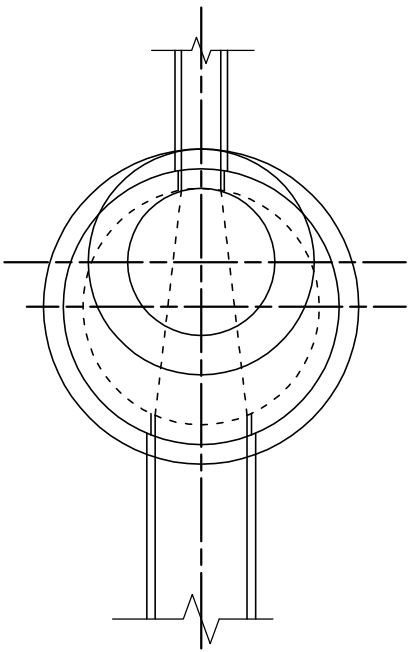
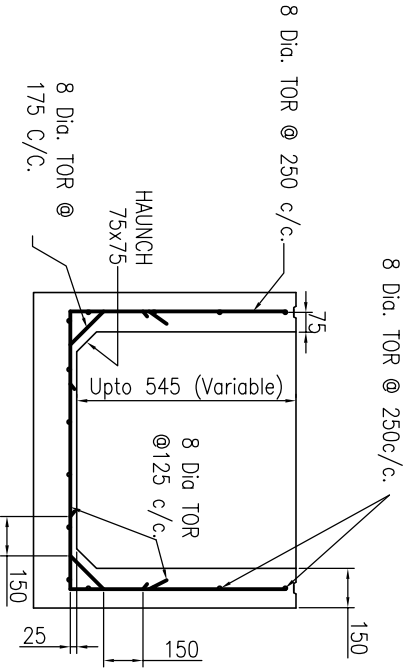


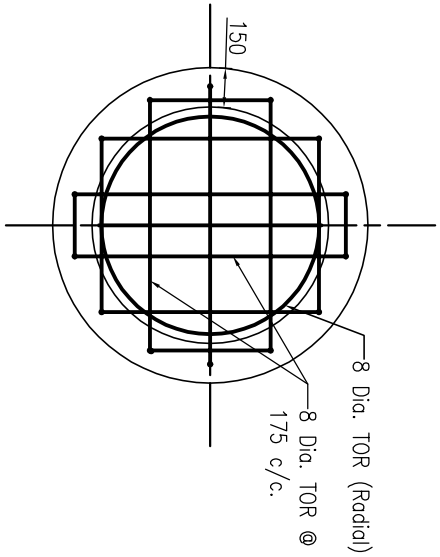
**CROSS SECTION**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



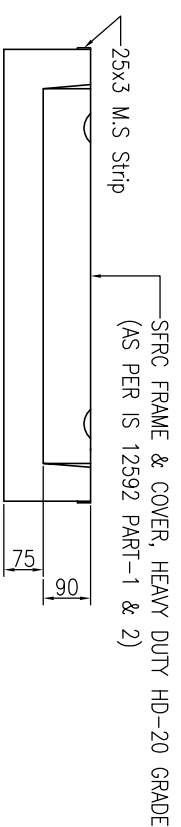
**PLAN OF PREFAB RCC MANHOLE**



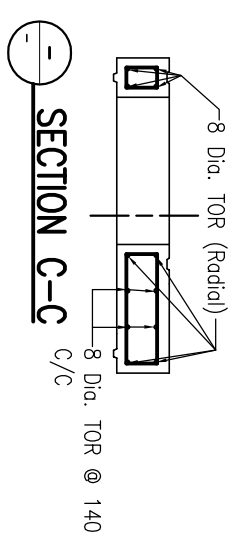
**REINFORCEMENT DETAIL OF BASE UNIT**



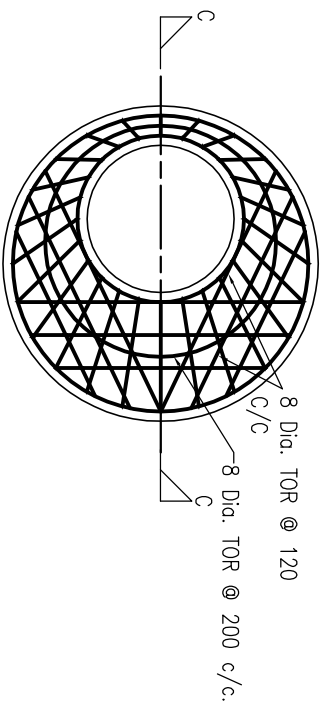
**SECTION B-B**  
REINFORCEMENT DETAIL OF BASE SLAB



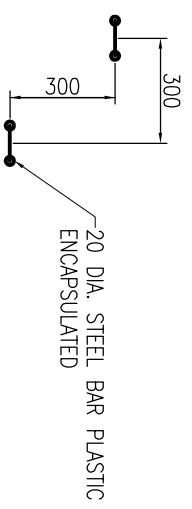
**DETAIL OF MANHOLE COVER & ADJUSTABLE RING**  
SCALE 1:10



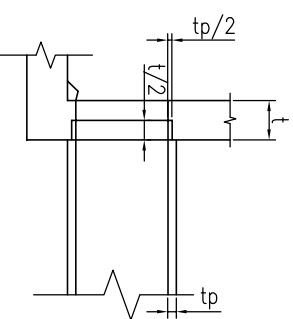
**SECTION C-C**



**SECTION A-A**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



**DETAIL-Y**  
SCALE 1:15



**DETAIL-Z**

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 27MM EXCEPT BASE SLAB, WHICH SHALL BE 40MM OVERS 23MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFINING TO IS 1786
  5. MAXIMUM BEARING PRESSURE 8.94 T/SQ.M.
  6. SCALE 1:20, UNLESS OTHERWISE STATED

Drawing Base Reference:-  
PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.

REV	DATE	NAME	DESCRIPTION	CHK'D
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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DEVELOPMENT CORPORATION

303 Marine Drive - 80 001  
Singapore  
Phone: + (65) 2710101, Fax: + (65) 2710103  
www.meinhardtgroup.com

PROJECT:-  
PREPARATION OF DETAILED  
PROJECT REPORTS (DPRS) & BID  
DOCUMENTS:  
TENDERING FOR EXECUTION,  
CONSTRUCTION SUPERVISION &  
QUALITY CONTROL OF SEWERAGE &  
DRAINAGE PROJECTS OF PATNA  
UNDER JNNURM

**MEINHARDT**  
CONSULTANT:-  
MEINHARDT (SINGAPORE) PTE. LTD.  
A-8, Sector-16, Noida-201301, India  
Pn:- +91 120 2516155, Fax No:- +91 120 251515  
www.meinhardtgroup.com, Email:- info@meinhardtindia.com

DRAWING TITLE  
910 DIA. MANHOLE DEPTH UPTO 0.91 M,  
MAX. SIZE OF OUT GOING PIPE 350 NP-2

DISCIPLINE	DRAWING NO.	REVISION
PH	STD-01	00

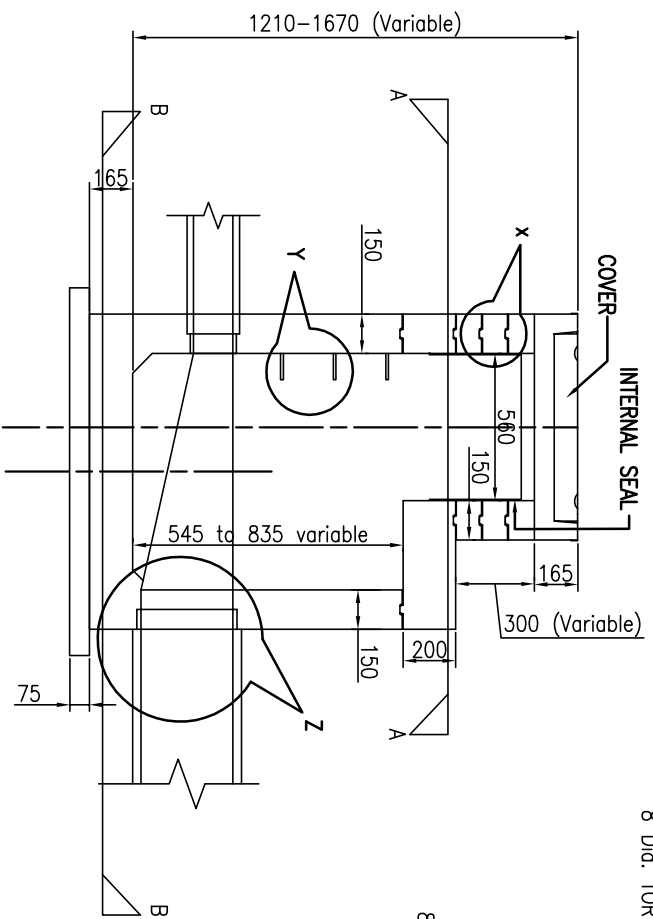
PURPOSE OF ISSUE  
DRAFT DETAILED PROJECT REPORT

BY	DATE OF FIRST ISSUE
SKS	MAY 2013

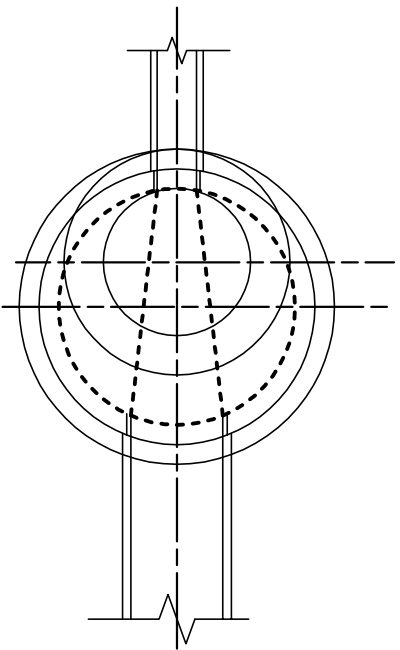
DRAWN: SKS  
DESIGNED: JR  
CHECKED: RP  
APPROVED: CRR

DATE OF FIRST ISSUE: MAY 2013  
DATE OF ISSUE: MAY 2013

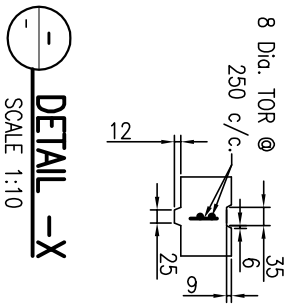
SCALE :- 1 : 20  
SHEET SIZE :- A3



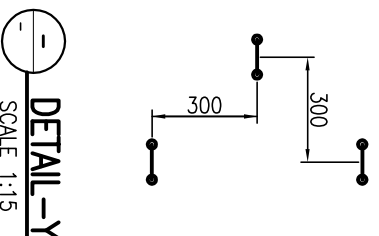
**CROSS SECTION**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



