40	8.90	-1.20	-0.70	74.00	9.40	*9.40*	-0.20	-0.20	
16	-16	9.40	9.40	-0.20	-0.20	76.00	*9.40*	9.40	-0.20	-0.20	
18	-18		*9.40*		-0.20	78.00	9.40		-0.20		
20	-20		9.40		-0.20	80.00					
22	-22					82.00					
24	-24					84.00					
26	-26					86.00					
28	-28					88.00					
30	-30					90.00					

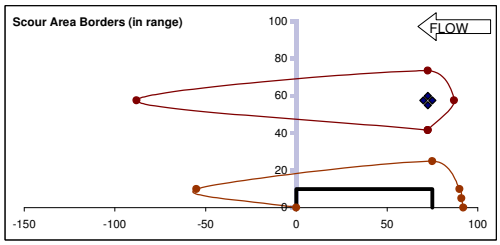
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.20	-8.40
2	1.40	-8.20
4	2.35	-7.25
6	3.60	-6.00
8	4.75	-4.85
10	5.65	-3.95
12	6.50	-3.10
14	7.90	-1.70
16	9.20	-0.40
18	9.40	-0.20
20	9.40	-0.20

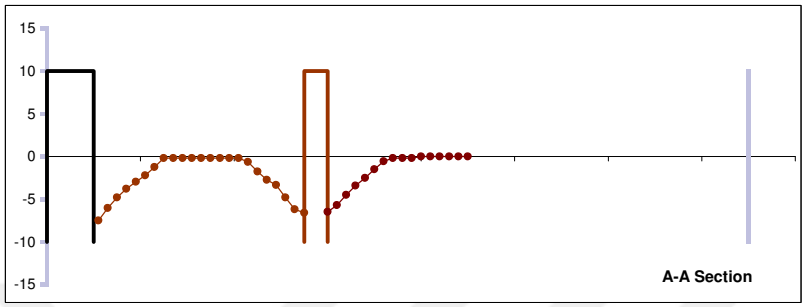
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	17
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	158

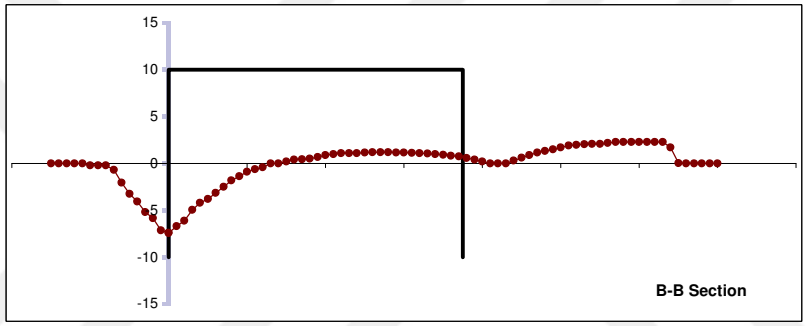


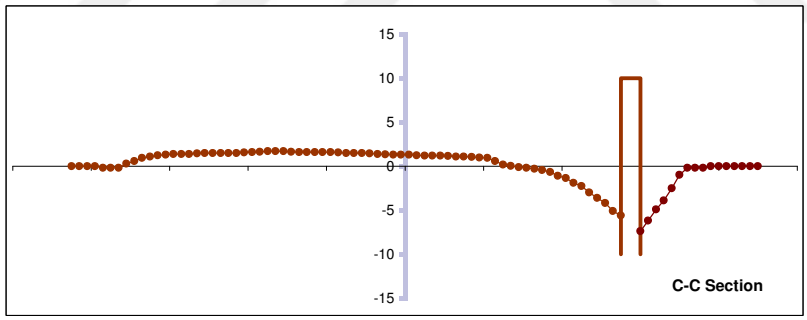
Experiment No : **E41**

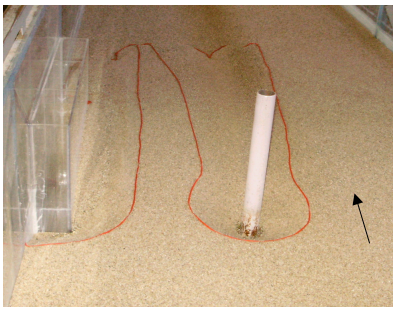


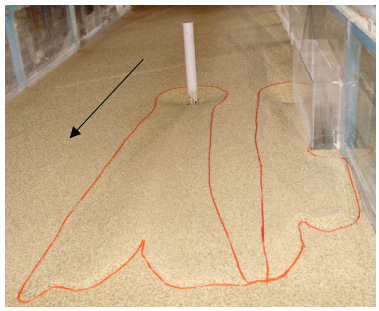






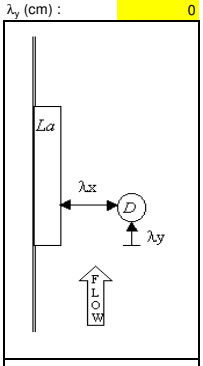


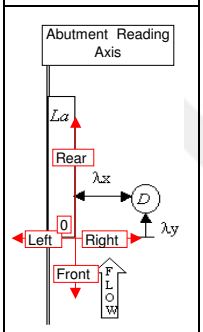


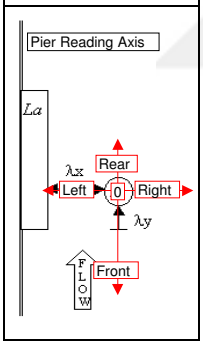


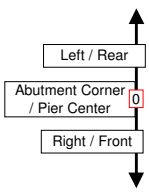
Experiment No : **E42**

Date :	21.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	0









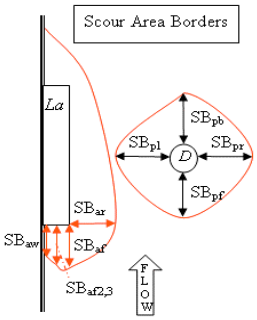
This color was used for raw data readings

This color was used for values enterpolated to sketch

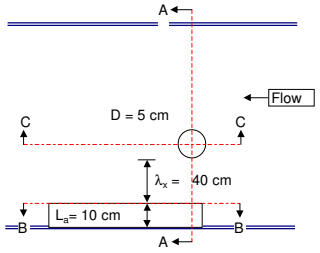
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-90.00				
-138	138					-88.00				
-136	136					-86.00				
-134	134					-84.00				
-132	132					-82.00				
-130	130					-80.00				
-128	128					-78.00				
-126	126					-76.00				
-124	124					-74.00				
-122	122					-72.00				
-120	120		9.60		0.00	-70.00		9.60		0.00
-118	118		9.80		0.20	-68.00		9.60		0.00
-116	116		10.60		1.00	-66.00		10.10		0.50
-114	114		11.55		1.95	-64.00		10.55		0.95
-112	112		11.90		2.30	-62.00		10.70		1.10
-110	110		11.95		2.35	-60.00		10.90		1.30
-108	108		*11.93*		2.33	-58.00		*11.00*		1.40
-106	106		11.90		2.30	-56.00		11.10		1.50
-104	104		*11.75*		2.15	-54.00		*11.10*		1.50
-102	102		11.60		2.00	-52.00		11.10		1.50
-100	100		*11.48*		1.88	-50.00		*11.10*		1.50
-98	98		11.35		1.75	-48.00		11.10		1.50
-96	96		*11.13*		1.53	-46.00		*11.10*		1.50
-94	94		10.90		1.30	-44.00		11.10		1.50
-92	92		*10.68*		1.08	-42.00		*11.15*		1.55
-90	90		10.45		0.85	-40.00		11.20		1.60
-88	88		*10.23*		0.63	-38.00		*11.10*		1.50
-86	86		10.00		0.40	-36.00		11.00		1.40
-84	84		*9.88*		0.28	-34.00		*11.00*		1.40
-82	82		9.75		0.15	-32.00		11.00		1.40
-80	80		*9.75*		0.15	-30.00		*11.00*		1.40
-78	78		9.75		0.15	-28.00		11.00		1.40
-76	76		*9.93*		0.33	-26.00		*10.93*		1.33
-74	74		10.10		0.50	-24.00		10.85		1.25
-72	72		*10.23*		0.63	-22.00		*10.85*		1.25
-70	70		10.35		0.75	-20.00		*10.85*		1.25
-68	68		*10.48*		0.88	-18.00		10.85		1.25
-66	66		10.60		1.00	-16.00		*10.80*		1.20
-64	64		*10.70*		1.10	-14.00		10.75		1.15
-62	62		10.80		1.20	-12.00		*10.75*		1.15
-60	60		*10.80*		1.20	-10.00		10.75		1.15
-58	58		10.80		1.20	-8.00		*10.73*		1.13
-56	56		*10.80*		1.20	-6.00		10.70		1.10
-54	54		10.80		1.20	-4.00		*10.65*		1.05
-52	52		*10.80*		1.20	-2.00		10.60		1.00
-50	50		10.80		1.20	0.00		*10.60*		1.00
-48	48		*10.80*		1.20	2.00		10.60		1.00
-46	46		10.80		1.20	4.00		*10.53*		0.92
-44	44		*10.70*		1.10	6.00		10.45		0.85
-42	42		10.60		1.00	8.00		*10.40*		0.80
-40	40		*10.60*		1.00	10.00	2.40	10.35	-7.20	0.75
-38	38		10.60		1.00	12.00	2.60	*10.30*	-7.00	0.70
-36	36		*10.55*		0.95	14.00	3.85	10.25	-5.75	0.65
-34	34		10.50		0.90	16.00	5.10	*10.18*	-4.50	0.58
-32	32		*10.45*		0.85	18.00	6.40	10.10	-3.20	0.50
-30	30		10.40		0.80	20.00	7.15	*10.00*	-2.45	0.40
-28	28		*10.20*		0.60	22.00	7.85	9.90	-1.75	0.30
-26	26		10.00		0.40	24.00	8.90	9.75	-0.70	0.15
-24	24		9.90		0.30	26.00	9.40	9.60	-0.20	0.00
-22	22		9.60		0.00	28.00	*9.40*	9.30	-0.20	-0.30
-20	20		9.20		-0.40	30.00	9.40	9.20	-0.20	-0.40
-18	18		8.80		-0.80	32.00	*9.40*	8.85	-0.20	-0.75
-16	16		8.20		-1.40	34.00	9.40	8.75	-0.20	-0.85
-14	14		7.60		-2.00	36.00	*9.40*	8.10	-0.20	-1.50
-12	12		7.20		-2.40	38.00	9.40	7.90	-0.20	-1.70
-10	10	2.00	6.70	-7.60	-2.90	40.00	8.10	7.50	-1.50	-2.10
-8	8	2.00	5.85	-7.60	-3.75	42.00	6.90	6.65	-2.70	-2.95
-6	6	1.85	5.30	-7.75	-4.30	44.00	6.15	6.10	-3.45	-3.50
-4	4	1.75	4.30	-7.85	-5.30	46.00	5.00	5.15	-4.60	-4.45
-2	2	1.60	3.00	-8.00	-6.60	48.00	3.85	4.70	-5.75	-4.90
0	0	2.40	2.40	-7.20	-7.20	50.00	3.50	4.60	-6.10	-5.00
0	0	2.40	2.40	-7.20	-7.20	55.00	3.15	2.70	-6.45	-6.90
2	-2	2.60	2.80	-7.00	-6.80	57.00	4.00	3.80	-5.60	-5.80
4	-4	3.80	3.90	-5.80	-5.70	59.00	5.10	5.20	-4.50	-4.40
6	-6	5.10	4.70	-4.50	-4.90	61.00	6.50	6.30	-3.10	-3.30
8	-8	6.20	5.60	-3.40	-4.00	63.00	7.40	7.65	-2.20	-1.95
10	-10	7.10	6.60	-2.50	-3.00	65.00	8.40	8.55	-1.20	-1.05
12	-12	7.80	8.00	-1.80	-1.60	67.00	9.40	9.40	-0.20	-0.20
14	-14	9.40	9.40	-0.20	-0.20	69.00		*9.40*		-0.20
16	-16		*9.40*		-0.20	71.00		9.40		-0.20
18	-18		9.40		-0.20	73.00				
20	-20					75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

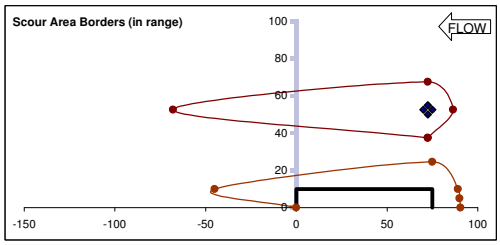
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.90	-7.70
2	2.10	-7.50
4	3.10	-6.50
6	4.50	-5.10
8	5.50	-4.10
10	6.40	-3.20
12	7.60	-2.00
14	8.80	-0.80
16	9.50	-0.10
18		
20		

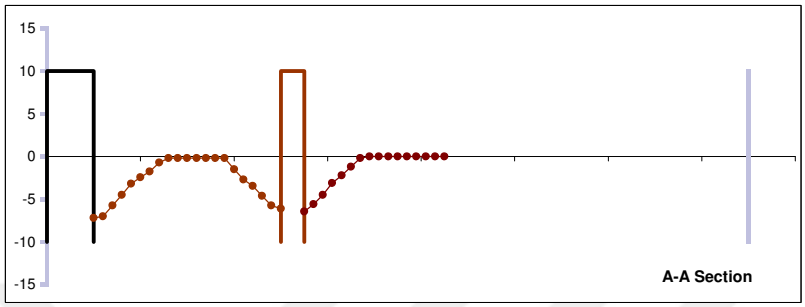
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	138

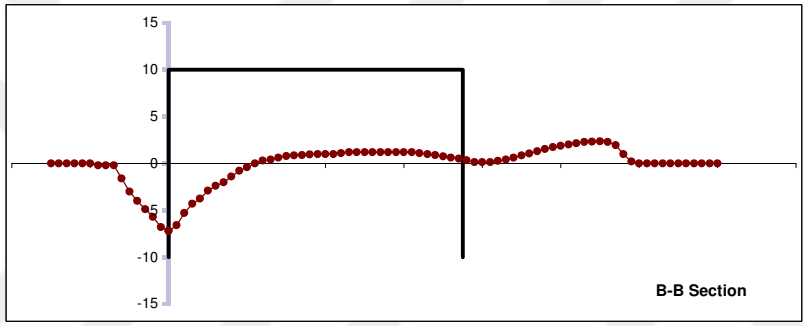


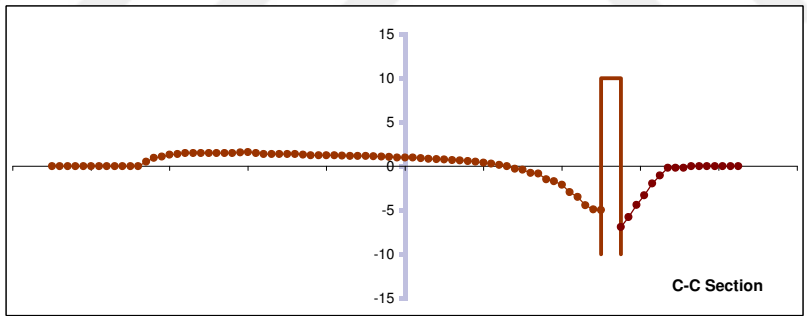
Experiment No : **E42**

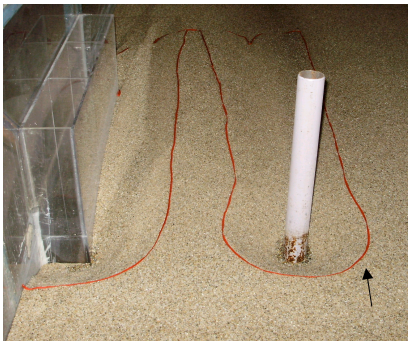


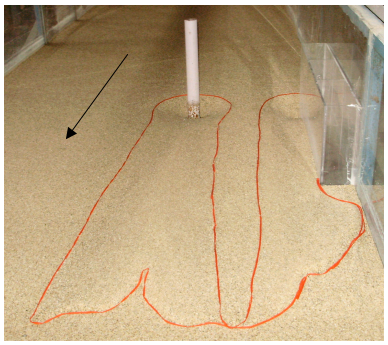




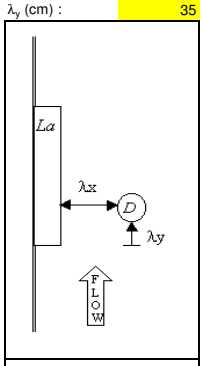


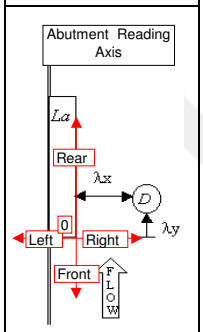


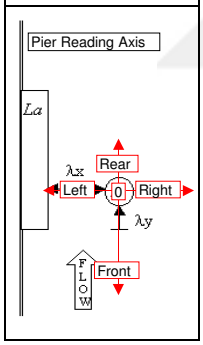


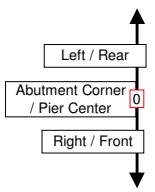


Experiment No :	**E43**
Date :	23.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	35









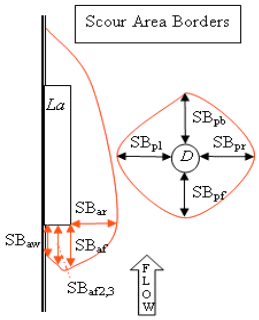
This color was used for raw data readings

This color was used for values enterpolated to sketch

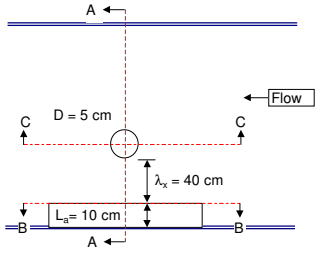
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-90.00				
-138	138					-88.00		9.40		-0.20
-136	136					-86.00		*9.70*		0.10
-134	134					-84.00		10.00		0.40
-132	132					-82.00		10.60		1.00
-130	130					-80.00		10.80		1.20
-128	128		9.80		0.20	-78.00		*10.88*		1.28
-126	126		10.95		1.35	-76.00		10.95		1.35
-124	124		11.50		1.90	-74.00		*10.95*		1.35
-122	122		11.60		2.00	-72.00		10.95		1.35
-120	120		*11.63*		2.03	-70.00		*10.98*		1.38
-118	118		11.65		2.05	-68.00		11.00		1.40
-116	116		*11.70*		2.10	-66.00		*11.08*		1.48
-114	114		11.75		2.15	-64.00		11.15		1.55
-112	112		*11.68*		2.08	-62.00		*11.18*		1.58
-110	110		11.60		2.00	-60.00		11.20		1.60
-108	108		*11.55*		1.95	-58.00		*11.20*		1.60
-106	106		11.50		1.90	-56.00		11.20		1.60
-104	104		*11.50*		1.90	-54.00		*11.20*		1.60
-102	102		11.50		1.90	-52.00		11.20		1.60
-100	100		*11.45*		1.85	-50.00		*11.25*		1.65
-98	98		11.40		1.80	-48.00		11.30		1.70
-96	96		*11.28*		1.68	-46.00		*11.33*		1.73
-94	94		11.15		1.55	-44.00		11.35		1.75
-92	92		*11.03*		1.43	-42.00		*11.38*		1.78
-90	90		10.90		1.30	-40.00		11.40		1.80
-88	88		*10.68*		1.08	-38.00		*11.40*		1.80
-86	86		10.45		0.85	-36.00		11.40		1.80
-84	84		*10.28*		0.67	-34.00		*11.40*		1.80
-82	82		10.10		0.50	-32.00		11.40		1.80
-80	80		*10.05*		0.45	-30.00		*11.40*		1.80
-78	78		10.00		0.40	-28.00		11.40		1.80
-76	76		*10.08*		0.48	-26.00		*11.40*		1.80
-74	74		10.15		0.55	-24.00		11.40		1.80
-72	72		*10.38*		0.78	-22.00		*11.38*		1.78
-70	70		10.60		1.00	-20.00		*11.36*		1.76
-68	68		*10.65*		1.05	-18.00		11.30		1.70
-66	66		10.70		1.10	-16.00		*11.30*		1.70
-64	64		*10.85*		1.25	-14.00		11.30		1.70
-62	62		11.00		1.40	-12.00		*11.23*		1.63
-60	60		*11.05*		1.45	-10.00		11.15		1.55
-58	58		11.10		1.50	-8.00		*11.13*		1.53
-56	56		*11.00*		1.40	-6.00		11.10		1.50
-54	54		10.90		1.30	-4.00		*11.10*		1.50
-52	52		*10.90*		1.30	-2.00		11.10		1.50
-50	50		10.90		1.30	0.00		*11.05*		1.45
-48	48		*10.90*		1.30	2.00		11.00		1.40
-46	46		10.90		1.30	4.00		*11.00*		1.40
-44	44		*10.80*		1.20	6.00		11.00		1.40
-42	42		10.70		1.10	8.00		*10.83*		1.23
-40	40		*10.65*		1.05	10.00	10.10	10.65	0.50	1.05
-38	38		10.60		1.00	12.00	9.90	*10.38*	0.30	0.78
-36	36		*10.43*		0.83	14.00	9.50	10.10	-0.10	0.50
-34	34		10.25		0.65	16.00	9.10	*10.00*	-0.50	0.40
-32	32		*10.18*		0.58	18.00	*9.15*	9.90	-0.45	0.30
-30	30		10.10		0.50	20.00	9.20	*9.65*	-0.40	0.05
-28	28		*9.90*		0.30	22.00	*9.60*	9.40	0.00	-0.20
-26	26		9.70		0.10	24.00	10.00	9.30	0.40	-0.30
-24	24		9.45		-0.15	26.00	*9.80*	9.15	0.20	-0.45
-22	22		9.20		-0.40	28.00	9.60	8.90	0.00	-0.70
-20	20		8.90		-0.70	30.00	*9.50*	8.50	-0.10	-1.10
-18	18		8.30		-1.30	32.00	9.40	8.30	-0.20	-1.30
-16	16		7.70		-1.90	34.00	*9.40*	8.00	-0.20	-1.60
-14	14		7.15		-2.45	36.00	9.40	7.75	-0.20	-1.85
-12	12		6.50		-3.10	38.00	8.50	7.35	-1.10	-2.25
-10	10	1.50	6.10	-8.10	-3.50	40.00	7.60	6.95	-2.00	-2.65
-8	8	1.50	5.50	-8.10	-4.10	42.00	6.70	6.50	-2.90	-3.10
-6	6	*1.45*	4.75	-8.15	-4.85	44.00	5.50	5.70	-4.10	-3.90
-4	4	1.40	3.70	-8.20	-5.90	46.00	4.45	5.10	-5.15	-4.50
-2	2	1.30	3.00	-8.30	-6.60	48.00	3.10	4.15	-6.50	-5.45
0	0	2.10	2.10	-7.50	-7.50	50.00	2.50	3.30	-7.10	-6.30
0	0	2.10	2.10	-7.50	-7.50	55.00	3.40	2.40	-6.20	-7.20
2	-2	2.15	3.00	-7.45	-6.60	57.00	4.20	3.75	-5.40	-5.85
4	-4	3.40	4.00	-6.20	-5.60	59.00	5.50	5.10	-4.10	-4.50
6	-6	5.00	4.70	-4.60	-4.90	61.00	5.95	6.50	-3.65	-3.10
8	-8	6.10	5.60	-3.50	-4.00	63.00	7.05	7.65	-2.55	-1.95
10	-10	6.70	6.60	-2.90	-3.00	65.00	8.00	8.70	-1.60	-0.90
12	-12	8.00	7.90	-1.60	-1.70	67.00	8.10	9.50	-1.50	-0.10
14	-14	8.70	9.00	-0.90	-0.60	69.00	9.10	*9.50*	-0.50	-0.10
16	-16	9.40	9.50	-0.20	-0.10	71.00	9.50	9.50	-0.10	-0.10
18	-18		*9.50*		-0.10	73.00				
20	-20		9.50		-0.10	75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

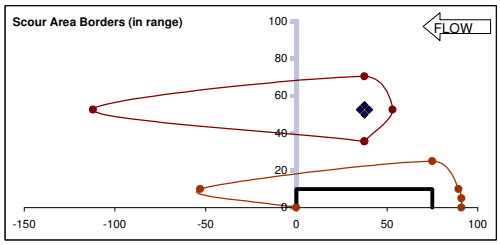
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.50	-8.10
2	1.60	-8.00
4	2.50	-7.10
6	3.70	-5.90
8	5.10	-4.50
10	5.95	-3.65
12	7.25	-2.35
14	8.40	-1.20
16	9.50	-0.10
18		
20		

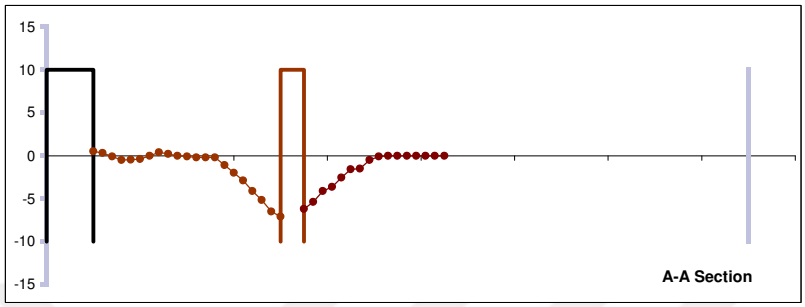
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	14.5
SB_{pf}	Pier Front	13
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	147

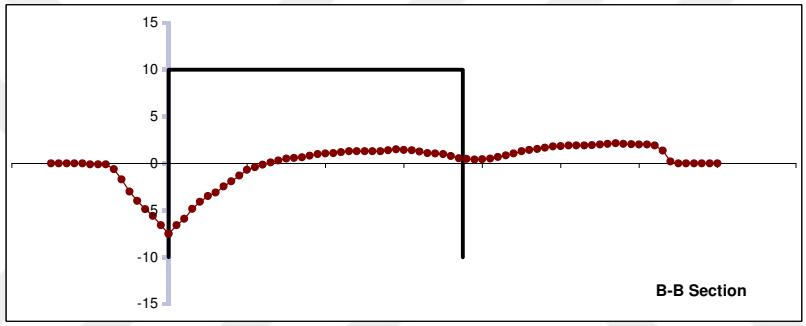


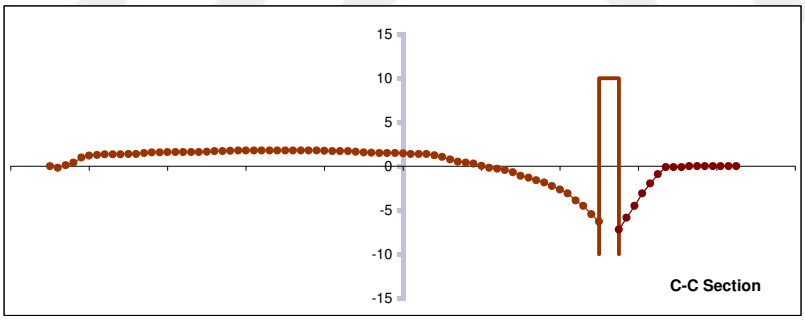
Experiment No : **E43**

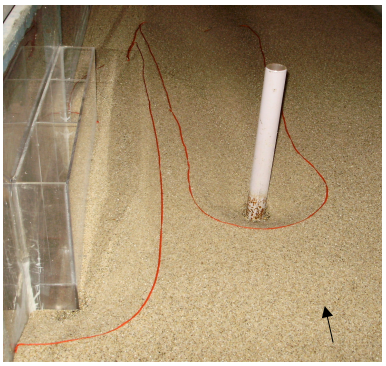


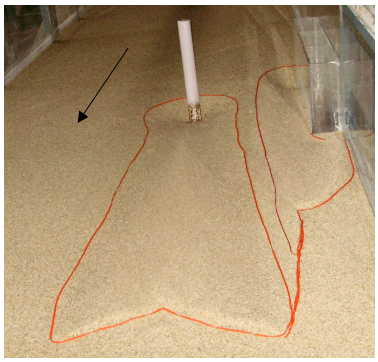




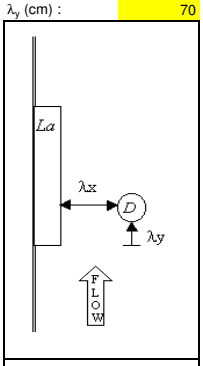


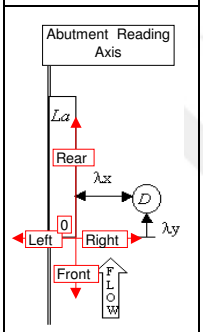


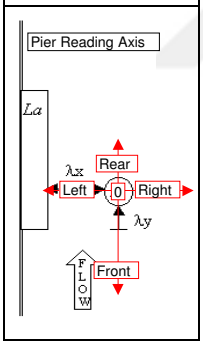


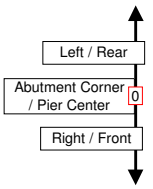


Experiment No :	**E44**
Date :	28.02.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	70









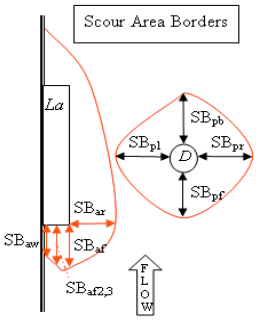
This color was used for raw data readings

This color was used for values enterpolated to sketch

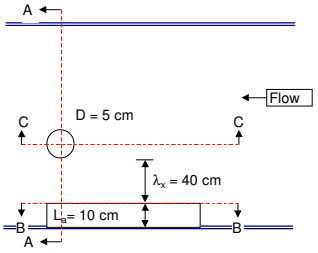
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-90.00				
-138	138					-88.00				
-136	136					-86.00				
-134	134					-84.00				
-132	132					-82.00				
-130	130					-80.00				
-128	128					-78.00				
-126	126					-76.00				
-124	124					-74.00				
-122	122		9.60		0.00	-72.00				
-120	120		10.50		0.90	-70.00				
-118	118		11.40		1.80	-68.00				
-116	116		11.95		2.35	-66.00				
-114	114		12.00		2.40	-64.00				
-112	112		*11.98*		2.38	-62.00				
-110	110		11.95		2.35	-60.00				
-108	108		*11.90*		2.30	-58.00				
-106	106		11.85		2.25	-56.00		9.40		-0.20
-104	104		*11.83*		2.23	-54.00		10.60		1.00
-102	102		11.80		2.20	-52.00		11.00		1.40
-100	100		*11.65*		2.05	-50.00		*11.15*		1.55
-98	98		11.50		1.90	-48.00		11.30		1.70
-96	96		*11.30*		1.70	-46.00		*11.40*		1.80
-94	94		11.10		1.50	-44.00		11.50		1.90
-92	92		*11.00*		1.40	-42.00		*11.50*		1.90
-90	90		10.90		1.30	-40.00		11.50		1.90
-88	88		*10.70*		1.10	-38.00		*11.58*		1.98
-86	86		10.50		0.90	-36.00		11.65		2.05
-84	84		*10.50*		0.90	-34.00		*11.58*		1.98
-82	82		10.50		0.90	-32.00		11.50		1.90
-80	80		*10.53*		0.93	-30.00		*11.45*		1.85
-78	78		10.55		0.95	-28.00		11.40		1.80
-76	76		*10.68*		1.08	-26.00		*11.45*		1.85
-74	74		10.80		1.20	-24.00		11.50		1.90
-72	72		*10.87*		1.27	-22.00		*11.35*		1.75
-70	70		*10.93*		1.33	-20.00		11.20		1.60
-68	68		11.00		1.40	-18.00		*11.27*		1.67
-66	66		*11.00*		1.40	-16.00		*11.33*		1.73
-64	64		11.00		1.40	-14.00		11.40		1.80
-62	62		*11.10*		1.50	-12.00		*11.38*		1.78
-60	60		11.20		1.60	-10.00		11.35		1.75
-58	58		*11.20*		1.60	-8.00		*11.33*		1.73
-56	56		11.20		1.60	-6.00		11.30		1.70
-54	54		*11.15*		1.55	-4.00		*11.25*		1.65
-52	52		11.10		1.50	-2.00		11.20		1.60
-50	50		*11.05*		1.45	0.00		*11.10*		1.50
-48	48		11.00		1.40	2.00		11.00		1.40
-46	46		*10.90*		1.30	4.00		*10.93*		1.33
-44	44		10.80		1.20	6.00		10.85		1.25
-42	42		*10.78*		1.18	8.00		*10.78*		1.18
-40	40		10.75		1.15	10.00	10.20	10.70	0.60	1.10
-38	38		*10.73*		1.13	12.00	10.40	*10.58*	0.80	0.98
-36	36		10.70		1.10	14.00	*10.10*	10.45	0.50	0.85
-34	34		*10.63*		1.03	16.00	9.80	*10.28*	0.20	0.67
-32	32		10.55		0.95	18.00	*9.60*	10.10	0.00	0.50
-30	30		*10.33*		0.73	20.00	9.40	*9.95*	-0.20	0.35
-28	28		10.10		0.50	22.00	*9.40*	9.80	-0.20	0.20
-26	26		*9.85*		0.25	24.00	9.40	9.75	-0.20	0.15
-24	24		9.60		0.00	26.00	*9.40*	9.45	-0.20	-0.15
-22	22		9.35		-0.25	28.00	9.40	9.25	-0.20	-0.35
-20	20		9.25		-0.35	30.00	*9.40*	9.00	-0.20	-0.60
-18	18		8.65		-0.95	32.00	9.40	8.65	-0.20	-0.95
-16	16		8.10		-1.50	34.00	*9.40*	8.40	-0.20	-1.20
-14	14		7.55		-2.05	36.00	9.40	8.10	-0.20	-1.50
-12	12		7.05		-2.55	38.00	8.70	7.60	-0.90	-2.00
-10	10	1.70	6.40	-7.90	-3.20	40.00	7.80	7.20	-1.80	-2.40
-8	8	*1.55*	5.80	-8.05	-3.80	42.00	6.90	6.85	-2.70	-2.75
-6	6	1.40	5.25	-8.20	-4.35	44.00	6.15	6.10	-3.45	-3.50
-4	4	*1.40*	3.95	-8.20	-5.65	46.00	4.50	5.30	-5.10	-4.30
-2	2	1.40	2.95	-8.20	-6.65	48.00	3.70	4.25	-5.90	-5.35
0	0	2.40	2.40	-7.20	-7.20	50.00	3.00	3.70	-6.60	-5.90
0	0	2.40	2.40	-7.20	-7.20	55.00	2.50	2.70	-7.10	-6.90
2	-2	2.50	2.90	-7.10	-6.70	57.00	3.50	3.50	-6.10	-6.10
4	-4	3.65	4.15	-5.95	-5.45	59.00	4.60	4.45	-5.00	-5.15
6	-6	5.10	4.70	-4.50	-4.90	61.00	5.60	5.50	-4.00	-4.10
8	-8	6.10	5.80	-3.50	-3.80	63.00	6.60	6.70	-3.00	-2.90
10	-10	6.80	7.00	-2.80	-2.60	65.00	7.40	7.95	-2.20	-1.65
12	-12	7.80	8.00	-1.80	-1.60	67.00	8.40	9.00	-1.20	-0.60
14	-14	8.85	9.10	-0.75	-0.50	69.00	9.40	9.40	-0.20	-0.20
16	-16	9.40	9.50	-0.20	-0.10	71.00				
18	-18					73.00				
20	-20					75.00				
22	-22					77.00				
24	-24					79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

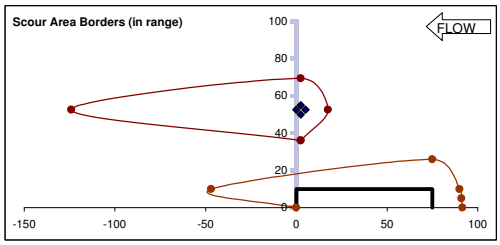
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.70	-7.90
2	1.95	-7.65
4	3.10	-6.50
6	4.30	-5.30
8	5.50	-4.10
10	6.70	-2.90
12	7.90	-1.70
14	8.75	-0.85
16	9.40	-0.20
18		
20		

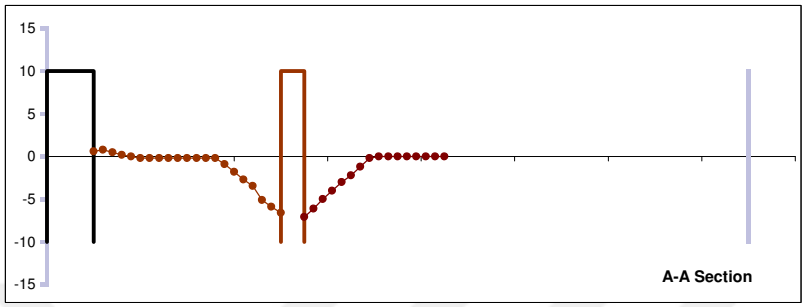
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	16
SB_{pl}	Pier Left	14
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	124

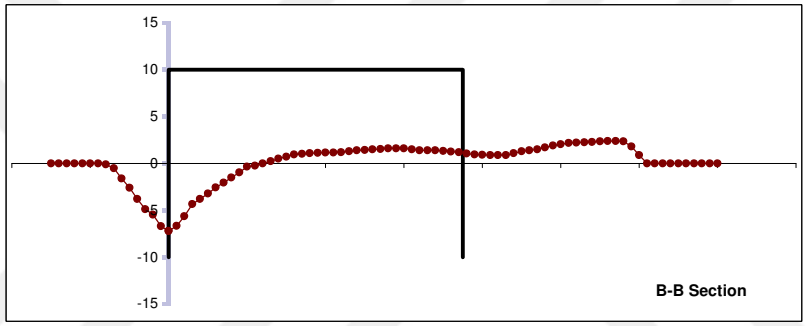


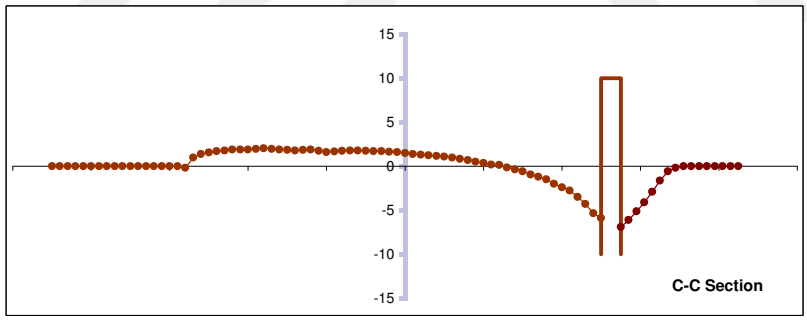
Experiment No : **E44**

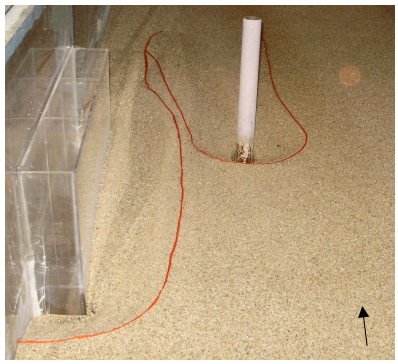


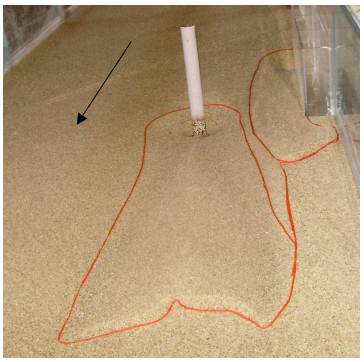






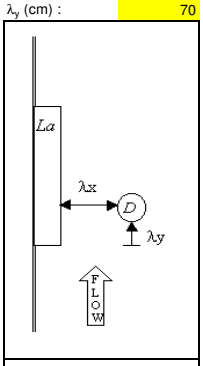


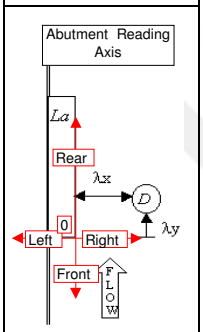


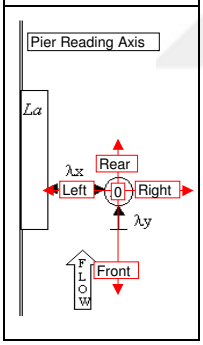


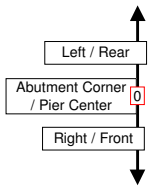
Experiment No : **E45**

Date :	02.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	70









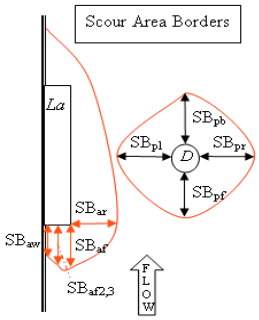
This color was used for raw data readings

This color was used for values enterpolated to sketch

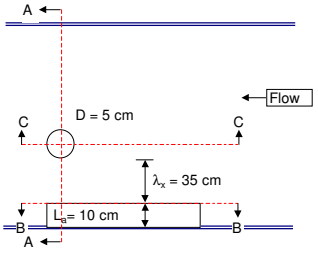
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	
-140	140					-95.00					
-138	138					-93.00					
-136	136					-91.00					
-134	134					-89.00					
-132	132					-87.00					
-130	130					-85.00					
-128	128					-83.00					
-126	126					-81.00					
-124	124					-79.00					
-122	122					-77.00					
-120	120					-75.00					
-118	118					-73.00					
-116	116					-71.00					
-114	114		9.80		0.20	-69.00					
-112	112		9.80		0.20	-67.00					
-110	110		10.60		1.00	-65.00					
-108	108		11.80		2.20	-63.00					
-106	106		11.90		2.30	-61.00		9.60		0.00	
-104	104		*11.85*		2.25	-59.00		10.70		1.10	
-102	102		11.80		2.20	-57.00		11.10		1.50	
-100	100		*11.68*		2.08	-55.00		*11.20*		1.60	
-98	98		11.55		1.95	-53.00		11.30		1.70	
-96	96		*11.33*		1.73	-51.00		*11.35*		1.75	
-94	94		11.10		1.50	-49.00		11.40		1.80	
-92	92		*10.95*		1.35	-47.00		*11.45*		1.85	
-90	90		10.80		1.20	-45.00		11.50		1.90	
-88	88		*10.63*		1.03	-43.00		*11.55*		1.95	
-86	86		10.45		0.85	-41.00		11.60		2.00	
-84	84		*10.38*		0.78	-39.00		*11.60*		2.00	
-82	82		10.30		0.70	-37.00		11.60		2.00	
-80	80		*10.40*		0.80	-35.00		*11.65*		2.05	
-78	78		10.50		0.90	-33.00		11.70		2.10	
-76	76		*10.60*		1.00	-31.00		*11.70*		2.10	
-74	74		10.70		1.10	-29.00		11.70		2.10	
-72	72		*10.70*		1.10	-27.00		*11.70*		2.10	
-70	70		*10.70*		1.10	-25.00		*11.70*		2.10	
-68	68		10.70		1.10	-23.00		11.70		2.10	
-66	66		*10.85*		1.25	-21.00		*11.70*		2.10	
-64	64		11.00		1.40	-19.00		*11.70*		2.10	
-62	62		*11.08*		1.48	-17.00		11.70		2.10	
-60	60		11.15		1.55	-15.00		*11.70*		2.10	
-58	58		*11.28*		1.68	-13.00		11.70		2.10	
-56	56		11.40		1.80	-11.00		*11.65*		2.05	
-54	54		*11.40*		1.80	-9.00		11.60		2.00	
-52	52		11.40		1.80	-7.00		*11.55*		1.95	
-50	50		*11.35*		1.75	-5.00		11.50		1.90	
-48	48		11.30		1.70	-3.00		*11.40*		1.80	
-46	46		*11.20*		1.60	-1.00		11.30		1.70	
-44	44		11.10		1.50	1.00		*11.23*		1.63	
-42	42		*11.05*		1.45	3.00		11.15		1.55	
-40	40		11.00		1.40	5.00		*10.98*		1.38	
-38	38		*10.95*		1.35	7.00		10.80		1.20	
-36	36		10.90		1.30	9.00		*10.75*		1.15	
-34	34		*10.90*		1.30	11.00	10.40	10.70	0.80	1.10	
-32	32		10.90		1.30	13.00	10.60	10.60	1.00	1.00	
-30	30		10.75		1.15	15.00	10.50	10.30	0.90	0.70	
-28	28		10.70		1.10	17.00	*10.20*	9.90	0.60	0.30	
-26	26		10.55		0.95	19.00	9.90	9.70	0.30	0.10	
-24	24		10.30		0.70	21.00	*9.95*	9.40	0.35	-0.20	
-22	22		10.05		0.45	23.00	10.00	9.10	0.40	-0.50	
-20	20		9.75		0.15	25.00	*10.13*	8.80	0.53	-0.80	
-18	18		9.30		-0.30	27.00	10.25	8.45	0.65	-1.15	
-16	16		8.70		-0.90	29.00	*9.88*	8.20	0.28	-1.40	
-14	14		8.05		-1.55	31.00	9.50	7.85	-0.10	-1.75	
-12	12		7.50		-2.10	33.00	8.85	7.30	-0.75	-2.30	
-10	10	2.20	6.75	-7.40	-2.85	35.00	7.95	6.70	-1.65	-2.90	
-8	8	*1.95*	6.20	-7.65	-3.40	37.00	6.70	6.35	-2.90	-3.25	
-6	6	1.70	5.35	-7.90	-4.25	39.00	5.80	5.65	-3.80	-3.95	
-4	4	*1.73*	4.10	-7.88	-5.50	41.00	4.50	4.90	-5.10	-4.70	
-2	2	1.75	3.18	-7.85	-6.42	43.00	3.45	4.30	-6.15	-5.30	
0	0	2.60	2.60	-7.00	-7.00	45.00	2.40	3.90	-7.20	-5.70	
0	0	2.60	2.60	-7.00	-7.00	50.00	2.50	1.90	-7.10	-7.70	
2	-2	2.70	3.10	-6.90	-6.50	52.00	3.25	3.00	-6.35	-6.60	
4	-4	4.00	4.15	-5.60	-5.45	54.00	4.40	4.50	-5.20	-5.10	
6	-6	5.25	4.95	-4.35	-4.65	56.00	5.70	5.80	-3.90	-3.80	
8	-8	6.50	5.90	-3.10	-3.70	58.00	6.20	7.10	-3.40	-2.50	
10	-10	7.30	7.00	-2.30	-2.60	60.00	7.15	8.30	-2.45	-1.30	
12	-12	8.30	8.30	-1.30	-1.30	62.00	8.30	9.10	-1.30	-0.50	
14	-14	9.10	9.40	-0.50	-0.20	64.00	9.15	9.40	-0.45	-0.20	
16	-16	9.40		-0.20		66.00	9.40		-0.20		
18	-18					68.00					
20	-20					70.00					
22	-22					72.00					
24	-24					74.00					
26	-26					76.00					
28	-28					78.00					
30	-30					80.00					

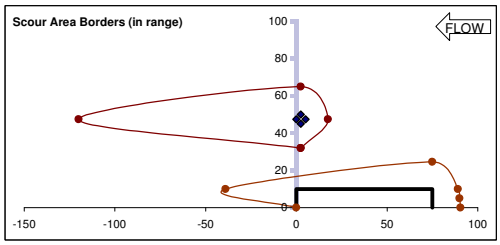
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.00	-7.60
2	2.35	-7.25
4	3.30	-6.30
6	4.75	-4.85
8	5.70	-3.90
10	6.70	-2.90
12	7.80	-1.80
14	9.10	-0.50
16	9.40	-0.20
18		
20		

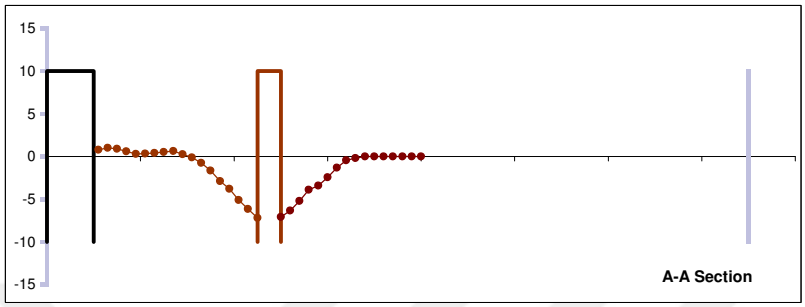
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	120

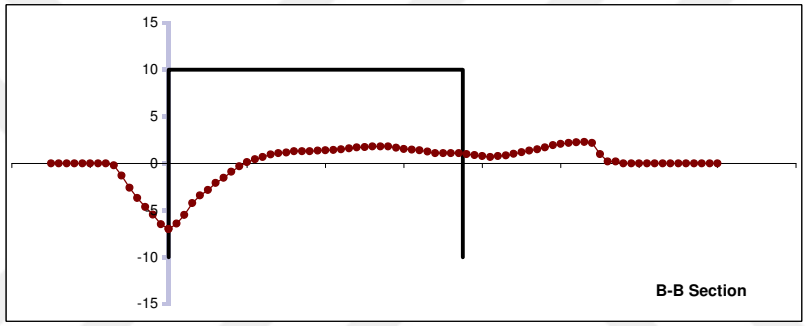


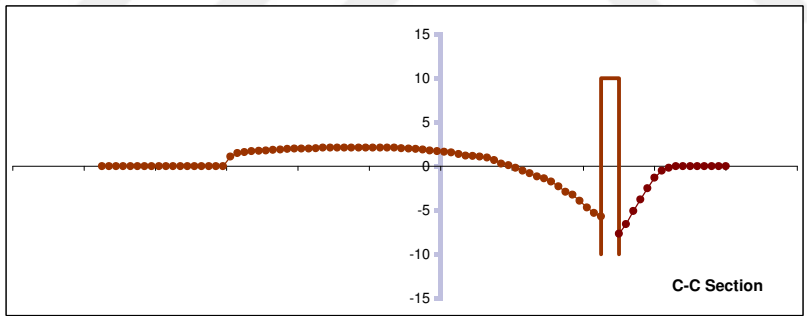
Experiment No : **E45**



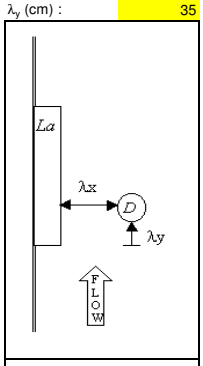


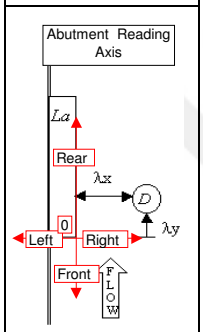


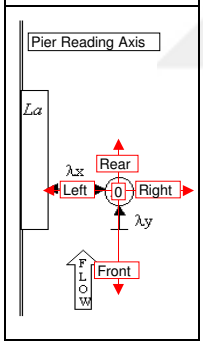


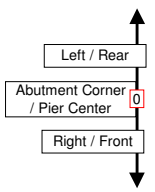


Experiment No :	**E46**
Date :	10.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	35









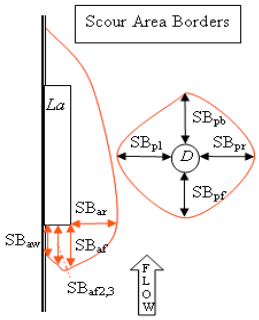
This color was used for raw data readings

This color was used for values enterpolated to sketch

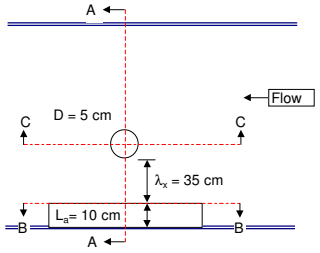
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-95.00				
-138	138					-93.00				
-136	136					-91.00				
-134	134					-89.00				
-132	132					-87.00		9.40		-0.20
-130	130					-85.00		9.60		0.00
-128	128					-83.00		10.50		0.90
-126	126					-81.00		*10.65*		1.05
-124	124		9.40		-0.20	-79.00		10.80		1.20
-122	122		9.90		0.30	-77.00		*10.90*		1.30
-120	120		11.10		1.50	-75.00		11.00		1.40
-118	118		11.80		2.20	-73.00		*11.05*		1.45
-116	116		11.90		2.30	-71.00		11.10		1.50
-114	114		*11.90*		2.30	-69.00		*11.15*		1.55
-112	112		11.90		2.30	-67.00		11.20		1.60
-110	110		*11.90*		2.30	-65.00		*11.20*		1.60
-108	108		11.90		2.30	-63.00		*11.20*		1.60
-106	106		*11.85*		2.25	-61.00		*11.20*		1.60
-104	104		11.80		2.20	-59.00		*11.20*		1.60
-102	102		*11.75*		2.15	-57.00		11.20		1.60
-100	100		11.70		2.10	-55.00		*11.20*		1.60
-98	98		*11.60*		2.00	-53.00		11.20		1.60
-96	96		11.50		1.90	-51.00		*11.20*		1.60
-94	94		*11.40*		1.80	-49.00		11.20		1.60
-92	92		11.30		1.70	-47.00		*11.20*		1.60
-90	90		10.80		1.20	-45.00		11.20		1.60
-88	88		*10.50*		0.90	-43.00		*11.20*		1.60
-86	86		10.20		0.60	-41.00		11.20		1.60
-84	84		*10.05*		0.45	-39.00		*11.25*		1.65
-82	82		9.90		0.30	-37.00		11.30		1.70
-80	80		*9.90*		0.30	-35.00		*11.30*		1.70
-78	78		9.90		0.30	-33.00		11.30		1.70
-76	76		*10.15*		0.55	-31.00		*11.30*		1.70
-74	74		10.40		0.80	-29.00		11.30		1.70
-72	72		*10.50*		0.90	-27.00		*11.27*		1.67
-70	70		*10.60*		1.00	-25.00		*11.23*		1.63
-68	68		10.70		1.10	-23.00		11.20		1.60
-66	66		*10.80*		1.20	-21.00		*11.20*		1.60
-64	64		10.90		1.30	-19.00		11.20		1.60
-62	62		*10.95*		1.35	-17.00		*11.15*		1.55
-60	60		11.00		1.40	-15.00		11.10		1.50
-58	58		*11.05*		1.45	-13.00		*11.05*		1.45
-56	56		11.10		1.50	-11.00		11.00		1.40
-54	54		*11.10*		1.50	-9.00		*10.95*		1.35
-52	52		11.10		1.50	-7.00		10.90		1.30
-50	50		*11.05*		1.45	-5.00		*10.85*		1.25
-48	48		11.00		1.40	-3.00		10.80		1.20
-46	46		*11.00*		1.40	-1.00		*10.70*		1.10
-44	44		11.00		1.40	1.00		10.60		1.00
-42	42		*10.95*		1.35	3.00		*10.55*		0.95
-40	40		10.90		1.30	5.00		10.50		0.90
-38	38		*10.75*		1.15	7.00		*10.30*		0.70
-36	36		10.60		1.00	9.00		10.10		0.50
-34	34		*10.40*		0.80	11.00	10.20	*9.95*	0.60	0.35
-32	32		10.20		0.60	13.00	10.20	9.80	0.60	0.20
-30	30		*10.00*		0.40	15.00	9.70	*9.50*	0.10	-0.10
-28	28		9.80		0.20	17.00	9.20	9.20	-0.40	-0.40
-26	26		9.70		0.10	19.00	9.00	9.00	-0.60	-0.60
-24	24		9.40		-0.20	21.00	9.30	8.80	-0.30	-0.80
-22	22		9.10		-0.50	23.00	9.70	8.60	0.10	-1.00
-20	20		8.70		-0.90	25.00	10.20	8.40	0.60	-1.20
-18	18		8.10		-1.50	27.00	10.00	8.20	0.40	-1.40
-16	16		7.70		-1.90	29.00	9.50	7.70	-0.10	-1.90
-14	14		7.30		-2.30	31.00	9.40	7.50	-0.20	-2.10
-12	12		6.60		-3.00	33.00	8.30	7.10	-1.30	-2.50
-10	10	1.20	5.90	-8.40	-3.70	35.00	7.10	6.70	-2.50	-2.90
-8	8	*1.15*	5.30	-8.45	-4.30	37.00	6.10	6.30	-3.50	-3.30
-6	6	1.10	4.60	-8.50	-5.00	39.00	5.40	5.60	-4.20	-4.00
-4	4	*1.10*	3.60	-8.50	-6.00	41.00	4.00	4.90	-5.60	-4.70
-2	2	1.10	2.70	-8.50	-6.90	43.00	2.50	4.40	-7.10	-5.20
0	0	1.80	1.80	-7.80	-7.80	45.00	2.10	3.40	-7.50	-6.20
0	0	1.80	1.80	-7.80	-7.80	50.00	2.10	2.10	-7.50	-7.50
2	-2	1.90	2.10	-7.70	-7.50	52.00	3.10	3.40	-6.50	-6.20
4	-4	3.10	3.40	-6.50	-6.20	54.00	4.10	4.70	-5.50	-4.90
6	-6	4.50	4.40	-5.10	-5.20	56.00	5.20	5.90	-4.40	-3.70
8	-8	5.70	5.30	-3.90	-4.30	58.00	6.00	7.30	-3.60	-2.30
10	-10	6.30	6.40	-3.30	-3.20	60.00	7.00	8.30	-2.60	-1.30
12	-12	7.70	7.30	-1.90	-2.30	62.00	8.10	9.40	-1.50	-0.20
14	-14	8.80	8.80	-0.80	-0.80	64.00	9.10		-0.50	
16	-16	9.40	9.40	-0.20	-0.20	66.00	9.40		-0.20	
18	-18					68.00				
20	-20					70.00				
22	-22					72.00				
24	-24					74.00				
26	-26					76.00				
28	-28					78.00				
30	-30					80.00				

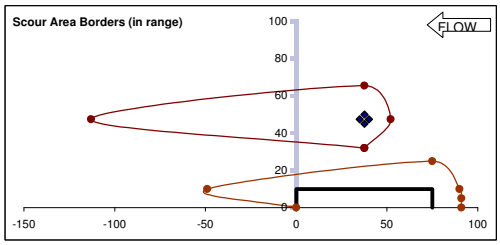
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.20	-8.40
2	1.40	-8.20
4	2.10	-7.50
6	3.30	-6.30
8	4.50	-5.10
10	5.50	-4.10
12	6.90	-2.70
14	8.10	-1.50
16	9.10	-0.50
18	*9.25*	-0.35
20	9.40	-0.20

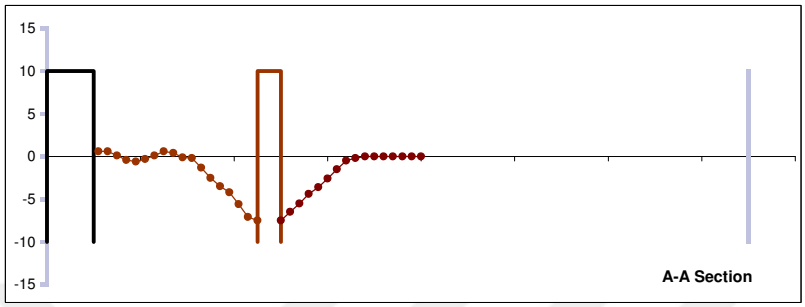
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	148

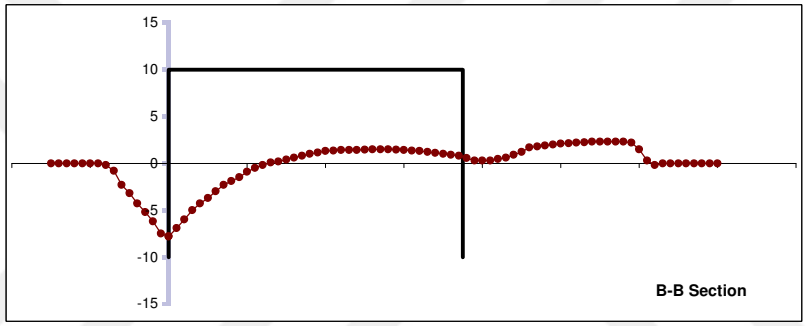


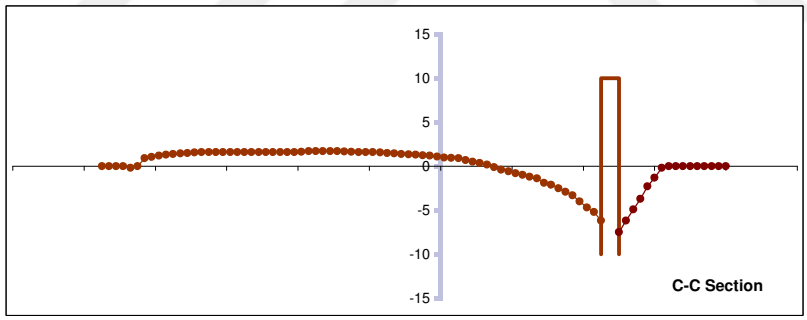
Experiment No : **E46**

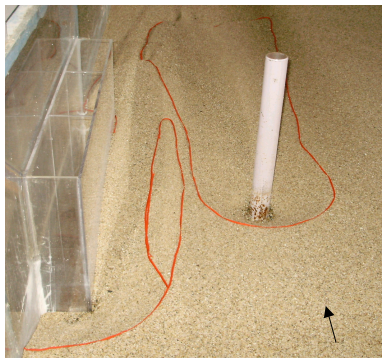


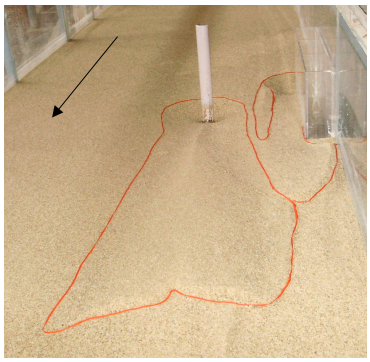






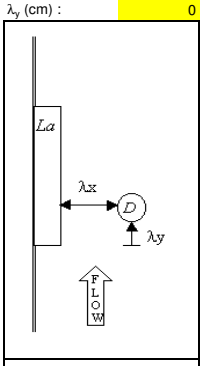


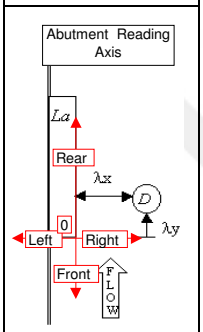


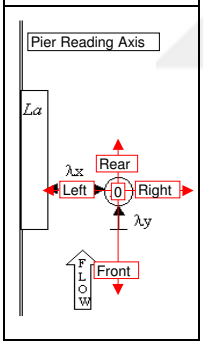


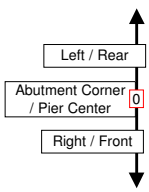
Experiment No : **E47**

Date :	14.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	0







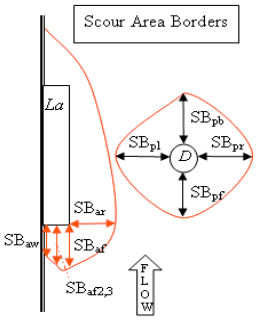


This color was used for raw data readings
This color was used for values enterpolated to sketch

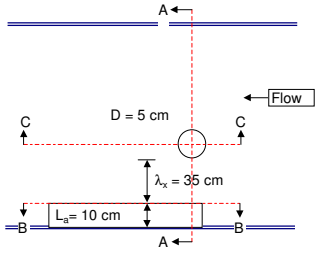
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-95.00				
-138	138					-93.00				
-136	136					-91.00				
-134	134					-89.00				
-132	132					-87.00				
-130	130					-85.00				
-128	128					-83.00		9.40		-0.20
-126	126					-81.00		*9.55*		-0.05
-124	124					-79.00		9.70		0.10
-122	122					-77.00		10.00		0.40
-120	120					-75.00		10.20		0.60
-118	118		9.70		0.10	-73.00		10.60		1.00
-116	116		10.20		0.60	-71.00		*10.75*		1.15
-114	114		11.30		1.70	-69.00		10.90		1.30
-112	112		11.90		2.30	-67.00		*10.90*		1.30
-110	110		11.90		2.30	-65.00		10.90		1.30
-108	108		*11.85*		2.25	-63.00		*10.95*		1.35
-106	106		11.80		2.20	-61.00		11.00		1.40
-104	104		*11.70*		2.10	-59.00		*11.00*		1.40
-102	102		11.60		2.00	-57.00		11.00		1.40
-100	100		*11.50*		1.90	-55.00		*11.05*		1.45
-98	98		11.40		1.80	-53.00		11.10		1.50
-96	96		*11.25*		1.65	-51.00		*11.10*		1.50
-94	94		11.10		1.50	-49.00		11.10		1.50
-92	92		*10.95*		1.35	-47.00		*11.10*		1.50
-90	90		10.80		1.20	-45.00		11.10		1.50
-88	88		*10.60*		1.00	-43.00		*11.10*		1.50
-86	86		10.40		0.80	-41.00		11.10		1.50
-84	84		*10.20*		0.60	-39.00		*11.10*		1.50
-82	82		10.00		0.40	-37.00		11.10		1.50
-80	80		*10.00*		0.40	-35.00		*11.10*		1.50
-78	78		10.00		0.40	-33.00		11.10		1.50
-76	76		*10.05*		0.45	-31.00		*11.05*		1.45
-74	74		10.10		0.50	-29.00		11.00		1.40
-72	72		*10.25*		0.65	-27.00		*10.97*		1.37
-70	70		10.40		0.80	-25.00		*10.93*		1.33
-68	68		*10.40*		0.80	-23.00		10.90		1.30
-66	66		10.40		0.80	-21.00		*10.90*		1.30
-64	64		*10.50*		0.90	-19.00		10.90		1.30
-62	62		10.60		1.00	-17.00		*10.90*		1.30
-60	60		*10.65*		1.05	-15.00		10.90		1.30
-58	58		10.70		1.10	-13.00		*10.90*		1.30
-56	56		*10.70*		1.10	-11.00		10.90		1.30
-54	54		10.70		1.10	-9.00		*10.85*		1.25
-52	52		*10.70*		1.10	-7.00		10.80		1.20
-50	50		10.70		1.10	-5.00		*10.80*		1.20
-48	48		*10.70*		1.10	-3.00		10.80		1.20
-46	46		10.70		1.10	-1.00		*10.70*		1.10
-44	44		*10.70*		1.10	1.00		10.60		1.00
-42	42		10.70		1.10	3.00		*10.55*		0.95
-40	40		*10.70*		1.10	5.00		10.50		0.90
-38	38		10.70		1.10	7.00		*10.40*		0.80
-36	36		*10.65*		1.05	9.00		10.30		0.70
-34	34		10.60		1.00	11.00	3.00	*10.30*	-6.60	0.70
-32	32		*10.50*		0.90	13.00	3.20	10.30	-6.40	0.70
-30	30		10.40		0.80	15.00	4.50	*10.20*	-5.10	0.60
-28	28		*10.25*		0.65	17.00	5.70	10.10	-3.90	0.50
-26	26		10.10		0.50	19.00	7.10	*9.95*	-2.50	0.35
-24	24		9.90		0.30	21.00	7.75	9.80	-1.85	0.20
-22	22		9.60		0.00	23.00	8.50	*9.55*	-1.10	-0.05
-20	20		9.40		-0.20	25.00	9.40	9.30	-0.20	-0.30
-18	18		8.90		-0.70	27.00	*9.40*	9.10	-0.20	-0.50
-16	16		8.40		-1.20	29.00	9.40	8.90	-0.20	-0.70
-14	14		7.80		-1.80	31.00	*9.20*	8.60	-0.40	-1.00
-12	12		7.40		-2.20	33.00	9.00	8.20	-0.60	-1.40
-10	10	2.00	6.80	-7.60	-2.80	35.00	8.00	7.90	-1.60	-1.70
-8	8	*1.95*	6.10	-7.65	-3.50	37.00	6.70	7.40	-2.90	-2.20
-6	6	1.90	5.50	-7.70	-4.10	39.00	5.90	6.80	-3.70	-2.80
-4	4	*1.75*	4.20	-7.85	-5.40	41.00	4.75	5.90	-4.85	-3.70
-2	2	1.60	3.30	-8.00	-6.30	43.00	3.50	5.40	-6.10	-4.20
0	0	2.70	2.70	-6.90	-6.90	45.00	3.00	4.70	-6.60	-4.90
0	0	2.70	2.70	-6.90	-6.90	50.00	2.90	2.50	-6.70	-7.10
2	-2	2.90	2.80	-6.70	-6.80	52.00	3.50	3.80	-6.10	-5.80
4	-4	3.90	3.80	-5.70	-5.80	54.00	4.70	4.90	-4.90	-4.70
6	-6	5.20	4.70	-4.40	-4.90	56.00	6.20	6.40	-3.40	-3.20
8	-8	6.60	5.65	-3.00	-3.95	58.00	7.00	7.50	-2.60	-2.10
10	-10	7.10	6.80	-2.50	-2.80	60.00	7.85	8.90	-1.75	-0.70
12	-12	8.10	8.00	-1.50	-1.60	62.00	8.80	9.40	-0.80	-0.20
14	-14	9.40	9.40	-0.20	-0.20	64.00	9.40	9.40	-0.20	-0.20
16	-16		9.40		-0.20	66.00				
18	-18					68.00				
20	-20					70.00				
22	-22					72.00				
24	-24					74.00				
26	-26					76.00				
28	-28					78.00				
30	-30					80.00				

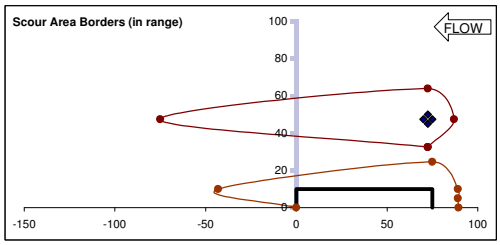
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.00	-7.60
2	2.10	-7.50
4	3.20	-6.40
6	4.40	-5.20
8	5.40	-4.20
10	6.50	-3.10
12	7.75	-1.85
14	9.00	-0.60
16	9.40	-0.20
18	*9.40*	-0.20
20	9.40	-0.20

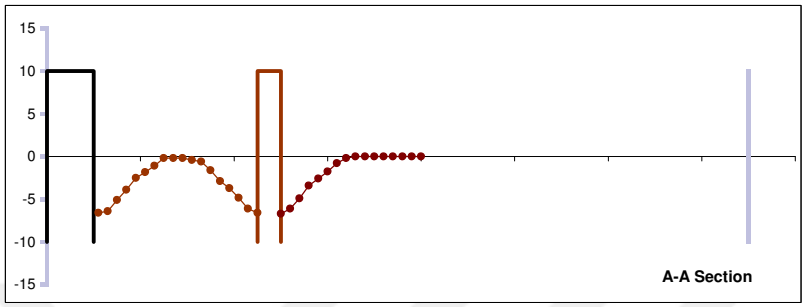
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	145

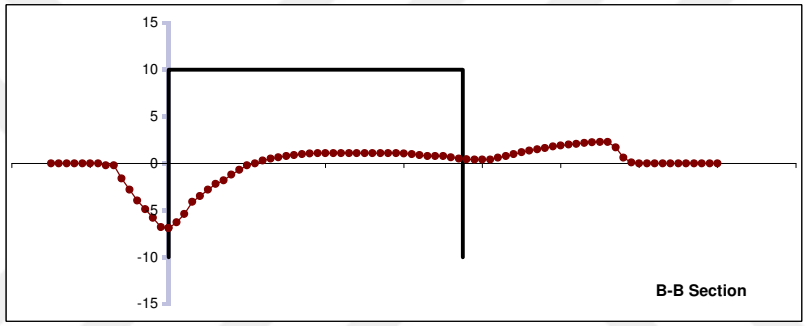


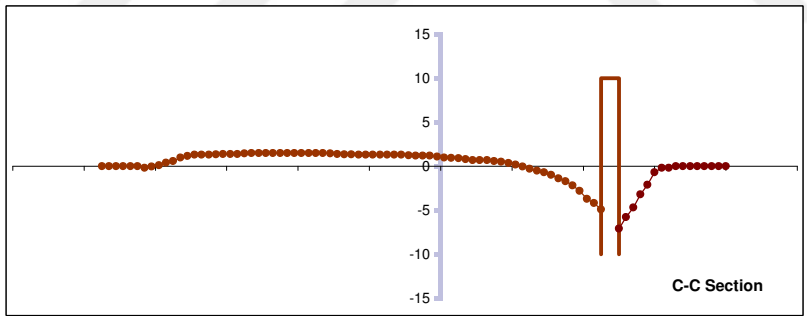
Experiment No : **E47**

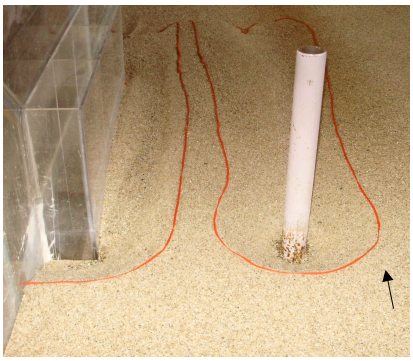


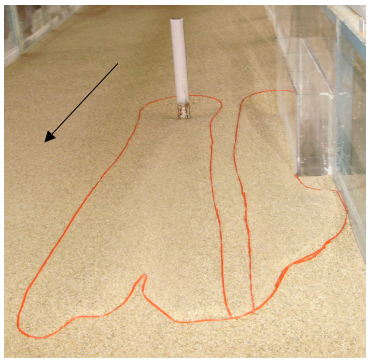




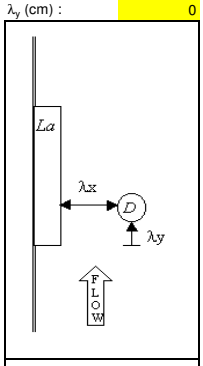


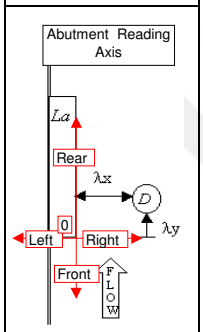


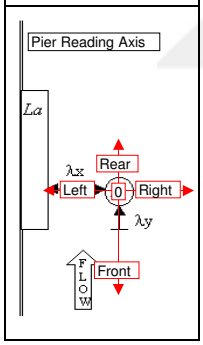


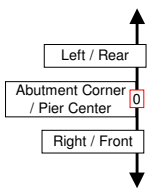


Experiment No :	**E48**
Date :	17.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	0









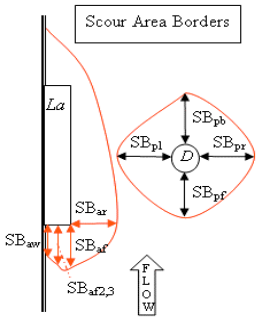
This color was used for raw data readings

This color was used for values enterpolated to sketch

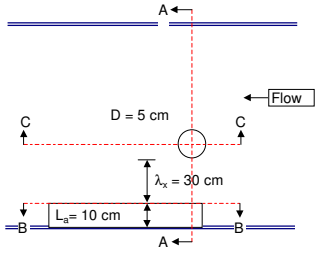
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-100.00				
-138	138					-98.00				
-136	136					-96.00		9.40		-0.20
-134	134					-94.00		*9.45*		-0.15
-132	132					-92.00		9.50		-0.10
-130	130					-90.00		9.60		0.00
-128	128					-88.00		9.75		0.15
-126	126					-86.00		10.05		0.45
-124	124					-84.00		10.40		0.80
-122	122					-82.00		10.75		1.15
-120	120					-80.00		*10.88*		1.28
-118	118					-78.00		11.00		1.40
-116	116					-76.00		*11.05*		1.45
-114	114		9.40		-0.20	-74.00		11.10		1.50
-112	112		10.20		0.60	-72.00		*11.15*		1.55
-110	110		11.40		1.80	-70.00		11.20		1.60
-108	108		11.80		2.20	-68.00		*11.20*		1.60
-106	106		11.90		2.30	-66.00		11.20		1.60
-104	104		*11.83*		2.23	-64.00		*11.20*		1.60
-102	102		11.75		2.15	-62.00		11.20		1.60
-100	100		*11.68*		2.08	-60.00		*11.20*		1.60
-98	98		11.60		2.00	-58.00		11.20		1.60
-96	96		*11.50*		1.90	-56.00		*11.20*		1.60
-94	94		11.40		1.80	-54.00		11.20		1.60
-92	92		*11.25*		1.65	-52.00		*11.20*		1.60
-90	90		11.10		1.50	-50.00		11.20		1.60
-88	88		*10.85*		1.25	-48.00		*11.20*		1.60
-86	86		10.60		1.00	-46.00		11.20		1.60
-84	84		*10.30*		0.70	-44.00		*11.15*		1.55
-82	82		10.00		0.40	-42.00		11.10		1.50
-80	80		*9.80*		0.20	-40.00		*11.10*		1.50
-78	78		9.60		0.00	-38.00		11.10		1.50
-76	76		*9.75*		0.15	-36.00		*11.05*		1.45
-74	74		9.90		0.30	-34.00		11.00		1.40
-72	72		*10.20*		0.60	-32.00		*10.95*		1.35
-70	70		10.50		0.90	-30.00		10.90		1.30
-68	68		*10.60*		1.00	-28.00		*10.90*		1.30
-66	66		10.70		1.10	-26.00		10.90		1.30
-64	64		*10.75*		1.15	-24.00		*10.85*		1.25
-62	62		10.80		1.20	-22.00		10.80		1.20
-60	60		*10.80*		1.20	-20.00		*10.80*		1.20
-58	58		10.80		1.20	-18.00		10.80		1.20
-56	56		*10.85*		1.25	-16.00		*10.75*		1.15
-54	54		10.90		1.30	-14.00		10.70		1.10
-52	52		*10.90*		1.30	-12.00		*10.68*		1.08
-50	50		10.90		1.30	-10.00		10.65		1.05
-48	48		*10.85*		1.25	-8.00		*10.60*		1.00
-46	46		10.80		1.20	-6.00		10.55		0.95
-44	44		*10.80*		1.20	-4.00		*10.45*		0.85
-42	42		10.80		1.20	-2.00		10.35		0.75
-40	40		*10.75*		1.15	0.00		*10.35*		0.75
-38	38		10.70		1.10	2.00		10.35		0.75
-36	36		*10.65*		1.05	4.00		*10.23*		0.63
-34	34		10.60		1.00	6.00		10.10		0.50
-32	32		*10.45*		0.85	8.00		*9.95*		0.35
-30	30		10.30		0.70	10.00	2.50	9.80	-7.10	0.20
-28	28		10.10		0.50	12.00	2.60	*9.65*	-7.00	0.05
-26	26		10.10		0.50	14.00	3.75	9.50	-5.85	-0.10
-24	24		9.80		0.20	16.00	5.10	*9.35*	-4.50	-0.25
-22	22		9.50		-0.10	18.00	6.50	9.20	-3.10	-0.40
-20	20		9.15		-0.45	20.00	7.35	9.10	-2.25	-0.50
-18	18		8.85		-0.75	22.00	8.20	8.90	-1.40	-0.70
-16	16		8.25		-1.35	24.00	9.20	8.50	-0.40	-1.10
-14	14		7.75		-1.85	26.00	9.40	8.25	-0.20	-1.35
-12	12		7.40		-2.20	28.00	8.85	7.80	-0.75	-1.80
-10	10	1.90	6.70	-7.70	-2.90	30.00	7.65	7.35	-1.95	-2.25
-8	8	*1.85*	6.00	-7.75	-3.60	32.00	6.40	6.90	-3.20	-2.70
-6	6	1.80	5.20	-7.80	-4.40	34.00	5.70	6.40	-3.90	-3.20
-4	4	*1.85*	4.00	-7.75	-5.60	36.00	4.55	5.60	-5.05	-4.00
-2	2	1.90	3.00	-7.70	-6.60	38.00	3.60	4.75	-6.00	-4.85
0	0	2.50	2.50	-7.10	-7.10	40.00	3.00	4.10	-6.60	-5.50
0	0	2.50	2.50	-7.10	-7.10	45.00	3.20	2.50	-6.40	-7.10
2	-2	2.70	2.85	-6.90	-6.75	47.00	3.45	3.65	-6.15	-5.95
4	-4	4.00	4.15	-5.60	-5.45	49.00	5.00	5.00	-4.60	-4.60
6	-6	5.20	5.00	-4.40	-4.60	51.00	6.10	6.35	-3.50	-3.25
8	-8	6.35	5.85	-3.25	-3.75	53.00	7.00	7.70	-2.60	-1.90
10	-10	7.20	7.00	-2.40	-2.60	55.00	7.65	9.10	-1.95	-0.50
12	-12	8.25	8.40	-1.35	-1.20	57.00	8.90	9.40	-0.70	-0.20
14	-14	9.10	9.40	-0.50	-0.20	59.00	9.40	*9.40*	-0.20	-0.20
16	-16	9.40	*9.40*	-0.20	-0.20	61.00	*9.40*	9.40	-0.20	-0.20
18	-18	9.10	9.40	-0.50	-0.20	63.00	9.40		-0.20	
20	-20	8.00		-1.60		65.00				
22	-22	6.40		-3.20		67.00				
24	-24	5.60		-4.00		69.00				
26	-26	4.75		-4.85		71.00				
28	-28	3.60		-6.00		73.00				
30	-30					75.00				

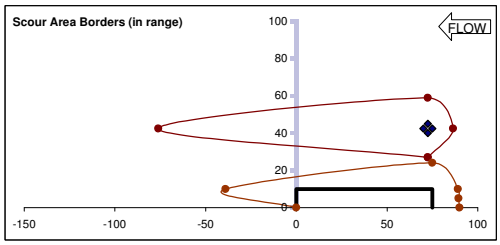
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.90	-7.70
2	2.10	-7.50
4	2.90	-6.70
6	4.15	-5.45
8	5.30	-4.30
10	6.30	-3.30
12	7.60	-2.00
14	8.90	-0.70
16	9.40	-0.20
18	*9.40*	-0.20
20	9.40	-0.20

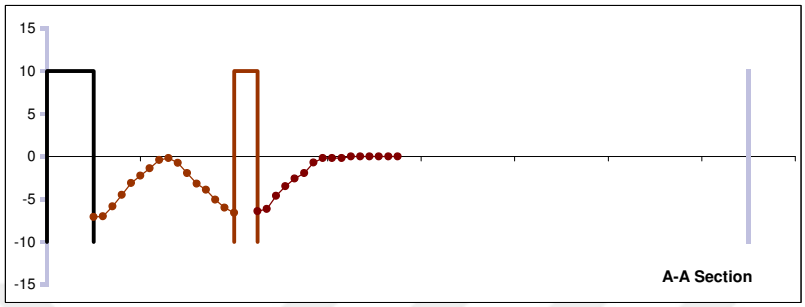
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	13
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	146

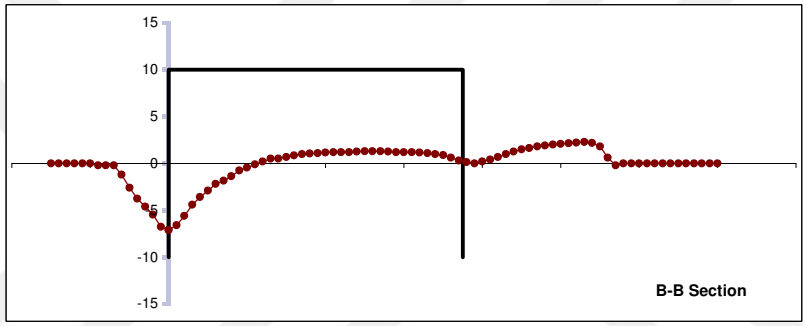


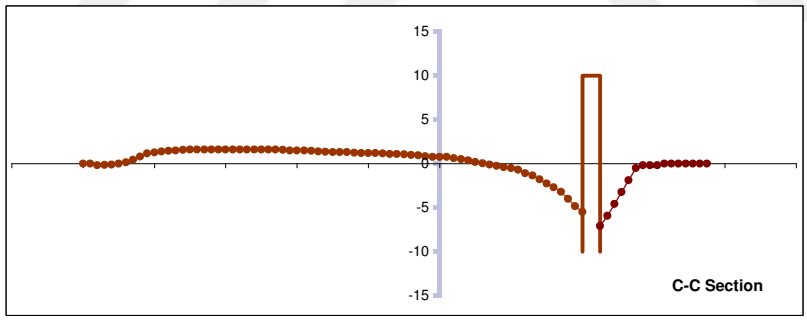
Experiment No : **E48**

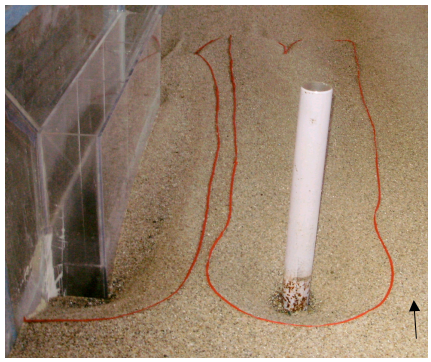




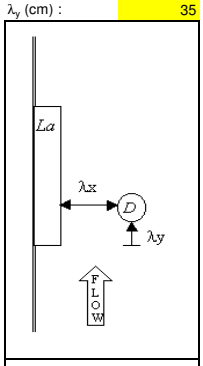


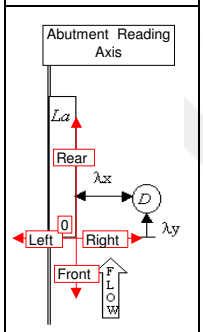


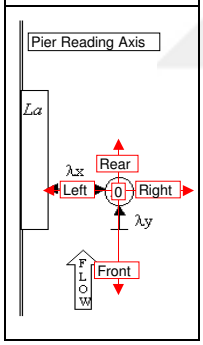


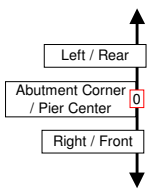


Experiment No :	**E49**
Date :	22.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	35









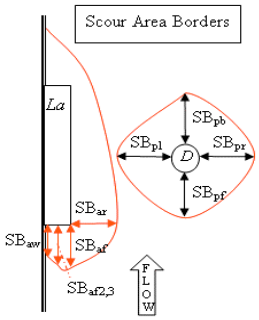
This color was used for raw data readings

This color was used for values enterpolated to sketch

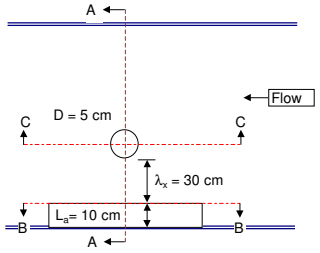
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/Front	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/Front
-140	140					-100.00				
-138	138					-98.00				
-136	136					-96.00				
-134	134					-94.00				
-132	132					-92.00				
-130	130					-90.00				
-128	128					-88.00				
-126	126					-86.00				
-124	124					-84.00				
-122	122					-82.00				
-120	120					-80.00				
-118	118		9.40		-0.20	-78.00				
-116	116		*9.50*		-0.10	-76.00				
-114	114		9.60		0.00	-74.00				
-112	112		*9.70*		0.10	-72.00				
-110	110		9.80		0.20	-70.00				
-108	108		*9.85*		0.25	-68.00				
-106	106		9.90		0.30	-66.00				
-104	104		*9.98*		0.38	-64.00				
-102	102		10.05		0.45	-62.00				
-100	100		*9.98*		0.38	-60.00				
-98	98		9.90		0.30	-58.00				
-96	96		*9.75*		0.15	-56.00				
-94	94		9.60		0.00	-54.00		9.40		-0.20
-92	92		*9.40*		-0.20	-52.00		9.65		0.05
-90	90		9.20		-0.40	-50.00		11.10		1.50
-88	88		*9.10*		-0.50	-48.00		*11.20*		1.60
-86	86		9.00		-0.60	-46.00		11.30		1.70
-84	84		*9.25*		-0.35	-44.00		*11.40*		1.80
-82	82		9.50		-0.10	-42.00		11.50		1.90
-80	80		*9.75*		0.15	-40.00		*11.50*		1.90
-78	78		10.00		0.40	-38.00		11.50		1.90
-76	76		*10.20*		0.60	-36.00		*11.50*		1.90
-74	74		10.40		0.80	-34.00		*11.50*		1.90
-72	72		*10.50*		0.90	-32.00		*11.50*		1.90
-70	70		*10.60*		1.00	-30.00		11.50		1.90
-68	68		10.70		1.10	-28.00		*11.50*		1.90
-66	66		*10.70*		1.10	-26.00		11.50		1.90
-64	64		10.70		1.10	-24.00		*11.50*		1.90
-62	62		*10.80*		1.20	-22.00		11.50		1.90
-60	60		10.90		1.30	-20.00		*11.50*		1.90
-58	58		*10.95*		1.35	-18.00		11.50		1.90
-56	56		11.00		1.40	-16.00		*11.43*		1.83
-54	54		*11.20*		1.60	-14.00		11.35		1.75
-52	52		11.40		1.80	-12.00		*11.38*		1.78
-50	50		*11.45*		1.85	-10.00		11.40		1.80
-48	48		11.50		1.90	-8.00		*11.25*		1.65
-46	46		*11.50*		1.90	-6.00		11.10		1.50
-44	44		11.50		1.90	-4.00		*11.00*		1.40
-42	42		*11.45*		1.85	-2.00		10.90		1.30
-40	40		11.40		1.80	0.00		*10.75*		1.15
-38	38		*11.30*		1.70	2.00		10.60		1.00
-36	36		11.20		1.60	4.00		*10.50*		0.90
-34	34		*11.05*		1.45	6.00		10.40		0.80
-32	32		10.90		1.30	8.00		10.30		0.70
-30	30		*10.85*		1.25	10.00	10.70	10.00	1.10	0.40
-28	28		10.80		1.20	12.00	10.70	9.70	1.10	0.10
-26	26		*10.75*		1.15	14.00	10.15	9.40	0.55	-0.20
-24	24		10.70		1.10	16.00	9.80	9.10	0.20	-0.50
-22	22		10.65		1.05	18.00	9.60	8.80	0.00	-0.80
-20	20		10.40		0.80	20.00	9.60	8.50	0.00	-1.10
-18	18		9.90		0.30	22.00	10.20	8.10	0.60	-1.50
-16	16		9.60		0.00	24.00	10.40	7.75	0.80	-1.85
-14	14		8.90		-0.70	26.00	10.20	7.45	0.60	-2.15
-12	12		8.30		-1.30	28.00	9.25	7.00	-0.35	-2.60
-10	10	2.90	7.60	-6.70	-2.00	30.00	7.85	6.00	-1.75	-3.60
-8	8	*2.78*	6.60	-6.83	-3.00	32.00	6.50	5.70	-3.10	-3.90
-6	6	2.65	5.75	-6.95	-3.85	34.00	5.50	5.10	-4.10	-4.50
-4	4	*2.50*	4.75	-7.10	-4.85	36.00	4.10	4.30	-5.50	-5.30
-2	2	2.35	3.75	-7.25	-5.85	38.00	2.75	3.90	-6.85	-5.70
0	0	3.10	3.10	-6.50	-6.50	40.00	2.00	3.50	-7.60	-6.10
0	0	2.10	3.10	-7.50	-6.50	45.00	2.00	1.90	-7.60	-7.70
2	-2	2.90	3.40	-6.70	-6.20	47.00	2.85	3.00	-6.75	-6.60
4	-4	4.10	4.40	-5.50	-5.20	49.00	4.10	4.25	-5.50	-5.35
6	-6	5.35	5.30	-4.25	-4.30	51.00	5.35	5.50	-4.25	-4.10
8	-8	6.30	6.10	-3.30	-3.50	53.00	5.60	7.00	-4.00	-2.60
10	-10	7.40	7.40	-2.20	-2.20	55.00	6.50	8.30	-3.10	-1.30
12	-12	8.40	9.10	-1.20	-0.50	57.00	7.65	9.40	-1.95	-0.20
14	-14	9.40	9.40	-0.20	-0.20	59.00	8.70	*9.40*	-0.90	-0.20
16	-16	*9.40*	*9.40*	-0.20	-0.20	61.00	9.40	9.40	-0.20	-0.20
18	-18	9.40	9.40	-0.20	-0.20	63.00				
20	-20					65.00				
22	-22					67.00				
24	-24					69.00				
26	-26					71.00				
28	-28					73.00				
30	-30					75.00				

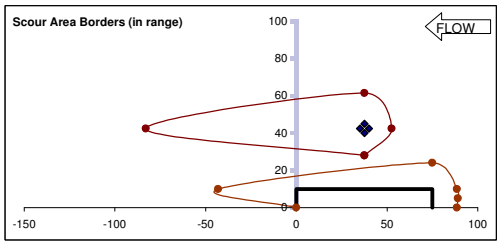
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.90	-6.70
2	3.00	-6.60
4	4.20	-5.40
6	5.70	-3.90
8	6.65	-2.95
10	7.80	-1.80
12	9.20	-0.40
14	9.50	-0.10
16	*9.50*	-0.10
18	9.50	-0.10
20		

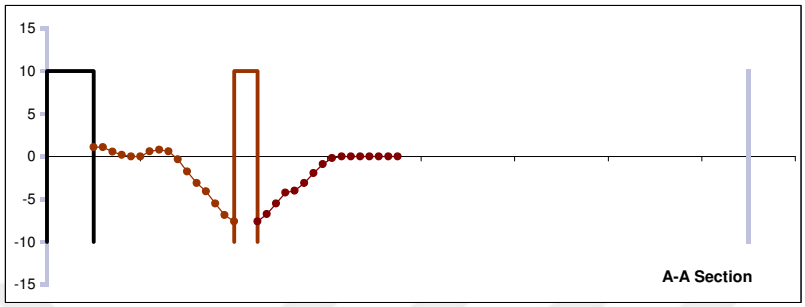
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	13.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	12
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	16.5
SB_{pb}	Pier Rear	118

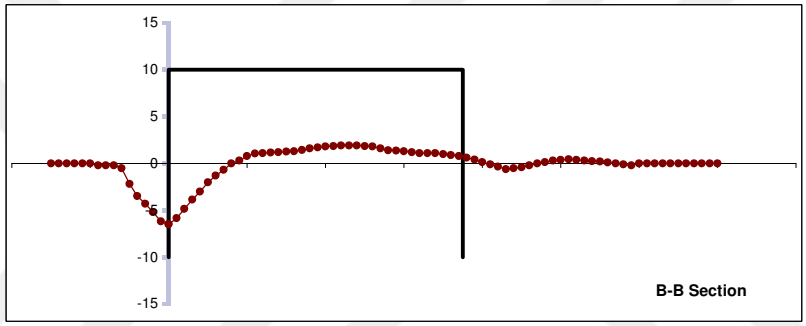


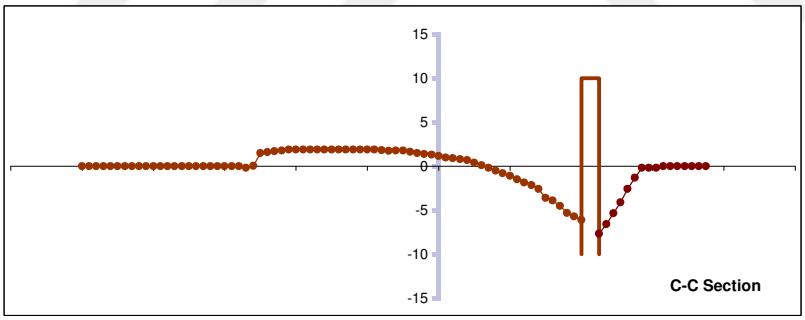
Experiment No : **E49**

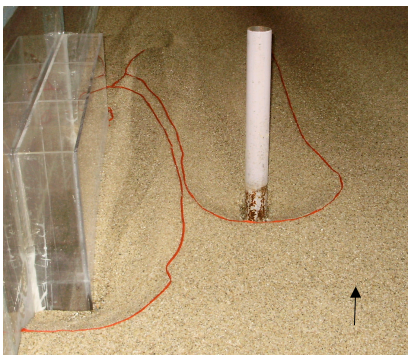


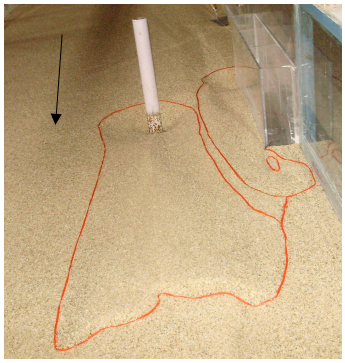






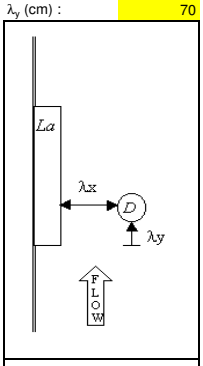


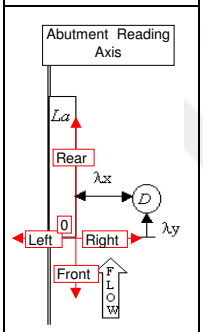


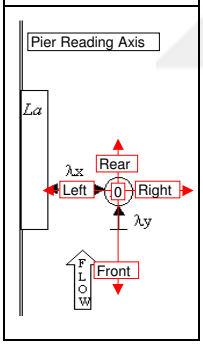


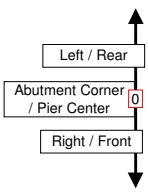
Experiment No : **E50**

Date :	25.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	70









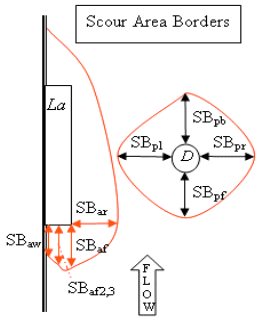
This color was used for raw data readings

This color was used for values enterpolated to sketch

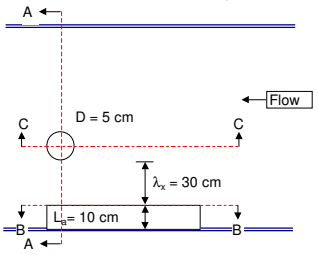
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	
-140	140					-100.00					
-138	138					-98.00					
-136	136					-96.00					
-134	134					-94.00					
-132	132					-92.00					
-130	130					-90.00					
-128	128		9.40		-0.20	-88.00					
-126	126		*9.65*		0.05	-86.00					
-124	124		9.90		0.30	-84.00					
-122	122		*9.90*		0.30	-82.00					
-120	120		9.90		0.30	-80.00					
-118	118		*9.90*		0.30	-78.00					
-116	116		9.90		0.30	-76.00					
-114	114		*9.95*		0.35	-74.00					
-112	112		10.00		0.40	-72.00					
-110	110		*10.55*		0.95	-70.00					
-108	108		11.10		1.50	-68.00					
-106	106		*11.15*		1.55	-66.00					
-104	104		11.20		1.60	-64.00					
-102	102		*11.13*		1.53	-62.00					
-100	100		11.05		1.45	-60.00					
-98	98		*10.95*		1.35	-58.00					
-96	96		10.85		1.25	-56.00					
-94	94		*10.68*		1.08	-54.00					
-92	92		10.50		0.90	-52.00					
-90	90		*10.30*		0.70	-50.00		9.40		-0.20	
-88	88		10.10		0.50	-48.00		10.00		0.40	
-86	86		*9.98*		0.38	-46.00		11.70		2.10	
-84	84		9.85		0.25	-44.00		*11.80*		2.20	
-82	82		*9.93*		0.33	-42.00		11.90		2.30	
-80	80		10.00		0.40	-40.00		*11.90*		2.30	
-78	78		*10.20*		0.60	-38.00		11.90		2.30	
-76	76		10.40		0.80	-36.00		*11.93*		2.33	
-74	74		*10.50*		0.90	-34.00		*11.95*		2.35	
-72	72		10.60		1.00	-32.00		*11.98*		2.38	
-70	70		*10.60*		1.00	-30.00		12.00		2.40	
-68	68		10.60		1.00	-28.00		*11.90*		2.30	
-66	66		*10.70*		1.10	-26.00		11.80		2.20	
-64	64		10.80		1.20	-24.00		*11.80*		2.20	
-62	62		*10.90*		1.30	-22.00		11.80		2.20	
-60	60		11.00		1.40	-20.00		*11.78*		2.18	
-58	58		*11.05*		1.45	-18.00		11.75		2.15	
-56	56		11.10		1.50	-16.00		*11.73*		2.13	
-54	54		*11.05*		1.45	-14.00		11.70		2.10	
-52	52		11.00		1.40	-12.00		*11.60*		2.00	
-50	50		*11.00*		1.40	-10.00		11.50		1.90	
-48	48		11.00		1.40	-8.00		*11.40*		1.80	
-46	46		*10.95*		1.35	-6.00		11.30		1.70	
-44	44		10.90		1.30	-4.00		*11.20*		1.60	
-42	42		*10.85*		1.25	-2.00		11.10		1.50	
-40	40		10.80		1.20	0.00		*11.05*		1.45	
-38	38		*10.70*		1.10	2.00		11.00		1.40	
-36	36		10.60		1.00	4.00		*10.85*		1.25	
-34	34		*10.55*		0.95	6.00		10.70		1.10	
-32	32		10.50		0.90	8.00		10.60		1.00	
-30	30		*10.45*		0.85	10.00	10.20	10.35	0.60	0.75	
-28	28		10.40		0.80	12.00	10.60	10.00	1.00	0.40	
-26	26		*10.30*		0.70	14.00	10.40	9.70	0.80	0.10	
-24	24		10.20		0.60	16.00	10.30	9.40	0.70	-0.20	
-22	22		9.65		0.05	18.00	10.15	9.20	0.55	-0.40	
-20	20		9.20		-0.40	20.00	10.15	8.90	0.55	-0.70	
-18	18		8.90		-0.70	22.00	10.15	8.60	0.55	-1.00	
-16	16		8.20		-1.40	24.00	10.15	8.35	0.55	-1.25	
-14	14		7.80		-1.80	26.00	10.20	8.00	0.60	-1.60	
-12	12		7.30		-2.30	28.00	9.50	7.50	-0.10	-2.10	
-10	10	1.60	6.40	-8.00	-3.20	30.00	8.40	7.25	-1.20	-2.35	
-8	8	*1.60*	5.80	-8.00	-3.80	32.00	7.00	6.80	-2.60	-2.80	
-6	6	1.60	4.90	-8.00	-4.70	34.00	5.90	6.20	-3.70	-3.40	
-4	4	*1.60*	3.90	-8.00	-5.70	36.00	4.80	5.50	-4.80	-4.10	
-2	2	1.60	3.00	-8.00	-6.60	38.00	3.25	4.95	-6.35	-4.65	
0	0	2.40	2.40	-7.20	-7.20	40.00	2.50	4.20	-7.10	-5.40	
0	0	2.40	2.40	-7.20	-7.20	45.00	2.30	2.50	-7.30	-7.10	
2	-2	2.60	2.90	-7.00	-6.70	47.00	3.10	3.80	-6.50	-5.80	
4	-4	3.60	4.00	-6.00	-5.60	49.00	4.70	4.70	-4.90	-4.90	
6	-6	4.90	4.70	-4.70	-4.90	51.00	5.65	5.90	-3.95	-3.70	
8	-8	6.10	5.70	-3.50	-3.90	53.00	6.20	7.40	-3.40	-2.20	
10	-10	7.10	6.85	-2.50	-2.75	55.00	7.15	8.70	-2.45	-0.90	
12	-12	8.00	7.90	-1.60	-1.70	57.00	8.40	9.40	-1.20	-0.20	
14	-14	9.40	9.40	-0.20	-0.20	59.00	9.40		-0.20		
16	-16	*9.40*	*9.40*	-0.20	-0.20	61.00	*9.40*		-0.20		
18	-18	9.40	9.40	-0.20	-0.20	63.00	9.40		-0.20		
20	-20					65.00					
22	-22					67.00					
24	-24					69.00					
26	-26					71.00					
28	-28					73.00					
30	-30					75.00					

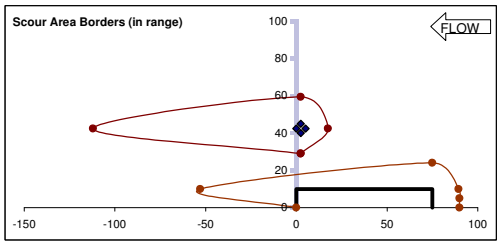
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.60	-8.00
2	1.80	-7.80
4	2.80	-6.80
6	4.00	-5.60
8	5.20	-4.40
10	6.30	-3.30
12	7.50	-2.10
14	8.70	-0.90
16	9.40	-0.20
18	*9.40*	-0.20
20	9.40	-0.20

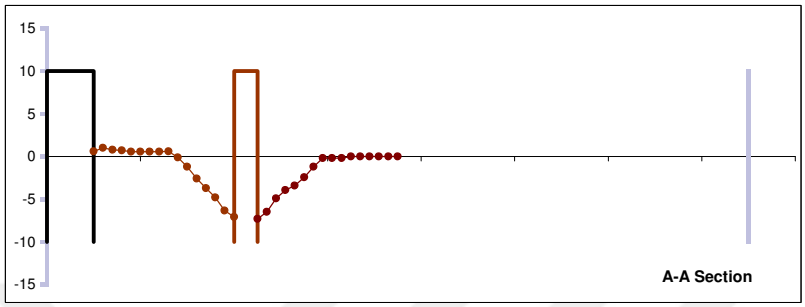
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	11
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	112

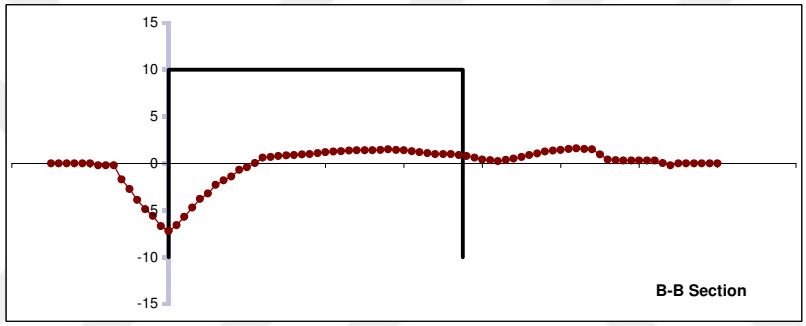


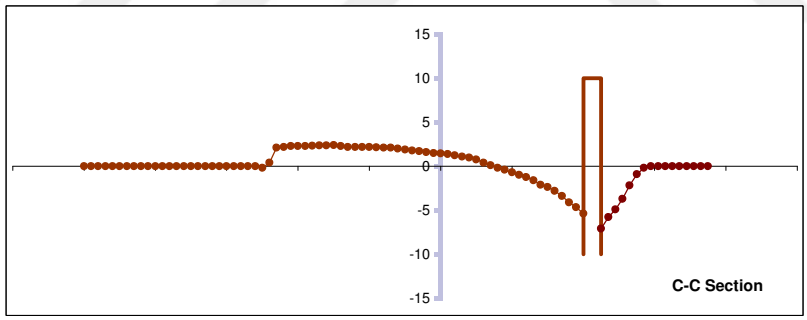
Experiment No : **E50**

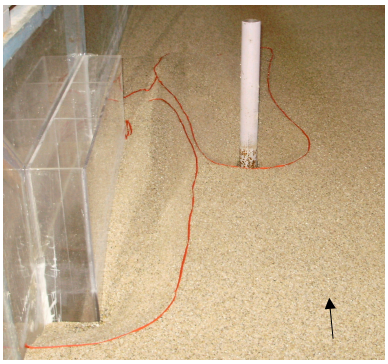


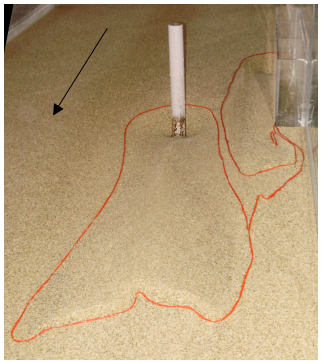




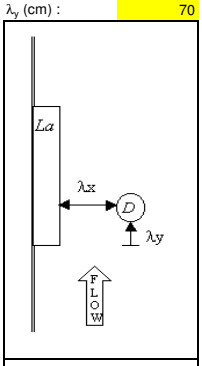


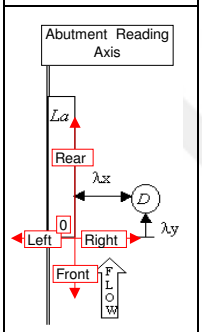


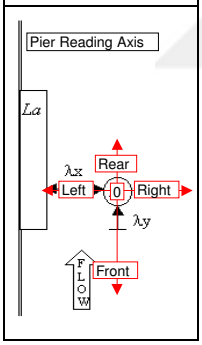


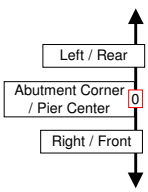


Experiment No :	**E51**
Date :	28.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	70









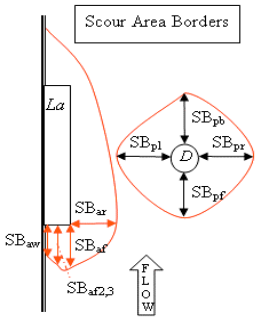
This color was used for raw data readings

This color was used for values enterpolated to sketch

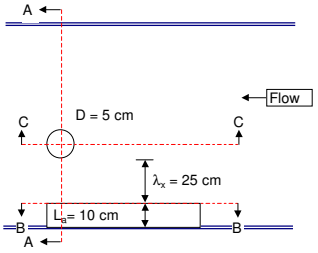
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-105.00				
-138	138					-103.00				
-136	136					-101.00				
-134	134					-99.00				
-132	132		9.40		-0.20	-97.00				
-130	130		*9.45*		-0.15	-95.00				
-128	128		9.50		-0.10	-93.00				
-126	126		*9.55*		-0.05	-91.00				
-124	124		9.60		0.00	-89.00				
-122	122		*9.85*		0.25	-87.00				
-120	120		10.10		0.50	-85.00				
-118	118		*10.15*		0.55	-83.00				
-116	116		10.20		0.60	-81.00				
-114	114		*10.20*		0.60	-79.00				
-112	112		10.20		0.60	-77.00				
-110	110		*10.15*		0.55	-75.00				
-108	108		10.10		0.50	-73.00				
-106	106		*10.00*		0.40	-71.00				
-104	104		9.90		0.30	-69.00				
-102	102		9.80		0.20	-67.00				
-100	100		*9.60*		0.00	-65.00				
-98	98		9.40		-0.20	-63.00				
-96	96		*9.30*		-0.30	-61.00				
-94	94		9.20		-0.40	-59.00				
-92	92		*9.30*		-0.30	-57.00				
-90	90		9.40		-0.20	-55.00				
-88	88		*9.20*		-0.40	-53.00		9.50		-0.10
-86	86		9.00		-0.60	-51.00		9.90		0.30
-84	84		*9.10*		-0.50	-49.00		11.30		1.70
-82	82		9.20		-0.40	-47.00		11.80		2.20
-80	80		*9.65*		0.05	-45.00		*11.85*		2.25
-78	78		10.10		0.50	-43.00		11.90		2.30
-76	76		*10.20*		0.60	-41.00		*12.00*		2.40
-74	74		10.30		0.70	-39.00		12.10		2.50
-72	72		*10.35*		0.75	-37.00		*12.14*		2.54
-70	70		10.40		0.80	-35.00		*12.17*		2.57
-68	68		*10.45*		0.85	-33.00		12.20		2.60
-66	66		10.50		0.90	-31.00		*12.20*		2.60
-64	64		*10.55*		0.95	-29.00		12.20		2.60
-62	62		10.60		1.00	-27.00		*12.15*		2.55
-60	60		*10.70*		1.10	-25.00		12.10		2.50
-58	58		10.80		1.20	-23.00		*12.10*		2.50
-56	56		*10.90*		1.30	-21.00		12.10		2.50
-54	54		11.00		1.40	-19.00		*12.10*		2.50
-52	52		*11.05*		1.45	-17.00		12.10		2.50
-50	50		11.10		1.50	-15.00		*12.05*		2.45
-48	48		*11.10*		1.50	-13.00		12.00		2.40
-46	46		11.10		1.50	-11.00		*11.90*		2.30
-44	44		*11.05*		1.45	-9.00		11.80		2.20
-42	42		11.00		1.40	-7.00		*11.70*		2.10
-40	40		*10.90*		1.30	-5.00		11.60		2.00
-38	38		10.80		1.20	-3.00		*11.45*		1.85
-36	36		*10.70*		1.10	-1.00		11.30		1.70
-34	34		10.60		1.00	1.00		*11.15*		1.55
-32	32		*10.60*		1.00	3.00		11.00		1.40
-30	30		10.60		1.00	5.00		*10.90*		1.30
-28	28		*10.50*		0.90	7.00		10.80		1.20
-26	26		10.40		0.80	9.00		10.60		1.00
-24	24		*10.35*		0.75	11.00	9.80	10.30	0.20	0.70
-22	22		10.30		0.70	13.00	10.40	9.80	0.80	0.20
-20	20		10.10		0.50	15.00	10.50	9.40	0.90	-0.20
-18	18		9.60		0.00	17.00	10.40	9.10	0.80	-0.50
-16	16		9.10		-0.50	19.00	10.30	8.80	0.70	-0.80
-14	14		8.70		-0.90	21.00	10.10	8.40	0.50	-1.20
-12	12		8.00		-1.60	23.00	9.50	8.00	-0.10	-1.60
-10	10	2.90	7.40	-6.70	-2.20	25.00	8.50	7.50	-1.10	-2.10
-8	8	*2.70*	6.70	-6.90	-2.90	27.00	7.40	7.10	-2.20	-2.50
-6	6	2.50	5.70	-7.10	-3.90	29.00	6.50	6.60	-3.10	-3.00
-4	4	*2.35*	4.30	-7.25	-5.30	31.00	5.00	5.90	-4.60	-3.70
-2	2	2.20	3.60	-7.40	-6.00	33.00	4.00	5.20	-5.60	-4.40
0	0	2.90	2.90	-6.70	-6.70	35.00	3.10	4.40	-6.50	-5.20
0	0	2.90	2.90	-6.70	-6.70	40.00	2.80	2.40	-6.80	-7.20
2	-2	3.00	3.50	-6.60	-6.10	42.00	3.50	4.00	-6.10	-5.60
4	-4	4.40	4.70	-5.20	-4.90	44.00	4.50	5.10	-5.10	-4.50
6	-6	5.50	5.10	-4.10	-4.50	46.00	5.60	6.40	-4.00	-3.20
8	-8	6.45	6.00	-3.15	-3.60	48.00	6.30	7.90	-3.30	-1.70
10	-10	7.50	7.60	-2.10	-2.00	50.00	6.80	9.40	-2.80	-0.20
12	-12	8.70	8.50	-0.90	-1.10	52.00	7.80		-1.80	
14	-14	9.40	9.40	-0.20	-0.20	54.00	8.80		-0.80	
16	-16					56.00	9.40		-0.20	
18	-18					58.00				
20	-20					60.00				
22	-22					62.00				
24	-24					64.00				
26	-26					66.00				
28	-28					68.00				
30	-30					70.00				

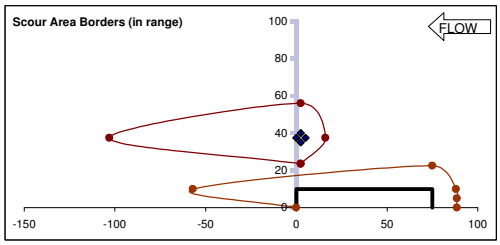
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.70	-6.90
2	2.90	-6.70
4	3.90	-5.70
6	5.30	-4.30
8	6.50	-3.10
10	7.70	-1.90
12	8.60	-1.00
14	9.40	-0.20
16	*9.40*	-0.20
18	9.40	-0.20
20	9.40	-0.20

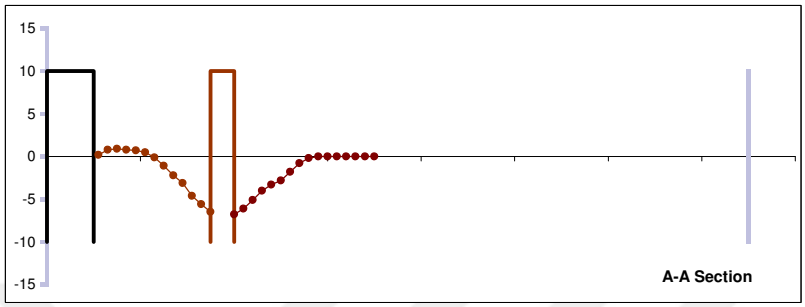
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	13.5
SB_{af}	Abutment Corner Front	13
SB_{ar}	Abutment Corner Right	12.5
SB_{pl}	Pier Left	11.5
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	16
SB_{pb}	Pier Rear	103

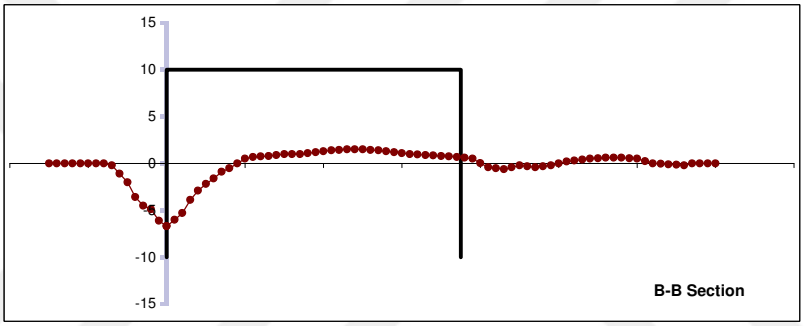


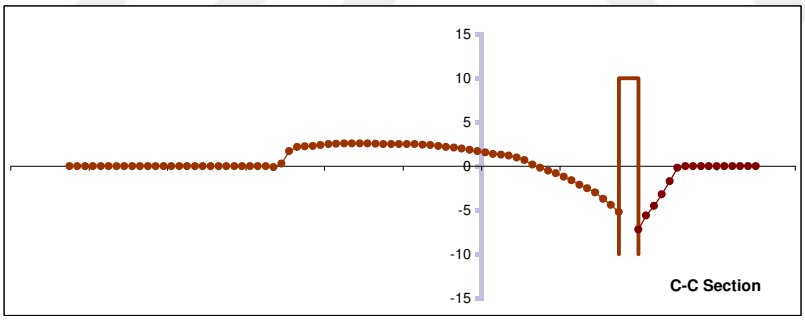
Experiment No : **E51**

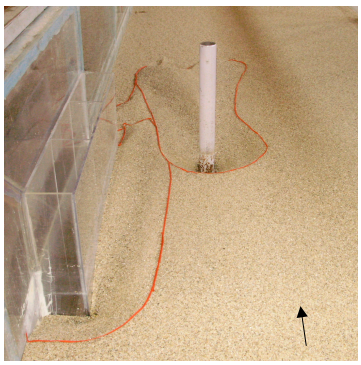


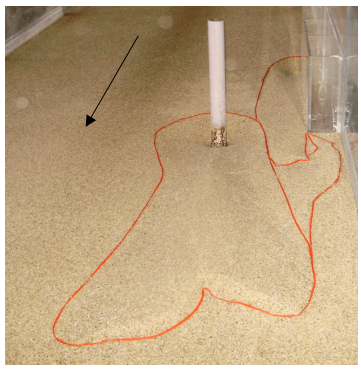




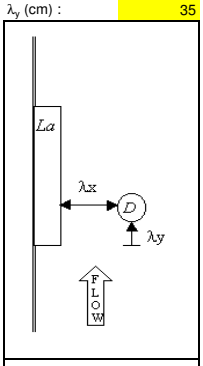


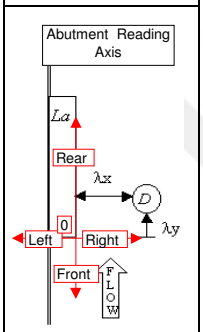


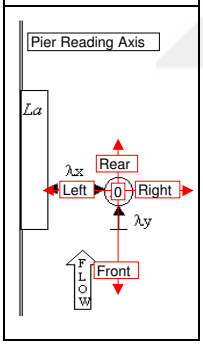


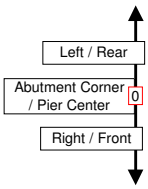


Experiment No :	**E52**
Date :	30.03.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	35







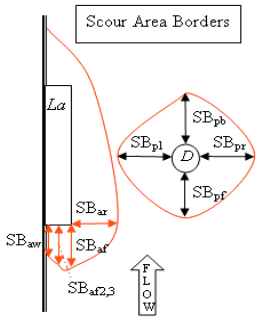


This color was used for raw data readings
This color was used for values enterpolated to sketch

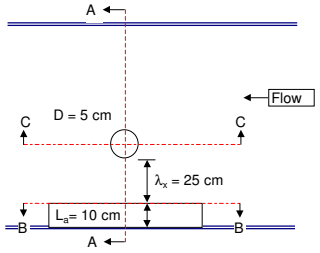
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140		9.40		-0.20	-105.00				
-138	138		*9.70*		0.10	-103.00				
-136	136		10.00		0.40	-101.00				
-134	134		*10.10*		0.50	-99.00				
-132	132		10.20		0.60	-97.00				
-130	130		*10.30*		0.70	-95.00				
-128	128		10.40		0.80	-93.00				
-126	126		*10.50*		0.90	-91.00				
-124	124		10.60		1.00	-89.00				
-122	122		*10.60*		1.00	-87.00		9.40		-0.20
-120	120		10.60		1.00	-85.00		9.60		0.00
-118	118		10.60		1.00	-83.00		10.00		0.40
-116	116		*10.60*		1.00	-81.00		10.35		0.75
-114	114		10.60		1.00	-79.00		10.60		1.00
-112	112		*10.70*		1.10	-77.00		*11.15*		1.55
-110	110		10.80		1.20	-75.00		11.70		2.10
-108	108		*10.85*		1.25	-73.00		*11.80*		2.20
-106	106		10.90		1.30	-71.00		11.90		2.30
-104	104		*10.90*		1.30	-69.00		*11.90*		2.30
-102	102		10.90		1.30	-67.00		11.90		2.30
-100	100		*10.75*		1.15	-65.00		*11.90*		2.30
-98	98		10.60		1.00	-63.00		11.90		2.30
-96	96		*10.70*		1.10	-61.00		*11.90*		2.30
-94	94		10.80		1.20	-59.00		11.90		2.30
-92	92		*10.50*		0.90	-57.00		*11.90*		2.30
-90	90		10.20		0.60	-55.00		11.90		2.30
-88	88		*10.05*		0.45	-53.00		*11.85*		2.25
-86	86		9.90		0.30	-51.00		11.80		2.20
-84	84		*9.88*		0.28	-49.00		*11.80*		2.20
-82	82		9.85		0.25	-47.00		11.80		2.20
-80	80		*9.98*		0.38	-45.00		*11.80*		2.20
-78	78		10.10		0.50	-43.00		11.80		2.20
-76	76		*10.20*		0.60	-41.00		*11.80*		2.20
-74	74		10.30		0.70	-39.00		*11.80*		2.20
-72	72		*10.40*		0.80	-37.00		*11.80*		2.20
-70	70		*10.50*		0.90	-35.00		11.80		2.20
-68	68		10.60		1.00	-33.00		*11.70*		2.10
-66	66		*10.75*		1.15	-31.00		11.60		2.00
-64	64		10.90		1.30	-29.00		*11.55*		1.95
-62	62		*10.90*		1.30	-27.00		11.50		1.90
-60	60		10.90		1.30	-25.00		*11.40*		1.80
-58	58		*11.00*		1.40	-23.00		11.30		1.70
-56	56		11.10		1.50	-21.00		*11.30*		1.70
-54	54		*11.18*		1.58	-19.00		11.30		1.70
-52	52		11.25		1.65	-17.00		*11.25*		1.65
-50	50		*11.38*		1.78	-15.00		11.20		1.60
-48	48		11.50		1.90	-13.00		*11.05*		1.45
-46	46		*11.50*		1.90	-11.00		10.90		1.30
-44	44		11.50		1.90	-9.00		*10.80*		1.20
-42	42		*11.40*		1.80	-7.00		10.70		1.10
-40	40		11.30		1.70	-5.00		*10.65*		1.05
-38	38		*11.15*		1.55	-3.00		10.60		1.00
-36	36		11.00		1.40	-1.00		*10.50*		0.90
-34	34		*10.85*		1.25	1.00		10.40		0.80
-32	32		10.70		1.10	3.00		10.20		0.60
-30	30		*10.65*		1.05	5.00		9.80		0.20
-28	28		10.60		1.00	7.00		9.50		-0.10
-26	26		*10.50*		0.90	9.00		9.30		-0.30
-24	24		10.40		0.80	11.00	10.50	8.90	0.90	-0.70
-22	22		10.00		0.40	13.00	10.10	8.65	0.50	-0.95
-20	20		9.60		0.00	15.00	9.60	8.40	0.00	-1.20
-18	18		9.10		-0.50	17.00	9.25	8.20	-0.35	-1.40
-16	16		8.50		-1.10	19.00	9.30	7.90	-0.30	-1.70
-14	14		8.00		-1.60	21.00	9.50	7.60	-0.10	-2.00
-12	12		7.10		-2.50	23.00	8.80	7.30	-0.80	-2.30
-10	10	1.60	6.50	-8.00	-3.10	25.00	7.60	6.85	-2.00	-2.75
-8	8	*1.55*	5.90	-8.05	-3.70	27.00	6.10	6.40	-3.50	-3.20
-6	6	1.50	5.00	-8.10	-4.60	29.00	4.50	5.60	-5.10	-4.00
-4	4	*1.50*	3.90	-8.10	-5.70	31.00	3.50	4.85	-6.10	-4.75
-2	2	1.50	2.85	-8.10	-6.75	33.00	2.10	3.90	-7.50	-5.70
0	0	2.10	2.10	-7.50	-7.50	35.00	1.50	3.40	-8.10	-6.20
0	0	2.10	2.10	-7.50	-7.50	40.00	1.50	1.70	-8.10	-7.90
2	-2	2.50	3.00	-7.10	-6.60	42.00	2.50	3.00	-7.10	-6.60
4	-4	3.40	3.90	-6.20	-5.70	44.00	3.65	4.70	-5.95	-4.90
6	-6	5.00	4.65	-4.60	-4.95	46.00	4.90	5.70	-4.70	-3.90
8	-8	6.10	5.60	-3.50	-4.00	48.00	5.90	6.80	-3.70	-2.80
10	-10	7.00	6.70	-2.60	-2.90	50.00	6.90	8.00	-2.70	-1.60
12	-12	8.00	8.10	-1.60	-1.50	52.00	7.60	9.40	-2.00	-0.20
14	-14	9.40	9.10	-0.20	-0.50	54.00	8.80	9.40	-0.80	-0.20
16	-16		9.40		-0.20	56.00	9.40		-0.20	
18	-18					58.00				
20	-20					60.00				
22	-22					62.00				
24	-24					64.00				
26	-26					66.00				
28	-28					68.00				
30	-30					70.00				

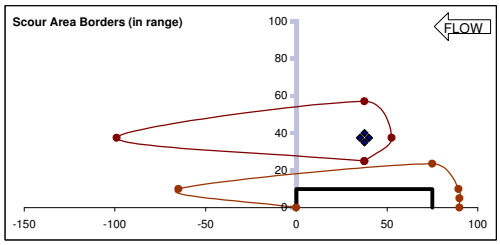
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.60	-8.00
2	1.80	-7.80
4	2.70	-6.90
6	3.85	-5.75
8	5.20	-4.40
10	6.10	-3.50
12	7.20	-2.40
14	8.30	-1.30
16	9.40	-0.20
18		
20		

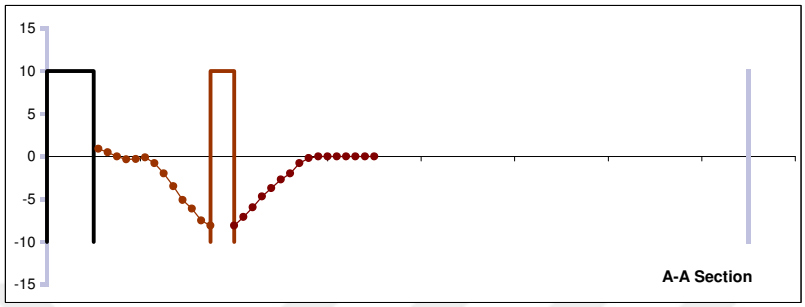
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	13.5
SB_{pl}	Pier Left	10
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	134

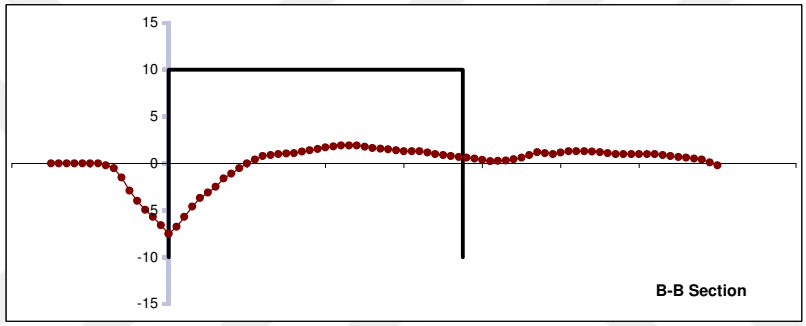


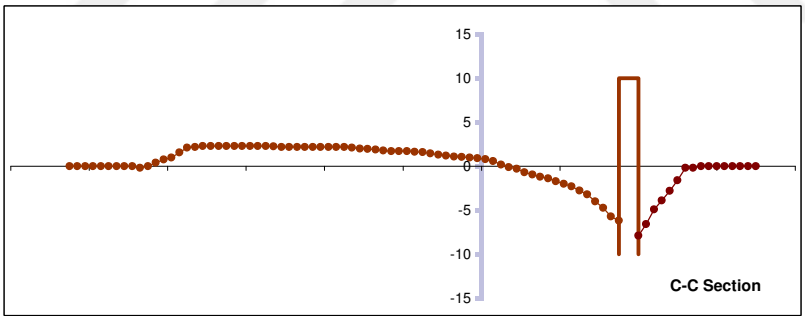
Experiment No : **E52**

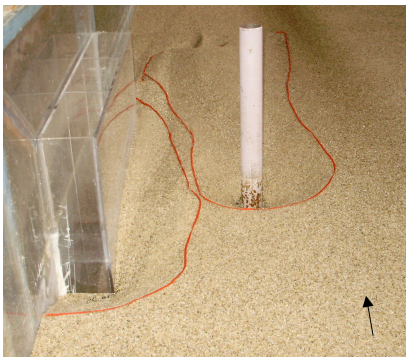


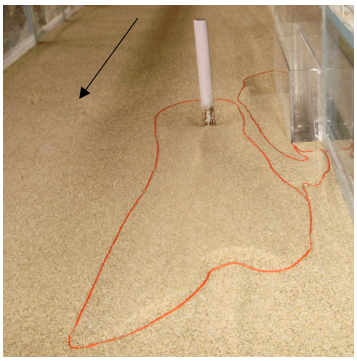






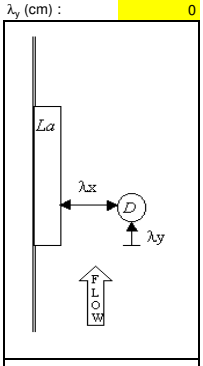


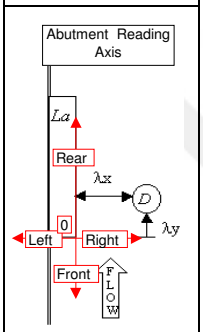


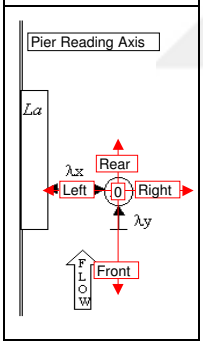


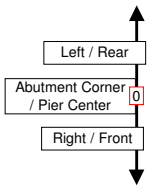
Experiment No : **E53**

Date :	04.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	0









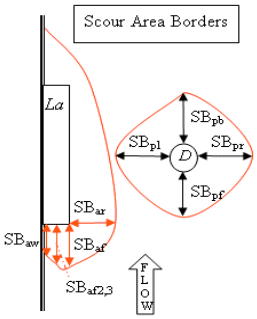
This color was used for raw data readings

This color was used for values enterpolated to sketch

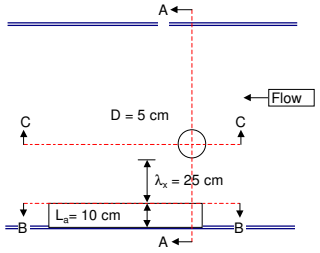
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-105.00				
-138	138					-103.00				
-136	136					-101.00				
-134	134					-99.00				
-132	132					-97.00				
-130	130		9.50		-0.10	-95.00				
-128	128		*9.50*		-0.10	-93.00		9.40		-0.20
-126	126		9.50		-0.10	-91.00		9.70		0.10
-124	124		*9.65*		0.05	-89.00		10.25		0.65
-122	122		9.80		0.20	-87.00		*10.58*		0.98
-120	120		*10.30*		0.70	-85.00		10.90		1.30
-118	118		10.80		1.20	-83.00		*11.05*		1.45
-116	116		*11.15*		1.55	-81.00		11.20		1.60
-114	114		11.50		1.90	-79.00		*11.28*		1.68
-112	112		*11.45*		1.85	-77.00		11.35		1.75
-110	110		11.40		1.80	-75.00		*11.38*		1.78
-108	108		*11.30*		1.70	-73.00		11.40		1.80
-106	106		11.20		1.60	-71.00		*11.40*		1.80
-104	104		*11.10*		1.50	-69.00		11.40		1.80
-102	102		11.00		1.40	-67.00		*11.40*		1.80
-100	100		*10.90*		1.30	-65.00		11.40		1.80
-98	98		10.80		1.20	-63.00		*11.40*		1.80
-96	96		*10.70*		1.10	-61.00		11.40		1.80
-94	94		10.60		1.00	-59.00		*11.40*		1.80
-92	92		*10.35*		0.75	-57.00		11.40		1.80
-90	90		10.10		0.50	-55.00		*11.40*		1.80
-88	88		*9.93*		0.33	-53.00		11.40		1.80
-86	86		9.75		0.15	-51.00		*11.40*		1.80
-84	84		*9.68*		0.08	-49.00		11.40		1.80
-82	82		9.60		0.00	-47.00		*11.35*		1.75
-80	80		*9.80*		0.20	-45.00		11.30		1.70
-78	78		10.00		0.40	-43.00		*11.20*		1.60
-76	76		*10.10*		0.50	-41.00		11.10		1.50
-74	74		10.20		0.60	-39.00		*11.10*		1.50
-72	72		*10.35*		0.75	-37.00		11.10		1.50
-70	70		10.50		0.90	-35.00		*11.05*		1.45
-68	68		*10.55*		0.95	-33.00		11.00		1.40
-66	66		10.60		1.00	-31.00		*10.90*		1.30
-64	64		*10.60*		1.00	-29.00		10.80		1.20
-62	62		10.60		1.00	-27.00		*10.75*		1.15
-60	60		*10.65*		1.05	-25.00		10.70		1.10
-58	58		10.70		1.10	-23.00		*10.70*		1.10
-56	56		*10.70*		1.10	-21.00		10.70		1.10
-54	54		10.70		1.10	-19.00		*10.65*		1.05
-52	52		*10.70*		1.10	-17.00		10.60		1.00
-50	50		10.70		1.10	-15.00		*10.50*		0.90
-48	48		*10.70*		1.10	-13.00		10.40		0.80
-46	46		10.70		1.10	-11.00		*10.40*		0.80
-44	44		*10.65*		1.05	-9.00		10.40		0.80
-42	42		10.60		1.00	-7.00		*10.40*		0.80
-40	40		*10.60*		1.00	-5.00		10.40		0.80
-38	38		10.60		1.00	-3.00		*10.30*		0.70
-36	36		*10.50*		0.90	-1.00		10.20		0.60
-34	34		10.40		0.80	1.00		*10.05*		0.45
-32	32		*10.35*		0.75	3.00		9.90		0.30
-30	30		10.30		0.70	5.00		*9.80*		0.20
-28	28		*10.05*		0.45	7.00		9.70		0.10
-26	26		9.80		0.20	9.00		*9.55*		-0.05
-24	24		*9.70*		0.10	11.00	2.50	9.40	-7.10	-0.20
-22	22		9.60		0.00	13.00	4.00	9.35	-5.60	-0.25
-20	20		9.30		-0.30	15.00	5.00	9.10	-4.60	-0.50
-18	18		8.90		-0.70	17.00	6.50	8.80	-3.10	-0.80
-16	16		8.70		-0.90	19.00	7.20	8.70	-2.40	-0.90
-14	14		8.20		-1.40	21.00	8.40	8.45	-1.20	-1.15
-12	12		7.60		-2.00	23.00	9.10	8.00	-0.50	-1.60
-10	10	2.10	7.05	-7.50	-2.55	25.00	7.75	7.60	-1.85	-2.00
-8	8	2.00	6.40	-7.60	-3.20	27.00	6.65	7.10	-2.95	-2.50
-6	6	*1.90*	5.50	-7.70	-4.10	29.00	5.60	6.50	-4.00	-3.10
-4	4	1.80	4.65	-7.80	-4.95	31.00	4.25	5.75	-5.35	-3.85
-2	2	*2.10*	3.10	-7.50	-6.50	33.00	3.20	4.90	-6.40	-4.70
0	0	2.40	2.40	-7.20	-7.20	35.00	2.80	4.20	-6.80	-5.40
0	0	2.40	2.40	-7.20	-7.20	40.00	2.90	2.40	-6.70	-7.20
2	-2	2.60	3.10	-7.00	-6.50	42.00	3.70	3.90	-5.90	-5.70
4	-4	4.00	4.00	-5.60	-5.60	44.00	4.70	4.90	-4.90	-4.70
6	-6	5.40	5.20	-4.20	-4.40	46.00	5.90	6.35	-3.70	-3.25
8	-8	6.30	6.10	-3.30	-3.50	48.00	7.00	7.75	-2.60	-1.85
10	-10	7.25	7.00	-2.35	-2.60	50.00	7.90	8.90	-1.70	-0.70
12	-12	7.40	8.40	-2.20	-1.20	52.00	9.10	9.40	-0.50	-0.20
14	-14	8.90	9.40	-0.70	-0.20	54.00	9.50		-0.10	
16	-16	7.90		-1.70		56.00				
18	-18	6.65		-2.95		58.00				
20	-20	5.60		-4.00		60.00				
22	-22	4.50		-5.10		62.00				
24	-24	3.40		-6.20		64.00				
26	-26	2.50		-7.10		66.00				
28	-28	2.50		-7.10		68.00				
30	-30	2.50		-7.10		70.00				

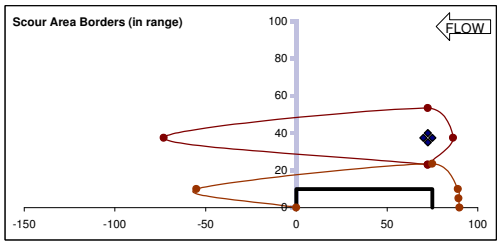
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.10	-7.50
2	2.30	-7.30
4	3.40	-6.20
6	4.60	-5.00
8	5.70	-3.90
10	7.00	-2.60
12	8.10	-1.50
14	9.40	-0.20
16	*9.40*	-0.20
18	9.40	-0.20
20		

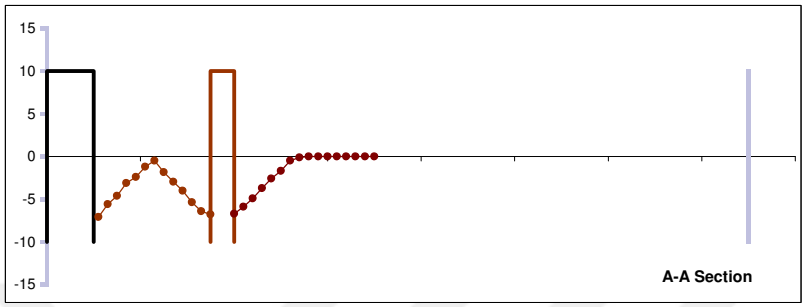
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	13.5
SB_{pl}	Pier Left	12
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	143

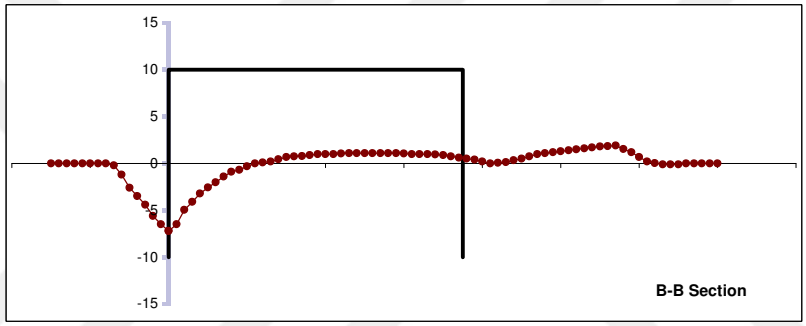


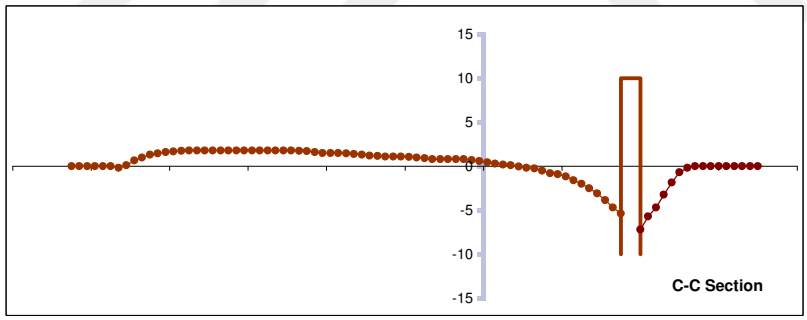
Experiment No : **E53**

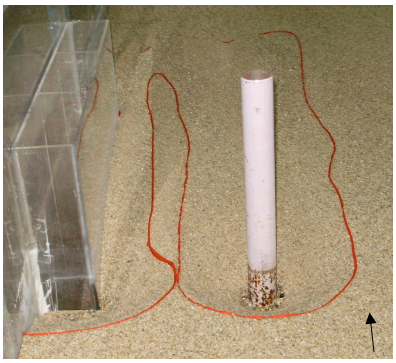


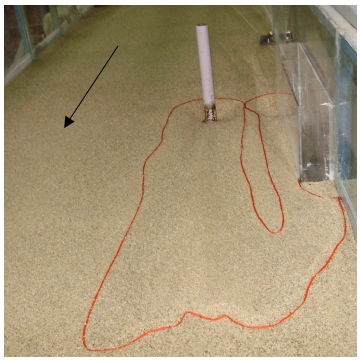






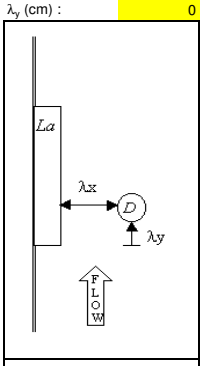


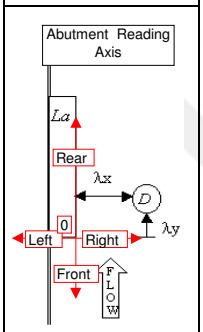


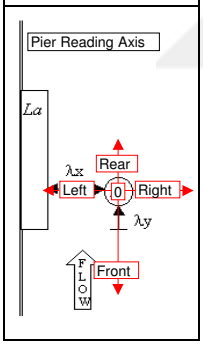


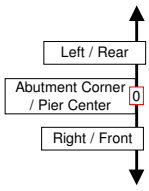
Experiment No : **E54**

Date :	06.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	0









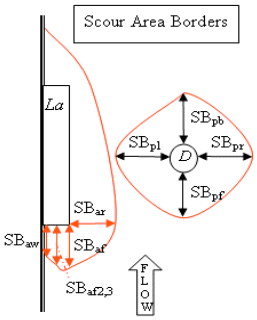
This color was used for raw data readings

This color was used for values enterpolated to sketch

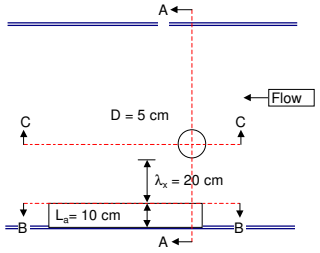
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-110.00				
-138	138					-108.00				
-136	136					-106.00				
-134	134					-104.00				
-132	132					-102.00				
-130	130					-100.00				
-128	128					-98.00				
-126	126					-96.00				
-124	124		9.50		-0.10	-94.00				
-122	122		*9.50*		-0.10	-92.00				
-120	120		9.50		-0.10	-90.00		9.40		-0.20
-118	118		9.90		0.30	-88.00		9.40		-0.20
-116	116		10.90		1.30	-86.00		10.20		0.60
-114	114		11.10		1.50	-84.00		*10.38*		0.78
-112	112		*10.93*		1.33	-82.00		10.55		0.95
-110	110		10.75		1.15	-80.00		*10.70*		1.10
-108	108		*10.68*		1.08	-78.00		10.85		1.25
-106	106		10.60		1.00	-76.00		*10.93*		1.33
-104	104		*10.40*		0.80	-74.00		11.00		1.40
-102	102		10.20		0.60	-72.00		*11.10*		1.50
-100	100		*10.05*		0.45	-70.00		11.20		1.60
-98	98		9.90		0.30	-68.00		*11.25*		1.65
-96	96		*9.75*		0.15	-66.00		11.30		1.70
-94	94		9.60		0.00	-64.00		*11.30*		1.70
-92	92		*9.53*		-0.08	-62.00		11.30		1.70
-90	90		9.45		-0.15	-60.00		*11.30*		1.70
-88	88		*9.38*		-0.23	-58.00		11.30		1.70
-86	86		9.30		-0.30	-56.00		*11.25*		1.65
-84	84		*9.30*		-0.30	-54.00		11.20		1.60
-82	82		9.30		-0.30	-52.00		*11.20*		1.60
-80	80		*9.55*		-0.05	-50.00		11.20		1.60
-78	78		9.80		0.20	-48.00		*11.20*		1.60
-76	76		*9.95*		0.35	-46.00		11.20		1.60
-74	74		10.10		0.50	-44.00		*11.20*		1.60
-72	72		*10.15*		0.55	-42.00		11.20		1.60
-70	70		10.20		0.60	-40.00		*11.15*		1.55
-68	68		*10.20*		0.60	-38.00		11.10		1.50
-66	66		10.20		0.60	-36.00		*11.10*		1.50
-64	64		*10.40*		0.80	-34.00		11.10		1.50
-62	62		10.60		1.00	-32.00		*11.03*		1.43
-60	60		*10.65*		1.05	-30.00		10.95		1.35
-58	58		10.70		1.10	-28.00		*10.95*		1.35
-56	56		*10.80*		1.20	-26.00		10.95		1.35
-54	54		10.90		1.30	-24.00		*10.85*		1.25
-52	52		*10.90*		1.30	-22.00		10.75		1.15
-50	50		10.90		1.30	-20.00		*10.73*		1.13
-48	48		*10.80*		1.20	-18.00		10.70		1.10
-46	46		10.70		1.10	-16.00		*10.68*		1.08
-44	44		*10.65*		1.05	-14.00		10.65		1.05
-42	42		10.60		1.00	-12.00		*10.53*		0.93
-40	40		*10.60*		1.00	-10.00		10.40		0.80
-38	38		10.60		1.00	-8.00		*10.35*		0.75
-36	36		*10.55*		0.95	-6.00		10.30		0.70
-34	34		10.50		0.90	-4.00		*10.25*		0.65
-32	32		*10.35*		0.75	-2.00		10.20		0.60
-30	30		10.20		0.60	0.00		*10.10*		0.50
-28	28		*10.15*		0.55	2.00		10.00		0.40
-26	26		10.10		0.50	4.00		*9.85*		0.25
-24	24		*10.03*		0.42	6.00		9.70		0.10
-22	22		9.95		0.35	8.00		*9.55*		-0.05
-20	20		9.90		0.30	10.00	3.30	9.40	-6.30	-0.20
-18	18		9.85		0.25	12.00	3.40	9.10	-6.20	-0.50
-16	16		9.60		0.00	14.00	4.65	8.90	-4.95	-0.70
-14	14		9.00		-0.60	16.00	6.25	8.80	-3.35	-0.80
-12	12		8.50		-1.10	18.00	7.30	8.30	-2.30	-1.30
-10	10	3.00	7.75	-6.60	-1.85	20.00	7.70	7.85	-1.90	-1.75
-8	8	2.90	7.10	-6.70	-2.50	22.00	6.50	7.30	-3.10	-2.30
-6	6	*2.75*	6.10	-6.85	-3.50	24.00	5.40	6.70	-4.20	-2.90
-4	4	2.60	5.10	-7.00	-4.50	26.00	4.40	5.85	-5.20	-3.75
-2	2	2.50	4.00	-7.10	-5.60	28.00	3.20	4.80	-6.40	-4.80
0	0	3.30	3.30	-6.30	-6.30	30.00	2.80	4.00	-6.80	-5.60
0	0	3.30	3.30	-6.30	-6.30	35.00	2.90	2.55	-6.70	-7.05
2	-2	3.10	3.70	-6.50	-5.90	37.00	3.60	3.90	-6.00	-5.70
4	-4	4.50	4.80	-5.10	-4.80	39.00	4.90	5.00	-4.70	-4.60
6	-6	5.90	5.30	-3.70	-4.30	41.00	6.10	6.25	-3.50	-3.35
8	-8	7.10	6.20	-2.50	-3.40	43.00	7.10	7.80	-2.50	-1.80
10	-10	7.80	7.80	-1.80	-1.80	45.00	8.20	9.10	-1.40	-0.50
12	-12	6.80	8.65	-2.80	-0.95	47.00	9.40	9.40	-0.20	-0.20
14	-14	5.50	9.40	-4.10	-0.20	49.00		*9.40*		-0.20
16	-16	4.80	*9.40*	-4.80	-0.20	51.00		9.40		-0.20
18	-18	3.70	9.40	-5.90	-0.20	53.00				
20	-20	2.90		-6.70		55.00				
22	-22					57.00				
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

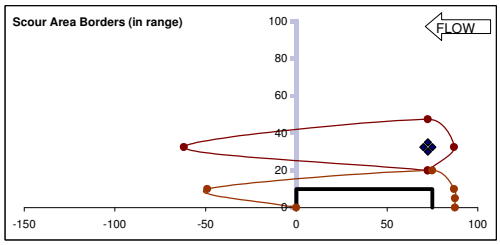
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	3.00	-6.60
2	3.20	-6.40
4	4.10	-5.50
6	5.50	-4.10
8	6.60	-3.00
10	8.00	-1.60
12	8.90	-0.70
14	9.40	-0.20
16	*9.40*	-0.20
18	9.40	-0.20
20		

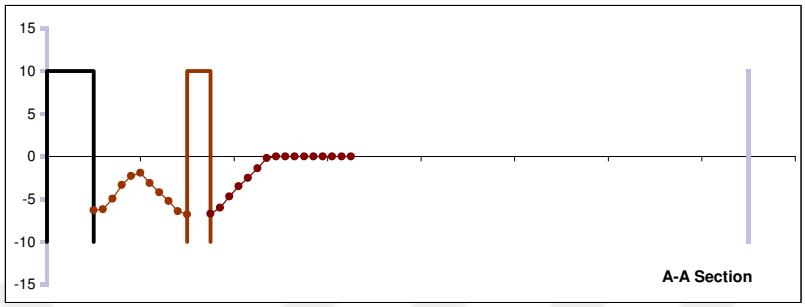
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	12.5
SB_{af}	Abutment Corner Front	12
SB_{ar}	Abutment Corner Right	10
SB_{pl}	Pier Left	10
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	132

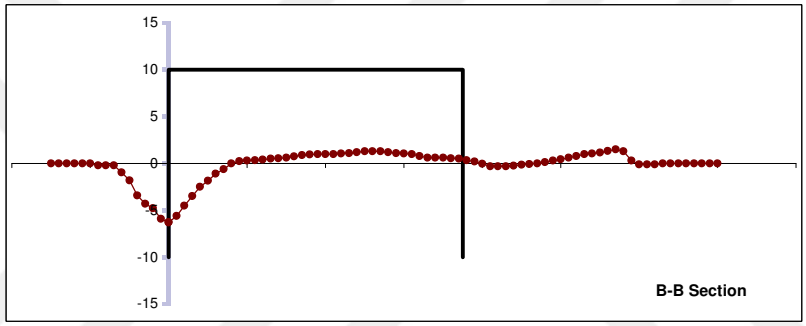


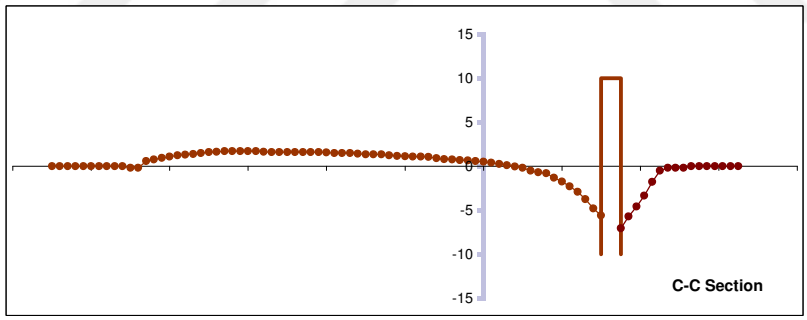
Experiment No : **E54**

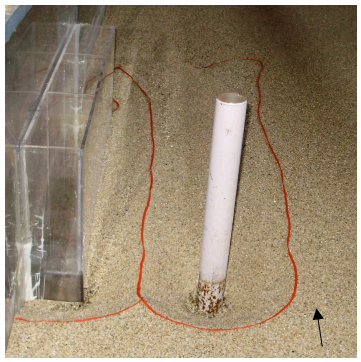




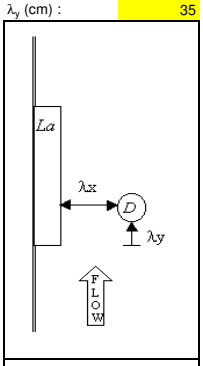


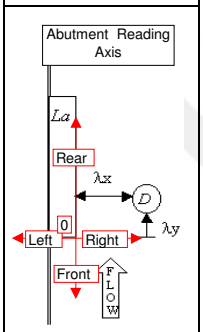


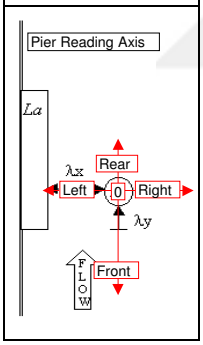


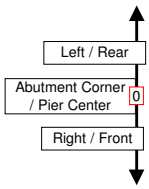


Experiment No :	**E55**
Date :	12.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	35









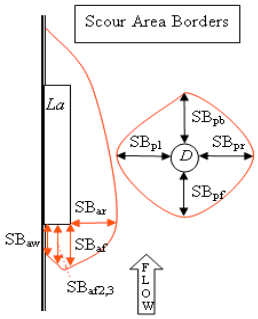
This color was used for raw data readings

This color was used for values enterpolated to sketch

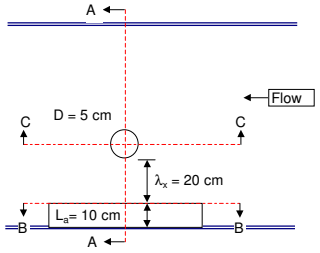
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-110.00				
-138	138					-108.00				
-136	136					-106.00				
-134	134		9.40		-0.20	-104.00				
-132	132		11.10		1.50	-102.00				
-130	130		11.60		2.00	-100.00				
-128	128		*11.58*		1.98	-98.00				
-126	126		*11.55*		1.95	-96.00				
-124	124		*11.53*		1.93	-94.00				
-122	122		11.50		1.90	-92.00				
-120	120		*11.35*		1.75	-90.00				
-118	118		11.20		1.60	-88.00				
-116	116		*11.15*		1.55	-86.00				
-114	114		11.10		1.50	-84.00				
-112	112		*11.05*		1.45	-82.00				
-110	110		11.00		1.40	-80.00				
-108	108		*10.93*		1.33	-78.00				
-106	106		10.85		1.25	-76.00				
-104	104		*10.65*		1.05	-74.00		9.40		-0.20
-102	102		10.45		0.85	-72.00		9.80		0.20
-100	100		*10.28*		0.67	-70.00		10.60		1.00
-98	98		10.10		0.50	-68.00		11.30		1.70
-96	96		*9.98*		0.38	-66.00		11.50		1.90
-94	94		9.85		0.25	-64.00		11.60		2.00
-92	92		*9.68*		0.08	-62.00		*11.60*		2.00
-90	90		9.50		-0.10	-60.00		11.60		2.00
-88	88		*9.38*		-0.23	-58.00		*11.60*		2.00
-86	86		9.25		-0.35	-56.00		11.60		2.00
-84	84		*9.25*		-0.35	-54.00		*11.70*		2.10
-82	82		9.25		-0.35	-52.00		11.80		2.20
-80	80		*9.35*		-0.25	-50.00		*11.80*		2.20
-78	78		9.45		-0.15	-48.00		11.80		2.20
-76	76		*9.60*		0.00	-46.00		*11.85*		2.25
-74	74		9.75		0.15	-44.00		11.90		2.30
-72	72		*9.84*		0.24	-42.00		*11.90*		2.30
-70	70		*9.92*		0.32	-40.00		11.90		2.30
-68	68		10.00		0.40	-38.00		*11.85*		2.25
-66	66		*10.15*		0.55	-36.00		11.80		2.20
-64	64		10.30		0.70	-34.00		*11.80*		2.20
-62	62		*10.40*		0.80	-32.00		11.80		2.20
-60	60		10.50		0.90	-30.00		*11.80*		2.20
-58	58		*10.60*		1.00	-28.00		11.80		2.20
-56	56		10.70		1.10	-26.00		*11.78*		2.18
-54	54		*10.90*		1.30	-24.00		11.75		2.15
-52	52		11.10		1.50	-22.00		*11.68*		2.08
-50	50		*11.25*		1.65	-20.00		11.60		2.00
-48	48		11.40		1.80	-18.00		*11.50*		1.90
-46	46		*11.40*		1.80	-16.00		11.40		1.80
-44	44		11.40		1.80	-14.00		*11.30*		1.70
-42	42		*11.40*		1.80	-12.00		11.20		1.60
-40	40		11.40		1.80	-10.00		*11.08*		1.48
-38	38		*11.20*		1.60	-8.00		10.95		1.35
-36	36		11.00		1.40	-6.00		*10.85*		1.25
-34	34		*10.85*		1.25	-4.00		10.75		1.15
-32	32		10.70		1.10	-2.00		*10.63*		1.03
-30	30		*10.65*		1.05	0.00		10.50		0.90
-28	28		10.60		1.00	2.00		10.25		0.65
-26	26		*10.50*		0.90	4.00		10.00		0.40
-24	24		10.40		0.80	6.00		9.65		0.05
-22	22		10.20		0.60	8.00		9.45		-0.15
-20	20		9.80		0.20	10.00		9.20		-0.40
-18	18		9.40		-0.20	12.00	10.60	8.70	1.00	-0.90
-16	16		8.90		-0.70	14.00	10.40	8.50	0.80	-1.10
-14	14		8.20		-1.40	16.00	9.90	8.20	0.30	-1.40
-12	12		7.50		-2.10	18.00	9.10	7.95	-0.50	-1.65
-10	10	1.80	6.90	-7.80	-2.70	20.00	8.70	7.40	-0.90	-2.20
-8	8	*1.80*	6.10	-7.80	-3.50	22.00	7.45	7.10	-2.15	-2.50
-6	6	1.80	5.40	-7.80	-4.20	24.00	6.00	6.60	-3.60	-3.00
-4	4	*1.80*	4.20	-7.80	-5.40	26.00	4.65	5.90	-4.95	-3.70
-2	2	1.80	3.00	-7.80	-6.60	28.00	3.50	5.00	-6.10	-4.60
0	0	2.40	2.40	-7.20	-7.20	30.00	2.50	4.40	-7.10	-5.20
0	0	2.40	2.40	-7.20	-7.20	35.00	2.50	2.45	-7.10	-7.15
2	-2	2.50	2.80	-7.10	-6.80	37.00	3.20	3.50	-6.40	-6.10
4	-4	3.90	4.00	-5.70	-5.60	39.00	4.50	4.60	-5.10	-5.00
6	-6	5.10	4.85	-4.50	-4.75	41.00	5.50	5.95	-4.10	-3.65
8	-8	6.00	5.80	-3.60	-3.80	43.00	6.10	7.30	-3.50	-2.30
10	-10	7.20	6.70	-2.40	-2.90	45.00	7.00	8.70	-2.60	-0.90
12	-12	8.15	8.85	-1.45	-0.75	47.00	8.00	9.40	-1.60	-0.20
14	-14	9.40	9.40	-0.20	-0.20	49.00	8.90		-0.70	
16	-16					51.00	9.40		-0.20	
18	-18					53.00				
20	-20					55.00				
22	-22					57.00				
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

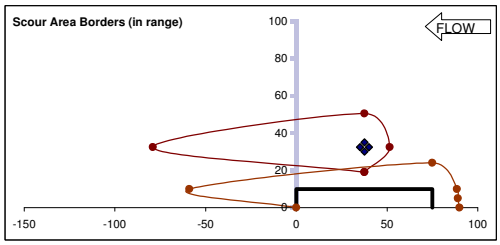
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.80	-7.80
2	1.90	-7.70
4	2.90	-6.70
6	4.30	-5.30
8	5.30	-4.30
10	6.30	-3.30
12	7.80	-1.80
14	9.10	-0.50
16	*9.25*	-0.35
18	9.40	-0.20
20		

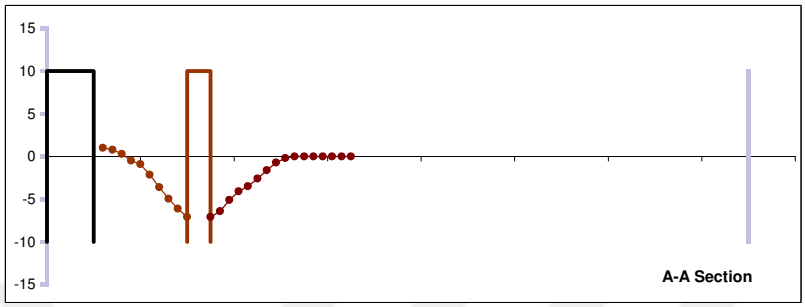
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	13.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	11
SB_{pf}	Pier Front	11.5
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	114

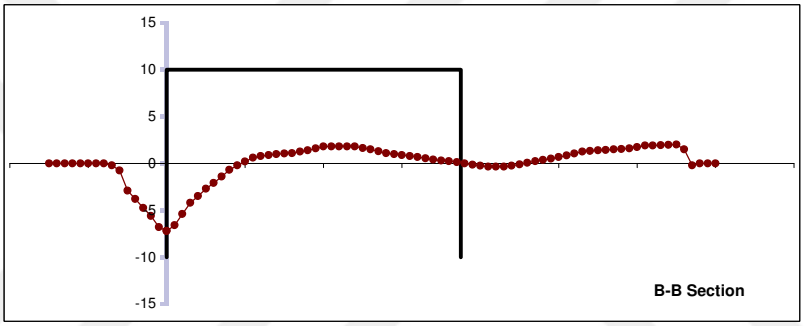


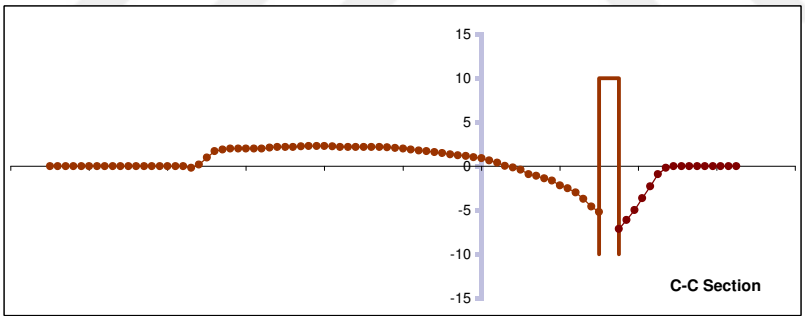
Experiment No : **E55**

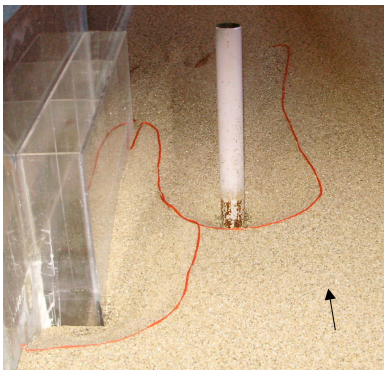


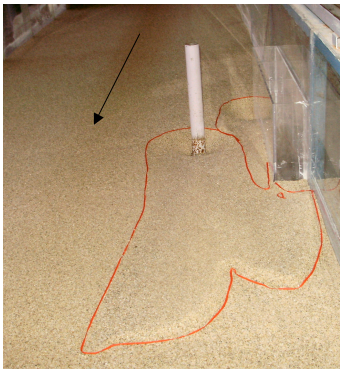




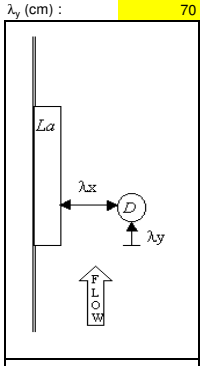


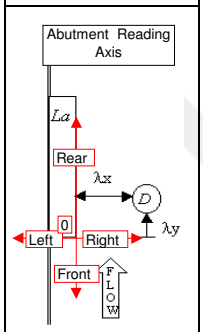


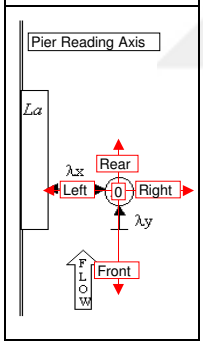


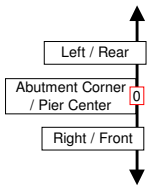


Experiment No :	**E56**
Date :	13.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	70









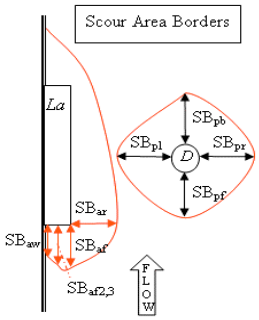
This color was used for raw data readings

This color was used for values enterpolated to sketch

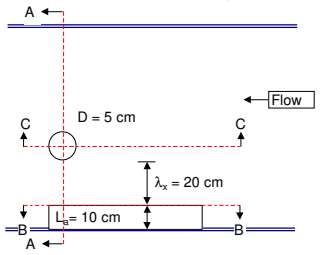
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140		10.50		0.90	-110.00				
-138	138		10.70		1.10	-108.00				
-136	136		*10.68*		1.08	-106.00				
-134	134		10.65		1.05	-104.00				
-132	132		*10.65*		1.05	-102.00				
-130	130		10.65		1.05	-100.00				
-128	128		*10.65*		1.05	-98.00				
-126	126		10.65		1.05	-96.00				
-124	124		*10.58*		0.98	-94.00				
-122	122		10.50		0.90	-92.00				
-120	120		*10.43*		0.83	-90.00				
-118	118		10.35		0.75	-88.00				
-116	116		*10.35*		0.75	-86.00				
-114	114		10.35		0.75	-84.00				
-112	112		*10.40*		0.80	-82.00				
-110	110		10.45		0.85	-80.00				
-108	108		*10.40*		0.80	-78.00				
-106	106		10.35		0.75	-76.00				
-104	104		*10.35*		0.75	-74.00				
-102	102		10.35		0.75	-72.00				
-100	100		*10.35*		0.75	-70.00				
-98	98		10.35		0.75	-68.00				
-96	96		*10.15*		0.55	-66.00				
-94	94		9.95		0.35	-64.00				
-92	92		*9.73*		0.13	-62.00				
-90	90		9.50		-0.10	-60.00				
-88	88		*9.63*		0.03	-58.00				
-86	86		9.75		0.15	-56.00				
-84	84		*9.93*		0.33	-54.00				
-82	82		10.10		0.50	-52.00		9.40		-0.20
-80	80		*10.25*		0.65	-50.00		9.90		0.30
-78	78		10.40		0.80	-48.00		10.50		0.90
-76	76		*10.45*		0.85	-46.00		11.10		1.50
-74	74		10.50		0.90	-44.00		11.50		1.90
-72	72		*10.62*		1.02	-42.00		*11.62*		2.02
-70	70		*10.73*		1.13	-40.00		*11.73*		2.13
-68	68		10.85		1.25	-38.00		11.85		2.25
-66	66		*10.93*		1.33	-36.00		*11.85*		2.25
-64	64		11.00		1.40	-34.00		11.85		2.25
-62	62		*11.05*		1.45	-32.00		*11.85*		2.25
-60	60		11.10		1.50	-30.00		11.85		2.25
-58	58		*11.10*		1.50	-28.00		*11.95*		2.35
-56	56		11.10		1.50	-26.00		12.05		2.45
-54	54		*11.10*		1.50	-24.00		*12.08*		2.48
-52	52		11.10		1.50	-22.00		12.10		2.50
-50	50		*11.05*		1.45	-20.00		*12.10*		2.50
-48	48		11.00		1.40	-18.00		12.10		2.50
-46	46		*10.95*		1.35	-16.00		*12.10*		2.50
-44	44		10.90		1.30	-14.00		12.10		2.50
-42	42		*10.75*		1.15	-12.00		*12.05*		2.45
-40	40		10.60		1.00	-10.00		12.00		2.40
-38	38		*10.50*		0.90	-8.00		*11.90*		2.30
-36	36		10.40		0.80	-6.00		11.80		2.20
-34	34		*10.38*		0.78	-4.00		*11.70*		2.10
-32	32		10.35		0.75	-2.00		11.60		2.00
-30	30		*10.28*		0.67	0.00		*11.30*		1.70
-28	28		10.20		0.60	2.00		11.00		1.40
-26	26		9.90		0.30	4.00		10.95		1.35
-24	24		9.65		0.05	6.00		10.80		1.20
-22	22		9.25		-0.35	8.00		10.55		0.95
-20	20		8.75		-0.85	10.00	10.50	10.15	0.90	0.55
-18	18		8.30		-1.30	12.00	10.50	10.05	0.90	0.45
-16	16		7.75		-1.85	14.00	10.60	9.65	1.00	0.05
-14	14		7.10		-2.50	16.00	10.40	9.25	0.80	-0.35
-12	12		6.60		-3.00	18.00	9.75	8.75	0.15	-0.85
-10	10	1.40	6.20	-8.20	-3.40	20.00	8.50	8.35	-1.10	-1.25
-8	8	*1.40*	5.60	-8.20	-4.00	22.00	7.60	7.85	-2.00	-1.75
-6	6	1.40	4.90	-8.20	-4.70	24.00	6.40	7.20	-3.20	-2.40
-4	4	*1.40*	3.70	-8.20	-5.90	26.00	5.20	6.65	-4.40	-2.95
-2	2	1.40	2.50	-8.20	-7.10	28.00	4.00	5.70	-5.60	-3.90
0	0	1.90	1.90	-7.70	-7.70	30.00	3.50	4.80	-6.10	-4.80
0	0	1.90	1.90	-7.70	-7.70	35.00	3.00	2.80	-6.60	-6.80
2	-2	2.05	2.50	-7.55	-7.10	37.00	3.60	3.80	-6.00	-5.80
4	-4	3.65	4.00	-5.95	-5.60	39.00	4.80	5.30	-4.80	-4.30
6	-6	5.00	4.65	-4.60	-4.95	41.00	6.20	6.45	-3.40	-3.15
8	-8	5.70	5.60	-3.90	-4.00	43.00	6.50	7.65	-3.10	-1.95
10	-10	6.90	6.50	-2.70	-3.10	45.00	7.20	8.90	-2.40	-0.70
12	-12	7.85	8.00	-1.75	-1.60	47.00	8.30	9.40	-1.30	-0.20
14	-14	8.90	9.40	-0.70	-0.20	49.00	9.00		-0.60	
16	-16	9.40		-0.20		51.00	9.40		-0.20	
18	-18					53.00				
20	-20					55.00				
22	-22					57.00				
24	-24					59.00				
26	-26					61.00				
28	-28					63.00				
30	-30					65.00				

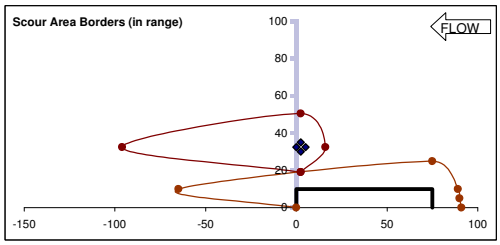
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.40	-8.20
2	1.70	-7.90
4	2.50	-7.10
6	3.70	-5.90
8	4.90	-4.70
10	6.10	-3.50
12	7.15	-2.45
14	8.50	-1.10
16	9.40	-0.20
18		
20		

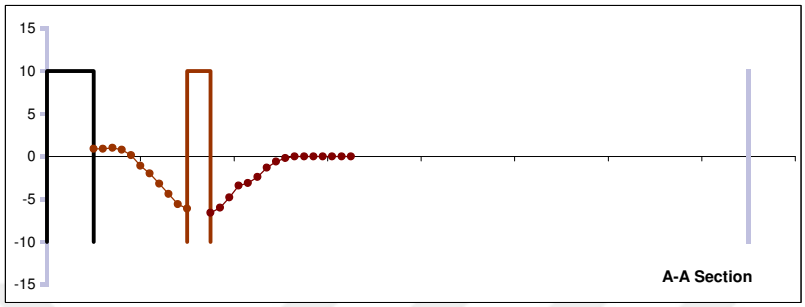
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	11
SB_{pf}	Pier Front	11
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	96

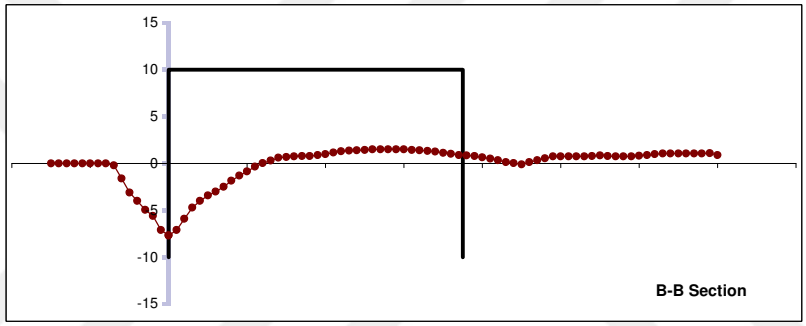


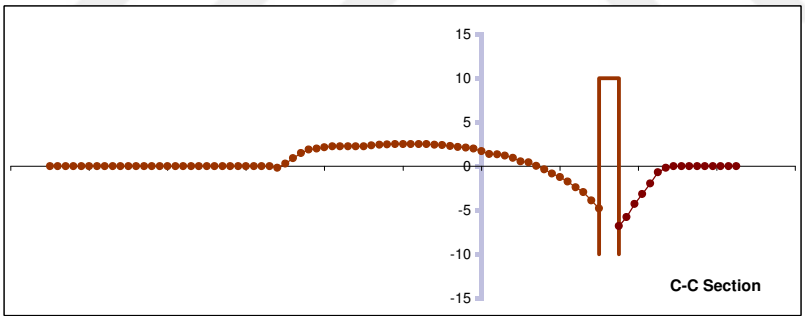
Experiment No : **E56**

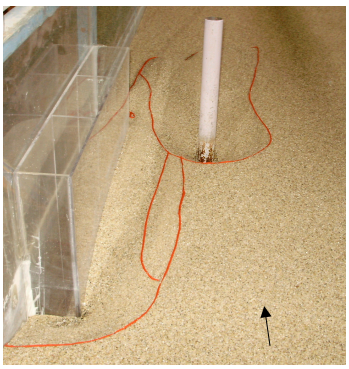


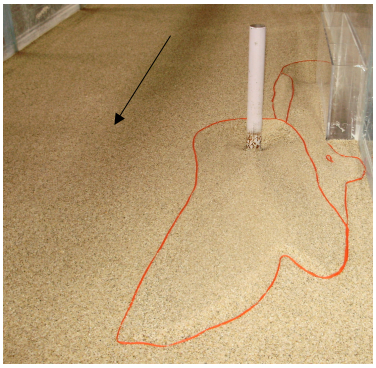




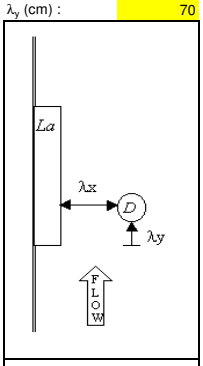


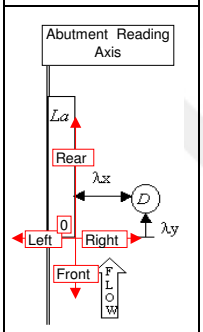


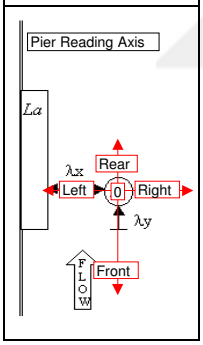


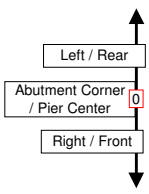


Experiment No :	**E57**
Date :	20.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	70







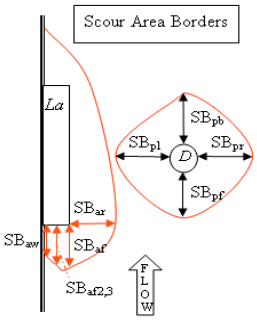


This color was used for raw data readings
This color was used for values enterpolated to sketch

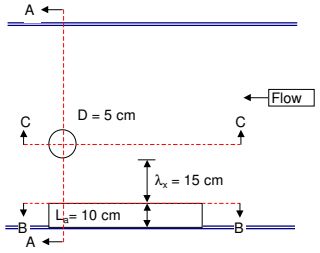
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140		11.38		1.78	-115.00				
-138	138		11.40		1.80	-113.00				
-136	136		11.40		1.80	-111.00				
-134	134		11.40		1.80	-109.00				
-132	132		11.40		1.80	-107.00				
-130	130		11.40		1.80	-105.00				
-128	128		11.25		1.65	-103.00				
-126	126		11.10		1.50	-101.00				
-124	124		11.10		1.50	-99.00				
-122	122		11.10		1.50	-97.00				
-120	120		10.80		1.20	-95.00				
-118	118		10.50		0.90	-93.00				
-116	116		10.50		0.90	-91.00				
-114	114		10.50		0.90	-89.00				
-112	112		10.50		0.90	-87.00				
-110	110		10.50		0.90	-85.00				
-108	108		10.45		0.85	-83.00				
-106	106		10.40		0.80	-81.00				
-104	104		10.33		0.73	-79.00				
-102	102		10.25		0.65	-77.00				
-100	100		10.13		0.53	-75.00				
-98	98		10.00		0.40	-73.00				
-96	96		9.85		0.25	-71.00				
-94	94		9.70		0.10	-69.00				
-92	92		9.65		0.05	-67.00				
-90	90		9.60		0.00	-65.00				
-88	88		9.50		-0.10	-63.00				
-86	86		9.40		-0.20	-61.00				
-84	84		9.40		-0.20	-59.00				
-82	82		9.40		-0.20	-57.00		9.40		-0.20
-80	80		9.40		-0.20	-55.00		10.00		0.40
-78	78		9.40		-0.20	-53.00		10.50		0.90
-76	76		9.80		0.20	-51.00		11.00		1.40
-74	74		10.20		0.60	-49.00		11.00		1.40
-72	72		10.34		0.74	-47.00		11.10		1.50
-70	70		10.47		0.87	-45.00		11.60		2.00
-68	68		10.60		1.00	-43.00		11.60		2.00
-66	66		10.70		1.10	-41.00		11.60		2.00
-64	64		10.80		1.20	-39.00		11.60		2.00
-62	62		10.85		1.25	-37.00		11.70		2.10
-60	60		10.90		1.30	-35.00		11.80		2.20
-58	58		10.95		1.35	-33.00		11.85		2.25
-56	56		11.00		1.40	-31.00		11.90		2.30
-54	54		11.00		1.40	-29.00		11.95		2.35
-52	52		11.00		1.40	-27.00		12.00		2.40
-50	50		11.00		1.40	-25.00		12.00		2.40
-48	48		11.00		1.40	-23.00		12.00		2.40
-46	46		10.95		1.35	-21.00		11.95		2.35
-44	44		10.90		1.30	-19.00		11.90		2.30
-42	42		10.85		1.25	-17.00		11.85		2.25
-40	40		10.80		1.20	-15.00		11.80		2.20
-38	38		10.70		1.10	-13.00		11.75		2.15
-36	36		10.60		1.00	-11.00		11.70		2.10
-34	34		10.60		1.00	-9.00		11.50		1.90
-32	32		10.60		1.00	-7.00		11.30		1.70
-30	30		10.45		0.85	-5.00		11.15		1.55
-28	28		10.30		0.70	-3.00		11.00		1.40
-26	26		10.20		0.60	-1.00		11.00		1.40
-24	24		10.10		0.50	1.00		10.75		1.15
-22	22		10.00		0.40	3.00		10.55		0.95
-20	20		9.60		0.00	5.00		10.40		0.80
-18	18		9.30		-0.30	7.00		10.20		0.60
-16	16		8.75		-0.85	9.00		9.80		0.20
-14	14		8.40		-1.20	11.00	9.70	9.50	0.10	-0.10
-12	12		7.90		-1.70	13.00	9.80	9.20	0.20	-0.40
-10	10	2.80	7.20	-6.80	-2.40	15.00	9.60	8.70	0.00	-0.90
-8	8	2.70	6.70	-6.90	-2.90	17.00	8.60	8.20	-1.00	-1.40
-6	6	2.60	6.00	-7.00	-3.60	19.00	7.60	7.40	-2.00	-2.20
-4	4	2.45	4.90	-7.15	-4.70	21.00	6.40	6.50	-3.20	-3.10
-2	2	2.30	4.10	-7.30	-5.50	23.00	5.25	5.90	-4.35	-3.70
0	0	2.90	2.90	-6.70	-6.70	25.00	4.20	5.70	-5.40	-3.90
0	0	2.90	2.90	-6.70	-6.70	30.00	4.00	3.30	-5.60	-6.30
2	-2	3.15	3.30	-6.45	-6.30	32.00	4.40	4.40	-5.20	-5.20
4	-4	4.50	4.30	-5.10	-5.30	34.00	5.40	5.40	-4.20	-4.20
6	-6	5.90	5.10	-3.70	-4.50	36.00	6.40	6.80	-3.20	-2.80
8	-8	6.70	6.00	-2.90	-3.60	38.00	7.70	8.40	-1.90	-1.20
10	-10	7.30	7.10	-2.30	-2.50	40.00	8.35	9.40	-1.25	-0.20
12	-12	8.60	8.10	-1.00	-1.50	42.00	9.10		-0.50	
14	-14	9.40	9.40	-0.20	-0.20	44.00	9.40		-0.20	
16	-16	10.00		0.40		46.00				
18	-18					48.00				
20	-20					50.00				
22	-22					52.00				
24	-24					54.00				
26	-26					56.00				
28	-28					58.00				
30	-30					60.00				

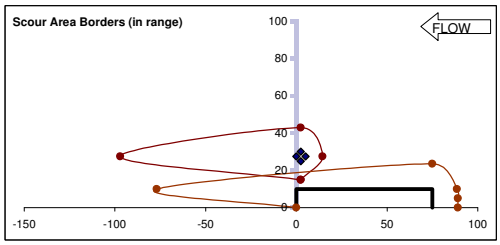
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.80	-6.80
2	3.20	-6.40
4	4.30	-5.30
6	5.35	-4.25
8	6.20	-3.40
10	7.50	-2.10
12	8.40	-1.20
14	9.40	-0.20
16		
18		
20		

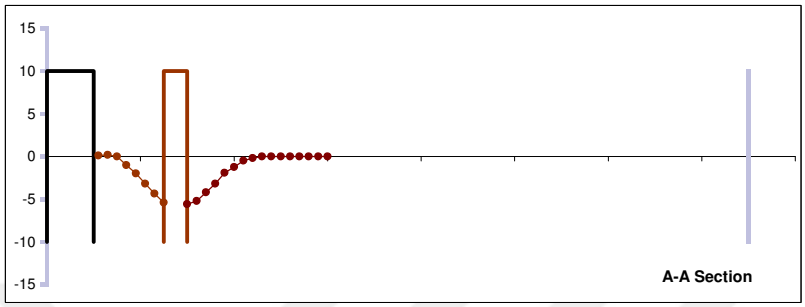
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	13.5
SB_{ar}	Abutment Corner Right	13.5
SB_{pl}	Pier Left	10
SB_{pf}	Pier Front	9.5
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	97

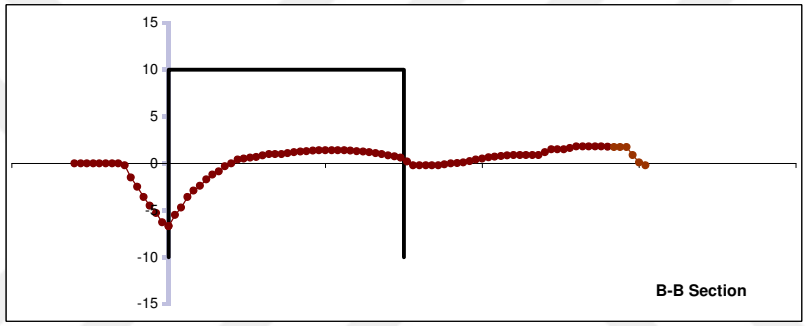


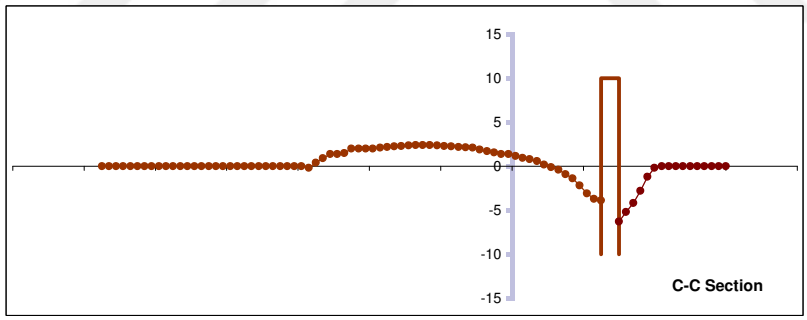
Experiment No : **E57**

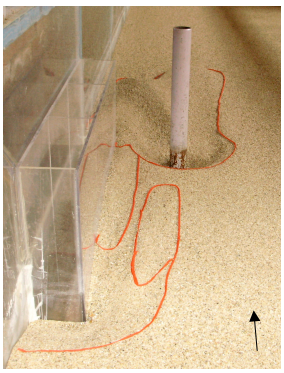


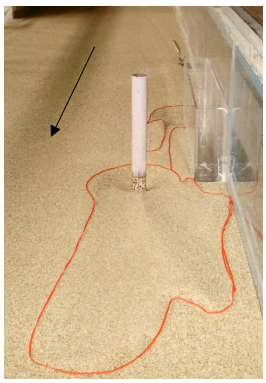




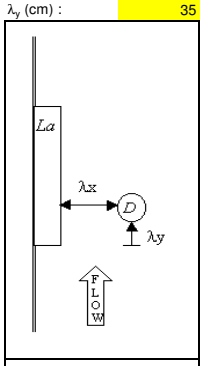


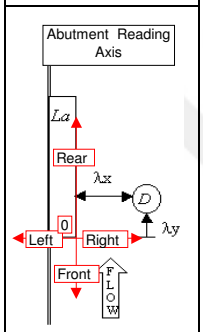


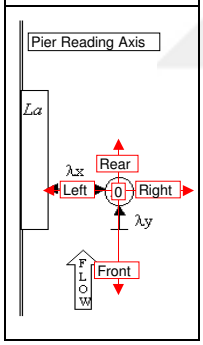


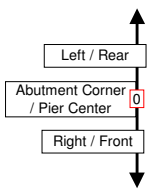


Experiment No :	**E58**
Date :	25.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	35









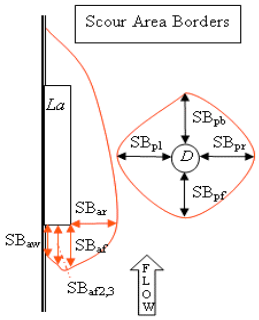
This color was used for raw data readings

This color was used for values enterpolated to sketch

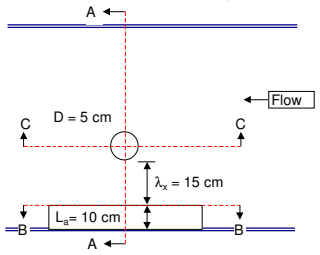
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-115.00				
-138	138		9.40		-0.20	-113.00				
-136	136		*9.25*		-0.35	-111.00				
-134	134		9.10		-0.50	-109.00				
-132	132		*9.15*		-0.45	-107.00				
-130	130		9.20		-0.40	-105.00				
-128	128		9.70		0.10	-103.00				
-126	126		11.25		1.65	-101.00				
-124	124		*11.48*		1.88	-99.00				
-122	122		11.70		2.10	-97.00				
-120	120		*11.75*		2.15	-95.00				
-118	118		11.80		2.20	-93.00				
-116	116		*11.80*		2.20	-91.00				
-114	114		11.80		2.20	-89.00				
-112	112		*11.70*		2.10	-87.00				
-110	110		11.60		2.00	-85.00				
-108	108		*11.55*		1.95	-83.00				
-106	106		11.50		1.90	-81.00		9.40		-0.20
-104	104		*11.35*		1.75	-79.00		10.00		0.40
-102	102		11.20		1.60	-77.00		10.30		0.70
-100	100		*11.03*		1.43	-75.00		11.00		1.40
-98	98		10.85		1.25	-73.00		11.50		1.90
-96	96		*10.63*		1.03	-71.00		11.60		2.00
-94	94		10.40		0.80	-69.00		11.60		2.00
-92	92		*10.10*		0.50	-67.00		*11.63*		2.03
-90	90		9.80		0.20	-65.00		11.65		2.05
-88	88		*9.65*		0.05	-63.00		*11.65*		2.05
-86	86		9.50		-0.10	-61.00		11.65		2.05
-84	84		*9.43*		-0.17	-59.00		*11.65*		2.05
-82	82		9.35		-0.25	-57.00		11.65		2.05
-80	80		*9.43*		-0.17	-55.00		*11.68*		2.08
-78	78		9.50		-0.10	-53.00		11.70		2.10
-76	76		*9.55*		-0.05	-51.00		*11.75*		2.15
-74	74		9.60		0.00	-49.00		11.80		2.20
-72	72		*10.25*		0.65	-47.00		*11.84*		2.24
-70	70		10.90		1.30	-45.00		*11.87*		2.27
-68	68		*10.90*		1.30	-43.00		11.90		2.30
-66	66		10.90		1.30	-41.00		*11.85*		2.25
-64	64		*10.45*		0.85	-39.00		11.80		2.20
-62	62		10.00		0.40	-37.00		*11.80*		2.20
-60	60		*10.00*		0.40	-35.00		11.80		2.20
-58	58		10.00		0.40	-33.00		*11.80*		2.20
-56	56		*10.00*		0.40	-31.00		11.80		2.20
-54	54		10.00		0.40	-29.00		*11.75*		2.15
-52	52		*10.10*		0.50	-27.00		11.70		2.10
-50	50		10.20		0.60	-25.00		*11.63*		2.03
-48	48		*10.33*		0.73	-23.00		11.55		1.95
-46	46		10.45		0.85	-21.00		*11.48*		1.88
-44	44		*10.68*		1.08	-19.00		11.40		1.80
-42	42		10.90		1.30	-17.00		*11.33*		1.73
-40	40		*10.95*		1.35	-15.00		11.25		1.65
-38	38		11.00		1.40	-13.00		*11.18*		1.58
-36	36		*10.95*		1.35	-11.00		11.10		1.50
-34	34		10.90		1.30	-9.00		*11.03*		1.43
-32	32		*10.85*		1.25	-7.00		10.95		1.35
-30	30		10.80		1.20	-5.00		*10.83*		1.23
-28	28		*10.75*		1.15	-3.00		10.70		1.10
-26	26		10.70		1.10	-1.00		*10.58*		0.98
-24	24		10.55		0.95	1.00		10.45		0.85
-22	22		10.30		0.70	3.00		*10.30*		0.70
-20	20		9.90		0.30	5.00		10.15		0.55
-18	18		9.45		-0.15	7.00		9.95		0.35
-16	16		8.90		-0.70	9.00		9.85		0.25
-14	14		8.30		-1.30	11.00	10.70	9.70	1.10	0.10
-12	12		8.00		-1.60	13.00	9.85	9.30	0.25	-0.30
-10	10	2.50	7.40	-7.10	-2.20	15.00	9.25	8.80	-0.35	-0.80
-8	8	*2.45*	6.70	-7.15	-2.90	17.00	8.35	8.30	-1.25	-1.30
-6	6	2.40	5.75	-7.20	-3.85	19.00	7.60	7.75	-2.00	-1.85
-4	4	*2.25*	4.65	-7.35	-4.95	21.00	5.90	6.90	-3.70	-2.70
-2	2	2.10	4.00	-7.50	-5.60	23.00	4.80	6.20	-4.80	-3.40
0	0	3.10	3.10	-6.50	-6.50	25.00	4.10	5.50	-5.50	-4.10
0	0	3.10	3.10	-6.50	-6.50	30.00	4.10	3.70	-5.50	-5.90
2	-2	3.30	3.40	-6.30	-6.20	32.00	4.45	4.75	-5.15	-4.85
4	-4	4.60	4.60	-5.00	-5.00	34.00	5.65	5.90	-3.95	-3.70
6	-6	6.05	5.25	-3.55	-4.35	36.00	6.20	7.35	-3.40	-2.25
8	-8	6.90	6.30	-2.70	-3.30	38.00	7.80	8.40	-1.80	-1.20
10	-10	7.60	7.40	-2.00	-2.20	40.00	8.70	9.40	-0.90	-0.20
12	-12	8.60	8.40	-1.00	-1.20	42.00	9.40		-0.20	
14	-14	9.40	9.40	-0.20	-0.20	44.00				
16	-16					46.00				
18	-18					48.00				
20	-20					50.00				
22	-22					52.00				
24	-24					54.00				
26	-26					56.00				
28	-28					58.00				
30	-30					60.00				

