Asian Development Bank

National Capital Region Planning Board

Capacity Development of the National Capital Region Planning Board

Package 2 Component B

TA No. 7055-IND

FINAL REPORT

Volume II-D: Detailed Drawings

Detailed Project Report for Rehabilitation & Augmentation of Sewerage System in Hapur

WilburSmith ASSOCIATES

July 2010

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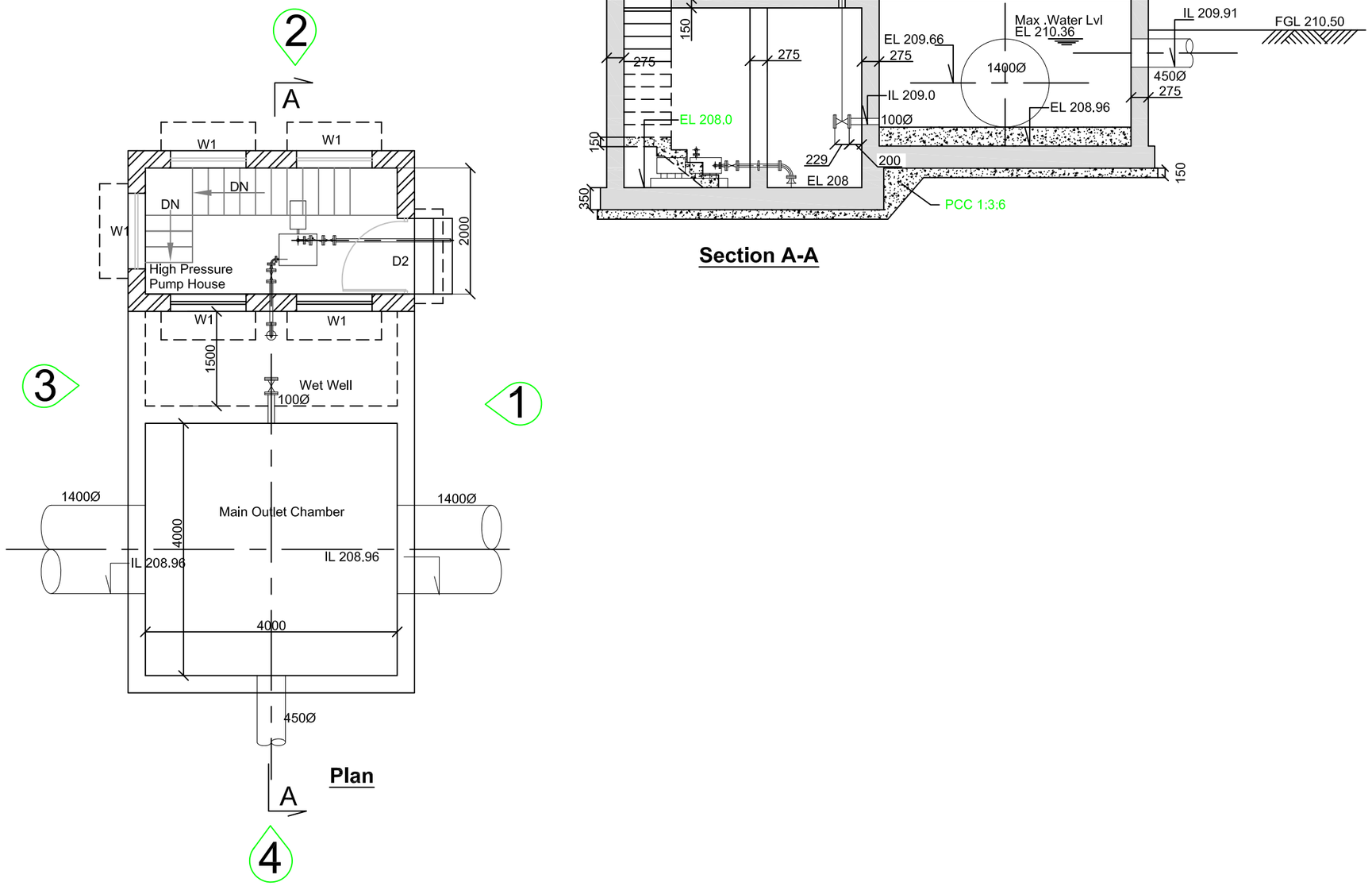


Section A-A

Plan

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Plan & Section of
High Pressure Pump House

Door & Window Schedule

S.NO	ID	Door Size	Nos	Remarks
1.	D2	1.2X2.1m	1	Steel
2.	W1	1.2X1.2m	5	Steel

Notes:

1. All Dimensions are in Millimeters

2. Bricks for Masonary Shall be of Class-75. Brickwall shall be Constructed using (1:6) Cement Mortar
.

3. External Plaster shall be , 20mm Thick, Plain Finished, in Two Coats of Cement Mortar (1:4).

4. Internal Cement Plaster shall be Smooth Finished Cement Mortar (1:4) And Shall be 12mm Thick.

5. Thickness of Brickwall, Except for Walls within Toilet Area shall be 350mm. Thickness of Walls in Toilet Area shall be 115mm

6. All Structural Concrete Shall be of Grade M20

7. Antitermite Treatment all Around Building shall be Done as Per Spec.

8. Painting: External: Cement Based-Internal: Oil Bound Distemper

Client:

Asian Development Bank
National Capital Region Planning Board

Consultant:

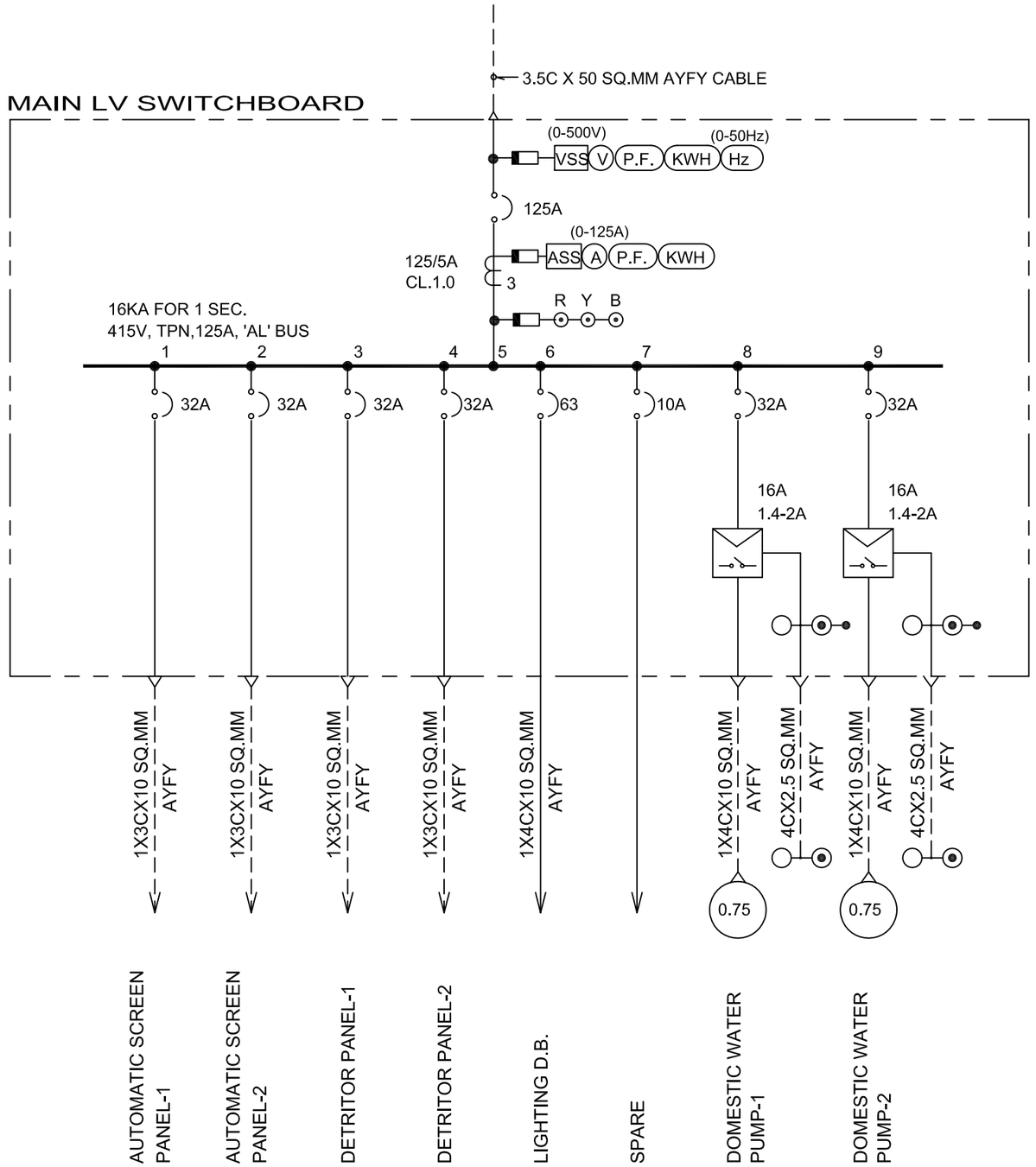
WIlbur SmIth Associates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 750 1500 2250 3000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-27

415V, TPN, 50HZ A.C SUPPLY FROM THE 63kVA,11/0.433kV TRANSFORMER
TO BE MOUNTED BY JVNL ON THEIR OUTDOOR POLE STRUCTURE



Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Single Line Diagram in South STP

Legend

- Moulded Case Clrcult Breaker (MCCB)
- Cable Termination
- Current Transformer (Number-'3' Indlcates Number of CTS.)
- A — Ammeter
- V — Voltmeter
- P.F. — Power Factor Meter
- Hz — Frequency Meter
- KWH — Kilo-watt Hour Meter
- VSS — Volt Meter Selector Switch
- ASS OR AS — Ammeter Selector Switch
- Dol Starter With Bimetallic Thermal O/I Relay & Spp
- Local St/sp Push Button Statlon In the Pump House.
- 0.75 — Pump Motor (Number Indicates Rating in 'KW')
- Push Button Station with Indicating Lamps

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
WIlbur Smlth Assoclates

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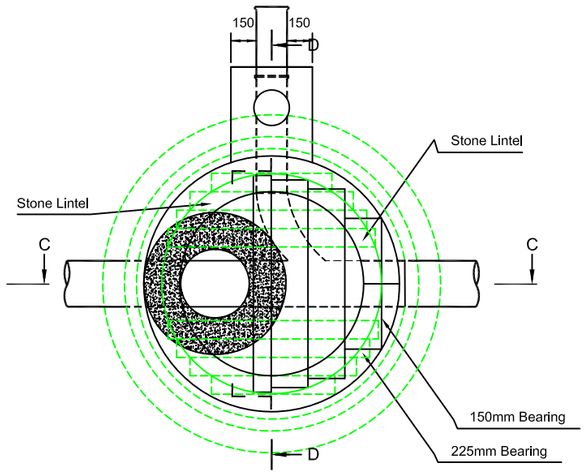
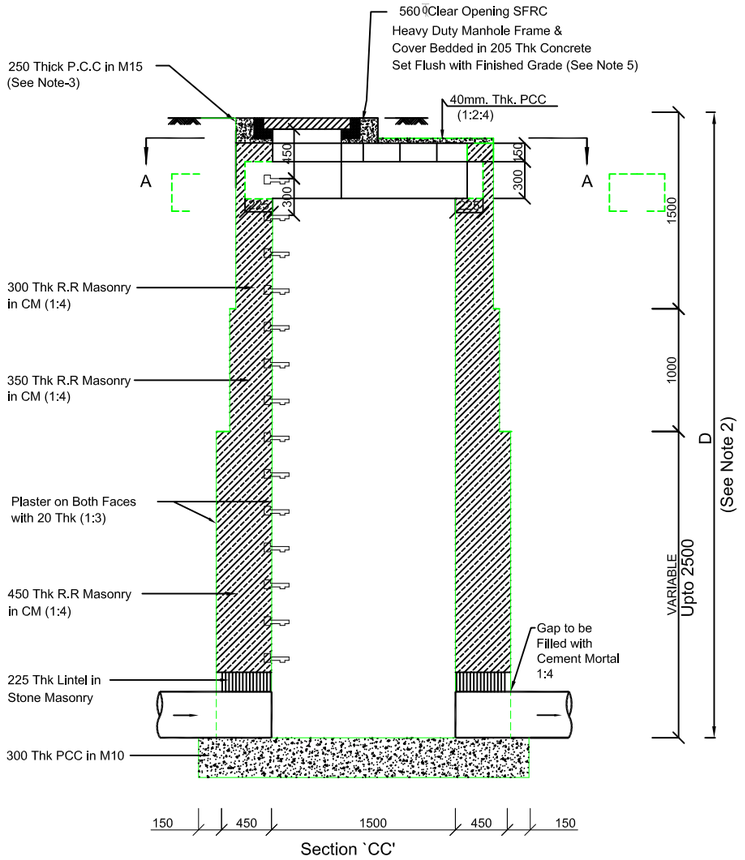
Date: Apnil. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-SW-STP-26



Section `AA'

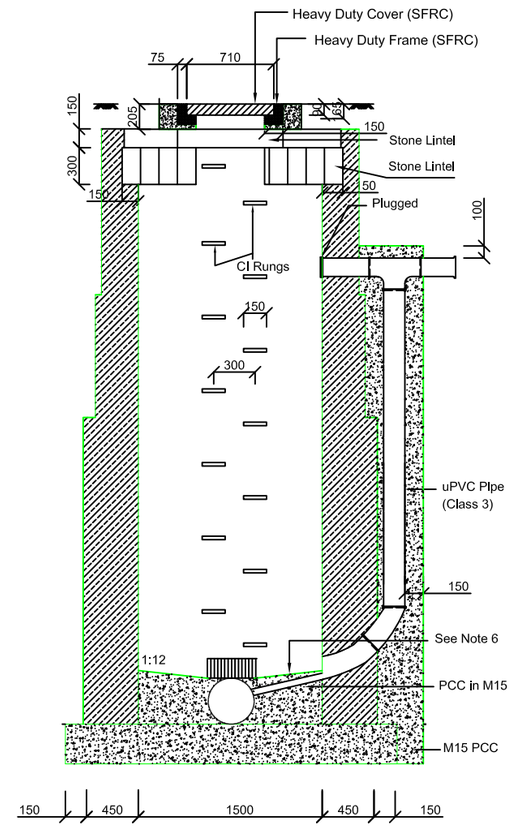


Section `CC'

Upto 900Ø Sewer

2500 < D < 5000

Type `c'



Section `DD'

Typical Drop Arrangement

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur

Typical Details of Manhole Type 'C' in South STP

Notes:

1. All Dimensions are in Millimeters
2. `D' is the Depth from Ground Level to Lowest Sewer Invert Level in Manhole.
3. 205 Thickness of Concrete Can be Varied to Flush Manhole Cover and Frame with Road Surface
4. C.I Step as Per I.S. 5455. Foot Rest Shall be Painted with Coal Tar.
5. SFRC Manhole Frame & Cover of Heavy Duty as per I.S.12592 (Part I & Ii).
6. The Benching at the Side of the Channel Shall be at Least 50mm Above the Crown of the Pipe and then Rise with a Slope of 1 in 12 Towards the Side of the Manhole.

Client:

Asian Development Bank
National Capital Region Planning Board

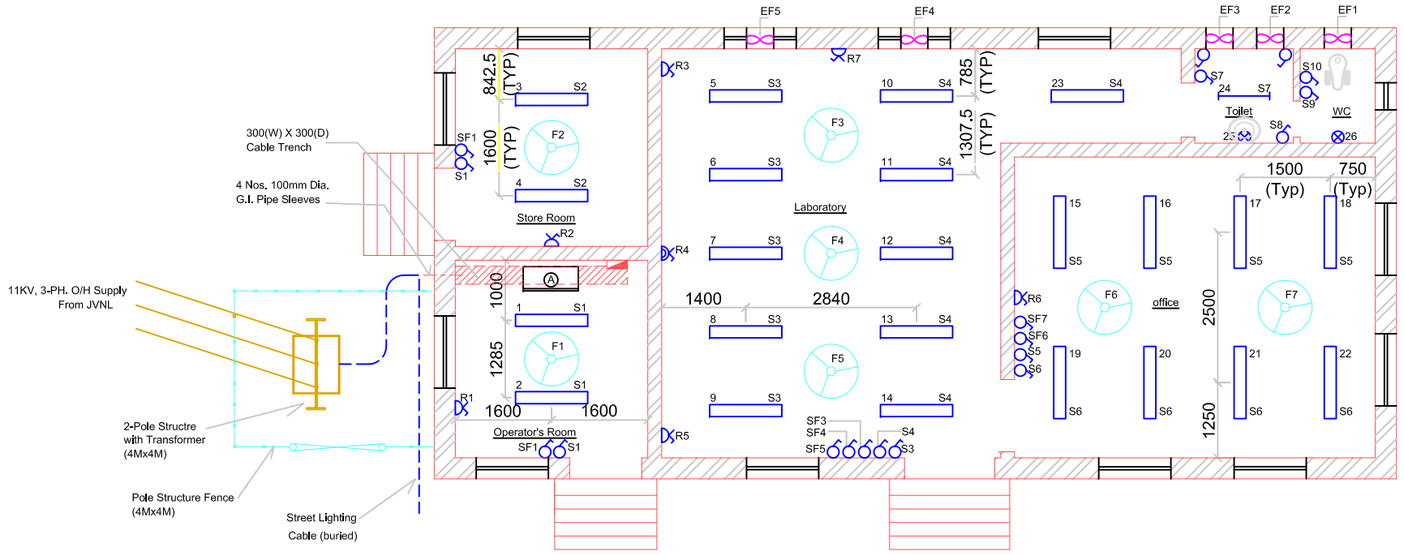
Consultant:

Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 500 1000 1500 2000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-25



Administration Building Plan at 0.0m Level

415V,3PH,4-Wire A.C. Supply From Main LV Switchboard

1x4cx10 Sq. mm Ayfy Cable

Lighting Distribution Board

Ckt No.		Fixture/ Receptacle No.	Switch No.	Location	Mounting Height	Load			Remark
						R	Y	B	
R1	MCB 16A SP	1,2,3,4,15,16,17,18,19,20, 21,22 F1,F2,F6,F7	S1/S2/S5/S6 SF1/SF2/SF6/SF7	Operator Room/ Store Room/ Office	3 m	1520			
Y1	MCB 16A SP	5,6,7,8,9,10,11,12,13,14, 23,24,25,26 F3,F4,F5,EF1,EF2,EF3,EF4,EF5	S3/S4/S7/S8/S9 SF4/SF5/SF3/SF4/SF5 SEF1/SEF2/SEF3	Laboratory/ Toilet	3 m		1650		
B1	MCB T C 16A SP	R1,R2,R3,R4,R5,R6,R7	–	Operator Room/ Store Room/ Laboratory/Office	1.5 m			1000	
R2	MCB T C 16A SP	1,2,5,8,11,14,17,20,23,26,29,32,35,38, 41,44,47	–	Outdoor Street Light		1190			Directly Controlled From DB Refer Street Lighting Layout Drg.
Y2	MCB T C 16A SP	3,6,9,12,15,18,21,24,27,30,33,36,39, 42,45,48	–	Outdoor Street Light			1120		
B2	MCB T C 16A SP	4,7,10,13,16,19,22,25,28,31,34,37,40 43,46,49	–	Outdoor Street Light				1120	
R3	MCB T C 16A SP	50,53,56,59,62,65,68,71,74,77,80,83 86,89,92,95,98,101	–	Outdoor Street Light		1260			
Y3	MCB T C 16A SP	51,54,57,60,63,66,69,72,75,78,81,84 87,90,93,96,99	–	Outdoor Street Light			1190		
B3	MCB T C 16A SP	52,55,58,61,64,67,70,73,76,79,82,85 88,91,94,97,100	–	Outdoor Street Light				1350	
R4	MCB T C 16A SP	SPARE	–	-					
Y4	MCB T C 16A SP	SPARE	–	-					
B4	MCB T C 16A SP	SPARE	–	-					
				Total Load		3970	3960	3470	

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Cabling and Lighting of Administration Building in South STP

Legend

- Main LV Distribution Board
- Lighting Distribution Road
- 2 X40 W Industrial Fluorescent Lamp Fixture
- 1 X40 W Industrial Fluorescent Lamp Fixture
- 40 W Incomdescent Lamp Fixture
- Exhaust Fan
- 5A,1-PH. Receptacle with Switch
- 15A,3-PH. Receptacle with Switch
- Ceiling Fan
- Timer Set for 12hrs.
- Contactor For Timer

Notes:

1. All Dimensions are in Millimeters

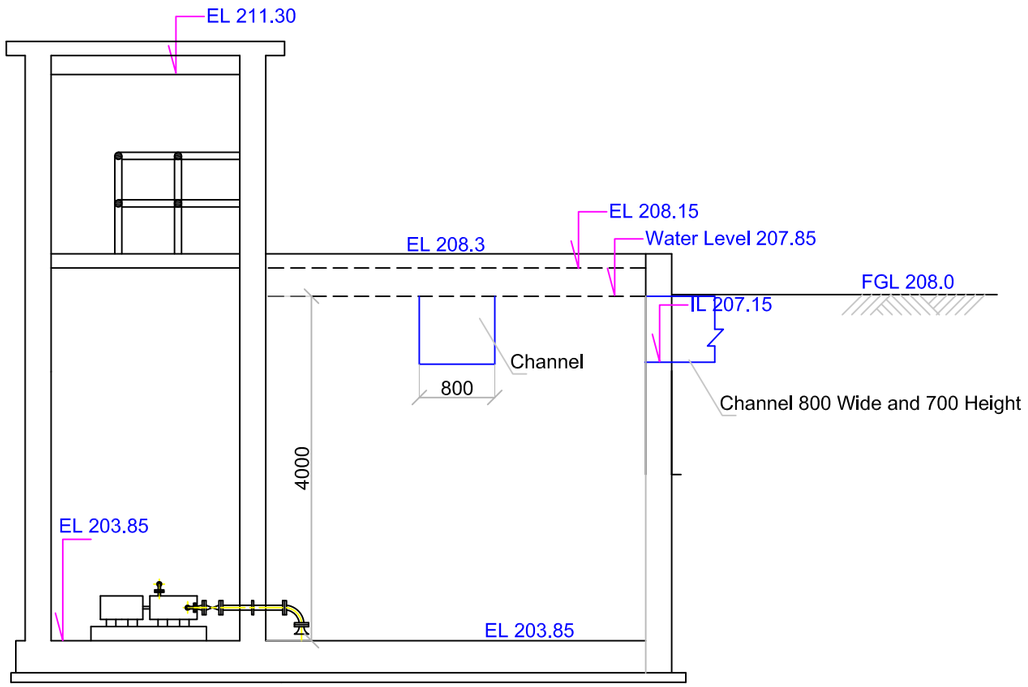
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

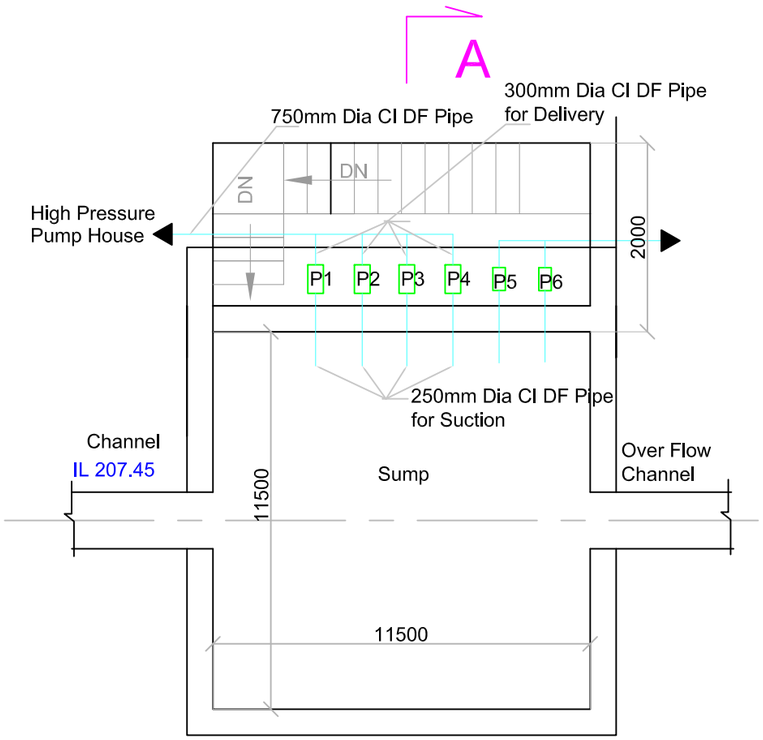
Drawn: SK | Checked: NSS
Date: April. 2010 | Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-24



Section A-A



Plan

Pump	Flow(CU.M/HR)	Head (MWC)	Motor (KW)
P5, P6	5	125	5.5
P1, P2, P3& P4	540	15	40

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Effluent Pump House for Irrigation and Disposal to Drain in South STP

Notes:

All Dimensions are in Millimeters and Elevations are in Meters

Client:

Asian Development Bank
National Capital Region Planning Board

Consultant:

Wilbur Smith Associates

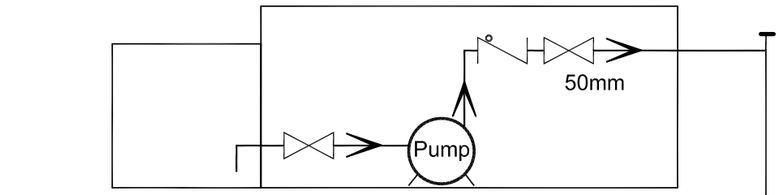
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-SW-STP-23