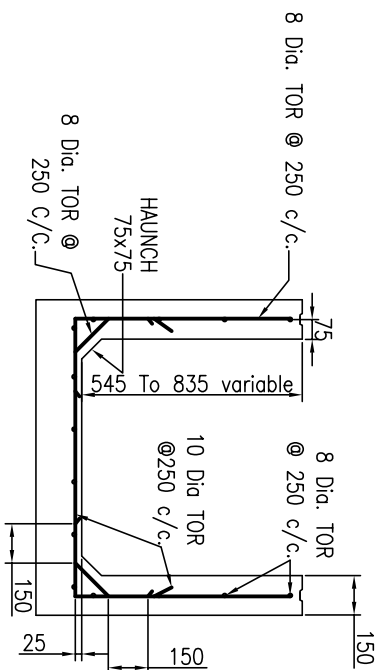
**PLAN OF PREFAB RCC MANHOLE**



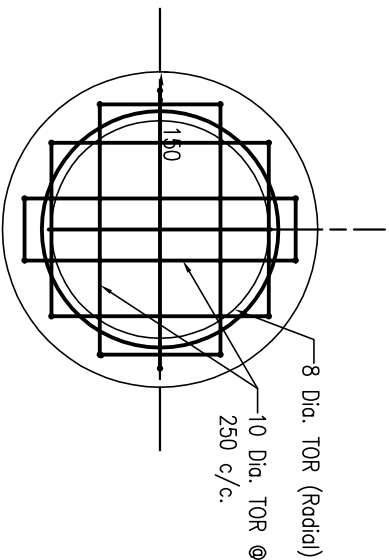
**DETAIL -X**  
SCALE 1:10



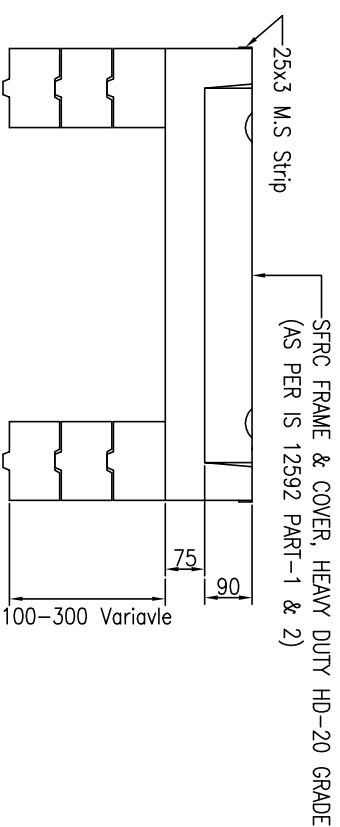
**DETAIL -Y**  
SCALE 1:15



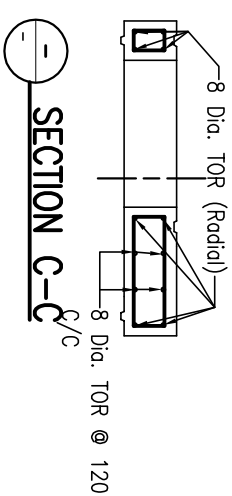
**REINFORCEMENT DETAIL OF BASE UNIT**



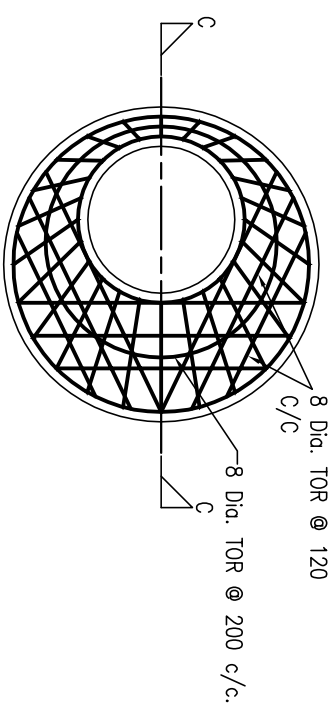
**SECTION B-B**  
REINFORCEMENT DETAIL OF BASE SLAB



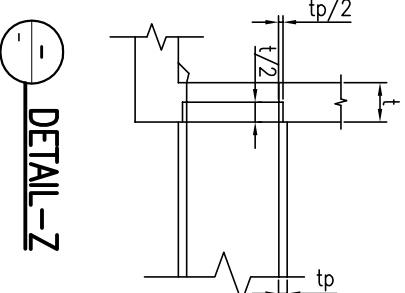
**DETAIL OF MANHOLE COVER & ADJUSTABLE RING**  
SCALE 1:10



**SECTION C-C**



**SECTION A-A**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



**DETAIL -Z**

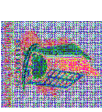
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 27 MM EXCEPT BASE SLAB.
  3. GRADE OF CONCRETE M30.
  4. SR. OF STEEL F415, CONFORMING TO IS 1786
  5. MAXIMUM BEARING PRESSURE 8.94 T/SQ.M.
  6. SCALE 1:20, UNLESS OTHERWISE STATED

Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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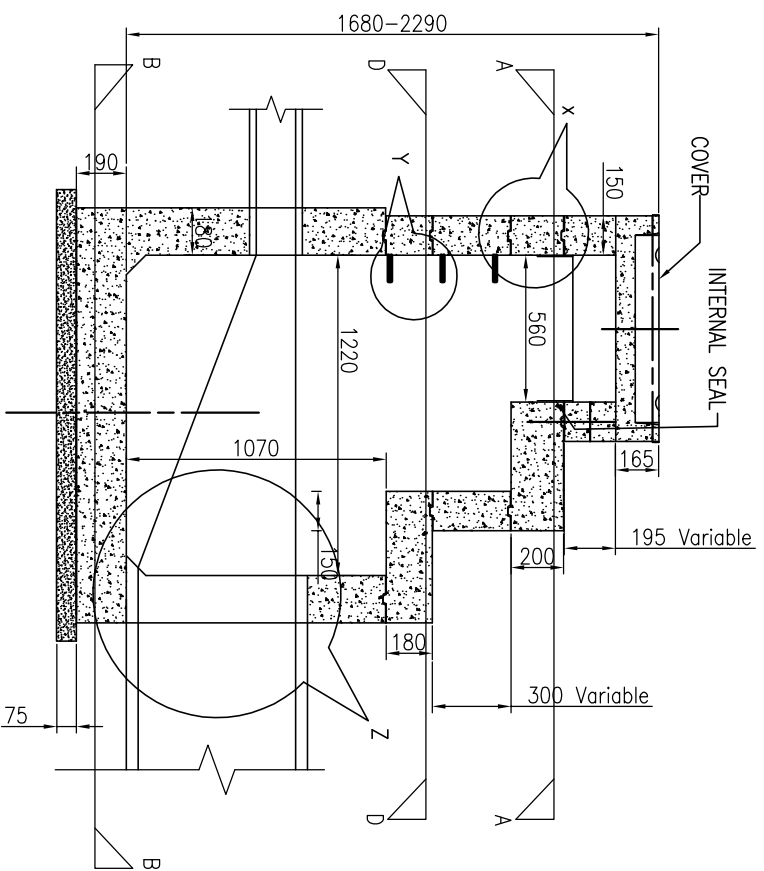
**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS:**  
TENDERING FOR EXECUTION,  
CONSTRUCTION SUPERVISION &  
QUALITY CONTROL OF SEWERAGE &  
DRAINAGE PROJECTS OF PATNA  
UNDER JNNURM

**MEINHARDT**

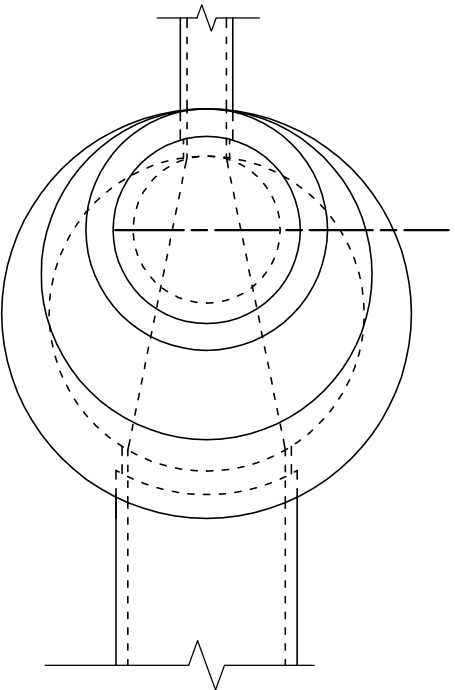
MEINHARDT (SINGAPORE) PTE. LTD.  
A-8, Seedar-16, Noida-201301, India  
P.O.:- +91 120 2516165, Fax No.:- +91 120 2515745  
www.meinhardtgroup.com, Email:-info@meinhardtindia.com

**910 DIA. MANHOLE, DEPTH 0.91-1.67 M, MAX SIZE OF OUT GOING PIPE 400 NP-2**

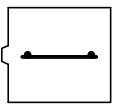
PURPOSE OF ISSUE		SCALE :- 1 : 20	
DRAFT	DETAILED PROJECT REPORT	SHEET SIZE :-	A3
BY	SKS	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	JR	CHECKED	RP
APPROVED	CR	DRAWING NO.	1092.01
DISCIPLINE	PH	STD.-02	00



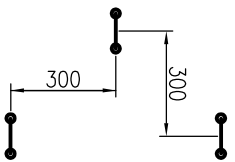
**CROSS SECTION**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



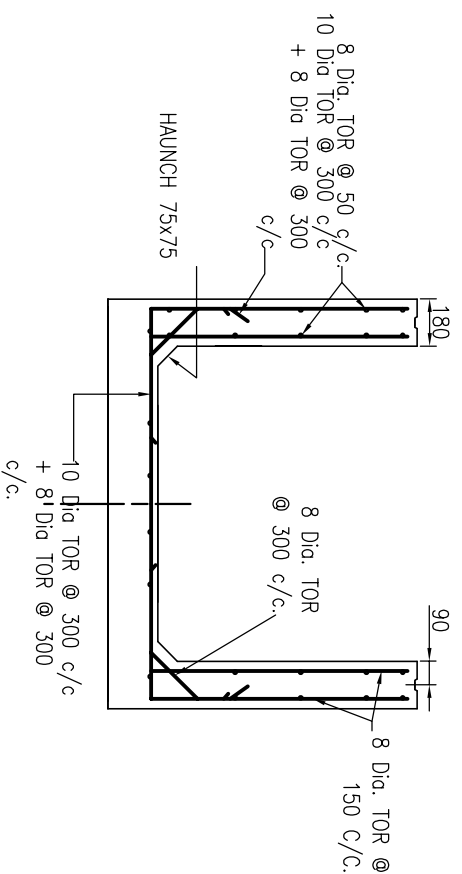
**PLAN OF PREFAB RCC MANHOLE**



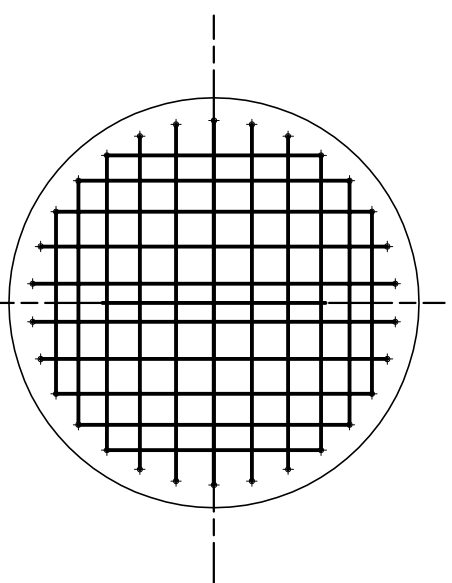
**DETAIL -X**  
SCALE 1:10



**DETAIL -Y**  
SCALE 1:15

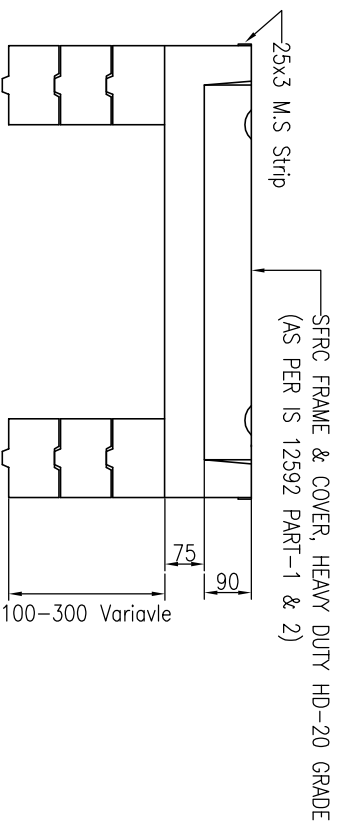


**REINFORCEMENT DETAIL OF BASE UNIT**

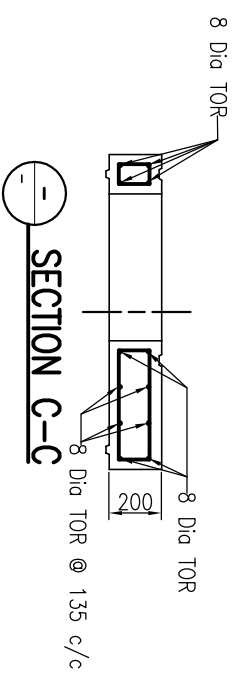


**SECTION A-A**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB

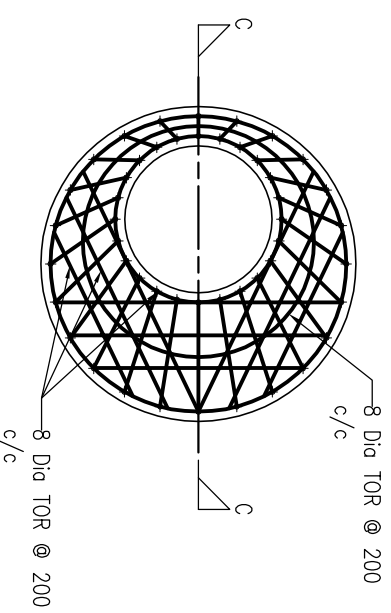
**SECTION B-B**  
REINFORCEMENT DETAIL OF BASE SLAB



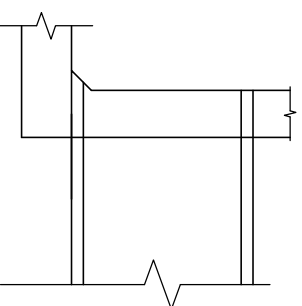
**DETAIL OF MANHOLE COVER & ADJUSTABLE RING**  
SCALE 1:10



**SECTION C-C**



**DETAIL -Z**



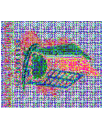
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 27 MM EXCEPT BASE SLAB, WHICH IS 40 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFINING TO IS 1786
  5. MAXIMUM BEARING PRESSURE 8.94 T/SQ.M.
  6. SCALE 1:20, UNLESS OTHERWISE STATED

Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

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DEVELOPMENT CORPORATION

**PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS:**  
**TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM**

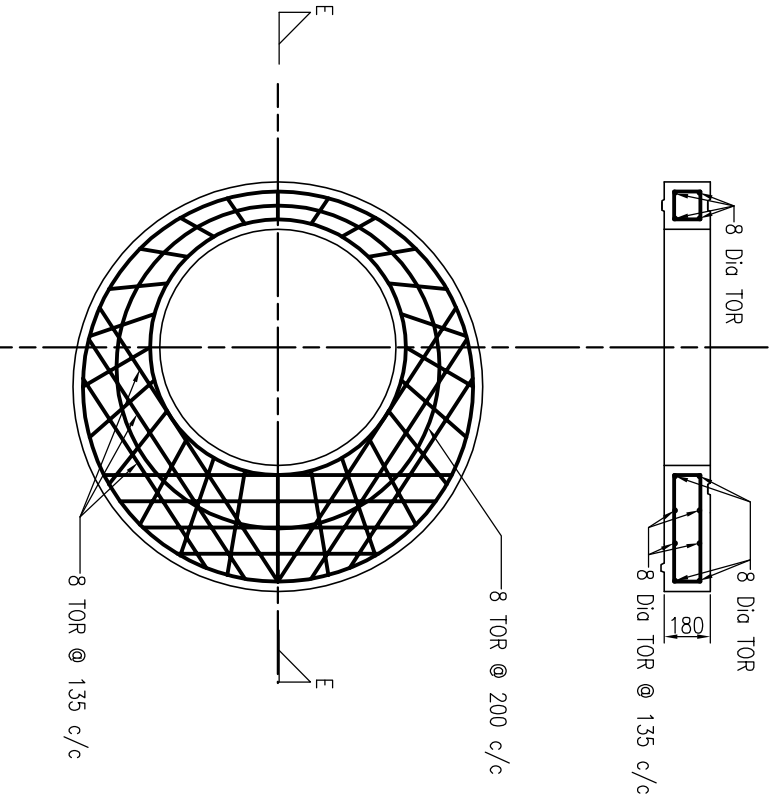
**MEINHARDT**  
MEINHARDT (SINGAPORE) PTE. LTD.

A-8, Seedar-16, Noida-201301, India  
Ph.:- +91 120 2516165, Fax No.:- +91 120 2515745  
www.meinhardtgroup.com, Email:-info@meinhardtindia.com

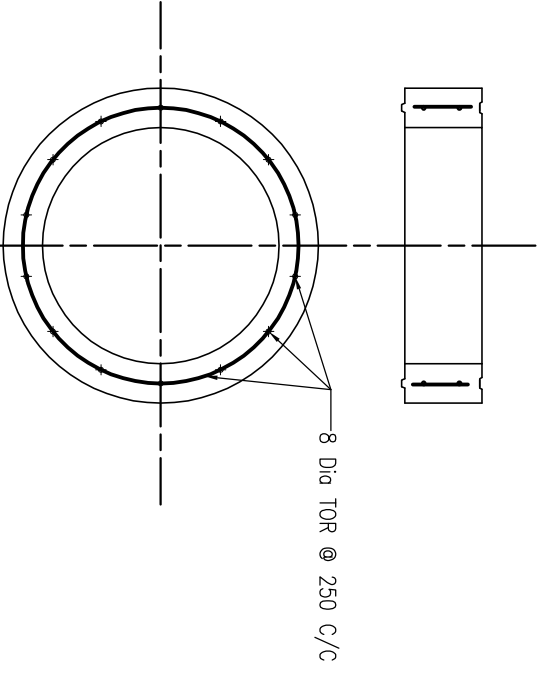
**DRAWING TITLE**  
1220 DIA. MANHOLE, DEPTH UPTO 1.68 M, MAX SIZE OF OUT GOING PIPE 600 NP-3  
SHEET - 1/2

PURPOSE OF ISSUE		SCALE :- 1 : 20	
DRAFT	DETAILED PROJECT REPORT	SHEET SIZE :-	A3
BY	SKS	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	JR	CHECKED	RP
APPROVED	CRR	DRAWING NO.	1092.01 PH
DISCIPLINE	PH	STANDARD	STD-03
JOB NO.	1092.01	REVISION	00

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEARANCE OF 27 MM, EXCEPT BASE SLAB, UNDER MANHOLE COVER IS 23 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFORMING TO IS 1786
  5. MAXIMUM BEARING PRESSURE 8.94 T/SQ.M.
  6. SCALE 1:20, UNLESS OTHERWISE STATED



**SECTION D-D**  
REINFORCEMENT DETAIL OF BOTTOM INTERMEDIATE SLAB



**REINFORCEMENT DETAIL OF INTERMEDIATE RING**

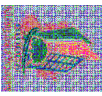
Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

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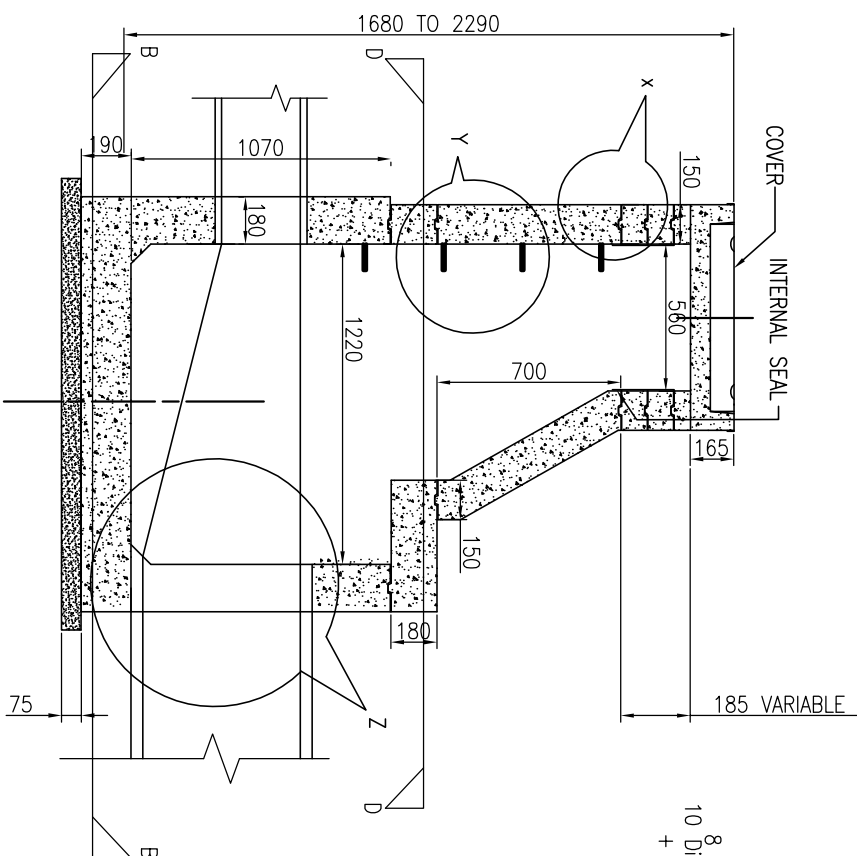
PREPARATION OF DETAILED  
PROJECT REPORTS (DPRS) & BID  
DOCUMENTS:  
TENDERING FOR EXECUTION;  
CONSTRUCTION SUPERVISION &  
QUALITY CONTROL OF SEWERAGE &  
DRAINAGE PROJECTS OF PATNA  
UNDER JNNURM

**MEINHARDT**

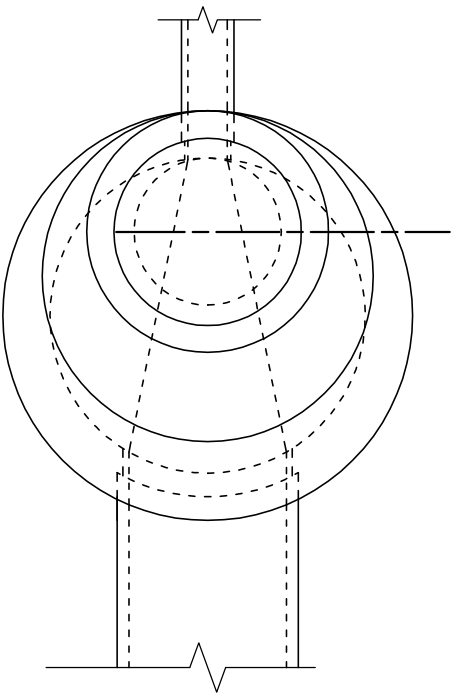
MEINHARDT (SINGAPORE) PTE. LTD.  
4-8, Seedar-16, Noida-201301, India  
P.O.: +91 120 2516165, Fax No.: +91 120 2515745  
www.meinhardtgroup.com, Email: info@meinhardtindia.com

DRAWING TITLE  
**1220 DIA. MANHOLE, DEPTH UPTO 1.68 M,  
MAX. SIZE OF OUT GOING PIPE 600 NP-3**  
SHEET - 2/2

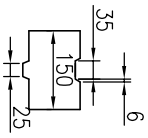
PURPOSE OF ISSUE		SCALE :- 1 : 20	
DRAFT	DETAILED PROJECT REPORT	SHEET SIZE :-	A3
BY	SKS	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	JR	CHECKED	RP
APPROVED	CRR	DRAWING NO.	1092.01
DISCIPLINE	PH	REVISION	00



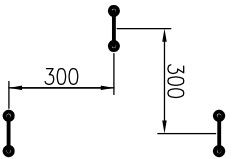
**CROSS SECTION**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



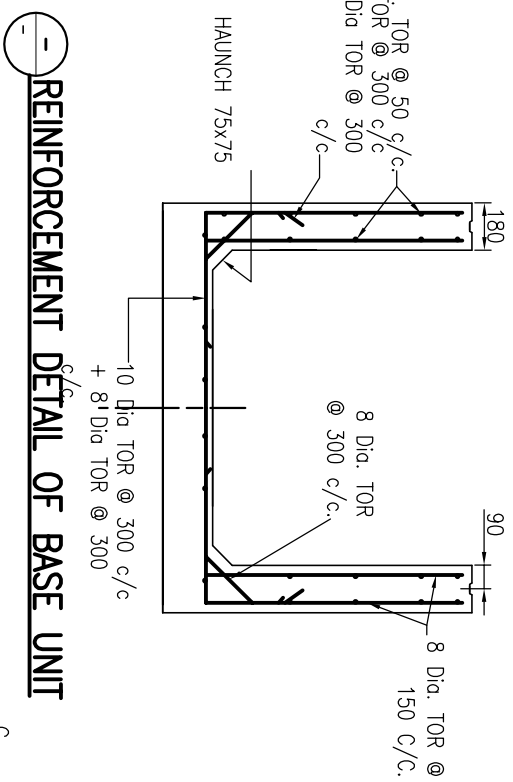
**PLAN OF PREFAB RCC MANHOLE**



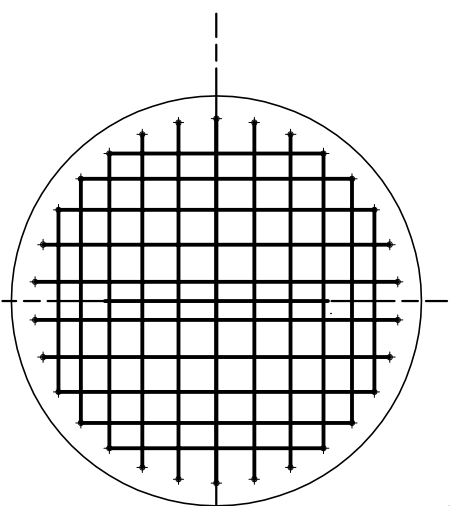
**DETAIL -X**  
SCALE 1:10



**DETAIL -Y**  
SCALE 1:15

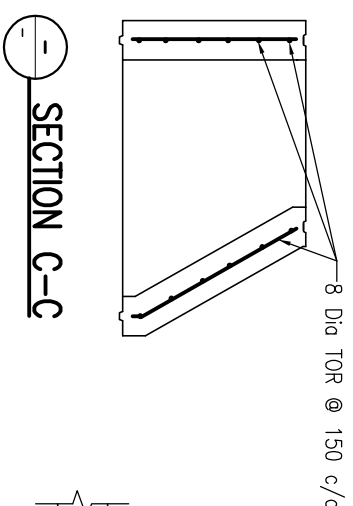
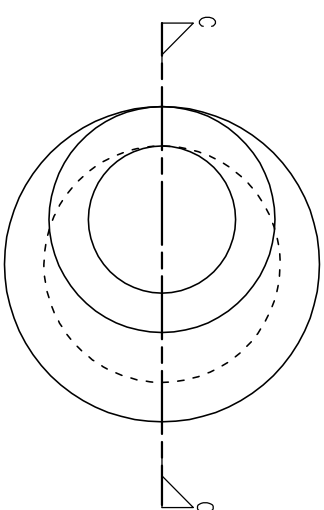