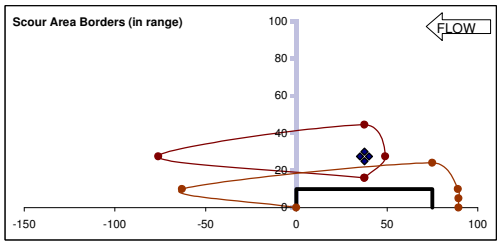
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.50	-7.10
2	2.80	-6.80
4	3.90	-5.70
6	5.20	-4.40
8	6.10	-3.50
10	7.30	-2.30
12	8.30	-1.30
14	9.40	-0.20
16		
18		
20		

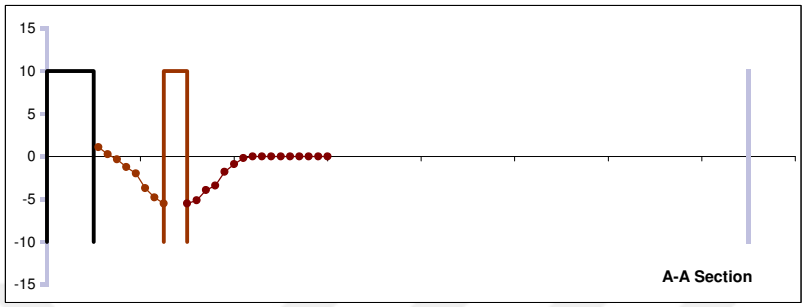
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	9
SB_{pf}	Pier Front	9
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	111

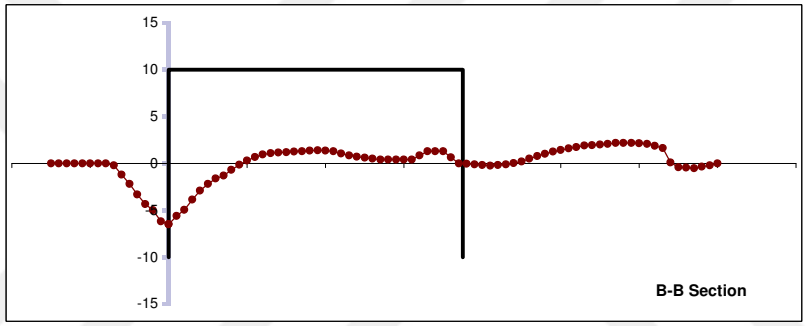


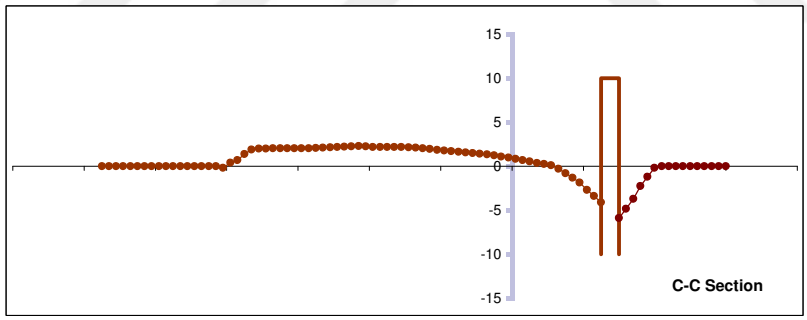
Experiment No : **E58**

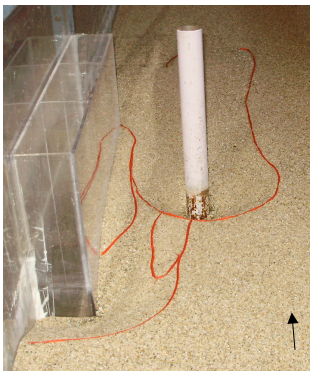


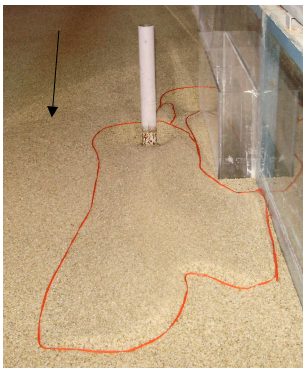




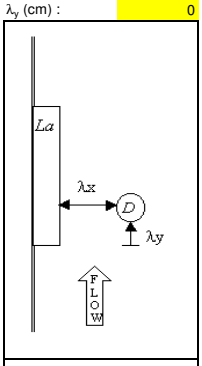


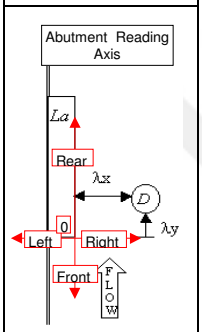


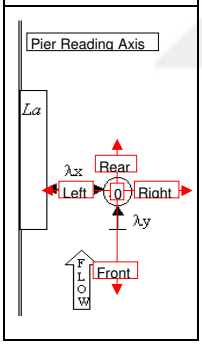


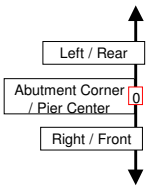


Experiment No :	**E59**
Date :	27.04.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	0









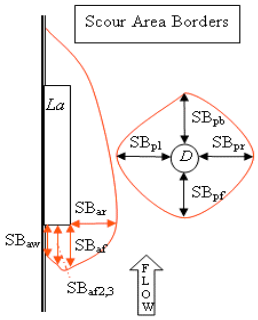
This color was used for raw data readings

This color was used for values enterpolated to sketch

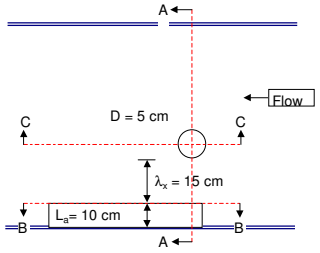
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-115.00				
-138	138					-113.00				
-136	136					-111.00				
-134	134					-109.00				
-132	132					-107.00				
-130	130		9.40		-0.20	-105.00		9.40		-0.20
-128	128		9.90		0.30	-103.00		9.95		0.35
-126	126		11.10		1.50	-101.00		10.65		1.05
-124	124		*11.25*		1.65	-99.00		10.90		1.30
-122	122		11.40		1.80	-97.00		11.30		1.70
-120	120		*11.38*		1.78	-95.00		*11.45*		1.85
-118	118		11.35		1.75	-93.00		11.60		2.00
-116	116		*11.33*		1.73	-91.00		*11.65*		2.05
-114	114		11.30		1.70	-89.00		11.70		2.10
-112	112		*11.25*		1.65	-87.00		*11.73*		2.13
-110	110		11.20		1.60	-85.00		11.75		2.15
-108	108		*11.05*		1.45	-83.00		*11.75*		2.15
-106	106		10.90		1.30	-81.00		11.75		2.15
-104	104		*10.60*		1.00	-79.00		*11.78*		2.18
-102	102		10.30		0.70	-77.00		11.80		2.20
-100	100		*10.05*		0.45	-75.00		*11.80*		2.20
-98	98		9.80		0.20	-73.00		11.80		2.20
-96	96		*9.65*		0.05	-71.00		*11.80*		2.20
-94	94		9.50		-0.10	-69.00		11.80		2.20
-92	92		*9.33*		-0.28	-67.00		*11.80*		2.20
-90	90		9.15		-0.45	-65.00		11.80		2.20
-88	88		*9.18*		-0.42	-63.00		*11.75*		2.15
-86	86		9.20		-0.40	-61.00		11.70		2.10
-84	84		*9.40*		-0.20	-59.00		*11.65*		2.05
-82	82		9.60		0.00	-57.00		11.60		2.00
-80	80		*9.65*		0.05	-55.00		*11.60*		2.00
-78	78		9.70		0.10	-53.00		11.60		2.00
-76	76		*9.93*		0.33	-51.00		*11.53*		1.93
-74	74		10.15		0.55	-49.00		11.45		1.85
-72	72		*10.25*		0.65	-47.00		*11.44*		1.84
-70	70		10.35		0.75	-45.00		*11.42*		1.82
-68	68		*10.38*		0.78	-43.00		11.40		1.80
-66	66		10.40		0.80	-41.00		*11.40*		1.80
-64	64		*10.45*		0.85	-39.00		11.40		1.80
-62	62		10.50		0.90	-37.00		*11.30*		1.70
-60	60		*10.55*		0.95	-35.00		11.20		1.60
-58	58		10.60		1.00	-33.00		*11.10*		1.50
-56	56		*10.70*		1.10	-31.00		11.00		1.40
-54	54		10.80		1.20	-29.00		*11.00*		1.40
-52	52		*10.85*		1.25	-27.00		11.00		1.40
-50	50		10.90		1.30	-25.00		*10.95*		1.35
-48	48		*10.90*		1.30	-23.00		10.90		1.30
-46	46		10.90		1.30	-21.00		*10.80*		1.20
-44	44		*10.85*		1.25	-19.00		10.70		1.10
-42	42		10.80		1.20	-17.00		*10.65*		1.05
-40	40		*10.80*		1.20	-15.00		10.60		1.00
-38	38		10.80		1.20	-13.00		*10.53*		0.92
-36	36		*10.75*		1.15	-11.00		10.45		0.85
-34	34		10.70		1.10	-9.00		*10.33*		0.73
-32	32		*10.70*		1.10	-7.00		10.20		0.60
-30	30		10.70		1.10	-5.00		10.00		0.40
-28	28		*10.58*		0.98	-3.00		9.95		0.35
-26	26		10.45		0.85	-1.00		9.55		-0.05
-24	24		*10.43*		0.83	1.00		9.45		-0.15
-22	22		10.40		0.80	3.00		9.00		-0.60
-20	20		*10.15*		0.55	5.00		8.70		-0.90
-18	18		9.90		0.30	7.00		8.45		-1.15
-16	16		9.80		0.20	9.00		8.10		-1.50
-14	14		9.20		-0.40	11.00	3.85	7.40	-5.75	-2.20
-12	12		8.80		-0.80	13.00	4.80	6.75	-4.80	-2.85
-10	10	*3.50*	8.20	-6.10	-1.40	15.00	6.30	6.15	-3.30	-3.45
-8	8	3.50	7.40	-6.10	-2.20	17.00	7.10	5.40	-2.50	-4.20
-6	6	3.30	6.55	-6.30	-3.05	19.00	6.10	4.45	-3.50	-5.15
-4	4	*3.10*	5.50	-6.50	-4.10	21.00	4.65	3.50	-4.95	-6.10
-2	2	2.90	4.50	-6.70	-5.10	23.00	3.05	2.65	-6.55	-6.95
0	0	3.70	3.70	-5.90	-5.90	25.00	2.10	2.30	-7.50	-7.30
0	0	3.70	3.70	-5.90	-5.90	30.00	1.20	1.20	-8.40	-8.40
2	-2	3.80	4.20	-5.80	-5.40	32.00	1.90	2.50	-7.70	-7.10
4	-4	4.90	5.40	-4.70	-4.20	34.00	3.30	4.20	-6.30	-5.40
6	-6	6.30	5.85	-3.30	-3.75	36.00	4.60	5.50	-5.00	-4.10
8	-8	7.00	7.15	-2.60	-2.45	38.00	6.00	6.80	-3.60	-2.80
10	-10	6.25	8.40	-3.35	-1.20	40.00	7.10	8.10	-2.50	-1.50
12	-12	4.80	9.40	-4.80	-0.20	42.00	8.10	9.40	-1.50	-0.20
14	-14	3.40		-6.20		44.00	9.20		-0.40	
16	-16	2.20		-7.40		46.00	9.40		-0.20	
18	-18	1.20		-8.40		48.00				
20	-20	1.20		-8.40		50.00				
22	-22	1.60		-8.00		52.00				
24	-24	3.00		-6.60		54.00				
26	-26	3.85		-5.75		56.00				
28	-28	5.15		-4.45		58.00				
30	-30	6.30		-3.30		60.00				

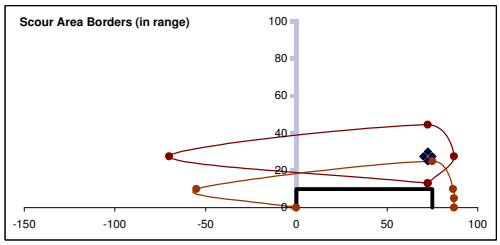
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	3.50	-6.10
2	4.10	-5.50
4	5.10	-4.50
6	6.50	-3.10
8	7.70	-1.90
10	8.95	-0.65
12	9.40	-0.20
14		
16		
18		
20		

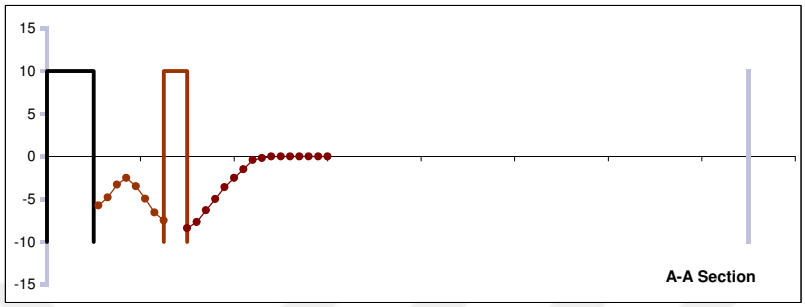
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12
SB_{af2}	Abutment Front (W+5 cm)	12
SB_{af}	Abutment Corner Front	11.5
SB_{ar}	Abutment Corner Right	*15*
SB_{pl}	Pier Left	*12*
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	140

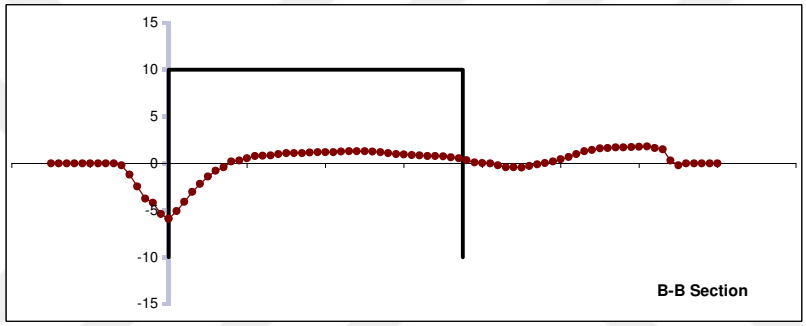


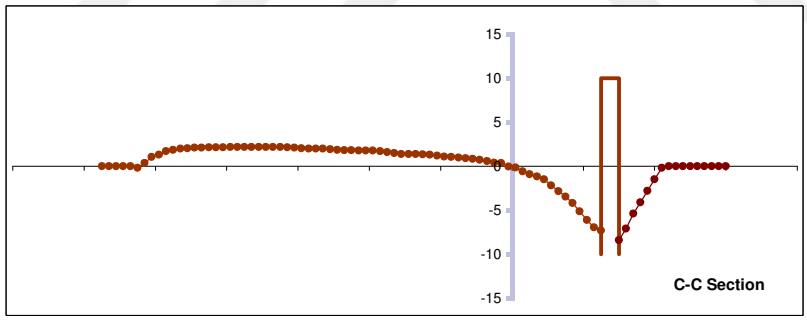
Experiment No : **E59**

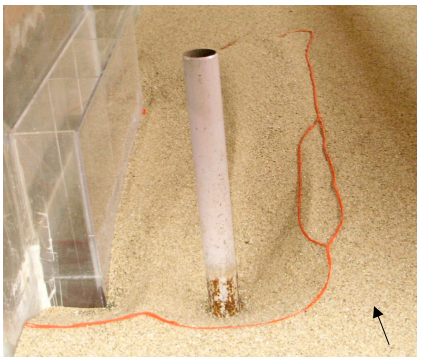


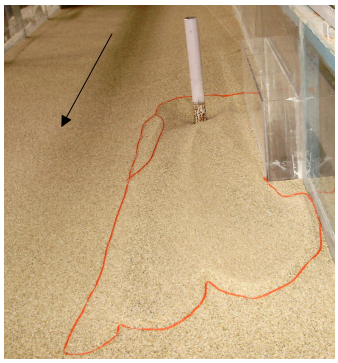




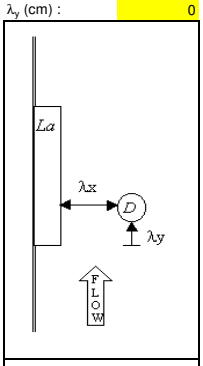


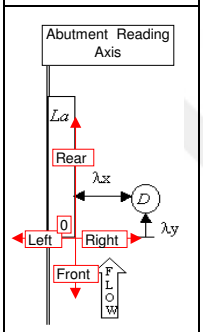


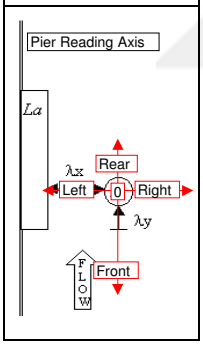


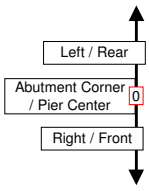


Experiment No :	**E60**
Date :	02.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	0







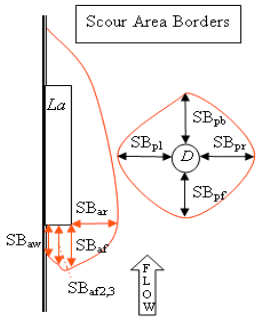


This color was used for raw data readings
This color was used for values enterpolated to sketch

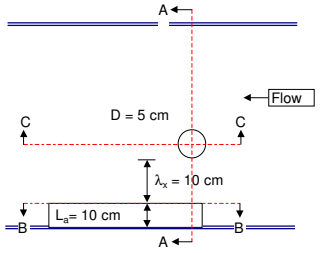
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-120.00				
-138	138					-118.00		9.40		-0.20
-136	136		9.40		-0.20	-116.00		11.30		1.70
-134	134		*9.45*		-0.15	-114.00		*11.35*		1.75
-132	132		9.50		-0.10	-112.00		11.40		1.80
-130	130		*9.55*		-0.05	-110.00		12.10		2.50
-128	128		9.60		0.00	-108.00		*12.15*		2.55
-126	126		*9.65*		0.05	-106.00		12.20		2.60
-124	124		9.70		0.10	-104.00		*12.15*		2.55
-122	122		*9.70*		0.10	-102.00		12.10		2.50
-120	120		9.70		0.10	-100.00		*12.05*		2.45
-118	118		10.45		0.85	-98.00		12.00		2.40
-116	116		*10.68*		1.08	-96.00		*11.95*		2.35
-114	114		10.90		1.30	-94.00		11.90		2.30
-112	112		*10.85*		1.25	-92.00		*11.85*		2.25
-110	110		10.80		1.20	-90.00		11.80		2.20
-108	108		*10.65*		1.05	-88.00		*11.75*		2.15
-106	106		10.50		0.90	-86.00		11.70		2.10
-104	104		*10.20*		0.60	-84.00		*11.70*		2.10
-102	102		9.90		0.30	-82.00		11.70		2.10
-100	100		*9.78*		0.18	-80.00		*11.70*		2.10
-98	98		9.65		0.05	-78.00		11.70		2.10
-96	96		*9.53*		-0.07	-76.00		*11.60*		2.00
-94	94		9.40		-0.20	-74.00		11.50		1.90
-92	92		*9.25*		-0.35	-72.00		*11.43*		1.83
-90	90		9.10		-0.50	-70.00		11.35		1.75
-88	88		*9.05*		-0.55	-68.00		*11.33*		1.73
-86	86		9.00		-0.60	-66.00		11.30		1.70
-84	84		*9.00*		-0.60	-64.00		*11.25*		1.65
-82	82		9.00		-0.60	-62.00		11.20		1.60
-80	80		*9.40*		-0.20	-60.00		*11.15*		1.55
-78	78		9.80		0.20	-58.00		11.10		1.50
-76	76		*10.05*		0.45	-56.00		*11.10*		1.50
-74	74		10.30		0.70	-54.00		11.10		1.50
-72	72		*10.30*		0.70	-52.00		*11.10*		1.50
-70	70		10.30		0.70	-50.00		11.10		1.50
-68	68		*10.30*		0.70	-48.00		*11.10*		1.50
-66	66		10.30		0.70	-46.00		11.10		1.50
-64	64		*10.30*		0.70	-44.00		*11.05*		1.45
-62	62		10.30		0.70	-42.00		11.00		1.40
-60	60		*10.30*		0.70	-40.00		*11.00*		1.40
-58	58		10.30		0.70	-38.00		11.00		1.40
-56	56		*10.30*		0.70	-36.00		*10.95*		1.35
-54	54		10.30		0.70	-34.00		10.90		1.30
-52	52		*10.35*		0.75	-32.00		*10.90*		1.30
-50	50		10.40		0.80	-30.00		10.90		1.30
-48	48		*10.45*		0.85	-28.00		*10.80*		1.20
-46	46		10.50		0.90	-26.00		10.70		1.10
-44	44		*10.50*		0.90	-24.00		*10.65*		1.05
-42	42		10.50		0.90	-22.00		10.60		1.00
-40	40		*10.50*		0.90	-20.00		*10.50*		0.90
-38	38		10.50		0.90	-18.00		10.40		0.80
-36	36		*10.45*		0.85	-16.00		*10.28*		0.68
-34	34		10.40		0.80	-14.00		10.15		0.55
-32	32		*10.30*		0.70	-12.00		10.00		0.40
-30	30		10.20		0.60	-10.00		9.80		0.20
-28	28		*10.15*		0.55	-8.00		9.65		0.05
-26	26		10.10		0.50	-6.00		9.40		-0.20
-24	24		*10.10*		0.50	-4.00		9.00		-0.60
-22	22		10.10		0.50	-2.00		8.90		-0.70
-20	20		9.90		0.30	0.00		8.70		-0.90
-18	18		9.70		0.10	2.00		8.25		-1.35
-16	16		9.40		-0.20	4.00		7.80		-1.80
-14	14		8.90		-0.70	6.00		7.50		-2.10
-12	12		8.25		-1.35	8.00		6.80		-2.80
-10	10	3.20	7.50	-6.40	-2.10	10.00	3.60	5.85	-6.00	-3.75
-8	8	*3.10*	6.65	-6.50	-2.95	12.00	3.40	5.00	-6.20	-4.60
-6	6	3.00	5.65	-6.60	-3.95	14.00	4.60	4.00	-5.00	-5.60
-4	4	*2.70*	4.70	-6.90	-4.90	16.00	3.60	3.30	-6.00	-6.30
-2	2	2.40	3.75	-7.20	-5.85	18.00	2.40	2.95	-7.20	-6.65
0	0	2.90	2.90	-6.70	-6.70	20.00	1.50	2.70	-8.10	-6.90
0	0	2.90	2.90	-6.70	-6.70	25.00	1.50	1.40	-8.10	-8.20
2	-2	2.55	3.15	-7.05	-6.45	27.00	1.75	2.40	-7.85	-7.20
4	-4	3.85	4.35	-5.75	-5.25	29.00	3.25	3.95	-6.35	-5.65
6	-6	4.30	5.15	-5.30	-4.45	31.00	4.75	5.80	-4.85	-3.80
8	-8	4.00	6.10	-5.60	-3.50	33.00	5.90	7.00	-3.70	-2.60
10	-10	2.70	7.25	-6.90	-2.35	35.00	7.15	8.10	-2.45	-1.50
12	-12	1.50	7.65	-8.10	-1.95	37.00	8.50	9.10	-1.10	-0.50
14	-14	1.50	8.30	-8.10	-1.30	39.00	9.40	9.40	-0.20	-0.20
16	-16	*1.50*	9.05	-8.10	-0.55	41.00				
18	-18	1.50	9.40	-8.10	-0.20	43.00				
20	-20	2.90		-6.70		45.00				
22	-22	4.15		-5.45		47.00				
24	-24	5.40		-4.20		49.00				
26	-26	6.45		-3.15		51.00				
28	-28	7.60		-2.00		53.00				
30	-30	8.85		-0.75		55.00				

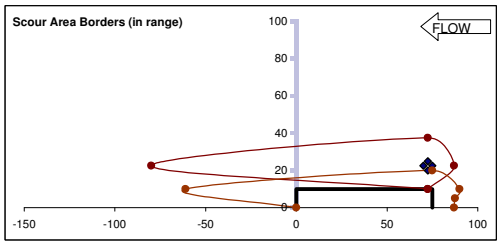
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	3.20	-6.40
2	3.40	-6.20
4	4.30	-5.30
6	5.85	-3.75
8	7.00	-2.60
10	8.00	-1.60
12	9.00	-0.60
14	9.40	-0.20
16		
18		
20		

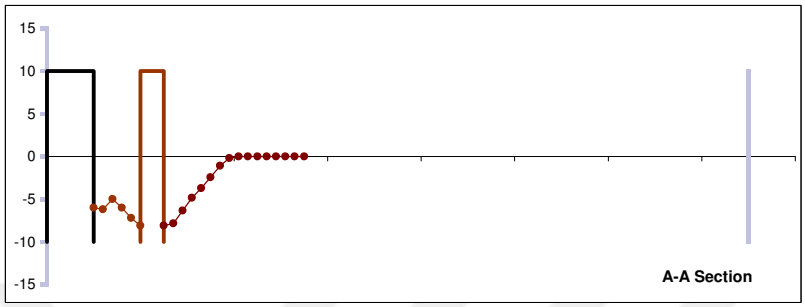
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12
SB_{af2}	Abutment Front (W+5 cm)	12.5
SB_{af}	Abutment Corner Front	15
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	150

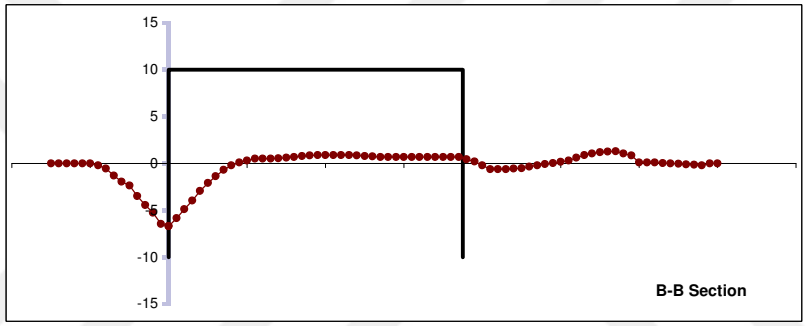


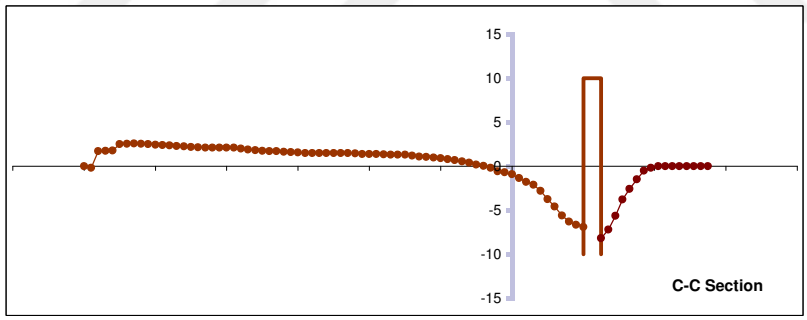
Experiment No : **E60**

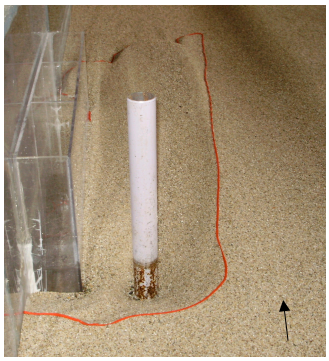


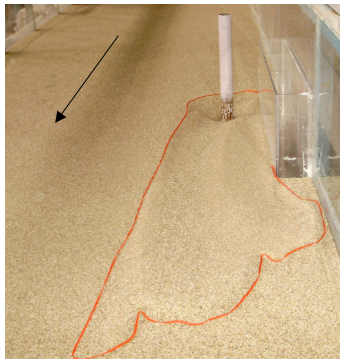






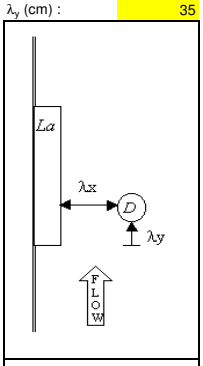


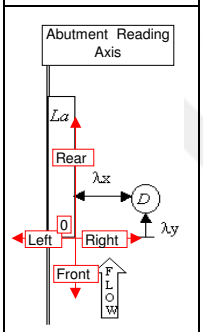


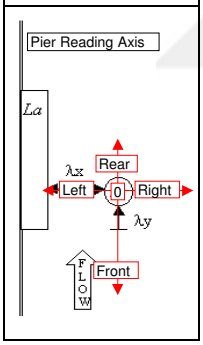


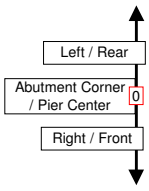
Experiment No : **E61**

Date :	04.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	35









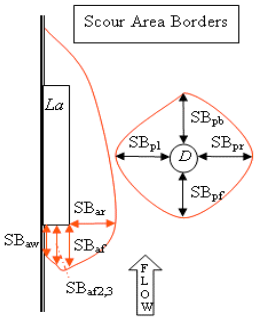
This color was used for raw data readings

This color was used for values enterpolated to sketch

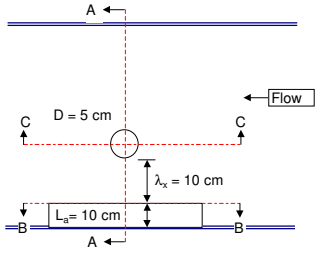
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-120.00				
-138	138					-118.00				
-136	136					-116.00				
-134	134					-114.00				
-132	132					-112.00				
-130	130					-110.00				
-128	128					-108.00				
-126	126					-106.00				
-124	124					-104.00				
-122	122					-102.00				
-120	120		9.40		-0.20	-100.00				
-118	118		9.60		0.00	-98.00				
-116	116		10.60		1.00	-96.00				
-114	114		11.65		2.05	-94.00				
-112	112		11.90		2.30	-92.00				
-110	110		12.00		2.40	-90.00				
-108	108		*11.95*		2.35	-88.00				
-106	106		11.90		2.30	-86.00				
-104	104		*11.70*		2.10	-84.00				
-102	102		11.50		1.90	-82.00				
-100	100		*11.25*		1.65	-80.00				
-98	98		11.00		1.40	-78.00				
-96	96		*10.68*		1.08	-76.00		9.40		-0.20
-94	94		10.35		0.75	-74.00		9.70		0.10
-92	92		*10.08*		0.48	-72.00		*10.15*		0.55
-90	90		9.80		0.20	-70.00		10.60		1.00
-88	88		*9.65*		0.05	-68.00		*10.90*		1.30
-86	86		9.50		-0.10	-66.00		11.20		1.60
-84	84		*9.50*		-0.10	-64.00		*11.70*		2.10
-82	82		9.50		-0.10	-62.00		12.20		2.60
-80	80		*9.65*		0.05	-60.00		*12.23*		2.63
-78	78		9.80		0.20	-58.00		12.25		2.65
-76	76		*9.85*		0.25	-56.00		*12.25*		2.65
-74	74		9.90		0.30	-54.00		12.25		2.65
-72	72		*9.96*		0.36	-52.00		*12.22*		2.62
-70	70		*10.02*		0.42	-50.00		*12.18*		2.58
-68	68		10.10		0.50	-48.00		12.15		2.55
-66	66		*10.10*		0.50	-46.00		*12.13*		2.53
-64	64		10.10		0.50	-44.00		12.10		2.50
-62	62		*10.05*		0.45	-42.00		*12.05*		2.45
-60	60		10.00		0.40	-40.00		12.00		2.40
-58	58		*9.88*		0.28	-38.00		*11.95*		2.35
-56	56		9.75		0.15	-36.00		11.90		2.30
-54	54		*9.50*		-0.10	-34.00		*11.90*		2.30
-52	52		9.25		-0.35	-32.00		11.90		2.30
-50	50		*9.00*		-0.60	-30.00		*11.90*		2.30
-48	48		8.75		-0.85	-28.00		11.90		2.30
-46	46		*8.50*		-1.10	-26.00		*11.88*		2.28
-44	44		8.25		-1.35	-24.00		11.85		2.25
-42	42		*8.25*		-1.35	-22.00		*11.68*		2.08
-40	40		8.25		-1.35	-20.00		11.50		1.90
-38	38		*8.78*		-0.82	-18.00		*11.38*		1.78
-36	36		9.30		-0.30	-16.00		11.25		1.65
-34	34		*9.58*		-0.03	-14.00		*11.13*		1.53
-32	32		9.85		0.25	-12.00		11.00		1.40
-30	30		*9.85*		0.25	-10.00		*10.93*		1.33
-28	28		9.85		0.25	-8.00		10.85		1.25
-26	26		*9.73*		0.13	-6.00		*10.75*		1.15
-24	24		9.60		0.00	-4.00		10.65		1.05
-22	22		9.50		-0.10	-2.00		10.55		0.95
-20	20		9.20		-0.40	0.00		10.35		0.75
-18	18		9.00		-0.60	2.00		10.20		0.60
-16	16		8.60		-1.00	4.00		10.05		0.45
-14	14		8.00		-1.60	6.00		9.90		0.30
-12	12		7.50		-2.10	8.00		9.60		0.00
-10	10	2.80	6.80	-6.80	-2.80	10.00	9.00	9.40	-0.60	-0.20
-8	8	*2.70*	6.30	-6.90	-3.30	12.00	8.10	9.00	-1.50	-0.60
-6	6	2.60	5.50	-7.00	-4.10	14.00	7.05	8.40	-2.55	-1.20
-4	4	*2.50*	4.50	-7.10	-5.10	16.00	6.45	7.50	-3.15	-2.10
-2	2	2.40	3.50	-7.20	-6.10	18.00	5.40	6.85	-4.20	-2.75
0	0	2.90	2.90	-6.70	-6.70	20.00	4.90	6.40	-4.70	-3.20
0	0	2.90	2.90	-6.70	-6.70	25.00	4.40	4.40	-5.20	-5.20
2	-2	3.15	3.15	-6.45	-6.45	27.00	5.10	5.40	-4.50	-4.20
4	-4	4.15	4.60	-5.45	-5.00	29.00	6.20	6.60	-3.40	-3.00
6	-6	5.60	5.30	-4.00	-4.30	31.00	6.40	8.10	-3.20	-1.50
8	-8	6.70	6.35	-2.90	-3.25	33.00	7.90	9.25	-1.70	-0.35
10	-10	7.60	7.50	-2.00	-2.10	35.00	9.00	10.00	-0.60	0.40
12	-12	8.50	8.90	-1.10	-0.70	37.00	9.25	9.95	-0.35	0.35
14	-14	9.40	9.40	-0.20	-0.20	39.00	9.40	9.90	-0.20	0.30
16	-16					41.00		9.85		0.25
18	-18					43.00		9.75		0.15
20	-20					45.00		9.60		0.00
22	-22					47.00		9.50		-0.10
24	-24					49.00		*9.45*		-0.15
26	-26					51.00		9.40		-0.20
28	-28					53.00		*9.40*		-0.20
30	-30					55.00		9.40		-0.20

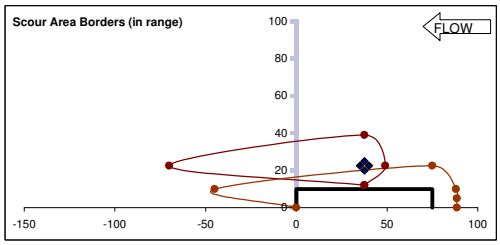
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.80	-6.80
2	3.00	-6.60
4	4.10	-5.50
6	5.35	-4.25
8	6.60	-3.00
10	7.70	-1.90
12	9.10	-0.50
14	9.40	-0.20
16		
18		
20		

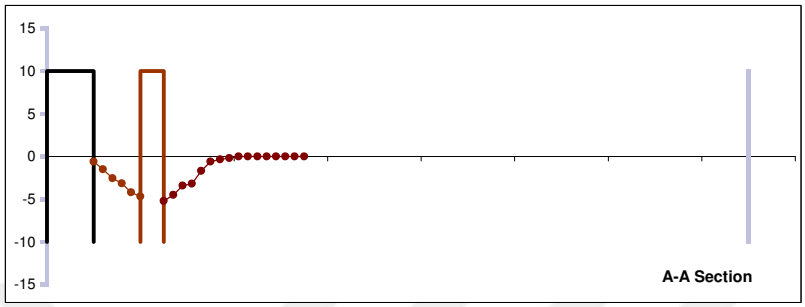
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	13.5
SB_{af}	Abutment Corner Front	13
SB_{ar}	Abutment Corner Right	12.5
SB_{pl}	Pier Left	8
SB_{pf}	Pier Front	9
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	105

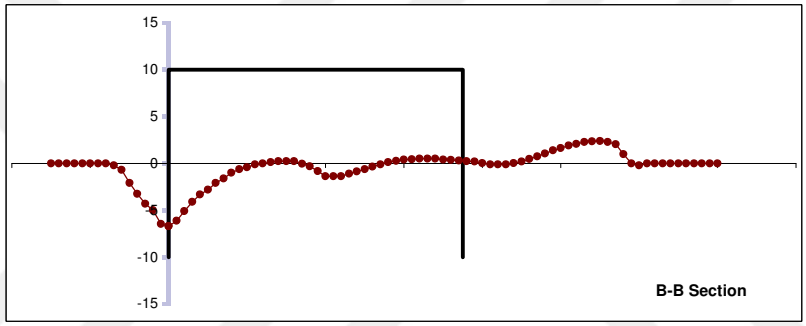


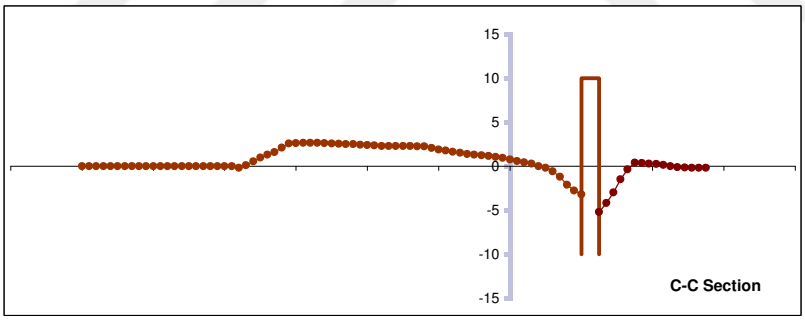
Experiment No : **E61**

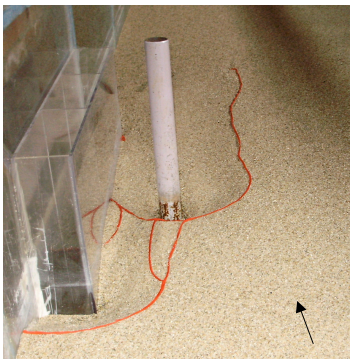


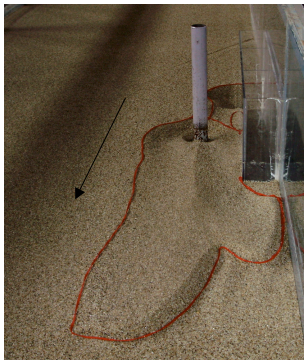




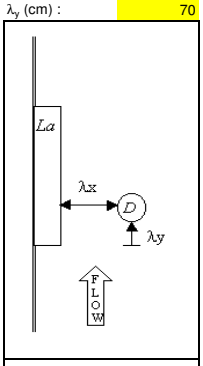


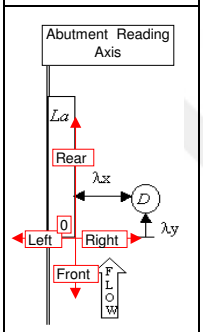


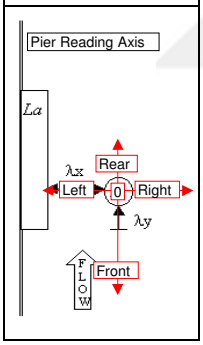


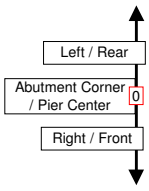


Experiment No :	**E62**
Date :	10.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	70









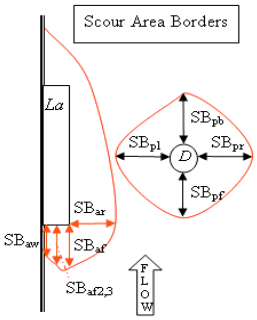
This color was used for raw data readings

This color was used for values enterpolated to sketch

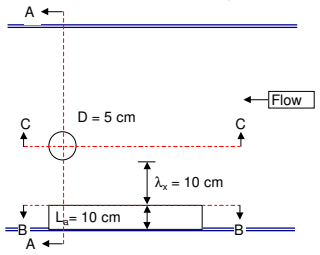
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-120.00				
-138	138					-118.00				
-136	136					-116.00				
-134	134					-114.00				
-132	132		9.40		-0.20	-112.00				
-130	130		10.15		0.55	-110.00				
-128	128		11.70		2.10	-108.00				
-126	126		12.50		2.90	-106.00				
-124	124		*12.40*		2.80	-104.00				
-122	122		12.30		2.70	-102.00				
-120	120		*12.20*		2.60	-100.00				
-118	118		12.10		2.50	-98.00				
-116	116		*11.93*		2.33	-96.00				
-114	114		11.75		2.15	-94.00				
-112	112		*11.58*		1.98	-92.00				
-110	110		11.40		1.80	-90.00				
-108	108		*11.13*		1.53	-88.00				
-106	106		10.85		1.25	-86.00				
-104	104		*10.65*		1.05	-84.00				
-102	102		10.45		0.85	-82.00				
-100	100		*10.33*		0.73	-80.00				
-98	98		10.20		0.60	-78.00				
-96	96		*10.03*		0.42	-76.00				
-94	94		9.85		0.25	-74.00				
-92	92		*9.68*		0.08	-72.00				
-90	90		9.50		-0.10	-70.00				
-88	88		*9.45*		-0.15	-68.00				
-86	86		9.40		-0.20	-66.00				
-84	84		*9.35*		-0.25	-64.00				
-82	82		9.30		-0.30	-62.00				
-80	80		*9.15*		-0.45	-60.00				
-78	78		9.00		-0.60	-58.00				
-76	76		*9.00*		-0.60	-56.00				
-74	74		9.00		-0.60	-54.00				
-72	72		*9.27*		-0.33	-52.00				
-70	70		*9.53*		-0.07	-50.00				
-68	68		9.80		0.20	-48.00				
-66	66		*10.25*		0.65	-46.00				
-64	64		10.70		1.10	-44.00				
-62	62		*10.80*		1.20	-42.00				
-60	60		10.90		1.30	-40.00				
-58	58		*10.90*		1.30	-38.00		9.40		-0.20
-56	56		10.90		1.30	-36.00		9.50		-0.10
-54	54		*10.88*		1.28	-34.00		9.80		0.20
-52	52		10.85		1.25	-32.00		10.20		0.60
-50	50		*10.83*		1.23	-30.00		11.60		2.00
-48	48		10.80		1.20	-28.00		12.30		2.70
-46	46		*10.78*		1.18	-26.00		*12.53*		2.93
-44	44		10.75		1.15	-24.00		12.75		3.15
-42	42		*10.73*		1.13	-22.00		*12.78*		3.18
-40	40		10.70		1.10	-20.00		12.80		3.20
-38	38		*10.60*		1.00	-18.00		*12.80*		3.20
-36	36		10.50		0.90	-16.00		12.80		3.20
-34	34		*10.40*		0.80	-14.00		*12.73*		3.13
-32	32		10.30		0.70	-12.00		12.65		3.05
-30	30		10.05		0.45	-10.00		*12.58*		2.98
-28	28		9.80		0.20	-8.00		12.50		2.90
-26	26		9.45		-0.15	-6.00		12.30		2.70
-24	24		9.10		-0.50	-4.00		12.10		2.50
-22	22		8.90		-0.70	-2.00		11.85		2.25
-20	20		8.55		-1.05	0.00		11.75		2.15
-18	18		8.00		-1.60	2.00		11.35		1.75
-16	16		7.60		-2.00	4.00		11.15		1.55
-14	14		7.20		-2.40	6.00		10.80		1.20
-12	12		6.60		-3.00	8.00		10.05		0.45
-10	10	1.60	6.00	-8.00	-3.60	10.00	8.70	9.90	-0.90	0.30
-8	8	*1.65*	5.60	-7.95	-4.00	12.00	8.05	9.35	-1.55	-0.25
-6	6	1.70	4.95	-7.90	-4.65	14.00	7.40	8.50	-2.20	-1.10
-4	4	*1.60*	3.70	-8.00	-5.90	16.00	6.45	7.40	-3.15	-2.20
-2	2	1.50	3.05	-8.10	-6.55	18.00	5.45	6.60	-4.15	-3.00
0	0	2.10	2.10	-7.50	-7.50	20.00	5.00	6.40	-4.60	-3.20
0	0	2.10	2.10	-7.50	-7.50	25.00	4.50	4.60	-5.10	-5.00
2	-2	2.50	2.55	-7.10	-7.05	27.00	5.50	5.25	-4.10	-4.35
4	-4	3.70	3.70	-5.90	-5.90	29.00	6.80	6.70	-2.80	-2.90
6	-6	5.20	4.55	-4.40	-5.05	31.00	7.30	8.10	-2.30	-1.50
8	-8	6.15	5.50	-3.45	-4.10	33.00	7.75	9.25	-1.85	-0.35
10	-10	6.90	6.60	-2.70	-3.00	35.00	8.80	9.90	-0.80	0.30
12	-12	8.00	7.80	-1.60	-1.80	37.00	9.40	10.20	-0.20	0.60
14	-14	9.00	9.40	-0.60	-0.20	39.00		*10.23*		0.63
16	-16	9.40		-0.20		41.00		10.25		0.65
18	-18					43.00		*10.25*		0.65
20	-20					45.00		10.25		0.65
22	-22					47.00		*10.20*		0.60
24	-24					49.00		10.15		0.55
26	-26					51.00		*10.18*		0.58
28	-28					53.00		10.20		0.60
30	-30					55.00		*10.18*		0.58

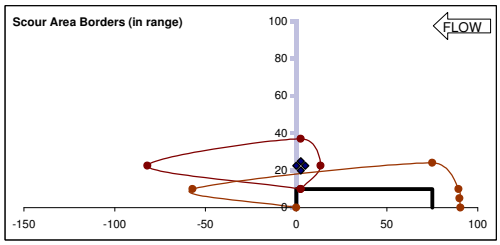
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	1.60	-8.00
2	1.80	-7.80
4	2.55	-7.05
6	3.80	-5.80
8	4.90	-4.70
10	5.90	-3.70
12	7.15	-2.45
14	8.60	-1.00
16	9.40	-0.20
18		
20		

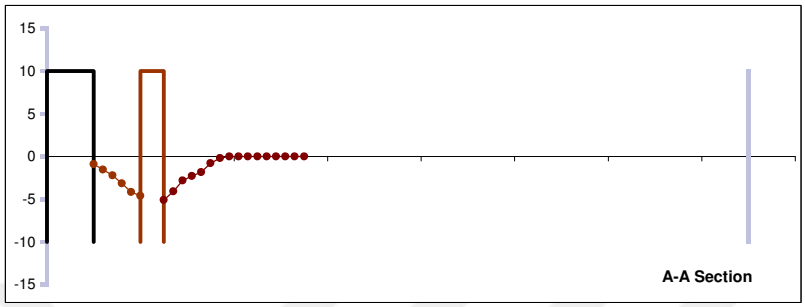
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	8.5
SB_{pr}	Pier Right	12
SB_{pb}	Pier Rear	82

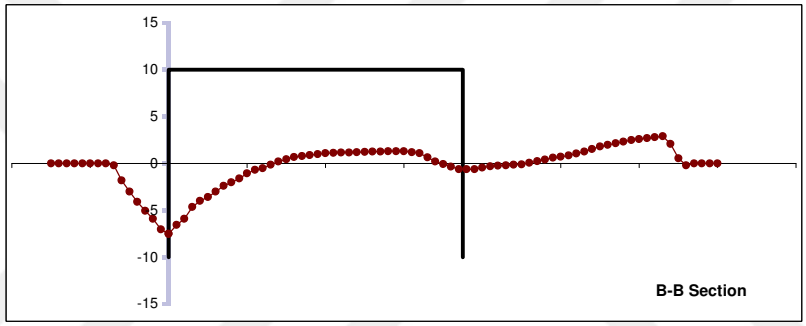


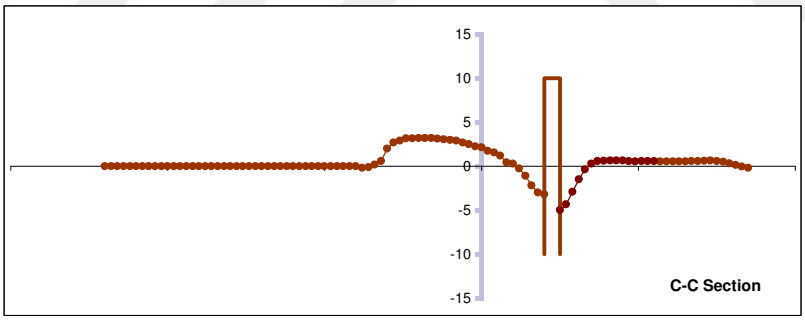
Experiment No : **E62**

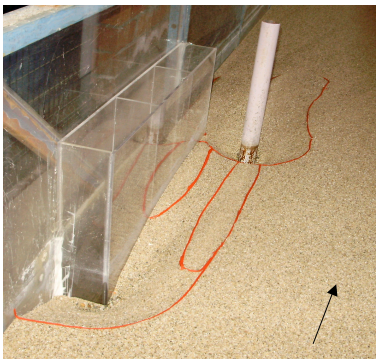


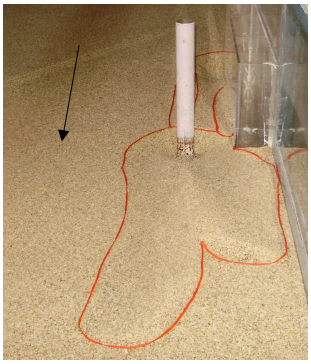




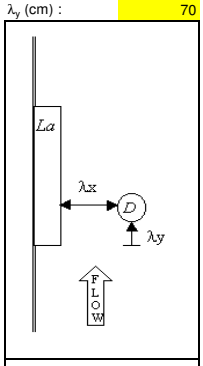


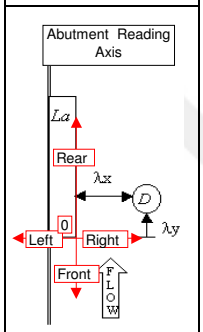


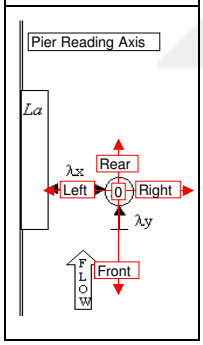


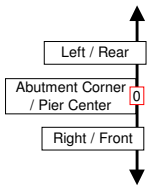


Experiment No :	**E63**
Date :	12.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5
λ_y (cm) :	70









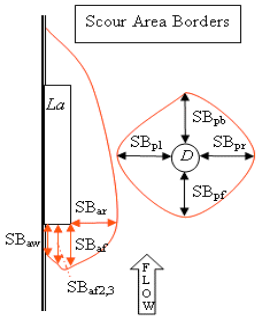
This color was used for raw data readings

This color was used for values enterpolated to sketch

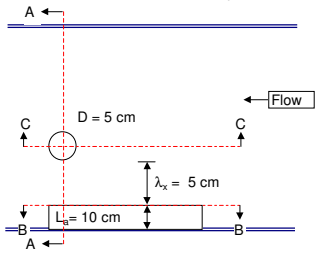
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-125.00				
-138	138					-123.00				
-136	136					-121.00				
-134	134					-119.00				
-132	132					-117.00				
-130	130					-115.00				
-128	128					-113.00				
-126	126					-111.00				
-124	124					-109.00				
-122	122		9.40		-0.20	-107.00				
-120	120		9.80		0.20	-105.00				
-118	118		10.20		0.60	-103.00				
-116	116		10.80		1.20	-101.00				
-114	114		11.40		1.80	-99.00				
-112	112		12.80		3.20	-97.00				
-110	110		12.30		2.70	-95.00				
-108	108		*12.40*		2.80	-93.00				
-106	106		12.50		2.90	-91.00				
-104	104		*12.28*		2.68	-89.00				
-102	102		12.05		2.45	-87.00				
-100	100		*11.80*		2.20	-85.00				
-98	98		11.55		1.95	-83.00				
-96	96		*11.28*		1.68	-81.00				
-94	94		11.00		1.40	-79.00				
-92	92		*10.60*		1.00	-77.00				
-90	90		10.20		0.60	-75.00				
-88	88		*9.90*		0.30	-73.00				
-86	86		9.60		0.00	-71.00				
-84	84		*9.30*		-0.30	-69.00				
-82	82		9.00		-0.60	-67.00				
-80	80		8.30		-1.30	-65.00				
-78	78		7.95		-1.65	-63.00				
-76	76		7.50		-2.10	-61.00				
-74	74		6.90		-2.70	-59.00				
-72	72		6.30		-3.30	-57.00				
-70	70		6.10		-3.50	-55.00				
-68	68		6.35		-3.25	-53.00				
-66	66		6.60		-3.00	-51.00				
-64	64		7.45		-2.15	-49.00				
-62	62		8.80		-0.80	-47.00				
-60	60		10.10		0.50	-45.00				
-58	58		*10.35*		0.75	-43.00				
-56	56		10.60		1.00	-41.00				
-54	54		*10.60*		1.00	-39.00				
-52	52		10.60		1.00	-37.00		9.40		-0.20
-50	50		*10.65*		1.05	-35.00		9.50		-0.10
-48	48		10.70		1.10	-33.00		10.45		0.85
-46	46		*10.70*		1.10	-31.00		10.80		1.20
-44	44		10.70		1.10	-29.00		11.20		1.60
-42	42		*10.70*		1.10	-27.00		11.65		2.05
-40	40		10.70		1.10	-25.00		12.20		2.60
-38	38		*10.60*		1.00	-23.00		12.70		3.10
-36	36		10.50		0.90	-21.00		12.70		3.10
-34	34		*10.45*		0.85	-19.00		*12.65*		3.05
-32	32		10.40		0.80	-17.00		12.60		3.00
-30	30		*10.30*		0.70	-15.00		12.50		2.90
-28	28		10.20		0.60	-13.00		12.35		2.75
-26	26		*10.13*		0.53	-11.00		12.20		2.60
-24	24		10.05		0.45	-9.00		11.90		2.30
-22	22		*9.73*		0.13	-7.00		11.70		2.10
-20	20		9.40		-0.20	-5.00		11.35		1.75
-18	18		9.20		-0.40	-3.00		11.10		1.50
-16	16		8.70		-0.90	-1.00		10.45		0.85
-14	14		8.40		-1.20	1.00		9.90		0.30
-12	12		7.70		-1.90	3.00		9.50		-0.10
-10	10	2.90	7.20	-6.70	-2.40	5.00		9.20		-0.40
-8	8	*2.90*	6.70	-6.70	-2.90	7.00		8.25		-1.35
-6	6	2.90	5.90	-6.70	-3.70	9.00		7.50		-2.10
-4	4	2.40	4.70	-7.20	-4.90	11.00	5.90	6.75	-3.70	-2.85
-2	2	2.50	3.70	-7.10	-5.90	13.00	5.10	6.15	-4.50	-3.45
0	0	2.90	2.90	-6.70	-6.70	15.00	4.60	5.80	-5.00	-3.80
0	0	2.90	2.90	-6.70	-6.70	20.00	3.30	4.00	-6.30	-5.60
2	-2	3.20	3.65	-6.40	-5.95	22.00	4.35	5.10	-5.25	-4.50
4	-4	4.70	4.70	-4.90	-4.90	24.00	5.70	6.60	-3.90	-3.00
6	-6	5.90	5.20	-3.70	-4.40	26.00	6.65	7.90	-2.95	-1.70
8	-8	6.75	6.20	-2.85	-3.40	28.00	7.50	8.85	-2.10	-0.75
10	-10	7.80	7.55	-1.80	-2.05	30.00	8.55	9.90	-1.05	0.30
12	-12	8.70	8.50	-0.90	-1.10	32.00	9.40	*9.90*	-0.20	0.30
14	-14	9.40	9.40	-0.20	-0.20	34.00		9.90		0.30
16	-16					36.00		*9.90*		0.30
18	-18					38.00		9.90		0.30
20	-20					40.00				
22	-22					42.00				
24	-24					44.00				
26	-26					46.00				
28	-28					48.00				
30	-30					50.00				

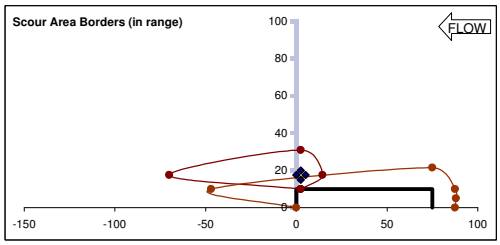
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.90	-6.70
2	3.40	-6.20
4	4.20	-5.40
6	5.85	-3.75
8	6.70	-2.90
10	7.90	-1.70
12	8.80	-0.80
14	9.40	-0.20
16		
18		
20		

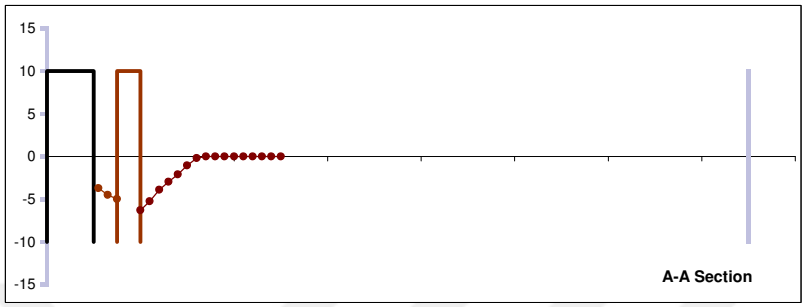
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	13
SB_{af}	Abutment Corner Front	12.5
SB_{ar}	Abutment Corner Right	11.5
SB_{pl}	Pier Left	*5*
SB_{pf}	Pier Front	9.5
SB_{pr}	Pier Right	11
SB_{pb}	Pier Rear	70

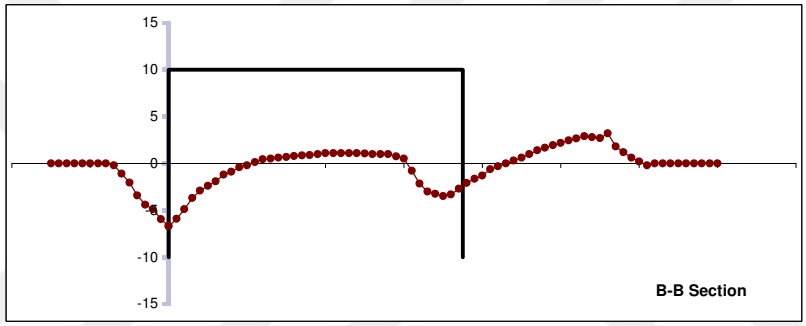


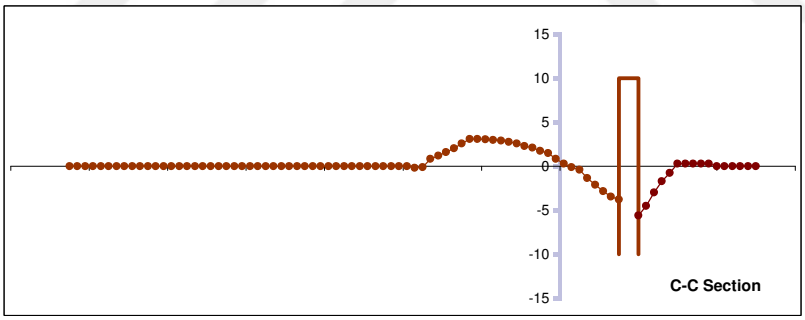
Experiment No : **E63**

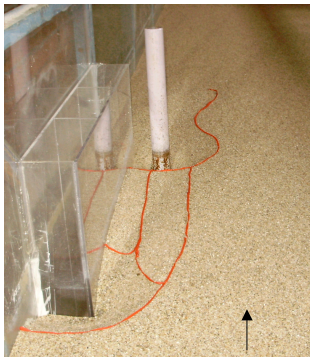






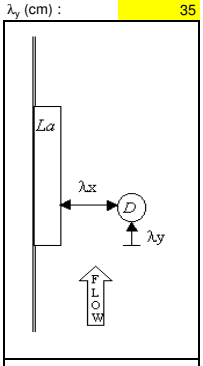


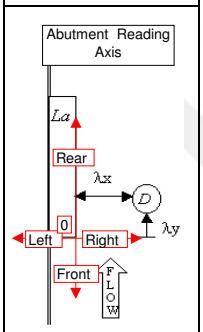


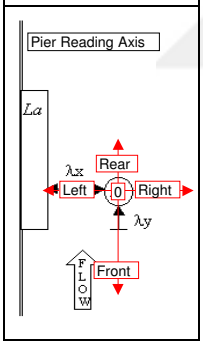


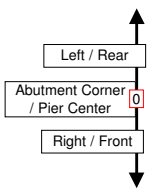
Experiment No : **E64**

Date :	16.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5
λ_y (cm) :	35









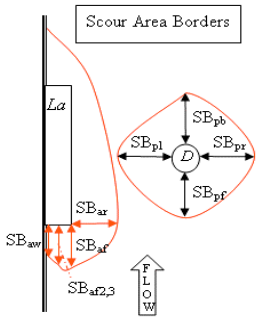
This color was used for raw data readings

This color was used for values enterpolated to sketch

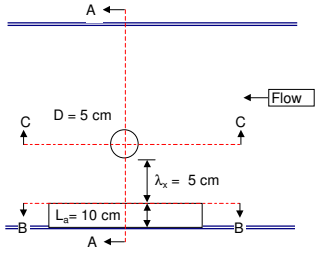
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140					-125.00				
-138	138					-123.00				
-136	136		9.60		0.00	-121.00				
-134	134		*9.65*		0.05	-119.00				
-132	132		9.70		0.10	-117.00				
-130	130		*9.70*		0.10	-115.00				
-128	128		9.70		0.10	-113.00				
-126	126		*9.80*		0.20	-111.00				
-124	124		9.90		0.30	-109.00				
-122	122		*9.95*		0.35	-107.00				
-120	120		10.00		0.40	-105.00				
-118	118		*10.15*		0.55	-103.00				
-116	116		10.30		0.70	-101.00				
-114	114		*10.35*		0.75	-99.00				
-112	112		10.40		0.80	-97.00				
-110	110		10.50		0.90	-95.00				
-108	108		*10.85*		1.25	-93.00				
-106	106		11.20		1.60	-91.00				
-104	104		*11.53*		1.93	-89.00				
-102	102		11.85		2.25	-87.00				
-100	100		*11.73*		2.13	-85.00				
-98	98		11.60		2.00	-83.00		9.50		-0.10
-96	96		*11.33*		1.73	-81.00		*9.68*		0.08
-94	94		11.05		1.45	-79.00		9.85		0.25
-92	92		*10.83*		1.23	-77.00		10.70		1.10
-90	90		10.60		1.00	-75.00		11.50		1.90
-88	88		*10.43*		0.83	-73.00		11.80		2.20
-86	86		10.25		0.65	-71.00		*11.90*		2.30
-84	84		*10.23*		0.63	-69.00		12.00		2.40
-82	82		10.20		0.60	-67.00		12.25		2.65
-80	80		*10.25*		0.65	-65.00		*12.38*		2.78
-78	78		10.30		0.70	-63.00		12.50		2.90
-76	76		*10.45*		0.85	-61.00		*12.55*		2.95
-74	74		10.60		1.00	-59.00		12.60		3.00
-72	72		*10.65*		1.05	-57.00		*12.57*		2.97
-70	70		10.70		1.10	-55.00		*12.53*		2.93
-68	68		*10.75*		1.15	-53.00		12.50		2.90
-66	66		10.80		1.20	-51.00		*12.50*		2.90
-64	64		*10.78*		1.18	-49.00		12.50		2.90
-62	62		10.75		1.15	-47.00		*12.43*		2.83
-60	60		*10.73*		1.13	-45.00		12.35		2.75
-58	58		10.70		1.10	-43.00		*12.20*		2.60
-56	56		*10.50*		0.90	-41.00		12.05		2.45
-54	54		10.30		0.70	-39.00		*12.05*		2.45
-52	52		9.95		0.35	-37.00		12.05		2.45
-50	50		9.10		-0.50	-35.00		*11.95*		2.35
-48	48		8.90		-0.70	-33.00		11.85		2.25
-46	46		8.30		-1.30	-31.00		*11.80*		2.20
-44	44		7.70		-1.90	-29.00		11.75		2.15
-42	42		7.20		-2.40	-27.00		*11.73*		2.13
-40	40		6.70		-2.90	-25.00		11.70		2.10
-38	38		6.30		-3.30	-23.00		*11.60*		2.00
-36	36		6.25		-3.35	-21.00		11.50		1.90
-34	34		6.10		-3.50	-19.00		*11.40*		1.80
-32	32		6.50		-3.10	-17.00		11.30		1.70
-30	30		7.30		-2.30	-15.00		*11.23*		1.63
-28	28		8.20		-1.40	-13.00		11.15		1.55
-26	26		9.30		-0.30	-11.00		*11.05*		1.45
-24	24		9.40		-0.20	-9.00		10.95		1.35
-22	22		9.20		-0.40	-7.00		*10.83*		1.23
-20	20		9.05		-0.55	-5.00		10.70		1.10
-18	18		8.70		-0.90	-3.00		10.60		1.00
-16	16		8.30		-1.30	-1.00		10.45		0.85
-14	14		8.00		-1.60	1.00		10.00		0.40
-12	12		7.40		-2.20	3.00		9.75		0.15
-10	10	2.80	6.80	-6.80	-2.80	5.00		9.25		-0.35
-8	8	*2.68*	6.50	-6.93	-3.10	7.00		8.75		-0.85
-6	6	2.55	5.85	-7.05	-3.75	9.00		8.10		-1.50
-4	4	*2.38*	4.40	-7.23	-5.20	11.00	5.70	7.25	-3.90	-2.35
-2	2	2.20	3.70	-7.40	-5.90	13.00	4.75	6.50	-4.85	-3.10
0	0	3.00	3.00	-6.60	-6.60	15.00	4.20	5.60	-5.40	-4.00
0	0	3.00	3.00	-6.60	-6.60	20.00	3.20	4.00	-6.40	-5.60
2	-2	3.20	3.40	-6.40	-6.20	22.00	4.25	4.60	-5.35	-5.00
4	-4	4.30	4.40	-5.30	-5.20	24.00	5.50	5.75	-4.10	-3.85
6	-6	5.60	5.15	-4.00	-4.45	26.00	6.50	6.80	-3.10	-2.80
8	-8	6.60	6.30	-3.00	-3.30	28.00	7.50	8.00	-2.10	-1.60
10	-10	7.40	7.40	-2.20	-2.20	30.00	8.60	8.90	-1.00	-0.70
12	-12	8.45	8.60	-1.15	-1.00	32.00	9.00	*8.85*	-0.60	-0.75
14	-14	9.10	9.40	-0.50	-0.20	34.00	9.40	8.80	-0.20	-0.80
16	-16	9.40		-0.20		36.00		*8.60*		-1.00
18	-18					38.00		8.40		-1.20
20	-20					40.00		*8.20*		-1.40
22	-22					42.00		8.00		-1.60
24	-24					44.00		*7.90*		-1.70
26	-26					46.00		7.80		-1.80
28	-28					48.00		*7.58*		-2.03
30	-30					50.00		7.35		-2.25

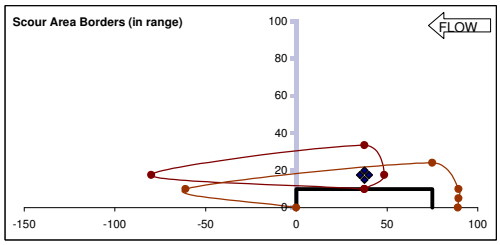
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.80	-6.80
2	2.95	-6.65
4	4.25	-5.35
6	5.45	-4.15
8	6.60	-3.00
10	7.45	-2.15
12	8.45	-1.15
14	9.40	-0.20
16		
18		
20		

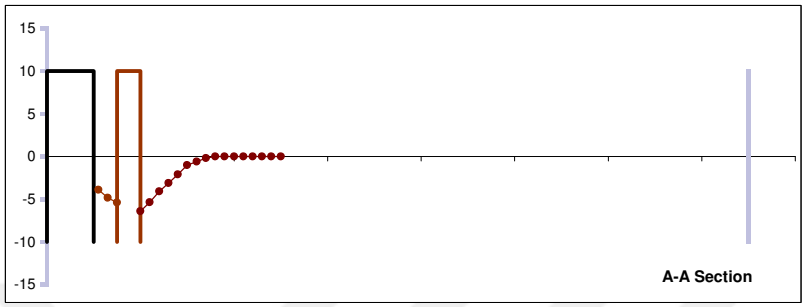
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	5
SB_{pf}	Pier Front	8.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	115

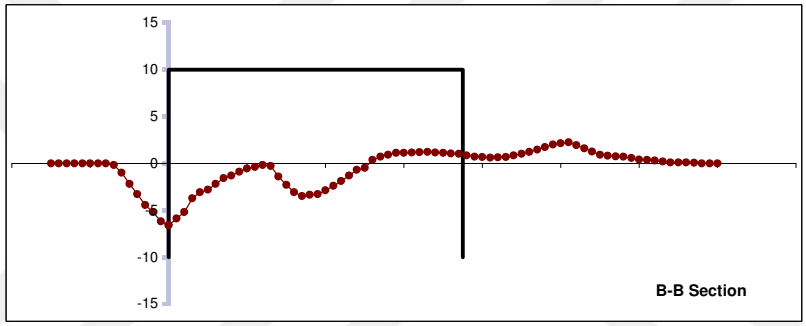


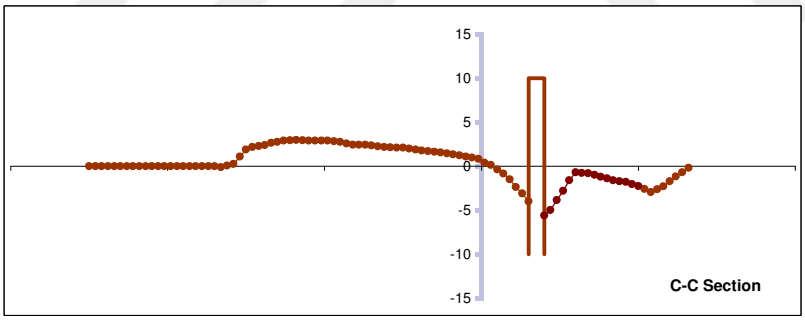
Experiment No : **E64**

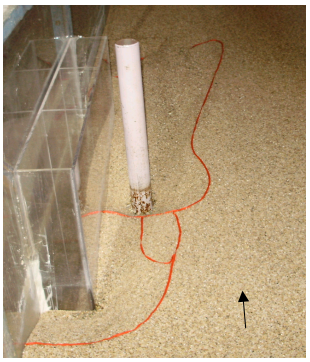


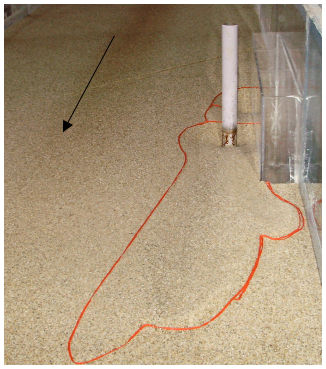




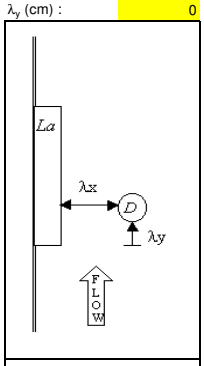


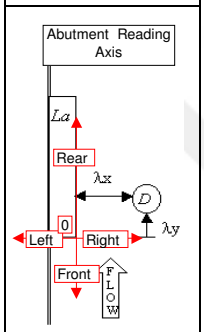


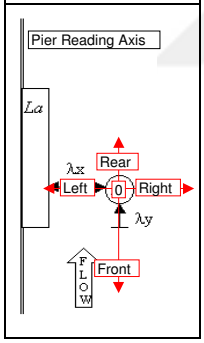


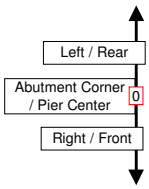


Experiment No :	**E65**
Date :	18.05.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	5
λ_y (cm) :	0









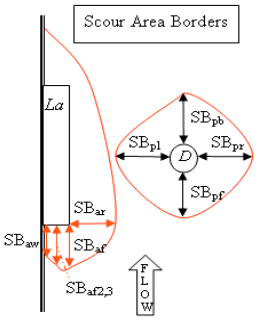
This color was used for raw data readings

This color was used for values enterpolated to sketch

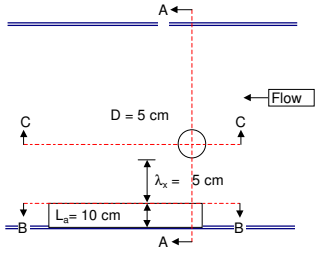
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/F ront	Dist.	Left/ Right	Rear/ Front	Left/ Right	Rear/F ront
-140	140		*9.55*		-0.05	-125.00		11.60		2.00
-138	138		9.60		0.00	-123.00		12.20		2.60
-136	136		*9.80*		0.20	-121.00		*12.20*		2.60
-134	134		10.00		0.40	-119.00		12.20		2.60
-132	132		*10.30*		0.70	-117.00		*12.25*		2.65
-130	130		10.60		1.00	-115.00		12.30		2.70
-128	128		*10.60*		1.00	-113.00		*12.30*		2.70
-126	126		10.60		1.00	-111.00		12.30		2.70
-124	124		*10.70*		1.10	-109.00		*12.30*		2.70
-122	122		10.80		1.20	-107.00		12.30		2.70
-120	120		10.80		1.20	-105.00		*12.25*		2.65
-118	118		11.00		1.40	-103.00		12.20		2.60
-116	116		11.30		1.70	-101.00		*12.20*		2.60
-114	114		11.30		1.70	-99.00		12.20		2.60
-112	112		*11.15*		1.55	-97.00		*12.15*		2.55
-110	110		11.00		1.40	-95.00		12.10		2.50
-108	108		*10.75*		1.15	-93.00		*12.05*		2.45
-106	106		10.50		0.90	-91.00		12.00		2.40
-104	104		*10.10*		0.50	-89.00		*11.95*		2.35
-102	102		9.70		0.10	-87.00		11.90		2.30
-100	100		*9.48*		-0.13	-85.00		*11.90*		2.30
-98	98		9.25		-0.35	-83.00		11.90		2.30
-96	96		*9.08*		-0.53	-81.00		*11.85*		2.25
-94	94		8.90		-0.70	-79.00		11.80		2.20
-92	92		*8.90*		-0.70	-77.00		*11.70*		2.10
-90	90		8.90		-0.70	-75.00		11.60		2.00
-88	88		*9.05*		-0.55	-73.00		*11.45*		1.85
-86	86		9.20		-0.40	-71.00		11.30		1.70
-84	84		*9.65*		0.05	-69.00		*11.35*		1.75
-82	82		10.10		0.50	-67.00		11.40		1.80
-80	80		*10.28*		0.67	-65.00		*11.40*		1.80
-78	78		10.45		0.85	-63.00		11.40		1.80
-76	76		*10.53*		0.92	-61.00		*11.45*		1.85
-74	74		10.60		1.00	-59.00		11.50		1.90
-72	72		*10.62*		1.02	-57.00		*11.50*		1.90
-70	70		*10.63*		1.03	-55.00		11.50		1.90
-68	68		10.65		1.05	-53.00		*11.45*		1.85
-66	66		*10.73*		1.13	-51.00		11.40		1.80
-64	64		10.80		1.20	-49.00		*11.38*		1.78
-62	62		*10.75*		1.15	-47.00		11.35		1.75
-60	60		10.70		1.10	-45.00		*11.30*		1.70
-58	58		*10.60*		1.00	-43.00		11.25		1.65
-56	56		10.50		0.90	-41.00		*11.23*		1.63
-54	54		*10.50*		0.90	-39.00		11.20		1.60
-52	52		10.50		0.90	-37.00		*11.15*		1.55
-50	50		*10.45*		0.85	-35.00		11.10		1.50
-48	48		10.40		0.80	-33.00		*11.05*		1.45
-46	46		*10.38*		0.78	-31.00		11.00		1.40
-44	44		10.35		0.75	-29.00		*10.88*		1.28
-42	42		*10.35*		0.75	-27.00		10.75		1.15
-40	40		10.35		0.75	-25.00		*10.63*		1.03
-38	38		*10.28*		0.67	-23.00		10.50		0.90
-36	36		10.20		0.60	-21.00		*10.35*		0.75
-34	34		*10.20*		0.60	-19.00		10.20		0.60
-32	32		10.20		0.60	-17.00		*10.10*		0.50
-30	30		*10.20*		0.60	-15.00		10.00		0.40
-28	28		10.20		0.60	-13.00		9.90		0.30
-26	26		*10.18*		0.58	-11.00		9.75		0.15
-24	24		10.15		0.55	-9.00		9.40		-0.20
-22	22		10.00		0.40	-7.00		9.25		-0.35
-20	20		9.65		0.05	-5.00		9.00		-0.60
-18	18		9.20		-0.40	-3.00		8.60		-1.00
-16	16		8.60		-1.00	-1.00		8.30		-1.30
-14	14		7.85		-1.75	1.00		8.10		-1.50
-12	12		6.90		-2.70	3.00		7.65		-1.95
-10	10	2.40	6.00	-7.20	-3.60	5.00		7.20		-2.40
-8	8	*2.25*	5.40	-7.35	-4.20	7.00		6.35		-3.25
-6	6	2.10	4.50	-7.50	-5.10	9.00		5.35		-4.25
-4	4	*1.75*	3.45	-7.85	-6.15	11.00	2.30	4.45	-7.30	-5.15
-2	2	1.40	2.70	-8.20	-6.90	13.00	1.20	3.20	-8.40	-6.40
0	0	1.85	1.85	-7.75	-7.75	15.00	1.00	2.80	-8.60	-6.80
0	0	1.85	1.85	-7.75	-7.75	20.00	1.70	1.40	-7.90	-8.20
2	-2	1.60	2.50	-8.00	-7.10	22.00	2.60	2.25	-7.00	-7.35
4	-4	2.35	3.70	-7.25	-5.90	24.00	3.70	3.25	-5.90	-6.35
6	-6	1.10	4.70	-8.50	-4.90	26.00	5.00	4.35	-4.60	-5.25
8	-8	*1.10*	5.80	-8.50	-3.80	28.00	6.30	5.50	-3.30	-4.10
10	-10	1.10	6.85	-8.50	-2.75	30.00	6.85	6.80	-2.75	-2.80
12	-12	1.40	7.35	-8.20	-2.25	32.00	8.30	7.80	-1.30	-1.80
14	-14	2.45	7.15	-7.15	-2.45	34.00	9.40	9.10	-0.20	-0.50
16	-16	3.70	8.00	-5.90	-1.60	36.00		9.40		-0.20
18	-18	5.25	9.40	-4.35	-0.20	38.00				
20	-20	6.15		-3.45		40.00				
22	-22	7.20		-2.40		42.00				
24	-24	8.20		-1.40		44.00				
26	-26	9.40		-0.20		46.00				
28	-28					48.00				
30	-30					50.00				

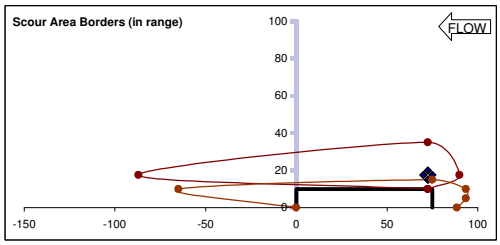
On side wall		
Dist.	Raw Data Reading (cm)	ds (cm)
0	2.40	-7.20
2	2.70	-6.90
4	3.80	-5.80
6	5.10	-4.50
8	6.35	-3.25
10	7.70	-1.90
12	8.80	-0.80
14	9.40	-0.20
16		
18		
20		

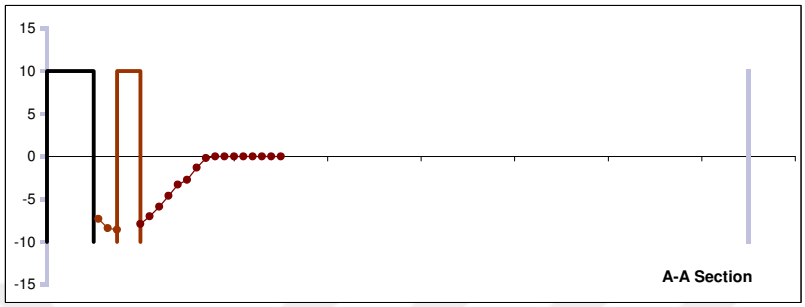
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af}	Abutment Corner Front	18.5
SB_{ar}	Abutment Corner Right	5
SB_{pl}	Pier Left	5
SB_{pf}	Pier Front	15
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	157

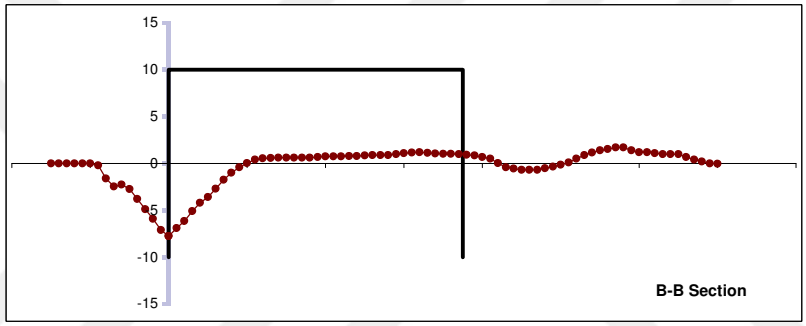


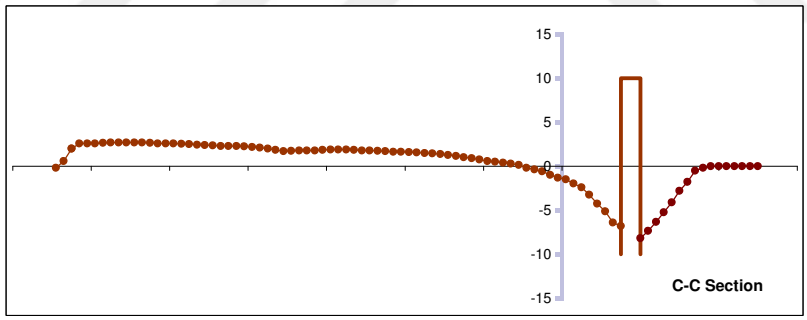
Experiment No : **E65**

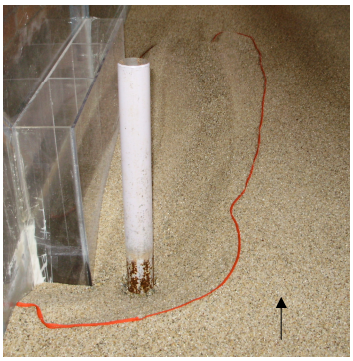




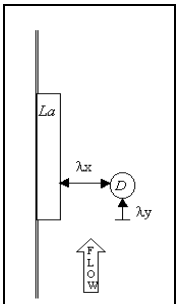


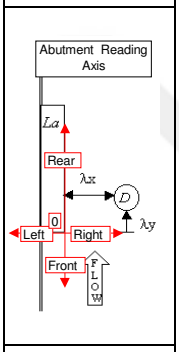


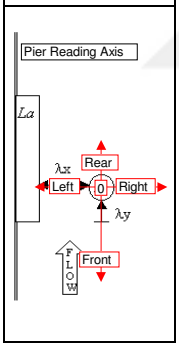


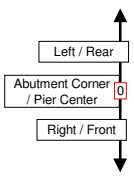


Experiment No :	**E66**
Date :	21.06.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	9.6
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	0









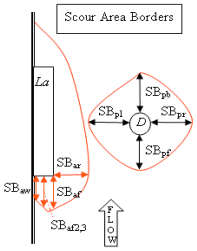
This color was used for raw data readings

This color was used for values enterpolated to sketch

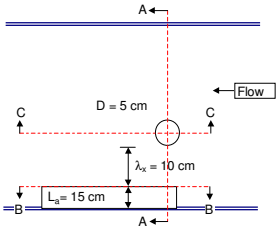
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131		9.50		-0.10
-154	154					-129		9.80		0.20
-152	152					-127		10.40		0.80
-150	150					-125		11.00		1.40
-148	148					-123		11.20		1.60
-146	146					-121		11.60		2.00
-144	144					-119		*11.80*		2.20
-142	142					-117		12.00		2.40
-140	140					-115		*11.95*		2.35
-138	138					-113		11.90		2.30
-136	136					-111		*11.85*		2.25
-134	134		9.50		-0.10	-109		11.80		2.20
-132	132		10.10		0.50	-107		*11.75*		2.15
-130	130		10.20		0.60	-105		11.70		2.10
-128	128		*10.30*		0.70	-103		*11.65*		2.05
-126	126		10.40		0.80	-101		11.60		2.00
-124	124		*10.40*		0.80	-99		*11.55*		1.95
-122	122		10.40		0.80	-97		11.50		1.90
-120	120		*10.40*		0.80	-95		*11.50*		1.90
-118	118		10.40		0.80	-93		11.50		1.90
-116	116		*10.40*		0.80	-91		*11.45*		1.85
-114	114		10.40		0.80	-89		11.40		1.80
-112	112		*10.30*		0.70	-87		*11.40*		1.80
-110	110		10.20		0.60	-85		11.40		1.80
-108	108		*10.10*		0.50	-83		*11.35*		1.75
-106	106		10.00		0.40	-81		11.30		1.70
-104	104		*9.85*		0.25	-79		*11.30*		1.70
-102	102		9.70		0.10	-77		11.30		1.70
-100	100		*9.60*		0.00	-75		*11.30*		1.70
-98	98		9.50		-0.10	-73		11.30		1.70
-96	96		*9.35*		-0.25	-71		*11.30*		1.70
-94	94		9.20		-0.40	-69		11.30		1.70
-92	92		*9.15*		-0.45	-67		*11.25*		1.65
-90	90		9.10		-0.50	-65		11.20		1.60
-88	88		*9.10*		-0.50	-63		*11.20*		1.60
-86	86		9.10		-0.50	-61		11.20		1.60
-84	84		*9.25*		-0.35	-59		*11.20*		1.60
-82	82		9.40		-0.20	-57		11.20		1.60
-80	80		*9.70*		0.10	-55		*11.18*		1.58
-78	78		10.00		0.40	-53		11.15		1.55
-76	76		*10.05*		0.45	-51		*11.13*		1.53
-74	74		10.10		0.50	-49		11.10		1.50
-72	72		*10.20*		0.60	-47		*11.07*		1.47
-70	70		10.30		0.70	-45		*11.03*		1.43
-68	68		*10.30*		0.70	-43		11.00		1.40
-66	66		10.30		0.70	-41		*11.00*		1.40
-64	64		*10.25*		0.65	-39		11.00		1.40
-62	62		10.20		0.60	-37		*10.90*		1.30
-60	60		*10.10*		0.50	-35		10.80		1.20
-58	58		10.00		0.40	-33		*10.65*		1.05
-56	56		*10.00*		0.40	-31		10.50		0.90
-54	54		10.00		0.40	-29		*10.50*		0.90
-52	52		*9.85*		0.25	-27		10.50		0.90
-50	50		9.70		0.10	-25		*10.45*		0.85
-48	48		*9.60*		0.00	-23		10.40		0.80
-46	46		9.50		-0.10	-21		*10.30*		0.70
-44	44		*9.45*		-0.15	-19		10.20		0.60
-42	42		9.40		-0.20	-17		*10.10*		0.50
-40	40		*9.40*		-0.20	-15		10.00		0.40
-38	38		9.40		-0.20	-13		*9.80*		0.20
-36	36		*9.25*		-0.35	-11		9.60		0.00
-34	34		9.10		-0.50	-9		*9.55*		-0.05
-32	32		*9.00*		-0.60	-7		9.50		-0.10
-30	30		8.90		-0.70	-5		*9.40*		-0.20
-28	28		*8.50*		-1.10	-3		9.30		-0.30
-26	26		8.10		-1.50	-1		*9.30*		-0.30
-24	24		*7.75*		-1.85	1		9.30		-0.30
-22	22		7.40		-2.20	3		*9.30*		-0.30
-20	20		7.20		-2.40	5		9.30		-0.30
-18	18		6.75		-2.85	7		*9.20*		-0.40
-16	16		6.15		-3.45	9		9.10		-0.50
-14	14	2.20	5.60	-7.40	-4.00	11		9.10		-0.50
-12	12	1.70	4.85	-7.90	-4.75	13		8.85		-0.75
-10	10	1.10	4.05	-8.50	-5.55	15	1.00	8.50	-8.60	-1.10
-8	8	0.75	3.30	-8.85	-6.30	17	0.25	8.10	-9.35	-1.50
-6	6	0.30	2.50	-9.30	-7.10	19	1.00	7.55	-8.60	-2.05
-4	4	-0.15	1.40	-9.75	-8.20	21	1.75	6.90	-7.85	-2.70
-2	2	-0.30	0.70	-9.90	-8.90	23	3.10	6.20	-6.50	-3.40
0	0	0.10	0.10	-9.50	-9.50	25	2.70	5.60	-6.90	-4.00
0	0	0.10	0.10	-9.50	-9.50	30	3.00	3.05	-6.60	-6.55
2	-2	0.00	0.25	-9.60	-9.35	32	3.80	3.90	-5.80	-5.70
4	-4	0.70	1.40	-8.90	-8.20	34	4.60	5.10	-5.00	-4.50
6	-6	2.00	2.90	-7.60	-6.70	36	5.30	6.20	-4.30	-3.40
8	-8	3.40	3.60	-6.20	-6.00	38	6.30	6.95	-3.30	-2.65
10	-10	3.10	4.15	-6.50	-5.45	40.00	7.40	7.90	-2.20	-1.70
12	-12	2.50	5.00	-7.10	-4.60	42.00	8.80	8.80	-0.80	-0.80
14	-14	2.75	6.30	-6.85	-3.30	44.00	9.40	9.40	-0.20	-0.20
16	-16	3.30	7.55	-6.30	-2.05	46.00				
18	-18	3.55	9.40	-6.05	-0.20	48.00				
20	-20	4.60		-5.00		50.00				
22	-22	6.30		-3.30		52.00				
24	-24	7.00		-2.60		54.00				
26	-26	8.30		-1.30		56.00				
28	-28	9.40		-0.20		58.00				
30	-30					60.00				

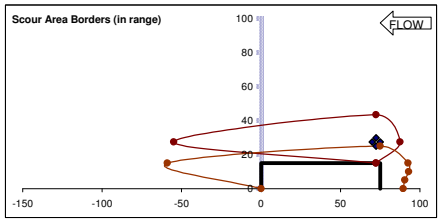
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	2.30	-7.30
2	2.10	-7.50
4	3.00	-6.60
6	4.15	-5.45
8	5.20	-4.40
10	6.20	-3.40
12	7.20	-2.40
14	8.20	-1.40
16	9.40	-0.20
18		
20		

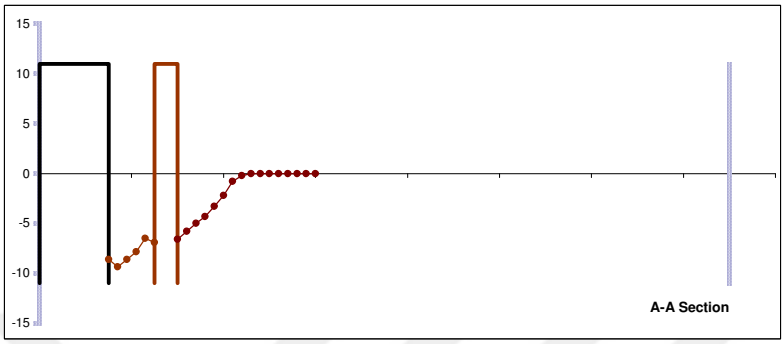
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	17.5
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	125

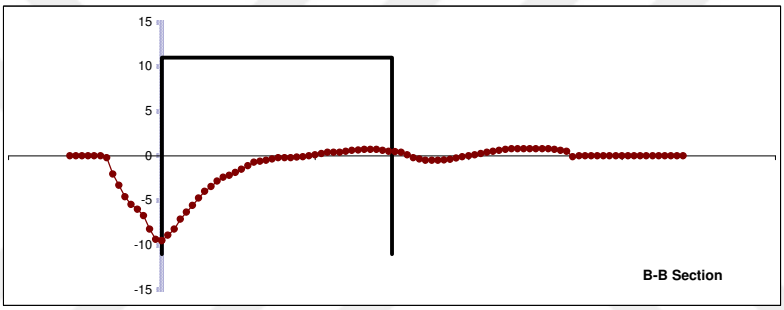


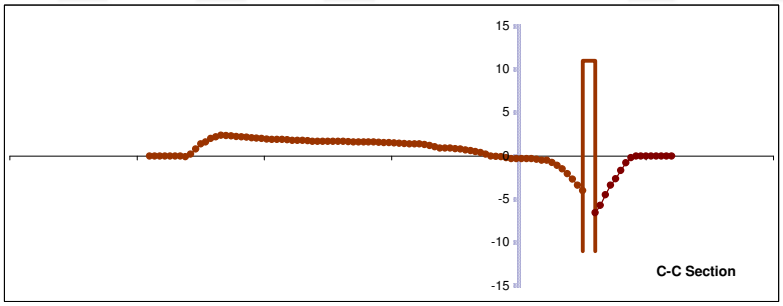
Experiment No : **E66**

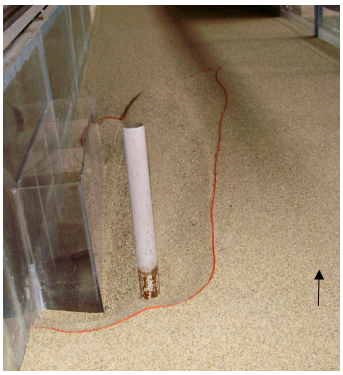




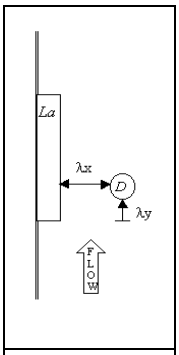


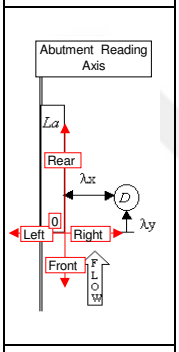


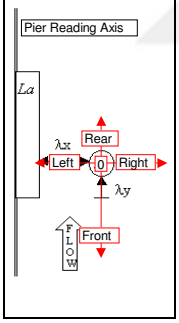


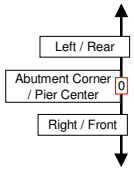


Experiment No :	**E67**
Date :	23.06.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	35









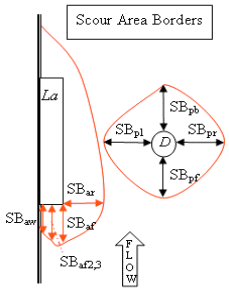
This color was used for raw data readings

This color was used for values enterpolated to sketch

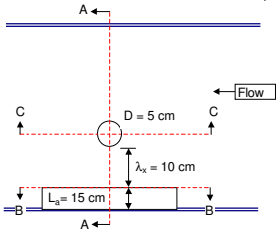
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131				
-154	154					-129				
-152	152					-127				
-150	150					-125				
-148	148					-123				
-146	146					-121				
-144	144					-119				
-142	142					-117				
-140	140					-115				
-138	138		11.80		-0.20	-113				
-136	136		12.00		0.00	-111				
-134	134		12.30		0.30	-109				
-132	132		12.70		0.70	-107				
-130	130		13.10		1.10	-105				
-128	128		13.70		1.70	-103				
-126	126		13.90		1.90	-101				
-124	124		14.50		2.50	-99				
-122	122		14.90		2.90	-97				
-120	120		*14.85*		2.85	-95				
-118	118		14.80		2.80	-93				
-116	116		*14.70*		2.70	-91				
-114	114		14.60		2.60	-89				
-112	112		*14.53*		2.53	-87				
-110	110		14.45		2.45	-85				
-108	108		*14.30*		2.30	-83				
-106	106		14.15		2.15	-81				
-104	104		*13.93*		1.93	-79				
-102	102		13.70		1.70	-77		11.80		-0.20
-100	100		*13.50*		1.50	-75		12.90		0.90
-98	98		13.30		1.30	-73		13.50		1.50
-96	96		*13.10*		1.10	-71		14.45		2.45
-94	94		12.90		0.90	-69		14.70		2.70
-92	92		*12.75*		0.75	-67		*14.75*		2.75
-90	90		12.60		0.60	-65		14.80		2.80
-88	88		*12.48*		0.48	-63		*14.85*		2.85
-86	86		12.35		0.35	-61		14.90		2.90
-84	84		*12.15*		0.15	-59		*14.93*		2.93
-82	82		11.95		-0.05	-57		14.95		2.95
-80	80		*11.73*		-0.28	-55		*14.95*		2.95
-78	78		11.50		-0.50	-53		14.95		2.95
-76	76		*11.60*		-0.40	-51		*14.95*		2.95
-74	74		11.70		-0.30	-49		14.95		2.95
-72	72		*11.75*		-0.25	-47		*14.94*		2.94
-70	70		11.80		-0.20	-45		*14.92*		2.92
-68	68		*11.78*		-0.23	-43		14.90		2.90
-66	66		11.75		-0.25	-41		*14.88*		2.88
-64	64		*11.75*		-0.25	-39		14.85		2.85
-62	62		11.75		-0.25	-37		*14.80*		2.80
-60	60		*11.60*		-0.40	-35		14.75		2.75
-58	58		11.45		-0.55	-33		*14.68*		2.68
-56	56		*11.23*		-0.78	-31		14.60		2.60
-54	54		11.00		-1.00	-29		*14.55*		2.55
-52	52		*10.70*		-1.30	-27		14.50		2.50
-50	50		10.40		-1.60	-25		*14.30*		2.30
-48	48		*10.25*		-1.75	-23		14.10		2.10
-46	46		10.10		-1.90	-21		*14.00*		2.00
-44	44		*10.03*		-1.98	-19		13.90		1.90
-42	42		9.95		-2.05	-17		*13.80*		1.80
-40	40		*9.95*		-2.05	-15		13.70		1.70
-38	38		9.95		-2.05	-13		*13.65*		1.65
-36	36		*9.78*		-2.23	-11		13.60		1.60
-34	34		9.60		-2.40	-9		*13.45*		1.45
-32	32		*9.35*		-2.65	-7		13.30		1.30
-30	30		9.10		-2.90	-5		*13.25*		1.25
-28	28		*8.80*		-3.20	-3		13.20		1.20
-26	26		8.50		-3.50	-1		*13.05*		1.05
-24	24		8.20		-3.80	1		12.90		0.90
-22	22		7.80		-4.20	3		12.45		0.45
-20	20		7.45		-4.55	5		12.35		0.35
-18	18		7.10		-4.90	7		12.15		0.15
-16	16		6.70		-5.30	9		11.90		-0.10
-14	14	0.50	6.15	-11.50	-5.85	11		11.70		-0.30
-12	12	*0.75*	5.40	-11.25	-6.60	13		11.40		-0.60
-10	10	1.00	4.85	-11.00	-7.15	15	9.90	11.00	-2.10	-1.00
-8	8	*0.95*	3.90	-11.05	-8.10	17	9.50	10.40	-2.50	-1.60
-6	6	0.90	2.80	-11.10	-9.20	19	8.70	9.70	-3.30	-2.30
-4	4	*0.85*	2.00	-11.15	-10.00	21	7.80	9.25	-4.20	-2.75
-2	2	0.80	1.50	-11.20	-10.50	23	6.90	8.60	-5.10	-3.40
0	0	1.10	1.10	-10.90	-10.90	25	6.50	8.40	-5.50	-3.60
0	0	1.10	1.10	-10.90	-10.90	30	6.20	6.00	-5.80	-6.00
2	-2	0.80	1.60	-11.20	-10.40	32	7.30	7.20	-4.70	-4.80
4	-4	1.60	2.80	-10.40	-9.20	34	8.50	8.00	-3.50	-4.00
6	-6	3.10	3.95	-8.90	-8.05	36	9.50	9.25	-2.50	-2.75
8	-8	4.25	4.80	-7.75	-7.20	38	10.15	10.80	-1.85	-1.20
10	-10	5.70	5.65	-6.30	-6.35	40.00	10.75	10.40	-1.25	-1.60
12	-12	7.00	6.45	-5.00	-5.55	42.00	10.90	10.25	-1.10	-1.75
14	-14	7.65	7.40	-4.35	-4.60	44.00	11.00	10.15	-1.00	-1.85
16	-16	8.60	8.60	-3.40	-3.40	46.00	11.25	10.00	-0.75	-2.00
18	-18	9.45	9.60	-2.55	-2.40	48.00	11.40	10.00	-0.60	-2.00
20	-20	10.35	10.70	-1.65	-1.30	50.00	11.60	9.80	-0.40	-2.20
22	-22	11.40	11.70	-0.60	-0.30	52.00	11.80	9.20	-0.20	-2.80
24	-24	11.80		-0.20		54.00		8.45		-3.55
26	-26					56.00		7.90		-4.10
28	-28					58.00		7.50		-4.50
30	-30					60.00		7.15		-4.85

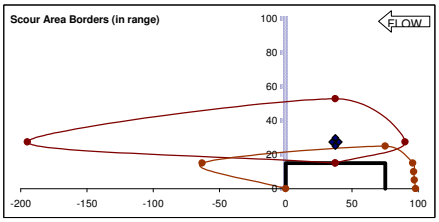
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	0.50	-11.50
2	0.40	-11.60
4	0.90	-11.10
6	1.90	-10.10
8	3.20	-8.80
10	4.70	-7.30
12	5.50	-6.50
14	5.90	-6.10
16	7.50	-4.50
18	8.50	-3.50
20	9.60	-2.40
22	11.10	-0.90
24	11.80	-0.20

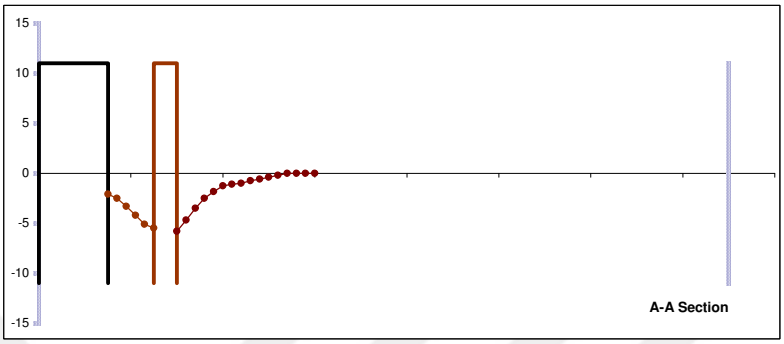
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	23
SB_{af2}	Abutment Front (W+5 cm)	22
SB_{af3}	Abutment Front (W+10 cm)	21.5
SB_{af}	Abutment Corner Front	21
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	50
SB_{pr}	Pier Right	23
SB_{pb}	Pier Rear	230

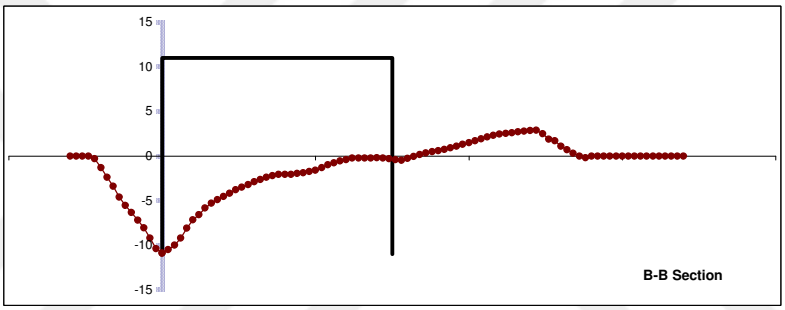


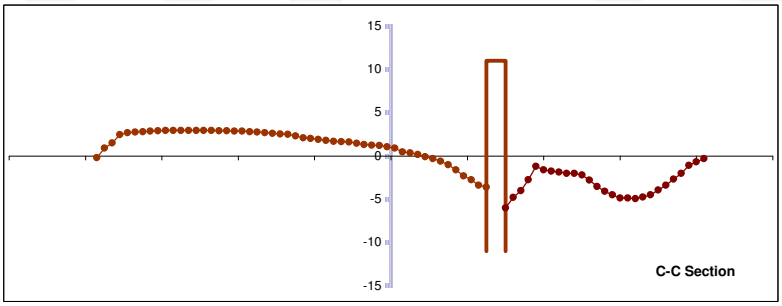
Experiment No : **E67**

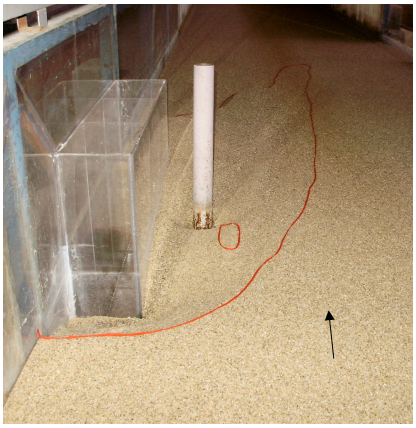


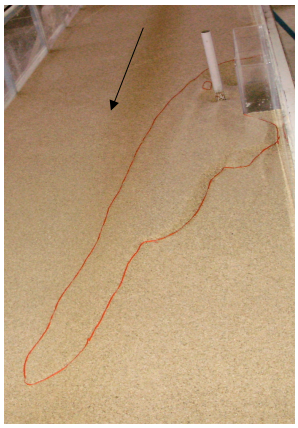




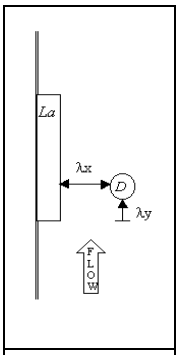


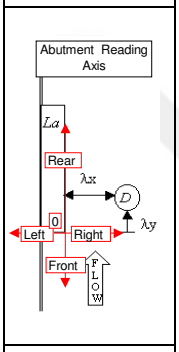


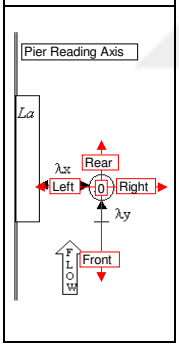


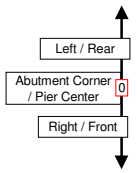


Experiment No :	**E68**
Date :	27.06.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	70









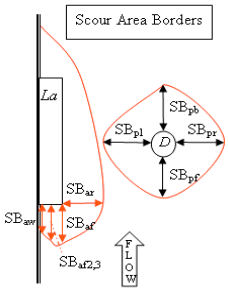
This color was used for raw data readings

This color was used for values enterpolated to sketch

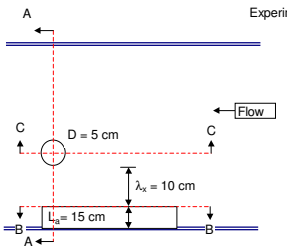
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131				
-154	154					-129				
-152	152					-127				
-150	150					-125				
-148	148					-123				
-146	146					-121				
-144	144					-119				
-142	142					-117				
-140	140		11.70		-0.30	-115				
-138	138		12.45		0.45	-113				
-136	136		14.00		2.00	-111				
-134	134		15.10		3.10	-109				
-132	132		15.60		3.60	-107				
-130	130		*15.55*		3.55	-105				
-128	128		15.50		3.50	-103				
-126	126		*15.50*		3.50	-101				
-124	124		15.50		3.50	-99				
-122	122		*15.40*		3.40	-97				
-120	120		15.30		3.30	-95				
-118	118		*15.18*		3.18	-93				
-116	116		15.05		3.05	-91				
-114	114		*14.75*		2.75	-89				
-112	112		14.45		2.45	-87				
-110	110		*14.13*		2.13	-85				
-108	108		13.80		1.80	-83				
-106	106		*13.55*		1.55	-81				
-104	104		13.30		1.30	-79				
-102	102		*13.03*		1.03	-77				
-100	100		12.75		0.75	-75				
-98	98		*12.53*		0.53	-73				
-96	96		12.30		0.30	-71				
-94	94		12.10		0.10	-69				
-92	92		11.95		-0.05	-67				
-90	90		11.95		-0.05	-65				
-88	88		11.90		-0.10	-63				
-86	86		11.90		-0.10	-61				
-84	84		11.90		-0.10	-59				
-82	82		12.00		0.00	-57				
-80	80		11.80		-0.20	-55				
-78	78		11.55		-0.45	-53				
-76	76		11.10		-0.90	-51				
-74	74		11.10		-0.90	-49				
-72	72		11.05		-0.95	-47				
-70	70		11.55		-0.45	-45				
-68	68		12.10		0.10	-43				
-66	66		12.65		0.65	-41		11.70		-0.30
-64	64		12.85		0.85	-39		*11.75*		-0.25
-62	62		*12.80*		0.80	-37		11.80		-0.20
-60	60		12.75		0.75	-35		13.95		1.95
-58	58		*12.68*		0.68	-33		14.20		2.20
-56	56		12.60		0.60	-31		15.20		3.20
-54	54		*12.60*		0.60	-29		15.30		3.30
-52	52		12.60		0.60	-27		*15.33*		3.33
-50	50		*12.45*		0.45	-25		15.35		3.35
-48	48		12.30		0.30	-23		*15.43*		3.43
-46	46		*12.10*		0.10	-21		15.50		3.50
-44	44		11.90		-0.10	-19		*15.53*		3.53
-42	42		*11.60*		-0.40	-17		15.55		3.55
-40	40		11.30		-0.70	-15		*15.53*		3.53
-38	38		*11.03*		-0.98	-13		15.50		3.50
-36	36		10.75		-1.25	-11		*15.45*		3.45
-34	34		*10.43*		-1.58	-9		15.40		3.40
-32	32		10.10		-1.90	-7		*15.35*		3.35
-30	30		*9.80*		-2.20	-5		15.30		3.30
-28	28		9.50		-2.50	-3		15.10		3.10
-26	26		9.20		-2.80	-1		*14.98*		2.98
-24	24		8.55		-3.45	1		14.85		2.85
-22	22		8.25		-3.75	3		14.60		2.60
-20	20		7.80		-4.20	5		14.30		2.30
-18	18		7.30		-4.70	7		13.95		1.95
-16	16		6.75		-5.25	9		13.65		1.65
-14	14	1.65	6.30	-10.35	-5.70	11		13.30		1.30
-12	12	1.65	5.50	-10.35	-6.50	13		12.90		0.90
-10	10	1.75	4.75	-10.25	-7.25	15	10.90	12.30	-1.10	0.30
-8	8	1.60	4.00	-10.40	-8.00	17	11.00	11.60	-1.00	-0.40
-6	6	1.55	3.50	-10.45	-8.50	19	9.70	10.90	-2.30	-1.10
-4	4	1.50	2.70	-10.50	-9.30	21	8.70	10.10	-3.30	-1.90
-2	2	1.35	2.55	-10.65	-9.45	23	7.40	9.00	-4.60	-3.00
0	0	1.50	1.50	-10.50	-10.50	25	7.00	8.70	-5.00	-3.30
0	0	1.50	1.50	-10.50	-10.50	30	7.20	6.80	-4.80	-5.20
2	-2	1.60	1.95	-10.40	-10.05	32	8.15	7.65	-3.85	-4.35
4	-4	2.55	3.20	-9.45	-8.80	34	9.00	8.95	-3.00	-3.05
6	-6	3.60	4.60	-8.40	-7.40	36	10.00	10.10	-2.00	-1.90
8	-8	4.90	5.45	-7.10	-6.55	38	11.50	11.20	-0.50	-0.80
10	-10	6.00	6.45	-6.00	-5.55	40.00	11.80	*11.30*	-0.20	-0.70
12	-12	7.00	6.95	-5.00	-5.05	42.00	*11.70*	11.40	-0.30	-0.60
14	-14	7.75	7.60	-4.25	-4.40	44.00	11.60	*11.30*	-0.40	-0.70
16	-16	8.65	8.90	-3.35	-3.10	46.00	*11.60*	11.20	-0.40	-0.80
18	-18	9.80	10.20	-2.20	-1.80	48.00	11.60	*11.15*	-0.40	-0.85
20	-20	10.80	11.10	-1.20	-0.90	50.00		11.10		-0.90
22	-22	11.70	11.70	-0.30	-0.30	52.00		*11.05*		-0.95
24	-24					54.00		11.00		-1.00
26	-26					56.00		*10.93*		-1.08
28	-28					58.00		10.85		-1.15
30	-30					60.00		*10.85*		-1.15

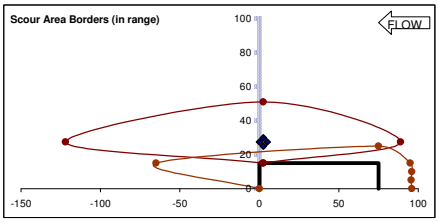
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	1.65	-10.35
2	1.60	-10.40
4	2.20	-9.80
6	3.40	-8.60
8	4.90	-7.10
10	5.80	-6.20
12	6.55	-5.45
14	7.50	-4.50
16	9.90	-2.10
18	9.90	-2.10
20	11.15	-0.85
22	11.70	-0.30
24		

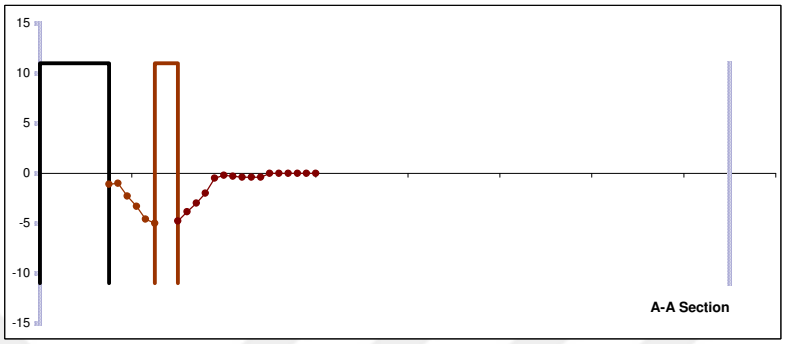
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21
SB_{af2}	Abutment Front (W+5 cm)	20.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	20
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	84
SB_{pr}	Pier Right	21
SB_{pb}	Pier Rear	122

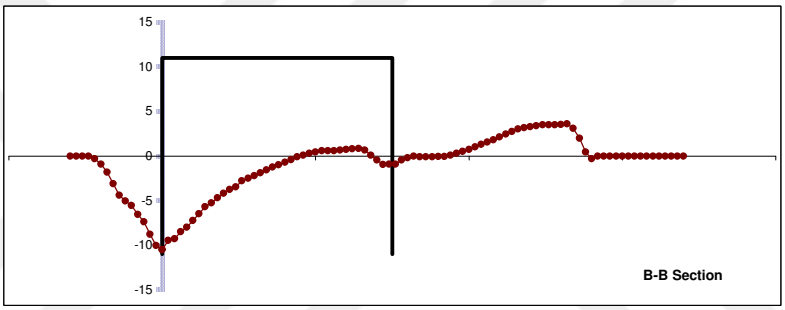


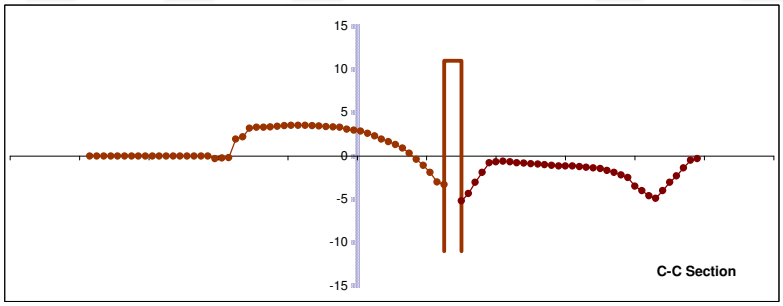
Experiment No : **E68**



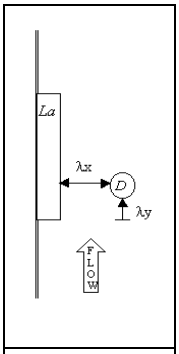


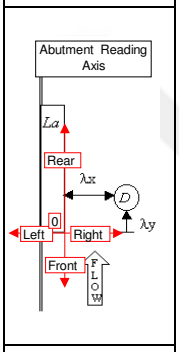


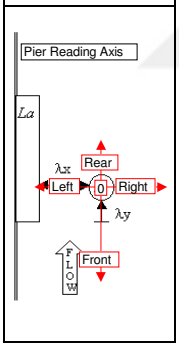


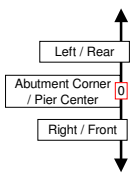


Experiment No :	**E69**
Date :	05.07.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	70









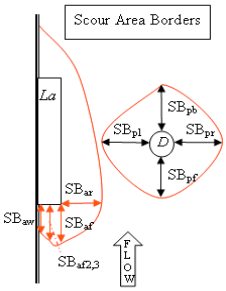
This color was used for raw data readings

This color was used for values enterpolated to sketch

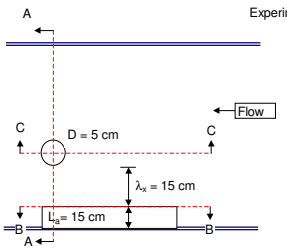
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-140				
-168	168					-138				
-166	166					-136				
-164	164					-134				
-162	162					-132				
-160	160					-130				
-158	158					-128				
-156	156					-126				
-154	154					-124				
-152	152					-122				
-150	150					-120				
-148	148		11.80		-0.20	-118				
-146	146		11.90		-0.10	-116				
-144	144		12.28		0.28	-114				
-142	142		14.00		2.00	-112				
-140	140		15.40		3.40	-110				
-138	138		15.30		3.30	-108				
-136	136		*15.25*		3.25	-106				
-134	134		15.20		3.20	-104				
-132	132		*15.10*		3.10	-102				
-130	130		15.00		3.00	-100				
-128	128		*14.93*		2.93	-98				
-126	126		14.85		2.85	-96				
-124	124		*14.78*		2.78	-94				
-122	122		14.70		2.70	-92				
-120	120		*14.45*		2.45	-90				
-118	118		14.20		2.20	-88				
-116	116		*14.00*		2.00	-86				
-114	114		13.80		1.80	-84				
-112	112		*13.63*		1.63	-82				
-110	110		13.45		1.45	-80				
-108	108		*13.25*		1.25	-78				
-106	106		13.05		1.05	-76				
-104	104		*12.93*		0.93	-74				
-102	102		12.80		0.80	-72				
-100	100		*12.75*		0.75	-70				
-98	98		12.70		0.70	-68				
-96	96		*12.65*		0.65	-66				
-94	94		12.60		0.60	-64				
-92	92		*12.50*		0.50	-62				
-90	90		12.40		0.40	-60				
-88	88		*12.10*		0.10	-58				
-86	86		11.80		-0.20	-56				
-84	84		*11.88*		-0.13	-54				
-82	82		11.95		-0.05	-52				
-80	80		*12.10*		0.10	-50				
-78	78		12.25		0.25	-48				
-76	76		*12.38*		0.38	-46				
-74	74		12.50		0.50	-44				
-72	72		*12.59*		0.59	-42				
-70	70		*12.67*		0.67	-40				
-68	68		12.75		0.75	-38		11.70		-0.30
-66	66		*12.78*		0.78	-36		12.05		0.05
-64	64		12.80		0.80	-34		12.70		0.70
-62	62		*12.80*		0.80	-32		14.10		2.10
-60	60		12.80		0.80	-30		15.20		3.20
-58	58		*12.75*		0.75	-28		*15.30*		3.30
-56	56		12.70		0.70	-26		15.40		3.40
-54	54		*12.60*		0.60	-24		*15.40*		3.40
-52	52		12.50		0.50	-22		15.40		3.40
-50	50		*12.45*		0.45	-20		*15.35*		3.35
-48	48		12.40		0.40	-18		15.30		3.30
-46	46		*12.20*		0.20	-16		*15.30*		3.30
-44	44		12.00		0.00	-14		15.30		3.30
-42	42		*11.80*		-0.20	-12		*15.30*		3.30
-40	40		11.60		-0.40	-10		15.30		3.30
-38	38		*11.23*		-0.78	-8		*15.25*		3.25
-36	36		10.85		-1.15	-6		15.20		3.20
-34	34		*10.43*		-1.58	-4		*15.20*		3.20
-32	32		10.00		-2.00	-2		15.20		3.20
-30	30		*9.43*		-2.58	0		*15.10*		3.10
-28	28		8.85		-3.15	2		15.00		3.00
-26	26		*8.50*		-3.50	4		*14.90*		2.90
-24	24		8.15		-3.85	6		14.80		2.80
-22	22		*7.78*		-4.23	8		14.70		2.70
-20	20		7.40		-4.60	10		14.40		2.40
-18	18		*7.03*		-4.98	12		14.10		2.10
-16	16		6.65		-5.35	14		13.80		1.80
-14	14	1.35	6.35	-10.65	-5.65	16	12.30	13.45	0.30	1.45
-12	12	1.65	5.90	-10.35	-6.10	18	12.30	13.10	0.30	1.10
-10	10	1.50	5.10	-10.50	-6.90	20	12.50	12.40	0.50	0.40
-8	8	*1.25*	4.40	-10.75	-7.60	22	11.90	11.80	-0.10	-0.20
-6	6	1.00	3.55	-11.00	-8.45	24	10.85	11.10	-1.15	-0.90
-4	4	*0.90*	2.90	-11.10	-9.10	26	9.75	10.10	-2.25	-1.90
-2	2	0.80	2.10	-11.20	-9.90	28	8.80	9.20	-3.20	-2.80
0	0	1.40	1.40	-10.60	-10.60	30	7.50	9.10	-4.50	-2.90
0	0	1.40	1.40	-10.60	-10.60	35	7.00	6.70	-5.00	-5.30
2	-2	1.50	1.80	-10.50	-10.20	37	8.30	7.70	-3.70	-4.30
4	-4	2.60	3.20	-9.40	-8.80	39	9.30	8.90	-2.70	-3.10
6	-6	3.50	4.25	-8.50	-7.75	41	10.15	10.15	-1.85	-1.85
8	-8	4.70	5.20	-7.30	-6.80	43	10.60	11.10	-1.40	-0.90
10	-10	6.30	5.95	-5.70	-6.05	45.00	10.80	*11.23*	-1.20	-0.78
12	-12	7.15	6.80	-4.85	-5.20	47.00	10.90	11.35	-1.10	-0.65
14	-14	8.00	7.65	-4.00	-4.35	49.00	11.10	*11.43*	-0.90	-0.57
16	-16	8.70	9.10	-3.30	-2.90	51.00	*11.40*	11.50	-0.60	-0.50
18	-18	9.40	10.30	-2.60	-1.70	53.00	11.70	*11.65*	-0.30	-0.35
20	-20	10.65	11.10	-1.35	-0.90	55.00		11.80		-0.20
22	-22	11.70	11.70	-0.30	-0.30	57.00		*11.95*		-0.05
24	-24					59.00		12.10		0.10
26	-26					61.00		*12.10*		0.10
28	-28					63.00		12.10		0.10
30	-30					65.00		*12.15*		0.15

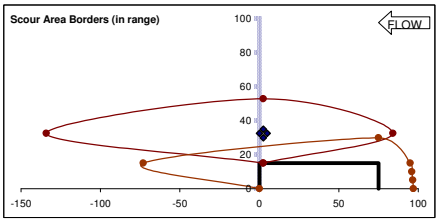
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	1.00	-11.00
2	1.10	-10.90
4	2.00	-10.00
6	3.20	-8.80
8	4.40	-7.60
10	5.50	-6.50
12	6.30	-5.70
14	7.10	-4.90
16	8.45	-3.55
18	9.80	-2.20
20	10.90	-1.10
22	11.70	-0.30
24		

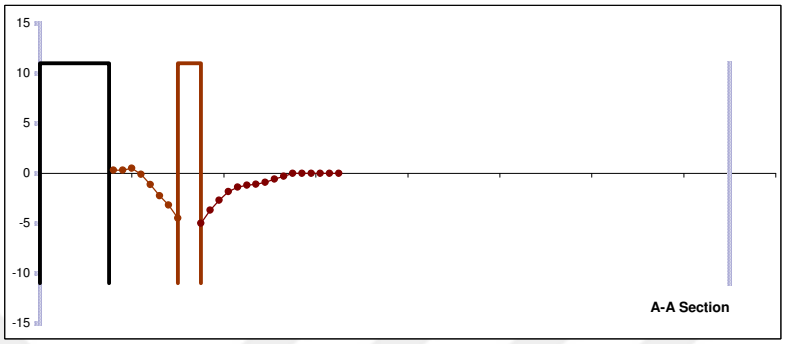
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	22
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	20
SB_{ar}	Abutment Corner Right	*15*
SB_{pl}	Pier Left	*15*
SB_{pf}	Pier Front	79
SB_{pr}	Pier Right	18
SB_{pb}	Pier Rear	134

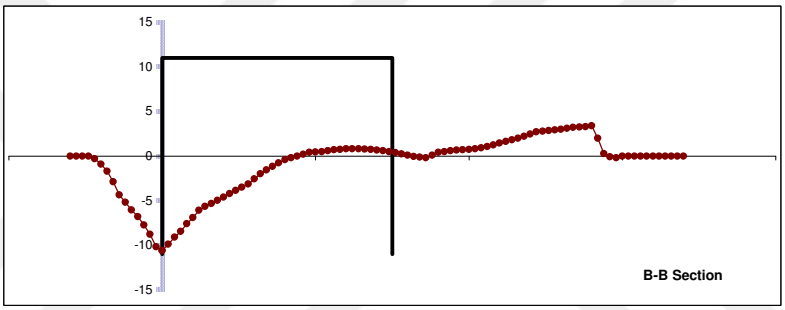


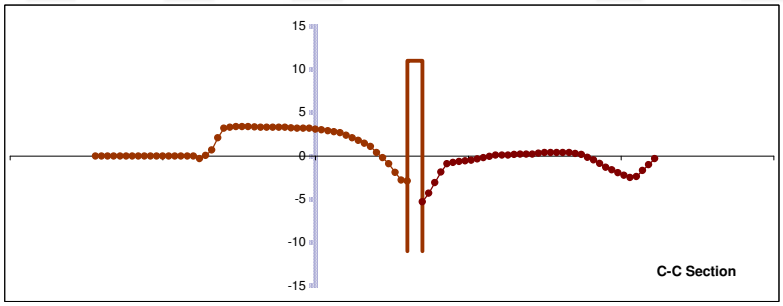
Experiment No : **E69**



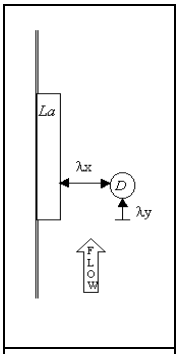


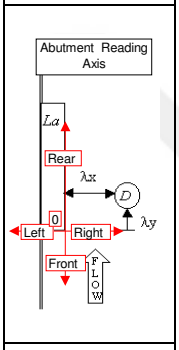


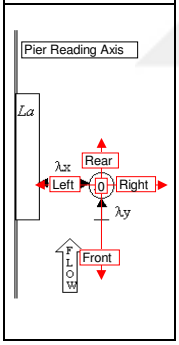


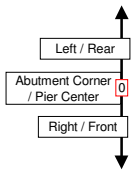


Experiment No :	**E70**
Date :	07.07.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	35









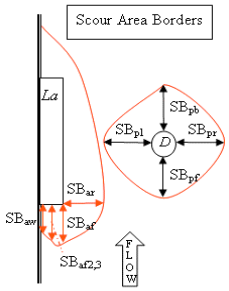
This color was used for raw data readings

This color was used for values enterpolated to sketch

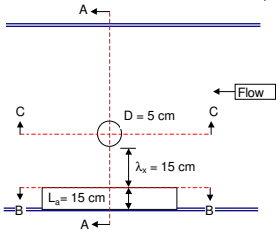
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-140				
-168	168					-138				
-166	166					-136				
-164	164					-134				
-162	162					-132				
-160	160					-130				
-158	158					-128				
-156	156					-126				
-154	154					-124				
-152	152					-122				
-150	150					-120				
-148	148					-118				
-146	146					-116				
-144	144					-114				
-142	142					-112				
-140	140					-110				
-138	138					-108				
-136	136					-106				
-134	134					-104				
-132	132					-102				
-130	130					-100				
-128	128		11.70		-0.30	-98				
-126	126		12.20		0.20	-96				
-124	124		13.55		1.55	-94				
-122	122		14.90		2.90	-92				
-120	120		*14.95*		2.95	-90				
-118	118		15.00		3.00	-88				
-116	116		*14.85*		2.85	-86				
-114	114		14.70		2.70	-84				
-112	112		*14.35*		2.35	-82				
-110	110		14.00		2.00	-80				
-108	108		*14.15*		2.15	-78				
-106	106		14.30		2.30	-76				
-104	104		*14.25*		2.25	-74		11.70		-0.30
-102	102		14.20		2.20	-72		*12.00*		0.00
-100	100		*14.05*		2.05	-70		12.30		0.30
-98	98		13.90		1.90	-68		*12.30*		0.30
-96	96		*13.78*		1.78	-66		12.30		0.30
-94	94		13.65		1.65	-64		*12.30*		0.30
-92	92		*13.58*		1.58	-62		12.30		0.30
-90	90		13.50		1.50	-60		*12.50*		0.50
-88	88		*13.33*		1.33	-58		12.70		0.70
-86	86		13.15		1.15	-56		12.80		0.80
-84	84		*12.93*		0.93	-54		13.65		1.65
-82	82		12.70		0.70	-52		14.20		2.20
-80	80		*12.35*		0.35	-50		*14.25*		2.25
-78	78		12.00		0.00	-48		14.30		2.30
-76	76		*11.55*		-0.45	-46		*14.35*		2.35
-74	74		11.10		-0.90	-44		14.40		2.40
-72	72		*10.97*		-1.04	-42		*14.40*		2.40
-70	70		*10.83*		-1.17	-40		14.40		2.40
-68	68		10.70		-1.30	-38		*14.40*		2.40
-66	66		*10.85*		-1.15	-36		14.40		2.40
-64	64		11.00		-1.00	-34		*14.35*		2.35
-62	62		*11.18*		-0.82	-32		14.30		2.30
-60	60		11.35		-0.65	-30		*14.35*		2.35
-58	58		*11.50*		-0.50	-28		14.40		2.40
-56	56		11.65		-0.35	-26		*14.30*		2.30
-54	54		*11.78*		-0.23	-24		14.20		2.20
-52	52		11.90		-0.10	-22		*14.20*		2.20
-50	50		*11.95*		-0.05	-20		14.20		2.20
-48	48		12.00		0.00	-18		*14.10*		2.10
-46	46		*12.10*		0.10	-16		14.00		2.00
-44	44		12.20		0.20	-14		*13.95*		1.95
-42	42		*12.20*		0.20	-12		13.90		1.90
-40	40		12.20		0.20	-10		*13.70*		1.70
-38	38		*12.08*		0.07	-8		13.50		1.50
-36	36		11.95		-0.05	-6		*13.40*		1.40
-34	34		*11.83*		-0.18	-4		13.30		1.30
-32	32		11.70		-0.30	-2		*13.25*		1.25
-30	30		*11.50*		-0.50	0		13.20		1.20
-28	28		11.30		-0.70	2		*13.05*		1.05
-26	26		*10.20*		-1.80	4		12.90		0.90
-24	24		9.10		-2.90	6		*12.80*		0.80
-22	22		8.80		-3.20	8		12.70		0.70
-20	20		8.50		-3.50	10		*12.55*		0.55
-18	18		7.90		-4.10	12		12.40		0.40
-16	16		7.40		-4.60	14		*12.30*		0.30
-14	14	1.60	6.90	-10.40	-5.10	16	11.20	12.20	-0.80	0.20
-12	12	*1.65*	6.30	-10.35	-5.70	18	11.10	12.10	-0.90	0.10
-10	10	1.70	5.65	-10.30	-6.35	20	10.90	11.70	-1.10	-0.30
-8	8	*1.55*	4.80	-10.45	-7.20	22	10.50	11.35	-1.50	-0.65
-6	6	1.40	3.50	-10.60	-8.50	24	10.10	10.90	-1.90	-1.10
-4	4	*1.20*	2.30	-10.80	-9.70	26	9.20	10.40	-2.80	-1.60
-2	2	1.00	2.10	-11.00	-9.90	28	8.40	9.70	-3.60	-2.30
0	0	1.60	1.60	-10.40	-10.40	30	7.50	9.00	-4.50	-3.00
0	0	1.60	1.60	-10.40	-10.40	35	6.90	6.80	-5.10	-5.20
2	-2	1.50	1.70	-10.50	-10.30	37	8.40	7.85	-3.60	-4.15
4	-4	2.50	2.90	-9.50	-9.10	39	9.20	8.80	-2.80	-3.20
6	-6	3.90	4.00	-8.10	-8.00	41	9.80	10.30	-2.20	-1.70
8	-8	5.00	5.10	-7.00	-6.90	43	10.15	11.50	-1.85	-0.50
10	-10	6.10	6.00	-5.90	-6.00	45.00	10.55	12.20	-1.45	0.20
12	-12	7.00	6.55	-5.00	-5.45	47.00	11.30	12.50	-0.70	0.50
14	-14	8.20	7.50	-3.80	-4.50	49.00	11.70	12.50	-0.30	0.50
16	-16	9.00	8.70	-3.00	-3.30	51.00		*12.38*		0.38
18	-18	9.90	10.20	-2.10	-1.80	53.00		12.25		0.25
20	-20	10.60	11.20	-1.40	-0.80	55.00		*11.98*		-0.03
22	-22	11.70	11.70	-0.30	-0.30	57.00		11.70		-0.30
24	-24					59.00		*11.30*		-0.70
26	-26					61.00		10.90		-1.10
28	-28					63.00		10.50		-1.50
30	-30					65.00		10.15		-1.85

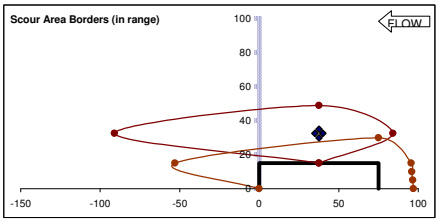
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	1.40	-10.60
2	1.60	-10.40
4	2.30	-9.70
6	3.70	-8.30
8	5.05	-6.95
10	5.80	-6.20
12	6.70	-5.30
14	7.40	-4.60
16	8.75	-3.25
18	10.15	-1.85
20	11.20	-0.80
22	11.70	-0.30
24		

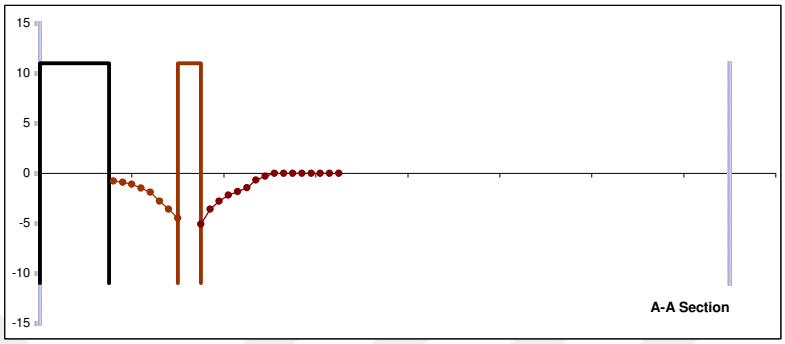
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	22
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	20.5
SB_{ar}	Abutment Corner Right	*15*
SB_{pl}	Pier Left	*15*
SB_{pf}	Pier Front	44
SB_{pr}	Pier Right	14
SB_{pb}	Pier Rear	126

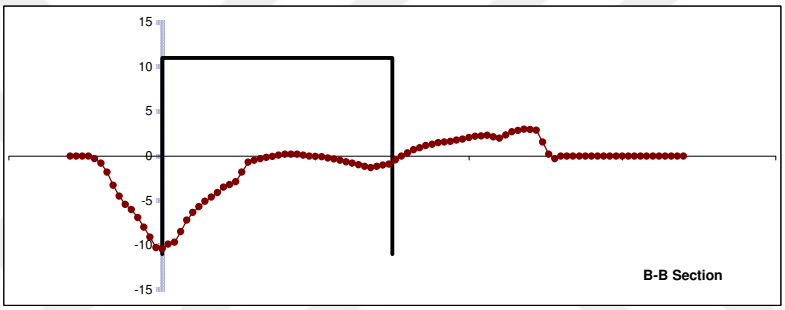


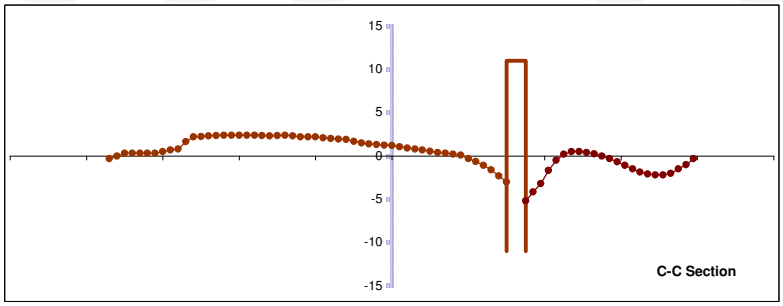
Experiment No : **E70**

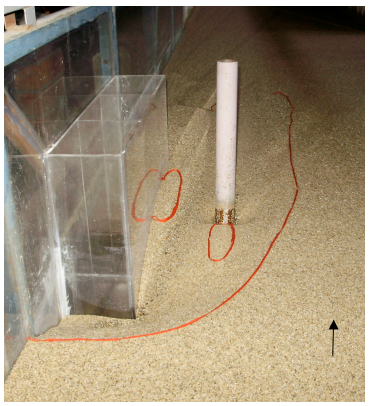


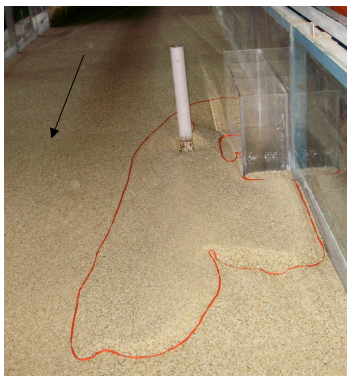




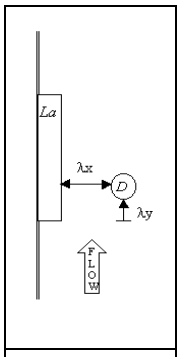


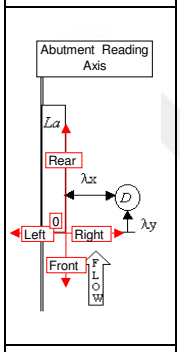


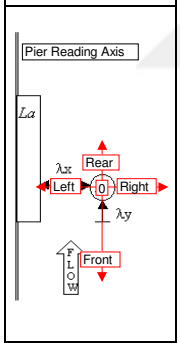


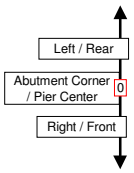


Experiment No :	**E71**
Date :	11.07.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	15
λ_y (cm) :	0









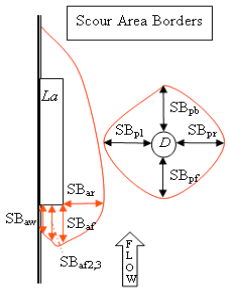
This color was used for raw data readings

This color was used for values enterpolated to sketch

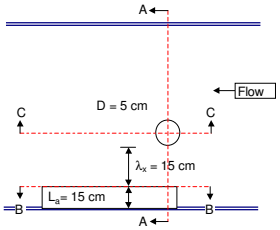
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-140				
-168	168					-138		11.70		-0.30
-166	166					-136		12.50		0.50
-164	164					-134		13.40		1.40
-162	162					-132		14.40		2.40
-160	160					-130		*14.40*		2.40
-158	158					-128		14.40		2.40
-156	156					-126		*14.40*		2.40
-154	154					-124		14.40		2.40
-152	152		11.80		-0.20	-122		*14.35*		2.35
-150	150		13.10		1.10	-120		14.30		2.30
-148	148		13.80		1.80	-118		*14.28*		2.28
-146	146		14.10		2.10	-116		14.25		2.25
-144	144		*14.35*		2.35	-114		*14.23*		2.23
-142	142		14.60		2.60	-112		14.20		2.20
-140	140		*14.35*		2.35	-110		*14.10*		2.10
-138	138		14.10		2.10	-108		14.00		2.00
-136	136		*14.10*		2.10	-106		*14.00*		2.00
-134	134		14.10		2.10	-104		14.00		2.00
-132	132		*14.05*		2.05	-102		*14.00*		2.00
-130	130		14.00		2.00	-100		14.00		2.00
-128	128		*13.95*		1.95	-98		*13.90*		1.90
-126	126		13.90		1.90	-96		13.80		1.80
-124	124		*13.90*		1.90	-94		*13.70*		1.70
-122	122		13.90		1.90	-92		13.60		1.60
-120	120		*13.85*		1.85	-90		*13.60*		1.60
-118	118		13.80		1.80	-88		13.60		1.60
-116	116		*13.75*		1.75	-86		*13.55*		1.55
-114	114		13.70		1.70	-84		13.50		1.50
-112	112		*13.65*		1.65	-82		*13.40*		1.40
-110	110		13.60		1.60	-80		13.30		1.30
-108	108		*13.55*		1.55	-78		*13.30*		1.30
-106	106		13.50		1.50	-76		13.30		1.30
-104	104		*13.30*		1.30	-74		*13.30*		1.30
-102	102		13.10		1.10	-72		13.30		1.30
-100	100		*13.10*		1.10	-70		*13.20*		1.20
-98	98		13.10		1.10	-68		13.10		1.10
-96	96		*12.90*		0.90	-66		*13.05*		1.05
-94	94		12.70		0.70	-64		13.00		1.00
-92	92		*12.45*		0.45	-62		*12.95*		0.95
-90	90		12.20		0.20	-60		12.90		0.90
-88	88		*11.90*		-0.10	-58		*12.90*		0.90
-86	86		11.60		-0.40	-56		12.90		0.90
-84	84		*11.38*		-0.63	-54		*12.90*		0.90
-82	82		11.15		-0.85	-52		12.90		0.90
-80	80		*11.28*		-0.73	-50		*12.85*		0.85
-78	78		11.40		-0.60	-48		12.80		0.80
-76	76		*11.65*		-0.35	-46		*12.80*		0.80
-74	74		11.90		-0.10	-44		12.80		0.80
-72	72		*11.99*		-0.02	-42		*12.78*		0.78
-70	70		*12.07*		0.07	-40		*12.77*		0.77
-68	68		12.15		0.15	-38		12.75		0.75
-66	66		*12.28*		0.28	-36		*12.63*		0.63
-64	64		12.40		0.40	-34		12.50		0.50
-62	62		*12.45*		0.45	-32		*12.50*		0.50
-60	60		12.50		0.50	-30		12.50		0.50
-58	58		*12.50*		0.50	-28		*12.50*		0.50
-56	56		12.50		0.50	-26		12.50		0.50
-54	54		*12.50*		0.50	-24		*12.50*		0.50
-52	52		12.50		0.50	-22		12.50		0.50
-50	50		*12.55*		0.55	-20		*12.45*		0.45
-48	48		12.60		0.60	-18		12.40		0.40
-46	46		*12.50*		0.50	-16		*12.40*		0.40
-44	44		12.40		0.40	-14		12.40		0.40
-42	42		*12.20*		0.20	-12		*12.40*		0.40
-40	40		12.00		0.00	-10		12.40		0.40
-38	38		*11.80*		-0.20	-8		*12.40*		0.40
-36	36		11.60		-0.40	-6		12.40		0.40
-34	34		*11.38*		-0.63	-4		*12.15*		0.15
-32	32		11.15		-0.85	-2		11.90		-0.10
-30	30		*10.90*		-1.10	0		*11.85*		-0.15
-28	28		10.65		-1.35	2		11.80		-0.20
-26	26		*10.25*		-1.75	4		*11.65*		-0.35
-24	24		9.85		-2.15	6		11.50		-0.50
-22	22		*9.50*		-2.50	8		*11.30*		-0.70
-20	20		9.15		-2.85	10		11.10		-0.90
-18	18		*8.68*		-3.33	12		11.00		-1.00
-16	16		8.20		-3.80	14		10.55		-1.45
-14	14	3.10	*7.60*	-8.90	-4.40	16	3.00	10.10	-9.00	-1.90
-12	12	*3.05*	7.00	-8.95	-5.00	18	2.80	9.75	-9.20	-2.25
-10	10	3.00	6.20	-9.00	-5.80	20	3.15	9.40	-8.85	-2.60
-8	8	*2.75*	5.60	-9.25	-6.40	22	4.30	8.60	-7.70	-3.40
-6	6	2.50	4.55	-9.50	-7.45	24	5.80	7.85	-6.20	-4.15
-4	4	*2.25*	3.60	-9.75	-8.40	26	6.90	7.05	-5.10	-4.95
-2	2	2.00	3.00	-10.00	-9.00	28	5.50	6.15	-6.50	-5.85
0	0	2.10	2.20	-9.90	-9.80	30	3.90	5.40	-8.10	-6.60
0	0	2.20	2.20	-9.80	-9.80	35	3.50	3.30	-8.50	-8.70
2	-2	1.85	2.40	-10.15	-9.60	37	4.40	4.50	-7.60	-7.50
4	-4	2.60	3.90	-9.40	-8.10	39	6.00	5.85	-6.00	-6.15
6	-6	4.00	5.20	-8.00	-6.80	41	7.30	7.30	-4.70	-4.70
8	-8	5.20	6.20	-6.80	-5.80	43	8.70	8.40	-3.30	-3.60
10	-10	6.30	6.80	-5.70	-5.20	45.00	9.80	9.70	-2.20	-2.30
12	-12	6.90	7.80	-5.10	-4.20	47.00	10.80	11.00	-1.20	-1.00
14	-14	5.30	8.65	-6.70	-3.35	49.00	11.70	11.70	-0.30	-0.30
16	-16	3.90	9.90	-8.10	-2.10	51.00				
18	-18	*3.85*	10.90	-8.15	-1.10	53.00				
20	-20	3.80	11.70	-8.20	-0.30	55.00				
22	-22	3.80		-8.20		57.00				
24	-24	4.80		-7.20		59.00				
26	-26	5.90		-6.10		61.00				
28	-28	7.10		-4.90		63.00				
30	-30	8.45		-3.55		65.00				

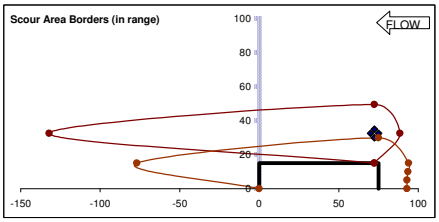
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	3.10	-8.90
2	3.00	-9.00
4	3.90	-8.10
6	5.30	-6.70
8	6.50	-5.50
10	7.50	-4.50
12	8.25	-3.75
14	9.50	-2.50
16	10.70	-1.30
18	11.50	-0.50
20	11.70	-0.30

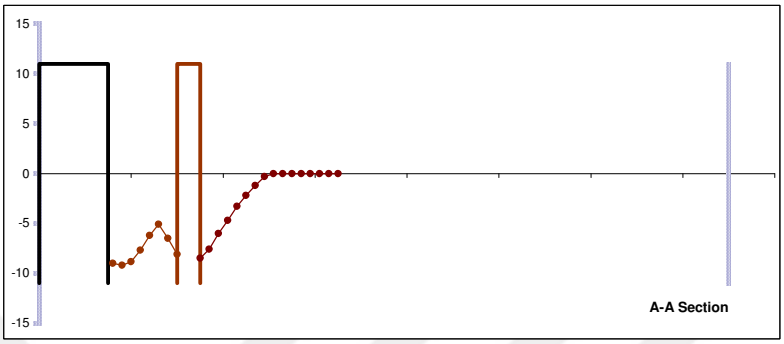
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18
SB_{af2}	Abutment Front (W+5 cm)	18
SB_{af3}	Abutment Front (W+10 cm)	18.5
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	*15*
SB_{pl}	Pier Left	*15*
SB_{pf}	Pier Front	13.5
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	202

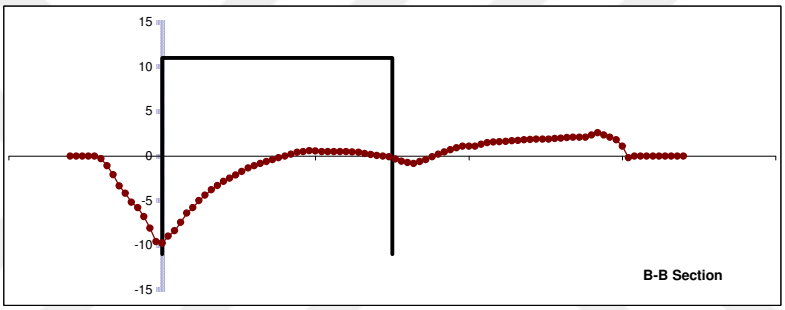


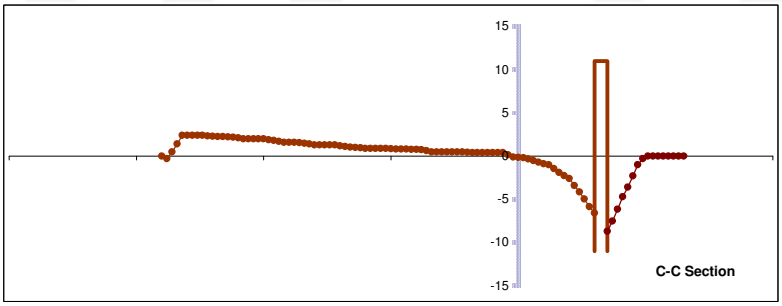
Experiment No : **E71**

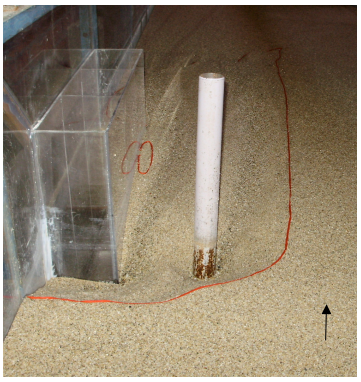


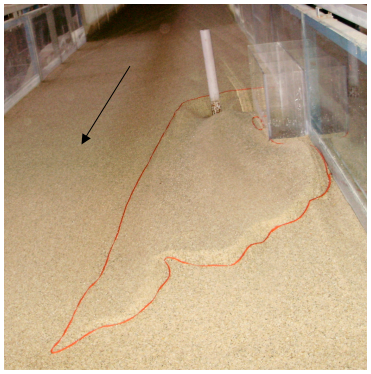






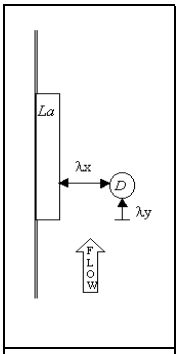


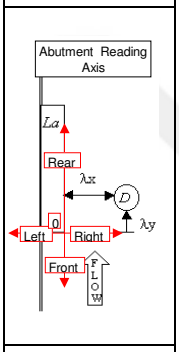


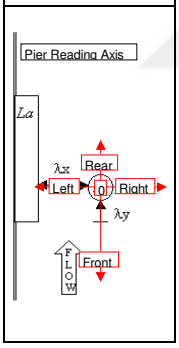


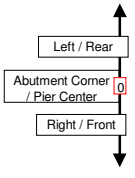
Experiment No : **E72**

Date :	13.07.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	0









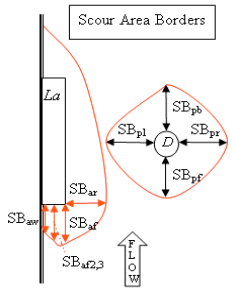
This color was used for raw data readings

This color was used for values enterpolated to sketch

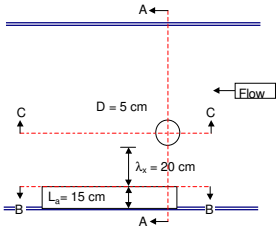
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-135		14.10		2.10
-168	168					-133		*14.05*		2.05
-166	166		11.80		-0.20	-131		14.00		2.00
-164	164		12.00		0.00	-129		*14.00*		2.00
-162	162		13.45		1.45	-127		14.00		2.00
-160	160		14.00		2.00	-125		*13.95*		1.95
-158	158		14.40		2.40	-123		13.90		1.90
-156	156		*14.40*		2.40	-121		*13.85*		1.85
-154	154		14.40		2.40	-119		13.80		1.80
-152	152		*14.35*		2.35	-117		*13.75*		1.75
-150	150		14.30		2.30	-115		13.70		1.70
-148	148		*14.30*		2.30	-113		*13.70*		1.70
-146	146		14.30		2.30	-111		13.70		1.70
-144	144		*14.25*		2.25	-109		*13.70*		1.70
-142	142		14.20		2.20	-107		13.70		1.70
-140	140		*14.20*		2.20	-105		*13.65*		1.65
-138	138		14.20		2.20	-103		13.60		1.60
-136	136		*14.15*		2.15	-101		*13.55*		1.55
-134	134		14.10		2.10	-99		13.50		1.50
-132	132		*14.05*		2.05	-97		*13.50*		1.50
-130	130		14.00		2.00	-95		13.50		1.50
-128	128		*13.95*		1.95	-93		*13.45*		1.45
-126	126		13.90		1.90	-91		13.40		1.40
-124	124		*13.90*		1.90	-89		*13.35*		1.35
-122	122		13.90		1.90	-87		13.30		1.30
-120	120		*13.88*		1.88	-85		*13.25*		1.25
-118	118		13.85		1.85	-83		13.20		1.20
-116	116		*13.85*		1.85	-81		*13.20*		1.20
-114	114		13.85		1.85	-79		13.20		1.20
-112	112		*13.85*		1.85	-77		*13.15*		1.15
-110	110		13.85		1.85	-75		13.10		1.10
-108	108		*13.75*		1.75	-73		*13.05*		1.05
-106	106		13.65		1.65	-71		13.00		1.00
-104	104		*13.65*		1.65	-69		*13.00*		1.00
-102	102		13.65		1.65	-67		13.00		1.00
-100	100		*13.43*		1.43	-65		*12.95*		0.95
-98	98		13.20		1.20	-63		12.90		0.90
-96	96		*13.03*		1.03	-61		*12.85*		0.85
-94	94		12.85		0.85	-59		12.80		0.80
-92	92		*12.53*		0.52	-57		*12.75*		0.75
-90	90		12.20		0.20	-55		12.70		0.70
-88	88		*11.85*		-0.15	-53		*12.65*		0.65
-86	86		11.50		-0.50	-51		12.60		0.60
-84	84		*11.25*		-0.75	-49		*12.55*		0.55
-82	82		11.00		-1.00	-47		12.50		0.50
-80	80		*10.85*		-1.15	-45		*12.45*		0.45
-78	78		10.70		-1.30	-43		12.40		0.40
-76	76		*10.80*		-1.20	-41		*12.40*		0.40
-74	74		10.90		-1.10	-39		12.40		0.40
-72	72		*11.20*		-0.80	-37		*12.37*		0.37
-70	70		11.50		-0.50	-35		*12.33*		0.33
-68	68		*11.60*		-0.40	-33		12.30		0.30
-66	66		11.70		-0.30	-31		*12.30*		0.30
-64	64		*11.85*		-0.15	-29		12.30		0.30
-62	62		12.00		0.00	-27		*12.30*		0.30
-60	60		*12.00*		0.00	-25		12.30		0.30
-58	58		12.00		0.00	-23		*12.30*		0.30
-56	56		*12.10*		0.10	-21		12.30		0.30
-54	54		12.20		0.20	-19		*12.30*		0.30
-52	52		*12.30*		0.30	-17		12.30		0.30
-50	50		12.40		0.40	-15		*12.23*		0.23
-48	48		*12.15*		0.15	-13		12.15		0.15
-46	46		11.90		-0.10	-11		*12.03*		0.03
-44	44		*11.80*		-0.20	-9		11.90		-0.10
-42	42		11.70		-0.30	-7		*11.75*		-0.25
-40	40		*11.55*		-0.45	-5		11.60		-0.40
-38	38		11.40		-0.60	-3		*11.55*		-0.45
-36	36		*11.20*		-0.80	-1		11.50		-0.50
-34	34		11.00		-1.00	1		*11.38*		-0.63
-32	32		*10.75*		-1.25	3		11.25		-0.75
-30	30		10.50		-1.50	5		*11.03*		-0.98
-28	28		*10.25*		-1.75	7		10.80		-1.20
-26	26		10.00		-2.00	9		*10.60*		-1.40
-24	24		*9.68*		-2.33	11		10.40		-1.60
-22	22		9.35		-2.65	13		*10.08*		-1.93
-20	20		9.00		-3.00	15	3.20	9.75	-8.80	-2.25
-18	18		8.50		-3.50	17	3.00	9.50	-9.00	-2.50
-16	16		8.20		-3.80	19	3.30	9.20	-8.70	-2.80
-14	14	3.50	7.30	-8.50	-4.70	21	4.40	8.80	-7.60	-3.20
-12	12	*3.30*	6.80	-8.70	-5.20	23	6.00	8.30	-6.00	-3.70
-10	10	3.10	6.05	-8.90	-5.95	25	7.20	7.80	-4.80	-4.20
-8	8	*2.85*	5.30	-9.15	-6.70	27	7.40	7.15	-4.60	-4.85
-6	6	2.60	4.50	-9.40	-7.50	29	7.00	6.30	-5.00	-5.70
-4	4	*2.35*	3.60	-9.65	-8.40	31	5.60	5.60	-6.40	-6.40
-2	2	2.10	3.25	-9.90	-8.75	33	4.15	4.80	-7.85	-7.20
0	0	3.10	3.10	-8.90	-8.90	35	3.00	4.30	-9.00	-7.70
0	0	3.10	3.10	-8.90	-8.90	40	3.10	3.10	-8.90	-8.90
2	-2	2.70	2.35	-9.30	-9.65	42	3.90	4.20	-8.10	-7.80
4	-4	4.10	3.30	-7.90	-8.70	44	5.35	5.45	-6.65	-6.55
6	-6	5.30	5.15	-6.70	-6.85	46	6.70	7.25	-5.30	-4.75
8	-8	6.80	6.20	-5.20	-5.80	48	8.20	8.30	-3.80	-3.70
10	-10	7.60	6.90	-4.40	-5.10	50.00	9.10	9.55	-2.90	-2.45
12	-12	6.80	7.40	-5.20	-4.60	52.00	10.10	10.65	-1.90	-1.35
14	-14	5.30	8.20	-6.70	-3.80	54.00	11.00	11.70	-1.00	-0.30
16	-16	4.10	9.35	-7.90	-2.65	56.00	11.70		-0.30	
18	-18	3.30	10.55	-8.70	-1.45	58.00				
20	-20	3.10	11.60	-8.90	-0.40	60.00				
22	-22	3.10		-8.90		62.00				
24	-24	4.10		-7.90		64.00				
26	-26	5.15		-6.85		66.00				
28	-28	6.70		-5.30		68.00				
30	-30	8.00		-4.00		70.00				

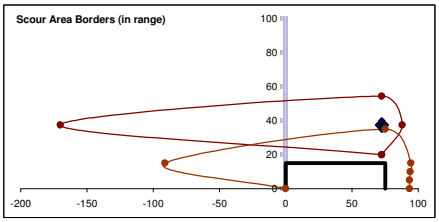
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	3.40	-8.60
2	3.35	-8.65
4	4.00	-8.00
6	5.10	-6.90
8	6.50	-5.50
10	7.40	-4.60
12	8.40	-3.60
14	9.60	-2.40
16	10.60	-1.40
18	11.70	-0.30
20	11.70	-0.30

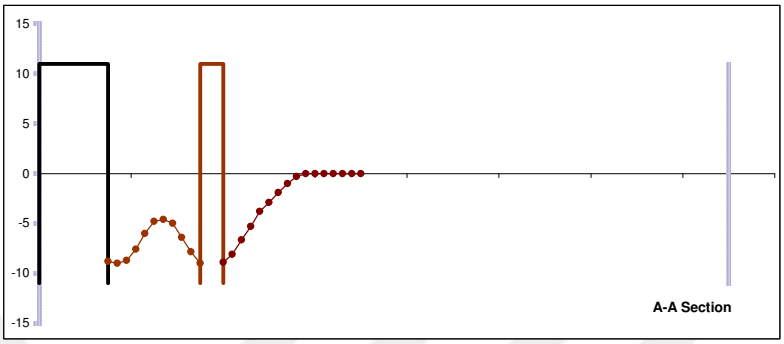
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18.5
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af3}	Abutment Front (W+10 cm)	19
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	*20*
SB_{pl}	Pier Left	*15*
SB_{pf}	Pier Front	13
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	240

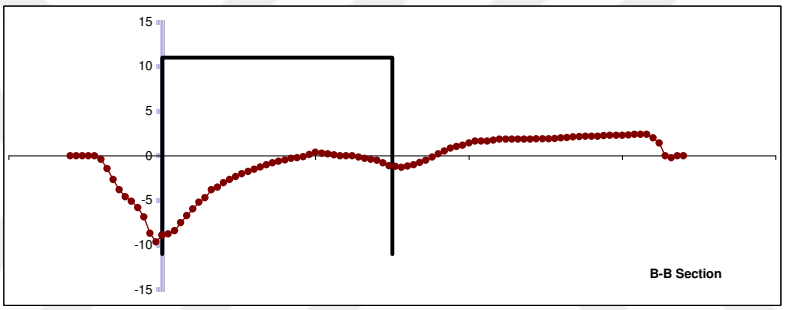


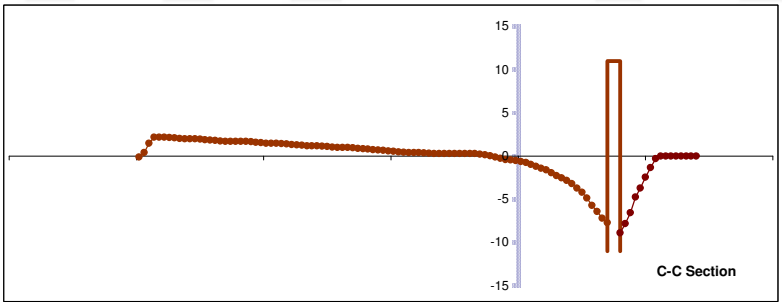
Experiment No : **E72**

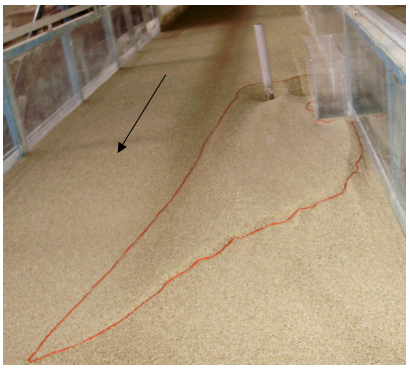






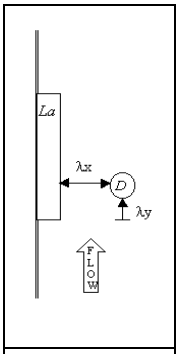


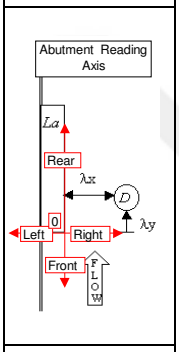


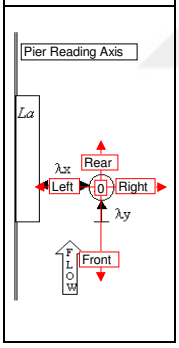


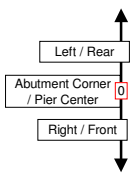
Experiment No : **E73**

Date :	10.08.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	35









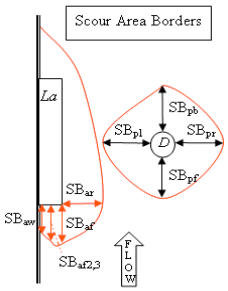
This color was used for raw data readings

This color was used for values enterpolated to sketch

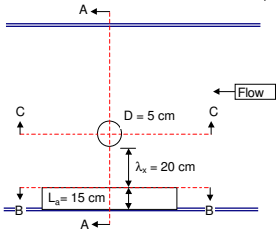
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-135				
-168	168					-133				
-166	166					-131				
-164	164					-129				
-162	162					-127				
-160	160					-125				
-158	158					-123				
-156	156					-121				
-154	154					-119				
-152	152					-117				
-150	150		11.80		-0.20	-115				
-148	148		13.45		1.45	-113				
-146	146		14.20		2.20	-111				
-144	144		14.20		2.20	-109				
-142	142		*14.20*		2.20	-107				
-140	140		14.20		2.20	-105				
-138	138		*14.15*		2.15	-103				
-136	136		14.10		2.10	-101				
-134	134		*14.10*		2.10	-99				
-132	132		14.10		2.10	-97				
-130	130		*14.10*		2.10	-95				
-128	128		14.10		2.10	-93				
-126	126		*14.10*		2.10	-91		11.70		-0.30
-124	124		14.10		2.10	-89		12.20		0.20
-122	122		*14.05*		2.05	-87		13.30		1.30
-120	120		14.00		2.00	-85		13.50		1.50
-118	118		*13.95*		1.95	-83		14.00		2.00
-116	116		13.90		1.90	-81		14.40		2.40
-114	114		*13.85*		1.85	-79		14.40		2.40
-112	112		13.80		1.80	-77		14.60		2.60
-110	110		*13.75*		1.75	-75		*14.55*		2.55
-108	108		13.70		1.70	-73		14.50		2.50
-106	106		*13.65*		1.65	-71		*14.50*		2.50
-104	104		13.60		1.60	-69		14.50		2.50
-102	102		*13.50*		1.50	-67		*14.45*		2.45
-100	100		13.40		1.40	-65		14.40		2.40
-98	98		*13.35*		1.35	-63		*14.35*		2.35
-96	96		13.30		1.30	-61		14.30		2.30
-94	94		*13.15*		1.15	-59		*14.30*		2.30
-92	92		13.00		1.00	-57		*14.30*		2.30
-90	90		*12.73*		0.73	-55		14.30		2.30
-88	88		12.45		0.45	-53		*14.30*		2.30
-86	86		*12.23*		0.23	-51		14.30		2.30
-84	84		12.00		0.00	-49		*14.30*		2.30
-82	82		*11.75*		-0.25	-47		14.30		2.30
-80	80		11.50		-0.50	-45		*14.35*		2.35
-78	78		*11.50*		-0.50	-43		14.40		2.40
-76	76		11.50		-0.50	-41		*14.38*		2.38
-74	74		*11.60*		-0.40	-39		14.35		2.35
-72	72		11.70		-0.30	-37		*14.30*		2.30
-70	70		*11.90*		-0.10	-35		14.25		2.25
-68	68		12.10		0.10	-33		*14.18*		2.18
-66	66		*12.23*		0.23	-31		14.10		2.10
-64	64		12.35		0.35	-29		*14.03*		2.03
-62	62		*12.43*		0.43	-27		13.95		1.95
-60	60		12.50		0.50	-25		*13.90*		1.90
-58	58		*12.55*		0.55	-23		13.85		1.85
-56	56		12.60		0.60	-21		*13.73*		1.73
-54	54		*12.60*		0.60	-19		13.60		1.60
-52	52		12.60		0.60	-17		*13.53*		1.53
-50	50		*12.58*		0.57	-15		13.45		1.45
-48	48		12.55		0.55	-13		*13.40*		1.40
-46	46		*12.55*		0.55	-11		13.35		1.35
-44	44		12.55		0.55	-9		*13.28*		1.28
-42	42		*12.23*		0.23	-7		13.20		1.20
-40	40		11.90		-0.10	-5		*13.10*		1.10
-38	38		*11.65*		-0.35	-3		13.00		1.00
-36	36		11.40		-0.60	-1		*12.90*		0.90
-34	34		*11.10*		-0.90	1		12.80		0.80
-32	32		10.80		-1.20	3		*12.75*		0.75
-30	30		*10.40*		-1.60	5		12.70		0.70
-28	28		10.00		-2.00	7		*12.55*		0.55
-26	26		9.60		-2.40	9		12.40		0.40
-24	24		9.10		-2.90	11		*12.30*		0.30
-22	22		8.60		-3.40	13		12.20		0.20
-20	20		8.00		-4.00	15	11.50	*11.98*	-0.50	-0.03
-18	18		7.70		-4.30	17	*11.20*	11.75	-0.80	-0.25
-16	16		7.00		-5.00	19	10.90	*11.58*	-1.10	-0.43
-14	14	0.70	6.40	-11.30	-5.60	21	*10.70*	11.40	-1.30	-0.60
-12	12	*1.10*	5.90	-10.90	-6.10	23	10.50	11.00	-1.50	-1.00
-10	10	1.50	5.25	-10.50	-6.75	25	10.50	10.65	-1.50	-1.35
-8	8	*1.25*	4.70	-10.75	-7.30	27	10.10	10.30	-1.90	-1.70
-6	6	1.00	3.60	-11.00	-8.40	29	9.65	9.60	-2.35	-2.40
-4	4	*1.40*	2.60	-10.60	-9.40	31	8.65	8.85	-3.35	-3.15
-2	2	1.80	2.00	-10.20	-10.00	33	7.25	8.20	-4.75	-3.80
0	0	1.50	1.50	-10.50	-10.50	35	6.00	7.60	-6.00	-4.40
0	0	1.50	1.50	-10.50	-10.50	40	6.00	6.00	-6.00	-6.00
2	-2	1.20	1.80	-10.80	-10.20	42	6.80	7.20	-5.20	-4.80
4	-4	2.30	3.00	-9.70	-9.00	44	7.50	8.75	-4.50	-3.25
6	-6	3.45	3.85	-8.55	-8.15	46	8.00	9.70	-4.00	-2.30
8	-8	4.90	4.90	-7.10	-7.10	48	8.90	10.00	-3.10	-2.00
10	-10	6.10	6.10	-5.90	-5.90	50.00	9.85	*9.95*	-2.15	-2.05
12	-12	6.90	6.80	-5.10	-5.20	52.00	10.90	9.90	-1.10	-2.10
14	-14	8.15	7.50	-3.85	-4.50	54.00	11.80	*9.90*	-0.20	-2.10
16	-16	9.40	8.60	-2.60	-3.40	56.00		9.90		-2.10
18	-18	9.80	10.05	-2.20	-1.95	58.00		*10.05*		-1.95
20	-20	10.65	11.35	-1.35	-0.65	60.00		10.20		-1.80
22	-22	11.80	11.80	-0.20	-0.20	62.00		*10.40*		-1.60
24	-24					64.00		10.60		-1.40
26	-26					66.00		*10.75*		-1.25
28	-28					68.00		10.90		-1.10
30	-30					70.00		*11.35*		-0.65

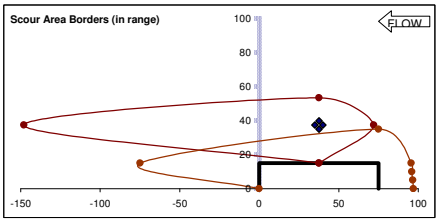
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	0.70	-11.30
2	0.90	-11.10
4	1.30	-10.70
6	2.40	-9.60
8	3.80	-8.20
10	5.15	-6.85
12	5.90	-6.10
14	6.80	-5.20
16	8.10	-3.90
18	9.00	-3.00
20	10.90	-1.10
22	11.80	-0.20
24		

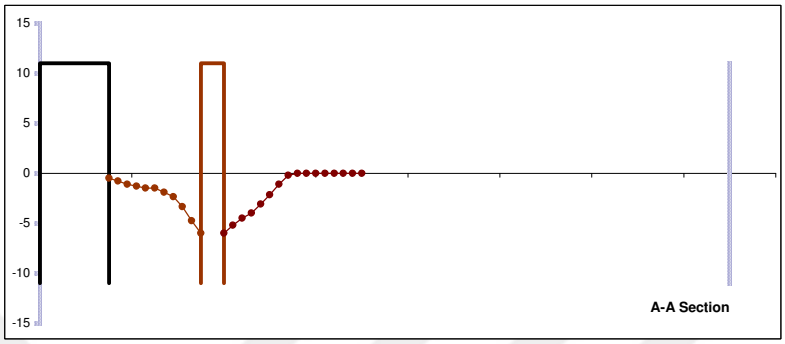
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	22
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	20.5
SB_{ar}	Abutment Corner Right	*20*
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	32
SB_{pr}	Pier Right	13.5
SB_{pb}	Pier Rear	183

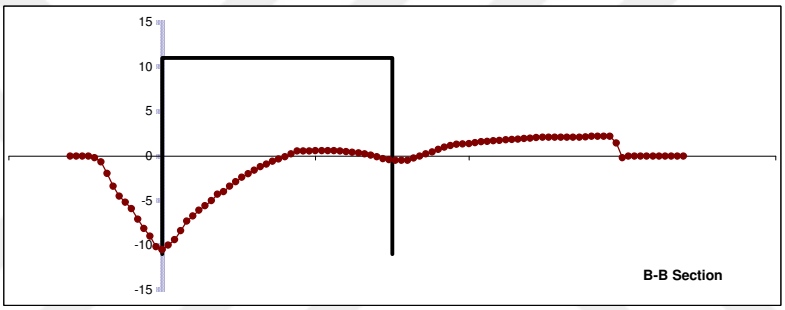


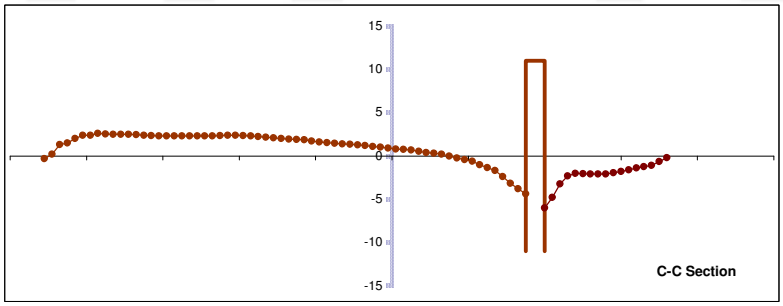
Experiment No : **E73**

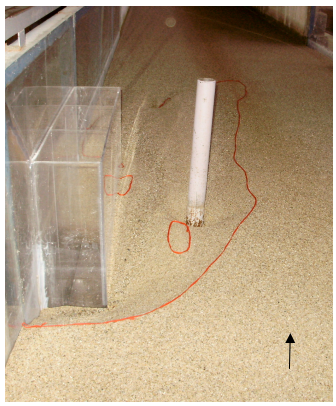


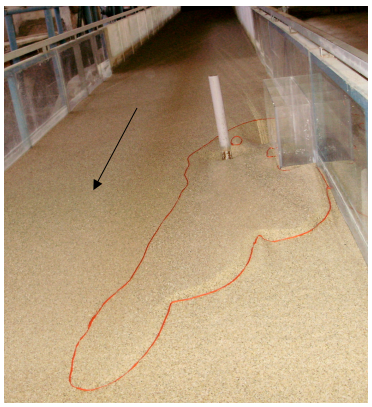






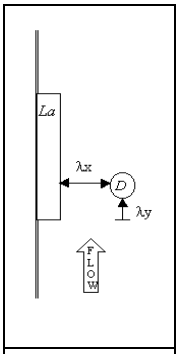


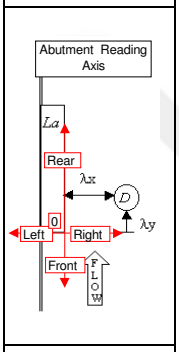


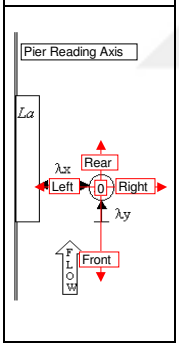


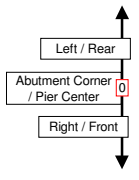
Experiment No : **E74**

Date :	15.08.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	70









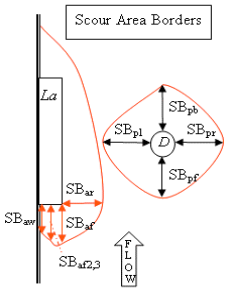
This color was used for raw data readings

This color was used for values enterpolated to sketch

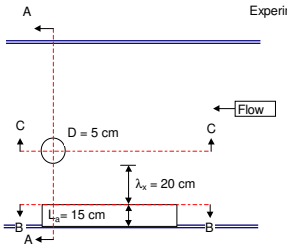
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-135				
-168	168					-133				
-166	166		11.80		-0.20	-131				
-164	164		*11.70*		-0.30	-129				
-162	162		11.60		-0.40	-127				
-160	160		*11.35*		-0.65	-125				
-158	158		11.10		-0.90	-123				
-156	156		*10.95*		-1.05	-121				
-154	154		10.80		-1.20	-119				
-152	152		11.40		-0.60	-117				
-150	150		12.80		0.80	-115				
-148	148		14.40		2.40	-113				
-146	146		*14.65*		2.65	-111				
-144	144		14.90		2.90	-109				
-142	142		*14.85*		2.85	-107				
-140	140		14.80		2.80	-105				
-138	138		*14.80*		2.80	-103				
-136	136		14.80		2.80	-101				
-134	134		*14.55*		2.55	-99				
-132	132		14.30		2.30	-97				
-130	130		*14.20*		2.20	-95				
-128	128		14.10		2.10	-93				
-126	126		*13.95*		1.95	-91				
-124	124		13.80		1.80	-89				
-122	122		*13.73*		1.73	-87				
-120	120		13.65		1.65	-85				
-118	118		*13.48*		1.48	-83				
-116	116		13.30		1.30	-81				
-114	114		*13.28*		1.28	-79				
-112	112		13.25		1.25	-77				
-110	110		*13.18*		1.18	-75				
-108	108		13.10		1.10	-73				
-106	106		*13.10*		1.10	-71				
-104	104		13.10		1.10	-69				
-102	102		*13.10*		1.10	-67				
-100	100		13.10		1.10	-65				
-98	98		*13.10*		1.10	-63				
-96	96		13.10		1.10	-61				
-94	94		*13.10*		1.10	-59				
-92	92		13.10		1.10	-57				
-90	90		*12.95*		0.95	-55				
-88	88		12.80		0.80	-53				
-86	86		*12.65*		0.65	-51				
-84	84		12.50		0.50	-49				
-82	82		*12.50*		0.50	-47				
-80	80		12.50		0.50	-45				
-78	78		*12.50*		0.50	-43				
-76	76		12.50		0.50	-41		13.65		1.65
-74	74		*12.60*		0.60	-39		13.85		1.85
-72	72		12.70		0.70	-37		14.60		2.60
-70	70		*12.85*		0.85	-35		*14.65*		2.65
-68	68		13.00		1.00	-33		14.70		2.70
-66	66		*13.00*		1.00	-31		*14.80*		2.80
-64	64		13.00		1.00	-29		14.90		2.90
-62	62		*13.00*		1.00	-27		*14.95*		2.95
-60	60		13.00		1.00	-25		15.00		3.00
-58	58		*13.00*		1.00	-23		*15.00*		3.00
-56	56		13.00		1.00	-21		15.00		3.00
-54	54		*12.85*		0.85	-19		*15.00*		3.00
-52	52		12.70		0.70	-17		15.00		3.00
-50	50		*12.60*		0.60	-15		*15.00*		3.00
-48	48		12.50		0.50	-13		15.00		3.00
-46	46		*12.33*		0.32	-11		*14.95*		2.95
-44	44		12.15		0.15	-9		14.90		2.90
-42	42		*11.83*		-0.18	-7		*14.80*		2.80
-40	40		11.50		-0.50	-5		14.70		2.70
-38	38		*11.15*		-0.85	-3		*14.60*		2.60
-36	36		10.80		-1.20	-1		14.50		2.50
-34	34		*10.45*		-1.55	1		*14.45*		2.45
-32	32		10.10		-1.90	3		14.40		2.40
-30	30		*9.70*		-2.30	5		*14.28*		2.28
-28	28		9.30		-2.70	7		14.15		2.15
-26	26		8.80		-3.20	9		*14.00*		2.00
-24	24		8.50		-3.50	11		13.85		1.85
-22	22		8.00		-4.00	13		*13.68*		1.68
-20	20		7.55		-4.45	15	12.50	13.50	0.50	1.50
-18	18		7.00		-5.00	17	12.80	13.20	0.80	1.20
-16	16		6.40		-5.60	19	12.90	12.85	0.90	0.85
-14	14	0.60	6.00	-11.40	-6.00	21	12.90	12.50	0.90	0.50
-12	12	*0.80*	5.45	-11.20	-6.55	23	12.70	12.10	0.70	0.10
-10	10	1.00	4.90	-11.00	-7.10	25	12.40	11.70	0.40	-0.30
-8	8	*0.80*	4.20	-11.20	-7.80	27	11.75	11.00	-0.25	-1.00
-6	6	0.60	3.50	-11.40	-8.50	29	10.60	10.40	-1.40	-1.60
-4	4	*0.60*	2.35	-11.40	-9.65	31	9.30	9.40	-2.70	-2.60
-2	2	0.60	1.80	-11.40	-10.20	33	8.45	8.50	-3.55	-3.50
0	0	1.30	1.30	-10.70	-10.70	35	6.90	8.40	-5.10	-3.60
0	0	1.30	1.30	-10.70	-10.70	40	7.10	6.70	-4.90	-5.30
2	-2	1.20	1.55	-10.80	-10.45	42	8.45	7.80	-3.55	-4.20
4	-4	2.20	2.50	-9.80	-9.50	44	9.20	9.00	-2.80	-3.00
6	-6	3.45	3.60	-8.55	-8.40	46	10.00	10.25	-2.00	-1.75
8	-8	4.70	4.60	-7.30	-7.40	48	10.70	11.40	-1.30	-0.60
10	-10	5.80	5.40	-6.20	-6.60	50.00	11.35	11.60	-0.65	-0.40
12	-12	6.80	6.20	-5.20	-5.80	52.00	11.50	*11.65*	-0.50	-0.35
14	-14	7.90	6.90	-4.10	-5.10	54.00	11.80	11.70	-0.20	-0.30
16	-16	8.70	8.00	-3.30	-4.00	56.00		*11.80*		-0.20
18	-18	9.40	9.10	-2.60	-2.90	58.00		11.90		-0.10
20	-20	10.30	10.35	-1.70	-1.65	60.00		*11.95*		-0.05
22	-22	11.30	11.80	-0.70	-0.20	62.00		12.00		0.00
24	-24	11.80		-0.20		64.00		*12.05*		0.05
26	-26					66.00		12.10		0.10
28	-28					68.00		*12.10*		0.10
30	-30					70.00		12.10		0.10

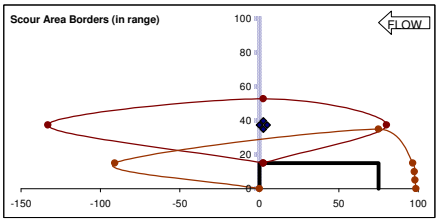
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	0.60	-11.40
2	0.60	-11.40
4	0.95	-11.05
6	1.80	-10.20
8	3.20	-8.80
10	4.30	-7.70
12	5.20	-6.80
14	6.10	-5.90
16	6.90	-5.10
18	8.10	-3.90
20	9.50	-2.50
22	10.60	-1.40
24	11.80	-0.20

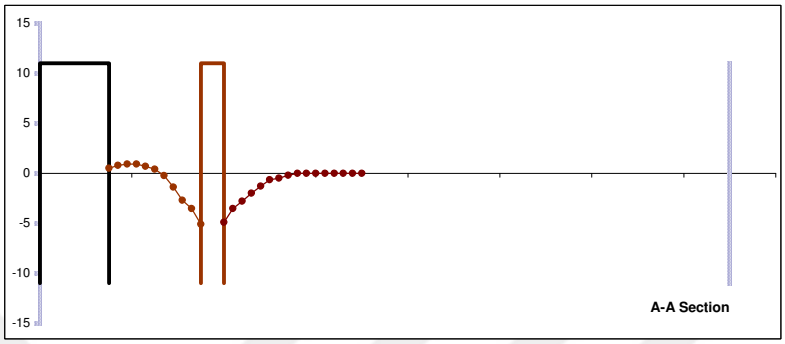
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	23.5
SB_{af2}	Abutment Front (W+5 cm)	23
SB_{af3}	Abutment Front (W+10 cm)	22.5
SB_{af}	Abutment Corner Front	21.5
SB_{ar}	Abutment Corner Right	*20*
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	75
SB_{pr}	Pier Right	13
SB_{pb}	Pier Rear	133

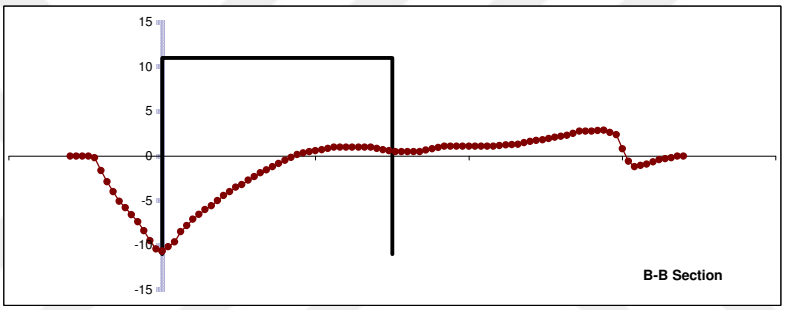


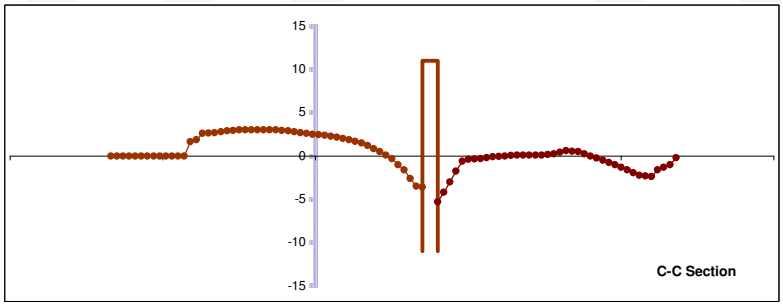
Experiment No : **E74**

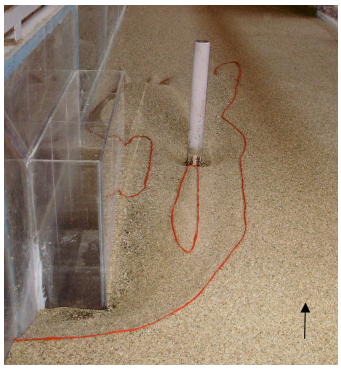




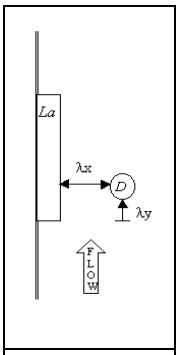


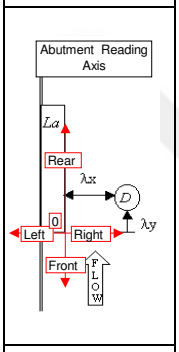


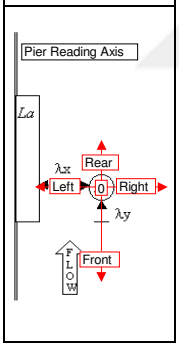


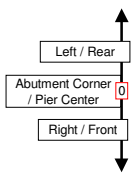


Experiment No :	**E75**
Date :	20.09.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	70









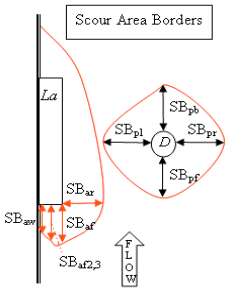
This color was used for raw data readings

This color was used for values enterpolated to sketch

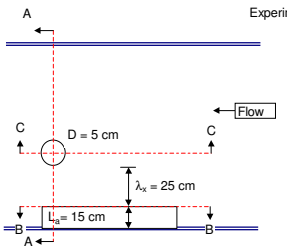
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-130				
-168	168					-128				
-166	166					-126				
-164	164					-124				
-162	162					-122				
-160	160					-120				
-158	158					-118				
-156	156		11.70		-0.30	-116				
-154	154		*11.45*		-0.55	-114				
-152	152		11.20		-0.80	-112				
-150	150		11.00		-1.00	-110				
-148	148		12.45		0.45	-108				
-146	146		13.25		1.25	-106				
-144	144		13.85		1.85	-104				
-142	142		13.75		1.75	-102				
-140	140		14.00		2.00	-100				
-138	138		*14.00*		2.00	-98				
-136	136		14.00		2.00	-96				
-134	134		*14.00*		2.00	-94				
-132	132		14.00		2.00	-92				
-130	130		*13.85*		1.85	-90				
-128	128		13.70		1.70	-88				
-126	126		*13.65*		1.65	-86				
-124	124		13.60		1.60	-84				
-122	122		*13.40*		1.40	-82				
-120	120		13.20		1.20	-80				
-118	118		*13.00*		1.00	-78				
-116	116		12.80		0.80	-76				
-114	114		*12.85*		0.85	-74				
-112	112		12.90		0.90	-72				
-110	110		*13.05*		1.05	-70				
-108	108		13.20		1.20	-68				
-106	106		13.25		1.25	-66				
-104	104		*13.30*		1.30	-64				
-102	102		13.35		1.35	-62				
-100	100		*13.28*		1.28	-60		11.70		-0.30
-98	98		13.20		1.20	-58		*11.65*		-0.35
-96	96		*13.20*		1.20	-56		11.60		-0.40
-94	94		13.20		1.20	-54		12.40		0.40
-92	92		*13.10*		1.10	-52		13.50		1.50
-90	90		13.00		1.00	-50		14.80		2.80
-88	88		*12.75*		0.75	-48		14.90		2.90
-86	86		12.50		0.50	-46		15.20		3.20
-84	84		12.50		0.50	-44		*15.15*		3.15
-82	82		11.80		-0.20	-42		15.10		3.10
-80	80		11.70		-0.30	-40		*15.05*		3.05
-78	78		11.40		-0.60	-38		15.00		3.00
-76	76		11.40		-0.60	-36		*14.95*		2.95
-74	74		11.35		-0.65	-34		14.90		2.90
-72	72		11.40		-0.60	-32		*14.85*		2.85
-70	70		*11.48*		-0.52	-30		14.80		2.80
-68	68		11.55		-0.45	-28		*14.75*		2.75
-66	66		11.30		-0.70	-26		14.70		2.70
-64	64		*11.85*		-0.15	-24		*14.60*		2.60
-62	62		12.40		0.40	-22		14.50		2.50
-60	60		12.40		0.40	-20		*14.50*		2.50
-58	58		12.50		0.50	-18		14.50		2.50
-56	56		12.60		0.60	-16		*14.35*		2.35
-54	54		12.65		0.65	-14		14.20		2.20
-52	52		*12.50*		0.50	-12		*14.20*		2.20
-50	50		12.35		0.35	-10		14.20		2.20
-48	48		*12.28*		0.27	-8		*14.15*		2.15
-46	46		12.20		0.20	-6		14.10		2.10
-44	44		11.90		-0.10	-4		*13.95*		1.95
-42	42		11.85		-0.15	-2		13.80		1.80
-40	40		11.70		-0.30	0		*13.80*		1.80
-38	38		11.40		-0.60	2		13.80		1.80
-36	36		11.00		-1.00	4		*13.75*		1.75
-34	34		10.80		-1.20	6		13.70		1.70
-32	32		10.30		-1.70	8		*13.60*		1.60
-30	30		10.10		-1.90	10		13.50		1.50
-28	28		*9.78*		-2.23	12		*13.45*		1.45
-26	26		9.45		-2.55	14		13.40		1.40
-24	24		*9.03*		-2.98	16	11.80	*12.75*	-0.20	0.75
-22	22		8.60		-3.40	18	12.00	12.10	0.00	0.10
-20	20		*8.23*		-3.78	20	12.50	*11.85*	0.50	-0.15
-18	18		7.85		-4.15	22	12.50	11.60	0.50	-0.40
-16	16	*2.10*	7.65	-9.90	-4.35	24	12.40	11.60	0.40	-0.40
-14	14	*2.12*	7.30	-9.88	-4.70	26	12.30	11.45	0.30	-0.55
-12	12	*2.16*	6.60	-9.84	-5.40	28	12.00	11.10	0.00	-0.90
-10	10	2.20	6.20	-9.80	-5.80	30	11.70	10.30	-0.30	-1.70
-8	8	2.10	5.30	-9.90	-6.70	32	10.80	10.00	-1.20	-2.00
-6	6	1.60	4.20	-10.40	-7.80	34	9.50	9.45	-2.50	-2.55
-4	4	*1.60*	2.80	-10.40	-9.20	36	8.20	9.00	-3.80	-3.00
-2	2	1.60	1.90	-10.40	-10.10	38	7.80	7.85	-4.20	-4.15
0	0	1.65	1.65	-10.35	-10.35	40	5.40	7.00	-6.60	-5.00
0	0	1.65	1.65	-10.35	-10.35	45	6.00	6.00	-6.00	-6.00
2	-2	1.90	1.40	-10.10	-10.60	47	6.80	6.60	-5.20	-5.40
4	-4	2.90	3.25	-9.10	-8.75	49	7.30	7.70	-4.70	-4.30
6	-6	4.90	4.40	-7.10	-7.60	51	8.30	8.90	-3.70	-3.10
8	-8	5.70	5.65	-6.30	-6.35	53	9.40	9.80	-2.60	-2.20
10	-10	7.10	6.45	-4.90	-5.55	55.00	10.80	10.45	-1.20	-1.55
12	-12	8.00	7.15	-4.00	-4.85	57.00	11.50	10.90	-0.50	-1.10
14	-14	9.10	8.70	-2.90	-3.30	59.00	11.80	*11.05*	-0.20	-0.95
16	-16	10.00	10.10	-2.00	-1.90	61.00		11.20		-0.80
18	-18	10.90	11.15	-1.10	-0.85	63.00		*11.40*		-0.60
20	-20	11.20	*11.38*	-0.80	-0.63	65.00		11.60		-0.40
22	-22	*11.35*	11.60	-0.65	-0.40	67.00				
24	-24	11.50	*11.60*	-0.50	-0.40	69.00				
26	-26	*11.55*	11.60	-0.45	-0.40	71.00				
28	-28	11.60	*11.65*	-0.40	-0.35	73.00				
30	-30		11.70		-0.30	75.00				