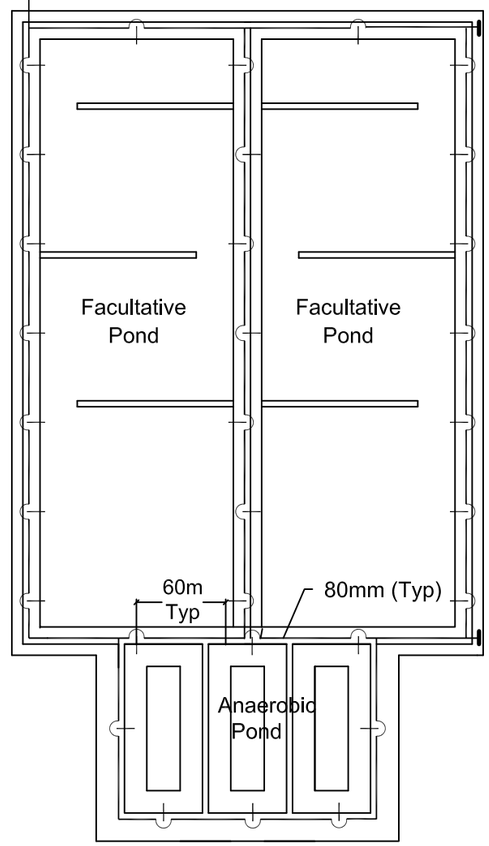
Capcity Development of the NCRPB: Component B (ADB TA-7055)

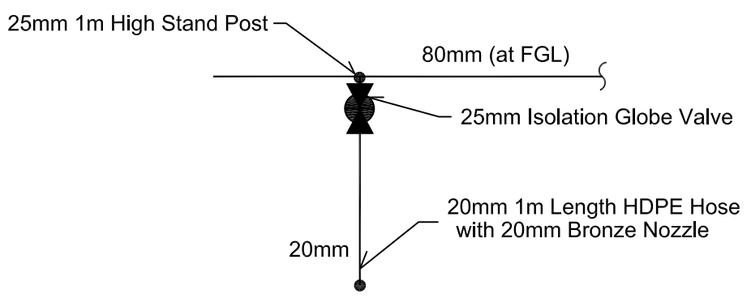
Hapur
Flow Diagram for Scum Cleaning in STP South



Pump	Flow(Cu.m/Hr)	Head(MWC)	Motor (KW)
P5, P6	5	125	5.5
P1, P2, P3& P4	540	15	40

80mm GI Pipe





Typical Connection for Scum Cleaning

Legend

- Pump
- Gate Valve (normally Open)
- Non Return Valve
- Pipe Line
- Connection For Gardening/cleaning
- Gate Valve (normally Closed)
- Foot Valve with Strainer

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
WIlbur Smlth Assoclates

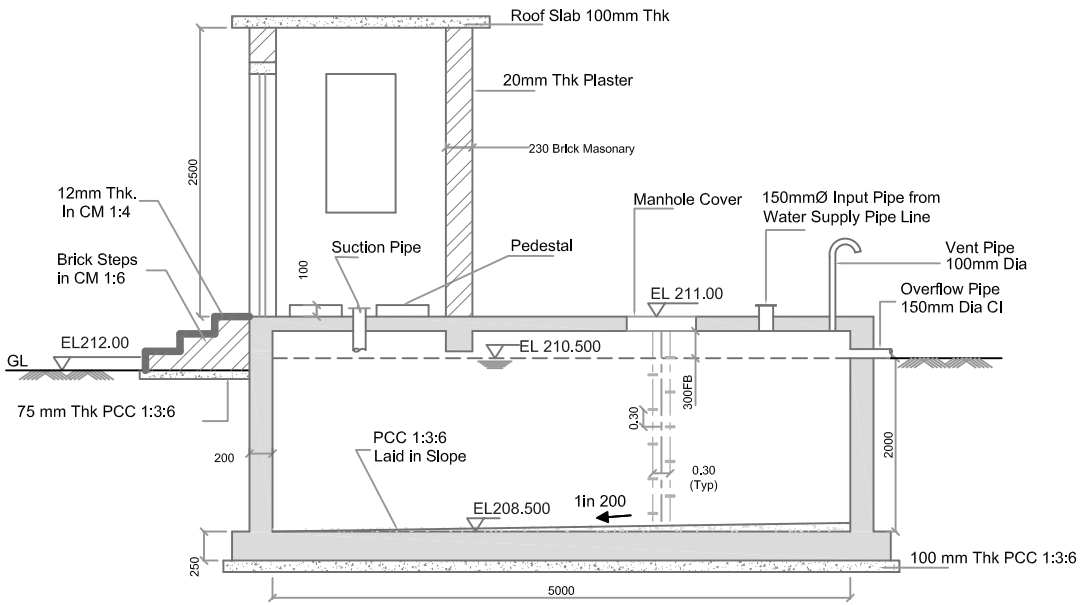
Drawn: SK	Checked: NSS
Date: Aprll. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-SW-STP-22

Capcity Development of the NCRPB: Component B (ADB TA-7055)

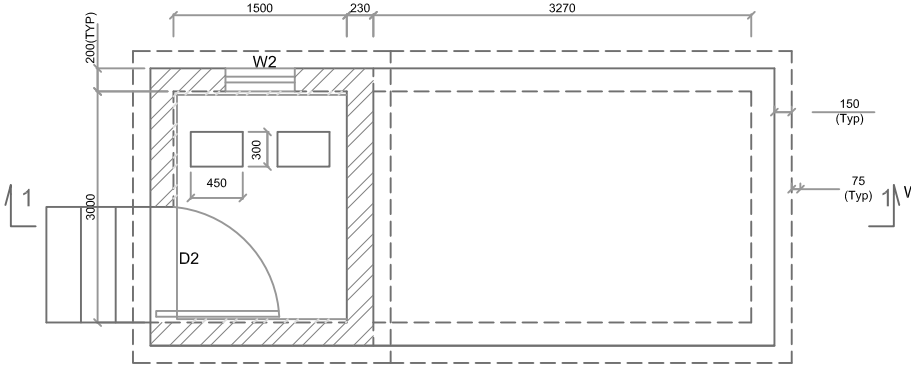
Hapur
Details of U.G Tank & Pump House for Clear Water in STP South



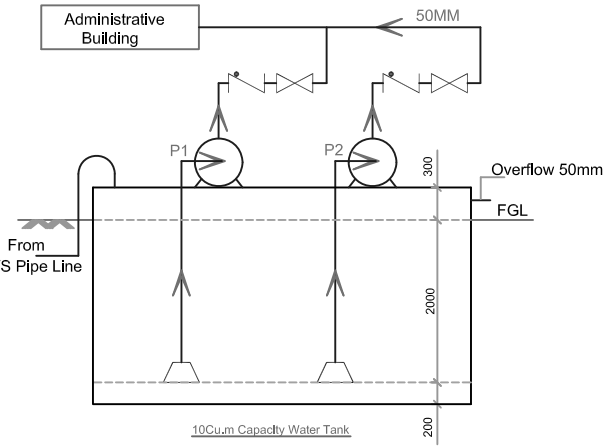
Section 1-1

S.No	ID	Door Size	Nos	Remarks
1.	D2	1.0X2.1m	1	Steel
2.	W2	0.60X1.2m	1	Steel

Door & Window Schedule



Plan



Pump	Flow (CU.M/HR)	Head (MWC)	Motor (KW)
P1 & P2	5	10.0	0.55

Legend

- Pump
- Gate Valve (normally Open)
- Non Return Valve
- Pipe Line
- Connection For Gardening/cleaning
- Gate Valve (normally Closed)
- Foot Valve with Strainer

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters
2. Bricks for Masonary Shall be of Class-75. Brickwall shall be Constructed using (1:6) Cement Mortar
3. External Plaster shall be , 20mm Thick, Plain Finished, in Two Coats of Cement Mortar (1:4).
4. Internal Cement Plaster shall be Smooth Finished Cement Mortar (1:4) And Shall be 12mm Thick.
5. Thickness of Brickwall, Except for Walls Within Toilet Area shall be 350mm. Thickness of Walls in Toilet Area shall be 115mm
6. All Structural Concrete Shall be of Grade M20
7. Antitermite Treatment All Around Building Shall be Done as Per Spec.
8. Painting: External: Cement Based-Internal: Oil Bound Distemper

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

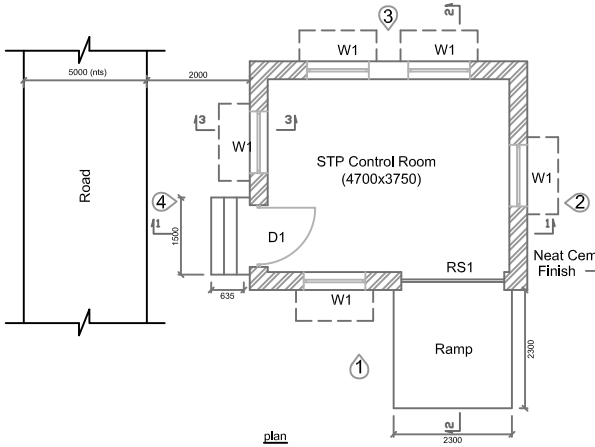
Drawn: SK | Checked: NSS
Date: April. 2010 | Approved: NSS

Scale: 0 500 1000 1500 2000 Millimeters

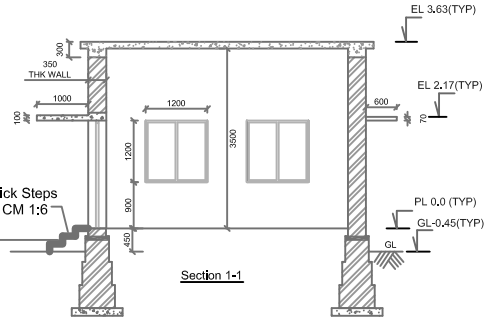
Drg. No. NCRPB-HAPUR-SW-STP-21

Capcity Development of the NCRPB: Component B (ADB TA-7055)

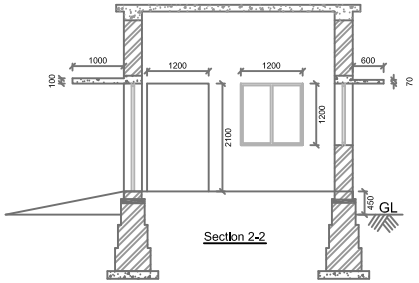
Hapur
Details of Control Room in STP South



plan



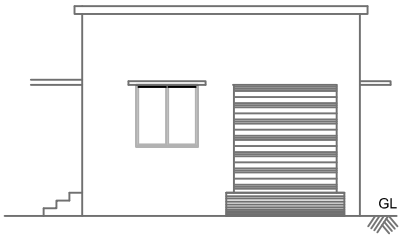
Section 1-1



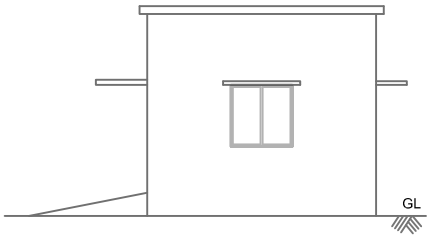
Section 2-2

Door & Window Schedule

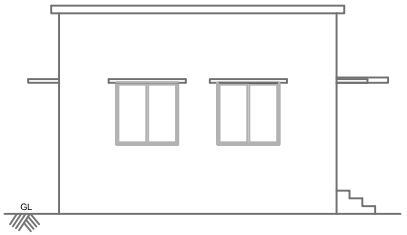
S.NO	ID	Door Size	Nos	Remarks
1.	D2	1.2X2.1m	1	Wooden
2.	W1	1.2X1.2m	5	Steel
3.	RS1	2.0X2.1m	1	Steel



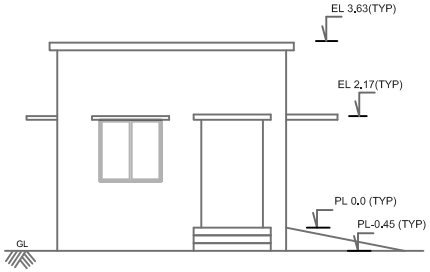
Elevation 1



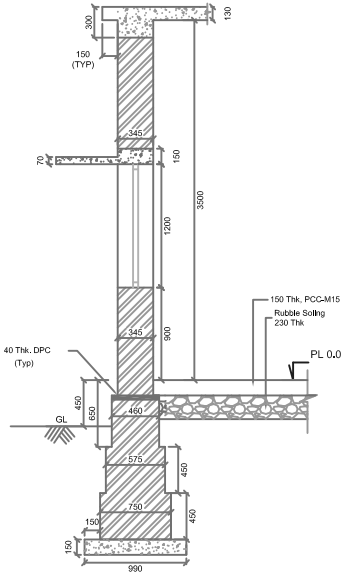
Elevation 2



Elevation 3



Elevation 4



Section 3-3

Scale: NTS

Notes:

1. All Dimensions are In Millimeters and Elevations are Meters
2. Bricks for Masonary Shall be of Class-75. Brickwall shall be Constructed using (1:6) Cement Mortar
3. External Plaster shall be , 20mm Thick, Plain Finished, In Two Coats of Cement Mortar (1:4).
4. Internal Cement Plaster shall be Smooth Finished Cement Mortar (1:4) And Shall be 12mm Thick.
5. Thickness of Brickwall, Except for Walls Within Toilet Area shall be 350mm. Thickness of Walls in Toilet Area shall be 115mm
6. All Structural Concrete Shall be of Grade M20
7. Antitermite Treatment All Around Building Shall be Done as Per Spec.
8. Painting: External: Cement Based-Internal: Oil Bound Distemper

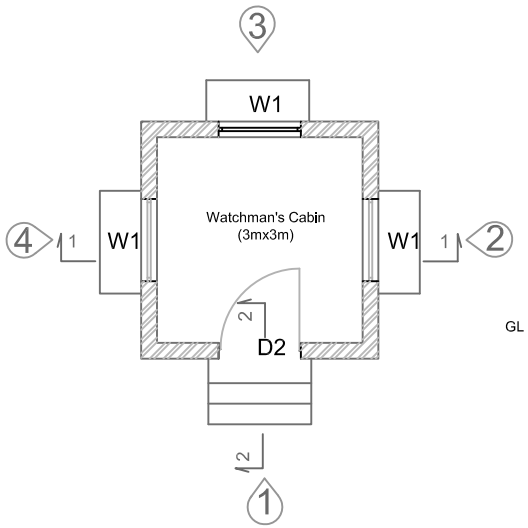
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

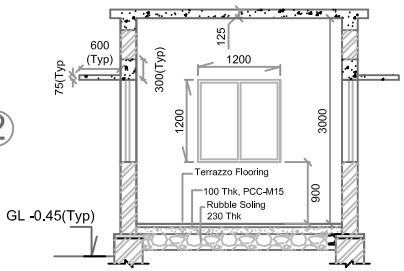
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimeters

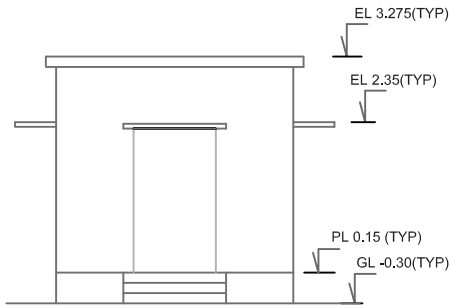
Drg. No. NCRPB-HAPUR-SW-STP-20



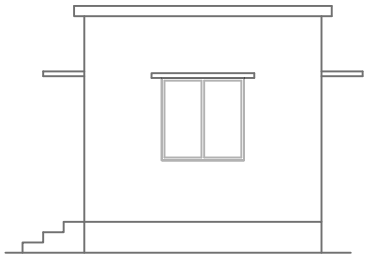
Plan of
Watchman's Cabin



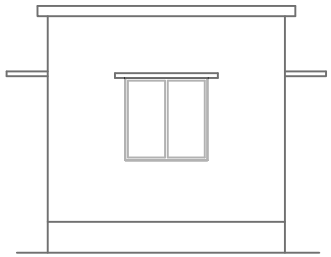
Section 1-1



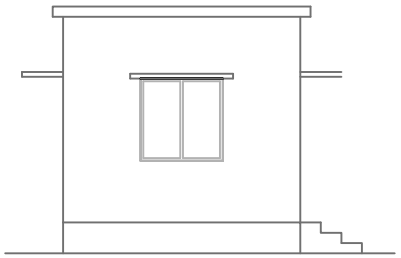
Elevation 1



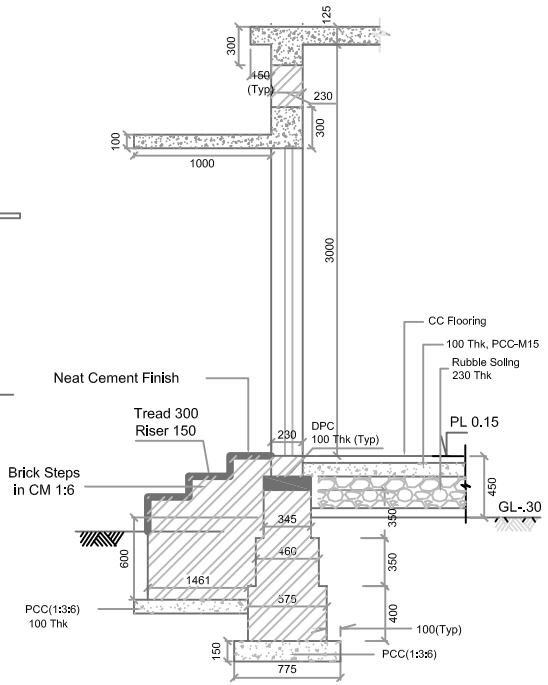
Elevation 2



Elevation 3



Elevation 4



Section 2-2
(Scale: NTS)

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Details of Watchman's Cabin
in STP South

Door & Window Schedule

S.NO	ID	Door Size	Nos	Remarks
1.	D2	1.2X2.1m	1	Wooden
2.	W1	1.2X1.2m	3	Steel

Notes:

1. All Dimensions are in Millimeters and Elevations are Meters
2. Bricks for Masonary shall be of Class-75. Brickwall shall be Constructed using (1:6) Cement Mortar
3. External Plaster shall be , 20mm Thick, Plain Finished, in Two Coats of Cement Mortar (1:4).
4. Internal Cement Plaster shall be Smooth Finished Cement Mortar (1:4) and shall be 12mm Thick.
5. Thickness of Brickwall, Except for Walls within Toilet Area shall be 350mm. Thickness of Walls in Toilet Area shall be 115mm
6. All Structural Concrete shall be of Grade M20
7. Antitermite Treatment all Around Building shall be Done as Per Spec.
8. Painting: External: Cement Based-Internal: Oil Bound Distemper

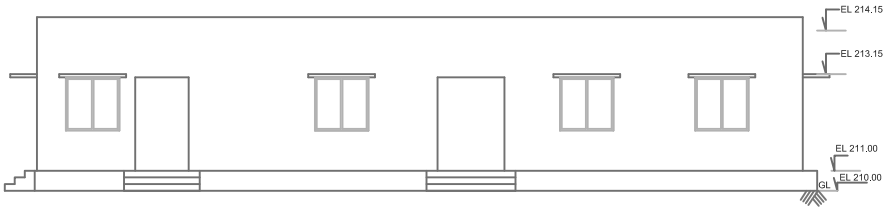
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

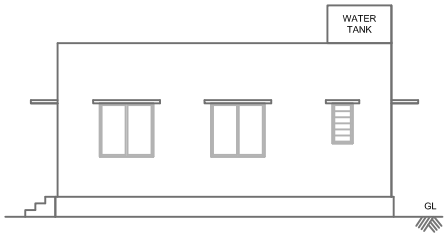
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 750 1500 2250 3000 Millimeters

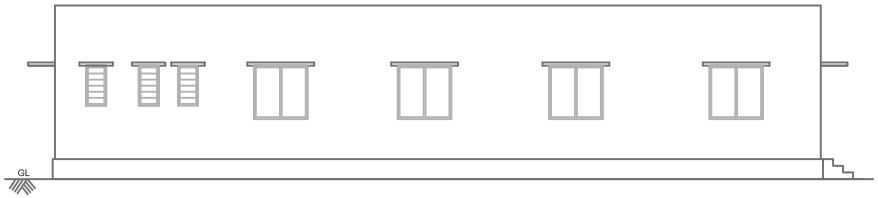
Drg. No. NCRPB-HAPUR-SW-STP-19



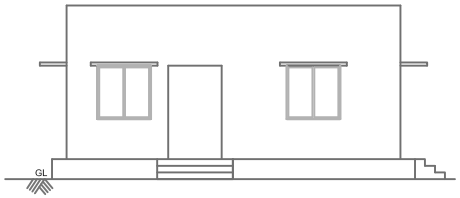
Elevation 1



Elevation 2



Elevation 3



Elevation 4

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Elevation of Administrative Building

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

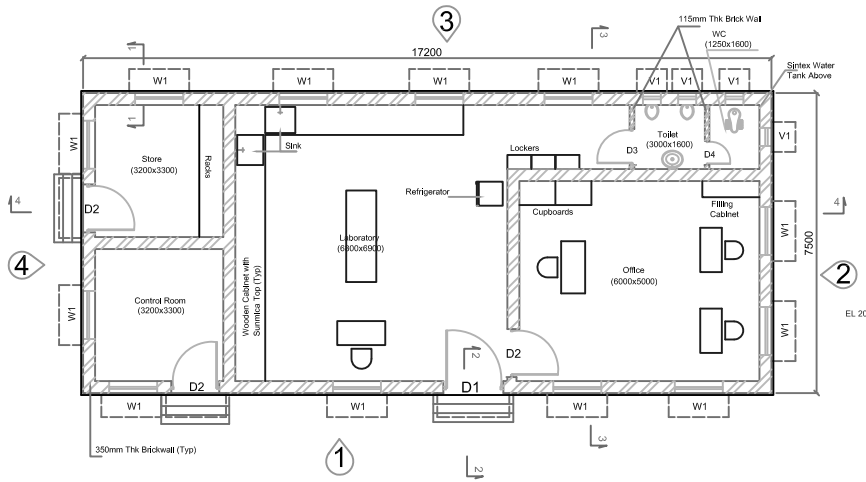
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: NTS

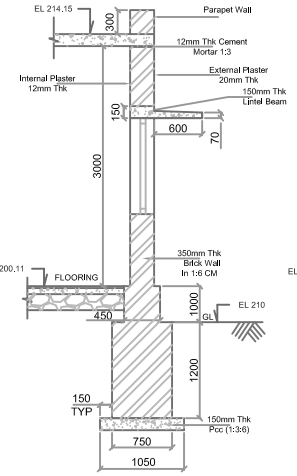
Drg. No. NCRPB-HAPUR-SW-STP-18

Capcity Development of the NCRPB: Component B (ADB TA-7055)

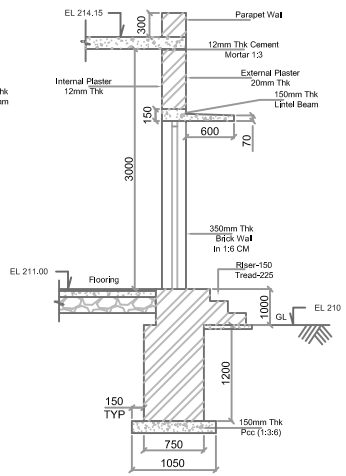
Hapur
Plan and Section of Administrative Building in South STP



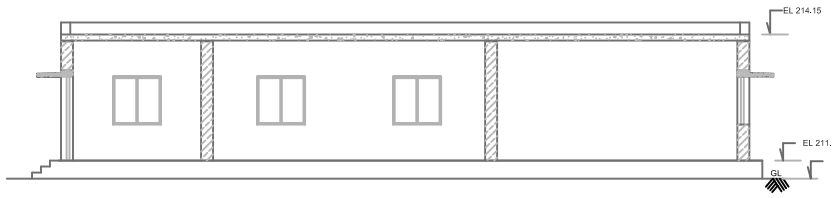
Plan at 211.0m Level



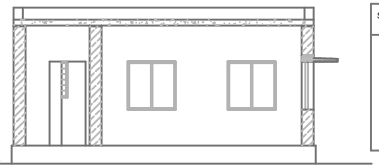
Section 1-1
SCALE 1:50



Section 2-2
SCALE 1:50



Section 4-4



Section 3-3

Door & Window Schedule

S.No	ID	Door Size	Nos	Remarks
1.	D1	1.5X2.1M	1	
2.	D2	1.2X2.1M	3	
3.	D3	0.9X2.1M	1	
4.	D4	0.6X2.1M	1	
5.	W1	1.2X1.2M	12	
6.	V1	0.45X0.9M	4	

Notes:

1. All Dimensions are in Millimeters and Elevations are Meters
2. Bricks for Masonary Shall be of Class-75. Brickwall shall be Constructed using (1:6) Cement Mortar
3. External Plaster shall be , 20mm Thick, Plain Finished, In Two Coats of Cement Mortar (1:4).
4. Internal Cement Plaster shall be Smooth Finished Cement Mortar (1:4) and shall be 12mm Thick.
5. Thickness of Brickwall, Except for Walls Within Toilet Area shall be 350mm. Thickness of Walls In Toilet Area shall be 115mm
6. All Structural Concrete Shall be of Grade M20
7. Antitermite Treatment all Around Building Shall be Done as Per Spec.
8. Painting: External: Cement Based-Internal: Oil Bound Distemper

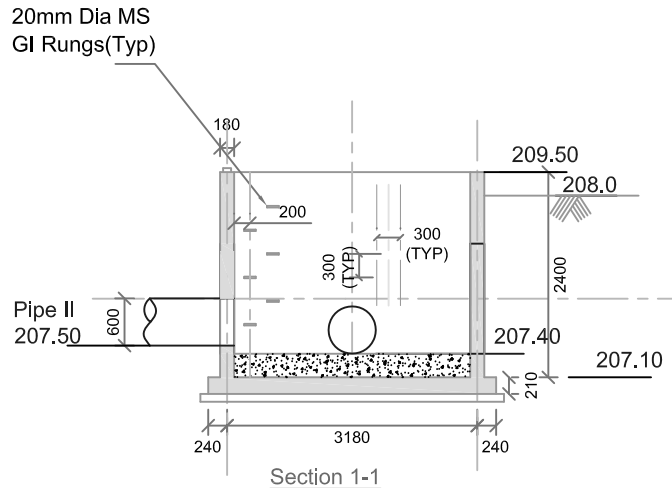
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April. 2010 | Approved: NSS