**REINFORCEMENT DETAIL OF BASE UNIT**



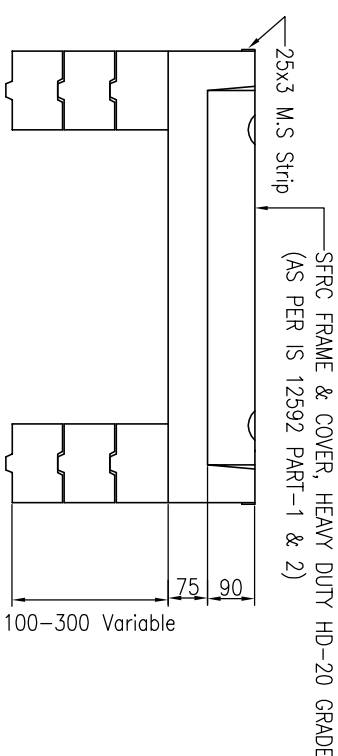
**SECTION B-B**  
REINFORCEMENT DETAIL OF BASE SLAB

**REINFORCEMENT DETAIL OF REDUCING SHAFT**

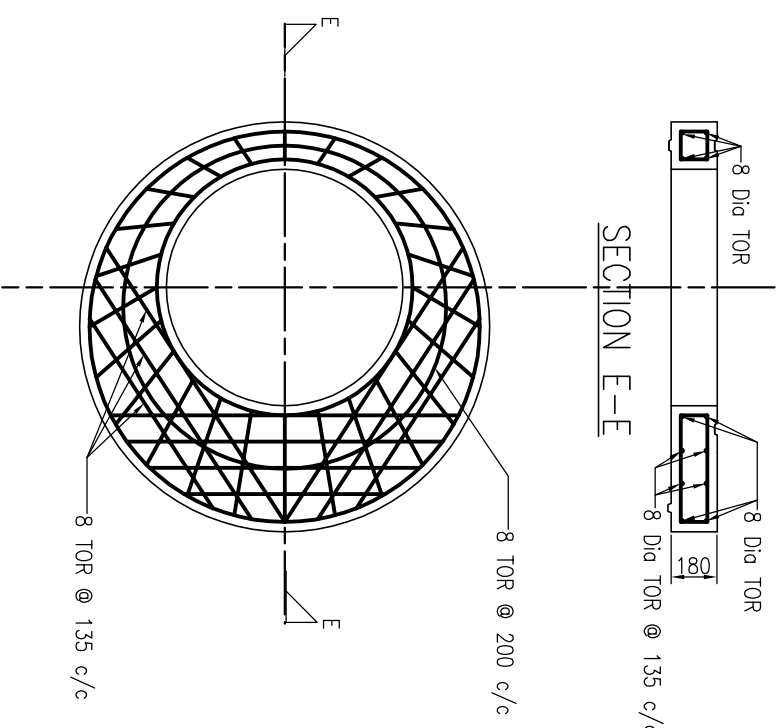


**SECTION C-C**

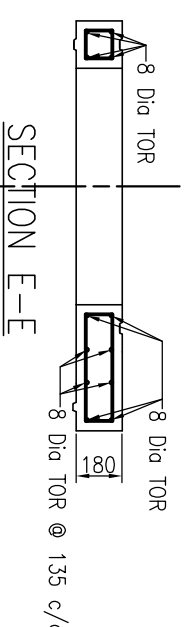
**DETAIL -Z**



**DETAIL OF MANHOLE COVER & ADJUSTABLE RING**  
SCALE 1:10



**SECTION D-D**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



**SECTION E-E**

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 25MM EXCEPT BASE SLAB, 40MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFORMING TO IS 1786.
  5. MAXIMUM BEARING PRESSURE 8.94 T/SQ.M.
  6. SCALE 1:20, UNLESS OTHERWISE STATED

Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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P.O.:- +91 120 2516165, Fax No.:- +91 120 2515745  
www.meinhardtgroup.com, Email:-info@meinhardtindia.com

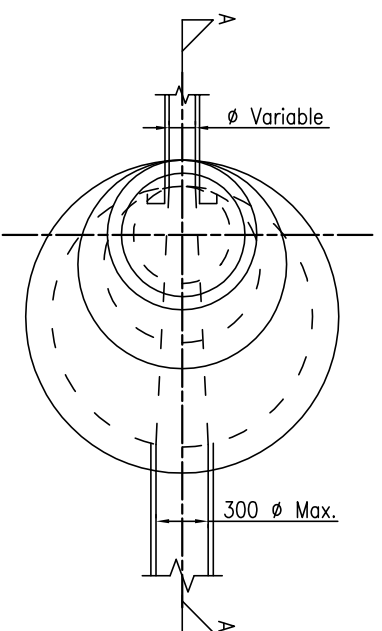
**BIHAR**  
URBAN INFRASTRUCTURE  
DEVELOPMENT CORPORATION

**PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS:-**  
TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

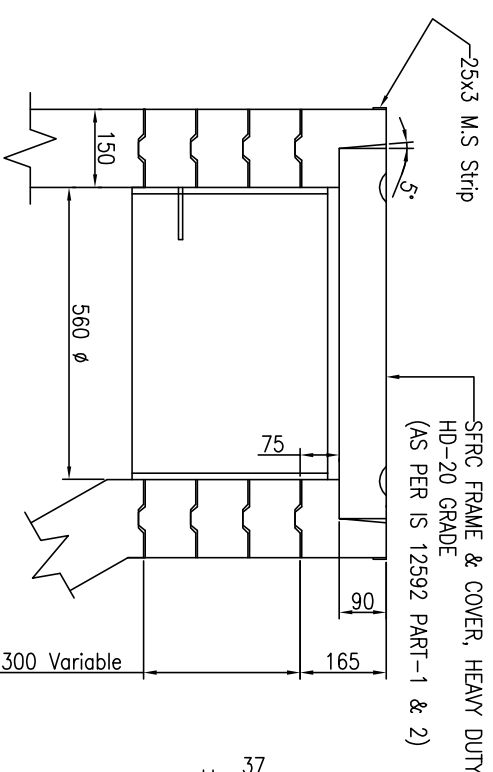
**DRAWING TITLE**  
1220 DIA. MANHOLE, DEPTH 1.68 TO 2.29 M, MAX.SIZE OF OUT GOING PIPE 800 NP-3

DISCIPLINE	DRAWING NO.	REVISION
PH	STD-04	00

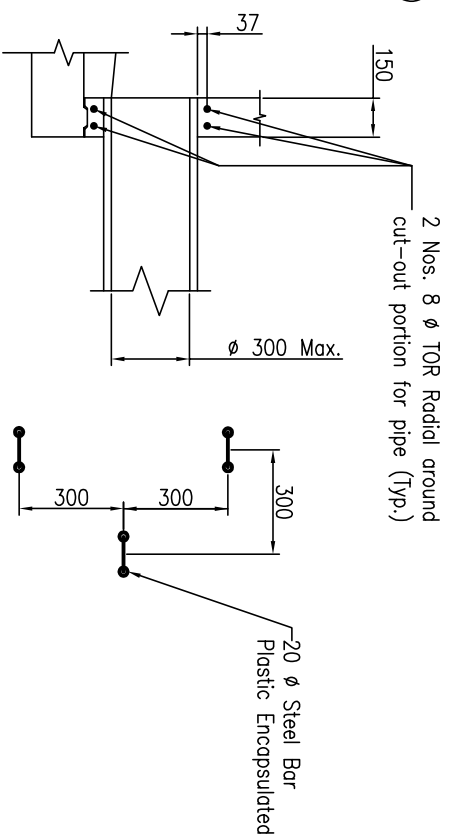




PLAN OF PREFAB RCC MANHOLE

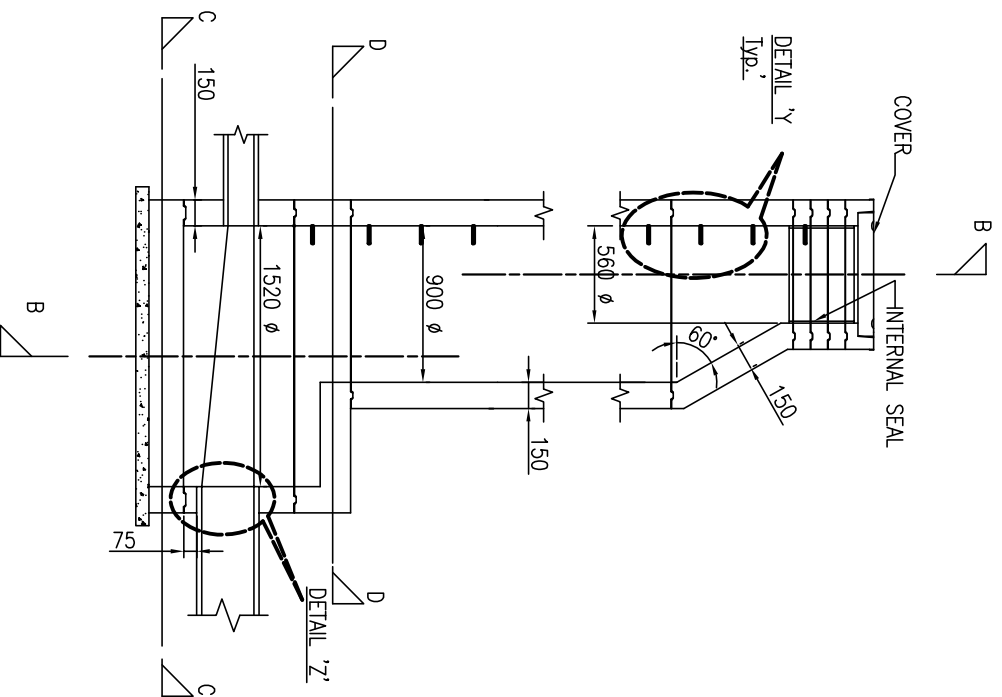


DETAIL OF MANHOLE COVER & ADJUSTABLE RING  
SCALE 1:15

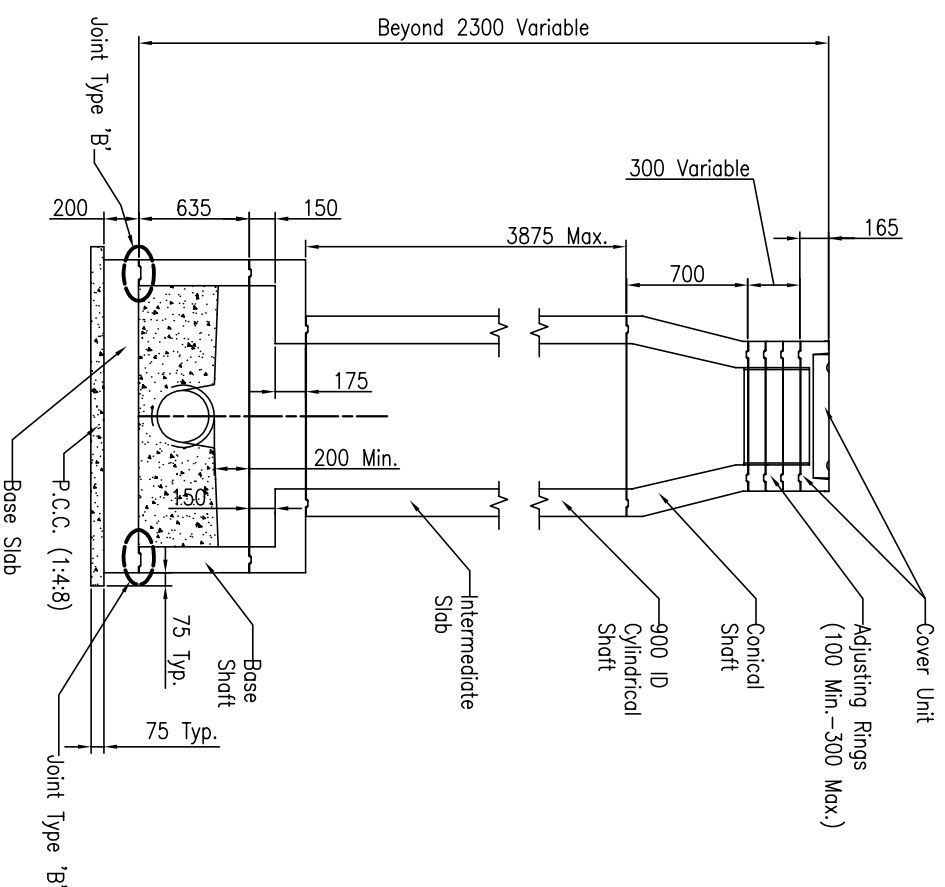


DETAIL-Z  
SCALE:- 1 : 20

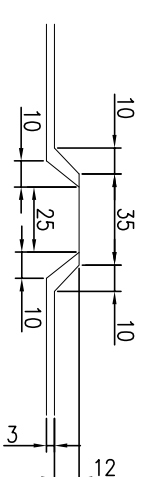
DETAIL-Y (TYP.)  
SCALE 1:15



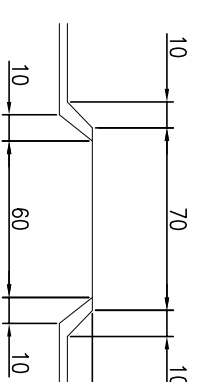
SECTION A-A  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



SECTION B-B  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



JOINT DETAIL (TYP.)  
SCALE:- 1 : 2



JOINT DETAIL TYPE 'B' (TYP.)  
SCALE:- 1 : 2

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB.
  3. WHERE MINIMUM CLEAR COVER IS 25 MM.
  4. GR. OF CONCRETE: M30.
  5. GR. OF STEEL: Fe 415, CONFORMING TO IS: 1786.
  6. ALL JOINTS ARE JOINT TYPE EXCEPT JOINTS UNLESS OTHERWISE STATED.
  7. SCALE: 1:20, UNLESS OTHERWISE STATED.