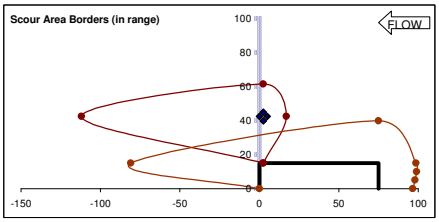
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	2.10	-9.90
2	1.70	-10.30
4	3.10	-8.90
6	4.30	-7.70
8	5.60	-6.40
10	6.75	-5.25
12	7.70	-4.30
14	8.50	-3.50
16	9.85	-2.15
18	11.00	-1.00
20	11.25	-0.75
22	*11.23*	-0.78
24	11.20	-0.80

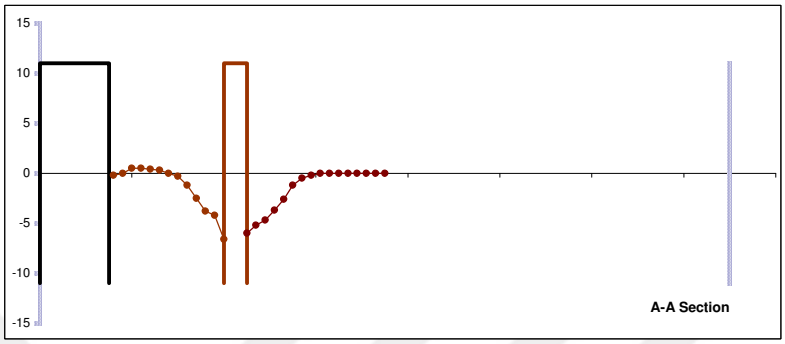
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21.5
SB_{af2}	Abutment Front (W+5 cm)	23
SB_{af3}	Abutment Front (W+10 cm)	24
SB_{af}	Abutment Corner Front	23.5
SB_{ar}	Abutment Corner Right	*25*
SB_{pl}	Pier Left	*25*
SB_{pf}	Pier Front	12
SB_{pr}	Pier Right	16.5
SB_{pb}	Pier Rear	112

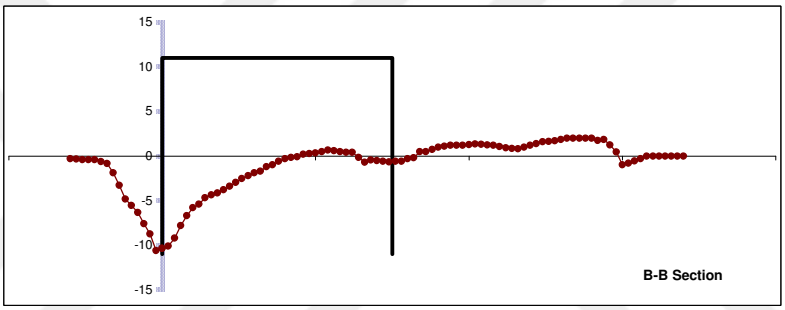


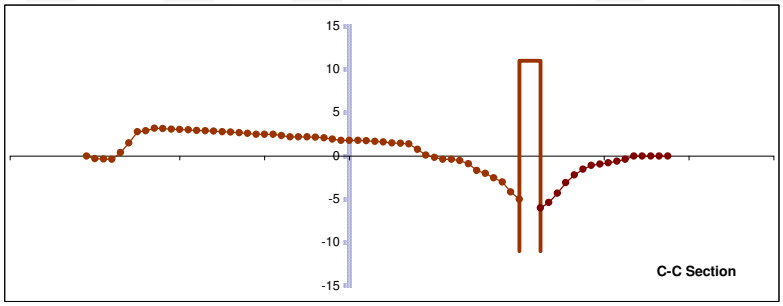
Experiment No : **E75**

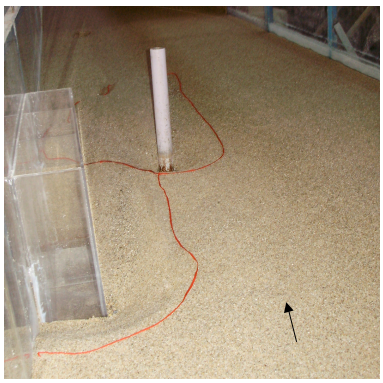




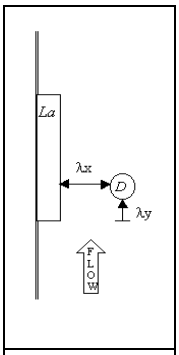


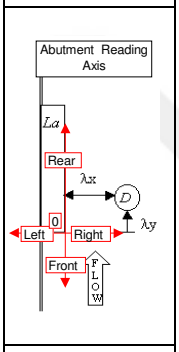


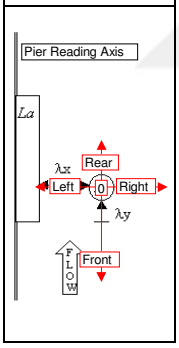


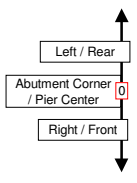


Experiment No :	**E76**
Date :	28.09.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	35









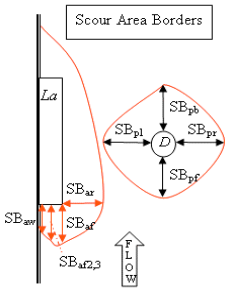
This color was used for raw data readings

This color was used for values enterpolated to sketch

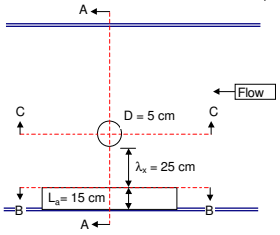
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-130				
-168	168					-128				
-166	166					-126				
-164	164					-124				
-162	162					-122				
-160	160					-120				
-158	158					-118				
-156	156					-116				
-154	154					-114				
-152	152					-112				
-150	150					-110				
-148	148					-108				
-146	146					-106				
-144	144		13.20		1.20	-104				
-142	142		*13.45*		1.45	-102				
-140	140		13.70		1.70	-100				
-138	138		13.90		1.90	-98				
-136	136		*13.95*		1.95	-96				
-134	134		14.00		2.00	-94				
-132	132		14.00		2.00	-92				
-130	130		14.30		2.30	-90				
-128	128		13.80		1.80	-88				
-126	126		*13.80*		1.80	-86				
-124	124		13.80		1.80	-84				
-122	122		*13.75*		1.75	-82				
-120	120		13.70		1.70	-80				
-118	118		13.30		1.30	-78				
-116	116		13.30		1.30	-76		12.00		0.00
-114	114		*13.20*		1.20	-74		12.10		0.10
-112	112		13.10		1.10	-72		12.40		0.40
-110	110		*12.80*		0.80	-70		12.70		0.70
-108	108		12.50		0.50	-68		13.20		1.20
-106	106		12.40		0.40	-66		13.80		1.80
-104	104		*12.33*		0.32	-64		13.90		1.90
-102	102		*12.25*		0.25	-62		13.80		1.80
-100	100		*12.18*		0.18	-60		13.90		1.90
-98	98		12.10		0.10	-58		13.80		1.80
-96	96		*11.90*		-0.10	-56		*13.85*		1.85
-94	94		11.70		-0.30	-54		13.90		1.90
-92	92		*11.50*		-0.50	-52		*13.55*		1.55
-90	90		11.30		-0.70	-50		13.20		1.20
-88	88		*11.25*		-0.75	-48		*13.45*		1.45
-86	86		11.20		-0.80	-46		13.70		1.70
-84	84		11.10		-0.90	-44		*13.70*		1.70
-82	82		11.30		-0.70	-42		13.70		1.70
-80	80		11.30		-0.70	-40		*13.65*		1.65
-78	78		11.50		-0.50	-38		13.60		1.60
-76	76		11.60		-0.40	-36		*13.55*		1.55
-74	74		11.50		-0.50	-34		13.50		1.50
-72	72		11.90		-0.10	-32		*13.45*		1.45
-70	70		12.10		0.10	-30		13.40		1.40
-68	68		12.30		0.30	-28		*13.40*		1.40
-66	66		12.50		0.50	-26		13.40		1.40
-64	64		12.80		0.80	-24		*13.35*		1.35
-62	62		13.00		1.00	-22		13.30		1.30
-60	60		13.10		1.10	-20		*13.25*		1.25
-58	58		13.20		1.20	-18		13.20		1.20
-56	56		13.20		1.20	-16		*13.20*		1.20
-54	54		13.10		1.10	-14		13.20		1.20
-52	52		13.30		1.30	-12		*13.20*		1.20
-50	50		13.20		1.20	-10		13.20		1.20
-48	48		13.30		1.30	-8		*13.15*		1.15
-46	46		13.30		1.30	-6		13.10		1.10
-44	44		13.50		1.50	-4		*13.05*		1.05
-42	42		13.50		1.50	-2		13.00		1.00
-40	40		13.30		1.30	0		*12.95*		0.95
-38	38		13.30		1.30	2		12.90		0.90
-36	36		13.00		1.00	4		12.80		0.80
-34	34		13.10		1.10	6		12.70		0.70
-32	32		12.90		0.90	8		12.60		0.60
-30	30		12.80		0.80	10		12.60		0.60
-28	28		12.50		0.50	12		12.40		0.40
-26	26		12.30		0.30	14		12.10		0.10
-24	24		11.80		-0.20	16	12.80	11.90	0.80	-0.10
-22	22		11.70		-0.30	18	10.00	11.50	-2.00	-0.50
-20	20		11.20		-0.80	20	12.60	11.40	0.60	-0.60
-18	18		10.80		-1.20	22	12.50	11.10	0.50	-0.90
-16	16	*6.80*	9.70	-5.20	-2.30	24	11.90	10.60	-0.10	-1.40
-14	14	*7.10*	9.50	-4.90	-2.50	26	11.90	10.40	-0.10	-1.60
-12	12	7.40	8.80	-4.60	-3.20	28	11.70	10.00	-0.30	-2.00
-10	10	5.50	7.90	-6.50	-4.10	30	10.90	9.60	-1.10	-2.40
-8	8	4.60	7.10	-7.40	-4.90	32	10.00	8.80	-2.00	-3.20
-6	6	4.40	6.10	-7.60	-5.90	34	8.60	8.20	-3.40	-3.80
-4	4	*4.15*	4.80	-7.85	-7.20	36	7.30	7.60	-4.70	-4.40
-2	2	3.90	3.90	-8.10	-8.10	38	5.90	6.50	-6.10	-5.50
0	0	3.20	3.20	-8.80	-8.80	40	4.40	6.20	-7.60	-5.80
0	0	3.20	3.20	-8.80	-8.80	45	4.40	4.70	-7.60	-7.30
2	-2	5.80	3.30	-6.20	-8.70	47	5.80	5.70	-6.20	-6.30
4	-4	5.90	4.70	-6.10	-7.30	49	6.70	6.80	-5.30	-5.20
6	-6	5.30	6.10	-6.70	-5.90	51	7.60	8.40	-4.40	-3.60
8	-8	6.80	6.80	-5.20	-5.20	53	8.60	9.50	-3.40	-2.50
10	-10	7.00	7.70	-5.00	-4.30	55.00	8.80	10.60	-3.20	-1.40
12	-12	8.20	8.80	-3.80	-3.20	57.00	10.90	10.90	-1.10	-1.10
14	-14	9.40	10.00	-2.60	-2.00	59.00	11.80	11.00	-0.20	-1.00
16	-16	10.10	10.10	-1.90	-1.90	61.00	11.70	11.20	-0.30	-0.80
18	-18	10.80	10.20	-1.20	-1.80	63.00				
20	-20	11.00		-1.00		65.00				
22	-22	11.20		-0.80		67.00				
24	-24	11.30		-0.70		69.00				
26	-26	11.40		-0.60		71.00				
28	-28	*11.45*		-0.55		73.00				
30	-30	11.50		-0.50		75.00				

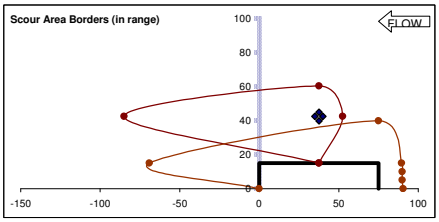
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.80	-5.20
2	6.60	-5.40
4	7.10	-4.90
6	8.40	-3.60
8	9.20	-2.80
10	9.80	-2.20
12	9.80	-2.20
14	9.90	-2.10
16	10.20	-1.80
18	10.30	-1.70
20	10.30	-1.70
22	*10.55*	-1.45
24	10.80	-1.20

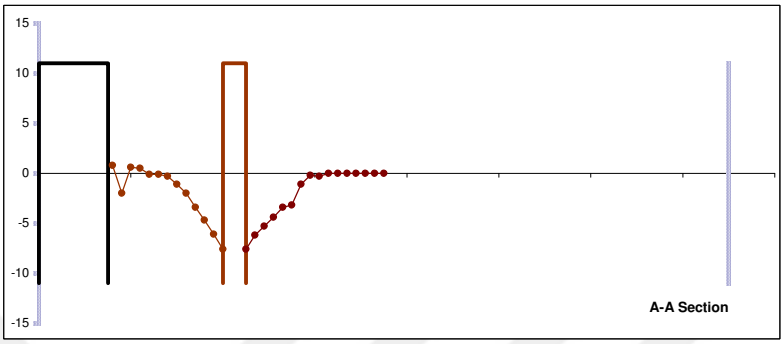
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af3}	Abutment Front (W+10 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	*25*
SB_{pl}	Pier Left	*25*
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	120

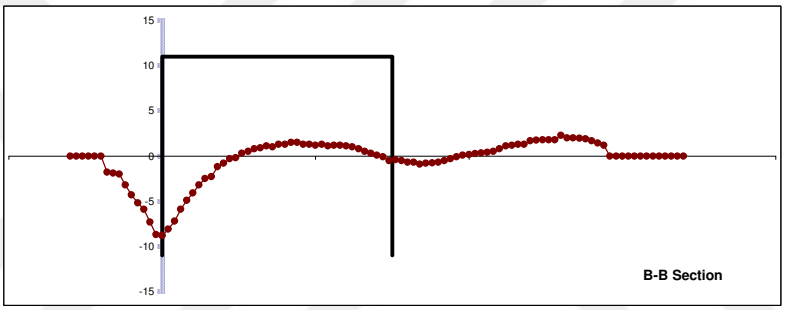


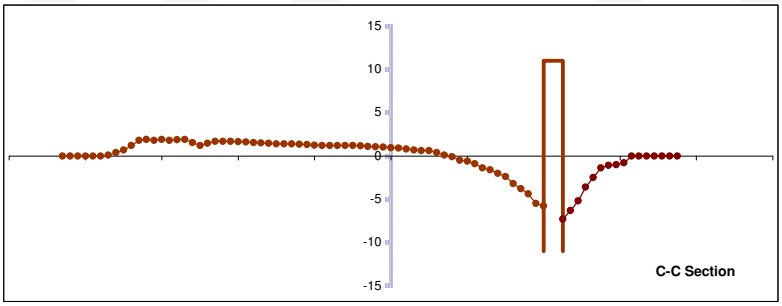
Experiment No : **E76**

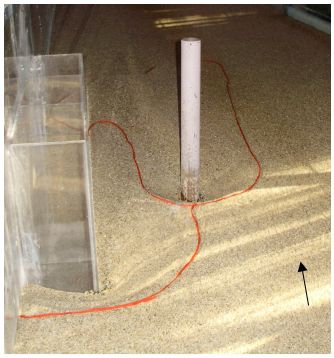


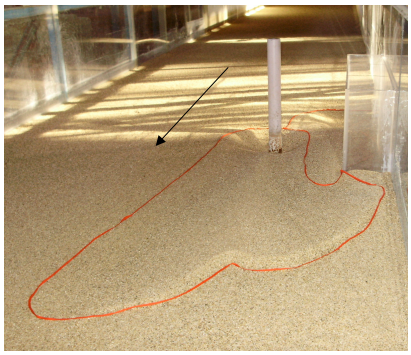




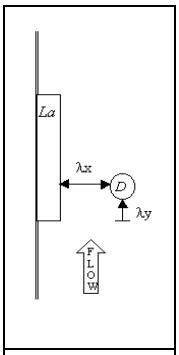


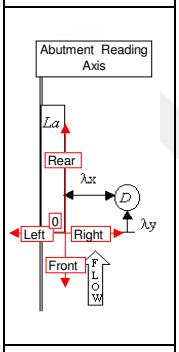


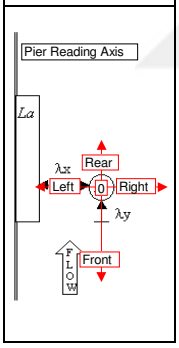


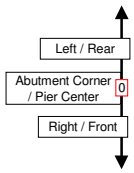


Experiment No :	**E77**
Date :	30.09.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	25
λ_y (cm) :	0









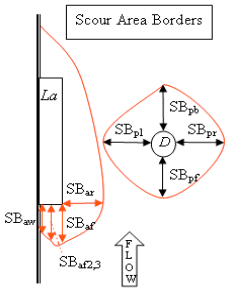
This color was used for raw data readings

This color was used for values enterpolated to sketch

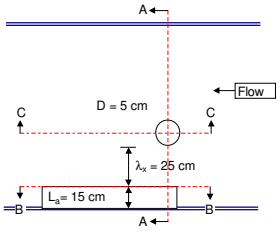
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-130		11.60		-0.40
-168	168					-128		11.10		-0.90
-166	166					-126		11.00		-1.00
-164	164					-124		11.10		-0.90
-162	162					-122		12.00		0.00
-160	160					-120		12.90		0.90
-158	158					-118		12.90		0.90
-156	156		11.00		-1.00	-116		*12.90*		0.90
-154	154		11.10		-0.90	-114		12.90		0.90
-152	152		12.20		0.20	-112		*12.90*		0.90
-150	150		13.20		1.20	-110		12.90		0.90
-148	148		13.60		1.60	-108		*12.85*		0.85
-146	146		*13.60*		1.60	-106		12.80		0.80
-144	144		13.60		1.60	-104		*12.85*		0.85
-142	142		*13.60*		1.60	-102		12.90		0.90
-140	140		13.60		1.60	-100		*12.80*		0.80
-138	138		*13.55*		1.55	-98		12.70		0.70
-136	136		13.50		1.50	-96		*12.70*		0.70
-134	134		*13.45*		1.45	-94		12.70		0.70
-132	132		13.40		1.40	-92		*12.70*		0.70
-130	130		*13.40*		1.40	-90		12.70		0.70
-128	128		13.40		1.40	-88		*12.50*		0.50
-126	126		*13.40*		1.40	-86		12.30		0.30
-124	124		13.40		1.40	-84		*12.35*		0.35
-122	122		*13.40*		1.40	-82		12.40		0.40
-120	120		13.40		1.40	-80		*12.45*		0.45
-118	118		*13.25*		1.25	-78		12.50		0.50
-116	116		13.10		1.10	-76		*12.35*		0.35
-114	114		*13.00*		1.00	-74		12.20		0.20
-112	112		12.90		0.90	-72		*12.25*		0.25
-110	110		*12.90*		0.90	-70		12.30		0.30
-108	108		12.90		0.90	-68		*12.25*		0.25
-106	106		*12.90*		0.90	-66		12.20		0.20
-104	104		12.90		0.90	-64		*12.25*		0.25
-102	102		*12.75*		0.75	-62		12.30		0.30
-100	100		12.60		0.60	-60		*12.30*		0.30
-98	98		*12.45*		0.45	-58		12.30		0.30
-96	96		12.30		0.30	-56		*12.25*		0.25
-94	94		*12.10*		0.10	-54		12.20		0.20
-92	92		11.90		-0.10	-52		*12.25*		0.25
-90	90		*11.55*		-0.45	-50		12.30		0.30
-88	88		11.20		-0.80	-48		*12.30*		0.30
-86	86		10.90		-1.10	-46		*12.30*		0.30
-84	84		10.60		-1.40	-44		12.30		0.30
-82	82		10.20		-1.80	-42		*12.30*		0.30
-80	80		10.30		-1.70	-40		12.30		0.30
-78	78		10.50		-1.50	-38		*12.20*		0.20
-76	76		10.70		-1.30	-36		12.10		0.10
-74	74		11.10		-0.90	-34		*12.15*		0.15
-72	72		11.15		-0.85	-32		12.20		0.20
-70	70		11.70		-0.30	-30		*12.20*		0.20
-68	68		12.10		0.10	-28		12.20		0.20
-66	66		12.30		0.30	-26		*12.10*		0.10
-64	64		12.50		0.50	-24		12.00		0.00
-62	62		*12.55*		0.55	-22		*11.85*		-0.15
-60	60		12.60		0.60	-20		11.70		-0.30
-58	58		*12.40*		0.40	-18		11.60		-0.40
-56	56		12.20		0.20	-16		11.70		-0.30
-54	54		*12.25*		0.25	-14		11.40		-0.60
-52	52		12.30		0.30	-12		11.40		-0.60
-50	50		*12.20*		0.20	-10		11.40		-0.60
-48	48		12.10		0.10	-8		11.30		-0.70
-46	46		*11.95*		-0.05	-6		11.20		-0.80
-44	44		11.80		-0.20	-4		11.00		-1.00
-42	42		11.80		-0.20	-2		10.90		-1.10
-40	40		11.80		-0.20	0		10.60		-1.40
-38	38		11.60		-0.40	2		10.50		-1.50
-36	36		11.50		-0.50	4		10.60		-1.40
-34	34		11.30		-0.70	6		10.20		-1.80
-32	32		11.00		-1.00	8		9.90		-2.10
-30	30		10.70		-1.30	10		9.80		-2.20
-28	28		10.20		-1.80	12		9.70		-2.30
-26	26		9.80		-2.20	14		9.50		-2.50
-24	24		9.40		-2.60	16	3.60	9.40	-8.40	-2.60
-22	22		9.10		-2.90	18	3.50	9.20	-8.50	-2.80
-20	20		8.50		-3.50	20	3.40	9.20	-8.60	-2.80
-18	18		7.80		-4.20	22	2.60	8.70	-9.40	-3.30
-16	16		7.70		-4.30	24	3.70	8.70	-8.30	-3.30
-14	14	2.80	7.20	-9.20	-4.80	26	5.10	8.10	-6.90	-3.90
-12	12	2.20	6.50	-9.80	-5.50	28	6.50	7.60	-5.50	-4.40
-10	10	2.30	5.60	-9.70	-6.40	30	7.20	6.30	-4.80	-5.70
-8	8	*1.85*	4.80	-10.15	-7.20	32	8.60	6.00	-3.40	-6.00
-6	6	1.40	3.30	-10.60	-8.70	34	7.50	5.40	-4.50	-6.60
-4	4	1.60	2.80	-10.40	-9.20	36	6.20	4.90	-5.80	-7.10
-2	2	1.90	2.20	-10.10	-9.80	38	4.80	4.20	-7.20	-7.80
0	0	1.60	1.60	-10.40	-10.40	40	3.60	4.00	-8.40	-8.00
0	0	1.60	1.60	-10.40	-10.40	45	3.00	3.60	-9.00	-8.40
2	-2	1.70	2.10	-10.30	-9.90	47	4.60	4.70	-7.40	-7.30
4	-4	2.40	3.70	-9.60	-8.30	49	6.10	5.80	-5.90	-6.20
6	-6	3.10	4.80	-8.90	-7.20	51	6.80	7.30	-5.20	-4.70
8	-8	4.90	5.40	-7.10	-6.60	53	7.90	8.50	-4.10	-3.50
10	-10	6.20	6.10	-5.80	-5.90	55.00	8.80	9.70	-3.20	-2.30
12	-12	7.20	6.80	-4.80	-5.20	57.00	9.60	10.40	-2.40	-1.60
14	-14	8.20	8.00	-3.80	-4.00	59.00	10.40	10.60	-1.60	-1.40
16	-16	9.20	9.40	-2.80	-2.60	61.00	10.40	10.70	-1.60	-1.30
18	-18	6.70	10.10	-5.30	-1.90	63.00	10.30	10.80	-1.70	-1.20
20	-20	5.00	10.50	-7.00	-1.50	65.00	10.50	*11.05*	-1.50	-0.95
22	-22	4.00	10.70	-8.00	-1.30	67.00	11.70	11.30	-0.30	-0.70
24	-24	3.90	10.60	-8.10	-1.40	69.00				
26	-26	4.10	10.70	-7.90	-1.30	71.00				
28	-28	4.80	11.60	-7.20	-0.40	73.00				
30	-30	5.70		-6.30		75.00				

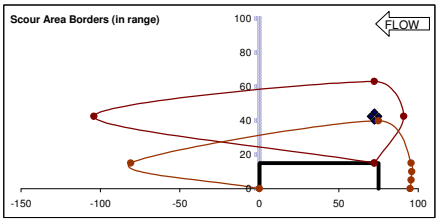
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	2.30	-9.70
2	2.20	-9.80
4	2.35	-9.65
6	3.30	-8.70
8	4.60	-7.40
10	5.50	-6.50
12	6.60	-5.40
14	7.70	-4.30
16	8.80	-3.20
18	10.30	-1.70
20	10.70	-1.30

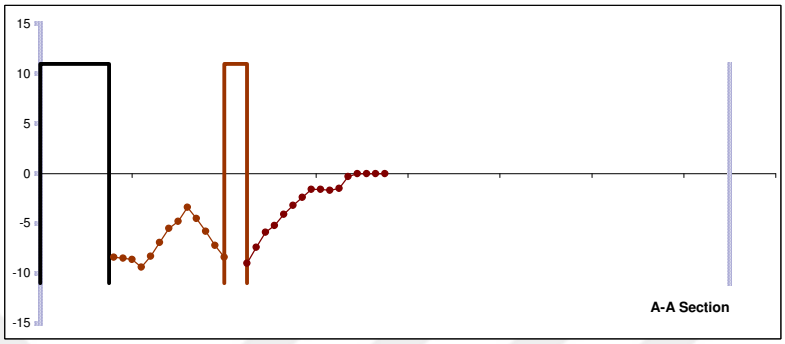
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	20
SB_{af2}	Abutment Front (W+5 cm)	20.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	20.5
SB_{ar}	Abutment Corner Right	*25*
SB_{pl}	Pier Left	*25*
SB_{pf}	Pier Front	16
SB_{pr}	Pier Right	18
SB_{pb}	Pier Rear	174

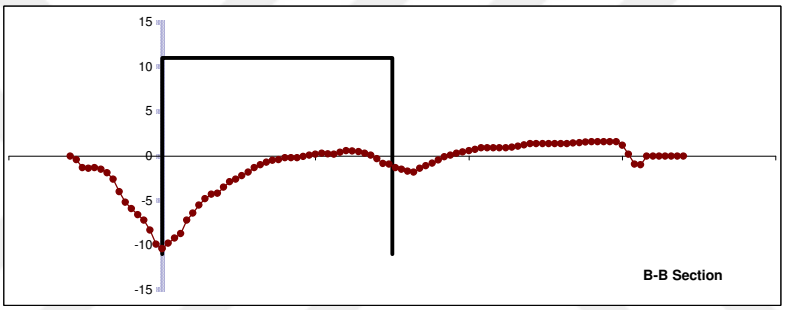


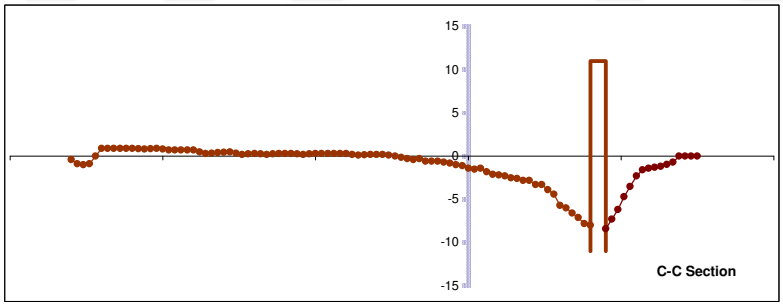
Experiment No : **E77**

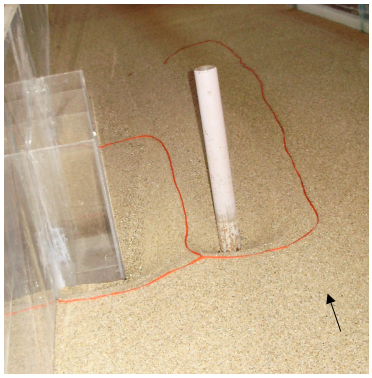


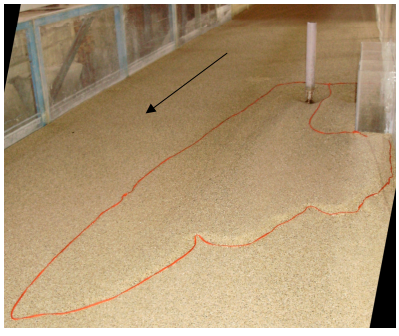






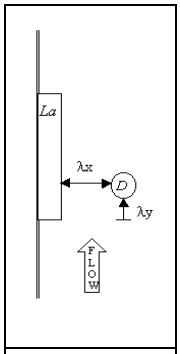


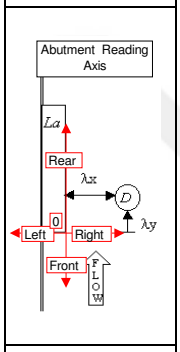


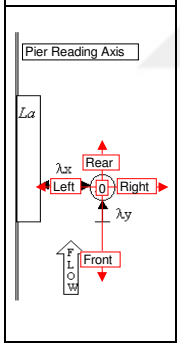


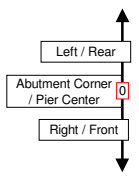
Experiment No : **E78**

Date :	04.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	0









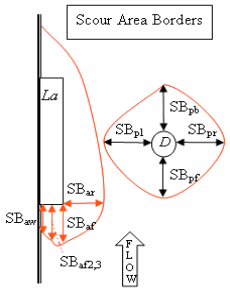
This color was used for raw data readings

This color was used for values enterpolated to sketch

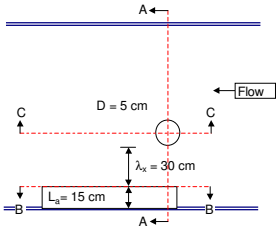
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
	Distance (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
	-170	170					-125		13.70		1.70
	-168	168					-123		*13.70*		1.70
	-166	166					-121		13.70		1.70
	-164	164					-119		*13.70*		1.70
	-162	162		12.10		0.10	-117		13.70		1.70
	-160	160		12.60		0.60	-115		*13.65*		1.65
	-158	158		13.80		1.80	-113		13.60		1.60
	-156	156		14.00		2.00	-111		*13.60*		1.60
	-154	154		14.10		2.10	-109		13.60		1.60
	-152	152		14.20		2.20	-107		*13.65*		1.65
	-150	150		*14.20*		2.20	-105		13.70		1.70
	-148	148		14.20		2.20	-103		*13.75*		1.75
	-146	146		*14.25*		2.25	-101		13.80		1.80
	-144	144		14.30		2.30	-99		*13.70*		1.70
	-142	142		*14.30*		2.30	-97		13.60		1.60
	-140	140		14.30		2.30	-95		*13.55*		1.55
	-138	138		*14.35*		2.35	-93		13.50		1.50
	-136	136		14.40		2.40	-91		*13.50*		1.50
	-134	134		*14.30*		2.30	-89		13.50		1.50
	-132	132		14.20		2.20	-87		*13.50*		1.50
	-130	130		*14.15*		2.15	-85		13.50		1.50
	-128	128		14.10		2.10	-83		*13.50*		1.50
	-126	126		*14.15*		2.15	-81		13.50		1.50
	-124	124		14.20		2.20	-79		*13.45*		1.45
	-122	122		*14.10*		2.10	-77		13.40		1.40
	-120	120		14.00		2.00	-75		*13.35*		1.35
	-118	118		*13.95*		1.95	-73		13.30		1.30
	-116	116		13.90		1.90	-71		*13.30*		1.30
	-114	114		*13.85*		1.85	-69		13.30		1.30
	-112	112		13.80		1.80	-67		*13.15*		1.15
	-110	110		*13.80*		1.80	-65		13.00		1.00
	-108	108		13.80		1.80	-63		*13.10*		1.10
	-106	106		*13.80*		1.80	-61		13.20		1.20
	-104	104		13.80		1.80	-59		*13.10*		1.10
	-102	102		*13.70*		1.70	-57		13.00		1.00
	-100	100		13.60		1.60	-55		*13.00*		1.00
	-98	98		*13.40*		1.40	-53		13.00		1.00
	-96	96		13.20		1.20	-51		*13.15*		1.15
	-94	94		*12.95*		0.95	-49		13.30		1.30
	-92	92		12.70		0.70	-47		*13.25*		1.25
	-90	90		*12.60*		0.60	-45		13.20		1.20
	-88	88		12.50		0.50	-43		*13.05*		1.05
	-86	86		11.90		-0.10	-41		12.90		0.90
	-84	84		11.70		-0.30	-39		*12.85*		0.85
	-82	82		11.60		-0.40	-37		12.80		0.80
	-80	80		12.10		0.10	-35		*12.75*		0.75
	-78	78		11.70		-0.30	-33		12.70		0.70
	-76	76		11.60		-0.40	-31		*12.75*		0.75
	-74	74		11.80		-0.20	-29		12.80		0.80
	-72	72		*11.87*		-0.14	-27		*12.70*		0.70
	-70	70		*11.93*		-0.07	-25		12.60		0.60
	-68	68		12.00		0.00	-23		*12.65*		0.65
	-66	66		*12.10*		0.10	-21		12.70		0.70
	-64	64		12.20		0.20	-19		*12.65*		0.65
	-62	62		*12.30*		0.30	-17		12.60		0.60
	-60	60		12.40		0.40	-15		*12.55*		0.55
	-58	58		*12.40*		0.40	-13		12.50		0.50
	-56	56		12.40		0.40	-11		*12.45*		0.45
	-54	54		*12.40*		0.40	-9		12.40		0.40
	-52	52		12.40		0.40	-7		*12.40*		0.40
	-50	50		*12.30*		0.30	-5		12.40		0.40
	-48	48		12.20		0.20	-3		12.40		0.40
	-46	46		12.20		0.20	-1		12.30		0.30
	-44	44		12.20		0.20	1		12.40		0.40
	-42	42		12.00		0.00	3		12.40		0.40
	-40	40		11.90		-0.10	5		12.20		0.20
	-38	38		11.70		-0.30	7		12.20		0.20
	-36	36		11.40		-0.60	9		12.10		0.10
	-34	34		11.10		-0.90	11		12.00		0.00
	-32	32		10.70		-1.30	13		12.00		0.00
	-30	30		10.50		-1.50	15	*2.60*	11.80	-9.40	-0.20
	-28	28		10.10		-1.90	17	3.80	11.80	-8.20	-0.20
	-26	26		9.70		-2.30	19	3.30	11.70	-8.70	-0.30
	-24	24		9.40		-2.60	21	3.90	11.70	-8.10	-0.30
	-22	22		9.20		-2.80	23	5.20	11.30	-6.80	-0.70
	-20	20		8.60		-3.40	25	6.20	11.30	-5.80	-0.70
	-18	18		8.30		-3.70	27	7.80	11.20	-4.20	-0.80
	-16	16		7.60		-4.40	29	8.90	10.90	-3.10	-1.10
	-14	14	2.90	7.00	-9.10	-5.00	31	9.70	10.70	-2.30	-1.30
	-12	12	2.40	6.50	-9.60	-5.50	33	10.60	10.60	-1.40	-1.40
	-10	10	4.60	5.10	-7.40	-6.90	35	10.50	10.00	-1.50	-2.00
	-8	8	2.30	5.10	-9.70	-6.90	37	9.60	9.70	-2.40	-2.30
	-6	6	2.20	3.60	-9.80	-8.40	39	8.60	8.70	-3.40	-3.30
	-4	4	1.90	2.80	-10.10	-9.20	41	7.70	8.00	-4.30	-4.00
	-2	2	1.50	2.50	-10.50	-9.50	43	6.50	6.70	-5.50	-5.30
	0	0	1.90	1.90	-10.10	-10.10	45	5.40	6.70	-6.60	-5.30
	0	0	1.90	1.90	-10.10	-10.10	50	5.00	5.50	-7.00	-6.50
	2	-2	1.60	2.70	-10.40	-9.30	52	5.30	7.00	-6.70	-5.00
	4	-4	1.80	3.90	-10.20	-8.10	54	6.70	8.20	-5.30	-3.80
	6	-6	2.60	5.20	-9.40	-6.80	56	8.10	9.40	-3.90	-2.60
	8	-8	3.50	6.00	-8.50	-6.00	58	9.30	10.20	-2.70	-1.80
	10	-10	5.20	6.70	-6.80	-5.30	60.00	9.90	10.60	-2.10	-1.40
	12	-12	6.50	7.40	-5.50	-4.60	62.00	11.00	11.70	-1.00	-0.30
	14	-14	7.70	8.60	-4.30	-3.40	64.00	11.40	12.00	-0.60	0.00
	16	-16	8.40	9.70	-3.60	-2.30	66.00				
	18	-18	9.30	10.80	-2.70	-1.20	68.00				
	20	-20	10.00	11.70	-2.00	-0.30	70.00				
	22	-22	10.60	11.60	-1.40	-0.40	72.00				
	24	-24	9.90		-2.10		74.00				
	26	-26	8.80		-3.20		76.00				
	28	-28	7.60		-4.40		78.00				
	30	-30	6.50		-5.50		80.00				

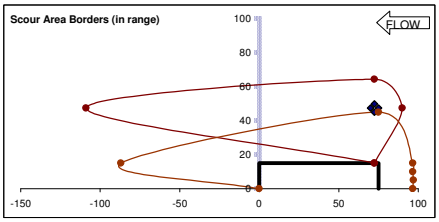
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	2.40	-9.60
2	2.60	-9.40
4	2.90	-9.10
6	4.00	-8.00
8	5.10	-6.90
10	6.30	-5.70
12	7.10	-4.90
14	8.40	-3.60
16	9.50	-2.50
18	10.60	-1.40
20	11.80	-0.20

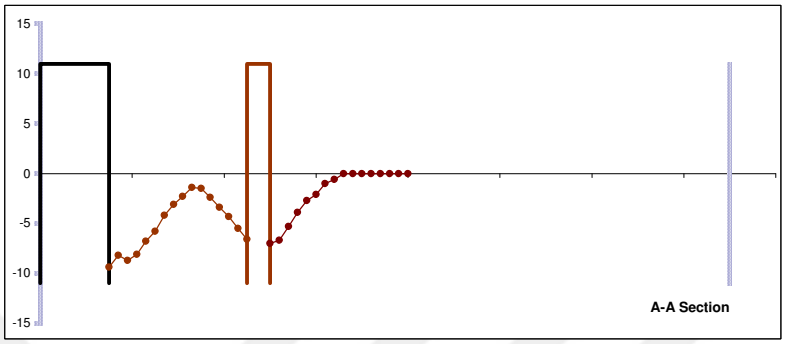
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21.5
SB_{af2}	Abutment Front (W+5 cm)	22
SB_{af3}	Abutment Front (W+10 cm)	21.5
SB_{af}	Abutment Corner Front	21.5
SB_{ar}	Abutment Corner Right	*30*
SB_{pl}	Pier Left	*30*
SB_{pf}	Pier Front	15
SB_{pr}	Pier Right	14.5
SB_{pb}	Pier Rear	179

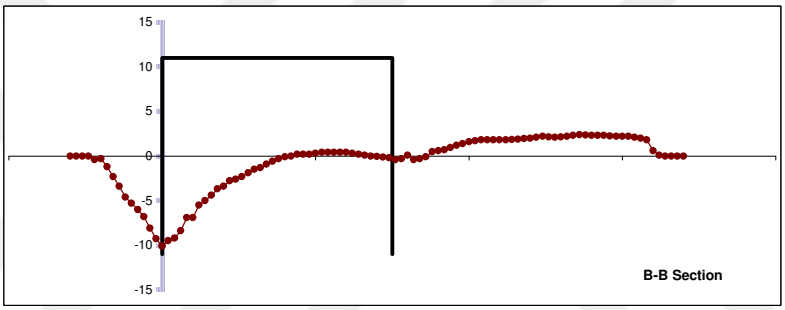


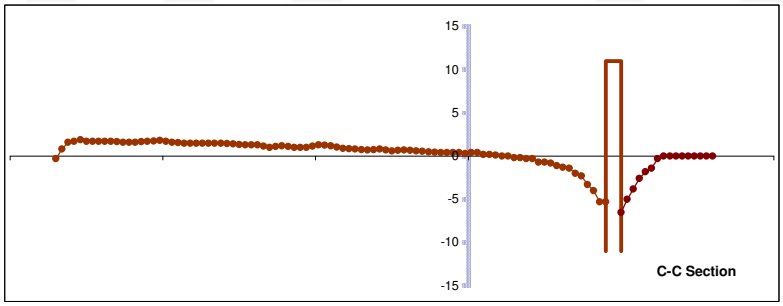
Experiment No : **E78**

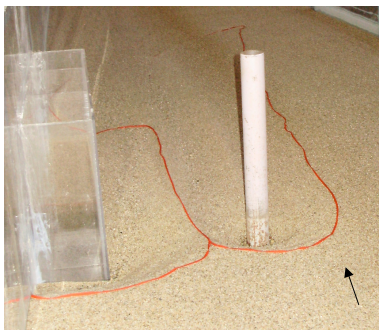


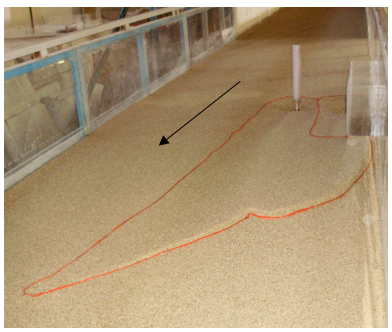




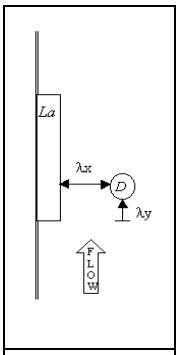


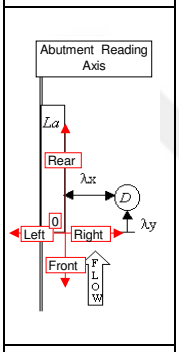


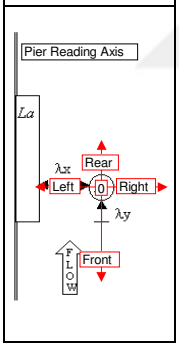


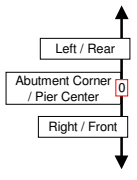


Experiment No :	**E79**
Date :	06.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	35









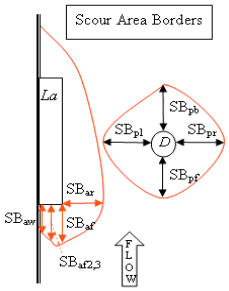
This color was used for raw data readings

This color was used for values enterpolated to sketch

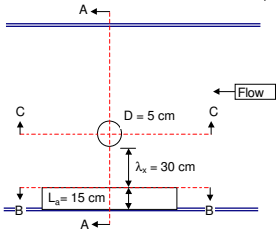
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-125				
-168	168		11.80		-0.20	-123				
-166	166		12.00		0.00	-121				
-164	164		12.30		0.30	-119				
-162	162		12.80		0.80	-117				
-160	160		13.40		1.40	-115				
-158	158		14.30		2.30	-113				
-156	156		15.00		3.00	-111				
-154	154		15.00		3.00	-109				
-152	152		14.90		2.90	-107		12.60		0.60
-150	150		15.00		3.00	-105		13.20		1.20
-148	148		*14.95*		2.95	-103		14.00		2.00
-146	146		14.90		2.90	-101		14.10		2.10
-144	144		*14.60*		2.60	-99		14.20		2.20
-142	142		14.30		2.30	-97		14.40		2.40
-140	140		*14.20*		2.20	-95		*14.40*		2.40
-138	138		14.10		2.10	-93		14.40		2.40
-136	136		*14.00*		2.00	-91		*14.40*		2.40
-134	134		13.90		1.90	-89		14.40		2.40
-132	132		*13.95*		1.95	-87		*14.40*		2.40
-130	130		14.00		2.00	-85		14.40		2.40
-128	128		*13.90*		1.90	-83		*14.30*		2.30
-126	126		13.80		1.80	-81		14.20		2.20
-124	124		*13.75*		1.75	-79		*14.25*		2.25
-122	122		13.70		1.70	-77		14.30		2.30
-120	120		*13.75*		1.75	-75		*14.15*		2.15
-118	118		13.80		1.80	-73		14.00		2.00
-116	116		*13.75*		1.75	-71		*13.95*		1.95
-114	114		13.70		1.70	-69		13.90		1.90
-112	112		*13.70*		1.70	-67		*13.85*		1.85
-110	110		13.70		1.70	-65		13.80		1.80
-108	108		*13.65*		1.65	-63		*13.75*		1.75
-106	106		13.60		1.60	-61		13.70		1.70
-104	104		*13.55*		1.55	-59		*13.70*		1.70
-102	102		13.50		1.50	-57		13.70		1.70
-100	100		*13.50*		1.50	-55		*13.65*		1.65
-98	98		13.50		1.50	-53		13.60		1.60
-96	96		*13.40*		1.40	-51		*13.50*		1.50
-94	94		13.30		1.30	-49		13.40		1.40
-92	92		*13.20*		1.20	-47		*13.40*		1.40
-90	90		13.10		1.10	-45		13.40		1.40
-88	88		*13.00*		1.00	-43		*13.35*		1.35
-86	86		12.90		0.90	-41		13.30		1.30
-84	84		12.70		0.70	-39		*13.25*		1.25
-82	82		12.60		0.60	-37		13.20		1.20
-80	80		12.50		0.50	-35		*13.20*		1.20
-78	78		12.60		0.60	-33		13.20		1.20
-76	76		12.80		0.80	-31		*13.15*		1.15
-74	74		12.70		0.70	-29		13.10		1.10
-72	72		12.90		0.90	-27		*13.05*		1.05
-70	70		13.00		1.00	-25		13.00		1.00
-68	68		13.20		1.20	-23		*12.95*		0.95
-66	66		13.20		1.20	-21		12.90		0.90
-64	64		13.20		1.20	-19		*12.90*		0.90
-62	62		13.20		1.20	-17		12.90		0.90
-60	60		13.20		1.20	-15		*12.90*		0.90
-58	58		13.10		1.10	-13		12.90		0.90
-56	56		13.00		1.00	-11		*12.85*		0.85
-54	54		13.00		1.00	-9		12.80		0.80
-52	52		12.90		0.90	-7		*12.70*		0.70
-50	50		12.90		0.90	-5		12.60		0.60
-48	48		12.70		0.70	-3		*12.55*		0.55
-46	46		12.60		0.60	-1		12.50		0.50
-44	44		12.40		0.40	1		12.30		0.30
-42	42		12.20		0.20	3		12.00		0.00
-40	40		11.80		-0.20	5		12.00		0.00
-38	38		11.60		-0.40	7		11.70		-0.30
-36	36		11.30		-0.70	9		11.60		-0.40
-34	34		10.70		-1.30	11		11.40		-0.60
-32	32		10.40		-1.60	13		11.20		-0.80
-30	30		10.10		-1.90	15	*11.50*	11.10	-0.50	-0.90
-28	28		9.70		-2.30	17	11.60	10.80	-0.40	-1.20
-26	26		9.20		-2.80	19	11.70	10.70	-0.30	-1.30
-24	24		8.50		-3.50	21	11.20	10.60	-0.80	-1.40
-22	22		7.80		-4.20	23	10.70	10.20	-1.30	-1.80
-20	20		7.30		-4.70	25	10.40	10.10	-1.60	-1.90
-18	18		7.10		-4.90	27	10.40	10.00	-1.60	-2.00
-16	16		6.40		-5.60	29	10.60	9.90	-1.40	-2.10
-14	14	2.10	5.90	-9.90	-6.10	31	10.90	9.50	-1.10	-2.50
-12	12	2.00	5.30	-10.00	-6.70	33	11.20	9.50	-0.80	-2.50
-10	10	1.90	4.50	-10.10	-7.50	35	11.10	9.10	-0.90	-2.90
-8	8	1.00	3.70	-11.00	-8.30	37	9.70	8.50	-2.30	-3.50
-6	6	1.30	2.80	-10.70	-9.20	39	8.50	8.00	-3.50	-4.00
-4	4	*1.25*	2.20	-10.75	-9.80	41	7.50	7.30	-4.50	-4.70
-2	2	1.20	1.60	-10.80	-10.40	43	6.30	6.50	-5.70	-5.50
0	0	1.20	1.20	-10.80	-10.80	45	5.10	6.10	-6.90	-5.90
0	0	1.20	1.20	-10.80	-10.80	50	3.90	5.20	-8.10	-6.80
2	-2	1.50	1.50	-10.50	-10.50	52	5.40	5.80	-6.60	-6.20
4	-4	1.50	2.60	-10.50	-9.40	54	6.30	6.90	-5.70	-5.10
6	-6	2.30	3.70	-9.70	-8.30	56	7.00	8.20	-5.00	-3.80
8	-8	3.40	4.80	-8.60	-7.20	58	8.20	9.40	-3.80	-2.60
10	-10	5.10	5.40	-6.90	-6.60	60.00	9.20	10.80	-2.80	-1.20
12	-12	6.70	6.10	-5.30	-5.90	62.00	10.40	11.40	-1.60	-0.60
14	-14	7.70	7.20	-4.30	-4.80	64.00	11.50	11.50	-0.50	-0.50
16	-16	8.50	8.40	-3.50	-3.60	66.00	12.00	11.70	0.00	-0.30
18	-18	9.40	9.70	-2.60	-2.30	68.00				
20	-20	9.70	10.80	-2.30	-1.20	70.00				
22	-22	10.60	11.90	-1.40	-0.10	72.00				
24	-24	11.30		-0.70		74.00				
26	-26	11.70		-0.30		76.00				
28	-28	11.90		-0.10		78.00				
30	-30					80.00				

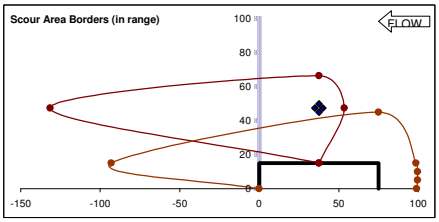
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	0.70	-11.30
2	0.85	-11.15
4	1.20	-10.80
6	1.90	-10.10
8	3.20	-8.80
10	4.40	-7.60
12	5.20	-6.80
14	6.20	-5.80
16	7.20	-4.80
18	8.50	-3.50
20	9.90	-2.10
22	11.10	-0.90
24	11.70	-0.30

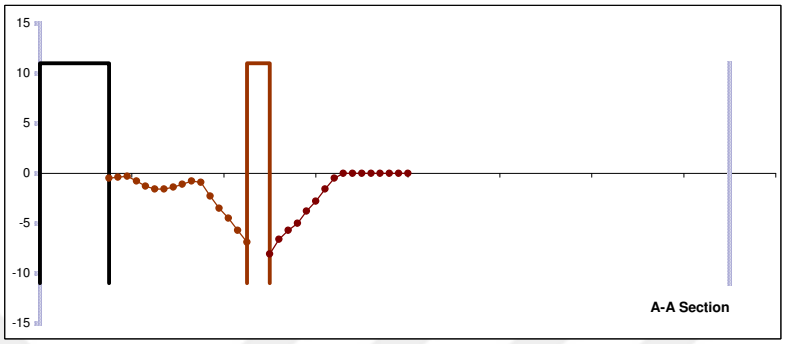
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	24
SB_{af2}	Abutment Front (W+5 cm)	24.5
SB_{af3}	Abutment Front (W+10 cm)	24.5
SB_{af}	Abutment Corner Front	23.5
SB_{ar}	Abutment Corner Right	*30*
SB_{pl}	Pier Left	*30*
SB_{pf}	Pier Front	13.5
SB_{pr}	Pier Right	16.5
SB_{pb}	Pier Rear	166.5

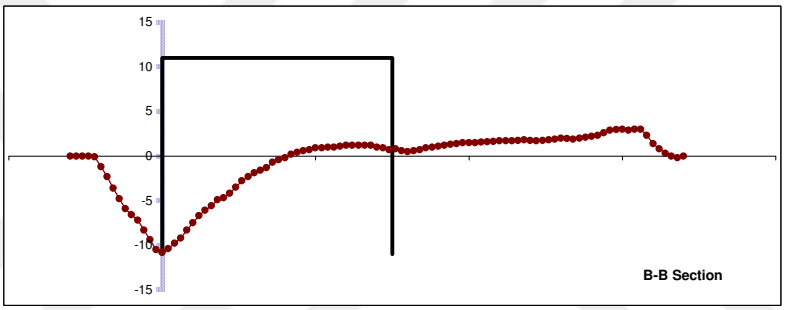


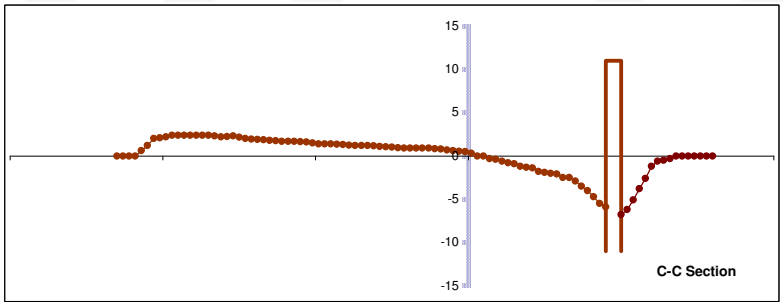
Experiment No : **E79**

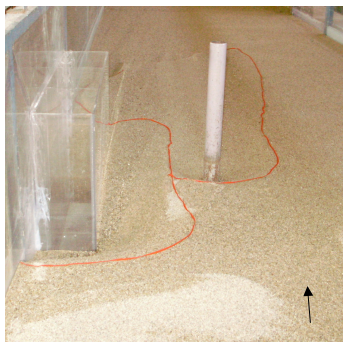


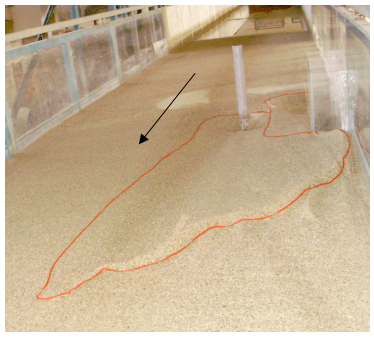






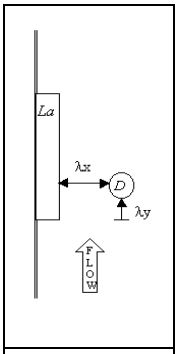


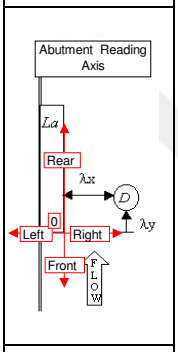


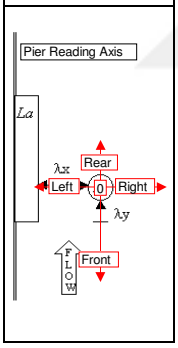


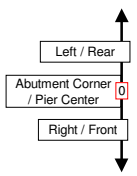
Experiment No : **E80**

Date :	10.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	70









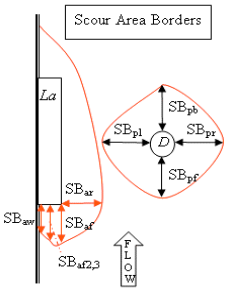
This color was used for raw data readings

This color was used for values enterpolated to sketch

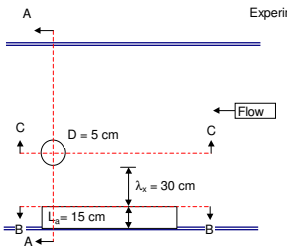
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-125				
-168	168					-123				
-166	166					-121				
-164	164		12.00		0.00	-119				
-162	162		12.40		0.40	-117				
-160	160		12.60		0.60	-115				
-158	158		*12.60*		0.60	-113				
-156	156		12.60		0.60	-111				
-154	154		*12.60*		0.60	-109				
-152	152		12.60		0.60	-107				
-150	150		*12.60*		0.60	-105				
-148	148		12.60		0.60	-103				
-146	146		*12.55*		0.55	-101				
-144	144		12.50		0.50	-99				
-142	142		*12.50*		0.50	-97				
-140	140		12.50		0.50	-95				
-138	138		*12.45*		0.45	-93				
-136	136		12.40		0.40	-91				
-134	134		*12.40*		0.40	-89				
-132	132		12.40		0.40	-87				
-130	130		*12.45*		0.45	-85				
-128	128		12.50		0.50	-83				
-126	126		*12.45*		0.45	-81				
-124	124		12.40		0.40	-79				
-122	122		*12.30*		0.30	-77				
-120	120		12.20		0.20	-75				
-118	118		*12.30*		0.30	-73				
-116	116		12.40		0.40	-71				
-114	114		13.40		1.40	-69				
-112	112		13.50		1.50	-67				
-110	110		13.40		1.40	-65				
-108	108		13.40		1.40	-63				
-106	106		13.50		1.50	-61				
-104	104		13.20		1.20	-59		12.00		0.00
-102	102		13.40		1.40	-57		13.20		1.20
-100	100		13.40		1.40	-55		14.00		2.00
-98	98		13.10		1.10	-53		14.30		2.30
-96	96		12.80		0.80	-51		14.30		2.30
-94	94		12.90		0.90	-49		14.50		2.50
-92	92		12.80		0.80	-47		*14.40*		2.40
-90	90		12.80		0.80	-45		14.30		2.30
-88	88		12.80		0.80	-43		*14.30*		2.30
-86	86		12.80		0.80	-41		14.30		2.30
-84	84		12.90		0.90	-39		*14.25*		2.25
-82	82		12.90		0.90	-37		14.20		2.20
-80	80		13.00		1.00	-35		*14.15*		2.15
-78	78		13.00		1.00	-33		14.10		2.10
-76	76		13.20		1.20	-31		*14.05*		2.05
-74	74		13.20		1.20	-29		14.00		2.00
-72	72		*13.27*		1.27	-27		*13.85*		1.85
-70	70		*13.33*		1.33	-25		13.70		1.70
-68	68		13.40		1.40	-23		*13.75*		1.75
-66	66		*13.40*		1.40	-21		13.80		1.80
-64	64		13.40		1.40	-19		*13.75*		1.75
-62	62		*13.40*		1.40	-17		13.70		1.70
-60	60		13.40		1.40	-15		*13.65*		1.65
-58	58		*13.40*		1.40	-13		13.60		1.60
-56	56		13.40		1.40	-11		*13.50*		1.50
-54	54		*13.30*		1.30	-9		13.40		1.40
-52	52		13.20		1.20	-7		*13.40*		1.40
-50	50		*13.20*		1.20	-5		13.40		1.40
-48	48		13.20		1.20	-3		*13.30*		1.30
-46	46		13.20		1.20	-1		13.20		1.20
-44	44		13.20		1.20	1		*13.20*		1.20
-42	42		13.10		1.10	3		13.20		1.20
-40	40		13.00		1.00	5		*13.20*		1.20
-38	38		12.80		0.80	7		13.20		1.20
-36	36		12.50		0.50	9		*13.05*		1.05
-34	34		12.20		0.20	11		12.90		0.90
-32	32		11.80		-0.20	13		12.90		0.90
-30	30		11.60		-0.40	15	*13.33*	12.60	1.33	0.60
-28	28		11.30		-0.70	17	12.50	12.60	0.50	0.60
-26	26		11.00		-1.00	19	13.00	12.40	1.00	0.40
-24	24		10.60		-1.40	21	13.40	12.20	1.40	0.20
-22	22		10.20		-1.80	23	13.60	12.00	1.60	0.00
-20	20		9.70		-2.30	25	13.40	11.80	1.40	-0.20
-18	18		9.20		-2.80	27	13.30	11.60	1.30	-0.40
-16	16		8.70		-3.30	29	13.10	11.30	1.10	-0.70
-14	14	6.60	8.20	-5.40	-3.80	31	12.80	11.00	0.80	-1.00
-12	12	5.50	7.40	-6.50	-4.60	33	12.50	10.50	0.50	-1.50
-10	10	4.70	6.80	-7.30	-5.20	35	10.90	10.10	-1.10	-1.90
-8	8	4.00	5.90	-8.00	-6.10	37	9.50	9.70	-2.50	-2.30
-6	6	3.80	4.60	-8.20	-7.40	39	8.40	9.10	-3.60	-2.90
-4	4	3.30	3.80	-8.70	-8.20	41	7.60	8.50	-4.40	-3.50
-2	2	3.00	3.10	-9.00	-8.90	43	6.30	7.90	-5.70	-4.10
0	0	3.00	3.00	-9.00	-9.00	45	5.10	6.60	-6.90	-5.40
0	0	3.00	3.00	-9.00	-9.00	50	5.20	5.00	-6.80	-7.00
2	-2	3.70	3.80	-8.30	-8.20	52	6.20	6.20	-5.80	-5.80
4	-4	3.70	5.40	-8.30	-6.60	54	7.20	7.40	-4.80	-4.60
6	-6	4.90	6.50	-7.10	-5.50	56	7.80	9.00	-4.20	-3.00
8	-8	6.20	7.30	-5.80	-4.70	58	9.00	10.10	-3.00	-1.90
10	-10	7.60	8.00	-4.40	-4.00	60.00	10.10	11.10	-1.90	-0.90
12	-12	8.80	9.30	-3.20	-2.70	62.00	10.90	11.30	-1.10	-0.70
14	-14	9.40	11.40	-2.60	-0.60	64.00	11.50	11.40	-0.50	-0.60
16	-16	10.30	11.60	-1.70	-0.40	66.00	11.60	11.40	-0.40	-0.60
18	-18	11.00	11.70	-1.00	-0.30	68.00	11.70	11.40	-0.30	-0.60
20	-20	11.20		-0.80		70.00	12.00	12.00	0.00	0.00
22	-22	11.40		-0.60		72.00				
24	-24	11.40		-0.60		74.00				
26	-26					76.00				
28	-28					78.00				
30	-30					80.00				

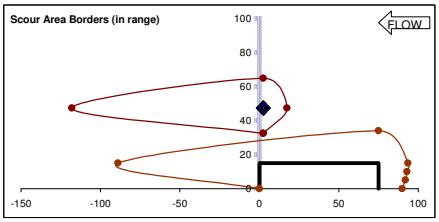
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.60	-5.40
2	6.20	-5.80
4	6.70	-5.30
6	7.60	-4.40
8	8.40	-3.60
10	9.10	-2.90
12	10.20	-1.80
14	11.40	-0.60
16	11.80	-0.20
18	11.70	-0.30
20		
22		
24		

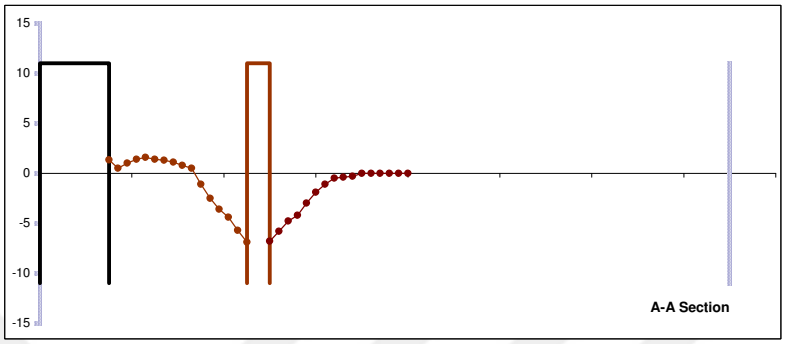
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	17
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	18.5
SB_{ar}	Abutment Corner Right	19
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	12.5
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	118

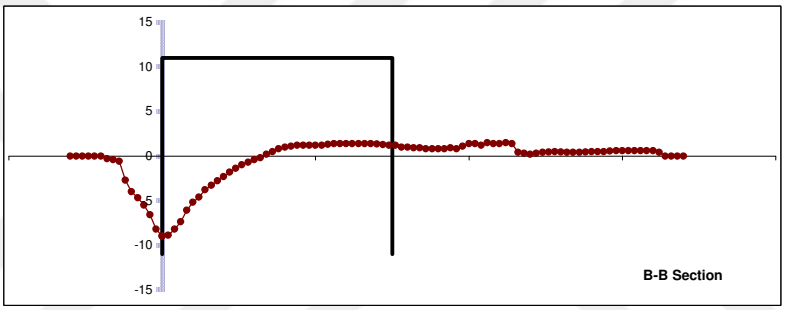


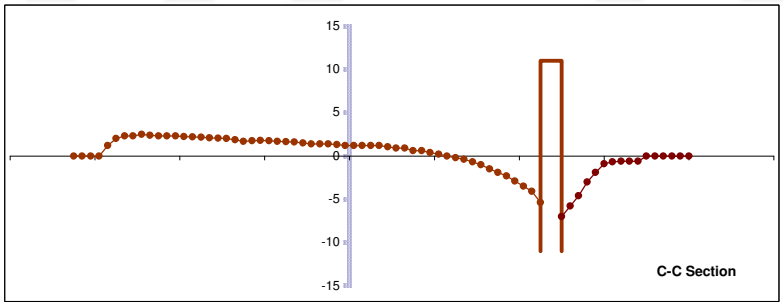
Experiment No : **E80**

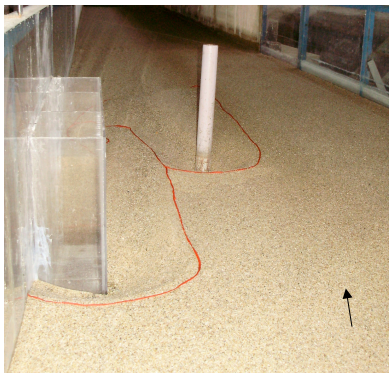




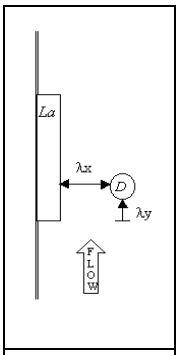


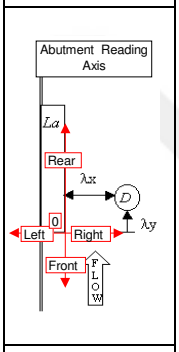


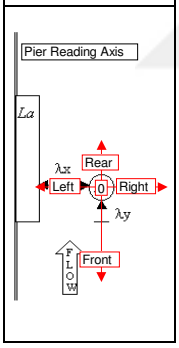


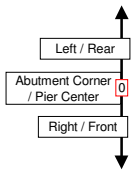


Experiment No :	**E81**
Date :	12.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	70









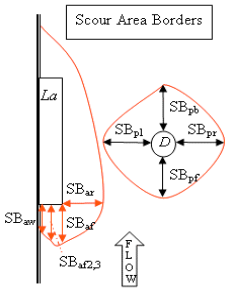
This color was used for raw data readings

This color was used for values enterpolated to sketch

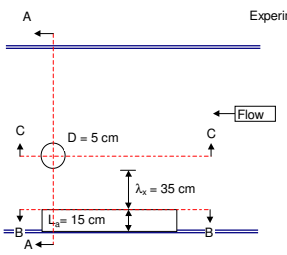
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	
Distance (cm)											
-170	170		13.20		1.20	-120					
-168	168		*13.05*		1.05	-118					
-166	166		12.90		0.90	-116					
-164	164		*12.90*		0.90	-114					
-162	162		12.90		0.90	-112					
-160	160		*12.55*		0.55	-110					
-158	158		12.20		0.20	-108					
-156	156		*12.55*		0.55	-106					
-154	154		12.90		0.90	-104					
-152	152		*12.80*		0.80	-102					
-150	150		12.70		0.70	-100					
-148	148		*12.70*		0.70	-98					
-146	146		12.70		0.70	-96					
-144	144		*12.60*		0.60	-94		12.00		0.00	
-142	142		12.50		0.50	-92		12.20		0.20	
-140	140		*12.45*		0.45	-90		13.00		1.00	
-138	138		12.40		0.40	-88		*13.60*		1.60	
-136	136		12.40		0.40	-86		14.20		2.20	
-134	134		13.00		1.00	-84		*14.15*		2.15	
-132	132		14.00		2.00	-82		14.10		2.10	
-130	130		14.20		2.20	-80		*14.10*		2.10	
-128	128		14.20		2.20	-78		14.10		2.10	
-126	126		14.20		2.20	-76		*14.10*		2.10	
-124	124		14.30		2.30	-74		14.10		2.10	
-122	122		14.20		2.20	-72		*14.05*		2.05	
-120	120		14.20		2.20	-70		14.00		2.00	
-118	118		*14.20*		2.20	-68		13.90		1.90	
-116	116		14.20		2.20	-66		*13.90*		1.90	
-114	114		14.20		2.20	-64		13.90		1.90	
-112	112		14.40		2.40	-62		*13.85*		1.85	
-110	110		14.40		2.40	-60		13.80		1.80	
-108	108		14.40		2.40	-58		*13.80*		1.80	
-106	106		14.30		2.30	-56		13.80		1.80	
-104	104		14.30		2.30	-54		*13.75*		1.75	
-102	102		14.20		2.20	-52		13.70		1.70	
-100	100		14.20		2.20	-50		*13.73*		1.73	
-98	98		14.10		2.10	-48		*13.75*		1.75	
-96	96		13.90		1.90	-46		*13.78*		1.78	
-94	94		13.90		1.90	-44		13.80		1.80	
-92	92		13.70		1.70	-42		*13.70*		1.70	
-90	90		13.50		1.50	-40		13.60		1.60	
-88	88		13.30		1.30	-38		*13.60*		1.60	
-86	86		13.30		1.30	-36		13.60		1.60	
-84	84		13.10		1.10	-34		*13.55*		1.55	
-82	82		13.00		1.00	-32		13.50		1.50	
-80	80		12.90		0.90	-30		*13.50*		1.50	
-78	78		12.70		0.70	-28		13.50		1.50	
-76	76		*12.80*		0.80	-26		*13.48*		1.48	
-74	74		12.90		0.90	-24		*13.46*		1.46	
-72	72		12.80		0.80	-22		*13.44*		1.44	
-70	70		12.90		0.90	-20		*13.42*		1.42	
-68	68		12.80		0.80	-18		13.40		1.40	
-66	66		13.10		1.10	-16		*13.35*		1.35	
-64	64		13.10		1.10	-14		13.30		1.30	
-62	62		13.00		1.00	-12		*13.25*		1.25	
-60	60		13.20		1.20	-10		13.20		1.20	
-58	58		13.10		1.10	-8		*13.20*		1.20	
-56	56		13.10		1.10	-6		13.20		1.20	
-54	54		13.10		1.10	-4		*13.25*		1.25	
-52	52		12.90		0.90	-2		13.30		1.30	
-50	50		12.90		0.90	0		*13.15*		1.15	
-48	48		12.70		0.70	2		13.00		1.00	
-46	46		12.70		0.70	4		*13.00*		1.00	
-44	44		12.50		0.50	6		13.00		1.00	
-42	42		12.30		0.30	8		12.90		0.90	
-40	40		12.10		0.10	10		12.70		0.70	
-38	38		11.90		-0.10	12		12.50		0.50	
-36	36		11.60		-0.40	14		12.70		0.70	
-34	34		11.30		-0.70	16	12.00	12.80	0.00	0.80	
-32	32		11.00		-1.00	18	12.50	12.30	0.50	0.30	
-30	30		10.70		-1.30	20	12.40	12.20	0.40	0.20	
-28	28		10.40		-1.60	22	12.80	11.60	0.80	-0.40	
-26	26		9.90		-2.10	24	12.80	11.60	0.80	-0.40	
-24	24		9.50		-2.50	26	12.60	11.80	0.60	-0.20	
-22	22		9.10		-2.90	28	12.60	11.20	0.60	-0.80	
-20	20		8.70		-3.30	30	12.40	*11.20*	0.40	-0.80	
-18	18		8.20		-3.80	32	12.20	10.80	0.20	-1.20	
-16	16		7.80		-4.20	34	12.10	10.60	0.10	-1.40	
-14	14	2.50	7.10	-9.50	-4.90	36	12.00	10.50	0.00	-1.50	
-12	12	2.80	6.50	-9.20	-5.50	38	11.70	10.10	-0.30	-1.90	
-10	10	2.50	5.80	-9.50	-6.20	40	10.80	9.50	-1.20	-2.50	
-8	8	2.50	5.00	-9.50	-7.00	42	9.80	9.00	-2.20	-3.00	
-6	6	2.40	4.30	-9.60	-7.70	44	8.50	8.20	-3.50	-3.80	
-4	4	2.20	3.10	-9.80	-8.90	46	7.30	7.30	-4.70	-4.70	
-2	2	2.00	2.20	-10.00	-9.80	48	6.40	6.70	-5.60	-5.30	
0	0	2.00	2.00	-10.00	-10.00	50	5.90	6.00	-6.10	-6.00	
0	0	2.00	2.00	-10.00	-10.00	55	5.20	6.00	-6.80	-6.00	
2	-2	2.10	2.10	-9.90	-9.90	57	5.90	7.00	-6.10	-5.00	
4	-4	2.30	3.50	-9.70	-8.50	59	7.00	8.40	-5.00	-3.60	
6	-6	2.90	4.70	-9.10	-7.30	61	8.00	9.50	-4.00	-2.50	
8	-8	4.30	5.70	-7.70	-6.30	63	9.10	10.50	-2.90	-1.50	
10	-10	5.80	6.40	-6.20	-5.60	65.00	10.00	11.10	-2.00	-0.90	
12	-12	7.10	7.10	-4.90	-4.90	67.00	10.80	11.30	-1.20	-0.70	
14	-14	7.80	8.10	-4.20	-3.90	69.00	11.60	11.50	-0.40	-0.50	
16	-16	8.50	9.20	-3.50	-2.80	71.00	11.90	11.70	-0.10	-0.30	
18	-18	9.40	11.00	-2.60	-1.00	73.00	12.00	11.50	0.00	-0.50	
20	-20	10.20	11.50	-1.80	-0.50	75.00		12.00		0.00	
22	-22	10.90	11.80	-1.10	-0.20	77.00					
24	-24	11.90	11.80	-0.10	-0.20	79.00					
26	-26	11.40	11.90	-0.60	-0.10	81.00					
28	-28	11.30		-0.70		83.00					
30	-30	11.30		-0.70		85.00					

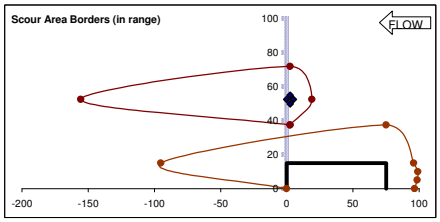
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	2.50	-9.50
2	2.60	-9.40
4	3.10	-8.90
6	4.10	-7.90
8	5.30	-6.70
10	6.40	-5.60
12	7.20	-4.80
14	8.40	-3.60
16	9.50	-2.50
18	10.40	-1.60
20	11.40	-0.60
22	*11.70*	-0.30
24	12.00	0.00

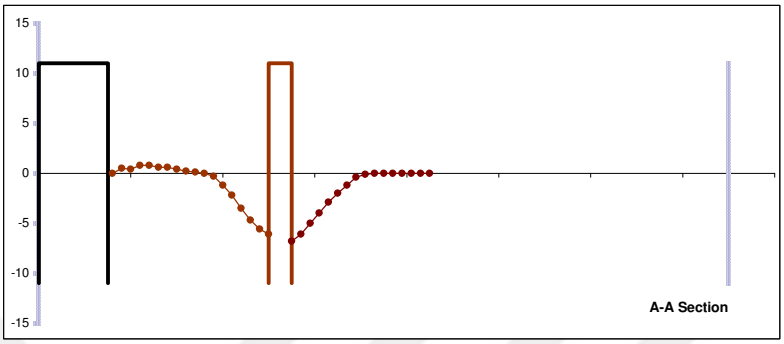
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21.5
SB_{af2}	Abutment Front (W+5 cm)	23.5
SB_{af3}	Abutment Front (W+10 cm)	24
SB_{af}	Abutment Corner Front	21
SB_{ar}	Abutment Corner Right	22.5
SB_{pl}	Pier Left	12.5
SB_{pf}	Pier Front	14
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	155.5

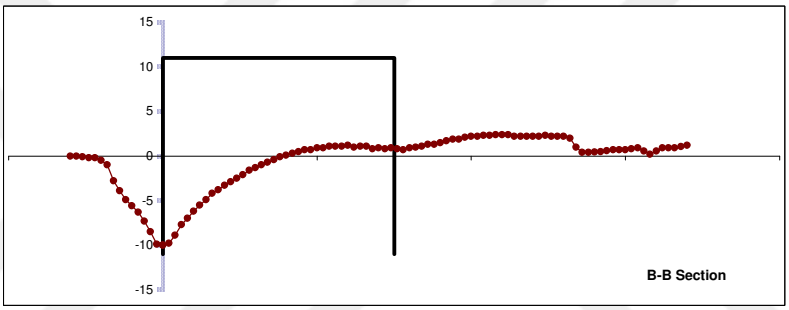


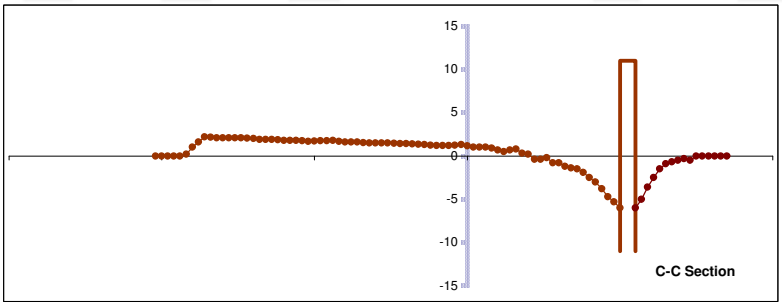
Experiment No : **E81**

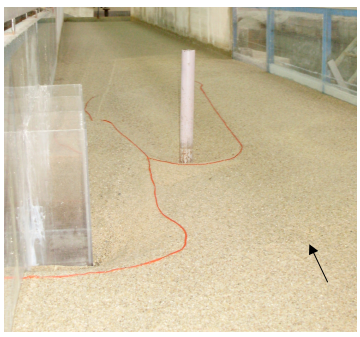


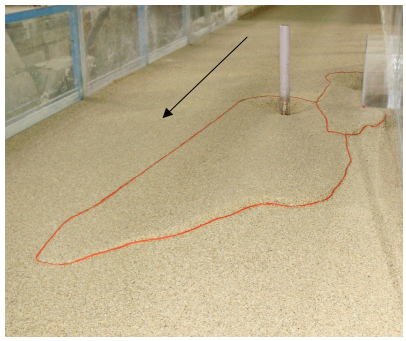






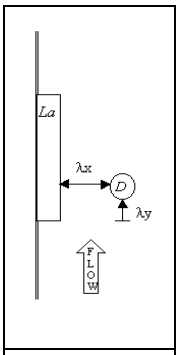


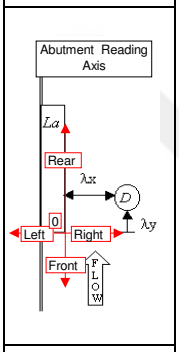


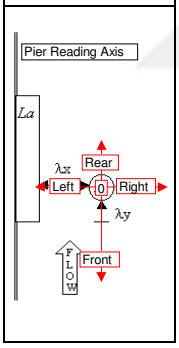


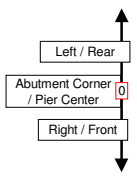
Experiment No : **E82**

Date :	18.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	35









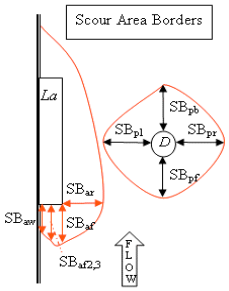
This color was used for raw data readings

This color was used for values enterpolated to sketch

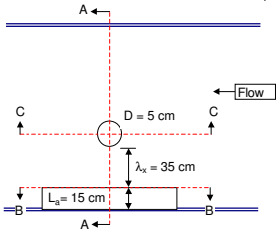
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-120				
-168	168					-118				
-166	166					-116				
-164	164					-114				
-162	162					-112				
-160	160					-110				
-158	158					-108				
-156	156					-106				
-154	154					-104				
-152	152					-102				
-150	150					-100				
-148	148					-98				
-146	146					-96				
-144	144					-94				
-142	142		12.10		0.10	-92				
-140	140		13.70		1.70	-90				
-138	138		13.90		1.90	-88				
-136	136		13.80		1.80	-86				
-134	134		*13.75*		1.75	-84				
-132	132		13.70		1.70	-82				
-130	130		13.70		1.70	-80				
-128	128		*13.30*		1.30	-78		12.10		0.10
-126	126		13.10		1.10	-76		12.70		0.70
-124	124		12.90		0.90	-74		13.10		1.10
-122	122		12.90		0.90	-72		13.70		1.70
-120	120		12.70		0.70	-70		14.10		2.10
-118	118		12.70		0.70	-68		14.30		2.30
-116	116		13.40		1.40	-66		14.30		2.30
-114	114		13.50		1.50	-64		*14.15*		2.15
-112	112		13.50		1.50	-62		14.00		2.00
-110	110		13.70		1.70	-60		*14.00*		2.00
-108	108		13.70		1.70	-58		14.00		2.00
-106	106		13.90		1.90	-56		*14.00*		2.00
-104	104		13.90		1.90	-54		14.00		2.00
-102	102		13.80		1.80	-52		*14.00*		2.00
-100	100		13.90		1.90	-50		14.00		2.00
-98	98		13.70		1.70	-48		*13.97*		1.97
-96	96		13.70		1.70	-46		*13.94*		1.94
-94	94		13.60		1.60	-44		13.90		1.90
-92	92		13.50		1.50	-42		*13.85*		1.85
-90	90		13.50		1.50	-40		13.80		1.80
-88	88		13.50		1.50	-38		*13.85*		1.85
-86	86		13.50		1.50	-36		13.90		1.90
-84	84		13.50		1.50	-34		*13.80*		1.80
-82	82		13.40		1.40	-32		13.70		1.70
-80	80		13.60		1.60	-30		*13.65*		1.65
-78	78		13.50		1.50	-28		13.60		1.60
-76	76		13.60		1.60	-26		*13.55*		1.55
-74	74		13.60		1.60	-24		13.50		1.50
-72	72		13.60		1.60	-22		*13.50*		1.50
-70	70		13.70		1.70	-20		13.50		1.50
-68	68		13.70		1.70	-18		*13.45*		1.45
-66	66		13.80		1.80	-16		13.40		1.40
-64	64		13.80		1.80	-14		*13.40*		1.40
-62	62		13.70		1.70	-12		13.40		1.40
-60	60		13.80		1.80	-10		*13.30*		1.30
-58	58		13.70		1.70	-8		13.20		1.20
-56	56		13.70		1.70	-6		*13.25*		1.25
-54	54		13.70		1.70	-4		13.30		1.30
-52	52		13.70		1.70	-2		13.20		1.20
-50	50		13.50		1.50	0		13.20		1.20
-48	48		13.30		1.30	2		13.00		1.00
-46	46		13.30		1.30	4		13.00		1.00
-44	44		13.20		1.20	6		12.80		0.80
-42	42		13.10		1.10	8		12.80		0.80
-40	40		12.90		0.90	10		12.70		0.70
-38	38		12.50		0.50	12		12.60		0.60
-36	36		12.10		0.10	14		12.50		0.50
-34	34		11.90		-0.10	16	12.60	12.40	0.60	0.40
-32	32		11.40		-0.60	18	12.40	11.80	0.40	-0.20
-30	30		10.90		-1.10	20	12.00	11.60	0.00	-0.40
-28	28		10.60		-1.40	22	11.80	11.40	-0.20	-0.60
-26	26		10.40		-1.60	24	11.60	11.20	-0.40	-0.80
-24	24		10.10		-1.90	26	11.40	11.00	-0.60	-1.00
-22	22		9.40		-2.60	28	11.50	10.70	-0.50	-1.30
-20	20		9.00		-3.00	30	11.70	10.10	-0.30	-1.90
-18	18		9.70		-2.30	32	12.10	10.10	0.10	-1.90
-16	16	4.10	7.80	-7.90	-4.20	34	12.70	9.80	0.70	-2.20
-14	14	4.40	7.70	-7.60	-4.30	36	12.50	9.50	0.50	-2.50
-12	12	4.10	6.70	-7.90	-5.30	38	11.70	9.20	-0.30	-2.80
-10	10	3.90	6.00	-8.10	-6.00	40	10.50	9.00	-1.50	-3.00
-8	8	*3.60*	5.20	-8.40	-6.80	42	9.20	8.40	-2.80	-3.60
-6	6	3.30	4.40	-8.70	-7.60	44	8.30	7.80	-3.70	-4.20
-4	4	*3.00*	4.00	-9.00	-8.00	46	7.10	7.10	-4.90	-4.90
-2	2	2.70	3.50	-9.30	-8.50	48	5.80	6.70	-6.20	-5.30
0	0	2.60	2.60	-9.40	-9.40	50	4.70	6.60	-7.30	-5.40
0	0	2.60	2.60	-9.40	-9.40	55	5.30	5.30	-6.70	-6.70
2	-2	4.10	2.80	-7.90	-9.20	57	6.40	5.90	-5.60	-6.10
4	-4	3.30	2.90	-8.70	-9.10	59	7.20	7.00	-4.80	-5.00
6	-6	3.70	4.40	-8.30	-7.60	61	7.60	8.20	-4.40	-3.80
8	-8	5.00	5.60	-7.00	-6.40	63	8.40	9.70	-3.60	-2.30
10	-10	6.20	6.60	-5.80	-5.40	65.00	9.60	11.00	-2.40	-1.00
12	-12	7.60	7.30	-4.40	-4.70	67.00	11.10	12.00	-0.90	0.00
14	-14	8.50	8.00	-3.50	-4.00	69.00	11.90	12.20	-0.10	0.20
16	-16	9.20	8.70	-2.80	-3.30	71.00	12.10	12.10	0.10	0.10
18	-18	10.20	9.90	-1.80	-2.10	73.00				
20	-20	11.10	11.20	-0.90	-0.80	75.00				
22	-22	11.80	12.00	-0.20	0.00	77.00				
24	-24	12.10		0.10		79.00				
26	-26					81.00				
28	-28					83.00				
30	-30					85.00				

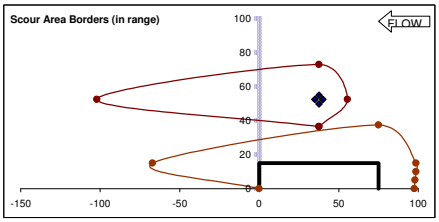
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.10	-7.90
2	4.00	-8.00
4	4.40	-7.60
6	5.60	-6.40
8	6.60	-5.40
10	7.50	-4.50
12	8.20	-3.80
14	9.40	-2.60
16	10.60	-1.40
18	11.50	-0.50
20	12.10	0.10
22		
24		

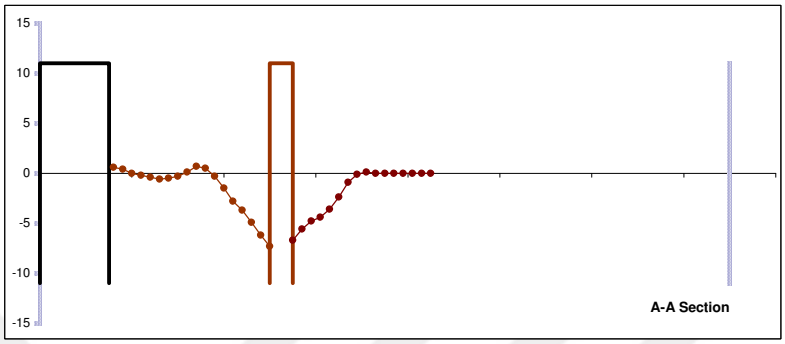
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	22.5
SB_{af2}	Abutment Front (W+5 cm)	23
SB_{af3}	Abutment Front (W+10 cm)	23.5
SB_{af}	Abutment Corner Front	23.5
SB_{ar}	Abutment Corner Right	22.5
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	15.5
SB_{pr}	Pier Right	18
SB_{pb}	Pier Rear	137

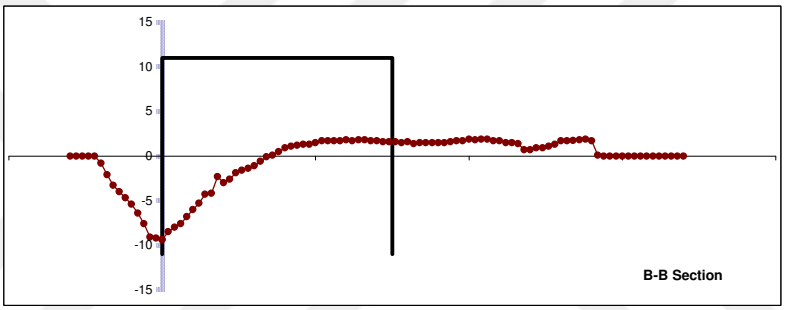


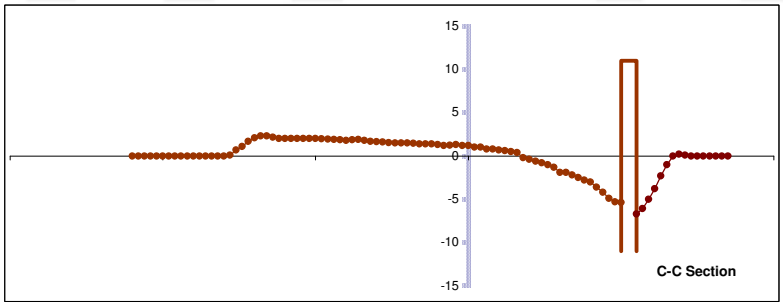
Experiment No : **E82**

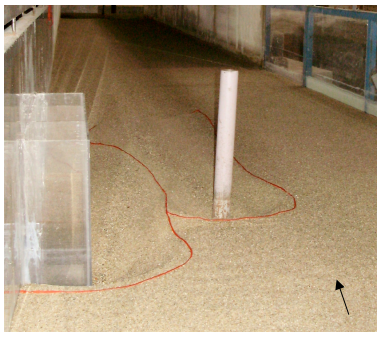


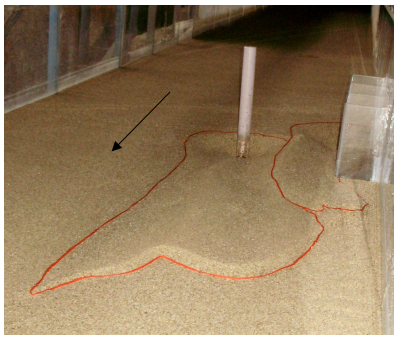




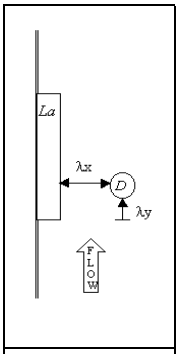


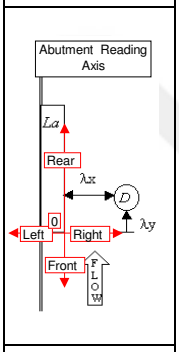


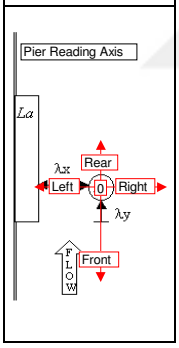


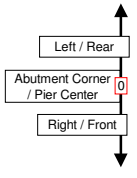


Experiment No :	**E83**
Date :	20.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	35
λ_y (cm) :	0









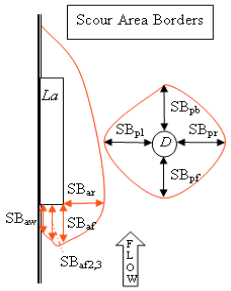
This color was used for raw data readings

This color was used for values enterpolated to sketch

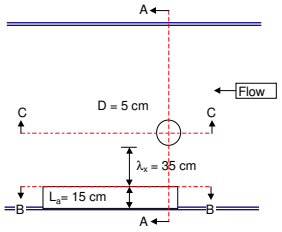
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-120		13.70		1.70
-168	168					-118		*13.70*		1.70
-166	166					-116		13.70		1.70
-164	164					-114		*13.65*		1.65
-162	162					-112		13.60		1.60
-160	160		12.20		0.20	-110		*13.65*		1.65
-158	158		12.50		0.50	-108		13.70		1.70
-156	156		12.50		0.50	-106		*13.70*		1.70
-154	154		13.40		1.40	-104		13.70		1.70
-152	152		14.00		2.00	-102		*13.65*		1.65
-150	150		12.40		0.40	-100		13.60		1.60
-148	148		12.50		0.50	-98		*13.65*		1.65
-146	146		14.60		2.60	-96		13.70		1.70
-144	144		*14.65*		2.65	-94		*13.65*		1.65
-142	142		14.70		2.70	-92		13.60		1.60
-140	140		*14.75*		2.75	-90		*13.65*		1.65
-138	138		14.80		2.80	-88		13.70		1.70
-136	136		*14.75*		2.75	-86		*13.60*		1.60
-134	134		14.70		2.70	-84		13.50		1.50
-132	132		*14.70*		2.70	-82		*13.45*		1.45
-130	130		14.70		2.70	-80		13.40		1.40
-128	128		*14.70*		2.70	-78		*13.40*		1.40
-126	126		14.70		2.70	-76		13.40		1.40
-124	124		*14.70*		2.70	-74		*13.45*		1.45
-122	122		14.70		2.70	-72		13.50		1.50
-120	120		*14.65*		2.65	-70		*13.50*		1.50
-118	118		14.60		2.60	-68		13.50		1.50
-116	116		*14.55*		2.55	-66		*13.35*		1.35
-114	114		14.50		2.50	-64		13.20		1.20
-112	112		*14.45*		2.45	-62		*13.20*		1.20
-110	110		14.40		2.40	-60		13.20		1.20
-108	108		*14.30*		2.30	-58		*13.15*		1.15
-106	106		14.20		2.20	-56		13.10		1.10
-104	104		*14.20*		2.20	-54		*13.05*		1.05
-102	102		14.20		2.20	-52		13.00		1.00
-100	100		*14.10*		2.10	-50		*12.95*		0.95
-98	98		14.00		2.00	-48		12.90		0.90
-96	96		13.80		1.80	-46		*12.85*		0.85
-94	94		13.70		1.70	-44		12.80		0.80
-92	92		13.60		1.60	-42		*12.75*		0.75
-90	90		13.30		1.30	-40		12.70		0.70
-88	88		13.20		1.20	-38		*12.65*		0.65
-86	86		12.90		0.90	-36		12.60		0.60
-84	84		12.80		0.80	-34		*12.65*		0.65
-82	82		12.70		0.70	-32		12.70		0.70
-80	80		12.50		0.50	-30		*12.70*		0.70
-78	78		12.50		0.50	-28		12.70		0.70
-76	76		12.50		0.50	-26		*12.70*		0.70
-74	74		12.50		0.50	-24		12.70		0.70
-72	72		12.70		0.70	-22		*12.70*		0.70
-70	70		12.70		0.70	-20		12.70		0.70
-68	68		12.70		0.70	-18		*12.65*		0.65
-66	66		12.90		0.90	-16		12.60		0.60
-64	64		12.80		0.80	-14		*12.60*		0.60
-62	62		12.70		0.70	-12		12.60		0.60
-60	60		12.80		0.80	-10		*12.60*		0.60
-58	58		12.70		0.70	-8		12.60		0.60
-56	56		12.70		0.70	-6		*12.50*		0.50
-54	54		12.70		0.70	-4		12.40		0.40
-52	52		12.60		0.60	-2		*12.45*		0.45
-50	50		12.40		0.40	0		12.50		0.50
-48	48		12.30		0.30	2		12.50		0.50
-46	46		12.20		0.20	4		12.40		0.40
-44	44		11.90		-0.10	6		12.60		0.60
-42	42		11.80		-0.20	8		12.20		0.20
-40	40		11.50		-0.50	10		12.20		0.20
-38	38		11.20		-0.80	12		11.90		-0.10
-36	36		10.90		-1.10	14		11.90		-0.10
-34	34		10.50		-1.50	16	2.50	11.70	-9.50	-0.30
-32	32		10.10		-1.90	18	2.90	11.60	-9.10	-0.40
-30	30		9.80		-2.20	20	2.70	11.30	-9.30	-0.70
-28	28		9.40		-2.60	22	3.10	11.50	-8.90	-0.50
-26	26		8.90		-3.10	24	4.70	11.30	-7.30	-0.70
-24	24		8.40		-3.60	26	6.00	11.00	-6.00	-1.00
-22	22		7.90		-4.10	28	7.30	10.90	-4.70	-1.10
-20	20		7.70		-4.30	30	9.10	10.80	-2.90	-1.20
-18	18		7.10		-4.90	32	9.50	10.60	-2.50	-1.40
-16	16		6.70		-5.30	34	10.10	10.40	-1.90	-1.60
-14	14	1.30	6.10	-10.70	-5.90	36	10.40	9.80	-1.60	-2.20
-12	12	1.40	5.40	-10.60	-6.60	38	11.10	9.50	-0.90	-2.50
-10	10	1.90	4.60	-10.10	-7.40	40	10.10	9.10	-1.90	-2.90
-8	8	1.70	4.00	-10.30	-8.00	42	8.70	8.60	-3.30	-3.40
-6	6	1.30	2.90	-10.70	-9.10	44	7.60	7.90	-4.40	-4.10
-4	4	*1.30*	2.20	-10.70	-9.80	46	6.90	7.60	-5.10	-4.40
-2	2	1.30	1.70	-10.70	-10.30	48	5.80	6.40	-6.20	-5.60
0	0	1.40	1.40	-10.60	-10.60	50	4.50	6.10	-7.50	-5.90
0	0	1.40	1.40	-10.60	-10.60	55	4.80	4.80	-7.20	-7.20
2	-2	2.20	1.50	-9.80	-10.50	57	5.60	5.70	-6.40	-6.30
4	-4	2.40	3.00	-9.60	-9.00	59	6.90	7.00	-5.10	-5.00
6	-6	3.60	4.20	-8.40	-7.80	61	8.60	8.20	-3.40	-3.80
8	-8	4.90	5.30	-7.10	-6.70	63	9.20	9.60	-2.80	-2.40
10	-10	6.10	5.70	-5.90	-6.30	65.00	9.90	10.60	-2.10	-1.40
12	-12	7.30	6.40	-4.70	-5.60	67.00	10.70	11.00	-1.30	-1.00
14	-14	8.40	7.50	-3.60	-4.50	69.00	11.70	11.80	-0.30	-0.20
16	-16	9.00	8.50	-3.00	-3.50	71.00	11.90	11.90	-0.10	-0.10
18	-18	10.10	9.70	-1.90	-2.30	73.00	11.90	12.00	-0.10	0.00
20	-20	10.90	10.80	-1.10	-1.20	75.00	12.10	12.10	0.10	0.10
22	-22	11.10	12.10	-0.90	0.10	77.00				
24	-24	9.80		-2.20		79.00				
26	-26	9.60		-2.40		81.00				
28	-28	8.00		-4.00		83.00				
30	-30	8.00		-4.00		85.00				

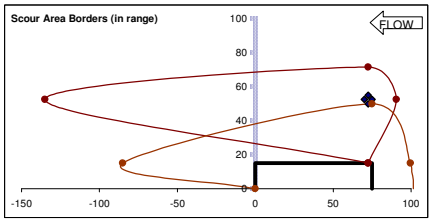
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	1.10	-10.90
2	1.00	-11.00
4	1.10	-10.90
6	1.90	-10.10
8	3.00	-9.00
10	4.20	-7.80
12	5.20	-6.80
14	6.10	-5.90
16	7.30	-4.70
18	8.60	-3.40
20	9.70	-2.30

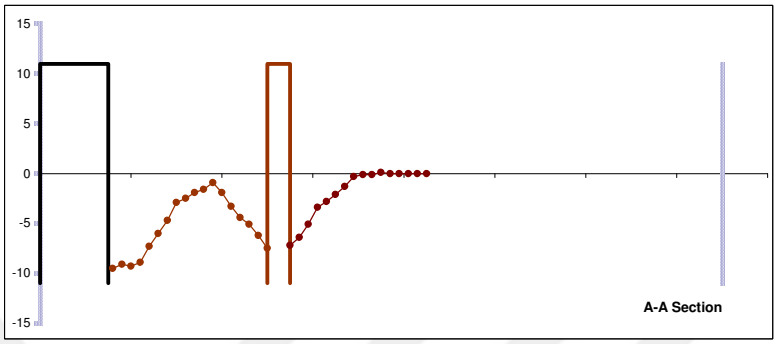
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	26.5
SB_{af2}	Abutment Front (W+5 cm)	26.5
SB_{af3}	Abutment Front (W+10 cm)	25.5
SB_{af}	Abutment Corner Front	24.5
SB_{ar}	Abutment Corner Right	*35*
SB_{pl}	Pier Left	*35*
SB_{pf}	Pier Front	15.5
SB_{pr}	Pier Right	16.5
SB_{pb}	Pier Rear	205

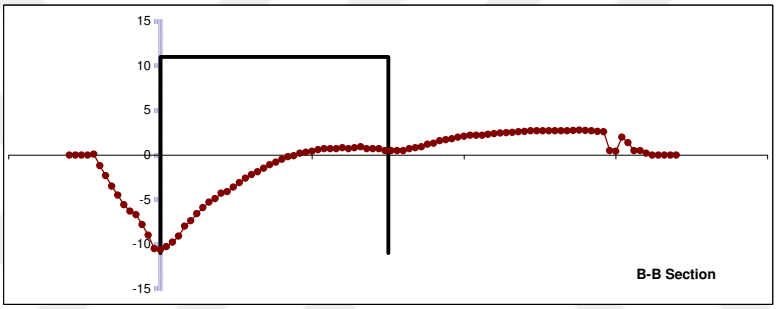


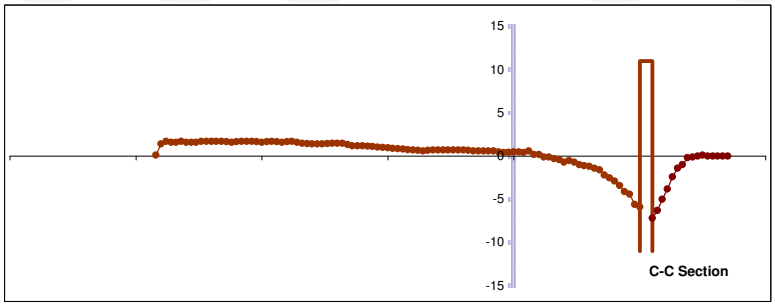
Experiment No : **E83**

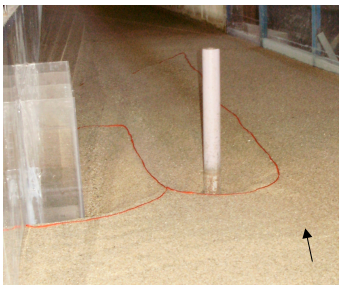


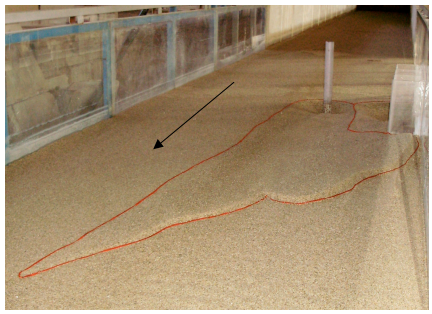






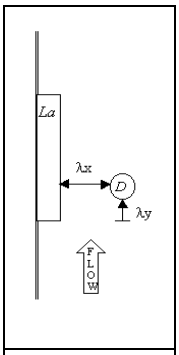


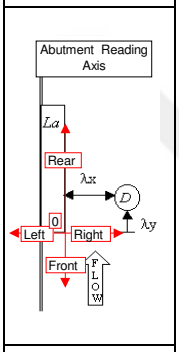


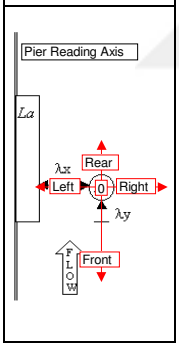


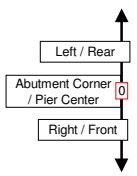
Experiment No : **E84**

Date :	24.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	0









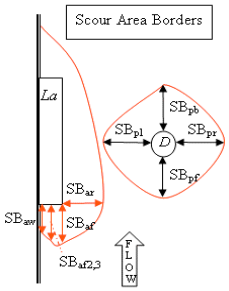
This color was used for raw data readings

This color was used for values enterpolated to sketch

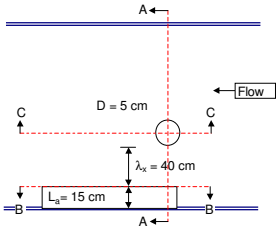
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-115				
-168	168					-113				
-166	166					-111				
-164	164					-109				
-162	162					-107				
-160	160					-105				
-158	158					-103				
-156	156					-101				
-154	154					-99				
-152	152					-97				
-150	150					-95				
-148	148					-93				
-146	146					-91		12.10		0.10
-144	144					-89		12.30		0.30
-142	142					-87		12.30		0.30
-140	140					-85		12.30		0.30
-138	138					-83		12.30		0.30
-136	136					-81		12.40		0.40
-134	134					-79		12.70		0.70
-132	132					-77		13.00		1.00
-130	130					-75		13.00		1.00
-128	128		12.10		0.10	-73		13.20		1.20
-126	126		12.40		0.40	-71		13.30		1.30
-124	124		13.70		1.70	-69		13.20		1.20
-122	122		13.40		1.40	-67		13.20		1.20
-120	120		14.50		2.50	-65		*13.30*		1.30
-118	118		14.60		2.60	-63		13.40		1.40
-116	116		14.70		2.70	-61		*13.40*		1.40
-114	114		14.70		2.70	-59		13.40		1.40
-112	112		14.70		2.70	-57		*13.35*		1.35
-110	110		14.60		2.60	-55		13.30		1.30
-108	108		14.50		2.50	-53		*13.30*		1.30
-106	106		14.60		2.60	-51		13.30		1.30
-104	104		14.50		2.50	-49		*13.30*		1.30
-102	102		14.30		2.30	-47		13.30		1.30
-100	100		14.30		2.30	-45		*13.35*		1.35
-98	98		14.10		2.10	-43		13.40		1.40
-96	96		14.00		2.00	-41		*13.35*		1.35
-94	94		13.70		1.70	-39		13.30		1.30
-92	92		13.70		1.70	-37		*13.30*		1.30
-90	90		13.40		1.40	-35		13.30		1.30
-88	88		13.20		1.20	-33		*13.20*		1.20
-86	86		13.00		1.00	-31		13.10		1.10
-84	84		12.70		0.70	-29		*13.05*		1.05
-82	82		12.70		0.70	-27		13.00		1.00
-80	80		12.50		0.50	-25		*13.05*		1.05
-78	78		12.30		0.30	-23		13.10		1.10
-76	76		12.40		0.40	-21		*13.05*		1.05
-74	74		12.50		0.50	-19		13.00		1.00
-72	72		12.60		0.60	-17		*13.20*		1.20
-70	70		12.70		0.70	-15		13.40		1.40
-68	68		12.70		0.70	-13		*13.10*		1.10
-66	66		13.00		1.00	-11		12.80		0.80
-64	64		13.00		1.00	-9		*12.85*		0.85
-62	62		13.20		1.20	-7		12.90		0.90
-60	60		13.30		1.30	-5		*12.95*		0.95
-58	58		13.20		1.20	-3		13.00		1.00
-56	56		13.20		1.20	-1		*13.10*		1.10
-54	54		13.10		1.10	1		13.20		1.20
-52	52		13.00		1.00	3		*13.10*		1.10
-50	50		12.90		0.90	5		13.00		1.00
-48	48		13.00		1.00	7		*13.05*		1.05
-46	46		12.80		0.80	9		13.10		1.10
-44	44		12.70		0.70	11		13.10		1.10
-42	42		12.60		0.60	13		13.20		1.20
-40	40		12.30		0.30	15		13.20		1.20
-38	38		12.00		0.00	17	4.10	13.10	-7.90	1.10
-36	36		11.90		-0.10	19	4.10	13.00	-7.90	1.00
-34	34		11.50		-0.50	21	4.10	12.90	-7.90	0.90
-32	32		11.10		-0.90	23	4.90	12.80	-7.10	0.80
-30	30		10.80		-1.20	25	6.20	12.70	-5.80	0.70
-28	28		10.40		-1.60	27	7.70	12.40	-4.30	0.40
-26	26		10.00		-2.00	29	8.80	12.00	-3.20	0.00
-24	24		9.70		-2.30	31	9.60	12.30	-2.40	0.30
-22	22		9.40		-2.60	33	10.20	12.20	-1.80	0.20
-20	20		9.20		-2.80	35	10.70	11.90	-1.30	-0.10
-18	18		8.90		-3.10	37	11.40	11.60	-0.60	-0.40
-16	16		8.70		-3.30	39	12.00	11.40	0.00	-0.60
-14	14	5.30	8.20	-6.70	-3.80	41	12.10	11.20	0.10	-0.80
-12	12	4.90	7.70	-7.10	-4.30	43	12.10	10.80	0.10	-1.20
-10	10	4.50	6.90	-7.50	-5.10	45	11.60	10.40	-0.40	-1.60
-8	8	4.20	5.80	-7.80	-6.20	47	10.30	9.80	-1.70	-2.20
-6	6	4.00	5.00	-8.00	-7.00	49	9.10	9.30	-2.90	-2.70
-4	4	3.50	4.00	-8.50	-8.00	51	8.30	8.30	-3.70	-3.70
-2	2	3.20	3.80	-8.80	-8.20	53	7.10	7.60	-4.90	-4.40
0	0	3.10	3.10	-8.90	-8.90	55	5.60	7.10	-6.40	-4.90
0	0	3.10	3.10	-8.90	-8.90	60	6.00	5.20	-6.00	-6.80
2	-2	4.00	3.60	-8.00	-8.40	62	7.10	6.20	-4.90	-5.80
4	-4	3.50	5.10	-8.50	-6.90	64	8.60	7.30	-3.40	-4.70
6	-6	3.90	6.40	-8.10	-5.60	66	9.70	8.70	-2.30	-3.30
8	-8	5.10	7.40	-6.90	-4.60	68	10.30	10.10	-1.70	-1.90
10	-10	6.60	8.00	-5.40	-4.00	70.00	11.30	11.30	-0.70	-0.70
12	-12	8.20	8.70	-3.80	-3.30	72.00	11.70	12.00	-0.30	0.00
14	-14	8.80	9.50	-3.20	-2.50	74.00	11.90	12.10	-0.10	0.10
16	-16	9.30	12.10	-2.70	0.10	76.00	11.70		-0.30	
18	-18	10.10		-1.90		78.00	12.10		0.10	
20	-20	11.00		-1.00		80.00				
22	-22	11.90		-0.10		82.00				
24	-24	12.20		0.20		84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

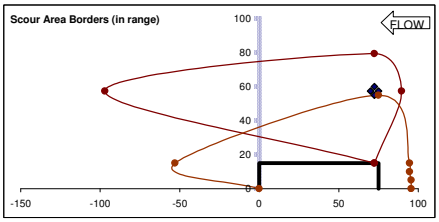
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.80	-7.20
2	4.60	-7.40
4	5.10	-6.90
6	6.30	-5.70
8	7.50	-4.50
10	8.20	-3.80
12	9.00	-3.00
14	10.20	-1.80
16	11.20	-0.80
18	11.50	-0.50
20	12.00	0.00

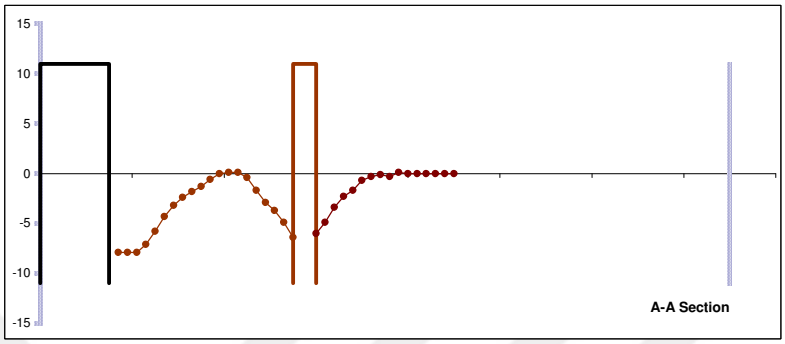
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	20.5
SB_{af2}	Abutment Front (W+5 cm)	20.5
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	*40*
SB_{pl}	Pier Left	*40*
SB_{pf}	Pier Front	14.5
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	167

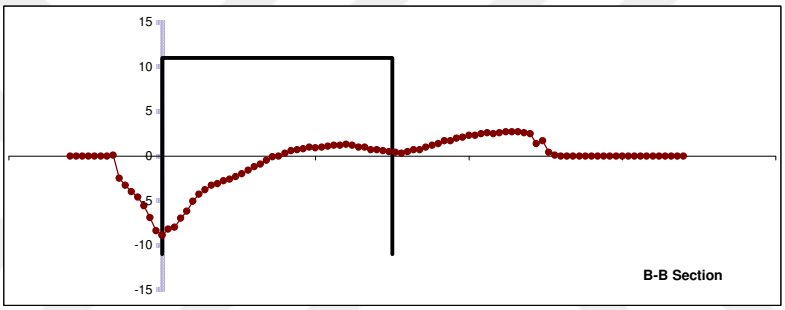


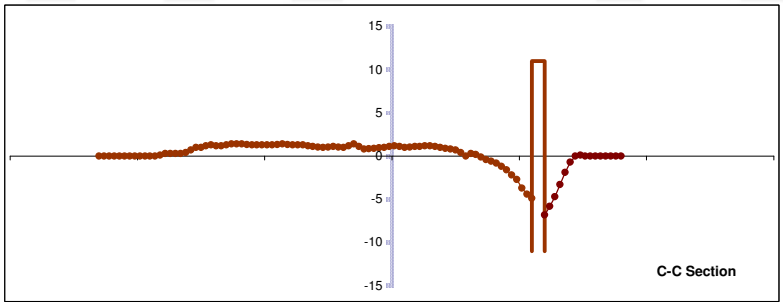
Experiment No : **E84**

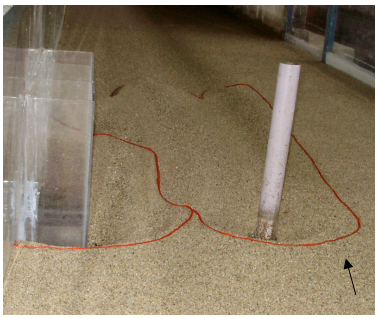


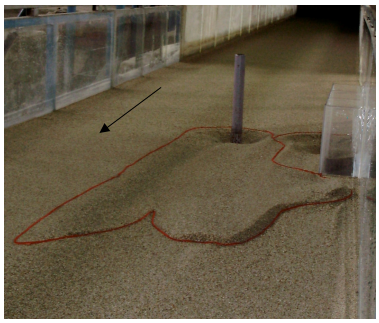




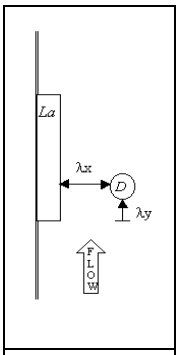


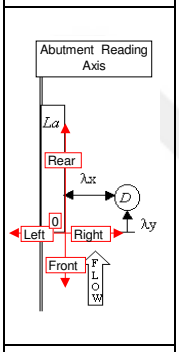


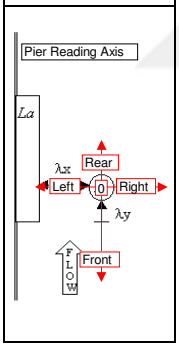


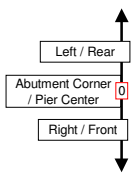


Experiment No :	**E85**
Date :	26.10.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	35









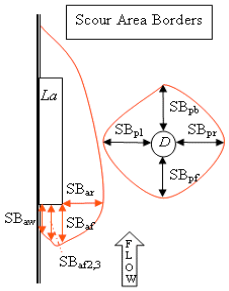
This color was used for raw data readings

This color was used for values enterpolated to sketch

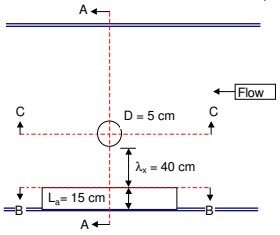
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-115				
-168	168					-113				
-166	166					-111				
-164	164					-109				
-162	162					-107				
-160	160					-105				
-158	158					-103				
-156	156					-101				
-154	154					-99				
-152	152					-97				
-150	150					-95				
-148	148					-93				
-146	146					-91				
-144	144					-89				
-142	142					-87				
-140	140					-85				
-138	138		12.30		0.30	-83				
-136	136		12.50		0.50	-81		12.20		0.20
-134	134		12.50		0.50	-79		13.40		1.40
-132	132		12.50		0.50	-77		13.70		1.70
-130	130		12.50		0.50	-75		13.70		1.70
-128	128		12.40		0.40	-73		13.80		1.80
-126	126		12.40		0.40	-71		13.80		1.80
-124	124		14.10		2.10	-69		13.60		1.60
-122	122		14.50		2.50	-67		13.70		1.70
-120	120		14.80		2.80	-65		13.70		1.70
-118	118		14.60		2.60	-63		13.80		1.80
-116	116		14.60		2.60	-61		*13.75*		1.75
-114	114		14.60		2.60	-59		13.70		1.70
-112	112		14.60		2.60	-57		*13.75*		1.75
-110	110		14.60		2.60	-55		13.80		1.80
-108	108		14.60		2.60	-53		*13.85*		1.85
-106	106		14.40		2.40	-51		13.90		1.90
-104	104		14.60		2.60	-49		*13.80*		1.80
-102	102		14.60		2.60	-47		13.70		1.70
-100	100		14.40		2.40	-45		*13.75*		1.75
-98	98		14.30		2.30	-43		13.80		1.80
-96	96		14.10		2.10	-41		*13.80*		1.80
-94	94		13.90		1.90	-39		13.80		1.80
-92	92		13.80		1.80	-37		*13.80*		1.80
-90	90		13.60		1.60	-35		13.80		1.80
-88	88		13.70		1.70	-33		*13.75*		1.75
-86	86		13.10		1.10	-31		13.70		1.70
-84	84		13.10		1.10	-29		*13.65*		1.65
-82	82		13.00		1.00	-27		13.60		1.60
-80	80		13.10		1.10	-25		*13.65*		1.65
-78	78		13.20		1.20	-23		13.70		1.70
-76	76		13.30		1.30	-21		*13.80*		1.80
-74	74		13.30		1.30	-19		13.90		1.90
-72	72		13.30		1.30	-17		*13.80*		1.80
-70	70		13.50		1.50	-15		13.70		1.70
-68	68		13.40		1.40	-13		*13.60*		1.60
-66	66		13.50		1.50	-11		13.50		1.50
-64	64		13.60		1.60	-9		*13.50*		1.50
-62	62		13.70		1.70	-7		13.50		1.50
-60	60		13.70		1.70	-5		*13.50*		1.50
-58	58		13.70		1.70	-3		13.50		1.50
-56	56		13.70		1.70	-1		*13.60*		1.60
-54	54		13.80		1.80	1		13.70		1.70
-52	52		13.60		1.60	3		*13.60*		1.60
-50	50		13.30		1.30	5		13.50		1.50
-48	48		13.30		1.30	7		*13.50*		1.50
-46	46		13.30		1.30	9		13.50		1.50
-44	44		13.20		1.20	11		13.50		1.50
-42	42		13.00		1.00	13		13.30		1.30
-40	40		12.90		0.90	15	*11.95*	13.50	-0.05	1.50
-38	38		12.40		0.40	17	12.20	13.40	0.20	1.40
-36	36		12.10		0.10	19	12.60	13.30	0.60	1.30
-34	34		11.80		-0.20	21	12.20	13.10	0.20	1.10
-32	32		11.50		-0.50	23	11.90	12.60	-0.10	0.60
-30	30		11.20		-0.80	25	11.50	12.50	-0.50	0.50
-28	28		10.80		-1.20	27	11.50	12.00	-0.50	0.00
-26	26		10.50		-1.50	29	11.70	11.90	-0.30	-0.10
-24	24		10.00		-2.00	31	12.00	11.60	0.00	-0.40
-22	22		9.60		-2.40	33	12.30	11.70	0.30	-0.30
-20	20		9.30		-2.70	35	12.80	11.30	0.80	-0.70
-18	18		8.90		-3.10	37	12.80	11.80	0.80	-0.20
-16	16	5.10	8.40	-6.90	-3.60	39	12.30	11.10	0.30	-0.90
-14	14	4.80	7.80	-7.20	-4.20	41	11.90	10.60	-0.10	-1.40
-12	12	4.40	7.00	-7.60	-5.00	43	11.30	10.30	-0.70	-1.70
-10	10	4.00	6.20	-8.00	-5.80	45	10.70	9.70	-1.30	-2.30
-8	8	3.70	5.20	-8.30	-6.80	47	9.70	9.80	-2.30	-2.20
-6	6	3.50	4.40	-8.50	-7.60	49	8.80	9.20	-3.20	-2.80
-4	4	3.00	3.60	-9.00	-8.40	51	7.70	8.70	-4.30	-3.30
-2	2	3.30	3.60	-8.70	-8.40	53	6.40	7.80	-5.60	-4.20
0	0	2.90	2.90	-9.10	-9.10	55	4.70	7.10	-7.30	-4.90
0	0	2.90	2.90	-9.10	-9.10	60	5.00	4.20	-7.00	-7.80
2	-2	3.90	3.40	-8.10	-8.60	62	5.90	5.00	-6.10	-7.00
4	-4	3.60	4.80	-8.40	-7.20	64	7.00	6.20	-5.00	-5.80
6	-6	4.00	6.00	-8.00	-6.00	66	8.40	7.50	-3.60	-4.50
8	-8	5.10	7.00	-6.90	-5.00	68	8.80	8.90	-3.20	-3.10
10	-10	6.60	7.70	-5.40	-4.30	70.00	9.80	10.10	-2.20	-1.90
12	-12	7.80	8.20	-4.20	-3.80	72.00	10.80	11.30	-1.20	-0.70
14	-14	8.80	9.20	-3.20	-2.80	74.00	11.80	12.00	-0.20	0.00
16	-16	9.60	10.60	-2.40	-1.40	76.00	12.10	12.10	0.10	0.10
18	-18	10.40	11.90	-1.60	-0.10	78.00				
20	-20	11.10	12.10	-0.90	0.10	80.00				
22	-22	11.90		-0.10		82.00				
24	-24	12.00		0.00		84.00				
26	-26	12.20		0.20		86.00				
28	-28					88.00				
30	-30					90.00				

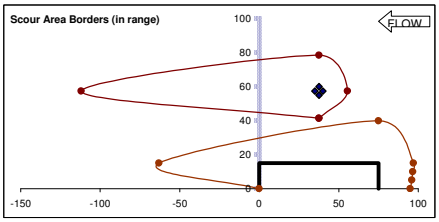
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.60	-7.40
2	4.40	-7.60
4	4.90	-7.10
6	5.80	-6.20
8	7.00	-5.00
10	7.80	-4.20
12	8.70	-3.30
14	9.90	-2.10
16	11.10	-0.90
18	12.00	0.00
20	12.10	0.10
22		
24		

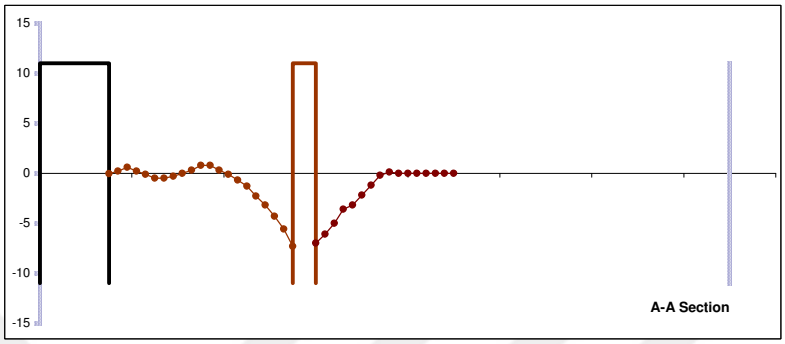
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	20
SB_{af2}	Abutment Front (W+5 cm)	21
SB_{af3}	Abutment Front (W+10 cm)	21.5
SB_{af}	Abutment Corner Front	22
SB_{ar}	Abutment Corner Right	25
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	15.5
SB_{pr}	Pier Right	18.5
SB_{pb}	Pier Rear	147

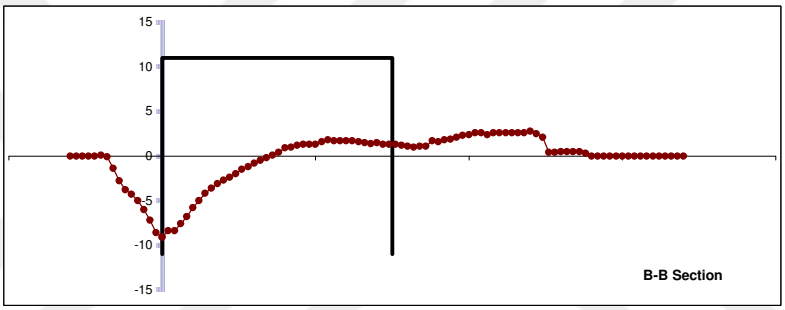


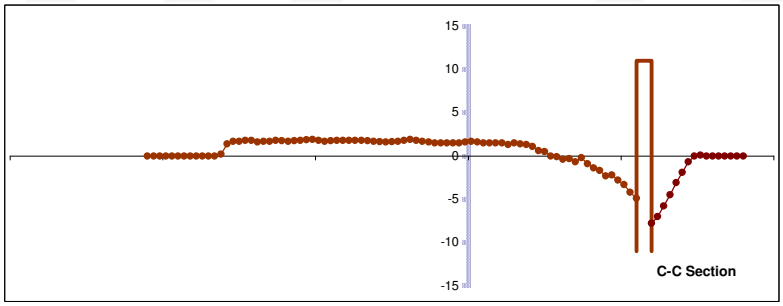
Experiment No : **E85**

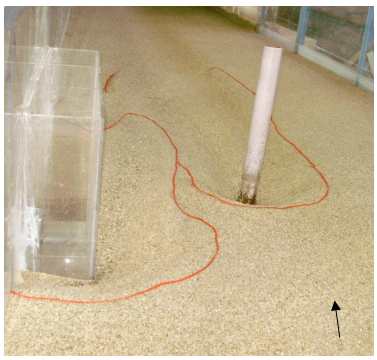


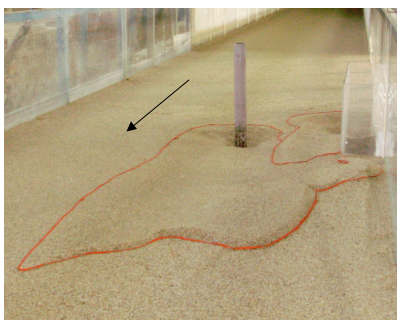




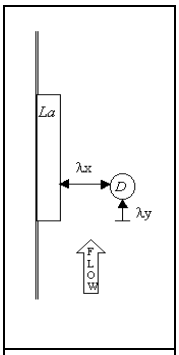


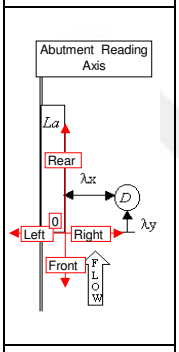


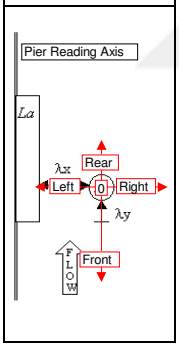


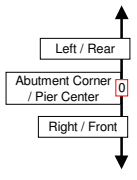


Experiment No :	**E86**
Date :	01.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	70









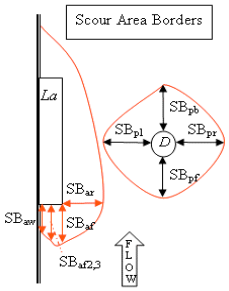
This color was used for raw data readings

This color was used for values enterpolated to sketch

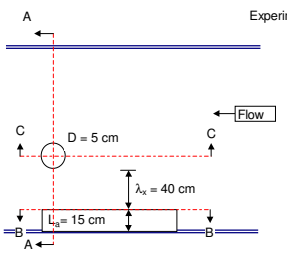
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-115				
-168	168					-113				
-166	166					-111				
-164	164					-109				
-162	162					-107				
-160	160					-105				
-158	158					-103				
-156	156					-101				
-154	154					-99				
-152	152					-97				
-150	150					-95				
-148	148					-93				
-146	146					-91				
-144	144					-89				
-142	142					-87				
-140	140					-85				
-138	138					-83				
-136	136					-81				
-134	134					-79		12.40		0.40
-132	132		12.20		0.20	-77		13.40		1.40
-130	130		12.70		0.70	-75		13.20		1.20
-128	128		12.70		0.70	-73		13.80		1.80
-126	126		12.70		0.70	-71		*13.80*		1.80
-124	124		12.90		0.90	-69		13.80		1.80
-122	122		14.00		2.00	-67		14.20		2.20
-120	120		14.90		2.90	-65		*14.25*		2.25
-118	118		14.90		2.90	-63		14.30		2.30
-116	116		15.10		3.10	-61		*14.40*		2.40
-114	114		15.30		3.30	-59		14.50		2.50
-112	112		15.10		3.10	-57		*14.45*		2.45
-110	110		15.10		3.10	-55		14.40		2.40
-108	108		15.00		3.00	-53		*14.30*		2.30
-106	106		15.00		3.00	-51		14.20		2.20
-104	104		15.00		3.00	-49		*14.30*		2.30
-102	102		14.80		2.80	-47		14.40		2.40
-100	100		14.70		2.70	-45		*14.35*		2.35
-98	98		14.80		2.80	-43		14.30		2.30
-96	96		14.60		2.60	-41		*14.35*		2.35
-94	94		14.50		2.50	-39		14.40		2.40
-92	92		14.30		2.30	-37		*14.30*		2.30
-90	90		13.90		1.90	-35		14.20		2.20
-88	88		13.70		1.70	-33		*14.20*		2.20
-86	86		13.30		1.30	-31		*14.20*		2.20
-84	84		13.40		1.40	-29		*14.20*		2.20
-82	82		13.20		1.20	-27		14.20		2.20
-80	80		13.10		1.10	-25		*14.20*		2.20
-78	78		13.00		1.00	-23		14.20		2.20
-76	76		13.00		1.00	-21		*14.35*		2.35
-74	74		12.90		0.90	-19		14.50		2.50
-72	72		13.20		1.20	-17		*14.37*		2.37
-70	70		13.30		1.30	-15		*14.23*		2.23
-68	68		13.20		1.20	-13		14.10		2.10
-66	66		13.40		1.40	-11		*14.05*		2.05
-64	64		13.40		1.40	-9		14.00		2.00
-62	62		13.40		1.40	-7		*13.80*		1.80
-60	60		13.50		1.50	-5		13.60		1.60
-58	58		13.50		1.50	-3		*13.70*		1.70
-56	56		13.50		1.50	-1		13.80		1.80
-54	54		13.40		1.40	1		*13.85*		1.85
-52	52		13.30		1.30	3		13.90		1.90
-50	50		13.00		1.00	5		*13.85*		1.85
-48	48		13.20		1.20	7		13.80		1.80
-46	46		13.10		1.10	9		*13.65*		1.65
-44	44		12.90		0.90	11		13.50		1.50
-42	42		12.90		0.90	13		13.50		1.50
-40	40		12.70		0.70	15	*13.30*	13.40	1.30	1.40
-38	38		12.20		0.20	17	*12.80*	13.20	0.80	1.20
-36	36		11.90		-0.10	19	12.30	13.10	0.30	1.10
-34	34		11.60		-0.40	21	12.20	12.80	0.20	0.80
-32	32		11.30		-0.70	23	12.90	12.90	0.90	0.90
-30	30		11.10		-0.90	25	13.40	12.50	1.40	0.50
-28	28		10.80		-1.20	27	13.60	12.30	1.60	0.30
-26	26		10.40		-1.60	29	13.60	12.00	1.60	0.00
-24	24		10.10		-1.90	31	13.30	11.90	1.30	-0.10
-22	22		9.50		-2.50	33	13.10	11.50	1.10	-0.50
-20	20		9.20		-2.80	35	13.00	11.70	1.00	-0.30
-18	18		9.70		-2.30	37	13.10	11.10	1.10	-0.90
-16	16		8.40		-3.60	39	13.20	11.40	1.20	-0.60
-14	14	4.60	7.60	-7.40	-4.40	41	12.60	11.00	0.60	-1.00
-12	12	4.80	7.30	-7.20	-4.70	43	12.20	10.30	0.20	-1.70
-10	10	4.40	6.50	-7.60	-5.50	45	11.80	10.20	-0.20	-1.80
-8	8	4.10	5.90	-7.90	-6.10	47	11.00	9.50	-1.00	-2.50
-6	6	3.90	5.30	-8.10	-6.70	49	10.10	9.30	-1.90	-2.70
-4	4	3.50	4.00	-8.50	-8.00	51	8.60	8.20	-3.40	-3.80
-2	2	2.90	3.90	-9.10	-8.10	53	7.60	7.40	-4.40	-4.60
0	0	2.90	2.90	-9.10	-9.10	55	6.10	6.60	-5.90	-5.40
0	0	2.90	2.90	-9.10	-9.10	60	5.60	7.10	-6.40	-4.90
2	-2	3.20	3.70	-8.80	-8.30	62	5.80	7.20	-6.20	-4.80
4	-4	3.40	4.90	-8.60	-7.10	64	6.60	8.00	-5.40	-4.00
6	-6	4.50	6.10	-7.50	-5.90	66	7.70	8.70	-4.30	-3.30
8	-8	6.10	7.00	-5.90	-5.00	68	8.70	9.90	-3.30	-2.10
10	-10	7.70	7.40	-4.30	-4.60	70.00	9.70	10.60	-2.30	-1.40
12	-12	8.80	8.40	-3.20	-3.60	72.00	9.40	11.20	-2.60	-0.80
14	-14	9.50	9.00	-2.50	-3.00	74.00	10.60	12.20	-1.40	0.20
16	-16	10.10	10.50	-1.90	-1.50	76.00	11.60		-0.40	
18	-18	10.30	11.80	-1.70	-0.20	78.00	12.10		0.10	
20	-20	11.10	12.10	-0.90	0.10	80.00				
22	-22	12.10		0.10		82.00				
24	-24					84.00				
26	-26					86.00				
28	-28					88.00				
30	-30					90.00				

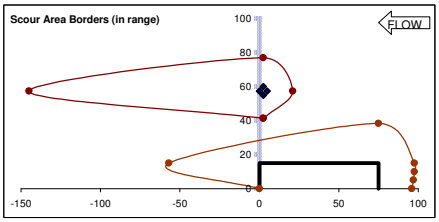
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.60	-7.40
2	4.30	-7.70
4	4.50	-7.50
6	5.30	-6.70
8	6.60	-5.40
10	7.70	-4.30
12	8.50	-3.50
14	9.40	-2.60
16	10.70	-1.30
18	12.00	0.00
20	12.40	0.40
22		
24		

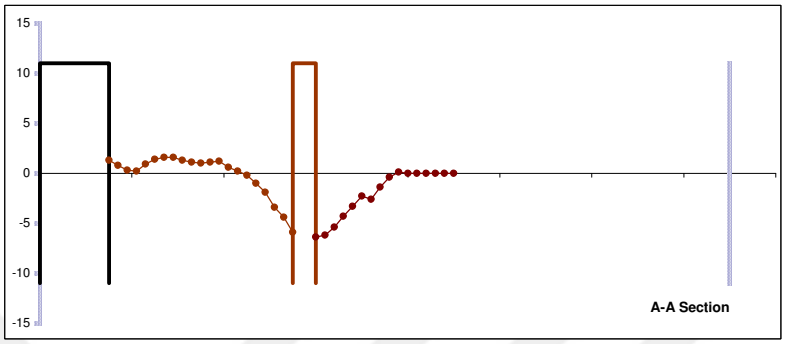
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21
SB_{af2}	Abutment Front (W+5 cm)	22
SB_{af3}	Abutment Front (W+10 cm)	22.5
SB_{af}	Abutment Corner Front	22.5
SB_{ar}	Abutment Corner Right	23.5
SB_{pl}	Pier Left	13.5
SB_{pf}	Pier Front	16
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	145

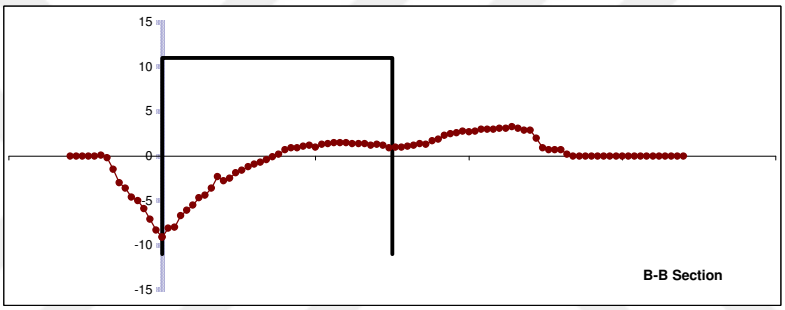


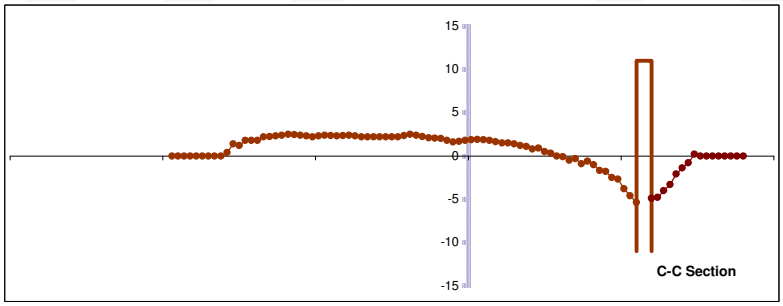
Experiment No : **E86**

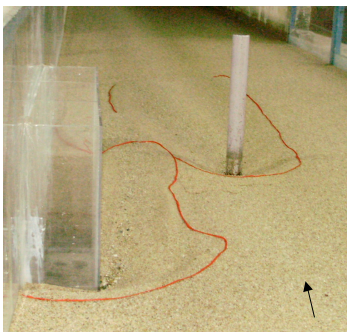


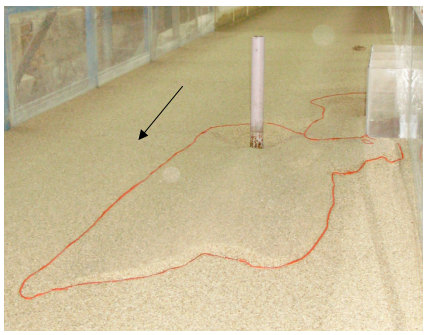






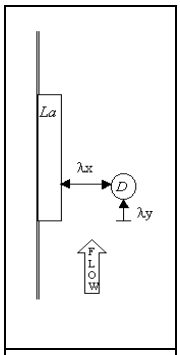


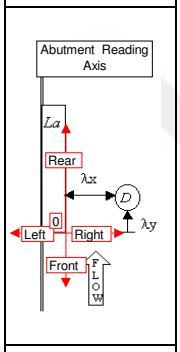


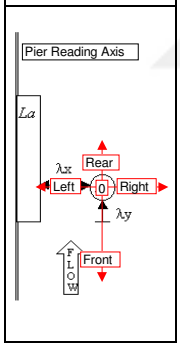


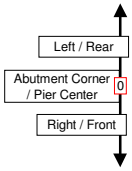
Experiment No : **E87**

Date :	03.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	70









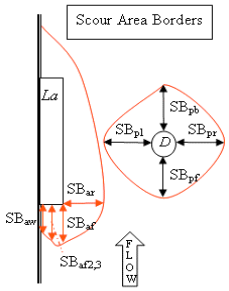
This color was used for raw data readings

This color was used for values enterpolated to sketch

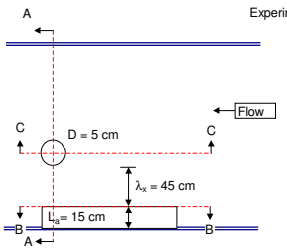
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-110				
-168	168					-108				
-166	166					-106				
-164	164					-104				
-162	162					-102				
-160	160					-100				
-158	158					-98				
-156	156					-96				
-154	154					-94				
-152	152					-92				
-150	150					-90				
-148	148					-88				
-146	146					-86				
-144	144					-84				
-142	142					-82				
-140	140					-80				
-138	138					-78				
-136	136					-76				
-134	134					-74				
-132	132					-72				
-130	130					-70				
-128	128					-68				
-126	126		12.20		0.20	-66				
-124	124		12.40		0.40	-64				
-122	122		13.40		1.40	-62				
-120	120		12.70		0.70	-60				
-118	118		13.80		1.80	-58		12.20		0.20
-116	116		14.00		2.00	-56		12.40		0.40
-114	114		14.00		2.00	-54		12.60		0.60
-112	112		14.00		2.00	-52		13.50		1.50
-110	110		14.00		2.00	-50		13.90		1.90
-108	108		14.00		2.00	-48		14.10		2.10
-106	106		14.10		2.10	-46		14.20		2.20
-104	104		14.10		2.10	-44		14.10		2.10
-102	102		14.00		2.00	-42		14.30		2.30
-100	100		14.00		2.00	-40		*14.45*		2.45
-98	98		13.80		1.80	-38		14.60		2.60
-96	96		14.00		2.00	-36		*14.55*		2.55
-94	94		13.80		1.80	-34		14.50		2.50
-92	92		13.80		1.80	-32		*14.60*		2.60
-90	90		13.90		1.90	-30		14.70		2.70
-88	88		13.80		1.80	-28		*14.65*		2.65
-86	86		13.90		1.90	-26		14.60		2.60
-84	84		13.60		1.60	-24		*14.50*		2.50
-82	82		13.60		1.60	-22		14.40		2.40
-80	80		13.70		1.70	-20		*14.45*		2.45
-78	78		13.60		1.60	-18		14.50		2.50
-76	76		13.70		1.70	-16		*14.40*		2.40
-74	74		13.70		1.70	-14		14.30		2.30
-72	72		13.70		1.70	-12		*14.25*		2.25
-70	70		13.70		1.70	-10		14.20		2.20
-68	68		13.80		1.80	-8		*14.25*		2.25
-66	66		13.80		1.80	-6		14.30		2.30
-64	64		14.00		2.00	-4		*14.25*		2.25
-62	62		13.60		1.60	-2		14.20		2.20
-60	60		13.60		1.60	0		*14.05*		2.05
-58	58		13.70		1.70	2		13.90		1.90
-56	56		13.60		1.60	4		14.10		2.10
-54	54		13.40		1.40	6		13.90		1.90
-52	52		13.40		1.40	8		13.80		1.80
-50	50		13.30		1.30	10		13.70		1.70
-48	48		13.10		1.10	12		14.00		2.00
-46	46		13.10		1.10	14		13.60		1.60
-44	44		12.90		0.90	16	*13.70*	13.60	1.70	1.60
-42	42		12.90		0.90	18	12.90	13.40	0.90	1.40
-40	40		13.00		1.00	20	13.10	13.50	1.10	1.50
-38	38		12.50		0.50	22	13.70	13.40	1.70	1.40
-36	36		12.20		0.20	24	13.70	13.40	1.70	1.40
-34	34		12.00		0.00	26	13.60	13.20	1.60	1.20
-32	32		11.50		-0.50	28	13.40	12.80	1.40	0.80
-30	30		11.30		-0.70	30	13.50	12.60	1.50	0.60
-28	28		10.90		-1.10	32	13.30	12.30	1.30	0.30
-26	26		10.70		-1.30	34	13.40	12.10	1.40	0.10
-24	24		10.20		-1.80	36	13.00	12.00	1.00	0.00
-22	22		9.80		-2.20	38	13.00	11.70	1.00	-0.30
-20	20		9.40		-2.60	40	12.60	11.50	0.60	-0.50
-18	18		9.00		-3.00	42	12.10	11.50	0.10	-0.50
-16	16		8.40		-3.60	44	11.90	11.20	-0.10	-0.80
-14	14	4.90	8.10	-7.10	-3.90	46	11.50	10.60	-0.50	-1.40
-12	12	4.60	7.60	-7.40	-4.40	48	11.60	10.10	-0.40	-1.90
-10	10	4.10	7.00	-7.90	-5.00	50	10.90	9.50	-1.10	-2.50
-8	8	3.70	6.10	-8.30	-5.90	52	10.80	9.10	-1.20	-2.90
-6	6	*3.60*	4.90	-8.40	-7.10	54	10.10	9.30	-1.90	-2.70
-4	4	3.50	4.20	-8.50	-7.80	56	9.20	8.20	-2.80	-3.80
-2	2	3.00	3.80	-9.00	-8.20	58	7.90	7.60	-4.10	-4.40
0	0	3.10	3.10	-8.90	-8.90	60	6.60	6.70	-5.40	-5.30
0	0	3.10	3.10	-8.90	-8.90	65	5.90	5.00	-6.10	-7.00
2	-2	3.30	3.70	-8.70	-8.30	67	6.00	6.10	-6.00	-5.90
4	-4	3.90	5.30	-8.10	-6.70	69	7.50	7.30	-4.50	-4.70
6	-6	4.80	6.40	-7.20	-5.60	71	8.30	8.40	-3.70	-3.60
8	-8	6.20	7.30	-5.80	-4.70	73	8.90	10.10	-3.10	-1.90
10	-10	7.80	7.80	-4.20	-4.20	75.00	9.60	10.80	-2.40	-1.20
12	-12	8.60	8.30	-3.40	-3.70	77.00	10.60	11.70	-1.40	-0.30
14	-14	9.30	9.30	-2.70	-2.70	79.00	11.90	12.20	-0.10	0.20
16	-16	10.10	10.50	-1.90	-1.50	81.00	12.40		0.40	
18	-18	11.00	11.90	-1.00	-0.10	83.00	12.20		0.20	
20	-20	11.60	12.20	-0.40	0.20	85.00				
22	-22	11.90		-0.10		87.00				
24	-24	12.20		0.20		89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

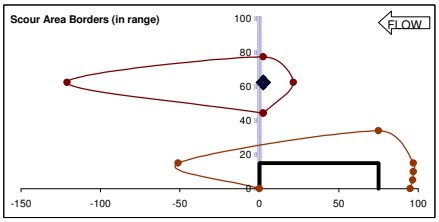
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.90	-7.10
2	4.80	-7.20
4	5.00	-7.00
6	6.10	-5.90
8	7.20	-4.80
10	8.10	-3.90
12	8.90	-3.10
14	10.30	-1.70
16	11.20	-0.80
18	12.10	0.10
20	12.20	0.20
22		
24		

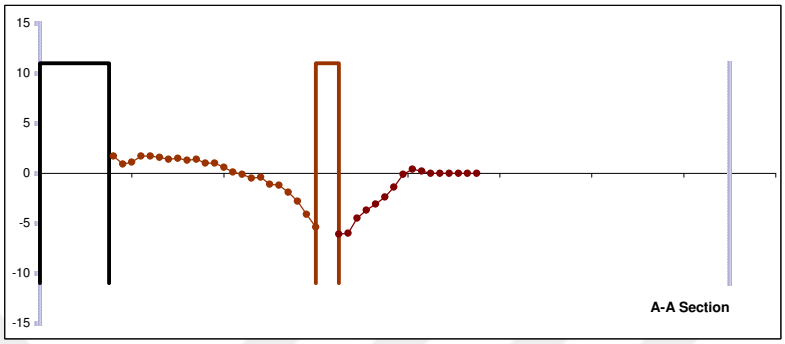
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	20
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	22
SB_{af}	Abutment Corner Front	22
SB_{ar}	Abutment Corner Right	19
SB_{pl}	Pier Left	15.5
SB_{pf}	Pier Front	16.5
SB_{pr}	Pier Right	12.5
SB_{pb}	Pier Rear	121

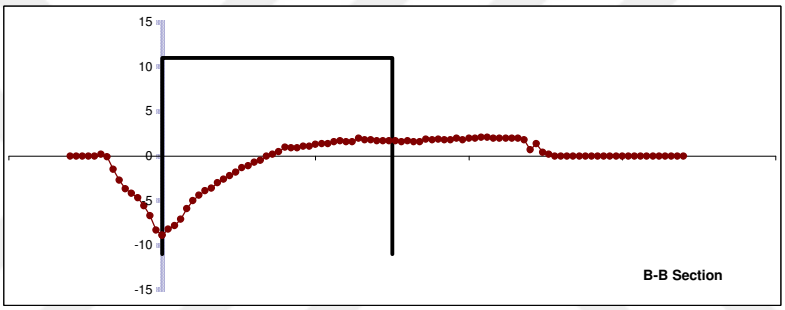


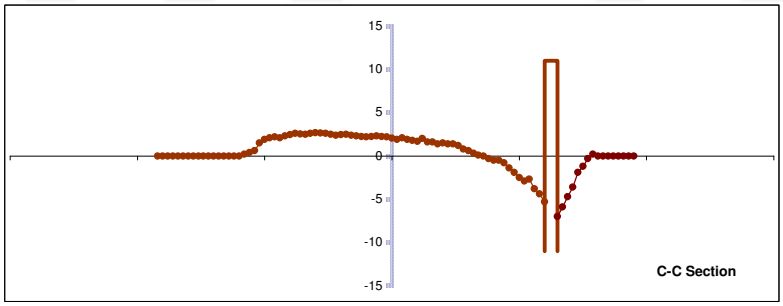
Experiment No : **E87**

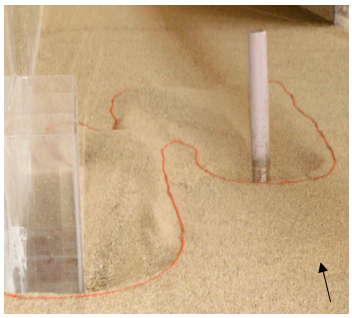


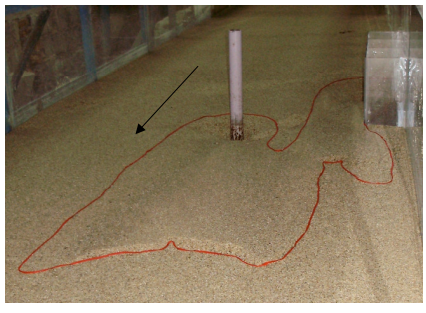






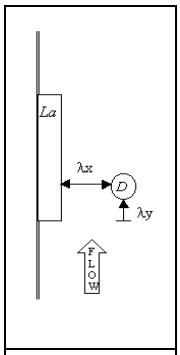


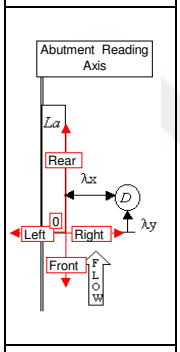


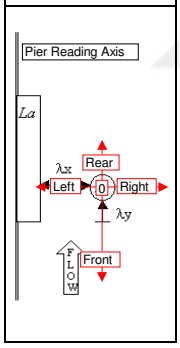


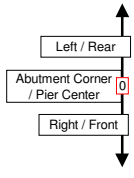
Experiment No : **E88**

Date :	16.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	35









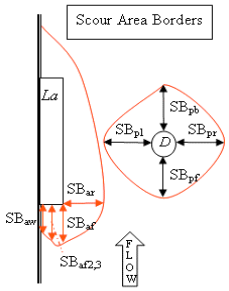
This color was used for raw data readings

This color was used for values enterpolated to sketch

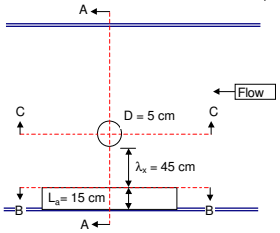
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-110				
-168	168					-108				
-166	166					-106				
-164	164					-104				
-162	162					-102				
-160	160					-100				
-158	158					-98				
-156	156					-96				
-154	154					-94				
-152	152					-92				
-150	150					-90				
-148	148					-88				
-146	146					-86				
-144	144					-84				
-142	142					-82				
-140	140					-80				
-138	138		12.20		0.20	-78				
-136	136		12.70		0.70	-76				
-134	134		12.60		0.60	-74		12.20		0.20
-132	132		12.80		0.80	-72		12.40		0.40
-130	130		12.80		0.80	-70		12.40		0.40
-128	128		13.00		1.00	-68		12.80		0.80
-126	126		13.00		1.00	-66		13.60		1.60
-124	124		12.90		0.90	-64		13.40		1.40
-122	122		13.20		1.20	-62		13.60		1.60
-120	120		13.10		1.10	-60		*13.65*		1.65
-118	118		13.30		1.30	-58		13.70		1.70
-116	116		13.30		1.30	-56		*13.65*		1.65
-114	114		13.70		1.70	-54		13.60		1.60
-112	112		13.90		1.90	-52		*13.60*		1.60
-110	110		13.80		1.80	-50		13.60		1.60
-108	108		13.80		1.80	-48		*13.65*		1.65
-106	106		13.40		1.40	-46		13.70		1.70
-104	104		13.40		1.40	-44		*13.70*		1.70
-102	102		13.20		1.20	-42		13.70		1.70
-100	100		13.10		1.10	-40		*13.85*		1.85
-98	98		12.80		0.80	-38		14.00		2.00
-96	96		12.60		0.60	-36		*14.35*		2.35
-94	94		12.50		0.50	-34		14.70		2.70
-92	92		12.30		0.30	-32		*14.45*		2.45
-90	90		12.20		0.20	-30		14.20		2.20
-88	88		12.20		0.20	-28		*14.05*		2.05
-86	86		12.00		0.00	-26		13.90		1.90
-84	84		12.10		0.10	-24		*13.85*		1.85
-82	82		12.40		0.40	-22		13.80		1.80
-80	80		12.70		0.70	-20		*13.80*		1.80
-78	78		12.80		0.80	-18		13.80		1.80
-76	76		13.00		1.00	-16		*13.90*		1.90
-74	74		13.20		1.20	-14		14.00		2.00
-72	72		13.30		1.30	-12		*13.87*		1.87
-70	70		13.40		1.40	-10		*13.74*		1.74
-68	68		13.50		1.50	-8		13.60		1.60
-66	66		13.60		1.60	-6		*13.65*		1.65
-64	64		13.60		1.60	-4		13.70		1.70
-62	62		13.60		1.60	-2		*13.80*		1.80
-60	60		13.80		1.80	0		13.90		1.90
-58	58		13.90		1.90	2		*13.95*		1.95
-56	56		13.80		1.80	4		14.00		2.00
-54	54		13.70		1.70	6		*13.80*		1.80
-52	52		13.70		1.70	8		13.60		1.60
-50	50		13.80		1.80	10		*13.60*		1.60
-48	48		13.60		1.60	12		13.60		1.60
-46	46		13.60		1.60	14		*13.45*		1.45
-44	44		13.40		1.40	16	13.20	13.30	1.20	1.30
-42	42		13.50		1.50	18	13.10	*13.20*	1.10	1.20
-40	40		13.10		1.10	20	12.80	13.10	0.80	1.10
-38	38		13.10		1.10	22	12.10	*13.10*	0.10	1.10
-36	36		12.80		0.80	24	11.70	13.10	-0.30	1.10
-34	34		12.60		0.60	26	11.60	13.10	-0.40	1.10
-32	32		12.40		0.40	28	12.00	13.00	0.00	1.00
-30	30		12.10		0.10	30	12.10	12.40	0.10	0.40
-28	28		12.00		0.00	32	13.20	12.20	1.20	0.20
-26	26		11.90		-0.10	34	13.20	12.20	1.20	0.20
-24	24		11.50		-0.50	36	12.30	11.80	0.30	-0.20
-22	22		11.20		-0.80	38	11.70	12.00	-0.30	0.00
-20	20		10.90		-1.10	40	11.80	11.60	-0.20	-0.40
-18	18		10.10		-1.90	42	11.90	11.20	-0.10	-0.80
-16	16	6.70	9.90	-5.30	-2.10	44	12.10	11.00	0.10	-1.00
-14	14	6.80	9.40	-5.20	-2.60	46	12.00	10.70	0.00	-1.30
-12	12	6.00	8.80	-6.00	-3.20	48	11.80	10.30	-0.20	-1.70
-10	10	5.10	7.80	-6.90	-4.20	50	11.00	9.90	-1.00	-2.10
-8	8	4.40	6.90	-7.60	-5.10	52	10.10	9.50	-1.90	-2.50
-6	6	4.30	5.90	-7.70	-6.10	54	9.30	8.70	-2.70	-3.30
-4	4	3.90	4.80	-8.10	-7.20	56	8.10	7.90	-3.90	-4.10
-2	2	4.00	4.60	-8.00	-7.40	58	6.90	7.20	-5.10	-4.80
0	0	3.50	3.50	-8.50	-8.50	60	6.00	6.90	-6.00	-5.10
0	0	3.50	3.50	-8.50	-8.50	65	5.10	4.90	-6.90	-7.10
2	-2	4.00	4.10	-8.00	-7.90	67	5.70	6.00	-6.30	-6.00
4	-4	4.30	5.60	-7.70	-6.40	69	7.20	7.40	-4.80	-4.60
6	-6	5.00	7.10	-7.00	-4.90	71	8.40	8.50	-3.60	-3.50
8	-8	6.30	7.90	-5.70	-4.10	73	9.20	9.90	-2.80	-2.10
10	-10	7.60	8.40	-4.40	-3.60	75.00	9.80	11.30	-2.20	-0.70
12	-12	9.00	9.50	-3.00	-2.50	77.00	10.70	12.00	-1.30	0.00
14	-14	9.70	10.80	-2.30	-1.20	79.00	11.70	12.20	-0.30	0.20
16	-16	10.50	12.40	-1.50	0.40	81.00	12.20		0.20	
18	-18	11.40	12.20	-0.60	0.20	83.00				
20	-20	12.20		0.20		85.00				
22	-22					87.00				
24	-24					89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

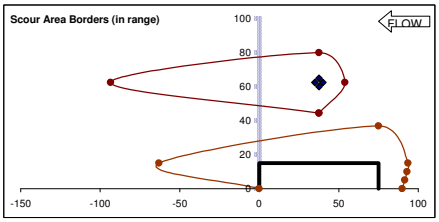
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.70	-5.30
2	6.60	-5.40
4	7.60	-4.40
6	8.20	-3.80
8	8.90	-3.10
10	9.40	-2.60
12	10.60	-1.40
14	11.70	-0.30
16	12.10	0.10
18	12.70	0.70
20	12.10	0.10
22		
24		

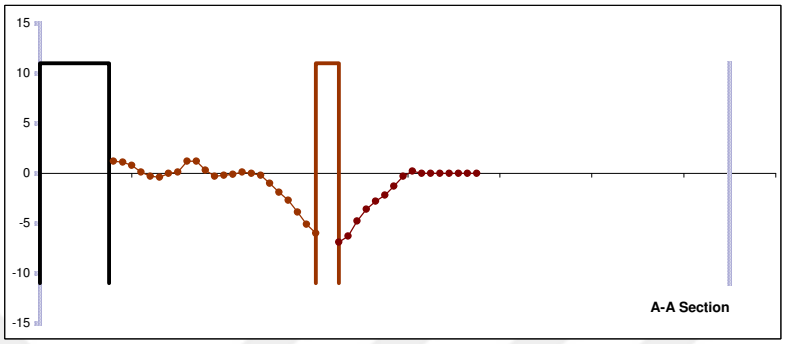
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	16.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	18.5
SB_{ar}	Abutment Corner Right	22
SB_{pl}	Pier Left	15.5
SB_{pf}	Pier Front	14
SB_{pr}	Pier Right	15
SB_{pb}	Pier Rear	128.5

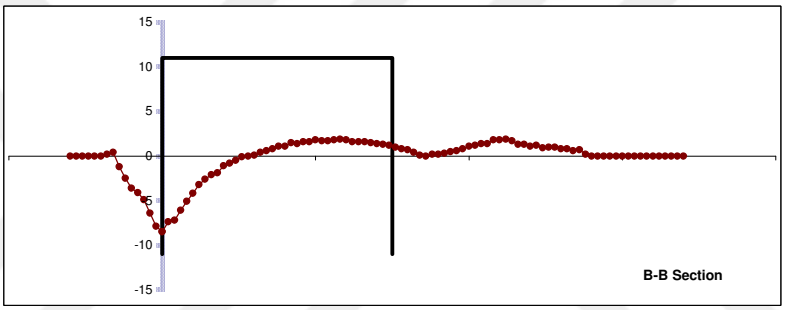


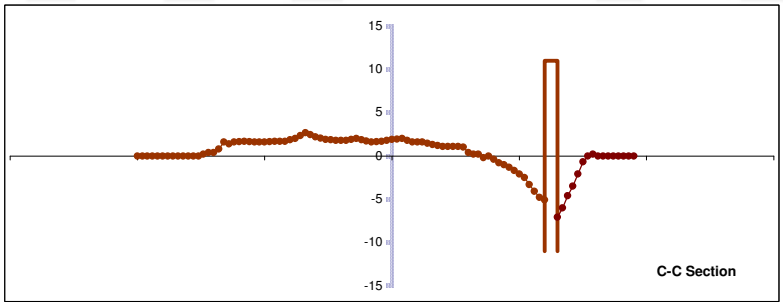
Experiment No : **E88**

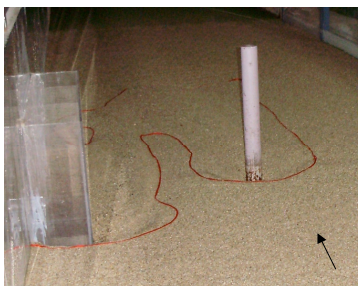


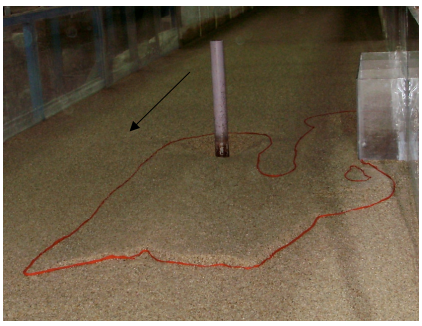






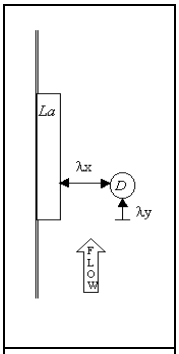


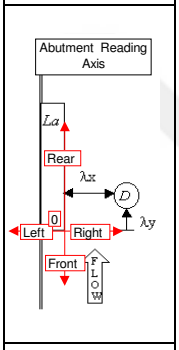


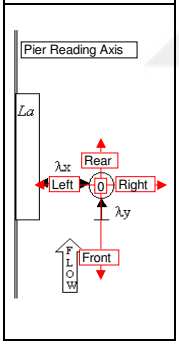


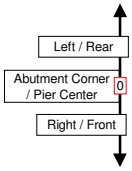
Experiment No : **E89**

Date :	18.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	45
λ_y (cm) :	0









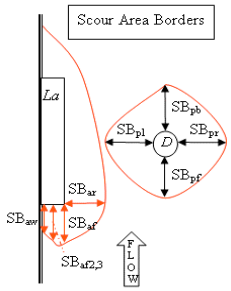
This color was used for raw data readings

This color was used for values enterpolated to sketch

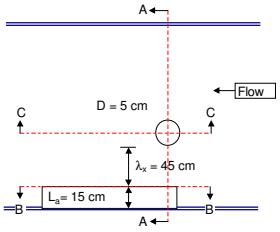
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-110				
-168	168					-108				
-166	166					-106				
-164	164					-104				
-162	162					-102				
-160	160		12.20		0.20	-100				
-158	158		12.40		0.40	-98				
-156	156		12.50		0.50	-96				
-154	154		12.60		0.60	-94		12.20		0.20
-152	152		12.50		0.50	-92		12.60		0.60
-150	150		12.90		0.90	-90		12.80		0.80
-148	148		12.70		0.70	-88		12.60		0.60
-146	146		12.60		0.60	-86		12.60		0.60
-144	144		13.00		1.00	-84		12.50		0.50
-142	142		13.00		1.00	-82		12.50		0.50
-140	140		12.90		0.90	-80		12.70		0.70
-138	138		13.10		1.10	-78		12.70		0.70
-136	136		13.30		1.30	-76		13.00		1.00
-134	134		13.70		1.70	-74		13.10		1.10
-132	132		14.70		2.70	-72		13.30		1.30
-130	130		15.10		3.10	-70		13.50		1.50
-128	128		15.40		3.40	-68		13.40		1.40
-126	126		15.10		3.10	-66		13.40		1.40
-124	124		*15.10*		3.10	-64		*13.30*		1.30
-122	122		15.10		3.10	-62		13.20		1.20
-120	120		*15.00*		3.00	-60		*13.35*		1.35
-118	118		14.90		2.90	-58		13.50		1.50
-116	116		*14.90*		2.90	-56		*13.55*		1.55
-114	114		14.90		2.90	-54		13.60		1.60
-112	112		*14.80*		2.80	-52		*13.60*		1.60
-110	110		14.70		2.70	-50		13.60		1.60
-108	108		*14.60*		2.60	-48		*13.65*		1.65
-106	106		14.50		2.50	-46		13.70		1.70
-104	104		14.50		2.50	-44		*13.70*		1.70
-102	102		14.40		2.40	-42		13.70		1.70
-100	100		14.00		2.00	-40		*13.70*		1.70
-98	98		14.00		2.00	-38		13.70		1.70
-96	96		13.80		1.80	-36		*13.70*		1.70
-94	94		13.70		1.70	-34		13.70		1.70
-92	92		13.60		1.60	-32		*13.85*		1.85
-90	90		13.30		1.30	-30		14.00		2.00
-88	88		13.00		1.00	-28		*13.40*		1.40
-86	86		13.00		1.00	-26		12.80		0.80
-84	84		12.70		0.70	-24		*13.35*		1.35
-82	82		12.60		0.60	-22		13.90		1.90
-80	80		12.50		0.50	-20		*13.80*		1.80
-78	78		12.50		0.50	-18		13.70		1.70
-76	76		12.70		0.70	-16		*13.60*		1.60
-74	74		12.90		0.90	-14		13.50		1.50
-72	72		13.00		1.00	-12		*13.54*		1.54
-70	70		13.00		1.00	-10		*13.57*		1.57
-68	68		13.20		1.20	-8		13.60		1.60
-66	66		13.10		1.10	-6		*13.70*		1.70
-64	64		13.20		1.20	-4		13.80		1.80
-62	62		13.10		1.10	-2		*13.80*		1.80
-60	60		13.40		1.40	0		13.80		1.80
-58	58		13.30		1.30	2		*13.80*		1.80
-56	56		13.10		1.10	4		13.80		1.80
-54	54		13.00		1.00	6		*13.80*		1.80
-52	52		13.00		1.00	8		13.80		1.80
-50	50		13.10		1.10	10		*13.70*		1.70
-48	48		12.90		0.90	12		13.60		1.60
-46	46		12.90		0.90	14		*13.45*		1.45
-44	44		12.60		0.60	16	5.90	13.30	-6.10	1.30
-42	42		12.40		0.40	18	6.50	*13.35*	-5.50	1.35
-40	40		12.20		0.20	20	8.40	13.40	-3.60	1.40
-38	38		11.80		-0.20	22	7.30	*13.25*	-4.70	1.25
-36	36		11.70		-0.30	24	8.30	13.10	-3.70	1.10
-34	34		11.50		-0.50	26	9.40	*13.05*	-2.60	1.05
-32	32		11.50		-0.50	28	10.50	13.00	-1.50	1.00
-30	30		11.10		-0.90	30	10.40	*13.00*	-1.60	1.00
-28	28		10.90		-1.10	32	11.10	13.00	-0.90	1.00
-26	26		10.60		-1.40	34	11.60	12.90	-0.40	0.90
-24	24		10.30		-1.70	36	12.00	13.00	0.00	1.00
-22	22		10.10		-1.90	38	12.10	13.00	0.10	1.00
-20	20		9.70		-2.30	40	12.10	12.80	0.10	0.80
-18	18		9.40		-2.60	42	12.20	12.60	0.20	0.60
-16	16		8.80		-3.20	44	12.00	12.30	0.00	0.30
-14	14	6.30	8.20	-5.70	-3.80	46	12.00	11.90	0.00	-0.10
-12	12	5.80	7.50	-6.20	-4.50	48	12.00	11.40	0.00	-0.60
-10	10	5.20	6.80	-6.80	-5.20	50	11.60	11.00	-0.40	-1.00
-8	8	4.80	6.00	-7.20	-6.00	52	10.90	10.30	-1.10	-1.70
-6	6	4.40	5.10	-7.60	-6.90	54	8.80	9.80	-3.20	-2.20
-4	4	3.80	4.50	-8.20	-7.50	56	8.80	9.00	-3.20	-3.00
-2	2	3.60	4.20	-8.40	-7.80	58	7.80	8.20	-4.20	-3.80
0	0	3.60	3.60	-8.40	-8.40	60	6.60	7.90	-5.40	-4.10
0	0	3.60	3.60	-8.40	-8.40	65	6.00	6.40	-6.00	-5.60
2	-2	4.20	3.80	-7.80	-8.20	67	7.40	7.00	-4.60	-5.00
4	-4	3.70	5.30	-8.30	-6.70	69	8.30	8.10	-3.70	-3.90
6	-6	4.30	6.60	-7.70	-5.40	71	9.30	9.30	-2.70	-2.70
8	-8	5.40	7.30	-6.60	-4.70	73	10.50	10.40	-1.50	-1.60
10	-10	6.70	7.80	-5.30	-4.20	75.00	11.20	11.20	-0.80	-0.80
12	-12	7.90	8.50	-4.10	-3.50	77.00	11.90	11.90	-0.10	-0.10
14	-14	8.70	9.40	-3.30	-2.60	79.00	12.20	12.00	0.20	0.00
16	-16	9.50	11.10	-2.50	-0.90	81.00				
18	-18	10.20	12.00	-1.80	0.00	83.00				
20	-20	11.20	12.20	-0.80	0.20	85.00				
22	-22	12.00		0.00		87.00				
24	-24	12.20		0.20		89.00				
26	-26					91.00				
28	-28					93.00				
30	-30					95.00				

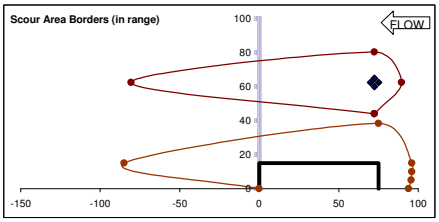
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.30	-5.70
2	5.80	-6.20
4	6.20	-5.80
6	7.30	-4.70
8	8.10	-3.90
10	8.80	-3.20
12	9.90	-2.10
14	11.00	-1.00
16	12.00	0.00
18	12.20	0.20
20		

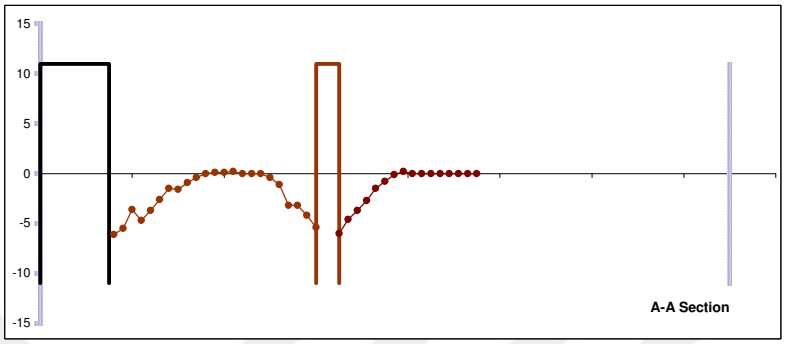
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	19
SB_{af2}	Abutment Front (W+5 cm)	20.5
SB_{af3}	Abutment Front (W+10 cm)	21
SB_{af}	Abutment Corner Front	21
SB_{ar}	Abutment Corner Right	23.5
SB_{pl}	Pier Left	16
SB_{pf}	Pier Front	14.5
SB_{pr}	Pier Right	15.5
SB_{pb}	Pier Rear	150.5

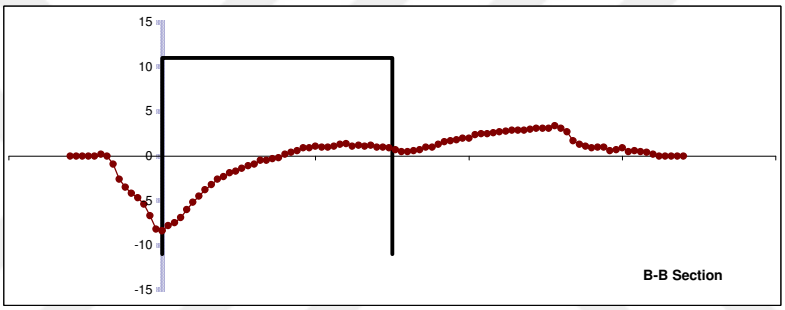


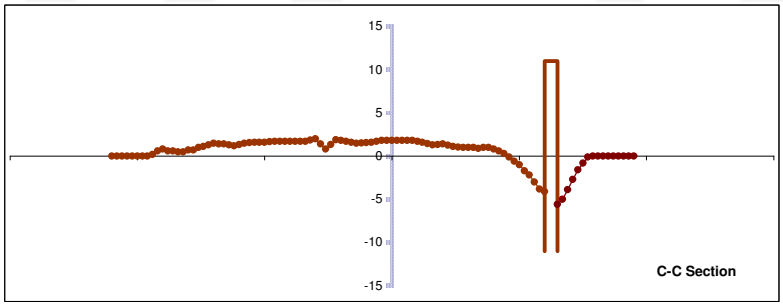
Experiment No : **E89**

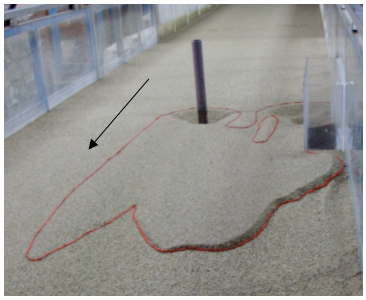




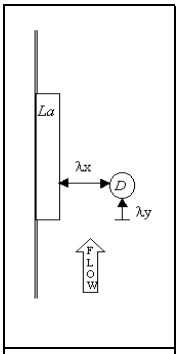


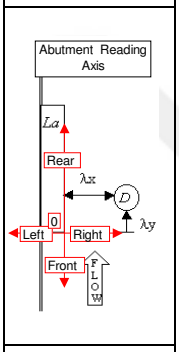


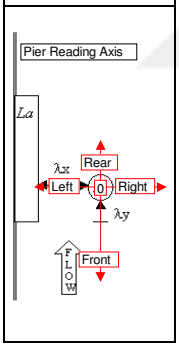


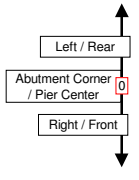


Experiment No :	**E90**
Date :	22.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	0









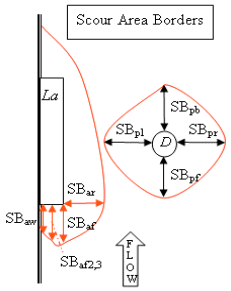
This color was used for raw data readings

This color was used for values enterpolated to sketch

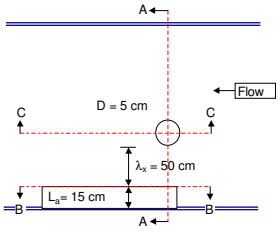
	ABUTMENT						PIER			
Flow Direction	Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)									
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97				
-160	160					-95				
-158	158					-93				
-156	156					-91				
-154	154					-89				
-152	152					-87				
-150	150					-85				
-148	148		12.20		0.20	-83				
-146	146		12.40		0.40	-81				
-144	144		12.50		0.50	-79				
-142	142		12.40		0.40	-77				
-140	140		12.40		0.40	-75				
-138	138		12.60		0.60	-73				
-136	136		13.60		1.60	-71				
-134	134		12.70		0.70	-69				
-132	132		13.80		1.80	-67				
-130	130		12.80		0.80	-65				
-128	128		13.10		1.10	-63		12.10		0.10
-126	126		13.30		1.30	-61		*12.20*		0.20
-124	124		13.20		1.20	-59		12.30		0.30
-122	122		13.40		1.40	-57		12.60		0.60
-120	120		14.10		2.10	-55		12.40		0.40
-118	118		14.10		2.10	-53		12.50		0.50
-116	116		14.20		2.20	-51		*12.85*		0.85
-114	114		14.20		2.20	-49		13.20		1.20
-112	112		14.20		2.20	-47		*13.15*		1.15
-110	110		14.00		2.00	-45		13.10		1.10
-108	108		14.30		2.30	-43		*13.10*		1.10
-106	106		14.10		2.10	-41		13.10		1.10
-104	104		13.90		1.90	-39		*13.05*		1.05
-102	102		13.70		1.70	-37		13.00		1.00
-100	100		13.70		1.70	-35		*13.10*		1.10
-98	98		13.30		1.30	-33		13.20		1.20
-96	96		13.10		1.10	-31		*13.20*		1.20
-94	94		13.00		1.00	-29		13.20		1.20
-92	92		12.70		0.70	-27		*13.35*		1.35
-90	90		13.50		1.50	-25		13.50		1.50
-88	88		12.50		0.50	-23		*13.45*		1.45
-86	86		12.50		0.50	-21		13.40		1.40
-84	84		13.40		1.40	-19		*13.50*		1.50
-82	82		12.40		0.40	-17		13.60		1.60
-80	80		12.70		0.70	-15		*13.45*		1.45
-78	78		12.70		0.70	-13		13.30		1.30
-76	76		12.30		0.30	-11		*13.30*		1.30
-74	74		12.80		0.80	-9		13.30		1.30
-72	72		13.20		1.20	-7		*13.23*		1.23
-70	70		13.40		1.40	-5		*13.17*		1.17
-68	68		13.30		1.30	-3		13.10		1.10
-66	66		13.20		1.20	-1		*13.15*		1.15
-64	64		13.30		1.30	1		13.20		1.20
-62	62		13.30		1.30	3		*13.20*		1.20
-60	60		13.40		1.40	5		13.20		1.20
-58	58		13.40		1.40	7		*13.25*		1.25
-56	56		13.40		1.40	9		13.30		1.30
-54	54		13.30		1.30	11		13.30		1.30
-52	52		13.10		1.10	13		13.20		1.20
-50	50		13.30		1.30	15		13.40		1.40
-48	48		13.10		1.10	17	6.30	13.30	-5.70	1.30
-46	46		13.10		1.10	19	5.60	13.50	-6.40	1.50
-44	44		13.00		1.00	21	5.40	13.60	-6.60	1.60
-42	42		13.20		1.20	23	5.90	13.20	-6.10	1.20
-40	40		13.20		1.20	25	7.50	13.20	-4.50	1.20
-38	38		12.90		0.90	27	9.00	13.10	-3.00	1.10
-36	36		12.30		0.30	29	9.80	13.10	-2.20	1.10
-34	34		12.10		0.10	31	10.50	13.20	-1.50	1.20
-32	32		12.00		0.00	33	10.80	13.00	-1.20	1.00
-30	30		11.70		-0.30	35	11.30	12.90	-0.70	0.90
-28	28		11.40		-0.60	37	11.60	13.20	-0.40	1.20
-26	26		11.00		-1.00	39	11.70	13.00	-0.30	1.00
-24	24		10.70		-1.30	41	11.70	12.70	-0.30	0.70
-22	22		10.30		-1.70	43	11.70	12.70	-0.30	0.70
-20	20		9.70		-2.30	45	11.80	12.40	-0.20	0.40
-18	18		9.30		-2.70	47	11.90	12.20	-0.10	0.20
-16	16		8.80		-3.20	49	11.80	11.70	-0.20	-0.30
-14	14	6.60	8.90	-5.40	-3.10	51	12.30	11.30	0.30	-0.70
-12	12	5.90	7.40	-6.10	-4.60	53	11.70	11.10	-0.30	-0.90
-10	10	5.30	6.60	-6.70	-5.40	55	10.40	10.50	-1.60	-1.50
-8	8	4.80	6.00	-7.20	-6.00	57	9.60	10.50	-2.40	-1.50
-6	6	4.20	4.90	-7.80	-7.10	59	8.70	9.70	-3.30	-2.30
-4	4	3.70	4.50	-8.30	-7.50	61	8.30	9.10	-3.70	-2.90
-2	2	3.30	3.80	-8.70	-8.20	63	6.60	8.10	-5.40	-3.90
0	0	3.20	3.20	-8.80	-8.80	65	6.60	7.60	-5.40	-4.40
0	0	3.20	3.20	-8.80	-8.80	70	7.00	6.10	-5.00	-5.90
2	-2	3.80	3.70	-8.20	-8.30	72	7.70	6.70	-4.30	-5.30
4	-4	3.70	5.10	-8.30	-6.90	74	9.20	7.80	-2.80	-4.20
6	-6	3.90	6.00	-8.10	-6.00	76	9.50	9.10	-2.50	-2.90
8	-8	5.20	7.60	-6.80	-4.40	78	10.20	10.70	-1.80	-1.30
10	-10	6.80	8.30	-5.20	-3.70	80.00	11.50	11.60	-0.50	-0.40
12	-12	7.80	9.20	-4.20	-2.80	82.00	11.90	12.20	-0.10	0.20
14	-14	9.00	10.20	-3.00	-1.80	84.00	12.00		0.00	
16	-16	9.70	11.70	-2.30	-0.30	86.00	12.20		0.20	
18	-18	10.50	12.00	-1.50	0.00	88.00				
20	-20	11.30	12.20	-0.70	0.20	90.00				
22	-22	11.80		-0.20		92.00				
24	-24	11.90		-0.10		94.00				
26	-26	11.90		-0.10		96.00				
28	-28	11.90		-0.10		98.00				
30	-30	12.20		0.20		100.00				

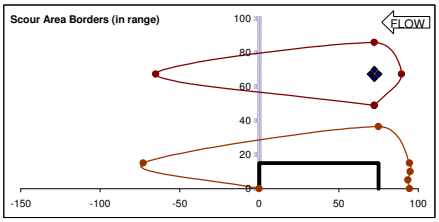
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.60	-5.40
2	6.20	-5.80
4	6.70	-5.30
6	7.80	-4.20
8	8.50	-3.50
10	9.00	-3.00
12	9.60	-2.40
14	11.00	-1.00
16	12.10	0.10
18		
20		

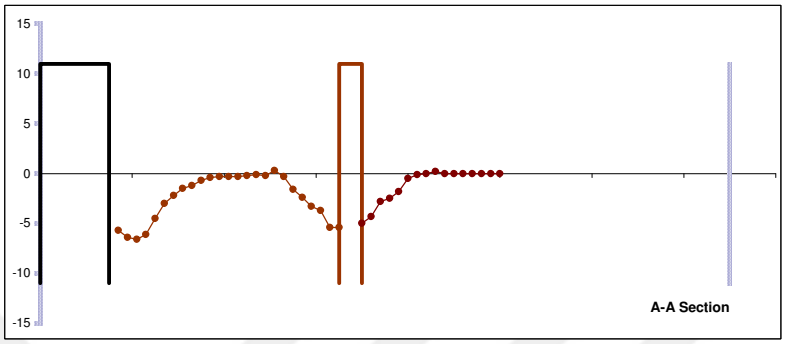
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	19.5
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af3}	Abutment Front (W+10 cm)	20
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	21.5
SB_{pl}	Pier Left	16
SB_{pf}	Pier Front	14.5
SB_{pr}	Pier Right	16
SB_{pb}	Pier Rear	135

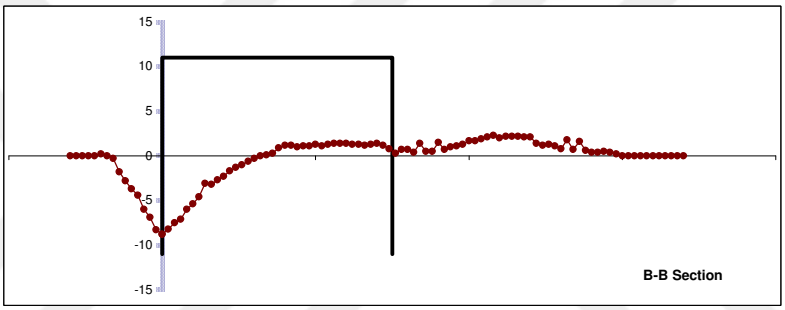


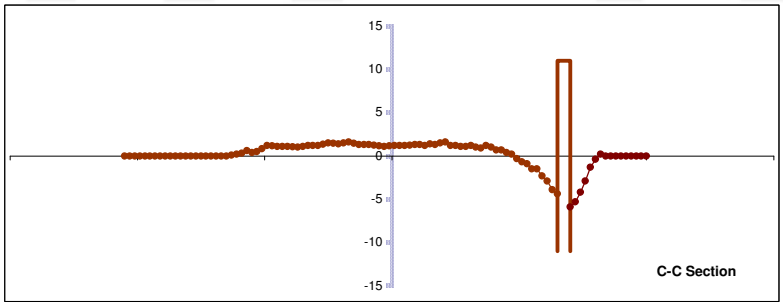
Experiment No : **E90**

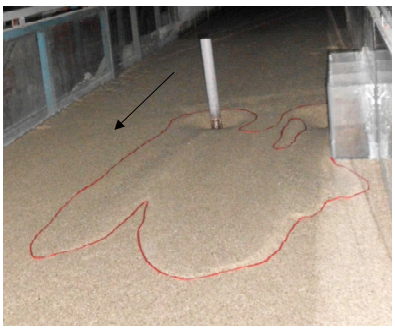




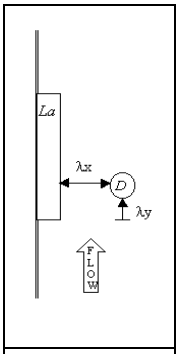


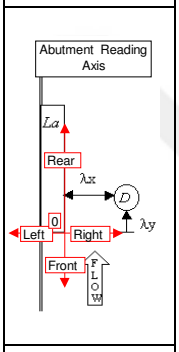


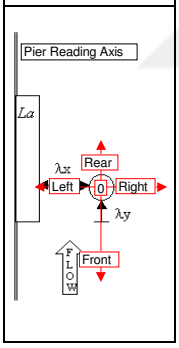


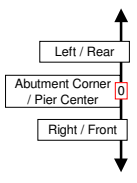


Experiment No :	**E91**
Date :	24.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	35









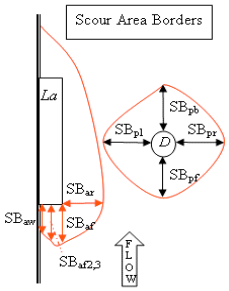
This color was used for raw data readings

This color was used for values enterpolated to sketch

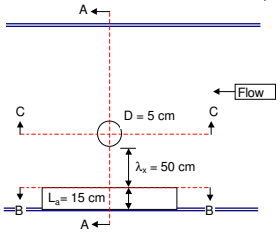
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97				
-160	160					-95				
-158	158					-93				
-156	156					-91				
-154	154					-89				
-152	152					-87				
-150	150					-85				
-148	148					-83				
-146	146					-81				
-144	144					-79				
-142	142					-77				
-140	140					-75				
-138	138					-73				
-136	136		12.20		0.20	-71				
-134	134		12.50		0.50	-69				
-132	132		12.50		0.50	-67				
-130	130		12.80		0.80	-65				
-128	128		13.00		1.00	-63				
-126	126		13.00		1.00	-61		12.20		0.20
-124	124		13.60		1.60	-59		12.30		0.30
-122	122		13.60		1.60	-57		12.50		0.50
-120	120		13.40		1.40	-55		13.30		1.30
-118	118		13.40		1.40	-53		13.30		1.30
-116	116		13.70		1.70	-51		13.40		1.40
-114	114		13.70		1.70	-49		13.50		1.50
-112	112		13.70		1.70	-47		13.40		1.40
-110	110		13.80		1.80	-45		*13.50*		1.50
-108	108		13.70		1.70	-43		13.60		1.60
-106	106		13.60		1.60	-41		*13.70*		1.70
-104	104		13.50		1.50	-39		13.80		1.80
-102	102		13.20		1.20	-37		*13.80*		1.80
-100	100		13.20		1.20	-35		13.80		1.80
-98	98		13.10		1.10	-33		*13.80*		1.80
-96	96		12.90		0.90	-31		13.80		1.80
-94	94		12.70		0.70	-29		*13.65*		1.65
-92	92		12.50		0.50	-27		13.50		1.50
-90	90		12.30		0.30	-25		*13.60*		1.60
-88	88		12.20		0.20	-23		13.70		1.70
-86	86		12.30		0.30	-21		*13.70*		1.70
-84	84		12.60		0.60	-19		13.70		1.70
-82	82		12.70		0.70	-17		*13.70*		1.70
-80	80		12.80		0.80	-15		13.70		1.70
-78	78		13.10		1.10	-13		*13.70*		1.70
-76	76		13.20		1.20	-11		13.70		1.70
-74	74		13.40		1.40	-9		*13.70*		1.70
-72	72		13.40		1.40	-7		13.70		1.70
-70	70		13.40		1.40	-5		*13.70*		1.70
-68	68		13.60		1.60	-3		13.70		1.70
-66	66		13.70		1.70	-1		*13.80*		1.80
-64	64		13.70		1.70	1		13.90		1.90
-62	62		13.90		1.90	3		*13.85*		1.85
-60	60		14.00		2.00	5		13.80		1.80
-58	58		14.10		2.10	7		*13.70*		1.70
-56	56		14.20		2.20	9		13.60		1.60
-54	54		13.90		1.90	11		*13.60*		1.60
-52	52		13.90		1.90	13		13.60		1.60
-50	50		13.70		1.70	15	*13.20*	13.60	1.20	1.60
-48	48		13.70		1.70	17	12.20	13.80	0.20	1.80
-46	46		13.60		1.60	19	12.20	13.70	0.20	1.70
-44	44		13.50		1.50	21	13.00	13.40	1.00	1.40
-42	42		13.60		1.60	23	13.20	13.30	1.20	1.30
-40	40		13.70		1.70	25	13.00	13.30	1.00	1.30
-38	38		13.50		1.50	27	12.20	13.40	0.20	1.40
-36	36		13.40		1.40	29	11.70	13.30	-0.30	1.30
-34	34		13.00		1.00	31	11.70	13.00	-0.30	1.00
-32	32		13.00		1.00	33	11.80	13.00	-0.20	1.00
-30	30		12.80		0.80	35	12.20	13.10	0.20	1.10
-28	28		12.40		0.40	37	13.10	12.80	1.10	0.80
-26	26		12.00		0.00	39	12.30	12.50	0.30	0.50
-24	24		11.60		-0.40	41	12.10	12.20	0.10	0.20
-22	22		11.20		-0.80	43	11.90	12.30	-0.10	0.30
-20	20		10.70		-1.30	45	11.50	11.80	-0.50	-0.20
-18	18		10.10		-1.90	47	11.60	11.60	-0.40	-0.40
-16	16		9.60		-2.40	49	11.90	11.00	-0.10	-1.00
-14	14	7.30	8.80	-4.70	-3.20	51	12.30	10.50	0.30	-1.50
-12	12	6.20	8.20	-5.80	-3.80	53	11.60	10.10	-0.40	-1.90
-10	10	5.40	7.10	-6.60	-4.90	55	10.80	9.70	-1.20	-2.30
-8	8	4.70	6.10	-7.30	-5.90	57	9.60	9.00	-2.40	-3.00
-6	6	4.20	5.20	-7.80	-6.80	59	9.00	8.50	-3.00	-3.50
-4	4	4.00	4.10	-8.00	-7.90	61	8.50	7.50	-3.50	-4.50
-2	2	3.60	3.60	-8.40	-8.40	63	6.80	7.10	-5.20	-4.90
0	0	3.30	3.30	-8.70	-8.70	65	5.40	7.00	-6.60	-5.00
0	0	3.30	3.30	-8.70	-8.70	70	5.30	5.30	-6.70	-6.70
2	-2	3.00	3.80	-9.00	-8.20	72	5.70	6.40	-6.30	-5.60
4	-4	3.70	5.00	-8.30	-7.00	74	7.00	7.60	-5.00	-4.40
6	-6	4.80	6.40	-7.20	-5.60	76	8.30	8.90	-3.70	-3.10
8	-8	6.00	7.40	-6.00	-4.60	78	8.90	10.20	-3.10	-1.80
10	-10	7.60	8.20	-4.40	-3.80	80.00	9.70	11.70	-2.30	-0.30
12	-12	8.70	9.00	-3.30	-3.00	82.00	10.60	12.40	-1.40	0.40
14	-14	9.40	10.60	-2.60	-1.40	84.00	11.70	12.20	-0.30	0.20
16	-16	10.40	11.70	-1.60	-0.30	86.00	11.90		-0.10	
18	-18	11.20	12.00	-0.80	0.00	88.00	12.20		0.20	
20	-20	11.90	12.20	-0.10	0.20	90.00				
22	-22	11.70		-0.30		92.00				
24	-24	11.90		-0.10		94.00				
26	-26	11.80		-0.20		96.00				
28	-28	11.80		-0.20		98.00				
30	-30	12.20		0.20		100.00				