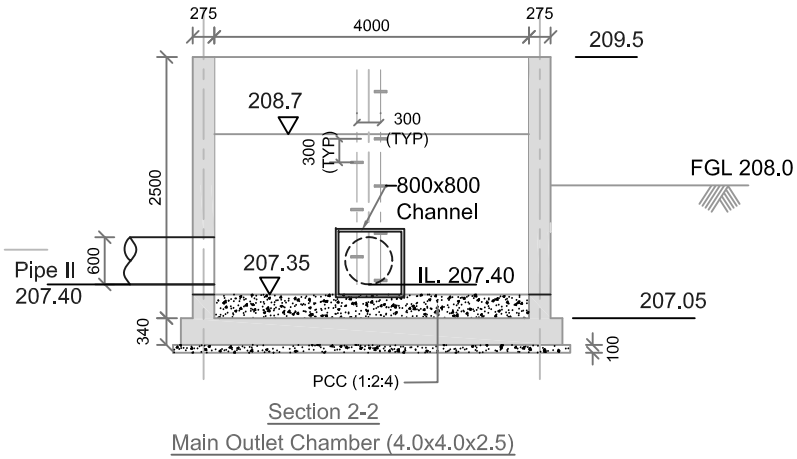
Scale: 0 1500 3000 4500 6000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-17



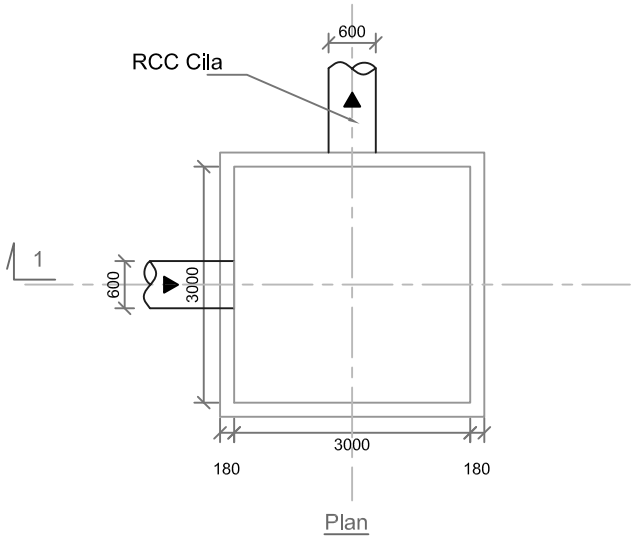
Section 1-1

Outlet Chamber of Faculative Pond
(3.0x3.0x2.40

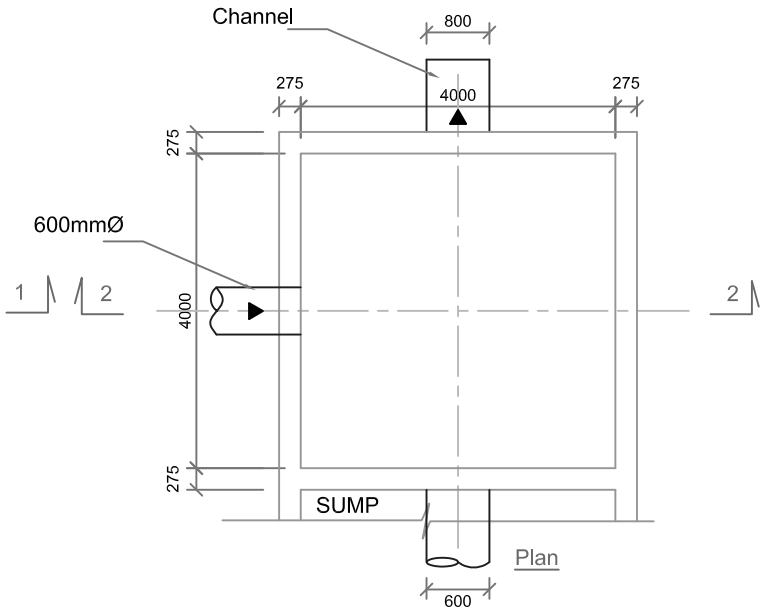


Section 2-2

Main Outlet Chamber (4.0x4.0x2.5)



Plan



Plan

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Details of Outlet 1 and 2
in South STP

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters Unless Noted Otherwise.
2. Unless Mentioned Otherwise Cement Shall be Ordinary Portland Cement Conforming to IS:269
3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete Shall be 330 Kg/Cu.m. of Concrete.

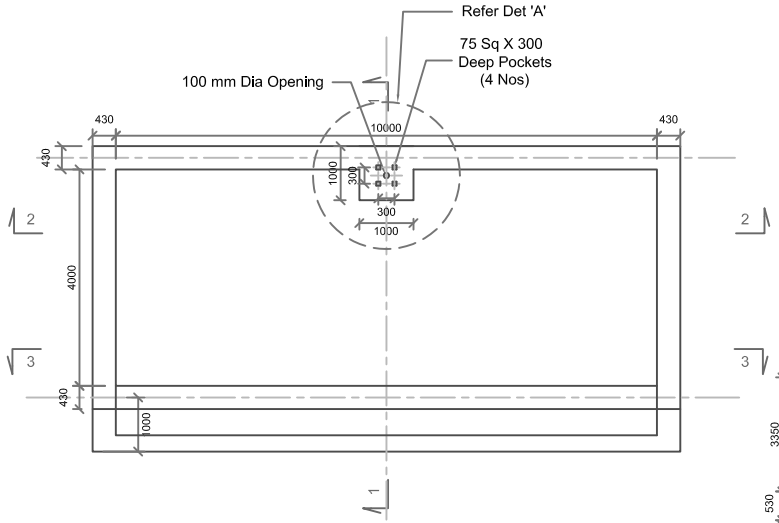
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

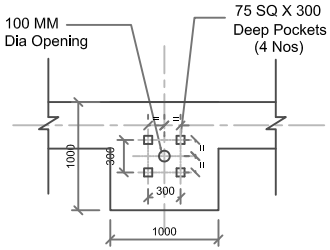
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 625 1250 1875 2500 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-16



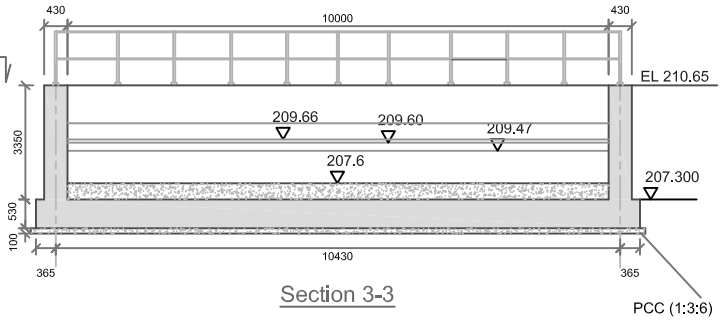
Plan



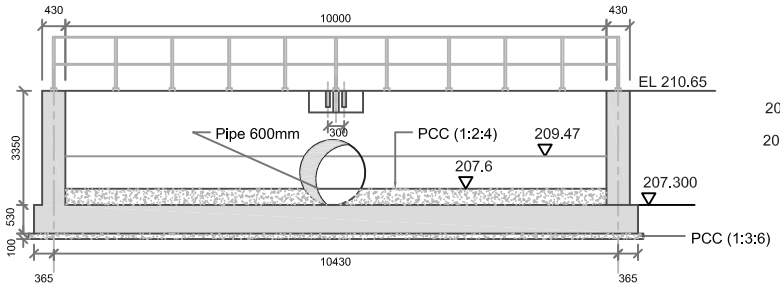
Detail A

Refer Note 4

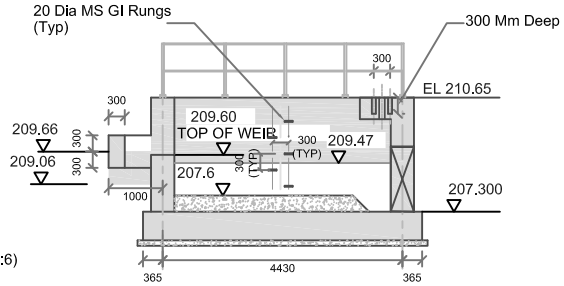
(Scale 1:45)



Section 3-3



Section 2-2



Section 1-1

Outlet Chamber of Faculative Pond (10.0x4.0x3.350)-2 Nos

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur

Outlet Chamber of Faculative Pond in South STP

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters Unless Noted Otherwise.
2. Unless Mentioned Otherwise Cement shall be Ordinary Portland Cement Conforming to IS:269
3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete shall be 330 Kg/cu.m. of Concrete.
4. This area shall be Filled with Asphalt Only after Erection of the Gate

Client:

Asian Development Bank
National Capital Region Planning Board

Consultant:

Wilbur Smith Associates

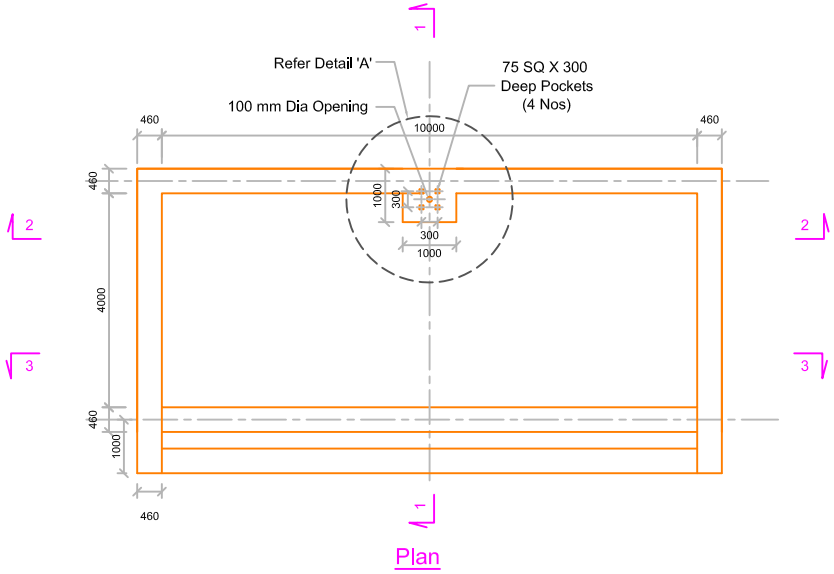
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimetres

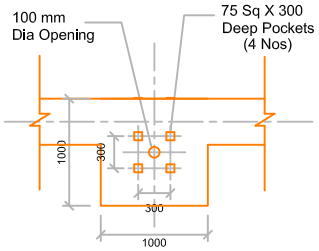
Drg. No. NCRPB-HAPUR-SW-STP-15

Capcity Development of the NCRPB: Component B (ADB TA-7055)

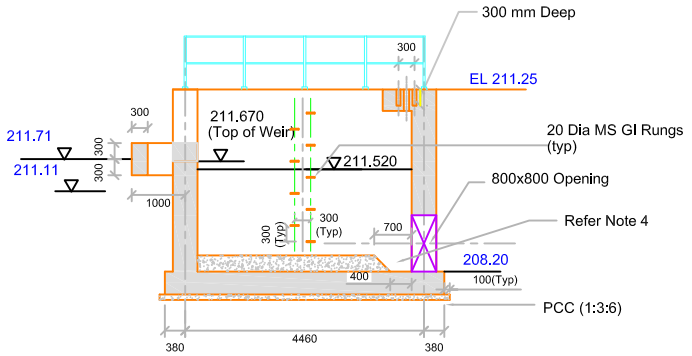
Hapur
Inlet Chamber of Faculative Pond
10x4 Size in STP South



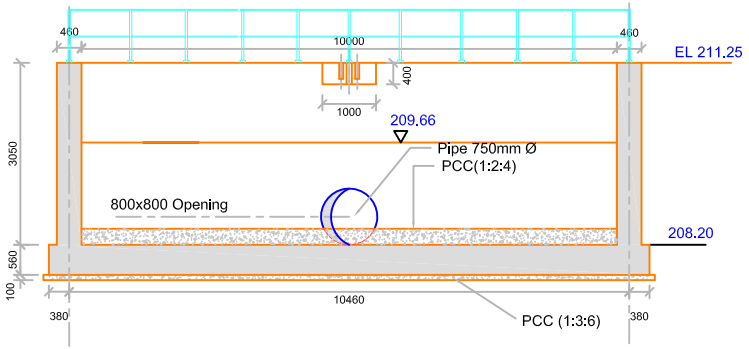
Plan



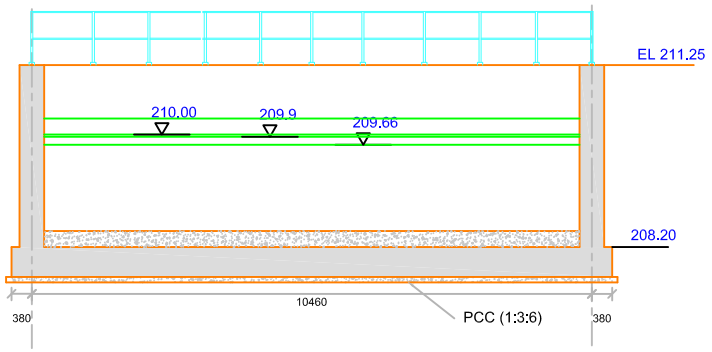
Detail A
Refer Note 4
(Scale 1:50)



Section 1-1



Section 2-2



Section 3-3

Inlet Chamber of Faculative Pond (4.0x10.0x3.05) -2 Nos.

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters Unless Noted Otherwise.

2. Unless Mentioned Otherwise Cement Shall be Ordinary Portland Cement Conforming to IS:269

3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete Shall be 330 Kg/cu.m. of Concrete.

4. This area shall be Filled with Asphalt Only after Erection of the Gate

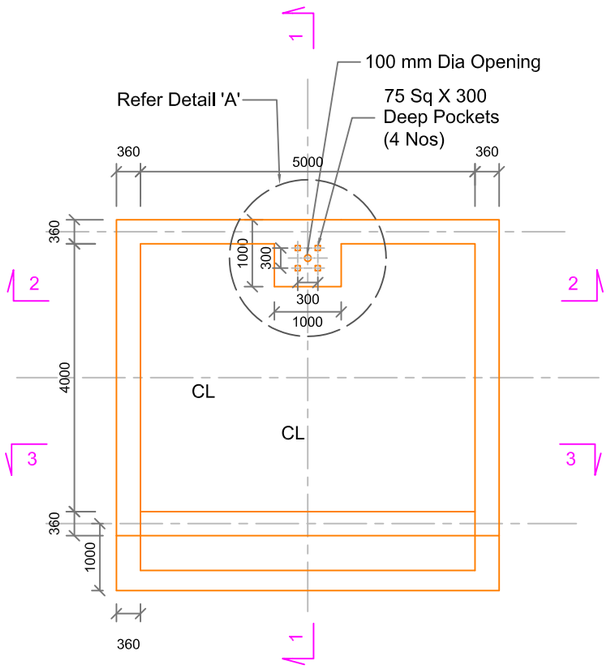
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

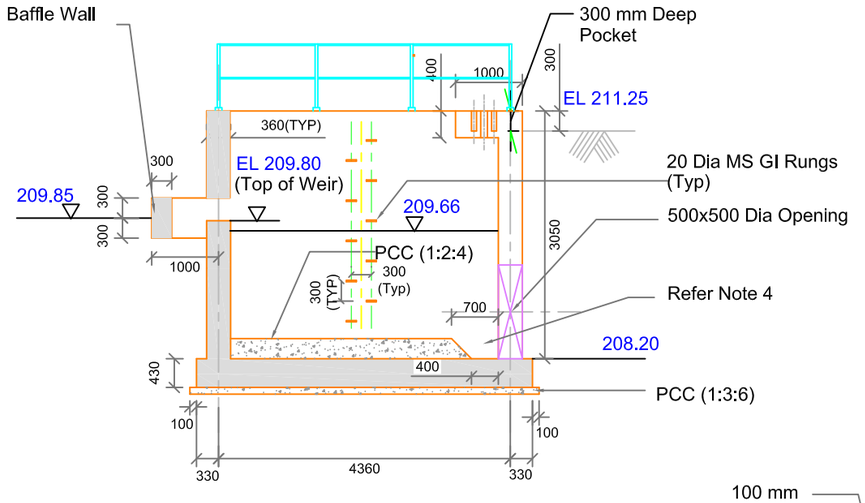
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimetres

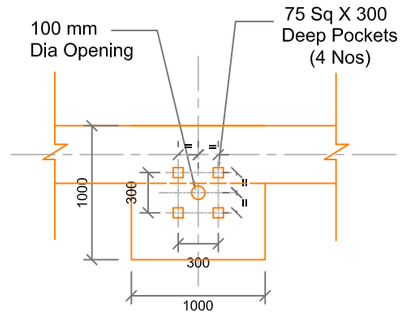
Drg. No. NCRPB-HAPUR-SW-STP-14



Plan

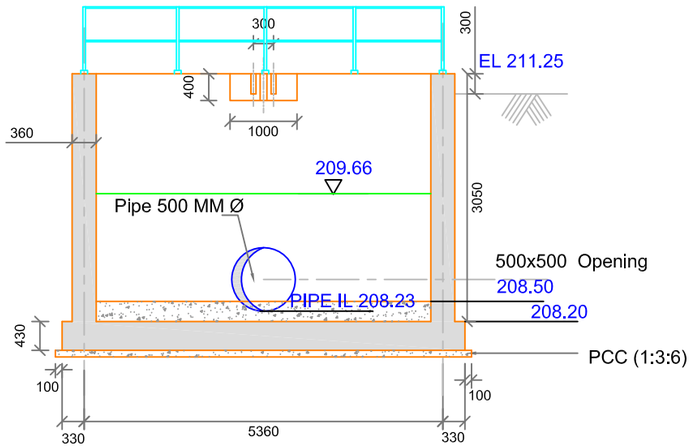


Section 1-1

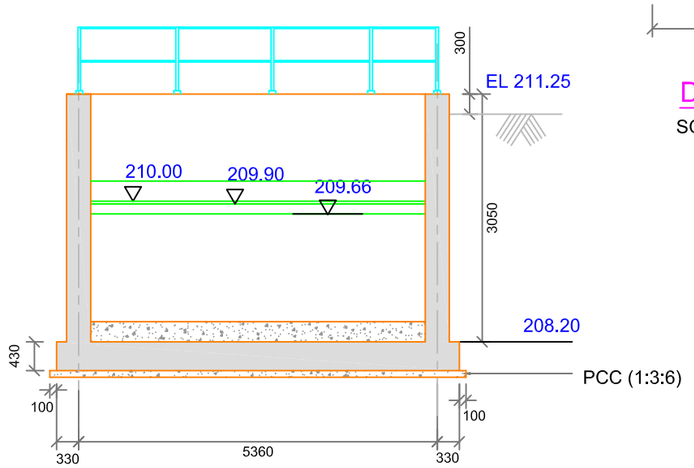


Detail A

SCALE 1: 40



Section 2-2



Section 3-3

Inlet Chamber of Faculative Pond (5.0x4.0x3.05) -2 Nos

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur

Details of Outlet to Anerobic Pond and Inlet to Faculative Pond 5mx4m Size in STP South

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters Unless Noted Otherwise.
2. Unless Mentioned Otherwise Cement Shall be Ordinary Portland Cement Conforming to IS:269
3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete Shall be 330 Kg/cu.m. of Concrete.
4. This area Shall be Filled with Asphalt Only after Erection of the Gate

Client:

Asian Development Bank
National Capital Region Planning Board

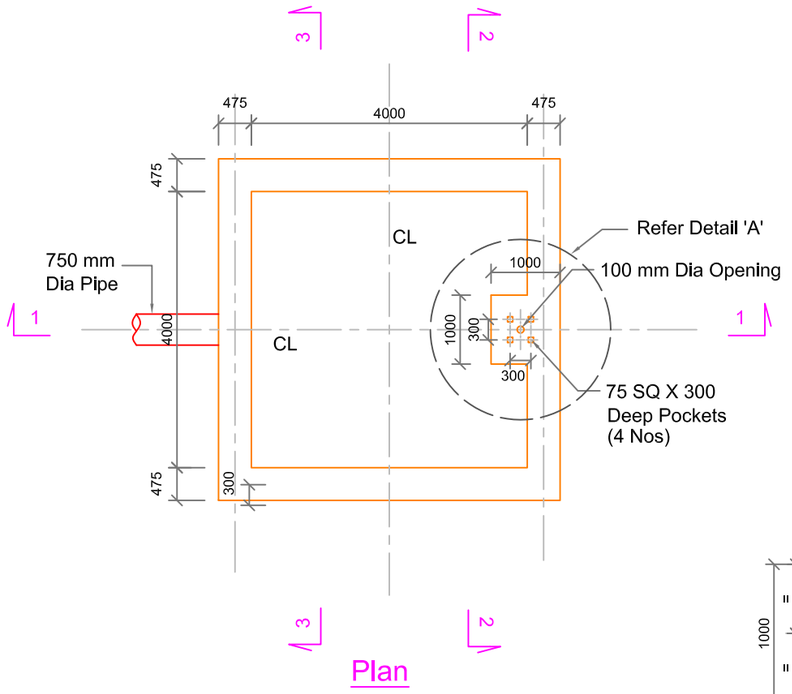
Consultant:

WIlbur Smlth Assoclates

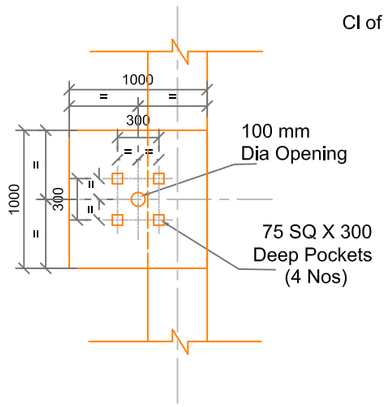
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-13

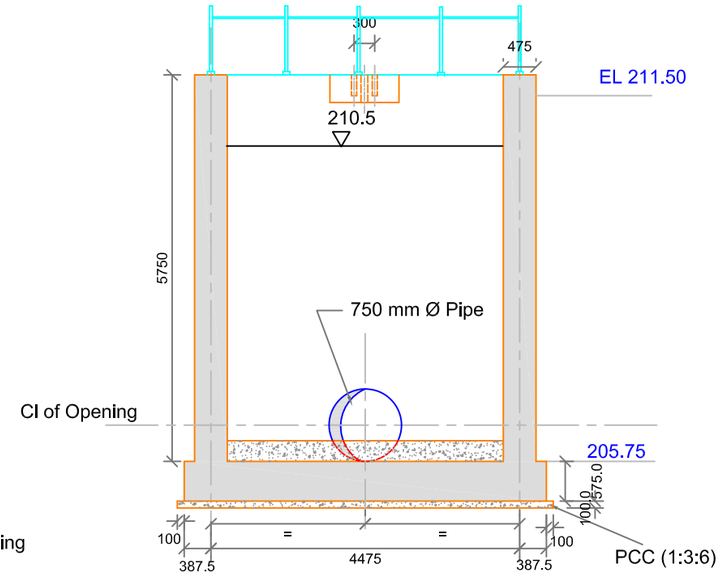


Plan

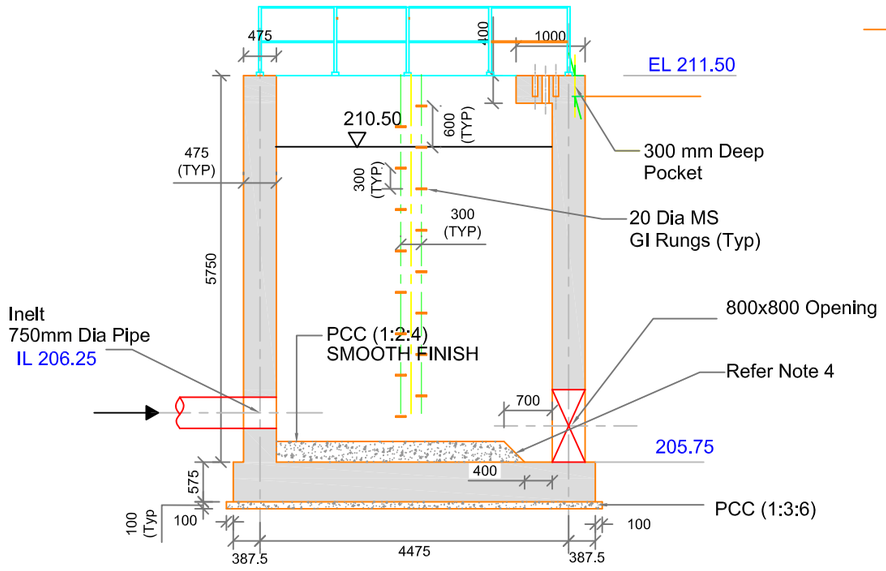


Details A

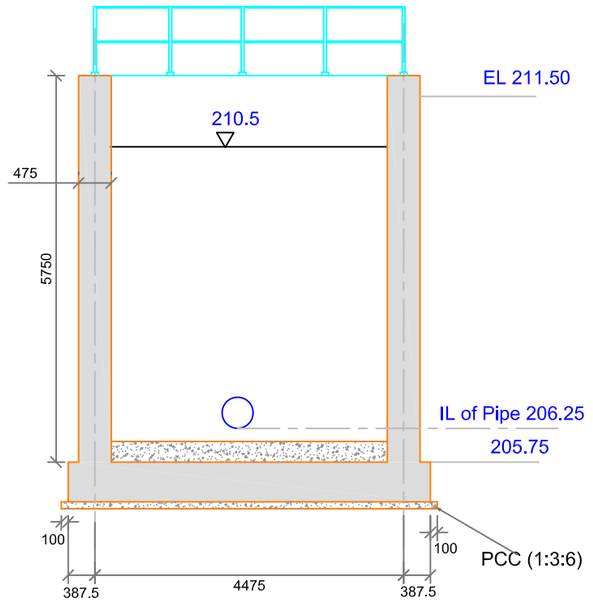
(SCALE 1:50)



Section 2-2



Section 1-1



Section 3-3

Inlet Chamber of Anaerobic Pond (4.0x4.0x5.75)- 3 Nos

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Details of Inlet Chamber of Anaerobic Pond in STP South

Notes:

1. All Dimensions are in Millimeters and Elevations are in Meters Unless Noted Otherwise.

2. Unless Mentioned Otherwise Cement Shall be Ordinary Portland Cement Conforming to IS:269

3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete Shall be 330 Kg/cu.m. of Concrete.