Drawing Base Reference:  
PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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CLIENT:-



BIHAR  
URBAN INFRASTRUCTURE  
DEVELOPMENT CORPORATION

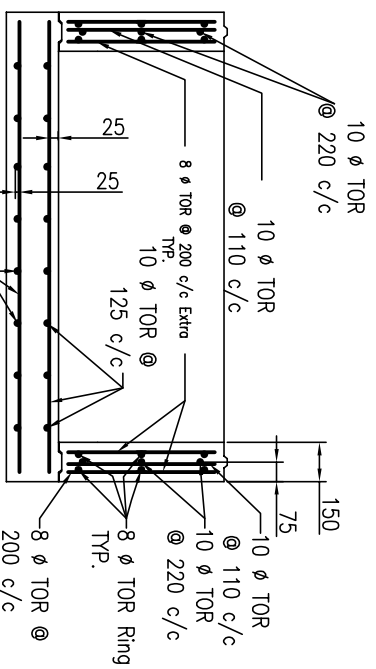
PREPARATION OF DETAILED  
PROJECT REPORTS (DPRs) & BID  
DOCUMENTS:  
TENDERING FOR EXECUTION,  
CONSTRUCTION SUPERVISION &  
QUALITY CONTROL OF SEWERAGE &  
DRAINAGE PROJECTS OF PATNA  
UNDER JNNURM

CONSULTANT:  
**MEINHARDT**  
MEINHARDT (SINGAPORE) PTE. LTD.  
A-8, Seasia-16, Nohda-201301, India  
Ph.:- +91 120 2516165, Fax No.:- +91 120 2515745  
www.meinhardtgroup.com, Email:- info@meinhardtindia.com

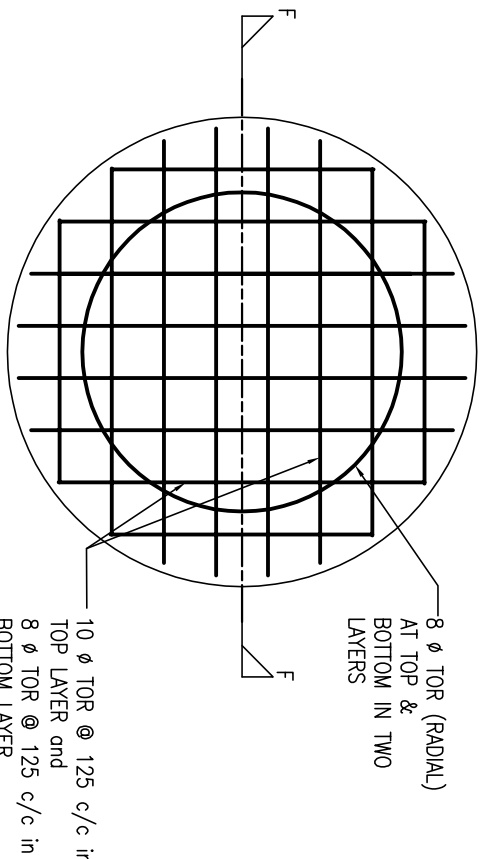
DRAWING TITLE  
ø 1520 Manhole, Depth beyond 2.30 M, Max. Size of  
Outgoing Pipe ø 300 Nr-2 with 60° Conical Shaft  
SHEET - 1/2

PURPOSE OF ISSUE	SCALE	1 : 30
DRAWN	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	DATE OF FIRST ISSUE	MAY 2013
CHECKED	DATE OF FIRST ISSUE	MAY 2013
APPROVED	DATE OF FIRST ISSUE	MAY 2013
JOB NO.	DISCIPLINE	DRAWING NO.
1092.01	PH	STD-05
		REVISION
		00

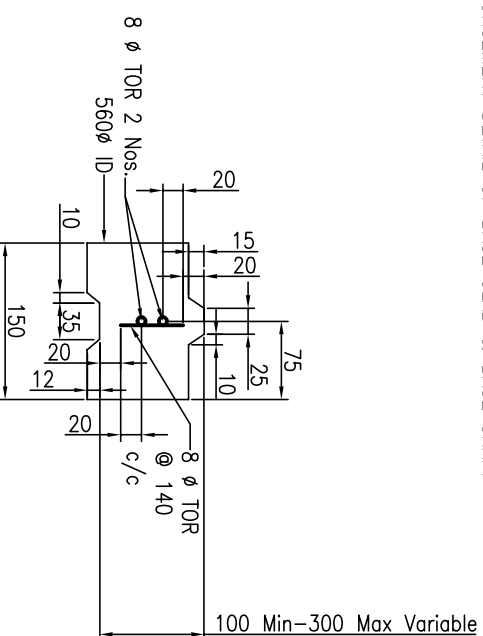
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB, WHERE MINIMUM CLEAR COVER IS 25 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE EXCEPT JOINTS BETWEEN MANHOLE AND PIPE.
  6. SCALE 1:20, UNLESS OTHERWISE STATED



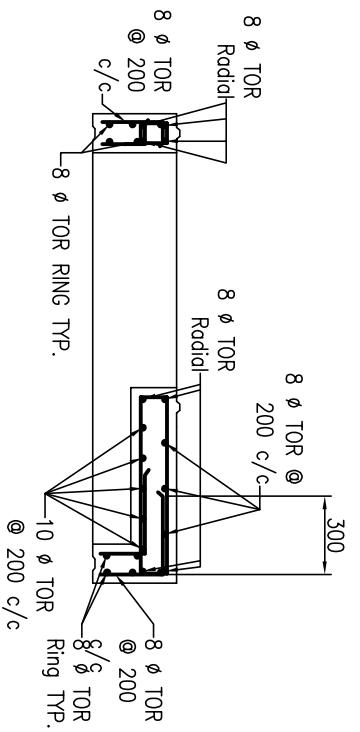
**SECTION F-F**



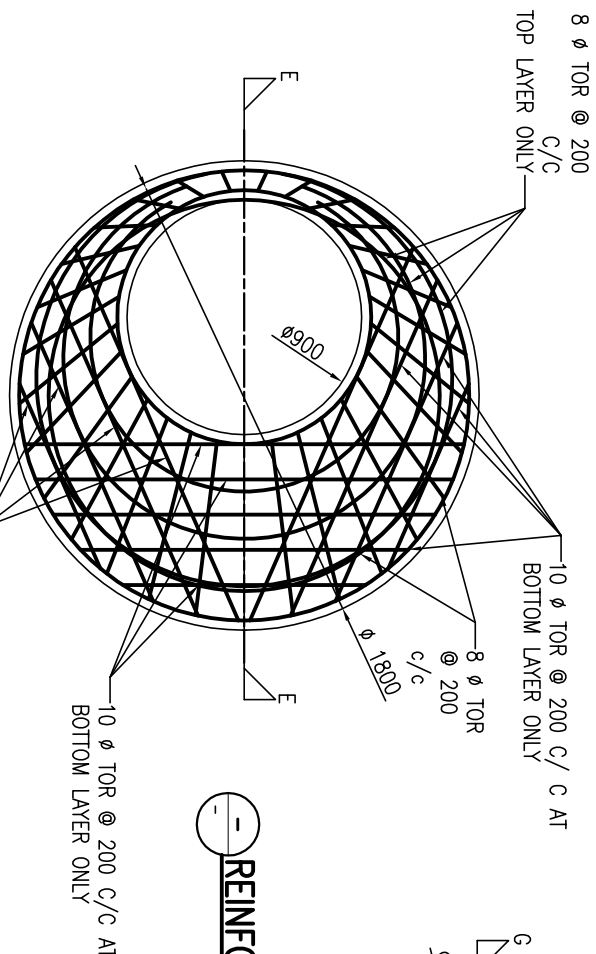
**SECTION C-C**



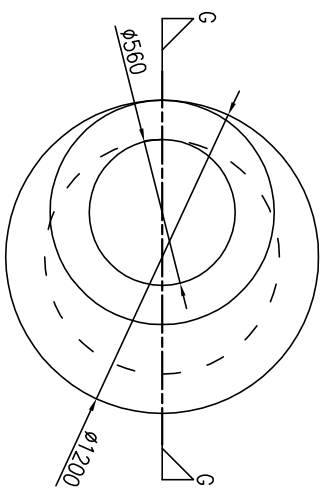
**REINFORCEMENT DETAIL OF ADJUSTING RING**



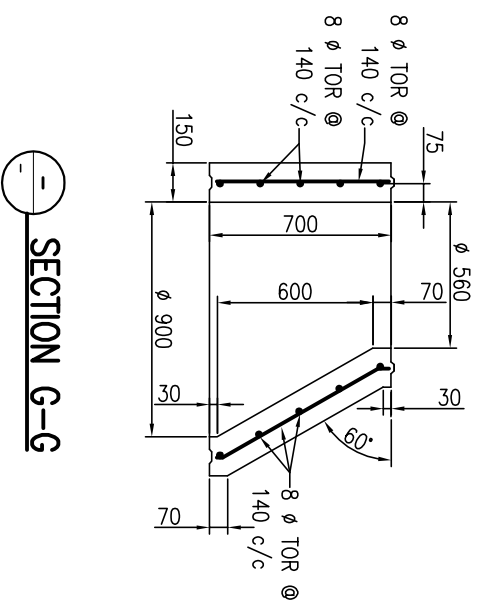
**SECTION E-E**



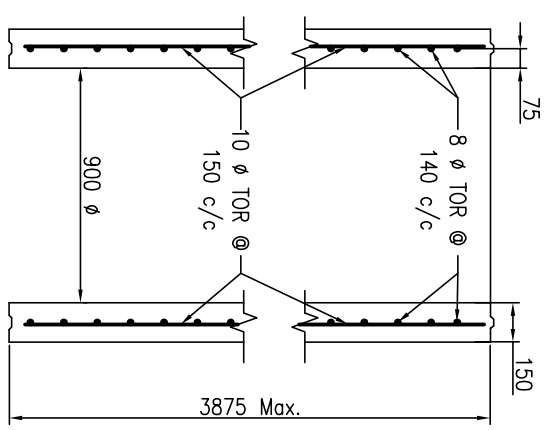
**SECTION D-D**



**REINFORCEMENT DETAIL OF CONICAL SHAFT**



**SECTION G-G**



**REINFORCEMENT DETAIL OF 900 ID CYLINDRICAL SHAFT**

SCALE 1:20, UNLESS OTHERWISE STATED


Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

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**BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION**

301, Kalyan Towers, 480/01, Boring Road, Patna - 800 011  
 Phone: (081)2210101 Fax: (081)2210103  
 Email: info@biurdc.com

**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS:**  
**TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM**

CONSULTANT:  
**MEINHARDT (SINGAPORE) PTE. LTD.**  
 A-8, Seedar-16, Noida-201301, India  
 Ph.:+91 120 2516165, Fax No.:+91 120 2515745  
 www.meinhardtgroup.com, Email: info@meinhardtindia.com