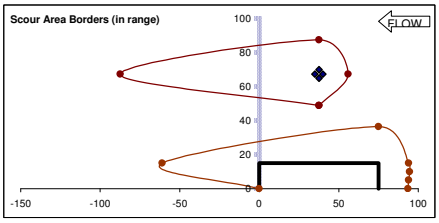
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.30	-4.70
2	6.30	-5.70
4	6.80	-5.20
6	8.00	-4.00
8	8.70	-3.30
10	9.30	-2.70
12	10.30	-1.70
14	11.30	-0.70
16	12.00	0.00
18	12.10	0.10
20		
22		
24		

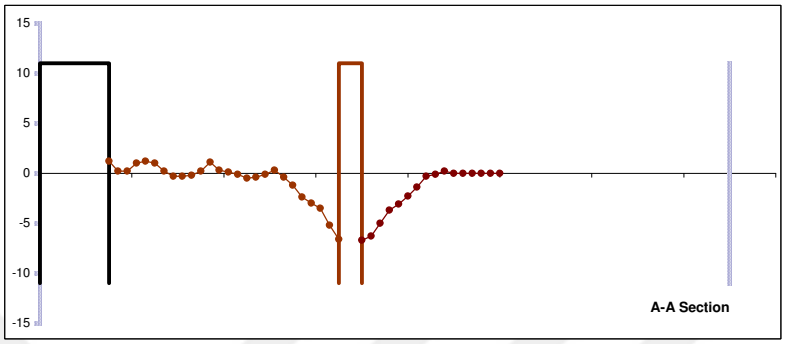
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18.5
SB_{af2}	Abutment Front (W+5 cm)	19
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	21.5
SB_{pl}	Pier Left	16
SB_{pf}	Pier Front	16
SB_{pr}	Pier Right	17.5
SB_{pb}	Pier Rear	122.5

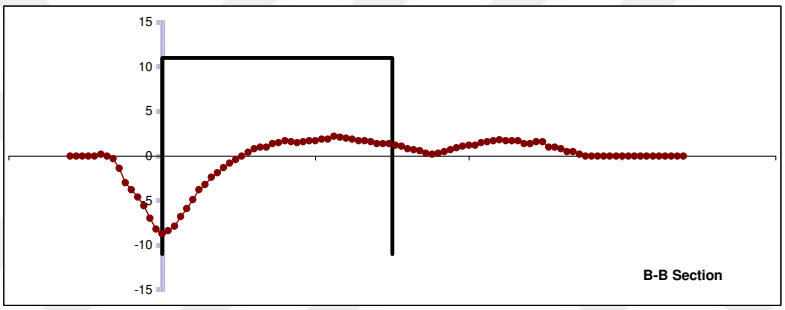


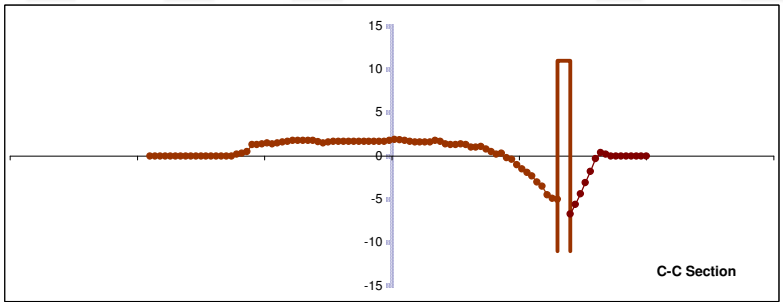
Experiment No : **E91**

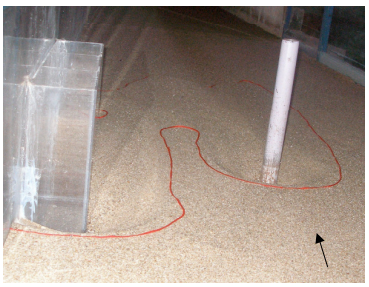


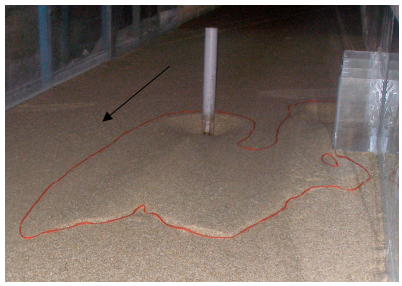




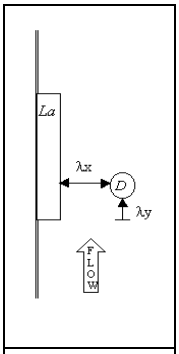


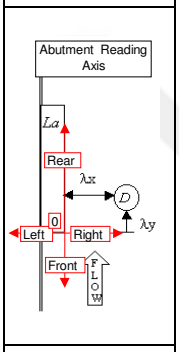


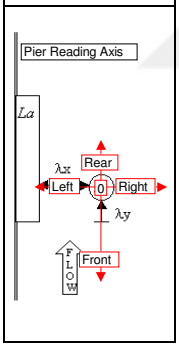


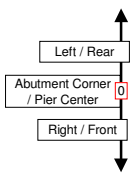


Experiment No :	**E92**
Date :	29.11.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	70









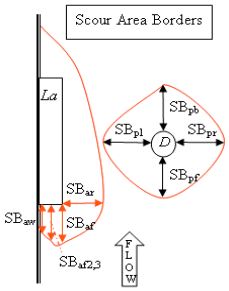
This color was used for raw data readings

This color was used for values enterpolated to sketch

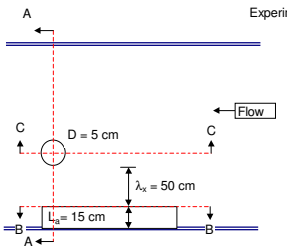
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97				
-160	160					-95				
-158	158					-93				
-156	156					-91				
-154	154					-89				
-152	152					-87				
-150	150					-85				
-148	148					-83				
-146	146					-81				
-144	144					-79				
-142	142					-77				
-140	140					-75				
-138	138					-73				
-136	136					-71				
-134	134		12.20		0.20	-69				
-132	132		13.30		1.30	-67				
-130	130		12.60		0.60	-65				
-128	128		12.70		0.70	-63				
-126	126		13.00		1.00	-61				
-124	124		13.40		1.40	-59				
-122	122		13.20		1.20	-57				
-120	120		13.10		1.10	-55				
-118	118		13.20		1.20	-53				
-116	116		13.00		1.00	-51		12.10		0.10
-114	114		13.00		1.00	-49		12.60		0.60
-112	112		13.10		1.10	-47		14.00		2.00
-110	110		13.00		1.00	-45		14.00		2.00
-108	108		13.00		1.00	-43		*14.10*		2.10
-106	106		12.90		0.90	-41		14.20		2.20
-104	104		12.80		0.80	-39		*14.35*		2.35
-102	102		13.10		1.10	-37		14.50		2.50
-100	100		13.20		1.20	-35		*14.30*		2.30
-98	98		13.00		1.00	-33		14.10		2.10
-96	96		12.90		0.90	-31		*14.15*		2.15
-94	94		13.00		1.00	-29		14.20		2.20
-92	92		12.90		0.90	-27		*14.20*		2.20
-90	90		13.20		1.20	-25		14.20		2.20
-88	88		13.20		1.20	-23		*14.30*		2.30
-86	86		13.00		1.00	-21		14.40		2.40
-84	84		13.40		1.40	-19		*14.40*		2.40
-82	82		13.40		1.40	-17		14.40		2.40
-80	80		13.60		1.60	-15		*14.50*		2.50
-78	78		13.50		1.50	-13		14.60		2.60
-76	76		14.00		2.00	-11		*14.55*		2.55
-74	74		13.80		1.80	-9		14.50		2.50
-72	72		14.10		2.10	-7		*14.47*		2.47
-70	70		14.00		2.00	-5		*14.44*		2.44
-68	68		13.90		1.90	-3		14.40		2.40
-66	66		14.10		2.10	-1		*14.25*		2.25
-64	64		14.00		2.00	1		14.10		2.10
-62	62		14.00		2.00	3		*14.05*		2.05
-60	60		14.40		2.40	5		14.00		2.00
-58	58		14.20		2.20	7		*14.05*		2.05
-56	56		14.00		2.00	9		14.10		2.10
-54	54		13.90		1.90	11		*14.00*		2.00
-52	52		13.90		1.90	13		13.90		1.90
-50	50		13.80		1.80	15	*13.90*	*13.90*	1.90	1.90
-48	48		13.70		1.70	17	*13.70*	13.90	1.70	1.90
-46	46		13.60		1.60	19	*13.50*	*13.70*	1.50	1.70
-44	44		13.50		1.50	21	13.30	13.50	1.30	1.50
-42	42		13.60		1.60	23	13.50	13.50	1.50	1.50
-40	40		13.30		1.30	25	13.70	13.30	1.70	1.30
-38	38		13.20		1.20	27	13.90	13.10	1.90	1.10
-36	36		13.00		1.00	29	14.00	13.10	2.00	1.10
-34	34		12.70		0.70	31	13.60	13.10	1.60	1.10
-32	32		12.30		0.30	33	13.50	12.90	1.50	0.90
-30	30		12.20		0.20	35	13.50	12.60	1.50	0.60
-28	28		11.80		-0.20	37	13.30	12.40	1.30	0.40
-26	26		11.30		-0.70	39	13.20	12.20	1.20	0.20
-24	24		10.90		-1.10	41	13.40	11.90	1.40	-0.10
-22	22		10.60		-1.40	43	12.70	11.50	0.70	-0.50
-20	20		10.20		-1.80	45	12.40	11.10	0.40	-0.90
-18	18		9.90		-2.10	47	12.30	11.00	0.30	-1.00
-16	16		9.40		-2.60	49	11.80	10.60	-0.20	-1.40
-14	14	6.80	8.60	-5.20	-3.40	51	11.70	10.40	-0.30	-1.60
-12	12	6.10	7.60	-5.90	-4.40	53	11.80	10.00	-0.20	-2.00
-10	10	5.40	6.50	-6.60	-5.50	55	11.80	9.20	-0.20	-2.80
-8	8	5.00	5.70	-7.00	-6.30	57	10.90	8.80	-1.10	-3.20
-6	6	4.30	4.70	-7.70	-7.30	59	9.80	8.00	-2.20	-4.00
-4	4	4.30	4.10	-7.70	-7.90	61	8.70	7.30	-3.30	-4.70
-2	2	4.00	3.70	-8.00	-8.30	63	6.40	6.40	-5.60	-5.60
0	0	3.60	3.60	-8.40	-8.40	65	5.20	6.20	-6.80	-5.80
0	0	3.60	3.60	-8.40	-8.40	70	5.20	5.40	-6.80	-6.60
2	-2	3.70	3.80	-8.30	-8.20	72	5.10	6.20	-6.90	-5.80
4	-4	4.40	5.20	-7.60	-6.80	74	6.40	7.50	-5.60	-4.50
6	-6	6.10	6.40	-5.90	-5.60	76	7.50	8.70	-4.50	-3.30
8	-8	7.30	7.50	-4.70	-4.50	78	8.30	10.10	-3.70	-1.90
10	-10	8.40	7.90	-3.60	-4.10	80.00	9.10	10.90	-2.90	-1.10
12	-12	9.90	8.30	-2.10	-3.70	82.00	10.40	12.00	-1.60	0.00
14	-14	10.00	9.50	-2.00	-2.50	84.00	11.70	12.10	-0.30	0.10
16	-16	10.20	10.70	-1.80	-1.30	86.00	12.00		0.00	
18	-18	9.90	12.10	-2.10	0.10	88.00				
20	-20	9.90		-2.10		90.00				
22	-22	11.00		-1.00		92.00				
24	-24	11.80		-0.20		94.00				
26	-26	11.80		-0.20		96.00				
28	-28	12.20		0.20		98.00				
30	-30					100.00				

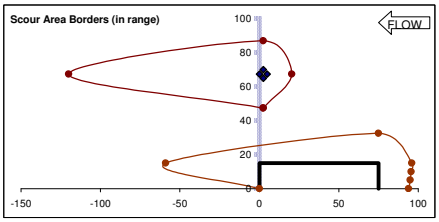
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.80	-5.20
2	6.40	-5.60
4	6.90	-5.10
6	8.00	-4.00
8	9.30	-2.70
10	10.10	-1.90
12	11.40	-0.60
14	12.00	0.00
16	12.10	0.10
18		
20		
22		
24		

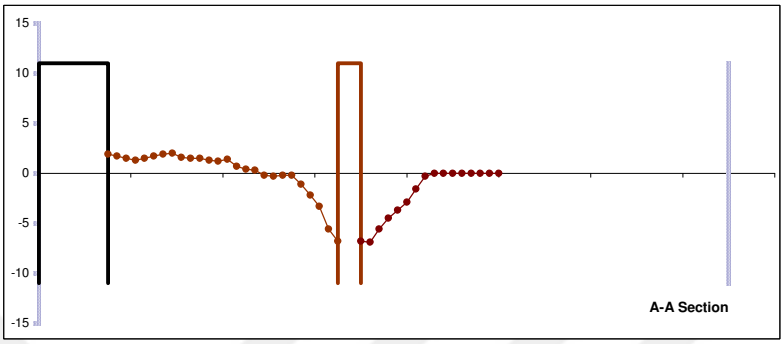
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	19
SB_{af2}	Abutment Front (W+5 cm)	20
SB_{af3}	Abutment Front (W+10 cm)	20.5
SB_{af}	Abutment Corner Front	21
SB_{ar}	Abutment Corner Right	17.5
SB_{pl}	Pier Left	17.5
SB_{pf}	Pier Front	15.5
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	120

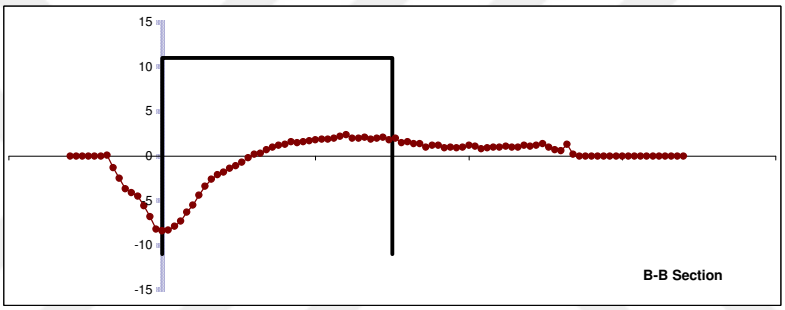


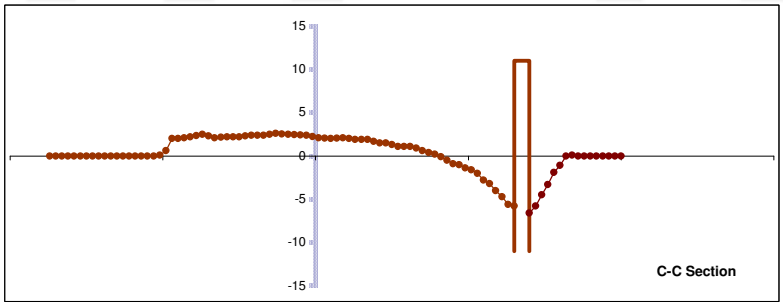
Experiment No : **E92**

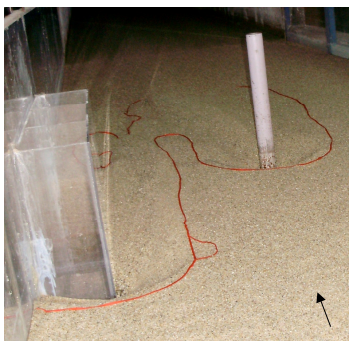


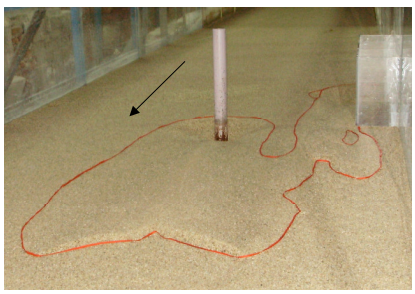






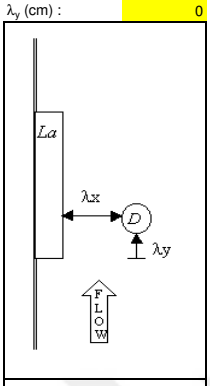


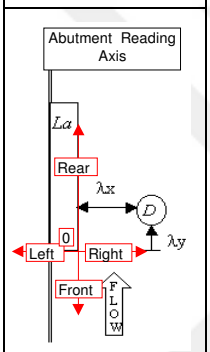


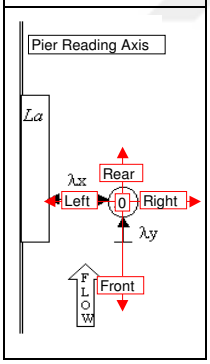


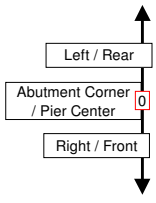
Experiment No : **E93**

Date :	21.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	0









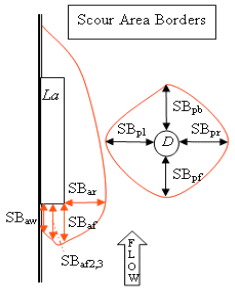
This color was used for raw data readings

This color was used for values enterpolated to sketch

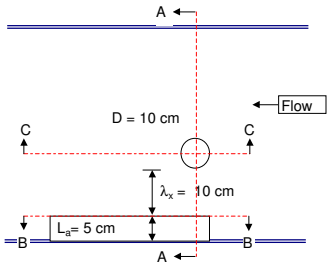
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-125				
-138	138					-123				
-136	136					-121				
-134	134					-119				
-132	132					-117				
-130	130					-115				
-128	128					-113				
-126	126					-111				
-124	124					-109				
-122	122					-107				
-120	120					-105				
-118	118					-103				
-116	116					-101				
-114	114					-99				
-112	112					-97				
-110	110					-95				
-108	108					-93				
-106	106					-91				
-104	104					-89				
-102	102		12.00		0.00	-87				
-100	100		12.90		0.90	-85				
-98	98		12.90		0.90	-83		12.00		0.00
-96	96		12.70		0.70	-81		12.20		0.20
-94	94		12.40		0.40	-79		12.30		0.30
-92	92		12.50		0.50	-77		12.10		0.10
-90	90		12.10		0.10	-75		12.80		0.80
-88	88		11.80		-0.20	-73		12.80		0.80
-86	86		11.70		-0.30	-71		13.60		1.60
-84	84		11.60		-0.40	-69		13.50		1.50
-82	82		11.60		-0.40	-67		13.50		1.50
-80	80		11.50		-0.50	-65		13.90		1.90
-78	78		11.60		-0.40	-63		13.90		1.90
-76	76		11.80		-0.20	-61		*13.90*		1.90
-74	74		12.10		0.10	-59		13.90		1.90
-72	72		11.90		-0.10	-57		*13.85*		1.85
-70	70		11.90		-0.10	-55		13.80		1.80
-68	68		12.00		0.00	-53		*14.00*		2.00
-66	66		11.80		-0.20	-51		14.20		2.20
-64	64		12.00		0.00	-49		*14.25*		2.25
-62	62		11.60		-0.40	-47		14.30		2.30
-60	60		11.70		-0.30	-45		*14.25*		2.25
-58	58		11.70		-0.30	-43		14.20		2.20
-56	56		11.80		-0.20	-41		*14.25*		2.25
-54	54		11.60		-0.40	-39		14.30		2.30
-52	52		11.50		-0.50	-37		*14.35*		2.35
-50	50		11.50		-0.50	-35		14.40		2.40
-48	48		11.40		-0.60	-33		*14.35*		2.35
-46	46		11.30		-0.70	-31		14.30		2.30
-44	44		11.20		-0.80	-29		*14.45*		2.45
-42	42		11.10		-0.90	-27		14.60		2.60
-40	40		11.00		-1.00	-25		*14.50*		2.50
-38	38		10.80		-1.20	-23		14.40		2.40
-36	36		11.00		-1.00	-21		14.40		2.40
-34	34		11.20		-0.80	-19		14.30		2.30
-32	32		11.20		-0.80	-17		14.20		2.20
-30	30		11.10		-0.90	-15		14.20		2.20
-28	28		11.30		-0.70	-13		13.60		1.60
-26	26		10.90		-1.10	-11		13.30		1.30
-24	24		11.00		-1.00	-9		13.10		1.10
-22	22		10.90		-1.10	-7		12.50		0.50
-20	20		10.60		-1.40	-5		12.30		0.30
-18	18		10.80		-1.20	-3		11.90		-0.10
-16	16		10.90		-1.10	-1		11.60		-0.40
-14	14		10.40		-1.60	1		10.90		-1.10
-12	12		10.00		-2.00	3		10.40		-1.60
-10	10		9.30		-2.70	5	7.70	9.50	-4.30	-2.50
-8	8	7.30	8.70	-4.70	-3.30	7	7.50	8.80	-4.50	-3.20
-6	6	7.20	8.10	-4.80	-3.90	9	6.80	7.60	-5.20	-4.40
-4	4	6.60	7.80	-5.40	-4.20	11	5.90	6.70	-6.10	-5.30
-2	2	6.50	7.30	-5.50	-4.70	13	5.20	6.20	-6.80	-5.80
0	0	6.70	6.70	-5.30	-5.30	15	3.50	6.00	-8.50	-6.00
0	0	6.70	6.70	-5.30	-5.30	25	3.80	4.10	-8.20	-7.90
2	-2	6.60	7.30	-5.40	-4.70	27	4.40	5.00	-7.60	-7.00
4	-4	6.30	8.70	-5.70	-3.30	29	6.00	6.70	-6.00	-5.30
6	-6	5.90	9.50	-6.10	-2.50	31	7.00	7.50	-5.00	-4.50
8	-8	5.40	10.20	-6.60	-1.80	33	8.10	8.60	-3.90	-3.40
10	-10		10.70		-1.30	35	9.20	9.50	-2.80	-2.50
12	-12		10.90		-1.10	37	10.50	10.60	-1.50	-1.40
14	-14		11.10		-0.90	39	11.20	11.60	-0.80	-0.40
16	-16		11.10		-0.90	41	11.40	11.80	-0.60	-0.20
18	-18		12.00		0.00	43	11.50	12.00	-0.50	0.00
20	-20					45	11.80		-0.20	
22	-22					47	11.80		-0.20	
24	-24					49	12.00		0.00	
26	-26					51				
28	-28					53				
30	-30					55				

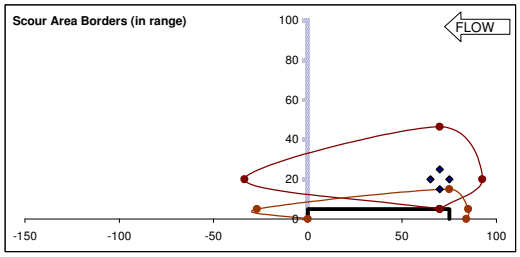
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.30	-4.70
2	7.80	-4.20
4	8.80	-3.20
6	9.80	-2.20
8	10.50	-1.50
10	10.80	-1.20
12	10.80	-1.20
14	10.90	-1.10
16	11.10	-0.90
18	11.00	-1.00
20	12.00	0.00

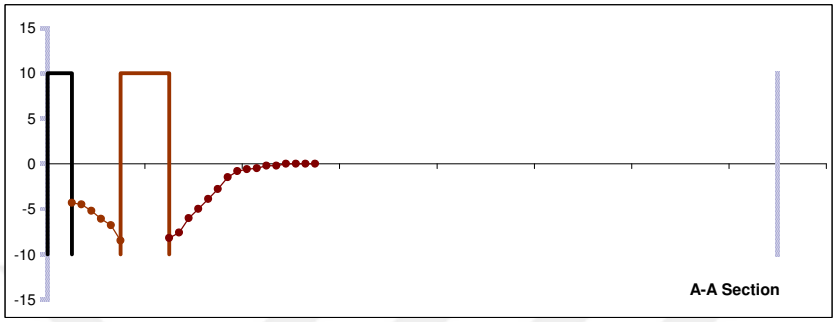
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	10
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	17.5
SB_{pr}	Pier Right	21.5
SB_{pb}	Pier Rear	98.5

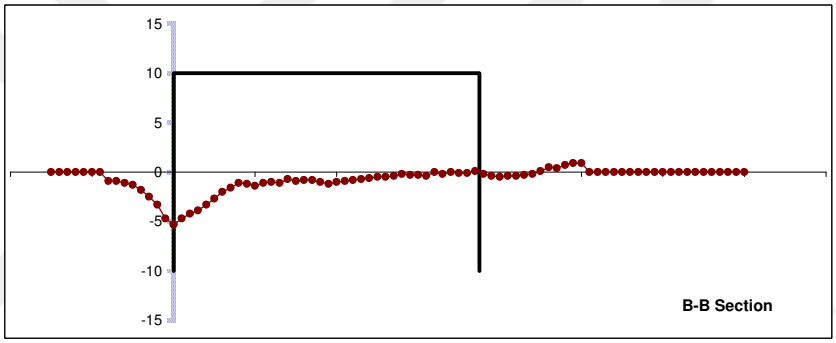


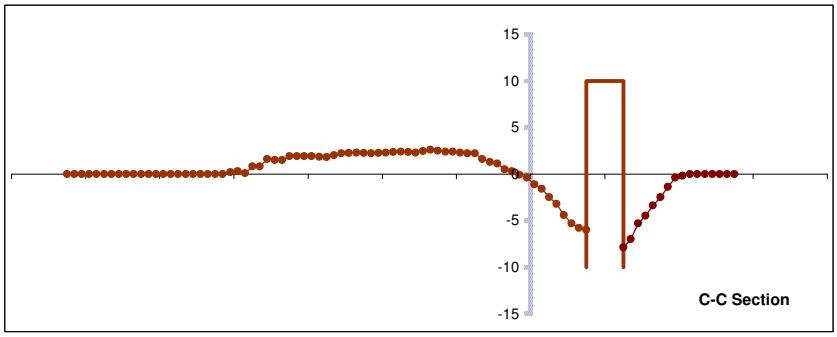
Experiment No : **E93**

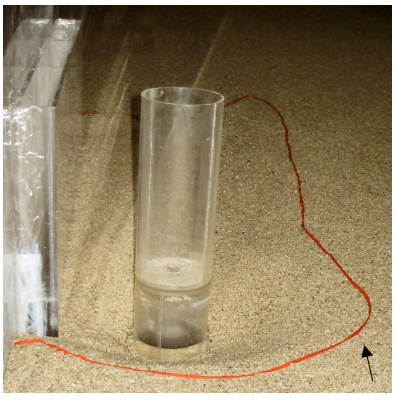






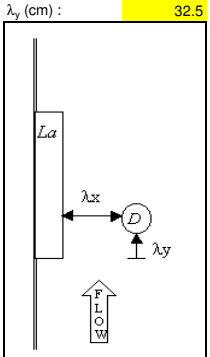


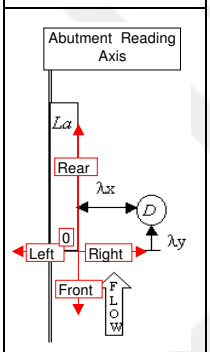


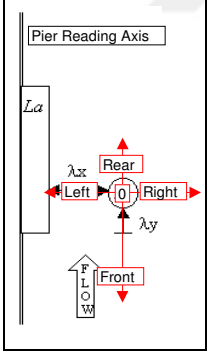


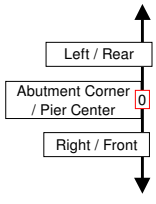
Experiment No : **E94**

Date :	23.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	32.5









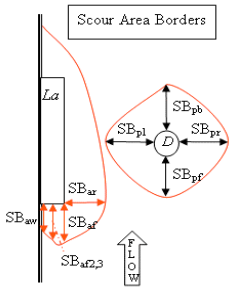
This color was used for raw data readings

This color was used for values enterpolated to sketch

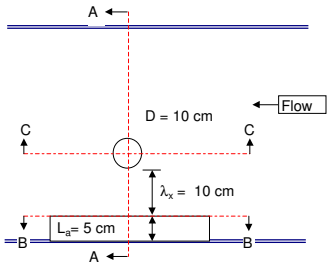
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-125				
-138	138					-123				
-136	136					-121				
-134	134					-119				
-132	132					-117				
-130	130					-115				
-128	128					-113				
-126	126					-111				
-124	124		12.00		0.00	-109				
-122	122		11.80		-0.20	-107				
-120	120		11.60		-0.40	-105				
-118	118		11.20		-0.80	-103				
-116	116		11.50		-0.50	-101				
-114	114		11.40		-0.60	-99				
-112	112		12.30		0.30	-97				
-110	110		14.30		2.30	-95				
-108	108		14.40		2.40	-93				
-106	106		14.40		2.40	-91				
-104	104		14.50		2.50	-89				
-102	102		14.50		2.50	-87				
-100	100		14.30		2.30	-85				
-98	98		14.30		2.30	-83				
-96	96		14.20		2.20	-81				
-94	94		14.00		2.00	-79				
-92	92		13.90		1.90	-77				
-90	90		13.50		1.50	-75				
-88	88		13.20		1.20	-73				
-86	86		13.00		1.00	-71				
-84	84		12.40		0.40	-69				
-82	82		12.00		0.00	-67		12.00		0.00
-80	80		11.90		-0.10	-65		12.30		0.30
-78	78		11.90		-0.10	-63		12.70		0.70
-76	76		11.80		-0.20	-61		13.50		1.50
-74	74		11.80		-0.20	-59		14.40		2.40
-72	72		11.80		-0.20	-57		14.60		2.60
-70	70		11.90		-0.10	-55		*14.60*		2.60
-68	68		12.10		0.10	-53		14.60		2.60
-66	66		12.10		0.10	-51		*14.55*		2.55
-64	64		12.30		0.30	-49		14.50		2.50
-62	62		12.70		0.70	-47		*14.60*		2.60
-60	60		12.80		0.80	-45		14.70		2.70
-58	58		12.70		0.70	-43		*14.70*		2.70
-56	56		12.50		0.50	-41		14.70		2.70
-54	54		12.50		0.50	-39		*14.70*		2.70
-52	52		12.10		0.10	-37		14.70		2.70
-50	50		11.40		-0.60	-35		*14.65*		2.65
-48	48		10.90		-1.10	-33		14.60		2.60
-46	46		10.10		-1.90	-31		*14.65*		2.65
-44	44		9.30		-2.70	-29		14.70		2.70
-42	42		8.80		-3.20	-27		*14.65*		2.65
-40	40		8.20		-3.80	-25		14.60		2.60
-38	38		7.90		-4.10	-23		14.60		2.60
-36	36		8.10		-3.90	-21		14.90		2.90
-34	34		8.30		-3.70	-19		14.70		2.70
-32	32		8.50		-3.50	-17		14.40		2.40
-30	30		9.30		-2.70	-15		14.50		2.50
-28	28		9.90		-2.10	-13		14.10		2.10
-26	26		10.50		-1.50	-11		14.20		2.20
-24	24		11.50		-0.50	-9		13.50		1.50
-22	22		11.80		-0.20	-7		13.30		1.30
-20	20		11.80		-0.20	-5		13.00		1.00
-18	18		12.00		0.00	-3		12.60		0.60
-16	16		12.30		0.30	-1		12.20		0.20
-14	14		13.20		1.20	1		11.60		-0.40
-12	12		13.20		1.20	3		10.40		-1.60
-10	10		13.00		1.00	5	8.50	9.70	-3.50	-2.30
-8	8		12.20		0.20	7	8.20	9.00	-3.80	-3.00
-6	6		11.40		-0.60	9	7.20	8.20	-4.80	-3.80
-4	4	9.10	10.60	-2.90	-1.40	11	6.00	7.40	-6.00	-4.60
-2	2	8.80	9.10	-3.20	-2.90	13	4.70	7.50	-7.30	-4.50
0	0	8.30	8.30	-3.70	-3.70	15	4.40	7.30	-7.60	-4.70
0	0	8.30	8.30	-3.70	-3.70	25	4.50	2.70	-7.50	-9.30
2	-2	8.90	9.40	-3.10	-2.60	27	4.30	3.10	-7.70	-8.90
4	-4	9.40	10.80	-2.60	-1.20	29	5.40	4.80	-6.60	-7.20
6	-6	10.40	11.60	-1.60	-0.40	31	6.80	5.90	-5.20	-6.10
8	-8	11.20	11.50	-0.80	-0.50	33	8.10	7.50	-3.90	-4.50
10	-10	11.80	11.60	-0.20	-0.40	35	9.20	8.70	-2.80	-3.30
12	-12	11.50	11.80	-0.50	-0.20	37	9.40	9.90	-2.60	-2.10
14	-14	11.60	12.00	-0.40	0.00	39	9.70	10.10	-2.30	-1.90
16	-16	12.00		0.00		41	10.90	10.90	-1.10	-1.10
18	-18					43	11.50	11.60	-0.50	-0.40
20	-20					45	11.60	11.80	-0.40	-0.20
22	-22					47	11.70	12.00	-0.30	0.00
24	-24					49	11.80		-0.20	
26	-26					51	12.00		0.00	
28	-28					53				
30	-30					55				

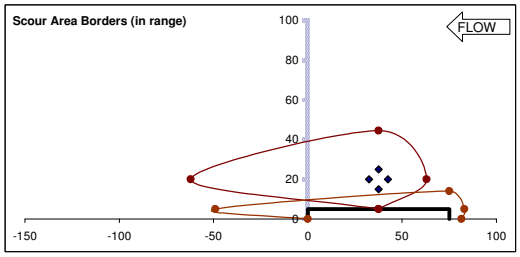
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.10	-2.90
2	9.70	-2.30
4	10.90	-1.10
6	11.40	-0.60
8	11.40	-0.60
10	11.60	-0.40
12	11.50	-0.50
14	11.90	-0.10
16	12.00	0.00
18		
20		

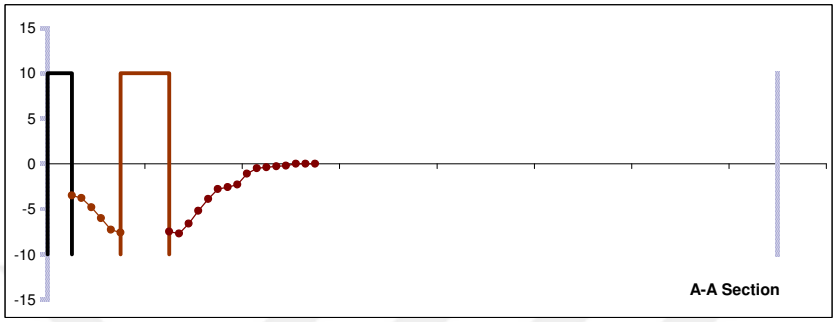
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	6.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	20.5
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	94.5

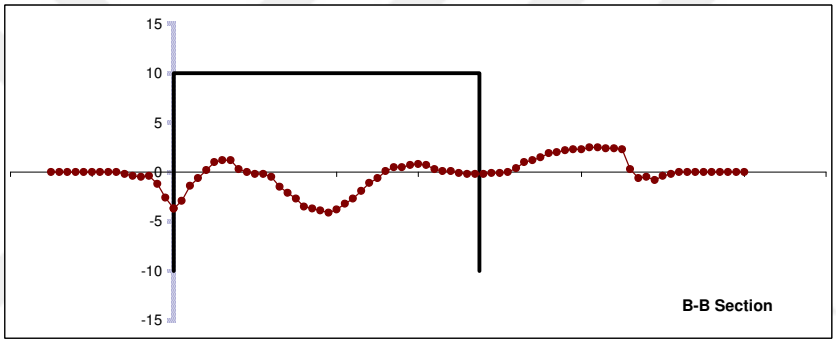


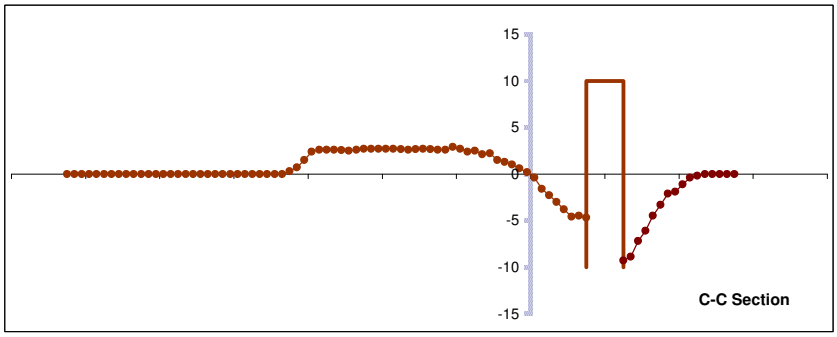
Experiment No : **E94**

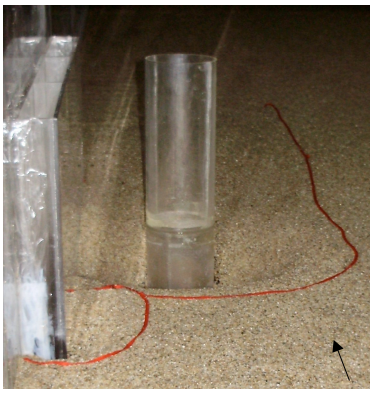


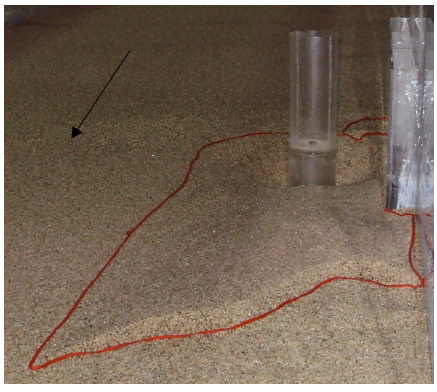






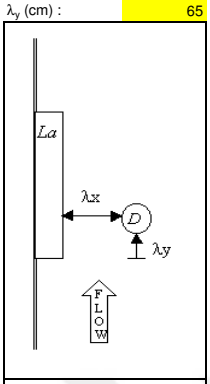


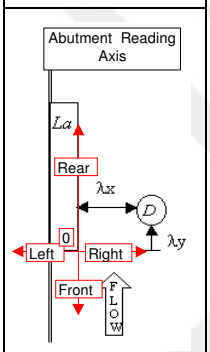


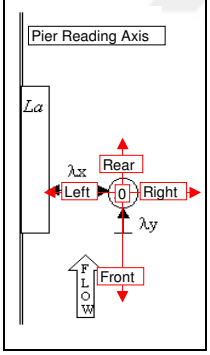


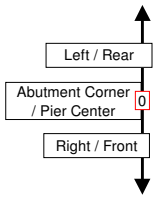
Experiment No : **E95**

Date :	28.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	65









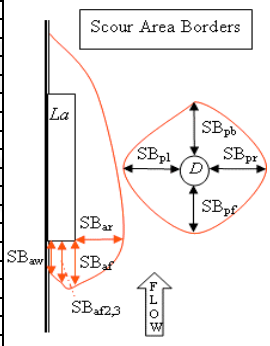
This color was used for raw data readings

This color was used for values enterpolated to sketch

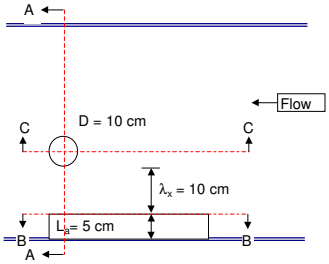
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140		14.10		2.10	-125				
-138	138		14.30		2.30	-123				
-136	136		14.00		2.00	-121				
-134	134		14.00		2.00	-119				
-132	132		14.10		2.10	-117				
-130	130		14.00		2.00	-115				
-128	128		13.90		1.90	-113				
-126	126		13.80		1.80	-111				
-124	124		13.80		1.80	-109				
-122	122		13.80		1.80	-107				
-120	120		*13.65*		1.65	-105				
-118	118		13.50		1.50	-103				
-116	116		*13.50*		1.50	-101				
-114	114		13.50		1.50	-99				
-112	112		*13.45*		1.45	-97				
-110	110		13.40		1.40	-95				
-108	108		*13.20*		1.20	-93				
-106	106		13.00		1.00	-91				
-104	104		13.00		1.00	-89				
-102	102		12.90		0.90	-87				
-100	100		13.00		1.00	-85				
-98	98		13.10		1.10	-83				
-96	96		13.00		1.00	-81				
-94	94		13.00		1.00	-79				
-92	92		12.80		0.80	-77				
-90	90		12.70		0.70	-75				
-88	88		12.40		0.40	-73				
-86	86		11.90		-0.10	-71				
-84	84		11.40		-0.60	-69				
-82	82		10.40		-1.60	-67				
-80	80		10.00		-2.00	-65		12.00		0.00
-78	78		9.40		-2.60	-63		11.70		-0.30
-76	76		8.60		-3.40	-61		11.70		-0.30
-74	74		8.30		-3.70	-59		12.40		0.40
-72	72		8.20		-3.80	-57		*13.20*		1.20
-70	70		8.40		-3.60	-55		14.00		2.00
-68	68		8.70		-3.30	-53		14.30		2.30
-66	66		9.20		-2.80	-51		14.60		2.60
-64	64		10.90		-1.10	-49		14.70		2.70
-62	62		10.80		-1.20	-47		14.60		2.60
-60	60		11.50		-0.50	-45		14.70		2.70
-58	58		11.70		-0.30	-43		14.70		2.70
-56	56		11.80		-0.20	-41		14.90		2.90
-54	54		11.90		-0.10	-39		14.80		2.80
-52	52		12.00		0.00	-37		15.00		3.00
-50	50		11.80		-0.20	-35		15.10		3.10
-48	48		12.00		0.00	-33		14.90		2.90
-46	46		12.10		0.10	-31		15.10		3.10
-44	44		12.10		0.10	-29		15.50		3.50
-42	42		12.10		0.10	-27		15.10		3.10
-40	40		12.10		0.10	-25		15.10		3.10
-38	38		12.30		0.30	-23		15.20		3.20
-36	36		12.30		0.30	-21		15.40		3.40
-34	34		12.30		0.30	-19		15.20		3.20
-32	32		12.30		0.30	-17		14.90		2.90
-30	30		12.10		0.10	-15		14.90		2.90
-28	28		11.80		-0.20	-13		14.70		2.70
-26	26		11.40		-0.60	-11		14.60		2.60
-24	24		11.30		-0.70	-9		14.50		2.50
-22	22		11.50		-0.50	-7		14.30		2.30
-20	20		11.70		-0.30	-5		13.50		1.50
-18	18		12.70		0.70	-3		13.10		1.10
-16	16		13.30		1.30	-1		12.60		0.60
-14	14		13.10		1.10	1		11.80		-0.20
-12	12		12.80		0.80	3		11.10		-0.90
-10	10		12.10		0.10	5	9.20	10.20	-2.80	-1.80
-8	8		11.40		-0.60	7	8.40	9.00	-3.60	-3.00
-6	6		10.60		-1.40	9	7.40	8.30	-4.60	-3.70
-4	4	8.30	9.40	-3.70	-2.60	11	6.40	7.60	-5.60	-4.40
-2	2	7.80	8.60	-4.20	-3.40	13	4.80	7.40	-7.20	-4.60
0	0	7.70	7.70	-4.30	-4.30	15	3.90	7.80	-8.10	-4.20
0	0	7.70	7.70	-4.30	-4.30	25	4.40	2.90	-7.60	-9.10
2	-2	8.40	8.40	-3.60	-3.60	27	4.20	3.30	-7.80	-8.70
4	-4	9.20	9.90	-2.80	-2.10	29	5.20	5.00	-6.80	-7.00
6	-6	10.70	11.10	-1.30	-0.90	31	6.90	5.90	-5.10	-6.10
8	-8	10.90	11.80	-1.10	-0.20	33	8.30	7.50	-3.70	-4.50
10	-10	11.30	11.90	-0.70	-0.10	35	9.40	8.70	-2.60	-3.30
12	-12	11.60	12.00	-0.40	0.00	37	10.00	9.70	-2.00	-2.30
14	-14	11.60		-0.40		39	10.90	11.40	-1.10	-0.60
16	-16	11.40		-0.60		41	11.80	12.00	-0.20	0.00
18	-18	11.70		-0.30		43	11.90		-0.10	
20	-20	12.00		0.00		45	12.00		0.00	
22	-22					47				
24	-24					49				
26	-26					51				
28	-28					53				
30	-30					55				

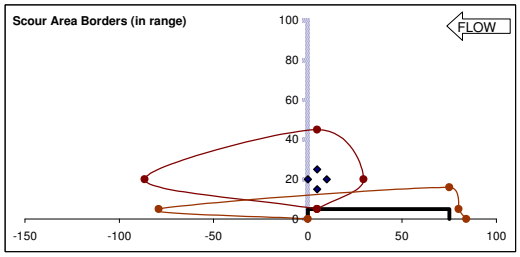
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.30	-3.70
2	8.80	-3.20
4	9.70	-2.30
6	11.10	-0.90
8	12.00	0.00
10		
12		
14		
16		
18		
20		

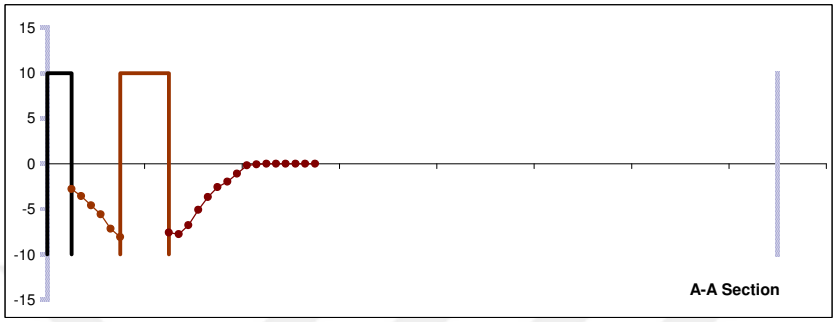
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	5
SB_{ar}	Abutment Corner Right	11
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	19.5
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	86.5

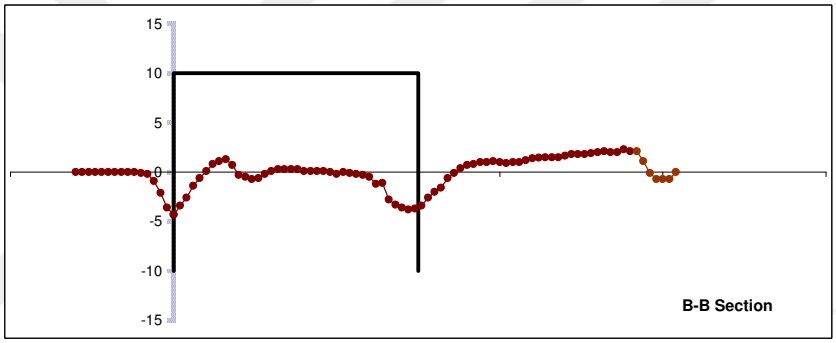


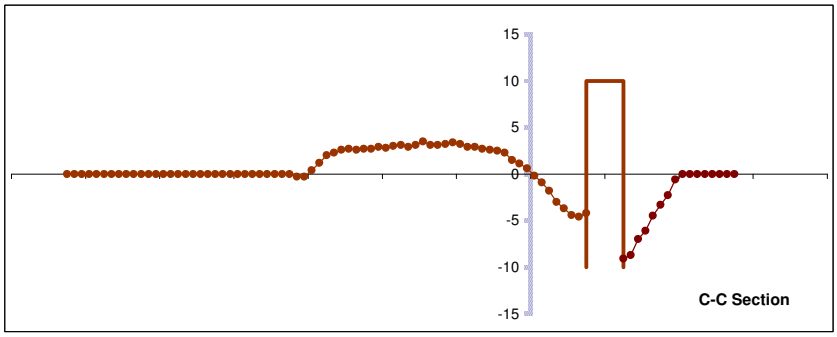
Experiment No : **E95**

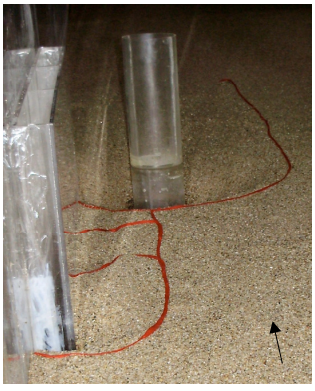


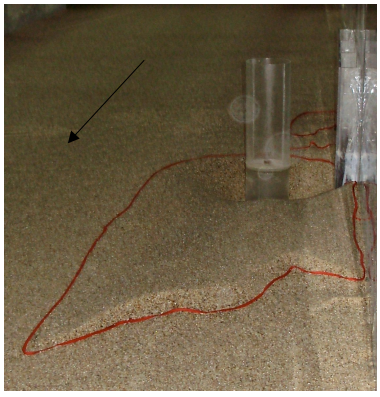






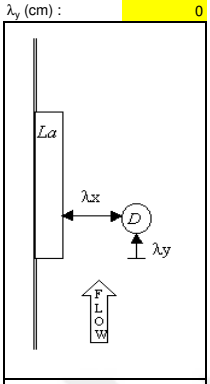


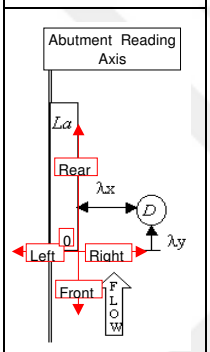


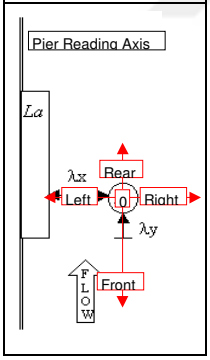


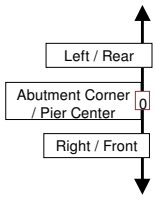
Experiment No : **E96**

Date :	30.12.2011
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	0









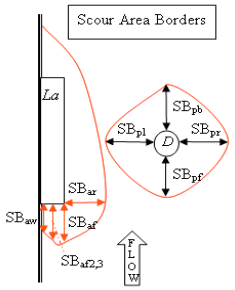
This color was used for raw data readings

This color was used for values enterpolated to sketch

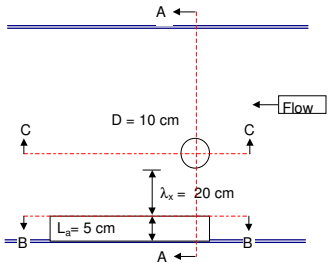
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-115				
-138	138					-113				
-136	136					-111				
-134	134					-109				
-132	132					-107				
-130	130					-105				
-128	128					-103				
-126	126					-101				
-124	124					-99				
-122	122					-97				
-120	120					-95				
-118	118					-93				
-116	116					-91				
-114	114					-89				
-112	112					-87				
-110	110					-85				
-108	108					-83				
-106	106		12.00		0.00	-81				
-104	104		12.30		0.30	-79				
-102	102		12.60		0.60	-77				
-100	100		12.90		0.90	-75				
-98	98		12.70		0.70	-73				
-96	96		12.80		0.80	-71		12.00		0.00
-94	94		12.40		0.40	-69		11.90		-0.10
-92	92		12.50		0.50	-67		12.60		0.60
-90	90		12.30		0.30	-65		13.20		1.20
-88	88		12.30		0.30	-63		13.80		1.80
-86	86		11.60		-0.40	-61		13.80		1.80
-84	84		11.60		-0.40	-59		*13.90*		1.90
-82	82		11.40		-0.60	-57		14.00		2.00
-80	80		11.50		-0.50	-55		*14.00*		2.00
-78	78		11.40		-0.60	-53		14.00		2.00
-76	76		11.40		-0.60	-51		*14.00*		2.00
-74	74		11.30		-0.70	-49		14.00		2.00
-72	72		11.50		-0.50	-47		*14.15*		2.15
-70	70		11.60		-0.40	-45		14.30		2.30
-68	68		11.70		-0.30	-43		*14.35*		2.35
-66	66		11.60		-0.40	-41		14.40		2.40
-64	64		*11.60*		-0.40	-39		*14.35*		2.35
-62	62		11.60		-0.40	-37		14.30		2.30
-60	60		*11.70*		-0.30	-35		*14.40*		2.40
-58	58		11.80		-0.20	-33		14.50		2.50
-56	56		*11.75*		-0.25	-31		*14.50*		2.50
-54	54		11.70		-0.30	-29		14.50		2.50
-52	52		*11.65*		-0.35	-27		*14.55*		2.55
-50	50		11.60		-0.40	-25		14.60		2.60
-48	48		*11.55*		-0.45	-23		*14.60*		2.60
-46	46		11.50		-0.50	-21		14.60		2.60
-44	44		*11.45*		-0.55	-19		*14.55*		2.55
-42	42		11.40		-0.60	-17		14.50		2.50
-40	40		11.40		-0.60	-15		*14.40*		2.40
-38	38		11.30		-0.70	-13		14.30		2.30
-36	36		11.20		-0.80	-11		14.30		2.30
-34	34		11.30		-0.70	-9		14.30		2.30
-32	32		11.40		-0.60	-7		14.10		2.10
-30	30		11.60		-0.40	-5		13.80		1.80
-28	28		11.50		-0.50	-3		13.50		1.50
-26	26		11.30		-0.70	-1		13.40		1.40
-24	24		11.30		-0.70	1		13.50		1.50
-22	22		10.80		-1.20	3		13.00		1.00
-20	20		10.60		-1.40	5	10.60	12.50	-1.40	0.50
-18	18		10.50		-1.50	7	11.10	12.10	-0.90	0.10
-16	16		10.90		-1.10	9	11.40	11.50	-0.60	-0.50
-14	14		11.90		-0.10	11	11.90	10.70	-0.10	-1.30
-12	12		12.50		0.50	13	10.50	9.80	-1.50	-2.20
-10	10		12.30		0.30	15	9.00	9.00	-3.00	-3.00
-8	8		11.70		-0.30	17	7.80	8.70	-4.20	-3.30
-6	6		10.90		-1.10	19	6.50	7.70	-5.50	-4.30
-4	4	9.70	9.80	-2.30	-2.20	21	5.90	7.10	-6.10	-4.90
-2	2	9.00	9.30	-3.00	-2.70	23	4.20	7.30	-7.80	-4.70
0	0	8.50	8.50	-3.50	-3.50	25	3.80	7.60	-8.20	-4.40
0	0	8.50	8.50	-3.50	-3.50	35	2.60	2.60	-9.40	-9.40
2	-2	8.90	9.30	-3.10	-2.70	37	4.30	3.50	-7.70	-8.50
4	-4	9.50	10.40	-2.50	-1.60	39	5.60	4.90	-6.40	-7.10
6	-6	10.80	11.00	-1.20	-1.00	41	7.30	6.20	-4.70	-5.80
8	-8	10.70	11.80	-1.30	-0.20	43	8.10	7.30	-3.90	-4.70
10	-10	9.40	11.80	-2.60	-0.20	45	9.20	8.30	-2.80	-3.70
12	-12	7.90	12.00	-4.10	0.00	47	10.10	9.40	-1.90	-2.60
14	-14	6.80		-5.20		49	11.00	10.20	-1.00	-1.80
16	-16	5.60		-6.40		51	11.30	12.00	-0.70	0.00
18	-18	4.30		-7.70		53	11.40		-0.60	
20	-20	3.00		-9.00		55	11.60		-0.40	
22	-22	2.20		-9.80		57	11.70		-0.30	
24	-24	2.60		-9.40		59	11.90		-0.10	
26	-26	2.60		-9.40		61	12.00		0.00	
28	-28	6.60		-5.40		63				
30	-30	7.10		-4.90		65				

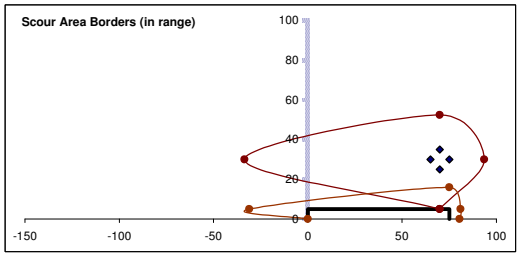
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.40	-2.60
2	9.70	-2.30
4	10.70	-1.30
6	11.70	-0.30
8	11.80	-0.20
10	12.00	0.00
12		
14		
16		
18		
20		

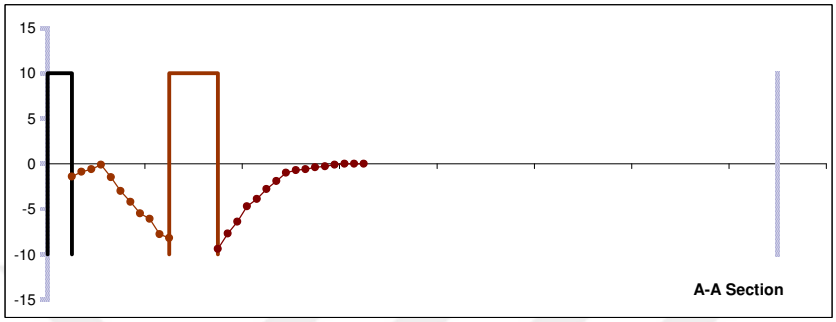
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	5.5
SB_{af}	Abutment Corner Front	6
SB_{ar}	Abutment Corner Right	*11.0*
SB_{pl}	Pier Left	*20.0*
SB_{pf}	Pier Front	18.5
SB_{pr}	Pier Right	17.5
SB_{pb}	Pier Rear	98.5

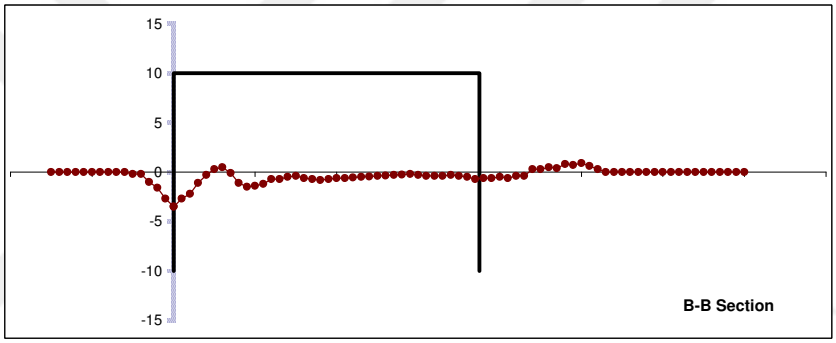


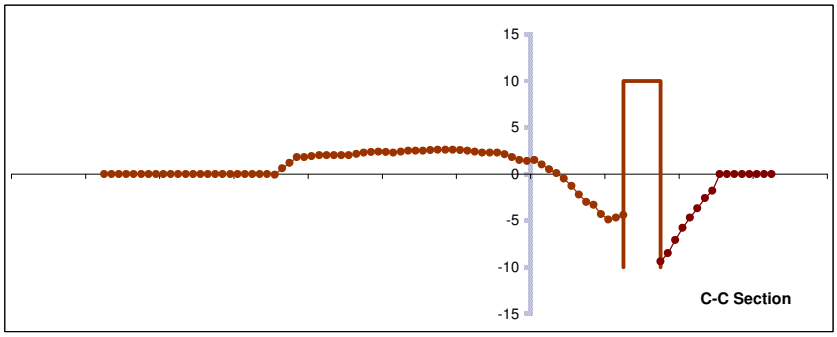
Experiment No : **E96**

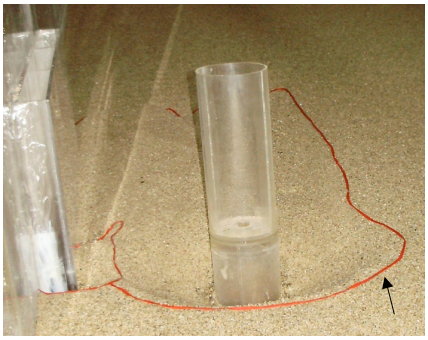


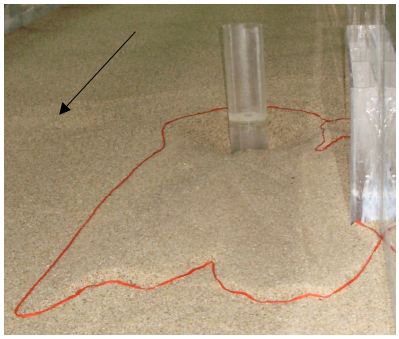






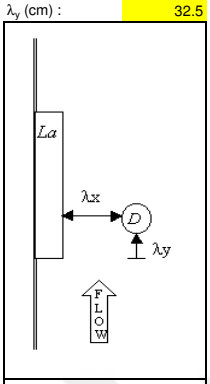


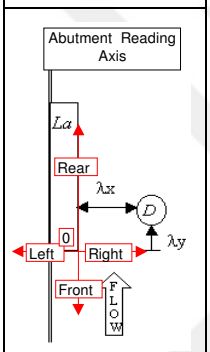


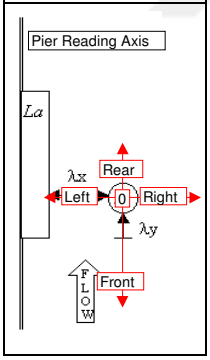


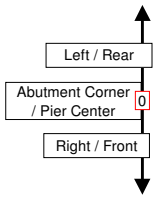
Experiment No : **E97**

Date :	03.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	32.5









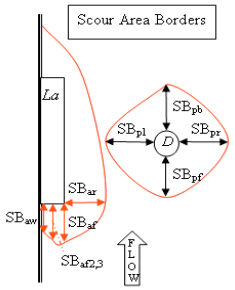
This color was used for raw data readings

This color was used for values enterpolated to sketch

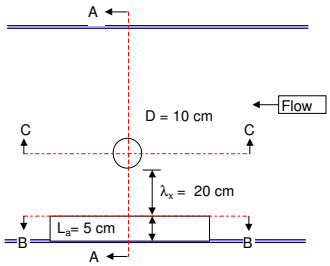
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-115				
-138	138					-113				
-136	136					-111				
-134	134					-109				
-132	132					-107				
-130	130					-105				
-128	128					-103				
-126	126					-101				
-124	124		12.00		0.00	-99				
-122	122		12.00		0.00	-97				
-120	120		12.70		0.70	-95				
-118	118		13.80		1.80	-93				
-116	116		13.00		1.00	-91				
-114	114		13.10		1.10	-89				
-112	112		12.70		0.70	-87				
-110	110		13.10		1.10	-85				
-108	108		13.40		1.40	-83				
-106	106		13.40		1.40	-81				
-104	104		13.70		1.70	-79				
-102	102		13.60		1.60	-77				
-100	100		13.50		1.50	-75				
-98	98		13.60		1.60	-73				
-96	96		13.40		1.40	-71				
-94	94		13.30		1.30	-69				
-92	92		13.20		1.20	-67				
-90	90		12.80		0.80	-65				
-88	88		12.90		0.90	-63				
-86	86		12.50		0.50	-61				
-84	84		12.10		0.10	-59				
-82	82		12.10		0.10	-57				
-80	80		12.00		0.00	-55		12.00		0.00
-78	78		11.80		-0.20	-53		11.80		-0.20
-76	76		11.80		-0.20	-51		13.80		1.80
-74	74		12.00		0.00	-49		14.10		2.10
-72	72		12.10		0.10	-47		14.40		2.40
-70	70		12.10		0.10	-45		14.30		2.30
-68	68		12.00		0.00	-43		14.40		2.40
-66	66		12.20		0.20	-41		14.70		2.70
-64	64		12.20		0.20	-39		14.60		2.60
-62	62		*12.30*		0.30	-37		14.40		2.40
-60	60		12.40		0.40	-35		14.80		2.80
-58	58		*12.35*		0.35	-33		15.00		3.00
-56	56		12.30		0.30	-31		14.80		2.80
-54	54		*12.35*		0.35	-29		14.80		2.80
-52	52		12.40		0.40	-27		14.90		2.90
-50	50		*12.40*		0.40	-25		*15.05*		3.05
-48	48		12.40		0.40	-23		15.20		3.20
-46	46		*12.35*		0.35	-21		*15.15*		3.15
-44	44		12.30		0.30	-19		15.10		3.10
-42	42		*12.20*		0.20	-17		*15.15*		3.15
-40	40		12.10		0.10	-15		15.20		3.20
-38	38		*11.95*		-0.05	-13		*15.15*		3.15
-36	36		11.80		-0.20	-11		15.10		3.10
-34	34		*11.70*		-0.30	-9		*14.90*		2.90
-32	32		11.60		-0.40	-7		14.70		2.70
-30	30		*11.60*		-0.40	-5		*14.55*		2.55
-28	28		11.60		-0.40	-3		14.40		2.40
-26	26		11.60		-0.40	-1		14.40		2.40
-24	24		11.60		-0.40	1		13.80		1.80
-22	22		11.60		-0.40	3		13.40		1.40
-20	20		11.50		-0.50	5	*11.90*	13.10	-0.10	1.10
-18	18		11.40		-0.60	7	11.90	12.50	-0.10	0.50
-16	16		11.50		-0.50	9	12.10	12.00	0.10	0.00
-14	14		11.60		-0.40	11	11.40	11.60	-0.60	-0.40
-12	12		12.80		0.80	13	10.20	10.90	-1.80	-1.10
-10	10		12.40		0.40	15	9.00	9.70	-3.00	-2.30
-8	8		12.10		0.10	17	7.90	8.80	-4.10	-3.20
-6	6		11.20		-0.80	19	7.60	8.30	-4.40	-3.70
-4	4	8.90	9.90	-3.10	-2.10	21	5.90	7.60	-6.10	-4.40
-2	2	8.80	9.20	-3.20	-2.80	23	4.50	7.80	-7.50	-4.20
0	0	8.60	8.60	-3.40	-3.40	25	4.10	7.90	-7.90	-4.10
0	0	8.60	8.60	-3.40	-3.40	35	4.00	2.30	-8.00	-9.70
2	-2	9.20	9.50	-2.80	-2.50	37	3.90	3.50	-8.10	-8.50
4	-4	10.70	10.90	-1.30	-1.10	39	5.30	4.90	-6.70	-7.10
6	-6	11.20	11.80	-0.80	-0.20	41	6.90	5.80	-5.10	-6.20
8	-8	11.40	12.00	-0.60	0.00	43	8.20	7.30	-3.80	-4.70
10	-10	11.40		-0.60		45	9.40	8.50	-2.60	-3.50
12	-12	11.60		-0.40		47	10.00	10.00	-2.00	-2.00
14	-14	11.50		-0.50		49	10.60	11.10	-1.40	-0.90
16	-16	11.50		-0.50		51	11.60	12.00	-0.40	0.00
18	-18	11.80		-0.20		53	12.00		0.00	
20	-20					55				
22	-22					57				
24	-24					59				
26	-26					61				
28	-28					63				
30	-30					65				

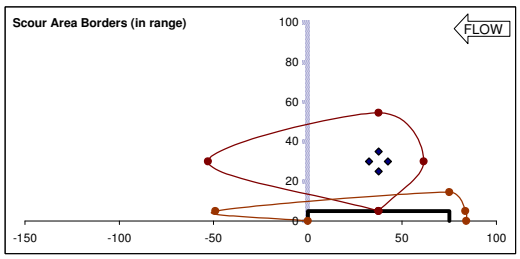
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.90	-2.10
2	10.10	-1.90
4	11.40	-0.60
6	12.00	0.00
8		
10		
12		
14		
16		
18		
20		

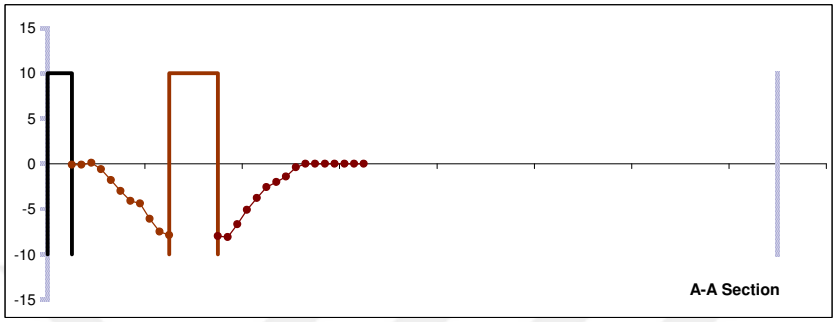
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	9
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	9.5
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	19
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	85.5

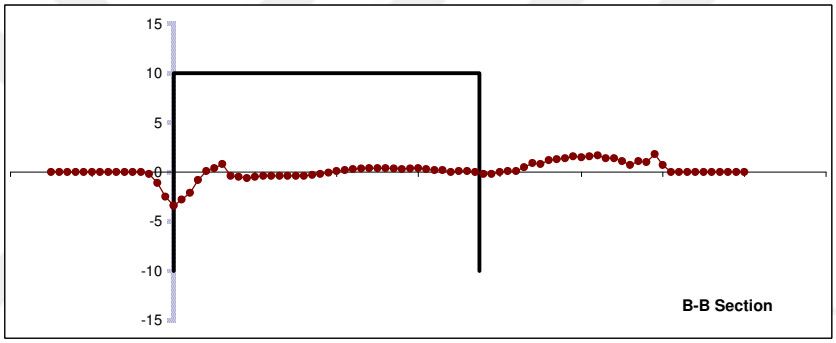


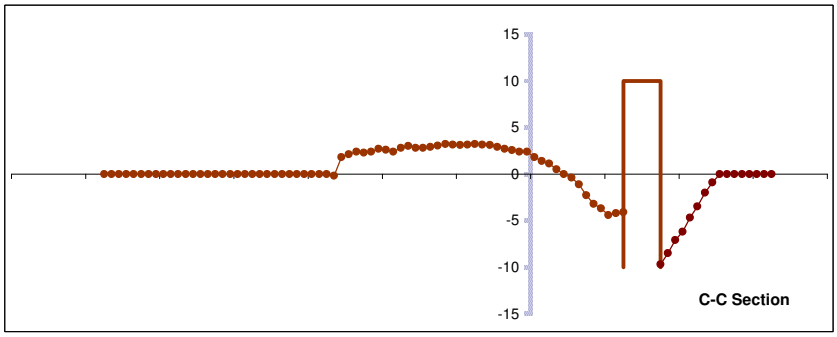
Experiment No : **E97**

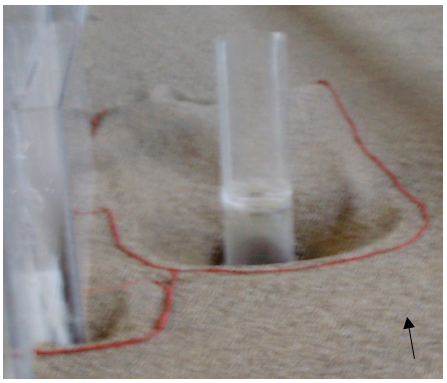


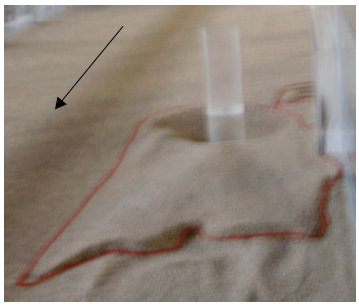






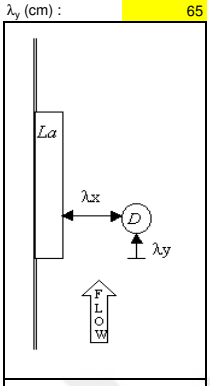


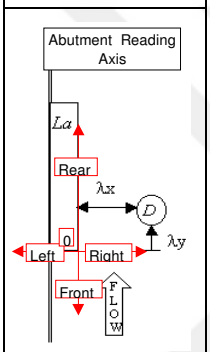


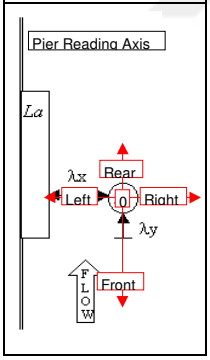


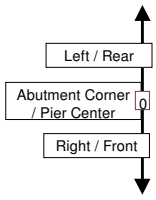
Experiment No : **E98**

Date :	09.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	65









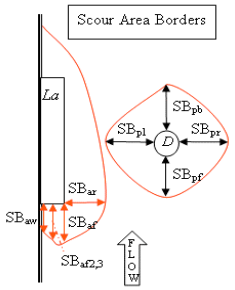
This color was used for raw data readings

This color was used for values enterpolated to sketch

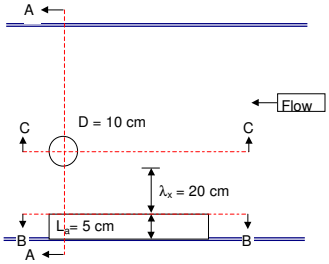
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140		*12.95*		0.95	-115				
-138	138		13.00		1.00	-113				
-136	136		*12.90*		0.90	-111				
-134	134		12.80		0.80	-109				
-132	132		*12.65*		0.65	-107				
-130	130		12.50		0.50	-105				
-128	128		*12.45*		0.45	-103				
-126	126		12.40		0.40	-101				
-124	124		*12.45*		0.45	-99				
-122	122		12.50		0.50	-97				
-120	120		*12.35*		0.35	-95				
-118	118		12.20		0.20	-93				
-116	116		*12.30*		0.30	-91				
-114	114		12.40		0.40	-89				
-112	112		12.50		0.50	-87				
-110	110		12.70		0.70	-85				
-108	108		12.70		0.70	-83				
-106	106		12.80		0.80	-81				
-104	104		13.00		1.00	-79				
-102	102		13.00		1.00	-77				
-100	100		13.30		1.30	-75				
-98	98		13.30		1.30	-73				
-96	96		13.30		1.30	-71				
-94	94		13.20		1.20	-69				
-92	92		13.00		1.00	-67				
-90	90		12.70		0.70	-65				
-88	88		12.50		0.50	-63				
-86	86		12.30		0.30	-61		12.00		0.00
-84	84		11.80		-0.20	-59		11.80		-0.20
-82	82		11.60		-0.40	-57		11.50		-0.50
-80	80		11.60		-0.40	-55		11.50		-0.50
-78	78		11.40		-0.60	-53		11.70		-0.30
-76	76		11.30		-0.70	-51		12.50		0.50
-74	74		11.40		-0.60	-49		13.70		1.70
-72	72		11.50		-0.50	-47		14.20		2.20
-70	70		11.40		-0.60	-45		14.20		2.20
-68	68		11.80		-0.20	-43		14.30		2.30
-66	66		11.70		-0.30	-41		*14.60*		2.60
-64	64		11.80		-0.20	-39		14.90		2.90
-62	62		11.90		-0.10	-37		*14.85*		2.85
-60	60		11.80		-0.20	-35		14.80		2.80
-58	58		11.70		-0.30	-33		*15.00*		3.00
-56	56		11.70		-0.30	-31		15.20		3.20
-54	54		11.60		-0.40	-29		*15.35*		3.35
-52	52		11.40		-0.60	-27		15.50		3.50
-50	50		11.50		-0.50	-25		*15.40*		3.40
-48	48		11.40		-0.60	-23		15.30		3.30
-46	46		11.50		-0.50	-21		*15.45*		3.45
-44	44		11.40		-0.60	-19		15.60		3.60
-42	42		11.40		-0.60	-17		*15.60*		3.60
-40	40		11.40		-0.60	-15		15.60		3.60
-38	38		11.40		-0.60	-13		*15.50*		3.50
-36	36		11.50		-0.50	-11		15.40		3.40
-34	34		11.60		-0.40	-9		15.20		3.20
-32	32		12.30		0.30	-7		15.40		3.40
-30	30		12.00		0.00	-5		15.20		3.20
-28	28		12.00		0.00	-3		14.70		2.70
-26	26		11.90		-0.10	-1		14.70		2.70
-24	24		11.60		-0.40	1		14.60		2.60
-22	22		11.50		-0.50	3		14.10		2.10
-20	20		11.20		-0.80	5	*11.40*	13.70	-0.60	1.70
-18	18		11.60		-0.40	7	11.20	13.10	-0.80	1.10
-16	16		12.10		0.10	9	11.20	12.50	-0.80	0.50
-14	14		12.80		0.80	11	11.20	12.00	-0.80	0.00
-12	12		12.60		0.60	13	10.20	11.30	-1.80	-0.70
-10	10		12.30		0.30	15	9.50	10.40	-2.50	-1.60
-8	8		11.80		-0.20	17	9.40	9.50	-2.60	-2.50
-6	6		11.10		-0.90	19	7.60	8.70	-4.40	-3.30
-4	4	9.20	9.90	-2.80	-2.10	21	6.50	8.40	-5.50	-3.60
-2	2	8.40	8.80	-3.60	-3.20	23	5.00	7.80	-7.00	-4.20
0	0	8.00	8.00	-4.00	-4.00	25	3.70	7.70	-8.30	-4.30
0	0	8.00	8.00	-4.00	-4.00	35	4.70	2.60	-7.30	-9.40
2	-2	8.80	8.60	-3.20	-3.40	37	4.10	3.30	-7.90	-8.70
4	-4	9.20	10.00	-2.80	-2.00	39	5.00	4.80	-7.00	-7.20
6	-6	10.70	11.10	-1.30	-0.90	41	6.40	5.90	-5.60	-6.10
8	-8	11.40	12.00	-0.60	0.00	43	7.80	7.20	-4.20	-4.80
10	-10	11.70		-0.30		45	9.00	8.40	-3.00	-3.60
12	-12	12.00		0.00		47	9.70	9.70	-2.30	-2.30
14	-14					49	10.70	11.10	-1.30	-0.90
16	-16					51	11.80	12.00	-0.20	0.00
18	-18					53	12.00		0.00	
20	-20					55				
22	-22					57				
24	-24					59				
26	-26					61				
28	-28					63				
30	-30					65				

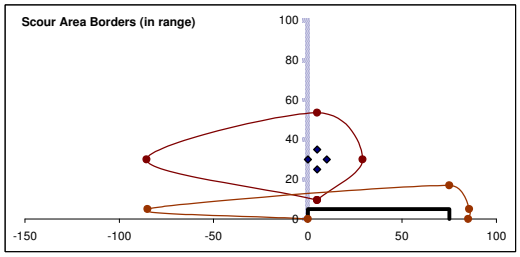
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.20	-2.80
2	9.30	-2.70
4	10.20	-1.80
6	11.40	-0.60
8	12.00	0.00
10		
12		
14		
16		
18		
20		

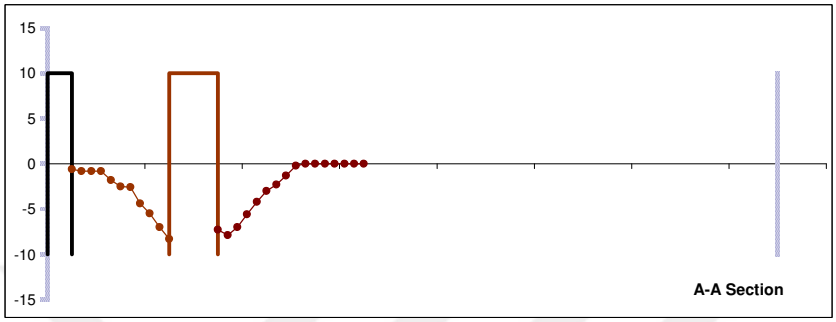
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	10.5
SB_{ar}	Abutment Corner Right	*12*
SB_{pl}	Pier Left	15.5
SB_{pf}	Pier Front	19
SB_{pr}	Pier Right	18.5
SB_{pb}	Pier Rear	85.5

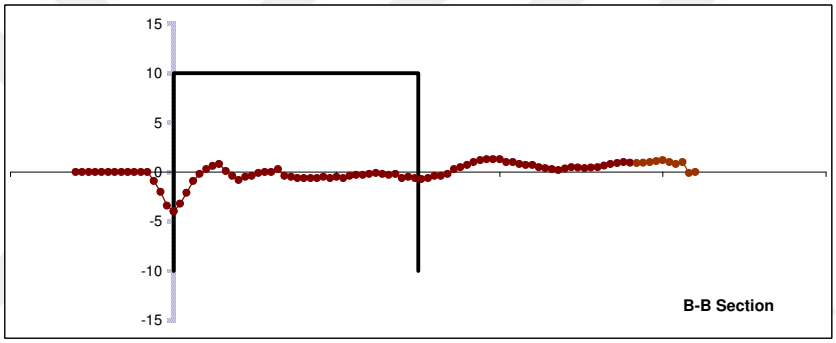


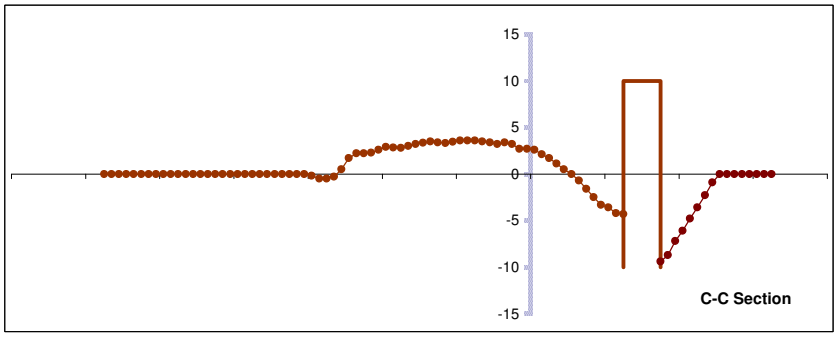
Experiment No : **E98**

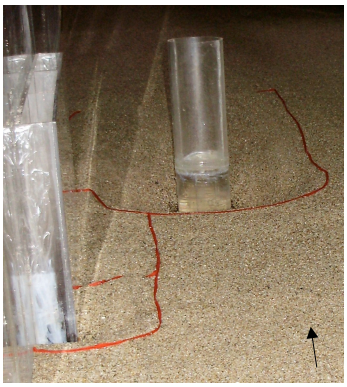


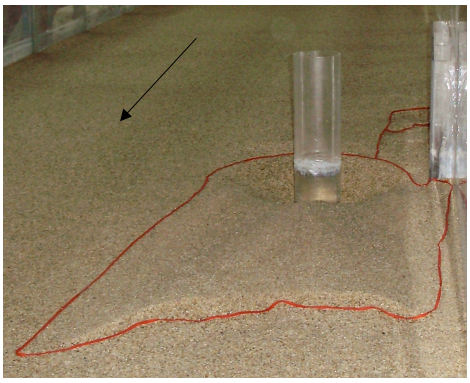






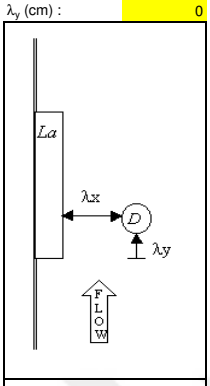


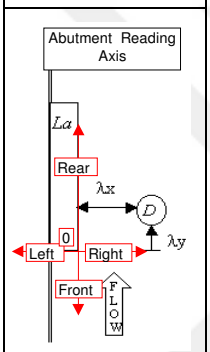


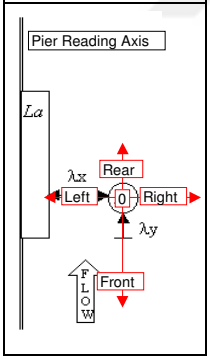


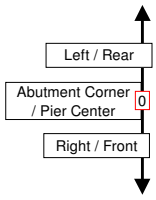
Experiment No : **E99**

Date :	11.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	0









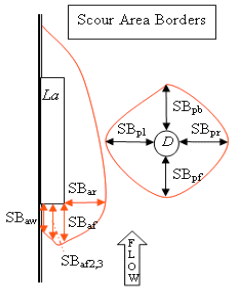
This color was used for raw data readings

This color was used for values enterpolated to sketch

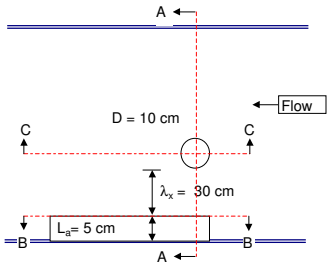
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-105				
-138	138					-103				
-136	136					-101				
-134	134					-99				
-132	132					-97				
-130	130					-95				
-128	128					-93				
-126	126					-91				
-124	124					-89				
-122	122					-87				
-120	120					-85				
-118	118					-83				
-116	116					-81				
-114	114					-79				
-112	112					-77				
-110	110					-75				
-108	108					-73				
-106	106					-71				
-104	104					-69				
-102	102					-67				
-100	100					-65				
-98	98					-63				
-96	96					-61				
-94	94					-59				
-92	92					-57				
-90	90		12.00		0.00	-55				
-88	88		11.80		-0.20	-53				
-86	86		11.60		-0.40	-51		12.00		0.00
-84	84		11.40		-0.60	-49		12.70		0.70
-82	82		11.30		-0.70	-47		12.80		0.80
-80	80		11.00		-1.00	-45		13.40		1.40
-78	78		11.20		-0.80	-43		13.70		1.70
-76	76		11.20		-0.80	-41		13.80		1.80
-74	74		*11.20*		-0.80	-39		13.60		1.60
-72	72		11.20		-0.80	-37		13.60		1.60
-70	70		*11.10*		-0.90	-35		13.70		1.70
-68	68		11.00		-1.00	-33		13.80		1.80
-66	66		*11.20*		-0.80	-31		14.10		2.10
-64	64		11.40		-0.60	-29		14.00		2.00
-62	62		*11.50*		-0.50	-27		*14.05*		2.05
-60	60		11.60		-0.40	-25		14.10		2.10
-58	58		*11.60*		-0.40	-23		*14.25*		2.25
-56	56		11.60		-0.40	-21		14.40		2.40
-54	54		*11.60*		-0.40	-19		*14.40*		2.40
-52	52		11.60		-0.40	-17		14.40		2.40
-50	50		*11.60*		-0.40	-15		*14.60*		2.60
-48	48		11.60		-0.40	-13		14.80		2.80
-46	46		*11.60*		-0.40	-11		*14.70*		2.70
-44	44		11.60		-0.40	-9		14.60		2.60
-42	42		*11.50*		-0.50	-7		*14.60*		2.60
-40	40		11.40		-0.60	-5		14.60		2.60
-38	38		*11.40*		-0.60	-3		14.30		2.30
-36	36		11.40		-0.60	-1		14.50		2.50
-34	34		*11.45*		-0.55	1		14.20		2.20
-32	32		11.50		-0.50	3		14.50		2.50
-30	30		*11.45*		-0.55	5	*10.30*	14.40	-1.70	2.40
-28	28		11.40		-0.60	7	11.00	13.90	-1.00	1.90
-26	26		11.40		-0.60	9	10.60	13.50	-1.40	1.50
-24	24		10.90		-1.10	11	11.40	13.40	-0.60	1.40
-22	22		10.70		-1.30	13	12.00	13.00	0.00	1.00
-20	20		10.90		-1.10	15	11.60	12.50	-0.40	0.50
-18	18		11.40		-0.60	17	11.10	12.10	-0.90	0.10
-16	16		12.10		0.10	19	10.60	11.60	-1.40	-0.40
-14	14		12.70		0.70	21	10.90	10.40	-1.10	-1.60
-12	12		12.20		0.20	23	10.40	9.90	-1.60	-2.10
-10	10		12.30		0.30	25	9.30	8.80	-2.70	-3.20
-8	8		11.70		-0.30	27	8.40	8.50	-3.60	-3.50
-6	6		10.70		-1.30	29	7.60	7.60	-4.40	-4.40
-4	4	8.50	9.90	-3.50	-2.10	31	6.40	7.30	-5.60	-4.70
-2	2	8.40	9.20	-3.60	-2.80	33	5.20	7.10	-6.80	-4.90
0	0	8.20	8.20	-3.80	-3.80	35	3.80	7.30	-8.20	-4.70
0	0	8.20	8.20	-3.80	-3.80	45	4.30	2.30	-7.70	-9.70
2	-2	8.50	9.10	-3.50	-2.90	47	3.90	2.90	-8.10	-9.10
4	-4	9.40	10.60	-2.60	-1.40	49	5.50	4.20	-6.50	-7.80
6	-6	10.90	11.70	-1.10	-0.30	51	6.90	6.00	-5.10	-6.00
8	-8	11.40	12.00	-0.60	0.00	53	8.20	7.10	-3.80	-4.90
10	-10	11.50		-0.50		55	9.20	8.20	-2.80	-3.80
12	-12	11.70		-0.30		57	9.60	9.40	-2.40	-2.60
14	-14	11.60		-0.40		59	10.40	10.60	-1.60	-1.40
16	-16	11.20		-0.80		61	11.40	11.60	-0.60	-0.40
18	-18	12.00		0.00		63	11.60	12.00	-0.40	0.00
20	-20					65	11.50		-0.50	
22	-22					67	12.00		0.00	
24	-24					69				
26	-26					71				
28	-28					73				
30	-30					75				

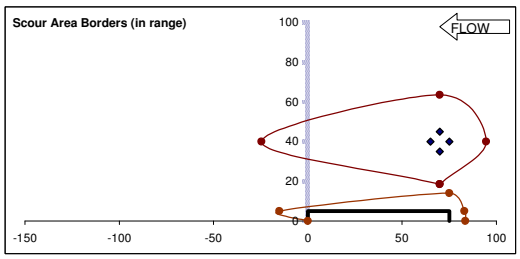
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.50	-3.50
2	9.00	-3.00
4	10.10	-1.90
6	11.30	-0.70
8	12.00	0.00
10		
12		
14		
16		
18		
20		

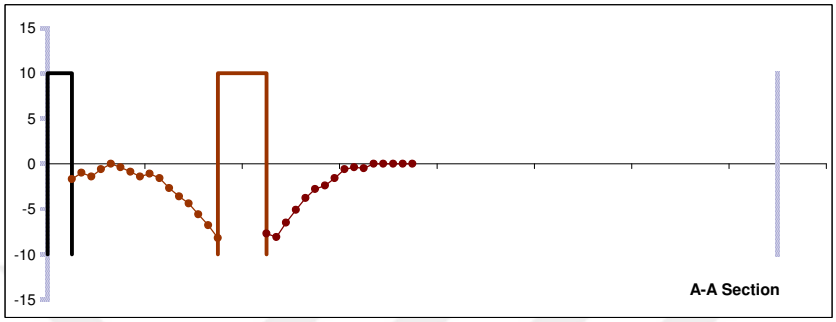
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	9
SB_{pl}	Pier Left	16.5
SB_{pf}	Pier Front	19.5
SB_{pr}	Pier Right	18.5
SB_{pb}	Pier Rear	89.5

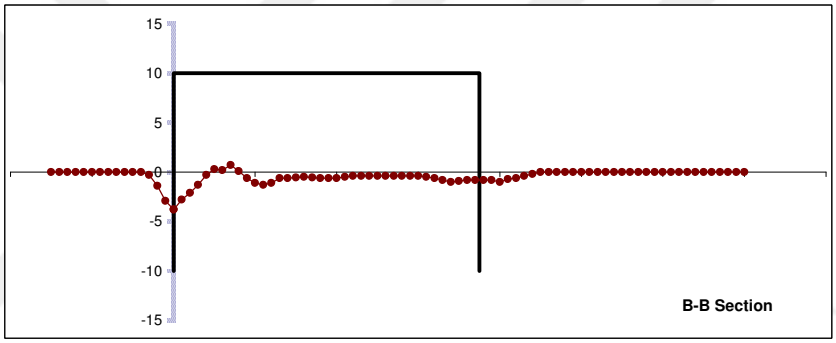


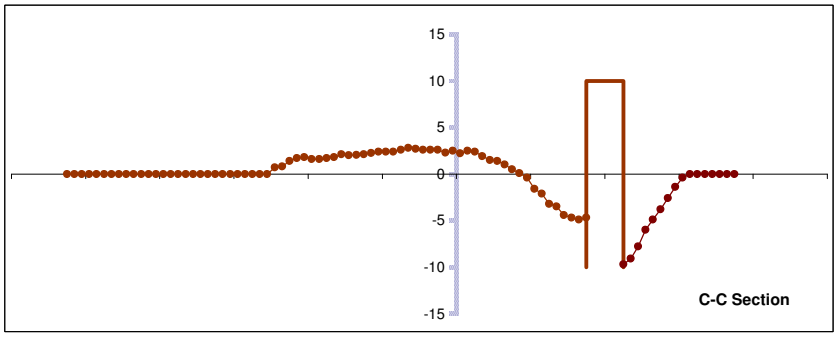
Experiment No : **E99**

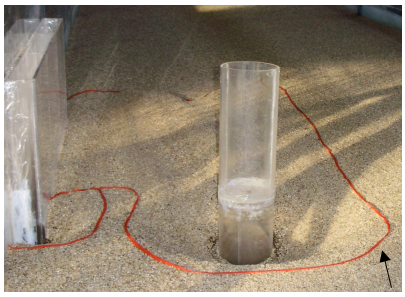


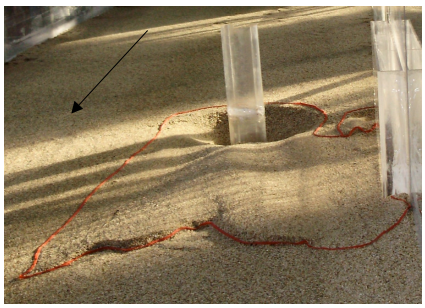






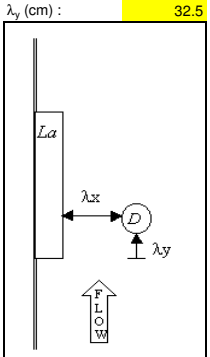


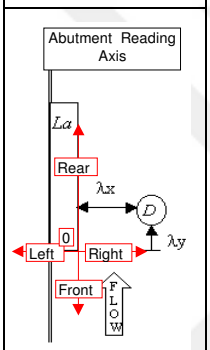


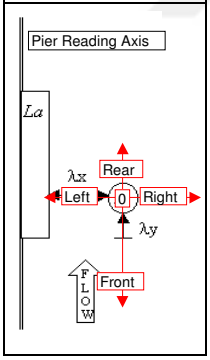


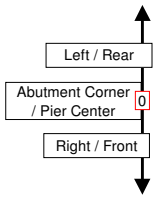
Experiment No : **E100**

Date :	13.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	32.5









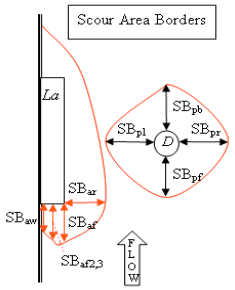
This color was used for raw data readings

This color was used for values enterpolated to sketch

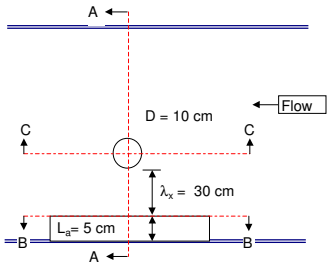
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-105				
-138	138					-103				
-136	136					-101				
-134	134					-99				
-132	132					-97				
-130	130					-95				
-128	128					-93				
-126	126					-91				
-124	124					-89				
-122	122					-87				
-120	120					-85				
-118	118					-83				
-116	116					-81				
-114	114					-79				
-112	112					-77				
-110	110					-75				
-108	108					-73				
-106	106					-71				
-104	104					-69				
-102	102					-67		12.00		0.00
-100	100					-65		11.90		-0.10
-98	98		12.00		0.00	-63		11.60		-0.40
-96	96		12.50		0.50	-61		11.80		-0.20
-94	94		12.70		0.70	-59		12.40		0.40
-92	92		12.50		0.50	-57		13.60		1.60
-90	90		12.40		0.40	-55		13.60		1.60
-88	88		11.80		-0.20	-53		13.90		1.90
-86	86		12.10		0.10	-51		*14.00*		2.00
-84	84		12.20		0.20	-49		14.10		2.10
-82	82		12.30		0.30	-47		*14.25*		2.25
-80	80		12.10		0.10	-45		14.40		2.40
-78	78		12.10		0.10	-43		*14.60*		2.60
-76	76		11.80		-0.20	-41		14.80		2.80
-74	74		11.60		-0.40	-39		*14.55*		2.55
-72	72		*11.70*		-0.30	-37		14.30		2.30
-70	70		11.80		-0.20	-35		*14.45*		2.45
-68	68		*11.95*		-0.05	-33		14.60		2.60
-66	66		12.10		0.10	-31		*14.65*		2.65
-64	64		*12.15*		0.15	-29		14.70		2.70
-62	62		12.20		0.20	-27		*14.80*		2.80
-60	60		*12.25*		0.25	-25		14.90		2.90
-58	58		12.30		0.30	-23		*14.90*		2.90
-56	56		*12.25*		0.25	-21		14.90		2.90
-54	54		12.20		0.20	-19		*14.90*		2.90
-52	52		*12.25*		0.25	-17		14.90		2.90
-50	50		12.30		0.30	-15		*14.90*		2.90
-48	48		*12.30*		0.30	-13		14.90		2.90
-46	46		12.30		0.30	-11		*14.90*		2.90
-44	44		*12.35*		0.35	-9		14.90		2.90
-42	42		12.40		0.40	-7		*14.90*		2.90
-40	40		12.30		0.30	-5		14.90		2.90
-38	38		12.40		0.40	-3		15.00		3.00
-36	36		12.30		0.30	-1		14.90		2.90
-34	34		12.50		0.50	1		14.80		2.80
-32	32		12.50		0.50	3		14.60		2.60
-30	30		12.40		0.40	5	11.80	14.30	-0.20	2.30
-28	28		12.30		0.30	7	11.40	14.10	-0.60	2.10
-26	26		12.20		0.20	9	11.70	14.20	-0.30	2.20
-24	24		12.10		0.10	11	11.60	13.70	-0.40	1.70
-22	22		11.60		-0.40	13	11.60	13.40	-0.40	1.40
-20	20		11.60		-0.40	15	12.10	12.90	0.10	0.90
-18	18		11.80		-0.20	17	11.80	12.30	-0.20	0.30
-16	16		12.30		0.30	19	11.20	11.80	-0.80	-0.20
-14	14		12.70		0.70	21	10.50	11.10	-1.50	-0.90
-12	12		13.10		1.10	23	9.80	10.20	-2.20	-1.80
-10	10		13.00		1.00	25	8.60	9.50	-3.40	-2.50
-8	8		12.00		0.00	27	7.30	8.70	-4.70	-3.30
-6	6		11.30		-0.70	29	6.00	8.10	-6.00	-3.90
-4	4	9.40	9.90	-2.60	-2.10	31	4.80	7.60	-7.20	-4.40
-2	2	9.20	9.30	-2.80	-2.70	33	3.50	7.10	-8.50	-4.90
0	0	8.60	8.60	-3.40	-3.40	35	4.00	7.80	-8.00	-4.20
0	0	8.60	8.60	-3.40	-3.40	45	3.70	2.40	-8.30	-9.60
2	-2	9.20	9.30	-2.80	-2.70	47	4.00	3.20	-8.00	-8.80
4	-4	10.60	10.70	-1.40	-1.30	49	5.60	4.50	-6.40	-7.50
6	-6	11.30	12.00	-0.70	0.00	51	7.10	6.00	-4.90	-6.00
8	-8	11.60		-0.40		53	8.00	7.20	-4.00	-4.80
10	-10	11.70		-0.30		55	9.20	8.40	-2.80	-3.60
12	-12	11.80		-0.20		57	9.90	9.50	-2.10	-2.50
14	-14	12.00		0.00		59	10.90	11.20	-1.10	-0.80
16	-16					61	11.40	12.00	-0.60	0.00
18	-18					63	11.50		-0.50	
20	-20					65	11.60		-0.40	
22	-22					67	12.00		0.00	
24	-24					69				
26	-26					71				
28	-28					73				
30	-30					75				

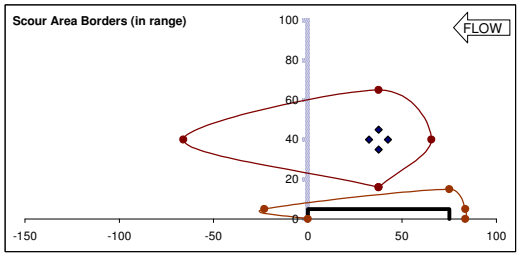
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.40	-2.60
2	9.50	-2.50
4	11.00	-1.00
6	11.80	-0.20
8	12.00	0.00
10		
12		
14		
16		
18		
20		

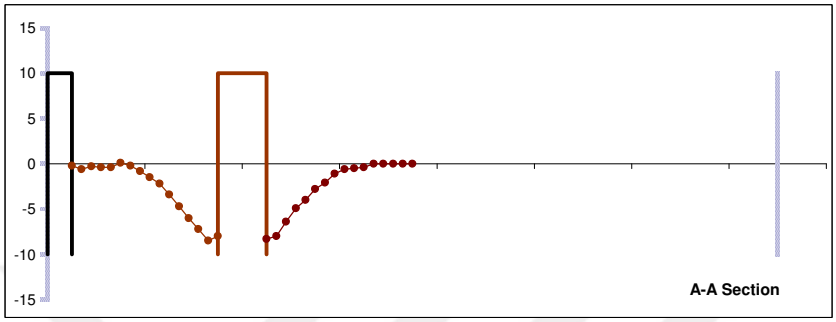
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	8.5
SB_{ar}	Abutment Corner Right	10
SB_{pl}	Pier Left	19
SB_{pf}	Pier Front	23
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	98.5

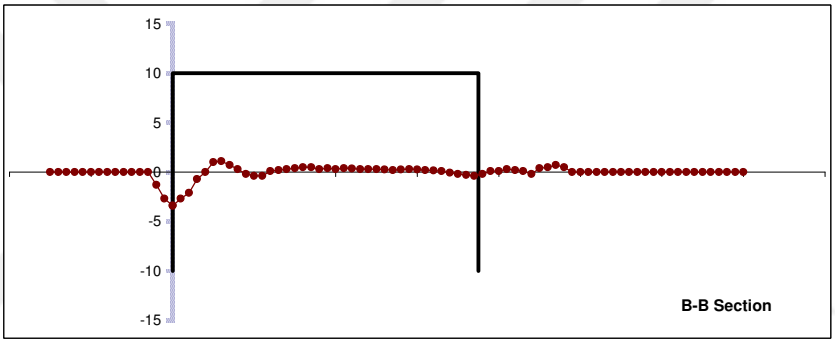


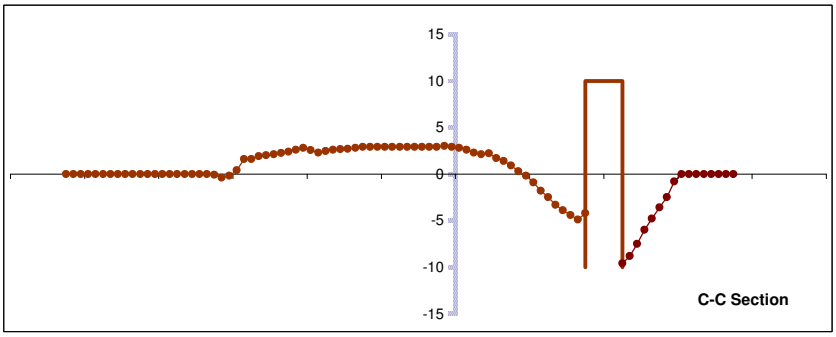
Experiment No : **E100**

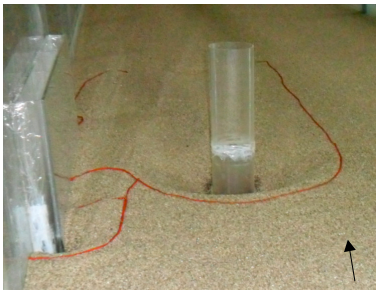


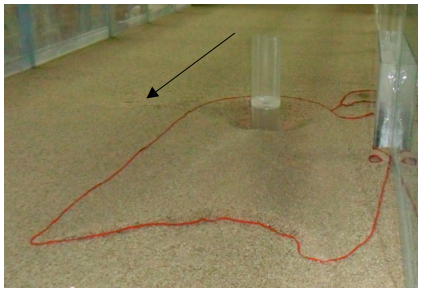






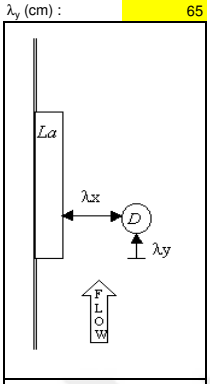


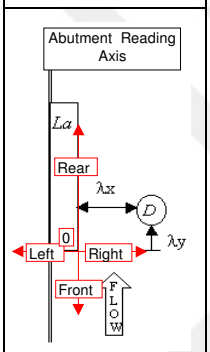


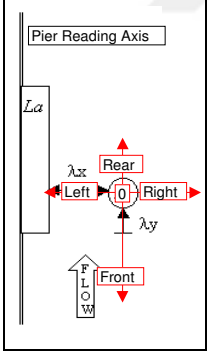


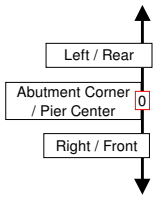
Experiment No : **E101**

Date :	17.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	65









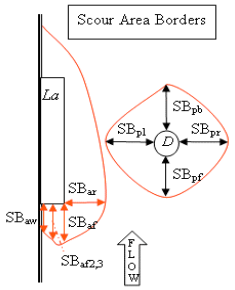
This color was used for raw data readings

This color was used for values enterpolated to sketch

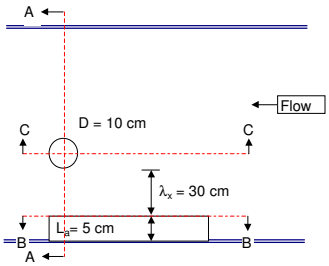
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-105				
-138	138					-103				
-136	136					-101				
-134	134					-99				
-132	132					-97				
-130	130					-95				
-128	128					-93				
-126	126					-91				
-124	124		12.00		0.00	-89				
-122	122		*12.20*		0.20	-87				
-120	120		12.40		0.40	-85				
-118	118		*12.50*		0.50	-83				
-116	116		12.60		0.60	-81				
-114	114		*12.60*		0.60	-79				
-112	112		12.60		0.60	-77				
-110	110		*12.75*		0.75	-75				
-108	108		12.90		0.90	-73				
-106	106		*12.90*		0.90	-71				
-104	104		12.90		0.90	-69				
-102	102		*12.90*		0.90	-67				
-100	100		12.90		0.90	-65				
-98	98		*12.80*		0.80	-63				
-96	96		12.70		0.70	-61				
-94	94		*12.85*		0.85	-59				
-92	92		13.00		1.00	-57				
-90	90		*12.90*		0.90	-55				
-88	88		12.80		0.80	-53				
-86	86		*12.85*		0.85	-51				
-84	84		12.90		0.90	-49				
-82	82		*12.75*		0.75	-47				
-80	80		12.60		0.60	-45				
-78	78		*12.50*		0.50	-43		12.00		0.00
-76	76		12.40		0.40	-41		12.70		0.70
-74	74		*12.45*		0.45	-39		14.30		2.30
-72	72		12.50		0.50	-37		14.90		2.90
-70	70		*12.55*		0.55	-35		*14.85*		2.85
-68	68		12.60		0.60	-33		14.80		2.80
-66	66		*12.65*		0.65	-31		*14.85*		2.85
-64	64		12.70		0.70	-29		14.90		2.90
-62	62		*12.75*		0.75	-27		*15.05*		3.05
-60	60		12.80		0.80	-25		15.20		3.20
-58	58		*12.75*		0.75	-23		*15.25*		3.25
-56	56		12.70		0.70	-21		15.30		3.30
-54	54		*12.70*		0.70	-19		*15.30*		3.30
-52	52		12.70		0.70	-17		15.30		3.30
-50	50		*12.65*		0.65	-15		*15.20*		3.20
-48	48		12.60		0.60	-13		15.10		3.10
-46	46		*12.65*		0.65	-11		*15.20*		3.20
-44	44		12.70		0.70	-9		15.30		3.30
-42	42		*12.70*		0.70	-7		15.30		3.30
-40	40		12.70		0.70	-5		15.20		3.20
-38	38		*12.75*		0.75	-3		15.60		3.60
-36	36		12.80		0.80	-1		15.00		3.00
-34	34		12.70		0.70	1		14.80		2.80
-32	32		12.80		0.80	3		15.00		3.00
-30	30		12.40		0.40	5	11.90	14.80	-0.10	2.80
-28	28		12.30		0.30	7	11.80	14.60	-0.20	2.60
-26	26		12.30		0.30	9	11.60	14.60	-0.40	2.60
-24	24		12.20		0.20	11	11.60	14.20	-0.40	2.20
-22	22		12.50		0.50	13	11.70	14.20	-0.30	2.20
-20	20		13.00		1.00	15	11.50	13.60	-0.50	1.60
-18	18		13.60		1.60	17	11.70	13.00	-0.30	1.00
-16	16		13.50		1.50	19	11.60	12.50	-0.40	0.50
-14	14		13.40		1.40	21	11.10	11.70	-0.90	-0.30
-12	12		13.20		1.20	23	10.20	10.60	-1.80	-1.40
-10	10		12.70		0.70	25	9.20	9.80	-2.80	-2.20
-8	8		11.60		-0.40	27	8.30	9.00	-3.70	-3.00
-6	6		10.80		-1.20	29	6.90	8.40	-5.10	-3.60
-4	4	8.90	9.90	-3.10	-2.10	31	5.90	7.30	-6.10	-4.70
-2	2	8.30	8.90	-3.70	-3.10	33	5.40	7.30	-6.60	-4.70
0	0	7.90	7.90	-4.10	-4.10	35	5.20	7.60	-6.80	-4.40
0	0	7.90	7.90	-4.10	-4.10	45	4.00	2.70	-8.00	-9.30
2	-2	8.70	8.60	-3.30	-3.40	47	4.40	2.60	-7.60	-9.40
4	-4	8.90	10.00	-3.10	-2.00	49	6.00	4.00	-6.00	-8.00
6	-6	10.30	11.20	-1.70	-0.80	51	7.10	5.60	-4.90	-6.40
8	-8	10.90	12.00	-1.10	0.00	53	8.50	6.40	-3.50	-5.60
10	-10	11.70		-0.30		55	9.70	8.00	-2.30	-4.00
12	-12	12.00		0.00		57	9.90	9.10	-2.10	-2.90
14	-14					59	11.10	10.40	-0.90	-1.60
16	-16					61	12.00	11.60	0.00	-0.40
18	-18					63		12.00		0.00
20	-20					65				
22	-22					67				
24	-24					69				
26	-26					71				
28	-28					73				
30	-30					75				

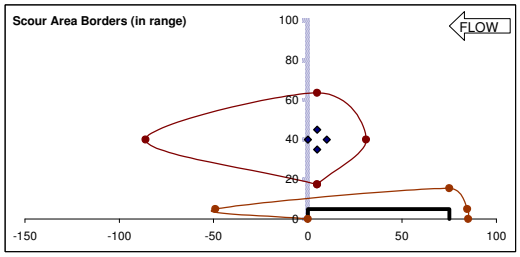
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.90	-3.10
2	8.80	-3.20
4	9.50	-2.50
6	10.60	-1.40
8	11.80	-0.20
10	12.00	0.00
12		
14		
16		
18		
20		

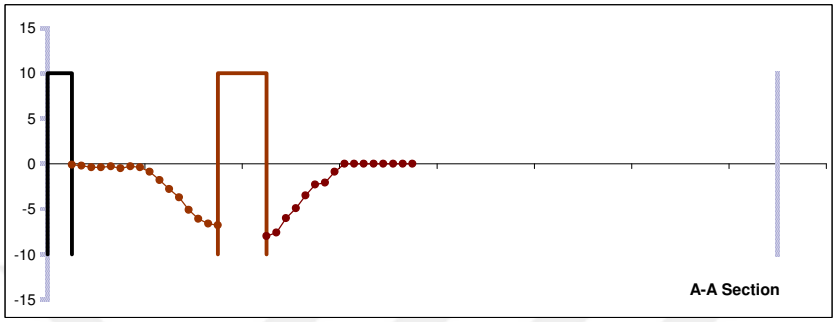
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	9.5
SB_{ar}	Abutment Corner Right	10.5
SB_{pl}	Pier Left	17.5
SB_{pf}	Pier Front	21
SB_{pr}	Pier Right	18.5
SB_{pb}	Pier Rear	86

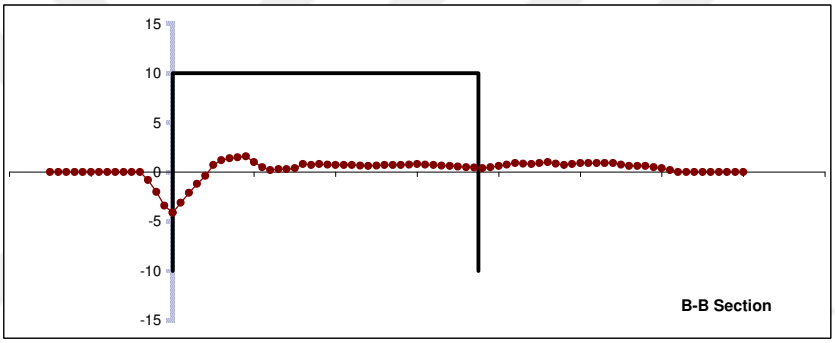


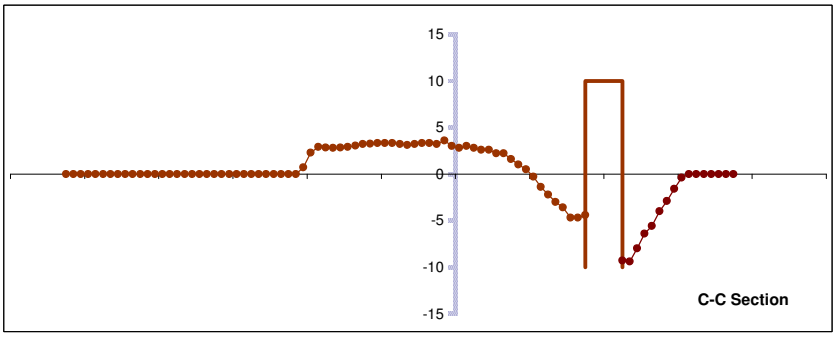
Experiment No : **E101**

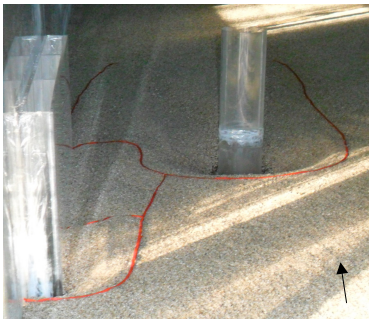


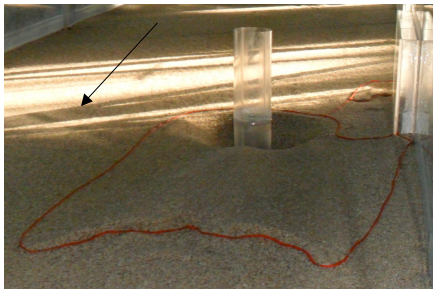






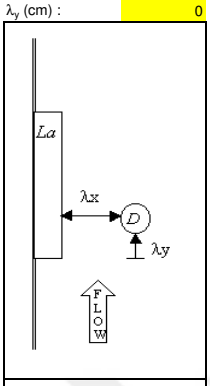


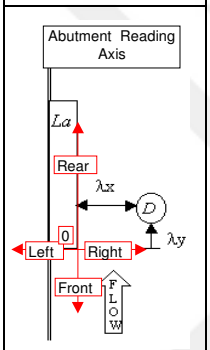


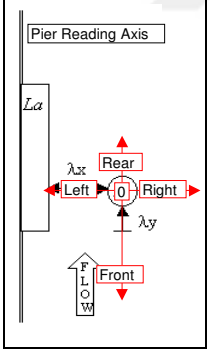


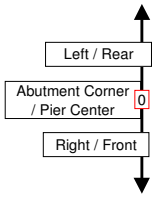
Experiment No : **E102**

Date :	19.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	0









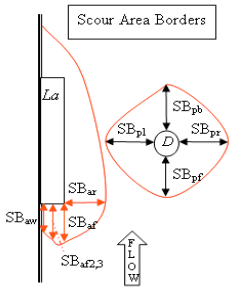
This color was used for raw data readings

This color was used for values enterpolated to sketch

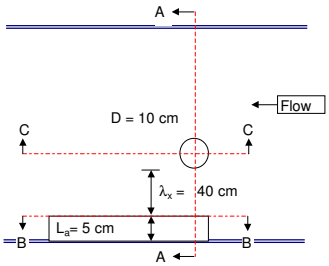
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-95				
-138	138					-93				
-136	136					-91				
-134	134					-89				
-132	132					-87				
-130	130					-85				
-128	128					-83				
-126	126					-81				
-124	124					-79				
-122	122					-77				
-120	120					-75				
-118	118					-73				
-116	116					-71				
-114	114					-69				
-112	112					-67				
-110	110					-65				
-108	108					-63				
-106	106					-61				
-104	104					-59		12.00		0.00
-102	102					-57		13.30		1.30
-100	100					-55		13.50		1.50
-98	98					-53		13.60		1.60
-96	96					-51		13.50		1.50
-94	94					-49		13.90		1.90
-92	92					-47		14.00		2.00
-90	90					-45		14.10		2.10
-88	88					-43		*14.25*		2.25
-86	86					-41		14.40		2.40
-84	84		12.00		0.00	-39		*14.40*		2.40
-82	82		*12.05*		0.05	-37		14.40		2.40
-80	80		12.10		0.10	-35		*14.45*		2.45
-78	78		*12.10*		0.10	-33		14.50		2.50
-76	76		12.10		0.10	-31		*14.50*		2.50
-74	74		*12.20*		0.20	-29		14.50		2.50
-72	72		12.30		0.30	-27		*14.50*		2.50
-70	70		*12.25*		0.25	-25		14.50		2.50
-68	68		12.20		0.20	-23		*14.65*		2.65
-66	66		*12.25*		0.25	-21		14.80		2.80
-64	64		12.30		0.30	-19		*14.85*		2.85
-62	62		*12.30*		0.30	-17		14.90		2.90
-60	60		12.30		0.30	-15		*14.95*		2.95
-58	58		*12.30*		0.30	-13		15.00		3.00
-56	56		12.30		0.30	-11		*15.05*		3.05
-54	54		*12.40*		0.40	-9		15.10		3.10
-52	52		12.50		0.50	-7		*15.10*		3.10
-50	50		*12.60*		0.60	-5		15.10		3.10
-48	48		12.70		0.70	-3		*15.15*		3.15
-46	46		*12.60*		0.60	-1		15.20		3.20
-44	44		12.50		0.50	1		*15.25*		3.25
-42	42		*12.65*		0.65	3		15.30		3.30
-40	40		12.80		0.80	5	8.90	15.30	-3.10	3.30
-38	38		*12.80*		0.80	7	8.60	15.10	-3.40	3.10
-36	36		12.80		0.80	9	8.70	15.00	-3.30	3.00
-34	34		*12.75*		0.75	11	10.30	14.80	-1.70	2.80
-32	32		12.70		0.70	13	11.10	14.60	-0.90	2.60
-30	30		12.80		0.80	15	12.30	14.40	0.30	2.40
-28	28		12.80		0.80	17	12.10	14.20	0.10	2.20
-26	26		12.90		0.90	19	12.00	14.00	0.00	2.00
-24	24		13.20		1.20	21	11.80	13.90	-0.20	1.90
-22	22		13.40		1.40	23	11.90	13.40	-0.10	1.40
-20	20		13.40		1.40	25	11.80	13.20	-0.20	1.20
-18	18		13.70		1.70	27	11.80	12.50	-0.20	0.50
-16	16		13.70		1.70	29	11.80	11.70	-0.20	-0.30
-14	14		13.30		1.30	31	11.50	10.90	-0.50	-1.10
-12	12		12.70		0.70	33	10.40	10.20	-1.60	-1.80
-10	10		12.30		0.30	35	9.00	9.40	-3.00	-2.60
-8	8		11.30		-0.70	37	8.00	8.80	-4.00	-3.20
-6	6		10.70		-1.30	39	6.80	8.10	-5.20	-3.90
-4	4	8.80	9.40	-3.20	-2.60	41	5.60	7.60	-6.40	-4.40
-2	2	9.40	8.50	-2.60	-3.50	43	4.10	7.60	-7.90	-4.40
0	0	7.90	7.90	-4.10	-4.10	45	3.40	7.80	-8.60	-4.20
0	0	7.90	7.90	-4.10	-4.10	55	3.30	2.60	-8.70	-9.40
2	-2	8.30	8.50	-3.70	-3.50	57	4.20	3.50	-7.80	-8.50
4	-4	9.90	9.80	-2.10	-2.20	59	6.20	5.00	-5.80	-7.00
6	-6	10.70	10.90	-1.30	-1.10	61	7.30	6.40	-4.70	-5.60
8	-8	11.70	12.00	-0.30	0.00	63	8.70	7.60	-3.30	-4.40
10	-10	11.90		-0.10		65	9.50	8.80	-2.50	-3.20
12	-12	12.00		0.00		67	10.40	10.20	-1.60	-1.80
14	-14					69	11.70	11.50	-0.30	-0.50
16	-16					71	12.00	12.00	0.00	0.00
18	-18					73				
20	-20					75				
22	-22					77				
24	-24					79				
26	-26					81				
28	-28					83				
30	-30					85				

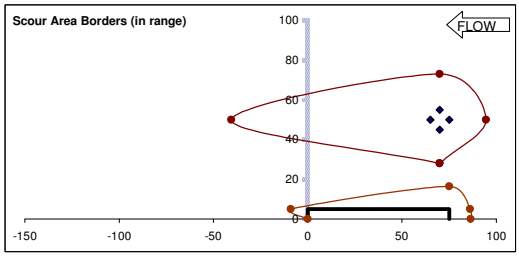
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.20	-3.80
2	8.80	-3.20
4	9.90	-2.10
6	11.00	-1.00
8	12.00	0.00
10		
12		
14		
16		
18		
20		

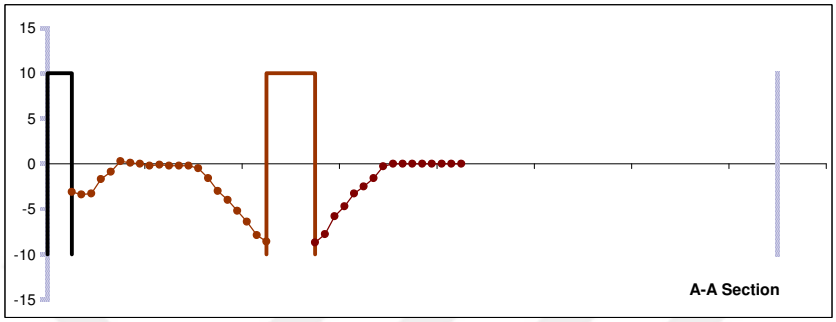
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	11.5
SB_{af}	Abutment Corner Front	11
SB_{ar}	Abutment Corner Right	11.5
SB_{pl}	Pier Left	17
SB_{pf}	Pier Front	19.5
SB_{pr}	Pier Right	18
SB_{pb}	Pier Rear	105.5

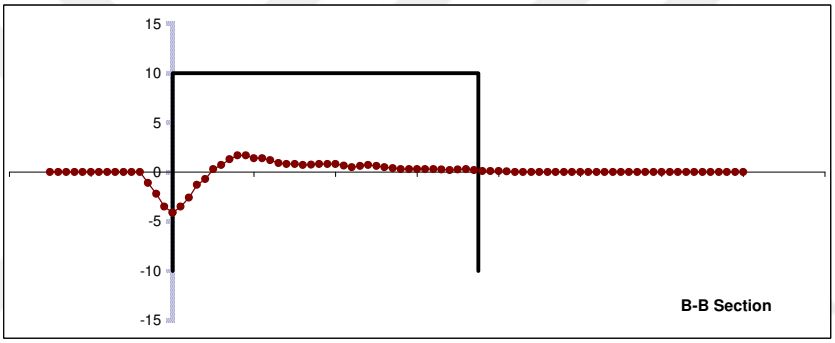


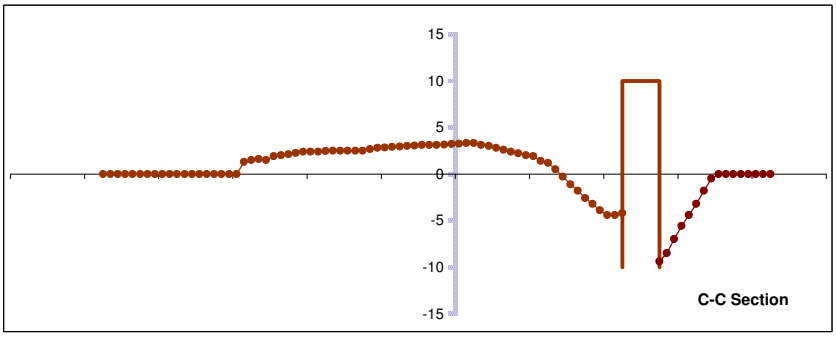
Experiment No : **E102**

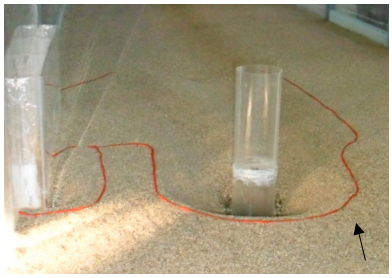


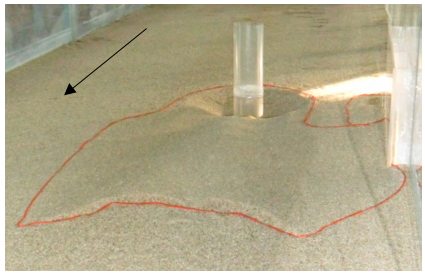






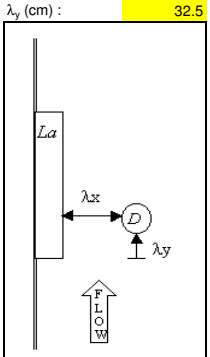


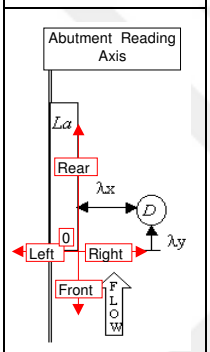


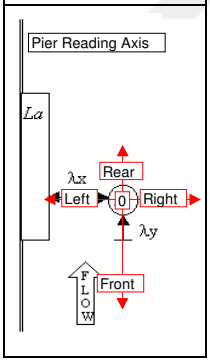


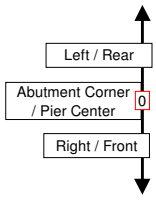
Experiment No : **E103**

Date :	23.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	32.5









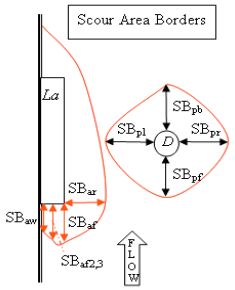
This color was used for raw data readings

This color was used for values enterpolated to sketch

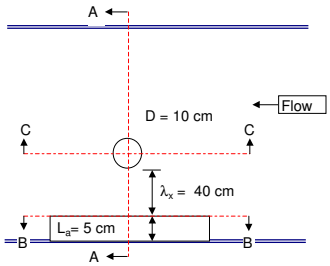
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-95				
-138	138					-93				
-136	136					-91				
-134	134					-89				
-132	132					-87				
-130	130					-85				
-128	128					-83				
-126	126					-81				
-124	124					-79				
-122	122					-77				
-120	120					-75				
-118	118					-73				
-116	116					-71				
-114	114					-69				
-112	112					-67				
-110	110					-65				
-108	108					-63				
-106	106					-61				
-104	104					-59				
-102	102					-57		12.00		0.00
-100	100					-55		11.70		-0.30
-98	98					-53		11.40		-0.60
-96	96					-51		11.30		-0.70
-94	94					-49		13.40		1.40
-92	92					-47		13.40		1.40
-90	90					-45		13.40		1.40
-88	88					-43		12.70		0.70
-86	86					-41		13.90		1.90
-84	84					-39		*14.05*		2.05
-82	82					-37		14.20		2.20
-80	80					-35		*14.25*		2.25
-78	78		12.00		0.00	-33		14.30		2.30
-76	76		*12.20*		0.20	-31		*14.50*		2.50
-74	74		12.40		0.40	-29		14.70		2.70
-72	72		*12.33*		0.33	-27		*14.77*		2.77
-70	70		*12.27*		0.27	-25		*14.84*		2.84
-68	68		12.20		0.20	-23		14.90		2.90
-66	66		*12.15*		0.15	-21		*14.85*		2.85
-64	64		12.10		0.10	-19		14.80		2.80
-62	62		*12.15*		0.15	-17		*14.85*		2.85
-60	60		12.20		0.20	-15		14.90		2.90
-58	58		*12.20*		0.20	-13		*14.95*		2.95
-56	56		12.20		0.20	-11		15.00		3.00
-54	54		*12.25*		0.25	-9		*14.95*		2.95
-52	52		12.30		0.30	-7		14.90		2.90
-50	50		*12.30*		0.30	-5		*14.90*		2.90
-48	48		12.30		0.30	-3		14.90		2.90
-46	46		*12.30*		0.30	-1		*15.00*		3.00
-44	44		12.30		0.30	1		15.10		3.10
-42	42		12.30		0.30	3		*15.05*		3.05
-40	40		12.40		0.40	5	*12.55*	15.00	0.55	3.00
-38	38		12.50		0.50	7	12.00	15.10	0.00	3.10
-36	36		12.80		0.80	9	12.60	15.00	0.60	3.00
-34	34		12.70		0.70	11	12.30	14.80	0.30	2.80
-32	32		12.50		0.50	13	12.20	14.90	0.20	2.90
-30	30		12.50		0.50	15	11.90	14.60	-0.10	2.60
-28	28		12.20		0.20	17	11.60	14.30	-0.40	2.30
-26	26		11.90		-0.10	19	11.70	14.10	-0.30	2.10
-24	24		11.70		-0.30	21	12.00	13.70	0.00	1.70
-22	22		11.80		-0.20	23	11.80	13.10	-0.20	1.10
-20	20		12.10		0.10	25	11.60	12.90	-0.40	0.90
-18	18		12.60		0.60	27	11.80	12.30	-0.20	0.30
-16	16		13.10		1.10	29	11.20	11.40	-0.80	-0.60
-14	14		13.60		1.60	31	10.00	10.70	-2.00	-1.30
-12	12		13.40		1.40	33	9.10	9.80	-2.90	-2.20
-10	10		13.20		1.20	35	8.80	9.10	-3.20	-2.90
-8	8		12.30		0.30	37	7.60	8.30	-4.40	-3.70
-6	6		11.20		-0.80	39	6.70	7.40	-5.30	-4.60
-4	4	9.60	10.00	-2.40	-2.00	41	5.70	7.10	-6.30	-4.90
-2	2	8.80	9.10	-3.20	-2.90	43	4.10	7.10	-7.90	-4.90
0	0	8.30	8.30	-3.70	-3.70	45	3.60	7.20	-8.40	-4.80
0	0	8.30	8.30	-3.70	-3.70	55	3.50	2.30	-8.50	-9.70
2	-2	9.00	8.80	-3.00	-3.20	57	3.80	2.80	-8.20	-9.20
4	-4	9.10	10.10	-2.90	-1.90	59	5.00	4.40	-7.00	-7.60
6	-6	10.40	11.60	-1.60	-0.40	61	6.50	5.80	-5.50	-6.20
8	-8	11.20	11.80	-0.80	-0.20	63	7.70	6.80	-4.30	-5.20
10	-10	11.80	12.00	-0.20	0.00	65	8.80	8.00	-3.20	-4.00
12	-12	12.00		0.00		67	9.90	9.50	-2.10	-2.50
14	-14					69	10.40	10.90	-1.60	-1.10
16	-16					71	11.60	12.00	-0.40	0.00
18	-18					73	12.00		0.00	
20	-20					75				
22	-22					77				
24	-24					79				
26	-26					81				
28	-28					83				
30	-30					85				

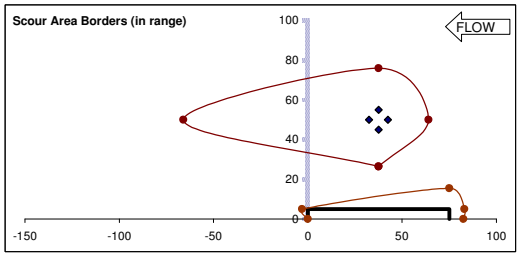
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.60	-2.40
2	9.70	-2.30
4	10.40	-1.60
6	11.90	-0.10
8	12.00	0.00
10		
12		
14		
16		
18		
20		

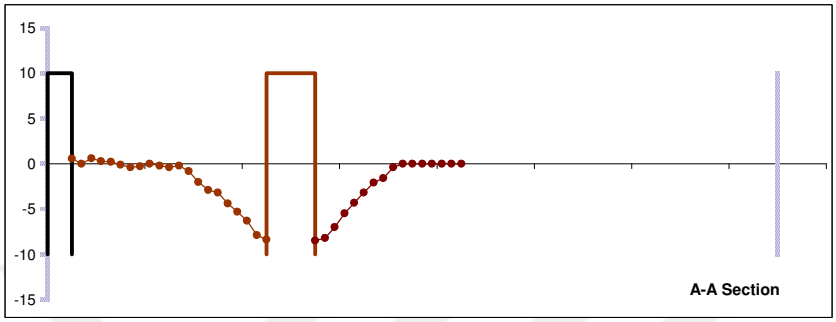
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	7.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	10.5
SB_{pl}	Pier Left	18.5
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	21
SB_{pb}	Pier Rear	98.5

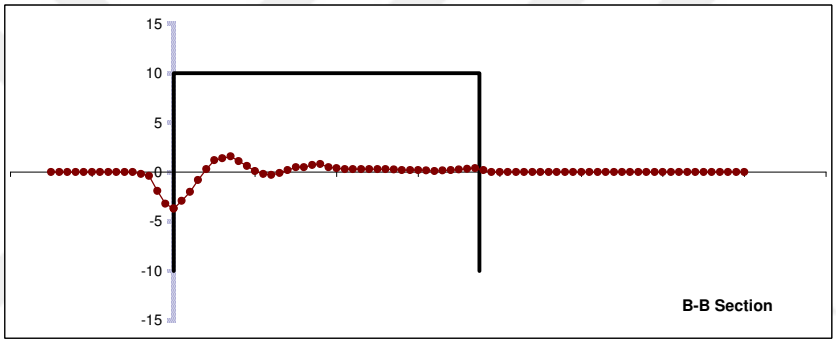


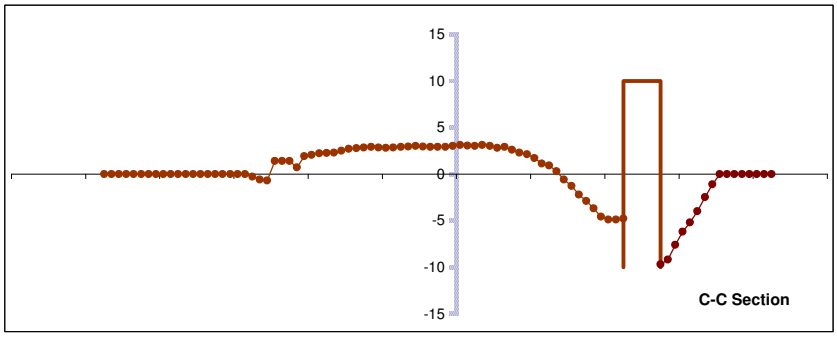
Experiment No : **E103**

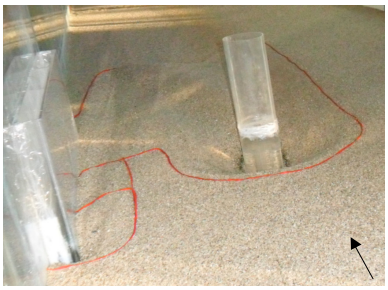


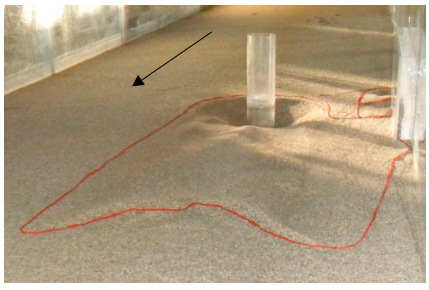






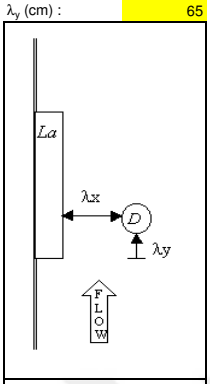


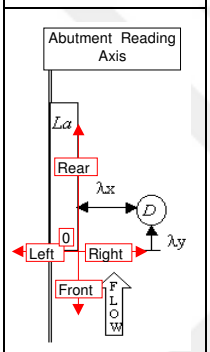


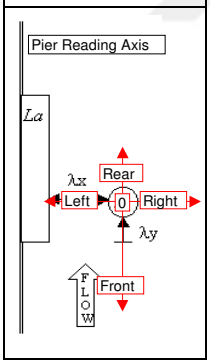


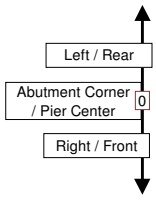
Experiment No : **E104**

Date :	25.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	65









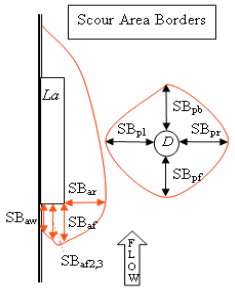
This color was used for raw data readings

This color was used for values enterpolated to sketch

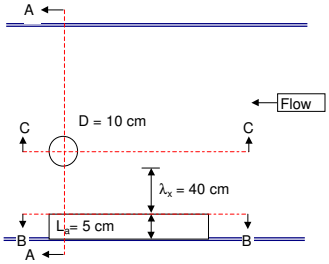
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-95				
-138	138					-93				
-136	136					-91				
-134	134					-89				
-132	132					-87				
-130	130					-85				
-128	128					-83				
-126	126					-81				
-124	124					-79				
-122	122					-77				
-120	120					-75				
-118	118					-73				
-116	116					-71				
-114	114					-69				
-112	112					-67				
-110	110					-65				
-108	108					-63				
-106	106					-61				
-104	104					-59				
-102	102					-57				
-100	100		12.00		0.00	-55				
-98	98		*12.20*		0.20	-53				
-96	96		12.40		0.40	-51		12.00		0.00
-94	94		*12.50*		0.50	-49		11.50		-0.50
-92	92		12.60		0.60	-47		11.60		-0.40
-90	90		*12.60*		0.60	-45		11.80		-0.20
-88	88		12.60		0.60	-43		12.40		0.40
-86	86		*12.55*		0.55	-41		13.10		1.10
-84	84		12.50		0.50	-39		13.40		1.40
-82	82		*12.40*		0.40	-37		13.50		1.50
-80	80		12.30		0.30	-35		14.00		2.00
-78	78		*12.25*		0.25	-33		14.70		2.70
-76	76		12.20		0.20	-31		*14.45*		2.45
-74	74		*12.40*		0.40	-29		14.20		2.20
-72	72		12.60		0.60	-27		*14.35*		2.35
-70	70		*12.65*		0.65	-25		14.50		2.50
-68	68		12.70		0.70	-23		*14.75*		2.75
-66	66		*12.65*		0.65	-21		15.00		3.00
-64	64		12.60		0.60	-19		*15.05*		3.05
-62	62		*12.70*		0.70	-17		15.10		3.10
-60	60		12.80		0.80	-15		*15.05*		3.05
-58	58		*12.80*		0.80	-13		15.00		3.00
-56	56		12.80		0.80	-11		*15.00*		3.00
-54	54		*12.80*		0.80	-9		15.00		3.00
-52	52		12.80		0.80	-7		*15.10*		3.10
-50	50		*12.90*		0.90	-5		15.20		3.20
-48	48		13.00		1.00	-3		*15.10*		3.10
-46	46		*13.15*		1.15	-1		15.00		3.00
-44	44		13.30		1.30	1		*15.05*		3.05
-42	42		13.20		1.20	3		15.10		3.10
-40	40		13.30		1.30	5	12.10	*15.05*	0.10	3.05
-38	38		13.40		1.40	7	12.00	15.00	0.00	3.00
-36	36		13.30		1.30	9	12.00	*15.05*	0.00	3.05
-34	34		12.90		0.90	11	12.30	15.10	0.30	3.10
-32	32		12.60		0.60	13	11.90	15.10	-0.10	3.10
-30	30		12.10		0.10	15	11.90	14.80	-0.10	2.80
-28	28		11.80		-0.20	17	12.00	14.50	0.00	2.50
-26	26		12.00		0.00	19	12.10	14.30	0.10	2.30
-24	24		12.70		0.70	21	12.00	14.40	0.00	2.40
-22	22		13.10		1.10	23	12.00	12.80	0.00	0.80
-20	20		13.70		1.70	25	11.80	12.90	-0.20	0.90
-18	18		14.00		2.00	27	12.00	12.50	0.00	0.50
-16	16		14.00		2.00	29	11.60	11.70	-0.40	-0.30
-14	14		13.50		1.50	31	10.90	11.00	-1.10	-1.00
-12	12		13.20		1.20	33	10.00	10.40	-2.00	-1.60
-10	10		12.60		0.60	35	9.00	9.40	-3.00	-2.60
-8	8		11.90		-0.10	37	8.00	8.50	-4.00	-3.50
-6	6	9.00	10.70	-3.00	-1.30	39	6.60	7.80	-5.40	-4.20
-4	4	9.30	9.70	-2.70	-2.30	41	5.60	7.20	-6.40	-4.80
-2	2	8.50	9.20	-3.50	-2.80	43	3.80	7.30	-8.20	-4.70
0	0	8.40	8.40	-3.60	-3.60	45	4.30	7.20	-7.70	-4.80
0	0	8.40	8.40	-3.60	-3.60	55	3.40	2.50	-8.60	-9.50
2	-2	9.20	8.60	-2.80	-3.40	57	3.60	2.60	-8.40	-9.40
4	-4	10.60	9.90	-1.40	-2.10	59	5.00	3.90	-7.00	-8.10
6	-6	11.20	11.40	-0.80	-0.60	61	6.00	5.20	-6.00	-6.80
8	-8	11.80	12.00	-0.20	0.00	63	7.40	6.80	-4.60	-5.20
10	-10	11.90		-0.10		65	8.50	8.00	-3.50	-4.00
12	-12	12.00		0.00		67	9.50	9.40	-2.50	-2.60
14	-14					69	10.60	10.70	-1.40	-1.30
16	-16					71	12.00	11.60	0.00	-0.40
18	-18					73		12.00		0.00
20	-20					75				
22	-22					77				
24	-24					79				
26	-26					81				
28	-28					83				
30	-30					85				

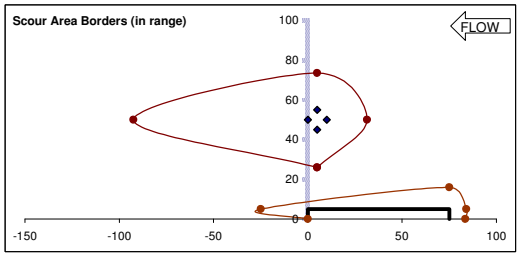
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.00	-3.00
2	9.60	-2.40
4	10.60	-1.40
6	11.90	-0.10
8	12.00	0.00
10		
12		
14		
16		
18		
20		

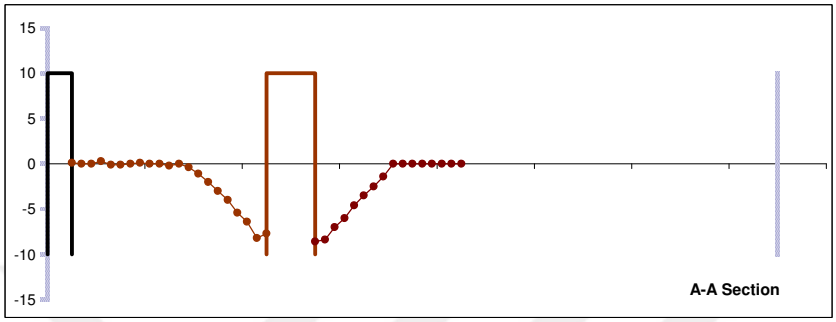
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	8.5
SB_{af}	Abutment Corner Front	9
SB_{ar}	Abutment Corner Right	11
SB_{pl}	Pier Left	19
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	18.5
SB_{pb}	Pier Rear	92.5

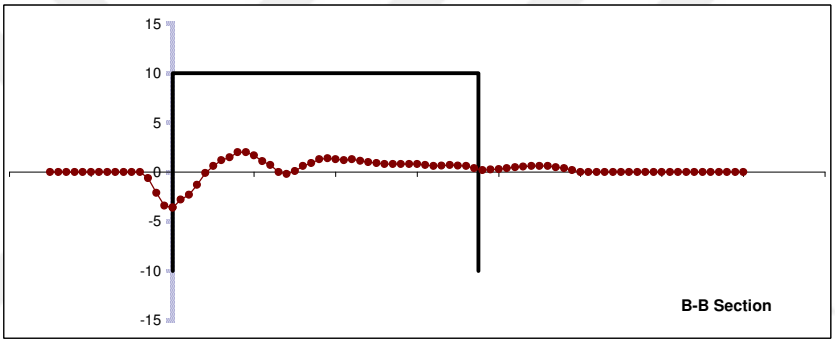


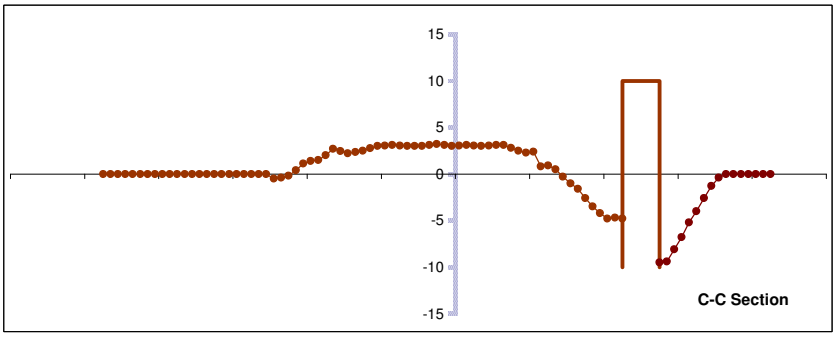
Experiment No : **E104**

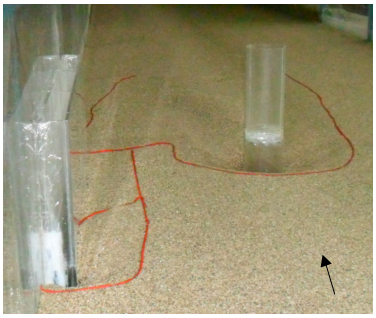


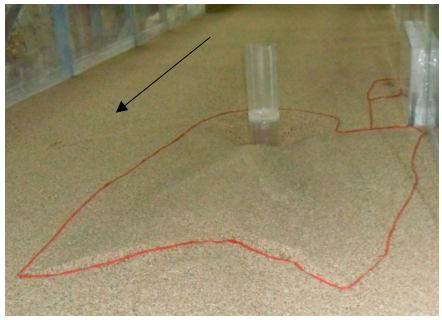






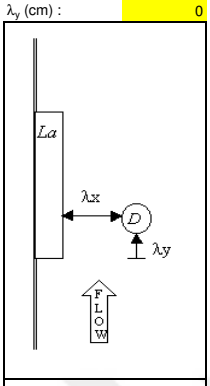


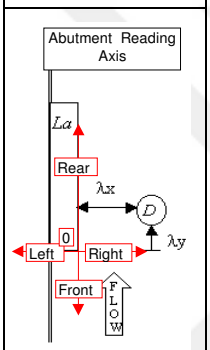


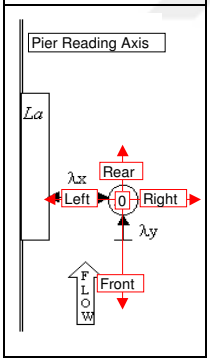


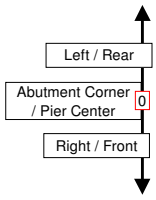
Experiment No : **E105**

Date :	27.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	0









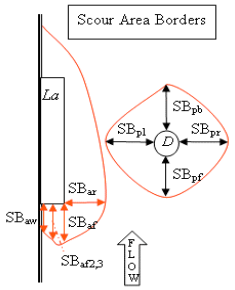
This color was used for raw data readings

This color was used for values enterpolated to sketch

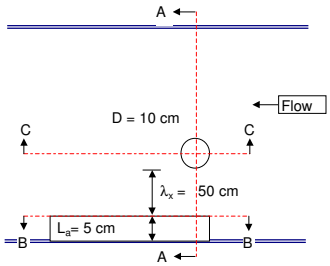
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-85				
-138	138					-83				
-136	136					-81				
-134	134					-79				
-132	132					-77				
-130	130					-75				
-128	128					-73				
-126	126					-71				
-124	124					-69				
-122	122					-67				
-120	120					-65				
-118	118		12.00		0.00	-63				
-116	116		*12.25*		0.25	-61				
-114	114		12.50		0.50	-59				
-112	112		*12.65*		0.65	-57				
-110	110		12.80		0.80	-55				
-108	108		*12.75*		0.75	-53				
-106	106		12.70		0.70	-51				
-104	104		*12.80*		0.80	-49				
-102	102		12.90		0.90	-47		12.00		0.00
-100	100		*12.95*		0.95	-45		13.30		1.30
-98	98		13.00		1.00	-43		13.60		1.60
-96	96		*13.05*		1.05	-41		14.00		2.00
-94	94		13.10		1.10	-39		*14.15*		2.15
-92	92		*13.00*		1.00	-37		14.30		2.30
-90	90		12.90		0.90	-35		*14.45*		2.45
-88	88		*12.85*		0.85	-33		14.60		2.60
-86	86		12.80		0.80	-31		*14.50*		2.50
-84	84		*12.50*		0.50	-29		14.40		2.40
-82	82		12.20		0.20	-27		*14.60*		2.60
-80	80		*12.15*		0.15	-25		14.80		2.80
-78	78		12.10		0.10	-23		*14.80*		2.80
-76	76		*12.15*		0.15	-21		14.80		2.80
-74	74		12.20		0.20	-19		*14.80*		2.80
-72	72		*12.15*		0.15	-17		14.80		2.80
-70	70		12.10		0.10	-15		*14.80*		2.80
-68	68		*12.25*		0.25	-13		14.80		2.80
-66	66		12.40		0.40	-11		*14.90*		2.90
-64	64		*12.40*		0.40	-9		15.00		3.00
-62	62		12.40		0.40	-7		*15.00*		3.00
-60	60		*12.50*		0.50	-5		15.00		3.00
-58	58		12.60		0.60	-3		*15.00*		3.00
-56	56		*12.60*		0.60	-1		15.00		3.00
-54	54		12.60		0.60	1		*15.05*		3.05
-52	52		*12.65*		0.65	3		15.10		3.10
-50	50		12.70		0.70	5	9.20	*15.20*	-2.80	3.20
-48	48		*12.65*		0.65	7	9.70	15.30	-2.30	3.30
-46	46		12.60		0.60	9	10.80	*15.25*	-1.20	3.25
-44	44		12.70		0.70	11	11.60	15.20	-0.40	3.20
-42	42		12.40		0.40	13	11.40	*15.10*	-0.60	3.10
-40	40		12.20		0.20	15	11.90	15.00	-0.10	3.00
-38	38		12.60		0.60	17	12.10	15.00	0.10	3.00
-36	36		12.60		0.60	19	12.00	15.00	0.00	3.00
-34	34		12.60		0.60	21	12.20	14.80	0.20	2.80
-32	32		12.70		0.70	23	12.10	14.70	0.10	2.70
-30	30		12.80		0.80	25	12.20	14.40	0.20	2.40
-28	28		12.70		0.70	27	12.30	14.10	0.30	2.10
-26	26		12.60		0.60	29	12.10	14.00	0.10	2.00
-24	24		12.80		0.80	31	12.30	13.70	0.30	1.70
-22	22		12.90		0.90	33	12.30	13.60	0.30	1.60
-20	20		13.30		1.30	35	12.30	13.30	0.30	1.30
-18	18		13.60		1.60	37	12.20	12.70	0.20	0.70
-16	16		13.50		1.50	39	12.00	12.00	0.00	0.00
-14	14		13.50		1.50	41	11.40	11.50	-0.60	-0.50
-12	12		13.00		1.00	43	10.20	10.70	-1.80	-1.30
-10	10		12.20		0.20	45	9.30	10.10	-2.70	-1.90
-8	8		11.20		-0.80	47	8.30	9.20	-3.70	-2.80
-6	6		10.40		-1.60	49	7.00	9.90	-5.00	-2.10
-4	4	9.30	9.70	-2.70	-2.30	51	5.70	9.30	-6.30	-2.70
-2	2	8.40	9.80	-3.60	-2.20	53	4.40	7.60	-7.60	-4.40
0	0	8.50	8.50	-3.50	-3.50	55	3.80	8.90	-8.20	-3.10
0	0	8.50	8.50	-3.50	-3.50	65	5.20	2.80	-6.80	-9.20
2	-2	9.30	8.70	-2.70	-3.30	67	4.50	3.50	-7.50	-8.50
4	-4	9.30	10.00	-2.70	-2.00	69	5.90	4.80	-6.10	-7.20
6	-6	10.10	10.70	-1.90	-1.30	71	7.40	6.40	-4.60	-5.60
8	-8	10.90	12.00	-1.10	0.00	73	8.50	7.70	-3.50	-4.30
10	-10	11.50		-0.50		75	9.40	9.00	-2.60	-3.00
12	-12	11.70		-0.30		77	9.90	10.20	-2.10	-1.80
14	-14	11.80		-0.20		79	10.80	11.80	-1.20	-0.20
16	-16	12.00		0.00		81	11.80	12.00	-0.20	0.00
18	-18					83	12.00		0.00	
20	-20					85				
22	-22					87				
24	-24					89				
26	-26					91				
28	-28					93				
30	-30					95				

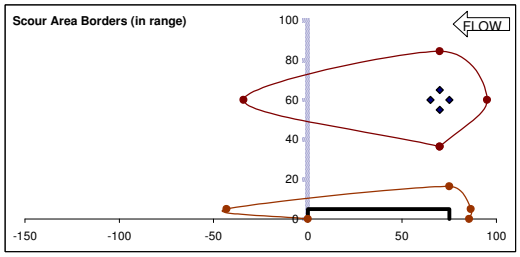
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.40	-3.60
2	9.10	-2.90
4	10.20	-1.80
6	11.40	-0.60
8	12.00	0.00
10		
12		
14		
16		
18		
20		

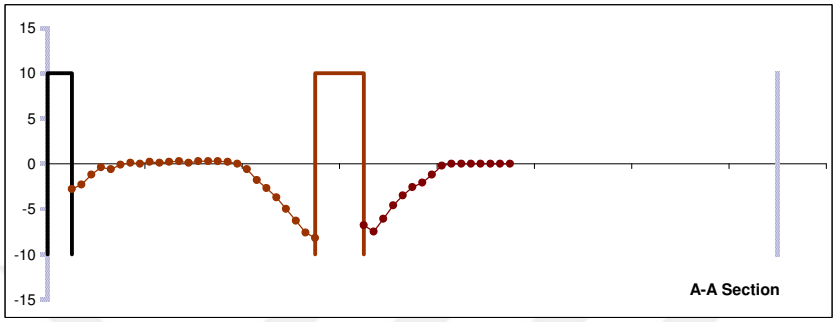
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10.5
SB_{af}	Abutment Corner Front	11.5
SB_{ar}	Abutment Corner Right	11.5
SB_{pl}	Pier Left	18.5
SB_{pf}	Pier Front	20
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	99

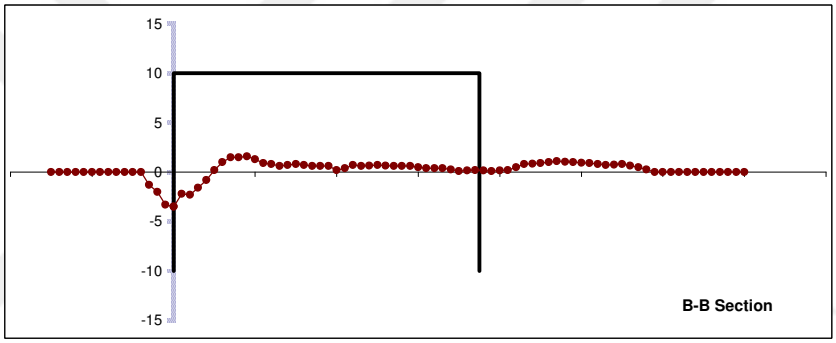


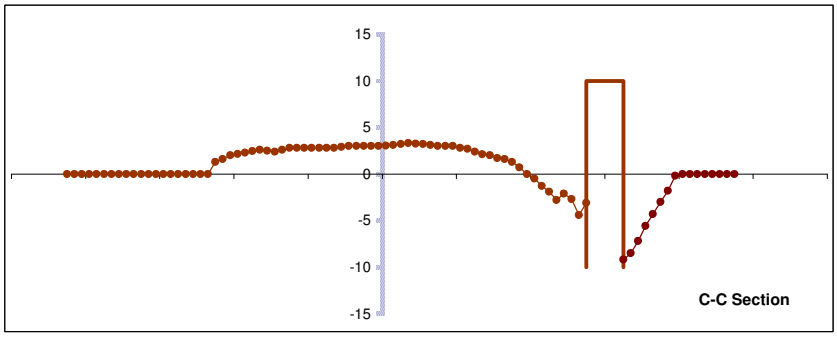
Experiment No : **E105**

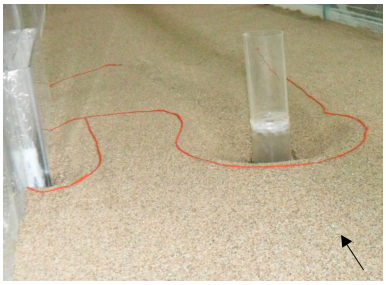


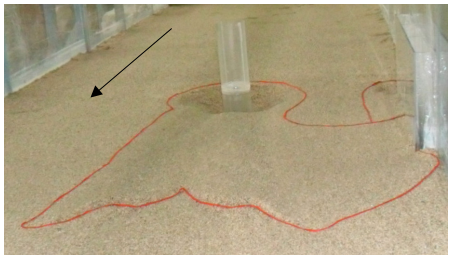






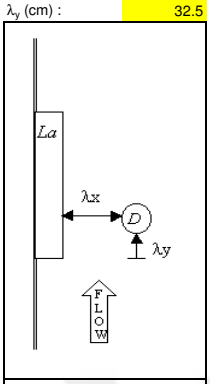


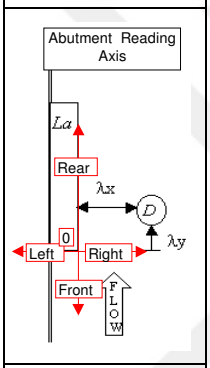


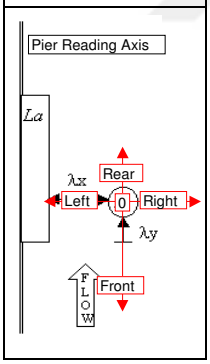


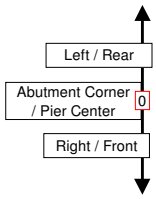
Experiment No : **E106**

Date :	31.01.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	32.5









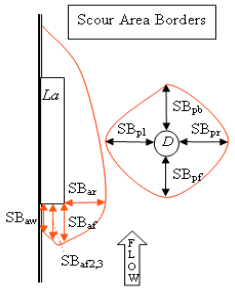
This color was used for raw data readings

This color was used for values enterpolated to sketch

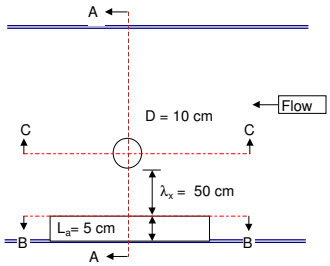
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-85				
-138	138					-83				
-136	136					-81				
-134	134					-79				
-132	132					-77				
-130	130					-75				
-128	128					-73				
-126	126					-71				
-124	124					-69				
-122	122					-67				
-120	120					-65				
-118	118					-63				
-116	116					-61				
-114	114					-59				
-112	112					-57				
-110	110					-55				
-108	108					-53				
-106	106					-51				
-104	104					-49				
-102	102		12.00		0.00	-47				
-100	100		*12.45*		0.45	-45				
-98	98		12.90		0.90	-43				
-96	96		*12.95*		0.95	-41				
-94	94		13.00		1.00	-39				
-92	92		*12.95*		0.95	-37				
-90	90		12.90		0.90	-35				
-88	88		*12.80*		0.80	-33				
-86	86		12.70		0.70	-31		12.00		0.00
-84	84		*12.50*		0.50	-29		11.80		-0.20
-82	82		12.30		0.30	-27		11.40		-0.60
-80	80		*12.35*		0.35	-25		11.30		-0.70
-78	78		12.40		0.40	-23		11.60		-0.40
-76	76		*12.45*		0.45	-21		11.50		-0.50
-74	74		12.50		0.50	-19		12.50		0.50
-72	72		*12.60*		0.60	-17		14.40		2.40
-70	70		*12.70*		0.70	-15		14.20		2.20
-68	68		12.80		0.80	-13		*14.40*		2.40
-66	66		*12.75*		0.75	-11		14.60		2.60
-64	64		12.70		0.70	-9		*14.60*		2.60
-62	62		*12.70*		0.70	-7		14.60		2.60
-60	60		12.70		0.70	-5		*14.65*		2.65
-58	58		*12.60*		0.60	-3		14.70		2.70
-56	56		12.50		0.50	-1		*14.80*		2.80
-54	54		*12.50*		0.50	1		14.90		2.90
-52	52		12.50		0.50	3		*14.95*		2.95
-50	50		*12.40*		0.40	5	11.90	15.00	-0.10	3.00
-48	48		12.30		0.30	7	11.90	*15.00*	-0.10	3.00
-46	46		*12.20*		0.20	9	12.10	15.00	0.10	3.00
-44	44		12.10		0.10	11	12.00	*15.10*	0.00	3.10
-42	42		*12.20*		0.20	13	11.90	15.20	-0.10	3.20
-40	40		12.30		0.30	15	12.00	*15.10*	0.00	3.10
-38	38		*12.30*		0.30	17	12.00	15.00	0.00	3.00
-36	36		12.30		0.30	19	12.00	15.10	0.00	3.10
-34	34		12.30		0.30	21	12.00	14.90	0.00	2.90
-32	32		12.50		0.50	23	11.80	15.10	-0.20	3.10
-30	30		12.80		0.80	25	11.50	14.70	-0.50	2.70
-28	28		12.70		0.70	27	11.40	14.40	-0.60	2.40
-26	26		12.70		0.70	29	11.40	14.60	-0.60	2.60
-24	24		12.60		0.60	31	11.20	14.20	-0.80	2.20
-22	22		12.40		0.40	33	11.20	13.60	-0.80	1.60
-20	20		12.30		0.30	35	11.20	13.10	-0.80	1.10
-18	18		12.10		0.10	37	11.30	12.50	-0.70	0.50
-16	16		12.20		0.20	39	11.20	12.10	-0.80	0.10
-14	14		12.30		0.30	41	11.20	10.90	-0.80	-1.10
-12	12		13.10		1.10	43	10.70	10.10	-1.30	-1.90
-10	10		12.70		0.70	45	9.80	9.20	-2.20	-2.80
-8	8		12.20		0.20	47	9.00	8.40	-3.00	-3.60
-6	6		11.40		-0.60	49	8.20	7.80	-3.80	-4.20
-4	4	10.30	10.20	-1.70	-1.80	51	6.60	6.90	-5.40	-5.10
-2	2	9.50	9.70	-2.50	-2.30	53	5.70	7.10	-6.30	-4.90
0	0	9.00	9.00	-3.00	-3.00	55	5.40	7.40	-6.60	-4.60
0	0	9.00	9.00	-3.00	-3.00	65	4.00	3.50	-8.00	-8.50
2	-2	9.10	9.30	-2.90	-2.70	67	4.70	4.50	-7.30	-7.50
4	-4	9.90	10.80	-2.10	-1.20	69	6.00	6.00	-6.00	-6.00
6	-6	11.00	12.00	-1.00	0.00	71	7.30	7.00	-4.70	-5.00
8	-8	11.80		-0.20		73	8.30	8.20	-3.70	-3.80
10	-10	11.90		-0.10		75	9.30	9.50	-2.70	-2.50
12	-12	12.00		0.00		77	10.40	10.50	-1.60	-1.50
14	-14					79	11.20	11.30	-0.80	-0.70
16	-16					81	11.30	12.00	-0.70	0.00
18	-18					83	11.40		-0.60	
20	-20					85	11.30		-0.70	
22	-22					87	11.60		-0.40	
24	-24					89				
26	-26					91				
28	-28					93				
30	-30					95				

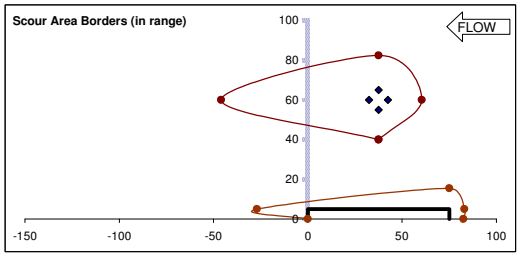
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	10.30	-1.70
2	10.40	-1.60
4	11.20	-0.80
6	12.00	0.00
8		
10		
12		
14		
16		
18		
20		

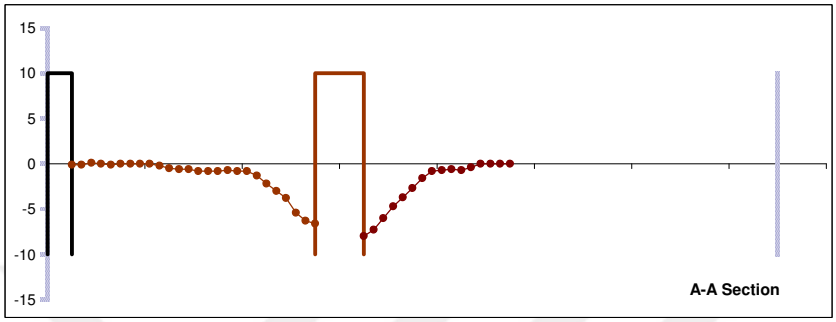
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	7.5
SB_{af}	Abutment Corner Front	8
SB_{ar}	Abutment Corner Right	10.5
SB_{pl}	Pier Left	15
SB_{pf}	Pier Front	18
SB_{pr}	Pier Right	17.5
SB_{pb}	Pier Rear	78.5

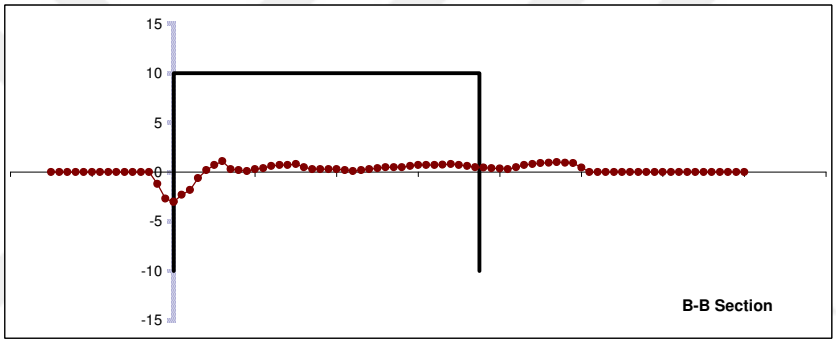


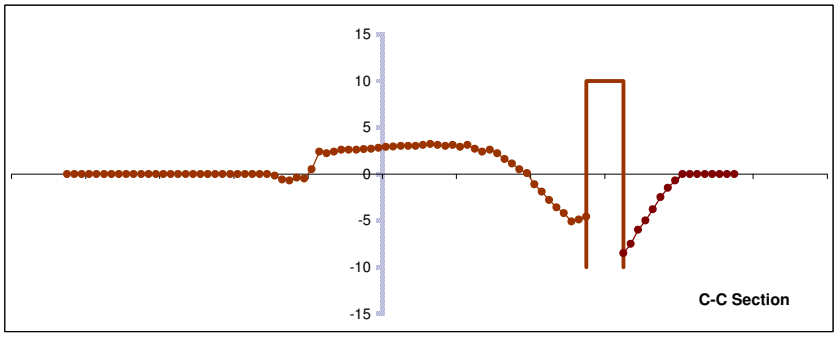
Experiment No : **E106**

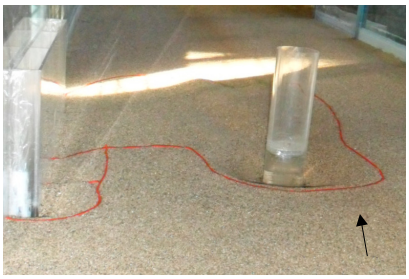


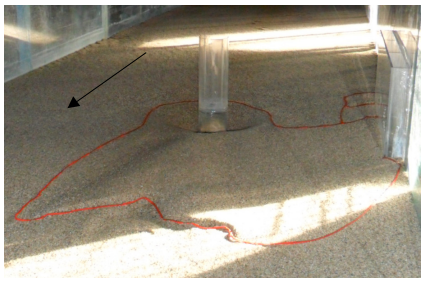






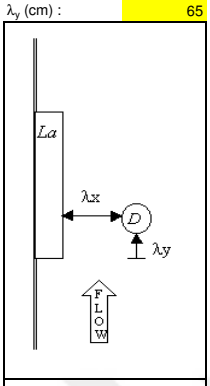


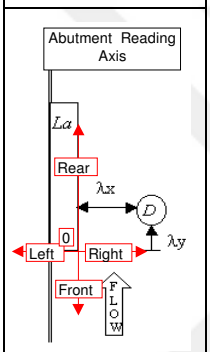


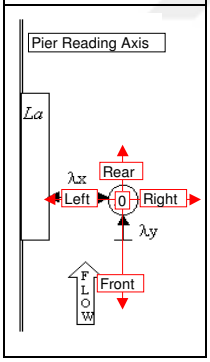


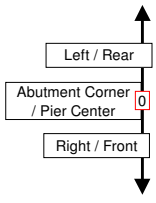
Experiment No : **E107**

Date :	02.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	65









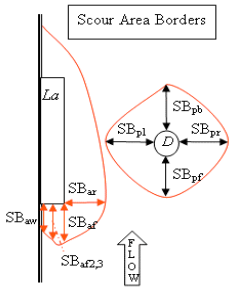
This color was used for raw data readings

This color was used for values enterpolated to sketch

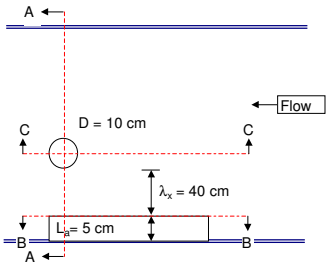
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-85				
-138	138					-83				
-136	136					-81				
-134	134					-79				
-132	132					-77				
-130	130					-75				
-128	128					-73				
-126	126					-71				
-124	124					-69				
-122	122					-67				
-120	120					-65				
-118	118					-63				
-116	116					-61				
-114	114					-59				
-112	112					-57				
-110	110					-55				
-108	108					-53				
-106	106					-51				
-104	104					-49				
-102	102					-47				
-100	100					-45				
-98	98					-43				
-96	96					-41				
-94	94					-39				
-92	92					-37				
-90	90					-35				
-88	88					-33		12.00		0.00
-86	86					-31		11.60		-0.40
-84	84					-29		11.30		-0.70
-82	82					-27		11.00		-1.00
-80	80					-25		11.00		-1.00
-78	78		12.00		0.00	-23		11.70		-0.30
-76	76		*12.00*		0.00	-21		14.10		2.10
-74	74		12.00		0.00	-19		*14.30*		2.30
-72	72		*12.05*		0.05	-17		14.50		2.50
-70	70		12.10		0.10	-15		*14.55*		2.55
-68	68		*12.10*		0.10	-13		14.60		2.60
-66	66		12.10		0.10	-11		*14.60*		2.60
-64	64		*12.10*		0.10	-9		14.60		2.60
-62	62		12.10		0.10	-7		*14.65*		2.65
-60	60		*12.05*		0.05	-5		14.70		2.70
-58	58		12.00		0.00	-3		*14.75*		2.75
-56	56		*12.10*		0.10	-1		14.80		2.80
-54	54		12.20		0.20	1		*14.85*		2.85
-52	52		*12.20*		0.20	3		14.90		2.90
-50	50		12.20		0.20	5	11.80	*14.95*	-0.20	2.95
-48	48		*12.15*		0.15	7	11.70	15.00	-0.30	3.00
-46	46		12.10		0.10	9	11.60	*15.15*	-0.40	3.15
-44	44		*12.20*		0.20	11	11.60	15.30	-0.40	3.30
-42	42		12.30		0.30	13	11.70	*15.35*	-0.30	3.35
-40	40		*12.30*		0.30	15	11.80	15.40	-0.20	3.40
-38	38		12.30		0.30	17	11.70	*15.40*	-0.30	3.40
-36	36		*12.35*		0.35	19	11.80	15.40	-0.20	3.40
-34	34		12.40		0.40	21	11.90	15.40	-0.10	3.40
-32	32		*12.40*		0.40	23	11.80	15.40	-0.20	3.40
-30	30		12.40		0.40	25	11.70	15.20	-0.30	3.20
-28	28		12.40		0.40	27	11.70	15.20	-0.30	3.20
-26	26		12.30		0.30	29	11.70	14.90	-0.30	2.90
-24	24		12.40		0.40	31	11.70	14.70	-0.30	2.70
-22	22		13.00		1.00	33	11.90	14.40	-0.10	2.40
-20	20		13.30		1.30	35	12.00	14.30	0.00	2.30
-18	18		13.30		1.30	37	11.90	13.70	-0.10	1.70
-16	16		13.30		1.30	39	11.70	13.00	-0.30	1.00
-14	14		13.10		1.10	41	10.90	12.20	-1.10	0.20
-12	12		12.90		0.90	43	10.20	11.50	-1.80	-0.50
-10	10		12.30		0.30	45	9.30	10.60	-2.70	-1.40
-8	8		11.40		-0.60	47	8.50	9.70	-3.50	-2.30
-6	6		10.20		-1.80	49	7.40	9.00	-4.60	-3.00
-4	4	9.20	9.50	-2.80	-2.50	51	5.80	8.30	-6.20	-3.70
-2	2	8.40	8.90	-3.60	-3.10	53	4.40	7.90	-7.60	-4.10
0	0	8.50	8.50	-3.50	-3.50	55	4.90	8.30	-7.10	-3.70
0	0	8.80	8.50	-3.20	-3.50	65	5.40	2.70	-6.60	-9.30
2	-2	9.00	9.10	-3.00	-2.90	67	4.00	3.30	-8.00	-8.70
4	-4	9.10	10.20	-2.90	-1.80	69	4.60	4.60	-7.40	-7.40
6	-6	10.10	11.70	-1.90	-0.30	71	5.90	6.00	-6.10	-6.00
8	-8	11.00	12.00	-1.00	0.00	73	8.00	7.10	-4.00	-4.90
10	-10	11.60		-0.40		75	8.80	8.50	-3.20	-3.50
12	-12	11.40		-0.60		77	9.30	9.70	-2.70	-2.30
14	-14	11.70		-0.30		79	10.00	10.90	-2.00	-1.10
16	-16	11.80		-0.20		81	11.30	12.00	-0.70	0.00
18	-18	12.00		0.00		83	11.70		-0.30	
20	-20					85	12.00		0.00	
22	-22					87				
24	-24					89				
26	-26					91				
28	-28					93				
30	-30					95				

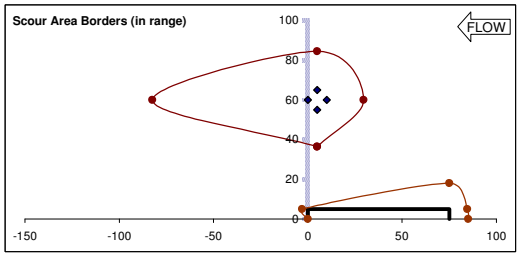
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.80	-3.20
2	9.20	-2.80
4	10.20	-1.80
6	11.20	-0.80
8	12.00	0.00
10		
12		
14		
16		
18		
20		

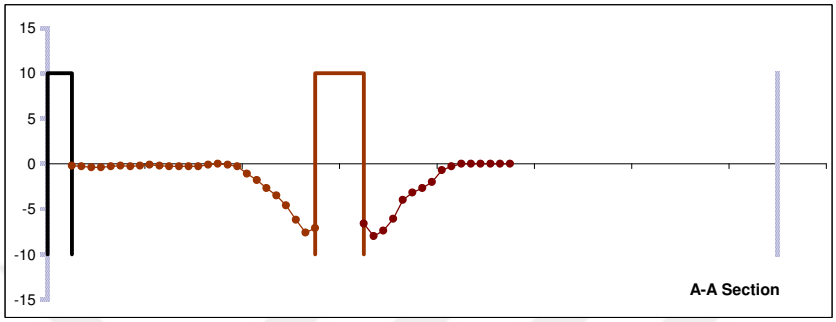
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af}	Abutment Corner Front	9.5
SB_{ar}	Abutment Corner Right	13
SB_{pl}	Pier Left	18.5
SB_{pf}	Pier Front	19.5
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	82.5

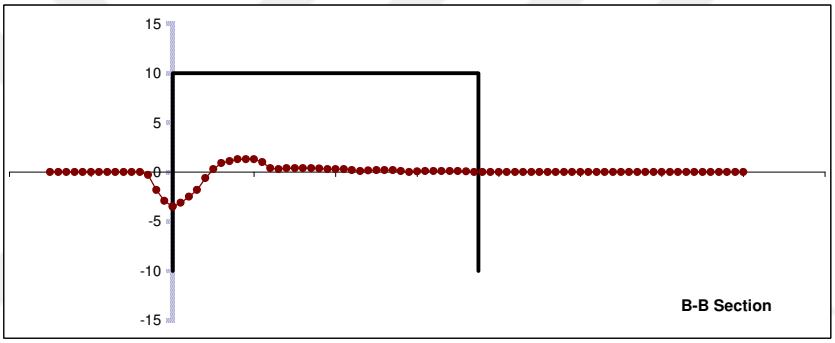


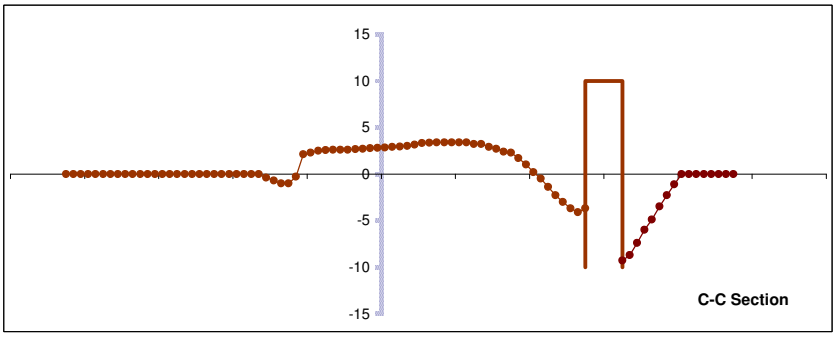
Experiment No : **E107**

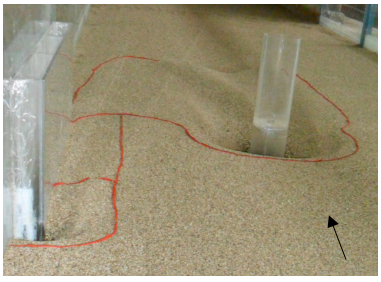


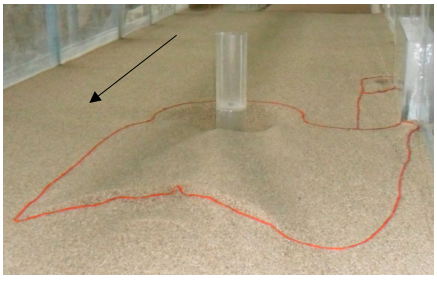






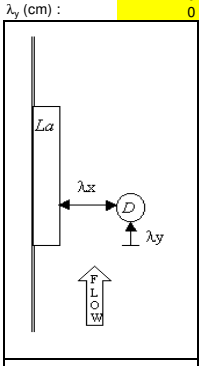


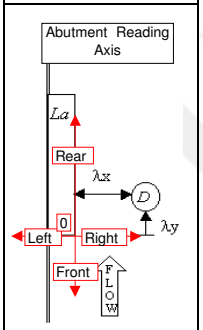


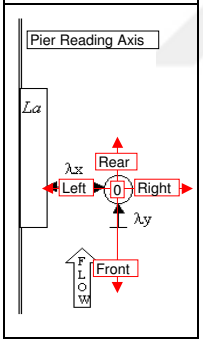


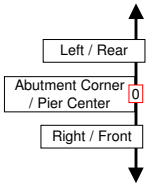
Experiment No : **E108**

Date :	07.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	0









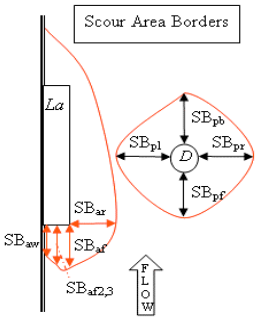
This color was used for raw data readings

This color was used for values enterpolated to sketch

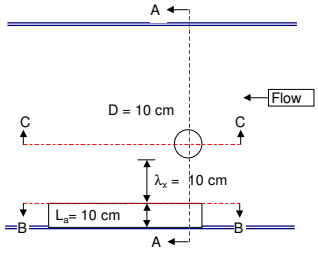
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-120				
-138	138					-118				
-136	136					-116				
-134	134					-114				
-132	132					-112				
-130	130					-110				
-128	128		12.00		0.00	-108				
-126	126		12.70		0.70	-106				
-124	124		13.50		1.50	-104				
-122	122		13.90		1.90	-102				
-120	120		13.70		1.70	-100				
-118	118		13.50		1.50	-98				
-116	116		13.10		1.10	-96				
-114	114		12.80		0.80	-94				
-112	112		13.00		1.00	-92				
-110	110		12.70		0.70	-90				
-108	108		12.80		0.80	-88				
-106	106		12.60		0.60	-86				
-104	104		12.50		0.50	-84				
-102	102		12.10		0.10	-82		12.00		0.00
-100	100		11.70		-0.30	-80		11.60		-0.40
-98	98		11.60		-0.40	-78		11.30		-0.70
-96	96		11.40		-0.60	-76		11.00		-1.00
-94	94		11.10		-0.90	-74		11.00		-1.00
-92	92		11.00		-1.00	-72		11.40		-0.60
-90	90		10.80		-1.20	-70		12.60		0.60
-88	88		11.00		-1.00	-68		12.80		0.80
-86	86		10.90		-1.10	-66		*13.00*		1.00
-84	84		11.20		-0.80	-64		13.20		1.20
-82	82		11.30		-0.70	-62		*13.15*		1.15
-80	80		12.00		0.00	-60		13.10		1.10
-78	78		12.10		0.10	-58		*13.10*		1.10
-76	76		*12.10*		0.10	-56		13.10		1.10
-74	74		12.10		0.10	-54		*13.15*		1.15
-72	72		*12.15*		0.15	-52		13.20		1.20
-70	70		12.20		0.20	-50		*13.35*		1.35
-68	68		*12.10*		0.10	-48		13.50		1.50
-66	66		12.00		0.00	-46		*13.40*		1.40
-64	64		*12.00*		0.00	-44		13.30		1.30
-62	62		12.00		0.00	-42		*13.40*		1.40
-60	60		*12.05*		0.05	-40		13.50		1.50
-58	58		12.10		0.10	-38		*13.55*		1.55
-56	56		*12.10*		0.10	-36		13.60		1.60
-54	54		12.10		0.10	-34		*13.65*		1.65
-52	52		*12.10*		0.10	-32		13.70		1.70
-50	50		12.10		0.10	-30		*13.60*		1.60
-48	48		*11.95*		-0.05	-28		13.50		1.50
-46	46		11.80		-0.20	-26		*13.55*		1.55
-44	44		11.80		-0.20	-24		13.60		1.60
-42	42		11.60		-0.40	-22		*13.60*		1.60
-40	40		11.70		-0.30	-20		13.60		1.60
-38	38		11.80		-0.20	-18		13.60		1.60
-36	36		11.60		-0.40	-16		13.90		1.90
-34	34		11.40		-0.60	-14		13.60		1.60
-32	32		11.30		-0.70	-12		13.50		1.50
-30	30		11.20		-0.80	-10		13.30		1.30
-28	28		11.20		-0.80	-8		13.10		1.10
-26	26		11.30		-0.70	-6		12.90		0.90
-24	24		11.40		-0.60	-4		12.60		0.60
-22	22		11.00		-1.00	-2		12.50		0.50
-20	20		10.90		-1.10	0		12.10		0.10
-18	18		10.30		-1.70	2		11.60		-0.40
-16	16		9.50		-2.50	4		10.80		-1.20
-14	14		8.80		-3.20	6		9.80		-2.20
-12	12		8.00		-4.00	8		9.30		-2.70
-10	10	7.00	7.60	-5.00	-4.40	10	5.70	8.50	-6.30	-3.50
-8	8	6.60	6.80	-5.40	-5.20	12	5.80	7.80	-6.20	-4.20
-6	6	6.00	6.20	-6.00	-5.80	14	5.30	6.90	-6.70	-5.10
-4	4	5.50	5.20	-6.50	-6.80	16	4.50	5.60	-7.50	-6.40
-2	2	5.10	4.90	-6.90	-7.10	18	3.70	5.00	-8.30	-7.00
0	0	4.70	4.70	-7.30	-7.30	20	1.90	3.90	-10.10	-8.10
0	0	4.70	4.70	-7.30	-7.30	30	2.20	2.10	-9.80	-9.90
2	-2	4.60	5.00	-7.40	-7.00	32	2.90	1.90	-9.10	-10.10
4	-4	4.70	6.70	-7.30	-5.30	34	4.50	2.60	-7.50	-9.40
6	-6	4.90	7.90	-7.10	-4.10	36	6.00	4.20	-6.00	-7.80
8	-8	4.20	9.10	-7.80	-2.90	38	7.50	5.50	-4.50	-6.50
10	-10	2.70	10.40	-9.30	-1.60	40	8.00	6.70	-4.00	-5.30
12	-12	2.00	10.60	-10.00	-1.40	42	9.00	7.90	-3.00	-4.10
14	-14	1.50	11.10	-10.50	-0.90	44	10.30	9.40	-1.70	-2.60
16	-16	1.60	11.80	-10.40	-0.20	46	11.50	10.80	-0.50	-1.20
18	-18	1.70	12.00	-10.30	0.00	48	11.40	11.50	-0.60	-0.50
20	-20	2.30		-9.70		50	11.50	11.80	-0.50	-0.20
22	-22	3.30		-8.70		52	11.40	11.90	-0.60	-0.10
24	-24	4.50		-7.50		54	11.60		-0.40	
26	-26	5.20		-6.80		56	11.70		-0.30	
28	-28	6.30		-5.70		58	11.80		-0.20	
30	-30	7.30		-4.70		60	11.90		-0.10	

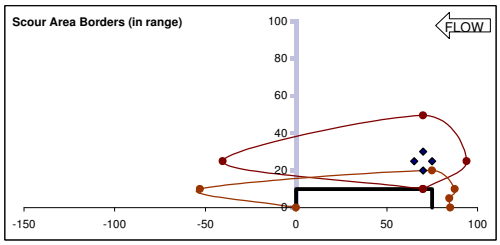
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.60	-5.40
2	6.70	-5.30
4	7.50	-4.50
6	8.90	-3.10
8	10.00	-2.00
10	11.10	-0.90
12	11.40	-0.60
14	11.80	-0.20
16	11.60	-0.40
18	11.80	-0.20
20	12.00	0.00

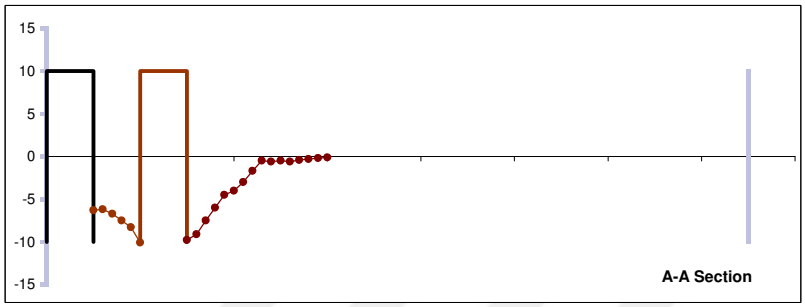
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10
SB_{af2}	Abutment Front (W+5 cm)	9.5
SB_{af}	Abutment Corner Front	12.5
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	19
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	105.5

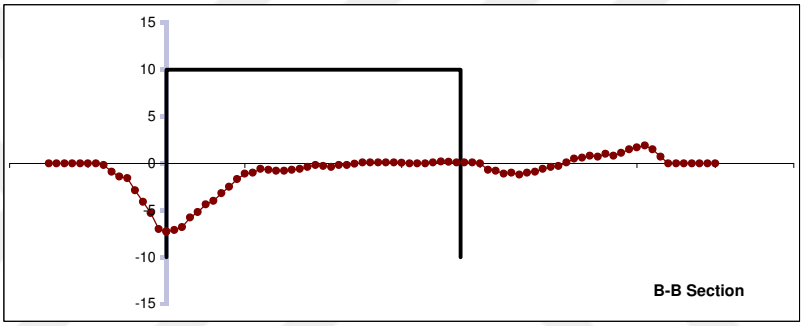


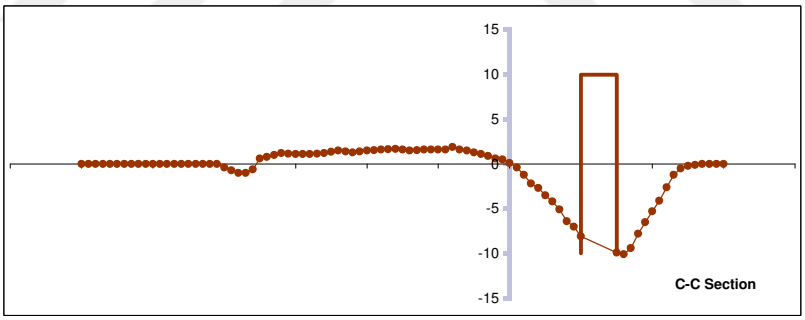
Experiment No : **E108**

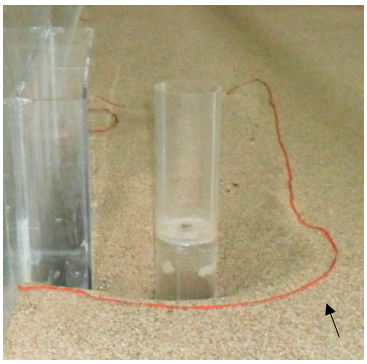


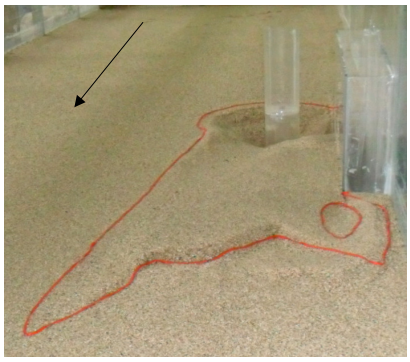






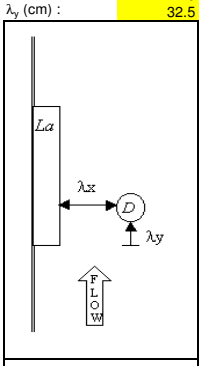


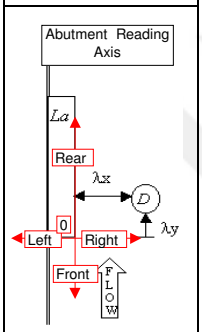


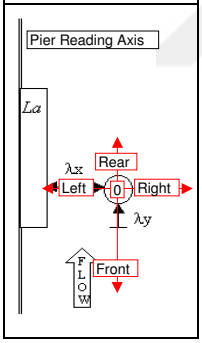


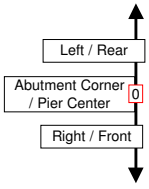
Experiment No : **E109**

Date :	09.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	32.5









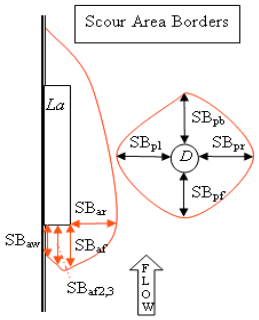
This color was used for raw data readings