4. This area Shall be Filled with Asphalt Only after Erection of the Gate

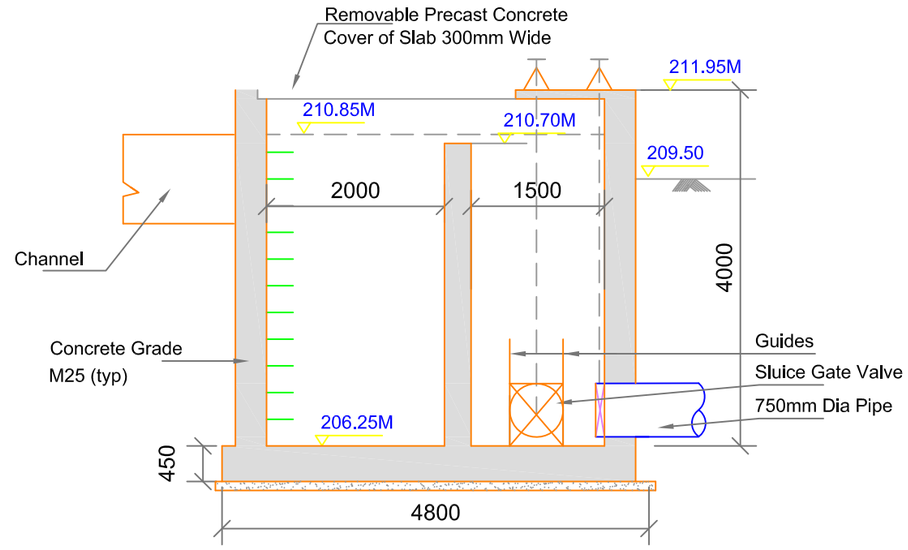
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

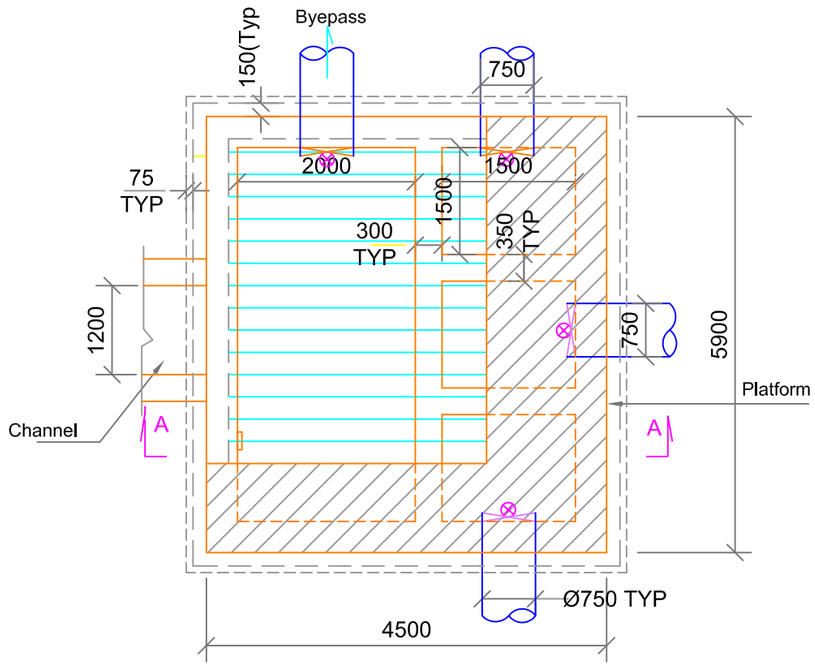
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 1000 2000 3000 4000 Millimetres

Drg. No. NCRPB-HAPUR-SW-STP-12



Section A-A



Plan of Distribution Chamber

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Distribution Chamber in STP South

Notes:

1. All Dimensions are in Millimeters and Elevations are in Mietres Unless Noted Otherwise.

2. Unless Mentioned Otherwise Cement Shall be Ordinary Portland Cement Conforming to IS:269

3. All Structural Concrete Shall be of M25 Grade with 20mm Downgraded Coarse Size. Unless Noted Otherwise Minimum Cement Content for Design Mix Concrete Shall be 330 Kg/cu.m. of Concrete.

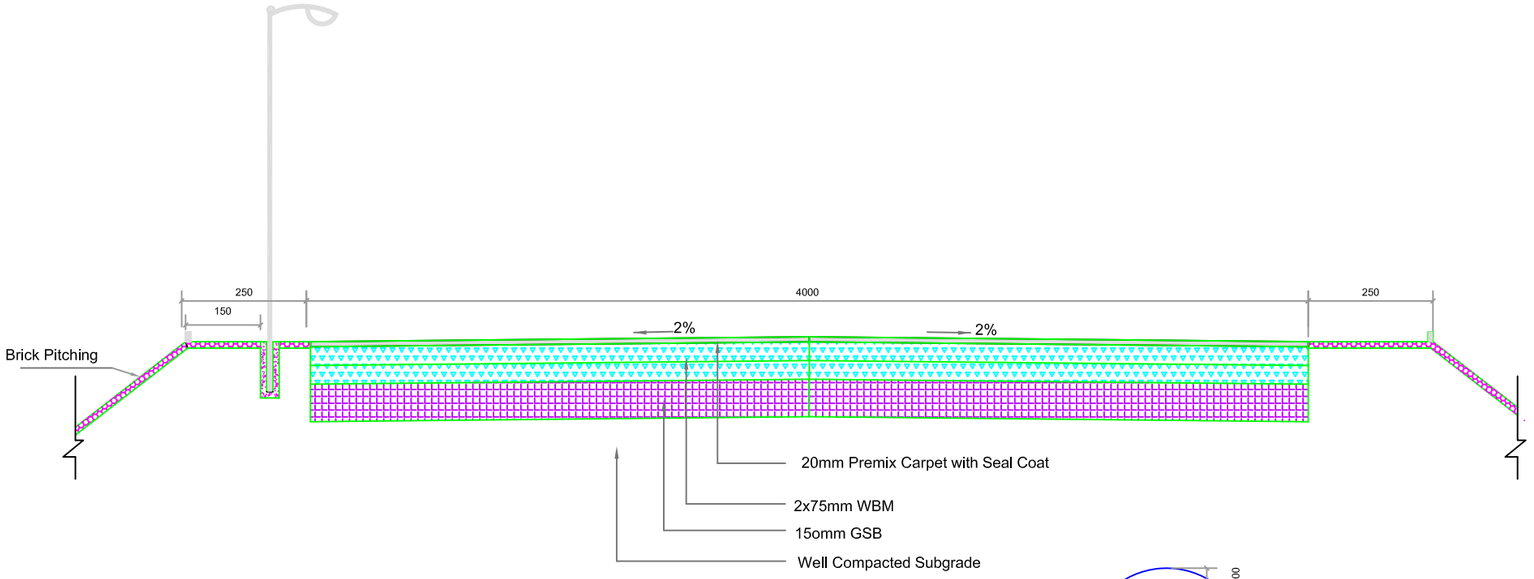
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
WIlbur Smlth Assoclates

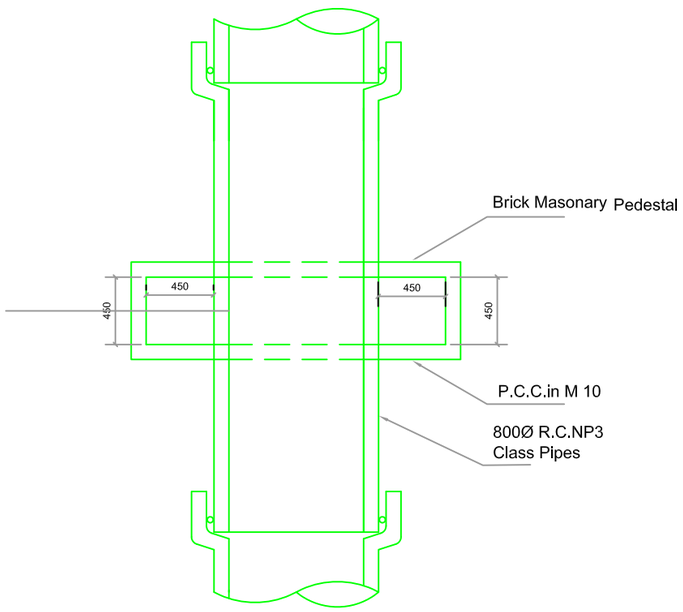
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 750 1500 2250 3000 MIIIImetres

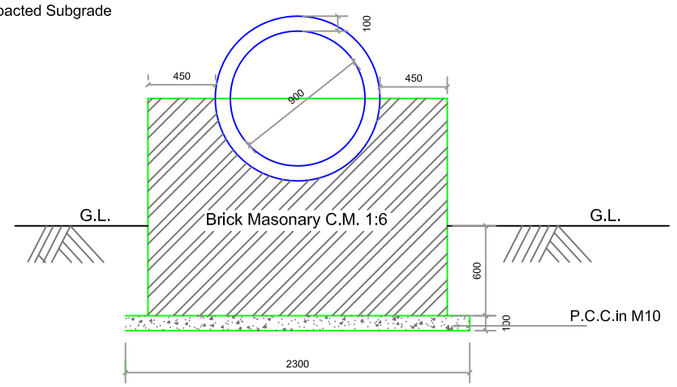
Drg. No. NCRPB-HAPUR-SW-STP-11



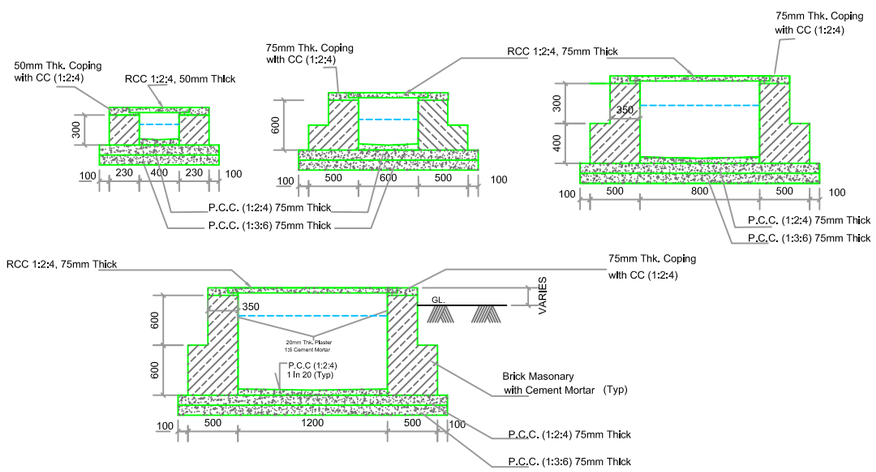
Typical Road Layout



Plan



Elevation



Cross Sectional Details of Drain

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Road and Drain Sections in STP South

Notes:

All Dimensions are in Millimeters and Elevations are in Meters

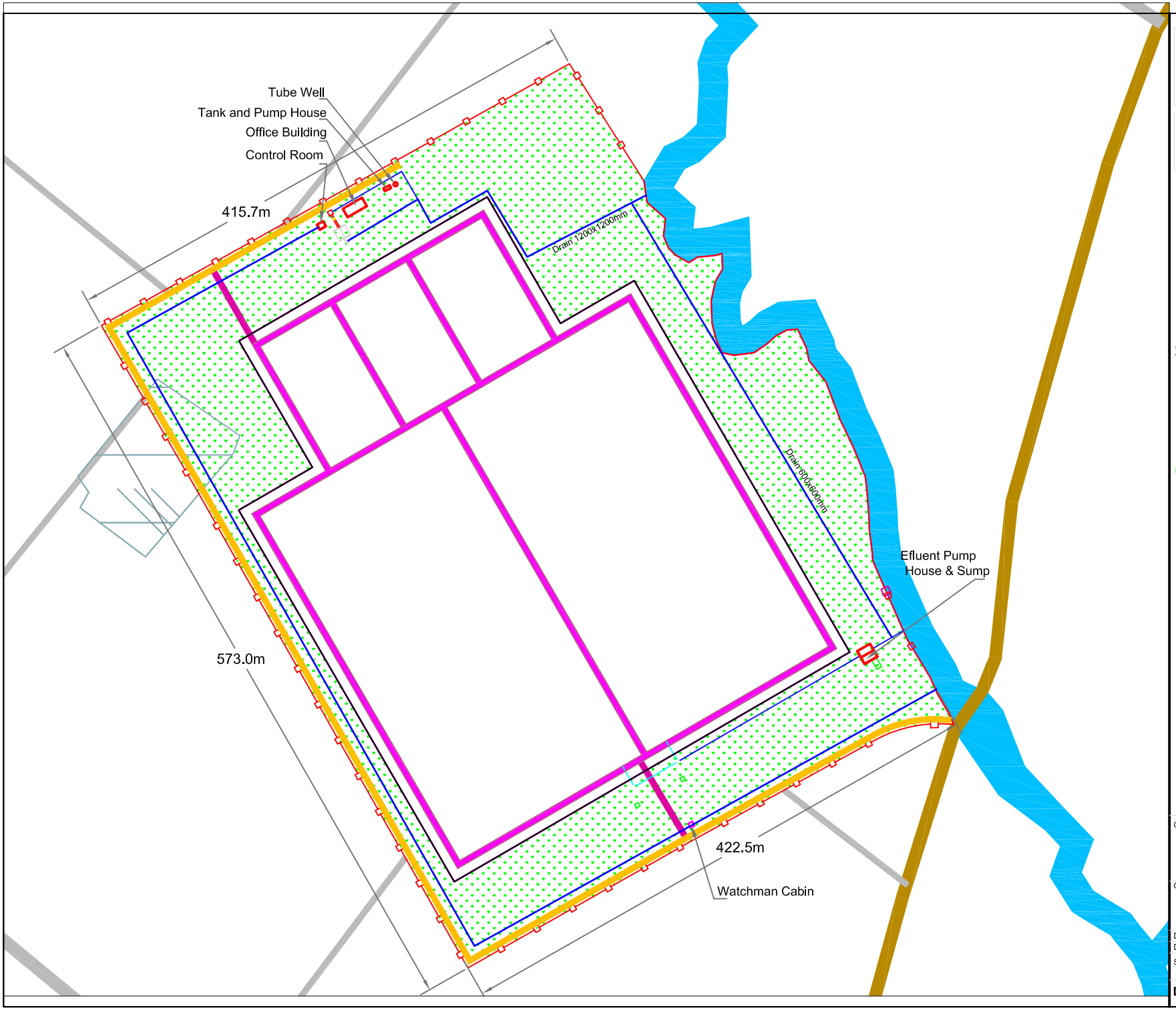
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
WIlbur Smlth Assoclates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-SW-STP-10



Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Road, Drain, Buildings, Green Area and Fencing in STP South

Legend

- Existing BT Road
- Existing Katcha Track
- Existing Drain

Overlay Legend

- Proposed Road at Ground Level
- Proposed Road on Embankment
- Proposed Approach Road to Embankment
- Barbed Wire Fencing
- Proposed Drain
- Green Area

Quantity of Works:

Proposed Road at Ground Level-1244 m

Proposed Road Leading to Embankment-135 m

Proposed Road on Embankment-2260 m

Barbed Wire Fencing - 2050m

Green Area-9.5 Hect.

Total Land Area-24.74 Hect.

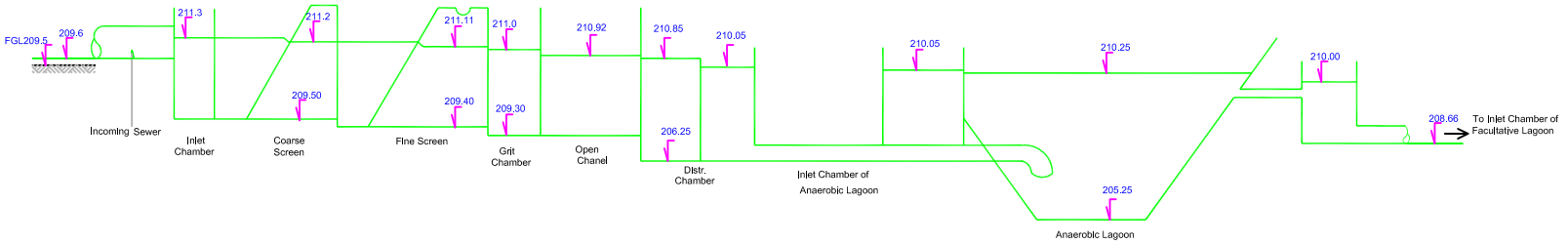
Drain -1200x1200 =400m
800x700=600m
600x600=800m
400x300=350m

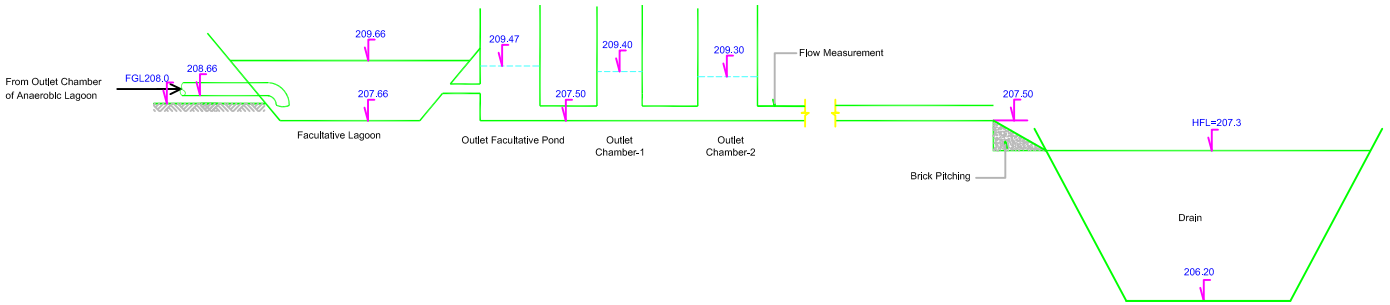
Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
WIlbur SmIth Assoclates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS
Scale: NTS	

Drg. No.NCRPB-HAPUR-SW-STP-09





Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Hydraulic Flow Diagram of Proposed 25 MLD in STP South

Notes:

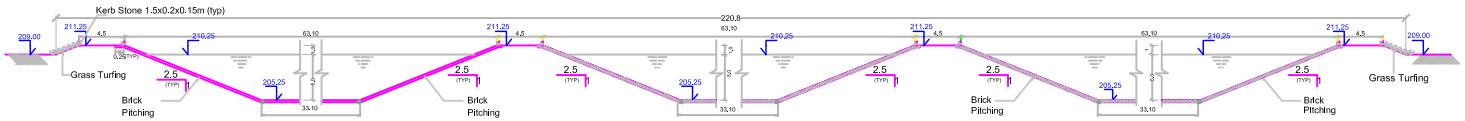
All Elevations are in Meters

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

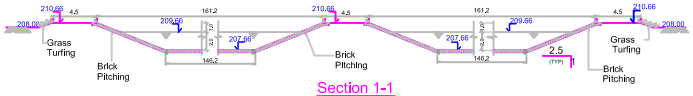
Drawn: SK	Checked: NSS
Date: April, 2010	Approved: NSS
Scale: NTS	

Drg. No. NCRPB-HAPUR-SW-STP-08



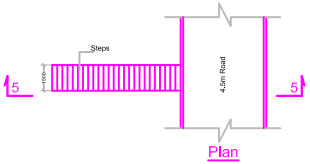
Section 3-3

Scale : NTS

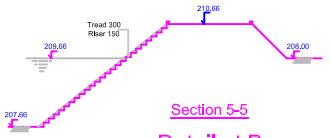


Section 1-1

Scale : NTS



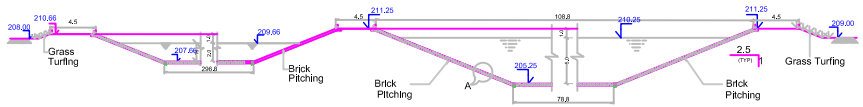
Plan



Section 5-5

Detail at B

Scale : NTS



Section 2-2

Scale : NTS

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur

Section of Araerobic Pond and Facuttatlve Pond In STP South

Note:

All Dimensions & Levels are in Meters

Client:

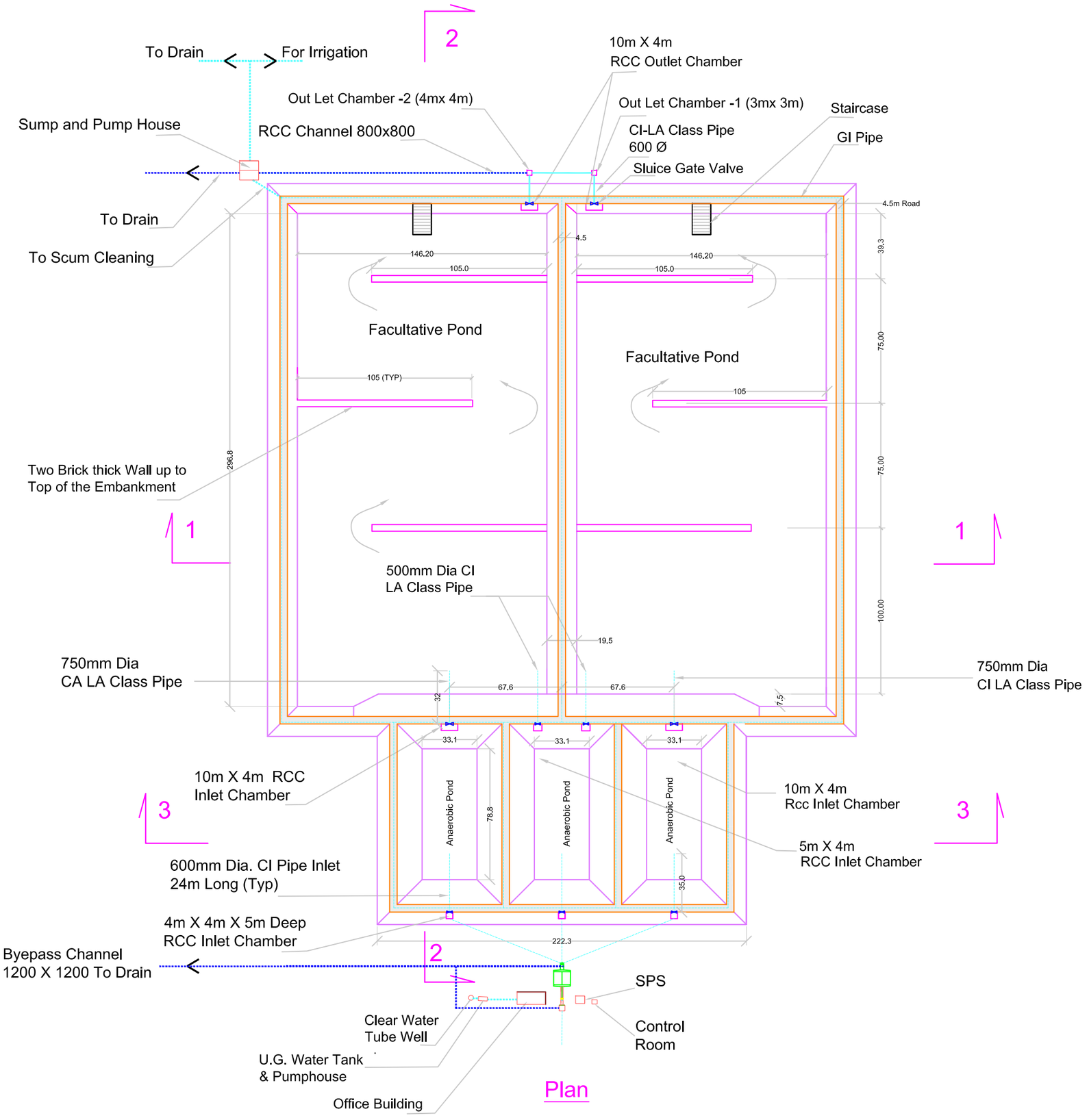
Asian Development Bank
National Capital Region Planning Board

Consultant:

Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April, 2010	Approved: NSS
Scale: NTS	

Drg. No.NCRPB-HAPUR-SW-STP-07B



Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
STP - Design

Legend

- Roads
- Pipe Line
- Channel
- Building
- Sluice Gate Valve

Schedule of Structures / Buildings:

Sl.No.	Description	Size
1	Inlet Chamber	3.5m X 3.5m
2	Coarse Screen Channel	4.0m X 1.30m
3	Fine Screen Channel	4.65mx2.0m-2nos
4	Grit Chamber	9.00m X 9.00m - 2.nos
5	Anaerobic Pond	33.1mx78.8m(@Bottom,63.1x108.8m at Top and 58.1x103.8m at Water Level)
6	Facultative Pond	146.2x296.8m@Bottom,161.2 X 313.8m at Top and 156.2x306.8m at Water Level)
7	Distribution Chamber	1.5m X 5.1m, 1.5x1.5m 3 Nos
8	Inlet to Anaerobic Pond	4.00x4.00m-3 Nos
9	Inlet to Facultative Pond	5.0mx4.0m- 2 Nos. and 10.0x4.0 2 Nos
10	Outlet to Facultative Pond	10.0mx4.0m- 2 Nos.
11	Outlet Chamber 1and 2	3.0mx3.0m and 4.0x4.0m
12	Office	17.2mx7.5m
13	Control Room	5.5m x 4.5m
14	Sump for Effluent Pump	11.5m x 11.5x 4.0m
15	High Pressure Pump House	11.5m x 4.5m
16	750mm CI LA Pipe	Length 350m
17	500mm CI LA Pipe	Length 50m
18	600mm CI LA Pipe	Length 70m
19	High Pressure Pump House	4.0m X 3.5m
20	Partion Wall in Ponds	105.0m x 6 Nos.
21	GI Pipe 50mm for Scum	2200m