DRAWING TITLE:  
**REINFORCEMENT DETAIL OF 900 ID CYLINDRICAL SHAFT**

PURPOSE OF ISSUE:  
**DRAFT DESIGN**

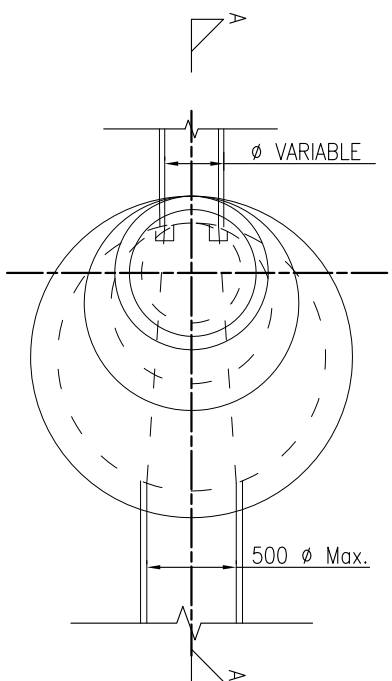
BY	DATE OF FIRST ISSUE
SKS	MAY 2013
JR	MAY 2013
RP	MAY 2013
CR	MAY 2013

APPROVED: \_\_\_\_\_

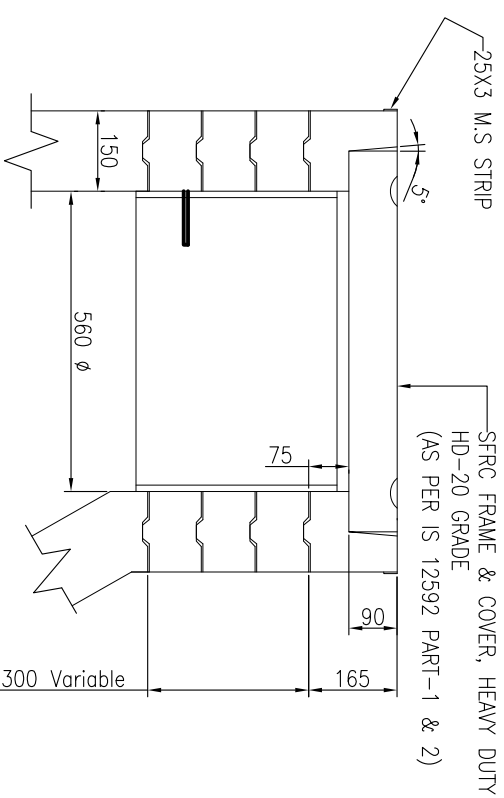
JOB NO. **1092.01** DISCIPLINE **PH** DRAWING NO. **STD-05** REVISION NO. **00**

SCALE: 1 : 20  
 SHEET - 2/2

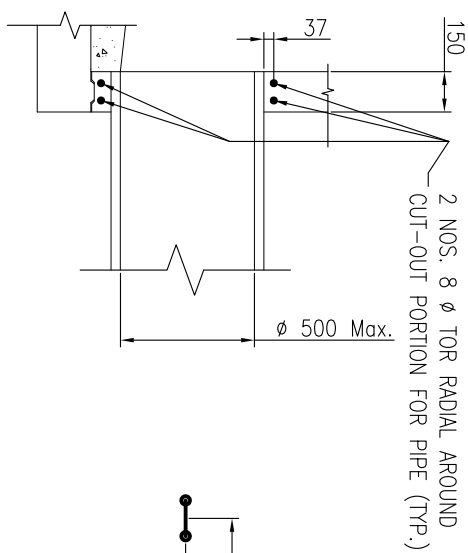
phi 1520 Manhole, Depth beyond 2.30 M, Max. Size of Outgoing Pipe phi 300 Np-2 with 60° Conical Shaft



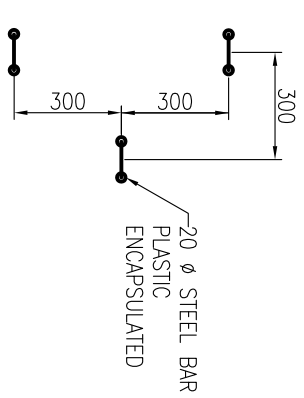
**PLAN OF PREFAB RCC MANHOLE**



**DETAIL OF MANHOLE COVER & ADJUSTABLE RING**  
SCALE 1:15

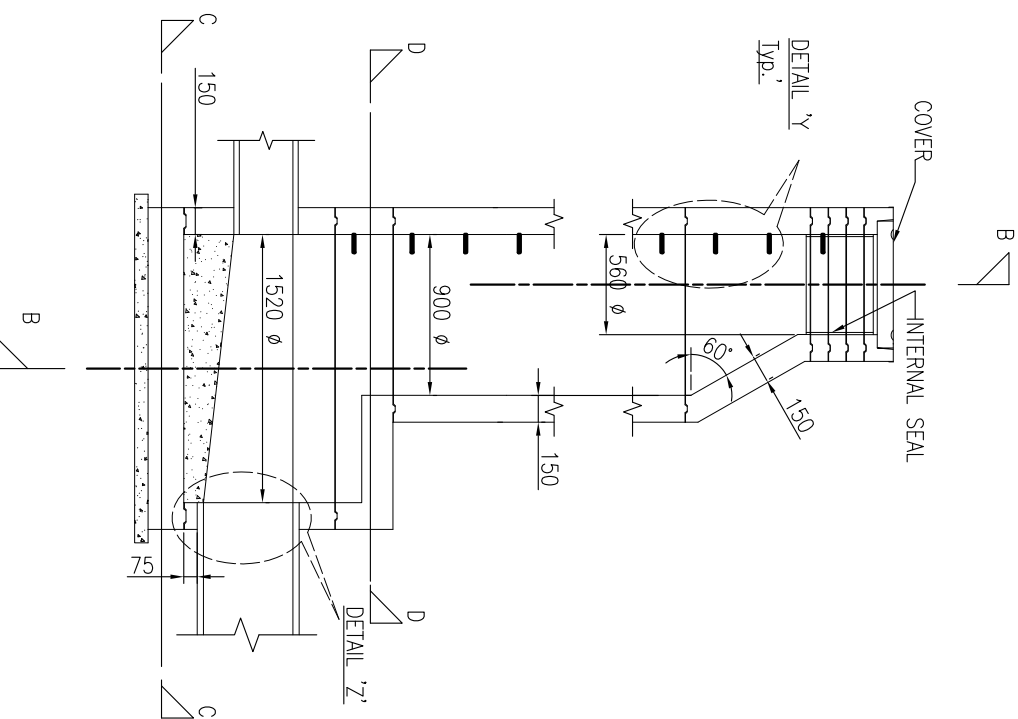


**DETAIL-Z**  
SCALE:- 1 : 20

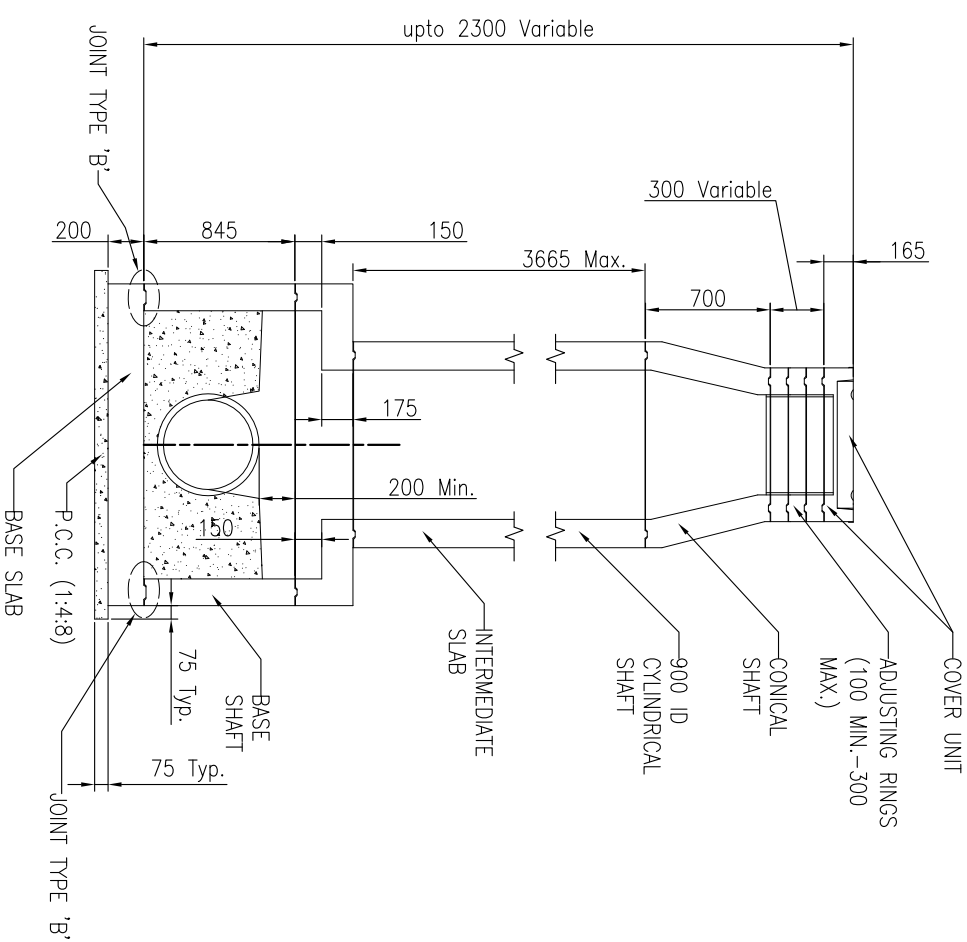


**DETAIL-Y (TYP.)**  
SCALE 1:15

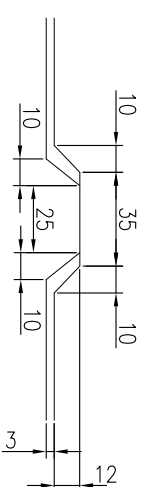
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM EXCEPT BASE SLAB, WHERE MINIMUM CLEAR COVER IS 25 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL FE-415 CONFIRMING TO IS 1786
  5. ALL JOINTS ARE JOINT TYPE 'B' IN SECTION B-B MARKED AS JOINT TYPE 'B' IN SECTION B-B
  6. SCALE 1:30, UNLESS OTHERWISE STATED



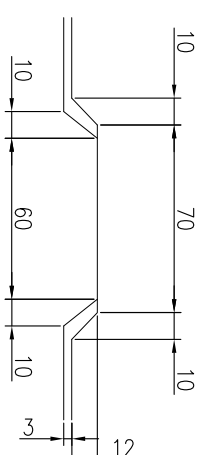
**SECTION A-A**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



**SECTION B-B**  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



**JOINT DETAIL (TYP.)**  
SCALE:- 1 : 2



**JOINT DETAIL TYPE 'B' (TYP.)**  
SCALE:- 1 : 2

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 Website: www.mehnhardtdia.com

**MEHNHARDT**  
 BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION

**PROJECT:**  
 PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS:  
 TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

**CONSULTANT:-**  
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 www.mehnhardtdia.com, Email:-info@mehnhardtdia.com

**DRAWING TITLE**  
 ø 1520 Manhole, Depth upto 2.30 M, Max. Size of Outgoing Pipe ø 500 Np-2 with 60° Conical Shaft  
 SHEET - 1/2

**PURPOSE OF ISSUE**  
 DRAFT DETAILED PROJECT REPORT

BY	SMS	MAY 2013
DESIGNED	JR	MAY 2013
CHECKED	RP	MAY 2013
APPROVED	CHR	MAY 2013
JOB NO.	DISCIPLINE	DRAWING NO.
1092.01	PH	STD-06
		REVISION
		00

**AMENDMENTS**

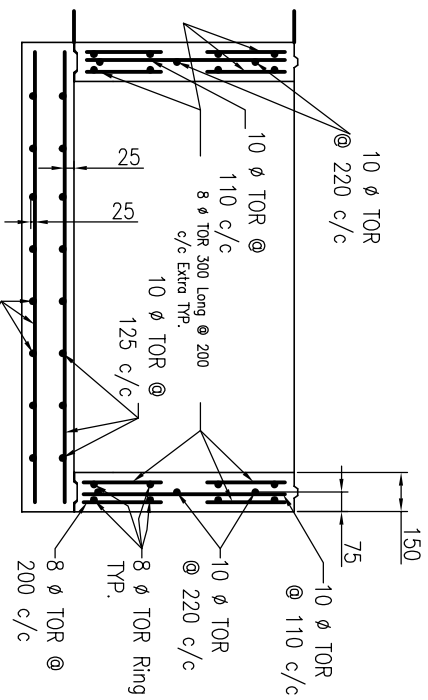
REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SMS	DRAFT DPR SUBMISSION	RP