This color was used for values enterpolated to sketch

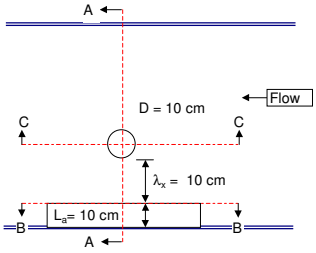
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-120				
-138	138					-118				
-136	136					-116				
-134	134					-114				
-132	132					-112				
-130	130					-110				
-128	128					-108				
-126	126					-106				
-124	124					-104				
-122	122					-102				
-120	120					-100				
-118	118					-98				
-116	116					-96				
-114	114					-94				
-112	112					-92				
-110	110					-90				
-108	108					-88				
-106	106		11.80		-0.20	-86				
-104	104		12.20		0.20	-84				
-102	102		13.10		1.10	-82				
-100	100		13.00		1.00	-80				
-98	98		13.10		1.10	-78		11.80		-0.20
-96	96		13.30		1.30	-76		12.20		0.20
-94	94		13.10		1.10	-74		13.10		1.10
-92	92		12.90		0.90	-72		13.70		1.70
-90	90		12.80		0.80	-70		14.60		2.60
-88	88		12.80		0.80	-68		15.20		3.20
-86	86		12.70		0.70	-66		15.70		3.70
-84	84		12.60		0.60	-64		*15.65*		3.65
-82	82		12.50		0.50	-62		15.60		3.60
-80	80		12.50		0.50	-60		*15.60*		3.60
-78	78		12.60		0.60	-58		15.60		3.60
-76	76		12.80		0.80	-56		*15.60*		3.60
-74	74		13.10		1.10	-54		15.60		3.60
-72	72		13.20		1.20	-52		*15.50*		3.50
-70	70		13.50		1.50	-50		15.40		3.40
-68	68		13.60		1.60	-48		*15.40*		3.40
-66	66		13.70		1.70	-46		15.40		3.40
-64	64		13.70		1.70	-44		*15.45*		3.45
-62	62		13.80		1.80	-42		15.50		3.50
-60	60		13.70		1.70	-40		*15.35*		3.35
-58	58		13.30		1.30	-38		15.20		3.20
-56	56		13.00		1.00	-36		*15.20*		3.20
-54	54		12.50		0.50	-34		15.20		3.20
-52	52		11.80		-0.20	-32		*15.10*		3.10
-50	50		10.80		-1.20	-30		15.00		3.00
-48	48		9.80		-2.20	-28		*14.90*		2.90
-46	46		8.80		-3.20	-26		14.80		2.80
-44	44		8.00		-4.00	-24		*14.80*		2.80
-42	42		7.50		-4.50	-22		14.80		2.80
-40	40		7.20		-4.80	-20		*14.50*		2.50
-38	38		6.90		-5.10	-18		14.20		2.20
-36	36		7.20		-4.80	-16		14.20		2.20
-34	34		7.40		-4.60	-14		14.10		2.10
-32	32		7.90		-4.10	-12		13.60		1.60
-30	30		8.60		-3.40	-10		13.40		1.40
-28	28		9.20		-2.80	-8		13.30		1.30
-26	26		10.00		-2.00	-6		12.90		0.90
-24	24		10.90		-1.10	-4		12.60		0.60
-22	22		12.20		0.20	-2		12.30		0.30
-20	20		13.20		1.20	0		12.00		0.00
-18	18		13.50		1.50	2		11.40		-0.60
-16	16		13.10		1.10	4		11.10		-0.90
-14	14		12.80		0.80	6		10.50		-1.50
-12	12		11.90		-0.10	8		9.80		-2.20
-10	10	8.60	11.10	-3.40	-0.90	10	7.00	9.60	-5.00	-2.40
-8	8	8.40	9.80	-3.60	-2.20	12	6.90	8.80	-5.10	-3.20
-6	6	7.60	8.60	-4.40	-3.40	14	6.70	7.90	-5.30	-4.10
-4	4	7.00	7.60	-5.00	-4.40	16	5.60	7.10	-6.40	-4.90
-2	2	6.70	6.70	-5.30	-5.30	18	4.10	6.60	-7.90	-5.40
0	0	6.20	6.20	-5.80	-5.80	20	3.20	6.80	-8.80	-5.20
0	0	6.20	6.20	-5.80	-5.80	30	2.80	1.60	-9.20	-10.40
2	-2	6.70	6.60	-5.30	-5.40	32	2.60	2.00	-9.40	-10.00
4	-4	6.90	8.10	-5.10	-3.90	34	3.90	3.60	-8.10	-8.40
6	-6	8.60	8.30	-3.40	-3.70	36	4.70	5.70	-7.30	-6.30
8	-8	8.60	9.90	-3.40	-2.10	38	5.90	7.30	-6.10	-4.70
10	-10	9.90	11.30	-2.10	-0.70	40	6.40	8.50	-5.60	-3.50
12	-12	10.70	11.70	-1.30	-0.30	42	7.00	10.00	-5.00	-2.00
14	-14	11.00	12.00	-1.00	0.00	44	7.90	10.60	-4.10	-1.40
16	-16	10.90		-1.10		46	9.20	11.10	-2.80	-0.90
18	-18	10.80		-1.20		48	10.40	10.80	-1.60	-1.20
20	-20	11.00		-1.00		50	11.40	10.80	-0.60	-1.20
22	-22	10.90		-1.10		52	11.20	11.10	-0.80	-0.90
24	-24	11.00		-1.00		54	11.40	11.50	-0.60	-0.50
26	-26	10.90		-1.10		56	11.30	11.00	-0.70	-1.00
28	-28	11.20		-0.80		58	11.00	11.40	-1.00	-0.60
30	-30	11.30		-0.70		60	11.50	11.80	-0.50	-0.20

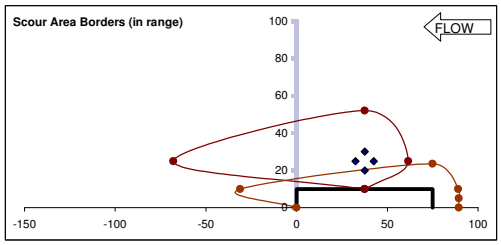
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.60	-4.40
2	8.10	-3.90
4	9.10	-2.90
6	10.20	-1.80
8	11.20	-0.80
10	11.70	-0.30
12	12.00	0.00
14		
16		
18		
20		

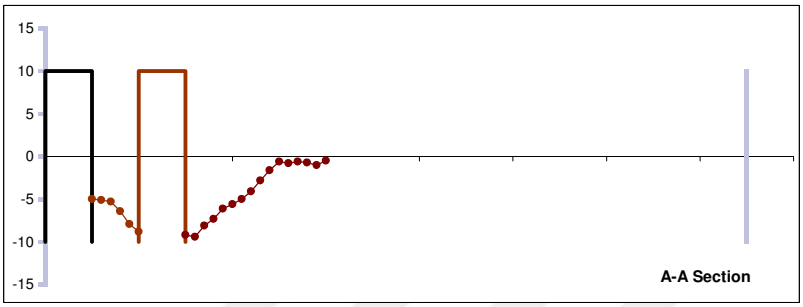
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{al}	Abutment Corner Front	14
SB_{ar}	Abutment Corner Right	13.5
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	19
SB_{pr}	Pier Right	22
SB_{pb}	Pier Rear	100.5

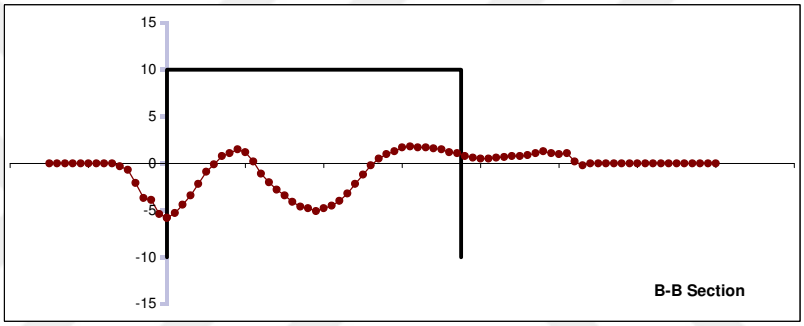


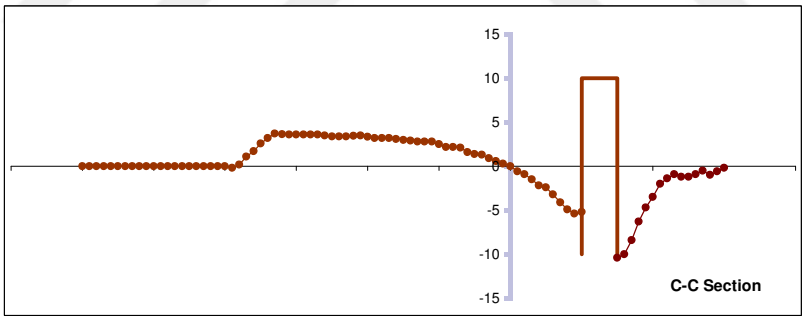
Experiment No : **E109**

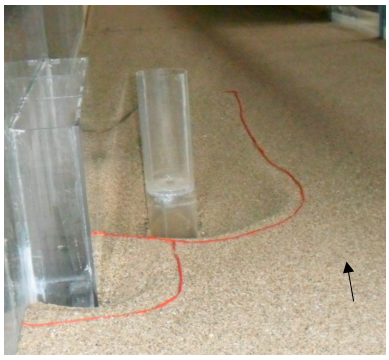


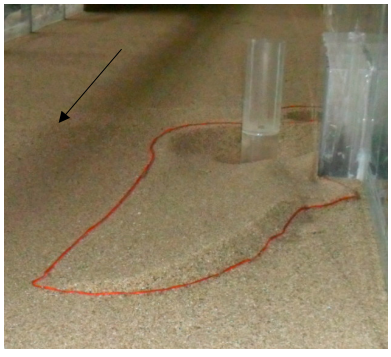






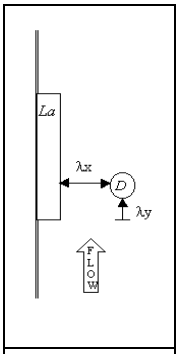


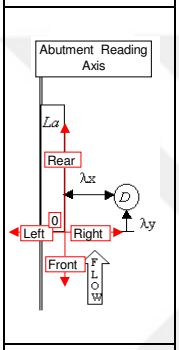


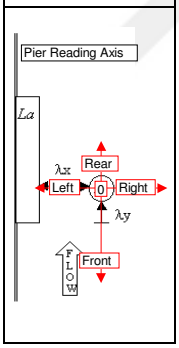


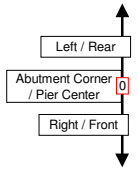
Experiment No : **E110**

Date :	13.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	65









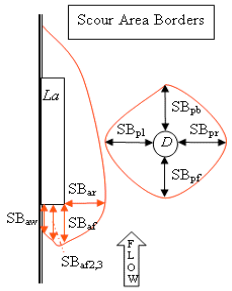
This color was used for raw data readings

This color was used for values enterpolated to sketch

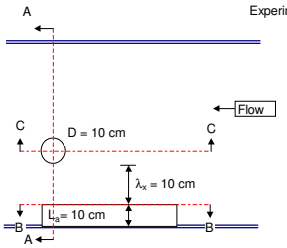
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-150				
-168	168					-148				
-166	166					-146				
-164	164					-144				
-162	162					-142				
-160	160					-140				
-158	158					-138				
-156	156					-136				
-154	154					-134				
-152	152					-132				
-150	150					-130				
-148	148					-128				
-146	146					-126				
-144	144					-124				
-142	142					-122				
-140	140					-120				
-138	138		11.90		-0.10	-118				
-136	136		13.30		1.30	-116				
-134	134		14.30		2.30	-114				
-132	132		14.50		2.50	-112				
-130	130		14.50		2.50	-110				
-128	128		14.50		2.50	-108				
-126	126		*14.45*		2.45	-106				
-124	124		14.40		2.40	-104				
-122	122		14.50		2.50	-102				
-120	120		14.40		2.40	-100				
-118	118		14.30		2.30	-98				
-116	116		*14.25*		2.25	-96				
-114	114		14.20		2.20	-94				
-112	112		13.90		1.90	-92				
-110	110		13.80		1.80	-90				
-108	108		13.50		1.50	-88				
-106	106		13.30		1.30	-86				
-104	104		13.10		1.10	-84				
-102	102		12.80		0.80	-82				
-100	100		12.80		0.80	-80				
-98	98		12.70		0.70	-78				
-96	96		12.80		0.80	-76				
-94	94		12.80		0.80	-74				
-92	92		12.50		0.50	-72				
-90	90		12.00		0.00	-70				
-88	88		11.40		-0.60	-68				
-86	86		10.80		-1.20	-66				
-84	84		10.30		-1.70	-64				
-82	82		9.60		-2.40	-62				
-80	80		8.90		-3.10	-60				
-78	78		8.00		-4.00	-58				
-76	76		*7.60*		-4.40	-56				
-74	74		7.20		-4.80	-54		12.00		0.00
-72	72		7.00		-5.00	-52		12.50		0.50
-70	70		7.10		-4.90	-50		12.80		0.80
-68	68		7.40		-4.60	-48		13.10		1.10
-66	66		8.30		-3.70	-46		12.90		0.90
-64	64		9.00		-3.00	-44		13.70		1.70
-62	62		9.90		-2.10	-42		14.10		2.10
-60	60		10.60		-1.40	-40		15.10		3.10
-58	58		11.10		-0.90	-38		15.40		3.40
-56	56		11.50		-0.50	-36		15.60		3.60
-54	54		11.20		-0.80	-34		*15.30*		3.30
-52	52		11.30		-0.70	-32		15.00		3.00
-50	50		11.00		-1.00	-30		15.30		3.30
-48	48		11.00		-1.00	-28		*15.25*		3.25
-46	46		11.20		-0.80	-26		15.20		3.20
-44	44		11.20		-0.80	-24		*15.15*		3.15
-42	42		11.50		-0.50	-22		15.10		3.10
-40	40		12.40		0.40	-20		*15.10*		3.10
-38	38		12.50		0.50	-18		15.10		3.10
-36	36		12.60		0.60	-16		15.10		3.10
-34	34		12.60		0.60	-14		15.00		3.00
-32	32		12.80		0.80	-12		14.80		2.80
-30	30		13.00		1.00	-10		14.50		2.50
-28	28		13.10		1.10	-8		14.30		2.30
-26	26		13.30		1.30	-6		14.20		2.20
-24	24		13.20		1.20	-4		13.90		1.90
-22	22		13.10		1.10	-2		13.90		1.90
-20	20		12.70		0.70	0		13.20		1.20
-18	18		12.20		0.20	2		12.60		0.60
-16	16		12.80		0.80	4		12.00		0.00
-14	14		11.40		-0.60	6		11.20		-0.80
-12	12		10.80		-1.20	8		10.70		-1.30
-10	10	*6.60*	10.20	-5.40	-1.80	10	7.90	9.70	-4.10	-2.30
-8	8	7.10	9.20	-4.90	-2.80	12	7.80	8.80	-4.20	-3.20
-6	6	6.60	8.30	-5.40	-3.70	14	6.40	7.80	-5.60	-4.20
-4	4	5.90	7.00	-6.10	-5.00	16	5.50	7.10	-6.50	-4.90
-2	2	5.60	6.30	-6.40	-5.70	18	4.20	7.10	-7.80	-4.90
0	0	6.00	6.00	-6.00	-6.00	20	4.00	7.30	-8.00	-4.70
0	0	6.00	6.00	-6.00	-6.00	30	3.60	1.70	-8.40	-10.30
2	-2	5.80	5.90	-6.20	-6.10	32	3.50	2.10	-8.50	-9.90
4	-4	6.10	7.20	-5.90	-4.80	34	5.20	4.10	-6.80	-7.90
6	-6	7.40	8.10	-4.60	-3.90	36	6.50	5.30	-5.50	-6.70
8	-8	8.90	9.10	-3.10	-2.90	38	7.40	6.60	-4.60	-5.40
10	-10	9.70	10.30	-2.30	-1.70	40	8.50	7.80	-3.50	-4.20
12	-12	10.40	11.70	-1.60	-0.30	42	9.10	8.90	-2.90	-3.10
14	-14	11.00	12.00	-1.00	0.00	44	9.70	10.00	-2.30	-2.00
16	-16	11.20		-0.80		46	10.70	11.40	-1.30	-0.60
18	-18	11.20		-0.80		48	11.00	11.80	-1.00	-0.20
20	-20	11.30		-0.70		50	11.00	12.00	-1.00	0.00
22	-22	11.40		-0.60		52	11.00		-1.00	
24	-24	11.80		-0.20		54	11.30		-0.70	
26	-26					56	11.20		-0.80	
28	-28					58	11.60		-0.40	
30	-30					60	11.70		-0.30	

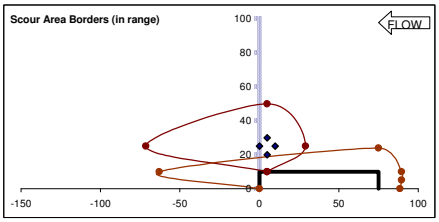
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.60	-5.40
2	7.00	-5.00
4	8.00	-4.00
6	9.30	-2.70
8	10.30	-1.70
10	11.30	-0.70
12	11.90	-0.10
14		
16		
18		
20		
22		
24		

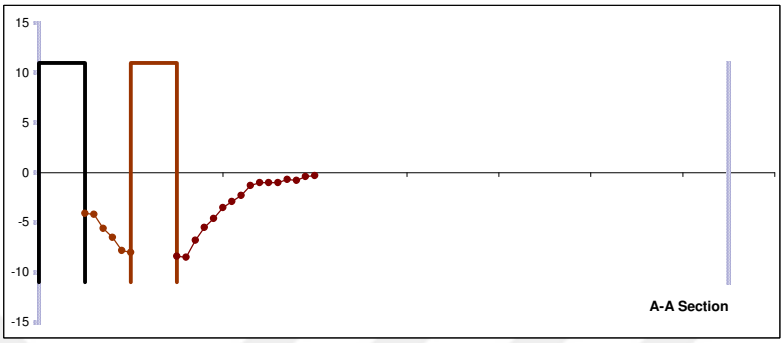
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	19
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	71.5

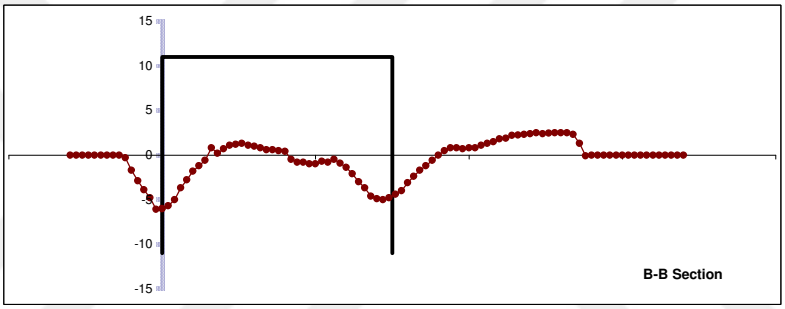


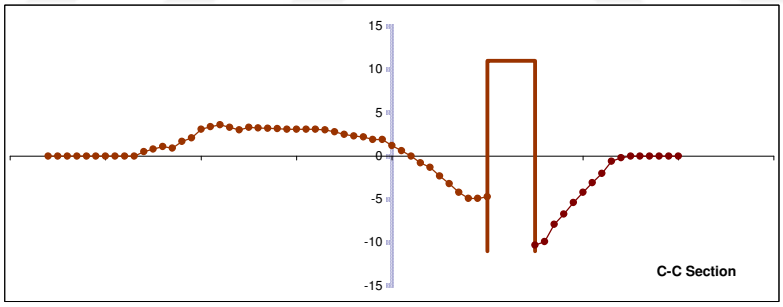
Experiment No : **E110**

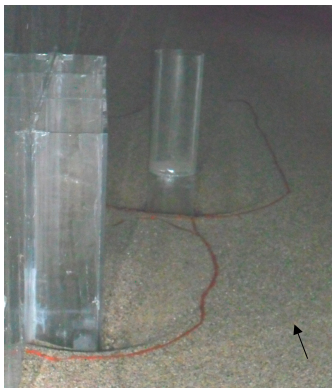


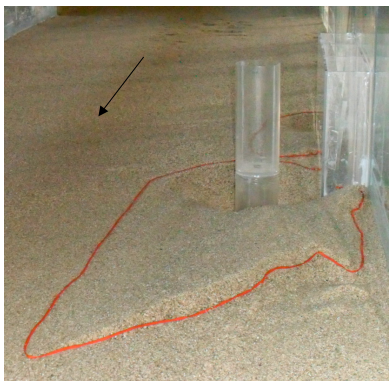




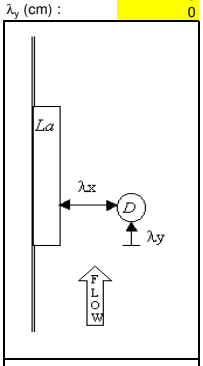


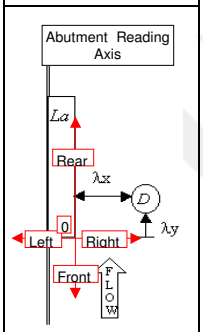


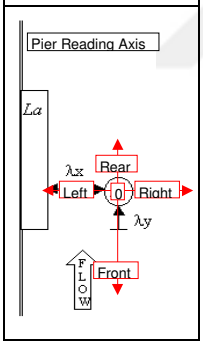


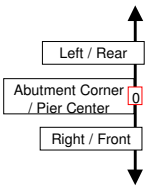


Experiment No :	**E111**
Date :	15.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	0









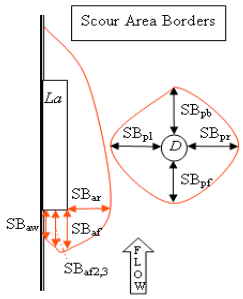
This color was used for raw data readings

This color was used for values enterpolated to sketch

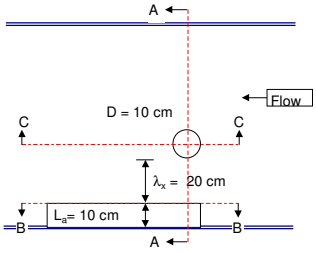
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-110				
-138	138					-108				
-136	136					-106				
-134	134					-104				
-132	132					-102				
-130	130					-100				
-128	128					-98				
-126	126		12.00		0.00	-96				
-124	124		13.40		1.40	-94				
-122	122		13.90		1.90	-92				
-120	120		14.10		2.10	-90				
-118	118		14.10		2.10	-88				
-116	116		13.90		1.90	-86				
-114	114		13.80		1.80	-84				
-112	112		13.80		1.80	-82				
-110	110		13.60		1.60	-80				
-108	108		13.60		1.60	-78				
-106	106		13.50		1.50	-76				
-104	104		13.20		1.20	-74				
-102	102		13.30		1.30	-72				
-100	100		13.00		1.00	-70		12.00		0.00
-98	98		12.80		0.80	-68		12.40		0.40
-96	96		12.60		0.60	-66		12.60		0.60
-94	94		12.60		0.60	-64		13.80		1.80
-92	92		12.20		0.20	-62		13.10		1.10
-90	90		12.20		0.20	-60		13.30		1.30
-88	88		11.80		-0.20	-58		*13.45*		1.45
-86	86		11.60		-0.40	-56		13.60		1.60
-84	84		11.30		-0.70	-54		*13.65*		1.65
-82	82		11.40		-0.60	-52		13.70		1.70
-80	80		11.30		-0.70	-50		*13.75*		1.75
-78	78		11.30		-0.70	-48		13.80		1.80
-76	76		11.30		-0.70	-46		*13.80*		1.80
-74	74		11.30		-0.70	-44		13.80		1.80
-72	72		11.40		-0.60	-42		*13.85*		1.85
-70	70		*11.35*		-0.65	-40		13.90		1.90
-68	68		11.30		-0.70	-38		*13.95*		1.95
-66	66		*11.40*		-0.60	-36		14.00		2.00
-64	64		11.50		-0.50	-34		*14.00*		2.00
-62	62		*11.55*		-0.45	-32		14.00		2.00
-60	60		11.60		-0.40	-30		*14.00*		2.00
-58	58		*11.55*		-0.45	-28		14.00		2.00
-56	56		11.50		-0.50	-26		*14.00*		2.00
-54	54		*11.50*		-0.50	-24		14.00		2.00
-52	52		11.50		-0.50	-22		*13.95*		1.95
-50	50		11.50		-0.50	-20		13.90		1.90
-48	48		11.50		-0.50	-18		*13.90*		1.90
-46	46		11.60		-0.40	-16		13.90		1.90
-44	44		11.30		-0.70	-14		*13.85*		1.85
-42	42		11.10		-0.90	-12		13.80		1.80
-40	40		11.00		-1.00	-10		*13.80*		1.80
-38	38		11.30		-0.70	-8		13.80		1.80
-36	36		12.40		0.40	-6		13.80		1.80
-34	34		12.60		0.60	-4		13.80		1.80
-32	32		12.70		0.70	-2		13.70		1.70
-30	30		12.90		0.90	0		13.70		1.70
-28	28		12.90		0.90	2		13.60		1.60
-26	26		13.00		1.00	4		13.40		1.40
-24	24		12.80		0.80	6		13.10		1.10
-22	22		12.80		0.80	8		12.80		0.80
-20	20		13.10		1.10	10	7.30	12.40	-4.70	0.40
-18	18		12.60		0.60	12	7.10	12.10	-4.90	0.10
-16	16		12.30		0.30	14	7.90	11.60	-4.10	-0.40
-14	14		12.10		0.10	16	9.40	10.70	-2.60	-1.30
-12	12		11.60		-0.40	18	9.10	10.00	-2.90	-2.00
-10	10	6.70	11.10	-5.30	-0.90	20	7.90	9.20	-4.10	-2.80
-8	8	6.60	10.20	-5.40	-1.80	22	6.70	8.40	-5.30	-3.60
-6	6	6.20	9.20	-5.80	-2.80	24	5.40	7.70	-6.60	-4.30
-4	4	5.60	8.00	-6.40	-4.00	26	4.50	6.90	-7.50	-5.10
-2	2	5.30	6.90	-6.70	-5.10	28	3.10	6.60	-8.90	-5.40
0	0	6.00	6.00	-6.00	-6.00	30	4.00	6.90	-8.00	-5.10
0	0	6.00	6.00	-6.00	-6.00	40	2.60	1.70	-9.40	-10.30
2	-2	5.60	6.60	-6.40	-5.40	42	3.00	2.70	-9.00	-9.30
4	-4	6.10	7.80	-5.90	-4.20	44	4.60	4.40	-7.40	-7.60
6	-6	7.30	8.30	-4.70	-3.70	46	6.10	5.70	-5.90	-6.30
8	-8	8.60	9.30	-3.40	-2.70	48	7.40	6.70	-4.60	-5.30
10	-10	9.30	10.50	-2.70	-1.50	50	8.60	7.70	-3.40	-4.30
12	-12	7.90	11.60	-4.10	-0.40	52	9.80	9.10	-2.20	-2.90
14	-14	6.70	11.80	-5.30	-0.20	54	10.70	10.50	-1.30	-1.50
16	-16	5.20		-6.80		56	11.50	11.60	-0.50	-0.40
18	-18	4.30		-7.70		58	11.50	11.80	-0.50	-0.20
20	-20	3.40		-8.60		60	11.80		-0.20	
22	-22	2.20		-9.80		62				
24	-24	1.70		-10.30		64				
26	-26	1.60		-10.40		66				
28	-28	2.10		-9.90		68				
30	-30	2.00		-10.00		70				

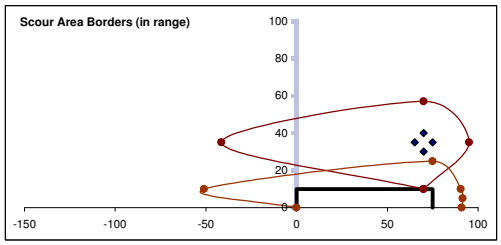
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.70	-5.30
2	6.80	-5.20
4	7.40	-4.60
6	8.90	-3.10
8	9.90	-2.10
10	11.00	-1.00
12	11.60	-0.40
14	11.70	-0.30
16	11.80	-0.20
18		
20		

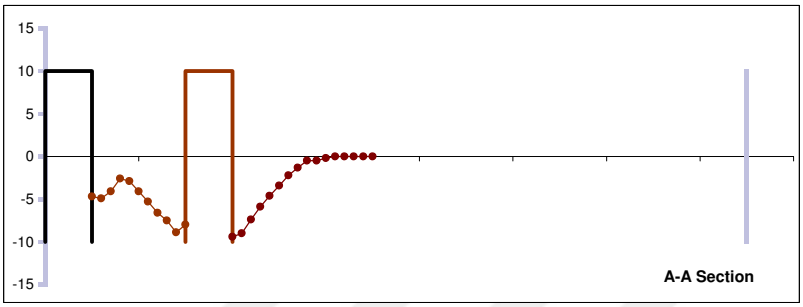
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	16.5
SB_{al}	Abutment Corner Front	15.5
SB_{ar}	Abutment Corner Right	*15*
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	20
SB_{pr}	Pier Right	17
SB_{pb}	Pier Rear	106.5

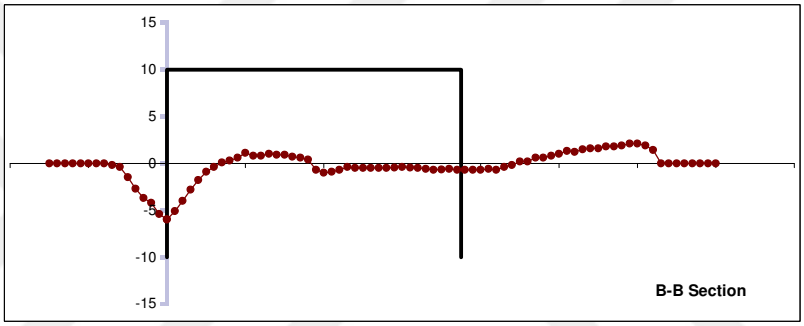


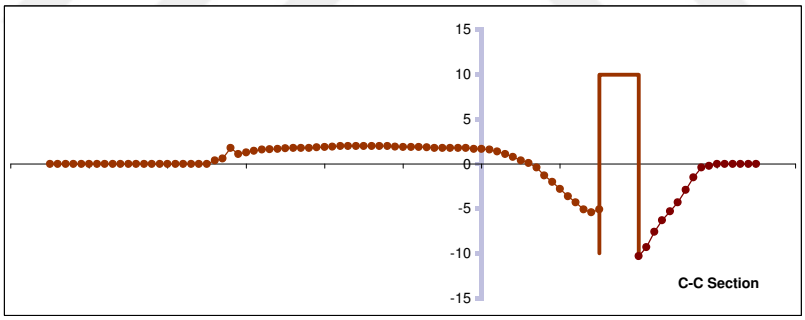
Experiment No : **E111**

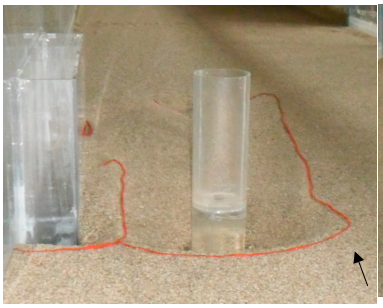


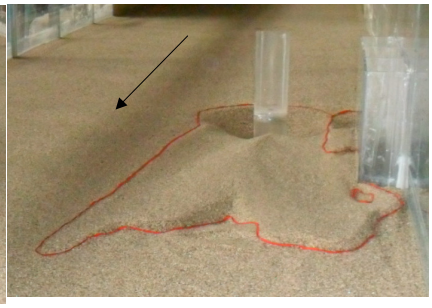




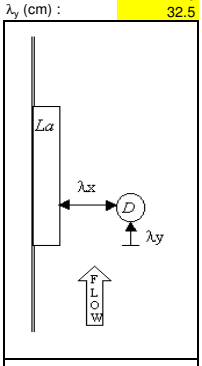


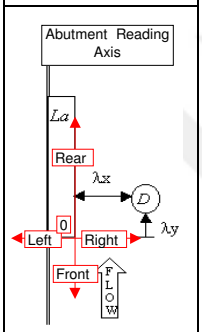


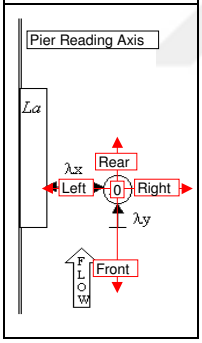


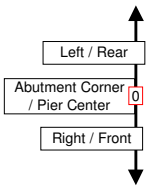


Experiment No :	**E112**
Date :	17.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	32.5









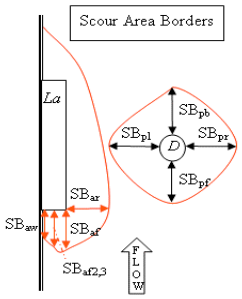
This color was used for raw data readings

This color was used for values enterpolated to sketch

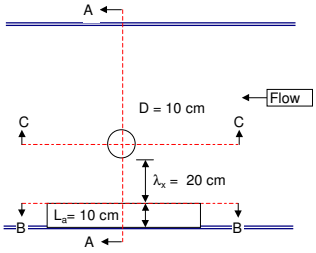
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-110				
-138	138		12.00		0.00	-108				
-136	136		14.80		2.80	-106				
-134	134		14.70		2.70	-104				
-132	132		14.80		2.80	-102				
-130	130		14.60		2.60	-100				
-128	128		14.50		2.50	-98				
-126	126		*14.65*		2.65	-96				
-124	124		14.80		2.80	-94				
-122	122		14.60		2.60	-92				
-120	120		14.50		2.50	-90				
-118	118		14.60		2.60	-88				
-116	116		14.70		2.70	-86				
-114	114		14.50		2.50	-84				
-112	112		14.10		2.10	-82				
-110	110		13.70		1.70	-80		11.80		-0.20
-108	108		12.70		0.70	-78		12.80		0.80
-106	106		13.30		1.30	-76		12.50		0.50
-104	104		13.00		1.00	-74		13.40		1.40
-102	102		12.90		0.90	-72		14.00		2.00
-100	100		12.70		0.70	-70		14.20		2.20
-98	98		12.50		0.50	-68		14.30		2.30
-96	96		12.50		0.50	-66		*14.35*		2.35
-94	94		12.50		0.50	-64		14.40		2.40
-92	92		12.00		0.00	-62		*14.40*		2.40
-90	90		11.90		-0.10	-60		14.40		2.40
-88	88		*11.87*		-0.13	-58		*14.40*		2.40
-86	86		*11.84*		-0.16	-56		14.40		2.40
-84	84		11.80		-0.20	-54		*14.35*		2.35
-82	82		11.60		-0.40	-52		14.30		2.30
-80	80		11.50		-0.50	-50		*14.25*		2.25
-78	78		11.30		-0.70	-48		14.20		2.20
-76	76		11.30		-0.70	-46		*14.20*		2.20
-74	74		11.20		-0.80	-44		14.20		2.20
-72	72		11.30		-0.70	-42		*14.15*		2.15
-70	70		11.40		-0.60	-40		14.10		2.10
-68	68		11.40		-0.60	-38		*14.15*		2.15
-66	66		11.40		-0.60	-36		14.20		2.20
-64	64		*11.50*		-0.50	-34		*14.20*		2.20
-62	62		11.60		-0.40	-32		14.20		2.20
-60	60		*11.75*		-0.25	-30		*14.30*		2.30
-58	58		11.90		-0.10	-28		14.40		2.40
-56	56		*11.80*		-0.20	-26		*14.40*		2.40
-54	54		11.70		-0.30	-24		14.40		2.40
-52	52		*11.70*		-0.30	-22		*14.50*		2.50
-50	50		11.70		-0.30	-20		14.60		2.60
-48	48		*11.50*		-0.50	-18		*14.65*		2.65
-46	46		11.30		-0.70	-16		14.70		2.70
-44	44		*11.30*		-0.70	-14		*14.70*		2.70
-42	42		11.30		-0.70	-12		14.70		2.70
-40	40		*11.40*		-0.60	-10		14.70		2.70
-38	38		11.50		-0.50	-8		14.60		2.60
-36	36		11.50		-0.50	-6		14.40		2.40
-34	34		11.60		-0.40	-4		14.20		2.20
-32	32		11.70		-0.30	-2		14.00		2.00
-30	30		12.30		0.30	0		13.80		1.80
-28	28		13.00		1.00	2		12.60		0.60
-26	26		13.60		1.60	4		12.30		0.30
-24	24		13.70		1.70	6		12.80		0.80
-22	22		13.80		1.80	8		12.50		0.50
-20	20		13.80		1.80	10	11.10	12.10	-0.90	0.10
-18	18		13.70		1.70	12	10.90	11.10	-1.10	-0.90
-16	16		13.10		1.10	14	10.70	10.80	-1.30	-1.20
-14	14		12.70		0.70	16	9.80	10.10	-2.20	-1.90
-12	12		12.00		0.00	18	9.80	9.50	-2.20	-2.50
-10	10	8.60	11.10	-3.40	-0.90	20	7.60	8.90	-4.40	-3.10
-8	8	7.80	10.10	-4.20	-1.90	22	6.50	7.70	-5.50	-4.30
-6	6	7.20	9.00	-4.80	-3.00	24	5.30	6.90	-6.70	-5.10
-4	4	6.80	7.90	-5.20	-4.10	26	4.00	6.20	-8.00	-5.80
-2	2	6.40	7.20	-5.60	-4.80	28	2.70	6.10	-9.30	-5.90
0	0	6.30	6.30	-5.70	-5.70	30	2.30	6.20	-9.70	-5.80
0	0	6.30	6.30	-5.70	-5.70	40	2.00	1.20	-10.00	-10.80
2	-2	6.90	6.50	-5.10	-5.50	42	1.90	1.60	-10.10	-10.40
4	-4	6.60	7.80	-5.40	-4.20	44	2.60	3.40	-9.40	-8.60
6	-6	8.30	8.60	-3.70	-3.40	46	5.20	4.50	-6.80	-7.50
8	-8	9.30	9.90	-2.70	-2.10	48	6.40	5.90	-5.60	-6.10
10	-10	9.70	11.20	-2.30	-0.80	50	7.60	7.00	-4.40	-5.00
12	-12	10.90	11.40	-1.10	-0.60	52	8.00	8.50	-4.00	-3.50
14	-14	11.10	11.60	-0.90	-0.40	54	8.50	9.50	-3.50	-2.50
16	-16	10.80	11.80	-1.20	-0.20	56	9.20	10.60	-2.80	-1.40
18	-18	11.20		-0.80		58	10.30	11.40	-1.70	-0.60
20	-20	11.20		-0.80		60	11.60	11.60	-0.40	-0.40
22	-22	11.30		-0.70		62	11.80	11.80	-0.20	-0.20
24	-24	11.40		-0.60		64				
26	-26	11.50		-0.50		66				
28	-28	11.60		-0.40		68				
30	-30	11.80		-0.20		70				

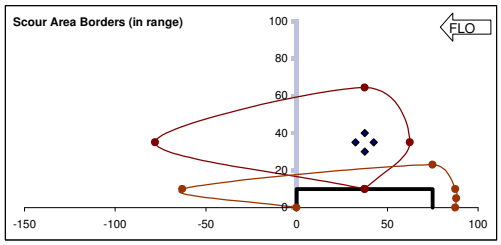
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.80	-4.20
2	7.90	-4.10
4	9.00	-3.00
6	10.10	-1.90
8	11.10	-0.90
10	11.60	-0.40
12	11.80	-0.20
14	12.00	0.00
16		
18		
20		

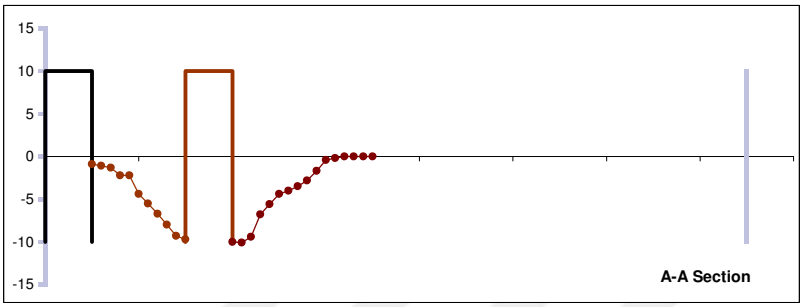
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	13
SB_{al}	Abutment Corner Front	12.5
SB_{ar}	Abutment Corner Right	13
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	20
SB_{pr}	Pier Right	24.5
SB_{pb}	Pier Rear	110.5

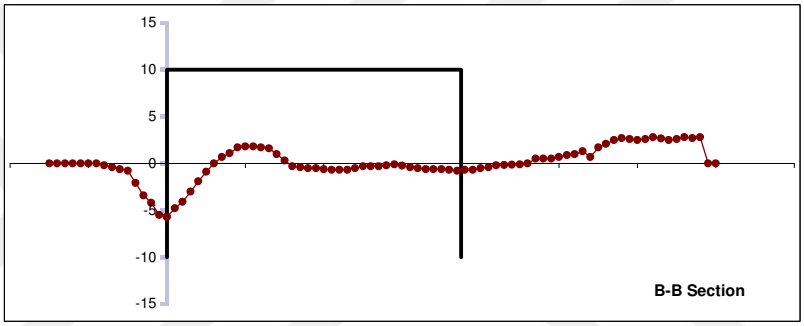


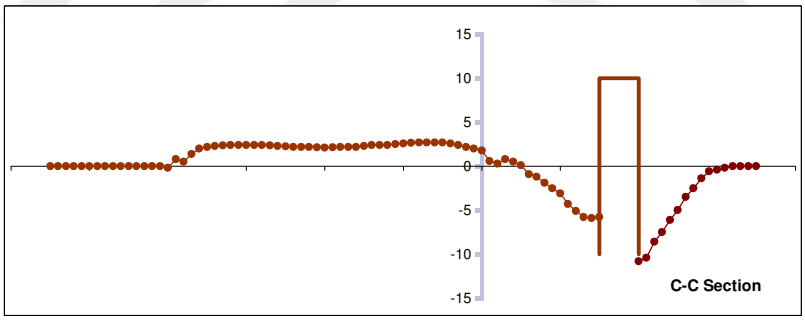
Experiment No : **E112**

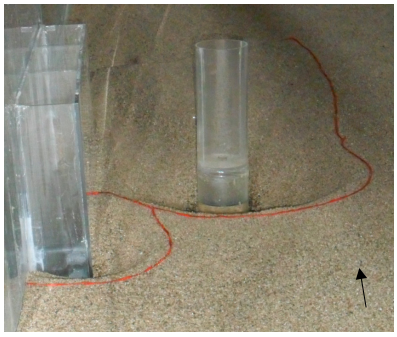


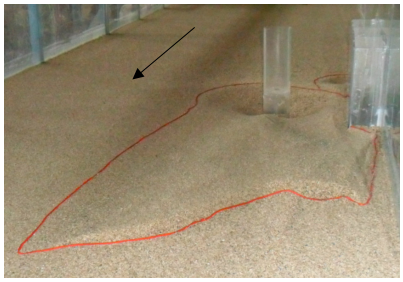






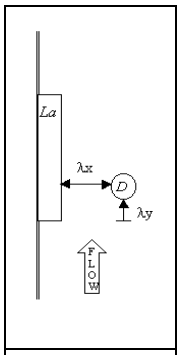


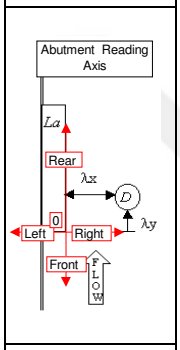


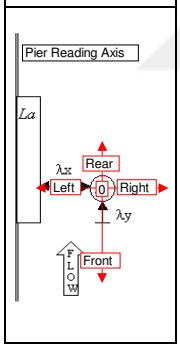


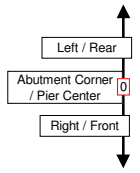
Experiment No : **E113**

Date :	21.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	65









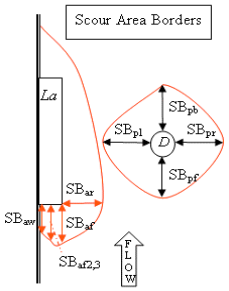
This color was used for raw data readings

This color was used for values enterpolated to sketch

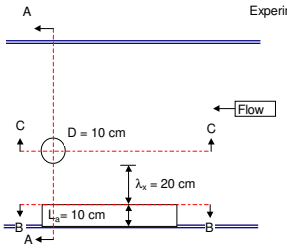
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-140				
-168	168					-138				
-166	166					-136				
-164	164					-134				
-162	162					-132				
-160	160		12.00		0.00	-130				
-158	158		12.50		0.50	-128				
-156	156		13.50		1.50	-126				
-154	154		13.70		1.70	-124				
-152	152		13.70		1.70	-122				
-150	150		13.80		1.80	-120				
-148	148		14.20		2.20	-118				
-146	146		14.20		2.20	-116				
-144	144		13.90		1.90	-114				
-142	142		14.00		2.00	-112				
-140	140		13.90		1.90	-110				
-138	138		13.40		1.40	-108				
-136	136		13.40		1.40	-106				
-134	134		13.20		1.20	-104				
-132	132		13.30		1.30	-102				
-130	130		13.00		1.00	-100				
-128	128		13.20		1.20	-98				
-126	126		12.90		0.90	-96				
-124	124		12.90		0.90	-94				
-122	122		12.80		0.80	-92				
-120	120		12.80		0.80	-90				
-118	118		12.80		0.80	-88				
-116	116		12.80		0.80	-86				
-114	114		12.90		0.90	-84				
-112	112		12.90		0.90	-82				
-110	110		12.90		0.90	-80				
-108	108		13.10		1.10	-78				
-106	106		13.10		1.10	-76				
-104	104		13.30		1.30	-74				
-102	102		13.40		1.40	-72				
-100	100		13.30		1.30	-70				
-98	98		13.20		1.20	-68				
-96	96		13.10		1.10	-66				
-94	94		13.00		1.00	-64		12.00		0.00
-92	92		12.50		0.50	-62		12.90		0.90
-90	90		12.30		0.30	-60		13.70		1.70
-88	88		12.30		0.30	-58		14.40		2.40
-86	86		11.90		-0.10	-56		14.90		2.90
-84	84		11.60		-0.40	-54		14.70		2.70
-82	82		11.60		-0.40	-52		14.50		2.50
-80	80		11.50		-0.50	-50		14.50		2.50
-78	78		11.30		-0.70	-48		14.20		2.20
-76	76		11.30		-0.70	-46		14.10		2.10
-74	74		11.30		-0.70	-44		14.00		2.00
-72	72		11.50		-0.50	-42		14.40		2.40
-70	70		11.80		-0.20	-40		14.50		2.50
-68	68		11.80		-0.20	-38		14.70		2.70
-66	66		11.80		-0.20	-36		14.90		2.90
-64	64		11.90		-0.10	-34		*15.05*		3.05
-62	62		12.10		0.10	-32		15.20		3.20
-60	60		11.90		-0.10	-30		*15.20*		3.20
-58	58		11.90		-0.10	-28		15.20		3.20
-56	56		12.00		0.00	-26		*14.95*		2.95
-54	54		12.20		0.20	-24		14.70		2.70
-52	52		12.30		0.30	-22		*14.75*		2.75
-50	50		12.50		0.50	-20		14.80		2.80
-48	48		12.90		0.90	-18		*14.90*		2.90
-46	46		13.30		1.30	-16		15.00		3.00
-44	44		13.70		1.70	-14		*15.05*		3.05
-42	42		13.80		1.80	-12		15.10		3.10
-40	40		13.70		1.70	-10		15.10		3.10
-38	38		13.70		1.70	-8		15.00		3.00
-36	36		13.90		1.90	-6		14.80		2.80
-34	34		13.70		1.70	-4		14.50		2.50
-32	32		13.70		1.70	-2		14.40		2.40
-30	30		13.70		1.70	0		14.40		2.40
-28	28		13.60		1.60	2		14.30		2.30
-26	26		13.60		1.60	4		13.90		1.90
-24	24		13.40		1.40	6		13.50		1.50
-22	22		13.40		1.40	8		13.30		1.30
-20	20		13.20		1.20	10	11.40	12.60	-0.60	0.60
-18	18		12.90		0.90	12	11.10	11.80	-0.90	-0.20
-16	16		12.50		0.50	14	11.10	11.30	-0.90	-0.70
-14	14		11.80		-0.20	16	10.30	10.60	-1.70	-1.40
-12	12		11.00		-1.00	18	9.60	10.20	-2.40	-1.80
-10	10	7.30	10.00	-4.70	-2.00	20	8.50	9.60	-3.50	-2.40
-8	8	6.60	9.10	-5.40	-2.90	22	7.40	8.40	-4.60	-3.60
-6	6	6.30	8.20	-5.70	-3.80	24	6.00	7.80	-6.00	-4.20
-4	4	6.20	6.30	-5.80	-5.70	26	4.80	7.10	-7.20	-4.90
-2	2	5.80	6.20	-6.20	-5.80	28	3.60	6.80	-8.40	-5.20
0	0	5.70	5.70	-6.30	-6.30	30	3.10	6.90	-8.90	-5.10
0	0	5.70	5.70	-6.30	-6.30	40	2.60	1.70	-9.40	-10.30
2	-2	6.10	6.30	-5.90	-5.70	42	2.90	2.30	-9.10	-9.70
4	-4	6.60	7.70	-5.40	-4.30	44	4.60	3.80	-7.40	-8.20
6	-6	8.30	8.10	-3.70	-3.90	46	5.50	4.80	-6.50	-7.20
8	-8	9.30	9.40	-2.70	-2.60	48	6.90	6.20	-5.10	-5.80
10	-10	10.20	10.60	-1.80	-1.40	50	8.00	7.50	-4.00	-4.50
12	-12	10.70	11.60	-1.30	-0.40	52	8.40	8.70	-3.60	-3.30
14	-14	11.40	11.80	-0.60	-0.20	54	9.10	9.90	-2.90	-2.10
16	-16	11.50		-0.50		56	10.20	11.20	-1.80	-0.80
18	-18	11.60		-0.40		58	10.50	12.00	-1.50	0.00
20	-20	11.80		-0.20		60	11.80		-0.20	
22	-22					62				
24	-24					64				
26	-26					66				
28	-28					68				
30	-30					70				

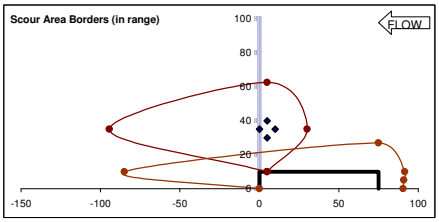
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.60	-5.40
2	6.50	-5.50
4	7.90	-4.10
6	9.20	-2.80
8	10.10	-1.90
10	11.20	-0.80
12	11.40	-0.60
14	11.80	-0.20
16		
18		
20		
22		
24		

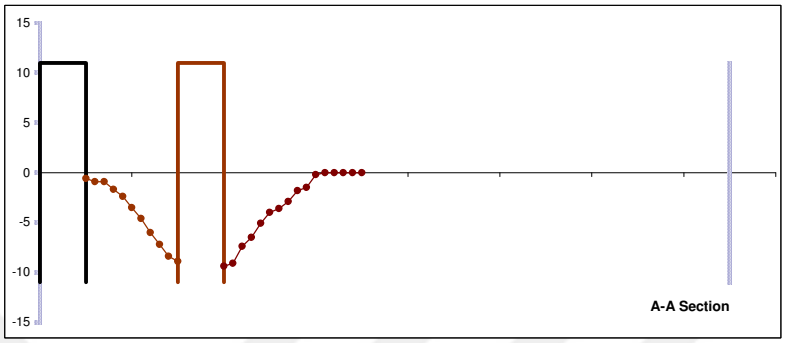
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	16.5
SB_{ar}	Abutment Corner Right	17
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	20
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	94.5

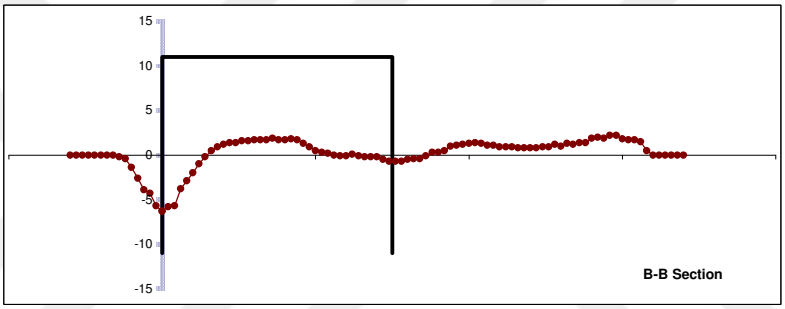


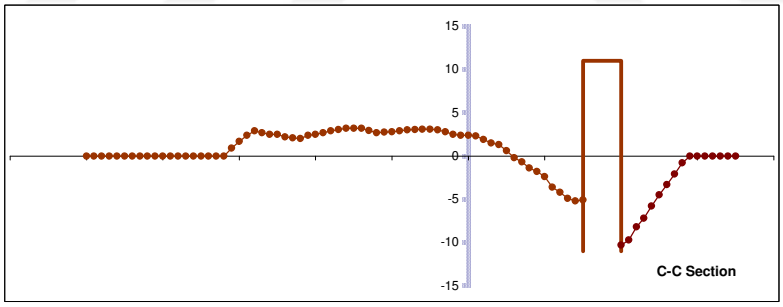
Experiment No : **E113**

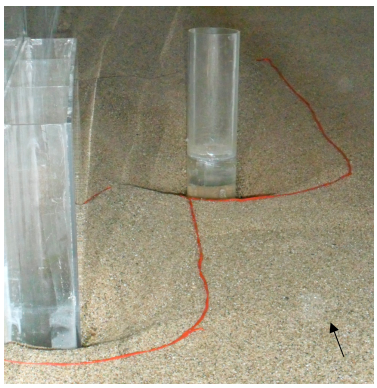


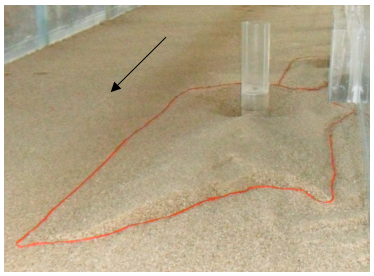




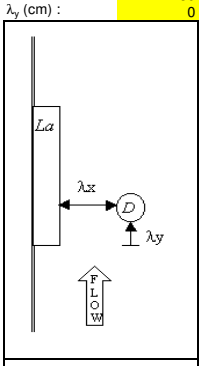


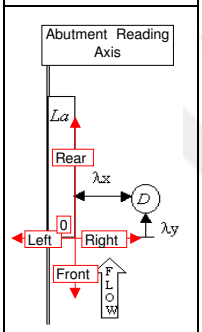


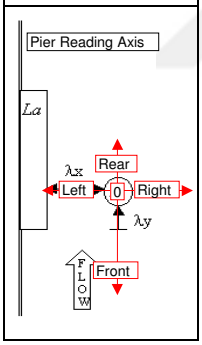


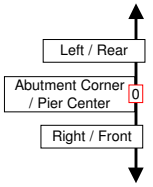


Experiment No :	**E114**
Date :	23.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	0









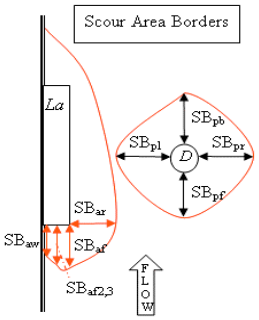
This color was used for raw data readings

This color was used for values enterpolated to sketch

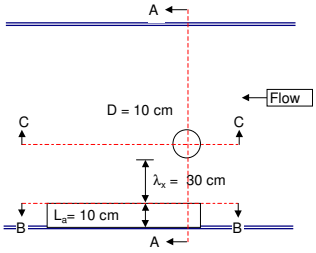
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-100				
-138	138					-98				
-136	136					-96				
-134	134					-94				
-132	132					-92				
-130	130					-90				
-128	128					-88				
-126	126		12.00		0.00	-86				
-124	124		12.70		0.70	-84				
-122	122		13.00		1.00	-82				
-120	120		13.10		1.10	-80				
-118	118		13.00		1.00	-78				
-116	116		13.00		1.00	-76				
-114	114		13.30		1.30	-74				
-112	112		12.80		0.80	-72				
-110	110		12.90		0.90	-70		12.20		0.20
-108	108		13.10		1.10	-68		12.30		0.30
-106	106		12.90		0.90	-66		12.50		0.50
-104	104		12.70		0.70	-64		12.70		0.70
-102	102		12.50		0.50	-62		12.90		0.90
-100	100		12.30		0.30	-60		*13.00*		1.00
-98	98		12.10		0.10	-58		13.10		1.10
-96	96		11.80		-0.20	-56		*13.25*		1.25
-94	94		11.80		-0.20	-54		13.40		1.40
-92	92		11.80		-0.20	-52		*13.45*		1.45
-90	90		11.50		-0.50	-50		13.50		1.50
-88	88		11.50		-0.50	-48		*13.55*		1.55
-86	86		11.50		-0.50	-46		*13.60*		1.60
-84	84		11.20		-0.80	-44		*13.65*		1.65
-82	82		11.20		-0.80	-42		13.70		1.70
-80	80		11.10		-0.90	-40		*13.75*		1.75
-78	78		11.10		-0.90	-38		13.80		1.80
-76	76		10.80		-1.20	-36		*13.85*		1.85
-74	74		11.10		-0.90	-34		13.90		1.90
-72	72		10.90		-1.10	-32		*13.95*		1.95
-70	70		11.20		-0.80	-30		14.00		2.00
-68	68		11.10		-0.90	-28		*14.05*		2.05
-66	66		11.30		-0.70	-26		14.10		2.10
-64	64		11.40		-0.60	-24		*14.10*		2.10
-62	62		11.40		-0.60	-22		14.10		2.10
-60	60		11.60		-0.40	-20		*14.10*		2.10
-58	58		11.60		-0.40	-18		14.10		2.10
-56	56		11.80		-0.20	-16		*14.10*		2.10
-54	54		12.00		0.00	-14		14.10		2.10
-52	52		12.30		0.30	-12		*14.10*		2.10
-50	50		12.40		0.40	-10		14.10		2.10
-48	48		12.60		0.60	-8		*14.20*		2.20
-46	46		12.70		0.70	-6		14.30		2.30
-44	44		12.70		0.70	-4		*14.20*		2.20
-42	42		12.90		0.90	-2		14.10		2.10
-40	40		13.10		1.10	0		*13.90*		1.90
-38	38		13.10		1.10	2		13.70		1.70
-36	36		13.20		1.20	4		*13.75*		1.75
-34	34		13.20		1.20	6		13.80		1.80
-32	32		13.30		1.30	8		13.30		1.30
-30	30		13.20		1.20	10	7.20	13.00	-4.80	1.00
-28	28		13.10		1.10	12	7.00	12.70	-5.00	0.70
-26	26		12.90		0.90	14	7.50	12.60	-4.50	0.60
-24	24		12.80		0.80	16	8.50	12.60	-3.50	0.60
-22	22		12.60		0.60	18	9.50	12.00	-2.50	0.00
-20	20		12.50		0.50	20	10.30	11.50	-1.70	-0.50
-18	18		12.20		0.20	22	10.60	11.10	-1.40	-0.90
-16	16		11.80		-0.20	24	10.20	10.40	-1.80	-1.60
-14	14		11.40		-0.60	26	9.30	9.90	-2.70	-2.10
-12	12		10.70		-1.30	28	8.30	8.90	-3.70	-3.10
-10	10	7.60	10.00	-4.40	-2.00	30	7.30	8.00	-4.70	-4.00
-8	8	7.20	8.90	-4.80	-3.10	32	6.20	7.10	-5.80	-4.90
-6	6	6.50	7.80	-5.50	-4.20	34	5.20	6.40	-6.80	-5.60
-4	4	5.70	6.80	-6.30	-5.20	36	3.70	6.00	-8.30	-6.00
-2	2	5.40	6.30	-6.60	-5.70	38	2.30	6.00	-9.70	-6.00
0	0	5.50	5.50	-6.50	-6.50	40	2.00	5.60	-10.00	-6.40
0	0	5.50	5.50	-6.50	-6.50	50	2.30	1.20	-9.70	-10.80
2	-2	5.40	5.70	-6.60	-6.30	52	2.50	1.80	-9.50	-10.20
4	-4	6.20	7.10	-5.80	-4.90	54	4.30	3.40	-7.70	-8.60
6	-6	7.70	8.00	-4.30	-4.00	56	5.30	4.80	-6.70	-7.20
8	-8	8.60	9.30	-3.40	-2.70	58	6.80	6.10	-5.20	-5.90
10	-10	9.60	10.70	-2.40	-1.30	60	8.10	7.20	-3.90	-4.80
12	-12	10.20	11.30	-1.80	-0.70	62	9.00	8.50	-3.00	-3.50
14	-14	11.80	11.60	-0.20	-0.40	64	9.80	9.70	-2.20	-2.30
16	-16		11.80		-0.20	66	10.80	10.60	-1.20	-1.40
18	-18					68	11.60	11.50	-0.40	-0.50
20	-20					70	11.80	11.80	-0.20	-0.20
22	-22					72				
24	-24					74				
26	-26					76				
28	-28					78				
30	-30					80				

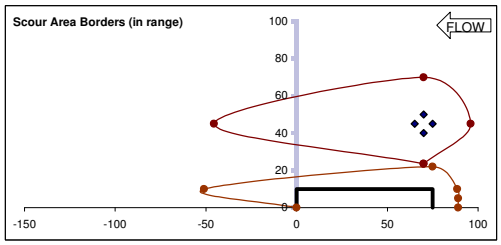
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.80	-5.20
2	6.90	-5.10
4	7.80	-4.20
6	8.90	-3.10
8	9.90	-2.10
10	10.90	-1.10
12	11.80	-0.20
14		
16		
18		
20		

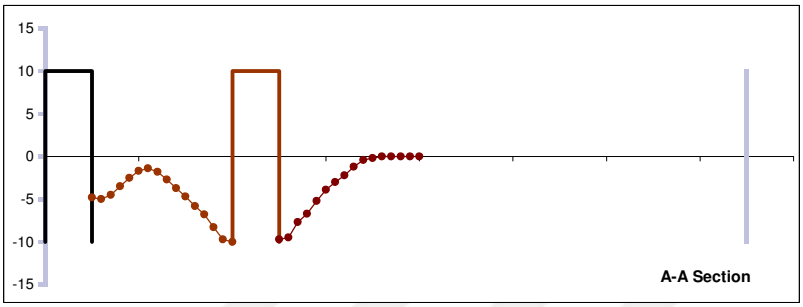
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	13.5
SB_{ar}	Abutment Corner Right	12
SB_{pl}	Pier Left	16.5
SB_{pf}	Pier Front	21
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	110.5

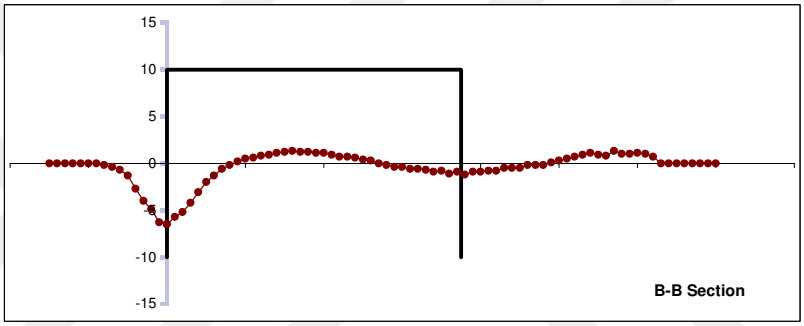


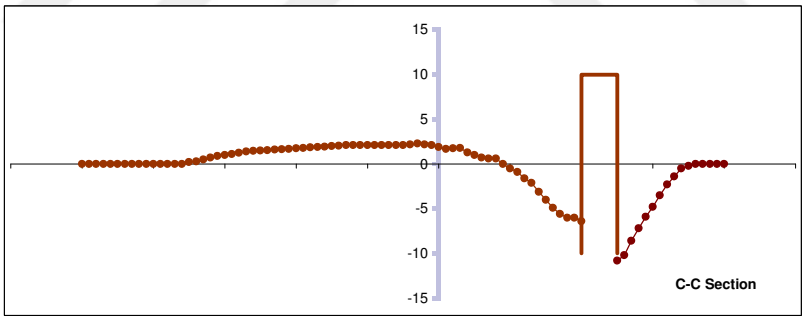
Experiment No : **E114**

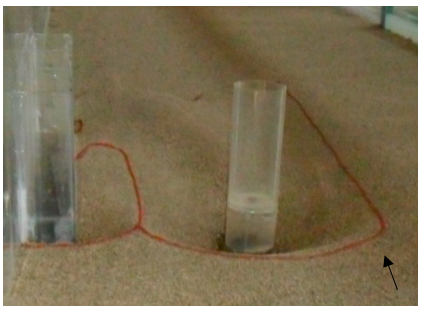


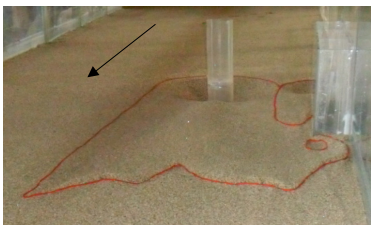




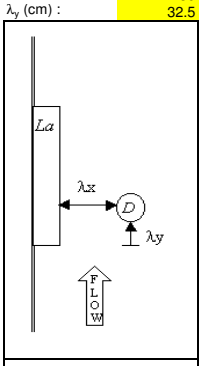


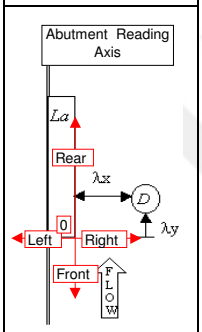


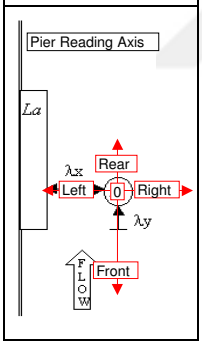


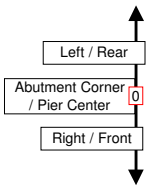


Experiment No :	**E115**
Date :	28.02.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	32.5









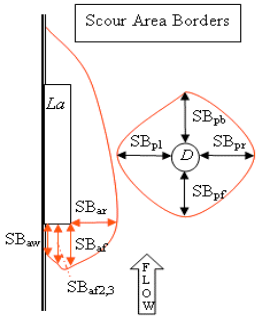
This color was used for raw data readings

This color was used for values enterpolated to sketch

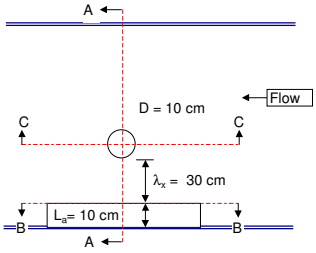
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140		13.80		1.80	-100				
-138	138		13.70		1.70	-98				
-136	136		13.80		1.80	-96				
-134	134		13.90		1.90	-94				
-132	132		13.30		1.30	-92				
-130	130		13.60		1.60	-90				
-128	128		13.30		1.30	-88				
-126	126		13.50		1.50	-86		12.00		0.00
-124	124		13.60		1.60	-84		11.80		-0.20
-122	122		13.30		1.30	-82		11.70		-0.30
-120	120		13.80		1.80	-80		13.10		1.10
-118	118		13.70		1.70	-78		13.70		1.70
-116	116		13.30		1.30	-76		*13.70*		1.70
-114	114		13.50		1.50	-74		13.70		1.70
-112	112		13.30		1.30	-72		*13.75*		1.75
-110	110		13.10		1.10	-70		13.80		1.80
-108	108		12.90		0.90	-68		*13.85*		1.85
-106	106		12.80		0.80	-66		13.90		1.90
-104	104		12.80		0.80	-64		*13.90*		1.90
-102	102		12.60		0.60	-62		13.90		1.90
-100	100		12.40		0.40	-60		*14.10*		2.10
-98	98		12.40		0.40	-58		14.30		2.30
-96	96		12.50		0.50	-56		*14.15*		2.15
-94	94		12.40		0.40	-54		14.00		2.00
-92	92		12.40		0.40	-52		*14.00*		2.00
-90	90		12.40		0.40	-50		14.00		2.00
-88	88		12.10		0.10	-48		*14.00*		2.00
-86	86		11.80		-0.20	-46		14.00		2.00
-84	84		11.70		-0.30	-44		*14.10*		2.10
-82	82		11.60		-0.40	-42		14.20		2.20
-80	80		11.50		-0.50	-40		*14.20*		2.20
-78	78		11.40		-0.60	-38		14.20		2.20
-76	76		11.60		-0.40	-36		*14.15*		2.15
-74	74		11.50		-0.50	-34		14.10		2.10
-72	72		11.50		-0.50	-32		*14.25*		2.25
-70	70		11.70		-0.30	-30		14.40		2.40
-68	68		11.70		-0.30	-28		*14.40*		2.40
-66	66		11.60		-0.40	-26		14.40		2.40
-64	64		11.70		-0.30	-24		*14.40*		2.40
-62	62		11.80		-0.20	-22		14.40		2.40
-60	60		11.90		-0.10	-20		*14.45*		2.45
-58	58		12.10		0.10	-18		14.50		2.50
-56	56		12.00		0.00	-16		*14.55*		2.55
-54	54		12.10		0.10	-14		14.60		2.60
-52	52		12.10		0.10	-12		*14.75*		2.75
-50	50		12.10		0.10	-10		14.90		2.90
-48	48		12.90		0.90	-8		*14.90*		2.90
-46	46		12.40		0.40	-6		14.90		2.90
-44	44		13.20		1.20	-4		*14.90*		2.90
-42	42		13.60		1.60	-2		14.90		2.90
-40	40		13.80		1.80	0		14.90		2.90
-38	38		13.70		1.70	2		14.60		2.60
-36	36		13.70		1.70	4		14.30		2.30
-34	34		13.60		1.60	6		14.30		2.30
-32	32		13.50		1.50	8		14.10		2.10
-30	30		13.60		1.60	10	*13.53*	13.90	1.53	1.90
-28	28		13.70		1.70	12	*13.39*	13.90	1.39	1.90
-26	26		13.80		1.80	14	*13.25*	13.30	1.25	1.30
-24	24		13.70		1.70	16	13.10	13.00	1.10	1.00
-22	22		13.60		1.60	18	13.00	12.70	1.00	0.70
-20	20		13.40		1.40	20	12.50	12.40	0.50	0.40
-18	18		13.00		1.00	22	11.70	11.80	-0.30	-0.20
-16	16		12.60		0.60	24	10.60	11.10	-1.40	-0.90
-14	14		12.00		0.00	26	9.70	10.10	-2.30	-1.90
-12	12		11.10		-0.90	28	8.70	9.40	-3.30	-2.60
-10	10	7.80	10.30	-4.20	-1.70	30	7.60	8.20	-4.40	-3.80
-8	8	7.20	9.60	-4.80	-2.40	32	6.30	7.00	-5.70	-5.00
-6	6	6.90	8.20	-5.10	-3.80	34	5.10	6.40	-6.90	-5.60
-4	4	6.20	7.20	-5.80	-4.80	36	3.80	5.90	-8.20	-6.10
-2	2	6.10	6.60	-5.90	-5.40	38	2.00	6.00	-10.00	-6.00
0	0	5.80	5.80	-6.20	-6.20	40	2.90	6.00	-9.10	-6.00
0	0	5.80	5.80	-6.20	-6.20	50	2.40	0.90	-9.60	-11.10
2	-2	6.40	6.40	-5.60	-5.60	52	2.60	1.80	-9.40	-10.20
4	-4	6.30	7.60	-5.70	-4.40	54	4.00	3.20	-8.00	-8.80
6	-6	7.70	8.30	-4.30	-3.70	56	5.30	4.50	-6.70	-7.50
8	-8	9.20	9.60	-2.80	-2.40	58	6.70	5.70	-5.30	-6.30
10	-10	10.10	11.20	-1.90	-0.80	60	7.60	7.00	-4.40	-5.00
12	-12	10.90	11.90	-1.10	-0.10	62	8.60	8.20	-3.40	-3.80
14	-14	11.40	12.00	-0.60	0.00	64	9.90	9.40	-2.10	-2.60
16	-16	11.70		-0.30		66	10.00	10.70	-2.00	-1.30
18	-18	11.80		-0.20		68	11.60	11.70	-0.40	-0.30
20	-20					70	11.80	12.00	-0.20	0.00
22	-22					72		13.20		1.20
24	-24					74		13.30		1.30
26	-26					76		13.10		1.10
28	-28					78		13.20		1.20
30	-30					80		13.00		1.00

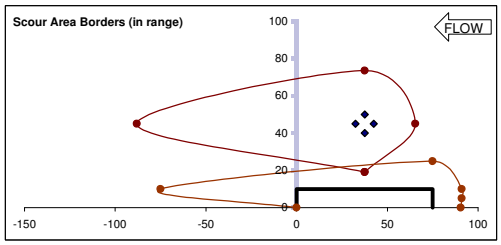
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.20	-4.80
2	7.30	-4.70
4	7.80	-4.20
6	9.30	-2.70
8	10.20	-1.80
10	11.50	-0.50
12	11.90	-0.10
14		
16		
18		
20		

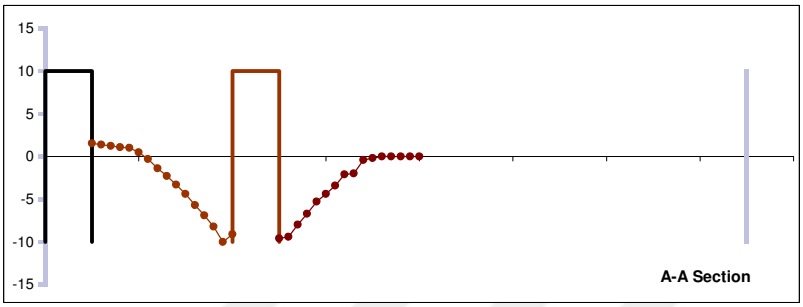
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	*16*
SB_{ar}	Abutment Corner Right	15
SB_{pl}	Pier Left	21
SB_{pf}	Pier Front	23
SB_{pr}	Pier Right	23.5
SB_{pb}	Pier Rear	120.5

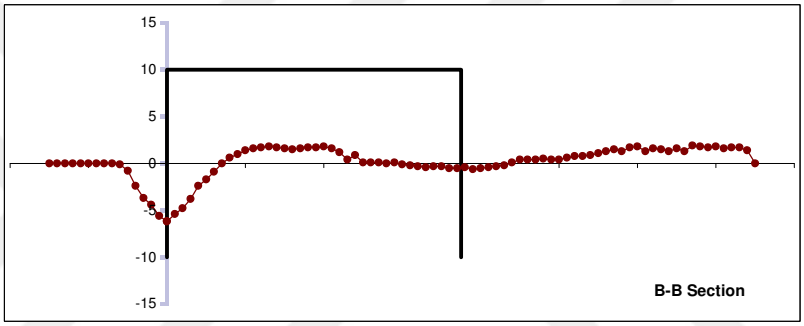


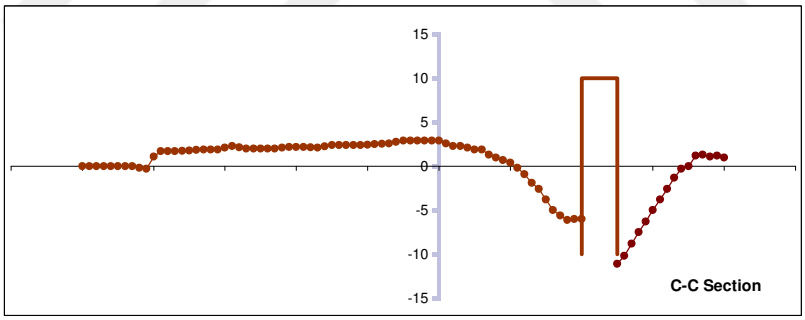
Experiment No : **E115**

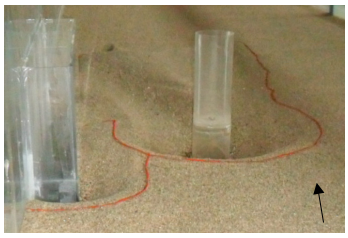


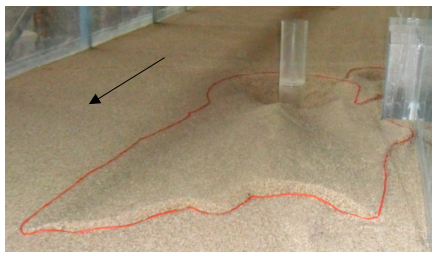






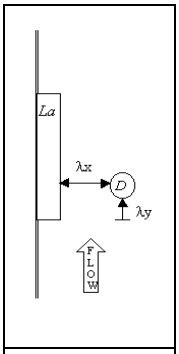


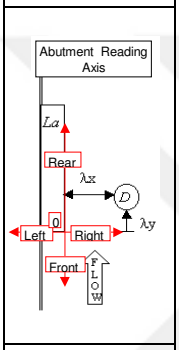


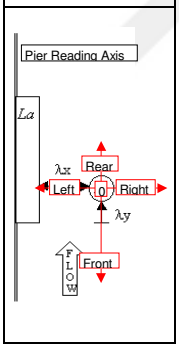


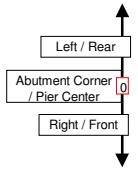
Experiment No : **E116**

Date :	01.03.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	65









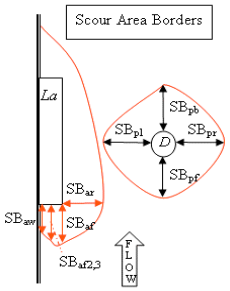
This color was used for raw data readings

This color was used for values enterpolated to sketch

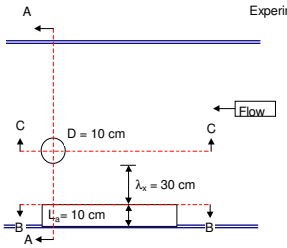
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170		10.90		-1.10	-130				
-168	168		11.90		-0.10	-128				
-166	166		11.60		-0.40	-126				
-164	164		11.80		-0.20	-124				
-162	162		12.10		0.10	-122				
-160	160		11.90		-0.10	-120				
-158	158		11.90		-0.10	-118				
-156	156		11.70		-0.30	-116				
-154	154		12.00		0.00	-114				
-152	152		*11.90*		-0.10	-112				
-150	150		11.80		-0.20	-110				
-148	148		*12.00*		0.00	-108				
-146	146		12.20		0.20	-106				
-144	144		*11.85*		-0.15	-104				
-142	142		11.50		-0.50	-102				
-140	140		*11.80*		-0.20	-100				
-138	138		12.10		0.10	-98				
-136	136		*12.20*		0.20	-96				
-134	134		12.30		0.30	-94				
-132	132		*12.15*		0.15	-92				
-130	130		12.00		0.00	-90				
-128	128		*11.95*		-0.05	-88				
-126	126		11.90		-0.10	-86				
-124	124		*11.95*		-0.05	-84				
-122	122		12.00		0.00	-82				
-120	120		*11.95*		-0.05	-80				
-118	118		11.90		-0.10	-78				
-116	116		*12.15*		0.15	-76				
-114	114		12.40		0.40	-74				
-112	112		*12.15*		0.15	-72				
-110	110		11.90		-0.10	-70				
-108	108		*11.95*		-0.05	-68				
-106	106		12.00		0.00	-66				
-104	104		*11.95*		-0.05	-64				
-102	102		11.90		-0.10	-62				
-100	100		*11.80*		-0.20	-60				
-98	98		11.70		-0.30	-58				
-96	96		*11.60*		-0.40	-56				
-94	94		11.50		-0.50	-54				
-92	92		*11.60*		-0.40	-52				
-90	90		*11.70*		-0.30	-50				
-88	88		11.80		-0.20	-48		12.00		0.00
-86	86		*11.60*		-0.40	-46		12.40		0.40
-84	84		11.40		-0.60	-44		13.40		1.40
-82	82		*11.30*		-0.70	-42		13.50		1.50
-80	80		11.20		-0.80	-40		13.60		1.60
-78	78		11.20		-0.80	-38		13.90		1.90
-76	76		11.10		-0.90	-36		*14.00*		2.00
-74	74		11.20		-0.80	-34		14.10		2.10
-72	72		11.20		-0.80	-32		*14.15*		2.15
-70	70		11.40		-0.60	-30		14.20		2.20
-68	68		11.30		-0.70	-28		*14.20*		2.20
-66	66		11.40		-0.60	-26		14.20		2.20
-64	64		12.10		0.10	-24		*14.30*		2.30
-62	62		12.30		0.30	-22		14.40		2.40
-60	60		12.60		0.60	-20		*14.40*		2.40
-58	58		12.70		0.70	-18		14.40		2.40
-56	56		12.80		0.80	-16		*14.55*		2.55
-54	54		13.20		1.20	-14		14.70		2.70
-52	52		13.40		1.40	-12		*14.65*		2.65
-50	50		13.50		1.50	-10		14.60		2.60
-48	48		13.50		1.50	-8		*14.75*		2.75
-46	46		13.40		1.40	-6		14.90		2.90
-44	44		13.40		1.40	-4		*14.90*		2.90
-42	42		13.40		1.40	-2		14.90		2.90
-40	40		13.40		1.40	0		14.90		2.90
-38	38		13.20		1.20	2		14.70		2.70
-36	36		13.10		1.10	4		14.70		2.70
-34	34		13.00		1.00	6		14.60		2.60
-32	32		13.20		1.20	8		14.30		2.30
-30	30		13.10		1.10	10	11.00	14.00	-1.00	2.00
-28	28		13.50		1.50	12	10.90	14.00	-1.10	2.00
-26	26		13.20		1.20	14	11.20	13.70	-0.80	1.70
-24	24		13.00		1.00	16	11.40	13.60	-0.60	1.60
-22	22		13.00		1.00	18	11.40	13.30	-0.60	1.30
-20	20		12.70		0.70	20	10.90	13.00	-1.10	1.00
-18	18		12.50		0.50	22	10.90	12.40	-1.10	0.40
-16	16		11.80		-0.20	24	10.10	11.80	-1.90	-0.20
-14	14		11.20		-0.80	26	9.70	11.10	-2.30	-0.90
-12	12		10.20		-1.80	28	9.00	10.20	-3.00	-1.80
-10	10	6.50	9.50	-5.50	-2.50	30	8.10	9.40	-3.90	-2.60
-8	8	6.10	8.80	-5.90	-3.20	32	6.80	8.80	-5.20	-3.20
-6	6	5.70	7.70	-6.30	-4.30	34	5.40	8.00	-6.60	-4.00
-4	4	5.30	6.70	-6.70	-5.30	36	4.10	7.00	-7.90	-5.00
-2	2	5.40	5.80	-6.60	-6.20	38	2.80	6.30	-9.20	-5.70
0	0	5.10	5.10	-6.90	-6.90	40	3.10	6.20	-8.90	-5.80
0	0	5.10	5.10	-6.90	-6.90	50	1.90	1.30	-10.10	-10.70
2	-2	5.90	5.90	-6.10	-6.10	52.00	2.90	2.30	-9.10	-9.70
4	-4	6.30	7.30	-5.70	-4.70	54.00	4.40	3.60	-7.60	-8.40
6	-6	7.60	8.00	-4.40	-4.00	56.00	5.70	4.90	-6.30	-7.10
8	-8	9.10	9.00	-2.90	-3.00	58.00	7.30	6.10	-4.70	-5.90
10	-10	10.20	10.60	-1.80	-1.40	60.00	7.80	7.40	-4.20	-4.60
12	-12	10.90	11.50	-1.10	-0.50	62.00	9.40	8.60	-2.60	-3.40
14	-14	11.30	11.90	-0.70	-0.10	64.00	9.20	9.90	-2.80	-2.10
16	-16	11.50		-0.50		66.00	10.50	11.10	-1.50	-0.90
18	-18	11.50		-0.50		68.00	11.80	11.80	-0.20	-0.20
20	-20	11.80		-0.20		70.00				
22	-22					72.00				
24	-24					74.00				
26	-26					76.00				
28	-28					78.00				
30	-30					80.00				

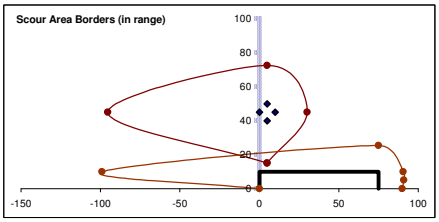
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.10	-5.90
2	6.00	-6.00
4	6.90	-5.10
6	8.40	-3.60
8	9.30	-2.70
10	10.40	-1.60
12	11.60	-0.40
14	11.80	-0.20
16		
18		
20		
22		
24		

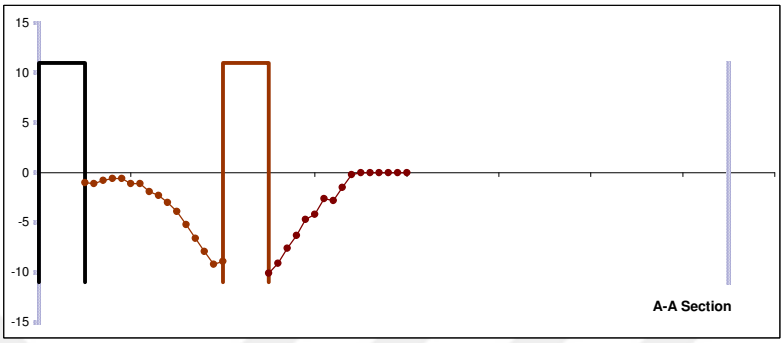
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	15.5
SB_{ar}	Abutment Corner Right	15.5
SB_{pl}	Pier Left	*25*
SB_{pf}	Pier Front	20
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	95.5

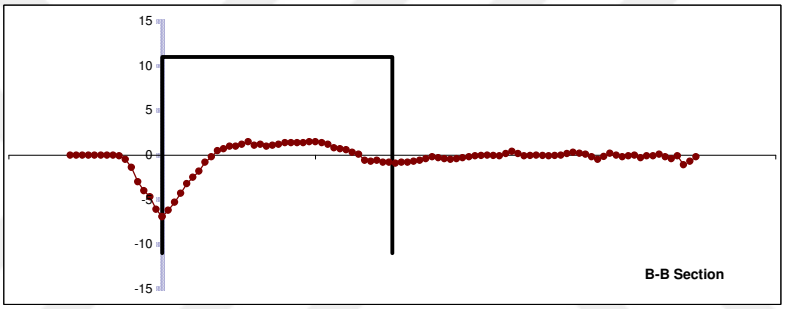


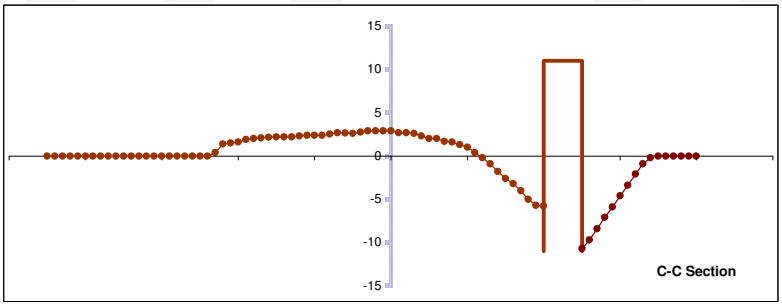
Experiment No : **E116**

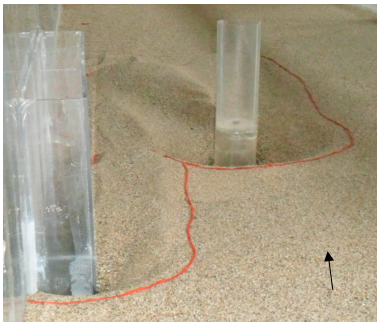


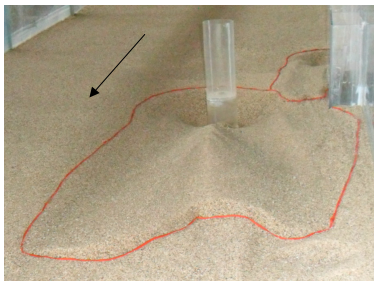




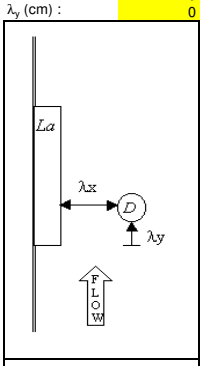


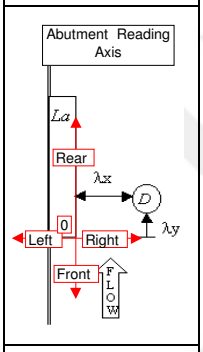


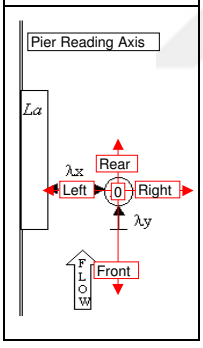


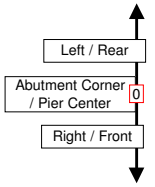


Experiment No :	**E117**
Date :	05.03.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	0









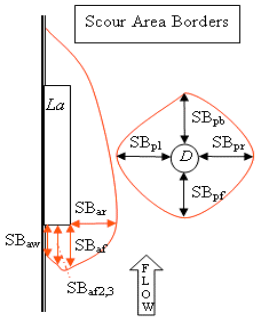
This color was used for raw data readings

This color was used for values enterpolated to sketch

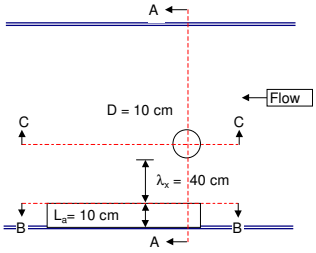
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-90				
-138	138					-88				
-136	136					-86				
-134	134					-84				
-132	132					-82				
-130	130					-80				
-128	128					-78				
-126	126					-76				
-124	124					-74				
-122	122					-72				
-120	120					-70				
-118	118		12.00		0.00	-68				
-116	116		12.40		0.40	-66				
-114	114		12.70		0.70	-64		12.00		0.00
-112	112		12.40		0.40	-62		12.20		0.20
-110	110		12.50		0.50	-60		12.90		0.90
-108	108		13.60		1.60	-58		13.80		1.80
-106	106		13.40		1.40	-56		*13.95*		1.95
-104	104		13.30		1.30	-54		14.10		2.10
-102	102		13.10		1.10	-52		*14.10*		2.10
-100	100		13.30		1.30	-50		14.10		2.10
-98	98		13.20		1.20	-48		*14.20*		2.20
-96	96		13.20		1.20	-46		14.30		2.30
-94	94		12.60		0.60	-44		*14.35*		2.35
-92	92		12.50		0.50	-42		14.40		2.40
-90	90		12.30		0.30	-40		*14.40*		2.40
-88	88		12.20		0.20	-38		14.40		2.40
-86	86		11.80		-0.20	-36		*14.35*		2.35
-84	84		12.20		0.20	-34		14.30		2.30
-82	82		11.80		-0.20	-32		*14.30*		2.30
-80	80		11.50		-0.50	-30		14.30		2.30
-78	78		11.20		-0.80	-28		*14.30*		2.30
-76	76		11.30		-0.70	-26		14.30		2.30
-74	74		11.40		-0.60	-24		*14.25*		2.25
-72	72		11.50		-0.50	-22		14.20		2.20
-70	70		11.80		-0.20	-20		*14.30*		2.30
-68	68		12.00		0.00	-18		14.40		2.40
-66	66		12.00		0.00	-16		*14.40*		2.40
-64	64		11.70		-0.30	-14		14.40		2.40
-62	62		11.90		-0.10	-12		*14.35*		2.35
-60	60		11.80		-0.20	-10		14.30		2.30
-58	58		12.00		0.00	-8		*14.40*		2.40
-56	56		12.20		0.20	-6		14.50		2.50
-54	54		12.90		0.90	-4		*14.55*		2.55
-52	52		13.00		1.00	-2		14.60		2.60
-50	50		13.00		1.00	0		*14.55*		2.55
-48	48		13.10		1.10	2		14.50		2.50
-46	46		13.00		1.00	4		*14.40*		2.40
-44	44		13.00		1.00	6		14.30		2.30
-42	42		12.90		0.90	8		*14.30*		2.30
-40	40		12.90		0.90	10	6.70	14.30	-5.30	2.30
-38	38		13.00		1.00	12	6.40	14.30	-5.60	2.30
-36	36		12.90		0.90	14	6.80	13.80	-5.20	1.80
-34	34		12.90		0.90	16	8.10	13.80	-3.90	1.80
-32	32		13.20		1.20	18	9.10	13.90	-2.90	1.90
-30	30		13.50		1.50	20	10.20	13.70	-1.80	1.70
-28	28		13.70		1.70	22	11.10	13.60	-0.90	1.60
-26	26		13.70		1.70	24	11.20	13.30	-0.80	1.30
-24	24		13.50		1.50	26	11.30	12.70	-0.70	0.70
-22	22		13.40		1.40	28	11.20	12.20	-0.80	0.20
-20	20		13.10		1.10	30	11.50	11.90	-0.50	-0.10
-18	18		12.50		0.50	32	11.30	11.50	-0.70	-0.50
-16	16		11.90		-0.10	34	11.40	11.20	-0.60	-0.80
-14	14		11.10		-0.90	36	10.70	10.60	-1.30	-1.40
-12	12		10.80		-1.20	38	9.30	9.40	-2.70	-2.60
-10	10	7.10	9.70	-4.90	-2.30	40	8.10	8.50	-3.90	-3.50
-8	8	6.30	8.70	-5.70	-3.30	42	7.20	8.10	-4.80	-3.90
-6	6	6.20	7.70	-5.80	-4.30	44	6.20	6.80	-5.80	-5.20
-4	4	5.90	6.60	-6.10	-5.40	46	5.20	6.60	-6.80	-5.40
-2	2	5.70	5.90	-6.30	-6.10	48	3.30	7.20	-8.70	-4.80
0	0	5.60	5.60	-6.40	-6.40	50	3.10	7.10	-8.90	-4.90
0	0	5.60	5.60	-6.40	-6.40	60	3.10	1.80	-8.90	-10.20
2	-2	6.00	5.90	-6.00	-6.10	62	4.10	2.60	-7.90	-9.40
4	-4	6.10	6.80	-5.90	-5.20	64	5.70	4.10	-6.30	-7.90
6	-6	7.70	8.00	-4.30	-4.00	66	7.30	5.10	-4.70	-6.90
8	-8	8.50	9.60	-3.50	-2.40	68	8.20	6.60	-3.80	-5.40
10	-10	9.70	11.10	-2.30	-0.90	70	9.20	7.80	-2.80	-4.20
12	-12	10.80	12.00	-1.20	0.00	72	10.00	9.10	-2.00	-2.90
14	-14	11.10		-0.90		74	11.60	10.60	-0.40	-1.40
16	-16	11.20		-0.80		76	12.00	12.00	0.00	0.00
18	-18	11.50		-0.50		78				
20	-20	11.30		-0.70		80				
22	-22	11.60		-0.40		82				
24	-24	11.80		-0.20		84				
26	-26					86				
28	-28					88				
30	-30					90				

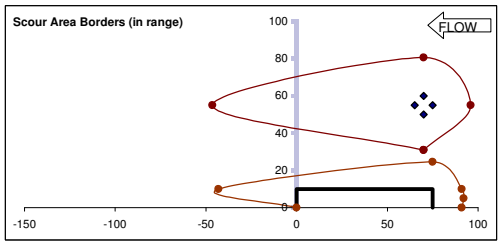
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.30	-5.70
2	6.70	-5.30
4	7.80	-4.20
6	8.90	-3.10
8	10.10	-1.90
10	11.10	-0.90
12	11.90	-0.10
14		
16		
18		
20		

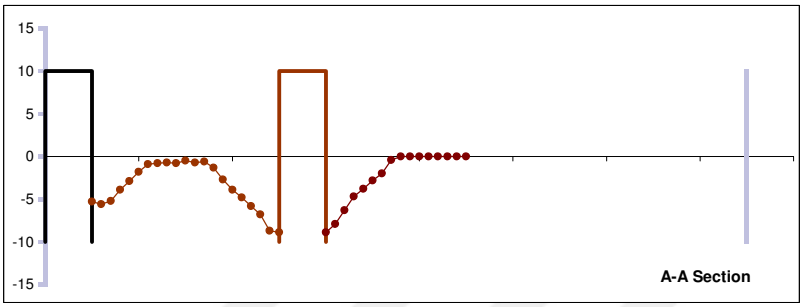
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	17
SB_{af}	Abutment Corner Front	16
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	19
SB_{pf}	Pier Front	21
SB_{pr}	Pier Right	20.5
SB_{pb}	Pier Rear	111.5

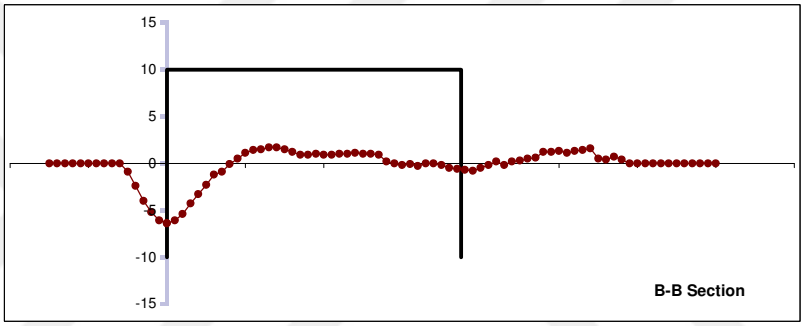


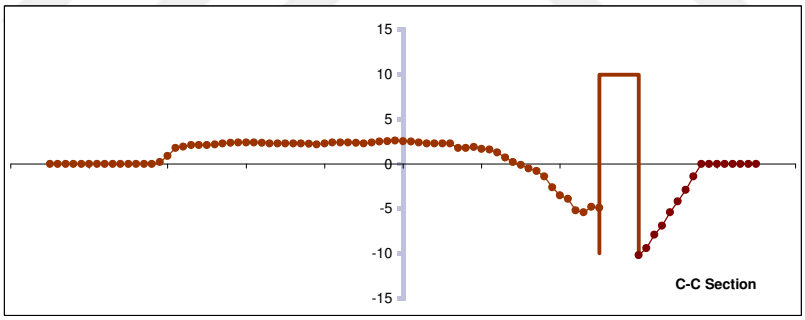
Experiment No : **E117**

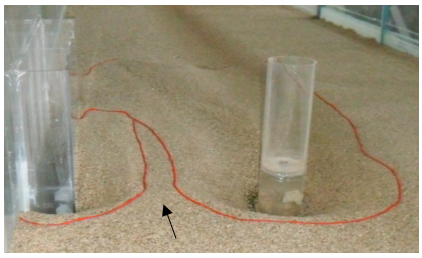


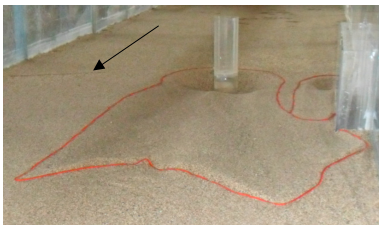




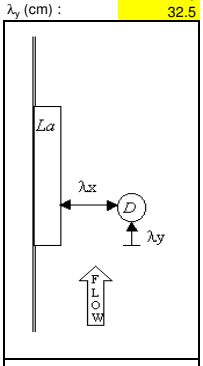


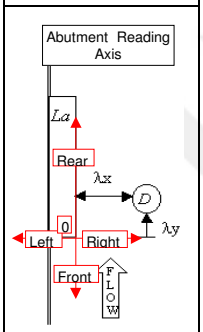


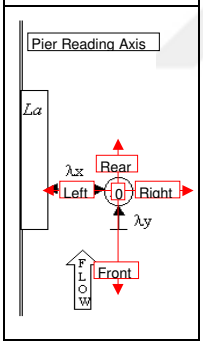


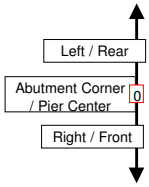


Experiment No :	**E118**
Date :	14.03.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	32.5









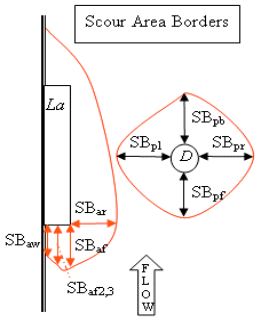
This color was used for raw data readings

This color was used for values enterpolated to sketch

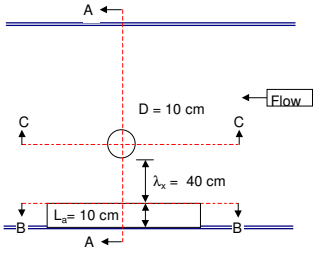
		ABUTMENT					PIER			
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-90				
-138	138					-88				
-136	136					-86				
-134	134					-84				
-132	132					-82				
-130	130					-80				
-128	128					-78				
-126	126					-76				
-124	124					-74				
-122	122					-72				
-120	120					-70				
-118	118					-68				
-116	116					-66				
-114	114					-64				
-112	112					-62				
-110	110					-60				
-108	108					-58				
-106	106					-56				
-104	104					-54				
-102	102					-52				
-100	100					-50				
-98	98		12.00		0.00	-48				
-96	96		12.50		0.50	-46				
-94	94		12.50		0.50	-44				
-92	92		12.50		0.50	-42				
-90	90		12.10		0.10	-40				
-88	88		12.00		0.00	-38				
-86	86		12.40		0.40	-36				
-84	84		12.30		0.30	-34				
-82	82		12.00		0.00	-32				
-80	80		11.70		-0.30	-30				
-78	78		11.80		-0.20	-28		12.00		0.00
-76	76		11.70		-0.30	-26		11.60		-0.40
-74	74		11.70		-0.30	-24		13.00		1.00
-72	72		*11.75*		-0.25	-22		13.60		1.60
-70	70		11.80		-0.20	-20		13.50		1.50
-68	68		12.00		0.00	-18		13.80		1.80
-66	66		12.20		0.20	-16		14.00		2.00
-64	64		12.00		0.00	-14		14.20		2.20
-62	62		12.30		0.30	-12		14.20		2.20
-60	60		12.50		0.50	-10		14.30		2.30
-58	58		12.30		0.30	-8		14.30		2.30
-56	56		12.50		0.50	-6		14.40		2.40
-54	54		12.80		0.80	-4		14.40		2.40
-52	52		12.70		0.70	-2		14.40		2.40
-50	50		12.70		0.70	0		14.70		2.70
-48	48		12.60		0.60	2		14.40		2.40
-46	46		12.80		0.80	4		14.50		2.50
-44	44		12.70		0.70	6		14.70		2.70
-42	42		12.40		0.40	8		14.20		2.20
-40	40		12.50		0.50	10	11.90	14.80	-0.10	2.80
-38	38		12.40		0.40	12	11.90	14.70	-0.10	2.70
-36	36		13.90		1.90	14	11.90	*14.55*	-0.10	2.55
-34	34		14.10		2.10	16	12.10	14.40	0.10	2.40
-32	32		13.80		1.80	18	12.60	14.40	0.60	2.40
-30	30		13.80		1.80	20	12.50	14.10	0.50	2.10
-28	28		13.80		1.80	22	11.50	14.00	-0.50	2.00
-26	26		13.80		1.80	24	10.40	13.70	-1.60	1.70
-24	24		14.10		2.10	26	10.20	13.40	-1.80	1.40
-22	22		13.80		1.80	28	10.60	13.30	-1.40	1.30
-20	20		13.70		1.70	30	11.40	12.50	-0.60	0.50
-18	18		13.30		1.30	32	10.90	12.00	-1.10	0.00
-16	16		12.70		0.70	34	10.50	11.30	-1.50	-0.70
-14	14		12.10		0.10	36	9.70	10.70	-2.30	-1.30
-12	12		11.60		-0.40	38	9.20	9.70	-2.80	-2.30
-10	10	7.40	10.90	-4.60	-1.10	40	8.10	9.20	-3.90	-2.80
-8	8	7.10	9.70	-4.90	-2.30	42	6.90	8.40	-5.10	-3.60
-6	6	6.70	8.50	-5.30	-3.50	44	5.60	7.50	-6.40	-4.50
-4	4	6.30	7.20	-5.70	-4.80	46	4.40	6.60	-7.60	-5.40
-2	2	6.10	6.20	-5.90	-5.80	48	2.80	6.30	-9.20	-5.70
0	0	5.60	5.60	-6.40	-6.40	50	3.20	5.30	-8.80	-6.70
0	0	5.60	5.60	-6.40	-6.40	60	2.70	1.50	-9.30	-10.50
2	-2	6.70	6.00	-5.30	-6.00	62	2.60	1.30	-9.40	-10.70
4	-4	6.40	7.80	-5.60	-4.20	64	4.60	2.80	-7.40	-9.20
6	-6	7.80	8.20	-4.20	-3.80	66	5.50	4.20	-6.50	-7.80
8	-8	9.10	9.20	-2.90	-2.80	68	7.00	5.40	-5.00	-6.60
10	-10	10.20	10.60	-1.80	-1.40	70	8.00	6.50	-4.00	-5.50
12	-12	10.60	11.80	-1.40	-0.20	72	8.70	7.80	-3.30	-4.20
14	-14	11.50		-0.50		74	9.70	9.20	-2.30	-2.80
16	-16	11.60		-0.40		76	10.80	10.60	-1.20	-1.40
18	-18	11.80		-0.20		78	11.80	11.80	-0.20	-0.20
20	-20					80				
22	-22					82				
24	-24					84				
26	-26					86				
28	-28					88				
30	-30					90				

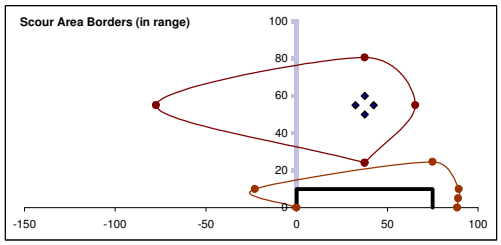
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.10	-4.90
2	7.20	-4.80
4	8.00	-4.00
6	9.40	-2.60
8	10.40	-1.60
10	11.50	-0.50
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

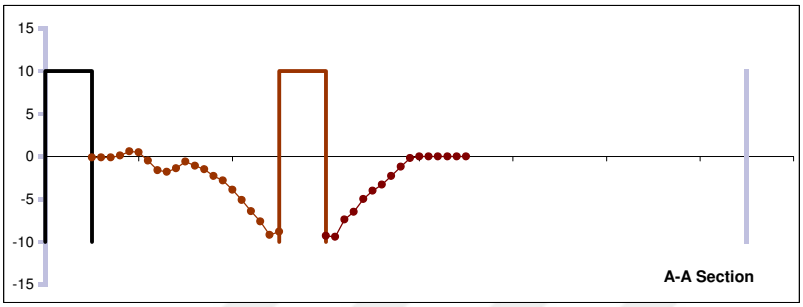
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13.5
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	14.5
SB_{pl}	Pier Left	*26*
SB_{pf}	Pier Front	23
SB_{pr}	Pier Right	20.5
SB_{pb}	Pier Rear	110

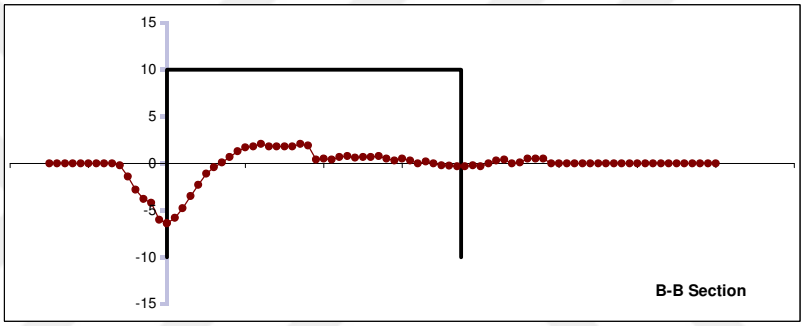


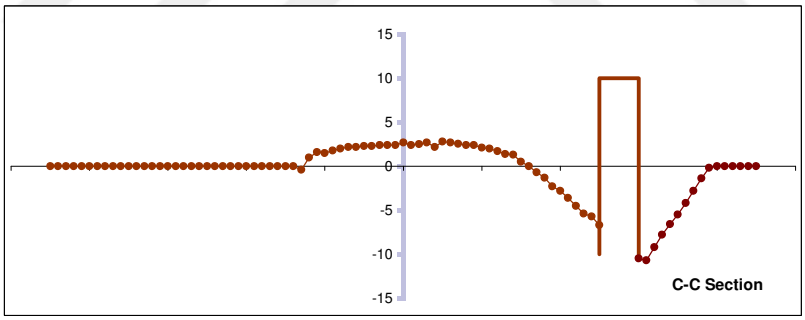
Experiment No : **E118**

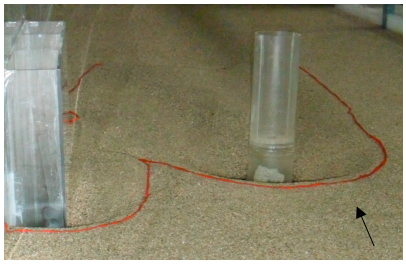


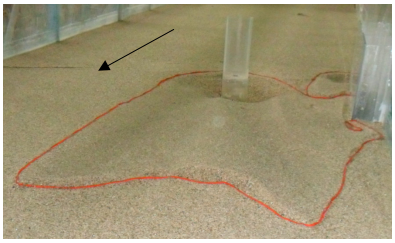






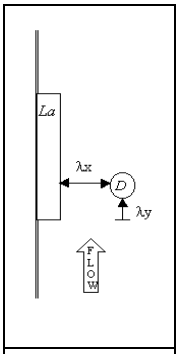


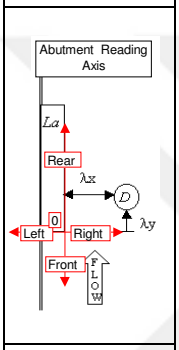


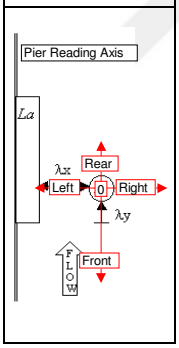


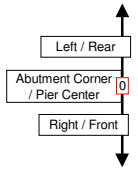
Experiment No : **E119**

Date :	20.03.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	65









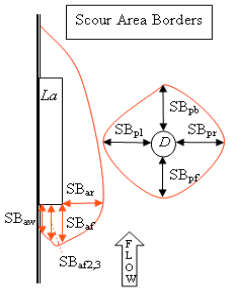
This color was used for raw data readings

This color was used for values enterpolated to sketch

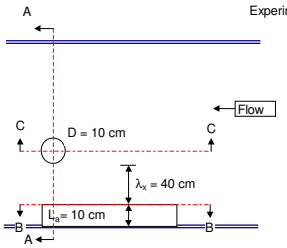
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-120				
-168	168					-118				
-166	166					-116				
-164	164					-114				
-162	162					-112				
-160	160					-110				
-158	158					-108				
-156	156					-106				
-154	154					-104				
-152	152					-102				
-150	150					-100				
-148	148					-98				
-146	146					-96				
-144	144					-94				
-142	142					-92				
-140	140					-90				
-138	138					-88				
-136	136					-86				
-134	134					-84				
-132	132					-82				
-130	130					-80				
-128	128					-78				
-126	126					-76				
-124	124					-74				
-122	122					-72				
-120	120					-70				
-118	118					-68				
-116	116					-66				
-114	114					-64				
-112	112					-62				
-110	110					-60				
-108	108					-58				
-106	106					-56				
-104	104					-54				
-102	102					-52				
-100	100					-50				
-98	98					-48				
-96	96					-46		12.00		0.00
-94	94					-44		13.00		1.00
-92	92					-42		13.80		1.80
-90	90					-40		13.90		1.90
-88	88					-38		*13.95*		1.95
-86	86					-36		14.00		2.00
-84	84					-34		*14.10*		2.10
-82	82		12.00		0.00	-32		14.20		2.20
-80	80		11.70		-0.30	-30		*14.35*		2.35
-78	78		11.50		-0.50	-28		14.50		2.50
-76	76		11.90		-0.10	-26		*14.45*		2.45
-74	74		11.60		-0.40	-24		14.40		2.40
-72	72		11.50		-0.50	-22		*14.40*		2.40
-70	70		11.80		-0.20	-20		14.40		2.40
-68	68		11.90		-0.10	-18		*14.50*		2.50
-66	66		11.80		-0.20	-16		14.60		2.60
-64	64		12.00		0.00	-14		*14.65*		2.65
-62	62		12.20		0.20	-12		14.70		2.70
-60	60		12.50		0.50	-10		*14.75*		2.75
-58	58		12.50		0.50	-8		14.80		2.80
-56	56		12.70		0.70	-6		*14.80*		2.80
-54	54		13.10		1.10	-4		14.80		2.80
-52	52		13.70		1.70	-2		*14.85*		2.85
-50	50		13.80		1.80	0		14.90		2.90
-48	48		13.70		1.70	2		*14.95*		2.95
-46	46		13.70		1.70	4		15.00		3.00
-44	44		13.40		1.40	6		*15.05*		3.05
-42	42		13.60		1.60	8		15.10		3.10
-40	40		13.40		1.40	10	11.50	15.10	-0.50	3.10
-38	38		13.40		1.40	12	11.30	15.00	-0.70	3.00
-36	36		13.20		1.20	14	11.50	14.80	-0.50	2.80
-34	34		13.40		1.40	16	11.40	14.60	-0.60	2.60
-32	32		13.50		1.50	18	11.40	14.40	-0.60	2.40
-30	30		13.70		1.70	20	11.50	14.30	-0.50	2.30
-28	28		13.60		1.60	22	11.50	14.20	-0.50	2.20
-26	26		13.50		1.50	24	11.50	14.00	-0.50	2.00
-24	24		13.20		1.20	26	11.60	13.80	-0.40	1.80
-22	22		13.20		1.20	28	11.60	13.30	-0.40	1.30
-20	20		12.70		0.70	30	11.50	12.80	-0.50	0.80
-18	18		12.50		0.50	32	11.50	12.50	-0.50	0.50
-16	16		12.00		0.00	34	10.60	12.10	-1.40	0.10
-14	14		11.40		-0.60	36	9.70	11.50	-2.30	-0.50
-12	12		10.70		-1.30	38	8.80	10.80	-3.20	-1.20
-10	10	7.80	9.80	-4.20	-2.20	40	8.50	9.80	-3.50	-2.20
-8	8	6.70	8.30	-5.30	-3.70	42	7.40	9.00	-4.60	-3.00
-6	6	6.60	7.40	-5.40	-4.60	44	6.20	8.00	-5.80	-4.00
-4	4	6.10	6.80	-5.90	-5.20	46	4.80	7.60	-7.20	-4.40
-2	2	6.00	6.30	-6.00	-5.70	48	3.60	7.10	-8.40	-4.90
0	0	5.80	5.80	-6.20	-6.20	50	3.10	7.00	-8.90	-5.00
0	0	5.80	5.80	-6.20	-6.20	60	2.40	1.60	-9.60	-10.40
2	-2	6.00	6.70	-6.00	-5.30	62	3.20	1.80	-8.80	-10.20
4	-4	6.30	7.70	-5.70	-4.30	64	4.70	3.30	-7.30	-8.70
6	-6	7.30	8.30	-4.70	-3.70	66	6.00	4.60	-6.00	-7.40
8	-8	8.70	9.40	-3.30	-2.60	68	6.90	6.00	-5.10	-6.00
10	-10	10.00	10.50	-2.00	-1.50	70	8.10	7.30	-3.90	-4.70
12	-12	10.40	11.60	-1.60	-0.40	72	8.70	8.50	-3.30	-3.50
14	-14	11.30	12.00	-0.70	0.00	74	9.50	9.40	-2.50	-2.60
16	-16	11.50		-0.50		76	11.00	10.60	-1.00	-1.40
18	-18	11.60		-0.40		78	12.00	12.00	0.00	0.00
20	-20	11.80		-0.20		80				
22	-22					82				
24	-24					84				
26	-26					86				
28	-28					88				
30	-30					90				

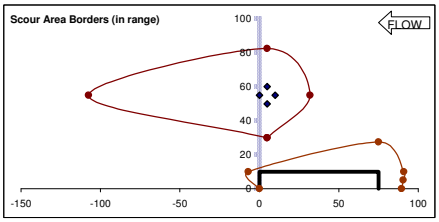
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.70	-5.30
2	7.10	-4.90
4	7.60	-4.40
6	9.10	-2.90
8	10.00	-2.00
10	11.10	-0.90
12	12.00	0.00
14		
16		
18		
20		
22		
24		

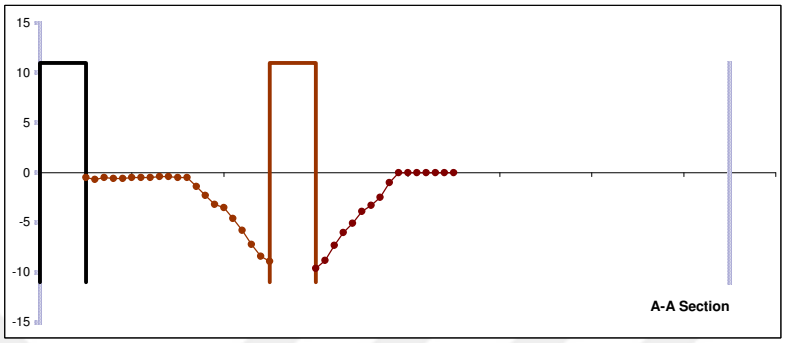
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af}	Abutment Corner Front	16
SB_{ar}	Abutment Corner Right	17.5
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	22
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	107.5

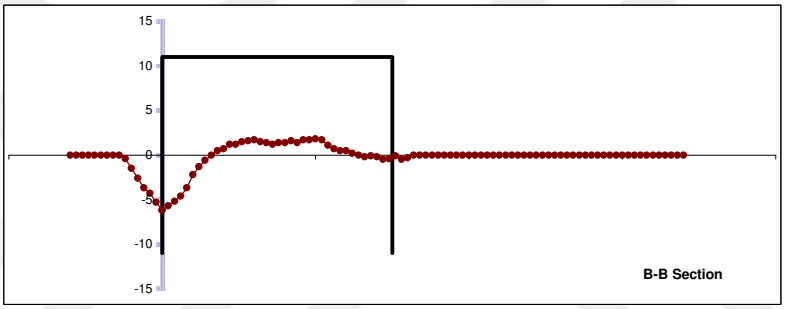


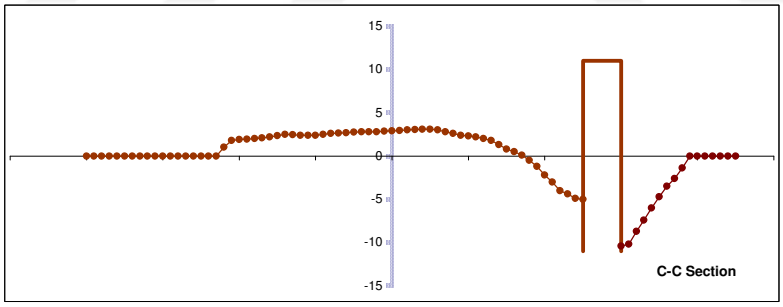
Experiment No : **E119**

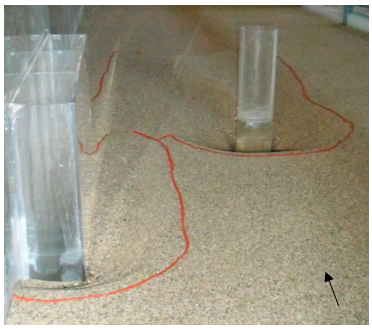


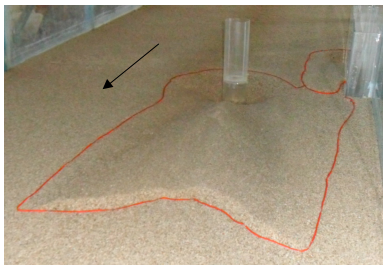




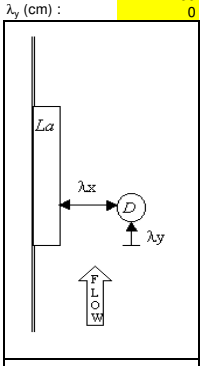


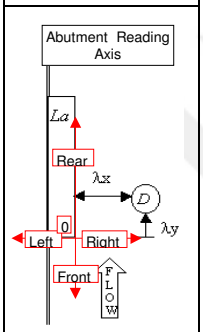


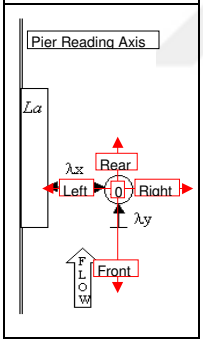


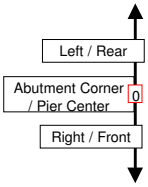


Experiment No :	**E120**
Date :	22.03.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	0









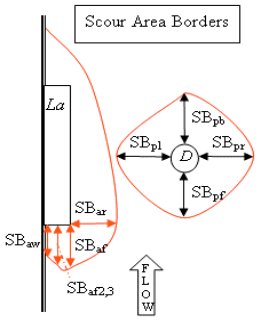
This color was used for raw data readings

This color was used for values enterpolated to sketch

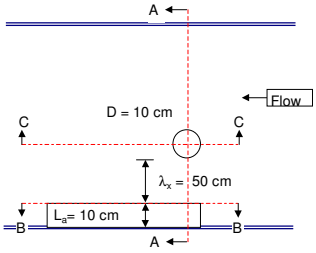
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-80				
-138	138					-78				
-136	136					-76				
-134	134					-74				
-132	132					-72				
-130	130					-70				
-128	128					-68				
-126	126					-66				
-124	124					-64				
-122	122					-62				
-120	120					-60				
-118	118					-58				
-116	116		12.00		0.00	-56				
-114	114		12.40		0.40	-54				
-112	112		12.90		0.90	-52				
-110	110		13.20		1.20	-50				
-108	108		13.00		1.00	-48				
-106	106		13.20		1.20	-46				
-104	104		13.20		1.20	-44				
-102	102		12.80		0.80	-42		12.00		0.00
-100	100		12.80		0.80	-40		11.60		-0.40
-98	98		12.80		0.80	-38		12.40		0.40
-96	96		12.80		0.80	-36		13.20		1.20
-94	94		12.30		0.30	-34		13.20		1.20
-92	92		12.20		0.20	-32		*13.35*		1.35
-90	90		11.80		-0.20	-30		13.50		1.50
-88	88		11.90		-0.10	-28		*13.50*		1.50
-86	86		11.60		-0.40	-26		13.50		1.50
-84	84		11.60		-0.40	-24		*13.65*		1.65
-82	82		11.70		-0.30	-22		13.80		1.80
-80	80		11.50		-0.50	-20		*13.80*		1.80
-78	78		11.50		-0.50	-18		13.80		1.80
-76	76		11.60		-0.40	-16		*13.85*		1.85
-74	74		11.90		-0.10	-14		13.90		1.90
-72	72		11.80		-0.20	-12		*13.95*		1.95
-70	70		11.90		-0.10	-10		14.00		2.00
-68	68		12.00		0.00	-8		*14.00*		2.00
-66	66		12.00		0.00	-6		14.00		2.00
-64	64		11.90		-0.10	-4		*14.05*		2.05
-62	62		12.00		0.00	-2		14.10		2.10
-60	60		12.00		0.00	0		*14.05*		2.05
-58	58		12.20		0.20	2		14.00		2.00
-56	56		12.60		0.60	4		*14.05*		2.05
-54	54		12.80		0.80	6		14.10		2.10
-52	52		12.90		0.90	8		*14.20*		2.20
-50	50		13.10		1.10	10	*7.50*	14.30	-4.50	2.30
-48	48		13.10		1.10	12	7.20	*14.25*	-4.80	2.25
-46	46		13.10		1.10	14	7.40	14.20	-4.60	2.20
-44	44		13.00		1.00	16	8.10	*14.20*	-3.90	2.20
-42	42		13.20		1.20	18	9.40	14.20	-2.60	2.20
-40	40		13.10		1.10	20	10.30	*14.15*	-1.70	2.15
-38	38		13.00		1.00	22	11.20	14.10	-0.80	2.10
-36	36		13.00		1.00	24	11.30	*13.90*	-0.70	1.90
-34	34		12.90		0.90	26	11.10	13.70	-0.90	1.70
-32	32		13.00		1.00	28	10.90	*13.60*	-1.10	1.60
-30	30		12.80		0.80	30	11.10	13.50	-0.90	1.50
-28	28		13.00		1.00	32	11.30	13.40	-0.70	1.40
-26	26		13.00		1.00	34	11.50	13.00	-0.50	1.00
-24	24		12.30		0.30	36	11.50	13.00	-0.50	1.00
-22	22		12.80		0.80	38	11.50	12.40	-0.50	0.40
-20	20		12.50		0.50	40	11.40	12.00	-0.60	0.00
-18	18		12.20		0.20	42	11.10	11.40	-0.90	-0.60
-16	16		11.90		-0.10	44	11.00	10.80	-1.00	-1.20
-14	14		11.10		-0.90	46	10.90	10.00	-1.10	-2.00
-12	12		10.40		-1.60	48	10.10	9.40	-1.90	-2.60
-10	10	6.40	9.20	-5.60	-2.80	50	9.00	8.90	-3.00	-3.10
-8	8	6.30	8.40	-5.70	-3.60	52	8.00	7.70	-4.00	-4.30
-6	6	5.90	7.90	-6.10	-4.10	54	6.80	7.40	-5.20	-4.60
-4	4	5.80	7.20	-6.20	-4.80	56	5.80	6.60	-6.20	-5.40
-2	2	5.80	6.20	-6.20	-5.80	58	4.40	6.60	-7.60	-5.40
0	0	5.70	5.70	-6.30	-6.30	60	3.20	6.90	-8.80	-5.10
0	0	5.70	5.70	-6.30	-6.30	70	2.60	1.90	-9.40	-10.10
2	-2	6.20	6.40	-5.80	-5.60	72	3.30	2.30	-8.70	-9.70
4	-4	6.40	7.70	-5.60	-4.30	74	4.00	3.90	-8.00	-8.10
6	-6	8.00	8.30	-4.00	-3.70	76	5.60	5.30	-6.40	-6.70
8	-8	9.30	9.00	-2.70	-3.00	78	6.90	6.60	-5.10	-5.40
10	-10	10.10	10.10	-1.90	-1.90	80	7.40	7.80	-4.60	-4.20
12	-12	10.80	11.40	-1.20	-0.60	82	9.40	8.90	-2.60	-3.10
14	-14	11.40	12.00	-0.60	0.00	84	11.50	10.00	-0.50	-2.00
16	-16	11.60		-0.40		86	12.00	11.30	0.00	-0.70
18	-18	11.80		-0.20		88		12.00		0.00
20	-20	12.00		0.00		90				
22	-22					92				
24	-24					94				
26	-26					96				
28	-28					98				
30	-30					100				

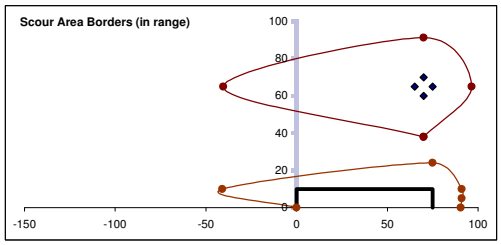
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.30	-5.70
2	5.90	-6.10
4	6.60	-5.40
6	8.00	-4.00
8	9.40	-2.60
10	10.30	-1.70
12	11.50	-0.50
14	12.00	0.00
16		
18		
20		

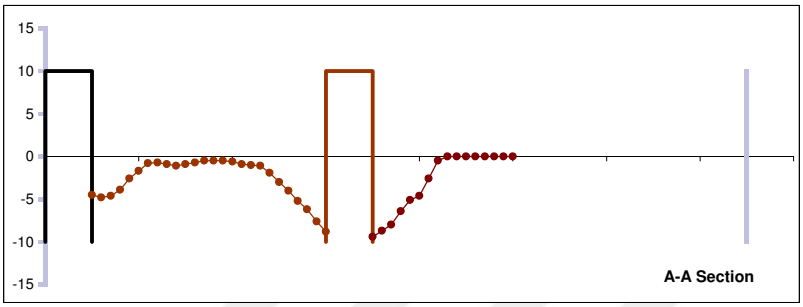
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15.5
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	16
SB_{ar}	Abutment Corner Right	14
SB_{pl}	Pier Left	*22*
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	21.3
SB_{pb}	Pier Rear	105.5

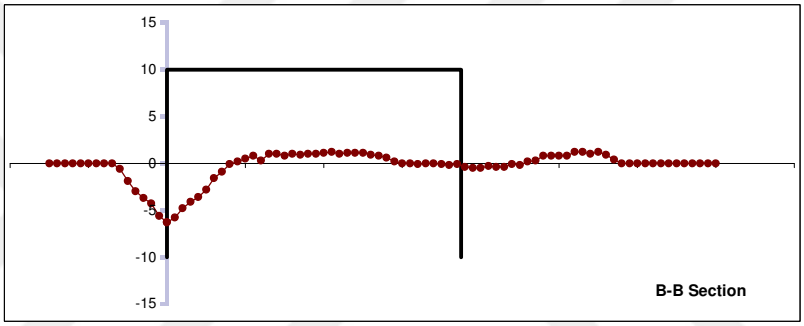


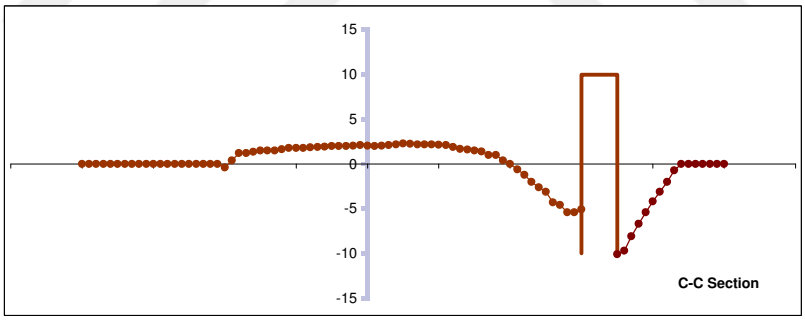
Experiment No : **E120**

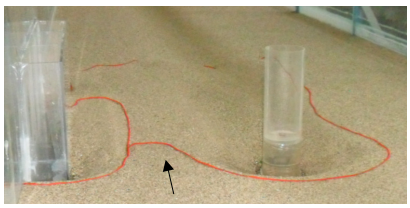


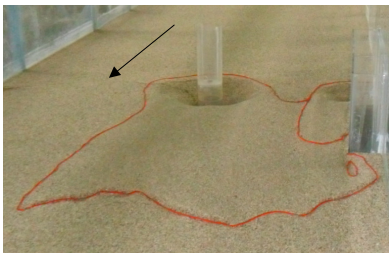




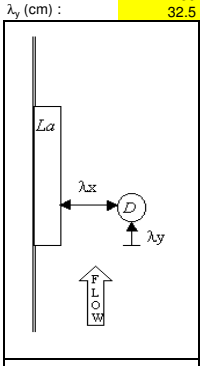


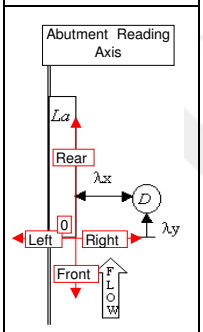


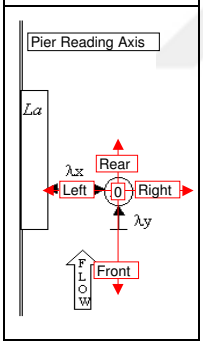


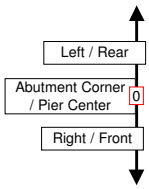


Experiment No :	**E121**
Date :	05.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	32.5









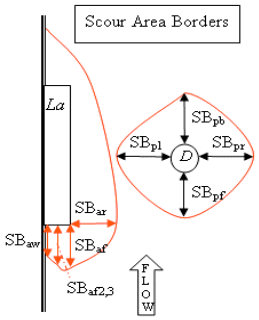
This color was used for raw data readings

This color was used for values enterpolated to sketch

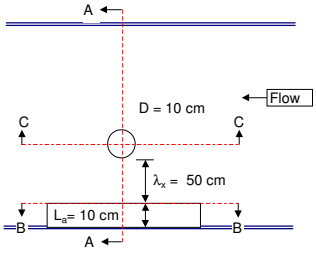
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-140	140					-80				
-138	138					-78				
-136	136					-76				
-134	134					-74				
-132	132					-72				
-130	130					-70				
-128	128					-68				
-126	126					-66				
-124	124					-64				
-122	122					-62				
-120	120					-60				
-118	118					-58				
-116	116					-56				
-114	114					-54		12.00		0.00
-112	112					-52		11.90		-0.10
-110	110		12.00		0.00	-50		13.00		1.00
-108	108		12.60		0.60	-48		13.60		1.60
-106	106		12.60		0.60	-46		*13.70*		1.70
-104	104		12.70		0.70	-44		13.80		1.80
-102	102		12.60		0.60	-42		*13.95*		1.95
-100	100		12.60		0.60	-40		14.10		2.10
-98	98		12.50		0.50	-38		*14.10*		2.10
-96	96		12.40		0.40	-36		14.10		2.10
-94	94		12.30		0.30	-34		*14.20*		2.20
-92	92		12.00		0.00	-32		14.30		2.30
-90	90		11.80		-0.20	-30		*14.30*		2.30
-88	88		11.40		-0.60	-28		14.30		2.30
-86	86		11.30		-0.70	-26		*14.30*		2.30
-84	84		11.50		-0.50	-24		14.30		2.30
-82	82		11.50		-0.50	-22		*14.30*		2.30
-80	80		11.70		-0.30	-20		14.30		2.30
-78	78		11.70		-0.30	-18		*14.30*		2.30
-76	76		11.70		-0.30	-16		14.30		2.30
-74	74		11.70		-0.30	-14		*14.40*		2.40
-72	72		11.90		-0.10	-12		14.50		2.50
-70	70		11.80		-0.20	-10		*14.60*		2.60
-68	68		12.00		0.00	-8		14.70		2.70
-66	66		12.00		0.00	-6		*14.70*		2.70
-64	64		12.30		0.30	-4		14.70		2.70
-62	62		12.40		0.40	-2		*14.65*		2.65
-60	60		12.50		0.50	0		14.60		2.60
-58	58		12.50		0.50	2		*14.75*		2.75
-56	56		12.40		0.40	4		14.90		2.90
-54	54		12.20		0.20	6		*14.85*		2.85
-52	52		12.80		0.80	8		14.80		2.80
-50	50		13.30		1.30	10	13.20	*14.80*	1.20	2.80
-48	48		13.60		1.60	12	13.60	14.80	1.60	2.80
-46	46		14.00		2.00	14	13.40	*14.95*	1.40	2.95
-44	44		14.10		2.10	16	13.10	15.10	1.10	3.10
-42	42		14.10		2.10	18	12.60	15.20	0.60	3.20
-40	40		13.90		1.90	20	12.60	15.00	0.60	3.00
-38	38		13.80		1.80	22	12.60	14.80	0.60	2.80
-36	36		13.80		1.80	24	12.50	14.70	0.50	2.70
-34	34		13.80		1.80	26	12.10	14.60	0.10	2.60
-32	32		13.90		1.90	28	12.00	14.20	0.00	2.20
-30	30		13.70		1.70	30	11.40	14.00	-0.60	2.00
-28	28		13.80		1.80	32	11.50	13.80	-0.50	1.80
-26	26		13.60		1.60	34	11.30	13.30	-0.70	1.30
-24	24		13.60		1.60	36	11.30	12.90	-0.70	0.90
-22	22		13.70		1.70	38	11.30	12.70	-0.70	0.70
-20	20		13.50		1.50	40	11.40	12.30	-0.60	0.30
-18	18		13.30		1.30	42	11.30	11.80	-0.70	-0.20
-16	16		12.70		0.70	44	11.30	11.20	-0.70	-0.80
-14	14		11.80		-0.20	46	10.80	11.00	-1.20	-1.00
-12	12		11.10		-0.90	48	10.00	9.60	-2.00	-2.40
-10	10	7.10	10.60	-4.90	-1.40	50	8.80	8.90	-3.20	-3.10
-8	8	6.90	9.80	-5.10	-2.20	52	7.90	8.00	-4.10	-4.00
-6	6	6.40	8.50	-5.60	-3.50	54	6.60	7.30	-5.40	-4.70
-4	4	6.10	7.70	-5.90	-4.30	56	5.10	6.90	-6.90	-5.10
-2	2	6.20	6.90	-5.80	-5.10	58	3.50	7.10	-8.50	-4.90
0	0	6.30	6.30	-5.70	-5.70	60	3.10	6.60	-8.90	-5.40
0	0	6.30	6.30	-5.70	-5.70	70	3.00	1.70	-9.00	-10.30
2	-2	6.60	6.80	-5.40	-5.20	72	2.80	2.00	-9.20	-10.00
4	-4	7.90	8.00	-4.10	-4.00	74	4.40	3.70	-7.60	-8.30
6	-6	8.90	8.50	-3.10	-3.50	76	5.60	4.90	-6.40	-7.10
8	-8	9.90	9.70	-2.10	-2.30	78	6.90	6.40	-5.10	-5.60
10	-10	10.90	11.40	-1.10	-0.60	80	8.10	7.40	-3.90	-4.60
12	-12	11.50	12.00	-0.50	0.00	82	8.60	8.50	-3.40	-3.50
14	-14	11.50		-0.50		84	9.60	10.30	-2.40	-1.70
16	-16	11.60		-0.40		86	10.60	11.80	-1.40	-0.20
18	-18	11.70		-0.30		88	12.00	12.00	0.00	0.00
20	-20	11.90		-0.10		90				
22	-22					92				
24	-24					94				
26	-26					96				
28	-28					98				
30	-30					100				

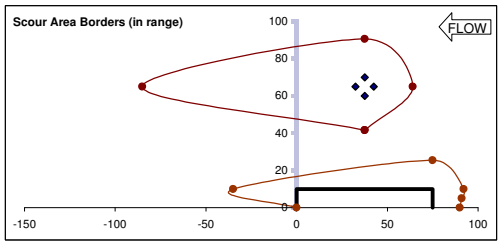
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.90	-5.10
2	6.40	-5.60
4	7.30	-4.70
6	8.60	-3.40
8	9.80	-2.20
10	11.20	-0.80
12	11.80	-0.20
14	12.00	0.00
16		
18		
20		

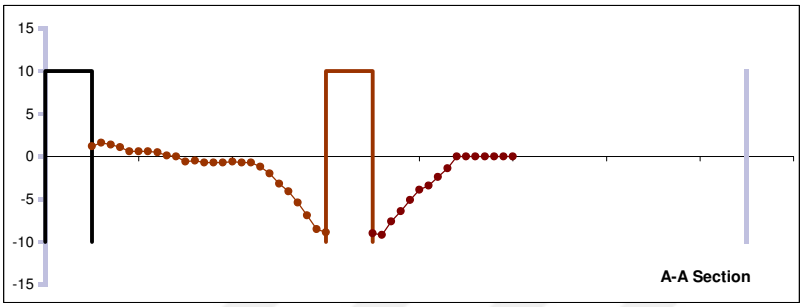
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	16
SB_{af}	Abutment Corner Front	17
SB_{ar}	Abutment Corner Right	15.5
SB_{pl}	Pier Left	18.5
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	20.5
SB_{pb}	Pier Rear	117.5

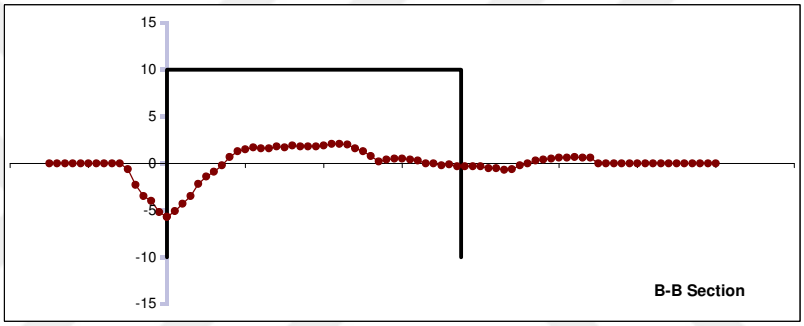


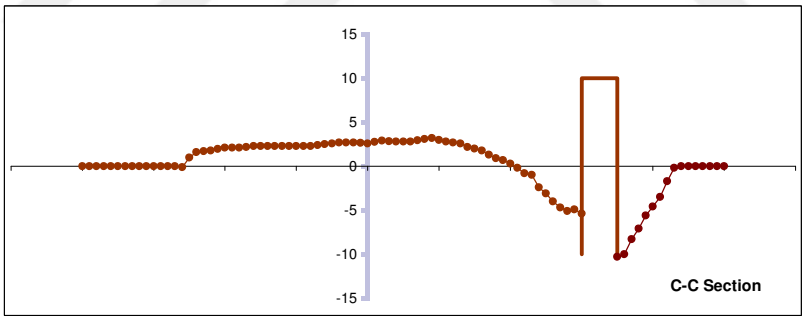
Experiment No : **E121**

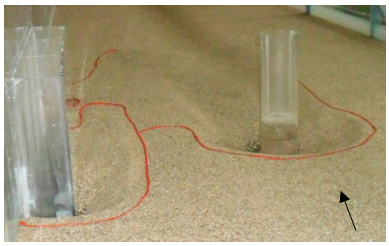


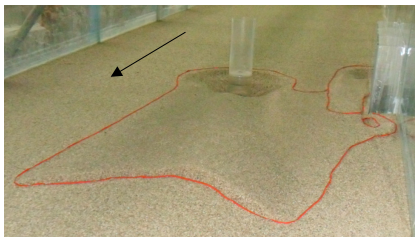






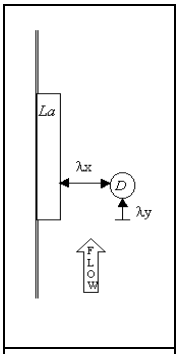


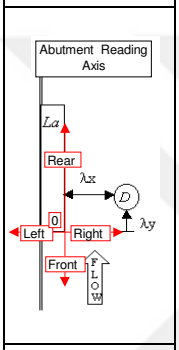


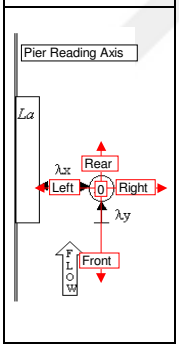


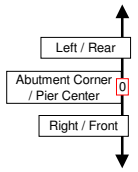
Experiment No : **E122**

Date :	09.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	65









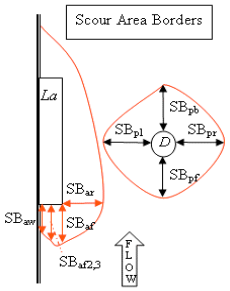
This color was used for raw data readings

This color was used for values enterpolated to sketch

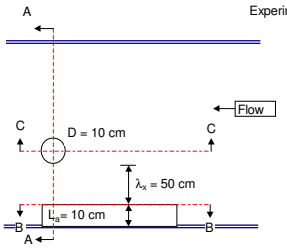
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-110				
-168	168					-108				
-166	166					-106				
-164	164					-104				
-162	162					-102				
-160	160					-100				
-158	158					-98				
-156	156					-96				
-154	154					-94				
-152	152					-92				
-150	150					-90				
-148	148					-88				
-146	146					-86				
-144	144					-84				
-142	142					-82				
-140	140					-80				
-138	138					-78				
-136	136					-76				
-134	134					-74				
-132	132					-72				
-130	130					-70				
-128	128					-68				
-126	126					-66				
-124	124					-64				
-122	122					-62				
-120	120					-60				
-118	118					-58				
-116	116					-56				
-114	114					-54				
-112	112					-52				
-110	110					-50		12.00		0.00
-108	108					-48		*12.60*		0.60
-106	106					-46		13.20		1.20
-104	104					-44		*13.45*		1.45
-102	102					-42		13.70		1.70
-100	100					-40		*13.75*		1.75
-98	98					-38		13.80		1.80
-96	96					-36		*13.80*		1.80
-94	94					-34		13.80		1.80
-92	92					-32		*13.85*		1.85
-90	90					-30		13.90		1.90
-88	88					-28		*14.05*		2.05
-86	86					-26		14.20		2.20
-84	84		12.00		0.00	-24		*14.20*		2.20
-82	82		12.10		0.10	-22		14.20		2.20
-80	80		12.20		0.20	-20		*14.15*		2.15
-78	78		12.10		0.10	-18		14.10		2.10
-76	76		12.10		0.10	-16		*14.20*		2.20
-74	74		12.10		0.10	-14		14.30		2.30
-72	72		12.30		0.30	-12		*14.30*		2.30
-70	70		12.20		0.20	-10		14.30		2.30
-68	68		12.20		0.20	-8		*14.35*		2.35
-66	66		12.40		0.40	-6		14.40		2.40
-64	64		12.30		0.30	-4		*14.35*		2.35
-62	62		12.30		0.30	-2		14.30		2.30
-60	60		12.40		0.40	0		*14.40*		2.40
-58	58		12.50		0.50	2		14.50		2.50
-56	56		12.80		0.80	4		*14.60*		2.60
-54	54		13.10		1.10	6		14.70		2.70
-52	52		13.30		1.30	8		*14.60*		2.60
-50	50		13.70		1.70	10	11.70	14.50	-0.30	2.50
-48	48		13.90		1.90	12	11.60	*14.50*	-0.40	2.50
-46	46		14.00		2.00	14	11.60	14.50	-0.40	2.50
-44	44		14.20		2.20	16	11.80	*14.45*	-0.20	2.45
-42	42		14.10		2.10	18	11.90	14.40	-0.10	2.40
-40	40		14.00		2.00	20	12.60	14.40	0.60	2.40
-38	38		14.30		2.30	22	12.70	14.30	0.70	2.30
-36	36		14.10		2.10	24	12.40	14.20	0.40	2.20
-34	34		14.00		2.00	26	12.30	14.40	0.30	2.40
-32	32		14.00		2.00	28	12.40	14.10	0.40	2.10
-30	30		13.90		1.90	30	12.30	13.90	0.30	1.90
-28	28		13.90		1.90	32	12.30	13.80	0.30	1.80
-26	26		13.70		1.70	34	12.10	13.70	0.10	1.70
-24	24		13.70		1.70	36	12.00	13.40	0.00	1.40
-22	22		13.40		1.40	38	12.00	13.50	0.00	1.50
-20	20		13.50		1.50	40	11.70	12.90	-0.30	0.90
-18	18		13.20		1.20	42	11.50	12.20	-0.50	0.20
-16	16		12.50		0.50	44	11.30	11.80	-0.70	-0.20
-14	14		12.10		0.10	46	10.10	11.20	-1.90	-0.80
-12	12		11.50		-0.50	48	9.30	10.50	-2.70	-1.50
-10	10	7.60	10.40	-4.40	-1.60	50	8.80	9.50	-3.20	-2.50
-8	8	7.40	9.50	-4.60	-2.50	52	7.80	8.70	-4.20	-3.30
-6	6	7.20	8.70	-4.80	-3.30	54	6.50	8.20	-5.50	-3.80
-4	4	6.60	7.80	-5.40	-4.20	56	5.40	7.30	-6.60	-4.70
-2	2	6.40	6.50	-5.60	-5.50	58	3.90	6.80	-8.10	-5.20
0	0	6.20	6.20	-5.80	-5.80	60	3.00	6.80	-9.00	-5.20
0	0	6.20	6.20	-5.80	-5.80	70	2.90	1.20	-9.10	-10.80
2	-2	6.50	6.90	-5.50	-5.10	72	3.50	1.60	-8.50	-10.40
4	-4	6.70	7.90	-5.30	-4.10	74	4.60	3.20	-7.40	-8.80
6	-6	8.30	8.70	-3.70	-3.30	76	6.50	4.90	-5.50	-7.10
8	-8	9.10	10.50	-2.90	-1.50	78	7.40	6.20	-4.60	-5.80
10	-10	10.30	11.70	-1.70	-0.30	80	8.20	7.30	-3.80	-4.70
12	-12	11.00	12.00	-1.00	0.00	82	9.20	8.40	-2.80	-3.60
14	-14	11.50		-0.50		84	10.20	9.40	-1.80	-2.60
16	-16	11.40		-0.60		86	11.20	10.60	-0.80	-1.40
18	-18	11.60		-0.40		88	12.00	11.70	0.00	-0.30
20	-20	11.80		-0.20		90		11.90		-0.10
22	-22	12.00		0.00		92		12.00		0.00
24	-24					94				
26	-26					96				
28	-28					98				
30	-30					100				

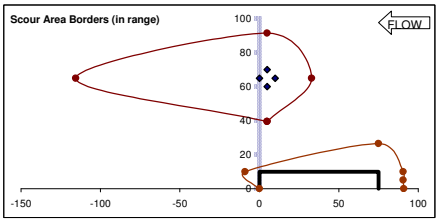
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.40	-4.60
2	7.60	-4.40
4	8.70	-3.30
6	9.90	-2.10
8	10.80	-1.20
10	11.80	-0.20
12	12.00	0.00
14		
16		
18		
20		
22		
24		

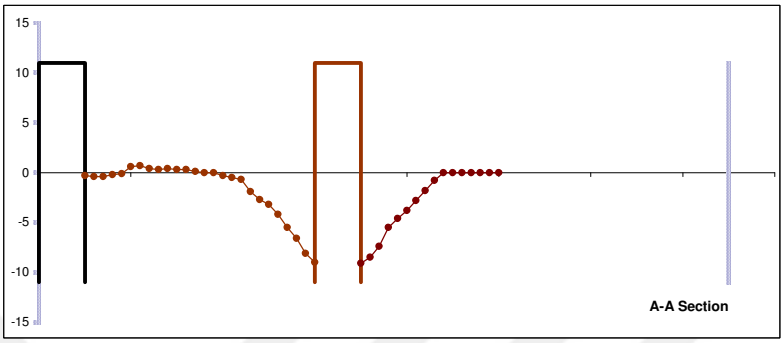
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af}	Abutment Corner Front	15.5
SB_{ar}	Abutment Corner Right	16.5
SB_{pl}	Pier Left	20.5
SB_{pf}	Pier Front	23
SB_{pr}	Pier Right	21.5
SB_{pb}	Pier Rear	115.5

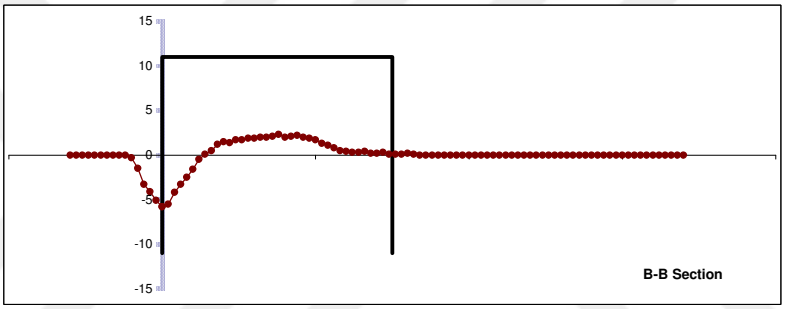


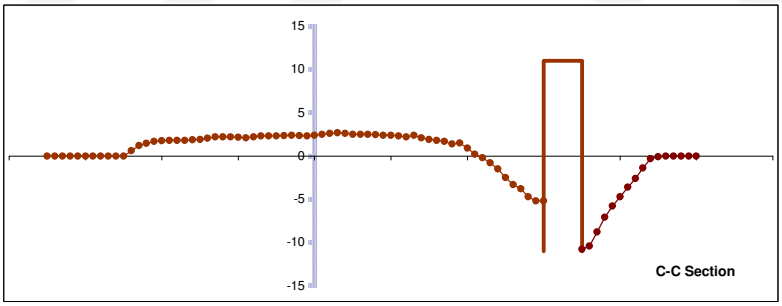
Experiment No : **E122**

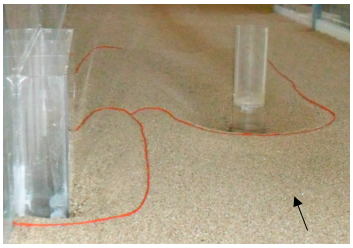


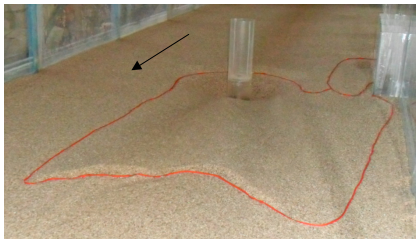




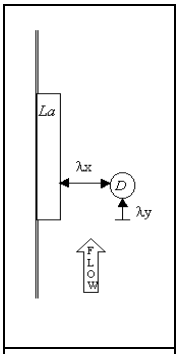


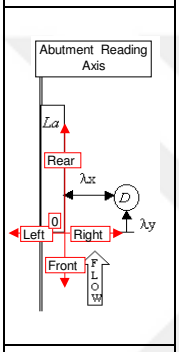


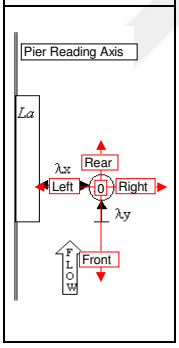


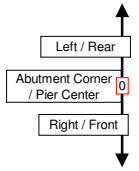


Experiment No :	**E123**
Date :	13.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	0









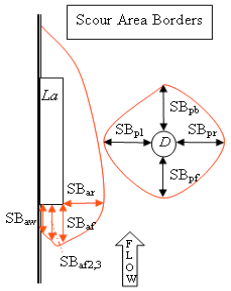
This color was used for raw data readings

This color was used for values enterpolated to sketch

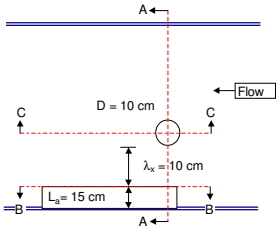
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131				
-154	154					-129				
-152	152		12.00		0.00	-127				
-150	150		12.80		0.80	-125				
-148	148		13.80		1.80	-123				
-146	146		*13.90*		1.90	-121		12.00		0.00
-144	144		14.00		2.00	-119		12.60		0.60
-142	142		*13.95*		1.95	-117		14.20		2.20
-140	140		13.90		1.90	-115		15.50		3.50
-138	138		*13.95*		1.95	-113		*15.50*		3.50
-136	136		14.00		2.00	-111		15.50		3.50
-134	134		*13.95*		1.95	-109		*15.45*		3.45
-132	132		13.90		1.90	-107		15.40		3.40
-130	130		*13.90*		1.90	-105		*15.37*		3.37
-128	128		*13.90*		1.90	-103		*15.34*		3.34
-126	126		13.90		1.90	-101		15.30		3.30
-124	124		*13.70*		1.70	-99		*15.30*		3.30
-122	122		13.50		1.50	-97		15.30		3.30
-120	120		*13.45*		1.45	-95		*15.30*		3.30
-118	118		13.40		1.40	-93		15.30		3.30
-116	116		13.30		1.30	-91		*15.25*		3.25
-114	114		13.20		1.20	-89		15.20		3.20
-112	112		13.00		1.00	-87		*15.15*		3.15
-110	110		12.90		0.90	-85		15.10		3.10
-108	108		12.80		0.80	-83		*15.10*		3.10
-106	106		12.40		0.40	-81		15.10		3.10
-104	104		12.30		0.30	-79		*15.10*		3.10
-102	102		12.20		0.20	-77		15.10		3.10
-100	100		11.80		-0.20	-75		*15.05*		3.05
-98	98		11.60		-0.40	-73		15.00		3.00
-96	96		11.40		-0.60	-71		*14.90*		2.90
-94	94		11.20		-0.80	-69		14.80		2.80
-92	92		11.20		-0.80	-67		*14.85*		2.85
-90	90		11.20		-0.80	-65		14.90		2.90
-88	88		11.10		-0.90	-63		*14.90*		2.90
-86	86		11.10		-0.90	-61		14.90		2.90
-84	84		11.20		-0.80	-59		*14.85*		2.85
-82	82		11.50		-0.50	-57		14.80		2.80
-80	80		11.60		-0.40	-55		*14.75*		2.75
-78	78		11.70		-0.30	-53		14.70		2.70
-76	76		11.80		-0.20	-51		*14.70*		2.70
-74	74		12.10		0.10	-49		14.70		2.70
-72	72		12.20		0.20	-47		*14.60*		2.60
-70	70		12.40		0.40	-45		14.50		2.50
-68	68		12.20		0.20	-43		*14.50*		2.50
-66	66		12.20		0.20	-41		14.50		2.50
-64	64		12.30		0.30	-39		*14.60*		2.60
-62	62		12.40		0.40	-37		14.70		2.70
-60	60		12.50		0.50	-35		*14.65*		2.65
-58	58		12.70		0.70	-33		14.60		2.60
-56	56		12.70		0.70	-31		*14.55*		2.55
-54	54		12.70		0.70	-29		14.50		2.50
-52	52		12.80		0.80	-27		*14.50*		2.50
-50	50		12.60		0.60	-25		14.50		2.50
-48	48		12.70		0.70	-23		*14.45*		2.45
-46	46		12.50		0.50	-21		14.40		2.40
-44	44		12.60		0.60	-19		14.40		2.40
-42	42		12.40		0.40	-17		14.40		2.40
-40	40		12.30		0.30	-15		14.40		2.40
-38	38		12.20		0.20	-13		14.00		2.00
-36	36		12.10		0.10	-11		13.70		1.70
-34	34		12.20		0.20	-9		13.50		1.50
-32	32		12.00		0.00	-7		13.20		1.20
-30	30		12.00		0.00	-5		12.80		0.80
-28	28		11.80		-0.20	-3		12.60		0.60
-26	26		11.50		-0.50	-1		12.60		0.60
-24	24		11.00		-1.00	1		12.20		0.20
-22	22		10.50		-1.50	3		11.90		-0.10
-20	20		9.70		-2.30	5		11.30		-0.70
-18	18		9.10		-2.90	7		10.70		-1.30
-16	16	*6.00*	8.80	-6.00	-3.20	9		10.20		-1.80
-14	14	*6.35*	7.50	-5.65	-4.50	11		9.90		-2.10
-12	12	6.70	6.70	-5.30	-5.30	13		9.40		-2.60
-10	10	6.00	5.80	-6.00	-6.20	15	3.80	8.50	-8.20	-3.50
-8	8	5.30	5.00	-6.70	-7.00	17	3.40	8.00	-8.60	-4.00
-6	6	4.70	4.40	-7.30	-7.60	19	3.40	7.50	-8.60	-4.50
-4	4	4.00	3.80	-8.00	-8.20	21	3.50	6.50	-8.50	-5.50
-2	2	3.10	3.20	-8.90	-8.80	23	3.40	5.90	-8.60	-6.10
0	0	2.50	2.50	-9.50	-9.50	25	2.90	5.60	-9.10	-6.40
0	0	2.50	2.50	-9.50	-9.50	35	2.90	1.30	-9.10	-10.70
2	-2	3.50	3.30	-8.50	-8.70	37	2.80	2.10	-9.20	-9.90
4	-4	3.00	5.00	-9.00	-7.00	39	3.70	3.50	-8.30	-8.50
6	-6	3.30	6.80	-8.70	-5.20	41	5.20	5.10	-6.80	-6.90
8	-8	3.60	7.30	-8.40	-4.70	43	6.30	6.40	-5.70	-5.60
10	-10	2.70	8.10	-9.30	-3.90	45	7.50	7.80	-4.50	-4.20
12	-12	2.00	9.60	-10.00	-2.40	47	9.00	8.80	-3.00	-3.20
14	-14	0.80	10.70	-11.20	-1.30	49	9.80	10.40	-2.20	-1.60
16	-16	0.90	11.40	-11.10	-0.60	51	10.40	11.50	-1.60	-0.50
18	-18	1.20	11.80	-10.80	-0.20	53	11.50	11.30	-0.50	-0.70
20	-20	1.20	11.60	-10.80	-0.40	55	12.00	11.80	0.00	-0.20
22	-22	1.40	11.80	-10.60	-0.20	57		12.00		0.00
24	-24	2.60		-9.40		59				
26	-26	3.90		-8.10		61				
28	-28	5.60		-6.40		63				
30	-30	7.00		-5.00		65				

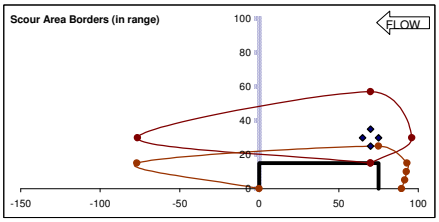
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.00	-6.00
2	6.10	-5.90
4	6.80	-5.20
6	8.00	-4.00
8	8.90	-3.10
10	9.80	-2.20
12	10.80	-1.20
14	11.20	-0.80
16	11.10	-0.90
18	11.80	-0.20
20	11.80	-0.20

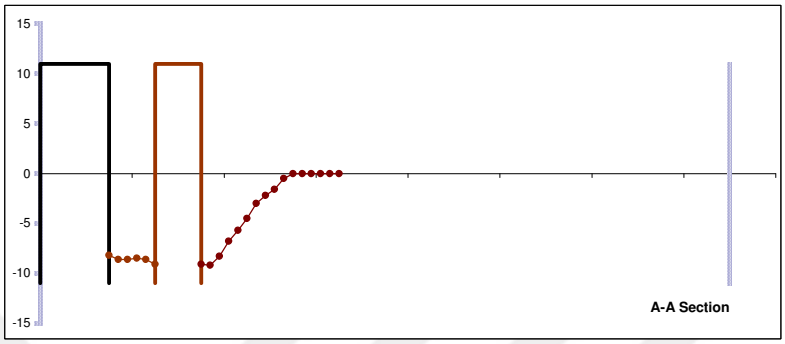
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	16.5
SB_{af3}	Abutment Front (W+10 cm)	17.5
SB_{af}	Abutment Corner Front	18
SB_{ar}	Abutment Corner Right	*10*
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	21
SB_{pr}	Pier Right	22
SB_{pb}	Pier Rear	141.5

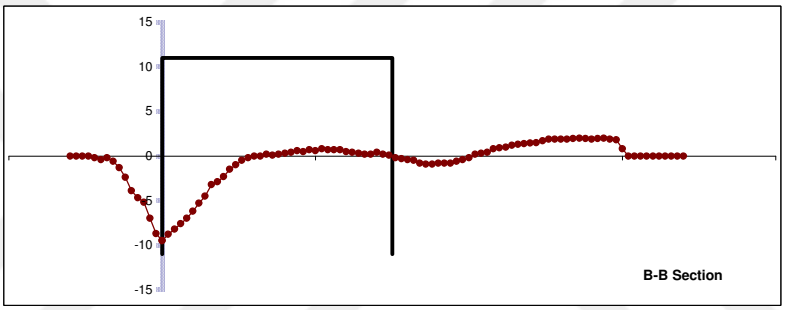


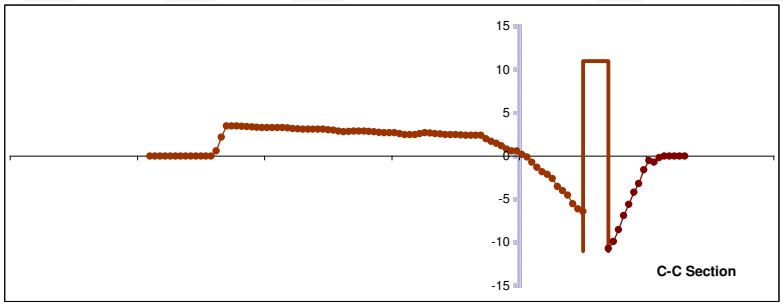
Experiment No : **E123**

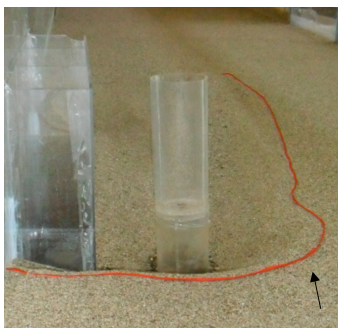


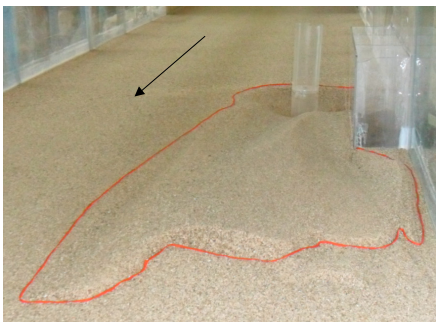




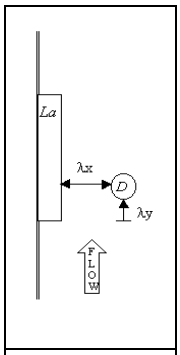


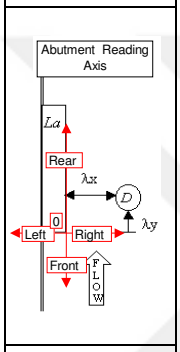


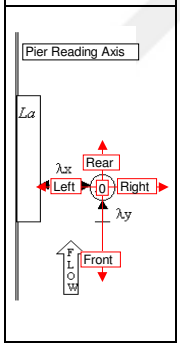


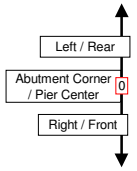


Experiment No :	**E124**
Date :	17.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	35









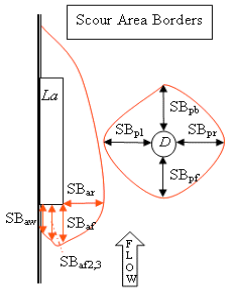
This color was used for raw data readings

This color was used for values enterpolated to sketch

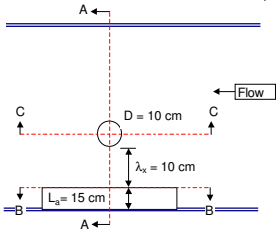
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131				
-154	154					-129				
-152	152					-127				
-150	150					-125				
-148	148					-123				
-146	146					-121				
-144	144					-119				
-142	142					-117				
-140	140					-115				
-138	138					-113				
-136	136					-111				
-134	134					-109				
-132	132		12.00		0.00	-107				
-130	130		12.20		0.20	-105				
-128	128		12.30		0.30	-103				
-126	126		12.40		0.40	-101				
-124	124		12.50		0.50	-99				
-122	122		13.90		1.90	-97				
-120	120		13.40		1.40	-95				
-118	118		13.60		1.60	-93				
-116	116		14.10		2.10	-91		12.00		0.00
-114	114		14.50		2.50	-89		12.60		0.60
-112	112		14.90		2.90	-87		13.10		1.10
-110	110		14.70		2.70	-85		13.60		1.60
-108	108		14.80		2.80	-83		13.80		1.80
-106	106		14.50		2.50	-81		14.30		2.30
-104	104		14.40		2.40	-79		15.00		3.00
-102	102		14.20		2.20	-77		15.60		3.60
-100	100		13.90		1.90	-75		15.60		3.60
-98	98		13.60		1.60	-73		15.80		3.80
-96	96		13.50		1.50	-71		*15.60*		3.60
-94	94		13.10		1.10	-69		*15.75*		3.75
-92	92		12.70		0.70	-67		15.90		3.90
-90	90		12.50		0.50	-65		*15.85*		3.85
-88	88		12.10		0.10	-63		15.80		3.80
-86	86		12.00		0.00	-61		*15.75*		3.75
-84	84		11.90		-0.10	-59		15.70		3.70
-82	82		11.90		-0.10	-57		*15.75*		3.75
-80	80		12.10		0.10	-55		15.80		3.80
-78	78		12.40		0.40	-53		*15.80*		3.80
-76	76		12.50		0.50	-51		15.80		3.80
-74	74		12.90		0.90	-49		*15.65*		3.65
-72	72		13.10		1.10	-47		15.50		3.50
-70	70		13.20		1.20	-45		*15.50*		3.50
-68	68		13.20		1.20	-43		15.50		3.50
-66	66		13.00		1.00	-41		*15.40*		3.40
-64	64		13.00		1.00	-39		15.30		3.30
-62	62		12.70		0.70	-37		*15.45*		3.45
-60	60		12.50		0.50	-35		15.60		3.60
-58	58		12.00		0.00	-33		*15.55*		3.55
-56	56		11.50		-0.50	-31		15.50		3.50
-54	54		11.10		-0.90	-29		*15.40*		3.40
-52	52		10.50		-1.50	-27		15.30		3.30
-50	50		9.50		-2.50	-25		*15.25*		3.25
-48	48		9.90		-2.10	-23		15.20		3.20
-46	46		9.20		-2.80	-21		*15.15*		3.15
-44	44		8.90		-3.10	-19		15.10		3.10
-42	42		8.50		-3.50	-17		*15.15*		3.15
-40	40		8.50		-3.50	-15		15.20		3.20
-38	38		8.50		-3.50	-13		*14.95*		2.95
-36	36		8.70		-3.30	-11		14.70		2.70
-34	34		9.20		-2.80	-9		14.70		2.70
-32	32		9.70		-2.30	-7		14.40		2.40
-30	30		10.40		-1.60	-5		14.30		2.30
-28	28		11.10		-0.90	-3		14.00		2.00
-26	26		12.20		0.20	-1		13.90		1.90
-24	24		12.00		0.00	1		13.60		1.60
-22	22		11.60		-0.40	3		13.20		1.20
-20	20		11.30		-0.70	5		12.80		0.80
-18	18		10.60		-1.40	7		12.20		0.20
-16	16	8.40	10.10	-3.60	-1.90	9		11.80		-0.20
-14	14	8.20	9.40	-3.80	-2.60	11		11.30		-0.70
-12	12	7.30	8.70	-4.70	-3.30	13		10.80		-1.20
-10	10	6.40	7.10	-5.60	-4.90	15	8.10	10.10	-3.90	-1.90
-8	8	5.80	6.60	-6.20	-5.40	17	8.00	9.60	-4.00	-2.40
-6	6	5.00	5.30	-7.00	-6.70	19	7.90	9.90	-4.10	-2.10
-4	4	4.50	5.30	-7.50	-6.70	21	6.90	8.40	-5.10	-3.60
-2	2	4.20	4.60	-7.80	-7.40	23	5.70	7.70	-6.30	-4.30
0	0	3.70	3.70	-8.30	-8.30	25	4.40	7.50	-7.60	-4.50
0	0	3.70	3.70	-8.30	-8.30	35	3.70	2.70	-8.30	-9.30
2	-2	4.80	3.70	-7.20	-8.30	37	3.50	2.70	-8.50	-9.30
4	-4	4.50	4.50	-7.50	-7.50	39	3.30	4.10	-8.70	-7.90
6	-6	5.60	6.00	-6.40	-6.00	41	4.30	5.60	-7.70	-6.40
8	-8	6.70	7.20	-5.30	-4.80	43	5.60	7.10	-6.40	-4.90
10	-10	7.80	7.90	-4.20	-4.10	45	6.60	7.90	-5.40	-4.10
12	-12	8.70	9.10	-3.30	-2.90	47	6.80	9.20	-5.20	-2.80
14	-14	9.50	10.20	-2.50	-1.80	49	7.70	10.80	-4.30	-1.20
16	-16	10.60	11.30	-1.40	-0.70	51	8.70	12.00	-3.30	0.00
18	-18	11.30	11.90	-0.70	-0.10	53	9.90		-2.10	
20	-20	11.60	12.00	-0.40	0.00	55	11.00		-1.00	
22	-22	11.80		-0.20		57	12.00		0.00	
24	-24					59				
26	-26					61				
28	-28					63				
30	-30					65				

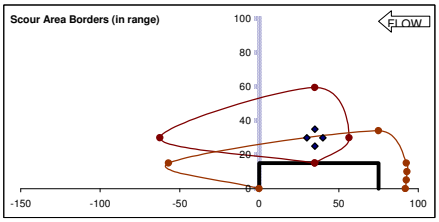
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.80	-4.20
2	7.50	-4.50
4	8.50	-3.50
6	9.40	-2.60
8	10.00	-2.00
10	10.90	-1.10
12	11.50	-0.50
14	11.80	-0.20
16	12.00	0.00
18		
20		
22		
24		

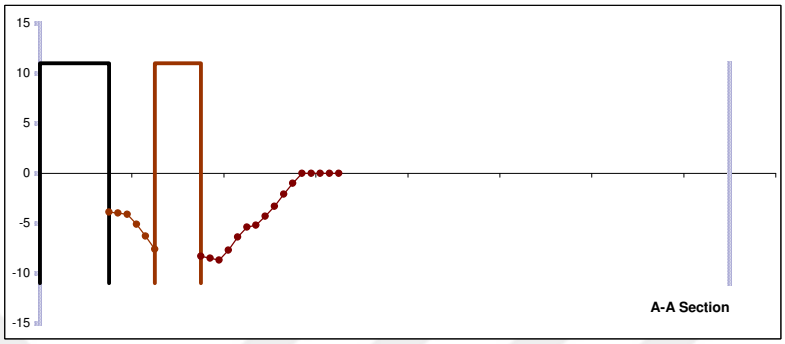
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	17
SB_{af2}	Abutment Front (W+5 cm)	17.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	17.5
SB_{ar}	Abutment Corner Right	19
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	16.5
SB_{pr}	Pier Right	24.5
SB_{pb}	Pier Rear	92.5

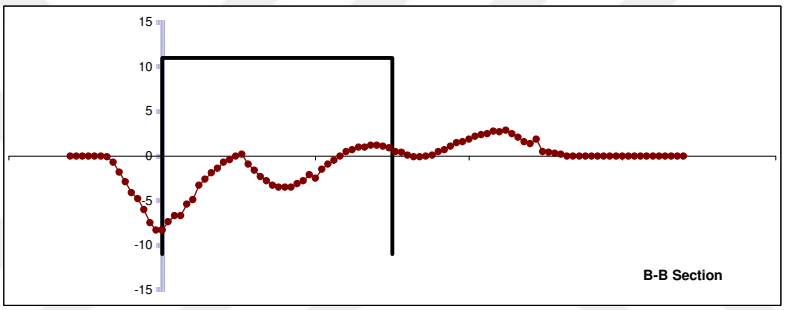


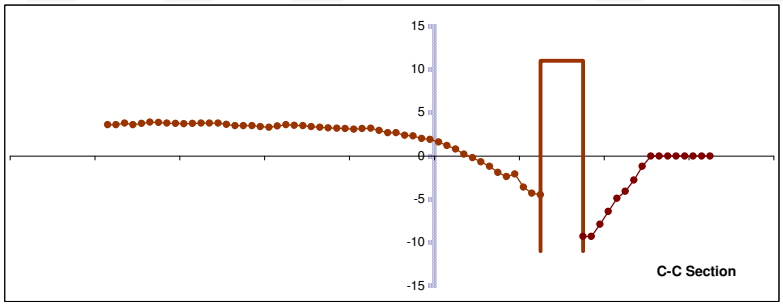
Experiment No : **E124**

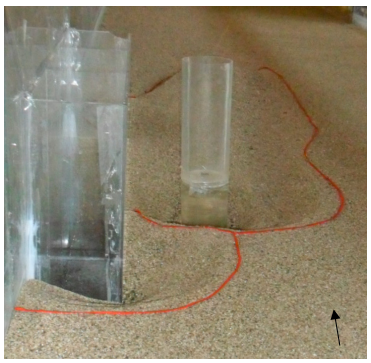


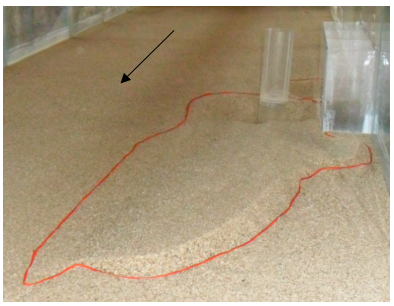




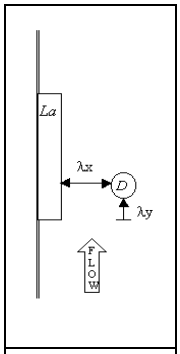


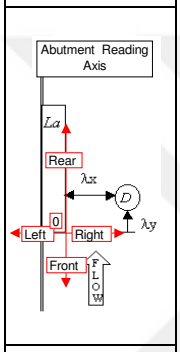


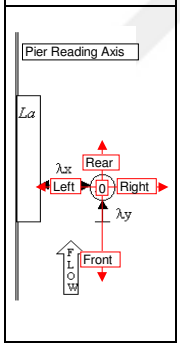


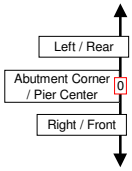


Experiment No :	**E125**
Date :	19.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	65









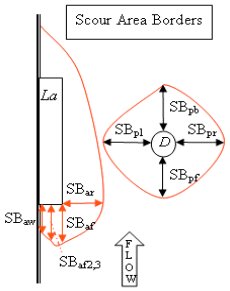
This color was used for raw data readings

This color was used for values enterpolated to sketch

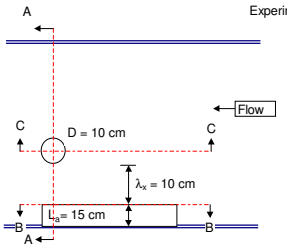
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-145				
-168	168					-143				
-166	166					-141				
-164	164					-139				
-162	162					-137				
-160	160					-135				
-158	158					-133				
-156	156					-131				
-154	154					-129				
-152	152					-127				
-150	150					-125				
-148	148					-123				
-146	146					-121				
-144	144					-119				
-142	142					-117				
-140	140					-115				
-138	138					-113				
-136	136		12.00		0.00	-111				
-134	134		13.50		1.50	-109				
-132	132		14.80		2.80	-107				
-130	130		15.50		3.50	-105				
-128	128		*15.60*		3.60	-103				
-126	126		15.70		3.70	-101				
-124	124		15.50		3.50	-99				
-122	122		15.20		3.20	-97				
-120	120		15.10		3.10	-95				
-118	118		14.80		2.80	-93				
-116	116		14.70		2.70	-91				
-114	114		14.40		2.40	-89				
-112	112		14.20		2.20	-87				
-110	110		12.70		0.70	-85				
-108	108		13.30		1.30	-83				
-106	106		13.10		1.10	-81				
-104	104		12.70		0.70	-79				
-102	102		12.50		0.50	-77				
-100	100		12.40		0.40	-75				
-98	98		12.10		0.10	-73				
-96	96		12.00		0.00	-71				
-94	94		12.00		0.00	-69				
-92	92		12.10		0.10	-67				
-90	90		11.90		-0.10	-65				
-88	88		12.10		0.10	-63				
-86	86		12.10		0.10	-61				
-84	84		12.00		0.00	-59				
-82	82		12.00		0.00	-57				
-80	80		11.50		-0.50	-55		12.00		0.00
-78	78		11.30		-0.70	-53		12.80		0.80
-76	76		10.30		-1.70	-51		13.50		1.50
-74	74		9.50		-2.50	-49		14.30		2.30
-72	72		9.30		-2.70	-47		14.20		2.20
-70	70		9.40		-2.60	-45		15.00		3.00
-68	68		9.40		-2.60	-43		15.70		3.70
-66	66		9.90		-2.10	-41		*15.60*		3.60
-64	64		10.70		-1.30	-39		15.50		3.50
-62	62		11.30		-0.70	-37		*15.50*		3.50
-60	60		12.90		0.90	-35		15.50		3.50
-58	58		13.70		1.70	-33		*15.50*		3.50
-56	56		13.90		1.90	-31		15.50		3.50
-54	54		13.90		1.90	-29		*15.50*		3.50
-52	52		13.90		1.90	-27		15.50		3.50
-50	50		13.80		1.80	-25		15.50		3.50
-48	48		13.80		1.80	-23		15.30		3.30
-46	46		13.70		1.70	-21		15.50		3.50
-44	44		13.50		1.50	-19		15.60		3.60
-42	42		13.30		1.30	-17		15.60		3.60
-40	40		13.20		1.20	-15		15.60		3.60
-38	38		13.10		1.10	-13		15.60		3.60
-36	36		13.00		1.00	-11		15.60		3.60
-34	34		12.80		0.80	-9		15.50		3.50
-32	32		12.70		0.70	-7		15.50		3.50
-30	30		12.20		0.20	-5		15.40		3.40
-28	28		12.10		0.10	-3		15.10		3.10
-26	26		11.60		-0.40	-1		15.10		3.10
-24	24		11.20		-0.80	1		14.80		2.80
-22	22		10.60		-1.40	3		14.50		2.50
-20	20		10.30		-1.70	5		13.60		1.60
-18	18		9.90		-2.10	7		13.30		1.30
-16	16		9.50		-2.50	9		13.10		1.10
-14	14	6.30	8.90	-5.70	-3.10	11		12.80		0.80
-12	12	6.00	8.30	-6.00	-3.70	13		12.30		0.30
-10	10	5.50	7.60	-6.50	-4.40	15	9.50	11.80	-2.50	-0.20
-8	8	4.80	6.70	-7.20	-5.30	17	9.40	11.70	-2.60	-0.30
-6	6	4.50	5.80	-7.50	-6.20	19	9.50	11.00	-2.50	-1.00
-4	4	3.60	5.10	-8.40	-6.90	21	8.40	10.20	-3.60	-1.80
-2	2	3.30	4.00	-8.70	-8.00	23	6.80	9.90	-5.20	-2.10
0	0	3.00	3.00	-9.00	-9.00	25	5.20	9.40	-6.80	-2.60
0	0	3.00	3.00	-9.00	-9.00	35	5.50	4.10	-6.50	-7.90
2	-2	3.30	2.80	-8.70	-9.20	37	4.70	4.40	-7.30	-7.60
4	-4	3.50	4.60	-8.50	-7.40	39	5.00	6.00	-7.00	-6.00
6	-6	4.20	6.00	-7.80	-6.00	41	6.30	7.40	-5.70	-4.60
8	-8	5.90	7.00	-6.10	-5.00	43	7.50	8.50	-4.50	-3.50
10	-10	7.30	7.60	-4.70	-4.40	45	7.60	9.70	-4.40	-2.30
12	-12	7.60	8.20	-4.40	-3.80	47	7.80	11.10	-4.20	-0.90
14	-14	9.20	9.50	-2.80	-2.50	49	8.60	12.00	-3.40	0.00
16	-16	9.39	10.90	-2.61	-1.10	51	9.60		-2.40	
18	-18	10.80	12.00	-1.20	0.00	53	10.70		-1.30	
20	-20	11.70		-0.30		55	11.80		-0.20	
22	-22	11.80		-0.20		57	12.00		0.00	
24	-24	12.00		0.00		59				
26	-26					61				
28	-28					63				
30	-30					65				

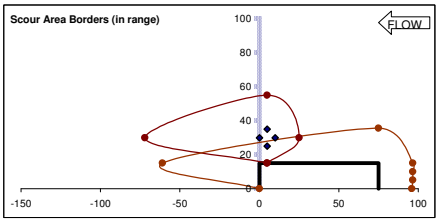
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	5.60	-6.40
2	5.70	-6.30
4	6.40	-5.60
6	7.50	-4.50
8	8.50	-3.50
10	9.10	-2.90
12	10.30	-1.70
14	11.20	-0.80
16	11.80	-0.20
18	12.00	0.00
20		
22		
24		

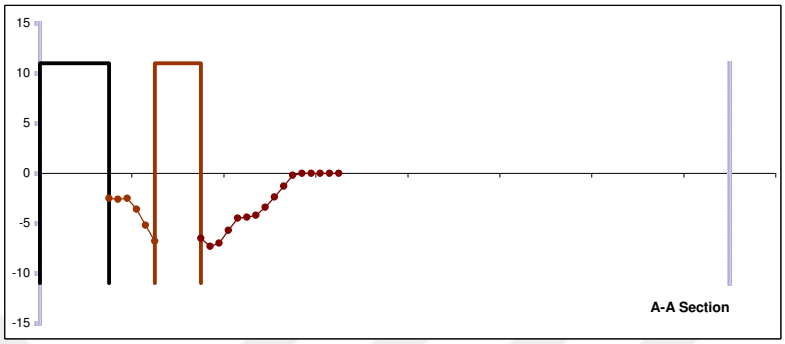
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	21.5
SB_{af}	Abutment Corner Front	21.5
SB_{ar}	Abutment Corner Right	20.5
SB_{pl}	Pier Left	*10*
SB_{pf}	Pier Front	15
SB_{pr}	Pier Right	20
SB_{pb}	Pier Rear	72

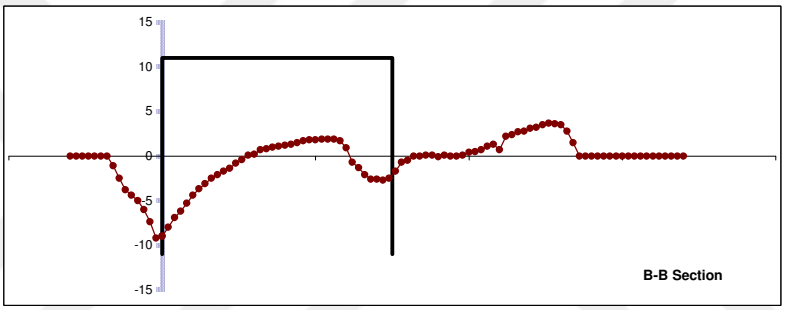


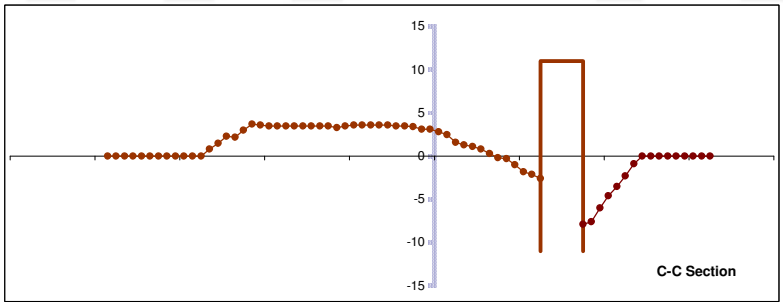
Experiment No : **E125**

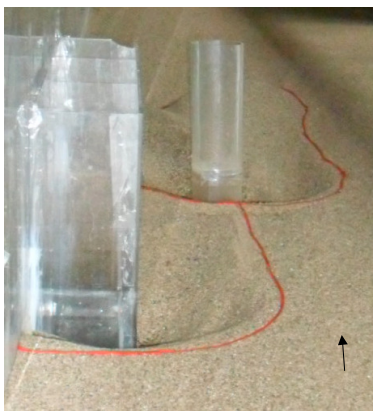


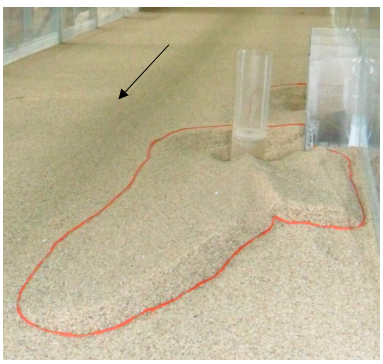




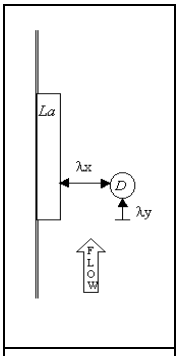


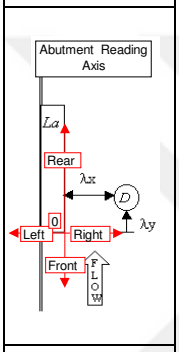


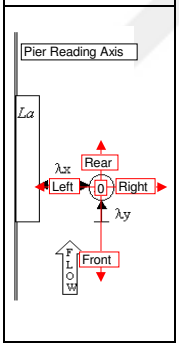


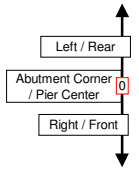


Experiment No :	E126
Date :	26.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	0









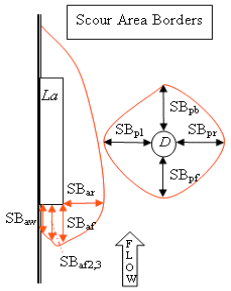
This color was used for raw data readings

This color was used for values enterpolated to sketch

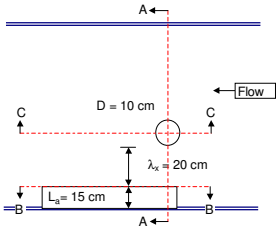
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-135				
-168	168					-133				
-166	166					-131				
-164	164					-129				
-162	162					-127				
-160	160					-125				
-158	158					-123				
-156	156					-121				
-154	154					-119				
-152	152					-117				
-150	150		12.00		0.00	-115				
-148	148		12.30		0.30	-113				
-146	146		12.40		0.40	-111				
-144	144		13.40		1.40	-109				
-142	142		12.70		0.70	-107				
-140	140		13.30		1.30	-105		12.00		0.00
-138	138		13.70		1.70	-103		13.50		1.50
-136	136		14.40		2.40	-101		*13.70*		1.70
-134	134		14.80		2.80	-99		13.90		1.90
-132	132		14.80		2.80	-97		*13.90*		1.90
-130	130		15.10		3.10	-95		13.90		1.90
-128	128		*14.95*		2.95	-93		*13.94*		1.94
-126	126		14.80		2.80	-91		*13.97*		1.97
-124	124		14.80		2.80	-89		14.00		2.00
-122	122		14.60		2.60	-87		*14.05*		2.05
-120	120		14.50		2.50	-85		14.10		2.10
-118	118		14.40		2.40	-83		*14.10*		2.10
-116	116		14.30		2.30	-81		14.10		2.10
-114	114		14.30		2.30	-79		*14.20*		2.20
-112	112		14.20		2.20	-77		14.30		2.30
-110	110		14.00		2.00	-75		*14.25*		2.25
-108	108		13.90		1.90	-73		14.20		2.20
-106	106		13.70		1.70	-71		*14.25*		2.25
-104	104		13.50		1.50	-69		14.30		2.30
-102	102		13.40		1.40	-67		*14.35*		2.35
-100	100		12.80		0.80	-65		14.40		2.40
-98	98		12.50		0.50	-63		*14.30*		2.30
-96	96		12.10		0.10	-61		14.20		2.20
-94	94		11.60		-0.40	-59		*14.25*		2.25
-92	92		11.30		-0.70	-57		14.30		2.30
-90	90		11.30		-0.70	-55		*14.40*		2.40
-88	88		11.00		-1.00	-53		14.50		2.50
-86	86		10.70		-1.30	-51		*14.35*		2.35
-84	84		10.90		-1.10	-49		14.20		2.20
-82	82		11.10		-0.90	-47		*14.10*		2.10
-80	80		11.50		-0.50	-45		14.00		2.00
-78	78		11.90		-0.10	-43		*14.10*		2.10
-76	76		12.40		0.40	-41		14.20		2.20
-74	74		12.50		0.50	-39		*14.10*		2.10
-72	72		*12.65*		0.65	-37		14.00		2.00
-70	70		12.80		0.80	-35		*14.15*		2.15
-68	68		*12.90*		0.90	-33		14.30		2.30
-66	66		13.00		1.00	-31		*14.20*		2.20
-64	64		*13.05*		1.05	-29		14.10		2.10
-62	62		13.10		1.10	-27		*14.00*		2.00
-60	60		*13.05*		1.05	-25		13.90		1.90
-58	58		13.00		1.00	-23		*13.80*		1.80
-56	56		*13.00*		1.00	-21		13.70		1.70
-54	54		13.00		1.00	-19		13.70		1.70
-52	52		*12.90*		0.90	-17		13.80		1.80
-50	50		12.80		0.80	-15		14.00		2.00
-48	48		*12.70*		0.70	-13		13.80		1.80
-46	46		12.60		0.60	-11		14.00		2.00
-44	44		*12.50*		0.50	-9		13.90		1.90
-42	42		12.40		0.40	-7		13.80		1.80
-40	40		*12.30*		0.30	-5		13.70		1.70
-38	38		12.20		0.20	-3		13.40		1.40
-36	36		*12.20*		0.20	-1		13.60		1.60
-34	34		12.20		0.20	1		13.40		1.40
-32	32		12.10		0.10	3		13.10		1.10
-30	30		12.10		0.10	5		12.70		0.70
-28	28		12.00		0.00	7		12.80		0.80
-26	26		12.10		0.10	9		12.50		0.50
-24	24		11.50		-0.50	11		12.00		0.00
-22	22		11.30		-0.70	13		11.90		-0.10
-20	20		10.90		-1.10	15	5.90	11.20	-6.10	-0.80
-18	18		10.30		-1.70	17	5.80	10.60	-6.20	-1.40
-16	16		9.90		-2.10	19	5.60	9.80	-6.40	-2.20
-14	14	8.10	9.30	-3.90	-2.70	21	5.90	9.30	-6.10	-2.70
-12	12	7.60	8.80	-4.40	-3.20	23	7.20	8.30	-4.80	-3.70
-10	10	6.40	7.70	-5.60	-4.30	25	8.30	7.30	-3.70	-4.70
-8	8	5.60	6.60	-6.40	-5.40	27	7.40	6.40	-4.60	-5.60
-6	6	4.90	5.60	-7.10	-6.40	29	6.10	5.60	-5.90	-6.40
-4	4	4.50	5.10	-7.50	-6.90	31	4.40	4.80	-7.60	-7.20
-2	2	4.40	4.40	-7.60	-7.60	33	3.60	4.60	-8.40	-7.40
0	0	4.10	4.10	-7.90	-7.90	35	1.90	4.70	-10.10	-7.30
0	0	4.10	4.10	-7.90	-7.90	45	1.80	1.10	-10.20	-10.90
2	-2	4.60	4.20	-7.40	-7.80	47	1.50	2.00	-10.50	-10.00
4	-4	4.50	5.80	-7.50	-6.20	49	2.60	3.30	-9.40	-8.70
6	-6	5.20	6.80	-6.80	-5.20	51	4.10	4.70	-7.90	-7.30
8	-8	6.60	7.80	-5.40	-4.20	53	5.60	5.90	-6.40	-6.10
10	-10	7.60	8.70	-4.40	-3.30	55	6.80	7.20	-5.20	-4.80
12	-12	7.40	9.70	-4.60	-2.30	57	7.70	8.70	-4.30	-3.30
14	-14	6.20	10.60	-5.80	-1.40	59	8.80	9.70	-3.20	-2.30
16	-16	4.70	11.60	-7.30	-0.40	61	10.10	11.00	-1.90	-1.00
18	-18	4.30	11.80	-7.70	-0.20	63	11.40	12.00	-0.60	0.00
20	-20	2.90		-9.10		65	12.00		0.00	
22	-22	1.50		-10.50		67				
24	-24	1.00		-11.00		69				
26	-26	0.90		-11.10		71				
28	-28	1.00		-11.00		73				
30	-30	1.00		-11.00		75				