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

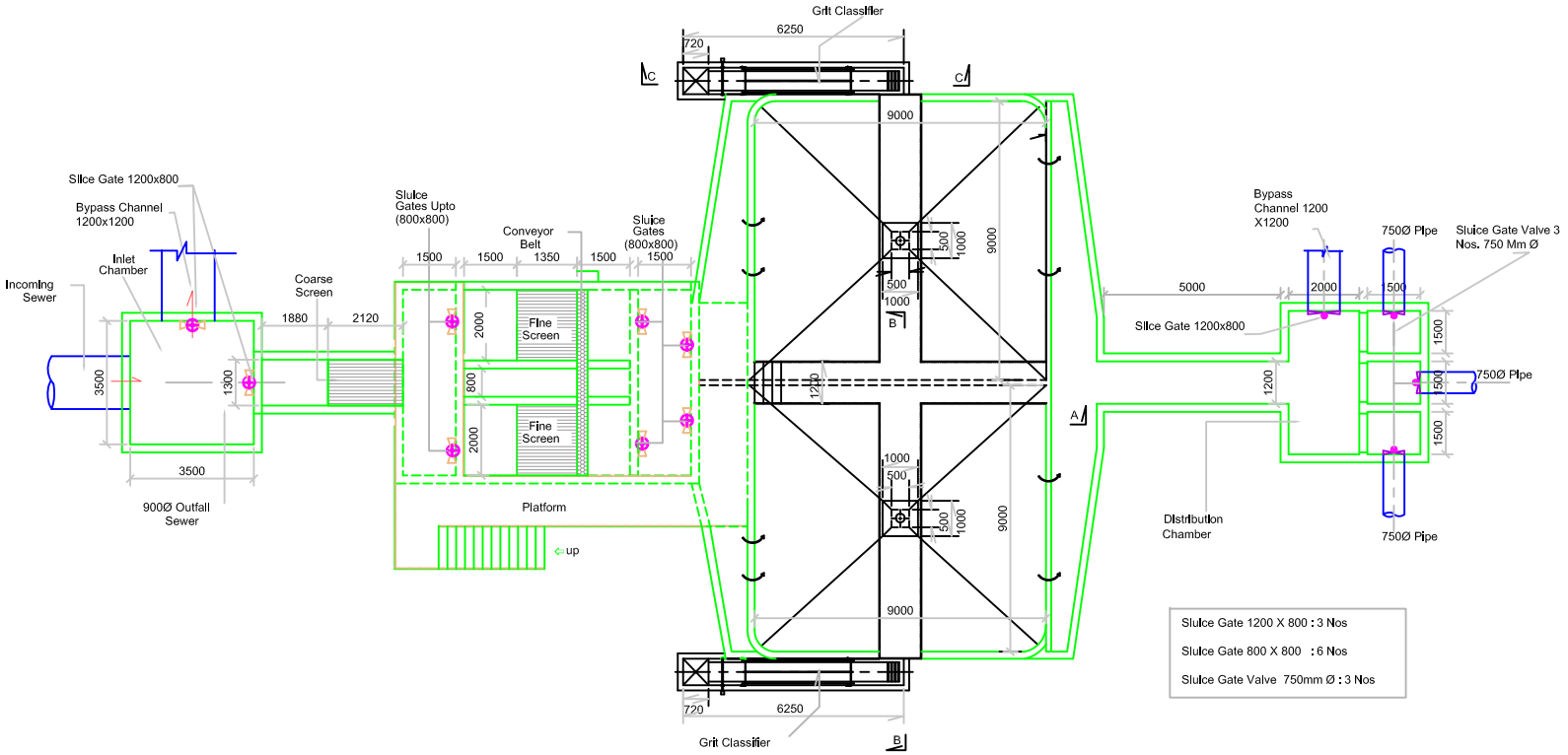
Drawn: SK | Checked: NSS
Date: April. 2010 | Approved: NSS

Scale: 0 25 50 75 100 Meters

Map 2-5

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Screen Chamber,Detritor & Distribution Chamber in STP South



PLAN

Note:

All Dimensions are in Millimeters

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

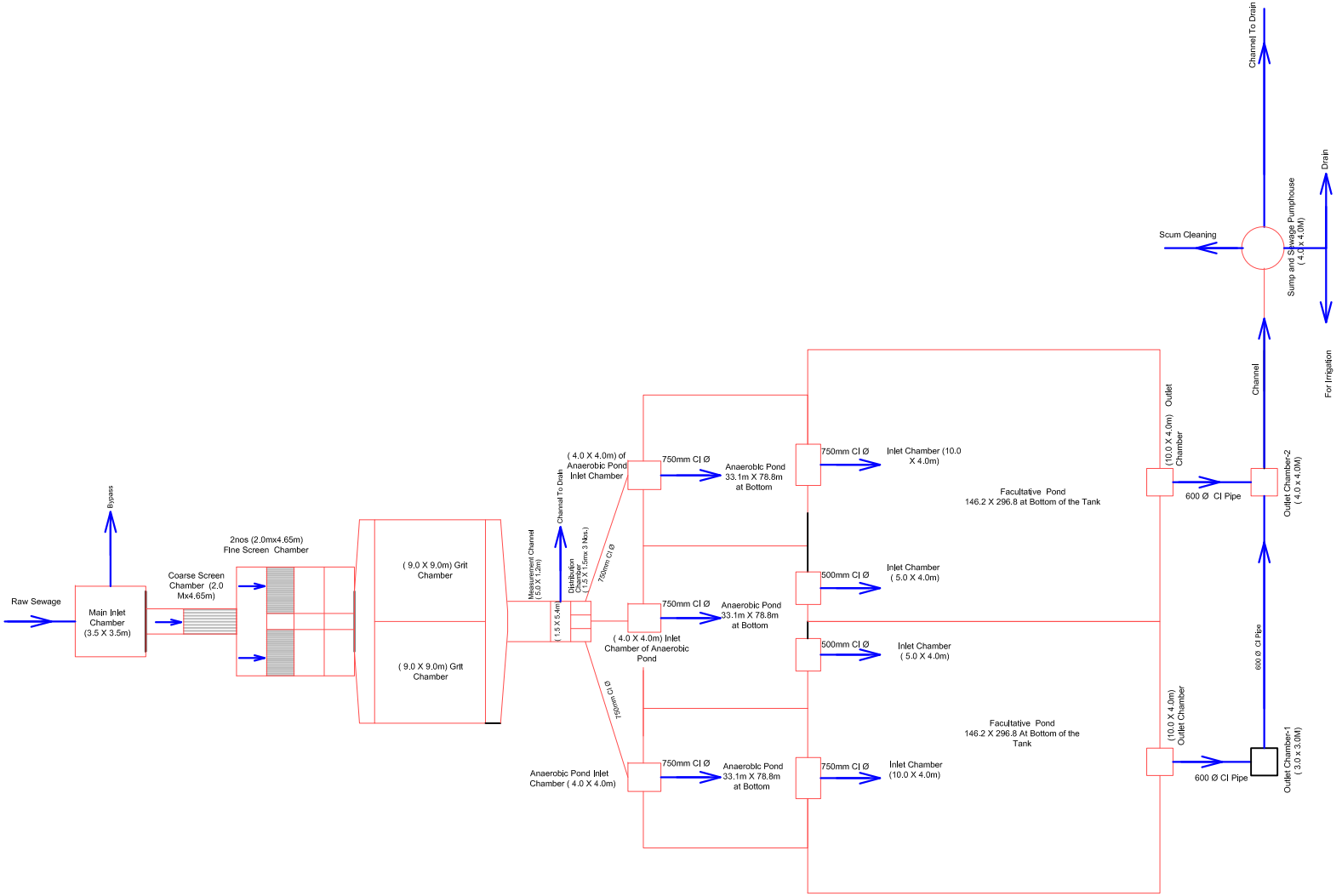
Drawn: SK	Checked: NSS
Date: April, 2010	Approved: NSS

Scale: 0 1250 2500 3750 5000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-06

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Schematic Diagram of Proposed 25 MLD in STP South



Client
Aslan Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-DPR-STP-05

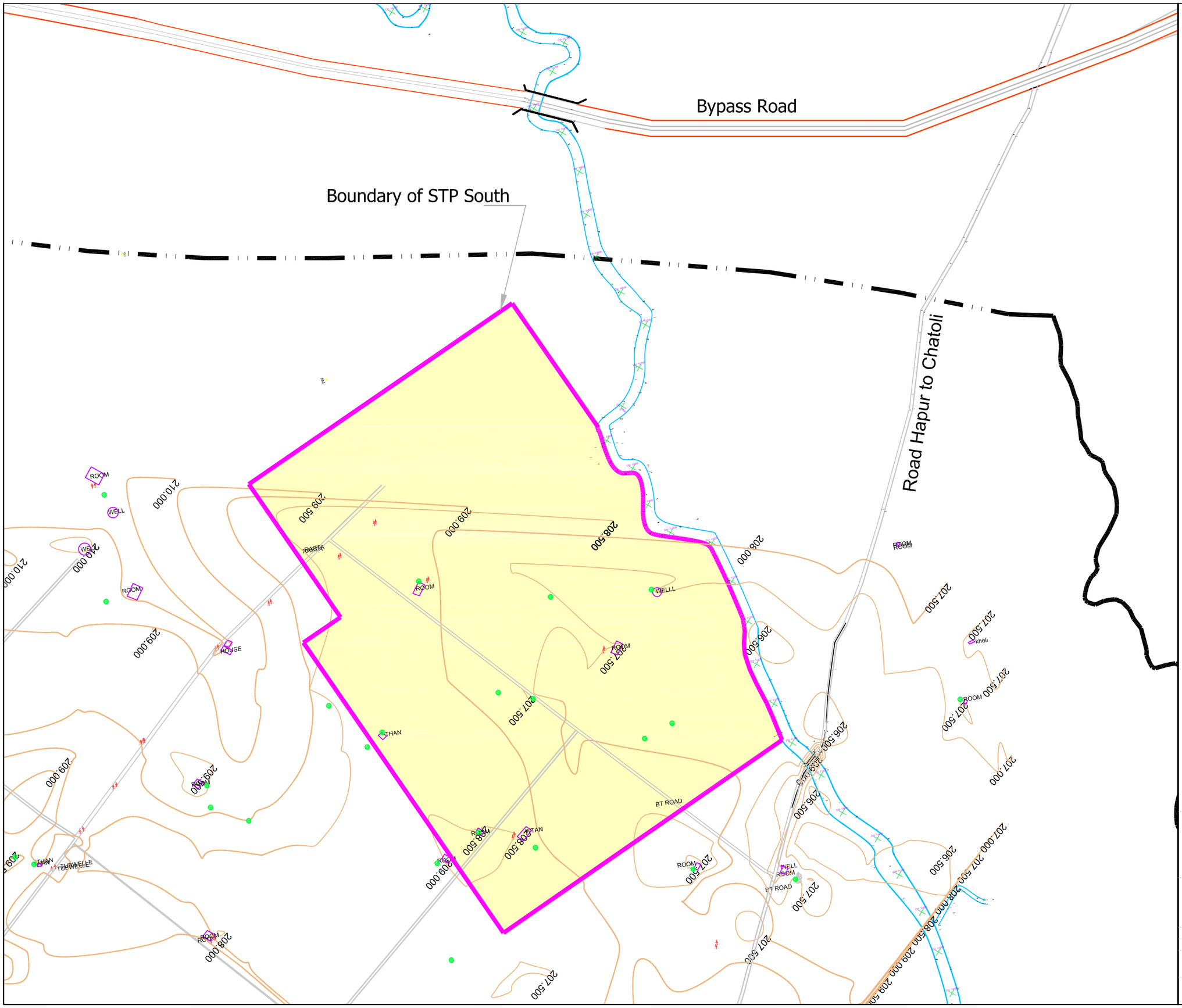
Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Contour Map in STP South

Bypass Road

Boundary of STP South

Road Hapur to Chatoli



Legend

- Master Plan Boundary
- Municipal Boundary
- Bypass Road
- Road
- Railway Line
- Drain
- Tree

Overlay Legend

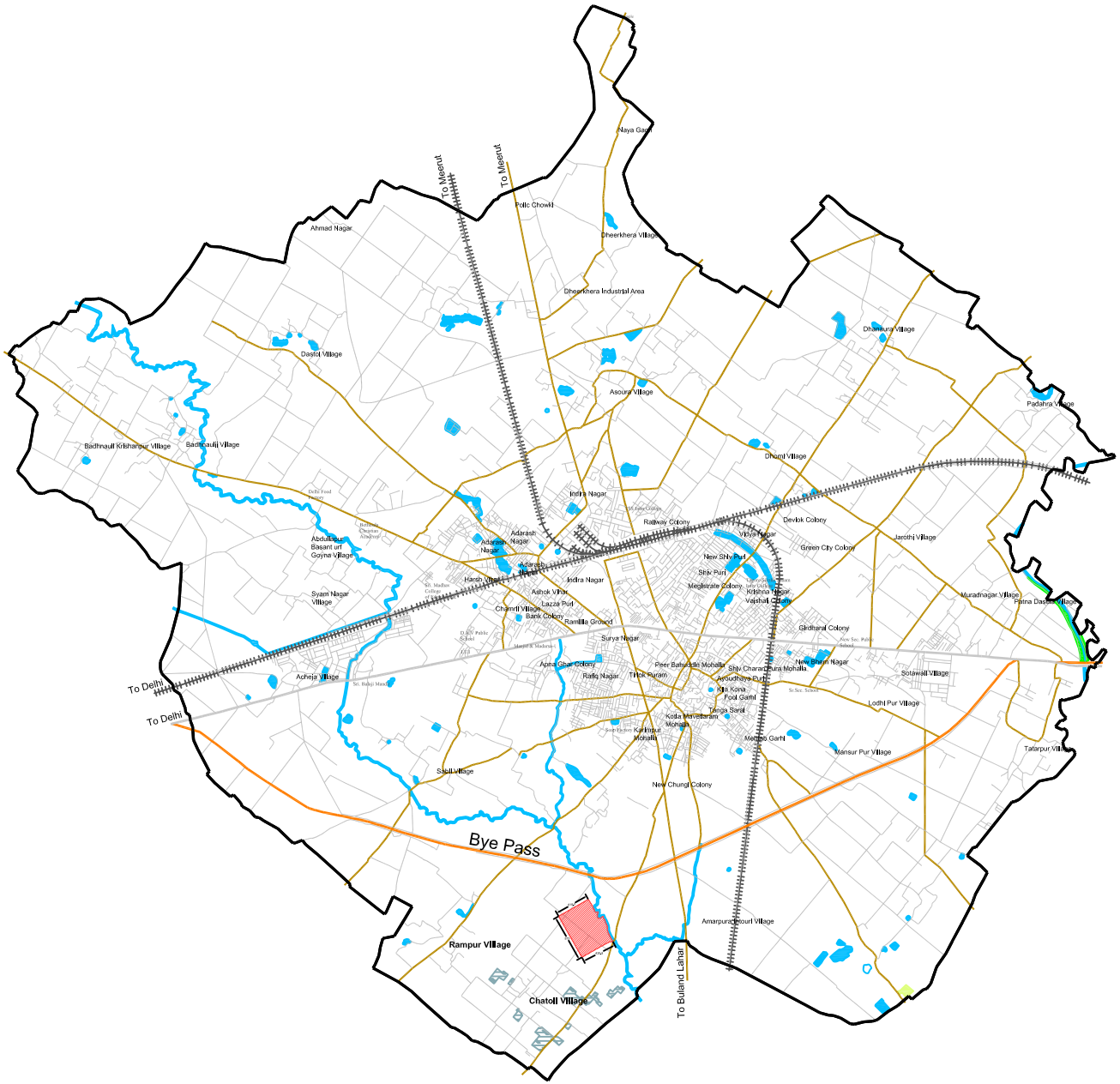
- Site of STP South
- Contour Line with Level

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April, 2010	Approved: NSS
Scale: NTS	

Drg. No.NCRPB-HAPUR-SW-STP-04



Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Proposed Site of STP South

Legend

- Existing Land Use Boundary
- Bypass Road
- Major Roads
- Minor Roads
- Railway Line
- Water Course

Overlay Legend

- Prposed Site of STP South
  Area=24.74 Hect.

Source:
NCR Cell, UP

Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

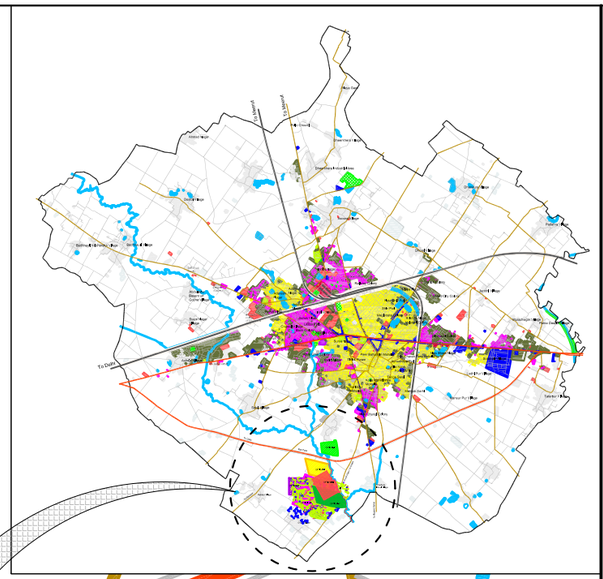
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 320 640 960 1280 1600 Metres

Drg. No.NCRPB-HAPUR-SW-STP-03

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
STP South Location-Options



To Hapur
To Delhi
Bye Pass
OPTION -I
OPTION -II
OPTION -III
OPTION -IV
OPTION -V
OPTION -VI
Road Hapur to Chatoli
Amarpura
Intouri Village
To Rampur
Rampur Village
Chatoli Village
To Buland Sahar

Legend
- Land Use Boundary
- National Highway
- Major Roads
- Minor Roads
- Railway Line
- Drain
- Rural Builtup
- Orchid

Overlay Legend
- Option -I (Alternate Selection)
- Option -II
- Option -III (Selected)
- Option - IV
- Option - V
- Option - VI

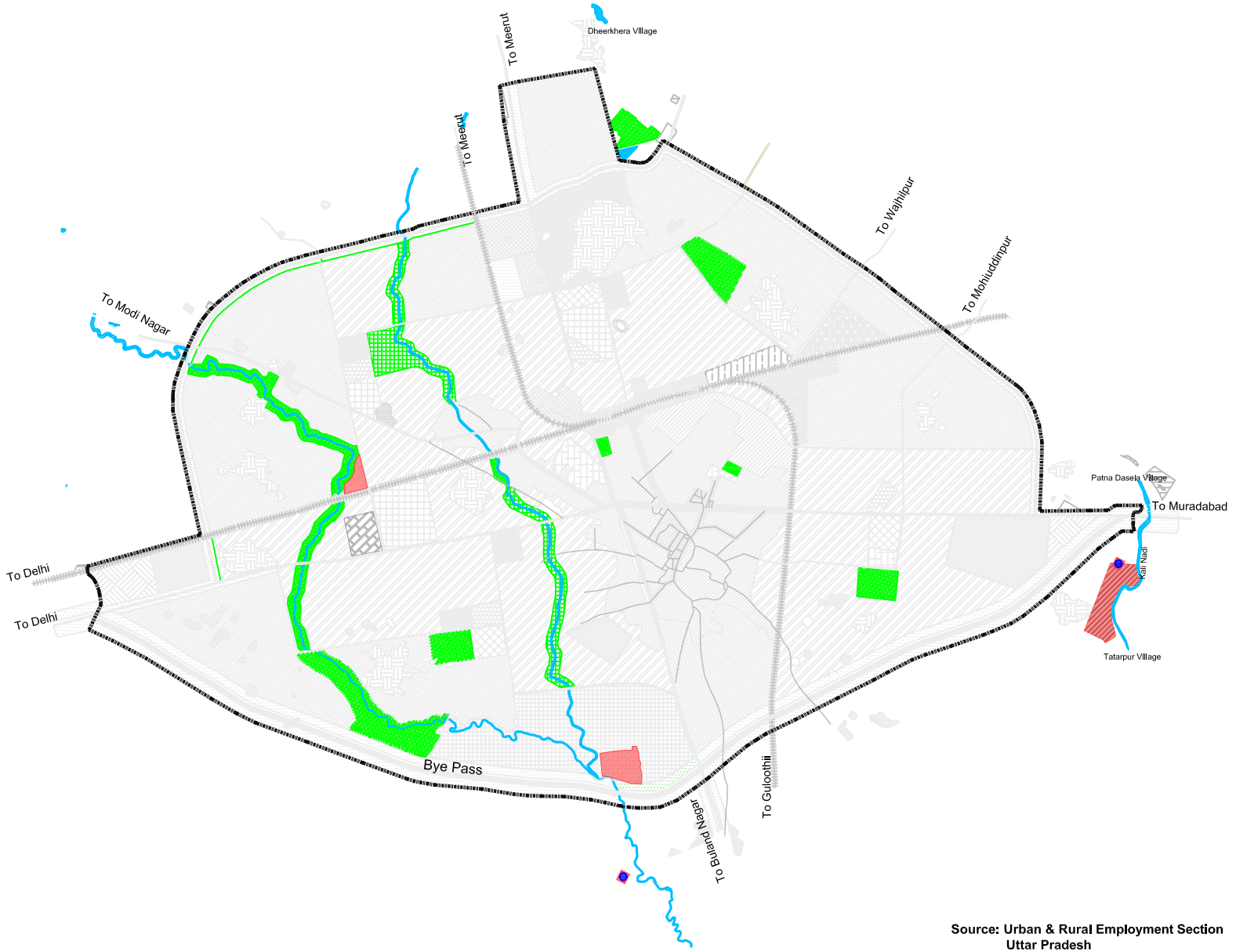
Source:
NCR Cell, UP

Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS
Scale: NTS	

Drg. No.NCRPB-HAPUR-SW-STP-02



Source: Urban & Rural Employment Section
Uttar Pradesh

Capcity Development of the NCRPB: Component B ADB TA-7055

Hapur
STP Sites Proposed in Master Plan

Legend

- Master Plan Boundary
- Minor Roads
- Railway Line
- Green Area & Park
- Drain, River
- STP Site as per Master Plan 2005
- STP Sites as per Proposed Master Plan 2021

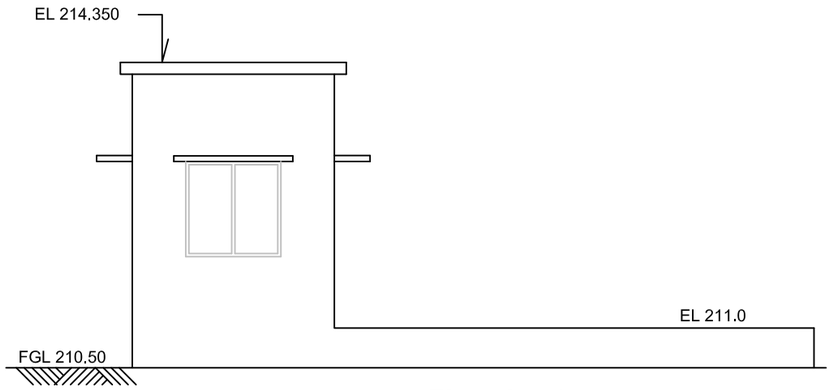
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

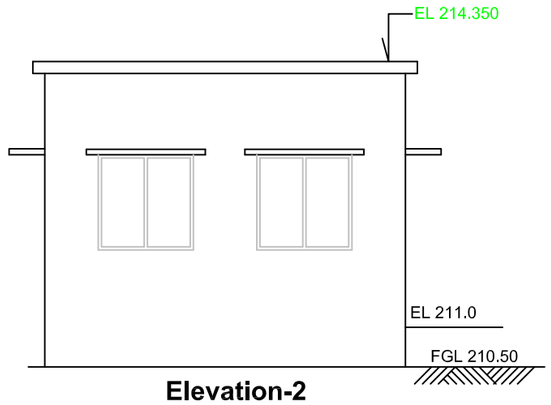
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 0 500 1000 1500 2000 Metres

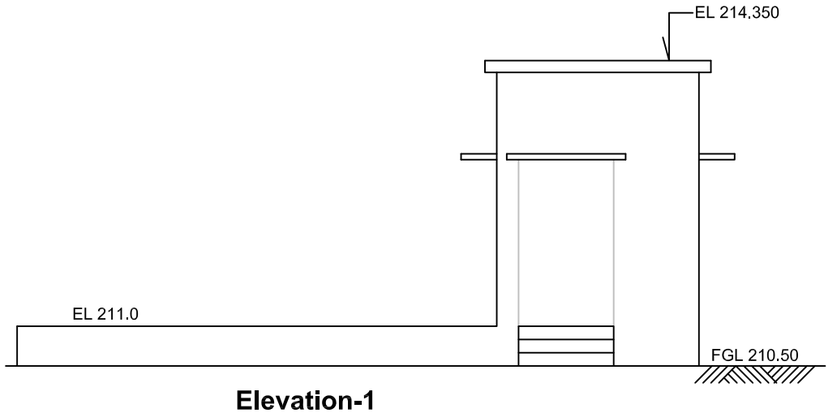
Drg. No. NCRPB-HAPUR-SW-STP-01



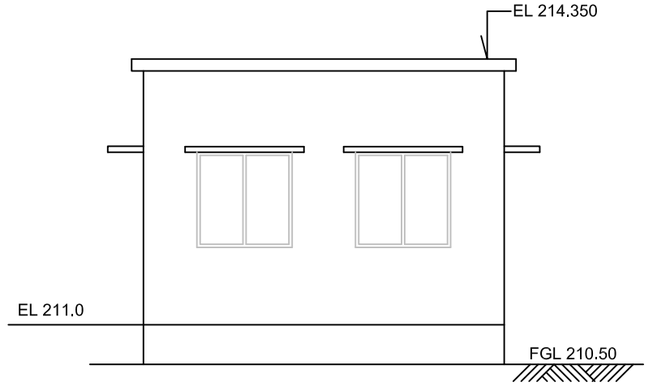
Elevation-3



Elevation-2



Elevation-1



Elevation-4

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Elevations of
High Pressure Pump House

Client:

Asian Development Bank
National Capital Region Planning Board

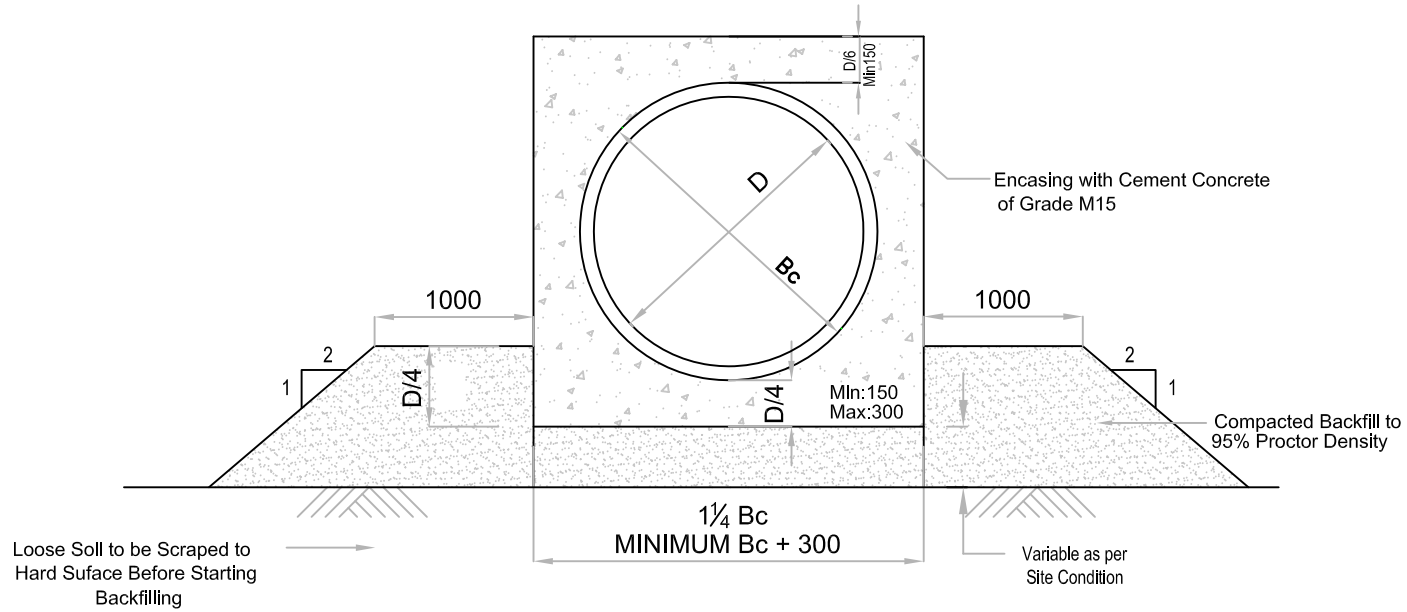
Consultant:

WIlbur Smlth Assoclates

Drawn: SK	Checked: NSS
Date: Apri. 2010	Approved: NSS

Scale: 0 750 1500 2250 3000 Millimeters

Drg. No. NCRPB-HAPUR-SW-STP-28



Typical Details of Pipe Encasing over Embankment

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Pipe Encasing Over Embankment

Notes

1. All Dimensions are in Millimeters Unless Otherwise Indicated and Levels are In meters.

2. Exposed Portion of Sewer LIne shall be Encased wlth Concrete of Grade M15.

3. Internal Diameter of Pipe = D

4. Outer Diameter of Pipe = BC

5. Backfilling shall be Done with Approved Material and shall be Compacted to Achieve 95% Proctor Density

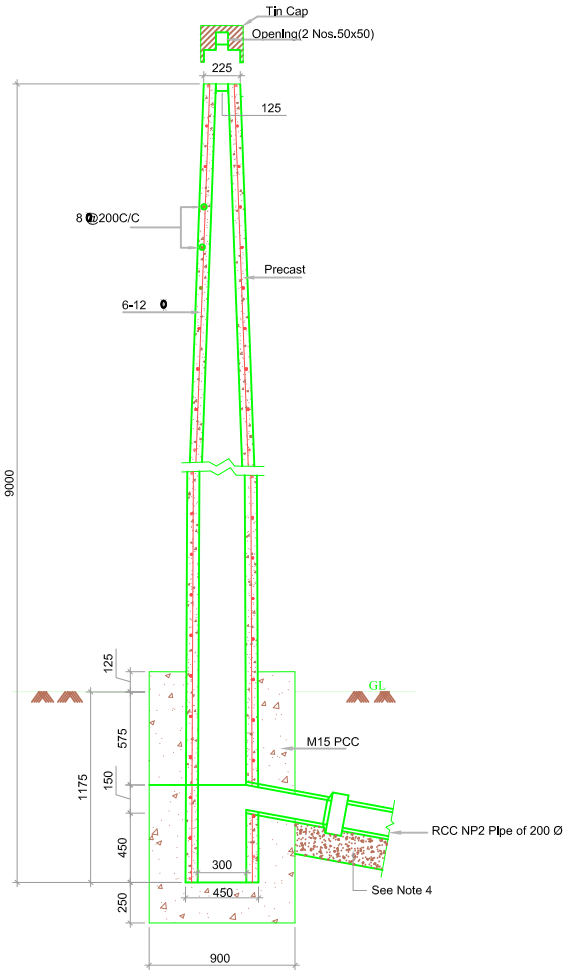
6. Backfillng wlth Approved Selected Excavated Materlal and Compactlon shall be Done In Layers of not more than 150mm

Client
Asian Development Bank
National Capital Region Planning Board

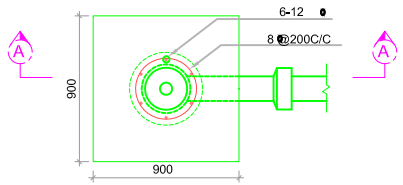
Consultant
WIlbur Smlth Assoclates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS
Scale: NTS	

Drg. No.NCRPB-HAPUR-SW-SD-13



section At A - A



Plan

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of RCC Vent Shaft

Notes

1. All Dimensions are in mm
2. Concrete Grade M20
3. Clear Cover 30
4. PCC Bedding as per Standard Bedding Drawing.

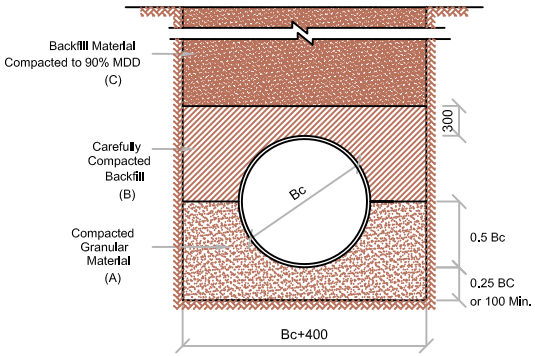
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

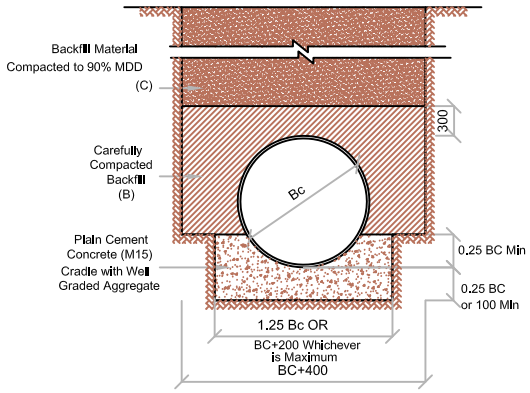
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 00 250 500 750 1000 Millimetres

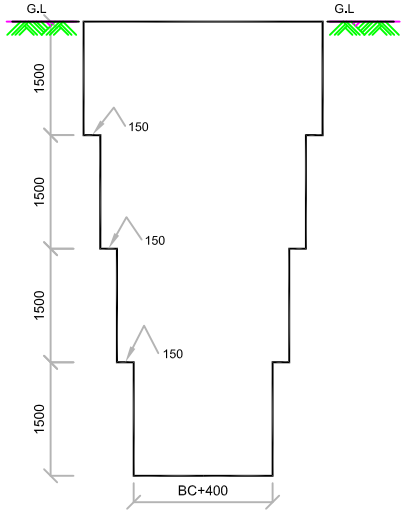
Drg. No.NCRPB-HAPUR-SW-SD-12



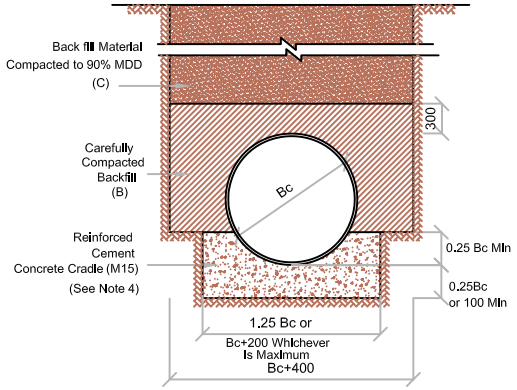
Granular Bedding (GRB) Type
A - GRB



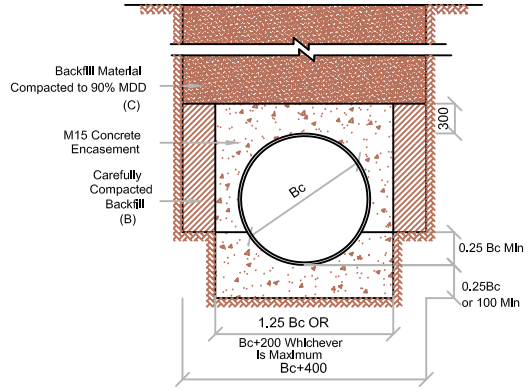
Plain Cement Concrete Bedding (PCCB)
Type B - PCCB



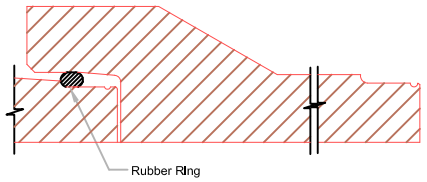
Typical Section of Sewer Trench
(See Note 5)



Reinforced Cement Concrete Bedding
(RCCB) with 0.4% Steel
Type C - RCCB-0.4%



Plain Cement Concrete
Encasement Bedding (PCCE)



Rubber Ring Roll on Joint for
R.C.C. Pipes

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Bedding

Legend

THK	Thick
PCC	Plain Cement Concrete
MIN	Minimum
RCC	Reinforced Cement Concrete

Notes

1. All Dimensions are In Millimeters Unless Otherwise Indicated.
2. Internal Diameter of Pipe = D
3. Outer Diameter of Pipe = BC
4. Percentage Steel is the Ratio of the Area of Steel to the area of Concrete. At the Crown in Case of Type D Bedding and at the Base In Case of Type C Bedding.
5. This Section Is Applicable for Timber Shuttering. For Steel Shuttering Separate Drawing Is Required.
6. Graded Hard Crushed Broken Stone or Gravel 100%% Passing Through 20 mm Selve, 20 To 50% Passing Through 10mm Selve and 100% Retained on 6mm Selve
7. For Depth upto 1.2m., Trench Width shall be Kept as BC+300.
8. Backfilling with Approved Selected Excavated Material and Compaction shall be done by Hand or Approved Mechanical Methods in Layers of 150mm with Special Care to Avoid Damage of the Pipe
9. Backfilling Shall be Done with Excavated Material by Hand or Approved Mechanical Methods In Layers not Exceeding 15 cm Thickness after Compacting, Wetted and Compacted to a Density of not less than 90% of Maximum dry Density at Optimum Moisture Content of the Surrounding Material.
10. Layer A. Compacted Granular Material
11. Layer B. Carefully Compacted Backfill
12. Layer C. Backfill Material Compacted To 90% M.D.D

Client

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National Capital Region Planning Board

Consultant

Wilbur Smith Associates

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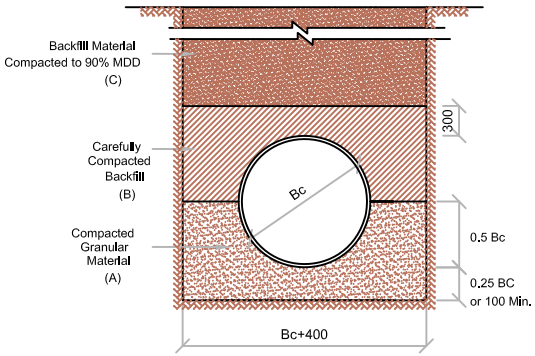
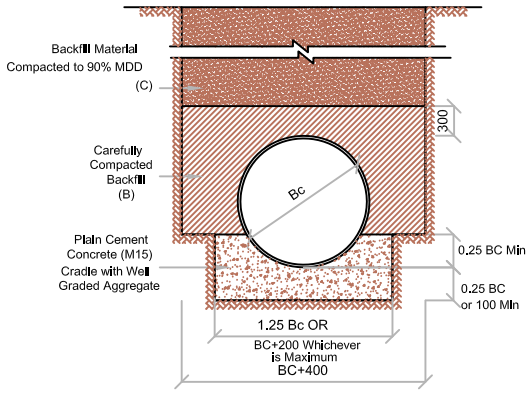
Date: April. 2010	Approved: NSS

Scale: NTS

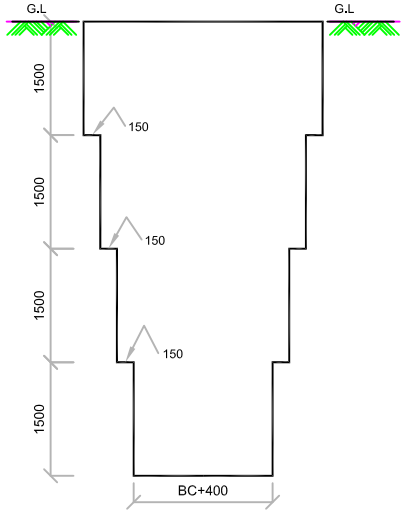
Drg. No. NCRPB-HAPUR-SW-SD-10



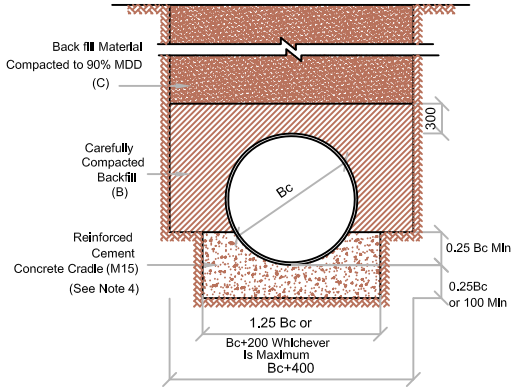
Granular Bedding (GRB) Type
A - GRB



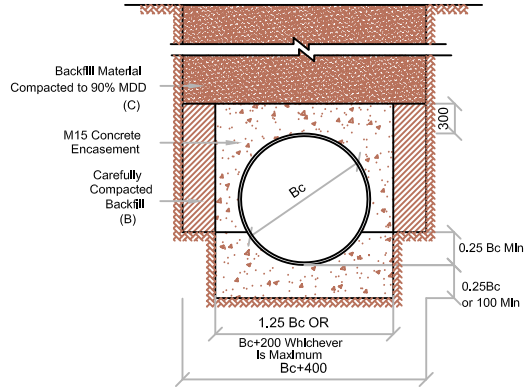
Plain Cement Concrete Bedding (PCCB)
Type B - PCCB



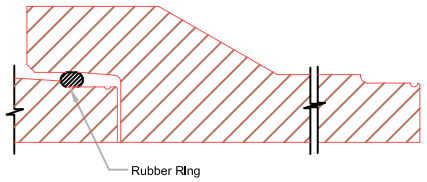
Typical Section of Sewer Trench
(See Note 5)



Reinforced Cement Concrete Bedding
(RCCB) with 0.4% Steel
Type C - RCCB-0.4%



Plain Cement Concrete
Encasement Bedding (PCCE)



Rubber Ring Roll on Joint for
R.C.C. Pipes

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Bedding

Legend

THK	Thick
PCC	Plain Cement Concrete
MIN	Minimum
RCC	Reinforced Cement Concrete

Notes

1. All Dimensions are In Millimeters Unless Otherwise Indicated.
2. Internal Diameter of Pipe = D
3. Outer Diameter of Pipe = BC
4. Percentage Steel is the Ratio of the Area of Steel to the area of Concrete. At the Crown in Case of Type D Bedding and at the Base In Case of Type C Bedding.
5. This Section Is Applicable for Timber Shuttering. For Steel Shuttering Separate Drawing Is Required.
6. Graded Hard Crushed Broken Stone or Gravel 100%% Passing Through 20 mm Selve, 20 To 50% Passing Through 10mm Selve and 100% Retained on 6mm Selve
7. For Depth upto 1.2m., Trench Width shall be Kept as BC+300.
8. Backfilling with Approved Selected Excavated Material and Compaction shall be done by Hand or Approved Mechanical Methods in Layers of 150mm with Special Care to Avoid Damage of the Pipe
9. Backfilling Shall be Done with Excavated Material by Hand or Approved Mechanical Methods In Layers not Exceeding 15 cm Thickness after Compacting, Wetted and Compacted to a Density of not less than 90% of Maximum dry Density at Optimum Moisture Content of the Surrounding Material.
10. Layer A. Compacted Granular Material
11. Layer B. Carefully Compacted Backfill
12. Layer C. Backfill Material Compacted To 90% M.D.D

Client

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National Capital Region Planning Board

Consultant

Wilbur Smith Associates

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Date: April. 2010	Approved: NSS

Scale: NTS

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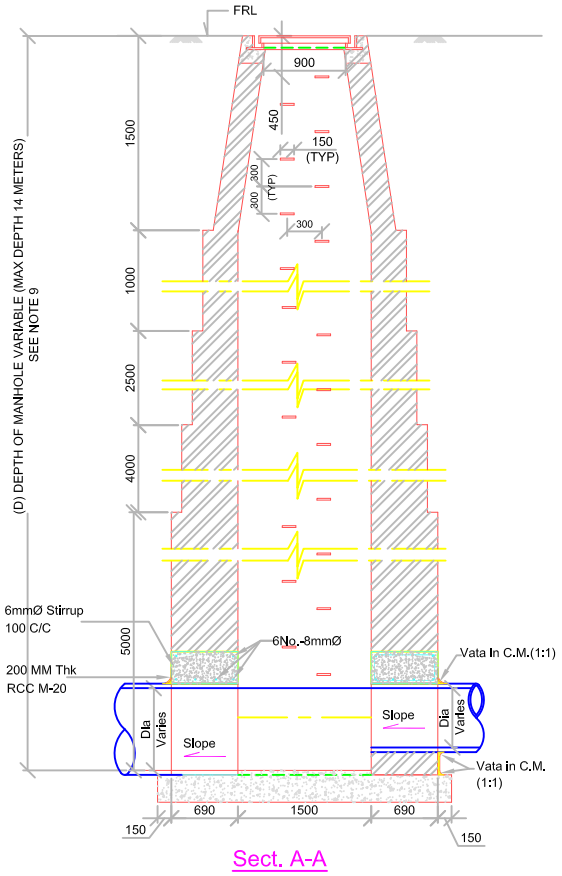
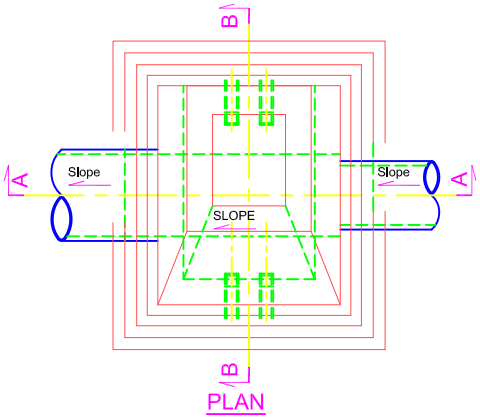
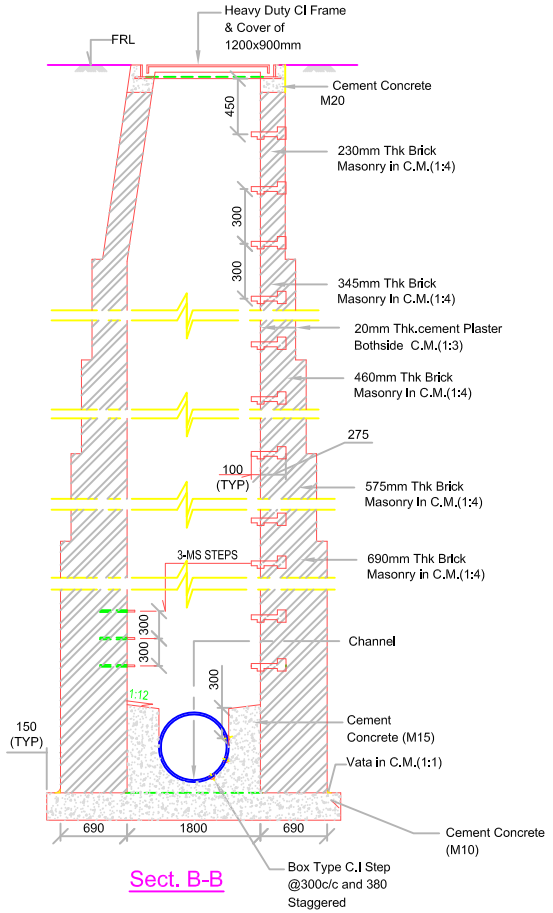


Sect. A-A



PLAN



Sect. B-B

Sr No.	Dia. of Sewer	Manhole Size
01	450 To 900	1500 X 1500 (Type G)
02	1000 To 1400	1800 X1500 (Type H)

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Details of 1800 X 1500mm
Scraper Manhole (Type H)

Legend

FRL	— —	Finished Road Level
Wt	— —	Weight
C.M.	— —	Cement Mortar
MAX	— —	Maximum
DIA	— —	Diameter
THK	— —	Thick
CI	— —	Cast Iron
PCC	— —	Plain Cement Concrete
EQ	— —	Equal
SFRC	— —	Steel Fiber Reinforced Concrete

Notes

1. All Dimensions are in Millimetres Except Otherwise Stated.
2. Vata In C.M.(1:1) Shall be Provided all Around the Pipe Entering and Leaving the Manhole and also at the Junction of Brick Masonry and Concrete Base Slab.
3. Box Type GI Steps each shall be Provided on One Side of the Channel for Pipes 600 Dia and above
4. Additional CI Steps (3nos) shall be Provided on the other Side of Benching Incase the Depth of Manhole Exceeds 3 Metres
5. Manhole Located on Road Shall have Manhole Cover Flush with Finished Road Surface.
6. At a Given Depth the Thickness of Brick Masonry shall not be Less than that Shown in this Drawing.
7. Thickness Specified for brick Masonry Is Excluding the Thickness of Cement Plaster on both Faces.
8. Channels for Manhole are to be Constructed Duly Considering the Direction of flow as well as Alignment and Invert Level of Pipes Entering/ Leaving the Manhole and as Directed by Engineer
9. D Is the Depth from Ground Level to Lowest Sewer Invert Level In Manhole.
10. CI Step Fixed with Cement Concrete 1:3:6.

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National Capital Region Planning Board

Consultant
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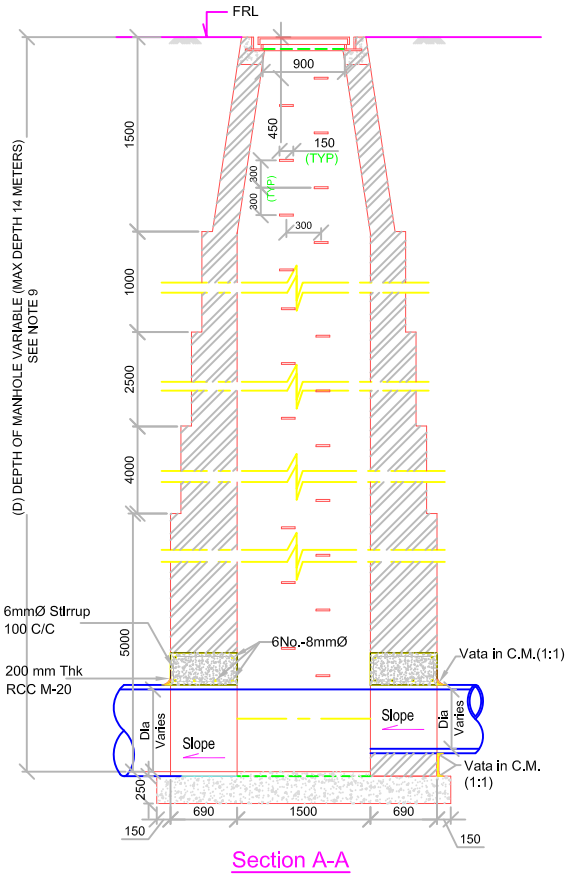
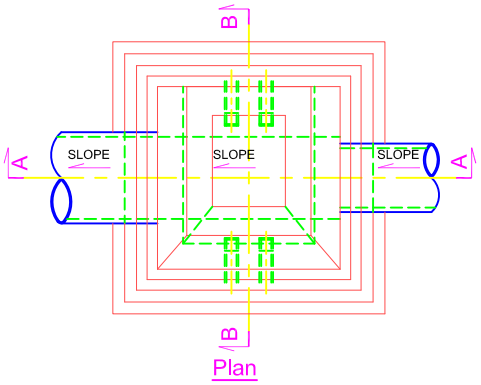
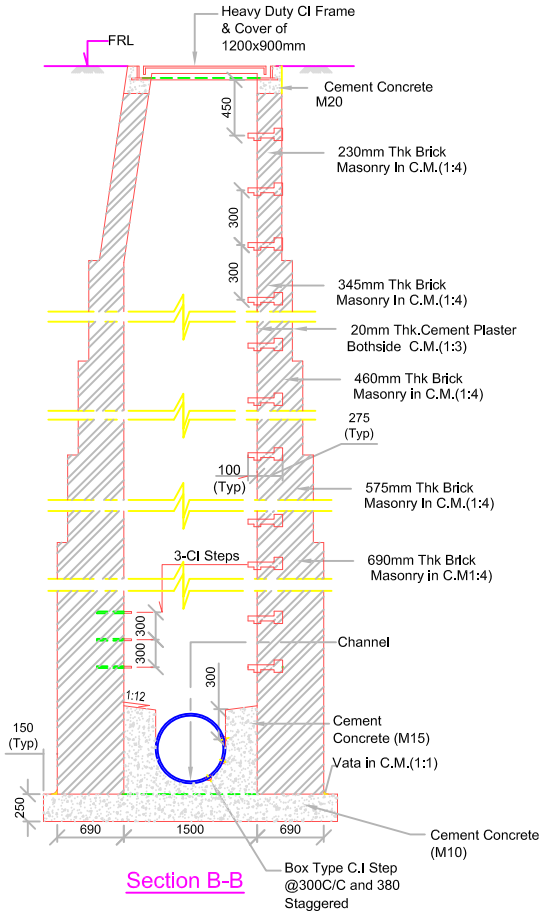
Drg. No. NCRPB-HAPUR-SW-SD-09



Section A-A



Plan



Section B-B

SR NO.	DIA. OF SEWER	MANHOLE SIZE
01	450 TO 900	1500 x 1500 (TYPE G)
02	1000 TO 1400	1800 x1500 (TYPE H)

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Details of 1500 X 1500mm Scraper Manhole (Type G)

Legend

FRL	– –	Finished Road Level
Wt	– –	Weight
C.M.	– –	Cement Mortar
MAX	– –	Maximum
DIA	– –	Diameter
THK	– –	Thick
CI	– –	Cast Iron
PCC	– –	Plain Cement Concrete
EQ	– –	Equal
SFRC	– –	Steel Fiber Reinforced Concrete

Notes

1. All Dimensions are in Millimetres Except Otherwise Stated.
2. Vata In C.M.(1:1) Shall be Provided all around the Pipe Entering and Leaving the Manhole and also at the Junction of Brick Masonry and Concrete Base Slab.
3. Box Type GI Steps Each Shall be Provided on One Side of the Channel for Pipes 600 Dia and Above
4. Additional CI Steps (3nos) Shall be Provided on the Other Side of Benching Incase the Depth of Manhole Exceeds 3 Metres
5. Manhole Located on Road Shall have Manhole Cover Flush with Finished Road Surface.
6. At a Given Depth the Thickness of Brick Masonry Shall not be less than that shown in this Drawing.
7. Thickness Specified for Brick Masonry Is Excluding the Thickness of Cement Plaster on Both Faces.
8. Channels for Manhole are to be Constructed Duly Considering the Direction of Flow as well as Alignment and Invert Level of Pipes Entering/ Leaving the Manhole and as Directed by Engineer
9. D Is the Depth from Ground Level to Lowest Sewer Invert Level In Manhole.
10. CI Step Fixed with Cement Concrete 1:3:6.