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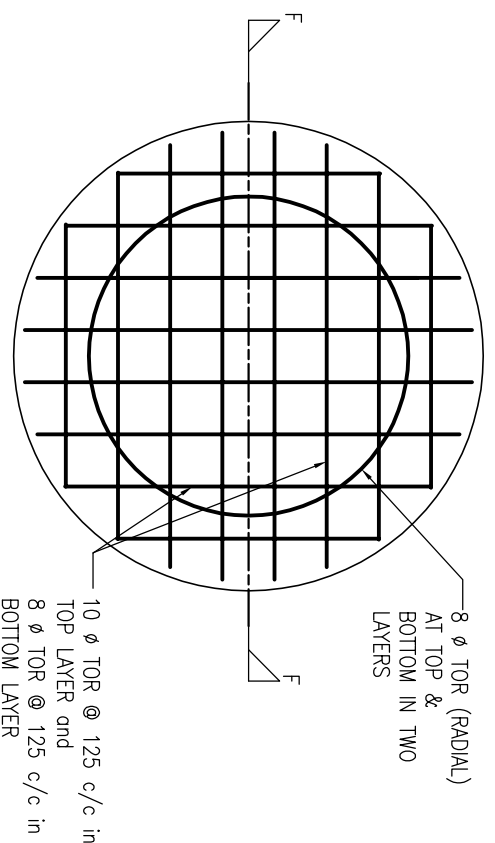
**Client:-**

**Drawing Base Reference:-**  
 PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.

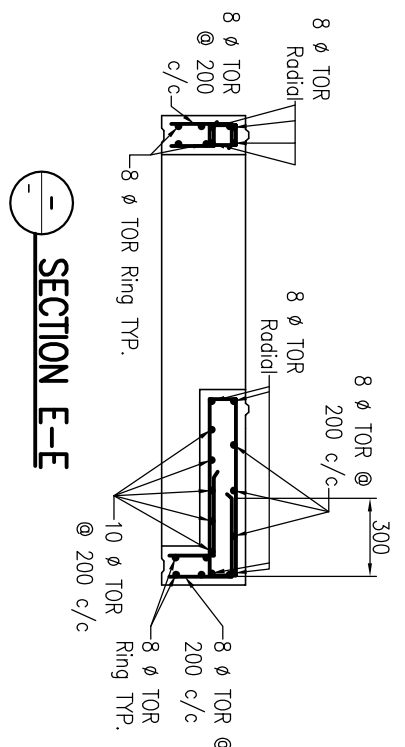




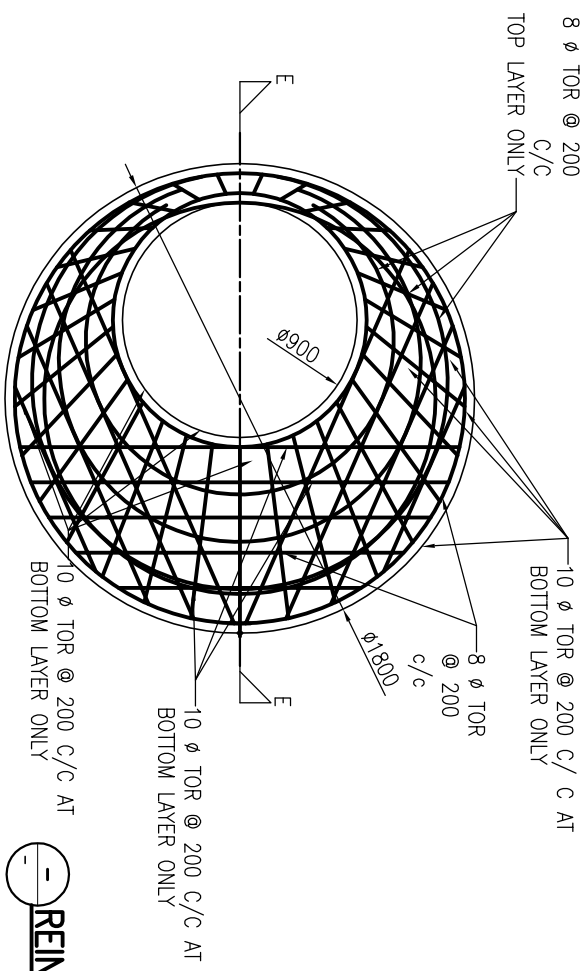
**SECTION F-F**  
REINFORCEMENT DETAIL OF BASE SLAB & BASE SHAFT



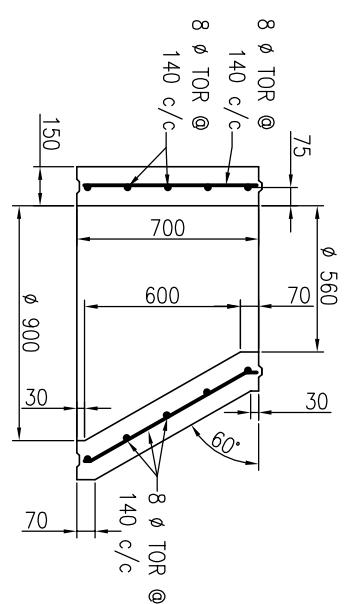
**SECTION C-C**  
REINFORCEMENT DETAIL OF BASE SLAB & BASE SHAFT



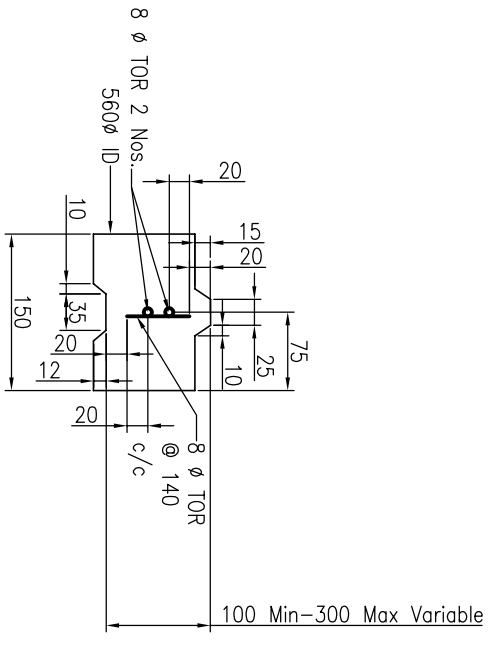
**SECTION E-E**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



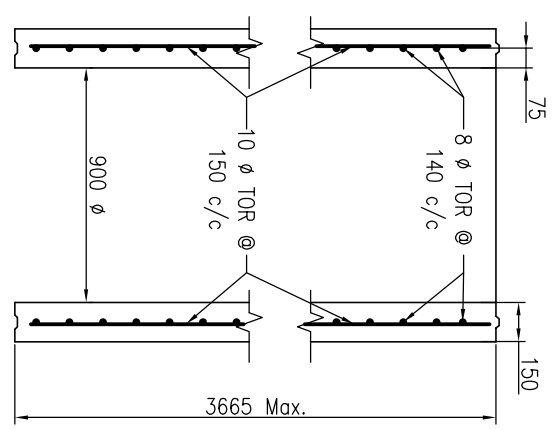
**SECTION D-D**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



**SECTION G-G**  
REINFORCEMENT DETAIL OF CONICAL SHAFT



**REINFORCEMENT DETAIL OF ADJUSTING RING**  
SCALE:- 1 : 5



**REINFORCEMENT DETAIL OF 900 ID CYLINDRICAL SHAFT**  
SCALE:- 1 : 20

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB, WHERE MINIMUM CLEAR COVER IS 25 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL Fe 415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE EXCEPT JOINTS UNDER JNNURM.
  6. SCALE 1:20, UNLESS OTHERWISE STATED

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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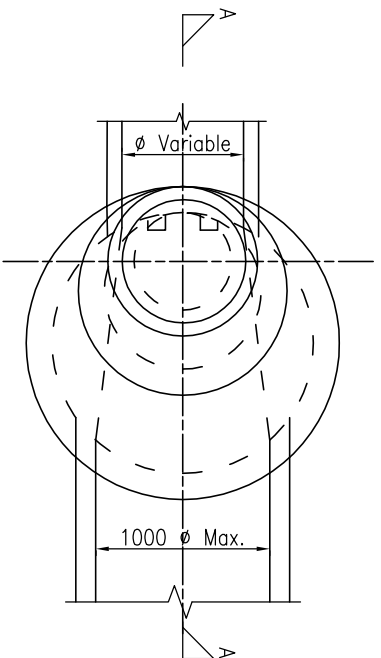
**CLIENT:-**  
BIHAR  
URBAN INFRASTRUCTURE  
DEVELOPMENT CORPORATION

**PROJECT:-**  
PREPARATION OF DETAILED  
PROJECT REPORTS (DPRS) & BID  
DOCUMENTS:  
TENDERING FOR EXECUTION,  
CONSTRUCTION SUPERVISION &  
QUALITY CONTROL OF SEWERAGE &  
DRAINAGE PROJECTS OF PATNA  
UNDER JNNURM

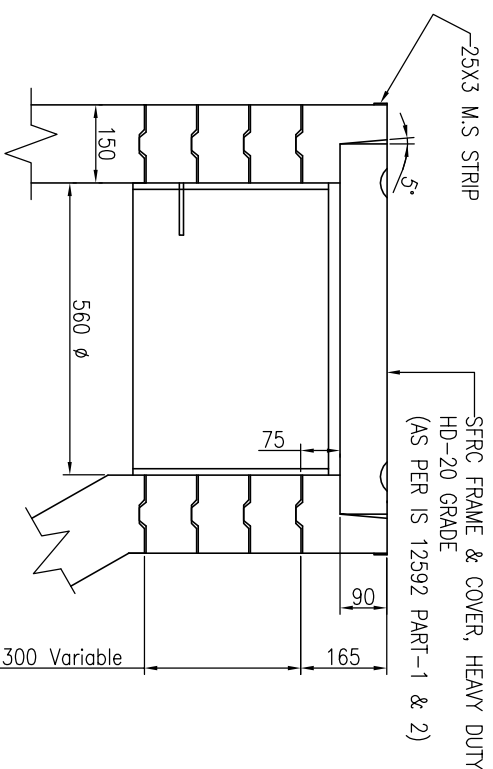
**CONSULTANT:-**  
**MEINHARDT**  
MEINHARDT (SINGAPORE) PTE. LTD.  
A-8, Seasia-16, Nohda-201301, India  
Ph.:- +91 120 2516165, Fax No.:- +91 120 2515745  
www.meinhardtgroup.com, Email:- info@meinhardtdia.com

**DRAWING TITLE**  
# 1520 Manhole, Depth beyond 2.30 M. Max. Size of  
Outgoing Pipe # 500 N#-2 with 60° Conical Shaft  
SHEET - 2/2

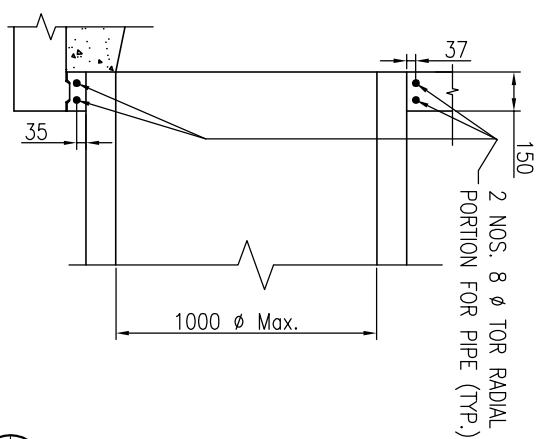
PURPOSE OF ISSUE	SCALE:-	DATE OF FIRST ISSUE	REVISION
DRAWN	1 : 20	MAY 2013	00
DESIGNED		MAY 2013	
CHECKED		MAY 2013	
APPROVED		MAY 2013	
JOB NO.	DISCIPLINE	DRAWING NO.	REVISION
1092.01	PH	STD-06	00