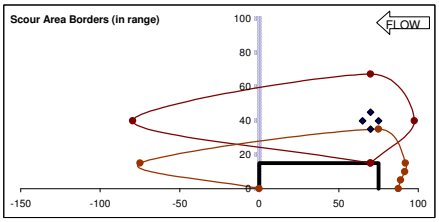
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.60	-4.40
2	7.40	-4.60
4	7.80	-4.20
6	8.80	-3.20
8	9.70	-2.30
10	10.60	-1.40
12	11.20	-0.80
14	11.60	-0.40
16	11.70	-0.30
18	11.80	-0.20
20		

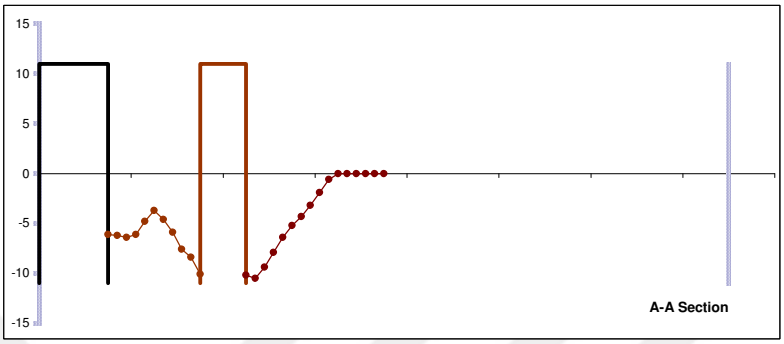
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	14
SB_{af3}	Abutment Front (W+10 cm)	16.5
SB_{af}	Abutment Corner Front	17
SB_{ar}	Abutment Corner Right	*20*
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	22.5
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	144.5

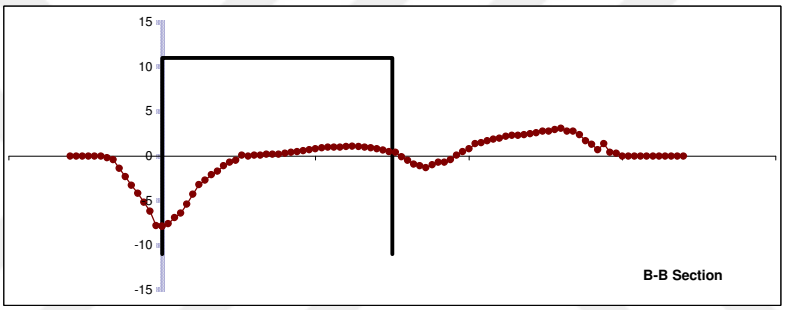


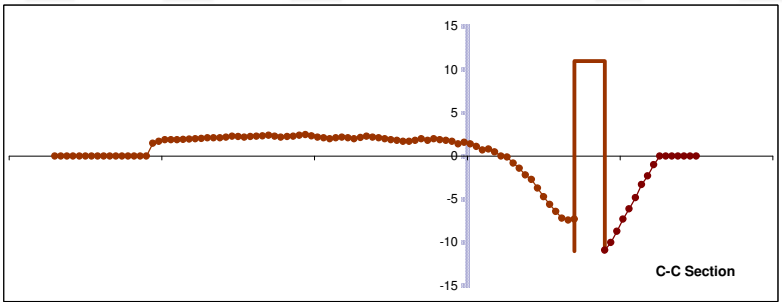
Experiment No : **E126**

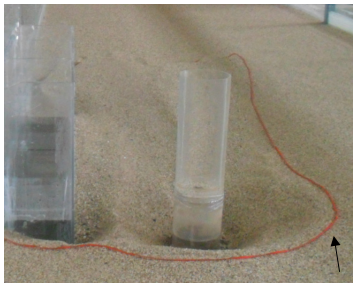


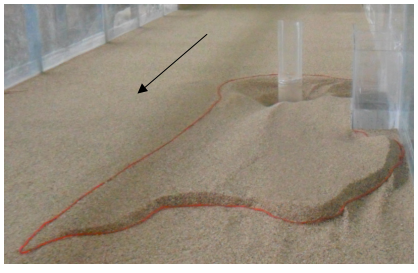




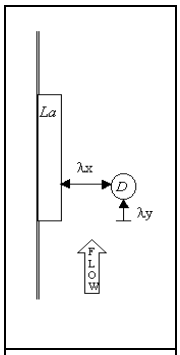


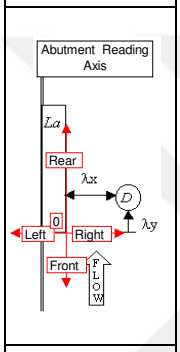


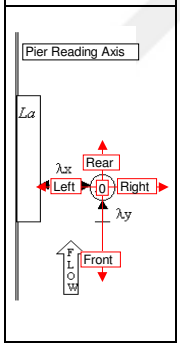


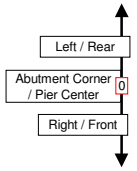


Experiment No :	**E127**
Date :	30.04.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	35









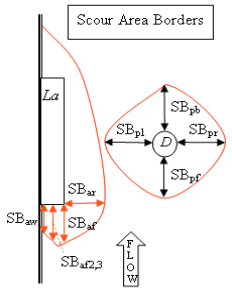
This color was used for raw data readings

This color was used for values enterpolated to sketch

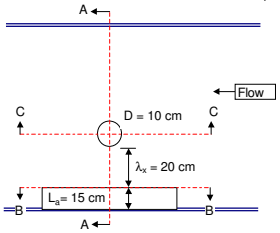
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-135				
-168	168					-133				
-166	166					-131				
-164	164					-129				
-162	162					-127				
-160	160					-125				
-158	158					-123				
-156	156					-121				
-154	154					-119				
-152	152					-117				
-150	150					-115				
-148	148					-113				
-146	146					-111				
-144	144					-109				
-142	142					-107				
-140	140		12.00		0.00	-105				
-138	138		13.10		1.10	-103				
-136	136		13.90		1.90	-101				
-134	134		14.70		2.70	-99				
-132	132		14.90		2.90	-97				
-130	130		14.90		2.90	-95				
-128	128		*14.90*		2.90	-93				
-126	126		14.90		2.90	-91				
-124	124		14.80		2.80	-89				
-122	122		15.10		3.10	-87				
-120	120		15.10		3.10	-85		12.00		0.00
-118	118		14.80		2.80	-83		13.10		1.10
-116	116		14.70		2.70	-81		13.80		1.80
-114	114		14.60		2.60	-79		14.50		2.50
-112	112		14.40		2.40	-77		14.90		2.90
-110	110		14.30		2.30	-75		15.00		3.00
-108	108		14.20		2.20	-73		*15.00*		3.00
-106	106		13.50		1.50	-71		15.00		3.00
-104	104		13.40		1.40	-69		*15.05*		3.05
-102	102		13.10		1.10	-67		15.10		3.10
-100	100		12.70		0.70	-65		*15.05*		3.05
-98	98		12.60		0.60	-63		15.00		3.00
-96	96		12.30		0.30	-61		*14.90*		2.90
-94	94		11.80		-0.20	-59		14.80		2.80
-92	92		11.50		-0.50	-57		*14.85*		2.85
-90	90		11.10		-0.90	-55		14.90		2.90
-88	88		11.00		-1.00	-53		*14.85*		2.85
-86	86		10.60		-1.40	-51		14.80		2.80
-84	84		10.50		-1.50	-49		*14.75*		2.75
-82	82		10.60		-1.40	-47		14.70		2.70
-80	80		10.70		-1.30	-45		*14.65*		2.65
-78	78		10.80		-1.20	-43		14.60		2.60
-76	76		10.80		-1.20	-41		*14.65*		2.65
-74	74		11.00		-1.00	-39		14.70		2.70
-72	72		11.20		-0.80	-37		*14.65*		2.65
-70	70		11.30		-0.70	-35		14.60		2.60
-68	68		11.30		-0.70	-33		*14.60*		2.60
-66	66		11.40		-0.60	-31		14.60		2.60
-64	64		11.40		-0.60	-29		*14.50*		2.50
-62	62		11.30		-0.70	-27		14.40		2.40
-60	60		11.40		-0.60	-25		*14.55*		2.55
-58	58		11.30		-0.70	-23		14.70		2.70
-56	56		11.30		-0.70	-21		*14.65*		2.65
-54	54		11.10		-0.90	-19		14.60		2.60
-52	52		11.00		-1.00	-17		*14.70*		2.70
-50	50		11.00		-1.00	-15		14.80		2.80
-48	48		11.10		-0.90	-13		*14.70*		2.70
-46	46		11.40		-0.60	-11		14.60		2.60
-44	44		12.50		0.50	-9		*14.65*		2.65
-42	42		13.20		1.20	-7		14.70		2.70
-40	40		13.40		1.40	-5		*14.60*		2.60
-38	38		13.60		1.60	-3		14.50		2.50
-36	36		13.70		1.70	-1		*14.35*		2.35
-34	34		13.50		1.50	1		14.20		2.20
-32	32		13.40		1.40	3		14.00		2.00
-30	30		13.30		1.30	5		13.70		1.70
-28	28		13.20		1.20	7		13.60		1.60
-26	26		13.10		1.10	9		13.50		1.50
-24	24		12.50		0.50	11		12.60		0.60
-22	22		12.30		0.30	13		12.30		0.30
-20	20		11.60		-0.40	15	13.10	12.00	1.10	0.00
-18	18		11.10		-0.90	17	13.10	11.80	1.10	-0.20
-16	16		10.40		-1.60	19	12.30	11.10	0.30	-0.90
-14	14	8.60	9.80	-3.40	-2.20	21	11.00	10.30	-1.00	-1.70
-12	12	8.50	9.10	-3.50	-2.90	23	10.20	9.70	-1.80	-2.30
-10	10	6.60	8.40	-5.40	-3.60	25	9.60	9.20	-2.40	-2.80
-8	8	5.90	7.50	-6.10	-4.50	27	8.80	8.50	-3.20	-3.50
-6	6	5.20	6.30	-6.80	-5.70	29	7.70	7.80	-4.30	-4.20
-4	4	4.70	5.10	-7.30	-6.90	31	6.20	7.00	-5.80	-5.00
-2	2	4.30	4.80	-7.70	-7.20	33	4.70	6.50	-7.30	-5.50
0	0	4.20	4.20	-7.80	-7.80	35	3.30	6.40	-8.70	-5.60
0	0	4.20	4.20	-7.80	-7.80	45	2.80	2.10	-9.20	-9.90
2	-2	4.40	4.50	-7.60	-7.50	47	2.60	2.20	-9.40	-9.80
4	-4	4.30	6.10	-7.70	-5.90	49	4.00	3.80	-8.00	-8.20
6	-6	5.50	7.20	-6.50	-4.80	51	5.20	5.20	-6.80	-6.80
8	-8	7.00	7.90	-5.00	-4.10	53	6.30	6.30	-5.70	-5.70
10	-10	7.90	8.70	-4.10	-3.30	55	6.80	7.50	-5.20	-4.50
12	-12	8.50	10.10	-3.50	-1.90	57	7.50	8.80	-4.50	-3.20
14	-14	9.30	11.50	-2.70	-0.50	59	8.70	9.80	-3.30	-2.20
16	-16	10.40	12.00	-1.60	0.00	61	9.80	11.30	-2.20	-0.70
18	-18	11.50		-0.50		63	11.00	11.80	-1.00	-0.20
20	-20	11.50		-0.50		65	11.50		-0.50	
22	-22	11.80		-0.20		67	11.80		-0.20	
24	-24					69				
26	-26					71				
28	-28					73				
30	-30					75				

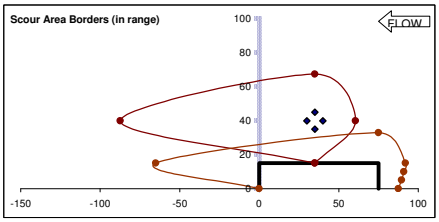
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.50	-3.50
2	8.40	-3.60
4	8.70	-3.30
6	9.60	-2.40
8	10.40	-1.60
10	11.30	-0.70
12	12.00	0.00
14		
16		
18		
20		
22		
24		

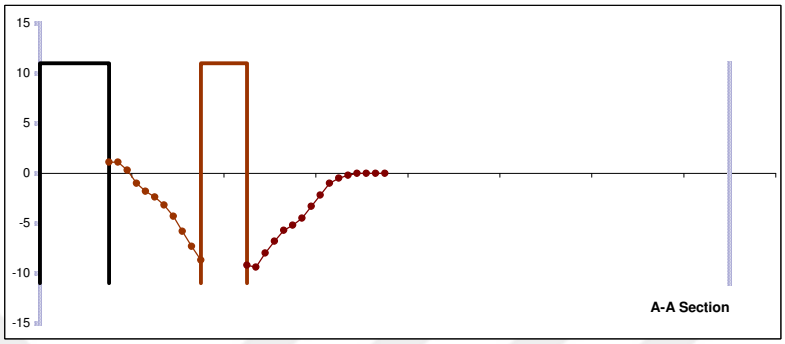
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	14.5
SB_{af3}	Abutment Front (W+10 cm)	16
SB_{af}	Abutment Corner Front	17
SB_{ar}	Abutment Corner Right	18
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	20.5
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	117.5

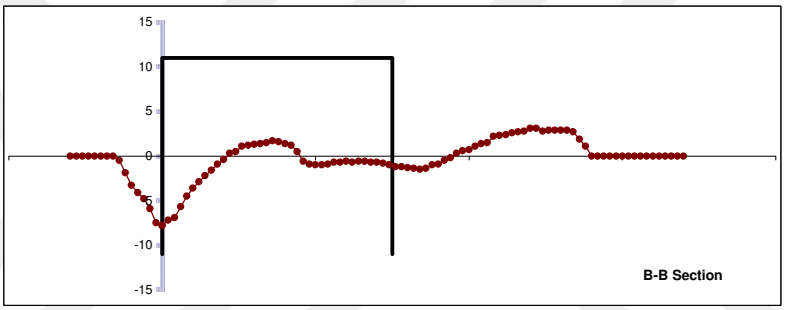


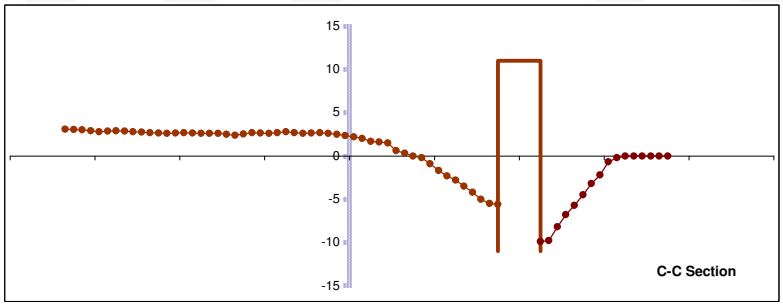
Experiment No : **E127**

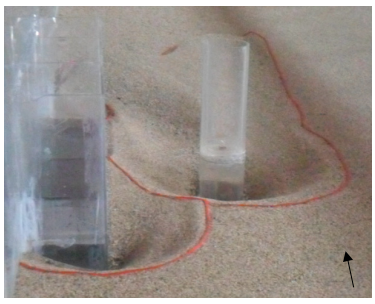


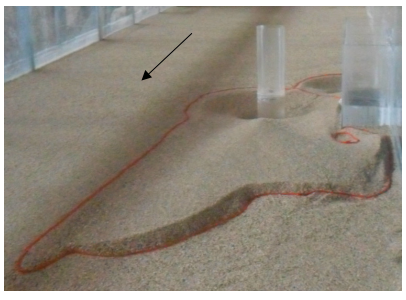








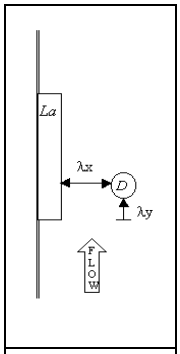


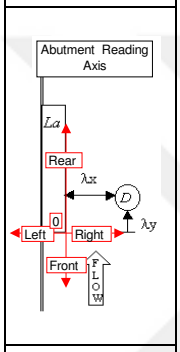


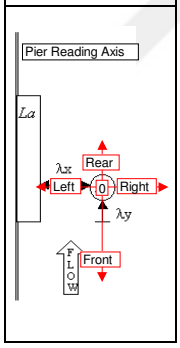
Experiment No : **E128**

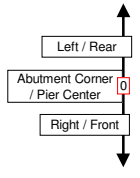
Date : 03.05.2012

Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	65









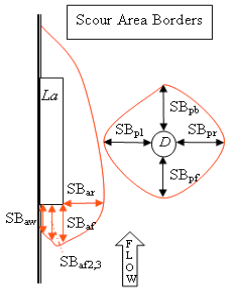
This color was used for raw data readings

This color was used for values enterpolated to sketch

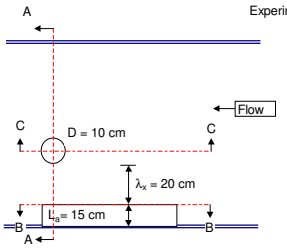
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-135				
-168	168					-133				
-166	166		12.00		0.00	-131				
-164	164		13.80		1.80	-129				
-162	162		14.30		2.30	-127				
-160	160		14.60		2.60	-125				
-158	158		14.60		2.60	-123				
-156	156		14.50		2.50	-121				
-154	154		14.50		2.50	-119				
-152	152		14.40		2.40	-117				
-150	150		14.40		2.40	-115				
-148	148		14.40		2.40	-113				
-146	146		14.30		2.30	-111				
-144	144		14.10		2.10	-109				
-142	142		13.90		1.90	-107				
-140	140		13.80		1.80	-105				
-138	138		13.50		1.50	-103				
-136	136		13.50		1.50	-101				
-134	134		13.60		1.60	-99				
-132	132		13.60		1.60	-97				
-130	130		13.10		1.10	-95				
-128	128		*13.10*		1.10	-93				
-126	126		13.10		1.10	-91				
-124	124		13.30		1.30	-89				
-122	122		13.00		1.00	-87				
-120	120		13.00		1.00	-85				
-118	118		12.90		0.90	-83				
-116	116		12.90		0.90	-81		12.00		0.00
-114	114		12.60		0.60	-79		13.00		1.00
-112	112		12.80		0.80	-77		13.70		1.70
-110	110		13.10		1.10	-75		14.30		2.30
-108	108		13.10		1.10	-73		15.00		3.00
-106	106		13.40		1.40	-71		15.20		3.20
-104	104		13.40		1.40	-69		*15.15*		3.15
-102	102		13.50		1.50	-67		15.10		3.10
-100	100		13.20		1.20	-65		*15.05*		3.05
-98	98		13.00		1.00	-63		15.00		3.00
-96	96		12.90		0.90	-61		*14.95*		2.95
-94	94		12.70		0.70	-59		14.90		2.90
-92	92		12.20		0.20	-57		*14.85*		2.85
-90	90		11.90		-0.10	-55		14.80		2.80
-88	88		11.70		-0.30	-53		*14.80*		2.80
-86	86		11.40		-0.60	-51		14.80		2.80
-84	84		11.40		-0.60	-49		*14.90*		2.90
-82	82		11.50		-0.50	-47		15.00		3.00
-80	80		11.20		-0.80	-45		*14.85*		2.85
-78	78		11.20		-0.80	-43		14.70		2.70
-76	76		11.30		-0.70	-41		*14.70*		2.70
-74	74		11.30		-0.70	-39		14.70		2.70
-72	72		11.60		-0.40	-37		*14.75*		2.75
-70	70		12.20		0.20	-35		14.80		2.80
-68	68		13.30		1.30	-33		*14.80*		2.80
-66	66		*13.40*		1.40	-31		14.80		2.80
-64	64		13.50		1.50	-29		*14.75*		2.75
-62	62		*13.60*		1.60	-27		14.70		2.70
-60	60		13.70		1.70	-25		*14.70*		2.70
-58	58		*13.75*		1.75	-23		14.70		2.70
-56	56		13.80		1.80	-21		*14.75*		2.75
-54	54		*13.75*		1.75	-19		14.80		2.80
-52	52		13.70		1.70	-17		*14.80*		2.80
-50	50		*13.70*		1.70	-15		14.80		2.80
-48	48		13.70		1.70	-13		*14.90*		2.90
-46	46		*13.50*		1.50	-11		15.00		3.00
-44	44		13.30		1.30	-9		*15.05*		3.05
-42	42		*13.15*		1.15	-7		15.10		3.10
-40	40		13.00		1.00	-5		15.10		3.10
-38	38		13.00		1.00	-3		15.00		3.00
-36	36		12.80		0.80	-1		14.80		2.80
-34	34		12.90		0.90	1		14.70		2.70
-32	32		13.00		1.00	3		14.60		2.60
-30	30		12.50		0.50	5		14.40		2.40
-28	28		12.30		0.30	7		14.10		2.10
-26	26		12.10		0.10	9		13.80		1.80
-24	24		11.70		-0.30	11		13.60		1.60
-22	22		11.20		-0.80	13		13.20		1.20
-20	20		10.60		-1.40	15	10.80	12.80	-1.20	0.80
-18	18		10.30		-1.70	17	10.70	12.70	-1.30	0.70
-16	16		9.60		-2.40	19	10.60	12.10	-1.40	0.10
-14	14	8.00	9.00	-4.00	-3.00	21	10.40	11.40	-1.60	-0.60
-12	12	7.70	8.20	-4.30	-3.80	23	10.10	10.70	-1.90	-1.30
-10	10	6.40	7.70	-5.60	-4.30	25	9.20	9.90	-2.80	-2.10
-8	8	5.90	7.00	-6.10	-5.00	27	7.80	9.20	-4.20	-2.80
-6	6	5.00	6.00	-7.00	-6.00	29	6.60	8.30	-5.40	-3.70
-4	4	4.70	5.00	-7.30	-7.00	31	5.30	7.40	-6.70	-4.60
-2	2	4.10	4.50	-7.90	-7.50	33	4.30	7.30	-7.70	-4.70
0	0	3.70	3.70	-8.30	-8.30	35	4.50	7.70	-7.50	-4.30
0	0	3.70	3.70	-8.30	-8.30	45	2.50	2.20	-9.50	-9.80
2	-2	4.00	4.20	-8.00	-7.80	47	3.40	3.60	-8.60	-8.40
4	-4	4.10	5.40	-7.90	-6.60	49	4.80	4.80	-7.20	-7.20
6	-6	5.00	6.80	-7.00	-5.20	51	5.80	6.00	-6.20	-6.00
8	-8	6.10	7.80	-5.90	-4.20	53	6.90	7.10	-5.10	-4.90
10	-10	7.30	8.20	-4.70	-3.80	55	7.60	8.20	-4.40	-3.80
12	-12	8.40	9.30	-3.60	-2.70	57	8.50	9.60	-3.50	-2.40
14	-14	8.30	10.30	-3.70	-1.70	59	9.70	10.70	-2.30	-1.30
16	-16	9.90	11.50	-2.10	-0.50	61	11.10	11.40	-0.90	-0.60
18	-18	10.90	12.00	-1.10	0.00	63	11.70	11.70	-0.30	-0.30
20	-20	11.50		-0.50		65	12.00	11.80	0.00	-0.20
22	-22	11.70		-0.30		67				
24	-24	11.80		-0.20		69				
26	-26					71				
28	-28					73				
30	-30					75				

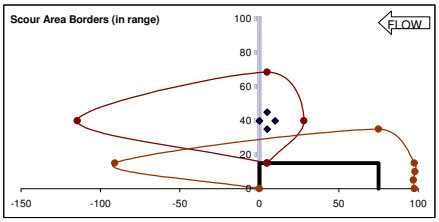
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.70	-4.30
2	7.60	-4.40
4	8.00	-4.00
6	8.80	-3.20
8	9.60	-2.40
10	10.50	-1.50
12	11.40	-0.60
14	11.90	-0.10
16	12.00	0.00
18		
20		
22		
24		

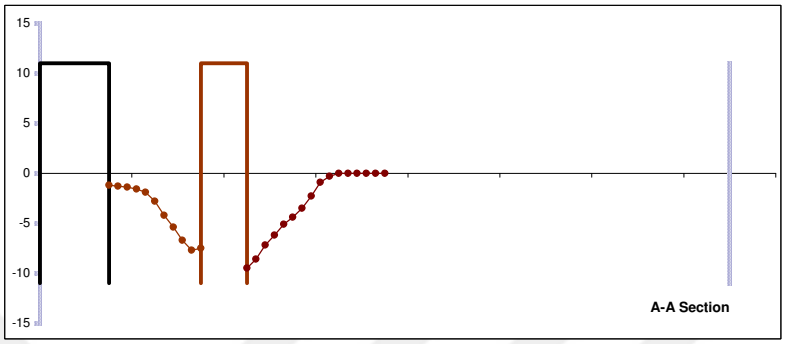
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	22.5
SB_{af2}	Abutment Front (W+5 cm)	22
SB_{af3}	Abutment Front (W+10 cm)	23
SB_{af}	Abutment Corner Front	22.5
SB_{ar}	Abutment Corner Right	20
SB_{pl}	Pier Left	*20*
SB_{pf}	Pier Front	18
SB_{pr}	Pier Right	23.5
SB_{pb}	Pier Rear	114.5

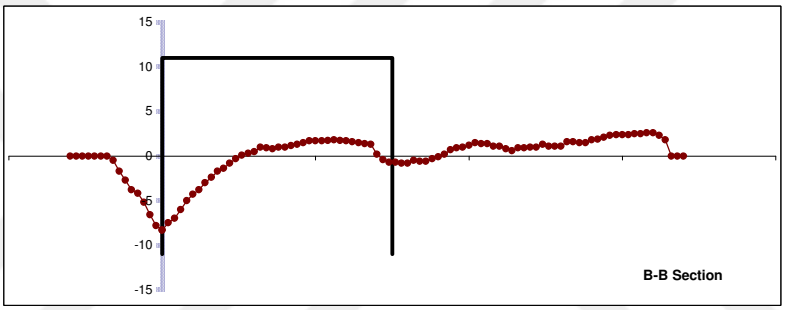


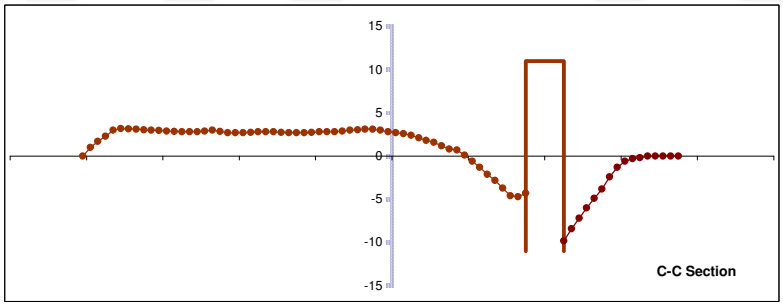
Experiment No : **E128**

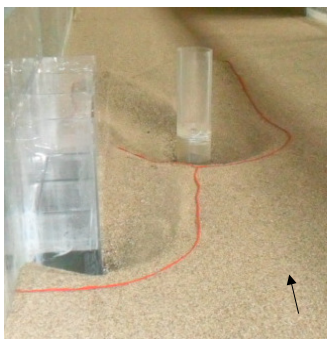


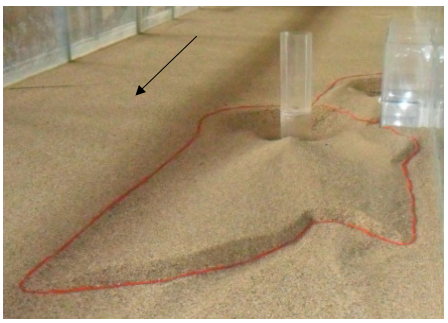




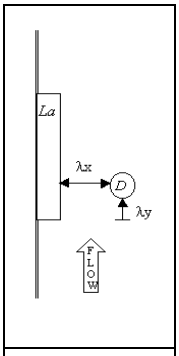


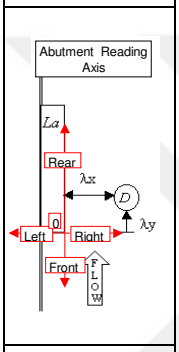


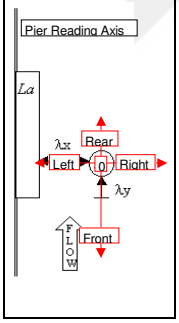


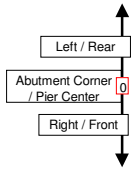


Experiment No :	**E129**
Date :	07.05.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	0









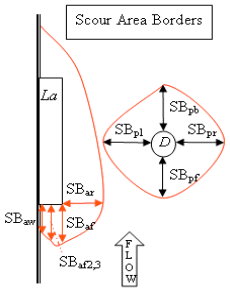
This color was used for raw data readings

This color was used for values enterpolated to sketch

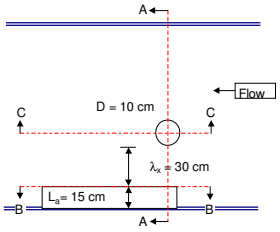
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-125				
-168	168					-123				
-166	166					-121				
-164	164					-119				
-162	162					-117				
-160	160					-115				
-158	158					-113				
-156	156					-111				
-154	154					-109				
-152	152					-107				
-150	150					-105				
-148	148					-103		12.00		0.00
-146	146					-101		13.00		1.00
-144	144					-99		13.50		1.50
-142	142		12.00		0.00	-97		*13.50*		1.50
-140	140		12.30		0.30	-95		13.50		1.50
-138	138		12.40		0.40	-93		*13.70*		1.70
-136	136		12.50		0.50	-91		13.90		1.90
-134	134		12.90		0.90	-89		*13.90*		1.90
-132	132		13.00		1.00	-87		13.90		1.90
-130	130		14.50		2.50	-85		*13.93*		1.93
-128	128		*14.45*		2.45	-83		*13.97*		1.97
-126	126		14.40		2.40	-81		14.00		2.00
-124	124		14.40		2.40	-79		*14.00*		2.00
-122	122		14.30		2.30	-77		14.00		2.00
-120	120		14.30		2.30	-75		*14.00*		2.00
-118	118		14.30		2.30	-73		14.00		2.00
-116	116		14.30		2.30	-71		*14.00*		2.00
-114	114		14.40		2.40	-69		14.00		2.00
-112	112		13.80		1.80	-67		*14.05*		2.05
-110	110		13.80		1.80	-65		14.10		2.10
-108	108		14.10		2.10	-63		*14.10*		2.10
-106	106		14.00		2.00	-61		14.10		2.10
-104	104		13.40		1.40	-59		*14.05*		2.05
-102	102		13.20		1.20	-57		14.00		2.00
-100	100		12.10		0.10	-55		*14.10*		2.10
-98	98		12.90		0.90	-53		14.20		2.20
-96	96		12.70		0.70	-51		*14.20*		2.20
-94	94		12.70		0.70	-49		14.20		2.20
-92	92		12.20		0.20	-47		*14.10*		2.10
-90	90		12.00		0.00	-45		14.00		2.00
-88	88		11.70		-0.30	-43		*14.00*		2.00
-86	86		11.10		-0.90	-41		14.00		2.00
-84	84		11.20		-0.80	-39		*13.90*		1.90
-82	82		11.20		-0.80	-37		13.80		1.80
-80	80		11.30		-0.70	-35		*13.80*		1.80
-78	78		11.40		-0.60	-33		13.80		1.80
-76	76		11.60		-0.40	-31		*13.80*		1.80
-74	74		11.80		-0.20	-29		13.80		1.80
-72	72		12.10		0.10	-27		*13.80*		1.80
-70	70		12.20		0.20	-25		13.80		1.80
-68	68		12.30		0.30	-23		*13.70*		1.70
-66	66		12.40		0.40	-21		13.60		1.60
-64	64		12.70		0.70	-19		*13.65*		1.65
-62	62		12.70		0.70	-17		13.70		1.70
-60	60		12.50		0.50	-15		*13.65*		1.65
-58	58		12.50		0.50	-13		13.60		1.60
-56	56		12.80		0.80	-11		*13.70*		1.70
-54	54		12.70		0.70	-9		13.80		1.80
-52	52		12.80		0.80	-7		*13.60*		1.60
-50	50		12.70		0.70	-5		13.40		1.40
-48	48		12.80		0.80	-3		*13.40*		1.40
-46	46		12.70		0.70	-1		13.40		1.40
-44	44		12.80		0.80	1		*13.40*		1.40
-42	42		13.00		1.00	3		13.40		1.40
-40	40		12.90		0.90	5		*13.30*		1.30
-38	38		12.70		0.70	7		13.20		1.20
-36	36		12.70		0.70	9		*13.05*		1.05
-34	34		12.40		0.40	11		12.90		0.90
-32	32		12.70		0.70	13		12.90		0.90
-30	30		12.40		0.40	15	4.80	12.80	-7.20	0.80
-28	28		12.20		0.20	17	4.70	12.50	-7.30	0.50
-26	26		12.00		0.00	19	5.10	12.30	-6.90	0.30
-24	24		11.60		-0.40	21	5.90	12.30	-6.10	0.30
-22	22		11.40		-0.60	23	7.20	11.80	-4.80	-0.20
-20	20		11.00		-1.00	25	8.30	11.30	-3.70	-0.70
-18	18		10.70		-1.30	27	9.40	10.70	-2.60	-1.30
-16	16		10.20		-1.80	29	10.00	10.40	-2.00	-1.60
-14	14	8.30	9.70	-3.70	-2.30	31	10.20	9.80	-1.80	-2.20
-12	12	7.50	9.10	-4.50	-2.90	33	9.80	9.10	-2.20	-2.90
-10	10	6.70	8.00	-5.30	-4.00	35	8.50	8.50	-3.50	-3.50
-8	8	6.20	7.50	-5.80	-4.50	37	7.50	7.80	-4.50	-4.20
-6	6	5.60	6.20	-6.40	-5.80	39	6.20	6.90	-5.80	-5.10
-4	4	5.00	5.20	-7.00	-6.80	41	5.10	6.50	-6.90	-5.50
-2	2	4.90	5.00	-7.10	-7.00	43	4.20	6.30	-7.80	-5.70
0	0	4.40	4.40	-7.60	-7.60	45	3.10	6.10	-8.90	-5.90
0	0	4.40	4.40	-7.60	-7.60	55	2.90	1.60	-9.10	-10.40
2	-2	4.90	4.70	-7.10	-7.30	57	2.80	2.50	-9.20	-9.50
4	-4	4.30	6.00	-7.70	-6.00	59	4.00	3.80	-8.00	-8.20
6	-6	5.40	7.50	-6.60	-4.50	61	5.60	5.20	-6.40	-6.80
8	-8	7.00	7.90	-5.00	-4.10	63	6.80	6.40	-5.20	-5.60
10	-10	7.70	8.50	-4.30	-3.50	65	7.90	7.50	-4.10	-4.50
12	-12	8.70	10.00	-3.30	-2.00	67	9.20	8.50	-2.80	-3.50
14	-14	9.50	11.40	-2.50	-0.60	69	10.00	9.60	-2.00	-2.40
16	-16	9.90	11.80	-2.10	-0.20	71	10.70	10.60	-1.30	-1.40
18	-18	9.50	12.00	-2.50	0.00	73	11.70	11.80	-0.30	-0.20
20	-20	9.60		-2.40		75	12.00	12.00	0.00	0.00
22	-22	8.70		-3.30		77				
24	-24	7.50		-4.50		79				
26	-26	6.30		-5.70		81				
28	-28	5.10		-6.90		83				
30	-30	4.00		-8.00		85				

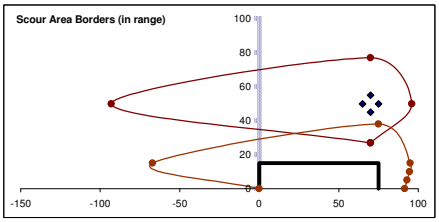
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.50	-4.50
2	7.60	-4.40
4	8.30	-3.70
6	9.00	-3.00
8	10.00	-2.00
10	10.70	-1.30
12	11.60	-0.40
14	11.60	-0.40
16	11.80	-0.20
18		
20		

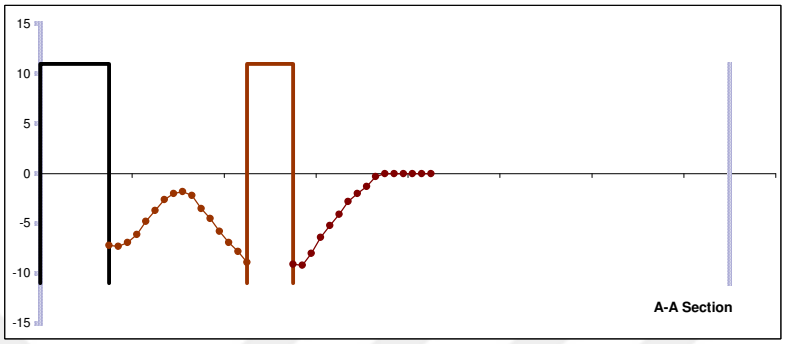
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16.5
SB_{af2}	Abutment Front (W+5 cm)	18
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	20
SB_{ar}	Abutment Corner Right	*23*
SB_{pl}	Pier Left	*18*
SB_{pf}	Pier Front	21
SB_{pr}	Pier Right	22
SB_{pb}	Pier Rear	158

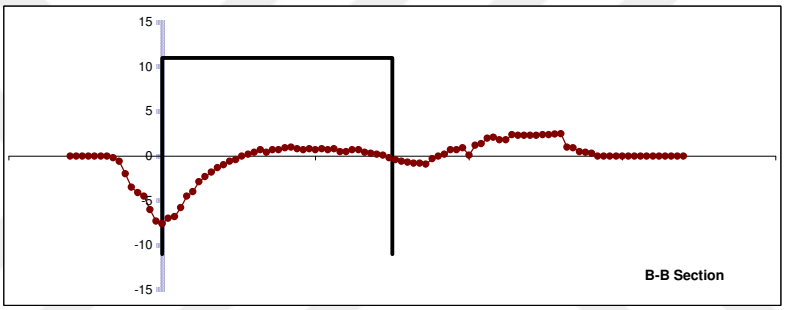


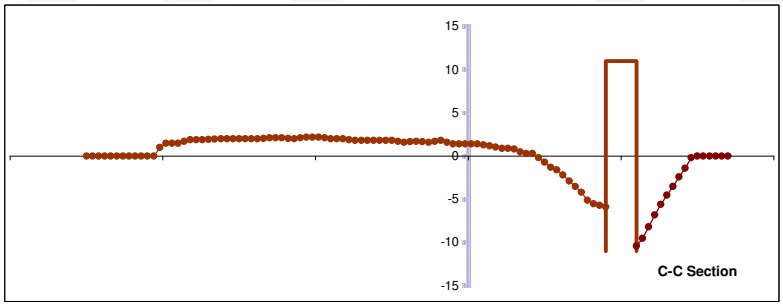
Experiment No : **E129**

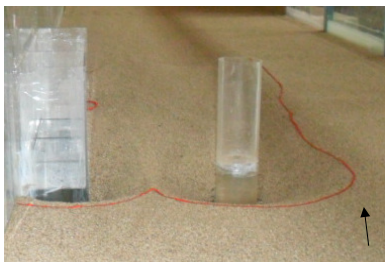


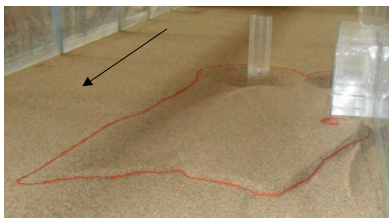




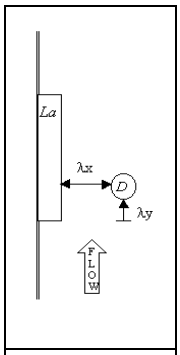


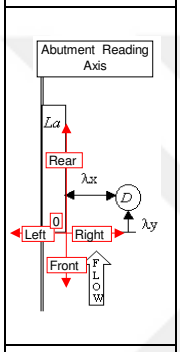


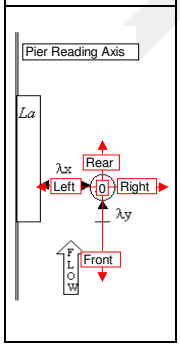


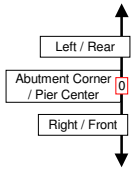


Experiment No :	**E130**
Date :	09.05.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	35









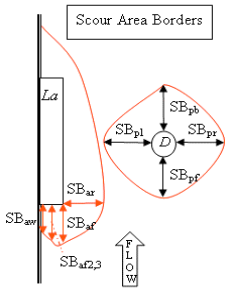
This color was used for raw data readings

This color was used for values enterpolated to sketch

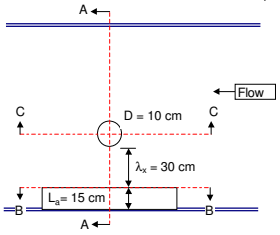
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170					-125				
-168	168					-123				
-166	166		12.00		0.00	-121				
-164	164		11.60		-0.40	-119				
-162	162		11.40		-0.60	-117				
-160	160		11.80		-0.20	-115				
-158	158		13.80		1.80	-113				
-156	156		15.20		3.20	-111				
-154	154		14.90		2.90	-109				
-152	152		15.00		3.00	-107				
-150	150		15.30		3.30	-105		12.00		0.00
-148	148		15.10		3.10	-103		12.30		0.30
-146	146		15.20		3.20	-101		12.50		0.50
-144	144		15.00		3.00	-99		12.80		0.80
-142	142		14.90		2.90	-97		14.60		2.60
-140	140		15.10		3.10	-95		14.70		2.70
-138	138		15.10		3.10	-93		*14.65*		2.65
-136	136		15.00		3.00	-91		14.60		2.60
-134	134		14.60		2.60	-89		*14.55*		2.55
-132	132		14.40		2.40	-87		14.50		2.50
-130	130		14.60		2.60	-85		*14.53*		2.53
-128	128		*14.60*		2.60	-83		*14.57*		2.57
-126	126		14.60		2.60	-81		14.60		2.60
-124	124		14.30		2.30	-79		*14.55*		2.55
-122	122		14.00		2.00	-77		14.50		2.50
-120	120		14.00		2.00	-75		*14.50*		2.50
-118	118		13.80		1.80	-73		14.50		2.50
-116	116		13.50		1.50	-71		*14.55*		2.55
-114	114		13.40		1.40	-69		14.60		2.60
-112	112		13.50		1.50	-67		*14.60*		2.60
-110	110		13.30		1.30	-65		14.60		2.60
-108	108		13.10		1.10	-63		*14.50*		2.50
-106	106		12.90		0.90	-61		14.40		2.40
-104	104		13.80		1.80	-59		*14.40*		2.40
-102	102		13.00		1.00	-57		14.40		2.40
-100	100		12.80		0.80	-55		*14.40*		2.40
-98	98		12.60		0.60	-53		14.40		2.40
-96	96		12.40		0.40	-51		*14.35*		2.35
-94	94		12.40		0.40	-49		14.30		2.30
-92	92		12.30		0.30	-47		*14.30*		2.30
-90	90		12.30		0.30	-45		14.30		2.30
-88	88		12.10		0.10	-43		*14.30*		2.30
-86	86		12.00		0.00	-41		14.30		2.30
-84	84		11.90		-0.10	-39		*14.30*		2.30
-82	82		11.90		-0.10	-37		14.30		2.30
-80	80		11.80		-0.20	-35		*14.25*		2.25
-78	78		12.00		0.00	-33		14.20		2.20
-76	76		12.00		0.00	-31		*14.20*		2.20
-74	74		12.20		0.20	-29		14.20		2.20
-72	72		12.70		0.70	-27		*14.20*		2.20
-70	70		12.90		0.90	-25		14.20		2.20
-68	68		13.20		1.20	-23		*14.15*		2.15
-66	66		13.40		1.40	-21		14.10		2.10
-64	64		13.50		1.50	-19		*14.15*		2.15
-62	62		13.80		1.80	-17		14.20		2.20
-60	60		14.00		2.00	-15		*14.15*		2.15
-58	58		14.20		2.20	-13		14.10		2.10
-56	56		14.10		2.10	-11		*14.10*		2.10
-54	54		14.00		2.00	-9		14.10		2.10
-52	52		14.20		2.20	-7		*14.10*		2.10
-50	50		14.30		2.30	-5		14.10		2.10
-48	48		14.30		2.30	-3		*14.15*		2.15
-46	46		14.30		2.30	-1		14.20		2.20
-44	44		14.40		2.40	1		*14.05*		2.05
-42	42		14.30		2.30	3		13.90		1.90
-40	40		14.40		2.40	5		*13.90*		1.90
-38	38		14.00		2.00	7		13.90		1.90
-36	36		13.90		1.90	9		13.80		1.80
-34	34		13.90		1.90	11		13.90		1.90
-32	32		13.60		1.60	13		13.50		1.50
-30	30		13.40		1.40	15	13.80	13.30	1.80	1.30
-28	28		13.20		1.20	17	13.70	12.90	1.70	0.90
-26	26		12.80		0.80	19	13.70	12.60	1.70	0.60
-24	24		12.50		0.50	21	13.40	12.00	1.40	0.00
-22	22		11.90		-0.10	23	13.00	11.50	1.00	-0.50
-20	20		11.50		-0.50	25	12.10	10.90	0.10	-1.10
-18	18		10.80		-1.20	27	11.00	10.30	-1.00	-1.70
-16	16		10.20		-1.80	29	10.10	9.70	-1.90	-2.30
-14	14	8.50	9.40	-3.50	-2.60	31	9.40	9.20	-2.60	-2.80
-12	12	8.40	8.70	-3.60	-3.30	33	8.30	8.80	-3.70	-3.20
-10	10	6.40	7.80	-5.60	-4.20	35	7.30	7.60	-4.70	-4.40
-8	8	5.60	6.70	-6.40	-5.30	37	6.00	6.40	-6.00	-5.60
-6	6	5.20	5.70	-6.80	-6.30	39	4.70	5.60	-7.30	-6.40
-4	4	4.70	5.30	-7.30	-6.70	41	3.50	5.10	-8.50	-6.90
-2	2	4.20	4.60	-7.80	-7.40	43	1.70	5.10	-10.30	-6.90
0	0	4.30	4.30	-7.70	-7.70	45	1.60	5.10	-10.40	-6.90
0	0	4.30	4.30	-7.70	-7.70	55	1.70	0.20	-10.30	-11.80
2	-2	4.50	4.40	-7.50	-7.60	57	1.90	1.20	-10.10	-10.80
4	-4	4.80	5.60	-7.20	-6.40	59	3.10	2.80	-8.90	-9.20
6	-6	6.00	6.90	-6.00	-5.10	61	4.50	4.00	-7.50	-8.00
8	-8	7.00	7.50	-5.00	-4.50	63	5.70	5.70	-6.30	-6.30
10	-10	8.00	8.10	-4.00	-3.90	65	7.30	6.30	-4.70	-5.70
12	-12	9.00	9.70	-3.00	-2.30	67	8.50	7.50	-3.50	-4.50
14	-14	9.70	11.10	-2.30	-0.90	69	9.00	8.80	-3.00	-3.20
16	-16	10.80	12.00	-1.20	0.00	71	9.70	10.10	-2.30	-1.90
18	-18	11.50		-0.50		73	11.00	11.30	-1.00	-0.70
20	-20	11.70		-0.30		75	11.70	11.80	-0.30	-0.20
22	-22	12.00		0.00		77	12.00	12.00	0.00	0.00
24	-24					79				
26	-26					81				
28	-28					83				
30	-30					85				

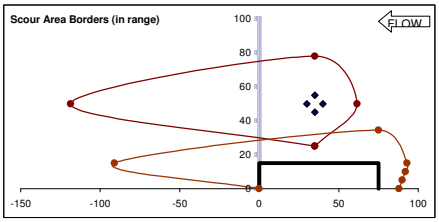
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.40	-3.60
2	8.30	-3.70
4	8.90	-3.10
6	9.80	-2.20
8	10.30	-1.70
10	11.50	-0.50
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		
22		
24		

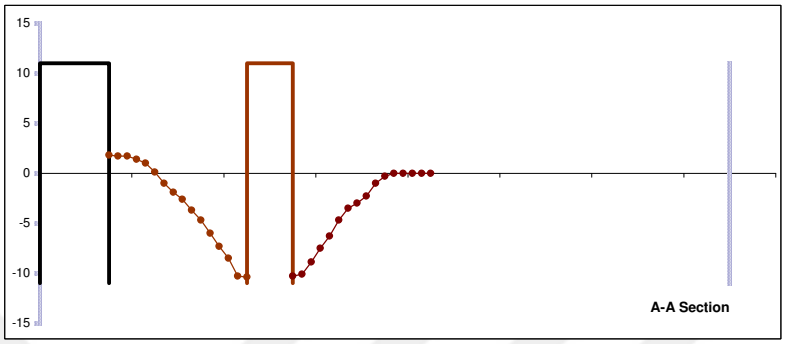
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	13
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af3}	Abutment Front (W+10 cm)	17
SB_{af}	Abutment Corner Front	18
SB_{ar}	Abutment Corner Right	19.5
SB_{pl}	Pier Left	20
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	23
SB_{pb}	Pier Rear	148.5

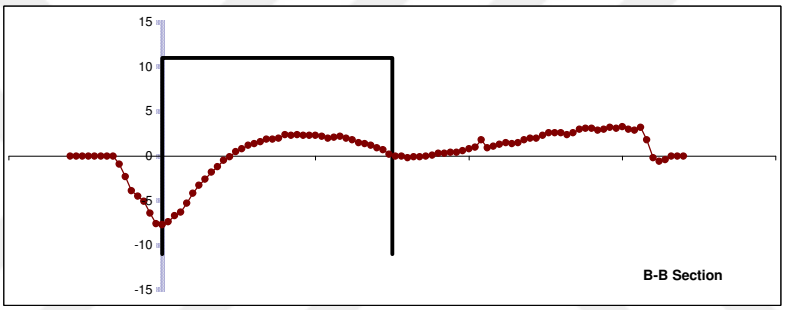


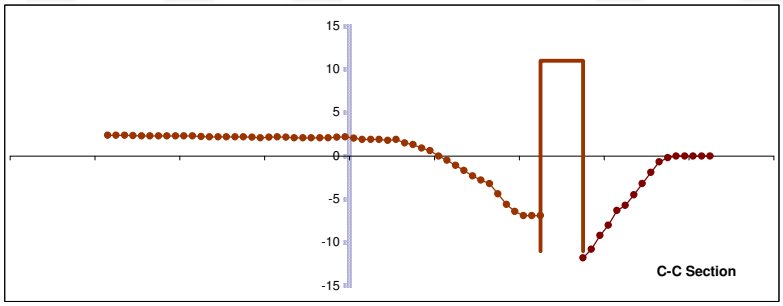
Experiment No : **E130**

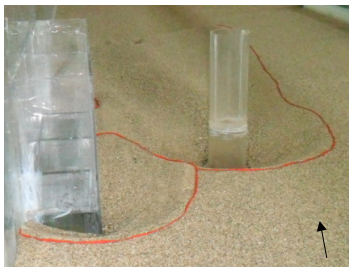


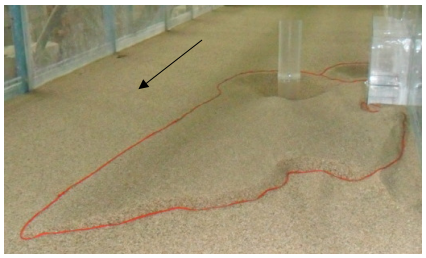








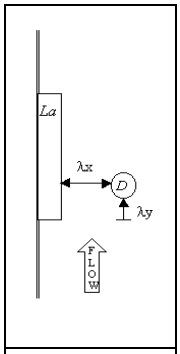


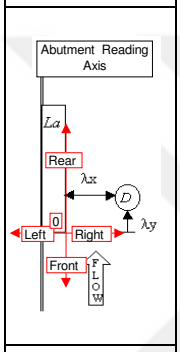


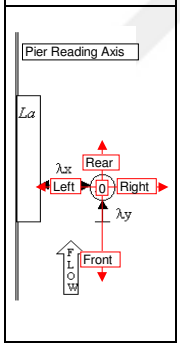
Experiment No : **E131**

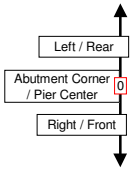
Date : 11.05.2012

Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	65









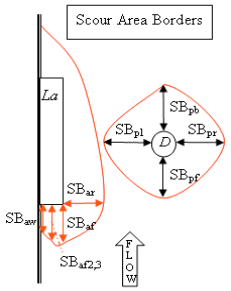
This color was used for raw data readings

This color was used for values enterpolated to sketch

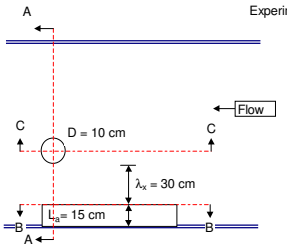
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/	Rear/	Left/	Rear/		Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	Dist. (cm)	Right	Front	Right	Front
-170	170		14.20		2.20	-125				
-168	168		*14.15*		2.15	-123				
-166	166		14.10		2.10	-121				
-164	164		*14.05*		2.05	-119				
-162	162		14.00		2.00	-117				
-160	160		*14.05*		2.05	-115				
-158	158		14.10		2.10	-113				
-156	156		*13.85*		1.85	-111				
-154	154		13.60		1.60	-109				
-152	152		*13.70*		1.70	-107				
-150	150		13.80		1.80	-105				
-148	148		*13.55*		1.55	-103				
-146	146		13.30		1.30	-101				
-144	144		*13.25*		1.25	-99				
-142	142		13.20		1.20	-97				
-140	140		*13.00*		1.00	-95				
-138	138		12.80		0.80	-93				
-136	136		*12.85*		0.85	-91				
-134	134		12.90		0.90	-89				
-132	132		*12.90*		0.90	-87		12.00		0.00
-130	130		12.90		0.90	-85		12.60		0.60
-128	128		*12.87*		0.87	-83		*12.70*		0.70
-126	126		*12.83*		0.83	-81		12.80		0.80
-124	124		12.80		0.80	-79		12.80		0.80
-122	122		*12.85*		0.85	-77		14.40		2.40
-120	120		12.90		0.90	-75		14.80		2.80
-118	118		13.00		1.00	-73		*14.90*		2.90
-116	116		12.80		0.80	-71		15.00		3.00
-114	114		13.10		1.10	-69		*14.95*		2.95
-112	112		13.00		1.00	-67		14.90		2.90
-110	110		13.00		1.00	-65		*14.95*		2.95
-108	108		12.90		0.90	-63		15.00		3.00
-106	106		13.00		1.00	-61		*14.85*		2.85
-104	104		12.80		0.80	-59		14.70		2.70
-102	102		12.80		0.80	-57		*14.65*		2.65
-100	100		12.40		0.40	-55		14.60		2.60
-98	98		12.20		0.20	-53		*14.60*		2.60
-96	96		11.80		-0.20	-51		14.60		2.60
-94	94		11.40		-0.60	-49		*14.65*		2.65
-92	92		11.10		-0.90	-47		14.70		2.70
-90	90		11.40		-0.60	-45		*14.80*		2.80
-88	88		11.90		-0.10	-43		14.90		2.90
-86	86		12.20		0.20	-41		*14.70*		2.70
-84	84		12.60		0.60	-39		14.50		2.50
-82	82		12.90		0.90	-37		*14.60*		2.60
-80	80		13.40		1.40	-35		14.70		2.70
-78	78		13.60		1.60	-33		*14.60*		2.60
-76	76		*13.65*		1.65	-31		14.50		2.50
-74	74		13.70		1.70	-29		*14.60*		2.60
-72	72		*13.75*		1.75	-27		14.70		2.70
-70	70		13.80		1.80	-25		*14.70*		2.70
-68	68		*13.90*		1.90	-23		14.70		2.70
-66	66		14.00		2.00	-21		*14.75*		2.75
-64	64		*13.90*		1.90	-19		14.80		2.80
-62	62		13.80		1.80	-17		*14.75*		2.75
-60	60		*13.80*		1.80	-15		14.70		2.70
-58	58		13.80		1.80	-13		*14.70*		2.70
-56	56		*13.75*		1.75	-11		14.70		2.70
-54	54		13.70		1.70	-9		*14.60*		2.60
-52	52		*13.55*		1.55	-7		14.50		2.50
-50	50		13.40		1.40	-5		*14.60*		2.60
-48	48		13.50		1.50	-3		14.70		2.70
-46	46		13.30		1.30	-1		*14.85*		2.85
-44	44		13.40		1.40	1		15.00		3.00
-42	42		13.30		1.30	3		*14.80*		2.80
-40	40		13.10		1.10	5		14.60		2.60
-38	38		13.20		1.20	7		*14.55*		2.55
-36	36		13.10		1.10	9		14.50		2.50
-34	34		12.80		0.80	11		14.50		2.50
-32	32		12.50		0.50	13		14.10		2.10
-30	30		12.10		0.10	15	13.10	14.00	1.10	2.00
-28	28		12.00		0.00	17	13.70	13.70	1.70	1.70
-26	26		11.40		-0.60	19	13.70	13.40	1.70	1.40
-24	24		11.10		-0.90	21	14.00	12.70	2.00	0.70
-22	22		10.50		-1.50	23	13.40	12.30	1.40	0.30
-20	20		9.90		-2.10	25	12.90	11.70	0.90	-0.30
-18	18		9.50		-2.50	27	11.40	11.10	-0.60	-0.90
-16	16		8.90		-3.10	29	10.90	10.40	-1.10	-1.60
-14	14	6.40	8.10	-5.60	-3.90	31	9.80	9.60	-2.20	-2.40
-12	12	5.80	7.40	-6.20	-4.60	33	9.60	9.00	-2.40	-3.00
-10	10	5.10	6.60	-6.90	-5.40	35	8.00	8.40	-4.00	-3.60
-8	8	4.70	5.80	-7.30	-6.20	37	6.70	7.60	-5.30	-4.40
-6	6	4.40	5.00	-7.60	-7.00	39	5.30	6.80	-6.70	-5.20
-4	4	4.10	4.80	-7.90	-7.20	41	3.90	6.10	-8.10	-5.90
-2	2	3.80	4.10	-8.20	-7.90	43	2.80	5.60	-9.20	-6.40
0	0	3.30	3.30	-8.70	-8.70	45	3.40	6.00	-8.60	-6.00
0	0	3.30	3.30	-8.70	-8.70	55	1.10	0.90	-10.90	-11.10
2	-2	3.60	4.20	-8.40	-7.80	57	2.00	1.40	-10.00	-10.60
4	-4	3.90	5.90	-8.10	-6.10	59	3.70	3.10	-8.30	-8.90
6	-6	5.90	7.10	-6.10	-4.90	61	5.00	4.40	-7.00	-7.60
8	-8	7.30	7.40	-4.70	-4.60	63	6.30	5.60	-5.70	-6.40
10	-10	8.60	8.60	-3.40	-3.40	65	7.50	6.60	-4.50	-5.40
12	-12	9.40	10.00	-2.60	-2.00	67	7.90	8.00	-4.10	-4.00
14	-14	10.10	*11.00*	-1.90	-1.00	69	8.20	9.20	-3.80	-2.80
16	-16	10.60	12.00	-1.40	0.00	71	9.40	10.60	-2.60	-1.40
18	-18	12.00		0.00		73	10.40	12.00	-1.60	0.00
20	-20					75	11.80		-0.20	
22	-22					77	12.00		0.00	
24	-24					79				
26	-26					81				
28	-28					83				
30	-30					85				

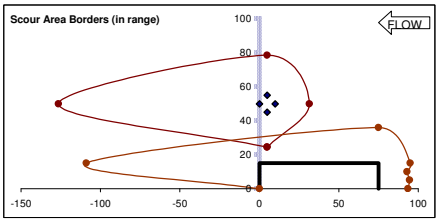
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	5.80	-6.20
2	7.20	-4.80
4	7.40	-4.60
6	8.40	-3.60
8	9.20	-2.80
10	10.10	-1.90
12	11.10	-0.90
14	11.70	-0.30
16	11.80	-0.20
18		
20		
22		
24		

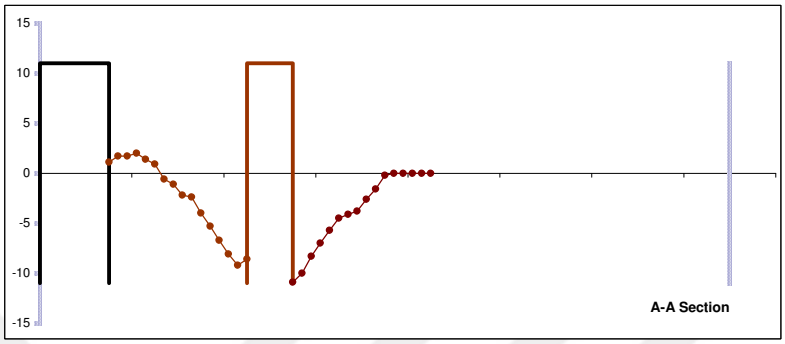
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18.5
SB_{af2}	Abutment Front (W+5 cm)	19.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	20
SB_{ar}	Abutment Corner Right	21
SB_{pl}	Pier Left	20.5
SB_{pf}	Pier Front	21.5
SB_{pr}	Pier Right	23.5
SB_{pb}	Pier Rear	126.5

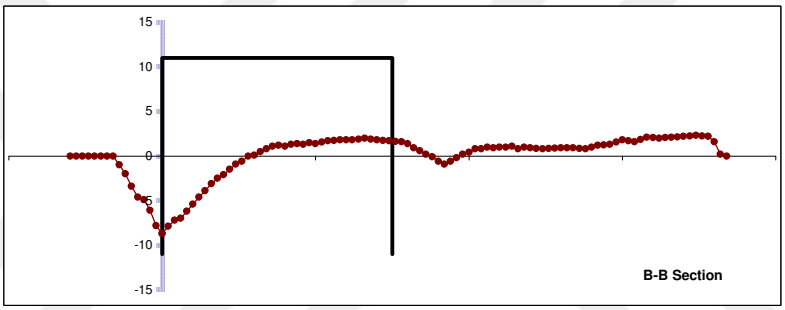


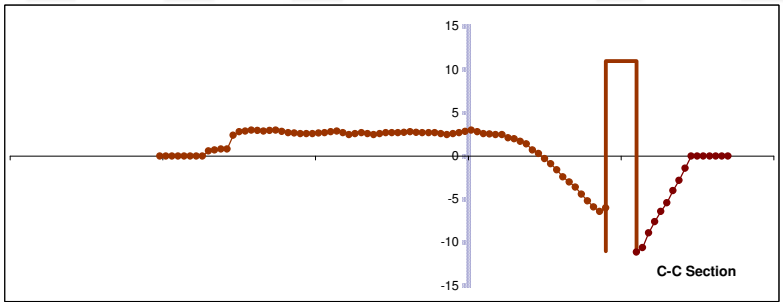
Experiment No : **E131**

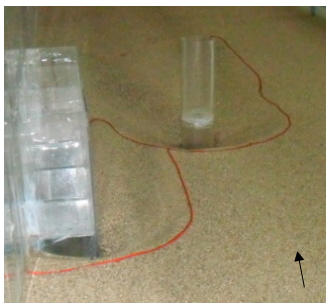


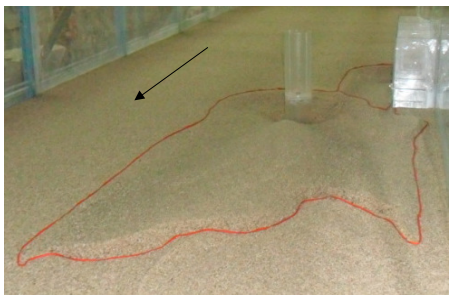




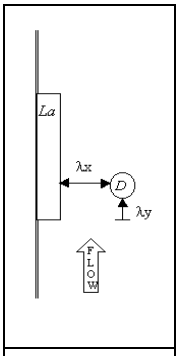


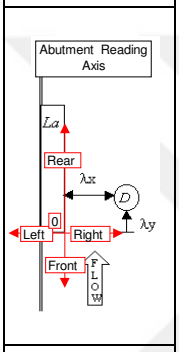


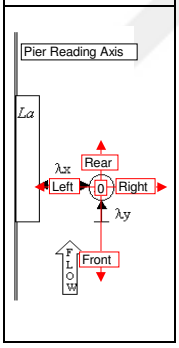


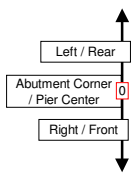


Experiment No :	E132
Date :	22.05.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	0









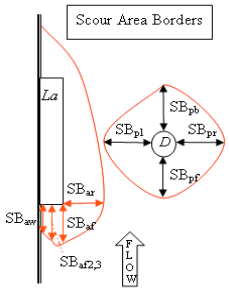
This color was used for raw data readings

This color was used for values enterpolated to sketch

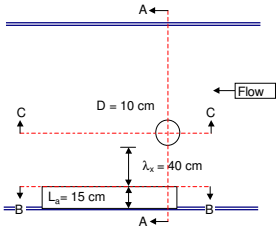
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
Distance (cm)										
-170	170					-115				
-168	168					-113				
-166	166					-111				
-164	164					-109				
-162	162					-107				
-160	160					-105				
-158	158					-103				
-156	156					-101				
-154	154					-99				
-152	152					-97				
-150	150					-95				
-148	148					-93				
-146	146					-91				
-144	144					-89		12.00		0.00
-142	142					-87		*12.35*		0.35
-140	140					-85		12.70		0.70
-138	138		12.00		0.00	-83		*12.80*		0.80
-136	136		13.70		1.70	-81		12.90		0.90
-134	134		14.10		2.10	-79		*12.95*		0.95
-132	132		14.10		2.10	-77		13.00		1.00
-130	130		14.70		2.70	-75		*13.13*		1.13
-128	128		*14.65*		2.65	-73		*13.27*		1.27
-126	126		14.60		2.60	-71		13.40		1.40
-124	124		14.40		2.40	-69		*13.35*		1.35
-122	122		14.40		2.40	-67		13.30		1.30
-120	120		14.30		2.30	-65		*13.30*		1.30
-118	118		14.20		2.20	-63		13.30		1.30
-116	116		14.10		2.10	-61		*13.35*		1.35
-114	114		14.10		2.10	-59		13.40		1.40
-112	112		13.90		1.90	-57		*13.45*		1.45
-110	110		13.90		1.90	-55		13.50		1.50
-108	108		13.70		1.70	-53		*13.55*		1.55
-106	106		13.40		1.40	-51		13.60		1.60
-104	104		13.50		1.50	-49		*13.55*		1.55
-102	102		13.40		1.40	-47		13.50		1.50
-100	100		13.10		1.10	-45		*13.10*		1.10
-98	98		12.80		0.80	-43		12.70		0.70
-96	96		12.70		0.70	-41		*13.10*		1.10
-94	94		12.40		0.40	-39		13.50		1.50
-92	92		12.10		0.10	-37		*13.45*		1.45
-90	90		11.80		-0.20	-35		13.40		1.40
-88	88		11.50		-0.50	-33		*13.40*		1.40
-86	86		11.20		-0.80	-31		13.40		1.40
-84	84		11.20		-0.80	-29		*13.40*		1.40
-82	82		11.40		-0.60	-27		13.40		1.40
-80	80		11.30		-0.70	-25		*13.35*		1.35
-78	78		11.40		-0.60	-23		13.30		1.30
-76	76		11.70		-0.30	-21		*13.35*		1.35
-74	74		11.80		-0.20	-19		13.40		1.40
-72	72		12.20		0.20	-17		*13.50*		1.50
-70	70		12.20		0.20	-15		13.60		1.60
-68	68		12.20		0.20	-13		*13.60*		1.60
-66	66		12.30		0.30	-11		13.60		1.60
-64	64		12.50		0.50	-9		*13.50*		1.50
-62	62		12.70		0.70	-7		13.40		1.40
-60	60		12.70		0.70	-5		*13.40*		1.40
-58	58		12.70		0.70	-3		13.40		1.40
-56	56		12.60		0.60	-1		*13.45*		1.45
-54	54		12.70		0.70	1		13.50		1.50
-52	52		12.60		0.60	3		*13.45*		1.45
-50	50		12.50		0.50	5		13.40		1.40
-48	48		12.70		0.70	7		*13.35*		1.35
-46	46		12.70		0.70	9		13.30		1.30
-44	44		12.50		0.50	11		*12.80*		0.80
-42	42		12.70		0.70	13		12.30		0.30
-40	40		12.40		0.40	15	3.90	*12.30*	-8.10	0.30
-38	38		12.20		0.20	17	3.40	12.30	-8.60	0.30
-36	36		12.10		0.10	19	4.30	13.40	-7.70	1.40
-34	34		11.90		-0.10	21	5.40	13.30	-6.60	1.30
-32	32		11.60		-0.40	23	6.50	13.40	-5.50	1.40
-30	30		11.40		-0.60	25	8.20	13.10	-3.80	1.10
-28	28		11.10		-0.90	27	9.10	13.00	-2.90	1.00
-26	26		10.80		-1.20	29	10.20	12.50	-1.80	0.50
-24	24		10.60		-1.40	31	10.30	12.40	-1.70	0.40
-22	22		10.40		-1.60	33	11.00	12.00	-1.00	0.00
-20	20		9.80		-2.20	35	11.50	11.80	-0.50	-0.20
-18	18		9.40		-2.60	37	11.20	11.40	-0.80	-0.60
-16	16		9.70		-2.30	39	11.40	10.70	-0.60	-1.30
-14	14	6.10	8.20	-5.90	-3.80	41	10.10	10.20	-1.90	-1.80
-12	12	5.80	7.40	-6.20	-4.60	43	8.80	9.50	-3.20	-2.50
-10	10	4.90	6.50	-7.10	-5.50	45	7.70	7.80	-4.30	-4.20
-8	8	4.50	5.80	-7.50	-6.20	47	7.00	7.10	-5.00	-4.90
-6	6	4.10	5.10	-7.90	-6.90	49	5.60	6.70	-6.40	-5.30
-4	4	3.70	4.60	-8.30	-7.40	51	4.50	6.20	-7.50	-5.80
-2	2	3.10	2.70	-8.90	-9.30	53	2.70	5.60	-9.30	-6.40
0	0	2.70	2.70	-9.30	-9.30	55	2.00	5.70	-10.00	-6.30
0	0	2.70	2.70	-9.30	-9.30	65	2.10	1.10	-9.90	-10.90
2	-2	3.80	3.60	-8.20	-8.40	67	2.80	2.80	-9.20	-9.20
4	-4	4.00	4.80	-8.00	-7.20	69	4.20	3.70	-7.80	-8.30
6	-6	4.40	6.50	-7.60	-5.50	71	5.20	5.30	-6.80	-6.70
8	-8	5.50	7.20	-6.50	-4.80	73	6.70	6.60	-5.30	-5.40
10	-10	7.20	7.50	-4.80	-4.50	75	7.80	8.10	-4.20	-3.90
12	-12	8.50	8.40	-3.50	-3.60	77	9.20	9.20	-2.80	-2.80
14	-14	9.80	9.70	-2.20	-2.30	79	9.60	10.70	-2.40	-1.30
16	-16	10.60	11.50	-1.40	-0.50	81	10.20	11.70	-1.80	-0.30
18	-18	10.90	11.80	-1.10	-0.20	83	11.50	11.80	-0.50	-0.20
20	-20	11.10		-0.90		85	11.80		-0.20	
22	-22	11.90		-0.10		87				
24	-24	11.40		-0.60		89				
26	-26	11.80		-0.20		91				
28	-28					93				
30	-30					95				

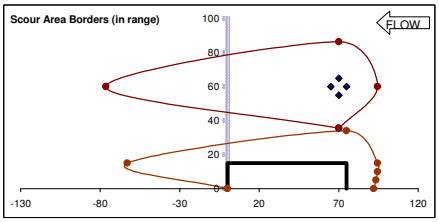
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	5.80	-6.20
2	5.60	-6.40
4	6.60	-5.40
6	7.90	-4.10
8	8.70	-3.30
10	9.40	-2.60
12	10.70	-1.30
14	11.90	-0.10
16	12.00	0.00
18		
20		

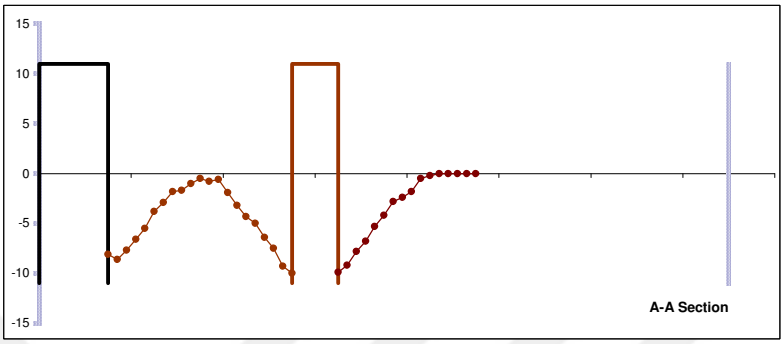
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	17
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	19
SB_{pl}	Pier Left	19.5
SB_{pf}	Pier Front	19.5
SB_{pr}	Pier Right	21.5
SB_{pb}	Pier Rear	141.5

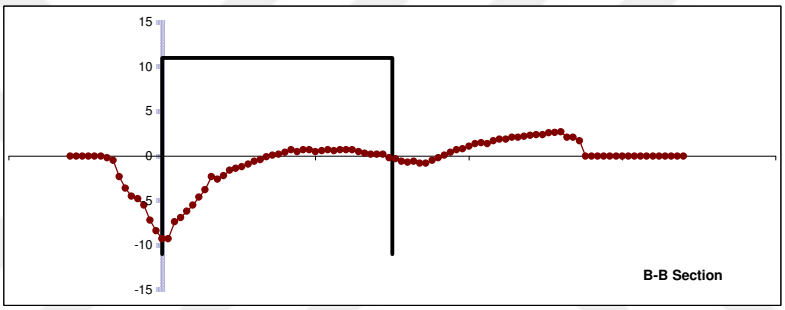


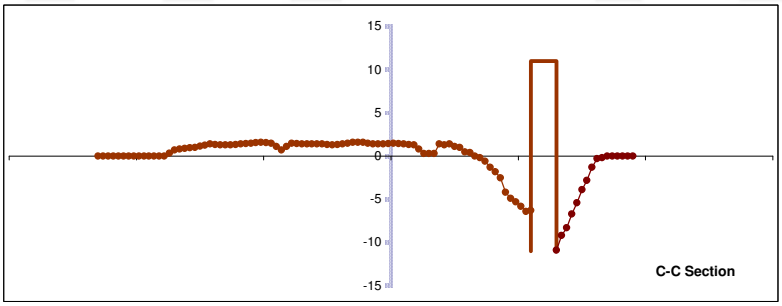
Experiment No : **E132**

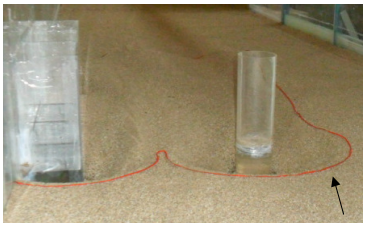


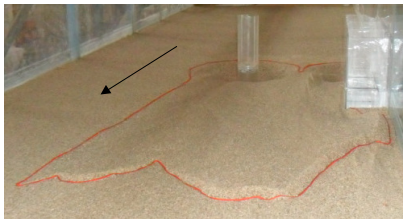




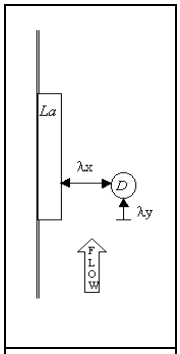


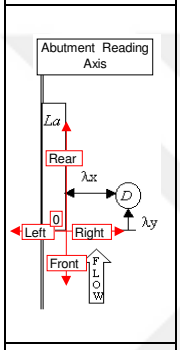


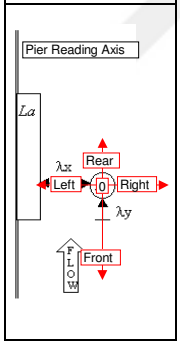


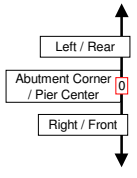


Experiment No :	**E133**
Date :	24.05.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	35









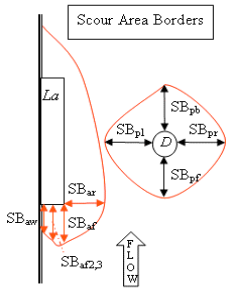
This color was used for raw data readings

This color was used for values enterpolated to sketch

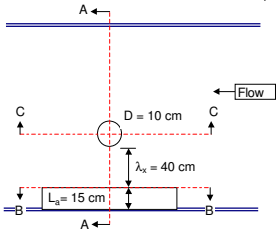
	ABUTMENT						PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	
-170	170		*12.70*		0.70	-115					
-168	168		12.70		0.70	-113					
-166	166		*12.70*		0.70	-111					
-164	164		12.70		0.70	-109		12.00		0.00	
-162	162		*12.65*		0.65	-107		13.20		1.20	
-160	160		12.60		0.60	-105		*13.50*		1.50	
-158	158		*12.60*		0.60	-103		13.80		1.80	
-156	156		12.60		0.60	-101		*13.90*		1.90	
-154	154		*12.65*		0.65	-99		14.00		2.00	
-152	152		12.70		0.70	-97		*13.95*		1.95	
-150	150		*12.65*		0.65	-95		13.90		1.90	
-148	148		12.60		0.60	-93		*13.90*		1.90	
-146	146		*12.57*		0.57	-91		13.90		1.90	
-144	144		*12.54*		0.54	-89		*13.80*		1.80	
-142	142		12.50		0.50	-87		13.70		1.70	
-140	140		*12.55*		0.55	-85		*13.75*		1.75	
-138	138		12.60		0.60	-83		13.80		1.80	
-136	136		*12.60*		0.60	-81		*13.85*		1.85	
-134	134		12.60		0.60	-79		13.90		1.90	
-132	132		*12.65*		0.65	-77		*13.80*		1.80	
-130	130		12.70		0.70	-75		13.70		1.70	
-128	128		*12.70*		0.70	-73		*13.70*		1.70	
-126	126		12.70		0.70	-71		13.70		1.70	
-124	124		12.90		0.90	-69		*13.75*		1.75	
-122	122		13.10		1.10	-67		13.80		1.80	
-120	120		13.40		1.40	-65		*13.75*		1.75	
-118	118		13.50		1.50	-63		13.70		1.70	
-116	116		13.50		1.50	-61		*13.70*		1.70	
-114	114		13.60		1.60	-59		13.70		1.70	
-112	112		13.60		1.60	-57		*13.70*		1.70	
-110	110		13.60		1.60	-55		13.70		1.70	
-108	108		13.60		1.60	-53		*13.70*		1.70	
-106	106		13.70		1.70	-51		13.70		1.70	
-104	104		13.90		1.90	-49		*13.65*		1.65	
-102	102		13.60		1.60	-47		13.60		1.60	
-100	100		13.40		1.40	-45		*13.65*		1.65	
-98	98		13.10		1.10	-43		13.70		1.70	
-96	96		13.30		1.30	-41		*13.70*		1.70	
-94	94		13.20		1.20	-39		13.70		1.70	
-92	92		12.70		0.70	-37		*13.65*		1.65	
-90	90		12.60		0.60	-35		13.60		1.60	
-88	88		12.30		0.30	-33		*13.65*		1.65	
-86	86		12.20		0.20	-31		13.70		1.70	
-84	84		12.10		0.10	-29		*13.60*		1.60	
-82	82		11.80		-0.20	-27		13.50		1.50	
-80	80		11.70		-0.30	-25		*13.65*		1.65	
-78	78		11.80		-0.20	-23		13.80		1.80	
-76	76		11.90		-0.10	-21		*13.75*		1.75	
-74	74		12.30		0.30	-19		13.70		1.70	
-72	72		12.40		0.40	-17		*13.75*		1.75	
-70	70		12.70		0.70	-15		13.80		1.80	
-68	68		*12.80*		0.80	-13		*13.75*		1.75	
-66	66		12.90		0.90	-11		13.70		1.70	
-64	64		*13.00*		1.00	-9		*13.70*		1.70	
-62	62		13.10		1.10	-7		13.70		1.70	
-60	60		*13.30*		1.30	-5		*13.70*		1.70	
-58	58		13.50		1.50	-3		13.70		1.70	
-56	56		*13.45*		1.45	-1		*13.65*		1.65	
-54	54		13.40		1.40	1		13.60		1.60	
-52	52		*13.45*		1.45	3		*13.60*		1.60	
-50	50		13.50		1.50	5		13.60		1.60	
-48	48		*13.40*		1.40	7		*13.60*		1.60	
-46	46		13.30		1.30	9		13.60		1.60	
-44	44		*13.30*		1.30	11		*13.40*		1.40	
-42	42		13.30		1.30	13		13.20		1.20	
-40	40		13.30		1.30	15	12.80	*13.20*	0.80	1.20	
-38	38		13.20		1.20	17	12.90	13.20	0.90	1.20	
-36	36		13.10		1.10	19	13.00	13.20	1.00	1.20	
-34	34		12.90		0.90	21	12.60	13.10	0.60	1.10	
-32	32		12.80		0.80	23	12.10	12.80	0.10	0.80	
-30	30		12.60		0.60	25	11.70	12.90	-0.30	0.90	
-28	28		12.60		0.60	27	11.60	12.40	-0.40	0.40	
-26	26		12.30		0.30	29	11.60	12.20	-0.40	0.20	
-24	24		11.80		-0.20	31	11.70	11.80	-0.30	-0.20	
-22	22		11.50		-0.50	33	11.80	11.10	-0.20	-0.90	
-20	20		10.90		-1.10	35	12.30	10.60	0.30	-1.40	
-18	18		10.40		-1.60	37	11.80	9.70	-0.20	-2.30	
-16	16		9.90		-2.10	39	10.70	9.20	-1.30	-2.80	
-14	14	8.00	9.40	-4.00	-2.60	41	9.60	8.50	-2.40	-3.50	
-12	12	7.20	8.70	-4.80	-3.30	43	8.40	7.40	-3.60	-4.60	
-10	10	6.40	7.70	-5.60	-4.30	45	7.60	6.60	-4.40	-5.40	
-8	8	5.40	6.50	-6.60	-5.50	47	6.70	5.90	-5.30	-6.10	
-6	6	4.90	5.70	-7.10	-6.30	49	5.50	5.30	-6.50	-6.70	
-4	4	4.60	4.90	-7.40	-7.10	51	3.90	5.00	-8.10	-7.00	
-2	2	4.20	4.40	-7.80	-7.60	53	2.70	5.10	-9.30	-6.90	
0	0	3.80	3.80	-8.20	-8.20	55	2.40	5.60	-9.60	-6.40	
0	0	3.80	3.80	-8.20	-8.20	65	1.60	0.30	-10.40	-11.70	
2	-2	4.70	4.20	-7.30	-7.80	67	2.40	1.40	-9.60	-10.60	
4	-4	4.40	5.40	-7.60	-6.60	69	3.60	2.70	-8.40	-9.30	
6	-6	5.60	6.60	-6.40	-5.40	71	4.90	4.00	-7.10	-8.00	
8	-8	6.60	7.10	-5.40	-4.90	73	6.20	5.40	-5.80	-6.60	
10	-10	7.70	8.00	-4.30	-4.00	75	6.90	6.60	-5.10	-5.40	
12	-12	8.80	9.60	-3.20	-2.40	77	8.00	7.70	-4.00	-4.30	
14	-14	9.40	10.80	-2.60	-1.20	79	9.40	8.70	-2.60	-3.30	
16	-16	10.10	12.00	-1.90	0.00	81	10.10	9.80	-1.90	-2.20	
18	-18	11.00		-1.00		83	11.00	11.00	-1.00	-1.00	
20	-20	11.50		-0.50		85	12.00	11.60	0.00	-0.40	
22	-22	11.60		-0.40		87		11.90		-0.10	
24	-24	11.80		-0.20		89					
26	-26					91					
28	-28					93					
30	-30					95					

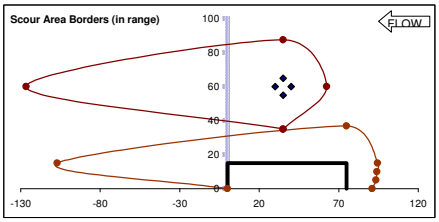
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.20	-4.80
2	7.60	-4.40
4	8.20	-3.80
6	8.80	-3.20
8	10.10	-1.90
10	10.90	-1.10
12	11.60	-0.40
14	11.80	-0.20
16		
18		
20		
22		
24		

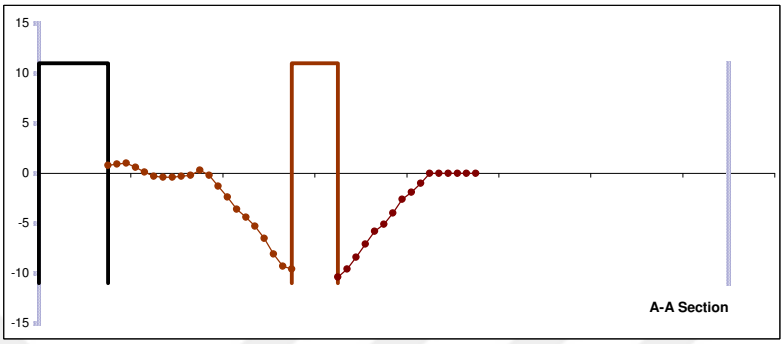
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af3}	Abutment Front (W+10 cm)	19
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	22
SB_{pl}	Pier Left	20
SB_{pf}	Pier Front	22.5
SB_{pr}	Pier Right	22.5
SB_{pb}	Pier Rear	156.5

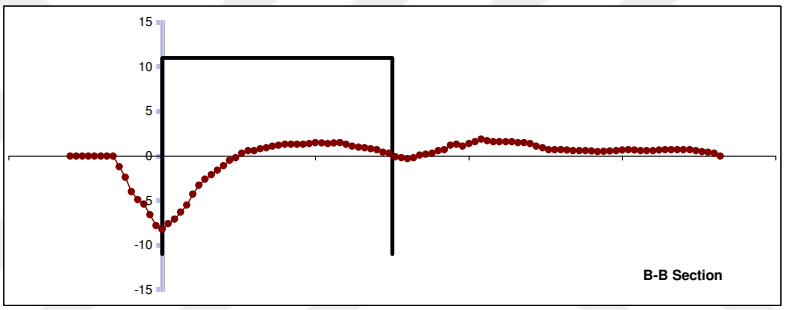


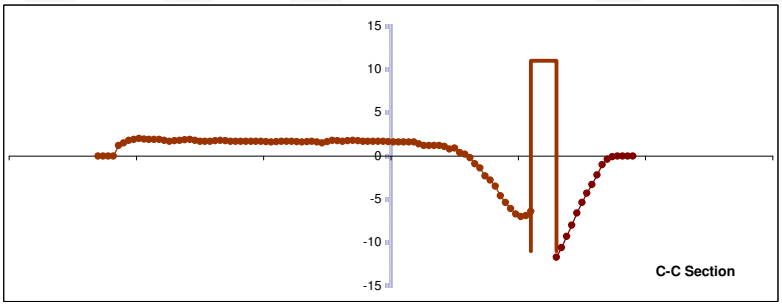
Experiment No : **E133**

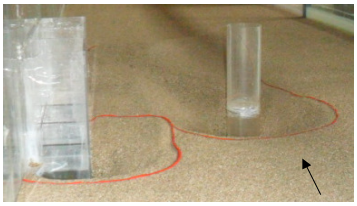


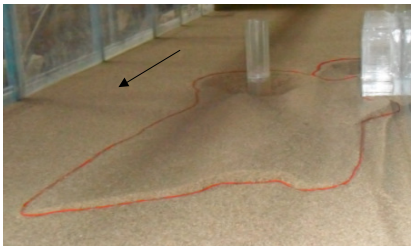








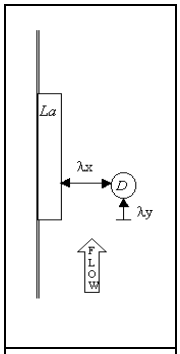


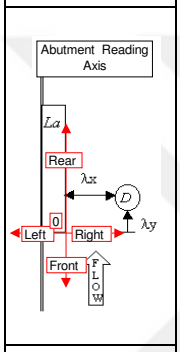


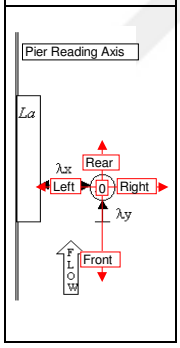
Experiment No : **E134**

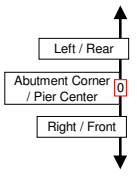
Date : 28.05.2012

Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	65









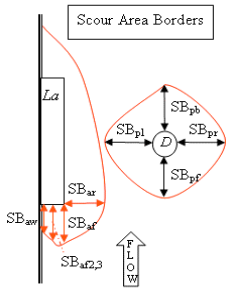
This color was used for raw data readings

This color was used for values enterpolated to sketch

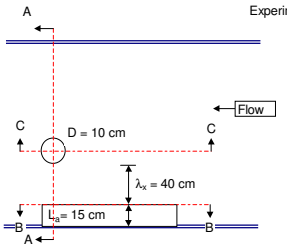
	ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-115				
-168	168					-113				
-166	166					-111				
-164	164					-109				
-162	162					-107				
-160	160					-105				
-158	158					-103				
-156	156					-101				
-154	154					-99				
-152	152					-97				
-150	150					-95				
-148	148					-93				
-146	146					-91		12.00		0.00
-144	144					-89		*13.00*		1.00
-142	142					-87		14.00		2.00
-140	140					-85		*14.10*		2.10
-138	138					-83		14.20		2.20
-136	136					-81		*14.10*		2.10
-134	134					-79		14.00		2.00
-132	132					-77		*14.00*		2.00
-130	130					-75		14.00		2.00
-128	128					-73		*13.40*		1.40
-126	126					-71		12.80		0.80
-124	124					-69		14.10		2.10
-122	122					-67		*14.00*		2.00
-120	120					-65		13.90		1.90
-118	118					-63		*13.90*		1.90
-116	116		12.00		0.00	-61		13.90		1.90
-114	114		12.40		0.40	-59		*13.95*		1.95
-112	112		12.40		0.40	-57		14.00		2.00
-110	110		12.80		0.80	-55		*13.85*		1.85
-108	108		13.30		1.30	-53		13.70		1.70
-106	106		13.30		1.30	-51		*13.80*		1.80
-104	104		13.10		1.10	-49		13.90		1.90
-102	102		13.00		1.00	-47		*13.85*		1.85
-100	100		12.80		0.80	-45		13.80		1.80
-98	98		12.50		0.50	-43		*13.75*		1.75
-96	96		12.40		0.40	-41		13.70		1.70
-94	94		12.50		0.50	-39		*13.75*		1.75
-92	92		12.20		0.20	-37		13.80		1.80
-90	90		11.90		-0.10	-35		*13.80*		1.80
-88	88		11.80		-0.20	-33		13.80		1.80
-86	86		11.80		-0.20	-31		*13.85*		1.85
-84	84		11.90		-0.10	-29		13.90		1.90
-82	82		12.10		0.10	-27		*13.35*		1.35
-80	80		12.70		0.70	-25		12.80		0.80
-78	78		12.80		0.80	-23		*13.35*		1.35
-76	76		13.10		1.10	-21		13.90		1.90
-74	74		*13.20*		1.20	-19		*13.30*		1.30
-72	72		13.30		1.30	-17		12.70		0.70
-70	70		*13.30*		1.30	-15		*13.25*		1.25
-68	68		13.30		1.30	-13		13.80		1.80
-66	66		*13.40*		1.40	-11		*13.80*		1.80
-64	64		13.50		1.50	-9		13.80		1.80
-62	62		*13.45*		1.45	-7		*13.90*		1.90
-60	60		13.40		1.40	-5		14.00		2.00
-58	58		*13.30*		1.30	-3		*14.00*		2.00
-56	56		13.20		1.20	-1		14.00		2.00
-54	54		*13.25*		1.25	1		*14.00*		2.00
-52	52		13.30		1.30	3		14.00		2.00
-50	50		*13.20*		1.20	5		*14.05*		2.05
-48	48		13.10		1.10	7		14.10		2.10
-46	46		*13.10*		1.10	9		*14.00*		2.00
-44	44		13.10		1.10	11		13.90		1.90
-42	42		*13.05*		1.05	13		*13.80*		1.80
-40	40		13.00		1.00	15	12.70	13.70	0.70	1.70
-38	38		13.00		1.00	17	12.90	13.70	0.90	1.70
-36	36		12.70		0.70	19	13.20	13.60	1.20	1.60
-34	34		12.50		0.50	21	13.00	13.30	1.00	1.30
-32	32		12.30		0.30	23	13.10	12.10	1.10	0.10
-30	30		12.00		0.00	25	13.10	12.90	1.10	0.90
-28	28		11.50		-0.50	27	12.90	12.50	0.90	0.50
-26	26		11.30		-0.70	29	13.00	12.30	1.00	0.30
-24	24		10.90		-1.10	31	12.70	11.70	0.70	-0.30
-22	22		10.40		-1.60	33	12.70	11.40	0.70	-0.60
-20	20		10.20		-1.80	35	12.30	10.70	0.30	-1.30
-18	18		9.60		-2.40	37	11.40	10.30	-0.60	-1.70
-16	16		9.00		-3.00	39	10.10	9.60	-1.90	-2.40
-14	14	6.00	8.50	-6.00	-3.50	41	8.90	8.80	-3.10	-3.20
-12	12	5.70	7.80	-6.30	-4.20	43	8.20	8.00	-3.80	-4.00
-10	10	4.90	6.80	-7.10	-5.20	45	7.60	7.00	-4.40	-5.00
-8	8	4.10	5.70	-7.90	-6.30	47	6.90	6.10	-5.10	-5.90
-6	6	3.80	5.10	-8.20	-6.90	49	5.00	5.40	-7.00	-6.60
-4	4	3.30	4.30	-8.70	-7.70	51	4.00	5.40	-8.00	-6.60
-2	2	3.00	3.60	-9.00	-8.40	53	2.30	4.80	-9.70	-7.20
0	0	3.10	3.10	-8.90	-8.90	55	2.30	6.20	-9.70	-5.80
0	0	3.10	3.10	-8.90	-8.90	65	1.20	1.00	-10.80	-11.00
2	-2	3.70	3.20	-8.30	-8.80	67	2.00	2.10	-10.00	-9.90
4	-4	3.80	4.60	-8.20	-7.40	69	3.30	3.50	-8.70	-8.50
6	-6	4.80	5.80	-7.20	-6.20	71	4.70	4.70	-7.30	-7.30
8	-8	6.20	6.70	-5.80	-5.30	73	5.90	5.70	-6.10	-6.30
10	-10	7.50	7.70	-4.50	-4.30	75	7.00	6.90	-5.00	-5.10
12	-12	8.70	9.20	-3.30	-2.80	77	7.60	8.30	-4.40	-3.70
14	-14	9.70	10.30	-2.30	-1.70	79	9.00	9.30	-3.00	-2.70
16	-16	10.10	11.50	-1.90	-0.50	81	10.10	10.60	-1.90	-1.40
18	-18	10.70	11.60	-1.30	-0.40	83	11.30	11.50	-0.70	-0.50
20	-20	11.30	12.00	-0.70	0.00	85	11.80	11.80	-0.20	-0.20
22	-22	11.60		-0.40		87				
24	-24	11.70		-0.30		89				
26	-26	11.80		-0.20		91				
28	-28					93				
30	-30					95				

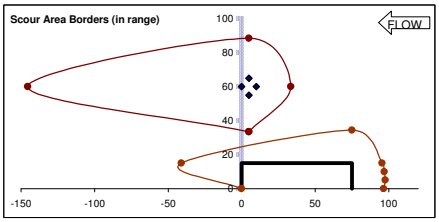
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	5.70	-6.30
2	5.60	-6.40
4	6.90	-5.10
6	7.60	-4.40
8	9.00	-3.00
10	10.20	-1.80
12	10.50	-1.50
14	10.80	-1.20
16	11.00	-1.00
18	11.80	-0.20
20		
22		
24		

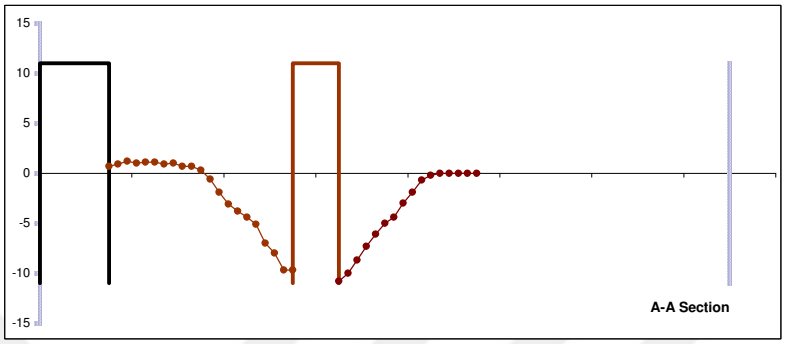
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	21.5
SB_{af2}	Abutment Front (W+5 cm)	22.5
SB_{af3}	Abutment Front (W+10 cm)	22
SB_{af}	Abutment Corner Front	20.5
SB_{ar}	Abutment Corner Right	19.5
SB_{pl}	Pier Left	21.5
SB_{pf}	Pier Front	23.5
SB_{pr}	Pier Right	23.5
SB_{pb}	Pier Rear	145.5

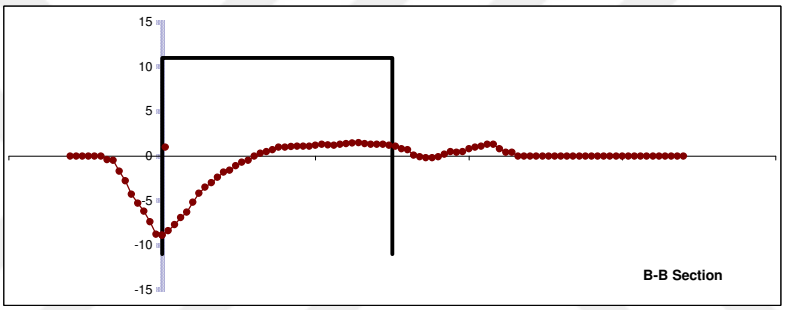


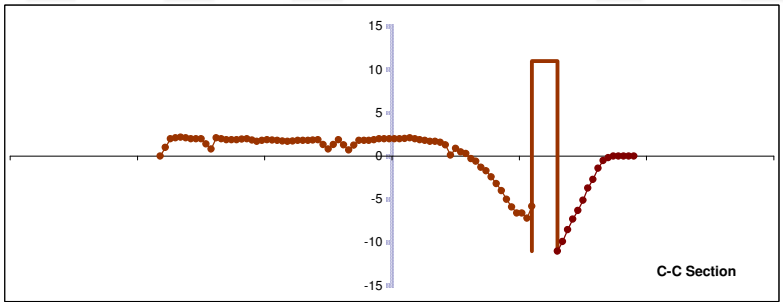
Experiment No : **E134**

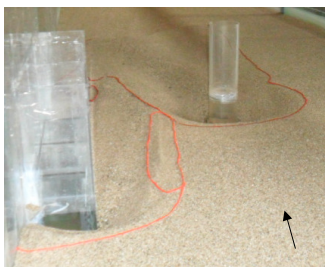


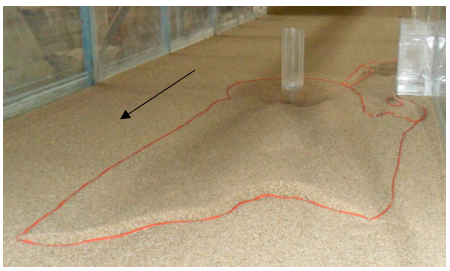




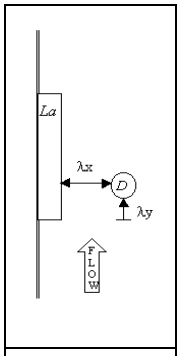


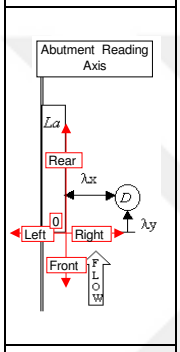


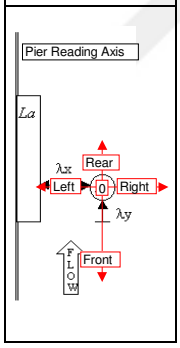


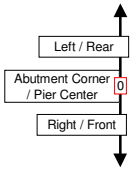


Experiment No :	**E135**
Date :	31.05.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	65









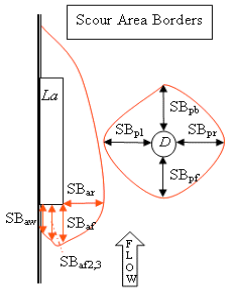
This color was used for raw data readings

This color was used for values enterpolated to sketch

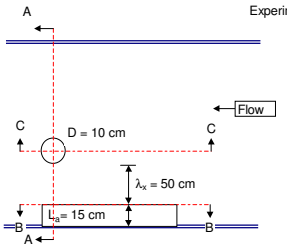
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97				
-160	160					-95				
-158	158					-93				
-156	156					-91				
-154	154					-89				
-152	152					-87				
-150	150					-85				
-148	148					-83				
-146	146					-81				
-144	144					-79				
-142	142					-77				
-140	140					-75				
-138	138					-73				
-136	136					-71				
-134	134					-69				
-132	132					-67				
-130	130					-65				
-128	128					-63				
-126	126					-61				
-124	124		12.00		0.00	-59		12.00		0.00
-122	122		13.10		1.10	-57		*13.25*		1.25
-120	120		13.10		1.10	-55		14.50		2.50
-118	118		13.30		1.30	-53		*14.55*		2.55
-116	116		13.40		1.40	-51		14.60		2.60
-114	114		13.30		1.30	-49		*14.75*		2.75
-112	112		13.30		1.30	-47		14.90		2.90
-110	110		13.00		1.00	-45		*14.90*		2.90
-108	108		12.70		0.70	-43		14.90		2.90
-106	106		12.50		0.50	-41		*14.75*		2.75
-104	104		12.70		0.70	-39		14.60		2.60
-102	102		12.70		0.70	-37		*14.70*		2.70
-100	100		12.40		0.40	-35		14.80		2.80
-98	98		12.50		0.50	-33		*14.80*		2.80
-96	96		12.40		0.40	-31		14.80		2.80
-94	94		12.30		0.30	-29		*14.75*		2.75
-92	92		12.30		0.30	-27		14.70		2.70
-90	90		12.40		0.40	-25		*14.70*		2.70
-88	88		12.30		0.30	-23		14.70		2.70
-86	86		12.20		0.20	-21		*14.70*		2.70
-84	84		12.60		0.60	-19		14.70		2.70
-82	82		12.60		0.60	-17		*14.80*		2.80
-80	80		13.30		1.30	-15		14.90		2.90
-78	78		13.80		1.80	-13		*14.90*		2.90
-76	76		14.00		2.00	-11		14.90		2.90
-74	74		*14.20*		2.20	-9		*14.85*		2.85
-72	72		14.40		2.40	-7		14.80		2.80
-70	70		*14.45*		2.45	-5		*14.80*		2.80
-68	68		14.50		2.50	-3		14.80		2.80
-66	66		*14.50*		2.50	-1		*14.95*		2.95
-64	64		14.50		2.50	1		15.10		3.10
-62	62		*14.50*		2.50	3		*14.70*		2.70
-60	60		14.50		2.50	5		14.30		2.30
-58	58		*14.60*		2.60	7		*14.20*		2.20
-56	56		14.70		2.70	9		14.10		2.10
-54	54		*14.65*		2.65	11		*14.15*		2.15
-52	52		14.60		2.60	13		14.20		2.20
-50	50		*14.55*		2.55	15	12.90	*14.25*	0.90	2.25
-48	48		14.50		2.50	17	12.90	14.30	0.90	2.30
-46	46		*14.45*		2.45	19	13.50	*14.20*	1.50	2.20
-44	44		14.40		2.40	21	13.60	14.10	1.60	2.10
-42	42		*14.35*		2.35	23	13.70	*14.05*	1.70	2.05
-40	40		14.30		2.30	25	13.40	14.00	1.40	2.00
-38	38		14.30		2.30	27	13.00	*13.90*	1.00	1.90
-36	36		14.10		2.10	29	13.00	13.80	1.00	1.80
-34	34		14.20		2.20	31	12.70	13.70	0.70	1.70
-32	32		13.80		1.80	33	12.50	13.60	0.50	1.60
-30	30		13.50		1.50	35	12.50	13.20	0.50	1.20
-28	28		13.40		1.40	37	12.30	13.10	0.30	1.10
-26	26		13.00		1.00	39	11.80	12.70	-0.20	0.70
-24	24		12.70		0.70	41	11.40	11.90	-0.60	-0.10
-22	22		12.30		0.30	43	11.00	11.60	-1.00	-0.40
-20	20		11.90		-0.10	45	11.20	11.40	-0.80	-0.60
-18	18		11.30		-0.70	47	10.90	10.90	-1.10	-1.10
-16	16		10.80		-1.20	49	10.50	10.40	-1.50	-1.60
-14	14	8.50	10.30	-3.50	-1.70	51	9.30	9.40	-2.70	-2.60
-12	12	8.40	9.50	-3.60	-2.50	53	8.40	8.70	-3.60	-3.30
-10	10	6.80	8.70	-5.20	-3.30	55	7.60	8.30	-4.40	-3.70
-8	8	6.10	7.40	-5.90	-4.60	57	6.60	7.40	-5.40	-4.60
-6	6	5.40	6.50	-6.60	-5.50	59	5.00	6.50	-7.00	-5.50
-4	4	5.00	5.70	-7.00	-6.30	61	4.00	6.00	-8.00	-6.00
-2	2	4.50	5.00	-7.50	-7.00	63	2.80	5.30	-9.20	-6.70
0	0	3.30	3.30	-8.70	-8.70	65	3.00	5.00	-9.00	-7.00
0	0	3.30	3.30	-8.70	-8.70	75	1.30	0.70	-10.70	-11.30
2	-2	3.40	3.60	-8.60	-8.40	77	1.50	0.40	-10.50	-11.60
4	-4	4.50	5.20	-7.50	-6.80	79	3.00	1.70	-9.00	-10.30
6	-6	6.10	6.20	-5.90	-5.80	81	4.40	3.00	-7.60	-9.00
8	-8	7.40	7.10	-4.60	-4.90	83	5.80	4.40	-6.20	-7.60
10	-10	8.50	7.80	-3.50	-4.20	85	6.80	5.60	-5.20	-6.40
12	-12	9.00	9.30	-3.00	-2.70	87	7.70	6.80	-4.30	-5.20
14	-14	10.00	10.60	-2.00	-1.40	89	9.00	8.00	-3.00	-4.00
16	-16	11.10	11.60	-0.90	-0.40	91	10.10	9.20	-1.90	-2.80
18	-18	11.40	11.70	-0.60	-0.30	93	11.30	10.60	-0.70	-1.40
20	-20	11.70	11.80	-0.30	-0.20	95	11.80	11.40	-0.20	-0.60
22	-22	11.80		-0.20		97		11.50		-0.50
24	-24					99		11.60		-0.40
26	-26					101		11.80		-0.20
28	-28					103				
30	-30					105				

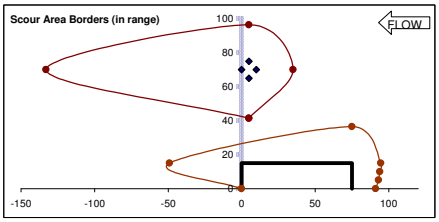
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.40	-3.60
2	8.00	-4.00
4	8.50	-3.50
6	9.50	-2.50
8	10.30	-1.70
10	11.30	-0.70
12	12.00	0.00
14		
16		
18		
20		
22		
24		

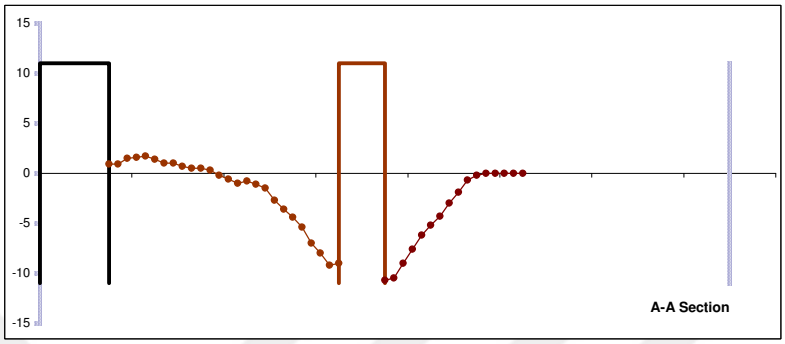
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	18
SB_{af3}	Abutment Front (W+10 cm)	19
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	21.5
SB_{pl}	Pier Left	23.5
SB_{pf}	Pier Front	25
SB_{pr}	Pier Right	21.5
SB_{pb}	Pier Rear	133

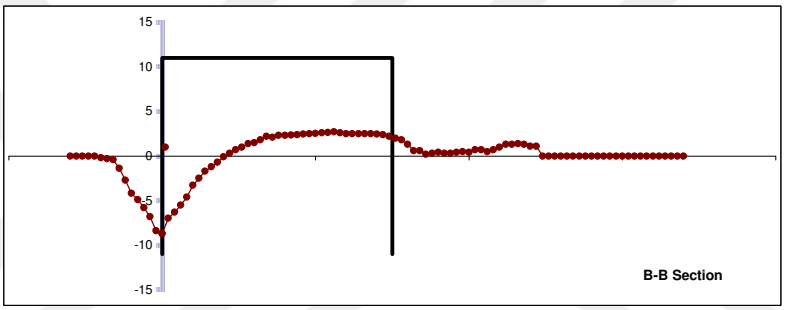


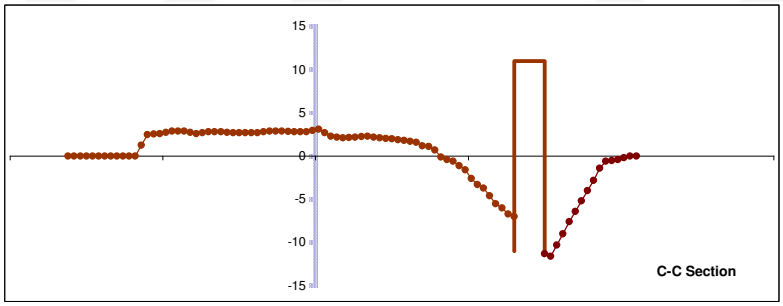
Experiment No : **E135**

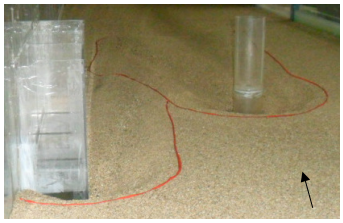


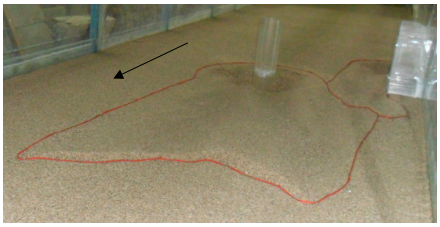




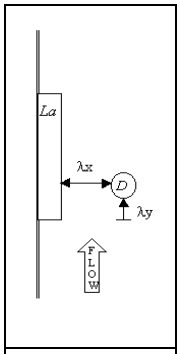


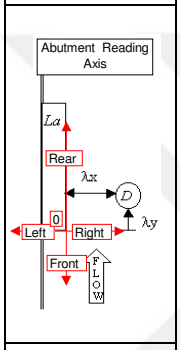


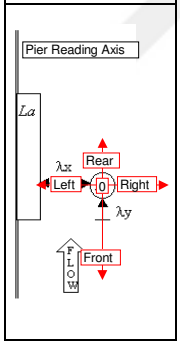


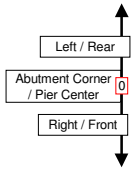


Experiment No :	**E136**
Date :	04.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	35









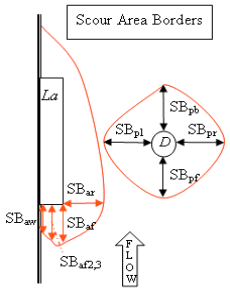
This color was used for raw data readings

This color was used for values enterpolated to sketch

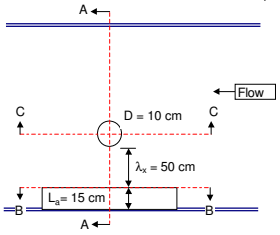
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER Raw Data Reading(cm)		PIER Scour Depth ds (cm)	
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. (cm)	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97				
-160	160					-95				
-158	158					-93				
-156	156					-91				
-154	154					-89				
-152	152					-87				
-150	150					-85				
-148	148					-83				
-146	146					-81				
-144	144					-79				
-142	142					-77				
-140	140					-75				
-138	138					-73				
-136	136		12.00		0.00	-71				
-134	134		12.30		0.30	-69				
-132	132		12.40		0.40	-67				
-130	130		12.90		0.90	-65				
-128	128		*13.35*		1.35	-63				
-126	126		13.80		1.80	-61				
-124	124		13.70		1.70	-59		12.00		0.00
-122	122		13.70		1.70	-57		13.30		1.30
-120	120		13.60		1.60	-55		13.60		1.60
-118	118		13.80		1.80	-53		13.70		1.70
-116	116		13.60		1.60	-51		*13.70*		1.70
-114	114		13.60		1.60	-49		13.70		1.70
-112	112		13.70		1.70	-47		*13.80*		1.80
-110	110		13.60		1.60	-45		13.90		1.90
-108	108		13.70		1.70	-43		*13.90*		1.90
-106	106		13.60		1.60	-41		13.90		1.90
-104	104		13.40		1.40	-39		*13.85*		1.85
-102	102		13.10		1.10	-37		13.80		1.80
-100	100		12.80		0.80	-35		*13.95*		1.95
-98	98		12.70		0.70	-33		14.10		2.10
-96	96		12.40		0.40	-31		*14.20*		2.20
-94	94		12.30		0.30	-29		14.30		2.30
-92	92		12.10		0.10	-27		*14.25*		2.25
-90	90		11.80		-0.20	-25		14.20		2.20
-88	88		11.60		-0.40	-23		*14.20*		2.20
-86	86		11.50		-0.50	-21		14.20		2.20
-84	84		11.80		-0.20	-19		*14.20*		2.20
-82	82		12.00		0.00	-17		14.20		2.20
-80	80		12.30		0.30	-15		*14.15*		2.15
-78	78		12.50		0.50	-13		14.10		2.10
-76	76		12.80		0.80	-11		*14.15*		2.15
-74	74		*12.95*		0.95	-9		14.20		2.20
-72	72		13.10		1.10	-7		*14.15*		2.15
-70	70		*13.25*		1.25	-5		14.10		2.10
-68	68		13.40		1.40	-3		*14.15*		2.15
-66	66		*13.40*		1.40	-1		14.20		2.20
-64	64		13.40		1.40	1		*14.15*		2.15
-62	62		*13.40*		1.40	3		14.10		2.10
-60	60		13.40		1.40	5		*14.25*		2.25
-58	58		*13.40*		1.40	7		14.40		2.40
-56	56		13.40		1.40	9		*14.25*		2.25
-54	54		*13.45*		1.45	11		14.10		2.10
-52	52		13.50		1.50	13		*14.25*		2.25
-50	50		*13.45*		1.45	15	13.20	14.40	1.20	2.40
-48	48		13.40		1.40	17	13.10	*14.35*	1.10	2.35
-46	46		*13.45*		1.45	19	13.40	14.30	1.40	2.30
-44	44		13.50		1.50	21	13.00	*14.25*	1.00	2.25
-42	42		*13.50*		1.50	23	12.60	14.20	0.60	2.20
-40	40		13.50		1.50	25	12.10	14.00	0.10	2.00
-38	38		*13.45*		1.45	27	12.00	13.90	0.00	1.90
-36	36		13.40		1.40	29	11.70	13.80	-0.30	1.80
-34	34		13.40		1.40	31	12.00	13.40	0.00	1.40
-32	32		13.30		1.30	33	12.00	13.10	0.00	1.10
-30	30		13.00		1.00	35	12.30	13.00	0.30	1.00
-28	28		12.70		0.70	37	12.00	12.80	0.00	0.80
-26	26		12.30		0.30	39	11.80	12.50	-0.20	0.50
-24	24		11.80		-0.20	41	11.50	12.20	-0.50	0.20
-22	22		11.30		-0.70	43	11.40	11.90	-0.60	-0.10
-20	20		10.90		-1.10	45	11.40	11.50	-0.60	-0.50
-18	18		10.40		-1.60	47	11.70	10.70	-0.30	-1.30
-16	16		10.00		-2.00	49	11.30	10.30	-0.70	-1.70
-14	14	7.80	9.40	-4.20	-2.60	51	10.00	9.60	-2.00	-2.40
-12	12	7.00	8.60	-5.00	-3.40	53	9.00	9.00	-3.00	-3.00
-10	10	6.10	8.00	-5.90	-4.00	55	8.00	8.20	-4.00	-3.80
-8	8	5.40	6.80	-6.60	-5.20	57	7.20	7.50	-4.80	-4.50
-6	6	4.70	5.70	-7.30	-6.30	59	6.20	6.80	-5.80	-5.20
-4	4	4.20	5.10	-7.80	-6.90	61	4.80	6.00	-7.20	-6.00
-2	2	4.00	4.30	-8.00	-7.70	63	3.40	5.60	-8.60	-6.40
0	0	3.70	3.70	-8.30	-8.30	65	2.70	5.80	-9.30	-6.20
0	0	3.70	3.70	-8.30	-8.30	75	2.40	1.30	-9.60	-10.70
2	-2	4.40	4.10	-7.60	-7.90	77	3.00	1.40	-9.00	-10.60
4	-4	4.30	5.70	-7.70	-6.30	79	4.00	3.00	-8.00	-9.00
6	-6	5.50	7.00	-6.50	-5.00	81	5.80	4.40	-6.20	-7.60
8	-8	6.90	7.30	-5.10	-4.70	83	6.60	5.80	-5.40	-6.20
10	-10	7.80	8.30	-4.20	-3.70	85	7.80	6.90	-4.20	-5.10
12	-12	8.90	9.80	-3.10	-2.20	87	8.80	8.20	-3.20	-3.80
14	-14	9.70	11.10	-2.30	-0.90	89	9.20	9.60	-2.80	-2.40
16	-16	10.70	11.80	-1.30	-0.20	91	10.60	11.30	-1.40	-0.70
18	-18	11.30		-0.70		93	11.70	11.80	-0.30	-0.20
20	-20	11.50		-0.50		95	11.80		-0.20	
22	-22	11.30		-0.70		97				
24	-24	11.70		-0.30		99				
26	-26	11.80		-0.20		101				
28	-28					103				
30	-30					105				

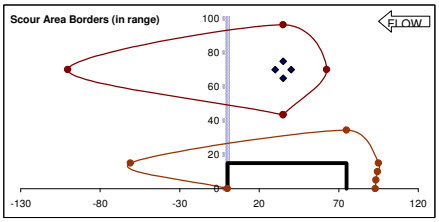
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.10	-3.90
2	7.90	-4.10
4	8.60	-3.40
6	9.40	-2.60
8	10.00	-2.00
10	10.90	-1.10
12	11.40	-0.60
14	11.90	-0.10
16		
18		
20		
22		
24		

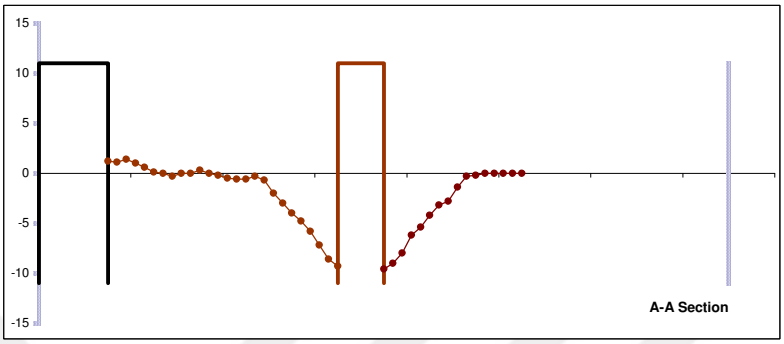
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18
SB_{af2}	Abutment Front (W+5 cm)	18.5
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	20
SB_{ar}	Abutment Corner Right	19.5
SB_{pl}	Pier Left	21.5
SB_{pf}	Pier Front	22.5
SB_{pr}	Pier Right	21.5
SB_{pb}	Pier Rear	130.5

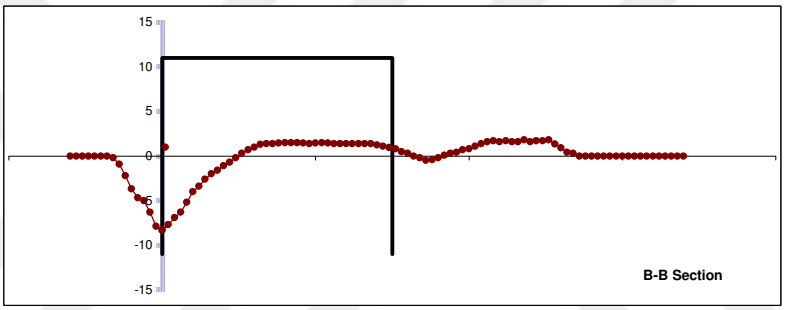


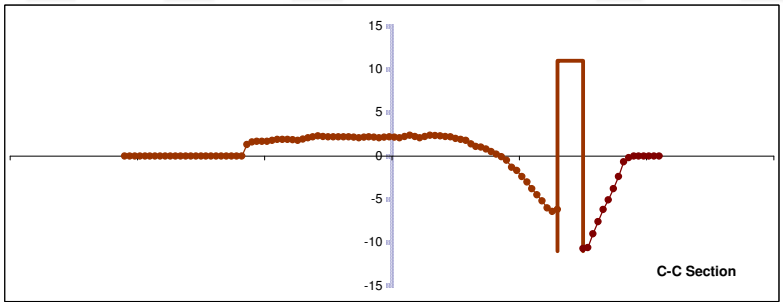
Experiment No : **E136**

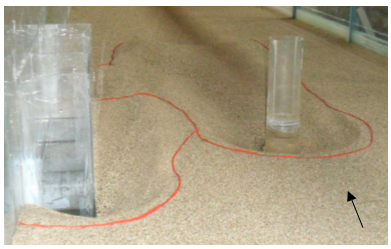


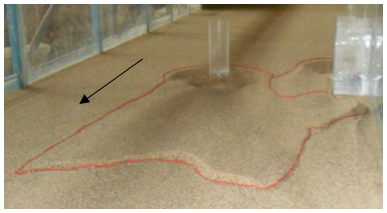




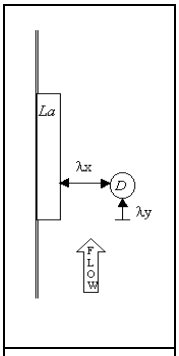


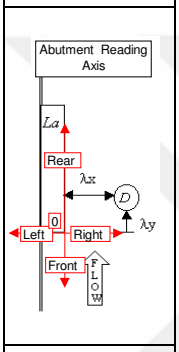


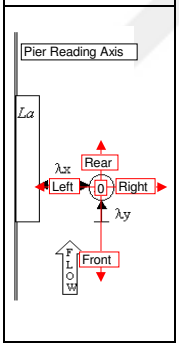


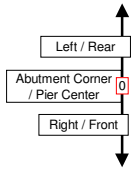


Experiment No :	**E137**
Date :	06.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	0









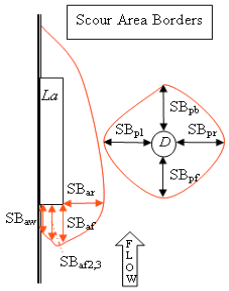
This color was used for raw data readings

This color was used for values enterpolated to sketch

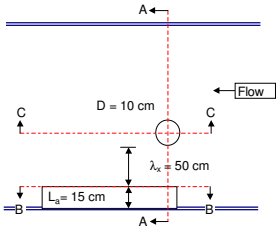
		ABUTMENT					PIER				
Flow Direction		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist.	Left/	Rear/	Left/	Rear/
Distance (cm)		Right	Front	Right	Front	(cm)	Right	Front	Right	Front
-170	170					-105				
-168	168					-103				
-166	166					-101				
-164	164					-99				
-162	162					-97		12.00		0.00
-160	160					-95		*12.65*		0.65
-158	158					-93		13.30		1.30
-156	156					-91		*13.50*		1.50
-154	154					-89		13.70		1.70
-152	152					-87		*13.60*		1.60
-150	150					-85		13.50		1.50
-148	148					-83		*13.60*		1.60
-146	146					-81		13.70		1.70
-144	144		12.00		0.00	-79		*13.75*		1.75
-142	142		12.50		0.50	-77		13.80		1.80
-140	140		12.60		0.60	-75		*13.90*		1.90
-138	138		13.20		1.20	-73		14.00		2.00
-136	136		13.90		1.90	-71		*14.00*		2.00
-134	134		15.10		3.10	-69		14.00		2.00
-132	132		15.20		3.20	-67		*13.95*		1.95
-130	130		15.10		3.10	-65		13.90		1.90
-128	128		*15.05*		3.05	-63		*14.00*		2.00
-126	126		15.00		3.00	-61		*14.10*		2.10
-124	124		14.80		2.80	-59		14.20		2.20
-122	122		14.80		2.80	-57		*14.05*		2.05
-120	120		14.70		2.70	-55		13.90		1.90
-118	118		14.60		2.60	-53		*14.00*		2.00
-116	116		14.70		2.70	-51		14.10		2.10
-114	114		14.40		2.40	-49		*14.10*		2.10
-112	112		14.20		2.20	-47		14.10		2.10
-110	110		14.20		2.20	-45		*14.15*		2.15
-108	108		14.00		2.00	-43		14.20		2.20
-106	106		14.00		2.00	-41		*14.20*		2.20
-104	104		13.90		1.90	-39		14.20		2.20
-102	102		14.10		2.10	-37		*14.25*		2.25
-100	100		13.70		1.70	-35		14.30		2.30
-98	98		13.70		1.70	-33		*14.30*		2.30
-96	96		13.50		1.50	-31		14.30		2.30
-94	94		13.20		1.20	-29		*14.20*		2.20
-92	92		12.80		0.80	-27		14.10		2.10
-90	90		12.60		0.60	-25		*14.10*		2.10
-88	88		12.40		0.40	-23		14.10		2.10
-86	86		12.30		0.30	-21		*14.05*		2.05
-84	84		12.20		0.20	-19		14.00		2.00
-82	82		11.90		-0.10	-17		*14.00*		2.00
-80	80		11.90		-0.10	-15		14.00		2.00
-78	78		12.00		0.00	-13		*14.10*		2.10
-76	76		12.10		0.10	-11		14.20		2.20
-74	74		12.20		0.20	-9		*14.05*		2.05
-72	72		12.30		0.30	-7		13.90		1.90
-70	70		*12.45*		0.45	-5		*13.85*		1.85
-68	68		12.60		0.60	-3		13.80		1.80
-66	66		*12.65*		0.65	-1		*13.85*		1.85
-64	64		12.70		0.70	1		13.90		1.90
-62	62		*12.70*		0.70	3		*13.85*		1.85
-60	60		12.70		0.70	5		13.80		1.80
-58	58		*12.75*		0.75	7		*13.85*		1.85
-56	56		12.80		0.80	9		13.90		1.90
-54	54		*12.70*		0.70	11		*13.75*		1.75
-52	52		12.60		0.60	13		13.60		1.60
-50	50		*12.45*		0.45	15	4.60	*13.60*	-7.40	1.60
-48	48		12.30		0.30	17	4.40	13.60	-7.60	1.60
-46	46		12.30		0.30	19	4.00	*13.50*	-8.00	1.50
-44	44		12.10		0.10	21	4.40	13.40	-7.60	1.40
-42	42		12.10		0.10	23	6.10	*13.40*	-5.90	1.40
-40	40		11.90		-0.10	25	7.10	13.40	-4.90	1.40
-38	38		11.70		-0.30	27	8.20	*13.30*	-3.80	1.30
-36	36		11.20		-0.80	29	9.10	13.20	-2.90	1.20
-34	34		10.80		-1.20	31	10.10	*13.15*	-1.90	1.15
-32	32		10.50		-1.50	33	10.70	13.10	-1.30	1.10
-30	30		10.40		-1.60	35	11.50	13.10	-0.50	1.10
-28	28		10.10		-1.90	37	12.00	12.90	0.00	0.90
-26	26		9.90		-2.10	39	12.00	12.60	0.00	0.60
-24	24		9.50		-2.50	41	12.20	12.20	0.20	0.20
-22	22		9.20		-2.80	43	12.00	12.00	0.00	0.00
-20	20		8.70		-3.30	45	12.20	11.60	0.20	-0.40
-18	18		8.40		-3.60	47	12.10	11.30	0.10	-0.70
-16	16		8.00		-4.00	49	12.20	10.60	0.20	-1.40
-14	14	5.00	7.30	-7.00	-4.70	51	11.50	9.90	-0.50	-2.10
-12	12	4.60	6.60	-7.40	-5.40	53	10.00	9.10	-2.00	-2.90
-10	10	4.50	6.00	-7.50	-6.00	55	8.80	8.70	-3.20	-3.30
-8	8	3.80	5.20	-8.20	-6.80	57	8.00	7.80	-4.00	-4.20
-6	6	3.30	4.50	-8.70	-7.50	59	7.70	7.10	-4.30	-4.90
-4	4	2.80	3.80	-9.20	-8.20	61	5.60	6.60	-6.40	-5.40
-2	2	3.00	3.30	-9.00	-8.70	63	4.50	6.60	-7.50	-5.40
0	0	2.90	2.90	-9.10	-9.10	65	3.50	6.30	-8.50	-5.70
0	0	2.90	2.90	-9.10	-9.10	75	2.00	2.00	-10.00	-10.00
2	-2	3.40	2.90	-8.60	-9.10	77	2.80	2.10	-9.20	-9.90
4	-4	3.30	4.20	-8.70	-7.80	79	4.30	3.80	-7.70	-8.20
6	-6	4.10	5.40	-7.90	-6.60	81	5.80	5.10	-6.20	-6.90
8	-8	5.10	6.50	-6.90	-5.50	83	6.80	6.50	-5.20	-5.50
10	-10	6.40	7.20	-5.60	-4.80	85	8.10	7.40	-3.90	-4.60
12	-12	7.80	7.90	-4.20	-4.10	87	9.30	8.70	-2.70	-3.30
14	-14	9.00	8.50	-3.00	-3.50	89	10.20	9.80	-1.80	-2.20
16	-16	9.60	9.70	-2.40	-2.30	91	11.30	11.20	-0.70	-0.80
18	-18	10.50	11.50	-1.50	-0.50	93	12.00	11.80	0.00	-0.20
20	-20	11.10	12.00	-0.90	0.00	95				
22	-22	12.00		0.00		97				
24	-24					99				
26	-26					101				
28	-28					103				
30	-30					105				

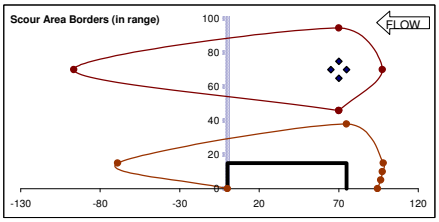
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	4.60	-7.40
2	4.10	-7.90
4	4.60	-7.40
6	5.60	-6.40
8	7.00	-5.00
10	7.80	-4.20
12	8.30	-3.70
14	9.70	-2.30
16	11.00	-1.00
18	12.00	0.00
20		

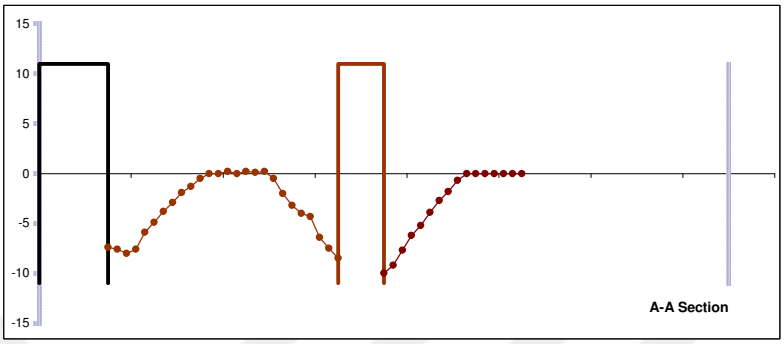
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	19.5
SB_{af2}	Abutment Front (W+5 cm)	21.5
SB_{af3}	Abutment Front (W+10 cm)	22.5
SB_{af}	Abutment Corner Front	23
SB_{ar}	Abutment Corner Right	23
SB_{pl}	Pier Left	19
SB_{pf}	Pier Front	22.5
SB_{pr}	Pier Right	19.5
SB_{pb}	Pier Rear	161.5

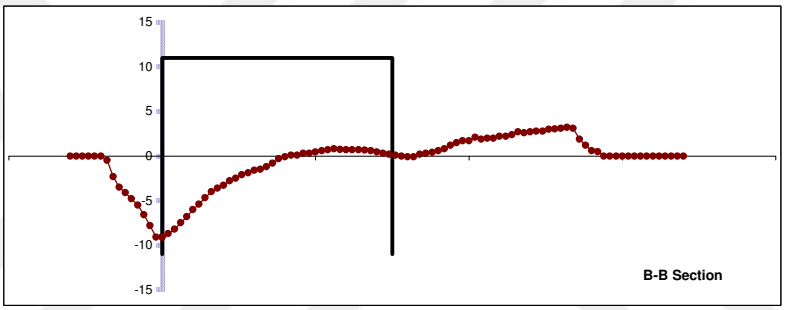


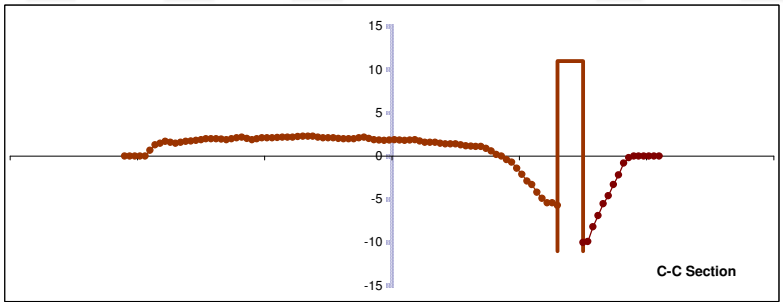
Experiment No : **E137**

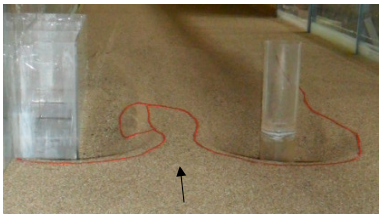


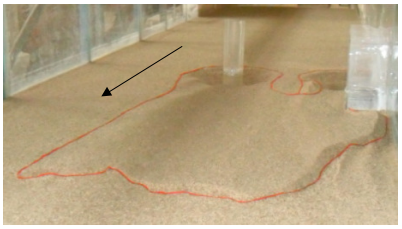






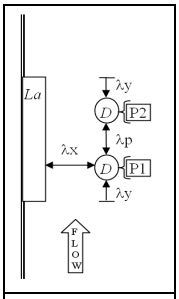


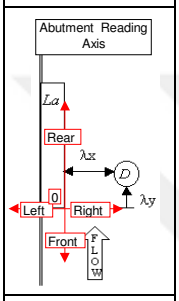


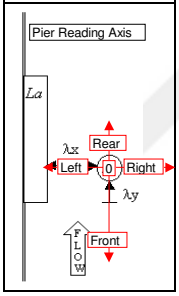


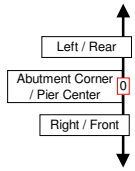
Experiment No : **E138**

Date :	12.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	15
λ_p (cm) :	35









This color was used for raw data readings

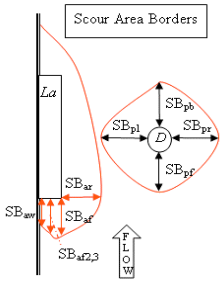
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm) Left/ Right	ABUTMENT Raw Data Reading(cm) Rear/ Front	ABUTMENT Scour Depth ds (cm) Left/ Right	ABUTMENT Scour Depth ds (cm) Rear/ Front		PIER at FRONT, P1 Raw Data Reading(cm) Left/ Right	PIER at FRONT, P1 Raw Data Reading(cm) Rear/ Front	PIER at FRONT, P1 Scour Depth ds (cm) Left/ Right	PIER at FRONT, P1 Scour Depth ds (cm) Rear/ Front		PIER at REAR, P2 Raw Data Reading(cm) Left/ Right	PIER at REAR, P2 Raw Data Reading(cm) Rear/ Front	PIER at REAR, P2 Scour Depth ds (cm) Left/ Right	PIER at REAR, P2 Scour Depth ds (cm) Rear/ Front	
Distance (cm)						Dist. in A-A					Dist. in C-C					Dist. in D-D
-140	140					-115					-155					115
-138	138					-113					-153					113
-136	136					-111					-151					111
-134	134					-109					-149					109
-132	132					-107					-147					107
-130	130					-105					-145					105
-128	128					-103					-143					103
-126	126					-101					-141					101
-124	124		12.00		0.00	-99					-139					99
-122	122		12.90		0.90	-97					-137					97
-120	120		13.10		1.10	-95					-135					95
-118	118		13.20		1.20	-93					-133					93
-116	116		13.20		1.20	-91					-131					91
-114	114		13.30		1.30	-89					-129					89
-112	112		13.30		1.30	-87					-127					87
-110	110		13.30		1.30	-85					-125					85
-108	108		13.20		1.20	-83					-123					83
-106	106		13.00		1.00	-81					-121					81
-104	104		13.00		1.00	-79					-119					79
-102	102		12.70		0.70	-77					-117					77
-100	100		12.60		0.60	-75					-115					75
-98	98		12.40		0.40	-73					-113					73
-96	96		12.40		0.40	-71					-111					71
-94	94		12.20		0.20	-69					-109					69
-92	92		12.00		0.00	-67					-107					67
-90	90		11.80		-0.20	-65					-105					65
-88	88		11.40		-0.60	-63					-103					63
-86	86		11.30		-0.70	-61					-101					61
-84	84		11.10		-0.90	-59					-99					59
-82	82		11.10		-0.90	-57					-97					57
-80	80		11.30		-0.70	-55					-95					55
-78	78		11.20		-0.80	-53					-93					53
-76	76		11.10		-0.90	-51					-91					51
-74	74		11.20		-0.80	-49					-89					49
-72	72		11.30		-0.70	-47					-87					47
-70	70		11.30		-0.70	-45					-85					45
-68	68		11.50		-0.50	-43					-83					43
-66	66		11.60		-0.40	-41					-81					41
-64	64		11.80		-0.20	-39					-79					39
-62	62		12.00		0.00	-37					-77					37
-60	60		12.20		0.20	-35					-75					35
-58	58		12.10		0.10	-33					-73					33
-56	56		12.00		0.00	-31					-71					31
-54	54		12.20		0.20	-29					-69					29
-52	52		12.00		0.00	-27					-67					27
-50	50		12.00		0.00	-25					-65		12.00		0.00	25
-48	48		11.90		-0.10	-23					-63		12.10		0.10	23
-46	46		11.90		-0.10	-21					-61		12.90		0.90	21
-44	44		11.80		-0.20	-19					-59		13.60		1.60	19
-42	42		11.80		-0.20	-17					-57		14.00		2.00	17
-40	40		11.50		-0.50	-15					-55		14.20		2.20	15
-38	38		11.20		-0.80	-13					-53		14.30		2.30	13
-36	36		10.90		-1.10	-11					-51		14.40		2.40	11
-34	34		10.60		-1.40	-9					-49		14.70		2.70	9
-32	32		10.40		-1.60	-7					-47		14.60		2.60	7
-30	30		10.30		-1.70	-5					-45		14.60		2.60	5
-28	28		10.10		-1.90	-3					-43		14.60		2.60	3
-26	26		10.10		-1.90	-1		12.00		0.00	-41		14.50		2.50	1
-24	24		9.90		-2.10	1		12.40		0.40	-39		14.40		2.40	-1
-22	22		10.00		-2.00	3		12.50		0.50	-37		14.40		2.40	-3
-20	20		9.50		-2.50	5		12.30		0.30	-35		14.40		2.40	-5
-18	18		9.30		-2.70	7		12.10		0.10	-33		14.20		2.20	-7
-16	16		9.00		-3.00	9		12.00		0.00	-31		14.20		2.20	-9
-14	14	7.00	8.40	-5.00	-3.60	11		11.70		-0.30	-29		13.70		1.70	-11
-12	12	6.50	7.90	-5.50	-4.10	13		11.70		-0.30	-27		13.20		1.20	-13
-10	10	5.60	7.20	-6.40	-4.80	15	9.70	11.30	-2.30	-0.70	-25		12.90		0.90	-15
-8	8	5.00	6.20	-7.00	-5.80	17	9.30	11.10	-2.70	-0.90	-23	12.00	12.30	0.00	0.30	-17
-6	6	4.40	5.00	-7.60	-7.00	19	8.90	10.50	-3.10	-1.50	-21	11.60	11.40	-0.40	-0.60	-19
-4	4	3.80	4.70	-8.20	-7.30	21	8.50	9.80	-3.50	-2.20	-19	10.90	12.00	-1.10	0.00	-21
-2	2	3.60	3.90	-8.40	-8.10	23	7.90	9.20	-4.10	-2.80	-17	9.60	10.90	-2.40	-1.10	-23
0	0	3.20	3.20	-8.80	-8.80	25	7.30	8.70	-4.70	-3.30	-15	8.90	10.50	-3.10	-1.50	-25
0	0	3.20	3.20	-8.80	-8.80	30	6.90	6.10	-5.10	-5.90	-10	8.00	8.10	-4.00	-3.90	-30
2	-2	3.90	4.30	-8.10	-7.70	32	7.80	7.30	-4.20	-4.70	-8	8.50	9.00	-3.50	-3.00	-32
4	-4	3.40	5.70	-8.60	-6.30	34	7.90	8.50	-4.10	-3.50	-6	9.90	10.40	-2.10	-1.60	-34
6	-6	4.80	6.50	-7.20	-5.50	36	8.60	9.80	-3.40	-2.20	-4	10.50	11.70	-1.50	-0.30	-36
8	-8	6.70	7.30	-5.30	-4.70	38	9.60	10.90	-2.40	-1.10	-2	11.20	11.80	-0.80	-0.20	-38
10	-10	7.70	7.70	-4.30	-4.30	40	10.50	10.60	-1.50	-1.40	0	11.50		-0.50		-40
12	-12	8.70	9.30	-3.30	-2.70	42	11.30	10.20	-0.70	-1.80	2	11.80		-0.20		-42
14	-14	9.30	10.40	-2.70	-1.60	44	11.10	10.10	-0.90	-1.90	4					-44
16	-16	10.10	11.50	-1.90	-0.50	46	11.30	10.20	-0.70	-1.80	6					-46
18	-18	10.20	11.80	-1.80	-0.20	48	11.50	10.20	-0.50	-1.80	8					-48
20	-20	10.40		-1.60		50	11.60	10.60	-0.40	-1.40	10					-50
22	-22	10.60		-1.40		52	12.00	11.10	0.00	-0.90	12					
24	-24	10.70		-1.30		54		11.30		-0.70	14					
26	-26	10.80		-1.20		56		11.50		-0.50	16					
28	-28	11.10		-0.90		58		11.60		-0.40	18					
30	-30	11.10		-0.90		60		11.80		-0.20	20					

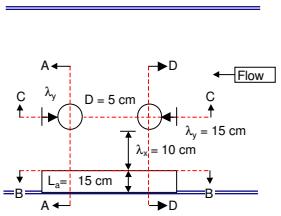
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.50	-5.50
2	6.60	-5.40
4	7.10	-4.90
6	8.30	-3.70
8	9.40	-2.60
10	10.30	-1.70
12	11.00	-1.00
14	11.60	-0.40
16	11.70	-0.30
18	11.80	-0.20
20		

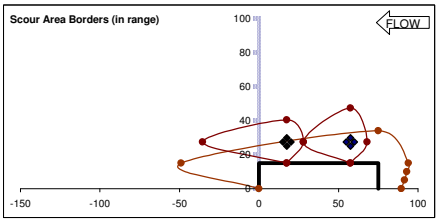
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	16.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	19

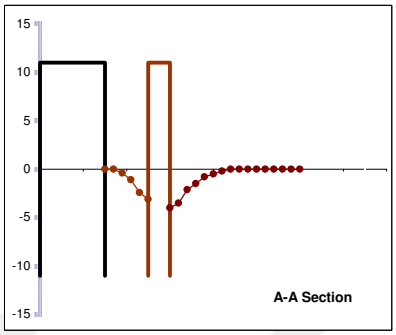
		P1	P2
SB_{pl}	Pier Left	10	10
SB_{pf}	Pier Front	8	8
SB_{pr}	Pier Right	17.5	10.5
SB_{pb}	Pier Rear	27	50.5

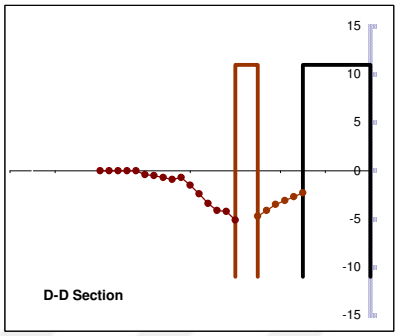


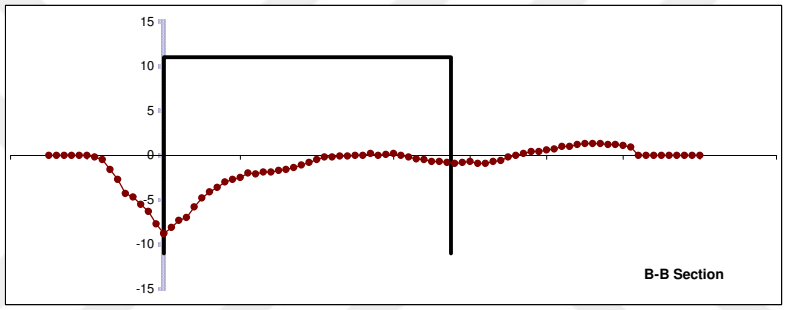
Experiment No : **E138**

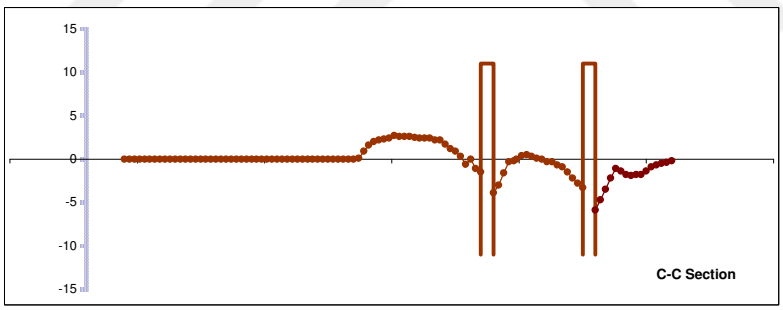


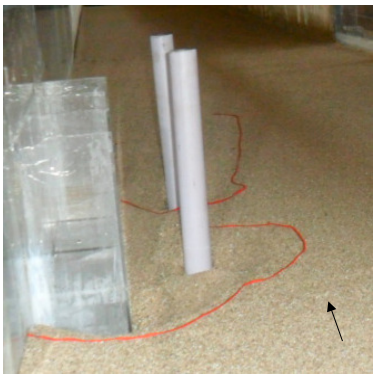


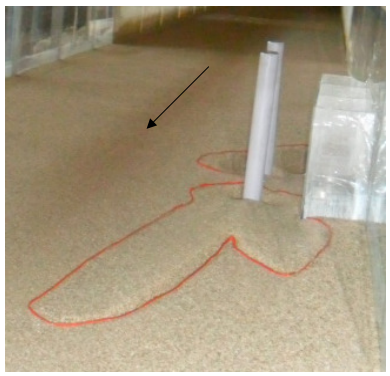






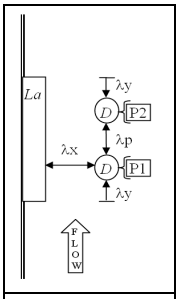


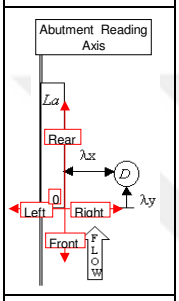


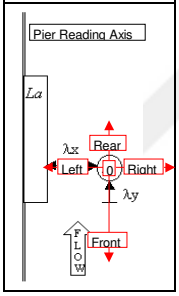


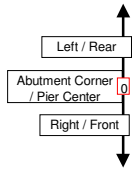
Experiment No : **E139**

Date :	14.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	15
λ_p (cm) :	35









This color was used for raw data readings

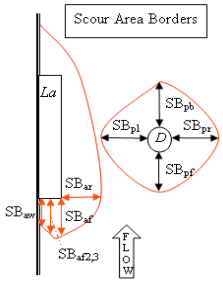
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140					-105					-145					105
-138	138					-103					-143					103
-136	136					-101					-141					101
-134	134		11.80		-0.20	-99					-139					99
-132	132		12.80		0.80	-97					-137					97
-130	130		14.40		2.40	-95					-135					95
-128	128		14.80		2.80	-93					-133					93
-126	126		14.90		2.90	-91					-131					91
-124	124		14.80		2.80	-89					-129					89
-122	122		14.50		2.50	-87					-127					87
-120	120		14.50		2.50	-85					-125					85
-118	118		14.30		2.30	-83					-123					83
-116	116		14.20		2.20	-81					-121					81
-114	114		14.00		2.00	-79					-119					79
-112	112		13.60		1.60	-77					-117					77
-110	110		13.30		1.30	-75					-115					75
-108	108		13.20		1.20	-73					-113					73
-106	106		13.00		1.00	-71					-111					71
-104	104		12.70		0.70	-69					-109					69
-102	102		12.40		0.40	-67					-107					67
-100	100		12.10		0.10	-65					-105					65
-98	98		11.80		-0.20	-63					-103					63
-96	96		11.80		-0.20	-61					-101					61
-94	94		11.50		-0.50	-59					-99					59
-92	92		11.30		-0.70	-57					-97					57
-90	90		11.10		-0.90	-55					-95					55
-88	88		10.90		-1.10	-53					-93					53
-86	86		10.80		-1.20	-51					-91					51
-84	84		10.90		-1.10	-49					-89					49
-82	82		10.90		-1.10	-47					-87		12.00		0.00	47
-80	80		11.10		-0.90	-45					-85		*12.85*		0.85	45
-78	78		11.30		-0.70	-43					-83		13.70		1.70	43
-76	76		11.70		-0.30	-41					-81		13.70		1.70	41
-74	74		12.00		0.00	-39					-79		13.70		1.70	39
-72	72		12.30		0.30	-37					-77		13.90		1.90	37
-70	70		12.30		0.30	-35					-75		13.60		1.60	35
-68	68		12.50		0.50	-33					-73		13.70		1.70	33
-66	66		*12.65*		0.65	-31					-71		13.80		1.80	31
-64	64		12.80		0.80	-29					-69		14.10		2.10	29
-62	62		*12.80*		0.80	-27					-67		14.30		2.30	27
-60	60		12.80		0.80	-25					-65		*14.40*		2.40	25
-58	58		*12.85*		0.85	-23					-63		14.50		2.50	23
-56	56		12.90		0.90	-21					-61		*14.60*		2.60	21
-54	54		*13.05*		1.05	-19					-59		14.70		2.70	19
-52	52		13.20		1.20	-17					-57		*14.70*		2.70	17
-50	50		*13.30*		1.30	-15					-55		14.70		2.70	15
-48	48		13.40		1.40	-13					-53		*14.75*		2.75	13
-46	46		*13.35*		1.35	-11					-51		14.80		2.80	11
-44	44		13.30		1.30	-9					-49		*14.80*		2.80	9
-42	42		*13.15*		1.15	-7					-47		14.80		2.80	7
-40	40		13.00		1.00	-5					-45		*14.90*		2.90	5
-38	38		*13.00*		1.00	-3					-43		15.00		3.00	3
-36	36		13.00		1.00	-1					-41		*14.95*		2.95	1
-34	34		13.10		1.10	1					-39		14.90		2.90	-1
-32	32		13.00		1.00	3					-37		*14.80*		2.80	-3
-30	30		12.60		0.60	5					-35		14.70		2.70	-5
-28	28		12.30		0.30	7					-33		*14.50*		2.50	-7
-26	26		12.00		0.00	9					-31		14.30		2.30	-9
-24	24		11.60		-0.40	11		11.60		-0.40	-29		14.30		2.30	-11
-22	22		11.20		-0.80	13		11.70		-0.30	-27		14.30		2.30	-13
-20	20		10.90		-1.10	15	11.20	11.50	-0.80	-0.50	-25	12.80	14.00	0.80	2.00	-15
-18	18		10.40		-1.60	17	10.60	11.30	-1.40	-0.70	-23	13.80	13.80	1.80	1.80	-17
-16	16		9.90		-2.10	19	10.50	11.20	-1.50	-0.80	-21	12.80	13.50	0.80	1.50	-19
-14	14	7.30	9.20	-4.70	-2.80	21	10.20	10.90	-1.80	-1.10	-19	12.50	13.30	0.50	1.30	-21
-12	12	6.80	8.50	-5.20	-3.50	23	10.10	10.70	-1.90	-1.30	-17	12.10	12.80	0.10	0.80	-23
-10	10	6.10	7.50	-5.90	-4.50	25	10.20	10.20	-1.80	-1.80	-15	11.60	12.40	-0.40	0.40	-25
-8	8	5.10	6.20	-6.90	-5.80	27	10.10	9.60	-1.90	-2.40	-13	11.30	12.20	-0.70	0.20	-27
-6	6	4.50	5.10	-7.50	-6.90	29	9.10	8.90	-2.90	-3.10	-11	10.80	11.60	-1.20	-0.40	-29
-4	4	4.30	4.70	-7.70	-7.30	31	7.90	8.30	-4.10	-3.70	-9	10.20	10.80	-1.80	-1.20	-31
-2	2	4.00	4.30	-8.00	-7.70	33	6.70	7.50	-5.30	-4.50	-7	9.30	10.30	-2.70	-1.70	-33
0	0	3.70	3.70	-8.30	-8.30	35	5.40	7.00	-6.60	-5.00	-5	8.50	9.10	-3.50	-2.90	-35
0	0	3.70	3.70	-8.30	-8.30	40	5.90	5.00	-6.10	-7.00	0	7.50	7.10	-4.50	-4.90	-40
2	-2	4.00	4.40	-8.00	-7.60	42	6.50	5.60	-5.50	-6.40	2	7.80	8.30	-4.20	-3.70	-42
4	-4	4.20	5.60	-7.80	-6.40	44	6.90	7.00	-5.10	-5.00	4	8.90	9.60	-3.10	-2.40	-44
6	-6	4.50	6.70	-7.50	-5.30	46	8.00	8.10	-4.00	-3.90	6	9.00	11.10	-3.00	-0.90	-46
8	-8	6.40	7.30	-5.60	-4.70	48	9.40	9.40	-2.60	-2.60	8	9.60	11.60	-2.40	-0.40	-48
10	-10	7.30	8.00	-4.70	-4.00	50	10.10	10.80	-1.90	-1.20	10	10.60		-1.40		-50
12	-12	8.50	9.20	-3.50	-2.80	52	11.10	11.80	-0.90	-0.20	12	11.40		-0.60		-52
14	-14	9.10	10.90	-2.90	-1.10	54	11.40	11.80	-0.60	-0.20	14	12.00		0.00		-54
16	-16	9.80	11.50	-2.20	-0.50	56	11.30		-0.70		16					-56
18	-18	10.40	11.80	-1.60	-0.20	58	11.50		-0.50		18					-58
20	-20	11.40		-0.60		60	11.80		-0.20		20					-60
22	-22	11.60		-0.40		62					22					
24	-24	11.80		-0.20		64					24					
26	-26					66					26					
28	-28					68					28					
30	-30					70					30					

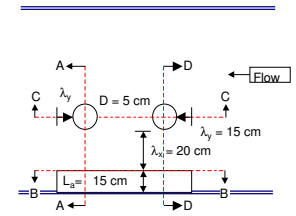
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.80	-5.20
2	6.60	-5.40
4	6.90	-5.10
6	8.00	-4.00
8	8.90	-3.10
10	9.80	-2.20
12	10.80	-1.20
14	11.60	-0.40
16	11.80	-0.20
18		
20		

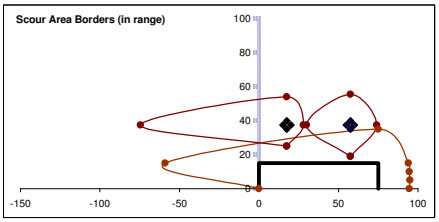
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	19.5
SB_{af2}	Abutment Front (W+5 cm)	20
SB_{af3}	Abutment Front (W+10 cm)	19.5
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	20

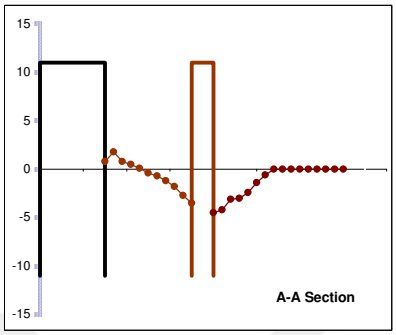
		P1	P2
SB_{pl}	Pier Left	*16*	10
SB_{pf}	Pier Front	14	8
SB_{pr}	Pier Right	15.5	14
SB_{pb}	Pier Rear	25	89.5

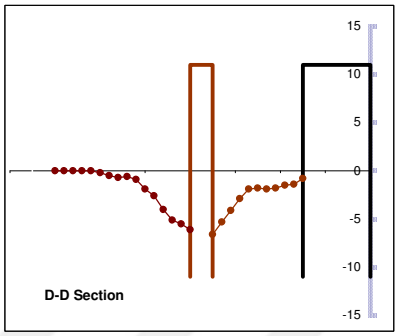


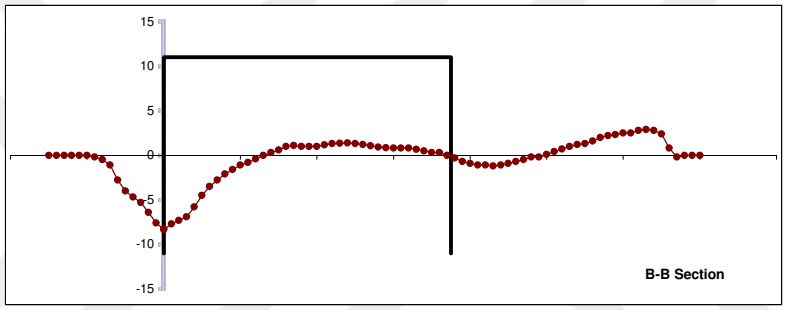
Experiment No : **E139**

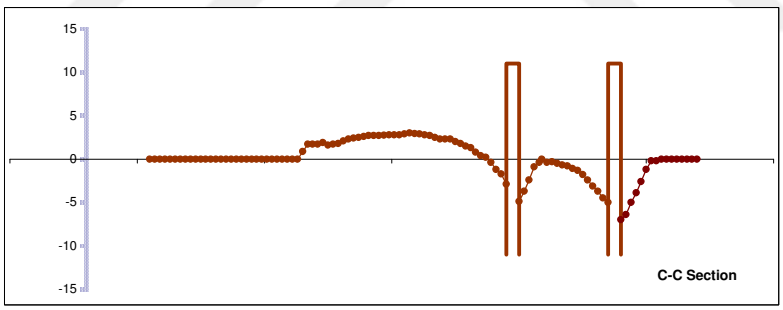


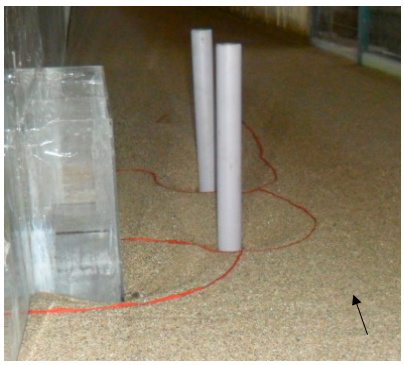


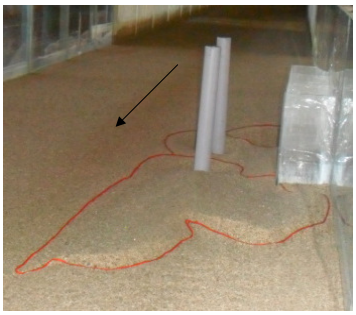






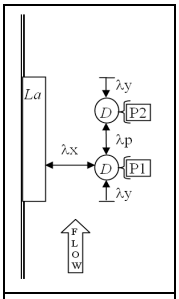


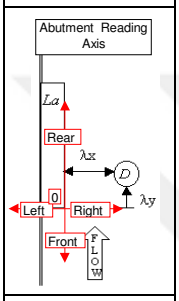


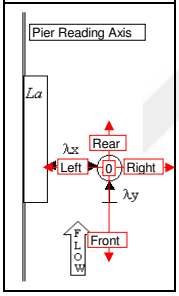


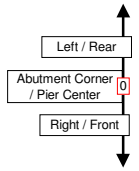
Experiment No : **E140**

Date :	18.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	15
λ_p (cm) :	35









This color was used for raw data readings

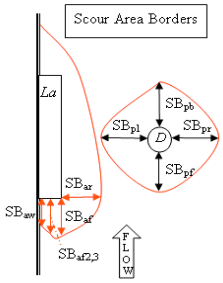
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140		13.30		1.30	-95					-135					95
-138	138		13.50		1.50	-93					-133					93
-136	136		13.50		1.50	-91					-131					91
-134	134		*13.55*		1.55	-89					-129					89
-132	132		13.60		1.60	-87					-127					87
-130	130		*13.60*		1.60	-85					-125					85
-128	128		13.60		1.60	-83					-123					83
-126	126		*13.70*		1.70	-81					-121					81
-124	124		13.80		1.80	-79					-119					79
-122	122		*13.65*		1.65	-77					-117					77
-120	120		13.50		1.50	-75					-115					75
-118	118		*13.55*		1.55	-73					-113					73
-116	116		13.60		1.60	-71					-111					71
-114	114		*13.35*		1.35	-69					-109					69
-112	112		13.10		1.10	-67					-107					67
-110	110		*13.15*		1.15	-65					-105					65
-108	108		13.20		1.20	-63					-103					63
-106	106		*13.15*		1.15	-61					-101					61
-104	104		13.10		1.10	-59					-99					59
-102	102		*12.85*		0.85	-57					-97					57
-100	100		12.60		0.60	-55					-95					55
-98	98		12.60		0.60	-53					-93					53
-96	96		12.50		0.50	-51					-91					51
-94	94		12.20		0.20	-49					-89					49
-92	92		11.90		-0.10	-47					-87					47
-90	90		11.70		-0.30	-45					-85					45
-88	88		11.50		-0.50	-43					-83					43
-86	86		11.30		-0.70	-41					-81					41
-84	84		11.20		-0.80	-39					-79		12.00		0.00	39
-82	82		11.30		-0.70	-37					-77		12.40		0.40	37
-80	80		11.60		-0.40	-35					-75		13.30		1.30	35
-78	78		11.90		-0.10	-33					-73		14.00		2.00	33
-76	76		12.00		0.00	-31					-71		14.30		2.30	31
-74	74		12.30		0.30	-29					-69		*14.45*		2.45	29
-72	72		*12.50*		0.50	-27					-67		14.60		2.60	27
-70	70		12.70		0.70	-25					-65		*14.65*		2.65	25
-68	68		*12.80*		0.80	-23					-63		14.70		2.70	23
-66	66		12.90		0.90	-21					-61		*14.75*		2.75	21
-64	64		*13.00*		1.00	-19					-59		14.80		2.80	19
-62	62		13.10		1.10	-17					-57		*14.85*		2.85	17
-60	60		*13.25*		1.25	-15					-55		14.90		2.90	15
-58	58		13.40		1.40	-13					-53		*14.90*		2.90	13
-56	56		*13.50*		1.50	-11					-51		14.90		2.90	11
-54	54		13.60		1.60	-9					-49		*14.90*		2.90	9
-52	52		*13.65*		1.65	-7					-47		14.90		2.90	7
-50	50		13.70		1.70	-5					-45		*14.80*		2.80	5
-48	48		*13.65*		1.65	-3					-43		14.70		2.70	3
-46	46		13.60		1.60	-1					-41		*14.75*		2.75	1
-44	44		*13.60*		1.60	1					-39		14.80		2.80	-1
-42	42		13.60		1.60	3					-37		*14.70*		2.70	-3
-40	40		13.60		1.60	5					-35		14.60		2.60	-5
-38	38		13.50		1.50	7					-33		*14.60*		2.60	-7
-36	36		13.60		1.60	9					-31		14.60		2.60	-9
-34	34		13.50		1.50	11					-29		*14.55*		2.55	-11
-32	32		13.30		1.30	13					-27		14.50		2.50	-13
-30	30		13.10		1.10	15	12.00		0.00		-25	12.10	*14.40*	0.10	2.40	-15
-28	28		12.70		0.70	17	11.60		-0.40		-23	13.20	14.30	1.20	2.30	-17
-26	26		12.50		0.50	19	11.30		-0.70		-21	13.50	*14.05*	1.50	2.05	-19
-24	24		12.20		0.20	21	11.30	10.40	-0.70	-1.60	-19	13.30	13.80	1.30	1.80	-21
-22	22		11.80		-0.20	23	10.80	10.60	-1.20	-1.40	-17	12.80	13.80	0.80	1.80	-23
-20	20		11.30		-0.70	25	10.80	10.50	-1.20	-1.50	-15	12.50	13.50	0.50	1.50	-25
-18	18		10.90		-1.10	27	11.10	10.40	-0.90	-1.60	-13	12.40	13.50	0.40	1.50	-27
-16	16		10.30		-1.70	29	11.30	10.30	-0.70	-1.70	-11	11.80	13.00	-0.20	1.00	-29
-14	14	7.70	9.60	-4.30	-2.40	31	12.10	10.50	0.10	-1.50	-9	11.80	12.70	-0.20	0.70	-31
-12	12	7.30	8.80	-4.70	-3.20	33	12.20	10.00	0.20	-2.00	-7	11.50	12.00	-0.50	0.00	-33
-10	10	5.90	7.90	-6.10	-4.10	35	10.40	9.80	-1.60	-2.20	-5	10.90	11.70	-1.10	-0.30	-35
-8	8	5.20	6.40	-6.80	-5.60	37	9.10	9.10	-2.90	-2.90	-3	10.30	11.00	-1.70	-1.00	-37
-6	6	4.50	5.40	-7.50	-6.60	39	8.00	8.40	-4.00	-3.60	-1	9.20	10.20	-2.80	-1.80	-39
-4	4	4.00	4.60	-8.00	-7.40	41	6.80	7.80	-5.20	-4.20	1	8.30	9.20	-3.70	-2.80	-41
-2	2	4.00	4.30	-8.00	-7.70	43	5.60	7.10	-6.40	-4.90	3	7.10	8.30	-4.90	-3.70	-43
0	0	3.70	3.70	-8.30	-8.30	45	5.30	6.30	-6.70	-5.70	5	6.40	8.20	-5.60	-3.80	-45
0	0	3.70	3.70	-8.30	-8.30	50	5.20	4.00	-6.80	-8.00	10	6.30	6.40	-5.70	-5.60	-50
2	-2	3.80	5.00	-8.20	-7.00	52	6.40	5.40	-5.60	-6.60	12	7.00	7.40	-5.00	-4.60	-52
4	-4	4.30	6.20	-7.70	-5.80	54	7.50	6.60	-4.50	-5.40	14	8.00	8.80	-4.00	-3.20	-54
6	-6	4.40	7.10	-7.60	-4.90	56	8.50	7.80	-3.50	-4.20	16	9.00	10.00	-3.00	-2.00	-56
8	-8	5.80	7.80	-6.20	-4.20	58	9.30	9.30	-2.70	-2.70	18	9.70		-2.30		-58
10	-10	7.30	8.90	-4.70	-3.10	60	10.40	10.60	-1.60	-1.40	20	10.60		-1.40		-60
12	-12	8.50	10.10	-3.50	-1.90	62	11.40	11.80	-0.60	-0.20	22	11.50		-0.50		-62
14	-14	9.70	11.40	-2.30	-0.60	64	11.80	11.80	-0.20	-0.20	24	11.80		-0.20		-64
16	-16	10.20	11.60	-1.80	-0.40	66					26					-66
18	-18	11.60	11.80	-0.40	-0.20	68					28					-68
20	-20	11.40		-0.60		70					30					-70
22	-22	11.10		-0.90		72					32					
24	-24	11.30		-0.70		74					34					
26	-26	11.30		-0.70		76					36					
28	-28	11.80		-0.20		78					38					
30	-30					80					40					

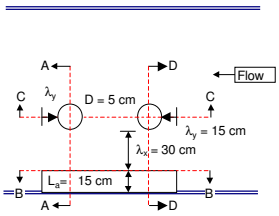
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.30	-4.70
2	7.50	-4.50
4	8.10	-3.90
6	9.00	-3.00
8	9.90	-2.10
10	10.70	-1.30
12	11.40	-0.60
14	11.80	-0.20
16		
18		
20		

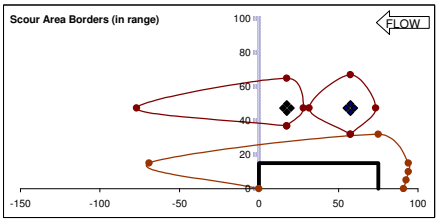
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	16
SB_{af2}	Abutment Front (W+5 cm)	17.5
SB_{af3}	Abutment Front (W+10 cm)	19
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	17

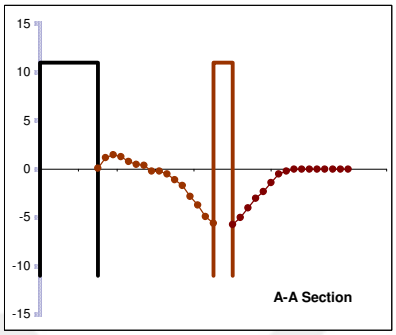
		P1	P2
SB_{pl}	Pier Left	13	8
SB_{pf}	Pier Front	13.5	8
SB_{pr}	Pier Right	17	15
SB_{pb}	Pier Rear	23.5	92

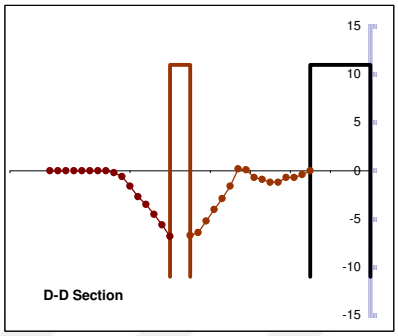


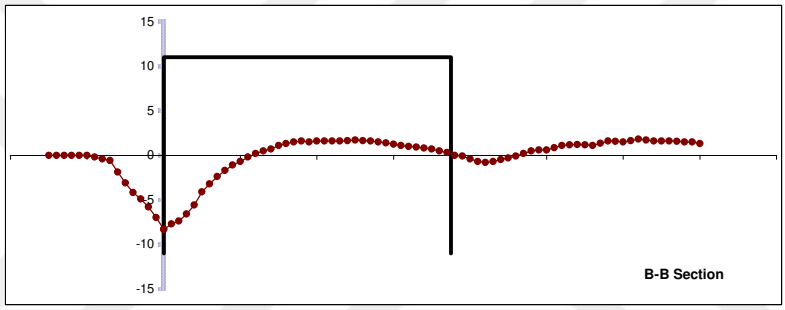
Experiment No : **E140**

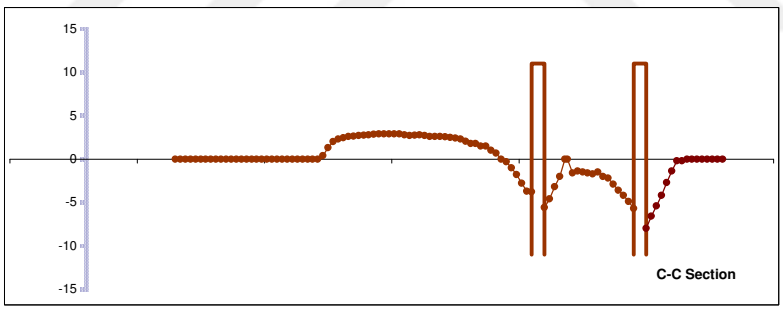


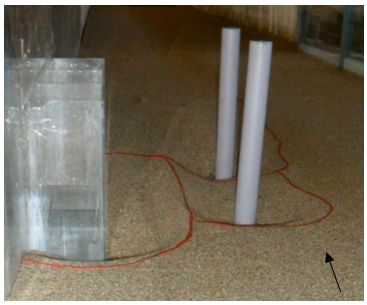


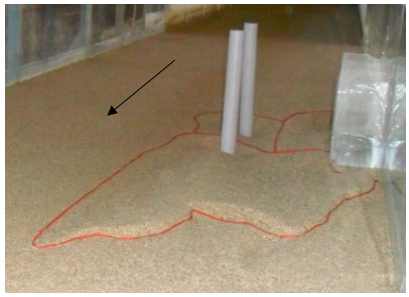






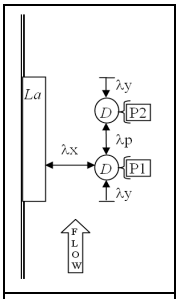


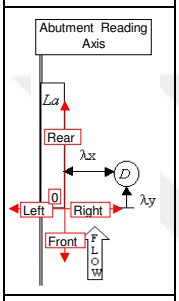


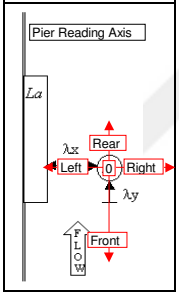


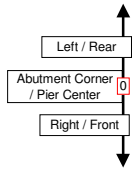
Experiment No : **E141**

Date :	20.06.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	15
λ_p (cm) :	35









This color was used for raw data readings

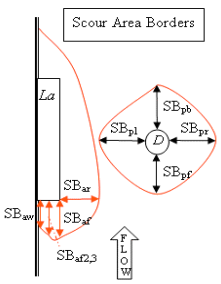
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140					-85					-125					85
-138	138					-83					-123					83
-136	136					-81					-121					81
-134	134					-79					-119					79
-132	132					-77					-117					77
-130	130					-75					-115					75
-128	128		11.80		-0.20	-73					-113					73
-126	126		11.80		-0.20	-71					-111					71
-124	124		12.30		0.30	-69					-109					69
-122	122		*12.63*		0.63	-67					-107					67
-120	120		*12.97*		0.97	-65					-105					65
-118	118		13.30		1.30	-63					-103					63
-116	116		*13.27*		1.27	-61					-101					61
-114	114		*13.34*		1.34	-59					-99					59
-112	112		13.40		1.40	-57					-97					57
-110	110		*13.30*		1.30	-55					-95					55
-108	108		*13.20*		1.20	-53					-93					53
-106	106		13.10		1.10	-51					-91		11.80		-0.20	51
-104	104		*13.07*		1.07	-49					-89		11.80		-0.20	49
-102	102		*13.04*		1.04	-47					-87		12.70		0.70	47
-100	100		13.00		1.00	-45					-85		13.20		1.20	45
-98	98		*12.54*		0.54	-43					-83		*13.35*		1.35	43
-96	96		*12.67*		0.67	-41					-81		13.50		1.50	41
-94	94		12.80		0.80	-39					-79		*13.50*		1.50	39
-92	92		*12.63*		0.63	-37					-77		13.50		1.50	37
-90	90		*12.47*		0.47	-35					-75		*13.50*		1.50	35
-88	88		12.30		0.30	-33					-73		13.50		1.50	33
-86	86		*12.17*		0.17	-31					-71		*13.56*		1.56	31
-84	84		*12.04*		0.04	-29					-69		*13.63*		1.63	29
-82	82		11.90		-0.10	-27					-67		13.70		1.70	27
-80	80		*12.07*		0.07	-25					-65		*13.76*		1.76	25
-78	78		*12.24*		0.23	-23					-63		*13.83*		1.83	23
-76	76		12.40		0.40	-21					-61		13.90		1.90	21
-74	74		*12.57*		0.57	-19					-59		*13.93*		1.93	19
-72	72		*12.74*		0.73	-17					-57		*13.97*		1.97	17
-70	70		12.90		0.90	-15					-55		14.00		2.00	15
-68	68		*13.00*		1.00	-13					-53		*14.03*		2.03	13
-66	66		*13.10*		1.10	-11					-51		*14.07*		2.07	11
-64	64		13.20		1.20	-9					-49		14.10		2.10	9
-62	62		*13.26*		1.26	-7					-47		*14.13*		2.13	7
-60	60		*13.33*		1.33	-5					-45		*14.17*		2.17	5
-58	58		13.40		1.40	-3					-43		14.20		2.20	3
-56	56		*13.43*		1.43	-1					-41		*14.17*		2.17	1
-54	54		*13.47*		1.47	1					-39		*14.14*		2.14	-1
-52	52		13.50		1.50	3					-37		14.10		2.10	-3
-50	50		*13.50*		1.50	5					-35		*14.10*		2.10	-5
-48	48		*13.50*		1.50	7					-33		*14.10*		2.10	-7
-46	46		13.50		1.50	9					-31		14.10		2.10	-9
-44	44		*13.45*		1.45	11					-29		*14.10*		2.10	-11
-42	42		13.40		1.40	13					-27		*14.10*		2.10	-13
-40	40		13.40		1.40	15	10.30		-1.70		-25	13.10	14.10	1.10	2.10	-15
-38	38		13.80		1.80	17	9.90		-2.10		-23	13.20	*14.10*	1.20	2.10	-17
-36	36		13.20		1.20	19	9.80		-2.20		-21	13.60	14.10	1.60	2.10	-19
-34	34		13.00		1.00	21	10.50		-1.50		-19	13.50	14.10	1.50	2.10	-21
-32	32		12.90		0.90	23	10.50		-1.50		-17	13.20	13.90	1.20	1.90	-23
-30	30		12.60		0.60	25	11.20		-0.80		-15	12.80	14.00	0.80	2.00	-25
-28	28		12.20		0.20	27	12.20	6.70	0.20	-5.30	-13	12.40	13.80	0.40	1.80	-27
-26	26		12.00		0.00	29	12.70	7.80	0.70	-4.20	-11	12.30	13.60	0.30	1.60	-29
-24	24		11.50		-0.50	31	12.20	9.40	0.20	-2.60	-9	12.20	13.30	0.20	1.30	-31
-22	22		11.50		-0.50	33	11.60	10.70	-0.40	-1.30	-7	12.10	13.00	0.10	1.00	-33
-20	20		10.80		-1.20	35	11.10	10.60	-0.90	-1.40	-5	11.90	12.80	-0.10	0.80	-35
-18	18		10.40		-1.60	37	10.80	10.40	-1.20	-1.60	-3	11.50	12.70	-0.50	0.70	-37
-16	16		9.80		-2.20	39	10.70	10.50	-1.30	-1.50	-1	11.10	12.30	-0.90	0.30	-39
-14	14	5.90	9.50	-6.10	-2.50	41	10.40	10.30	-1.60	-1.70	1	11.10	12.00	-0.90	0.00	-41
-12	12	5.80	8.70	-6.20	-3.30	43	10.00	9.90	-2.00	-2.10	3	11.50	11.60	-0.50	-0.40	-43
-10	10	5.10	8.00	-6.90	-4.00	45	8.80	9.50	-3.20	-2.50	5	11.00	11.30	-1.00	-0.70	-45
-8	8	4.60	7.20	-7.40	-4.80	47	7.60	9.20	-4.40	-2.80	7	10.50	10.60	-1.50	-1.40	-47
-6	6	3.80	5.80	-8.20	-6.20	49	6.60	8.70	-5.40	-3.30	9	9.20	9.70	-2.80	-2.30	-49
-4	4	3.80	4.90	-8.20	-7.10	51	6.40	7.90	-5.60	-4.10	11	8.40	8.80	-3.60	-3.20	-51
-2	2	3.60	4.40	-8.40	-7.60	53	5.60	7.20	-6.40	-4.80	13	7.30	7.60	-4.70	-4.40	-53
0	0	3.80	3.80	-8.20	-8.20	55	5.20	6.00	-6.80	-6.00	15	6.40	8.00	-5.60	-4.00	-55
0	0	3.80	3.80	-8.20	-8.20	60	6.20	4.90	-5.80	-7.10	20	5.60	6.40	-6.40	-5.60	-60
2	-2	3.90	3.80	-8.10	-8.20	62	6.90	5.60	-5.10	-6.40	22	7.00	7.40	-5.00	-4.60	-62
4	-4	4.00	5.10	-8.00	-6.90	64	8.00	7.50	-4.00	-4.50	24	8.50	8.80	-3.50	-3.20	-64
6	-6	5.40	6.50	-6.60	-5.50	66	9.00	8.60	-3.00	-3.40	26	8.80	10.20	-3.20	-1.80	-66
8	-8	6.80	7.10	-5.20	-4.90	68	9.80	10.10	-2.20	-1.90	28	10.00	10.40	-2.00	-1.60	-68
10	-10	8.00	7.60	-4.00	-4.40	70	11.00	10.80	-1.00	-1.20	30	10.70	10.30	-1.30	-1.70	-70
12	-12	8.80	8.80	-3.20	-3.20	72	11.20	11.00	-0.80	-1.00	32	11.50	10.70	-0.50	-1.30	-72
14	-14	9.80	9.60	-2.20	-2.40	74	11.30	11.00	-0.70	-1.00	34	11.80	11.00	-0.20	-1.00	-74
16	-16	10.80	11.20	-1.20	-0.80	76	11.50	11.20	-0.50	-0.80	36		10.00		-2.00	-76
18	-18	11.30	11.70	-0.70	-0.30	78	11.60	11.30	-0.40	-0.70	38		9.50		-2.50	-78
20	-20	11.40	11.80	-0.60	-0.20	80	11.80	11.30	-0.20	-0.70	40		9.10		-2.90	-80
22	-22	11.20		-0.80		82		11.50		-0.50	42		8.40		-3.60	-82.00
24	-24	11.50		-0.50		84		11.90		-0.10	44					
26	-26	11.30		-0.70		86					46					
28	-28	11.80		-0.20		88					48					
30	-30					90					50					

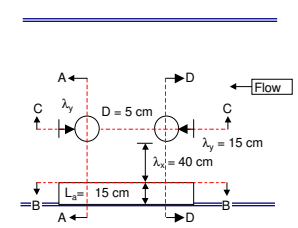
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	6.40	-5.60
2	6.30	-5.70
4	6.70	-5.30
6	7.90	-4.10
8	8.70	-3.30
10	9.50	-2.50
12	10.70	-1.30
14	11.80	-0.20
16	11.90	-0.10
18	11.90	-0.10
20		

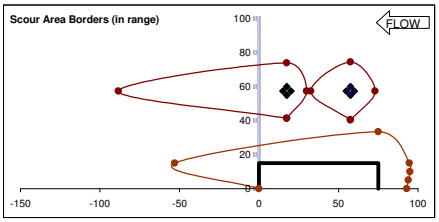
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	18
SB_{af2}	Abutment Front (W+5 cm)	19
SB_{af3}	Abutment Front (W+10 cm)	20
SB_{af}	Abutment Corner Front	19.5
SB_{ar}	Abutment Corner Right	18.5

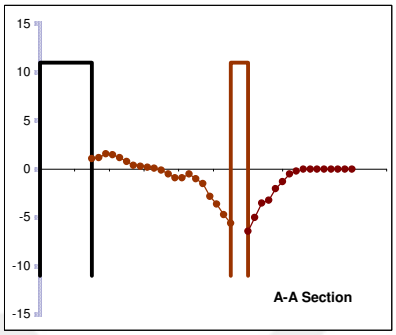
		P1	P2
SB_{pl}	Pier Left	14.5	13.5
SB_{pf}	Pier Front	13	10
SB_{pr}	Pier Right	14.5	14
SB_{pb}	Pier Rear	22.5	103.5

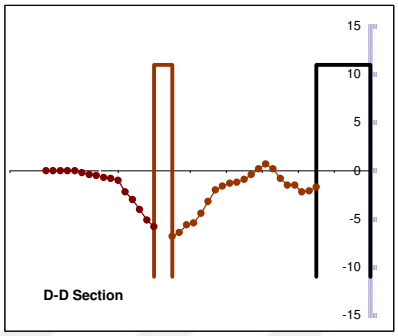


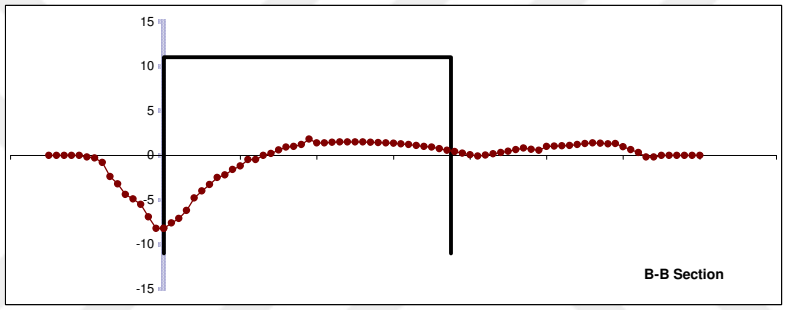
Experiment No : **E141**

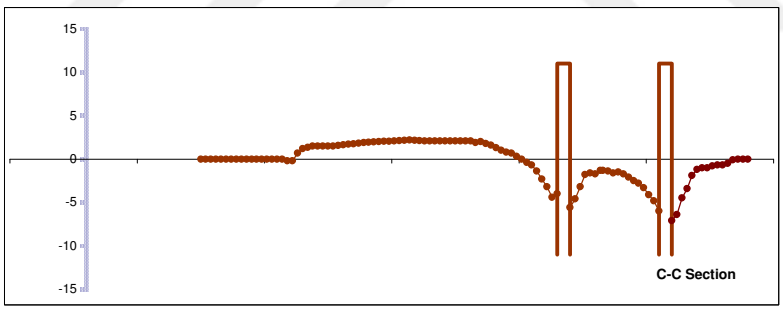


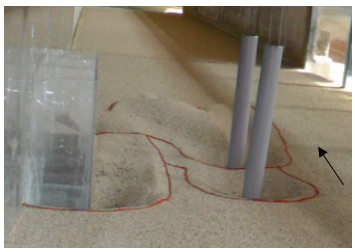


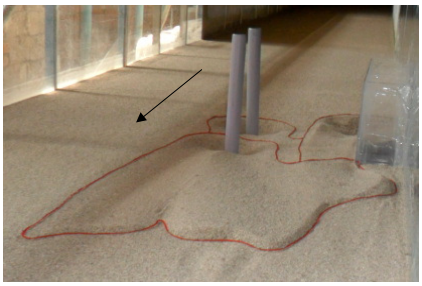






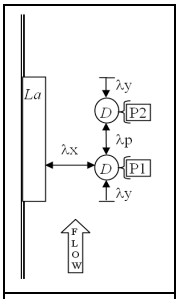


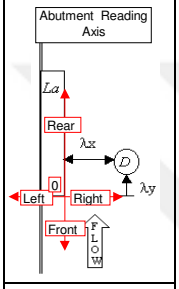


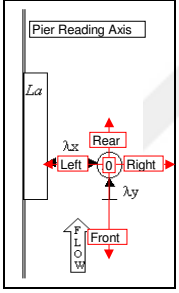


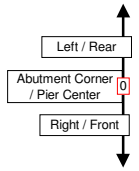
Experiment No : **E142**

Date :	06.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	15
λ_p (cm) :	35









This color was used for raw data readings

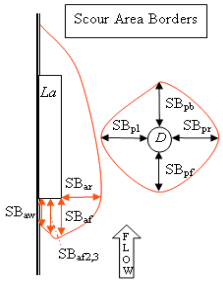
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-75					-115					75
-138	138					-73					-113					73
-136	136					-71					-111					71
-134	134					-69					-109					69
-132	132					-67					-107					67
-130	130					-65					-105					65
-128	128		12.00		0.00	-63					-103					63
-126	126		12.70		0.70	-61					-101					61
-124	124		13.80		1.80	-59					-99					59
-122	122		13.60		1.60	-57					-97					57
-120	120		14.20		2.20	-55					-95					55
-118	118		14.30		2.30	-53					-93					53
-116	116		14.30		2.30	-51					-91					51
-114	114		14.40		2.40	-49					-89					49
-112	112		14.20		2.20	-47					-87					47
-110	110		14.20		2.20	-45					-85					45
-108	108		14.10		2.10	-43					-83					43
-106	106		14.10		2.10	-41					-81					41
-104	104		13.90		1.90	-39					-79					39
-102	102		14.10		2.10	-37					-77					37
-100	100		14.10		2.10	-35					-75					35
-98	98		13.80		1.80	-33					-73					33
-96	96		13.60		1.60	-31					-71					31
-94	94		13.30		1.30	-29					-69					29
-92	92		13.10		1.10	-27					-67		12.00		0.00	27
-90	90		12.90		0.90	-25					-65		12.30		0.30	25
-88	88		12.70		0.70	-23					-63		12.40		0.40	23
-86	86		12.50		0.50	-21					-61		12.60		0.60	21
-84	84		12.30		0.30	-19					-59		12.70		0.70	19
-82	82		12.10		0.10	-17					-57		12.80		0.80	17
-80	80		12.10		0.10	-15					-55		12.80		0.80	15
-78	78		12.00		0.00	-13					-53		12.90		0.90	13
-76	76		12.00		0.00	-11					-51		13.00		1.00	11
-74	74		12.30		0.30	-9					-49		13.20		1.20	9
-72	72		12.40		0.40	-7					-47		13.40		1.40	7
-70	70		*12.65*		0.65	-5					-45		13.70		1.70	5
-68	68		12.90		0.90	-3					-43		*13.85*		1.85	3
-66	66		*12.85*		0.85	-1					-41		14.00		2.00	1
-64	64		12.80		0.80	1					-39		*14.05*		2.05	-1
-62	62		*12.85*		0.85	3					-37		14.10		2.10	-3
-60	60		12.90		0.90	5					-35		*14.25*		2.25	-5
-58	58		*12.90*		0.90	7					-33		14.40		2.40	-7
-56	56		12.90		0.90	9					-31		*14.35*		2.35	-9
-54	54		*12.95*		0.95	11					-29		14.30		2.30	-11
-52	52		13.00		1.00	13					-27		*14.35*		2.35	-13
-50	50		*13.05*		1.05	15	9.50		-2.50		-25	12.40	14.40	0.40	2.40	-15
-48	48		13.10		1.10	17	9.30		-2.70		-23	12.80	*14.45*	0.80	2.45	-17
-46	46		*12.95*		0.95	19	9.00		-3.00		-21	12.90	14.50	0.90	2.50	-19
-44	44		12.80		0.80	21	8.90		-3.10		-19	12.70	*14.50*	0.70	2.50	-21
-42	42		12.80		0.80	23	8.80		-3.20		-17	12.30	14.50	0.30	2.50	-23
-40	40		12.70		0.70	25	9.20		-2.80		-15	*12.15*	*14.50*	0.15	2.50	-25
-38	38		12.50		0.50	27	9.60		-2.40		-13	12.00	14.50	0.00	2.50	-27
-36	36		12.20		0.20	29	10.50		-1.50		-11	*11.90*	*14.50*	-0.10	2.50	-29
-34	34		11.90		-0.10	31	12.20		0.20		-9	11.80	14.50	-0.20	2.50	-31
-32	32		11.60		-0.40	33	11.90		-0.10		-7	*11.90*	*14.50*	-0.10	2.50	-33
-30	30		11.20		-0.80	35	11.30		-0.70		-5	12.00	14.50	0.00	2.50	-35
-28	28		11.00		-1.00	37	11.30		-0.70		-3	*11.65*	*14.35*	-0.35	2.35	-37
-26	26		10.70		-1.30	39	11.70	11.30	-0.30	-0.70	-1	11.30	14.20	-0.70	2.20	-39
-24	24		10.40		-1.60	41	11.20	11.60	-0.80	-0.40	1	*11.25*	14.20	-0.75	2.20	-41
-22	22		10.00		-2.00	43	11.30	11.40	-0.70	-0.60	3	11.20	13.90	-0.80	1.90	-43
-20	20		9.60		-2.40	45	11.80	11.30	-0.20	-0.70	5	*11.35*	13.70	-0.65	1.70	-45
-18	18		9.20		-2.80	47	11.80	11.20	-0.20	-0.80	7	11.50	13.50	-0.50	1.50	-47
-16	16		8.80		-3.20	49	11.80	10.90	-0.20	-1.10	9	*11.50*	12.30	-0.50	0.30	-49
-14	14	5.90	8.30	-6.10	-3.70	51	11.70	10.70	-0.30	-1.30	11	11.50	12.90	-0.50	0.90	-51
-12	12	5.10	7.70	-6.90	-4.30	53	11.80	10.20	-0.20	-1.80	13	11.50	12.70	-0.50	0.70	-53
-10	10	4.40	7.00	-7.60	-5.00	55	11.00	9.80	-1.00	-2.20	15	11.40	12.10	-0.60	0.10	-55
-8	8	3.70	5.60	-8.30	-6.40	57	9.80	9.30	-2.20	-2.70	17	10.50	11.80	-1.50	-0.20	-57
-6	6	3.40	4.40	-8.60	-7.60	59	8.90	8.80	-3.10	-3.20	19	9.60	11.00	-2.40	-1.00	-59
-4	4	3.00	3.90	-9.00	-8.10	61	7.90	8.20	-4.10	-3.80	21	8.60	10.00	-3.40	-2.00	-61
-2	2	3.10	3.10	-8.90	-8.90	63	5.80	7.50	-6.20	-4.50	23	8.20	9.20	-3.80	-2.80	-63
0	0	2.90	2.90	-9.10	-9.10	65	5.50	7.20	-6.50	-4.80	25	7.40	8.80	-4.60	-3.20	-65
0	0	2.90	2.90	-9.10	-9.10	70	6.00	4.50	-6.00	-7.50	30	7.30	7.20	-4.70	-4.80	-70
2	-2	2.90	4.30	-9.10	-7.70	72	6.50	6.40	-5.50	-5.60	32	8.50	8.00	-3.50	-4.00	-72
4	-4	3.30	5.00	-8.70	-7.00	74	7.70	7.80	-4.30	-4.20	34	9.40	9.40	-2.60	-2.60	-74
6	-6	3.90	6.40	-8.10	-5.60	76	9.00	9.10	-3.00	-2.90	36	9.90	10.80	-2.10	-1.20	-76
8	-8	5.10	7.30	-6.90	-4.70	78	9.70	10.40	-2.30	-1.60	38	10.70	11.50	-1.30	-0.50	-78
10	-10	6.30	8.40	-5.70	-3.60	80	10.50	11.70	-1.50	-0.30	40	11.40		-0.60		-80
12	-12	8.00	9.50	-4.00	-2.50	82	11.70	12.00	-0.30	0.00	42	11.80		-0.20		-82
14	-14	9.10	10.50	-2.90	-1.50	84	12.00		0.00		44					-84
16	-16	9.70	11.80	-2.30	-0.20	86					46					-86
18	-18	10.20		-1.80		88					48					-88
20	-20	10.80		-1.20		90					50					-90
22	-22	11.50		-0.50		92					52					
24	-24	11.60		-0.40		94					54					
26	-26	11.60		-0.40		96					56					
28	-28	11.80		-0.20		98					58					
30	-30					100					60					