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National Capital Region Planning Board

Consultant
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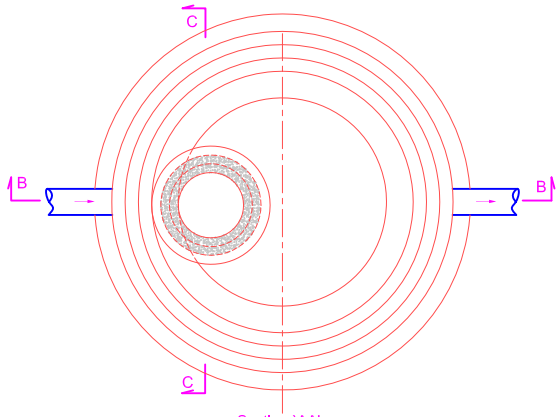
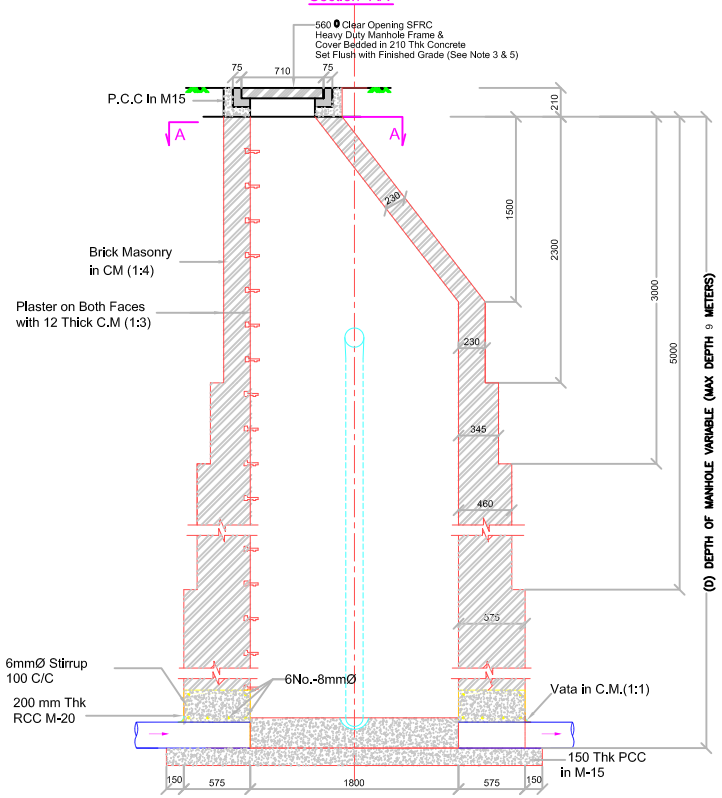


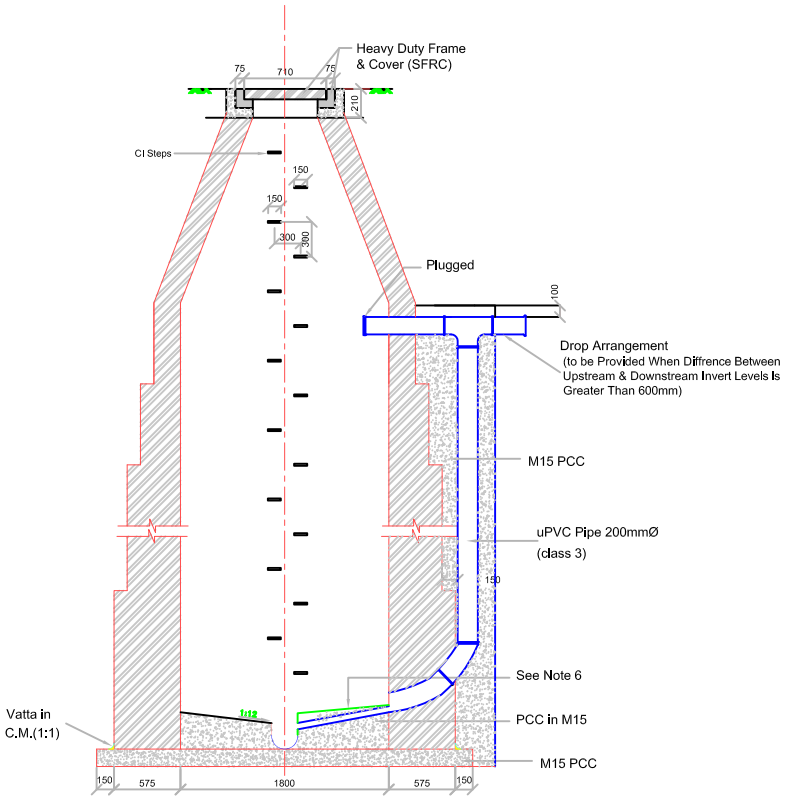
Sr No.	Type of Manhole	Depth(m)	Size Of Manhole	Pipe Size
01	R-Type	0.90	900x800	Upto 300Ø
02	A-Type	0.91-1.65	900mm Dia	Upto 500Ø
03	B-Type	1.66-2.30	1200mm Dia	Upto 600Ø
04	C-Type	2.31-above	1500mm Dia	Upto 900Ø
05	D-Type	—	1800mm Dia	1000Ø To 1400Ø
06	E-Type	—	2400mm Dia	1600Ø To 1800Ø

Section `AA'



Section `BB'

(Upto 900Ø Sewer
D = 2300 TO 9000)



Section `CC'

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Type "D"
for Depth 2.31m to Above

Legend

CI	Cast Iron
THK	Thick
PCC	Plain Cement Concrete
EQ	Equal
SFRC	Steel Fibre Reinforced Concrete

Notes

1. All Dimensions are in mm Except Otherwise Stated.
2. Vata in CM(1:1) Shall Be Provided all Around the Pipe Entering and Leaving the Manhole and also at the Junction of Brick Masonry and Concrete Base Slab.
3. Manhole Located on Road Shall have Manhole Cover Flush with Finished Road Surface.
4. At a Given Depth the Thickness of Brick Masonry Shall not be less than that Shown In this Drawing.
5. Thickness Specified for Brick Masonry Is Excluding the Thickness of Cement Plaster on both Faces.
6. Channels for Manhole are to be Constructed Duly Considering the Direction of Flow as well as Alignment and Invert Level of Pipes Entering/ Leaving the Manhole and as Directed by Engineer
7. D Is the Depth from Ground Level to Lowest Sewer Invert Level In Manhole.
8. CI Step Fixed with Cement Concrete 1:3:6.

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Asian Development Bank
National Capital Region Planning Board

Consultant
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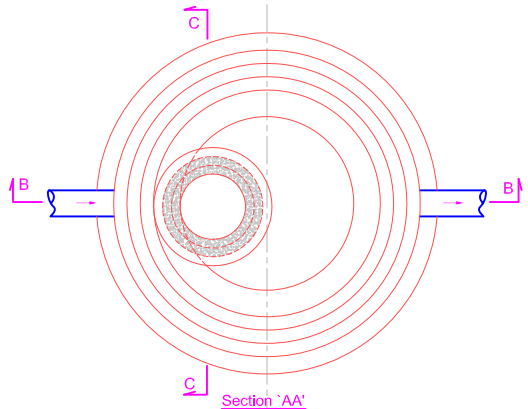
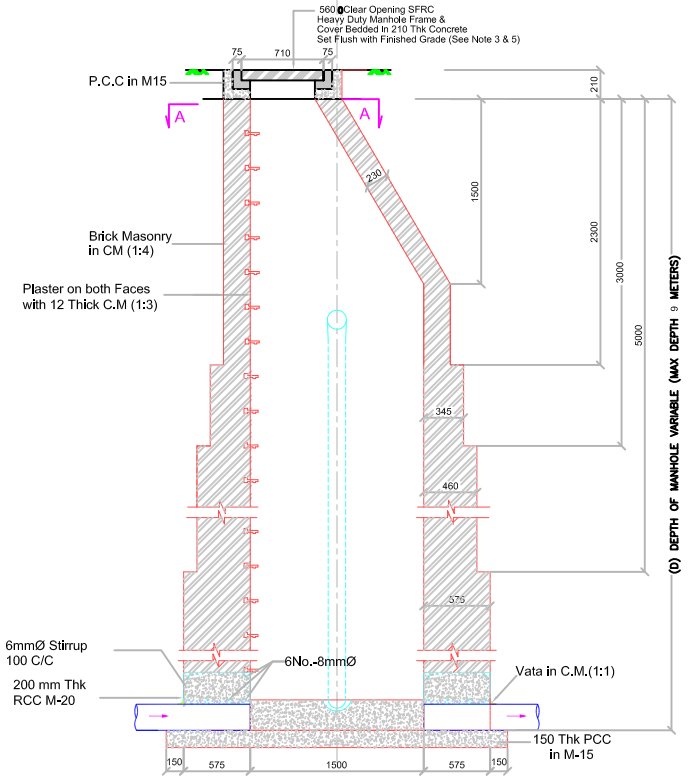
Scale: 00 300 600 900 1200 1500 Millimetres

Drg. No. NCRPB-HAPUR-SW-SD-07



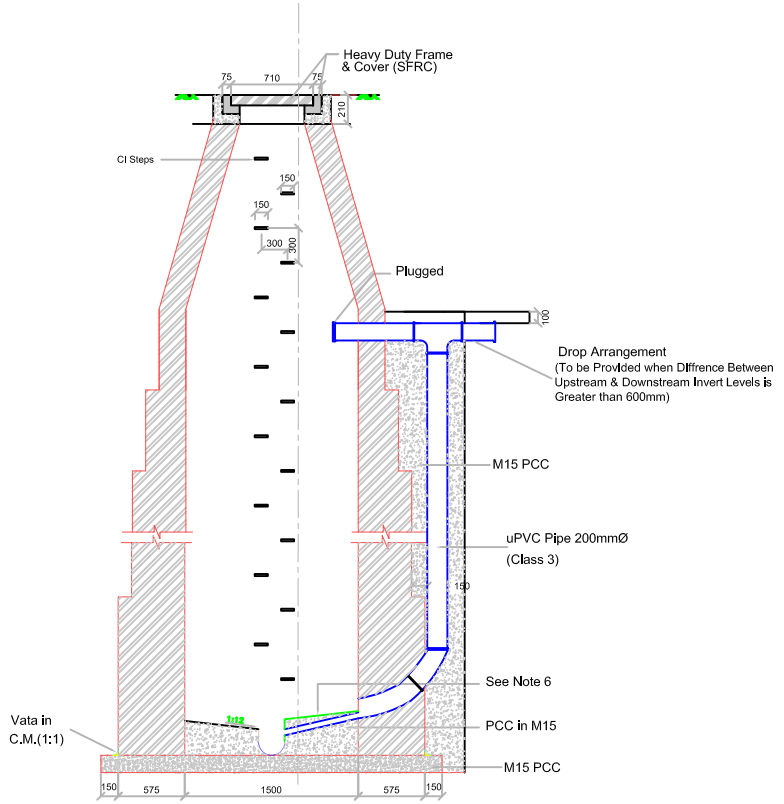
Sr No.	Type of Manhole	Depth(m)	Size of Manhole	Pipe Size
01	R-Type	0,90	900x800	Upto 300Ø
02	A-Type	0,91-1,65	900mm Dia	Upto 500Ø
03	B-Type	1.66-2,30	1200mm Dia	Upto 600Ø
04	C-Type	2.31-above	1500mm Dia	Upto 900Ø
05	D-Type	——	1800mm Dia	1000Ø To 1400Ø
06	E-Type	——	2400mm Dia	1600Ø To 1800Ø

Section `AA'



Section `BB'

(Upto 900Ø Sewer
D = 2300 to 9000)



Section `CC'

For R.C.C. Pipes

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Type "C" for Depth 2.31m and Above

Legend

CI	---------	Cast Iron
THK	---------	Thick
PCC	---------	Plain Cement Concrete
EQ	---------	Equal
SFRC	---------	Steel Fibre Reinforced Concrete

Notes

1. All Dimensions areIn mm Except Otherwise Stated.
2. Vata In CM(1:1) Shall be Provided all Around the Pipe Enterlng and Leaving the Manhole and also at the Junction of Brick Masonry and Concrete Base Slab.
3. Manhole Located on Road Shall Have Manhole Cover Flush with FInished Road Surface.
4. At A GIven Depth the Thickness of Brick Masonry Shall not be less than that Shown in this Drawing.
5. Thickness Specified for Brick Masonry Is Excluding the Thickness of Cement Plaster on both Faces.
6. Channels for Manhole are to be Constructed Duly Considering the DIrection of Flow as well as AIlgnment and Invert Level of Pipes Entering/ Leaving the Manhole and as Directed by Engineer
7. D is the Depth from Ground Level to Lowest Sewer Invert Level in Manhole.
8. CI Step FIxed wIth Cement Concrete 1:3:6.

Client

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National Capital Region Planning Board

Consultant

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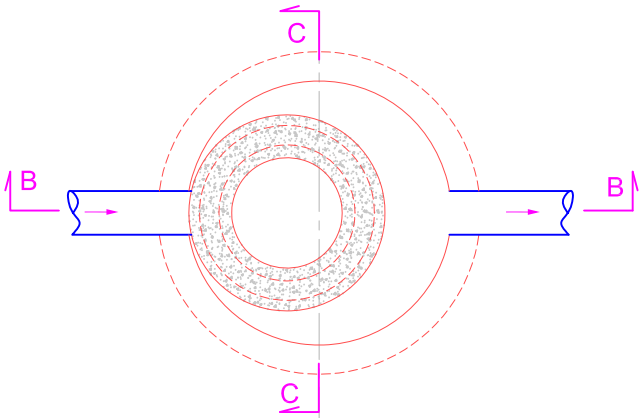
Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

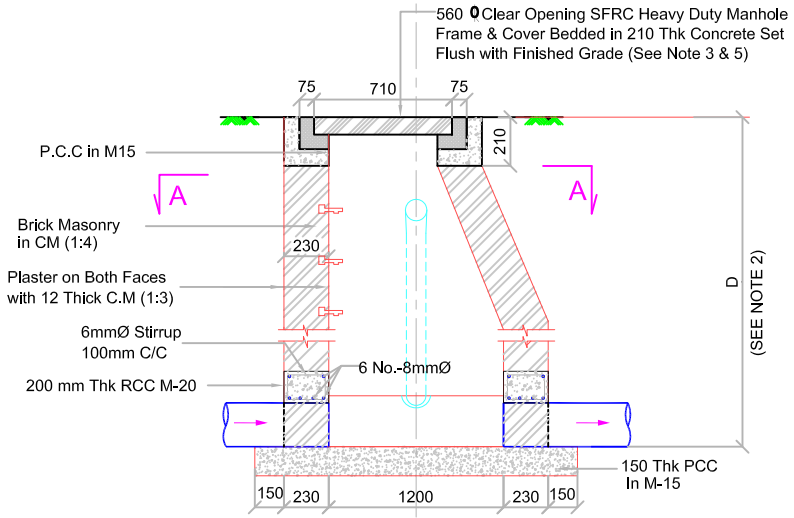
Scale: 00 300 600 900 1200 1500 Millimetres

Drg. No. NCRPB-HAPUR-SW-SD-06



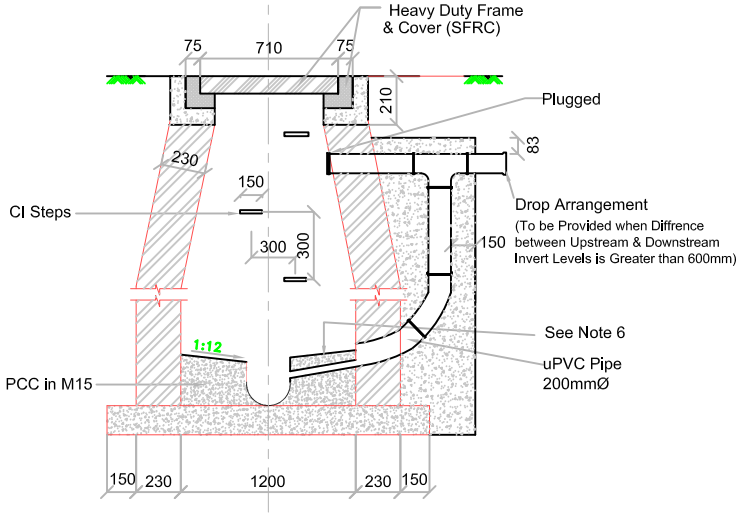
Section `AA'

Sr No.	Type of Manhole	Depth(m)	Size of Manhole	Pipe Size
01	R-Type	0.90	900x800	Upto 300Ø
02	A-Type	0.91-1.65	900mm Dia	Upto 500Ø
03	B-Type	1.66-2.30	1200mm Dia	Upto 600Ø
04	C-Type	2.31-above	1500mm Dia	Upto 900Ø
05	D-Type	----	1800mm Dia	1000Ø to 1400Ø
06	E-Type	----	2400mm Dia	1600Ø to 1800Ø



Section `BB'

(UPTO 600Ø Sewer
D = 1650 TO 2300)



Section `CC'

For R.C.C. Pipes

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Type "B"
for Depth 1.66 to 2.30 m

Legend

THK	Thick
PCC	Plain Cement Concrete
EQ	Equal
SFRC	Steel Fibre Reinforced Concrete

Notes

1.All Dimensions are in mm.

2.'D' Is The Depth from Ground Level to Lowest Sewer Invert Level In Manhole.

3.210 Thickness of Concrete Can be Varied to Flush Manhole Cover and Frame with Road Surface

4.SFRC Manhole Frame & Cover of Heavy Duty as Per I.S.12592 (Part I & II)

5.CI Step Fixed with Cement Concrete 1:3:6.

6.The Benching at the Side of the Channel Shall be at Least 50mm Above the Crown of the Pipe and then Rise with a Slope of 1 In 12 Towards the Side of the Manhole. Semicircular Portion will be Achieved in Cement Concrete Finishing Itself.

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National Capital Region Planning Board

Consultant
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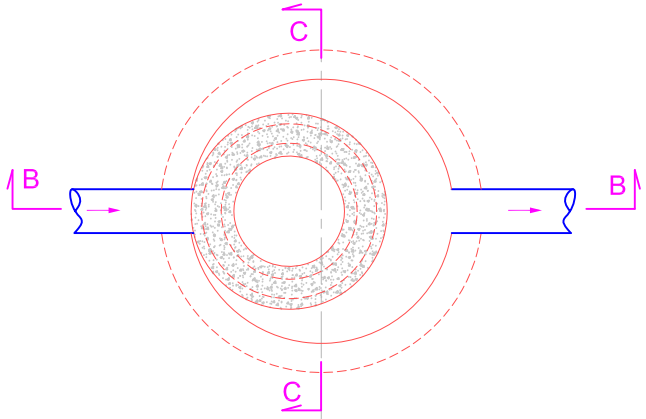
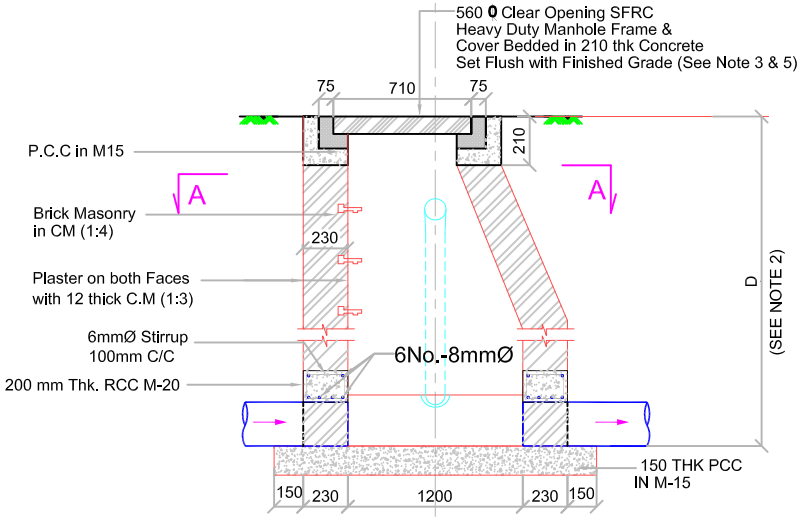
Scale: 00 200 400 600 800 1000 Millimeters

Drg. No. NCRPB-HAPUR-SW-SD-05



SECTION `AA'

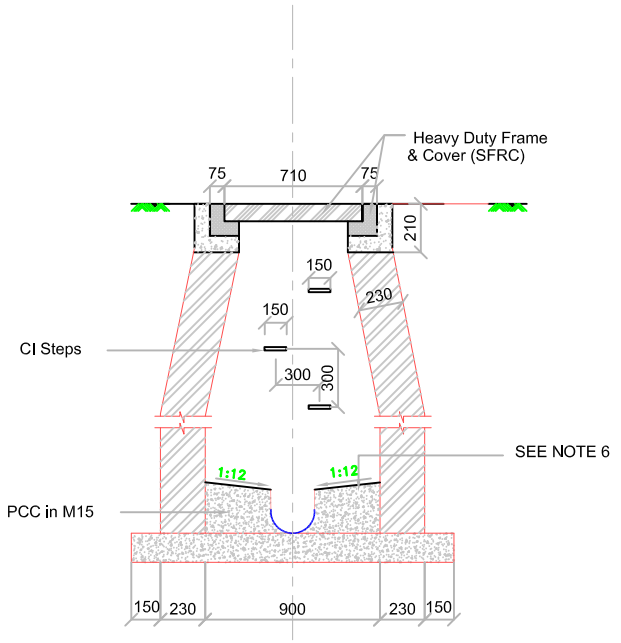
Sr No.	Type of Manhole	Depth(m)	Size of Manhole	Pipe Size
01	R-Type	0.90	900x800	Upto 300Ø
02	A-Type	0.91-1.65	900mm Dia	Upto 500Ø
03	B-Type	1.66-2.30	1200mm Dia	Upto 600Ø
04	C-Type	2.31-above	1500mm Dia	Upto 900Ø
05	D-Type	----	1800mm Dia	1000Ø To 1400Ø
06	E-Type	----	2400mm Dia	1600Ø To 1800Ø



SECTION `BB'

(UPTO 500Ø SEWER
D < 1650)

FOR R.C.C. PIPES



SECTION `CC'

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Type "A"
for Depth 0.91 to 1.65 m

Legend

THK	Thick
PCC	Plain Cement Concrete
EQ	Equal
SFRC	Steel Fibre Reinforced Concrete

Notes

1.All Dimensions are In mm.

2.'D' Is The Depth from Ground Level to Lowest Sewer Invert Level In Manhole.

3.210 Thickness of Concrete Can be Varied to Flush Manhole Cover and Frame with Road Surface

4.SFRC Manhole Frame & Cover of Heavy Duty as Per I.S.12592 (Part I & II)

5.CI Step Fixed with Cement Concrete 1:3:6.

6.The Benching at the Side of the Channel Shall be at Least 50mm Above the Crown of the Pipe and then Rise with a Slope of 1 In 12 towards the Side of the Manhole. Semicircular Portion will be Achieved in Cement Concrete Finishing Itself.