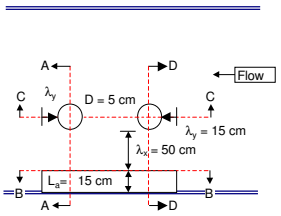
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	5.90	-6.10
2	5.80	-6.20
4	6.10	-5.90
6	7.30	-4.70
8	8.20	-3.80
10	8.90	-3.10
12	9.70	-2.30
14	11.00	-1.00
16	11.80	-0.20
18		
20		

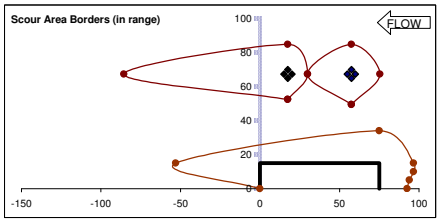
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	17.5
SB_{af2}	Abutment Front (W+5 cm)	19
SB_{af3}	Abutment Front (W+10 cm)	21.5
SB_{af}	Abutment Corner Front	21.5
SB_{ar}	Abutment Corner Right	19

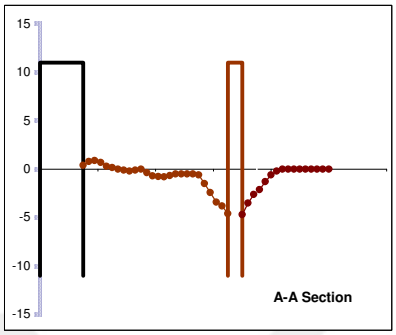
		P1	P2
SB_{pl}	Pier Left	15.5	12.5
SB_{pf}	Pier Front	15.5	10
SB_{pr}	Pier Right	15	15
SB_{pb}	Pier Rear	25	100.5

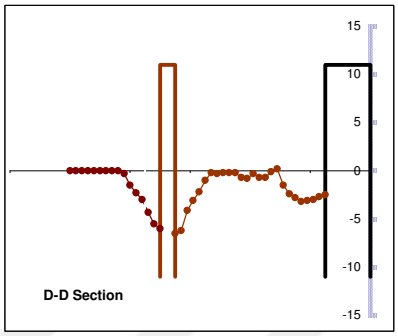


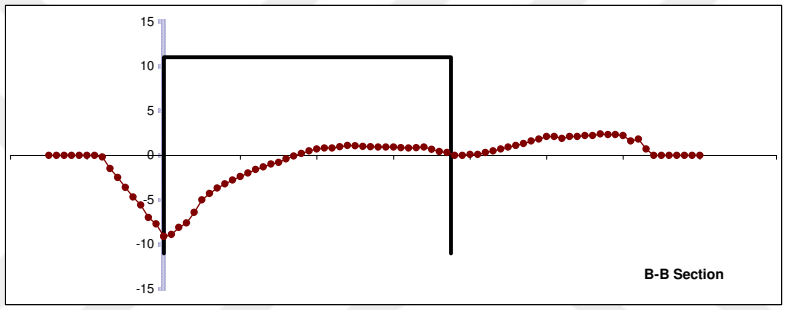
Experiment No : **E142**

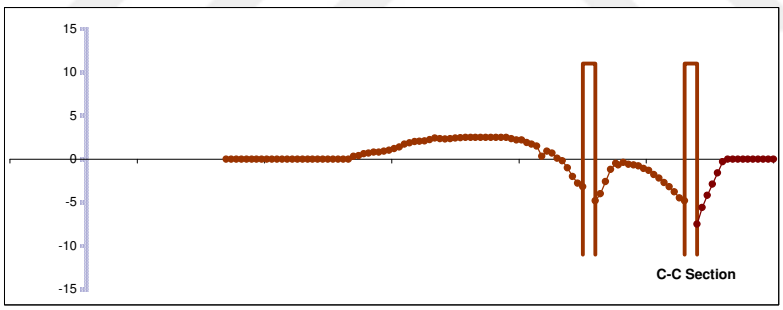


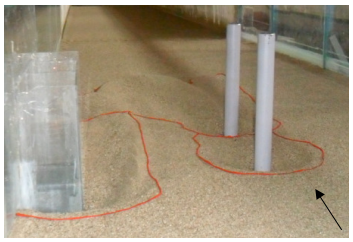


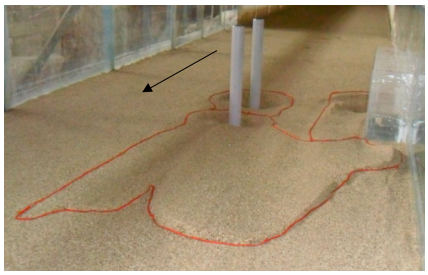






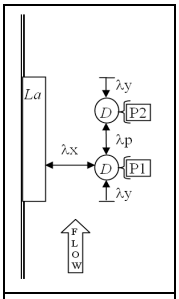


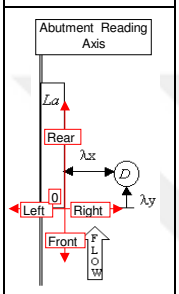


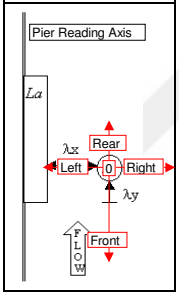


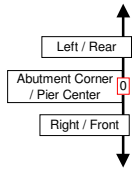
Experiment No : **E143**

Date :	10.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	15
λ_p (cm) :	35









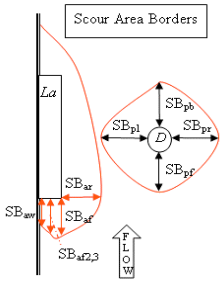
This color was used for raw data readings

This color was used for values enterpolated to sketch

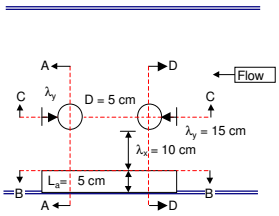
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140					-125					-165					125
-138	138					-123					-163					123
-136	136					-121					-161					121
-134	134					-119					-159					119
-132	132					-117					-157					117
-130	130					-115					-155					115
-128	128					-113					-153					113
-126	126					-111					-151					111
-124	124					-109					-149					109
-122	122					-107					-147					107
-120	120					-105					-145					105
-118	118					-103					-143					103
-116	116					-101					-141					101
-114	114					-99					-139					99
-112	112					-97					-137					97
-110	110					-95					-135					95
-108	108					-93					-133					93
-106	106					-91					-131					91
-104	104					-89					-129					89
-102	102		11.80		-0.20	-87					-127					87
-100	100		12.90		0.90	-85					-125					85
-98	98		13.90		1.90	-83					-123					83
-96	96		13.70		1.70	-81					-121					81
-94	94		13.60		1.60	-79					-119					79
-92	92		13.30		1.30	-77					-117					77
-90	90		13.00		1.00	-75					-115					75
-88	88		12.70		0.70	-73					-113					73
-86	86		12.30		0.30	-71					-111					71
-84	84		11.80		-0.20	-69					-109					69
-82	82		11.60		-0.40	-67					-107					67
-80	80		11.40		-0.60	-65					-105					65
-78	78		11.20		-0.80	-63					-103					63
-76	76		11.00		-1.00	-61					-101					61
-74	74		10.90		-1.10	-59					-99					59
-72	72		11.00		-1.00	-57					-97					57
-70	70		11.10		-0.90	-55					-95					55
-68	68		10.90		-1.10	-53					-93					53
-66	66		10.60		-1.40	-51					-91					51
-64	64		10.40		-1.60	-49					-89					49
-62	62		10.30		-1.70	-47					-87					47
-60	60		10.40		-1.60	-45					-85					45
-58	58		10.80		-1.20	-43					-83					43
-56	56		11.10		-0.90	-41					-81					41
-54	54		11.00		-1.00	-39					-79					39
-52	52		11.10		-0.90	-37					-77					37
-50	50		11.20		-0.80	-35					-75					35
-48	48		11.00		-1.00	-33					-73					33
-46	46		10.90		-1.10	-31					-71					31
-44	44		10.80		-1.20	-29					-69					29
-42	42		10.60		-1.40	-27					-67		12.00		0.00	27
-40	40		10.60		-1.40	-25					-65		12.70		0.70	25
-38	38		10.50		-1.50	-23					-63		12.90		0.90	23
-36	36		10.30		-1.70	-21					-61		13.20		1.20	21
-34	34		10.30		-1.70	-19					-59		14.00		2.00	19
-32	32		9.90		-2.10	-17					-57		14.10		2.10	17
-30	30		9.90		-2.10	-15					-55		14.30		2.30	15
-28	28		9.80		-2.20	-13					-53		14.30		2.30	13
-26	26		9.50		-2.50	-11					-51		14.10		2.10	11
-24	24		9.10		-2.90	-9		12.70		0.70	-49		13.80		1.80	9
-22	22		8.80		-3.20	-7		12.60		0.60	-47		13.70		1.70	7
-20	20		8.60		-3.40	-5		12.50		0.50	-45		13.50		1.50	5
-18	18		8.30		-3.70	-3		12.40		0.40	-43		13.40		1.40	3
-16	16		8.10		-3.90	-1		12.30		0.30	-41		13.20		1.20	1
-14	14		8.20		-3.80	1		12.00		0.00	-39		12.90		0.90	-1
-12	12		8.30		-3.70	3		11.80		-0.20	-37		12.40		0.40	-3
-10	10		8.40		-3.60	5	8.50	11.20	-3.50	-0.80	-35	10.70	12.00	-1.30	0.00	-5
-8	8		8.90		-3.10	7	8.30	10.40	-3.70	-1.60	-33	10.40	11.80	-1.60	-0.20	-7
-6	6	9.60	10.20	-2.40	-1.80	9	8.00	9.40	-4.00	-2.60	-31	9.30	10.70	-2.70	-1.30	-9
-4	4	9.70	9.30	-2.30	-2.70	11	7.60	8.50	-4.40	-3.50	-29	8.70	9.90	-3.30	-2.10	-11
-2	2	8.70	8.70	-3.30	-3.30	13	7.00	8.00	-5.00	-4.00	-27	8.30	9.00	-3.70	-3.00	-13
0	0	8.40	8.40	-3.60	-3.60	15	6.00	7.90	-6.00	-4.10	-25	7.30	8.90	-4.70	-3.10	-15
0	0	8.40	8.40	-3.60	-3.60	20	6.20	5.60	-5.80	-6.40	-20	7.30	7.30	-4.70	-4.70	-20
2	-2	8.10	9.00	-3.90	-3.00	22	7.30	6.70	-4.70	-5.30	-18	8.50	8.40	-3.50	-3.60	-22
4	-4	9.00	10.40	-3.00	-1.60	24	8.80	8.00	-3.20	-4.00	-16	9.50	10.00	-2.50	-2.00	-24
6	-6	9.80	10.80	-2.20	-1.20	26	10.10	9.10	-1.90	-2.90	-14	10.00	11.30	-2.00	-0.70	-26
8	-8	10.00	10.70	-2.00	-1.30	28	11.10	9.80	-0.90	-2.20	-12	10.40	12.70	-1.60	0.70	-28
10	-10	10.10	10.60	-1.90	-1.40	30	11.40	10.00	-0.60	-2.00	-10	11.10	*12.70*	-0.90	0.70	-30
12	-12	10.00	11.20	-2.00	-0.80	32	11.50	10.40	-0.50	-1.60	-8	11.60		-0.40		-32
14	-14	10.20	11.40	-1.80	-0.60	34	11.60	10.40	-0.40	-1.60	-6	11.80		-0.20		-34
16	-16	10.40	11.40	-1.60	-0.60	36	11.70	10.60	-0.30	-1.40	-4					-36
18	-18	10.70	*11.40*	-1.30	-0.60	38	11.80	10.80	-0.20	-1.20	-2					-38
20	-20	11.00	11.40	-1.00	-0.60	40		10.90		-1.10	0					-40
22	-22	11.10	*11.60*	-0.90	-0.40	42		11.20		-0.80	2					
24	-24	11.30	11.80	-0.70	-0.20	44		11.40		-0.60	4					
26	-26	11.50		-0.50		46		11.50		-0.50	6					
28	-28	11.50		-0.50		48		11.80		-0.20	8					
30	-30	11.60		-0.40		50					10					

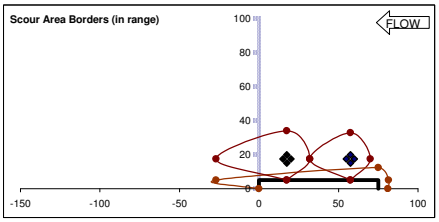
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.70	-2.30
2	9.40	-2.60
4	10.40	-1.60
6	10.50	-1.50
8	10.80	-1.20
10	11.00	-1.00
12	11.40	-0.60
14	11.50	-0.50
16	11.60	-0.40
18	11.80	-0.20
20		

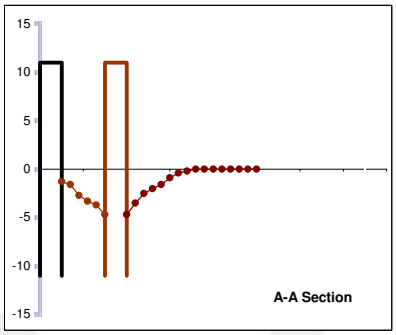
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	6	
SB_{af}	Abutment Corner Front	6.5	
SB_{ar}	Abutment Corner Right	7.5	
		P1	P2
SB_{pl}	Pier Left	*10*	*10*
SB_{pf}	Pier Front	10	12
SB_{pr}	Pier Right	13	14
SB_{pb}	Pier Rear	23	42

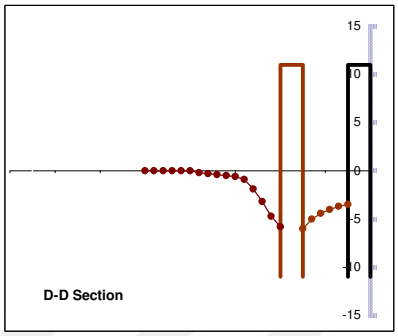


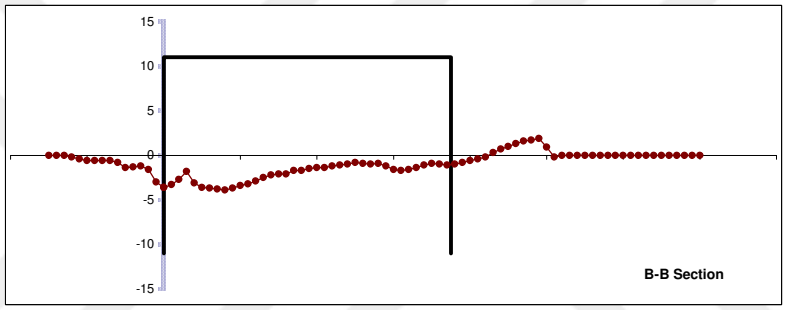
Experiment No : **E143**

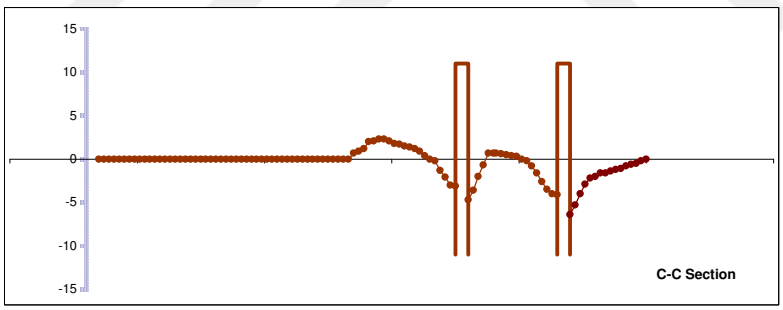






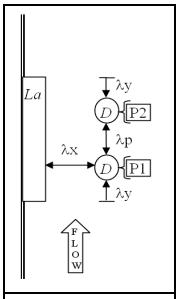


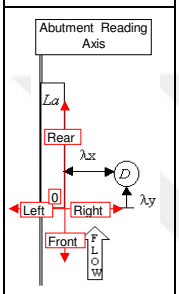


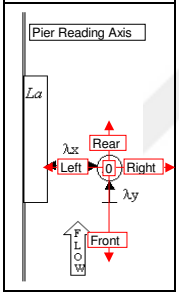


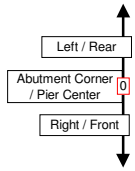
Experiment No : **E144**

Date :	12.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	15
λ_p (cm) :	35









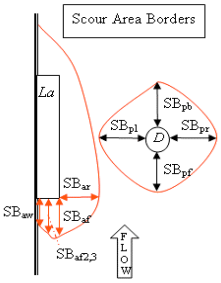
This color was used for raw data readings

This color was used for values enterpolated to sketch

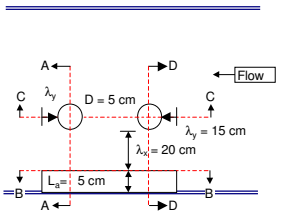
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-115					-155					115
-138	138					-113					-153					113
-136	136					-111					-151					111
-134	134					-109					-149					109
-132	132					-107					-147					107
-130	130					-105					-145					105
-128	128					-103					-143					103
-126	126					-101					-141					101
-124	124					-99					-139					99
-122	122					-97					-137					97
-120	120					-95					-135					95
-118	118					-93					-133					93
-116	116					-91					-131					91
-114	114					-89					-129					89
-112	112					-87					-127					87
-110	110					-85					-125					85
-108	108					-83					-123					83
-106	106					-81					-121					81
-104	104					-79					-119					79
-102	102					-77					-117					77
-100	100					-75					-115					75
-98	98		11.80		-0.20	-73					-113					73
-96	96		11.60		-0.40	-71					-111					71
-94	94		11.60		-0.40	-69					-109					69
-92	92		11.60		-0.40	-67					-107					67
-90	90		11.30		-0.70	-65					-105					65
-88	88		11.20		-0.80	-63					-103					63
-86	86		11.00		-1.00	-61					-101					61
-84	84		10.80		-1.20	-59					-99					59
-82	82		10.40		-1.60	-57					-97					57
-80	80		10.40		-1.60	-55					-95					55
-78	78		10.30		-1.70	-53					-93					53
-76	76		*10.45*		-1.55	-51					-91					51
-74	74		10.60		-1.40	-49					-89					49
-72	72		*10.65*		-1.35	-47					-87					47
-70	70		10.70		-1.30	-45					-85					45
-68	68		*10.65*		-1.35	-43					-83					43
-66	66		10.60		-1.40	-41					-81					41
-64	64		*10.55*		-1.45	-39					-79					39
-62	62		10.50		-1.50	-37					-77					37
-60	60		*10.45*		-1.55	-35					-75					35
-58	58		10.40		-1.60	-33					-73					33
-56	56		*10.35*		-1.65	-31					-71					31
-54	54		10.30		-1.70	-29					-69					29
-52	52		*10.20*		-1.80	-27					-67					27
-50	50		10.10		-1.90	-25					-65					25
-48	48		*10.00*		-2.00	-23					-63					23
-46	46		9.90		-2.10	-21					-61					21
-44	44		*9.85*		-2.15	-19					-59					19
-42	42		9.80		-2.20	-17					-57		11.80		-0.20	17
-40	40		*9.70*		-2.30	-15					-55		12.20		0.20	15
-38	38		9.60		-2.40	-13					-53		13.40		1.40	13
-36	36		9.70		-2.30	-11					-51		13.70		1.70	11
-34	34		9.90		-2.10	-9					-49		13.70		1.70	9
-32	32		9.90		-2.10	-7					-47		13.80		1.80	7
-30	30		10.10		-1.90	-5					-45		13.90		1.90	5
-28	28		10.10		-1.90	-3					-43		14.10		2.10	3
-26	26		9.90		-2.10	-1					-41		13.90		1.90	1
-24	24		9.70		-2.30	1		12.90		0.90	-39		13.80		1.80	-1
-22	22		9.60		-2.40	3		12.80		0.80	-37		13.80		1.80	-3
-20	20		9.40		-2.60	5	9.40	12.80	-2.60	0.80	-35	10.30	13.60	-1.70	1.60	-5
-18	18		9.20		-2.80	7	9.40	12.80	-2.60	0.80	-33	10.40	13.50	-1.60	1.50	-7
-16	16		9.40		-2.60	9	8.80	12.50	-3.20	0.50	-31	10.40	13.30	-1.60	1.30	-9
-14	14		9.30		-2.70	11	8.50	12.40	-3.50	0.40	-29	10.30	12.80	-1.70	0.80	-11
-12	12		9.60		-2.40	13	8.80	12.00	-3.20	0.00	-27	10.50	12.60	-1.50	0.60	-13
-10	10		9.70		-2.30	15	8.70	11.50	-3.30	-0.50	-25	10.60	12.10	-1.40	0.10	-15
-8	8		10.90		-1.10	17	9.90	10.90	-2.10	-1.10	-23	10.40	11.70	-1.60	-0.30	-17
-6	6	8.90	10.20	-3.10	-1.80	19	8.80	10.10	-3.20	-1.90	-21	9.30	10.80	-2.70	-1.20	-19
-4	4	8.50	9.30	-3.50	-2.70	21	8.20	9.30	-3.80	-2.70	-19	8.80	10.10	-3.20	-1.90	-21
-2	2	7.90	8.00	-4.10	-4.00	23	6.90	8.20	-5.10	-3.80	-17	8.00	9.60	-4.00	-2.40	-23
0	0	7.60	7.60	-4.40	-4.40	25	6.40	7.40	-5.60	-4.60	-15	7.00	9.10	-5.00	-2.90	-25
0	0	7.60	7.60	-4.40	-4.40	30	6.40	5.70	-5.60	-6.30	-10	7.40	7.50	-4.60	-4.50	-30
2	-2	8.50	8.20	-3.50	-3.80	32	7.70	6.90	-4.30	-5.10	-8	9.00	8.70	-3.00	-3.30	-32
4	-4	8.80	9.10	-3.20	-2.90	34	8.80	8.20	-3.20	-3.80	-6	9.50	9.90	-2.50	-2.10	-34
6	-6	9.90	10.30	-2.10	-1.70	36	10.00	9.60	-2.00	-2.40	-4	10.10	11.10	-1.90	-0.90	-36
8	-8	10.10	10.70	-1.90	-1.30	38	11.20	10.50	-0.80	-1.50	-2	11.20	12.70	-0.80	0.70	-38
10	-10	10.20	11.30	-1.80	-0.70	40	11.70	10.50	-0.30	-1.50	0	11.50	*12.70*	-0.50	0.70	-40
12	-12	10.00	*11.35*	-2.00	-0.65	42	11.80	10.80	-0.20	-1.20	2	11.60		-0.40		-42
14	-14	10.40	11.40	-1.60	-0.60	44		11.30		-0.70	4	11.80		-0.20		-44
16	-16	10.20	*11.60*	-1.80	-0.40	46		11.40		-0.60	6					-46
18	-18	10.40	11.80	-1.60	-0.20	48		11.50		-0.50	8					-48
20	-20	10.60		-1.40		50		11.80		-0.20	10					-50
22	-22	10.60		-1.40		52					12					
24	-24	10.80		-1.20		54					14					
26	-26	10.90		-1.10		56					16					
28	-28	11.30		-0.70		58					18					
30	-30	11.40		-0.60		60					20					

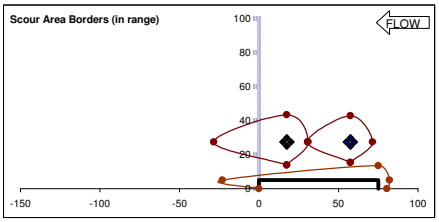
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.50	-3.50
2	8.80	-3.20
4	10.00	-2.00
6	10.70	-1.30
8	10.80	-1.20
10	10.90	-1.10
12	11.10	-0.90
14	11.20	-0.80
16	11.30	-0.70
18	11.40	-0.60
20	11.60	-0.40

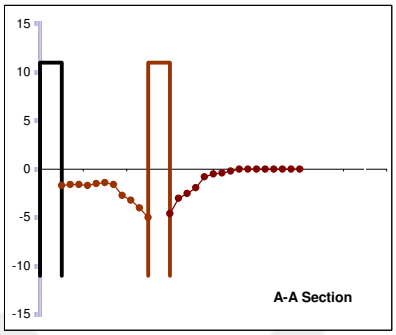
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	5.5	
SB_{af}	Abutment Corner Front	7	
SB_{ar}	Abutment Corner Right	8.5	
		P1	P2
SB_{pl}	Pier Left	9.5	11
SB_{pf}	Pier Front	11.5	11
SB_{pr}	Pier Right	13	13.5
SB_{pb}	Pier Rear	24.5	43.5

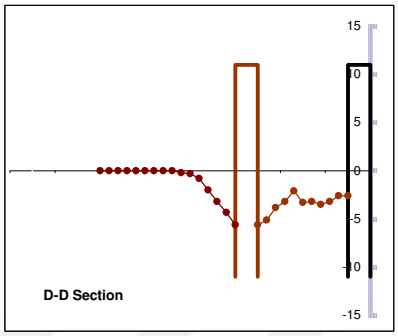


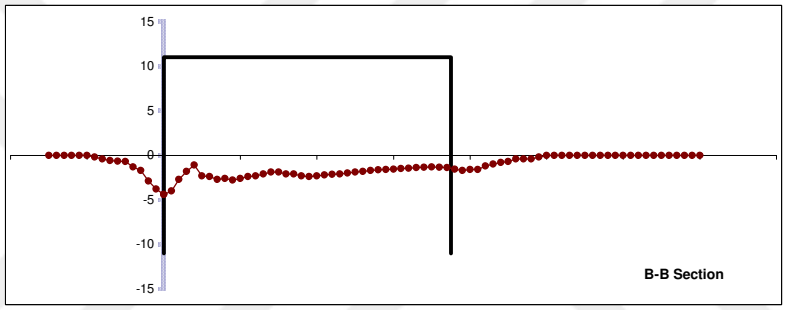
Experiment No : **E144**

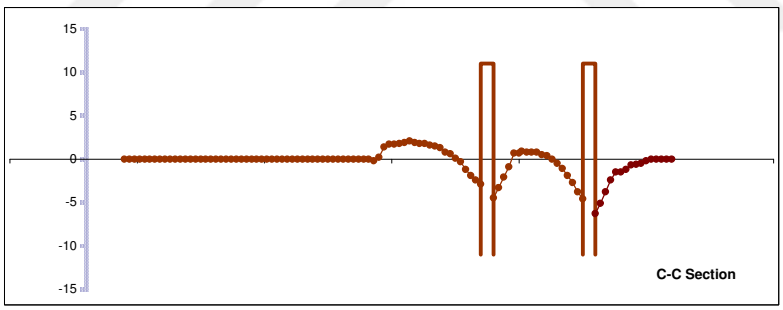


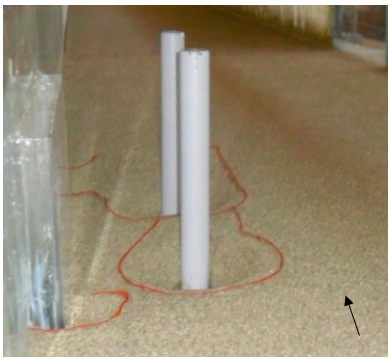


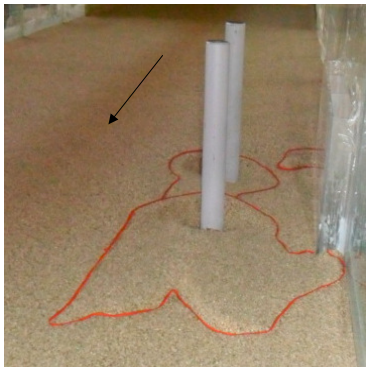






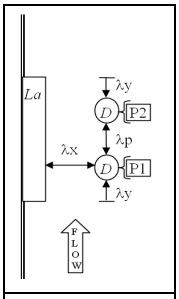


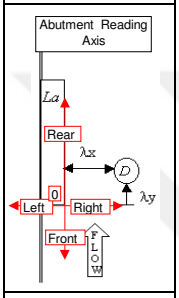


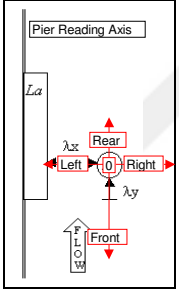


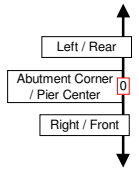
Experiment No : **E145**

Date :	18.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	15
λ_p (cm) :	35









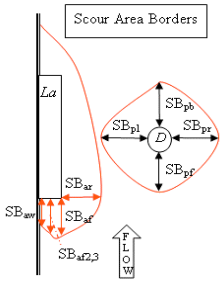
This color was used for raw data readings

This color was used for values enterpolated to sketch

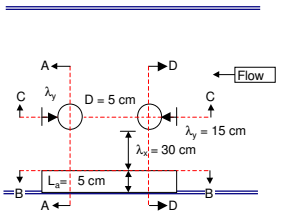
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-105					-145					105
-138	138					-103					-143					103
-136	136					-101					-141					101
-134	134					-99					-139					99
-132	132					-97					-137					97
-130	130					-95					-135					95
-128	128					-93					-133					93
-126	126					-91					-131					91
-124	124					-89					-129					89
-122	122					-87					-127					87
-120	120					-85					-125					85
-118	118					-83					-123					83
-116	116					-81					-121					81
-114	114					-79					-119					79
-112	112					-77					-117					77
-110	110					-75					-115					75
-108	108					-73					-113					73
-106	106					-71					-111					71
-104	104					-69					-109					69
-102	102					-67					-107					67
-100	100					-65					-105					65
-98	98					-63					-103					63
-96	96		12.00		0.00	-61					-101					61
-94	94		12.30		0.30	-59					-99					59
-92	92		12.40		0.40	-57					-97					57
-90	90		12.40		0.40	-55					-95					55
-88	88		12.30		0.30	-53					-93					53
-86	86		12.10		0.10	-51					-91					51
-84	84		11.90		-0.10	-49					-89					49
-82	82		11.70		-0.30	-47					-87					47
-80	80		11.50		-0.50	-45					-85					45
-78	78		11.30		-0.70	-43					-83					43
-76	76		11.50		-0.50	-41					-81					41
-74	74		*11.65*		-0.35	-39					-79					39
-72	72		11.80		-0.20	-37					-77					37
-70	70		*11.80*		-0.20	-35					-75					35
-68	68		11.80		-0.20	-33					-73					33
-66	66		*11.75*		-0.25	-31					-71					31
-64	64		11.70		-0.30	-29					-69					29
-62	62		*11.70*		-0.30	-27					-67					27
-60	60		*11.70*		-0.30	-25					-65					25
-58	58		11.70		-0.30	-23					-63					23
-56	56		*11.70*		-0.30	-21					-61					21
-54	54		11.70		-0.30	-19					-59		12.00		0.00	19
-52	52		*11.70*		-0.30	-17					-57		12.20		0.20	17
-50	50		11.70		-0.30	-15					-55		12.30		0.30	15
-48	48		*11.75*		-0.25	-13					-53		12.70		0.70	13
-46	46		11.80		-0.20	-11					-51		13.00		1.00	11
-44	44		*11.90*		-0.10	-9					-49		13.30		1.30	9
-42	42		12.00		0.00	-7					-47		13.70		1.70	7
-40	40		*11.95*		-0.05	-5					-45		14.00		2.00	5
-38	38		11.90		-0.10	-3					-43		14.10		2.10	3
-36	36		*11.95*		-0.05	-1					-41		14.30		2.30	1
-34	34		12.00		0.00	1					-39		14.40		2.40	-1
-32	32		*12.05*		0.05	3					-37		14.60		2.60	-3
-30	30		12.10		0.10	5	11.80		-0.20		-35	11.60	14.50	-0.40	2.50	-5
-28	28		*12.05*		0.05	7	11.60		-0.40		-33	11.60	14.60	-0.40	2.60	-7
-26	26		12.00		0.00	9	12.30		0.30		-31	11.60	14.40	-0.40	2.40	-9
-24	24		12.00		0.00	11	12.20	13.00	0.20	1.00	-29	11.70	14.50	-0.30	2.50	-11
-22	22		11.90		-0.10	13	12.30	12.90	0.30	0.90	-27	11.60	14.70	-0.40	2.70	-13
-20	20		12.00		0.00	15	12.00	13.80	0.00	1.80	-25	11.80	14.40	-0.20	2.40	-15
-18	18		12.30		0.30	17	11.50	13.00	-0.50	1.00	-23	11.80	14.20	-0.20	2.20	-17
-16	16		12.60		0.60	19	11.70	12.80	-0.30	0.80	-21	11.70	14.00	-0.30	2.00	-19
-14	14		12.70		0.70	21	11.50	12.40	-0.50	0.40	-19	11.60	13.80	-0.40	1.80	-21
-12	12		12.40		0.40	23	11.50	12.00	-0.50	0.00	-17	11.60	13.40	-0.40	1.40	-23
-10	10		12.00		0.00	25	11.70	11.50	-0.30	-0.50	-15	11.80	12.10	-0.20	0.10	-25
-8	8		11.30		-0.70	27	11.10	11.00	-0.90	-1.00	-13	11.40	12.50	-0.60	0.50	-27
-6	6	9.30	10.40	-2.70	-1.60	29	10.10	10.30	-1.90	-1.70	-11	10.60	11.80	-1.40	-0.20	-29
-4	4	8.90	9.40	-3.10	-2.60	31	9.20	9.50	-2.80	-2.50	-9	10.00	10.20	-2.00	-1.80	-31
-2	2	8.40	8.80	-3.60	-3.20	33	8.00	8.70	-4.00	-3.30	-7	9.70	10.30	-2.30	-1.70	-33
0	0	7.80	7.80	-4.20	-4.20	35	6.90	7.80	-5.10	-4.20	-5	7.90	9.80	-4.10	-2.20	-35
0	0	7.80	7.80	-4.20	-4.20	40	6.20	5.60	-5.80	-6.40	0	7.70	7.50	-4.30	-4.50	-40
2	-2	8.70	8.90	-3.30	-3.10	42	7.30	6.70	-4.70	-5.30	2	8.80	8.90	-3.20	-3.10	-42
4	-4	9.40	10.10	-2.60	-1.90	44	8.20	7.80	-3.80	-4.20	4	9.60	9.90	-2.40	-2.10	-44
6	-6	10.50	11.40	-1.50	-0.60	46	9.20	9.20	-2.80	-2.80	6	10.30	11.40	-1.70	-0.60	-46
8	-8	11.30	11.90	-0.70	-0.10	48	10.00	10.50	-2.00	-1.50	8	11.10	12.70	-0.90	0.70	-48
10	-10	11.50		-0.50		50	10.60	11.70	-1.40	-0.30	10	11.90	*12.70*	-0.10	0.70	-50
12	-12	11.70		-0.30		52	11.30	11.80	-0.70	-0.20	12					-52
14	-14	11.80		-0.20		54	11.30		-0.70		14					-54
16	-16					56	11.40		-0.60		16					-56
18	-18					58	11.50		-0.50		18					-58
20	-20					60	11.80		-0.20		20					-60
22	-22					62					22					
24	-24					64					24					
26	-26					66					26					
28	-28					68					28					
30	-30					70					30					

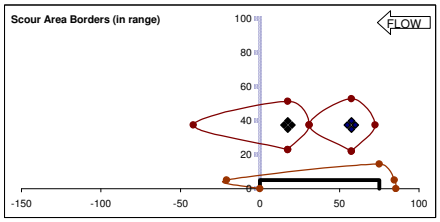
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.90	-3.10
2	9.20	-2.80
4	10.30	-1.70
6	11.60	-0.40
8	12.00	0.00
10		
12		
14		
16		
18		
20		

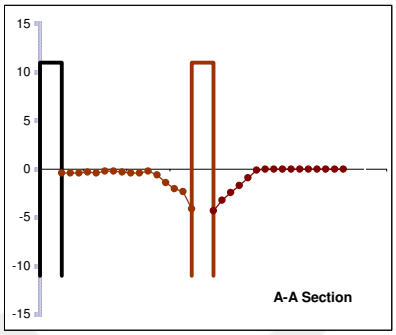
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10.5
SB_{af}	Abutment Corner Front	9.5
SB_{ar}	Abutment Corner Right	9.5
		P1 / P2
SB_{pl}	Pier Left	13 / 12
SB_{pf}	Pier Front	12.5 / 11
SB_{pr}	Pier Right	13 / 11.5
SB_{pb}	Pier Rear	24 / 57

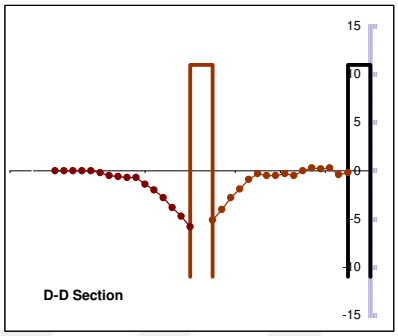


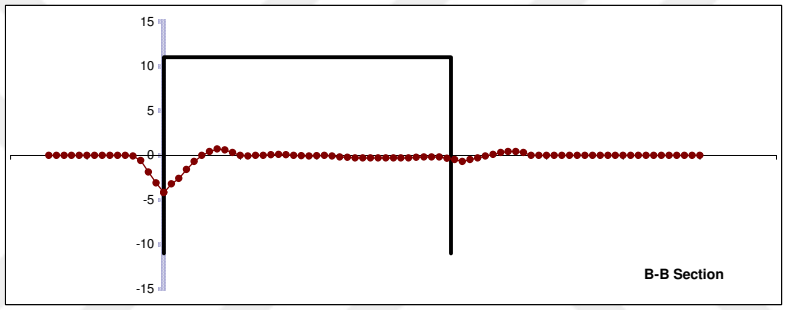
Experiment No : **E145**

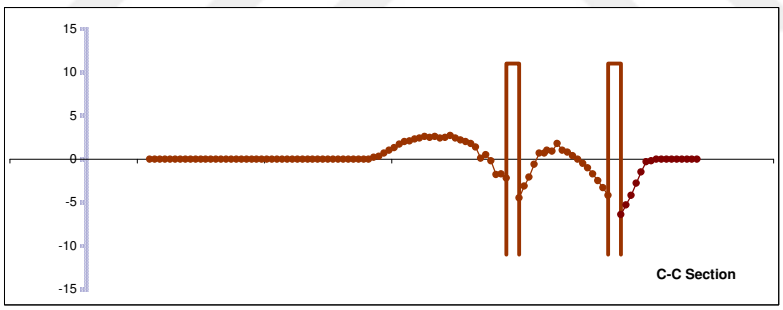


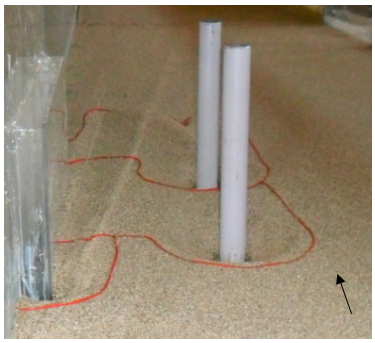






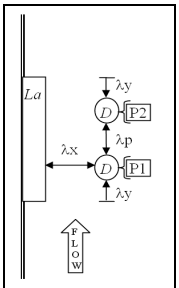


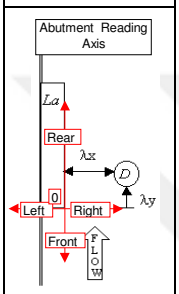


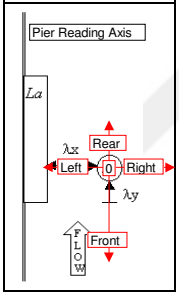


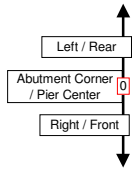
Experiment No : **E146**

Date :	20.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	15
λ_p (cm) :	35









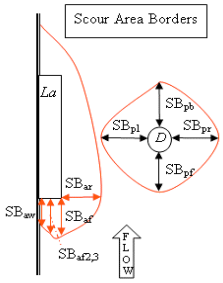
This color was used for raw data readings

This color was used for values enterpolated to sketch

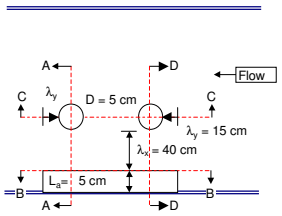
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-95					-135					95
-138	138					-93					-133					93
-136	136					-91					-131					91
-134	134					-89					-129					89
-132	132					-87					-127					87
-130	130					-85					-125					85
-128	128					-83					-123					83
-126	126					-81					-121					81
-124	124					-79					-119					79
-122	122					-77					-117					77
-120	120					-75					-115					75
-118	118					-73					-113					73
-116	116					-71					-111					71
-114	114					-69					-109					69
-112	112					-67					-107					67
-110	110					-65					-105					65
-108	108					-63					-103					63
-106	106					-61					-101					61
-104	104					-59					-99					59
-102	102					-57					-97					57
-100	100					-55					-95					55
-98	98					-53					-93					53
-96	96					-51					-91					51
-94	94					-49					-89					49
-92	92					-47					-87					47
-90	90					-45					-85					45
-88	88					-43					-83					43
-86	86		12.00		0.00	-41					-81					41
-84	84		11.60		-0.40	-39					-79					39
-82	82		11.40		-0.60	-37					-77					37
-80	80		11.50		-0.50	-35					-75					35
-78	78		*11.55*		-0.45	-33					-73					33
-76	76		11.60		-0.40	-31					-71					31
-74	74		*11.60*		-0.40	-29					-69					29
-72	72		11.60		-0.40	-27					-67					27
-70	70		*11.70*		-0.30	-25					-65					25
-68	68		11.80		-0.20	-23					-63					23
-66	66		*11.85*		-0.15	-21					-61					21
-64	64		11.90		-0.10	-19					-59					19
-62	62		*11.90*		-0.10	-17					-57					17
-60	60		11.90		-0.10	-15					-55					15
-58	58		*12.00*		0.00	-13					-53					13
-56	56		12.10		0.10	-11					-51					11
-54	54		*12.05*		0.05	-9					-49					9
-52	52		12.00		0.00	-7					-47					7
-50	50		*12.00*		0.00	-5					-45					5
-48	48		12.00		0.00	-3					-43					3
-46	46		*11.90*		-0.10	-1					-41					1
-44	44		11.80		-0.20	1					-39					-1
-42	42		*11.80*		-0.20	3					-37					-3
-40	40		11.80		-0.20	5	11.80		-0.20		-35	11.80	12.00	-0.20	0.00	-5
-38	38		*11.95*		-0.05	7	11.80		-0.20		-33	11.50	12.10	-0.50	0.10	-7
-36	36		12.10		0.10	9	11.70		-0.30		-31	11.90	12.70	-0.10	0.70	-9
-34	34		*12.20*		0.20	11	11.70		-0.30		-29	12.00	13.10	0.00	1.10	-11
-32	32		12.30		0.30	13	12.20		0.20		-27	*11.75*	13.60	-0.25	1.60	-13
-30	30		*12.30*		0.30	15	*11.85*		-0.15		-25	11.50	13.90	-0.50	1.90	-15
-28	28		12.30		0.30	17	11.50		-0.50		-23	*11.40*	14.20	-0.60	2.20	-17
-26	26		*12.30*		0.30	19	*11.50*		-0.50		-21	11.30	14.30	-0.70	2.30	-19
-24	24		12.30		0.30	21	11.50	13.10	-0.50	1.10	-19	*11.75*	14.30	-0.25	2.30	-21
-22	22		*12.15*		0.15	23	*11.45*	13.20	-0.55	1.20	-17	12.20	14.20	0.20	2.20	-23
-20	20		12.00		0.00	25	11.40	13.10	-0.60	1.10	-15	*11.65*	14.30	-0.35	2.30	-25
-18	18		12.00		0.00	27	*11.25*	13.00	-0.75	1.00	-13	11.10	14.20	-0.90	2.20	-27
-16	16		12.70		0.70	29	11.10	12.80	-0.90	0.80	-11	*11.10*	14.20	-0.90	2.20	-29
-14	14		13.00		1.00	31	*11.10*	12.30	-0.90	0.30	-9	11.10	14.00	-0.90	2.00	-31
-12	12		12.90		0.90	33	11.10	12.00	-0.90	0.00	-7	11.20	13.80	-0.80	1.80	-33
-10	10		12.40		0.40	35	11.10	11.60	-0.90	-0.40	-5	11.30	13.60	-0.70	1.60	-35
-8	8		11.70		-0.30	37	10.40	10.90	-1.60	-1.10	-3	10.40	13.30	-1.60	1.30	-37
-6	6	10.10	10.80	-1.90	-1.20	39	9.40	10.00	-2.60	-2.00	-1	9.70	11.80	-2.30	-0.20	-39
-4	4	9.70	9.80	-2.30	-2.20	41	8.40	9.30	-3.60	-2.70	1	9.30	11.20	-2.70	-0.80	-41
-2	2	9.20	9.30	-2.80	-2.70	43	7.70	8.40	-4.30	-3.60	3	8.40	10.40	-3.60	-1.60	-43
0	0	8.80	8.80	-3.20	-3.20	45	6.50	7.70	-5.50	-4.30	5	8.50	9.40	-3.50	-2.60	-45
0	0	8.80	8.80	-3.20	-3.20	50	7.00	6.10	-5.00	-5.90	10	8.10	8.20	-3.90	-3.80	-50
2	-2	9.40	9.70	-2.60	-2.30	52	8.00	7.30	-4.00	-4.70	12	9.30	9.20	-2.70	-2.80	-52
4	-4	9.80	11.40	-2.20	-0.60	54	9.20	8.50	-2.80	-3.50	14	10.00	10.50	-2.00	-1.50	-54
6	-6	11.00	12.00	-1.00	0.00	56	10.30	9.80	-1.70	-2.20	16	10.80	12.00	-1.20	0.00	-56
8	-8	11.50		-0.50		58	11.30	10.80	-0.70	-1.20	18	11.80	13.00	-0.20	1.00	-58
10	-10	11.60		-0.40		60	11.80	11.00	-0.20	-1.00	20		11.70		-0.30	-60
12	-12	11.80		-0.20		62		11.20		-0.80	22		12.30		0.30	-62
14	-14					64		11.10		-0.90	24		12.70		0.70	-64
16	-16					66		11.20		-0.80	26		13.10		1.10	-66
18	-18					68		11.20		-0.80	28					-68
20	-20					70		*11.30*		-0.70	30					-70
22	-22					72		11.40		-0.60	32					
24	-24					74		*11.50*		-0.50	34					
26	-26					76		11.60		-0.40	36					
28	-28					78		*11.70*		-0.30	38					
30	-30					80		11.80		-0.20	40					

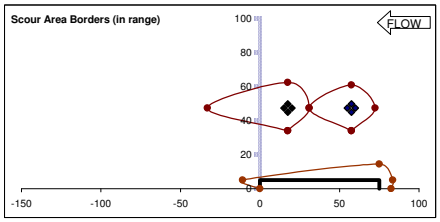
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.70	-2.30
2	9.90	-2.10
4	11.10	-0.90
6	11.80	-0.20
8		
10		
12		
14		
16		
18		
20		

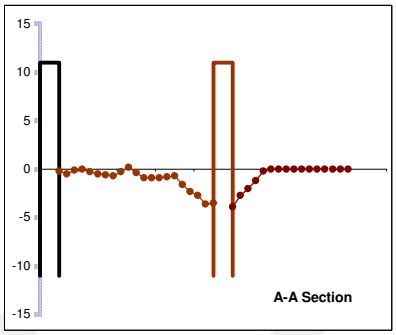
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	7.5	
SB_{af}	Abutment Corner Front	8.5	
SB_{ar}	Abutment Corner Right	9.5	
		P1	P2
SB_{pl}	Pier Left	11	11
SB_{pf}	Pier Front	12.5	11
SB_{pr}	Pier Right	11	12.5
SB_{pb}	Pier Rear	24	48

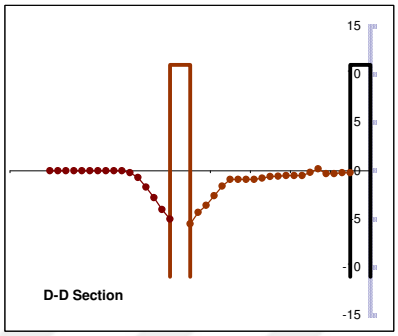


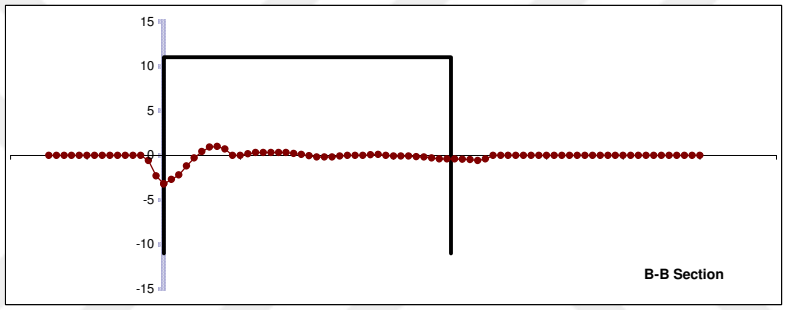
Experiment No : **E146**

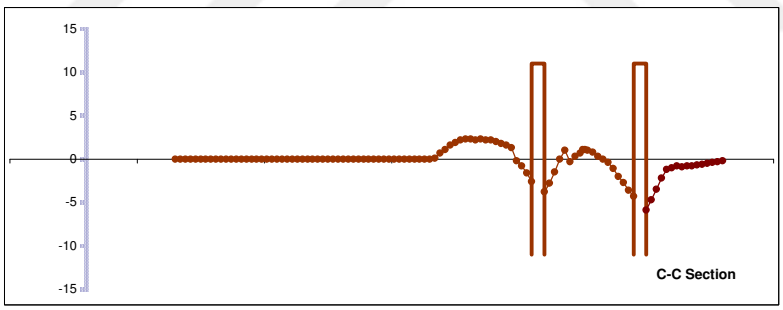


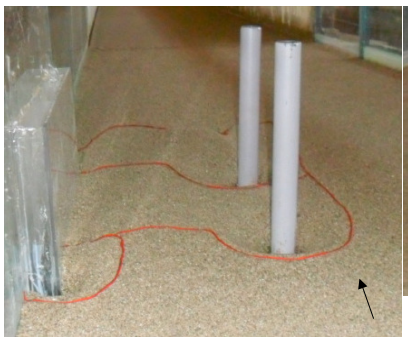


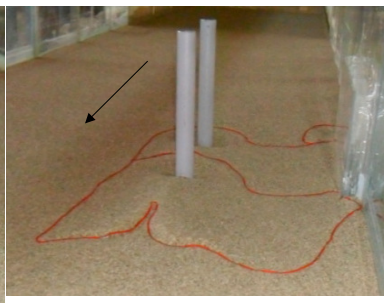






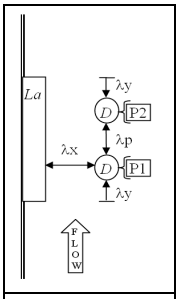


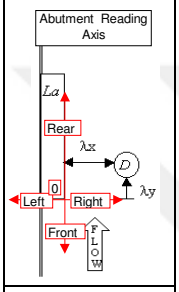


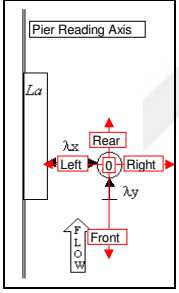


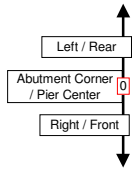
Experiment No : **E147**

Date :	24.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	15
λ_p (cm) :	35









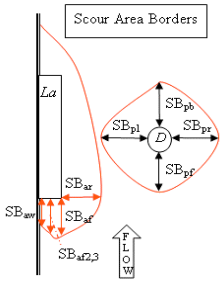
This color was used for raw data readings

This color was used for values enterpolated to sketch

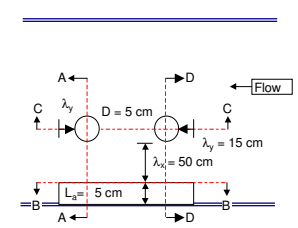
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-85					-125					85
-138	138					-83					-123					83
-136	136					-81					-121					81
-134	134					-79					-119					79
-132	132					-77					-117					77
-130	130					-75					-115					75
-128	128					-73					-113					73
-126	126					-71					-111					71
-124	124					-69					-109					69
-122	122					-67					-107					67
-120	120					-65					-105					65
-118	118					-63					-103					63
-116	116					-61					-101					61
-114	114					-59					-99					59
-112	112					-57					-97					57
-110	110					-55					-95					55
-108	108					-53					-93					53
-106	106					-51					-91					51
-104	104					-49					-89					49
-102	102					-47					-87					47
-100	100					-45					-85					45
-98	98					-43					-83					43
-96	96					-41					-81					41
-94	94					-39					-79					39
-92	92					-37					-77					37
-90	90					-35					-75					35
-88	88					-33					-73					33
-86	86					-31					-71					31
-84	84					-29					-69					29
-82	82		11.80		-0.20	-27					-67					27
-80	80		11.70		-0.30	-25					-65					25
-78	78		11.30		-0.70	-23					-63					23
-76	76		11.50		-0.50	-21					-61					21
-74	74		11.70		-0.30	-19					-59					19
-72	72		11.70		-0.30	-17					-57					17
-70	70		*11.90*		-0.10	-15					-55					15
-68	68		12.10		0.10	-13					-53					13
-66	66		*12.10*		0.10	-11					-51					11
-64	64		12.10		0.10	-9					-49					9
-62	62		*12.20*		0.20	-7					-47					7
-60	60		12.30		0.30	-5					-45					5
-58	58		*12.30*		0.30	-3					-43					3
-56	56		12.30		0.30	-1					-41					1
-54	54		*12.20*		0.20	1					-39					-1
-52	52		12.10		0.10	3					-37					-3
-50	50		*12.10*		0.10	5	12.00		0.00		-35	12.30	12.00	0.30	0.00	-5
-48	48		12.10		0.10	7	11.90		-0.10		-33	12.20	12.30	0.20	0.30	-7
-46	46		*12.20*		0.20	9	11.80		-0.20		-31	11.80	12.30	-0.20	0.30	-9
-44	44		12.30		0.30	11	11.80		-0.20		-29	12.00	12.60	0.00	0.60	-11
-42	42		*12.30*		0.30	13	*11.70*		-0.30		-27	*11.90*	12.80	-0.10	0.80	-13
-40	40		12.30		0.30	15	11.60		-0.40		-25	11.80	13.40	-0.20	1.40	-15
-38	38		*12.30*		0.30	17	*11.55*		-0.45		-23	*11.75*	13.80	-0.25	1.80	-17
-36	36		12.30		0.30	19	11.50		-0.50		-21	11.70	14.10	-0.30	2.10	-19
-34	34		*12.30*		0.30	21	*11.45*		-0.55		-19	*11.65*	14.30	-0.35	2.30	-21
-32	32		12.30		0.30	23	11.40		-0.60		-17	11.60	14.40	-0.40	2.40	-23
-30	30		*12.20*		0.20	25	*11.40*		-0.60		-15	*11.65*	14.50	-0.35	2.50	-25
-28	28		12.10		0.10	27	11.40		-0.60		-13	11.70	14.50	-0.30	2.50	-27
-26	26		*12.10*		0.10	29	*11.60*		-0.40		-11	*11.60*	14.60	-0.40	2.60	-29
-24	24		12.10		0.10	31	11.80	12.60	-0.20	0.60	-9	11.50	14.40	-0.50	2.40	-31
-22	22		*12.00*		0.00	33	*11.50*	13.40	-0.50	1.40	-7	*11.30*	14.10	-0.70	2.10	-33
-20	20		11.90		-0.10	35	11.20	12.90	-0.80	0.90	-5	11.10	14.10	-0.90	2.10	-35
-18	18		11.90		-0.10	37	11.20	13.20	-0.80	1.20	-3	*11.05*	13.80	-0.95	1.80	-37
-16	16		11.80		-0.20	39	11.00	12.90	-1.00	0.90	-1	11.00	13.60	-1.00	1.60	-39
-14	14		12.50		0.50	41	10.80	12.80	-1.20	0.80	1	11.00	13.40	-1.00	1.40	-41
-12	12		12.60		0.60	43	10.60	12.50	-1.40	0.50	3	10.80	13.20	-1.20	1.20	-43
-10	10		12.30		0.30	45	10.50	11.80	-1.50	-0.20	5	11.30	12.80	-0.70	0.80	-45
-8	8		11.80		-0.20	47	10.40	11.10	-1.60	-0.90	7	11.10	12.30	-0.90	0.30	-47
-6	6	9.90	11.00	-2.10	-1.00	49	10.10	10.40	-1.90	-1.60	9	10.20	11.50	-1.80	-0.50	-49
-4	4	9.80	10.20	-2.20	-1.80	51	9.40	9.60	-2.60	-2.40	11	9.40	10.90	-2.60	-1.10	-51
-2	2	8.90	9.50	-3.10	-2.50	53	8.30	8.60	-3.70	-3.40	13	9.20	9.90	-2.80	-2.10	-53
0	0	9.00	9.00	-3.00	-3.00	55	7.10	7.60	-4.90	-4.40	15	7.80	9.50	-4.20	-2.50	-55
0	0	9.00	9.00	-3.00	-3.00	60	6.00	5.80	-6.00	-6.20	20	7.50	7.30	-4.50	-4.70	-60
2	-2	9.30	10.00	-2.70	-2.00	62	7.50	6.70	-4.50	-5.30	22	8.80	8.60	-3.20	-3.40	-62
4	-4	9.90	11.10	-2.10	-0.90	64	8.20	8.00	-3.80	-4.00	24	9.60	9.60	-2.40	-2.40	-64
6	-6	10.80	12.00	-1.20	0.00	66	9.70	9.40	-2.30	-2.60	26	9.90	11.20	-2.10	-0.80	-66
8	-8	11.30		-0.70		68	10.60	10.40	-1.40	-1.60	28	10.60	12.60	-1.40	0.60	-68
10	-10	11.60		-0.40		70	11.20	10.60	-0.80	-1.40	30	11.50	*12.60*	-0.50	0.60	-70
12	-12	11.70		-0.30		72	11.40	10.80	-0.60	-1.20	32	11.80		-0.20		-72
14	-14	11.80		-0.20		74	11.50	10.60	-0.50	-1.40	34					-74
16	-16					76	11.80	10.70	-0.20	-1.30	36					-76
18	-18					78		10.90		-1.10	38					-78
20	-20					80		11.30		-0.70	40					-80
22	-22					82		11.10		-0.90	42					
24	-24					84		11.30		-0.70	44					
26	-26					86		11.40		-0.60	46					
28	-28					88		11.80		-0.20	48					
30	-30					90					50					

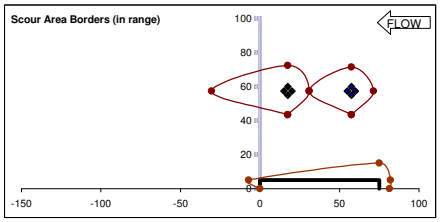
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.90	-2.10
2	9.80	-2.20
4	11.20	-0.80
6	11.80	-0.20
8		
10		
12		
14		
16		
18		
20		

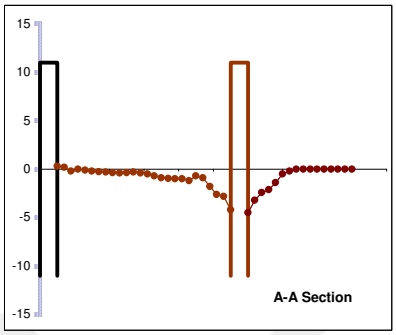
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	6.5	
SB_{af}	Abutment Corner Front	7	
SB_{ar}	Abutment Corner Right	10	
		P1	P2
SB_{pl}	Pier Left	11.5	11.5
SB_{pf}	Pier Front	11.5	11
SB_{pr}	Pier Right	11.5	12.5
SB_{pb}	Pier Rear	24	45.5

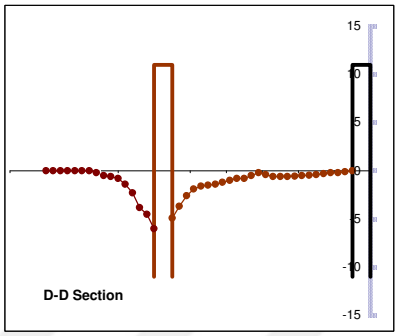


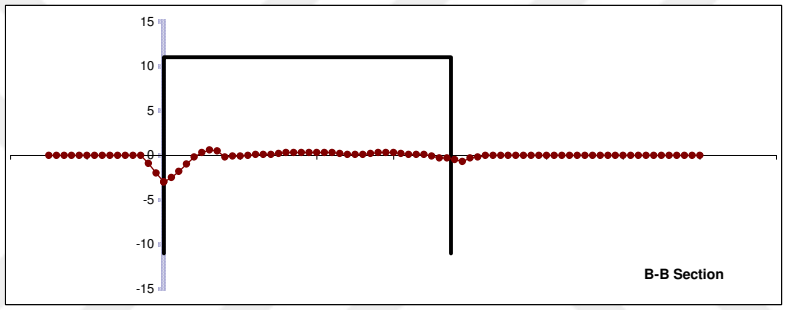
Experiment No : **E147**

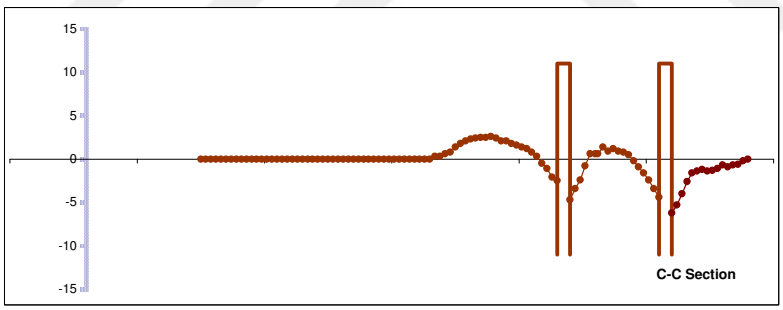


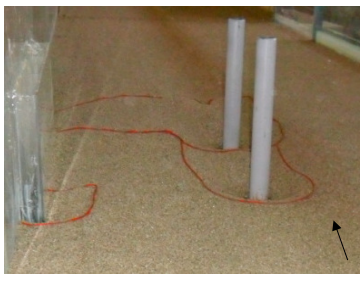


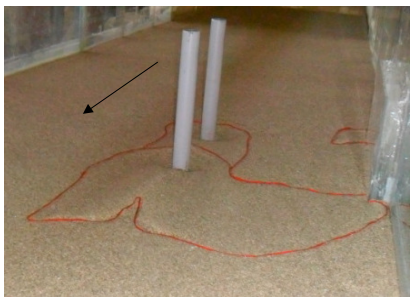






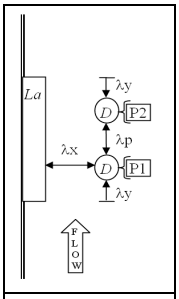


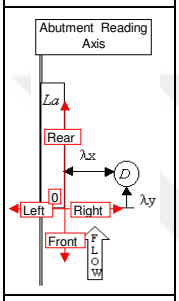


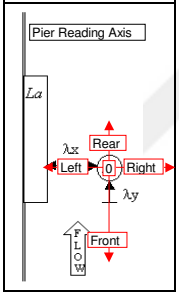


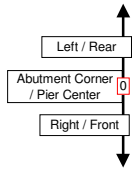
Experiment No : **E148**

Date :	26.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	50
λ_y (cm) :	15
λ_p (cm) :	35









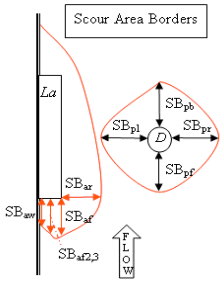
This color was used for raw data readings

This color was used for values enterpolated to sketch

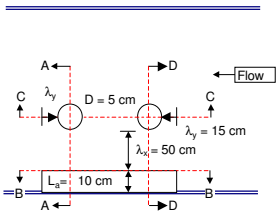
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-80					-120					80
-138	138					-78					-118					78
-136	136					-76					-116					76
-134	134					-74					-114					74
-132	132					-72					-112					72
-130	130					-70					-110					70
-128	128					-68					-108					68
-126	126					-66					-106					66
-124	124					-64					-104					64
-122	122					-62					-102					62
-120	120					-60					-100					60
-118	118		12.00		0.00	-58					-98					58
-116	116		12.40		0.40	-56					-96					56
-114	114		12.80		0.80	-54					-94					54
-112	112		12.90		0.90	-52					-92					52
-110	110		12.60		0.60	-50					-90					50
-108	108		12.80		0.80	-48					-88					48
-106	106		12.80		0.80	-46					-86					46
-104	104		12.60		0.60	-44					-84					44
-102	102		12.20		0.20	-42					-82					42
-100	100		12.50		0.50	-40					-80					40
-98	98		12.30		0.30	-38					-78					38
-96	96		12.30		0.30	-36					-76					36
-94	94		11.90		-0.10	-34					-74					34
-92	92		11.60		-0.40	-32					-72					32
-90	90		11.60		-0.40	-30					-70					30
-88	88		11.40		-0.60	-28					-68					28
-86	86		11.30		-0.70	-26					-66					26
-84	84		11.50		-0.50	-24					-64					24
-82	82		11.30		-0.70	-22					-62					22
-80	80		11.00		-1.00	-20					-60					20
-78	78		11.00		-1.00	-18					-58					18
-76	76		11.00		-1.00	-16					-56					16
-74	74		11.30		-0.70	-14					-54					14
-72	72		11.10		-0.90	-12					-52		12.00		0.00	12
-70	70		11.10		-0.90	-10					-50		12.20		0.20	10
-68	68		11.30		-0.70	-8					-48		12.40		0.40	8
-66	66		11.50		-0.50	-6					-46		12.30		0.30	6
-64	64		11.40		-0.60	-4					-44		12.40		0.40	4
-62	62		11.60		-0.40	-2					-42		12.50		0.50	2
-60	60		11.60		-0.40	0					-40		12.70		0.70	0
-58	58		11.70		-0.30	2					-38		13.00		1.00	-2
-56	56		11.60		-0.40	4					-36		13.20		1.20	-4
-54	54		11.70		-0.30	6					-34		13.30		1.30	-6
-52	52		*11.95*		-0.05	8					-32		13.60		1.60	-8
-50	50		12.20		0.20	10	12.00		0.00		-30	11.40	13.70	-0.60	1.70	-10
-48	48		*12.30*		0.30	12	11.90		-0.10		-28	11.30	14.10	-0.70	2.10	-12
-46	46		12.40		0.40	14	11.80		-0.20		-26	11.30	14.30	-0.70	2.30	-14
-44	44		*12.45*		0.45	16	12.00		0.00		-24	11.40	14.40	-0.60	2.40	-16
-42	42		12.50		0.50	18	11.80		-0.20		-22	12.00	14.60	0.00	2.60	-18
-40	40		*12.45*		0.45	20	11.80		-0.20		-20	11.90	14.80	-0.10	2.80	-20
-38	38		12.40		0.40	22	11.60		-0.40		-18	*11.85*	14.90	-0.15	2.90	-22
-36	36		*12.40*		0.40	24	11.50		-0.50		-16	11.80	14.90	-0.20	2.90	-24
-34	34		12.40		0.40	26	11.60		-0.40		-14	*11.65*	14.80	-0.35	2.80	-26
-32	32		*12.40*		0.40	28	11.50		-0.50		-12	11.50	14.90	-0.50	2.90	-28
-30	30		12.40		0.40	30	11.50		-0.50		-10	*11.45*	15.10	-0.55	3.10	-30
-28	28		*12.30*		0.30	32	11.20		-0.80		-8	11.40	15.00	-0.60	3.00	-32
-26	26		12.20		0.20	34	11.20		-0.80		-6	*11.40*	15.10	-0.60	3.10	-34
-24	24		12.30		0.30	36	*11.40*	12.50	-0.60	0.50	-4	11.40	14.80	-0.60	2.80	-36
-22	22		12.20		0.20	38	11.60	12.70	-0.40	0.70	-2	*11.40*	14.70	-0.60	2.70	-38
-20	20		11.80		-0.20	40	*11.55*	12.70	-0.45	0.70	0	11.40	14.40	-0.60	2.40	-40
-18	18		11.20		-0.80	42	11.50	12.30	-0.50	0.30	2	*11.40*	14.30	-0.60	2.30	-42
-16	16		10.70		-1.30	44	*11.55*	12.10	-0.45	0.10	4	11.40	14.30	-0.60	2.30	-44
-14	14		10.20		-1.80	46	11.60	11.70	-0.40	-0.30	6	11.40	14.00	-0.60	2.00	-46
-12	12		9.70		-2.30	48	11.60	11.20	-0.40	-0.80	8	11.60	13.50	-0.40	1.50	-48
-10	10	6.90	9.00	-5.10	-3.00	50	11.70	10.90	-0.30	-1.10	10	11.50	13.10	-0.50	1.10	-50
-8	8	7.00	8.30	-5.00	-3.70	52	10.90	10.50	-1.10	-1.50	12	10.90	12.30	-1.10	0.30	-52
-6	6	6.40	7.20	-5.60	-4.80	54	9.80	10.00	-2.20	-2.00	14	10.20	11.60	-1.80	-0.40	-54
-4	4	5.70	6.20	-6.30	-5.80	56	9.20	9.30	-2.80	-2.70	16	9.40	10.80	-2.60	-1.20	-56
-2	2	5.40	5.90	-6.60	-6.10	58	8.20	8.50	-3.80	-3.50	18	8.10	10.00	-3.90	-2.00	-58
0	0	5.10	5.10	-6.90	-6.90	60	7.00	7.30	-5.00	-4.70	20	8.00	9.40	-4.00	-2.60	-60
0	0	5.10	5.10	-6.90	-6.90	65	5.90	5.60	-6.10	-6.40	25	7.70	7.30	-4.30	-4.70	-65
2	-2	6.00	5.00	-6.00	-7.00	67	6.80	6.40	-5.20	-5.60	27	8.80	8.80	-3.20	-3.20	-67
4	-4	5.80	5.90	-6.20	-6.10	69	8.60	7.80	-3.40	-4.20	29	9.40	10.10	-2.60	-1.90	-69
6	-6	6.70	7.30	-5.30	-4.70	71	9.20	8.80	-2.80	-3.20	31	9.90	11.40	-2.10	-0.60	-71
8	-8	8.30	7.90	-3.70	-4.10	73	10.00	10.20	-2.00	-1.80	33	10.50	12.50	-1.50	0.50	-73
10	-10	9.10	8.60	-2.90	-3.40	75	11.20	11.40	-0.80	-0.60	35	11.50	*12.50*	-0.50	0.50	-75
12	-12	10.10	9.90	-1.90	-2.10	77	12.00	12.00	0.00	0.00	37	12.00		0.00		-77
14	-14	10.90	11.20	-1.10	-0.80	79					39					-79
16	-16	11.50	11.80	-0.50	-0.20	81					41					-81
18	-18	11.50		-0.50		83					43					-83
20	-20	11.80		-0.20		85					45					-85
22	-22					87					47					
24	-24					89					49					
26	-26					91					51					
28	-28					93					53					
30	-30					95					55					

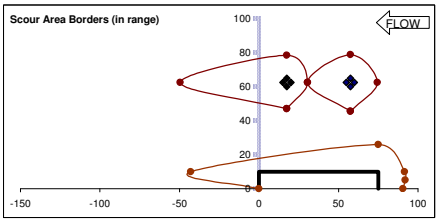
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.00	-5.00
2	6.70	-5.30
4	7.80	-4.20
6	8.80	-3.20
8	9.90	-2.10
10	10.80	-1.20
12	11.10	-0.90
14	11.40	-0.60
16	11.60	-0.40
18	11.80	-0.20
20		

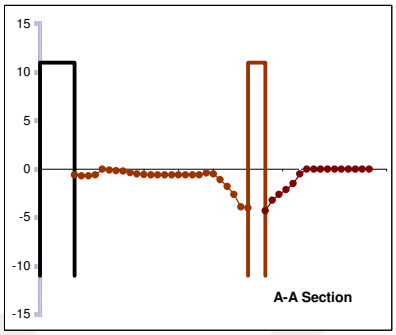
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	15.5	
SB_{af2}	Abutment Front (W+5 cm)	17	
SB_{af}	Abutment Corner Front	16.5	
SB_{ar}	Abutment Corner Right	16	
		P1	P2
SB_{pl}	Pier Left	14.5	13
SB_{pf}	Pier Front	14.5	10.5
SB_{pr}	Pier Right	14	13.5
SB_{pb}	Pier Rear	24.5	64.5

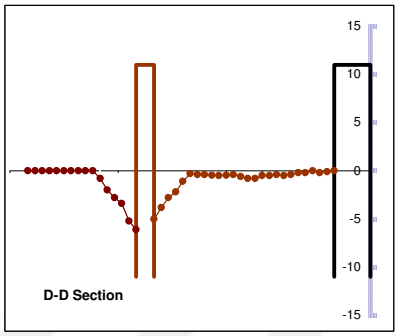


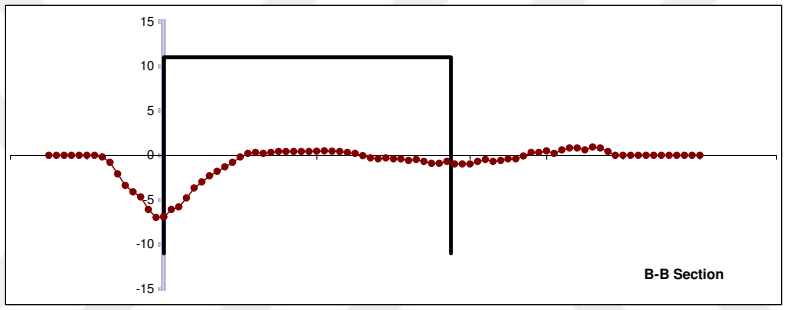
Experiment No : **E148**

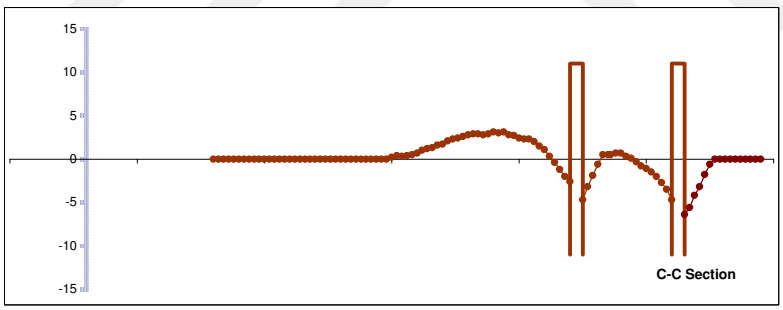


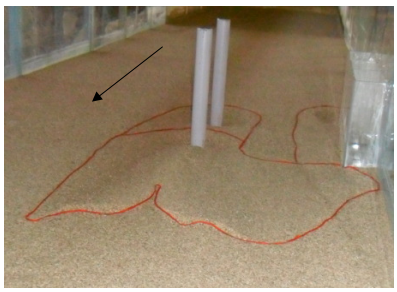






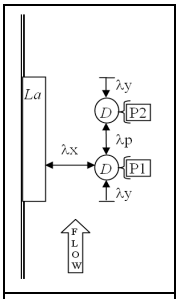


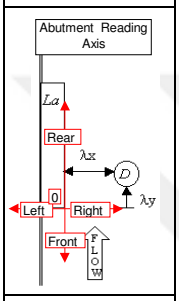


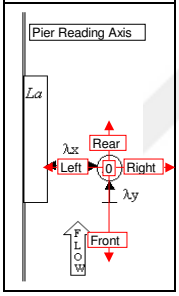


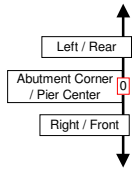
Experiment No : **E149**

Date :	30.07.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	40
λ_y (cm) :	15
λ_p (cm) :	35









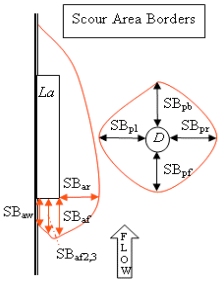
This color was used for raw data readings

This color was used for values enterpolated to sketch

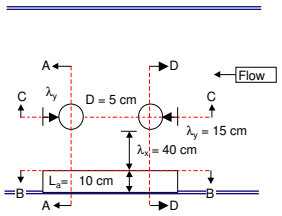
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-90					-130					90
-138	138					-88					-128					88
-136	136					-86					-126					86
-134	134					-84					-124					84
-132	132					-82					-122					82
-130	130					-80					-120					80
-128	128					-78					-118					78
-126	126					-76					-116					76
-124	124					-74					-114					74
-122	122					-72					-112					72
-120	120					-70					-110					70
-118	118					-68					-108					68
-116	116					-66					-106					66
-114	114					-64					-104					64
-112	112					-62					-102					62
-110	110					-60					-100					60
-108	108					-58					-98					58
-106	106					-56					-96					56
-104	104					-54					-94					54
-102	102					-52					-92					52
-100	100					-50					-90					50
-98	98					-48					-88					48
-96	96					-46					-86					46
-94	94					-44					-84					44
-92	92					-42					-82					42
-90	90					-40					-80					40
-88	88		12.00		0.00	-38					-78					38
-86	86		11.70		-0.30	-36					-76					36
-84	84		11.50		-0.50	-34					-74					34
-82	82		11.40		-0.60	-32					-72					32
-80	80		11.20		-0.80	-30					-70					30
-78	78		11.00		-1.00	-28					-68					28
-76	76		11.00		-1.00	-26					-66					26
-74	74		*11.25*		-0.75	-24					-64					24
-72	72		11.50		-0.50	-22					-62					22
-70	70		*11.75*		-0.25	-20					-60					20
-68	68		12.00		0.00	-18					-58		12.00		0.00	18
-66	66		*11.90*		-0.10	-16					-56		12.30		0.30	16
-64	64		11.80		-0.20	-14					-54		12.30		0.30	14
-62	62		*11.90*		-0.10	-12					-52		13.00		1.00	12
-60	60		12.00		0.00	-10					-50		13.20		1.20	10
-58	58		*12.05*		0.05	-8					-48		13.40		1.40	8
-56	56		12.10		0.10	-6					-46		13.70		1.70	6
-54	54		12.00		0.00	-4					-44		13.80		1.80	4
-52	52		12.20		0.20	-2					-42		*13.95*		1.95	2
-50	50		12.10		0.10	0					-40		14.10		2.10	0
-48	48		13.40		1.40	2					-38		*14.30*		2.30	-2
-46	46		13.00		1.00	4					-36		14.50		2.50	-4
-44	44		13.20		1.20	6					-34		*14.45*		2.45	-6
-42	42		13.40		1.40	8					-32		14.40		2.40	-8
-40	40		13.50		1.50	10	12.90		0.90		-30	11.90	*14.45*	-0.10	2.45	-10
-38	38		13.60		1.60	12	13.00		1.00		-28	11.90	14.50	-0.10	2.50	-12
-36	36		13.40		1.40	14	13.00		1.00		-26	11.90	*14.50*	-0.10	2.50	-14
-34	34		13.50		1.50	16	13.10		1.10		-24	12.40	14.50	0.40	2.50	-16
-32	32		13.60		1.60	18	12.70		0.70		-22	12.60	14.50	0.60	2.50	-18
-30	30		13.40		1.40	20	12.50		0.50		-20	12.50	14.40	0.50	2.40	-20
-28	28		13.70		1.70	22	12.30		0.30		-18	12.20	14.40	0.20	2.40	-22
-26	26		13.40		1.40	24	11.90		-0.10		-16	12.00	14.30	0.00	2.30	-24
-24	24		13.20		1.20	26	11.60	12.50	-0.40	0.50	-14	*11.75*	14.10	-0.25	2.10	-26
-22	22		13.10		1.10	28	11.40	12.60	-0.60	0.60	-12	11.50	13.80	-0.50	1.80	-28
-20	20		13.00		1.00	30	11.30	12.60	-0.70	0.60	-10	*11.45*	13.70	-0.55	1.70	-30
-18	18		12.70		0.70	32	10.90	12.30	-1.10	0.30	-8	11.40	13.50	-0.60	1.50	-32
-16	16		12.30		0.30	34	10.60	11.90	-1.40	-0.10	-6	*11.45*	13.20	-0.55	1.20	-34
-14	14		11.60		-0.40	36	10.20	11.30	-1.80	-0.70	-4	11.50	13.10	-0.50	1.10	-36
-12	12		11.00		-1.00	38	9.90	11.00	-2.10	-1.00	-2	11.50	12.60	-0.50	0.60	-38
-10	10	9.00	10.40	-3.00	-1.60	40	9.90	10.20	-2.10	-1.80	0	10.30	12.20	-1.70	0.20	-40
-8	8	8.50	9.50	-3.50	-2.50	42	9.70	9.70	-2.30	-2.30	2	10.50	11.80	-1.50	-0.20	-42
-6	6	7.60	8.50	-4.40	-3.50	44	9.10	8.90	-2.90	-3.10	4	9.50	11.40	-2.50	-0.60	-44
-4	4	7.00	7.20	-5.00	-4.80	46	8.20	8.10	-3.80	-3.90	6	7.90	10.20	-4.10	-1.80	-46
-2	2	6.70	8.70	-5.30	-3.30	48	7.00	7.40	-5.00	-4.60	8	7.90	9.30	-4.10	-2.70	-48
0	0	6.60	6.60	-5.40	-5.40	50	5.80	6.80	-6.20	-5.20	10	7.20	8.80	-4.80	-3.20	-50
0	0	6.60	6.60	-5.40	-5.40	55	5.90	5.20	-6.10	-6.80	15	7.10	7.30	-4.90	-4.70	-55
2	-2	7.00	6.80	-5.00	-5.20	57	6.50	6.20	-5.50	-5.80	17	8.00	8.00	-4.00	-4.00	-57
4	-4	7.20	7.60	-4.80	-4.40	59	8.20	7.60	-3.80	-4.40	19	9.00	9.50	-3.00	-2.50	-59
6	-6	8.30	8.70	-3.70	-3.30	61	9.30	9.30	-2.70	-2.70	21	9.50	10.80	-2.50	-1.20	-61
8	-8	8.60	9.20	-3.40	-2.80	63	10.50	10.50	-1.50	-1.50	23	10.20	12.20	-1.80	0.20	-63
10	-10	10.30	10.90	-1.70	-1.10	65	11.40	10.80	-0.60	-1.20	25	11.80	*12.35*	-0.20	0.35	-65
12	-12	11.00	11.60	-1.00	-0.40	67	11.80	10.90	-0.20	-1.10	27					-67
14	-14	11.50	11.80	-0.50	-0.20	69		11.10		-0.90	29					-69
16	-16	11.50		-0.50		71		11.00		-1.00	31					-71
18	-18	11.40		-0.60		73		11.20		-0.80	33					-73
20	-20	11.40		-0.60		75		11.50		-0.50	35					-75
22	-22	11.80		-0.20		77		11.40		-0.60	37					
24	-24					79		11.30		-0.70	39					
26	-26					81		11.80		-0.20	41					
28	-28					83					43					
30	-30					85					45					

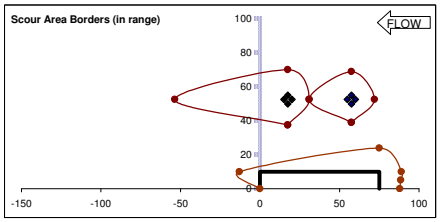
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.50	-3.50
2	8.70	-3.30
4	9.80	-2.20
6	10.50	-1.50
8	11.60	-0.40
10	11.80	-0.20
12		
14		
16		
18		
20		

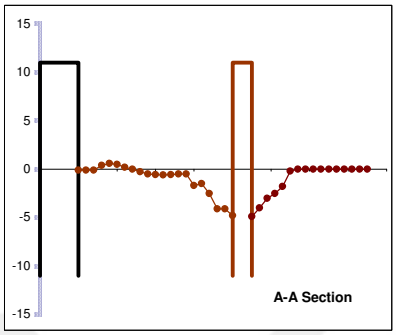
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	13	
SB_{af2}	Abutment Front (W+5 cm)	13.5	
SB_{af}	Abutment Corner Front	14	
SB_{ar}	Abutment Corner Right	14	
		P1	P2
SB_{pl}	Pier Left	11	12.5
SB_{pf}	Pier Front	12	11
SB_{pr}	Pier Right	14	15
SB_{pb}	Pier Rear	24	68.5

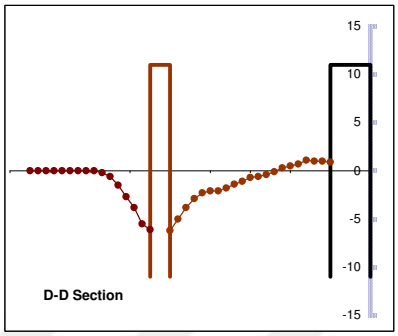


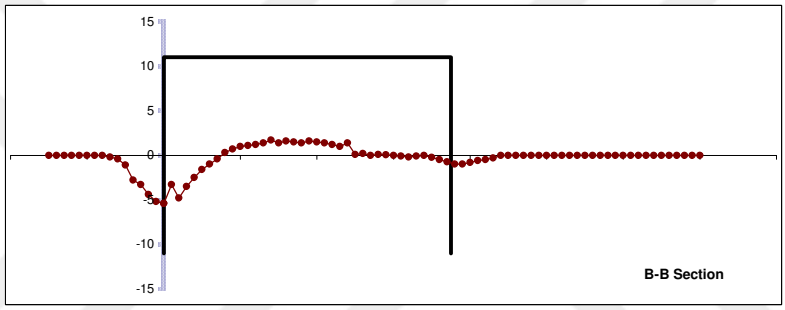
Experiment No : **E149**

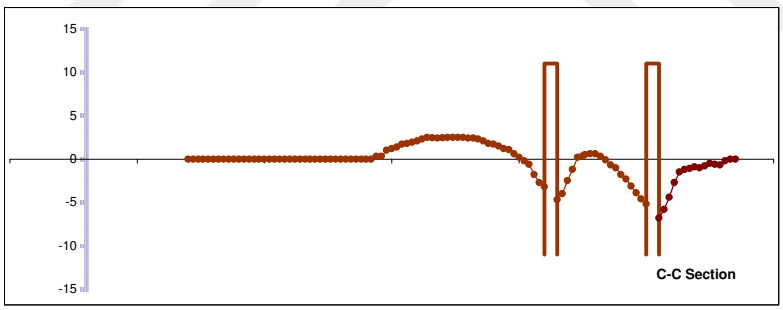


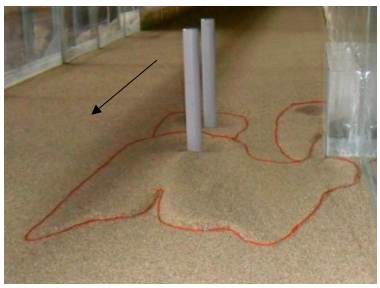






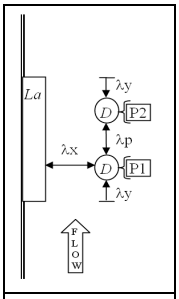


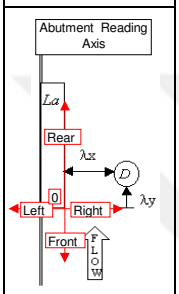


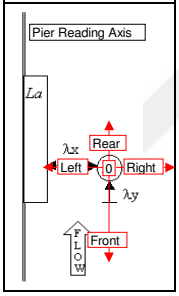


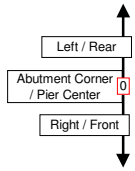
Experiment No : **E150**

Date :	01.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	30
λ_y (cm) :	15
λ_p (cm) :	35









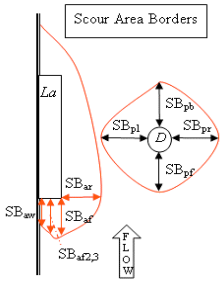
This color was used for raw data readings

This color was used for values enterpolated to sketch

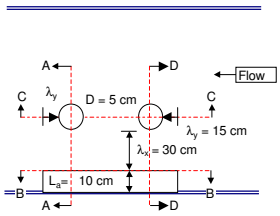
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-100					-140					100
-138	138					-98					-138					98
-136	136					-96					-136					96
-134	134					-94					-134					94
-132	132					-92					-132					92
-130	130					-90					-130					90
-128	128		12.00		0.00	-88					-128					88
-126	126		12.20		0.20	-86					-126					86
-124	124		12.40		0.40	-84					-124					84
-122	122		12.50		0.50	-82					-122					82
-120	120		12.90		0.90	-80					-120					80
-118	118		13.00		1.00	-78					-118					78
-116	116		13.00		1.00	-76					-116					76
-114	114		12.10		0.10	-74					-114					74
-112	112		12.60		0.60	-72					-112					72
-110	110		12.70		0.70	-70					-110					70
-108	108		12.70		0.70	-68					-108					68
-106	106		12.90		0.90	-66					-106					66
-104	104		12.80		0.80	-64					-104					64
-102	102		12.40		0.40	-62					-102					62
-100	100		12.40		0.40	-60					-100					60
-98	98		12.50		0.50	-58					-98					58
-96	96		13.10		1.10	-56					-96					56
-94	94		12.20		0.20	-54					-94					54
-92	92		12.10		0.10	-52					-92					52
-90	90		11.80		-0.20	-50					-90					50
-88	88		11.80		-0.20	-48					-88					48
-86	86		11.50		-0.50	-46					-86					46
-84	84		11.60		-0.40	-44					-84					44
-82	82		11.50		-0.50	-42					-82					42
-80	80		11.30		-0.70	-40					-80					40
-78	78		11.10		-0.90	-38					-78					38
-76	76		11.20		-0.80	-36					-76					36
-74	74		11.20		-0.80	-34					-74					34
-72	72		*11.30*		-0.70	-32					-72		12.00		0.00	32
-70	70		11.40		-0.60	-30					-70		12.50		0.50	30
-68	68		*11.45*		-0.55	-28					-68		12.40		0.40	28
-66	66		11.50		-0.50	-26					-66		12.70		0.70	26
-64	64		*11.55*		-0.45	-24					-64		13.10		1.10	24
-62	62		11.60		-0.40	-22					-62		13.20		1.20	22
-60	60		*11.65*		-0.35	-20					-60		13.40		1.40	20
-58	58		11.70		-0.30	-18					-58		13.90		1.90	18
-56	56		*11.65*		-0.35	-16					-56		14.10		2.10	16
-54	54		11.60		-0.40	-14					-54		14.00		2.00	14
-52	52		*11.55*		-0.45	-12					-52		14.40		2.40	12
-50	50		11.50		-0.50	-10					-50		*14.40*		2.40	10
-48	48		11.50		-0.50	-8					-48		14.40		2.40	8
-46	46		11.60		-0.40	-6					-46		*14.50*		2.50	6
-44	44		11.60		-0.40	-4					-44		14.60		2.60	4
-42	42		11.80		-0.20	-2					-42		*14.70*		2.70	2
-40	40		12.50		0.50	0					-40		14.80		2.80	0
-38	38		13.10		1.10	2					-38		*14.75*		2.75	-2
-36	36		13.40		1.40	4					-36		14.70		2.70	-4
-34	34		13.30		1.30	6					-34		*14.65*		2.65	-6
-32	32		13.60		1.60	8					-32		14.60		2.60	-8
-30	30		13.50		1.50	10	12.60		0.60		-30	11.60	*14.60*	-0.40	2.60	-10
-28	28		13.50		1.50	12	12.80		0.80		-28	11.50	14.60	-0.50	2.60	-12
-26	26		13.30		1.30	14	13.70		1.70		-26	11.60	14.60	-0.40	2.60	-14
-24	24		13.30		1.30	16	13.10	12.00	1.10	0.00	-24	11.60	14.50	-0.40	2.50	-16
-22	22		13.20		1.20	18	13.00	11.90	1.00	-0.10	-22	11.90	14.50	-0.10	2.50	-18
-20	20		13.00		1.00	20	13.70	11.40	1.70	-0.60	-20	12.00	14.30	0.00	2.30	-20
-18	18		12.90		0.90	22	13.30	11.70	1.30	-0.30	-18	11.50	14.10	-0.50	2.10	-22
-16	16		12.30		0.30	24	12.00	11.30	0.00	-0.70	-16	11.30	14.00	-0.70	2.00	-24
-14	14		11.80		-0.20	26	12.00	10.80	0.00	-1.20	-14	11.50	13.70	-0.50	1.70	-26
-12	12		11.20		-0.80	28	11.60	10.60	-0.40	-1.40	-12	11.60	13.40	-0.40	1.40	-28
-10	10	8.30	10.50	-3.70	-1.50	30	11.00	10.10	-1.00	-1.90	-10	11.40	12.90	-0.60	0.90	-30
-8	8	7.80	10.10	-4.20	-1.90	32	10.60	9.70	-1.40	-2.30	-8	11.00	12.70	-1.00	0.70	-32
-6	6	7.10	7.90	-4.90	-4.10	34	9.70	9.20	-2.30	-2.80	-6	10.10	12.30	-1.90	0.30	-34
-4	4	6.90	7.50	-5.10	-4.50	36	8.80	8.40	-3.20	-3.60	-4	9.00	11.30	-3.00	-0.70	-36
-2	2	6.60	7.10	-5.40	-4.90	38	7.20	7.60	-4.80	-4.40	-2	8.70	10.40	-3.30	-1.60	-38
0	0	6.30	6.30	-5.70	-5.70	40	5.80	7.20	-6.20	-4.80	0	8.20	10.00	-3.80	-2.00	-40
0	0	6.30	6.30	-5.70	-5.70	45	5.80	4.70	-6.20	-7.30	5	7.80	7.20	-4.20	-4.80	-45
2	-2	6.90	6.50	-5.10	-5.50	47	6.70	5.40	-5.30	-6.60	7	8.80	8.30	-3.20	-3.70	-47
4	-4	7.00	7.00	-5.00	-5.00	49	7.20	6.60	-4.80	-5.40	9	9.90	10.60	-2.10	-1.40	-49
6	-6	8.50	7.40	-3.50	-4.60	51	8.30	7.90	-3.70	-4.10	11	10.50	10.90	-1.50	-1.10	-51
8	-8	9.50	9.00	-2.50	-3.00	53	9.60	9.20	-2.40	-2.80	13	11.20	12.20	-0.80	0.20	-53
10	-10	10.10	10.20	-1.90	-1.80	55	11.30	10.50	-0.70	-1.50	15	12.00	*12.10*	0.00	0.10	-55
12	-12	10.80	10.40	-1.20	-1.60	57	11.50	11.20	-0.50	-0.80	17					-57
14	-14	11.40	12.00	-0.60	0.00	59	11.70	11.30	-0.30	-0.70	19					-59
16	-16	11.40		-0.60		61	11.90	11.40	-0.10	-0.60	21					-61
18	-18	11.50		-0.50		63		*11.50*		-0.50	23					-63
20	-20	11.80		-0.20		65		11.60		-0.40	25					-65
22	-22					67		*11.80*		-0.20	27					
24	-24					69		12.00		0.00	29					
26	-26					71		11.80		-0.20	31					
28	-28					73					33					
30	-30					75					35					

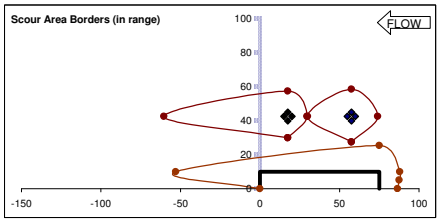
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.80	-4.20
2	7.70	-4.30
4	8.80	-3.20
6	9.80	-2.20
8	10.90	-1.10
10	11.50	-0.50
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

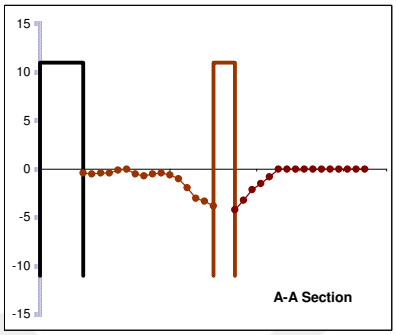
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	11.5	
SB_{af2}	Abutment Front (W+5 cm)	12.5	
SB_{af}	Abutment Corner Front	13	
SB_{ar}	Abutment Corner Right	15.5	
		P1	P2
SB_{pl}	Pier Left	12.5	10
SB_{pf}	Pier Front	14	9.5
SB_{pr}	Pier Right	13.5	12.5
SB_{pb}	Pier Rear	25	75.5

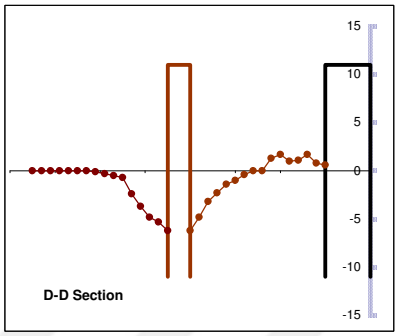


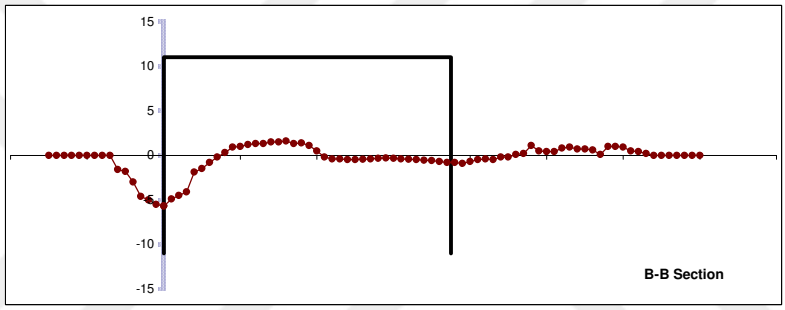
Experiment No : **E150**

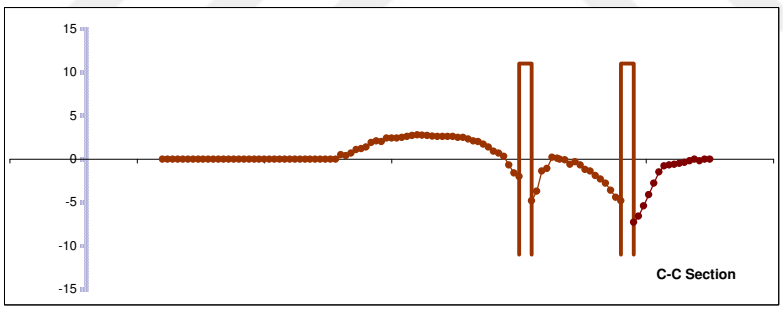


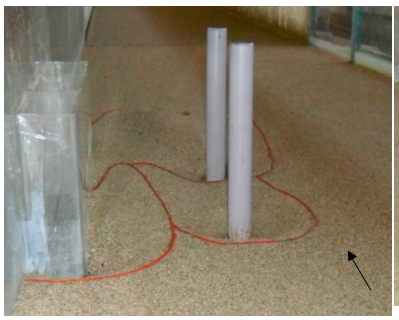


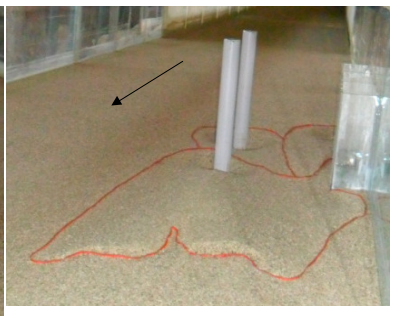






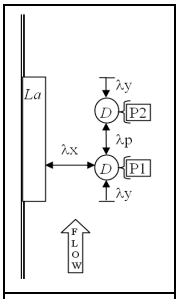


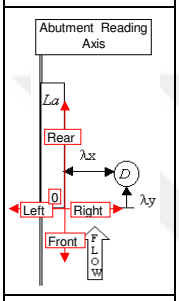


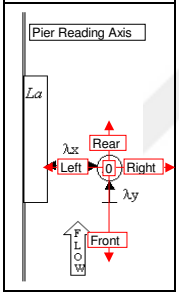


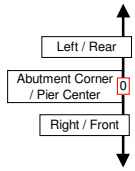
Experiment No : **E151**

Date :	03.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	20
λ_y (cm) :	15
λ_p (cm) :	35









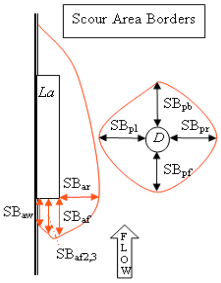
This color was used for raw data readings

This color was used for values enterpolated to sketch

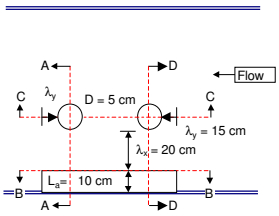
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-110					-150					110
-138	138					-108					-148					108
-136	136					-106					-146					106
-134	134					-104					-144					104
-132	132					-102					-142					102
-130	130		12.00		0.00	-100					-140					100
-128	128		12.40		0.40	-98					-138					98
-126	126		13.70		1.70	-96					-136					96
-124	124		14.10		2.10	-94					-134					94
-122	122		14.10		2.10	-92					-132					92
-120	120		13.90		1.90	-90					-130					90
-118	118		14.10		2.10	-88					-128					88
-116	116		14.30		2.30	-86					-126					86
-114	114		13.80		1.80	-84					-124					84
-112	112		13.80		1.80	-82					-122					82
-110	110		13.60		1.60	-80					-120					80
-108	108		13.60		1.60	-78					-118					78
-106	106		13.50		1.50	-76					-116					76
-104	104		13.40		1.40	-74					-114					74
-102	102		13.30		1.30	-72					-112					72
-100	100		13.10		1.10	-70					-110					70
-98	98		13.00		1.00	-68					-108					68
-96	96		12.90		0.90	-66					-106					66
-94	94		12.80		0.80	-64					-104					64
-92	92		12.30		0.30	-62					-102					62
-90	90		12.60		0.60	-60					-100					60
-88	88		12.20		0.20	-58					-98					58
-86	86		11.90		-0.10	-56					-96					56
-84	84		12.20		0.20	-54					-94					54
-82	82		11.70		-0.30	-52					-92					52
-80	80		11.50		-0.50	-50					-90		12.00		0.00	50
-78	78		11.40		-0.60	-48					-88		13.90		1.90	48
-76	76		11.10		-0.90	-46					-86		13.80		1.80	46
-74	74		11.20		-0.80	-44					-84		13.90		1.90	44
-72	72		11.40		-0.60	-42					-82		*14.00*		2.00	42
-70	70		*11.50*		-0.50	-40					-80		14.10		2.10	40
-68	68		11.60		-0.40	-38					-78		*14.05*		2.05	38
-66	66		*11.65*		-0.35	-36					-76		14.00		2.00	36
-64	64		11.70		-0.30	-34					-74		*14.00*		2.00	34
-62	62		*11.80*		-0.20	-32					-72		14.00		2.00	32
-60	60		11.90		-0.10	-30					-70		*14.25*		2.25	30
-58	58		*11.85*		-0.15	-28					-68		14.50		2.50	28
-56	56		11.80		-0.20	-26					-66		*14.35*		2.35	26
-54	54		*11.85*		-0.15	-24					-64		14.20		2.20	24
-52	52		11.90		-0.10	-22					-62		*14.25*		2.25	22
-50	50		*12.05*		0.05	-20					-60		14.30		2.30	20
-48	48		12.20		0.20	-18					-58		*14.40*		2.40	18
-46	46		*12.05*		0.05	-16					-56		14.50		2.50	16
-44	44		11.90		-0.10	-14					-54		*14.60*		2.60	14
-42	42		*11.80*		-0.20	-12					-52		14.70		2.70	12
-40	40		11.70		-0.30	-10					-50		*14.65*		2.65	10
-38	38		11.70		-0.30	-8					-48		14.60		2.60	8
-36	36		11.90		-0.10	-6					-46		*14.55*		2.55	6
-34	34		12.30		0.30	-4					-44		14.50		2.50	4
-32	32		13.30		1.30	-2					-42		14.60		2.60	2
-30	30		13.40		1.40	0					-40		14.50		2.50	0
-28	28		13.30		1.30	2					-38		14.50		2.50	-2
-26	26		13.40		1.40	4					-36		14.50		2.50	-4
-24	24		13.20		1.20	6		12.00		0.00	-34		14.10		2.10	-6
-22	22		13.20		1.20	8		12.00		0.00	-32		14.10		2.10	-8
-20	20		13.20		1.20	10	12.90	11.70	0.90	-0.30	-30	11.70	14.10	-0.30	2.10	-10
-18	18		12.70		0.70	12	13.00	11.50	1.00	-0.50	-28	11.60	13.90	-0.40	1.90	-12
-16	16		12.50		0.50	14	13.20	11.00	1.20	-1.00	-26	11.70	13.80	-0.30	1.80	-14
-14	14		12.00		0.00	16	12.70	10.70	0.70	-1.30	-24	11.80	13.80	-0.20	1.80	-16
-12	12		11.50		-0.50	18	12.50	10.40	0.50	-1.60	-22	11.60	13.50	-0.40	1.50	-18
-10	10	8.60	10.90	-3.40	-1.10	20	11.70	10.00	-0.30	-2.00	-20	11.40	13.20	-0.60	1.20	-20
-8	8	8.00	9.90	-4.00	-2.10	22	10.60	9.30	-1.40	-2.70	-18	10.80	12.60	-1.20	0.60	-22
-6	6	7.20	8.80	-4.80	-3.20	24	9.50	8.60	-2.50	-3.40	-16	10.20	12.30	-1.80	0.30	-24
-4	4	7.00	7.80	-5.00	-4.20	26	8.40	7.80	-3.60	-4.20	-14	9.80	11.30	-2.20	-0.70	-26
-2	2	6.30	7.10	-5.70	-4.90	28	7.00	6.70	-5.00	-5.30	-12	9.20	10.40	-2.80	-1.60	-28
0	0	6.20	6.20	-5.80	-5.80	30	5.90	6.40	-6.10	-5.60	-10	8.50	10.10	-3.50	-1.90	-30
0	0	6.20	6.20	-5.80	-5.80	35	5.20	4.40	-6.80	-7.60	-5	8.00	8.00	-4.00	-4.00	-35
2	-2	6.90	6.30	-5.10	-5.70	37	5.60	5.00	-6.40	-7.00	-3	8.90	8.70	-3.10	-3.30	-37
4	-4	7.20	7.50	-4.80	-4.50	39	6.80	6.10	-5.20	-5.90	-1	10.00	10.20	-2.00	-1.80	-39
6	-6	8.50	8.60	-3.50	-3.40	41	8.10	7.30	-3.90	-4.70	1	10.40	11.50	-1.60	-0.50	-41
8	-8	8.60	9.10	-3.40	-2.90	43	9.00	9.00	-3.00	-3.00	3	11.00	12.90	-1.00	0.90	-43
10	-10	10.30	10.70	-1.70	-1.30	45	10.50	10.00	-1.50	-2.00	5	12.00	*12.45*	0.00	0.45	-45
12	-12	10.70	11.70	-1.30	-0.30	47	11.30	11.00	-0.70	-1.00	7					-47
14	-14	11.10	12.00	-0.90	0.00	49	11.60	11.10	-0.40	-0.90	9					-49
16	-16	11.10		-0.90		51	11.80	11.50	-0.20	-0.50	11					-51
18	-18	11.40		-0.60		53		11.50		-0.50	13					-53
20	-20	11.70		-0.30		55		11.60		-0.40	15					-55
22	-22	11.50		-0.50		57		*11.70*		-0.30	17					
24	-24	11.50		-0.50		59		11.80		-0.20	19					
26	-26	11.20		-0.80		61					21					
28	-28	*11.25*		-0.75		63					23					
30	-30	11.30		-0.70		65					25					

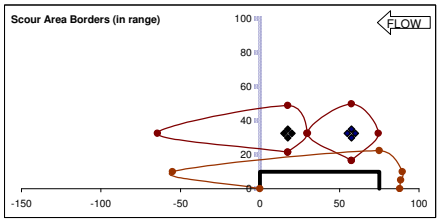
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.00	-4.00
2	8.30	-3.70
4	9.20	-2.80
6	10.00	-2.00
8	10.90	-1.10
10	11.50	-0.50
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

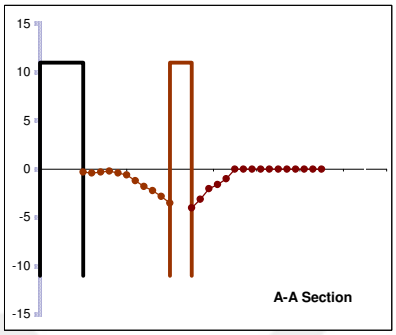
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	13	
SB_{af2}	Abutment Front (W+5 cm)	13.5	
SB_{af}	Abutment Corner Front	14.5	
SB_{ar}	Abutment Corner Right	12.5	
		P1	P2
SB_{pl}	Pier Left	13.5	8.5
SB_{pf}	Pier Front	14.5	9.5
SB_{pr}	Pier Right	15	14
SB_{pb}	Pier Rear	25	79.5

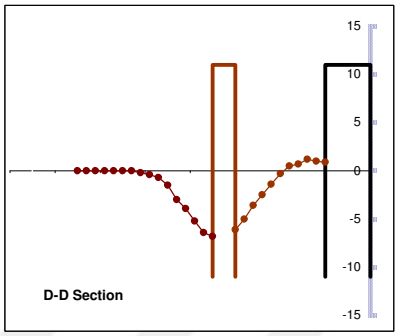


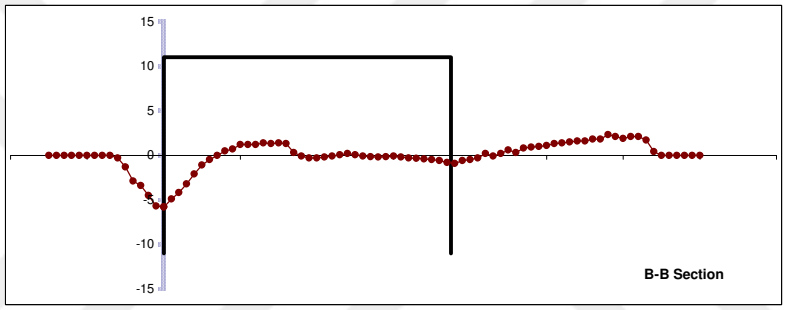
Experiment No : **E151**

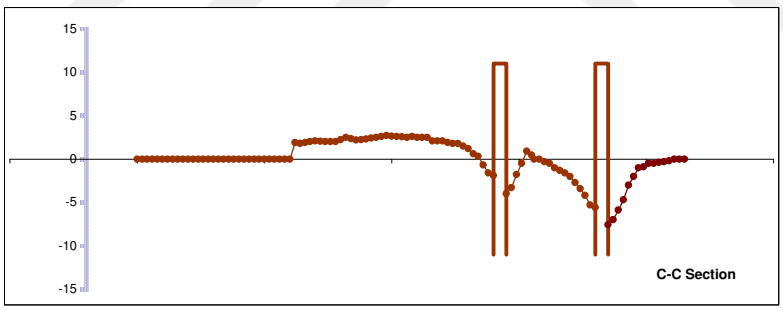


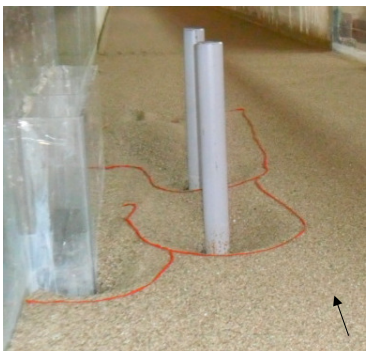


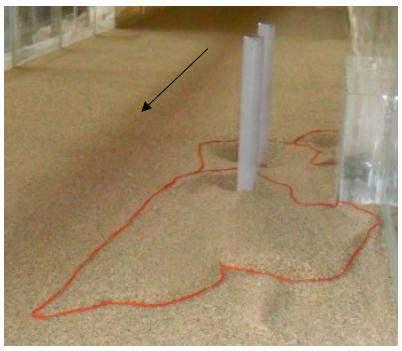






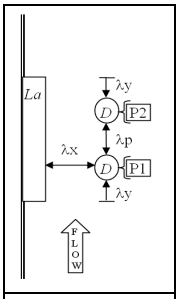


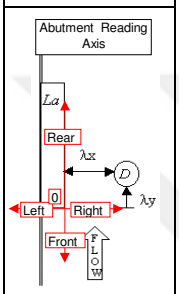


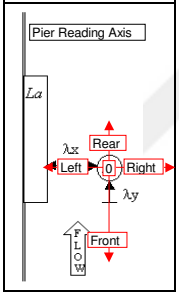


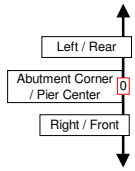
Experiment No : **E152**

Date :	07.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	10
λ_y (cm) :	15
λ_p (cm) :	35









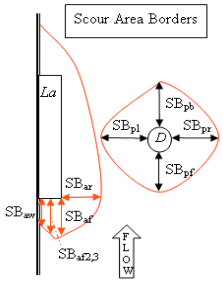
This color was used for raw data readings

This color was used for values enterpolated to sketch

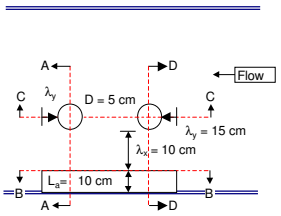
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-120					-160					120
-138	138					-118					-158					118
-136	136					-116					-156					116
-134	134					-114					-154					114
-132	132					-112					-152					112
-130	130					-110					-150					110
-128	128					-108					-148					108
-126	126					-106					-146					106
-124	124					-104					-144					104
-122	122					-102					-142					102
-120	120					-100					-140					100
-118	118					-98					-138					98
-116	116					-96					-136					96
-114	114					-94					-134					94
-112	112					-92					-132					92
-110	110		12.00		0.00	-90					-130					90
-108	108		12.40		0.40	-88					-128					88
-106	106		12.50		0.50	-86					-126					86
-104	104		13.60		1.60	-84					-124					84
-102	102		13.80		1.80	-82					-122					82
-100	100		13.40		1.40	-80					-120					80
-98	98		13.20		1.20	-78					-118					78
-96	96		12.20		0.20	-76					-116					76
-94	94		12.80		0.80	-74					-114					74
-92	92		12.20		0.20	-72					-112					72
-90	90		11.90		-0.10	-70					-110					70
-88	88		11.50		-0.50	-68					-108					68
-86	86		11.20		-0.80	-66					-106					66
-84	84		11.30		-0.70	-64					-104					64
-82	82		10.90		-1.10	-62					-102					62
-80	80		10.80		-1.20	-60					-100					60
-78	78		10.80		-1.20	-58					-98					58
-76	76		10.80		-1.20	-56					-96					56
-74	74		10.80		-1.20	-54					-94					54
-72	72		10.60		-1.40	-52					-92					52
-70	70		10.20		-1.80	-50					-90					50
-68	68		10.00		-2.00	-48					-88					48
-66	66		10.10		-1.90	-46					-86					46
-64	64		10.20		-1.80	-44					-84					44
-62	62		10.10		-1.90	-42					-82		12.00		0.00	42
-60	60		10.20		-1.80	-40					-80		12.70		0.70	40
-58	58		10.50		-1.50	-38					-78		12.90		0.90	38
-56	56		10.60		-1.40	-36					-76		12.60		0.60	36
-54	54		10.50		-1.50	-34					-74		12.90		0.90	34
-52	52		10.40		-1.60	-32					-72		12.90		0.90	32
-50	50		10.60		-1.40	-30					-70		12.70		0.70	30
-48	48		10.50		-1.50	-28					-68		12.50		0.50	28
-46	46		10.30		-1.70	-26					-66		12.50		0.50	26
-44	44		10.40		-1.60	-24					-64		12.90		0.90	24
-42	42		10.70		-1.30	-22					-62		12.70		0.70	22
-40	40		10.90		-1.10	-20					-60		12.80		0.80	20
-38	38		10.70		-1.30	-18					-58		13.30		1.30	18
-36	36		10.80		-1.20	-16					-56		13.70		1.70	16
-34	34		10.60		-1.40	-14					-54		13.80		1.80	14
-32	32		9.40		-2.60	-12					-52		14.20		2.20	12
-30	30		9.10		-2.90	-10					-50		14.40		2.40	10
-28	28		9.70		-2.30	-8					-48		14.50		2.50	8
-26	26		9.40		-2.60	-6		11.70		-0.30	-46		14.10		2.10	6
-24	24		9.20		-2.80	-4		11.90		-0.10	-44		14.00		2.00	4
-22	22		9.10		-2.90	-2		11.80		-0.20	-42		14.10		2.10	2
-20	20		9.20		-2.80	0		11.80		-0.20	-40		13.90		1.90	0
-18	18		9.70		-2.30	2		11.60		-0.40	-38		13.80		1.80	-2
-16	16		10.40		-1.60	4		11.30		-0.70	-36		13.80		1.80	-4
-14	14		10.40		-1.60	6		11.10		-0.90	-34		13.50		1.50	-6
-12	12		10.10		-1.90	8		10.50		-1.50	-32		13.50		1.50	-8
-10	10	7.30	9.40	-4.70	-2.60	10	8.70	10.10	-3.30	-1.90	-30	10.40	13.00	-1.60	1.00	-10
-8	8	7.20	8.60	-4.80	-3.40	12	8.90	9.80	-3.10	-2.20	-28	10.40	12.60	-1.60	0.60	-12
-6	6	6.40	7.30	-5.60	-4.70	14	8.20	8.70	-3.80	-3.30	-26	9.90	11.90	-2.10	-0.10	-14
-4	4	6.00	6.40	-6.00	-5.60	16	7.50	8.40	-4.50	-3.60	-24	8.60	10.80	-3.40	-1.20	-16
-2	2	5.40	6.50	-6.60	-5.50	18	6.40	7.10	-5.60	-4.90	-22	8.30	10.10	-3.70	-1.90	-18
0	0	5.00	5.00	-7.00	-7.00	20	4.80	6.40	-7.20	-5.60	-20	7.80	9.50	-4.20	-2.50	-20
0	0	5.00	5.00	-7.00	-7.00	25	5.50	4.80	-6.50	-7.20	-15	8.00	8.10	-4.00	-3.90	-25
2	-2	5.80	5.90	-6.20	-6.10	27	6.00	5.70	-6.00	-6.30	-13	9.00	9.40	-3.00	-2.60	-27
4	-4	5.90	7.10	-6.10	-4.90	29	7.00	6.90	-5.00	-5.10	-11	9.70	10.80	-2.30	-1.20	-29
6	-6	7.00	7.80	-5.00	-4.20	31	8.00	7.90	-4.00	-4.10	-9	10.60	11.70	-1.40	-0.30	-31
8	-8	8.80	8.70	-3.20	-3.30	33	9.40	9.20	-2.60	-2.80	-7	11.00	*11.70*	-1.00	-0.30	-33
10	-10	9.20	10.20	-2.80	-1.80	35	10.60	9.70	-1.40	-2.30	-5	11.00		-1.00		-35
12	-12	9.70	10.60	-2.30	-1.40	37	10.80	9.80	-1.20	-2.20	-3	11.20		-0.80		-37
14	-14	10.10	11.00	-1.90	-1.00	39	10.90	10.00	-1.10	-2.00	-1	11.80		-0.20		-39
16	-16	10.20	11.30	-1.80	-0.70	41	11.10	10.10	-0.90	-1.90	1	11.40		-0.60		-41
18	-18	10.20	11.80	-1.80	-0.20	43	11.10	10.30	-0.90	-1.70	3	11.20		-0.80		-43
20	-20	10.30		-1.70		45	11.30	10.50	-0.70	-1.50	5	11.30		-0.70		-45
22	-22	10.50		-1.50		47	11.40	10.70	-0.60	-1.30	7					
24	-24	10.60		-1.40		49	11.80	10.70	-0.20	-1.30	9					
26	-26	10.80		-1.20		51		10.60		-1.40	11					
28	-28	10.90		-1.10		53		11.00		-1.00	13					
30	-30	11.10		-0.90		55		11.10		-0.90	15					

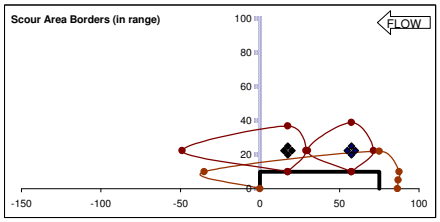
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.20	-4.80
2	7.30	-4.70
4	8.10	-3.90
6	9.30	-2.70
8	10.20	-1.80
10	10.60	-1.40
12	10.70	-1.30
14	10.80	-1.20
16	10.90	-1.10
18	10.70	-1.30
20	11.00	-1.00

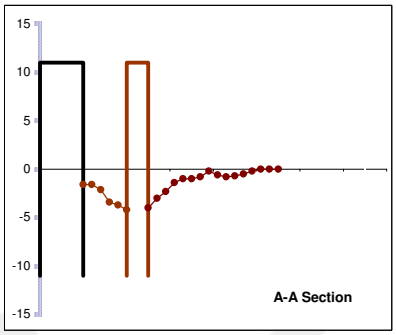
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	11.5	
SB_{af2}	Abutment Front (W+5 cm)	12	
SB_{af}	Abutment Corner Front	12.5	
SB_{ar}	Abutment Corner Right	12	
		P1	P2
SB_{pl}	Pier Left	*10*	*10*
SB_{pf}	Pier Front	11.5	9
SB_{pr}	Pier Right	14	12
SB_{pb}	Pier Rear	25	64

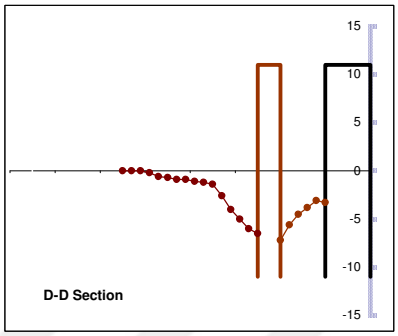


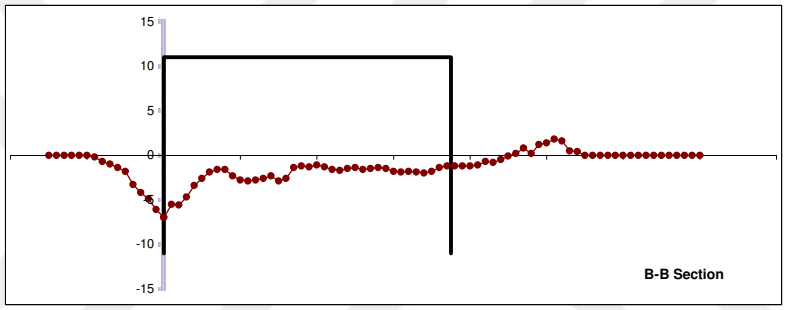
Experiment No : **E152**

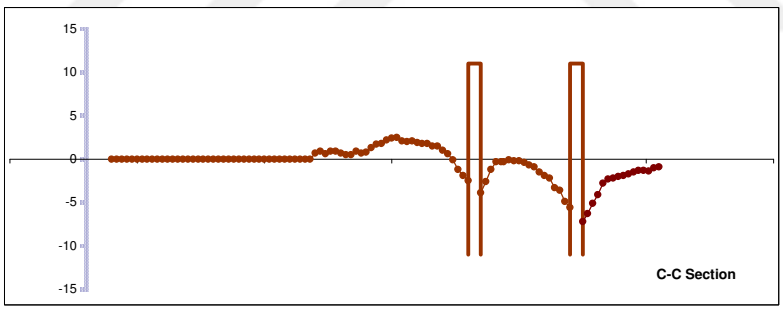


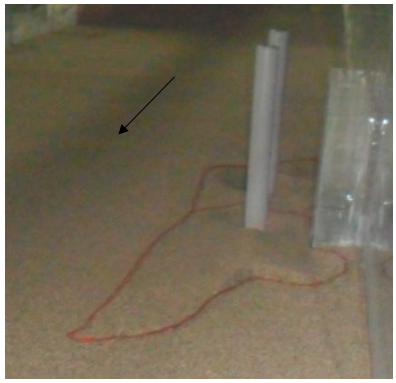






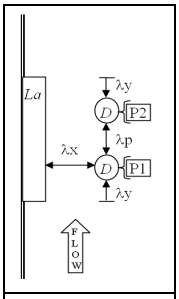


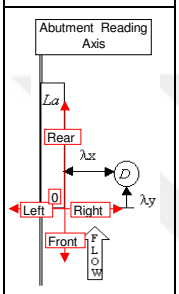


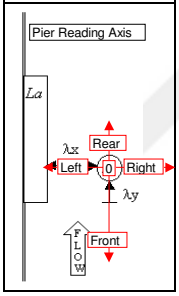


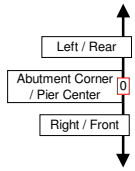
Experiment No : **E153**

Date :	09.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	10
λ_p (cm) :	35









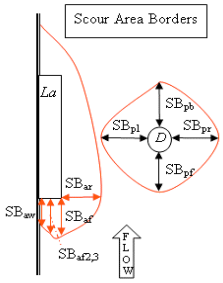
This color was used for raw data readings

This color was used for values enterpolated to sketch

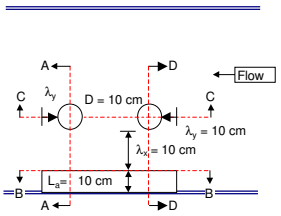
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-120					-165					120
-138	138					-118					-163					118
-136	136					-116					-161					116
-134	134					-114					-159					114
-132	132					-112					-157					112
-130	130					-110					-155					110
-128	128					-108					-153					108
-126	126					-106					-151					106
-124	124					-104					-149					104
-122	122					-102					-147					102
-120	120					-100					-145					100
-118	118					-98					-143					98
-116	116					-96					-141					96
-114	114		12.00		0.00	-94					-139					94
-112	112		12.40		0.40	-92					-137					92
-110	110		13.60		1.60	-90					-135					90
-108	108		15.60		3.60	-88					-133					88
-106	106		15.80		3.80	-86					-131					86
-104	104		15.80		3.80	-84					-129					84
-102	102		15.50		3.50	-82					-127					82
-100	100		14.30		2.30	-80					-125					80
-98	98		14.80		2.80	-78					-123					78
-96	96		14.70		2.70	-76					-121					76
-94	94		14.10		2.10	-74					-119					74
-92	92		13.80		1.80	-72					-117					72
-90	90		13.10		1.10	-70					-115					70
-88	88		12.60		0.60	-68					-113					68
-86	86		12.40		0.40	-66					-111					66
-84	84		12.10		0.10	-64					-109					64
-82	82		12.00		0.00	-62					-107					62
-80	80		11.90		-0.10	-60					-105					60
-78	78		11.80		-0.20	-58					-103					58
-76	76		11.80		-0.20	-56					-101					56
-74	74		11.60		-0.40	-54					-99					54
-72	72		11.20		-0.80	-52					-97					52
-70	70		11.00		-1.00	-50					-95					50
-68	68		10.60		-1.40	-48					-93					48
-66	66		10.00		-2.00	-46					-91					46
-64	64		9.60		-2.40	-44					-89					44
-62	62		9.70		-2.30	-42					-87					42
-60	60		9.90		-2.10	-40					-85					40
-58	58		10.40		-1.60	-38					-83					38
-56	56		10.80		-1.20	-36					-81					36
-54	54		11.20		-0.80	-34					-79					34
-52	52		11.20		-0.80	-32					-77					32
-50	50		11.50		-0.50	-30					-75					30
-48	48		11.80		-0.20	-28					-73					28
-46	46		11.60		-0.40	-26					-71		12.00		0.00	26
-44	44		11.50		-0.50	-24					-69		13.40		1.40	24
-42	42		11.70		-0.30	-22					-67		14.80		2.80	22
-40	40		11.50		-0.50	-20					-65		15.90		3.90	20
-38	38		11.30		-0.70	-18					-63		15.90		3.90	18
-36	36		11.30		-0.70	-16					-61		*15.90*		3.90	16
-34	34		11.20		-0.80	-14					-59		15.90		3.90	14
-32	32		10.60		-1.40	-12					-57		*15.25*		3.25	12
-30	30		10.10		-1.90	-10					-55		14.60		2.60	10
-28	28		9.40		-2.60	-8					-53		*15.05*		3.05	8
-26	26		8.70		-3.30	-6		12.30		0.30	-51		15.50		3.50	6
-24	24		7.90		-4.10	-4		12.30		0.30	-49		15.50		3.50	4
-22	22		6.90		-5.10	-2		12.20		0.20	-47		15.60		3.60	2
-20	20		6.10		-5.90	0		12.00		0.00	-45		15.30		3.30	0
-18	18		5.60		-6.40	2		12.10		0.10	-43		15.10		3.10	-2
-16	16		5.00		-7.00	4		11.80		-0.20	-41		15.00		3.00	-4
-14	14		5.00		-7.00	6		11.40		-0.60	-39		15.10		3.10	-6
-12	12		5.60		-6.40	8		11.20		-0.80	-37		14.70		2.70	-8
-10	10	8.00	6.20	-4.00	-5.80	10	5.40	10.60	-6.60	-1.40	-35	10.20	14.30	-1.80	2.30	-10
-8	8	7.50	7.50	-4.50	-4.50	12	5.60	9.90	-6.40	-2.10	-33	9.70	14.10	-2.30	2.10	-12
-6	6	6.70	6.90	-5.30	-5.10	14	5.40	9.20	-6.60	-2.80	-31	9.40	13.30	-2.60	1.30	-14
-4	4	6.30	6.40	-5.70	-5.60	16	4.20	8.90	-7.80	-3.10	-29	8.60	12.80	-3.40	0.80	-16
-2	2	5.80	5.90	-6.20	-6.10	18	3.60	8.30	-8.40	-3.70	-27	7.90	12.50	-4.10	0.50	-18
0	0	5.60	5.60	-6.40	-6.40	20	3.80	8.00	-8.20	-4.00	-25	8.50	12.40	-3.50	0.40	-20
0	0	5.60	5.60	-6.40	-6.40	30	4.90	2.30	-7.10	-9.70	-15	8.20	6.40	-3.80	-5.60	-30
2	-2	6.10	5.90	-5.90	-6.10	32	5.90	3.20	-6.10	-8.80	-13	9.40	7.10	-2.60	-4.90	-32
4	-4	6.50	6.10	-5.50	-5.90	34	6.90	4.30	-5.10	-7.70	-11	10.50	8.50	-1.50	-3.50	-34
6	-6	7.60	7.60	-4.40	-4.40	36	8.90	5.60	-3.10	-6.40	-9	11.50	9.40	-0.50	-2.60	-36
8	-8	8.00	8.50	-4.00	-3.50	38	9.90	6.70	-2.10	-5.30	-7	12.00	11.00	0.00	-1.00	-38
10	-10	7.40	11.00	-4.60	-1.00	40	11.20	7.80	-0.80	-4.20	-5		12.40		0.40	-40
12	-12	7.00	10.90	-5.00	-1.10	42	11.80	9.00	-0.20	-3.00	-3					-42
14	-14	6.80	11.20	-5.20	-0.80	44		10.20		-1.80	-1					-44
16	-16	6.60	11.60	-5.40	-0.40	46		11.20		-0.80	1					-46
18	-18	6.90	11.80	-5.10	-0.20	48		11.40		-0.60	3					-48
20	-20	7.30		-4.70		50		11.40		-0.60	5					-50
22	-22	8.00		-4.00		52		11.20		-0.80	7					
24	-24	8.80		-3.20		54		11.60		-0.40	9					
26	-26	9.70		-2.30		56		11.80		-0.20	11					
28	-28	10.60		-1.40		58					13					
30	-30	11.10		-0.90		60					15					

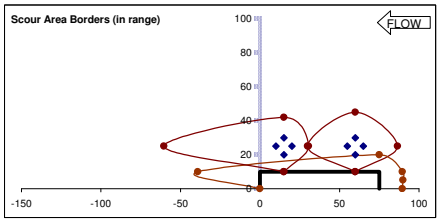
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.50	-4.50
2	7.50	-4.50
4	9.00	-3.00
6	10.10	-1.90
8	11.00	-1.00
10	11.60	-0.40
12	11.80	-0.20
14		
16		
18		
20		

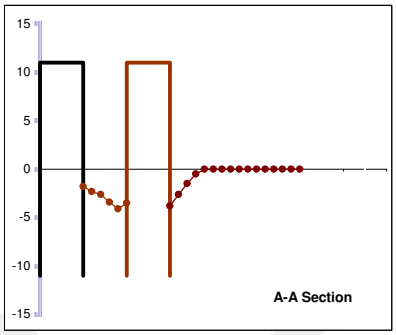
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af}	Abutment Corner Front	14.5
SB_{ar}	Abutment Corner Right	*10*
		P1 P2
SB_{pl}	Pier Left	*10* *10*
SB_{pf}	Pier Front	21.5 10.5
SB_{pr}	Pier Right	15 12
SB_{pb}	Pier Rear	25 70.5

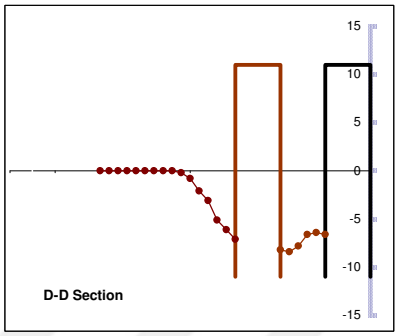


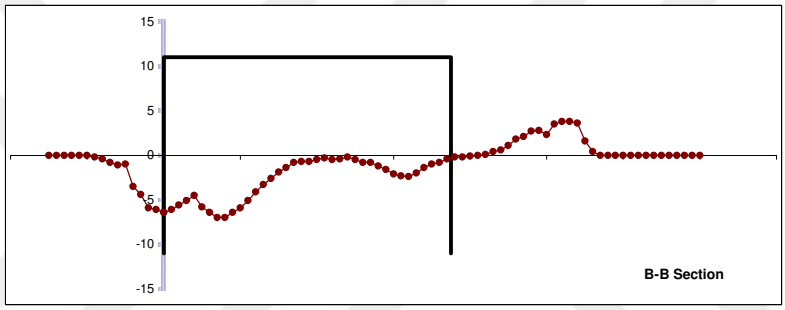
Experiment No : **E153**

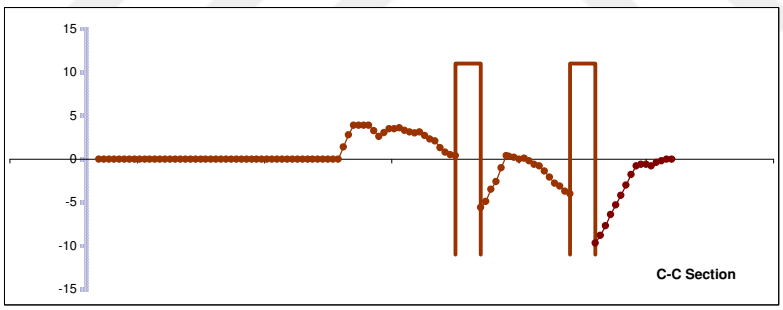


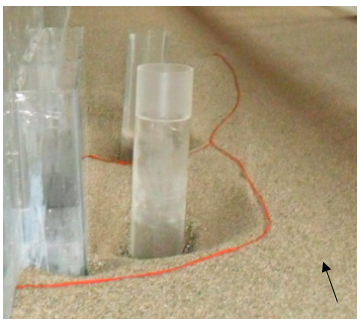


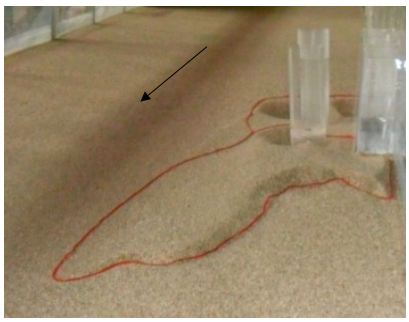






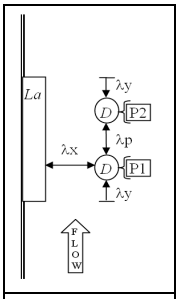


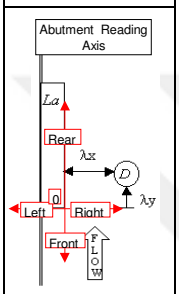


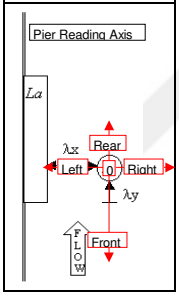


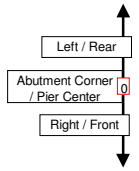
Experiment No : **E154**

Date :	13.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	10
λ_p (cm) :	35









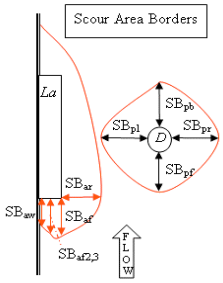
This color was used for raw data readings

This color was used for values enterpolated to sketch

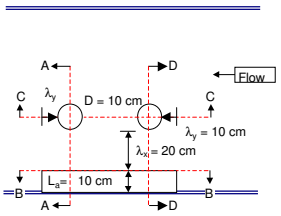
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140		13.60		1.60	-110					-155					110
-138	138		13.80		1.80	-108					-153					108
-136	136		14.10		2.10	-106					-151					106
-134	134		13.90		1.90	-104					-149					104
-132	132		13.90		1.90	-102					-147					102
-130	130		*14.00*		2.00	-100					-145					100
-128	128		14.10		2.10	-98					-143					98
-126	126		*14.15*		2.15	-96					-141					96
-124	124		14.20		2.20	-94					-139					94
-122	122		*14.30*		2.30	-92					-137					92
-120	120		14.40		2.40	-90					-135					90
-118	118		*14.40*		2.40	-88					-133					88
-116	116		14.40		2.40	-86					-131					86
-114	114		*14.35*		2.35	-84					-129					84
-112	112		14.30		2.30	-82					-127					82
-110	110		*14.30*		2.30	-80					-125					80
-108	108		14.30		2.30	-78					-123					78
-106	106		14.30		2.30	-76					-121					76
-104	104		14.40		2.40	-74					-119					74
-102	102		14.00		2.00	-72					-117					72
-100	100		14.40		2.40	-70					-115					70
-98	98		13.70		1.70	-68					-113					68
-96	96		13.60		1.60	-66					-111					66
-94	94		12.70		0.70	-64					-109					64
-92	92		12.30		0.30	-62					-107					62
-90	90		12.10		0.10	-60					-105					60
-88	88		11.90		-0.10	-58					-103					58
-86	86		11.80		-0.20	-56					-101					56
-84	84		11.80		-0.20	-54					-99					54
-82	82		11.00		-1.00	-52					-97					52
-80	80		10.80		-1.20	-50					-95		12.00		0.00	50
-78	78		10.70		-1.30	-48					-93		12.20		0.20	48
-76	76		*10.70*		-1.30	-46					-91		12.40		0.40	46
-74	74		10.70		-1.30	-44					-89		13.80		1.80	44
-72	72		*10.75*		-1.25	-42					-87		13.00		1.00	42
-70	70		10.80		-1.20	-40					-85		13.40		1.40	40
-68	68		*10.90*		-1.10	-38					-83		13.80		1.80	38
-66	66		11.00		-1.00	-36					-81		*14.05*		2.05	36
-64	64		*10.95*		-1.05	-34					-79		14.30		2.30	34
-62	62		10.90		-1.10	-32					-77		*14.35*		2.35	32
-60	60		*10.85*		-1.15	-30					-75		14.40		2.40	30
-58	58		10.80		-1.20	-28					-73		*14.55*		2.55	28
-56	56		10.80		-1.20	-26					-71		14.70		2.70	26
-54	54		10.70		-1.30	-24					-69		*14.75*		2.75	24
-52	52		10.90		-1.10	-22					-67		14.80		2.80	22
-50	50		10.70		-1.30	-20					-65		*14.80*		2.80	20
-48	48		10.90		-1.10	-18					-63		14.80		2.80	18
-46	46		10.90		-1.10	-16					-61		*14.75*		2.75	16
-44	44		11.00		-1.00	-14					-59		14.70		2.70	14
-42	42		10.80		-1.20	-12					-57		*14.85*		2.85	12
-40	40		10.60		-1.40	-10					-55		15.00		3.00	10
-38	38		10.90		-1.10	-8					-53		*14.95*		2.95	8
-36	36		10.70		-1.30	-6					-51		14.90		2.90	6
-34	34		10.90		-1.10	-4					-49		*14.90*		2.90	4
-32	32		11.10		-0.90	-2					-47		14.90		2.90	2
-30	30		11.30		-0.70	0					-45		*14.95*		2.95	0
-28	28		11.70		-0.30	2					-43		15.00		3.00	-2
-26	26		12.20		0.20	4					-41		15.00		3.00	-4
-24	24		12.70		0.70	6		11.80		-0.20	-39		15.10		3.10	-6
-22	22		13.00		1.00	8		11.60		-0.40	-37		15.30		3.30	-8
-20	20		12.90		0.90	10	12.70	10.30	0.70	-1.70	-35	11.00	14.80	-1.00	2.80	-10
-18	18		12.60		0.60	12	12.50	10.90	0.50	-1.10	-33	11.10	14.70	-0.90	2.70	-12
-16	16		12.50		0.50	14	11.60	10.40	-0.40	-1.60	-31	10.90	14.40	-1.10	2.40	-14
-14	14		12.30		0.30	16	10.60	9.80	-1.40	-2.20	-29	10.90	14.20	-1.10	2.20	-16
-12	12		11.80		-0.20	18	9.60	9.40	-2.40	-2.60	-27	10.10	13.80	-1.90	1.80	-18
-10	10	9.80	11.20	-2.20	-0.80	20	8.40	8.50	-3.60	-3.50	-25	9.60	13.50	-2.40	1.50	-20
-8	8	9.70	10.20	-2.30	-1.80	22	6.80	7.70	-5.20	-4.30	-23	8.80	13.10	-3.20	1.10	-22
-6	6	8.50	9.30	-3.50	-2.70	24	5.90	7.10	-6.10	-4.90	-21	8.60	12.50	-3.40	0.50	-24
-4	4	7.80	8.20	-4.20	-3.80	26	5.00	6.70	-7.00	-5.30	-19	7.40	12.10	-4.60	0.10	-26
-2	2	7.40	7.60	-4.60	-4.40	28	3.70	6.40	-8.30	-5.60	-17	7.00	11.60	-5.00	-0.40	-28
0	0	7.10	7.10	-4.90	-4.90	30	2.90	6.30	-9.10	-5.70	-15	7.60	12.40	-4.40	0.40	-30
0	0	7.10	7.10	-4.90	-4.90	40	4.40	2.00	-7.60	-10.00	-5	7.50	5.50	-4.50	-6.50	-40
2	-2	7.80	6.90	-4.20	-5.10	42	3.80	2.60	-8.20	-9.40	-3	7.50	5.90	-4.50	-6.10	-42
4	-4	7.40	7.80	-4.60	-4.20	44	5.20	4.40	-6.80	-7.60	-1	9.00	7.60	-3.00	-4.40	-44
6	-6	8.50	9.20	-3.50	-2.80	46	6.40	5.40	-5.60	-6.60	1	9.40	8.80	-2.60	-3.20	-46
8	-8	9.90	10.20	-2.10	-1.80	48	7.40	7.10	-4.60	-4.90	3	9.50	10.10	-2.50	-1.90	-48
10	-10	10.10	11.40	-1.90	-0.60	50	8.20	8.20	-3.80	-3.80	5	9.90	12.00	-2.10	0.00	-50
12	-12	10.10	11.80	-1.90	-0.20	52	9.30	9.20	-2.70	-2.80	7	10.30		-1.70		-52
14	-14	8.60		-3.40		54	10.30	10.20	-1.70	-1.80	9	10.60		-1.40		-54
16	-16	8.30		-3.70		56	11.30	11.30	-0.70	-0.70	11	11.10		-0.90		-56
18	-18	7.80		-4.20		58	11.50	11.40	-0.50	-0.60	13	11.60		-0.40		-58
20	-20	7.40		-4.60		60	12.00	11.30	0.00	-0.70	15	12.00		0.00		-60
22	-22	7.20		-4.80		62		11.60		-0.40	17					
24	-24	6.40		-5.60		64		11.80		-0.20	19					
26	-26	6.10		-5.90		66					21					
28	-28	6.20		-5.80		68					23					
30	-30	6.20		-5.80		70					25					

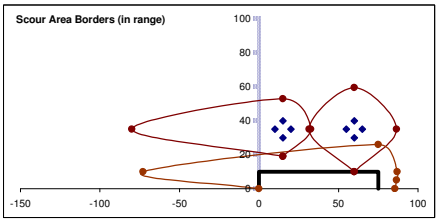
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.70	-2.30
2	9.80	-2.20
4	10.30	-1.70
6	11.10	-0.90
8	11.50	-0.50
10	11.80	-0.20
12		
14		
16		
18		
20		

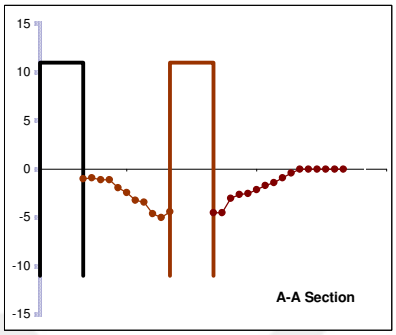
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	10.5
SB_{af2}	Abutment Front (W+5 cm)	11.5
SB_{af}	Abutment Corner Front	12
SB_{ar}	Abutment Corner Right	*16*
		P1 / P2
SB_{pl}	Pier Left	*20* / 11
SB_{pf}	Pier Front	21.5 / 12.5
SB_{pr}	Pier Right	19.5 / 13
SB_{pb}	Pier Rear	23.5 / 90

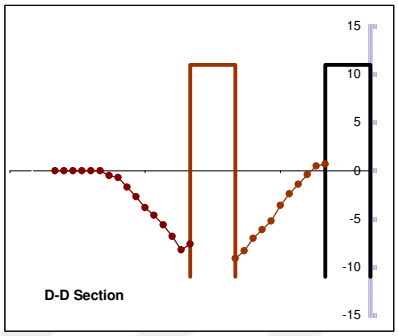


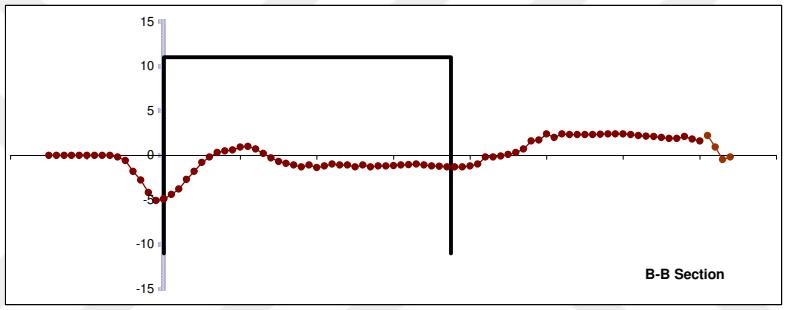
Experiment No : **E154**

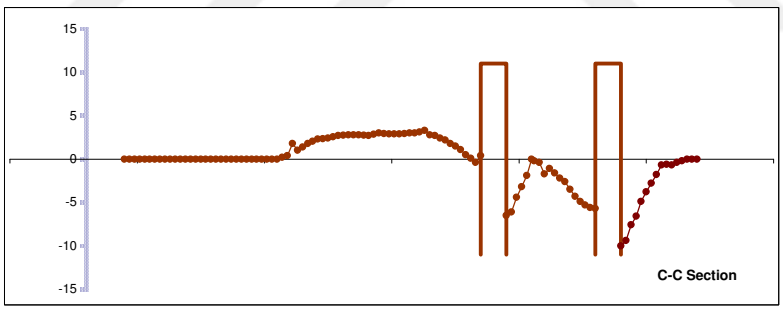


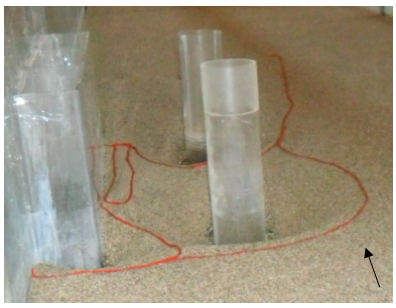


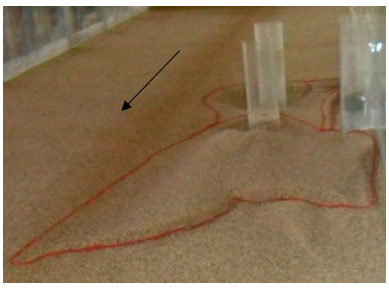






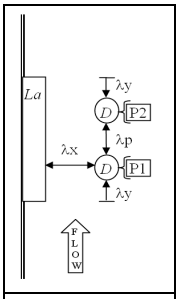


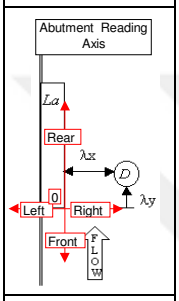


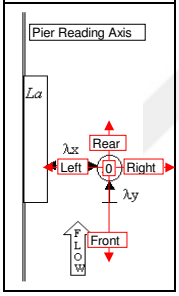


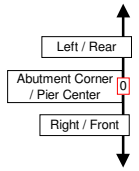
Experiment No : **E155**

Date :	15.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	10
λ_p (cm) :	35









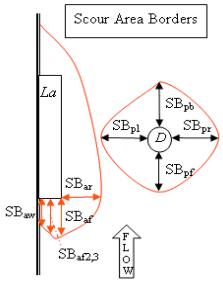
This color was used for raw data readings

This color was used for values enterpolated to sketch

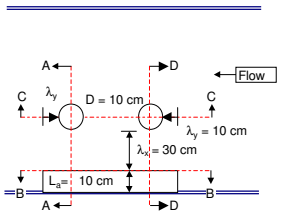
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140		13.20		1.20	-100					-145					100
-138	138		13.10		1.10	-98					-143					98
-136	136		13.40		1.40	-96					-141					96
-134	134		12.50		0.50	-94					-139					94
-132	132		12.80		0.80	-92					-137					92
-130	130		12.80		0.80	-90					-135					90
-128	128		12.70		0.70	-88					-133					88
-126	126		12.70		0.70	-86					-131					86
-124	124		12.40		0.40	-84					-129					84
-122	122		12.70		0.70	-82					-127					82
-120	120		12.80		0.80	-80					-125					80
-118	118		12.80		0.80	-78					-123					78
-116	116		12.70		0.70	-76					-121					76
-114	114		12.60		0.60	-74					-119					74
-112	112		12.90		0.90	-72					-117					72
-110	110		12.40		0.40	-70					-115					70
-108	108		12.50		0.50	-68					-113					68
-106	106		12.40		0.40	-66					-111					66
-104	104		12.50		0.50	-64					-109					64
-102	102		12.20		0.20	-62					-107					62
-100	100		12.30		0.30	-60					-105					60
-98	98		12.10		0.10	-58					-103					58
-96	96		12.00		0.00	-56					-101					56
-94	94		12.00		0.00	-54					-99					54
-92	92		11.90		-0.10	-52					-97					52
-90	90		11.80		-0.20	-50					-95					50
-88	88		11.50		-0.50	-48					-93					48
-86	86		11.40		-0.60	-46					-91					46
-84	84		11.10		-0.90	-44					-89					44
-82	82		11.00		-1.00	-42					-87					42
-80	80		10.80		-1.20	-40					-85					40
-78	78		10.70		-1.30	-38					-83					38
-76	76		10.80		-1.20	-36					-81					36
-74	74		10.90		-1.10	-34					-79					34
-72	72		*11.10*		-0.90	-32					-77					32
-70	70		11.30		-0.70	-30					-75		12.00		0.00	30
-68	68		*11.30*		-0.70	-28					-73		12.20		0.20	28
-66	66		11.30		-0.70	-26					-71		12.60		0.60	26
-64	64		*11.40*		-0.60	-24					-69		13.80		1.80	24
-62	62		11.50		-0.50	-22					-67		13.40		1.40	22
-60	60		*11.55*		-0.45	-20					-65		14.00		2.00	20
-58	58		11.60		-0.40	-18					-63		14.50		2.50	18
-56	56		*11.60*		-0.40	-16					-61		*14.70*		2.70	16
-54	54		11.60		-0.40	-14					-59		14.90		2.90	14
-52	52		*11.70*		-0.30	-12					-57		*15.00*		3.00	12
-50	50		11.80		-0.20	-10					-55		15.10		3.10	10
-48	48		*11.80*		-0.20	-8					-53		*15.10*		3.10	8
-46	46		11.80		-0.20	-6					-51		15.10		3.10	6
-44	44		*11.90*		-0.10	-4					-49		*15.20*		3.20	4
-42	42		12.00		0.00	-2					-47		15.30		3.30	2
-40	40		11.90		-0.10	0					-45		*15.25*		3.25	0
-38	38		12.70		0.70	2					-43		15.20		3.20	-2
-36	36		12.70		0.70	4					-41		*15.25*		3.25	-4
-34	34		13.00		1.00	6					-39		15.30		3.30	-6
-32	32		13.00		1.00	8					-37		*15.30*		3.30	-8
-30	30		12.90		0.90	10	12.50		0.50		-35	11.20	15.30	-0.80	3.30	-10
-28	28		12.90		0.90	12	12.50		0.50		-33	11.20	*15.25*	-0.80	3.25	-12
-26	26		13.00		1.00	14	12.60		0.60		-31	11.30	15.20	-0.70	3.20	-14
-24	24		12.90		0.90	16	12.40	12.30	0.40	0.30	-29	11.30	*15.15*	-0.70	3.15	-16
-22	22		12.90		0.90	18	12.30	11.90	0.30	-0.10	-27	11.40	15.10	-0.60	3.10	-18
-20	20		12.90		0.90	20	12.30	11.30	0.30	-0.70	-25	11.40	15.30	-0.60	3.30	-20
-18	18		12.70		0.70	22	11.90	10.80	-0.10	-1.20	-23	11.10	15.10	-0.90	3.10	-22
-16	16		12.30		0.30	24	10.90	10.40	-1.10	-1.60	-21	10.80	14.90	-1.20	2.90	-24
-14	14		11.80		-0.20	26	9.90	9.70	-2.10	-2.30	-19	10.10	14.90	-1.90	2.90	-26
-12	12		11.20		-0.80	28	9.00	9.00	-3.00	-3.00	-17	9.80	14.50	-2.20	2.50	-28
-10	10	8.90	10.60	-3.10	-1.40	30	7.90	8.30	-4.10	-3.70	-15	9.30	14.00	-2.70	2.00	-30
-8	8	8.40	9.70	-3.60	-2.30	32	7.30	7.30	-4.70	-4.70	-13	9.30	13.60	-2.70	1.60	-32
-6	6	7.70	8.70	-4.30	-3.30	34	3.70	6.50	-8.30	-5.50	-11	9.30	12.20	-2.70	0.20	-34
-4	4	7.00	7.90	-5.00	-4.10	36	4.30	6.20	-7.70	-5.80	-9	9.40	12.50	-2.60	0.50	-36
-2	2	6.70	7.10	-5.30	-4.90	38	3.40	6.30	-8.60	-5.70	-7	8.10	12.10	-3.90	0.10	-38
0	0	6.40	6.40	-5.60	-5.60	40	3.40	6.40	-8.60	-5.60	-5	9.00	12.80	-3.00	0.80	-40
0	0	6.40	6.40	-5.60	-5.60	50	2.90	1.80	-9.10	-10.20	5	7.10	5.60	-4.90	-6.40	-50
2	-2	6.90	6.70	-5.10	-5.30	52	3.30	2.30	-8.70	-9.70	7	8.00	6.70	-4.00	-5.30	-52
4	-4	7.10	6.80	-4.90	-5.20	54	4.80	3.70	-7.20	-8.30	9	9.50	8.40	-2.50	-3.60	-54
6	-6	8.60	8.30	-3.40	-3.70	56	6.20	5.20	-5.80	-6.80	11	9.90	9.60	-2.10	-2.40	-56
8	-8	9.70	9.20	-2.30	-2.80	58	7.30	6.60	-4.70	-5.40	13	10.10	10.80	-1.90	-1.20	-58
10	-10	10.30	10.20	-1.70	-1.80	60	8.60	7.60	-3.40	-4.40	15	10.40	12.50	-1.60	0.50	-60
12	-12	11.20	12.00	-0.80	0.00	62	9.30	8.90	-2.70	-3.10	17	10.80		-1.20		-62
14	-14	11.50		-0.50		64	10.00	10.30	-2.00	-1.70	19	10.80		-1.20		-64
16	-16	11.40		-0.60		66	11.20	11.40	-0.80	-0.60	21	11.10		-0.90		-66
18	-18	11.60		-0.40		68	11.80	11.60	-0.20	-0.40	23	11.50		-0.50		-68
20	-20	11.80		-0.20		70		11.80		-0.20	25	11.80		-0.20		-70
22	-22					72					27					
24	-24					74					29					
26	-26					76					31					
28	-28					78					33					
30	-30					80					35					

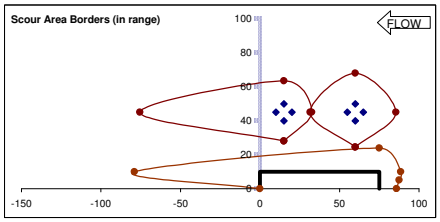
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.40	-3.60
2	8.80	-3.20
4	9.60	-2.40
6	10.60	-1.40
8	11.60	-0.40
10	11.90	-0.10
12		
14		
16		
18		
20		

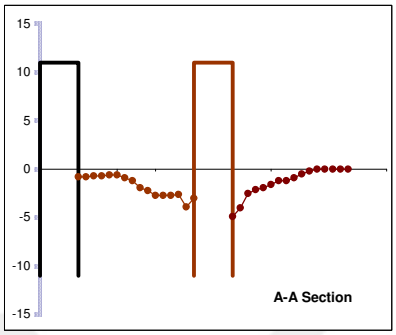
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	11	
SB_{af2}	Abutment Front (W+5 cm)	12.5	
SB_{af}	Abutment Corner Front	13.5	
SB_{ar}	Abutment Corner Right	14	
		P1	P2
SB_{pl}	Pier Left	15.5	12
SB_{pf}	Pier Front	20.5	12.5
SB_{pr}	Pier Right	18	13.5
SB_{pb}	Pier Rear	23.5	85.5

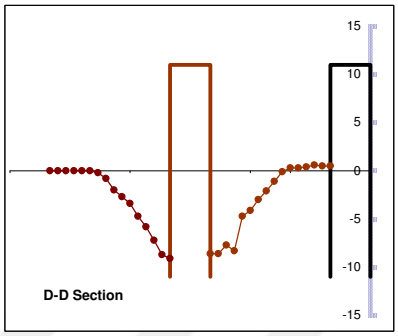


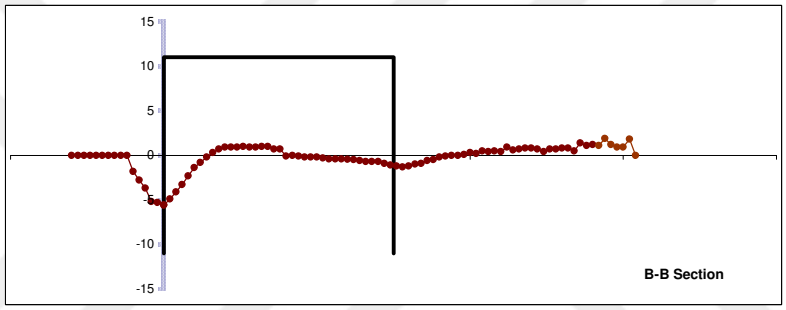
Experiment No : **E155**

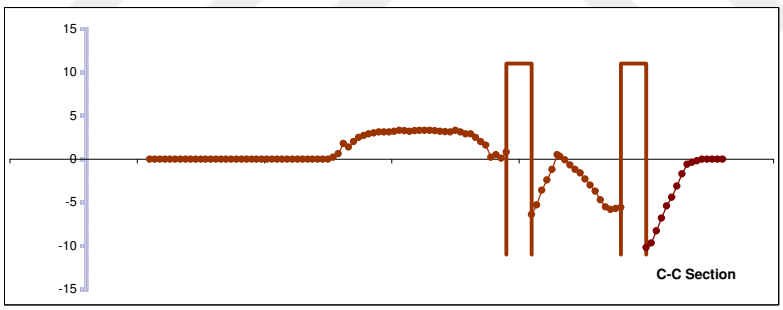


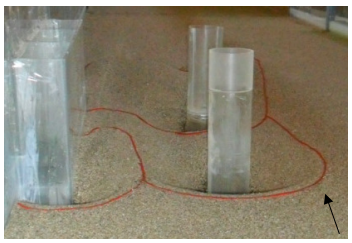


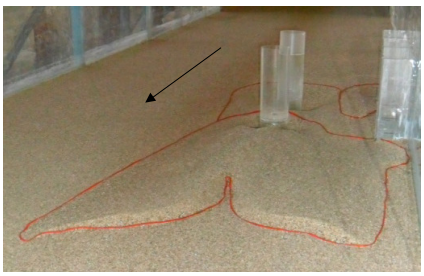






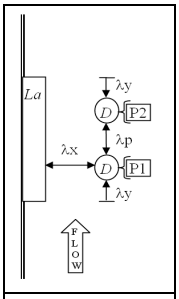


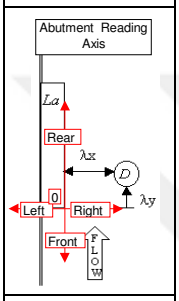


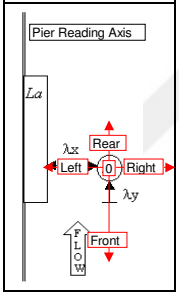


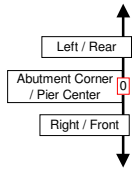
Experiment No : **E156**

Date :	22.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	10
λ_p (cm) :	35









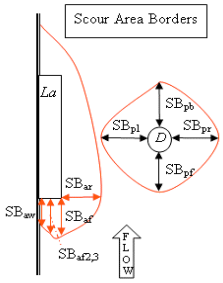
This color was used for raw data readings

This color was used for values enterpolated to sketch

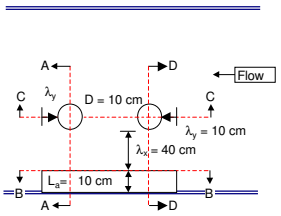
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-90					-135					90
-138	138					-88					-133					88
-136	136					-86					-131					86
-134	134					-84					-129					84
-132	132					-82					-127					82
-130	130					-80					-125					80
-128	128					-78					-123					78
-126	126					-76					-121					76
-124	124					-74					-119					74
-122	122		12.00		0.00	-72					-117					72
-120	120		*12.25*		0.25	-70					-115					70
-118	118		12.50		0.50	-68					-113					68
-116	116		*12.55*		0.55	-66					-111					66
-114	114		12.60		0.60	-64					-109					64
-112	112		*12.60*		0.60	-62					-107					62
-110	110		12.60		0.60	-60					-105					60
-108	108		*12.65*		0.65	-58					-103					58
-106	106		12.70		0.70	-56					-101					56
-104	104		*12.65*		0.65	-54					-99					54
-102	102		12.60		0.60	-52					-97					52
-100	100		*12.45*		0.45	-50					-95					50
-98	98		12.30		0.30	-48					-93					48
-96	96		*12.15*		0.15	-46					-91					46
-94	94		12.00		0.00	-44					-89					44
-92	92		*11.85*		-0.15	-42					-87					42
-90	90		11.70		-0.30	-40					-85					40
-88	88		*11.60*		-0.40	-38					-83					38
-86	86		11.50		-0.50	-36					-81					36
-84	84		11.50		-0.50	-34					-79					34
-82	82		11.50		-0.50	-32					-77					32
-80	80		11.40		-0.60	-30					-75					30
-78	78		11.30		-0.70	-28					-73					28
-76	76		11.20		-0.80	-26					-71					26
-74	74		11.20		-0.80	-24					-69					24
-72	72		*11.25*		-0.75	-22					-67					22
-70	70		11.30		-0.70	-20					-65					20
-68	68		*11.55*		-0.45	-18					-63					18
-66	66		11.80		-0.20	-16					-61					16
-64	64		*11.80*		-0.20	-14					-59					14
-62	62		11.80		-0.20	-12					-57		12.00		0.00	12
-60	60		*11.90*		-0.10	-10					-55		12.40		0.40	10
-58	58		12.00		0.00	-8					-53		12.20		0.20	8
-56	56		*12.00*		0.00	-6					-51		12.60		0.60	6
-54	54		12.00		0.00	-4					-49		13.20		1.20	4
-52	52		*12.00*		0.00	-2					-47		14.40		2.40	2
-50	50		12.00		0.00	0					-45		*14.60*		2.60	0
-48	48		*11.95*		-0.05	2					-43		14.80		2.80	-2
-46	46		11.90		-0.10	4					-41		*14.90*		2.90	-4
-44	44		*12.30*		0.30	6					-39		15.00		3.00	-6
-42	42		12.70		0.70	8					-37		*15.15*		3.15	-8
-40	40		*12.80*		0.80	10	12.60		0.60		-35	11.80	15.30	-0.20	3.30	-10
-38	38		12.90		0.90	12	12.70		0.70		-33	11.50	*15.35*	-0.50	3.35	-12
-36	36		*12.90*		0.90	14	12.70		0.70		-31	11.80	15.40	-0.20	3.40	-14
-34	34		12.90		0.90	16	12.30		0.30		-29	*11.85*	*15.40*	-0.15	3.40	-16
-32	32		*13.00*		1.00	18	12.10		0.10		-27	11.90	15.40	-0.10	3.40	-18
-30	30		13.10		1.10	20	11.90		-0.10		-25	*11.65*	*15.35*	-0.35	3.35	-20
-28	28		13.20		1.20	22	11.90		-0.10		-23	11.40	15.30	-0.60	3.30	-22
-26	26		13.10		1.10	24	11.80		-0.20		-21	*11.45*	*15.25*	-0.55	3.25	-24
-24	24		12.90		0.90	26	11.30		-0.70		-19	11.50	15.20	-0.50	3.20	-26
-22	22		12.90		0.90	28	10.90	13.10	-1.10	1.10	-17	*11.30*	*15.15*	-0.70	3.15	-28
-20	20		12.70		0.70	30	11.00	12.50	-1.00	0.50	-15	11.10	15.10	-0.90	3.10	-30
-18	18		12.40		0.40	32	11.10	11.80	-0.90	-0.20	-13	11.00	15.10	-1.00	3.10	-32
-16	16		12.20		0.20	34	11.30	11.20	-0.70	-0.80	-11	11.10	14.70	-0.90	2.70	-34
-14	14		11.80		-0.20	36	10.80	10.50	-1.20	-1.50	-9	10.80	14.70	-1.20	2.70	-36
-12	12		11.20		-0.80	38	9.70	9.90	-2.30	-2.10	-7	10.30	14.40	-1.70	2.40	-38
-10	10	8.50	10.60	-3.50	-1.40	40	8.60	9.30	-3.40	-2.70	-5	10.00	14.00	-2.00	2.00	-40
-8	8	8.20	9.70	-3.80	-2.30	42	7.50	8.30	-4.50	-3.70	-3	9.90	13.40	-2.10	1.40	-42
-6	6	7.10	8.80	-4.90	-3.20	44	6.20	7.40	-5.80	-4.60	-1	9.30	12.90	-2.70	0.90	-44
-4	4	7.00	7.70	-5.00	-4.30	46	5.20	7.00	-6.80	-5.00	1	9.40	12.50	-2.60	0.50	-46
-2	2	6.40	7.00	-5.60	-5.00	48	3.80	6.40	-8.20	-5.60	3	8.50	12.20	-3.50	0.20	-48
0	0	6.40	6.40	-5.60	-5.60	50	3.50	6.60	-8.50	-5.40	5	8.00	12.50	-4.00	0.50	-50
0	0	6.40	6.40	-5.60	-5.60	60	3.40	1.90	-8.60	-10.10	15	6.00	5.70	-6.00	-6.30	-60
2	-2	6.80	6.60	-5.20	-5.40	62	3.50	2.20	-8.50	-9.80	17	7.50	6.90	-4.50	-5.10	-62
4	-4	7.00	6.50	-5.00	-5.50	64	4.80	3.80	-7.20	-8.20	19	9.10	8.70	-2.90	-3.30	-64
6	-6	8.30	8.10	-3.70	-3.90	66	5.90	5.10	-6.10	-6.90	21	9.50	9.90	-2.50	-2.10	-66
8	-8	9.40	9.10	-2.60	-2.90	68	7.20	6.50	-4.80	-5.50	23	10.00	10.90	-2.00	-1.10	-68
10	-10	10.20	10.20	-1.80	-1.80	70	8.80	7.90	-3.20	-4.10	25	10.60	12.30	-1.40	0.30	-70
12	-12	10.70	11.80	-1.30	-0.20	72	9.80	9.20	-2.20	-2.80	27	10.90		-1.10		-72
14	-14	11.20	12.00	-0.80	0.00	74	10.80	10.70	-1.20	-1.30	29	11.60		-0.40		-74
16	-16	11.30		-0.70		76	11.80	11.60	-0.20	-0.40	31	11.80		-0.20		-76
18	-18	11.30		-0.70		78		11.80		-0.20	33					-78
20	-20	11.30		-0.70		80					35					-80
22	-22	11.50		-0.50		82					37					
24	-24	11.40		-0.60		84					39					
26	-26	11.20		-0.80		86					41					
28	-28	11.20		-0.80		88					43					
30	-30	11.80		-0.20		90					45					

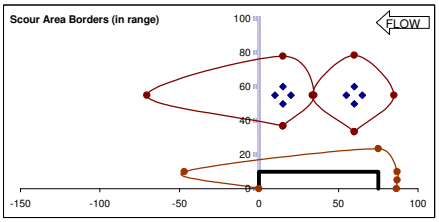
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.20	-3.80
2	8.80	-3.20
4	9.90	-2.10
6	10.80	-1.20
8	11.80	-0.20
10		
12		
14		
16		
18		
20		

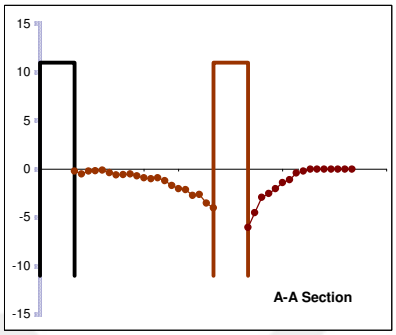
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	11.5	
SB_{af2}	Abutment Front (W+5 cm)	12	
SB_{af}	Abutment Corner Front	12	
SB_{ar}	Abutment Corner Right	13.5	
		P1	P2
SB_{pl}	Pier Left	16.5	13
SB_{pf}	Pier Front	20	14.5
SB_{pr}	Pier Right	18.5	18
SB_{pb}	Pier Rear	21.5	80.5

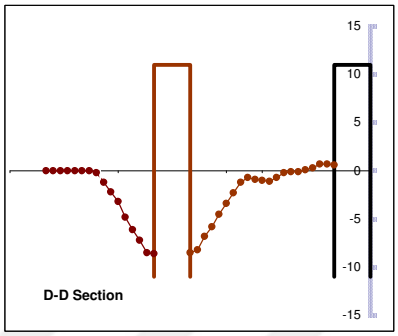


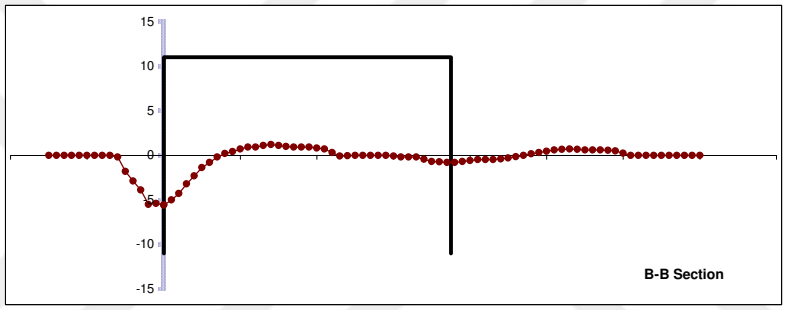
Experiment No : **E156**

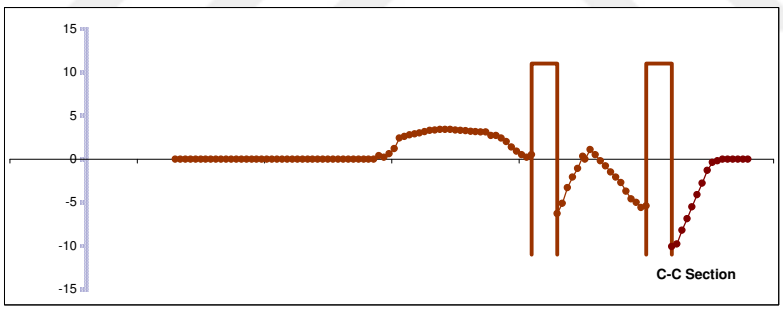


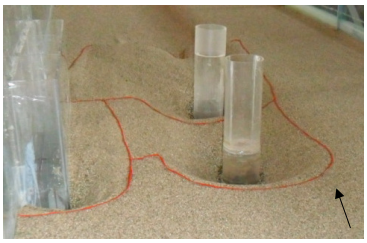


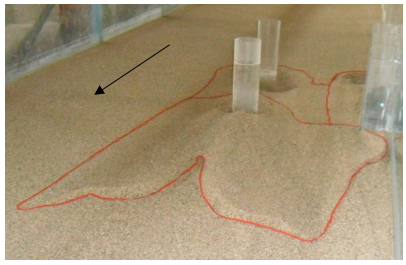






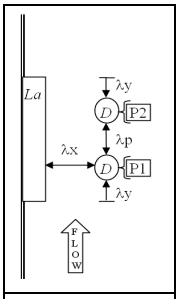


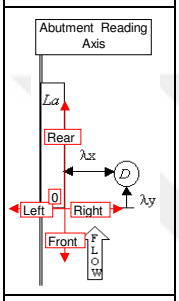


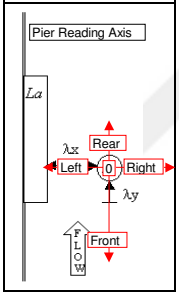


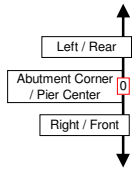
Experiment No : **E157**

Date :	24.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	10
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	10
λ_p (cm) :	35









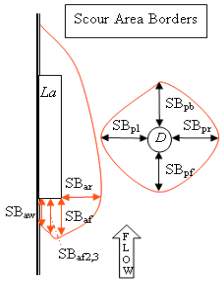
This color was used for raw data readings

This color was used for values enterpolated to sketch

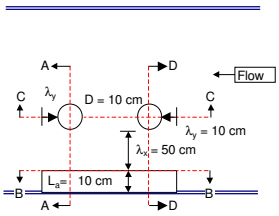
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140					-80					-125					80
-138	138					-78					-123					78
-136	136					-76					-121					76
-134	134					-74					-119					74
-132	132					-72					-117					72
-130	130					-70					-115					70
-128	128					-68					-113					68
-126	126					-66					-111					66
-124	124					-64					-109					64
-122	122					-62					-107					62
-120	120					-60					-105					60
-118	118					-58					-103					58
-116	116					-56					-101					56
-114	114		12.00		0.00	-54					-99					54
-112	112		13.20		1.20	-52					-97					52
-110	110		13.20		1.20	-50					-95					50
-108	108		13.40		1.40	-48					-93					48
-106	106		13.10		1.10	-46					-91					46
-104	104		13.00		1.00	-44					-89					44
-102	102		12.50		0.50	-42					-87					42
-100	100		12.60		0.60	-40					-85					40
-98	98		12.50		0.50	-38					-83					38
-96	96		12.40		0.40	-36					-81					36
-94	94		12.40		0.40	-34					-79					34
-92	92		11.80		-0.20	-32					-77					32
-90	90		11.80		-0.20	-30					-75					30
-88	88		11.50		-0.50	-28					-73					28
-86	86		11.40		-0.60	-26					-71					26
-84	84		11.30		-0.70	-24					-69					24
-82	82		11.10		-0.90	-22					-67					22
-80	80		11.10		-0.90	-20					-65					20
-78	78		11.00		-1.00	-18					-63					18
-76	76		10.70		-1.30	-16					-61					16
-74	74		*10.85*		-1.15	-14					-59		12.00		0.00	14
-72	72		11.00		-1.00	-12					-57		12.40		0.40	12
-70	70		*11.10*		-0.90	-10					-55		12.30		0.30	10
-68	68		11.20		-0.80	-8					-53		12.30		0.30	8
-66	66		*11.25*		-0.75	-6					-51		12.50		0.50	6
-64	64		11.30		-0.70	-4					-49		12.50		0.50	4
-62	62		*11.40*		-0.60	-2					-47		*12.55*		0.55	2
-60	60		11.50		-0.50	0					-45		12.60		0.60	0
-58	58		*11.50*		-0.50	2					-43		12.70		0.70	-2
-56	56		11.50		-0.50	4					-41		12.60		0.60	-4
-54	54		*11.50*		-0.50	6					-39		13.00		1.00	-6
-52	52		11.50		-0.50	8					-37		14.20		2.20	-8
-50	50		*11.65*		-0.35	10	12.00		0.00		-35	11.20	*14.60*	-0.80	2.60	-10
-48	48		11.80		-0.20	12	12.00		0.00		-33	11.30	15.00	-0.70	3.00	-12
-46	46		*12.00*		0.00	14	12.00		0.00		-31	*11.45*	*15.15*	-0.55	3.15	-14
-44	44		12.20		0.20	16	11.50		-0.50		-29	11.60	15.30	-0.40	3.30	-16
-42	42		*12.40*		0.40	18	11.30		-0.70		-27	*11.55*	*15.30*	-0.45	3.30	-18
-40	40		12.60		0.60	20	11.50		-0.50		-25	11.50	15.30	-0.50	3.30	-20
-38	38		12.70		0.70	22	11.80		-0.20		-23	*11.45*	*15.45*	-0.55	3.45	-22
-36	36		12.60		0.60	24	11.70		-0.30		-21	11.40	15.60	-0.60	3.60	-24
-34	34		12.70		0.70	26	11.20		-0.80		-19	*11.35*	*15.60*	-0.65	3.60	-26
-32	32		12.70		0.70	28	*11.35*		-0.65		-17	11.30	15.60	-0.70	3.60	-28
-30	30		12.70		0.70	30	11.50		-0.50		-15	*11.35*	*15.65*	-0.65	3.65	-30
-28	28		12.70		0.70	32	*11.45*		-0.55		-13	11.40	15.70	-0.60	3.70	-32
-26	26		12.80		0.80	34	11.40		-0.60		-11	*11.45*	*15.60*	-0.55	3.60	-34
-24	24		12.80		0.80	36	*11.40*	12.60	-0.60	0.60	-9	11.50	15.50	-0.50	3.50	-36
-22	22		12.60		0.60	38	11.40	12.40	-0.60	0.40	-7	*11.55*	15.60	-0.45	3.60	-38
-20	20		12.50		0.50	40	*11.45*	12.30	-0.55	0.30	-5	11.60	15.50	-0.40	3.50	-40
-18	18		12.10		0.10	42	11.50	12.00	-0.50	0.00	-3	11.70	15.40	-0.30	3.40	-42
-16	16		11.80		-0.20	44	11.50	11.30	-0.50	-0.70	-1	11.40	15.10	-0.60	3.10	-44
-14	14		11.50		-0.50	46	11.00	10.60	-1.00	-1.40	1	11.10	15.20	-0.90	3.20	-46
-12	12		10.80		-1.20	48	9.90	9.90	-2.10	-2.10	3	10.60	15.00	-1.40	3.00	-48
-10	10	7.90	10.00	-4.10	-2.00	50	8.80	9.20	-3.20	-2.80	5	10.10	14.70	-1.90	2.70	-50
-8	8	8.00	9.00	-4.00	-3.00	52	7.80	8.20	-4.20	-3.80	7	9.80	14.00	-2.20	2.00	-52
-6	6	7.20	7.80	-4.80	-4.20	54	7.20	7.40	-4.80	-4.60	9	9.60	13.30	-2.40	1.30	-54
-4	4	6.60	7.10	-5.40	-4.90	56	5.40	7.00	-6.60	-5.00	11	9.50	12.80	-2.50	0.80	-56
-2	2	6.20	6.00	-5.80	-6.00	58	4.50	7.00	-7.50	-5.00	13	8.60	12.20	-3.40	0.20	-58
0	0	5.80	5.80	-6.20	-6.20	60	3.70	7.20	-8.30	-4.80	15	8.60	12.90	-3.40	0.90	-60
0	0	5.80	5.80	-6.20	-6.20	70	1.80	2.70	-10.20	-9.30	25	7.20	6.10	-4.80	-5.90	-70
2	-2	6.60	6.30	-5.40	-5.70	72	4.40	2.80	-7.60	-9.20	27	8.20	6.80	-3.80	-5.20	-72
4	-4	6.60	6.60	-5.40	-5.40	74	5.30	4.10	-6.70	-7.90	29	9.40	8.20	-2.60	-3.80	-74
6	-6	7.50	8.20	-4.50	-3.80	76	6.70	5.60	-5.30	-6.40	31	9.70	8.40	-2.30	-3.60	-76
8	-8	8.70	9.20	-3.30	-2.80	78	7.80	7.00	-4.20	-5.00	33	10.60	10.70	-1.40	-1.30	-78
10	-10	9.70	10.50	-2.30	-1.50	80	8.80	8.20	-3.20	-3.80	35	10.70	12.40	-1.30	0.40	-80
12	-12	10.50	11.00	-1.50	-1.00	82	9.80	9.70	-2.20	-2.30	37	11.00		-1.00		-82
14	-14	11.10	12.00	-0.90	0.00	84	11.00	11.10	-1.00	-0.90	39	11.10		-0.90		-84
16	-16	11.40		-0.60		86	12.00	11.80	0.00	-0.20	41	11.50		-0.50		-86
18	-18	11.50		-0.50		88					43	12.00		0.00		-88
20	-20	11.50		-0.50		90					45					-90
22	-22	11.40		-0.60		92					47					
24	-24	11.50		-0.50		94					49					
26	-26	11.50		-0.50		96					51					
28	-28	11.80		-0.20		98					53					
30	-30					100					55					

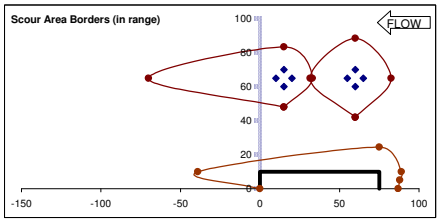
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	7.80	-4.20
2	7.50	-4.50
4	8.50	-3.50
6	9.80	-2.20
8	10.70	-1.30
10	11.60	-0.40
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

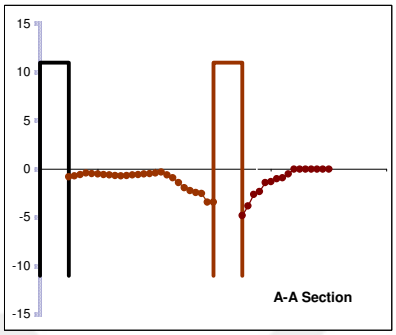
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	12	
SB_{af2}	Abutment Front (W+5 cm)	13	
SB_{af}	Abutment Corner Front	14	
SB_{ar}	Abutment Corner Right	14.5	
		P1	P2
SB_{pl}	Pier Left	18	12
SB_{pf}	Pier Front	17.5	13
SB_{pr}	Pier Right	18.5	13.5
SB_{pb}	Pier Rear	23.5	80

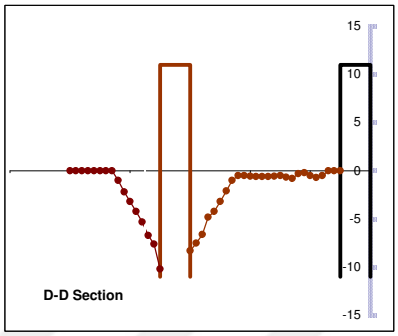


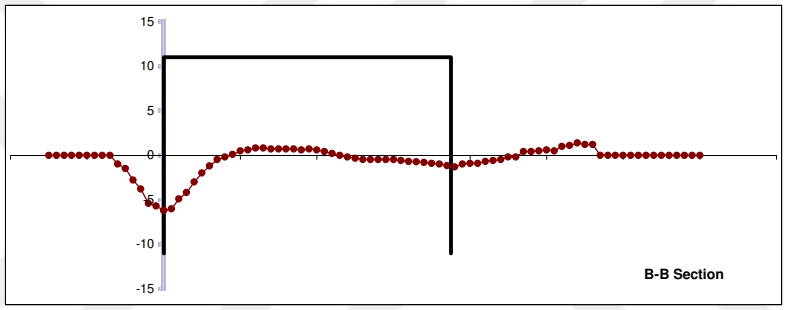
Experiment No : **E157**

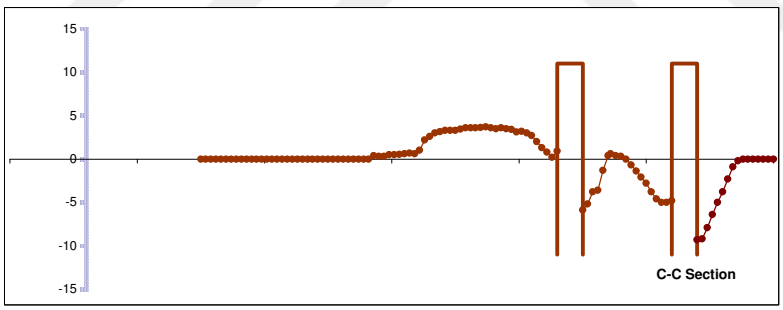


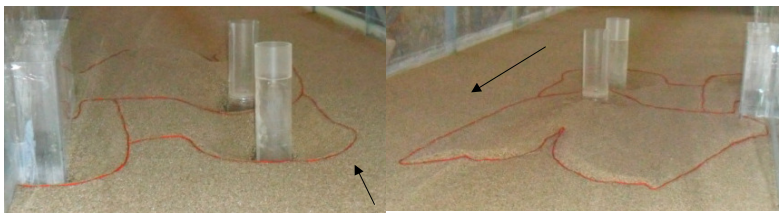






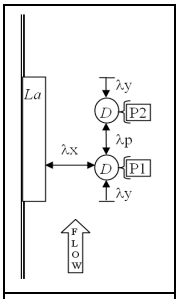


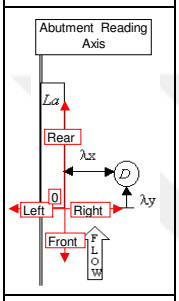


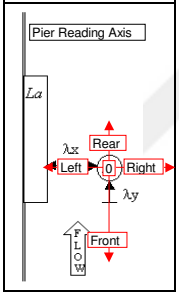


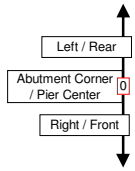
Experiment No : **E158**

Date :	28.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	10
λ_p (cm) :	35









This color was used for raw data readings

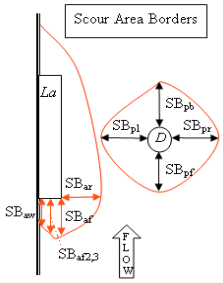
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-115					-160					115
-138	138					-113					-158					113
-136	136					-111					-156					111
-134	134					-109					-154					109
-132	132					-107					-152					107
-130	130					-105					-150					105
-128	128					-103					-148					103
-126	126		12.00		0.00	-101					-146					101
-124	124		12.90		0.90	-99					-144					99
-122	122		14.20		2.20	-97					-142					97
-120	120		14.00		2.00	-95					-140					95
-118	118		14.30		2.30	-93					-138					93
-116	116		15.80		3.80	-91					-136					91
-114	114		15.80		3.80	-89					-134					89
-112	112		15.70		3.70	-87					-132					87
-110	110		15.40		3.40	-85					-130					85
-108	108		15.10		3.10	-83					-128					83
-106	106		15.00		3.00	-81					-126					81
-104	104		14.50		2.50	-79					-124					79
-102	102		14.30		2.30	-77					-122					77
-100	100		13.90		1.90	-75					-120					75
-98	98		13.60		1.60	-73					-118					73
-96	96		13.20		1.20	-71					-116					71
-94	94		12.80		0.80	-69					-114					69
-92	92		12.30		0.30	-67					-112					67
-90	90		12.00		0.00	-65					-110					65
-88	88		11.90		-0.10	-63					-108					63
-86	86		11.50		-0.50	-61					-106					61
-84	84		11.40		-0.60	-59					-104					59
-82	82		11.30		-0.70	-57					-102					57
-80	80		11.00		-1.00	-55					-100					55
-78	78		10.90		-1.10	-53					-98					53
-76	76		10.90		-1.10	-51					-96					51
-74	74		11.00		-1.00	-49					-94					49
-72	72		10.90		-1.10	-47					-92					47
-70	70		10.90		-1.10	-45					-90					45
-68	68		10.70		-1.30	-43					-88					43
-66	66		10.60		-1.40	-41					-86					41
-64	64		10.40		-1.60	-39					-84					39
-62	62		10.40		-1.60	-37					-82					37
-60	60		10.30		-1.70	-35					-80					35
-58	58		10.80		-1.20	-33					-78					33
-56	56		11.00		-1.00	-31					-76					31
-54	54		11.40		-0.60	-29					-74					29
-52	52		11.60		-0.40	-27					-72					27
-50	50		11.70		-0.30	-25					-70		12.00		0.00	25
-48	48		11.70		-0.30	-23					-68		12.70		0.70	23
-46	46		11.80		-0.20	-21					-66		14.10		2.10	21
-44	44		11.80		-0.20	-19					-64		15.40		3.40	19
-42	42		11.70		-0.30	-17					-62		*15.40*		3.40	17
-40	40		11.50		-0.50	-15					-60		15.40		3.40	15
-38	38		11.40		-0.60	-13					-58		*15.50*		3.50	13
-36	36		11.00		-1.00	-11					-56		15.60		3.60	11
-34	34		10.70		-1.30	-9					-54		*15.30*		3.30	9
-32	32		9.90		-2.10	-7					-52		15.00		3.00	7
-30	30		9.50		-2.50	-5					-50		*15.00*		3.00	5
-28	28		9.10		-2.90	-3					-48		15.00		3.00	3
-26	26		8.50		-3.50	-1		11.20		-0.80	-46		*15.00*		3.00	1
-24	24		7.80		-4.20	1		11.50		-0.50	-44		15.00		3.00	-1
-22	22		7.30		-4.70	3		11.50		-0.50	-42		15.00		3.00	-3
-20	20		6.80		-5.20	5		11.30		-0.70	-40		14.70		2.70	-5
-18	18		6.50		-5.50	7		11.10		-0.90	-38		14.50		2.50	-7
-16	16		6.50		-5.50	9		10.60		-1.40	-36		14.80		2.80	-9
-14	14	8.30	6.60	-3.70	-5.40	11		10.30		-1.70	-34		14.30		2.30	-11
-12	12	8.00	6.60	-4.00	-5.40	13		9.90		-2.10	-32		13.70		1.70	-13
-10	10	6.70	6.30	-5.30	-5.70	15	5.90	9.00	-6.10	-3.00	-30	11.00	13.40	-1.00	1.40	-15
-8	8	6.20	5.70	-5.80	-6.30	17	5.80	8.30	-6.20	-3.70	-28	9.50	13.00	-2.50	1.00	-17
-6	6	5.30	4.80	-6.70	-7.20	19	5.60	7.70	-6.40	-4.30	-26	8.80	12.60	-3.20	0.60	-19
-4	4	4.50	4.30	-7.50	-7.70	21	5.20	7.10	-6.80	-4.90	-24	7.90	11.80	-4.10	-0.20	-21
-2	2	4.20	4.00	-7.80	-8.00	23	4.00	7.00	-8.00	-5.00	-22	6.80	11.50	-5.20	-0.50	-23
0	0	3.10	3.10	-8.90	-8.90	25	3.70	7.20	-8.30	-4.80	-20	6.60	11.50	-5.40	-0.50	-25
0	0	3.10	3.10	-8.90	-8.90	35	2.90	1.60	-9.10	-10.40	-10	7.10	6.00	-4.90	-6.00	-35
2	-2	4.00	3.80	-8.00	-8.20	37	3.50	2.50	-8.50	-9.50	-8	7.50	6.60	-4.50	-5.40	-37
4	-4	3.90	3.80	-8.10	-8.20	39	4.70	3.90	-7.30	-8.10	-6	9.20	8.20	-2.80	-3.80	-39
6	-6	5.10	5.40	-6.90	-6.60	41	6.00	5.10	-6.00	-6.90	-4	9.60	9.40	-2.40	-2.60	-41
8	-8	6.70	6.40	-5.30	-5.60	43	7.10	6.20	-4.90	-5.80	-2	9.80	10.90	-2.20	-1.10	-43
10	-10	6.90	7.50	-5.10	-4.50	45	8.00	7.20	-4.00	-4.80	0	9.80	11.50	-2.20	-0.50	-45
12	-12	7.70	8.50	-4.30	-3.50	47	9.70	8.40	-2.30	-3.60	2	9.80		-2.20		-47
14	-14	7.00	9.70	-5.00	-2.30	49	11.20	9.70	-0.80	-2.30	4	9.80		-2.20		-49
16	-16	6.60	10.90	-5.40	-1.10	51	11.70	10.90	-0.30	-1.10	6	10.00		-2.00		-51
18	-18	6.40	11.20	-5.60	-0.80	53	11.80	11.60	-0.20	-0.40	8	10.50		-1.50		-53
20	-20	6.60	11.30	-5.40	-0.70	55		11.50		-0.50	10	11.00		-1.00		-55
22	-22	7.10	11.20	-4.90	-0.80	57		11.80		-0.20	12					
24	-24	7.70	11.40	-4.30	-0.60	59					14					
26	-26	8.20	11.50	-3.80	-0.50	61					16					
28	-28	9.00	11.30	-3.00	-0.70	63					18					
30	-30	9.60	11.60	-2.40	-0.40	65					20					

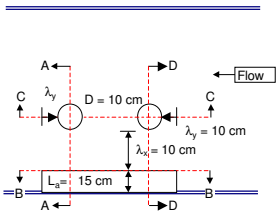
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.00	-4.00
2	7.70	-4.30
4	8.30	-3.70
6	9.10	-2.90
8	10.00	-2.00
10	10.80	-1.20
12	11.00	-1.00
14	11.10	-0.90
16	11.10	-0.90
18	11.20	-0.80
20	11.30	-0.70

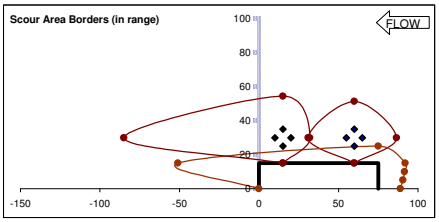
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af3}	Abutment Front (W+10 cm)	16.5
SB_{af}	Abutment Corner Front	17
SB_{ar}	Abutment Corner Right	*10*

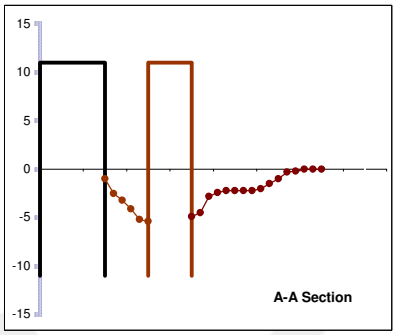
		P1	P2
SB_{pl}	Pier Left	*10*	*10*
SB_{pf}	Pier Front	21.5	12
SB_{pr}	Pier Right	16.5	19.5
SB_{pb}	Pier Rear	24	95

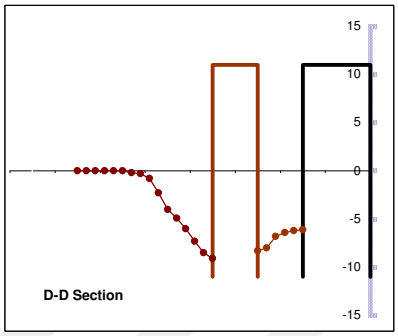


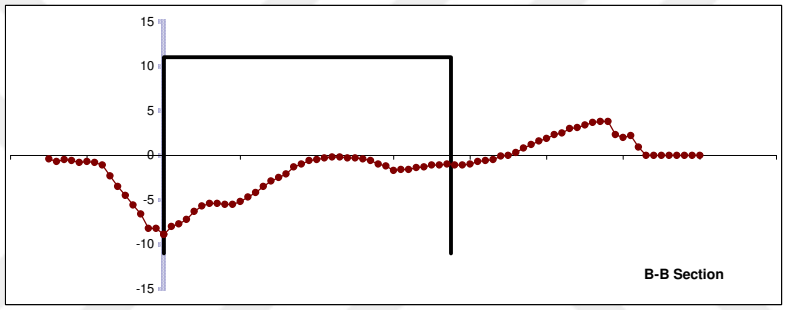
Experiment No : **E158**

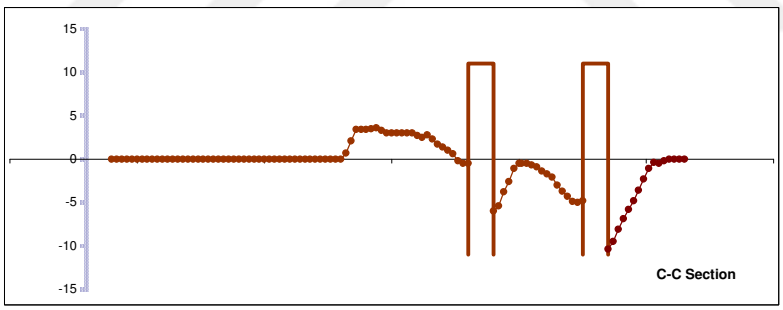


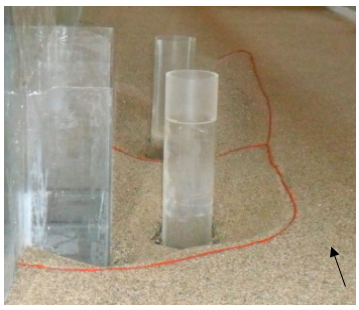


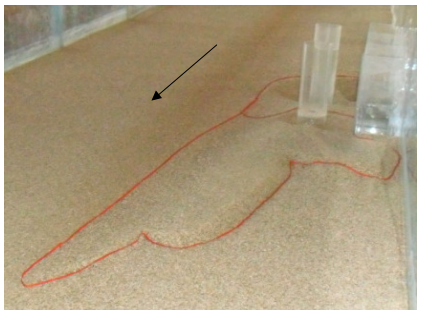






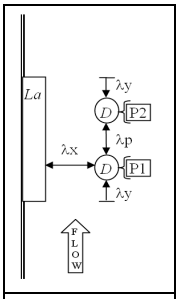


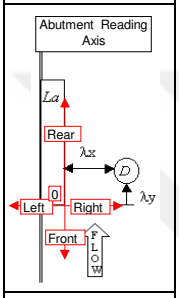


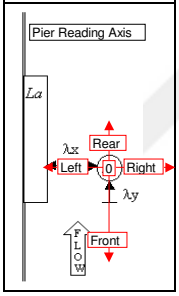


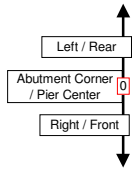
Experiment No : **E159**

Date :	31.08.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	10
λ_p (cm) :	35









This color was used for raw data readings

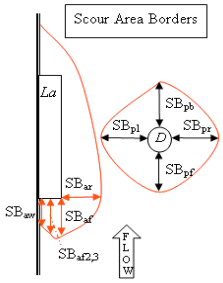
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
		Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in	Left/	Rear/	Left/	Rear/	Dist. in
Distance (cm)		Right	Front	Right	Front	A-A	Right	Front	Right	Front	C-C	Right	Front	Right	Front	D-D
-140	140		14.90		2.90	-105					-150					105
-138	138		*14.90*		2.90	-103					-148					103
-136	136		14.90		2.90	-101					-146					101
-134	134		*14.65*		2.65	-99					-144					99
-132	132		14.40		2.40	-97					-142					97
-130	130		*14.45*		2.45	-95					-140					95
-128	128		14.50		2.50	-93					-138					93
-126	126		*14.50*		2.50	-91					-136					91
-124	124		14.50		2.50	-89					-134					89
-122	122		*14.40*		2.40	-87					-132					87
-120	120		14.30		2.30	-85					-130					85
-118	118		*14.30*		2.30	-83					-128					83
-116	116		14.30		2.30	-81					-126					81
-114	114		*14.25*		2.25	-79					-124					79
-112	112		14.20		2.20	-77					-122					77
-110	110		14.10		2.10	-75					-120					75
-108	108		14.20		2.20	-73					-118					73
-106	106		13.90		1.90	-71					-116					71
-104	104		13.70		1.70	-69					-114					69
-102	102		13.50		1.50	-67					-112					67
-100	100		13.20		1.20	-65					-110					65
-98	98		12.70		0.70	-63					-108					63
-96	96		12.30		0.30	-61					-106					61
-94	94		11.70		-0.30	-59					-104					59
-92	92		11.20		-0.80	-57					-102					57
-90	90		10.60		-1.40	-55					-100					55
-88	88		9.70		-2.30	-53					-98					53
-86	86		9.50		-2.50	-51					-96					51
-84	84		9.10		-2.90	-49					-94					49
-82	82		8.90		-3.10	-47					-92					47
-80	80		9.20		-2.80	-45					-90		11.80		-0.20	45
-78	78		9.70		-2.30	-43					-88		12.70		0.70	43
-76	76		9.70		-2.30	-41					-86		13.90		1.90	41
-74	74		10.00		-2.00	-39					-84		14.00		2.00	39
-72	72		10.40		-1.60	-37					-82		*14.10*		2.10	37
-70	70		10.30		-1.70	-35					-80		14.20		2.20	35
-68	68		10.60		-1.40	-33					-78		*14.25*		2.25	33
-66	66		10.60		-1.40	-31					-76		14.30		2.30	31
-64	64		10.60		-1.40	-29					-74		*14.35*		2.35	29
-62	62		10.80		-1.20	-27					-72		14.40		2.40	27
-60	60		10.80		-1.20	-25					-70		*14.45*		2.45	25
-58	58		10.80		-1.20	-23					-68		14.50		2.50	23
-56	56		10.80		-1.20	-21					-66		*14.50*		2.50	21
-54	54		11.00		-1.00	-19					-64		14.50		2.50	19
-52	52		11.40		-0.60	-17					-62		*14.60*		2.60	17
-50	50		11.40		-0.60	-15					-60		14.70		2.70	15
-48	48		11.50		-0.50	-13					-58		*14.60*		2.60	13
-46	46		12.00		0.00	-11					-56		14.50		2.50	11
-44	44		11.70		-0.30	-9					-54		*14.55*		2.55	9
-42	42		11.60		-0.40	-7					-52		14.60		2.60	7
-40	40		11.80		-0.20	-5					-50		*14.60*		2.60	5
-38	38		12.20		0.20	-3					-48		14.60		2.60	3
-36	36		12.50		0.50	-1					-46		*14.60*		2.60	1
-34	34		12.90		0.90	1					-44		14.60		2.60	-1
-32	32		12.90		0.90	3					-42		*14.55*		2.55	-3
-30	30		12.70		0.70	5					-40		14.50		2.50	-5
-28	28		12.40		0.40	7					-38		*14.50*		2.50	-7
-26	26		11.90		-0.10	9					-36		14.50		2.50	-9
-24	24		12.00		0.00	11		10.60		-1.40	-34		*14.45*		2.45	-11
-22	22		11.70		-0.30	13		10.30		-1.70	-32		14.40		2.40	-13
-20	20		11.10		-0.90	15	12.00	10.20	0.00	-1.80	-30	10.10	14.40	-1.90	2.40	-15
-18	18		10.90		-1.10	17	11.30	9.40	-0.70	-2.60	-28	10.60	14.20	-1.40	2.20	-17
-16	16		10.40		-1.60	19	10.40	9.00	-1.60	-3.00	-26	10.60	13.70	-1.40	1.70	-19
-14	14	8.60	9.80	-3.40	-2.20	21	9.70	8.40	-2.30	-3.60	-24	10.10	13.40	-1.90	1.40	-21
-12	12	8.30	9.20	-3.70	-2.80	23	9.00	7.90	-3.00	-4.10	-22	9.40	12.10	-2.60	0.10	-23
-10	10	6.40	8.30	-5.60	-3.70	25	7.90	7.10	-4.10	-4.90	-20	8.70	12.70	-3.30	0.70	-25
-8	8	5.60	7.20	-6.40	-4.80	27	6.90	6.40	-5.10	-5.60	-18	8.40	12.40	-3.60	0.40	-27
-6	6	5.00	6.00	-7.00	-6.00	29	5.40	5.90	-6.60	-6.10	-16	8.00	11.80	-4.00	-0.20	-29
-4	4	4.70	5.40	-7.30	-6.60	31	3.80	5.30	-8.20	-6.70	-14	7.30	11.10	-4.70	-0.90	-31
-2	2	4.10	4.50	-7.90	-7.50	33	2.50	5.20	-9.50	-6.80	-12	6.40	10.90	-5.60	-1.10	-33
0	0	3.60	3.60	-8.40	-8.40	35	2.10	5.60	-9.90	-6.40	-10	6.80	10.90	-5.20	-1.10	-35
0	0	3.60	3.60	-8.40	-8.40	45	2.30	1.10	-9.70	-10.90	0	6.40	5.10	-5.60	-6.90	-45
2	-2	4.50	4.60	-7.50	-7.40	47	3.50	2.10	-8.50	-9.90	2	6.80	5.70	-5.20	-6.30	-47
4	-4	4.60	4.60	-7.40	-7.40	49	4.50	3.40	-7.50	-8.60	4	8.30	7.00	-3.70	-5.00	-49
6	-6	5.20	5.90	-6.80	-6.10	51	5.90	4.40	-6.10	-7.60	6	9.00	8.40	-3.00	-3.60	-51
8	-8	6.20	6.80	-5.80	-5.20	53	7.10	6.10	-4.90	-5.90	8	9.10	9.80	-2.90	-2.20	-53
10	-10	7.80	7.60	-4.20	-4.40	55	8.50	7.10	-3.50	-4.90	10	9.50	11.00	-2.50	-1.00	-55
12	-12	8.70	8.60	-3.30	-3.40	57	9.50	8.70	-2.50	-3.30	12	9.80		-2.20		-57
14	-14	9.40	10.10	-2.60	-1.90	59	10.60	10.00	-1.40	-2.00	14	10.10		-1.90		-59
16	-16	9.20	11.50	-2.80	-0.50	61	11.40	11.10	-0.60	-0.90	16	10.40		-1.60		-61
18	-18	8.40	11.80	-3.60	-0.20	63	12.00	11.50	0.00	-0.50	18	11.20		-0.80		-63
20	-20	7.40		-4.60		65		11.80		-0.20	20	11.80		-0.20		-65
22	-22	7.00		-5.00		67					22					
24	-24	6.80		-5.20		69					24					
26	-26	6.50		-5.50		71					26					
28	-28	6.60		-5.40		73					28					
30	-30	6.90		-5.10		75					30					

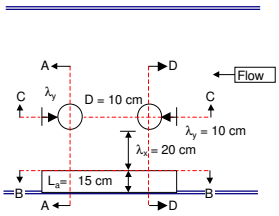
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.30	-3.70
2	8.20	-3.80
4	9.00	-3.00
6	9.70	-2.30
8	10.20	-1.80
10	11.30	-0.70
12	11.80	-0.20
14		
16		
18		
20		

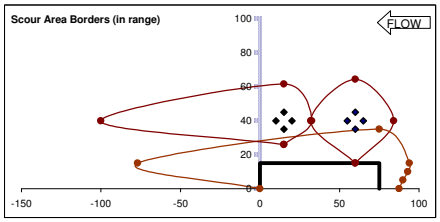
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	12.5
SB_{af2}	Abutment Front (W+5 cm)	15
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	19
SB_{ar}	Abutment Corner Right	*20*

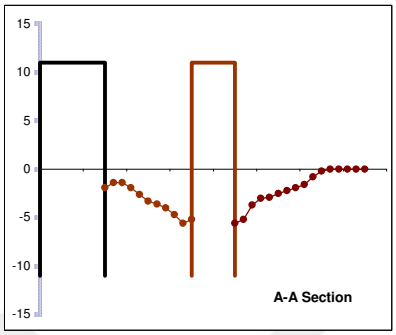
		P1	P2
SB_{pl}	Pier Left	*20*	9
SB_{pf}	Pier Front	19	12.5
SB_{pr}	Pier Right	19.5	16.5
SB_{pb}	Pier Rear	23	110

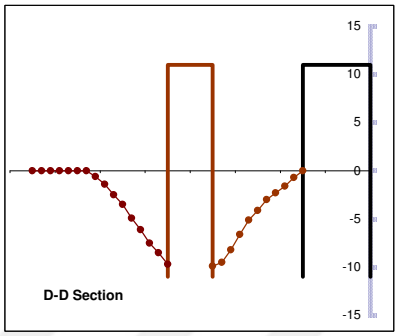


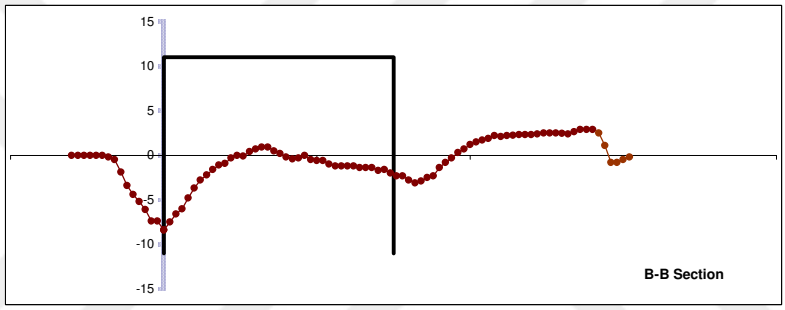
Experiment No : **E159**

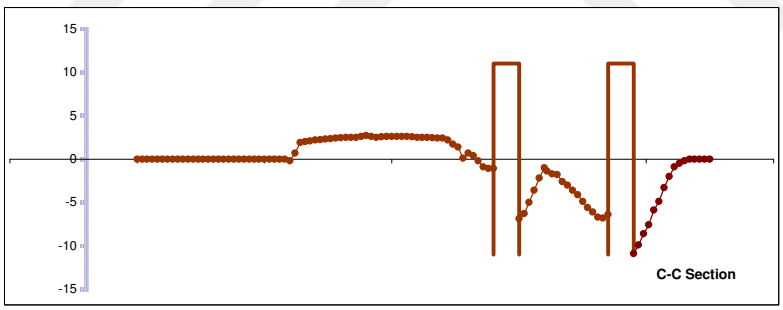


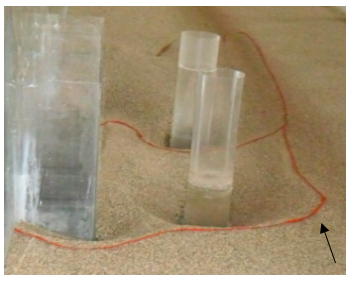


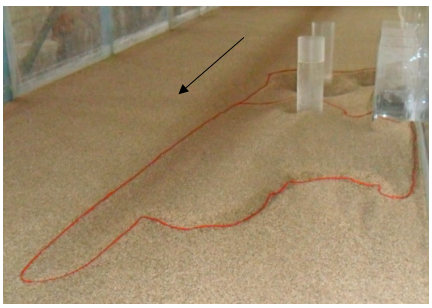






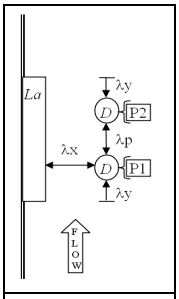


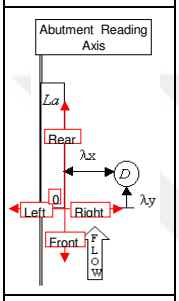


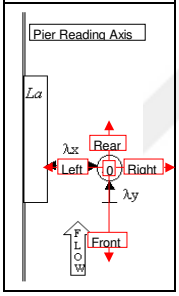


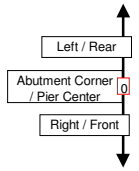
Experiment No : **E160**

Date :	04.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	10
λ_p (cm) :	35









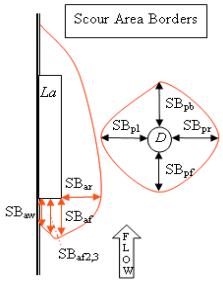
This color was used for raw data readings

This color was used for values enterpolated to sketch

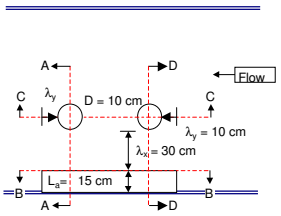
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140		14.10		2.10	-95					-140					95
-138	138		14.00		2.00	-93					-138					93
-136	136		14.00		2.00	-91					-136					91
-134	134		13.90		1.90	-89					-134					89
-132	132		14.00		2.00	-87					-132					87
-130	130		13.90		1.90	-85					-130					85
-128	128		13.70		1.70	-83					-128					83
-126	126		13.10		1.10	-81					-126					81
-124	124		13.10		1.10	-79					-124					79
-122	122		13.60		1.60	-77					-122					77
-120	120		13.30		1.30	-75					-120					75
-118	118		13.10		1.10	-73					-118					73
-116	116		13.00		1.00	-71					-116					71
-114	114		12.90		0.90	-69					-114					69
-112	112		12.80		0.80	-67					-112					67
-110	110		12.80		0.80	-65					-110					65
-108	108		12.40		0.40	-63					-108					63
-106	106		12.30		0.30	-61					-106					61
-104	104		12.20		0.20	-59					-104					59
-102	102		12.10		0.10	-57					-102					57
-100	100		11.80		-0.20	-55					-100					55
-98	98		11.60		-0.40	-53					-98					53
-96	96		11.30		-0.70	-51					-96		12.00		0.00	51
-94	94		11.20		-0.80	-49					-94		12.20		0.20	49
-92	92		10.90		-1.10	-47					-92		12.60		0.60	47
-90	90		10.60		-1.40	-45					-90		12.70		0.70	45
-88	88		10.20		-1.80	-43					-88		12.50		0.50	43
-86	86		10.30		-1.70	-41					-86		12.80		0.80	41
-84	84		10.20		-1.80	-39					-84		12.80		0.80	39
-82	82		9.90		-2.10	-37					-82		12.60		0.60	37
-80	80		10.10		-1.90	-35					-80		12.90		0.90	35
-78	78		10.40		-1.60	-33					-78		13.00		1.00	33
-76	76		10.60		-1.40	-31					-76		13.70		1.70	31
-74	74		10.90		-1.10	-29					-74		13.70		1.70	29
-72	72		11.40		-0.60	-27					-72		14.00		2.00	27
-70	70		11.70		-0.30	-25					-70		14.20		2.20	25
-68	68		11.60		-0.40	-23					-68		*14.35*		2.35	23
-66	66		11.60		-0.40	-21					-66		14.50		2.50	21
-64	64		11.90		-0.10	-19					-64		*14.60*		2.60	19
-62	62		12.20		0.20	-17					-62		14.70		2.70	17
-60	60		12.20		0.20	-15					-60		*14.85*		2.85	15
-58	58		12.30		0.30	-13					-58		15.00		3.00	13
-56	56		12.50		0.50	-11					-56		*15.00*		3.00	11
-54	54		12.70		0.70	-9					-54		15.00		3.00	9
-52	52		12.70		0.70	-7					-52		*15.10*		3.10	7
-50	50		13.00		1.00	-5					-50		15.20		3.20	5
-48	48		12.80		0.80	-3					-48		*15.35*		3.35	3
-46	46		12.80		0.80	-1					-46		15.50		3.50	1
-44	44		13.10		1.10	1					-44		*15.35*		3.35	-1
-42	42		13.20		1.20	3					-42		15.20		3.20	-3
-40	40		13.30		1.30	5					-40		*15.20*		3.20	-5
-38	38		13.10		1.10	7					-38		15.20		3.20	-7
-36	36		13.40		1.40	9					-36		*15.30*		3.30	-9
-34	34		13.40		1.40	11					-34		15.40		3.40	-11
-32	32		13.00		1.00	13					-32		*15.35*		3.35	-13
-30	30		12.80		0.80	15	10.60		-1.40		-30	11.90	15.30	-0.10	3.30	-15
-28	28		12.60		0.60	17	10.30		-1.70		-28	12.40	*15.10*	0.40	3.10	-17
-26	26		12.50		0.50	19	10.00		-2.00		-26	12.40	14.90	0.40	2.90	-19
-24	24		12.10		0.10	21	9.80	10.60	-2.20	-1.40	-24	12.40	*14.75*	0.40	2.75	-21
-22	22		11.80		-0.20	23	10.10	10.60	-1.90	-1.40	-22	12.30	14.60	0.30	2.60	-23
-20	20		11.50		-0.50	25	11.40	10.40	-0.60	-1.60	-20	12.10	14.60	0.10	2.60	-25
-18	18		10.80		-1.20	27	11.30	9.90	-0.70	-2.10	-18	11.70	14.40	-0.30	2.40	-27
-16	16		10.40		-1.60	29	10.90	9.40	-1.10	-2.60	-16	10.90	14.30	-1.10	2.30	-29
-14	14	8.40	10.00	-3.60	-2.00	31	9.70	8.80	-2.30	-3.20	-14	10.20	14.10	-1.80	2.10	-31
-12	12	8.00	9.30	-4.00	-2.70	33	8.40	8.00	-3.60	-4.00	-12	9.50	13.60	-2.50	1.60	-33
-10	10	7.00	8.30	-5.00	-3.70	35	7.10	7.50	-4.90	-4.50	-10	8.50	12.70	-3.50	0.70	-35
-8	8	5.90	7.20	-6.10	-4.80	37	5.90	6.50	-6.10	-5.50	-8	7.90	12.10	-4.10	0.10	-37
-6	6	5.40	6.30	-6.60	-5.70	39	4.50	6.10	-7.50	-5.90	-6	7.40	11.00	-4.60	-1.00	-39
-4	4	4.70	5.40	-7.30	-6.60	41	2.80	5.70	-9.20	-6.30	-4	6.40	10.50	-5.60	-1.50	-41
-2	2	4.10	4.80	-7.90	-7.20	43	2.50	5.40	-9.50	-6.60	-2	5.10	10.10	-6.90	-1.90	-43
0	0	3.70	3.70	-8.30	-8.30	45	2.10	5.60	-9.90	-6.40	0	5.60	10.40	-6.40	-1.60	-45
0	0	3.70	3.70	-8.30	-8.30	55	3.30	0.70	-8.70	-11.30	10	6.80	4.10	-5.20	-7.90	-55
2	-2	*4.05*	3.80	-7.95	-8.20	57	2.90	1.70	-9.10	-10.30	12	6.90	5.00	-5.10	-7.00	-57
4	-4	4.40	4.90	-7.60	-7.10	59	4.20	3.40	-7.80	-8.60	14	8.30	6.50	-3.70	-5.50	-59
6	-6	4.30	6.40	-7.70	-5.60	61	5.60	4.70	-6.40	-7.30	16	8.60	7.80	-3.40	-4.20	-61
8	-8	4.90	7.50	-7.10	-4.50	63	6.70	5.80	-5.30	-6.20	18	9.00	8.70	-3.00	-3.30	-63
10	-10	6.30	7.90	-5.70	-4.10	65	8.10	7.00	-3.90	-5.00	20	9.30	10.30	-2.70	-1.70	-65
12	-12	7.90	9.00	-4.10	-3.00	67	9.00	8.30	-3.00	-3.70	22	9.50		-2.50		-67
14	-14	8.80	10.20	-3.20	-1.80	69	10.10	9.80	-1.90	-2.20	24	9.70		-2.30		-69
16	-16	9.40	11.80	-2.60	-0.20	71	10.60	11.30	-1.40	-0.70	26	10.00		-2.00		-71
18	-18	10.10	12.00	-1.90	0.00	73	11.70	12.00	-0.30	0.00	28	10.50		-1.50		-73
20	-20	10.80		-1.20		75	12.00		0.00		30	11.20		-0.80		-75
22	-22	11.30		-0.70		77					32					
24	-24	11.80		-0.20		79					34					
26	-26					81					36					
28	-28					83					38					
30	-30					85					40					

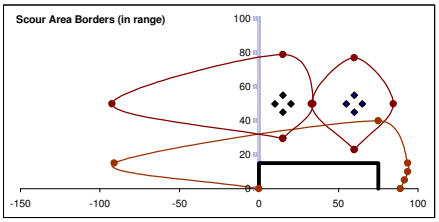
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.00	-4.00
2	7.40	-4.60
4	8.60	-3.40
6	9.40	-2.60
8	10.70	-1.30
10	11.40	-0.60
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

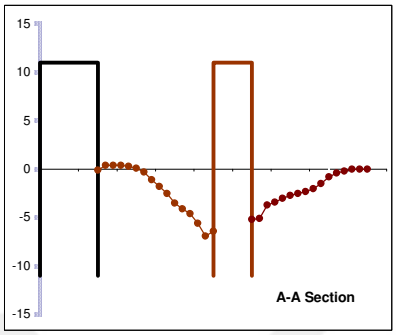
Scour Area Borders		(cm)		
SB_{aw}	Abutment Front (Wall)	14		
SB_{af2}	Abutment Front (W+5 cm)	16.5		
SB_{af3}	Abutment Front (W+10 cm)	18.5		
SB_{af}	Abutment Corner Front	18.5		
SB_{ar}	Abutment Corner Right	*25*		
		P1	P2	
SB_{pl}	Pier Left	*22*	15.5	
SB_{pf}	Pier Front	19.5	14	
SB_{pr}	Pier Right	22	24	
SB_{pb}	Pier Rear	22	102.5	

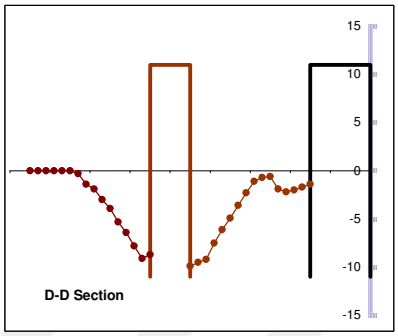


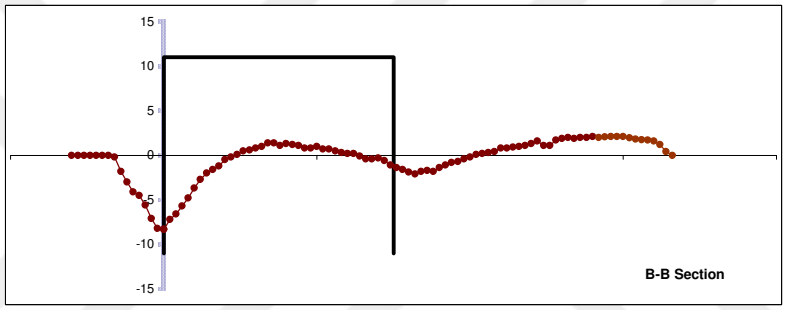
Experiment No : **E160**

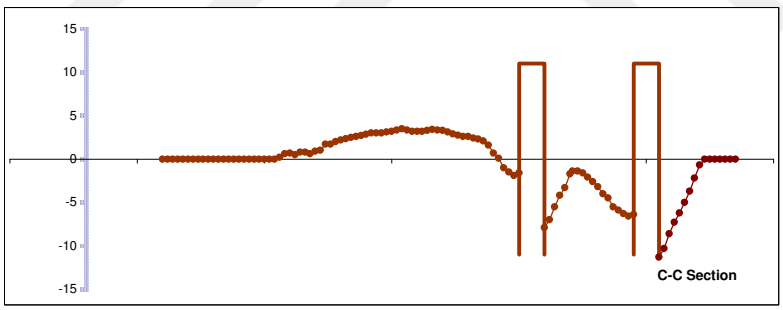


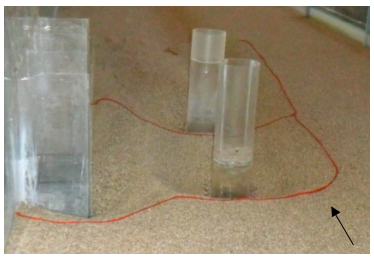


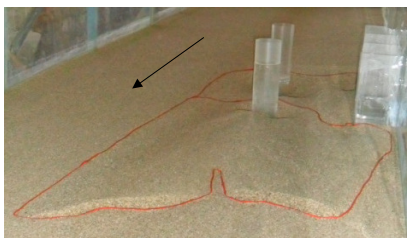






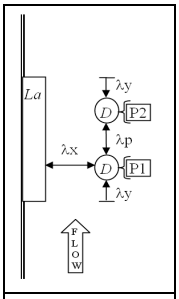


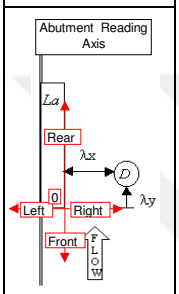


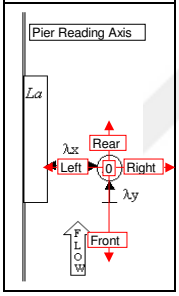


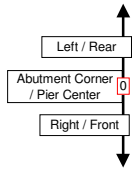
Experiment No : **E161**

Date :	06.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	10
λ_p (cm) :	35









This color was used for raw data readings

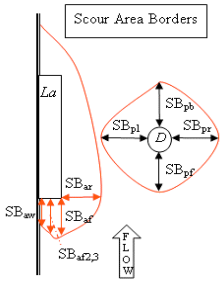
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-85					-130					85
-138	138					-83					-128					83
-136	136					-81					-126					81
-134	134					-79					-124					79
-132	132		12.00		0.00	-77					-122					77
-130	130		12.20		0.20	-75					-120					75
-128	128		12.40		0.40	-73					-118					73
-126	126		12.50		0.50	-71					-116					71
-124	124		12.90		0.90	-69					-114					69
-122	122		*13.20*		1.20	-67					-112					67
-120	120		13.50		1.50	-65					-110					65
-118	118		13.40		1.40	-63					-108					63
-116	116		13.40		1.40	-61					-106					61
-114	114		13.60		1.60	-59					-104					59
-112	112		13.60		1.60	-57					-102					57
-110	110		13.40		1.40	-55					-100					55
-108	108		13.30		1.30	-53					-98					53
-106	106		13.20		1.20	-51					-96					51
-104	104		13.10		1.10	-49					-94					49
-102	102		13.00		1.00	-47					-92					47
-100	100		12.70		0.70	-45					-90					45
-98	98		12.60		0.60	-43					-88					43
-96	96		12.60		0.60	-41					-86					41
-94	94		12.60		0.60	-39					-84					39
-92	92		12.10		0.10	-37					-82					37
-90	90		11.80		-0.20	-35					-80					35
-88	88		11.10		-0.90	-33					-78					33
-86	86		11.00		-1.00	-31					-76					31
-84	84		10.80		-1.20	-29					-74		12.00		0.00	29
-82	82		10.80		-1.20	-27					-72		12.40		0.40	27
-80	80		10.70		-1.30	-25					-70		12.40		0.40	25
-78	78		10.70		-1.30	-23					-68		12.30		0.30	23
-76	76		11.20		-0.80	-21					-66		12.50		0.50	21
-74	74		11.30		-0.70	-19					-64		12.70		0.70	19
-72	72		*11.55*		-0.45	-17					-62		12.80		0.80	17
-70	70		11.80		-0.20	-15					-60		12.70		0.70	15
-68	68		*11.90*		-0.10	-13					-58		12.90		0.90	13
-66	66		12.00		0.00	-11					-56		13.20		1.20	11
-64	64		*12.25*		0.25	-9					-54		13.70		1.70	9
-62	62		12.50		0.50	-7					-52		13.90		1.90	7
-60	60		*12.65*		0.65	-5					-50		14.30		2.30	5
-58	58		12.80		0.80	-3					-48		*14.60*		2.60	3
-56	56		12.70		0.70	-1					-46		14.90		2.90	1
-54	54		12.80		0.80	1					-44		*14.95*		2.95	-1
-52	52		12.70		0.70	3					-42		15.00		3.00	-3
-50	50		13.00		1.00	5					-40		*15.00*		3.00	-5
-48	48		13.20		1.20	7					-38		15.00		3.00	-7
-46	46		13.40		1.40	9					-36		*15.05*		3.05	-9
-44	44		13.20		1.20	11					-34		15.10		3.10	-11
-42	42		13.00		1.00	13					-32		*15.20*		3.20	-13
-40	40		12.40		0.40	15	9.70		-2.30		-30	12.30	15.30	0.30	3.30	-15
-38	38		12.60		0.60	17	9.70		-2.30		-28	12.40	*15.25*	0.40	3.25	-17
-36	36		12.70		0.70	19	9.60		-2.40		-26	12.30	15.20	0.30	3.20	-19
-34	34		12.70		0.70	21	9.80		-2.20		-24	*12.05*	*15.20*	0.05	3.20	-21
-32	32		12.80		0.80	23	9.90		-2.10		-22	11.80	15.20	-0.20	3.20	-23
-30	30		12.50		0.50	25	10.40		-1.60		-20	*11.75*	15.30	-0.25	3.30	-25
-28	28		12.30		0.30	27	10.90		-1.10		-18	11.70	15.20	-0.30	3.20	-27
-26	26		12.30		0.30	29	11.60		-0.40		-16	*11.60*	15.10	-0.40	3.10	-29
-24	24		11.90		-0.10	31	12.20	11.30	0.20	-0.70	-14	11.50	15.00	-0.50	3.00	-31
-22	22		11.40		-0.60	33	11.90	11.80	-0.10	-0.20	-12	*11.25*	14.80	-0.75	2.80	-33
-20	20		11.00		-1.00	35	11.20	10.80	-0.80	-1.20	-10	11.00	14.70	-1.00	2.70	-35
-18	18		10.40		-1.60	37	11.20	10.40	-0.80	-1.60	-8	11.00	14.30	-1.00	2.30	-37
-16	16		10.00		-2.00	39	11.00	10.10	-1.00	-1.90	-6	10.60	14.30	-1.40	2.30	-39
-14	14	8.20	9.50	-3.80	-2.50	41	9.80	9.70	-2.20	-2.30	-4	10.10	13.90	-1.90	1.90	-41
-12	12	8.10	9.10	-3.90	-2.90	43	8.90	9.00	-3.10	-3.00	-2	9.80	13.60	-2.20	1.60	-43
-10	10	6.20	8.50	-5.80	-3.50	45	8.00	8.20	-4.00	-3.80	0	9.10	13.00	-2.90	1.00	-45
-8	8	5.90	7.30	-6.10	-4.70	47	6.90	7.30	-5.10	-4.70	2	8.70	12.40	-3.30	0.40	-47
-6	6	5.20	6.20	-6.80	-5.80	49	5.50	6.50	-6.50	-5.50	4	8.30	12.10	-3.70	0.10	-49
-4	4	4.50	5.40	-7.50	-6.60	51	4.30	5.80	-7.70	-6.20	6	7.80	11.70	-4.20	-0.30	-51
-2	2	4.30	4.80	-7.70	-7.20	53	3.10	5.60	-8.90	-6.40	8	6.90	11.10	-5.10	-0.90	-53
0	0	4.00	4.00	-8.00	-8.00	55	3.00	6.00	-9.00	-6.00	10	7.70	11.30	-4.30	-0.70	-55
0	0	4.00	4.00	-8.00	-8.00	65	3.10	1.50	-8.90	-10.50	20	6.70	4.90	-5.30	-7.10	-65
2	-2	4.50	4.00	-7.50	-8.00	67	2.80	1.70	-9.20	-10.30	22	6.90	5.10	-5.10	-6.90	-67
4	-4	4.60	4.40	-7.40	-7.60	69	3.80	3.00	-8.20	-9.00	24	8.50	7.00	-3.50	-5.00	-69
6	-6	5.90	6.20	-6.10	-5.80	71	5.10	4.50	-6.90	-7.50	26	9.10	8.20	-2.90	-3.80	-71
8	-8	7.10	7.10	-4.90	-4.90	73	6.50	5.80	-5.50	-6.20	28	9.50	9.60	-2.50	-2.40	-73
10	-10	8.50	7.60	-3.50	-4.40	75	7.90	7.30	-4.10	-4.70	30	9.80	10.80	-2.20	-1.20	-75
12	-12	9.20	8.60	-2.80	-3.40	77	8.80	8.50	-3.20	-3.50	32	10.00		-2.00		-77
14	-14	9.70	9.90	-2.30	-2.10	79	9.50	9.70	-2.50	-2.30	34	10.50		-1.50		-79
16	-16	10.80	11.10	-1.20	-0.90	81	10.30	11.00	-1.70	-1.00	36	10.80		-1.20		-81
18	-18	11.40	11.70	-0.60	-0.30	83	11.00	11.80	-1.00	-0.20	38	11.30		-0.70		-83
20	-20	11.50	11.80	-0.50	-0.20	85	11.40		-0.60		40	11.50		-0.50		-85
22	-22	11.30		-0.70		87	11.50		-0.50		42					
24	-24	11.60		-0.40		89	11.80		-0.20		44					
26	-26	11.80		-0.20		91					46					
28	-28					93					48					
30	-30					95					50					

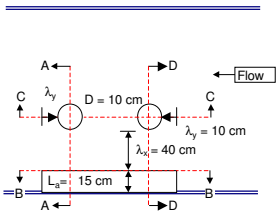
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.10	-3.90
2	7.80	-4.20
4	8.60	-3.40
6	9.40	-2.60
8	10.10	-1.90
10	11.20	-0.80
12	11.80	-0.20
14		
16		
18		
20		

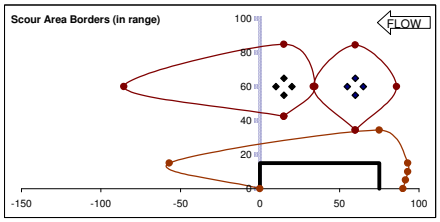
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	15
SB_{af2}	Abutment Front (W+5 cm)	16.5
SB_{af3}	Abutment Front (W+10 cm)	18
SB_{af}	Abutment Corner Front	18
SB_{ar}	Abutment Corner Right	19.5

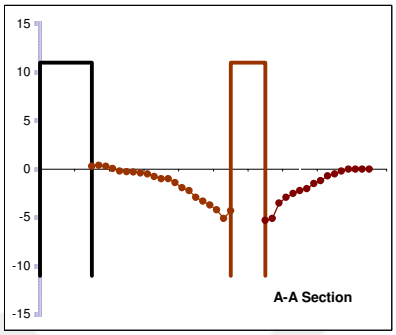
		P1	P2
SB_{pl}	Pier Left	20.5	12.5
SB_{pf}	Pier Front	21	14.5
SB_{pr}	Pier Right	19.5	20
SB_{pb}	Pier Rear	21.5	95.5

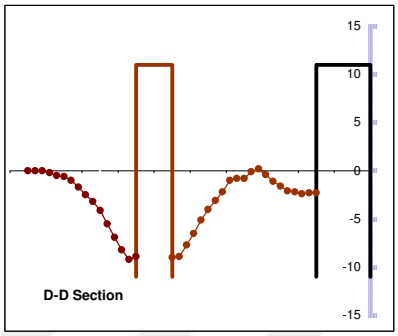


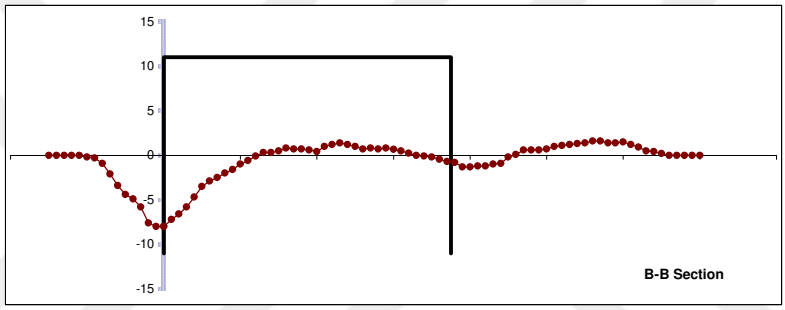
Experiment No : **E161**

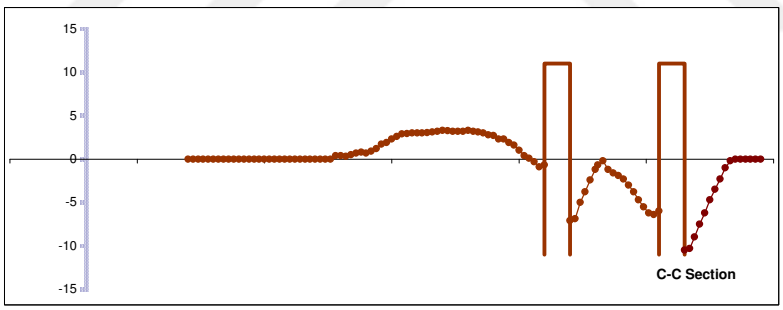


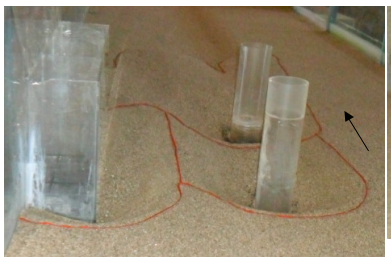


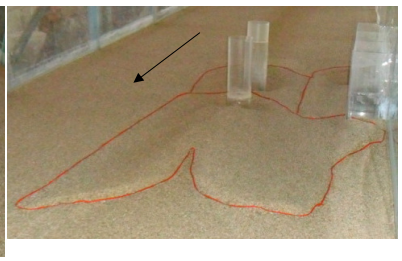






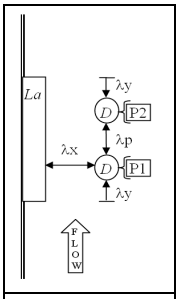


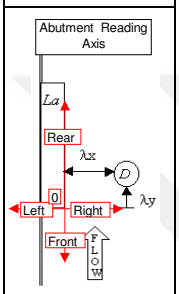


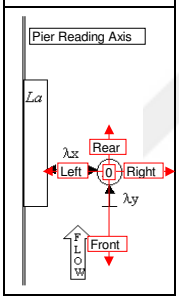


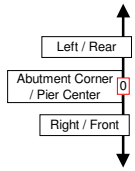
Experiment No : **E162**

Date :	10.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	15
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	10
λ_p (cm) :	35









This color was used for raw data readings

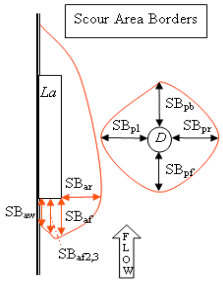
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-75					-120					75
-138	138					-73					-118					73
-136	136					-71					-116					71
-134	134					-69					-114					69
-132	132					-67					-112					67
-130	130					-65					-110					65
-128	128		12.00		0.00	-63					-108					63
-126	126		12.40		0.40	-61					-106					61
-124	124		13.60		1.60	-59					-104					59
-122	122		14.20		2.20	-57					-102					57
-120	120		14.00		2.00	-55					-100					55
-118	118		13.90		1.90	-53					-98					53
-116	116		13.80		1.80	-51					-96					51
-114	114		13.70		1.70	-49					-94					49
-112	112		*13.75*		1.75	-47					-92					47
-110	110		13.80		1.80	-45					-90					45
-108	108		13.70		1.70	-43					-88					43
-106	106		13.60		1.60	-41					-86					41
-104	104		13.40		1.40	-39					-84					39
-102	102		13.40		1.40	-37					-82					37
-100	100		13.10		1.10	-35					-80					35
-98	98		13.10		1.10	-33					-78					33
-96	96		12.80		0.80	-31					-76					31
-94	94		12.50		0.50	-29					-74					29
-92	92		12.30		0.30	-27					-72					27
-90	90		12.10		0.10	-25					-70					25
-88	88		11.90		-0.10	-23					-68					23
-86	86		11.60		-0.40	-21					-66					21
-84	84		11.20		-0.80	-19					-64					19
-82	82		11.20		-0.80	-17					-62					17
-80	80		11.30		-0.70	-15					-60					15
-78	78		11.30		-0.70	-13					-58					13
-76	76		11.20		-0.80	-11					-56					11
-74	74		11.80		-0.20	-9					-54					9
-72	72		11.90		-0.10	-7					-52					7
-70	70		12.60		0.60	-5					-50					5
-68	68		12.60		0.60	-3					-48					3
-66	66		12.60		0.60	-1					-46		12.00		0.00	1
-64	64		12.70		0.70	1					-44		12.40		0.40	-1
-62	62		12.90		0.90	3					-42		12.50		0.50	-3
-60	60		13.10		1.10	5					-40		12.60		0.60	-5
-58	58		13.40		1.40	7					-38		13.50		1.50	-7
-56	56		13.10		1.10	9					-36		14.10		2.10	-9
-54	54		13.40		1.40	11					-34		14.40		2.40	-11
-52	52		13.30		1.30	13					-32		14.60		2.60	-13
-50	50		13.20		1.20	15	10.20		-1.80		-30	12.60	14.80	0.60	2.80	-15
-48	48		13.30		1.30	17	10.10		-1.90		-28	12.90	15.20	0.90	3.20	-17
-46	46		13.30		1.30	19	9.90		-2.10		-26	12.60	15.20	0.60	3.20	-19
-44	44		13.20		1.20	21	9.70		-2.30		-24	12.10	*15.05*	0.10	3.05	-21
-42	42		13.10		1.10	23	9.90		-2.10		-22	*11.85*	14.90	-0.15	2.90	-23
-40	40		13.40		1.40	25	10.00		-2.00		-20	11.60	*15.00*	-0.40	3.00	-25
-38	38		13.00		1.00	27	10.60		-1.40		-18	*11.60*	15.10	-0.40	3.10	-27
-36	36		13.10		1.10	29	11.00		-1.00		-16	11.60	*15.05*	-0.40	3.05	-29
-34	34		13.20		1.20	31	11.70		-0.30		-14	*11.55*	15.00	-0.45	3.00	-31
-32	32		12.90		0.90	33	12.10		0.10		-12	11.50	*15.10*	-0.50	3.10	-33
-30	30		12.60		0.60	35	*11.60*		-0.40		-10	*11.35*	15.20	-0.65	3.20	-35
-28	28		12.50		0.50	37	11.10		-0.90		-8	11.20	15.20	-0.80	3.20	-37
-26	26		12.40		0.40	39	*11.00*		-1.00		-6	*11.15*	15.30	-0.85	3.30	-39
-24	24		12.60		0.60	41	10.90	*11.95*	-1.10	-0.05	-4	11.10	15.00	-0.90	3.00	-41
-22	22		12.00		0.00	43	*10.85*	11.90	-1.15	-0.10	-2	*11.25*	15.10	-0.75	3.10	-43
-20	20		11.30		-0.70	45	10.80	11.30	-1.20	-0.70	0	11.40	15.10	-0.60	3.10	-45
-18	18		11.00		-1.00	47	*10.85*	10.80	-1.15	-1.20	2	11.20	14.90	-0.80	2.90	-47
-16	16		10.40		-1.60	49	10.90	10.30	-1.10	-1.70	4	11.10	14.50	-0.90	2.50	-49
-14	14	8.40	10.00	-3.60	-2.00	51	10.90	9.40	-1.10	-2.60	6	10.60	14.10	-1.40	2.10	-51
-12	12	8.30	9.10	-3.70	-2.90	53	9.50	8.70	-2.50	-3.30	8	9.80	13.80	-2.20	1.80	-53
-10	10	7.20	8.70	-4.80	-3.30	55	8.20	8.00	-3.80	-4.00	10	9.60	13.60	-2.40	1.60	-55
-8	8	6.10	7.40	-5.90	-4.60	57	7.20	7.30	-4.80	-4.70	12	8.60	13.00	-3.40	1.00	-57
-6	6	5.50	6.10	-6.50	-5.90	59	6.40	6.40	-5.60	-5.60	14	8.20	12.20	-3.80	0.20	-59
-4	4	5.10	5.40	-6.90	-6.60	61	5.20	6.00	-6.80	-6.00	16	8.30	11.70	-3.70	-0.30	-61
-2	2	4.70	4.50	-7.30	-7.50	63	3.80	5.80	-8.20	-6.20	18	7.10	10.90	-4.90	-1.10	-63
0	0	4.30	4.30	-7.70	-7.70	65	3.10	6.10	-8.90	-5.90	20	7.30	11.00	-4.70	-1.00	-65
0	0	4.30	4.30	-7.70	-7.70	75	3.20	1.80	-8.80	-10.20	30	7.70	5.10	-4.30	-6.90	-75
2	-2	4.30	3.80	-7.70	-8.20	77	3.00	1.90	-9.00	-10.10	32	7.10	5.50	-4.90	-6.50	-77
4	-4	4.50	4.50	-7.50	-7.50	79	4.40	3.30	-7.60	-8.70	34	8.10	7.20	-3.90	-4.80	-79
6	-6	5.40	6.10	-6.60	-5.90	81	5.40	5.20	-6.60	-6.80	36	9.40	8.90	-2.60	-3.10	-81
8	-8	6.90	7.30	-5.10	-4.70	83	7.00	6.30	-5.00	-5.70	38	9.50	9.90	-2.50	-2.10	-83
10	-10	8.10	8.10	-3.90	-3.90	85	8.20	7.70	-3.80	-4.30	40	10.00	11.00	-2.00	-1.00	-85
12	-12	9.00	9.20	-3.00	-2.80	87	9.20	9.00	-2.80	-3.00	42	10.20	12.00	-1.80	0.00	-87
14	-14	9.70	11.00	-2.30	-1.00	89	10.20	10.10	-1.80	-1.90	44	10.80		-1.20		-89
16	-16	10.80	12.00	-1.20	0.00	91	11.20	11.30	-0.80	-0.70	46	11.00		-1.00		-91
18	-18	11.80		-0.20		93	11.40	11.50	-0.60	-0.50	48	11.60		-0.40		-93
20	-20					95	11.50	11.80	-0.50	-0.20	50	11.80		-0.20		-95
22	-22					97	11.80		-0.20		52					
24	-24					99					54					
26	-26					101					56					
28	-28					103					58					
30	-30					105					60					

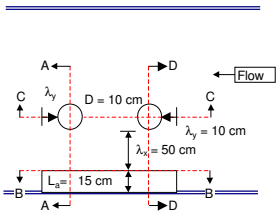
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	8.30	-3.70
2	8.20	-3.80
4	8.90	-3.10
6	9.80	-2.20
8	10.50	-1.50
10	11.40	-0.60
12	12.00	0.00
14		
16		
18		
20		

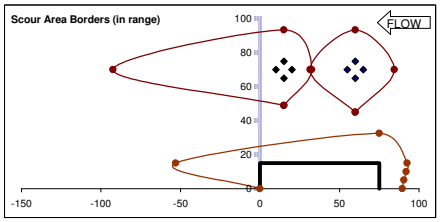
Scour Area Borders		(cm)
SB_{aw}	Abutment Front (Wall)	14.5
SB_{af2}	Abutment Front (W+5 cm)	15.5
SB_{af3}	Abutment Front (W+10 cm)	17
SB_{af}	Abutment Corner Front	17.5
SB_{ar}	Abutment Corner Right	17.5

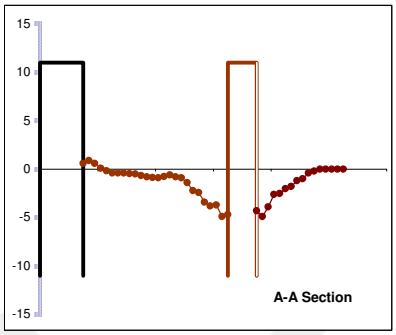
		P1	P2
SB_{pl}	Pier Left	20	16
SB_{pf}	Pier Front	19.5	12.5
SB_{pr}	Pier Right	18.5	18.5
SB_{pb}	Pier Rear	23.5	102.5

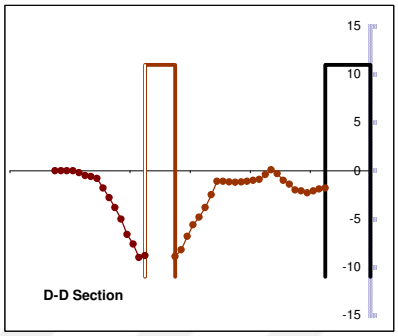


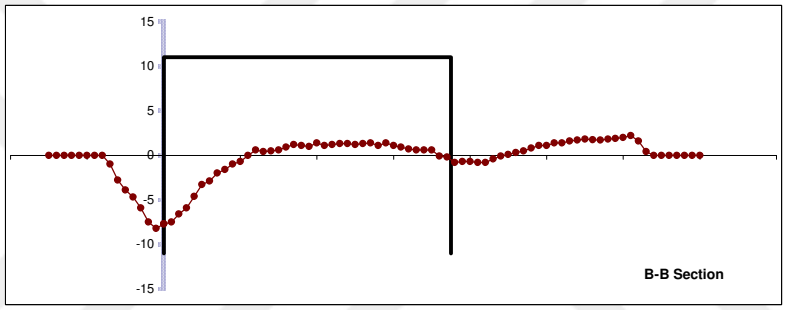
Experiment No : **E162**

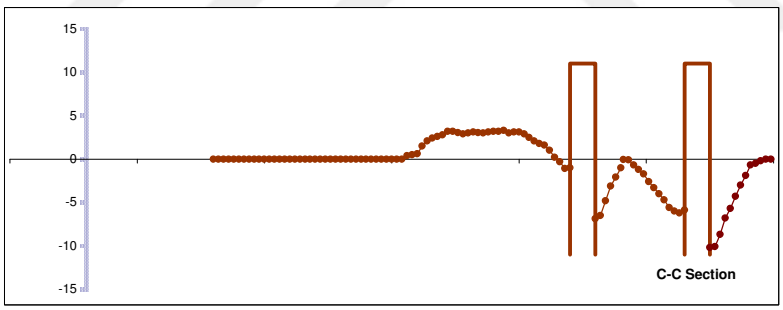


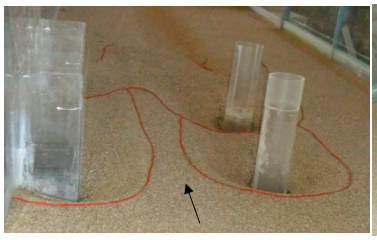


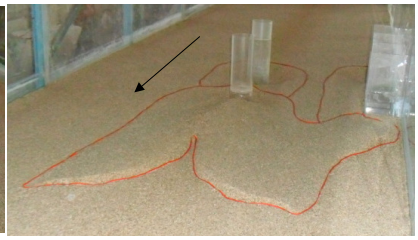






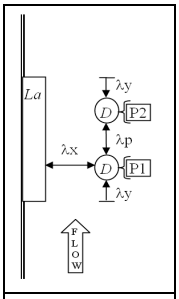


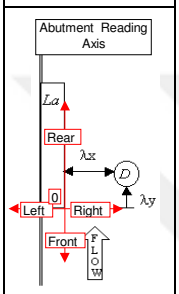


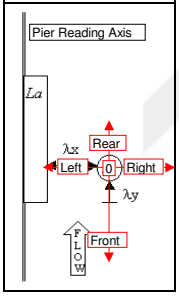


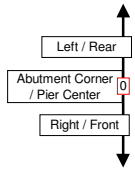
Experiment No : **E163**

Date :	12.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	10
λ_y (cm) :	10
λ_p (cm) :	35









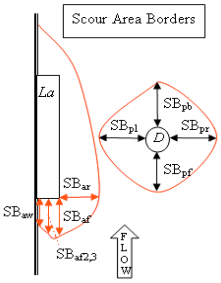
This color was used for raw data readings

This color was used for values enterpolated to sketch

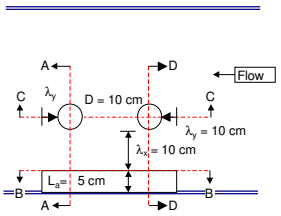
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-125					-170					125
-138	138					-123					-168					123
-136	136					-121					-166					121
-134	134					-119					-164					119
-132	132					-117					-162					117
-130	130					-115					-160					115
-128	128					-113					-158					113
-126	126					-111					-156					111
-124	124					-109					-154					109
-122	122					-107					-152					107
-120	120					-105					-150					105
-118	118					-103					-148					103
-116	116					-101					-146					101
-114	114					-99					-144					99
-112	112					-97					-142					97
-110	110					-95					-140					95
-108	108					-93					-138					93
-106	106					-91					-136					91
-104	104					-89					-134					89
-102	102		12.00		0.00	-87					-132					87
-100	100		12.50		0.50	-85					-130					85
-98	98		13.40		1.40	-83					-128					83
-96	96		13.50		1.50	-81					-126					81
-94	94		13.50		1.50	-79					-124					79
-92	92		13.40		1.40	-77					-122					77
-90	90		13.10		1.10	-75					-120					75
-88	88		12.70		0.70	-73					-118					73
-86	86		12.50		0.50	-71					-116					71
-84	84		12.00		0.00	-69					-114					69
-82	82		11.50		-0.50	-67					-112					67
-80	80		11.20		-0.80	-65					-110					65
-78	78		10.70		-1.30	-63					-108					63
-76	76		10.20		-1.80	-61					-106					61
-74	74		9.80		-2.20	-59					-104					59
-72	72		9.70		-2.30	-57					-102					57
-70	70		9.70		-2.30	-55					-100					55
-68	68		9.80		-2.20	-53					-98					53
-66	66		9.70		-2.30	-51					-96					51
-64	64		9.60		-2.40	-49					-94					49
-62	62		9.60		-2.40	-47					-92					47
-60	60		9.50		-2.50	-45					-90					45
-58	58		9.70		-2.30	-43					-88					43
-56	56		9.90		-2.10	-41					-86					41
-54	54		9.70		-2.30	-39					-84					39
-52	52		9.60		-2.40	-37					-82					37
-50	50		9.30		-2.70	-35					-80					35
-48	48		9.50		-2.50	-33					-78					33
-46	46		9.40		-2.60	-31					-76					31
-44	44		9.60		-2.40	-29					-74					29
-42	42		10.10		-1.90	-27					-72					27
-40	40		10.50		-1.50	-25					-70					25
-38	38		10.80		-1.20	-23					-68					23
-36	36		11.20		-0.80	-21					-66					21
-34	34		11.30		-0.70	-19					-64					19
-32	32		11.50		-0.50	-17					-62					17
-30	30		11.30		-0.70	-15					-60		12.00		0.00	15
-28	28		11.00		-1.00	-13					-58		12.40		0.40	13
-26	26		10.40		-1.60	-11					-56		13.70		1.70	11
-24	24		10.20		-1.80	-9		12.90		0.90	-54		14.50		2.50	9
-22	22		9.70		-2.30	-7		12.70		0.70	-52		14.40		2.40	7
-20	20		9.10		-2.90	-5		12.50		0.50	-50		14.50		2.50	5
-18	18		9.00		-3.00	-3		12.00		0.00	-48		14.20		2.20	3
-16	16		8.90		-3.10	-1		11.30		-0.70	-46		13.80		1.80	1
-14	14		8.90		-3.10	1		10.80		-1.20	-44		14.00		2.00	-1
-12	12		9.10		-2.90	3		10.20		-1.80	-42		13.80		1.80	-3
-10	10		9.70		-2.30	5	8.80	9.50	-3.20	-2.50	-40	9.70	13.30	-2.30	1.30	-5
-8	8		10.00		-2.00	7	9.10	8.50	-2.90	-3.50	-38	9.30	12.90	-2.70	0.90	-7
-6	6	*9.60*	10.60	-2.40	-1.40	9	7.70	8.10	-4.30	-3.90	-36	8.50	12.30	-3.50	0.30	-9
-4	4	9.60	9.60	-2.40	-2.40	11	6.40	7.10	-5.60	-4.90	-34	7.90	11.80	-4.10	-0.20	-11
-2	2	8.70	8.90	-3.30	-3.10	13	5.30	7.20	-6.70	-4.80	-32	6.80	11.40	-5.20	-0.60	-13
0	0	8.40	8.40	-3.60	-3.60	15	4.20	7.50	-7.80	-4.50	-30	6.30	11.80	-5.70	-0.20	-15
0	0	8.40	8.40	-3.60	-3.60	25	5.00	3.20	-7.00	-8.80	-20	7.80	6.20	-4.20	-5.80	-25
2	-2	8.60	8.50	-3.40	-3.50	27	4.70	3.70	-7.30	-8.30	-18	7.70	6.60	-4.30	-5.40	-27
4	-4	9.00	9.40	-3.00	-2.60	29	6.00	5.50	-6.00	-6.50	-16	9.20	8.20	-2.80	-3.80	-29
6	-6	9.90	10.10	-2.10	-1.90	31	7.50	6.60	-4.50	-5.40	-14	9.10	9.60	-2.90	-2.40	-31
8	-8	10.10	10.70	-1.90	-1.30	33	8.70	7.70	-3.30	-4.30	-12	9.40	10.60	-2.60	-1.40	-33
10	-10	9.80	11.00	-2.20	-1.00	35	9.50	9.10	-2.50	-2.90	-10	9.70	12.30	-2.30	0.30	-35
12	-12	9.10	11.10	-2.90	-0.90	37	10.50	10.00	-1.50	-2.00	-8	10.10	12.80	-1.90	0.80	-37
14	-14	9.00	*11.25*	-3.00	-0.75	39	11.20	11.00	-0.80	-1.00	-6	10.70		-1.30		-39
16	-16	8.80	11.40	-3.20	-0.60	41	11.30	10.90	-0.70	-1.10	-4	11.20		-0.80		-41
18	-18	9.00	*11.25*	-3.00	-0.75	43	11.40	11.40	-0.60	-0.60	-2	11.80		-0.20		-43
20	-20	9.00	11.10	-3.00	-0.90	45	11.80	11.30	-0.20	-0.70	0					-45
22	-22	9.30	*11.20*	-2.70	-0.80	47		11.40		-0.60	2					
24	-24	9.60	11.30	-2.40	-0.70	49		*11.20*		-0.80	4					
26	-26	9.40	*11.35*	-2.60	-0.65	51		11.00		-1.00	6					
28	-28	10.50	11.40	-1.50	-0.60	53		*11.15*		-0.85	8					
30	-30	11.00	*11.60*	-1.00	-0.40	55		11.30		-0.70	10					

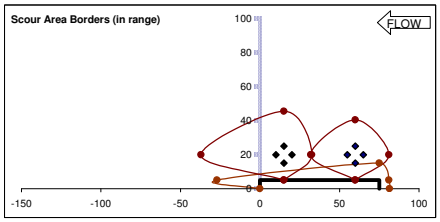
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.40	-2.60
2	9.80	-2.20
4	10.50	-1.50
6	10.30	-1.70
8	10.50	-1.50
10	10.80	-1.20
12	11.20	-0.80
14	11.10	-0.90
16	*11.10*	-0.90
18	11.10	-0.90
20	11.00	-1.00

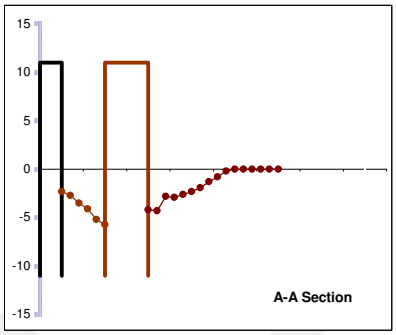
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	6.5	
SB_{af}	Abutment Corner Front	6	
SB_{ar}	Abutment Corner Right	*10*	
		P1	P2
SB_{pl}	Pier Left	*10*	*10*
SB_{pf}	Pier Front	16	12.5
SB_{pr}	Pier Right	15.5	20.5
SB_{pb}	Pier Rear	23	47

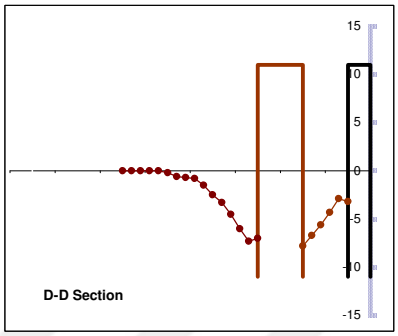


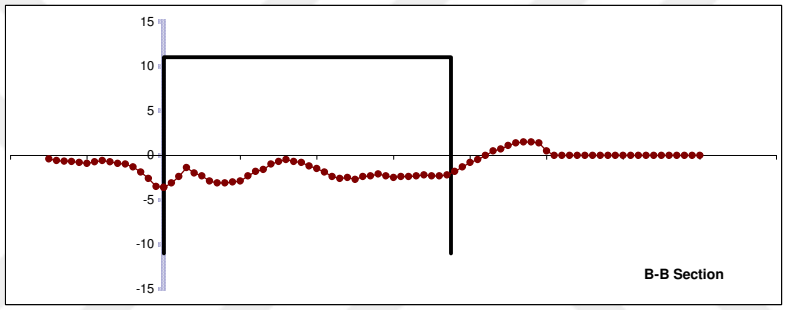
Experiment No : **E163**

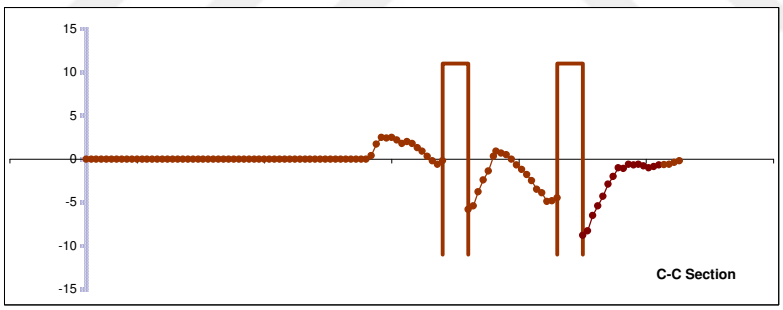


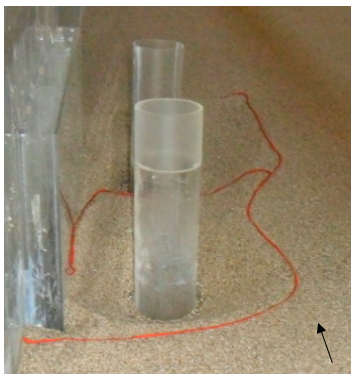


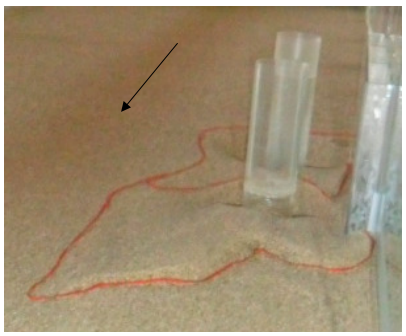






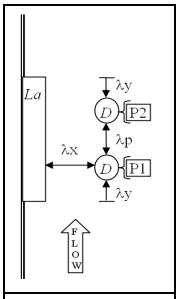


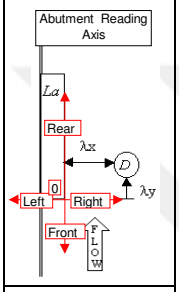


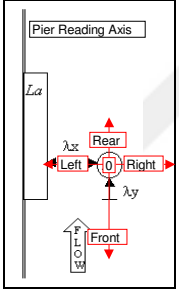


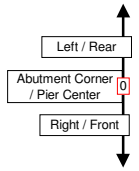
Experiment No : **E164**

Date :	17.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	20
λ_y (cm) :	10
λ_p (cm) :	35









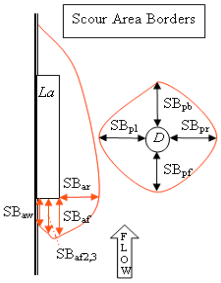
This color was used for raw data readings

This color was used for values enterpolated to sketch

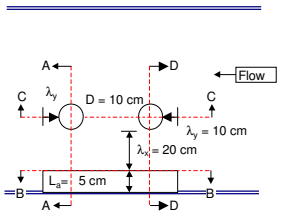
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-115					-160					115
-138	138					-113					-158					113
-136	136					-111					-156					111
-134	134					-109					-154					109
-132	132					-107					-152					107
-130	130					-105					-150					105
-128	128					-103					-148					103
-126	126					-101					-146					101
-124	124					-99					-144					99
-122	122					-97					-142					97
-120	120		12.00		0.00	-95					-140					95
-118	118		12.20		0.20	-93					-138					93
-116	116		12.60		0.60	-91					-136					91
-114	114		12.70		0.70	-89					-134					89
-112	112		12.90		0.90	-87					-132					87
-110	110		13.10		1.10	-85					-130					85
-108	108		13.00		1.00	-83					-128					83
-106	106		13.10		1.10	-81					-126					81
-104	104		13.20		1.20	-79					-124					79
-102	102		13.10		1.10	-77					-122					77
-100	100		13.40		1.40	-75					-120					75
-98	98		13.20		1.20	-73					-118					73
-96	96		13.00		1.00	-71					-116					71
-94	94		12.80		0.80	-69					-114					69
-92	92		12.70		0.70	-67					-112					67
-90	90		12.30		0.30	-65					-110					65
-88	88		12.10		0.10	-63					-108					63
-86	86		11.90		-0.10	-61					-106					61
-84	84		11.70		-0.30	-59					-104					59
-82	82		11.50		-0.50	-57					-102					57
-80	80		11.20		-0.80	-55					-100					55
-78	78		11.30		-0.70	-53					-98					53
-76	76		11.00		-1.00	-51					-96					51
-74	74		11.20		-0.80	-49					-94					49
-72	72		11.30		-0.70	-47					-92					47
-70	70		*11.45*		-0.55	-45					-90					45
-68	68		11.60		-0.40	-43					-88					43
-66	66		*11.55*		-0.45	-41					-86					41
-64	64		11.50		-0.50	-39					-84					39
-62	62		*11.65*		-0.35	-37					-82					37
-60	60		11.80		-0.20	-35					-80					35
-58	58		*11.90*		-0.10	-33					-78					33
-56	56		12.00		0.00	-31					-76					31
-54	54		*11.90*		-0.10	-29					-74		12.00		0.00	29
-52	52		11.80		-0.20	-27					-72		12.30		0.30	27
-50	50		*11.75*		-0.25	-25					-70		12.40		0.40	25
-48	48		11.70		-0.30	-23					-68		12.60		0.60	23
-46	46		*11.60*		-0.40	-21					-66		12.70		0.70	21
-44	44		11.50		-0.50	-19					-64		13.10		1.10	19
-42	42		*11.50*		-0.50	-17					-62		14.00		2.00	17
-40	40		11.50		-0.50	-15					-60		14.40		2.40	15
-38	38		*11.40*		-0.60	-13					-58		14.40		2.40	13
-36	36		11.30		-0.70	-11					-56		14.60		2.60	11
-34	34		*11.20*		-0.80	-9					-54		14.60		2.60	9
-32	32		11.10		-0.90	-7					-52		14.80		2.80	7
-30	30		*10.95*		-1.05	-5					-50		14.90		2.90	5
-28	28		10.80		-1.20	-3					-48		14.90		2.90	3
-26	26		*10.85*		-1.15	-1					-46		14.80		2.80	1
-24	24		10.90		-1.10	1		13.60		1.60	-44		15.10		3.10	-1
-22	22		*10.95*		-1.05	3		13.40		1.40	-42		15.00		3.00	-3
-20	20		11.00		-1.00	5	11.30	13.30	-0.70	1.30	-40	11.50	15.10	-0.50	3.10	-5
-18	18		11.00		-1.00	7	10.80	12.50	-1.20	0.50	-38	11.80	14.90	-0.20	2.90	-7
-16	16		10.90		-1.10	9	10.20	11.80	-1.80	-0.20	-36	11.40	14.70	-0.60	2.70	-9
-14	14		10.90		-1.10	11	10.10	11.20	-1.90	-0.80	-34	11.20	14.70	-0.80	2.70	-11
-12	12		11.70		-0.30	13	9.70	10.30	-2.30	-1.70	-32	10.30	14.50	-1.70	2.50	-13
-10	10		11.10		-0.90	15	8.90	9.60	-3.10	-2.40	-30	9.40	14.10	-2.60	2.10	-15
-8	8		11.80		-0.20	17	7.70	9.00	-4.30	-3.00	-28	9.20	13.80	-2.80	1.80	-17
-6	6	*9.70*	11.20	-2.30	-0.80	19	6.40	8.10	-5.60	-3.90	-26	8.90	13.30	-3.10	1.30	-19
-4	4	9.70	10.40	-2.30	-1.60	21	5.00	7.60	-7.00	-4.40	-24	7.90	12.70	-4.10	0.70	-21
-2	2	9.60	9.10	-2.40	-2.90	23	4.30	7.30	-7.70	-4.70	-22	7.50	12.00	-4.50	0.00	-23
0	0	8.80	8.80	-3.20	-3.20	25	4.50	7.60	-7.50	-4.40	-20	7.60	11.90	-4.40	-0.10	-25
0	0	8.80	8.80	-3.20	-3.20	35	4.50	2.60	-7.50	-9.40	-10	7.60	6.50	-4.40	-5.50	-35
2	-2	9.10	8.70	-2.90	-3.30	37	5.40	3.80	-6.60	-8.20	-8	8.70	7.50	-3.30	-4.50	-37
4	-4	9.60	9.40	-2.40	-2.60	39	6.60	5.30	-5.40	-6.70	-6	9.70	8.90	-2.30	-3.10	-39
6	-6	10.60	10.40	-1.40	-1.60	41	8.20	6.80	-3.80	-5.20	-4	10.00	10.10	-2.00	-1.90	-41
8	-8	10.60	11.10	-1.40	-0.90	43	9.70	8.10	-2.30	-3.90	-2	10.40	11.40	-1.60	-0.60	-43
10	-10	10.70	11.80	-1.30	-0.20	45	10.30	9.40	-1.70	-2.60	0	11.10	12.60	-0.90	0.60	-45
12	-12	10.80		-1.20		47	11.40	10.60	-0.60	-1.40	2	11.50	13.30	-0.50	1.30	-47
14	-14	11.00		-1.00		49	11.80	11.60	-0.20	-0.40	4	12.00		0.00		-49
16	-16	11.00		-1.00		51		12.00		0.00	6					-51
18	-18	10.50		-1.50		53					8					-53
20	-20	9.70		-2.30		55					10					-55
22	-22	9.50		-2.50		57					12					
24	-24	9.20		-2.80		59					14					
26	-26	9.20		-2.80		61					16					
28	-28	9.30		-2.70		63					18					
30	-30	9.70		-2.30		65					20					

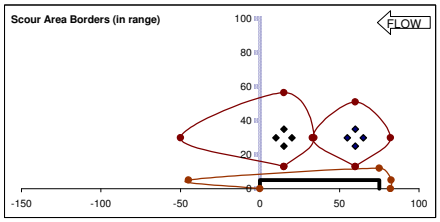
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.60	-2.40
2	10.30	-1.70
4	11.10	-0.90
6	11.10	-0.90
8	11.10	-0.90
10	11.60	-0.40
12	11.70	-0.30
14	11.80	-0.20
16		
18		
20		

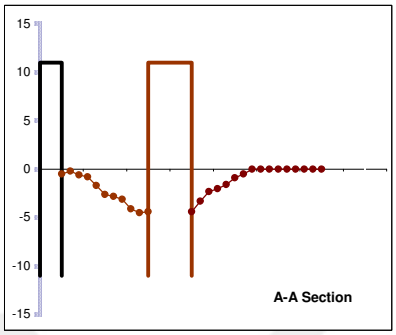
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	7	
SB_{af}	Abutment Corner Front	7.5	
SB_{ar}	Abutment Corner Right	7	
		P1	P2
SB_{pl}	Pier Left	12	12
SB_{pf}	Pier Front	17	14
SB_{pr}	Pier Right	16	21.5
SB_{pb}	Pier Rear	22	60

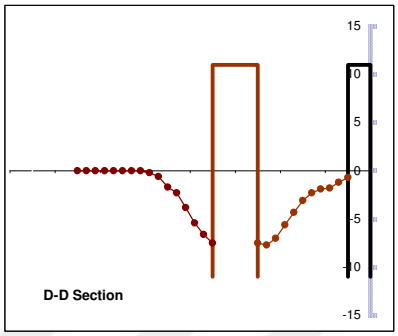


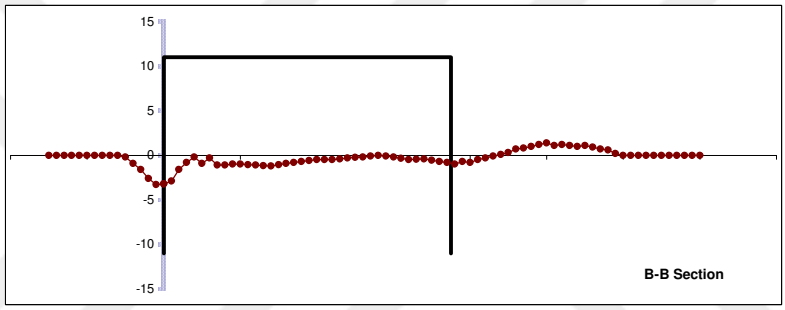
Experiment No : **E164**

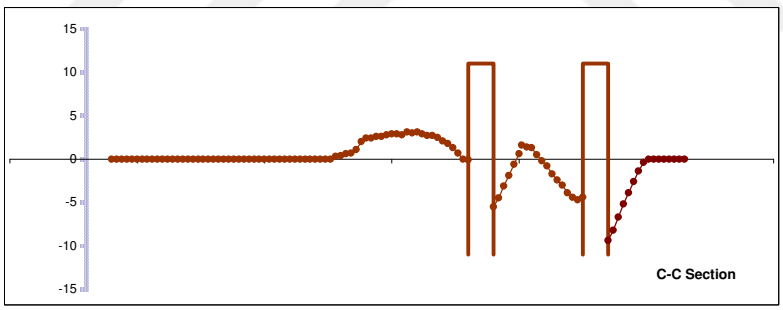


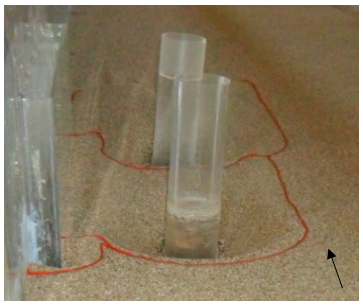


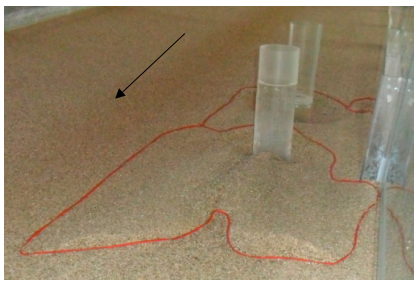






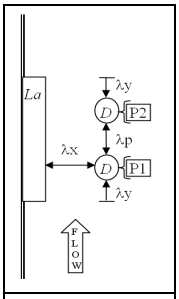


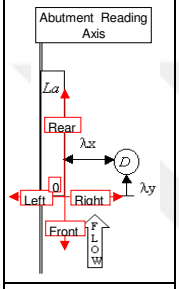


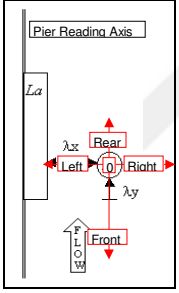


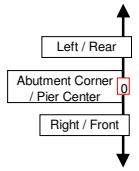
Experiment No : **E165**

Date :	19.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	30
λ_y (cm) :	10
λ_p (cm) :	35









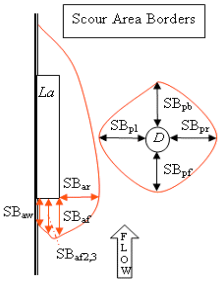
This color was used for raw data readings

This color was used for values enterpolated to sketch

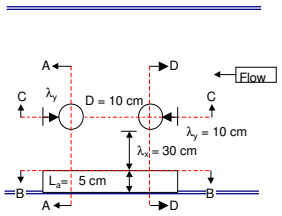
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-105					-150					105
-138	138					-103					-148					103
-136	136					-101					-146					101
-134	134					-99					-144					99
-132	132					-97					-142					97
-130	130					-95					-140					95
-128	128					-93					-138					93
-126	126					-91					-136					91
-124	124					-89					-134					89
-122	122					-87					-132					87
-120	120					-85					-130					85
-118	118					-83					-128					83
-116	116					-81					-126					81
-114	114					-79					-124					79
-112	112					-77					-122					77
-110	110					-75					-120					75
-108	108					-73					-118					73
-106	106					-71					-116					71
-104	104					-69					-114					69
-102	102					-67					-112					67
-100	100					-65					-110					65
-98	98					-63					-108					63
-96	96					-61					-106					61
-94	94					-59					-104					59
-92	92					-57					-102					57
-90	90		12.00		0.00	-55					-100					55
-88	88		12.20		0.20	-53					-98					53
-86	86		12.10		0.10	-51					-96					51
-84	84		11.80		-0.20	-49					-94					49
-82	82		11.60		-0.40	-47					-92					47
-80	80		11.40		-0.60	-45					-90					45
-78	78		11.00		-1.00	-43					-88					43
-76	76		*11.10*		-0.90	-41					-86					41
-74	74		11.20		-0.80	-39					-84					39
-72	72		*11.25*		-0.75	-37					-82					37
-70	70		11.30		-0.70	-35					-80					35
-68	68		*11.40*		-0.60	-33					-78					33
-66	66		11.50		-0.50	-31					-76					31
-64	64		*11.60*		-0.40	-29					-74					29
-62	62		11.70		-0.30	-27					-72					27
-60	60		*11.65*		-0.35	-25					-70					25
-58	58		11.60		-0.40	-23					-68					23
-56	56		*11.70*		-0.30	-21					-66					21
-54	54		11.80		-0.20	-19					-64					19
-52	52		*11.70*		-0.30	-17					-62		12.00		0.00	17
-50	50		11.60		-0.40	-15					-60		12.20		0.20	15
-48	48		*11.60*		-0.40	-13					-58		12.30		0.30	13
-46	46		11.60		-0.40	-11					-56		12.70		0.70	11
-44	44		*11.55*		-0.45	-9					-54		13.00		1.00	9
-42	42		11.50		-0.50	-7					-52		14.30		2.30	7
-40	40		*11.50*		-0.50	-5					-50		14.40		2.40	5
-38	38		11.50		-0.50	-3					-48		14.80		2.80	3
-36	36		*11.55*		-0.45	-1					-46		15.10		3.10	1
-34	34		11.60		-0.40	1					-44		15.10		3.10	-1
-32	32		*11.60*		-0.40	3					-42		15.20		3.20	-3
-30	30		11.60		-0.40	5	11.60		-0.40		-40	11.40	15.00	-0.60	3.00	-5
-28	28		*11.60*		-0.40	7	11.50		-0.50		-38	11.50	15.30	-0.50	3.30	-7
-26	26		11.60		-0.40	9	*11.35*		-0.65		-36	*11.45*	15.20	-0.55	3.20	-9
-24	24		*11.75*		-0.25	11	11.20	13.30	-0.80	1.30	-34	11.40	15.30	-0.60	3.30	-11
-22	22		11.90		-0.10	13	11.00	13.20	-1.00	1.20	-32	*11.30*	15.50	-0.70	3.50	-13
-20	20		*11.80*		-0.20	15	11.20	12.80	-0.80	0.80	-30	11.20	15.30	-0.80	3.30	-15
-18	18		11.70		-0.30	17	11.10	12.30	-0.90	0.30	-28	*11.45*	15.30	-0.55	3.30	-17
-16	16		11.60		-0.40	19	11.00	12.00	-1.00	0.00	-26	11.70	15.10	-0.30	3.10	-19
-14	14		11.60		-0.40	21	10.60	11.20	-1.40	-0.80	-24	11.70	14.70	-0.30	2.70	-21
-12	12		12.20		0.20	23	10.70	10.40	-1.30	-1.60	-22	11.20	14.50	-0.80	2.50	-23
-10	10		12.20		0.20	25	9.70	9.70	-2.30	-2.30	-20	10.40	14.30	-1.60	2.30	-25
-8	8		11.90		-0.10	27	8.60	8.90	-3.40	-3.10	-18	9.70	13.80	-2.30	1.80	-27
-6	6	*10.00*	11.10	-2.00	-0.90	29	7.70	8.40	-4.30	-3.60	-16	9.40	13.10	-2.60	1.10	-29
-4	4	10.00	10.10	-2.00	-1.90	31	6.20	7.70	-5.80	-4.30	-14	9.00	12.50	-3.00	0.50	-31
-2	2	9.20	9.50	-2.80	-2.50	33	5.00	7.40	-7.00	-4.60	-12	8.00	12.10	-4.00	0.10	-33
0	0	8.90	8.90	-3.10	-3.10	35	4.40	7.90	-7.60	-4.10	-10	7.90	12.00	-4.10	0.00	-35
0	0	8.90	8.90	-3.10	-3.10	45	4.20	3.20	-7.80	-8.80	0	7.90	6.60	-4.10	-5.40	-45
2	-2	9.40	9.20	-2.60	-2.80	47	4.30	3.10	-7.70	-8.90	2	8.00	7.00	-4.00	-5.00	-47
4	-4	9.70	9.70	-2.30	-2.30	49	5.20	4.80	-6.80	-7.20	4	9.50	8.50	-2.50	-3.50	-49
6	-6	10.50	10.90	-1.50	-1.10	51	6.40	6.20	-5.60	-5.80	6	10.00	9.90	-2.00	-2.10	-51
8	-8	11.20	11.80	-0.80	-0.20	53	7.70	7.40	-4.30	-4.60	8	10.10	11.00	-1.90	-1.00	-53
10	-10	11.40		-0.60		55	9.20	9.00	-2.80	-3.00	10	10.30	12.60	-1.70	0.60	-55
12	-12	11.50		-0.50		57	10.00	10.20	-2.00	-1.80	12	11.20	13.30	-0.80	1.30	-57
14	-14	11.80		-0.20		59	11.20	11.10	-0.80	-0.90	14	11.60		-0.40		-59
16	-16					61	11.40	11.60	-0.60	-0.40	16	11.60		-0.40		-61
18	-18					63	11.60	11.80	-0.40	-0.20	18	11.80		-0.20		-63
20	-20					65	12.00		0.00		20					-65
22	-22					67					22					
24	-24					69					24					
26	-26					71					26					
28	-28					73					28					
30	-30					75					30					

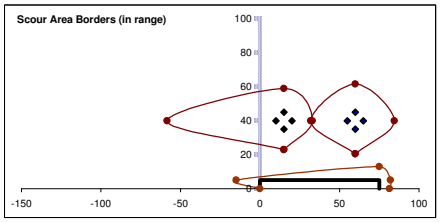
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	10.00	-2.00
2	10.50	-1.50
4	11.20	-0.80
6	11.50	-0.50
8	11.80	-0.20
10		
12		
14		
16		
18		
20		

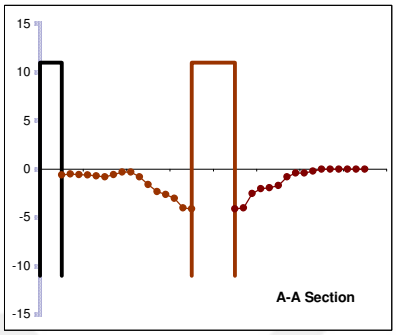
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	6.5	
SB_{af}	Abutment Corner Front	7	
SB_{ar}	Abutment Corner Right	*8*	
		P1	P2
SB_{pl}	Pier Left	14.5	12
SB_{pf}	Pier Front	19.5	13
SB_{pr}	Pier Right	16.5	14
SB_{pb}	Pier Rear	23	68.5

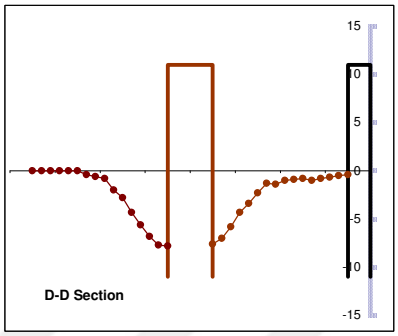


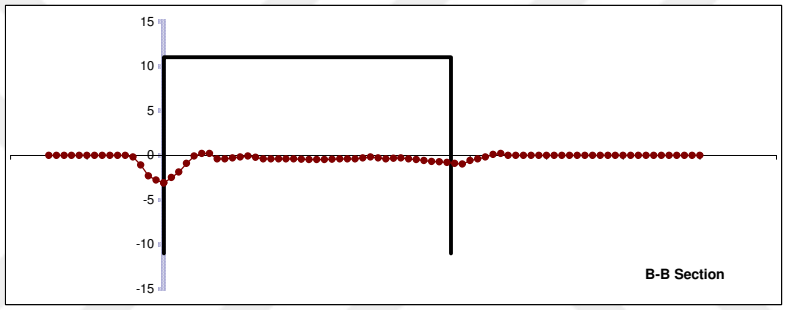
Experiment No : **E165**

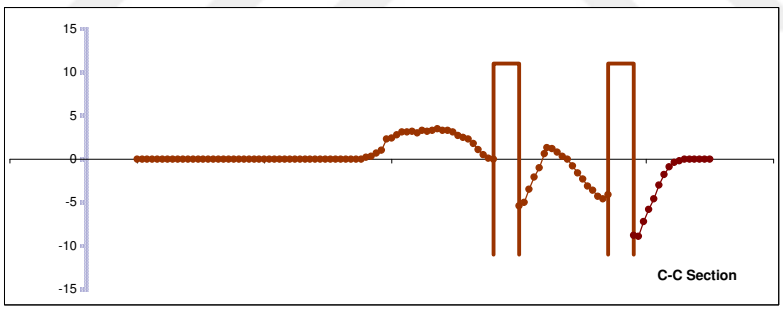


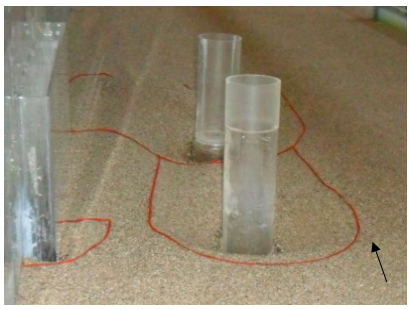


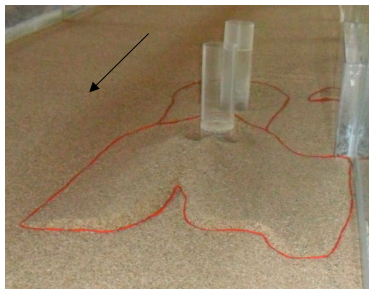






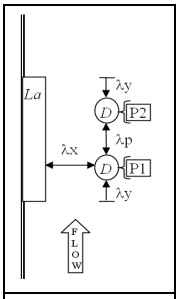


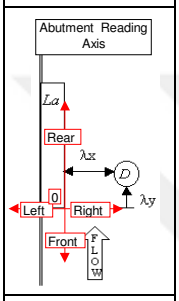


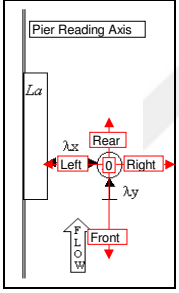


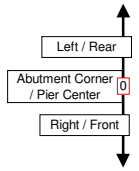
Experiment No : **E166**

Date :	24.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	40
λ_y (cm) :	10
λ_p (cm) :	35









This color was used for raw data readings

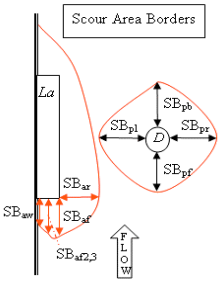
This color was used for values enterpolated to sketch

Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-95					-140					95
-138	138					-93					-138					93
-136	136					-91					-136					91
-134	134					-89					-134					89
-132	132					-87					-132					87
-130	130					-85					-130					85
-128	128					-83					-128					83
-126	126					-81					-126					81
-124	124					-79					-124					79
-122	122					-77					-122					77
-120	120					-75					-120					75
-118	118					-73					-118					73
-116	116					-71					-116					71
-114	114					-69					-114					69
-112	112					-67					-112					67
-110	110					-65					-110					65
-108	108					-63					-108					63
-106	106					-61					-106					61
-104	104					-59					-104					59
-102	102					-57					-102					57
-100	100					-55					-100					55
-98	98					-53					-98					53
-96	96					-51					-96					51
-94	94		12.00		0.00	-49					-94					49
-92	92		12.20		0.20	-47					-92					47
-90	90		12.40		0.40	-45					-90					45
-88	88		12.50		0.50	-43					-88					43
-86	86		12.30		0.30	-41					-86					41
-84	84		12.30		0.30	-39					-84					39
-82	82		12.20		0.20	-37					-82					37
-80	80		12.00		0.00	-35					-80					35
-78	78		11.90		-0.10	-33					-78					33
-76	76		11.40		-0.60	-31					-76					31
-74	74		11.10		-0.90	-29					-74					29
-72	72		11.40		-0.60	-27					-72					27
-70	70		*11.50*		-0.50	-25					-70					25
-68	68		11.60		-0.40	-23					-68					23
-66	66		*11.60*		-0.40	-21					-66					21
-64	64		11.60		-0.40	-19					-64					19
-62	62		*11.55*		-0.45	-17					-62					17
-60	60		11.50		-0.50	-15					-60					15
-58	58		*11.60*		-0.40	-13					-58					13
-56	56		11.70		-0.30	-11					-56					11
-54	54		*11.70*		-0.30	-9					-54					9
-52	52		11.70		-0.30	-7					-52					7
-50	50		*11.70*		-0.30	-5					-50					5
-48	48		11.70		-0.30	-3					-48					3
-46	46		*11.75*		-0.25	-1					-46					1
-44	44		11.80		-0.20	1					-44					-1
-42	42		*11.85*		-0.15	3					-42					-3
-40	40		11.90		-0.10	5	11.50		-0.50		-40	11.30		-0.70		-5
-38	38		*12.00*		0.00	7	11.70		-0.30		-38	11.60		-0.40		-7
-36	36		12.10		0.10	9	11.90		-0.10		-36	11.60	12.00	-0.40	0.00	-9
-34	34		*12.15*		0.15	11	12.30		0.30		-34	*11.55*	12.50	-0.45	0.50	-11
-32	32		12.20		0.20	13	12.00		0.00		-32	11.50	13.40	-0.50	1.40	-13
-30	30		*12.20*		0.20	15	11.50		-0.50		-30	*11.35*	14.10	-0.65	2.10	-15
-28	28		12.20		0.20	17	*11.20*		-0.80		-28	11.20	14.10	-0.80	2.10	-17
-26	26		*12.35*		0.35	19	10.90		-1.10		-26	*11.15*	14.40	-0.85	2.40	-19
-24	24		12.50		0.50	21	*10.90*	13.50	-1.10	1.50	-24	11.10	14.40	-0.90	2.40	-21
-22	22		12.50		0.50	23	10.90	12.30	-1.10	0.30	-22	*10.90*	14.50	-1.10	2.50	-23
-20	20		12.20		0.20	25	*10.80*	13.00	-1.20	1.00	-20	10.70	14.70	-1.30	2.70	-25
-18	18		11.90		-0.10	27	10.70	12.60	-1.30	0.60	-18	*10.65*	14.80	-1.35	2.80	-27
-16	16		11.80		-0.20	29	10.70	11.90	-1.30	-0.10	-16	10.60	14.70	-1.40	2.70	-29
-14	14		12.20		0.20	31	10.60	11.10	-1.40	-0.90	-14	10.60	14.40	-1.40	2.40	-31
-12	12		12.30		0.30	33	10.20	10.50	-1.80	-1.50	-12	10.20	14.30	-1.80	2.30	-33
-10	10		12.20		0.20	35	9.20	9.90	-2.80	-2.10	-10	9.80	14.40	-2.20	2.40	-35
-8	8		11.70		-0.30	37	8.60	9.10	-3.40	-2.90	-8	9.50	13.90	-2.50	1.90	-37
-6	6	*9.10*	10.90	-2.90	-1.10	39	7.40	8.40	-4.60	-3.60	-6	9.40	13.20	-2.60	1.20	-39
-4	4	9.40	9.90	-2.60	-2.10	41	5.80	7.90	-6.20	-4.10	-4	8.50	12.70	-3.50	0.70	-41
-2	2	8.60	9.10	-3.40	-2.90	43	4.40	7.80	-7.60	-4.20	-2	7.80	12.40	-4.20	0.40	-43
0	0	8.50	8.50	-3.50	-3.50	45	4.50	8.20	-7.50	-3.80	0	8.40	12.30	-3.60	0.30	-45
0	0	8.50	8.50	-3.50	-3.50	55	4.50	3.10	-7.50	-8.90	10	7.60	6.50	-4.40	-5.50	-55
2	-2	8.90	8.50	-3.10	-3.50	57	4.40	3.00	-7.60	-9.00	12	8.20	7.20	-3.80	-4.80	-57
4	-4	9.00	9.00	-3.00	-3.00	59	5.90	4.30	-6.10	-7.70	14	9.90	8.30	-2.10	-3.70	-59
6	-6	10.00	9.80	-2.00	-2.20	61	7.20	5.40	-4.80	-6.60	16	9.70	9.50	-2.30	-2.50	-61
8	-8	11.10	11.30	-0.90	-0.70	63	8.70	6.90	-3.30	-5.10	18	9.90	10.70	-2.10	-1.30	-63
10	-10	11.40	11.90	-0.60	-0.10	65	9.60	8.20	-2.40	-3.80	20	10.40	12.10	-1.60	0.10	-65
12	-12	11.30		-0.70		67	10.30	9.50	-1.70	-2.50	22	10.70	13.20	-1.30	1.20	-67
14	-14	11.40		-0.60		69	11.10	10.80	-0.90	-1.20	24	11.20		-0.80		-69
16	-16	11.40		-0.60		71	11.30	11.60	-0.70	-0.40	26	11.60		-0.40		-71
18	-18	11.40		-0.60		73	11.60	11.50	-0.40	-0.50	28	11.60		-0.40		-73
20	-20	11.30		-0.70		75	11.70	11.50	-0.30	-0.50	30	11.80		-0.20		-75
22	-22	11.20		-0.80		77	11.80	*11.55*	-0.20	-0.45	32					
24	-24	11.10		-0.90		79		11.60		-0.40	34					
26	-26	11.20		-0.80		81		*11.70*		-0.30	36					
28	-28	11.40		-0.60		83		11.80		-0.20	38					
30	-30	11.30		-0.70		85					40					

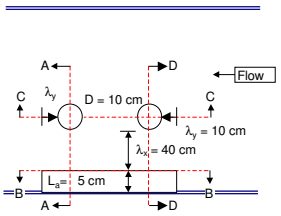
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.10	-2.90
2	9.40	-2.60
4	10.20	-1.80
6	11.20	-0.80
8	12.00	0.00
10		
12		
14		
16		
18		
20		

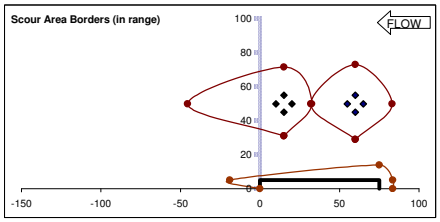
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	8.5	
SB_{af}	Abutment Corner Front	8.5	
SB_{ar}	Abutment Corner Right	9	
		P1	P2
SB_{pl}	Pier Left	16	14
SB_{pf}	Pier Front	18	12.5
SB_{pr}	Pier Right	18	16.5
SB_{pb}	Pier Rear	23	55.5

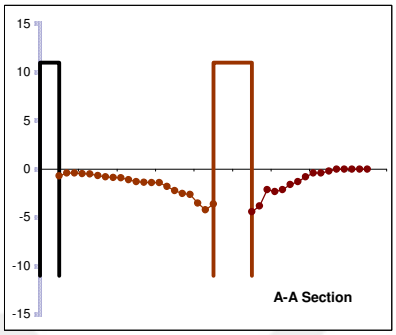
Scour Area Borders

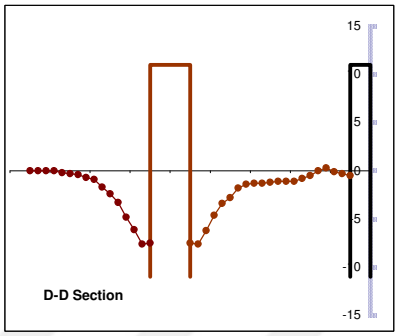


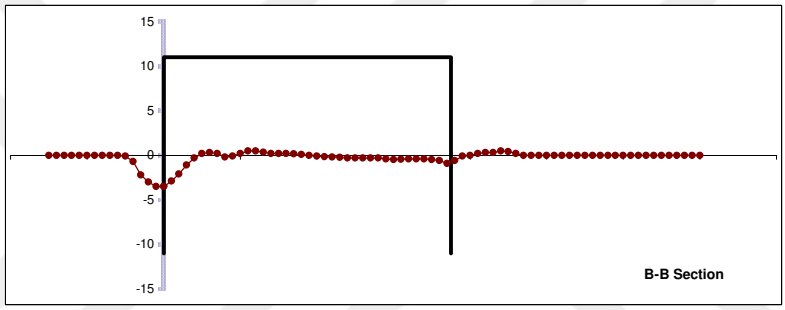
Experiment No : **E166**

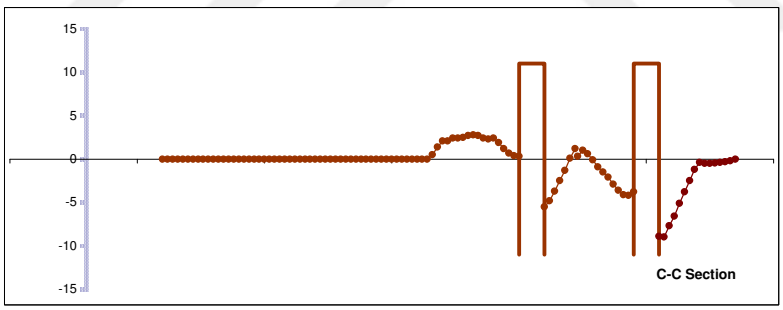


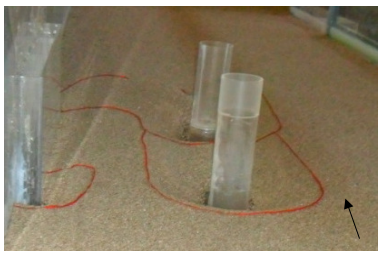


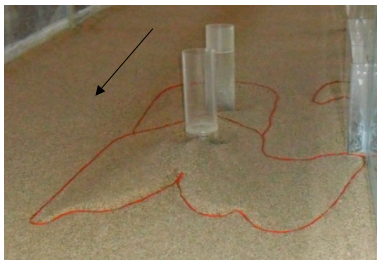






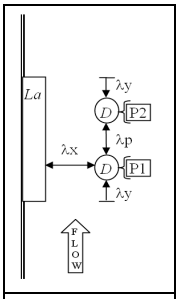


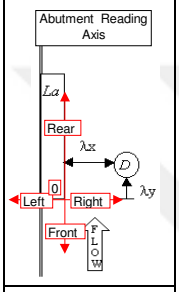


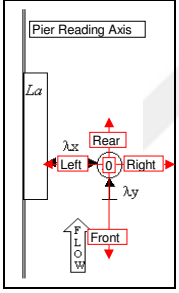


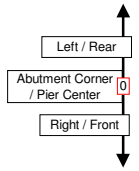
Experiment No : **E167**

Date :	26.09.2012
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	5
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	50
λ_y (cm) :	10
λ_p (cm) :	35









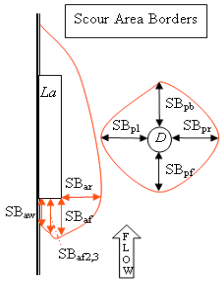
This color was used for raw data readings

This color was used for values enterpolated to sketch

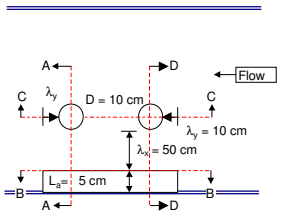
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-85					-130					85
-138	138					-83					-128					83
-136	136					-81					-126					81
-134	134					-79					-124					79
-132	132					-77					-122					77
-130	130					-75					-120					75
-128	128					-73					-118					73
-126	126					-71					-116					71
-124	124					-69					-114					69
-122	122					-67					-112					67
-120	120					-65					-110					65
-118	118					-63					-108					63
-116	116					-61					-106					61
-114	114					-59					-104					59
-112	112					-57					-102					57
-110	110					-55					-100					55
-108	108					-53					-98					53
-106	106					-51					-96					51
-104	104					-49					-94					49
-102	102					-47					-92					47
-100	100					-45					-90					45
-98	98					-43					-88					43
-96	96					-41					-86					41
-94	94					-39					-84					39
-92	92					-37					-82					37
-90	90					-35					-80					35
-88	88					-33					-78					33
-86	86					-31					-76					31
-84	84					-29					-74					29
-82	82					-27					-72					27
-80	80					-25					-70					25
-78	78					-23					-68					23
-76	76		12.00		0.00	-21					-66					21
-74	74		11.70		-0.30	-19					-64					19
-72	72		12.00		0.00	-17					-62					17
-70	70		12.30		0.30	-15					-60					15
-68	68		*12.30*		0.30	-13					-58					13
-66	66		12.30		0.30	-11					-56					11
-64	64		*12.40*		0.40	-9					-54					9
-62	62		12.50		0.50	-7					-52					7
-60	60		*12.50*		0.50	-5					-50					5
-58	58		12.50		0.50	-3					-48					3
-56	56		*12.45*		0.45	-1					-46					1
-54	54		12.40		0.40	1					-44					-1
-52	52		*12.35*		0.35	3					-42					-3
-50	50		12.30		0.30	5	11.80		-0.20		-40	12.10		0.10		-5
-48	48		*12.30*		0.30	7	11.70		-0.30		-38	12.20		0.20		-7
-46	46		12.30		0.30	9	11.60		-0.40		-36	11.90		-0.10		-9
-44	44		*12.30*		0.30	11	11.90		-0.10		-34	11.90		-0.10		-11
-42	42		12.30		0.30	13	12.10		0.10		-32	11.70	12.00	-0.30	0.00	-13
-40	40		*12.20*		0.20	15	*11.80*		-0.20		-30	*11.65*	13.00	-0.35	1.00	-15
-38	38		12.10		0.10	17	11.50		-0.50		-28	11.60	13.60	-0.40	1.60	-17
-36	36		*12.20*		0.20	19	*11.50*		-0.50		-26	*11.60*	14.30	-0.40	2.30	-19
-34	34		12.30		0.30	21	11.50		-0.50		-24	11.60	14.50	-0.40	2.50	-21
-32	32		*12.40*		0.40	23	*11.45*		-0.55		-22	*11.60*	14.70	-0.40	2.70	-23
-30	30		12.50		0.50	25	11.40		-0.60		-20	11.60	14.70	-0.40	2.70	-25
-28	28		*12.40*		0.40	27	*11.45*		-0.55		-18	*11.60*	14.80	-0.40	2.80	-27
-26	26		12.30		0.30	29	11.50		-0.50		-16	11.60	15.00	-0.40	3.00	-29
-24	24		12.30		0.30	31	*11.50*	13.50	-0.50	1.50	-14	*11.60*	15.20	-0.40	3.20	-31
-22	22		12.20		0.20	33	11.50	13.50	-0.50	1.50	-12	11.60	15.20	-0.40	3.20	-33
-20	20		12.00		0.00	35	*11.35*	13.20	-0.65	1.20	-10	*11.55*	15.10	-0.45	3.10	-35
-18	18		11.80		-0.20	37	11.20	12.60	-0.80	0.60	-8	11.50	15.20	-0.50	3.20	-37
-16	16		12.10		0.10	39	11.20	12.00	-0.80	0.00	-6	11.70	14.80	-0.30	2.80	-39
-14	14		12.40		0.40	41	11.00	11.40	-1.00	-0.60	-4	11.50	15.00	-0.50	3.00	-41
-12	12		13.10		1.10	43	10.00	10.80	-2.00	-1.20	-2	10.80	14.70	-1.20	2.70	-43
-10	10		12.70		0.70	45	9.30	10.10	-2.70	-1.90	0	10.20	14.40	-1.80	2.40	-45
-8	8		12.20		0.20	47	8.30	9.20	-3.70	-2.80	2	9.60	14.00	-2.40	2.00	-47
-6	6	*9.80*	11.50	-2.20	-0.50	49	7.00	8.60	-5.00	-3.40	4	9.50	13.40	-2.50	1.40	-49
-4	4	10.10	10.40	-1.90	-1.60	51	5.80	8.10	-6.20	-3.90	6	9.60	12.80	-2.40	0.80	-51
-2	2	9.20	9.00	-2.80	-3.00	53	4.80	8.00	-7.20	-4.00	8	8.30	12.50	-3.70	0.50	-53
0	0	8.70	8.70	-3.30	-3.30	55	4.80	8.20	-7.20	-3.80	10	9.20	12.40	-2.80	0.40	-55
0	0	8.70	8.70	-3.30	-3.30	65	6.00	2.60	-6.00	-9.40	20	7.00	6.10	-5.00	-5.90	-65
2	-2	9.30	8.80	-2.70	-3.20	67	4.00	3.20	-8.00	-8.80	22	8.50	6.90	-3.50	-5.10	-67
4	-4	9.30	9.60	-2.70	-2.40	69	5.20	4.80	-6.80	-7.20	24	9.50	8.70	-2.50	-3.30	-69
6	-6	10.40	10.80	-1.60	-1.20	71	6.90	6.00	-5.10	-6.00	26	9.70	10.00	-2.30	-2.00	-71
8	-8	11.60	11.60	-0.40	-0.40	73	8.20	7.20	-3.80	-4.80	28	10.00	11.00	-2.00	-1.00	-73
10	-10	11.50	11.80	-0.50	-0.20	75	8.90	8.40	-3.10	-3.60	30	10.60	12.50	-1.40	0.50	-75
12	-12	11.50		-0.50		77	10.20	10.00	-1.80	-2.00	32	11.30	13.50	-0.70	1.50	-77
14	-14	11.50		-0.50		79	11.10	11.10	-0.90	-0.90	34	11.70		-0.30		-79
16	-16	11.40		-0.60		81	11.50	11.40	-0.50	-0.60	36	11.80		-0.20		-81
18	-18	11.50		-0.50		83	11.80	11.80	-0.20	-0.20	38					-83
20	-20	11.80		-0.20		85					40					-85
22	-22					87					42					
24	-24					89					44					
26	-26					91					46					
28	-28					93					48					
30	-30					95					50					

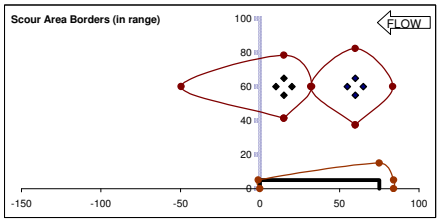
On side wall		
Dist. (cm)	Raw Data Reading (cm)	ds (cm)
0	9.80	-2.20
2	10.10	-1.90
4	11.10	-0.90
6	11.60	-0.40
8	11.80	-0.20
10		
12		
14		
16		
18		
20		

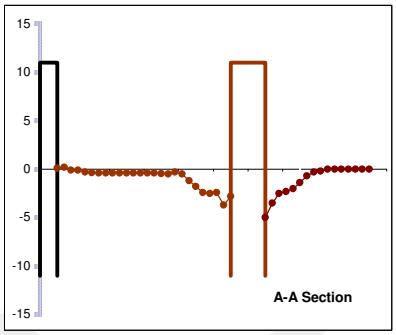
Scour Area Borders		(cm)	
SB_{aw}	Abutment Front (Wall)	9	
SB_{af}	Abutment Corner Front	9	
SB_{ar}	Abutment Corner Right	10	
		P1	P2
SB_{pl}	Pier Left	17.5	13.5
SB_{pf}	Pier Front	18.5	12.5
SB_{pr}	Pier Right	17.5	13.5
SB_{pb}	Pier Rear	23	59.5

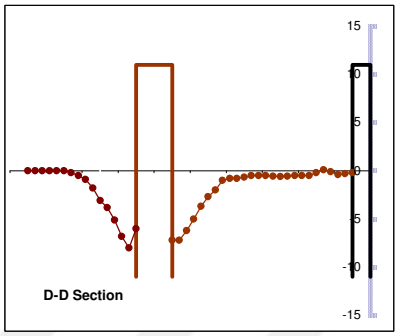


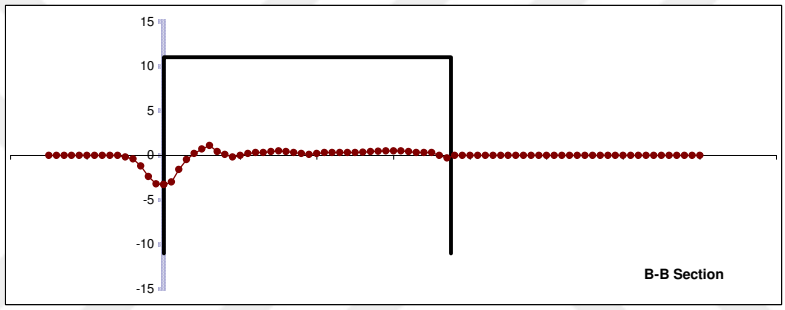
Experiment No : **E167**

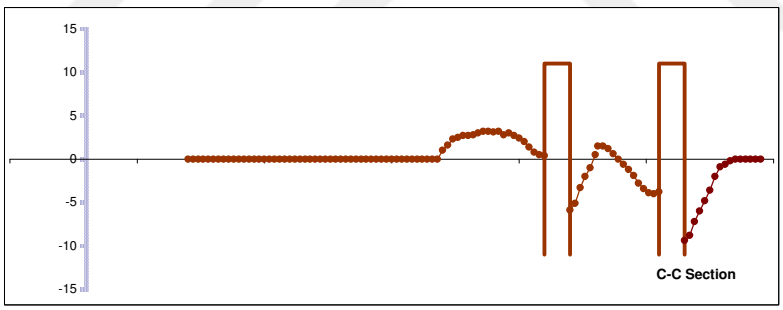


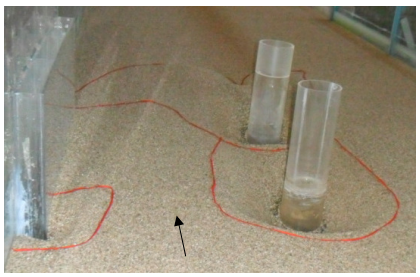


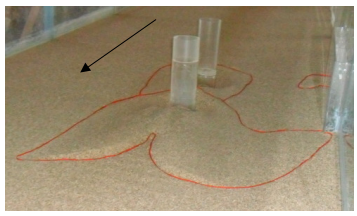






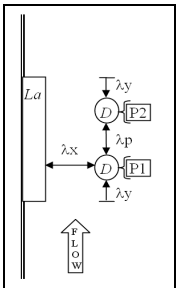


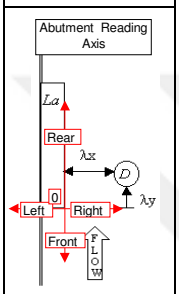


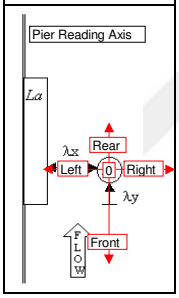


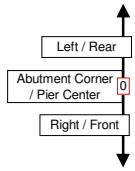
Experiment No : **E168**

Date :	16.05.2013
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	0
Abutment Lg. :	75
D (cm) :	10
λ_x (cm) :	70
λ_y (cm) :	10
λ_p (cm) :	35





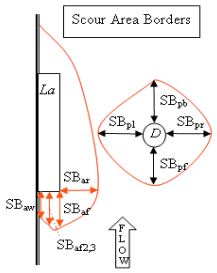




This color was used for raw data readings

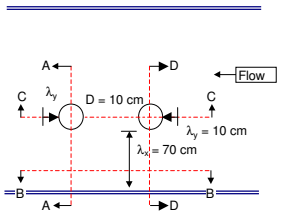
This color was used for values enterpolated to sketch

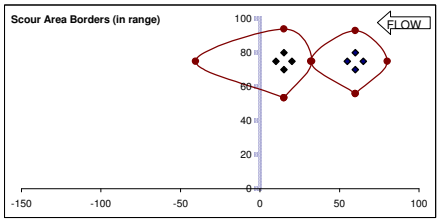
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-70					-115					70
-138	138					-68					-113					68
-136	136					-66					-111					66
-134	134					-64					-109					64
-132	132					-62					-107					62
-130	130					-60					-105					60
-128	128					-58					-103					58
-126	126					-56					-101					56
-124	124					-54					-99					54
-122	122					-52					-97					52
-120	120					-50					-95					50
-118	118					-48					-93					48
-116	116					-46					-91					46
-114	114					-44					-89					44
-112	112					-42					-87					42
-110	110					-40					-85					40
-108	108					-38					-83					38
-106	106					-36					-81					36
-104	104					-34					-79					34
-102	102					-32					-77					32
-100	100					-30					-75					30
-98	98					-28					-73					28
-96	96					-26					-71					26
-94	94					-24					-69					24
-92	92					-22					-67					22
-90	90					-20					-65					20
-88	88					-18					-63					18
-86	86					-16					-61					16
-84	84					-14					-59					14
-82	82					-12					-57					12
-80	80					-10					-55					10
-78	78					-8					-53					8
-76	76					-6					-51					6
-74	74					-4					-49					4
-72	72					-2					-47					2
-70	70					0					-45					0
-68	68					2					-43					-2
-66	66					4					-41					-4
-64	64					6					-39					-6
-62	62					8					-37					-8
-60	60					10					-35					-10
-58	58					12					-33					-12
-56	56					14					-31					-14
-54	54					16					-29					-16
-52	52					18					-27					-18
-50	50					20					-25					-20
-48	48					22					-23					-22
-46	46					24					-21		12.00		0.00	-24
-44	44					26					-19		12.20		0.20	-26
-42	42					28					-17		12.60		0.60	-28
-40	40					30	11.80		-0.20		-15		13.90		1.90	-30
-38	38					32	*11.65*		-0.35		-13		14.40		2.40	-32
-36	36					34	11.50		-0.50		-11		14.70		2.70	-34
-34	34					36	*11.45*		-0.55		-9		15.00		3.00	-36
-32	32					38	11.40		-0.60		-7		15.00		3.00	-38
-30	30					40	*11.40*		-0.60		-5		15.00		3.00	-40
-28	28					42	11.40		-0.60		-3		15.30		3.30	-42
-26	26					44	*11.45*		-0.55		-1		15.10		3.10	-44
-24	24					46	11.50	13.70	-0.50	1.70	1		15.30		3.30	-46
-22	22					48	*11.40*	13.80	-0.60	1.80	3		15.30		3.30	-48
-20	20					50	11.30	13.40	-0.70	1.40	5		15.00		3.00	-50
-18	18					52	*11.15*	12.80	-0.85	0.80	7	11.90	15.00	-0.10	3.00	-52
-16	16					54	11.00	12.40	-1.00	0.40	9	11.80	15.20	-0.20	3.20	-54
-14	14					56	11.00	10.50	-1.00	-1.50	11	11.70	15.00	-0.30	3.00	-56
-12	12					58	10.80	10.30	-1.20	-1.70	13	11.00	14.90	-1.00	2.90	-58
-10	10					60	9.90	9.60	-2.10	-2.40	15	10.50	14.70	-1.50	2.70	-60
-8	8					62	8.40	8.80	-3.60	-3.20	17	10.20	14.40	-1.80	2.40	-62
-6	6					64	7.30	7.90	-4.70	-4.10	19	10.30	14.00	-1.70	2.00	-64
-4	4					66	5.90	7.60	-6.10	-4.40	21	9.50	13.20	-2.50	1.20	-66
-2	2					68	4.80	7.90	-7.20	-4.10	23	8.40	12.70	-3.60	0.70	-68
0	0					70	4.90	8.10	-7.10	-3.90	25	8.80	12.90	-3.20	0.90	-70
0	0					80	6.50	3.40	-5.50	-8.60	35	8.30	7.70	-3.70	-4.30	-80
2	-2					82	5.80	3.70	-6.20	-8.30	37	8.70	7.50	-3.30	-4.50	-82
4	-4					84	7.70	5.00	-4.30	-7.00	39	9.90	8.90	-2.10	-3.10	-84
6	-6					86	8.80	6.50	-3.20	-5.50	41	10.10	10.10	-1.90	-1.90	-86
8	-8					88	9.80	7.80	-2.20	-4.20	43	10.60	11.70	-1.40	-0.30	-88
10	-10					90	11.10	8.80	-0.90	-3.20	45	10.90	13.20	-1.10	1.20	-90
12	-12					92	11.50	10.60	-0.50	-1.40	47	11.30	13.70	-0.70	1.70	-92
14	-14					94	11.80	11.30	-0.20	-0.70	49	11.80		-0.20		-94
16	-16					96		11.30		-0.70	51					-96
18	-18					98		*11.25*		-0.75	53					-98
20	-20					100		11.20		-0.80	55					-100
22	-22					102		*11.30*		-0.70	57					
24	-24					104		11.40		-0.60	59					
26	-26					106		*11.45*		-0.55	61					
28	-28					108		11.50		-0.50	63					
30	-30					110		*11.50*		-0.50	65					
32	-32					112		11.50		-0.50	67					
34	-34					114		*11.50*		-0.50	69					
36	-36					116		11.50		-0.50	71					
38	-38					118		*11.55*		-0.45	73					
40	-40					120		11.60		-0.40	75					
42	-42					122		*11.70*		-0.30	77					
44	-44					124		11.80		-0.20	79					

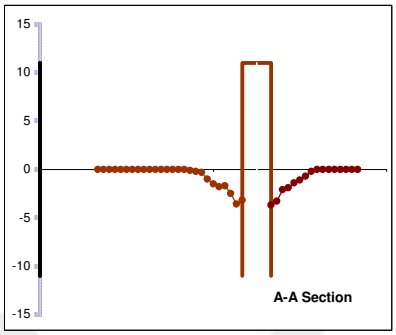


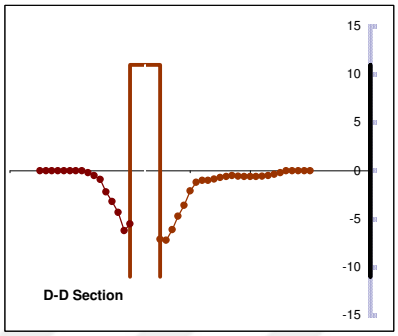
Scour Area Borders		(cm)	
		P1	P2
SB_{pl}	Pier Left	14	16.5
SB_{pf}	Pier Front	15	12.5
SB_{pr}	Pier Right	13	14
SB_{pb}	Pier Rear	23	50.5

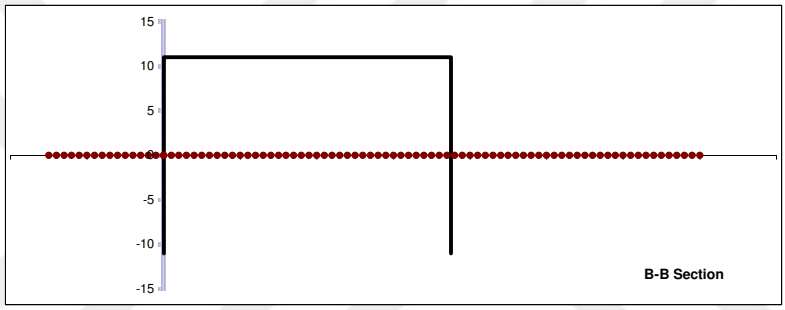
Experiment No : **E168**

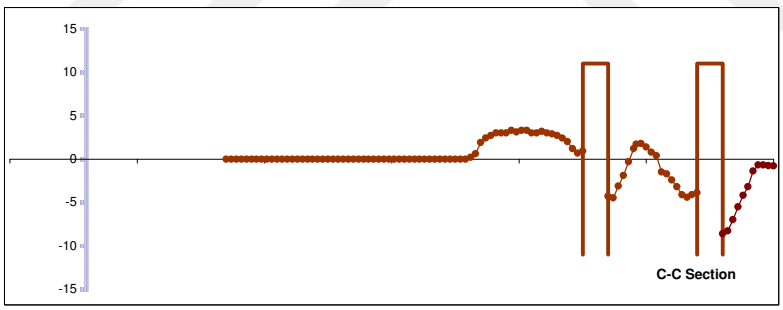


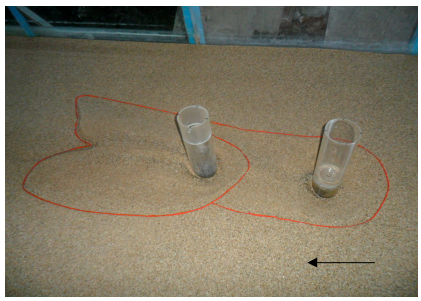


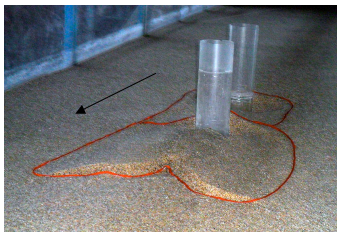






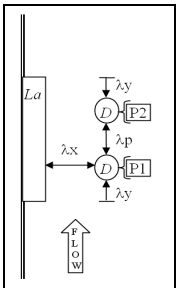


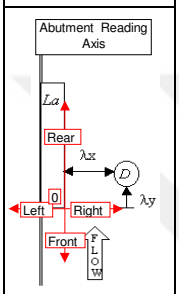


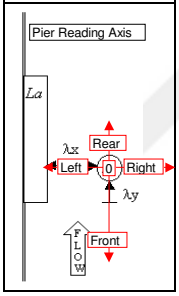


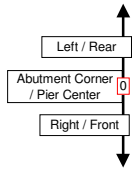
Experiment No : **E169**

Date :	21.05.2013
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	0
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	70
λ_y (cm) :	5
λ_p (cm) :	55





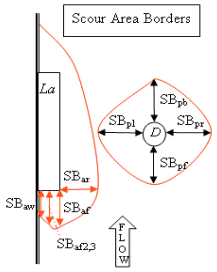




This color was used for raw data readings

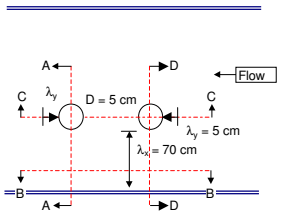
This color was used for values enterpolated to sketch

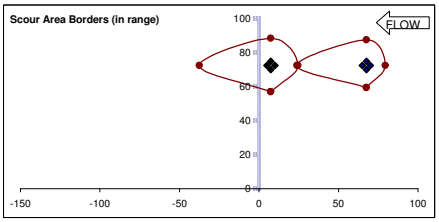
Flow Direction		ABUTMENT Raw Data Reading(cm)		ABUTMENT Scour Depth ds (cm)			PIER at FRONT, P1 Raw Data Reading(cm)		PIER at FRONT, P1 Scour Depth ds (cm)			PIER at REAR, P2 Raw Data Reading(cm)		PIER at REAR, P2 Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-70					-130					70
-138	138					-68					-128					68
-136	136					-66					-126					66
-134	134					-64					-124					64
-132	132					-62					-122					62
-130	130					-60					-120					60
-128	128					-58					-118					58
-126	126					-56					-116					56
-124	124					-54					-114					54
-122	122					-52					-112					52
-120	120					-50					-110					50
-118	118					-48					-108					48
-116	116					-46					-106					46
-114	114					-44					-104					44
-112	112					-42					-102					42
-110	110					-40					-100					40
-108	108					-38					-98					38
-106	106					-36					-96					36
-104	104					-34					-94					34
-102	102					-32					-92					32
-100	100					-30					-90					30
-98	98					-28					-88					28
-96	96					-26					-86					26
-94	94					-24					-84					24
-92	92					-22					-82					22
-90	90					-20					-80					20
-88	88					-18					-78					18
-86	86					-16					-76					16
-84	84					-14					-74					14
-82	82					-12					-72					12
-80	80					-10					-70					10
-78	78					-8					-68					8
-76	76					-6					-66					6
-74	74					-4					-64					4
-72	72					-2					-62					2
-70	70					0					-60					0
-68	68					2					-58					-2
-66	66					4					-56					-4
-64	64					6					-54					-6
-62	62					8					-52					-8
-60	60					10					-50					-10
-58	58					12					-48					-12
-56	56					14					-46					-14
-54	54					16					-44					-16
-52	52					18					-42					-18
-50	50					20					-40					-20
-48	48					22					-38					-22
-46	46					24					-36					-24
-44	44					26					-34					-26
-42	42					28		12.70		0.70	-32		11.80		-0.20	-28
-40	40					30		13.30		1.30	-30		12.50		0.50	-30
-38	38					32		13.30		1.30	-28		13.10		1.10	-32
-36	36					34	11.80	13.40	-0.20	1.40	-26		13.70		1.70	-34
-34	34					36	*11.60*	13.50	-0.40	1.50	-24		14.00		2.00	-36
-32	32					38	11.40	13.60	-0.60	1.60	-22		14.30		2.30	-38
-30	30					40	*11.40*	13.60	-0.60	1.60	-20		14.30		2.30	-40
-28	28					42	11.40	13.50	-0.60	1.50	-18		14.40		2.40	-42
-26	26					44	*11.35*	13.40	-0.65	1.40	-16		14.40		2.40	-44
-24	24					46	11.30	13.40	-0.70	1.40	-14		14.40		2.40	-46
-22	22					48	*11.20*	13.60	-0.80	1.60	-12		14.50		2.50	-48
-20	20					50	11.10	13.60	-0.90	1.60	-10	11.80	14.30	-0.20	2.30	-50
-18	18					52	11.10	13.40	-0.90	1.40	-8	*11.70*	14.00	-0.30	2.00	-52
-16	16					54	11.00	13.30	-1.00	1.30	-6	11.60	13.90	-0.40	1.90	-54
-14	14					56	10.90	13.10	-1.10	1.10	-4	11.60	13.50	-0.40	1.50	-56
-12	12					58	10.70	12.60	-1.30	0.60	-2	11.60	13.30	-0.40	1.30	-58
-10	10					60	10.50	12.00	-1.50	0.00	0	11.60	13.00	-0.40	1.00	-60
-8	8					62	10.40	11.30	-1.60	-0.70	2	11.00	12.20	-1.00	0.20	-62
-6	6					64	10.20	10.30	-1.80	-1.70	4	10.10	11.20	-1.90	-0.80	-64
-4	4					66	9.50	9.40	-2.50	-2.60	6	9.30	10.10	-2.70	-1.90	-66
-2	2					68	8.50	8.70	-3.50	-3.30	8	7.90	9.40	-4.10	-2.60	-68
0	0					70	7.50	8.10	-4.50	-3.90	10	6.80	8.30	-5.20	-3.70	-70
0	0					75	5.30	5.80	-6.70	-6.20	15	7.60	6.60	-4.40	-5.40	-75
2	-2					77	7.30	6.80	-4.70	-5.20	17	8.80	7.50	-3.20	-4.50	-77
4	-4					79	9.30	7.80	-2.70	-4.20	19	10.30	8.70	-1.70	-3.30	-79
6	-6					81	9.60	9.20	-2.40	-2.80	21	10.90	10.30	-1.10	-1.70	-81
8	-8					83	10.30	10.50	-1.70	-1.50	23	11.30	11.70	-0.70	-0.30	-83
10	-10					85	10.70	10.60	-1.30	-1.40	25	11.80	12.60	-0.20	0.60	-85
12	-12					87	10.80	10.90	-1.20	-1.10	27					-87
14	-14					89	10.90	11.10	-1.10	-0.90	29					-89
16	-16					91	11.80	11.10	-0.20	-0.90	31					-91
18	-18					93		*11.10*		-0.90	33					-93
20	-20					95		11.10		-0.90	35					-95
22	-22					97		*11.20*		-0.80	37					
24	-24					99		11.30		-0.70	39					
26	-26					101		*11.35*		-0.65	41					
28	-28					103		11.40		-0.60	43					
30	-30					105		*11.60*		-0.40	45					
32	-32					107		11.80		-0.20	47					
34	-34					109					49					
36	-36					111					51					
38	-38					113					53					
40	-40					115					55					
42	-42					117					57					
44	-44					119					59					

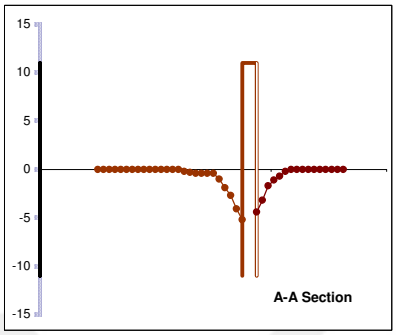


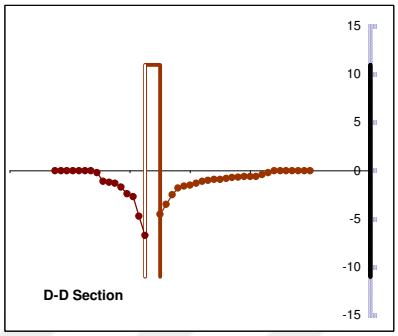
Scour Area Borders		(cm)	
		P1	P2
SB_{pl}	Pier Left	10.5	13
SB_{pf}	Pier Front	9.5	14.5
SB_{pr}	Pier Right	12.5	13.5
SB_{pb}	Pier Rear	41	42.5

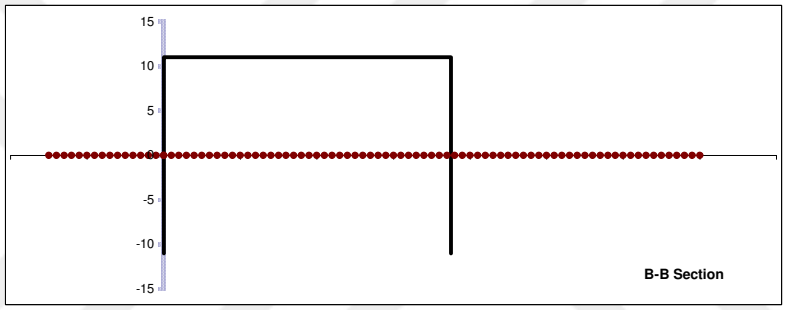
Experiment No : **E169**

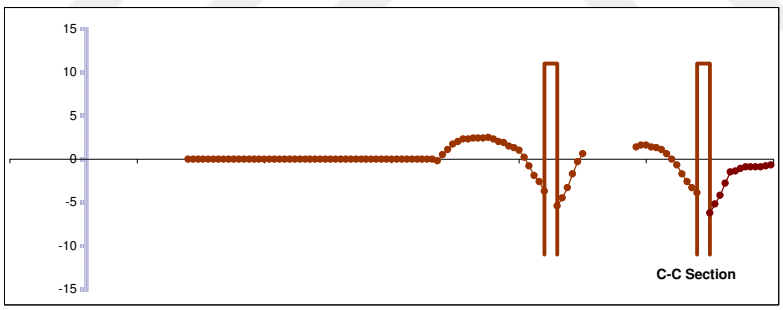


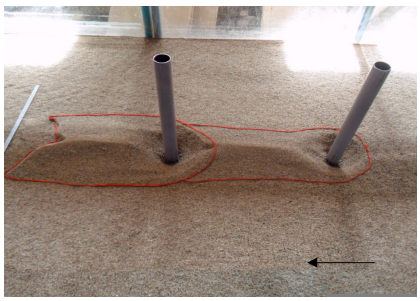


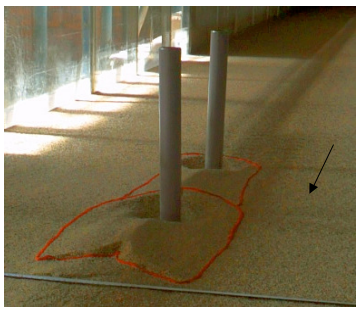






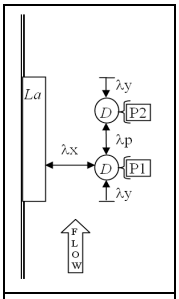


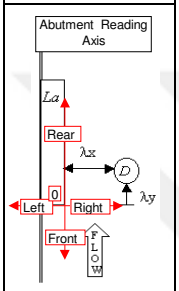


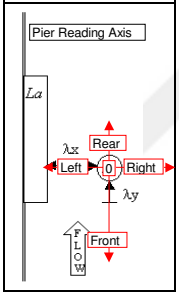


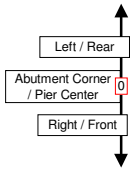
Experiment No : **E170**

Date :	28.05.2013
Q (lt/s) :	30
y (cm) :	6.45
Zero line (cm) :	12
L_a (cm)	0
Abutment Lg. :	75
D (cm) :	5
λ_x (cm) :	70
λ_y (cm) :	15
λ_p (cm) :	35





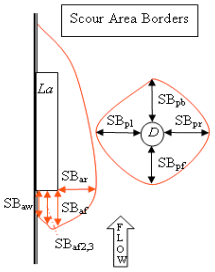




This color was used for raw data readings

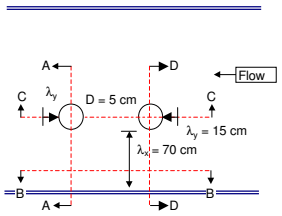
This color was used for values enterpolated to sketch

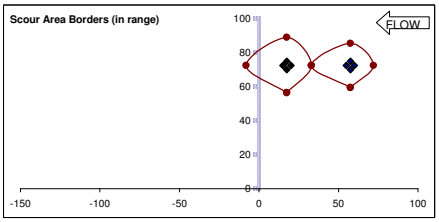
Flow Direction		ABUTMENT					PIER at FRONT, P1					PIER at REAR, P2				
		Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)			Raw Data Reading(cm)		Scour Depth ds (cm)		
Distance (cm)		Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in A-A	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in C-C	Left/ Right	Rear/ Front	Left/ Right	Rear/ Front	Dist. in D-D
-140	140					-70					-110					70
-138	138					-68					-108					68
-136	136					-66					-106					66
-134	134					-64					-104					64
-132	132					-62					-102					62
-130	130					-60					-100					60
-128	128					-58					-98					58
-126	126					-56					-96					56
-124	124					-54					-94					54
-122	122					-52					-92					52
-120	120					-50					-90					50
-118	118					-48					-88					48
-116	116					-46					-86					46
-114	114					-44					-84					44
-112	112					-42					-82					42
-110	110					-40					-80					40
-108	108					-38					-78					38
-106	106					-36					-76					36
-104	104					-34					-74					34
-102	102					-32					-72					32
-100	100					-30					-70					30
-98	98					-28					-68					28
-96	96					-26					-66					26
-94	94					-24					-64					24
-92	92					-22					-62					22
-90	90					-20					-60					20
-88	88					-18					-58					18
-86	86					-16					-56					16
-84	84					-14					-54					14
-82	82					-12					-52					12
-80	80					-10					-50					10
-78	78					-8					-48					8
-76	76					-6					-46					6
-74	74					-4					-44					4
-72	72					-2					-42					2
-70	70					0					-40					0
-68	68					2					-38					-2
-66	66					4					-36					-4
-64	64					6					-34					-6
-62	62					8					-32					-8
-60	60					10					-30					-10
-58	58					12					-28					-12
-56	56					14					-26					-14
-54	54					16					-24					-16
-52	52					18					-22					-18
-50	50					20					-20					-20
-48	48					22					-18					-22
-46	46					24					-16					-24
-44	44					26	11.80		-0.20		-14					-26
-42	42					28	*11.65*		-0.35		-12					-28
-40	40					30	11.50		-0.50		-10	11.80		-0.20		-30
-38	38					32	*11.40*		-0.60		-8	*11.70*		-0.30		-32
-36	36					34	11.30		-0.70		-6	11.60		-0.40		-34
-34	34					36	*11.30*		-0.70		-4	*11.35*		-0.65		-36
-32	32					38	11.30		-0.70		-2	11.10		-0.90		-38
-30	30					40	11.00		-1.00		0	*11.10*		-0.90		-40
-28	28					42	10.50		-1.50		2	11.10		-0.90		-42
-26	26					44	10.30		-1.70		4	*11.05*		-0.95		-44
-24	24					46	10.40		-1.60		6	11.00	12.00	-1.00	0.00	-46
-22	22					48	9.90		-2.10		8	*10.80*	11.90	-1.20	-0.10	-48
-20	20					50	9.60		-2.40		10	10.60	12.50	-1.40	0.50	-50
-18	18					52	9.30	12.60	-2.70	0.60	12	10.50	13.10	-1.50	1.10	-52
-16	16					54	9.30	13.00	-2.70	1.00	14	10.40	12.90	-1.60	0.90	-54
-14	14					56	8.90	12.80	-3.10	0.80	16	10.10	13.00	-1.90	1.00	-56
-12	12					58	8.70	12.30	-3.30	0.30	18	10.00	13.20	-2.00	1.20	-58
-10	10					60	8.50	11.80	-3.50	-0.20	20	10.00	12.70	-2.00	0.70	-60
-8	8					62	8.70	11.20	-3.30	-0.80	22	10.60	12.30	-1.40	0.30	-62
-6	6					64	8.80	10.60	-3.20	-1.40	24	10.30	11.70	-1.70	-0.30	-64
-4	4					66	8.90	9.60	-3.10	-2.40	26	9.60	10.90	-2.40	-1.10	-66
-2	2					68	8.30	8.70	-3.70	-3.30	28	9.00	10.10	-3.00	-1.90	-68
0	0					70	7.50	8.40	-4.50	-3.60	30	8.50	9.70	-3.50	-2.30	-70
0	0					75	8.70	6.20	-3.30	-5.80	35	8.30	7.70	-3.70	-4.30	-75
2	-2					77	8.50	6.50	-3.50	-5.50	37	9.50	8.30	-2.50	-3.70	-77
4	-4					79	9.10	7.60	-2.90	-4.40	39	10.40	9.80	-1.60	-2.20	-79
6	-6					81	9.90	8.80	-2.10	-3.20	41	11.60	10.50	-0.40	-1.50	-81
8	-8					83	10.60	10.30	-1.40	-1.70	43	10.70	10.80	-1.30	-1.20	-83
10	-10					85	10.80	11.10	-1.20	-0.90	45	10.80	10.60	-1.20	-1.40	-85
12	-12					87	11.20	11.00	-0.80	-1.00	47	11.00	10.80	-1.00	-1.20	-87
14	-14					89	11.80	*11.10*	-0.20	-0.90	49	11.20	11.10	-0.80	-0.90	-89
16	-16					91		11.20		-0.80	51	11.80		-0.20		-91
18	-18					93		*11.25*		-0.75	53					-93
20	-20					95		11.30		-0.70	55					-95
22	-22					97		*11.35*		-0.65	57					
24	-24					99		11.40		-0.60	59					
26	-26					101		*11.40*		-0.60	61					
28	-28					103		11.40		-0.60	63					
30	-30					105		*11.60*		-0.40	65					
32	-32					107		11.80		-0.20	67					
34	-34					109					69					
36	-36					111					71					
38	-38					113					73					
40	-40					115					75					
42	-42					117					77					
44	-44					119					79					

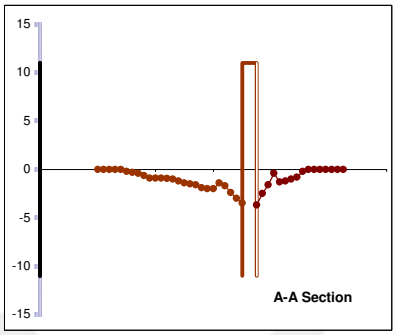


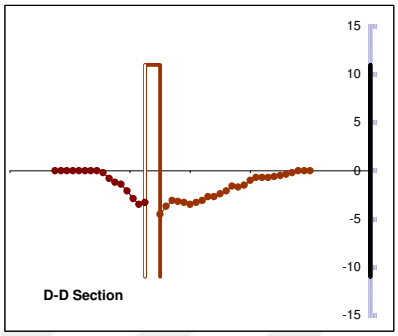
Scour Area Borders		(cm)	
		P1	P2
SB_{pl}	Pier Left	10.5	13.5
SB_{pf}	Pier Front	12	13
SB_{pr}	Pier Right	10.5	14
SB_{pb}	Pier Rear	22	23

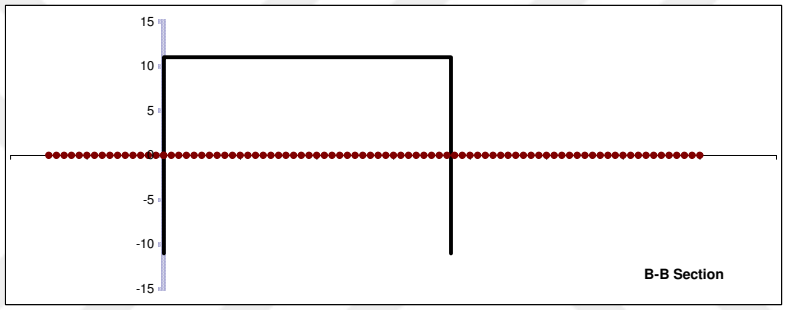
Experiment No : **E170**

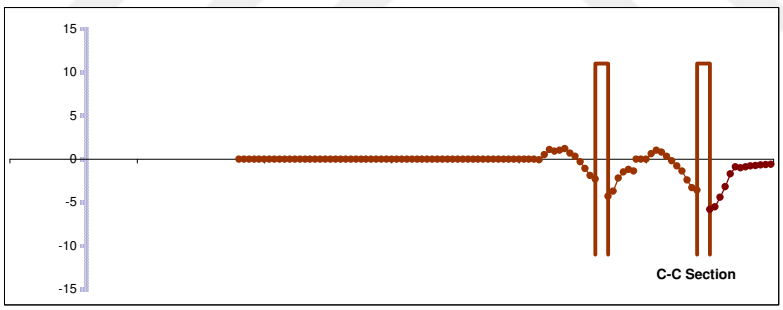


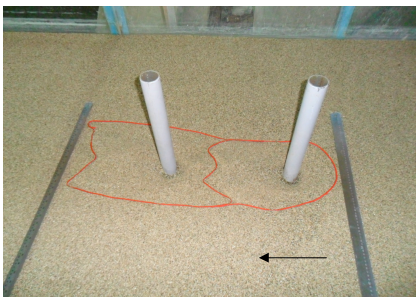












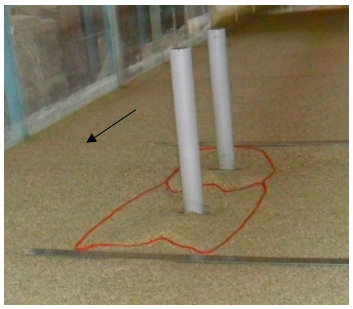
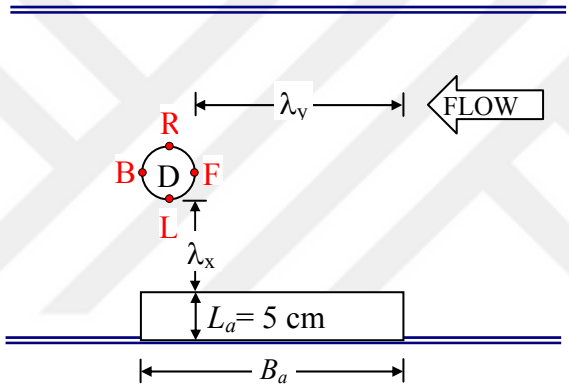


Table A.1 Initial experimental data at point B of the Pier

Exp. No.	D (cm)	$[(d_s)_{max}]_{p,0}$ (cm)	
One pier			
E4	5	4.35	
E5	10	4.75	
Two piers		$Pier_1$	$Pier_2$
E168	10	3.90	-0.90
E170	5	3.60	2.30



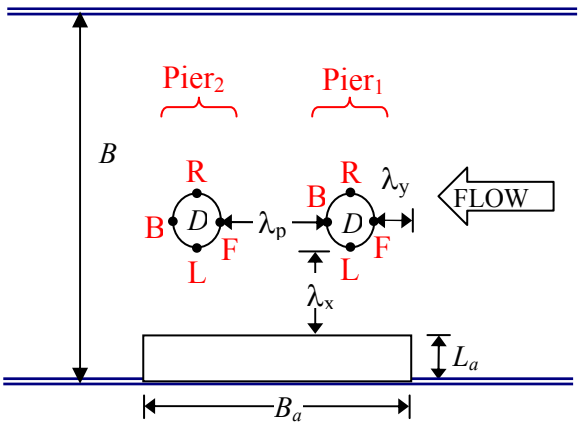


Table A.2 Measured maximum scour depths at the rear of the bridge pier, point B and their comparison with those of a single bridge pier data for D = 5 cm

at point B		λ_y = 0 cm, λ_y / B_a = 0.00			λ_y = 35 cm, λ_y / B_a = 0.47			λ_y = 70 cm, λ_y / B_a = 0.93		
λ_x (cm)	λ_x / D	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$
L_a / D = 1.00										
5.5	1.1	E6	4.50	1.03	E7	4.35	1.00	E8	4.20	0.97
10	2	E11	4.70	1.08	E10	4.00	0.92	E9	4.60	1.06
15	3	E12	4.60	1.06	E13	4.20	0.97	E14	4.20	0.97
20	4	E17	4.50	1.03	E16	4.40	1.01	E15	5.10	1.17
25	5	E18	4.90	1.13	E19	5.70	1.31	E20	4.90	1.13
30	6	E23	5.85	1.34	E22	5.60	1.29	E21	4.60	1.06
35	7	E24	5.10	1.17	E25	4.90	1.13	E26	4.80	1.10
40	8	E29	5.10	1.17	E28	4.10	0.94	E27	4.60	1.06
45	9	E30	5.00	1.15	E31	4.70	1.08	E32	4.30	0.99
50	10	E35	5.10	1.17	E34	5.60	1.29	E33	4.40	1.01
L_a / D = 2.00										
5	1	E65	6.80	1.56	E64	4.00	0.92	E63	3.80	0.87
10	2	E60	6.90	1.59	E61	3.20	0.74	E62	3.20	0.74
15	3	E59	7.30	1.68	E58	4.10	0.94	E57	3.90	0.90
20	4	E54	5.60	1.29	E55	5.20	1.20	E56	4.80	1.10
25	5	E53	5.40	1.24	E52	6.20	1.43	E51	5.20	1.20
30	6	E48	5.50	1.26	E49	6.10	1.40	E50	5.40	1.24
35	7	E47	4.90	1.13	E46	6.20	1.43	E45	5.70	1.31
40	8	E42	5.00	1.15	E43	6.30	1.45	E44	5.90	1.36
45	9	E41	5.60	1.29	E40	6.00	1.38	E39	5.10	1.17
50	10	E36	4.90	1.13	E37	5.05	1.16	E38	5.60	1.29
L_a / D = 3.00										
10	2	E66	4.00	0.92	E67	3.60	0.83	E68	3.30	0.76
15	3	E71	6.60	1.52	E70	3.00	0.69	E69	2.90	0.67
20	4	E72	7.70	1.77	E73	4.40	1.01	E74	3.60	0.83
25	5	E77	8.00	1.84	E76	5.80	1.33	E75	5.00	1.15
30	6	E78	5.30	1.22	E79	5.90	1.36	E80	5.40	1.24
35	7	E83	5.90	1.36	E82	5.40	1.24	E81	6.00	1.38
40	8	E84	4.90	1.13	E85	4.90	1.13	E86	5.40	1.24
45	9	E89	4.10	0.94	E88	5.10	1.17	E87	5.30	1.22
50	10	E90	4.40	1.01	E91	5.00	1.15	E92	5.80	1.33

Table A.3 Measured maximum scour depths at the rear of the bridge pier, point B and their comparison with those of a single bridge pier data for D = 10 cm

at point B		λ_y = 0 cm, λ_y / B_a = 0.00			λ_y = 32.5 cm, λ_y / B_a = 0.43			λ_y = 65 cm, λ_y / B_a = 0.87		
λ_x (cm)	λ_x / D	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$
L_a / D = 0.50										
10	1	E93	6.00	1.26	E94	4.70	0.99	E95	4.20	0.88
20	2	E96	4.40	0.93	E97	4.10	0.86	E98	4.30	0.91
30	3	E99	4.70	0.99	E100	4.20	0.88	E101	4.40	0.93
40	4	E102	4.20	0.88	E103	4.80	1.01	E104	4.80	1.01
50	5	E105	3.10	0.65	E106	4.60	0.97	E107	3.70	0.78
L_a / D = 1.00										
10	1	E108	8.10	1.71	E109	5.20	1.09	E110	4.70	0.99
20	2	E111	5.10	1.07	E112	5.80	1.22	E113	5.10	1.07
30	3	E114	6.40	1.35	E115	6.00	1.26	E116	5.80	1.22
40	4	E117	4.90	1.03	E118	6.70	1.41	E119	5.00	1.05
50	5	E120	5.10	1.07	E121	5.40	1.14	E122	5.20	1.09
L_a / D = 1.50										
10	1	E123	6.40	1.35	E124	4.50	0.95	E125	2.60	0.55
20	2	E126	7.30	1.54	E127	5.60	1.18	E128	4.30	0.91
30	3	E129	5.90	1.24	E130	6.90	1.45	E131	6.00	1.26
40	4	E132	6.30	1.33	E133	6.40	1.35	E134	5.80	1.22
50	5	E137	5.70	1.20	E136	6.20	1.31	E135	7.00	1.47

Table A.4 Measured maximum scour depths at the rear of the bridge piers, point B and their comparison with those of a single bridge pier data for two piers case

	D = 5 cm		Pier$_1$		Pier$_2$		D = 10 cm		Pier$_1$		Pier$_2$	
λ_x (cm)	λ_x / D	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	λ_x / D	Exp. No.	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$	$[(d_s)max]_p$ (cm)	$[(d_s)max]_p / [(d_s)max]_{p,0}$
	L_a / D = 1.00						L_a / D = 0.50					
10	2	E138	3.30	0.92	1.50	0.65	1	E153	4.00	1.03	-0.40	0.44
20	4	E139	5.00	1.39	2.90	1.26	2	E154	5.70	1.46	-0.40	0.44
30	6	E140	5.70	1.58	3.80	1.65	3	E155	5.60	1.44	-0.80	0.89
40	8	E141	6.00	1.67	4.00	1.74	4	E156	5.40	1.38	-0.50	0.56
50	10	E142	4.80	1.33	3.20	1.39	5	E157	4.80	1.23	-0.90	1.00
	L_a / D = 2.00						L_a / D = 1.00					
10	2	E143	4.10	1.14	3.10	1.35	1	E158	4.80	1.23	0.50	-0.56
20	4	E144	4.60	1.28	2.90	1.26	2	E159	6.40	1.64	1.10	-1.22
30	6	E145	4.20	1.17	2.20	0.96	3	E160	6.40	1.64	1.60	-1.78
40	8	E146	4.30	1.19	2.60	1.13	4	E161	6.00	1.54	0.70	-0.78
50	10	E147	4.40	1.22	2.50	1.09	5	E162	5.90	1.51	1.00	-1.11
	L_a / D = 3.00						L_a / D = 1.50					
50	10	E148	4.70	1.31	2.60	1.13	1	E163	4.50	1.15	0.20	-0.22
40	8	E149	5.20	1.44	3.20	1.39	2	E164	4.40	1.13	0.10	-0.11
30	6	E150	4.80	1.33	2.00	0.87	3	E165	4.10	1.05	0.00	0.00
20	4	E151	5.60	1.56	1.90	0.83	4	E166	3.80	0.97	-0.30	0.33
10	2	E152	5.60	1.56	2.50	1.09	5	E167	3.80	0.97	-0.40	0.44

APPENDIX B

STATISTICAL TABLES FOR CHAPTER 6

In this section, following pages show the independent variable relations which come from automatic linear modeling and curve estimation modules of a statistical computer program called SPSS (Statistical Package for the Social Sciences). In this procedure all simple relations as linear, logarithmic, inverse, quadratic, cubic, power, exponential relations were investigated and presented by determination coefficient, R^2 and significance value by F test. Higher R^2 and Sig. (p) value less than "0.05" were desired. And in the rest of the tables outliers which distort the model were presented.

Table B.1 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ for point L of the Pier$_1$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.432	0.000	0.016	**0.508**	**0.182**	0.019	0.275	0.003	**0.182**	0.019
	Lg.	0.499	0.000	0.028	**0.376**	**0.182**	0.019	0.161	0.028	**0.182**	0.019
	Inv.	0.482	0.000	0.041	**0.285**	**0.182**	0.019	0.026	**0.392**	**0.182**	0.019
	Qu.	**0.510**	0.000	0.036	**0.610**	**0.182**	0.019	0.279	0.012	**0.182**	0.019
	Cu.	**0.510**	0.000	0.045	**0.751**	**0.182**	0.019	**0.347**	0.010	**0.182**	0.019
	Pw.	0.497	0.000	0.028	**0.374**	0.173	0.022	0.159	0.029	0.173	0.022
	Ex.	0.416	0.000	0.016	**0.509**	0.173	0.022	0.284	0.002	0.173	0.022
Impor.								**0.470**			
Tend.								-			

Table B.2 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point R of the Pier$_1$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.411	0.000	0.163	0.027	**0.450**	0.000	0.077	**0.139**	**0.450**	0.000
	Lg.	0.536	0.000	**0.186**	0.017	**0.450**	0.000	0.032	**0.341**	**0.450**	0.000
	Inv.	0.578	0.000	0.178	0.020	**0.450**	0.000	0.004	**0.749**	**0.450**	0.000
	Qu.	**0.591**	0.000	0.176	0.073	**0.450**	0.000	0.108	**0.214**	**0.450**	0.000
	Cu.	**0.591**	0.000	0.182	**0.149**	**0.450**	0.000	0.120	**0.337**	**0.450**	0.000
	Pw.	0.539	0.000	0.180	0.020	0.434	0.000	0.035	**0.320**	0.434	0.000
	Ex.	0.403	0.000	0.158	0.029	0.434	0.000	0.085	**0.177**	0.434	0.000
Impor.				**0.431**		0.217		**0.315**			
Tend.				-		+		+			

Table B.3 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point F of the Pier$_1$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.346	0.001	0.004	**0.741**	0.018	**0.474**	0.270	0.003	0.018	**0.474**
	Lg.	0.427	0.000	0.012	**0.557**	0.018	**0.474**	0.169	0.024	0.018	**0.474**
	Inv.	0.424	0.000	0.020	**0.455**	0.018	**0.474**	0.038	**0.304**	0.018	**0.474**
	Qu.	0.473	0.000	0.029	**0.668**	0.018	**0.474**	0.270	0.014	0.018	**0.474**
	Cu.	**0.474**	0.001	0.031	**0.844**	0.018	**0.474**	**0.434**	0.002	0.018	**0.474**
	Pw.	0.426	0.000	0.012	**0.565**	0.017	**0.474**	0.170	0.024	0.017	**0.496**
	Ex.	0.339	0.001	0.004	**0.747**	0.017	**0.474**	0.273	0.003	0.017	**0.496**
Impor.								**0.286**			
Tend.								-			

Table B.4 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point B of the Pier$_1$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.208	0.011	0.020	**0.458**	0.013	**0.556**	0.187	0.017	0.013	**0.556**
	Lg.	0.321	0.001	0.043	**0.272**	0.013	**0.556**	0.065	**0.173**	0.013	**0.556**
	Inv.	0.382	0.000	0.067	**0.166**	0.013	**0.556**	0.000	**0.976**	0.013	**0.556**
	Qu.	0.445	0.000	0.056	**0.456**	0.013	**0.556**	0.225	0.032	0.013	**0.556**
	Cu.	**0.446**	0.001	0.058	**0.661**	0.013	**0.556**	**0.406**	0.003	0.013	**0.556**
	Pw.	0.311	0.001	0.049	**0.238**	0.016	**0.512**	0.055	**0.213**	0.016	**0.512**
	Ex.	0.193	0.015	0.026	**0.391**	0.016	**0.512**	0.179	0.020	0.016	**0.512**
Impor.				**0.530**				**0.384**			
Tend.				-				-			

Table B.5 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point L of the Pier$_2$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.000	**0.925**	0.032	**0.341**	0.058	**0.200**	**0.130**	0.050	0.058	**0.200**
	Lg.	0.002	**0.829**	0.063	**0.182**	0.058	**0.200**	0.068	**0.163**	0.058	**0.200**
	Inv.	0.002	**0.806**	0.087	**0.113**	0.058	**0.200**	0.012	**0.558**	0.058	**0.200**
	Qu.	0.013	**0.842**	0.073	**0.362**	0.058	**0.200**	0.142	**0.127**	0.058	**0.200**
	Cu.	0.014	**0.948**	0.106	**0.396**	0.058	**0.200**	0.181	**0.152**	0.058	**0.200**
	Pw.	0.001	**0.845**	0.050	**0.233**	0.048	**0.244**	0.055	**0.212**	0.048	**0.244**
	Ex.	0.000	**0.960**	0.023	**0.425**	0.048	**0.244**	0.123	**0.058**	0.048	**0.244**
Impor.											
Tend.											

Table B.6 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point R of the Pier$_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.053	**0.219**	0.018	**0.474**	0.021	**0.441**	0.009	**0.619**	0.021	**0.441**
	Lg.	0.051	**0.229**	0.039	**0.293**	0.021	**0.441**	0.000	**0.984**	0.021	**0.441**
	Inv.	0.046	**0.253**	0.053	**0.223**	0.021	**0.441**	0.014	**0.534**	0.021	**0.441**
	Qu.	0.056	**0.462**	0.071	**0.370**	0.021	**0.441**	0.019	**0.773**	0.021	**0.441**
	Cu.	0.125	**0.315**	0.073	**0.573**	0.021	**0.441**	0.192	**0.129**	0.021	**0.441**
	Pw.	0.044	**0.264**	0.040	**0.288**	0.026	**0.394**	0.000	**0.923**	0.026	**0.394**
	Ex.	0.045	**0.260**	0.018	**0.478**	0.026	**0.394**	0.007	**0.666**	0.026	**0.394**
Impor.						**0.527**					
Tend.						-					

Table B.7 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point F of the Pier$_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.063	**0.179**	0.101	**0.087**	0.640	0.000	0.026	**0.394**	0.640	0.000
	Lg.	0.042	**0.275**	0.066	**0.171**	0.640	0.000	0.005	**0.699**	0.640	0.000
	Inv.	0.023	**0.428**	0.034	**0.332**	0.640	0.000	0.003	**0.789**	0.640	0.000
	Qu.	0.077	**0.338**	0.118	**0.183**	0.640	0.000	0.031	**0.655**	0.640	0.000
	Cu.	0.112	**0.369**	0.134	**0.284**	0.640	0.000	0.135	**0.279**	0.640	0.000
	Pw.	0.054	**0.215**	0.064	**0.176**	**0.655**	0.000	0.002	**0.796**	**0.655**	0.000
	Ex.	0.071	**0.155**	0.094	**0.099**	**0.655**	0.000	0.020	**0.455**	**0.655**	0.000
Impor.				0.182		**0.746**		0.071			
Tend.				-		-		-			

Table B.8 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_p / [(d_s)_{max}]_{p,0}$ for point B of the Pier$_2$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.127	**0.054**	0.247	0.005	**0.541**	0.000	0.030	**0.361**	**0.541**	0.000
	Lg.	0.088	**0.112**	0.220	0.009	**0.541**	0.000	0.039	**0.296**	**0.541**	0.000
	Inv.	0.060	**0.192**	0.153	0.033	**0.541**	0.000	0.035	**0.324**	**0.541**	0.000
	Qu.	0.187	**0.061**	0.248	0.021	**0.541**	0.000	0.041	**0.568**	**0.541**	0.000
	Cu.	0.196	**0.123**	**0.269**	0.040	**0.541**	0.000	0.042	**0.771**	**0.541**	0.000
	Pw.	-		-		-		-		-	
	Ex.	-		-		-		-		-	
Impor.						**0.906**					
Tend.						+					

Table B.9 Tested relations and effects of the independent variables on the models for $[(d_s)_{max}]_a / [(d_s)_{max}]_{a,0}$ for point L$_0$ of the abutment for two piers case

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.038	**0.305**	0.002	**0.821**	0.110	**0.073**	0.049	**0.237**	0.110	**0.073**
	Lg.	0.041	**0.280**	0.009	**0.614**	0.110	**0.073**	0.061	**0.187**	0.110	**0.073**
	Inv.	0.041	**0.284**	0.021	**0.440**	0.110	**0.073**	0.079	**0.133**	0.110	**0.073**
	Qu.	0.039	**0.582**	0.022	**0.744**	0.110	**0.073**	0.052	**0.483**	0.110	**0.073**
	Cu.	0.045	**0.746**	0.022	**0.900**	0.110	**0.073**	0.164	**0.193**	0.110	**0.073**
	Pw.	0.047	**0.250**	0.011	**0.580**	0.103	**0.083**	0.071	**0.155**	0.103	**0.083**
	Ex.	0.045	**0.262**	0.003	**0.790**	0.103	**0.083**	0.056	**0.206**	0.103	**0.083**
Impor.						**0.466**					
Tend.						+					

Table B.10 Outliers of $[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$ for two piers case

Place	Experiment Number	Cook's Distance	$[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$
L of the $Pier_1$	E138	1.072	1.04
R of the $Pier_1$	E167	0.282	1.09
	E147	0.282	1.82
	E157	0.213	1.85
F of the $Pier_1$	E138	0.710	1.02
	E167	0.405	1.09
B of the $Pier_1$	E138	0.537	0.92
	E147	0.357	1.22
L of the $Pier_2$	E160	0.279	2.00
	E155	0.260	0.94
R of the $Pier_2$	E141	0.277	1.73
	E167	0.258	1.35
F of the $Pier_2$	E160	0.294	1.84
	E147	0.293	1.09
B of the $Pier_2$	E160	0.298	-1.78
	E162	0.257	-1.11
	E155	0.215	0.89

Table B.11 Outliers of $[(d_s)_{max}]_a$ / $[(d_s)_{max}]_{a,0}$ for two piers case

Place	Experiment Number	Cook's Distance	$[(d_s)_{max}]_p$ / $[(d_s)_{max}]_{p,0}$
L_0 of the abutment	E147	0.382	0.74
	E145	0.270	1.04
	E144	0.237	1.09

Table B.12 Tested relations and effects of the independent variables on the models for $SB_{pl} / SB_{pl,0}$ for point L of the pier

SB, at point L		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.170	0.000	0.148	0.000	0.014	**0.184**	0.003	**0.568**
	Logarithmic	0.119	0.000	0.238	0.000	-	-	0.035	0.031
	Inverse	0.072	0.002	0.288	0.000	-	-	0.102	0.000
	Quadratic	0.246	0.000	0.283	0.000	0.014	**0.401**	0.063	0.015
	Cubic	**0.285**	0.000	0.294	0.000	0.014	**0.608**	**0.140**	0.000
	Power	0.088	0.001	**0.403**	0.000	-	-	0.128	0.000
	Exponential	0.127	0.000	0.238	0.000	0.006	**0.375**	0.034	0.035
Importance		**0.689**							
Tendency		+							

Table B.13 Tested relations and effects of the independent variables on the models for $SB_{pf} / SB_{pf,0}$ for point F of the pier

SB, at point F		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.141	0.000	0.008	**0.306**	0.025	**0.073**	0.044	0.016
	Logarithmic	0.096	0.000	0.002	**0.587**	-	-	0.076	0.001
	Inverse	0.052	0.009	0.000	**0.862**	-	-	0.085	0.001
	Quadratic	0.204	0.000	0.011	**0.489**	0.026	**0.183**	0.076	0.006
	Cubic	**0.216**	0.000	0.032	**0.238**	0.042	**0.138**	**0.093**	0.006
	Power	0.126	0.000	0.001	**0.666**	-	-	0.054	0.007
	Exponential	0.190	0.000	0.000	**0.866**	0.009	**0.287**	0.040	0.021
Importance		**0.477**		**0.284**		0.046		0.192	
Tendency		+		-		+		+	

Table B.14 Tested relations and effects of the independent variables on the models for $SB_{pr} / SB_{pr,0}$ for point R of the pier

SB, at point R		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.227	0.000	0.008	**0.295**	0.002	**0.642**	0.098	0.000
	Logarithmic	0.216	0.000	0.009	**0.285**	-	-	0.069	0.002
	Inverse	0.185	0.000	0.009	**0.281**	-	-	0.030	0.046
	Quadratic	0.230	0.000	0.009	**0.576**	0.028	**0.162**	0.098	0.001
	Cubic	**0.273**	0.000	0.009	**0.771**	0.029	**0.280**	**0.116**	0.001
	Power	0.223	0.000	0.013	**0.185**	-	-	0.062	0.004
	Exponential	0.228	0.000	0.013	**0.200**	0.002	**0.625**	0.097	0.000
Importance		**0.788**							
Tendency		+							

Table B.15 Tested relations and effects of the independent variables on the models for $SB_{pb} / SB_{pb,0}$ for point B of the pier

SB, at point B		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.592	0.000	0.167	0.000	0.065	0.003	0.052	0.009
	Logarithmic	0.577	0.000	0.175	0.000	-	-	0.035	0.032
	Inverse	0.480	0.000	0.149	0.000	-	-	0.015	**0.162**
	Quadratic	0.595	0.000	0.180	0.000	0.067	0.012	**0.055**	0.027
	Cubic	0.595	0.000	0.185	0.000	**0.109**	0.002	0.056	**0.062**
	Power	**0.618**	0.000	**0.230**	0.000	-	-	0.023	**0.084**
	Exponential	0.590	0.000	0.219	0.000	0.053	0.008	0.043	0.017
Importance		**0.659**				**0.317**			
Tendency		+				-			

Table B.16 Outliers of dimensionless scour border parameters around one pier

Place	Dependent Variable	Experiment Number	Cook's Distance	Variable Value
L of the pier	$SB_{pl} / SB_{pl,0}$	E84	0.232	3.48
		E83	0.130	3.04
		E78	0.070	2.61
		E79	0.055	2.61
		E75	0.044	2.17
		E66	0.044	0.87
F of the pier	$SB_{pf} / SB_{pf,0}$	E68	0.597	8.40
		E69	0.408	7.90
		E74	0.295	7.50
		E67	0.068	5.00
		E66	0.066	1.25
		E71	0.034	1.35
		E107	0.033	1.18
R of the pier	$SB_{pr} / SB_{pr,0}$	E67	0.302	2.00
		E68	0.183	1.83
		E11	0.090	1.74
		E63	0.054	0.96
		E87	0.052	1.09
		E6	0.050	1.57
		E84	0.044	1.70
		E66	0.043	1.17
		E74	0.041	1.13
B of the pier	$SB_{pb} / SB_{pb,0}$	E67	0.263	3.38
		E72	0.156	3.53
		E90	0.057	1.99
		E71	0.056	2.97
		E66	0.051	1.84
		E105	0.045	0.90
		E91	0.043	1.80
		E106	0.042	0.71

Table B.17 Tested relations and effects of the independent variables on the models for $SB_{aw} / SB_{aw,0}$ for wall side of the abutment

SB, at wall side		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.008	**0.318**	0.040	0.021	0.008	**0.301**	0.001	**0.722**
	Logarithmic	0.017	**0.133**	0.043	0.018	-	-	0.008	**0.303**
	Inverse	0.022	**0.088**	0.034	0.034	-	-	0.011	**0.233**
	Quadratic	0.077	0.006	**0.046**	0.049	0.018	**0.310**	0.042	**0.065**
	Cubic	**0.161**	0.000	0.050	**0.086**	0.027	**0.318**	0.042	**0.140**
	Power	0.017	**0.141**	0.041	0.020	-	-	0.008	**0.313**
	Exponential	0.009	**0.291**	0.039	0.023	0.010	**0.262**	0.002	**0.645**
Importance				**0.547**					
Tendency				+					

Table B.18 Tested relations and effects of the independent variables on the models for $SB_{af} / SB_{af,0}$ for front side of the abutment

SB, at front side		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.005	**0.401**	0.006	**0.390**	0.000	**0.878**	0.006	**0.370**
	Logarithmic	0.002	**0.650**	0.005	**0.404**	-	-	0.009	**0.268**
	Inverse	0.000	**0.839**	0.003	**0.516**	-	-	0.004	**0.454**
	Quadratic	0.044	**0.055**	0.007	**0.644**	0.009	**0.554**	0.020	**0.270**
	Cubic	**0.110**	0.002	0.011	**0.693**	0.025	**0.349**	0.020	**0.454**
	Power	0.000	**0.865**	0.010	**0.264**	-	-	0.010	**0.250**
	Exponential	0.003	**0.566**	0.009	**0.267**	0.000	**0.928**	0.007	**0.345**
Importance									
Tendency									

Table B.19 Tested relations and effects of the independent variables on the models for $SB_{ar} / SB_{ar,0}$ for right side of the abutment

SB, at right side		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Linear	0.000	**0.950**	0.078	0.001	0.000	**0.944**	0.035	0.032
	Logarithmic	0.003	**0.560**	0.108	0.000	-	-	0.116	0.000
	Inverse	0.011	**0.225**	0.105	0.000	-	-	0.211	0.000
	Quadratic	0.015	**0.367**	0.141	0.000	0.000	**0.993**	0.124	0.000
	Cubic	0.054	**0.067**	**0.150**	0.000	0.047	**0.105**	**0.243**	0.000
	Power	0.010	**0.248**	0.123	0.000	-	-	0.158	0.000
	Exponential	0.005	**0.439**	0.088	0.001	0.002	**0.619**	0.052	0.009
Importance				**0.702**					
Tendency				+					

Table B.20 Outliers of dimensionless scour border parameters around abutment

Place	Dependent Variable	Experiment Number	Cook's Distance	Variable Value
wall side of the abutment	$SB_{aw} / SB_{aw,0}$	E105	0.055	1.17
		E102	0.053	1.28
		E88	0.035	0.73
front side of the abutment	$SB_{af} / SB_{af,0}$	E105	0.151	1.35
		E95	0.090	0.59
		E65	0.081	1.48
		E102	0.050	1.29
		E96	0.032	0.71
right side of the abutment	$SB_{ar} / SB_{ar,0}$	E84	0.168	1.90
		E107	0.112	1.37
		E83	0.089	1.67
		E68	0.084	0.48
		E66	0.083	0.48
		E67	0.070	0.48
		E65	0.060	0.38
		E78	0.040	1.43
		E123	0.039	0.48
		E105	0.038	1.21
		E6	0.033	0.58

Table B.21 Tested relations and effects of the independent variables on the models for $SB_{aw} / SB_{aw,0}$ for wall side of the abutment for two piers case

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.005	**0.722**	0.096	**0.096**	0.035	**0.321**	0.026	**0.399**	0.035	**0.321**
	Lg.	0.008	**0.647**	0.080	**0.130**	0.035	**0.321**	0.036	**0.314**	0.035	**0.321**
	Inv.	0.009	**0.625**	0.038	**0.304**	0.035	**0.321**	0.034	**0.330**	0.035	**0.321**
	Qu.	0.021	**0.750**	0.099	**0.246**	0.035	**0.321**	0.057	**0.450**	0.035	**0.321**
	Cu.	0.086	**0.498**	0.121	**0.333**	0.035	**0.321**	0.076	**0.555**	0.035	**0.321**
	Pw.	0.008	**0.648**	0.089	**0.109**	0.033	**0.336**	0.042	**0.277**	0.033	**0.336**
	Ex.	0.006	**0.677**	0.099	**0.090**	0.033	**0.336**	0.030	**0.361**	0.033	**0.336**
Impor.											
Tend.											

Table B.22 Tested relations and effects of the independent variables on the models for $SB_{af} / SB_{af,0}$ for front side of the abutment for two piers case

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.006	**0.675**	0.140	0.042	0.034	**0.328**	0.037	**0.305**	0.034	**0.328**
	Lg.	0.018	**0.477**	0.136	0.045	0.034	**0.328**	0.053	**0.219**	0.034	**0.328**
	Inv.	0.029	**0.368**	0.097	**0.094**	0.034	**0.328**	0.046	**0.257**	0.034	**0.328**
	Qu.	0.074	**0.356**	0.145	**0.121**	0.034	**0.328**	0.086	**0.296**	0.034	**0.328**
	Cu.	0.125	**0.315**	0.146	**0.244**	0.034	**0.328**	0.107	**0.393**	0.034	**0.328**
	Pw.	0.021	**0.440**	**0.146**	0.038	0.033	**0.333**	0.055	**0.212**	0.033	**0.333**
	Ex.	0.009	**0.622**	0.140	0.042	0.033	**0.333**	0.040	**0.290**	0.033	**0.333**
Impor.											
Tend.											

Table B.23 Tested relations and effects of the independent variables on the models for $SB_{ar} / SB_{ar,0}$ for right side of the abutment for two piers case

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.005	**0.721**	0.120	**0.061**	0.004	**0.741**	0.078	**0.136**	0.004	**0.741**
	Lg.	0.000	**0.930**	0.168	0.024	0.004	**0.741**	0.151	0.034	0.004	**0.741**
	Inv.	0.001	**0.871**	**0.198**	0.014	0.004	**0.741**	**0.227**	0.008	0.004	**0.741**
	Qu.	0.045	**0.540**	0.150	**0.112**	0.004	**0.741**	0.124	**0.166**	0.004	**0.741**
	Cu.	0.059	**0.656**	0.200	**0.116**	0.004	**0.741**	0.202	**0.112**	0.004	**0.741**
	Pw.	0.000	**0.922**	0.195	0.014	0.010	**0.599**	0.176	0.021	0.010	**0.599**
	Ex.	0.003	**0.780**	0.129	**0.051**	0.010	**0.599**	0.089	**0.109**	0.010	**0.599**
Impor.				**0.719**							
Tend.				-							

Table B.24 Tested relations and effects of the independent variables on the models for $SB_{pl} / SB_{pl,0}$ for left side of the $Pier_1$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.147	0.036	0.173	0.022	0.002	**0.803**	0.003	**0.787**	0.002	**0.803**
	Lg.	**0.168**	0.025	0.307	0.001	0.002	**0.803**	0.035	**0.325**	0.002	**0.803**
	Inv.	0.160	0.029	0.419	0.000	0.002	**0.803**	0.112	**0.071**	0.002	**0.803**
	Qu.	0.167	**0.085**	0.313	0.006	0.002	**0.803**	0.046	**0.532**	0.002	**0.803**
	Cu.	0.175	**0.166**	**0.464**	0.001	0.002	**0.803**	0.152	**0.224**	0.002	**0.803**
	Pw.	0.156	0.031	0.373	0.000	0.008	**0.639**	0.062	**0.184**	0.008	**0.639**
	Ex.	0.137	0.044	0.207	0.012	0.008	**0.639**	0.013	**0.552**	0.008	**0.639**
Impor.				**0.695**		**0.231**					
Tend.				-		-					

Table B.25 Tested relations and effects of the independent variables on the models for $SB_{pf}/SB_{pf,0}$ for front side of the $Pier_1$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.043	**0.269**	0.024	**0.415**	**0.448**	0.000	0.009	**0.613**	**0.448**	0.000
	Lg.	0.023	**0.421**	0.023	**0.420**	**0.448**	0.000	0.000	**0.917**	**0.448**	0.000
	Inv.	0.009	**0.611**	0.028	**0.376**	**0.448**	0.000	0.005	**0.709**	**0.448**	0.000
	Qu.	0.080	**0.326**	0.024	**0.720**	**0.448**	0.000	0.027	**0.696**	**0.448**	0.000
	Cu.	0.081	**0.527**	0.034	**0.824**	**0.448**	0.000	0.040	**0.784**	**0.448**	0.000
	Pw.	0.029	**0.370**	0.009	**0.621**	0.411	0.000	0.002	**0.805**	0.411	0.000
	Ex.	0.049	**0.239**	0.010	**0.600**	0.411	0.000	0.002	**0.809**	0.411	0.000
Impor.				**0.360**		**0.575**					
Tend.				-		-					

Table B.26 Tested relations and effects of the independent variables on the models for $SB_{pr}/SB_{pr,0}$ for right side of the $Pier_1$

		L_a/D		λ_x/D		λ_y/B_a		λ_x/L_a		λ_p/D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.272	0.003	0.022	**0.429**	0.013	**0.555**	0.196	0.014	0.013	**0.555**
	Lg.	0.246	0.005	0.000	**0.992**	0.013	**0.555**	0.153	0.033	0.013	**0.555**
	Inv.	0.180	0.019	0.028	**0.378**	0.013	**0.555**	0.078	**0.136**	0.013	**0.555**
	Qu.	0.272	0.014	0.121	**0.175**	0.013	**0.555**	0.196	**0.053**	0.013	**0.555**
	Cu.	**0.273**	0.038	0.233	**0.071**	0.013	**0.555**	0.217	**0.091**	0.013	**0.555**
	Pw.	0.240	0.006	0.000	**0.998**	0.015	**0.517**	0.148	0.036	0.015	**0.517**
	Ex.	0.267	0.003	0.023	**0.420**	0.015	**0.517**	**0.200**	0.013	0.015	**0.517**
Impor.		**0.330**				**0.235**					
Tend.		+				-					

Table B.27 Tested relations and effects of the independent variables on the models for $SB_{pb} / SB_{pb,0}$ for back side of the $Pier_1$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.330	0.001	0.068	**0.164**	0.613	0.000	0.027	**0.387**	0.613	0.000
	Lg.	0.320	0.001	0.035	**0.323**	0.613	0.000	0.075	**0.144**	0.613	0.000
	Inv.	0.269	0.003	0.012	**0.569**	0.613	0.000	0.129	**0.052**	0.613	0.000
	Qu.	0.332	0.004	0.103	**0.231**	0.613	0.000	0.077	**0.339**	0.613	0.000
	Cu.	**0.337**	0.012	0.107	**0.391**	0.613	0.000	0.129	**0.300**	0.613	0.000
	Pw.	0.312	0.001	0.037	**0.309**	**0.617**	0.000	0.069	**0.162**	**0.617**	0.000
	Ex.	0.319	0.001	0.073	**0.149**	**0.617**	0.000	0.024	**0.417**	**0.617**	0.000
Impor.				**0.287**		**0.630**					
Tend.				+		+					

Table B.28 Tested relations and effects of the independent variables on the models for $SB_{pl} / SB_{pl,0}$ for left side of the $Pier_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.022	**0.429**	0.445	0.000	0.076	**0.141**	0.176	0.021	0.076	**0.141**
	Lg.	0.023	**0.428**	0.472	0.000	0.076	**0.141**	0.261	0.004	0.076	**0.141**
	Inv.	0.019	**0.470**	0.409	0.000	0.076	**0.141**	0.237	0.006	0.076	**0.141**
	Qu.	0.023	**0.726**	0.461	0.000	0.076	**0.141**	0.294	0.009	0.076	**0.141**
	Cu.	0.024	**0.883**	**0.475**	0.001	0.076	**0.141**	**0.312**	0.019	0.076	**0.141**
	Pw.	0.014	**0.526**	0.470	0.000	0.077	**0.137**	0.284	0.002	0.077	**0.141**
	Ex.	0.015	**0.522**	0.429	0.000	0.077	**0.137**	0.198	0.014	0.077	**0.141**
Impor.				**0.953**							
Tend.				-							

Table B.29 Tested relations and effects of the independent variables on the models for $SB_{pf} / SB_{pf,0}$ for front side of the Pier$_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.543	0.000	0.092	**0.104**	**0.688**	0.000	0.050	**0.237**	**0.688**	0.000
	Lg.	0.466	0.000	0.061	**0.190**	**0.688**	0.000	0.096	**0.095**	**0.688**	0.000
	Inv.	0.340	0.001	0.027	**0.388**	**0.688**	0.000	0.113	**0.069**	**0.688**	0.000
	Qu.	0.552	0.000	0.098	**0.249**	**0.688**	0.000	0.116	**0.190**	**0.688**	0.000
	Cu.	0.558	0.000	0.137	**0.273**	**0.688**	0.000	0.132	**0.291**	**0.688**	0.000
	Pw.	0.496	0.000	0.054	**0.216**	0.663	0.000	0.115	**0.066**	0.663	0.000
	Ex.	**0.586**	0.000	0.076	**0.141**	0.663	0.000	0.064	**0.177**	0.663	0.000
Impor.				**0.270**		**0.418**					
Tend.				-		-					

Table B.30 Tested relations and effects of the independent variables on the models for $SB_{pr} / SB_{pr,0}$ for right side of the Pier$_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.045	**0.263**	0.082	**0.124**	0.323	0.001	0.037	**0.311**	0.323	0.001
	Lg.	0.045	**0.259**	0.079	**0.133**	0.323	0.001	0.008	**0.636**	0.323	0.001
	Inv.	0.051	**0.231**	0.066	**0.172**	0.323	0.001	0.000	**0.909**	0.323	0.001
	Qu.	0.047	**0.524**	0.083	**0.310**	0.323	0.001	0.062	**0.420**	0.323	0.001
	Cu.	0.070	**0.590**	0.088	**0.487**	0.323	0.001	0.105	**0.399**	0.323	0.001
	Pw.	0.046	**0.257**	0.064	**0.177**	**0.327**	0.001	0.004	**0.736**	**0.327**	0.001
	Ex.	0.044	**0.267**	0.069	**0.162**	**0.327**	0.001	0.032	**0.348**	**0327**	0.001
Impor.						**0.594**					
Tend.						-					

Table B.31 Tested relations and effects of the independent variables on the models for $SB_{pb} / SB_{pb,0}$ for back side of the $Pier_2$

		L_a / D		λ_x / D		λ_y / B_a		λ_x / L_a		λ_p / D	
		R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.	R^2	Sig.
Relation	Ln.	0.800	0.000	0.285	0.002	0.511	0.000	0.085	**0.118**	0.511	0.000
	Lg.	0.754	0.000	0.272	0.003	0.511	0.000	0.042	**0.280**	0.511	0.000
	Inv.	0.599	0.000	0.206	0.012	0.511	0.000	0.005	**0.700**	0.511	0.000
	Qu.	0.801	0.000	0.290	0.010	0.511	0.000	0.095	**0.261**	0.511	0.000
	Cu.	0.803	0.000	**0.302**	0.023	0.511	0.000	0.130	**0.296**	0.511	0.000
	Pw.	**0.830**	0.000	0.280	0.003	**0.553**	0.000	0.053	**0.221**	**0.553**	0.000
	Ex.	0.787	0.000	0.280	0.003	**0.553**	0.000	0.095	**0.097**	**0.553**	0.000
Impor.		**0.451**		**0.421**							
Tend.		+		-							

Table B.32 Outliers of dimensionless scour border parameters around abutment for two piers case

Place	Dependent Variable	Experiment Number	Cook's Distance	Variable Value
Abutment	$SB_{aw} / SB_{aw,0}$	E148	0.213	1.29
	$SB_{af} / SB_{af,0}$	E147	0.273	0.82
		E148	0.211	1.32
	$SB_{ar} / SB_{ar,0}$	No outlier		
$Pier_1$	$SB_{pl} / SB_{pl,0}$	No outlier		
	$SB_{pf} / SB_{pf,0}$	E138	0.488	0.67
		E167	0.282	1.23
		E163	0.274	1.07
	$SB_{pr} / SB_{pr,0}$	E160	0.308	1.69
	$SB_{pb} / SB_{pb,0}$	E143	0.294	1.05
		E141	0.248	1.02
		E138	0.239	1.23
$Pier_2$	$SB_{pl} / SB_{pl,0}$	E140	0.241	0.59
		E145	0.238	0.89
	$SB_{pf} / SB_{pf,0}$	No outlier		
	$SB_{pr} / SB_{pr,0}$	E160	0.332	1.71
		E153	0.225	0.86
	$SB_{pb} / SB_{pb,0}$	E138	0.986	2.20

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Akbulut, Ö.F. “Optimization of Cost and Service on Less Than Truck Load”, MSc. Thesis, G.Ü.F.B.E. (2002)

HOBBIES

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