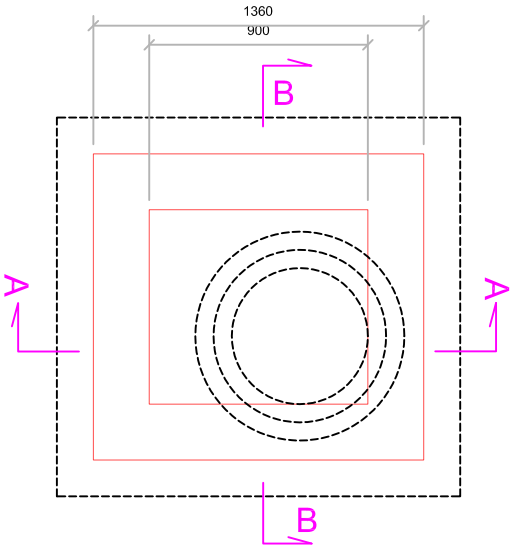
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

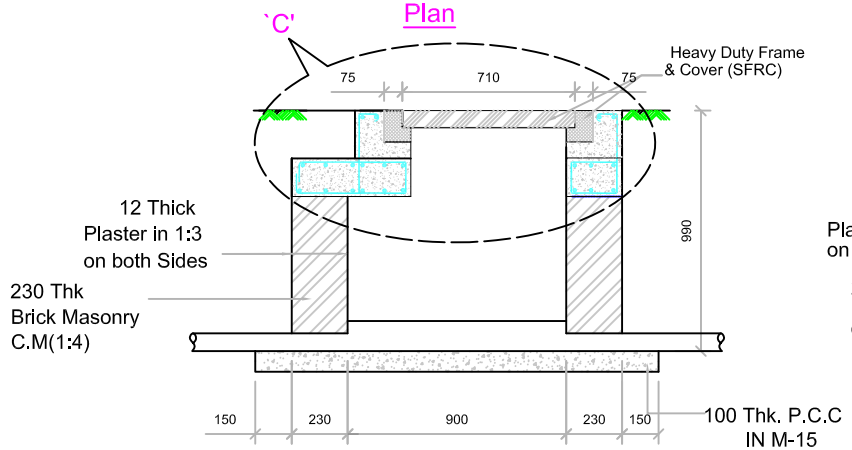
Drawn:SK | Checked: NSS
Date: April. 2010 | Approved: NSS

Scale: 00 200 400 600 800 1000 Millimeters

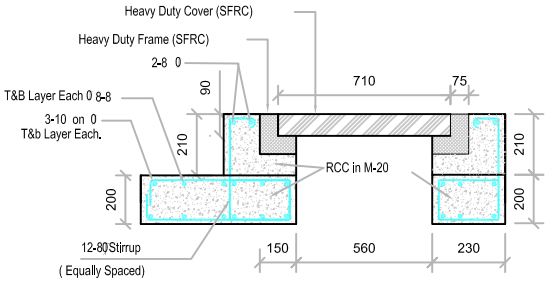
Drg. No. NCRPB-HAPUR-SW-SD-04



Plan

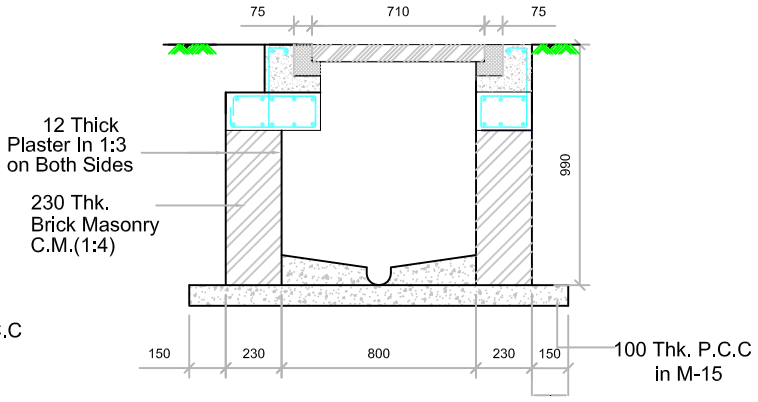


Secton at "AA"



Detail `c'

Sr No.	Type of Manhole	Depth(m)	Size	Pipe Size
01	R-Type	0.90	900x800	Upto 300Ø
02	A-Type	0.91-1.65	900mm Dia	Upto 500Ø
03	B-Type	1.66-2.30	1200mm Dia	Upto 600Ø
04	C-Type	2.31-above	1500mm Dia	Upto 900Ø
05	D-Type	---	1800mm Dia	1000Ø To 1400Ø
06	E-Type	---	2400mm Dia	1400Ø To 1800Ø



Secton at "BB"

"R" Type Manhole up to Depth 0.90 m

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Type "R" for Depth Up To 0.9 m.

Legend

THK	Thick
PCC	Plain Cement Concrete
EQ	Equal
SFRC	Steel Fibre Reinforced Concrete

Notes

1.All Dimensions are In mm.

2.'D' is The Depth from Ground Level to Lowest Sewer Invert Level In Manhole.

3.210 Thickness of Concrete Can be Varied to Flush Manhole Cover and Frame with Road Surface

4.SFRC Manhole Frame & Cover of Heavy Duty as Per I.S.12592

5.The Benching at The Side of the Channel Shall be at Least 50mm Above the Crown of The Pipe and Then Rise with a Slope of 1 In 12 Towards the Side of the Manhole. Semicircular Portion Will be Achieved In Cement Concrete Finishing Itself.

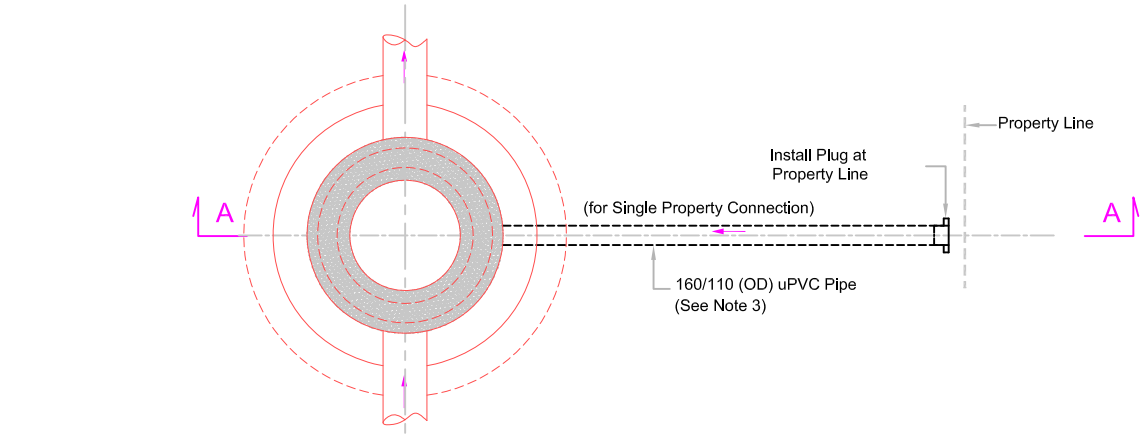
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

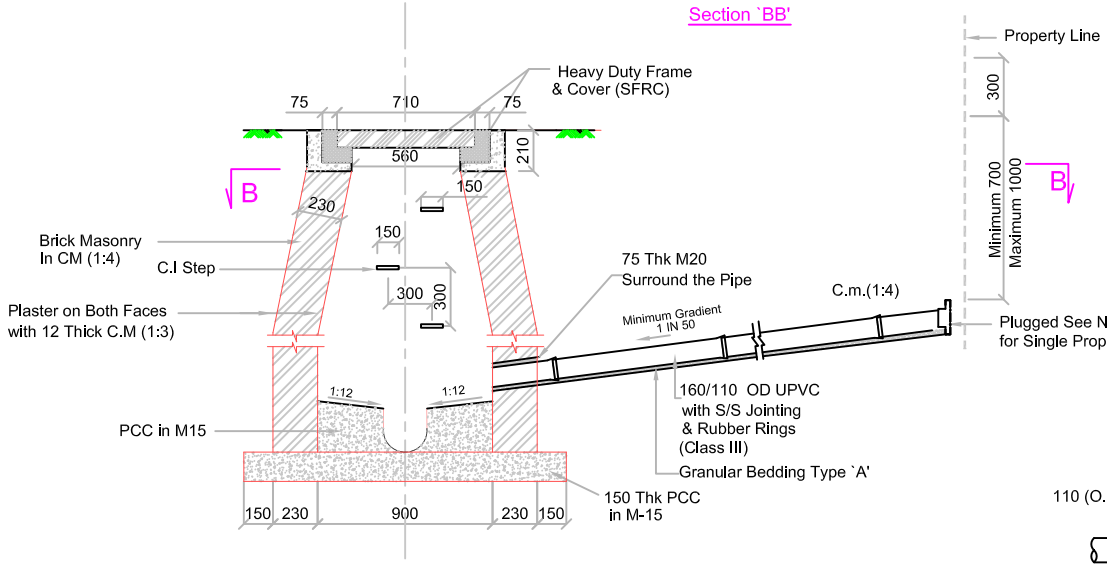
Drawn:SK | Checked: NSS
Date: April. 2010 | Approved: NSS

Scale: 00 200 400 600 800 1000 Millimetres

Drg. No. NCRPB-HAPUR-SW-SD-03

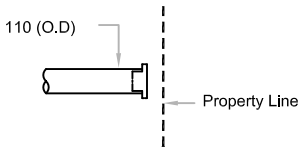


Section `BB'



Street Manhole

Section `AA'



Single Property Connection

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole - Property Connection (without Road Side Chamber)

Legend

CI	-----	Cast Iran
THK	-----	Thick
PCC	-----	Plain Cement Concrete

Notes:

1.All Dimensions are In mm Unless Otherwise Indicated.

2. SFRC Manhole Frame & Cover as Per I.S. 12592 (Part I&II).

3.The Pipe from Road side Chamber to Manhole shall be 160mm If flow Is more than 2 propoertles otherwise It will be 110mm dia.

4. CI Step Fixed with Cement Concrete 1:3:6

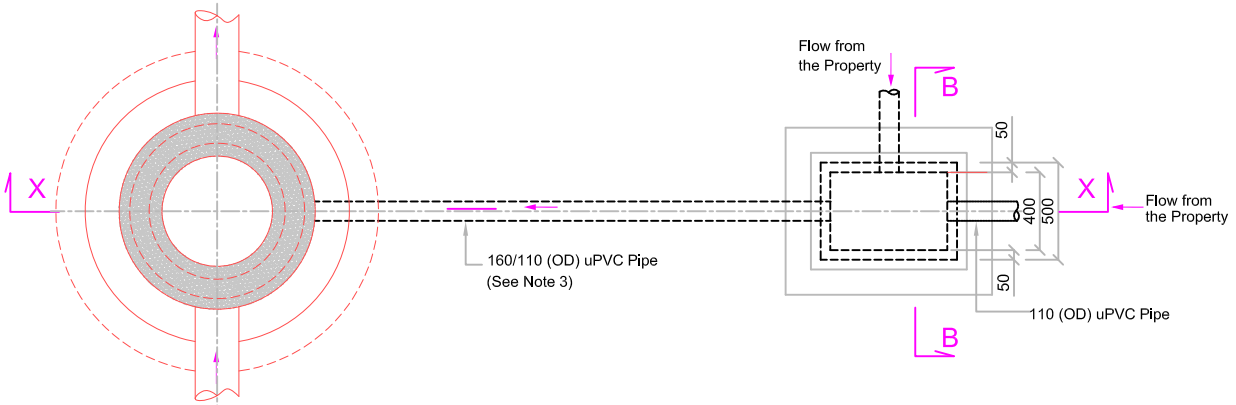
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

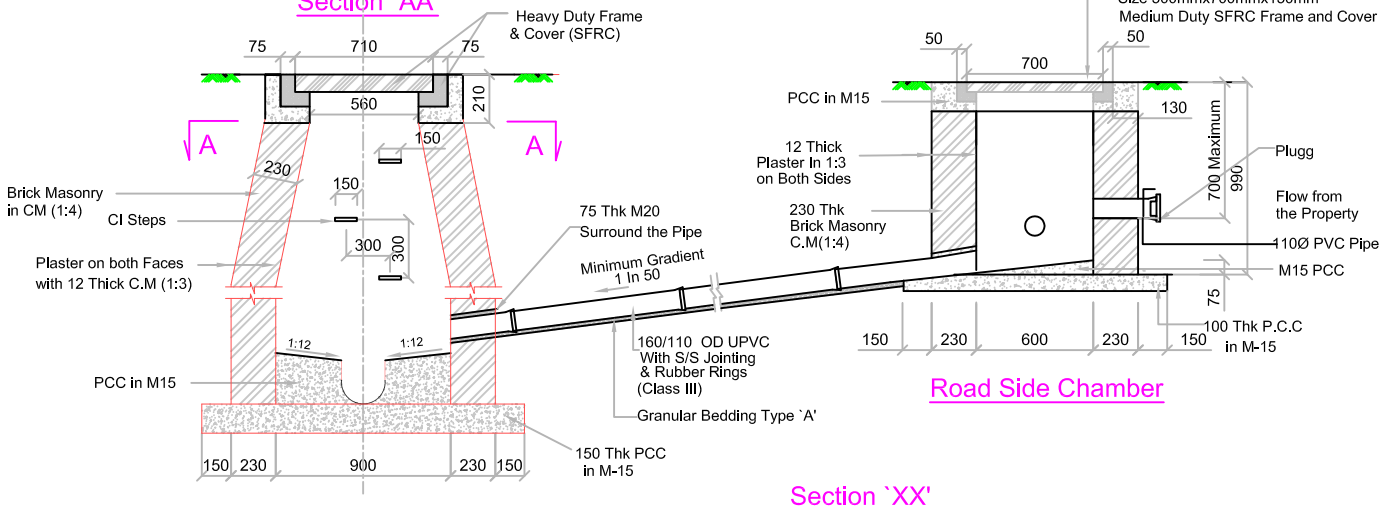
Drawn:SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 00 200 400 600 800 1000 Millimetres

Drg. No. NCRPB-HAPUR-SW-SD-02



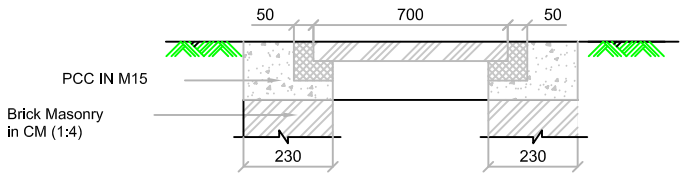
Section `AA'



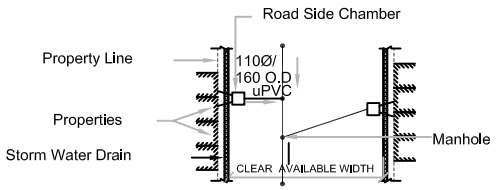
Street Manhole

Road Side Chamber

Section `XX'



Section `BB'
SCALE-1:15



Typical Property
Connection Layout

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Typical Details of Manhole Property Connection
(with Road Side Chamber)

Legend

SFRC	----	Steel Fibre Reinforced Concrete
THK	----	Thick
PCC	----	Plain Cement Concrete

Notes:

1. All Dimensions are In mm Unless Otherwise Indicated.
2. The Street Manhole shall be as Per Drawings
3. The Pipe from Road side Chamber to Manhole shall be 160mm if flow is more than 2 Propoerties Otherwise it will be 110mm Dia.
4. C.I Step Fixed with Cement Concrete 1:3:6

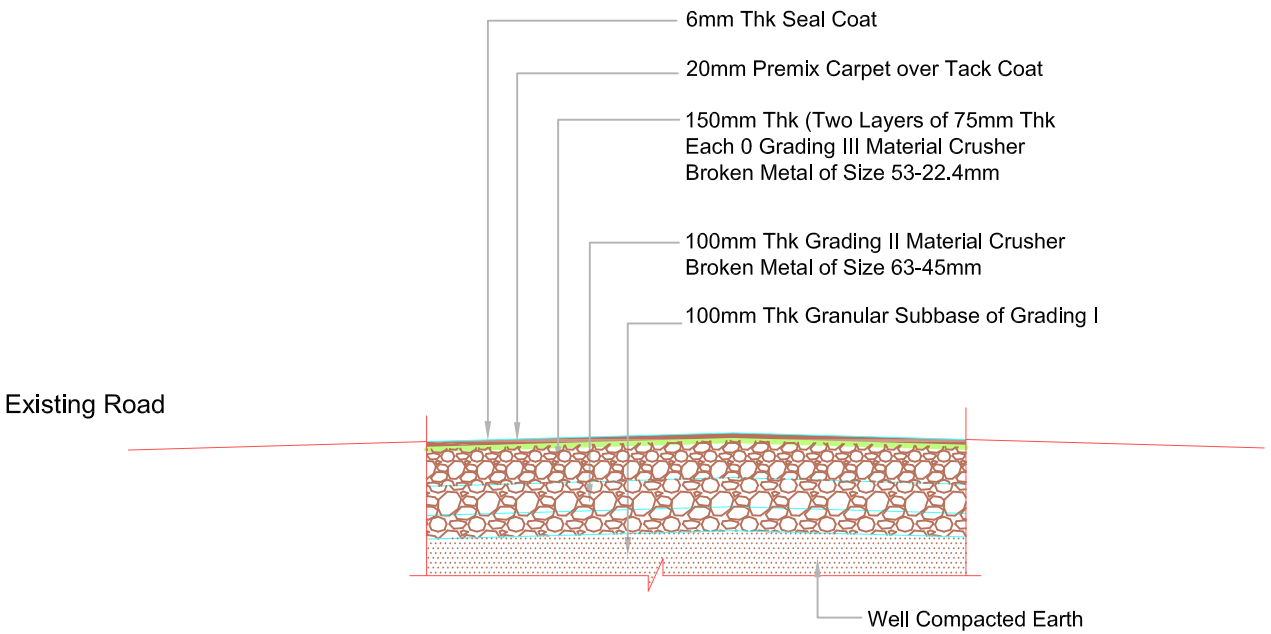
Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

Drawn:SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: 00 200 400 600 800 1000 Millimetres

Drg. No. NCRPB-HAPUR-SW-SD-01



Proposed Cross Section
for BTRoad Restoration Work

Capcity Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Proposed Cross Section
for BT Road Restoration Work

Notes

1. All Dimensions are in Millimeters Unless Otherwise Indicated and Levels are In meters.

2. Exposed Portion of Sewer LIne Shall Be Encased With Concrete of Grade M15.

3. Internal Diameter of Pipe = D

4. Outer Diameter of Pipe = Bc

5. Backfilling Shall Be Done with Approved Material and Shall be Compacted to Achieve 95% Proctor Density

6. Backfilling with Approved Selected Excavated Material and Compaction Shall be Done In Layers of not more than 150mm and with Special Care to Avoid Damage of the Pipe.

Client
Asian Development Bank
National Capital Region Planning Board

Consultant
Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April. 2010	Approved: NSS

Scale: NTS

Drg. No. NCRPB-HAPUR-SW-SD-14

TIRUPATI GARDEN

PETROL PUMP

NW-08

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-08

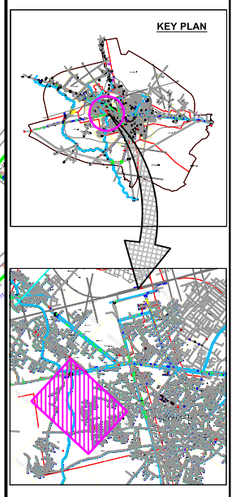
Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

- Proposed 200mm Dia Pipe
- Proposed 250mm Dia Pipe
- Proposed 300mm Dia Pipe
- Proposed 350mm Dia Pipe
- Proposed 400mm Dia Pipe
- Proposed 450mm Dia Pipe
- Proposed 500mm Dia Pipe
- Proposed 600mm Dia Pipe
- Proposed 700mm Dia Pipe
- Proposed 800mm Dia Pipe
- Proposed 900mm Dia Pipe
- Proposed 1100mm Dia Pipe
- P P-759 — Node of the Pipe
- ∅ 200 — Dia of the Pipe
- L: 30 — Length of the Pipe
- S 230 — Slope of the Pipe
- MH-759 — Manhole with Number
- 212.26 — Ground Level of the MH
- 210.08 — Invert Level of the MH

KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-08

NW-07

DIWAN INTER COLLEGE
SRI SHANTI KRISHI INTER COLLEGE
RAGHUBIR GANJ
GURUDWARA
GOVT. VETERNARY HOSPITAL
PETROL PUMP
TEMPLE
ROADWAYS BUS STAND
ALOK COLONY
BHAGWAN NAGAR
POWER HOUSE
RAM LEELA STAGE
MAHESH PURI
RAJIV PURA
PREM NAGAR

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-07

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

- Proposed 200mm Dia Pipe
- Proposed 250mm Dia Pipe
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- Proposed 400mm Dia Pipe
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- Proposed 1100mm Dia Pipe
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- L: 30 — Length of the Pipe
- S 230 — Slope of the Pipe
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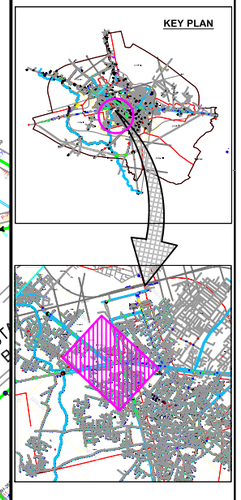
KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-07

NW-06

O.H.T.

RAILWA

STATION ROAD

O.H.T.

COLLECTOR GANJ

PARKASH NAGAR

AMAR DEEP COLONY

SAROJ GANJ

GANGA PURA

PREM PURA

ARYA NAGAR

TO

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-06

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

- Proposed 200mm Dia Pipe
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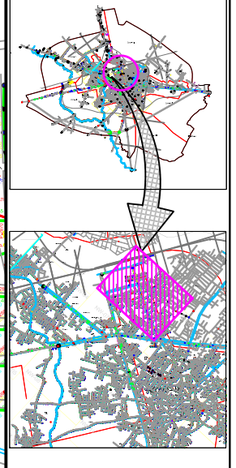
KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK	Checked: NSS
Date: April,2010	Approved: NSS

Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-06

BANK CO

ARJUN NAGAR

ABADI CHAMRI

OLD SHIV TEMPLE

NW-05

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-05

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

- Proposed 200mm Dia Pipe
- Proposed 250mm Dia Pipe
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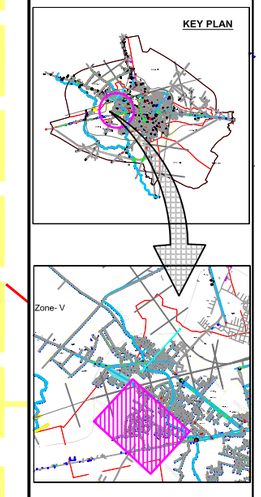
KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-05

PANCHSHEEL COLONY

COLD STORAGE

E.S.I. HOSPITAL

INDER NAGAR

MADHUBAN COLONY

DIWAN PUBLIC SCHOOL

NEW GANESH NAGAR

INDRLOCK COLONY

LAJJA PURI

ADARSH NAGAR

BANK COLONY

LAJJA PURI

NW-04

Zone- I

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-04

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

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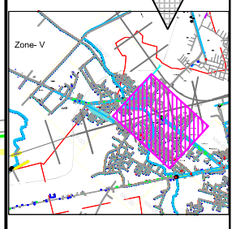
KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-04

<--TO CHANDRLOK NAGAR

JASHROOP NAGAR

JASHROOP NAGAR

JASHROOP NAGAR

OPEN

HARDWARI PURA

HARSH VIHAR

ELECTRIC SUB STATION

POLICE POST

SCHOOL GATE

TO MHODI NAGAR

B

B

COLD STORE

SARASAWTI GIRL'S INTER COLLEGE

RAM PARK COLONY

BRAMHADEVI HOSTEL JUNIOR HIGH SCHOOL

<--TO SCHOOL

NW-03

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-03

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

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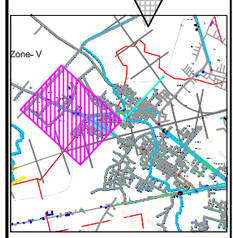

Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wllbur Smith Assoclates

Drawn: SK	Checked: NSS
Date: April,2010	Approved: NSS

Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-03

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-02

NW-02

CULTIVATION

JASROOP NAGAR

CHANDRA LOK

D — D

E — E

E — E

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

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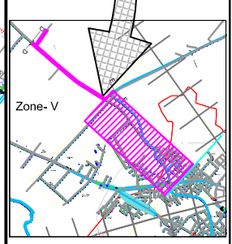
KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wilbur Smith Associates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-02

MILK POWDER FACTORY

WELL

GOPANA VILLAGE

SCHOOL

COLD STORAGE STORAGE

A — A

B — B

C — C

C — C

D — D

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-01

Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
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- Tree
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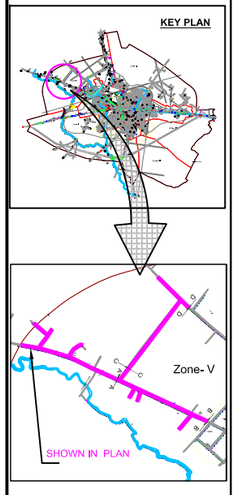
- 210.08 — Invert Level of the MH

KEY PLAN



Client:
Asian Development Bank
National Capital Region Planning Board

Consultant:
Wllbur Smith Assoclates

Drawn: SK | Checked: NSS
Date: April,2010 | Approved: NSS
Scale: 0 15 30 45 60 Meters

Drg. No.NCRPB-HAPUR-SW-NW-01

NW-09

SHASTRI NAGAR

KISHAN GANJ

CHANDI MANDIR MUZAFFAR PURA

MAHAVEER CHOWK

TOWN HALL

ATER PURA CHOWK

KHIRKI BAZAR

MOHBARAHI

AYODHYA PURI

CHAHKAMAL

QILA KONA

Capclty Development of the NCRPB: Component B (ADB TA-7055)

Hapur
Detailed Sewer Network NW-09

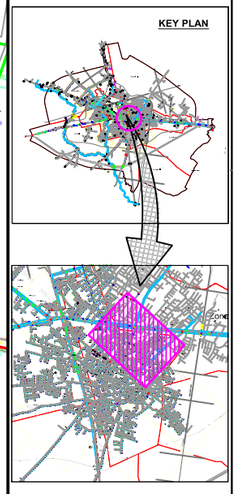
Legend

- Master Plan Boundary
- Municipal Boundary
- Zone Boundary
- Road
- Railway Line
- Drain
- Electric Pole
- Hand Pump
- Telephone Box
- Lamp Post
- Telephone Post
- Tree
- TBM
- Temple
- Culvert

Overlay Legend

- Proposed 200mm Dia Pipe
- Proposed 250mm Dia Pipe
- Proposed 300mm Dia Pipe
- Proposed 350mm Dia Pipe
- Proposed 400mm Dia Pipe
- Proposed 450mm Dia Pipe
- Proposed 500mm Dia Pipe
- Proposed 600mm Dia Pipe
- Proposed 700mm Dia Pipe
- Proposed 800mm Dia Pipe
- Proposed 900mm Dia Pipe
- Proposed 1100mm Dia Pipe
- P P-759 — Node of the Pipe
- Ø 200 — Dia of the Pipe
- L: 30 — Length of the Pipe
- S 230 — Slope of the Pipe
- MH-759 — Manhole with Number
- 212.26 — Ground Level of the MH
- 210.08 — Invert Level of the MH

KEY PLAN



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