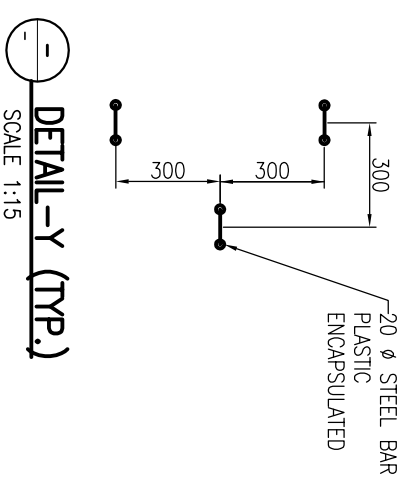
PLAN OF PREFAB RCC MANHOLE



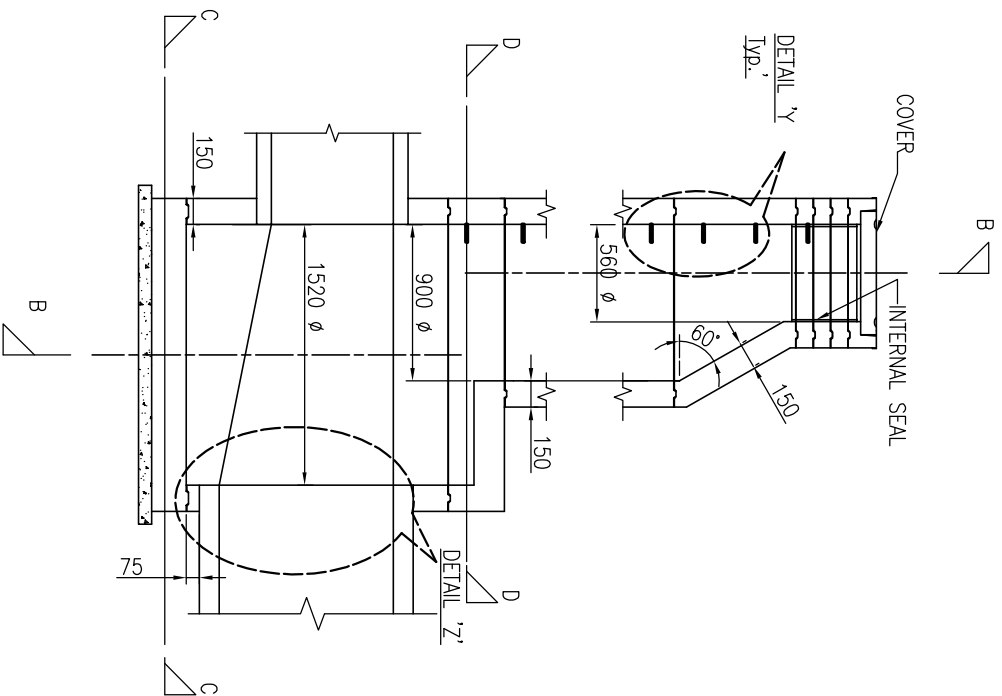
DETAIL OF MANHOLE COVER & ADJUSTABLE RING  
SCALE 1:15



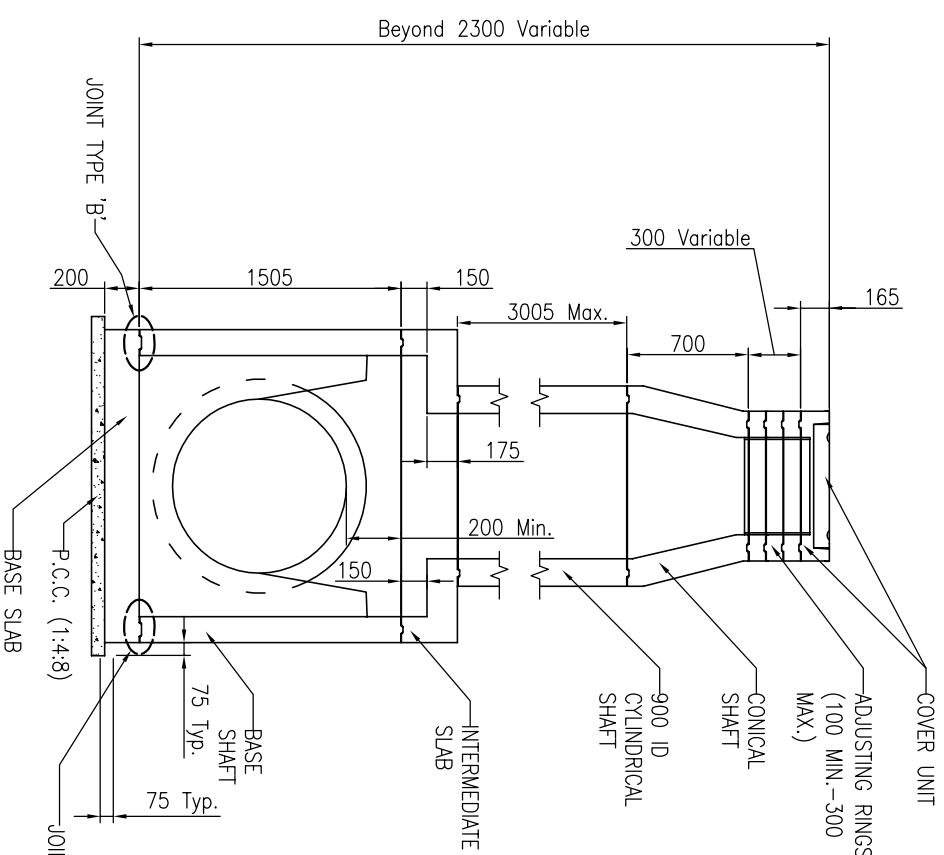
DETAIL-Z  
SCALE:- 1 : 20



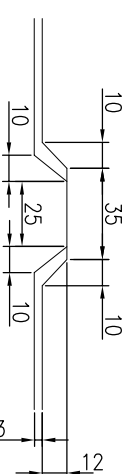
DETAIL-Y (TYP.)  
SCALE 1:15



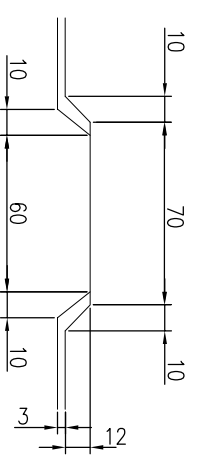
SECTION A-A  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



SECTION B-B  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



JOINT DETAIL (TYP.)  
SCALE:- 1 : 2



JOINT DETAIL TYPE 'B' (TYP.)  
SCALE:- 1 : 2

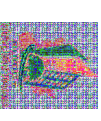
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB, WHERE MINIMUM CLEAR COVER IS 25 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE A EXCEPT JOINTS UNDER JNNURM.
  6. SCALE 1:20, UNLESS OTHERWISE STATED.

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

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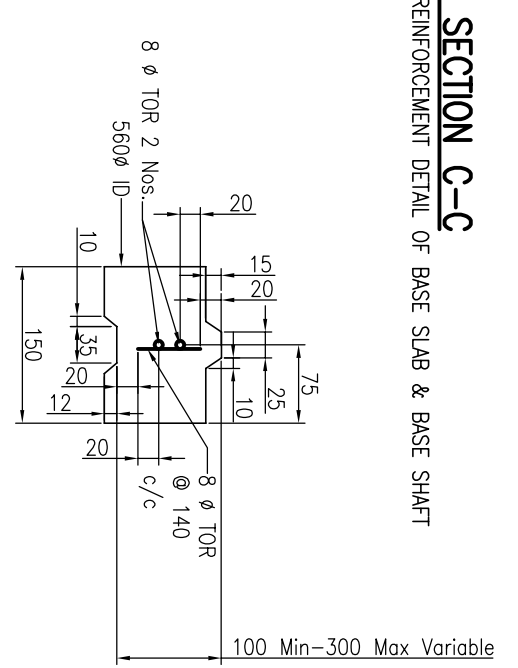
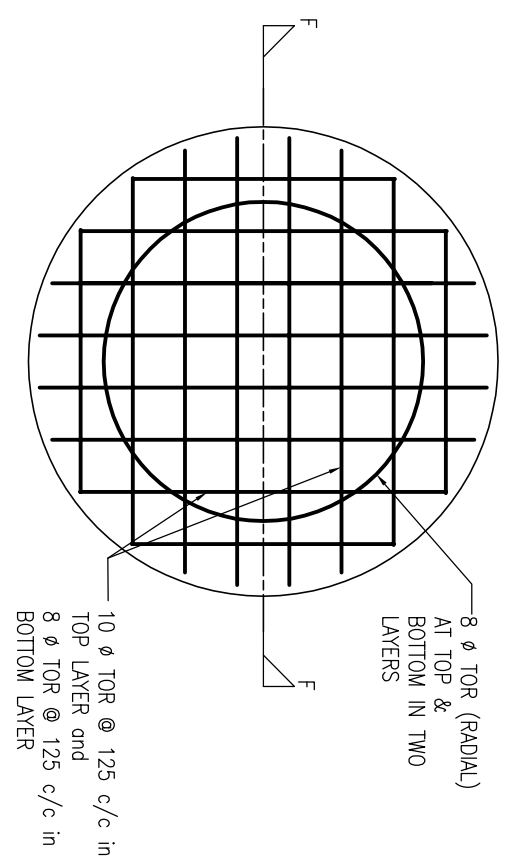
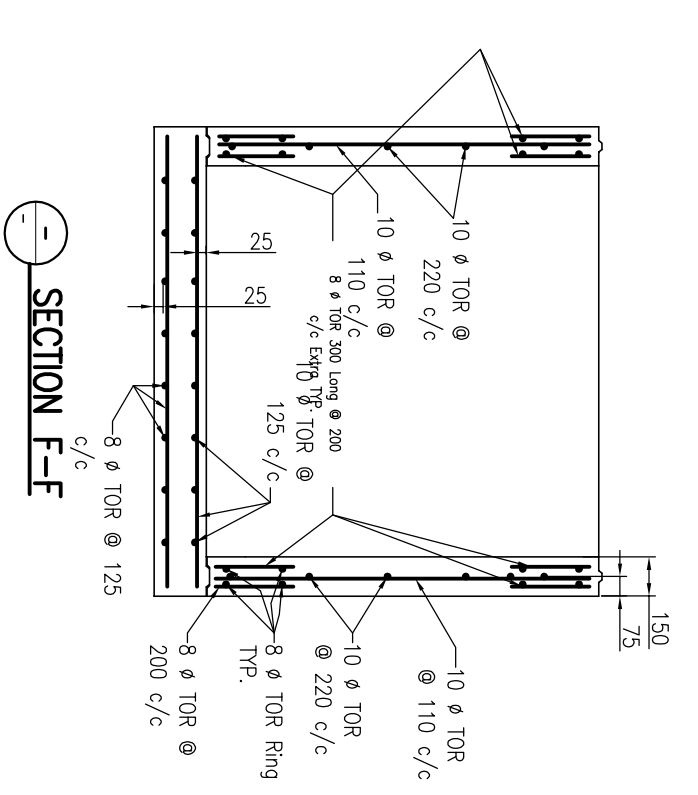
**BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION**

**PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS:**  
TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

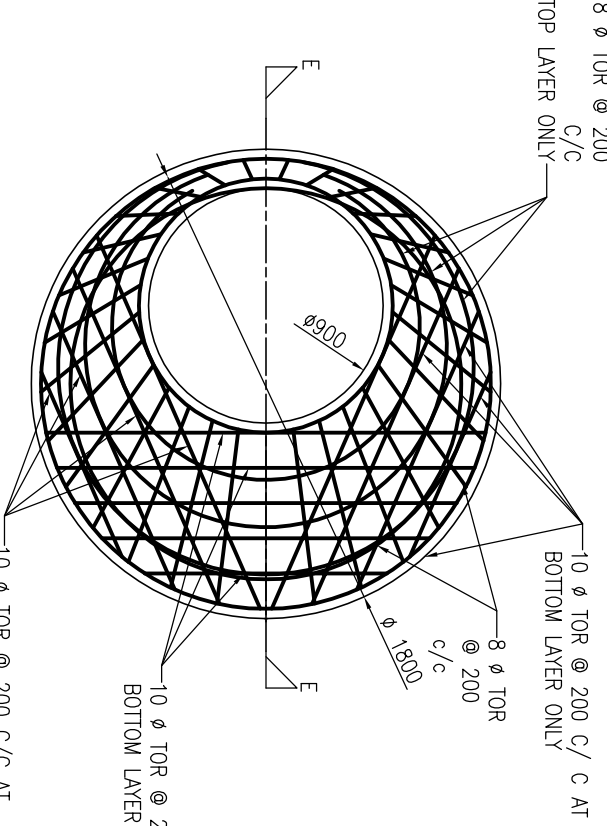
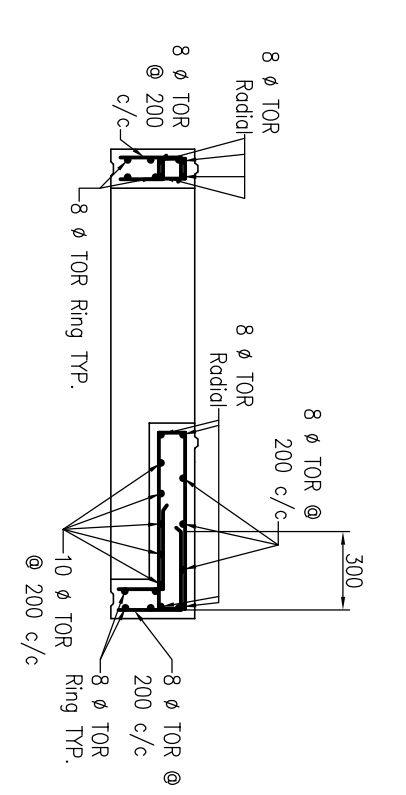
**MEINHARDT (SINGAPORE) PTE. LTD.**  
A-8, Seasia-16, Nohda-201301, India  
P.h.:- +91 120 2616165, Fax No.:- +91 120 2615745  
www.meinhardtgroup.com, Email:-info@meinhardtindia.com

**DRAWING TITLE**  
Ø 1520 Manhole, Depth beyond 2.30 M, Max. Size of Outgoing Pipe Ø 1000 Np-5 with 60° Conical Shaft  
SHEET - 1/2

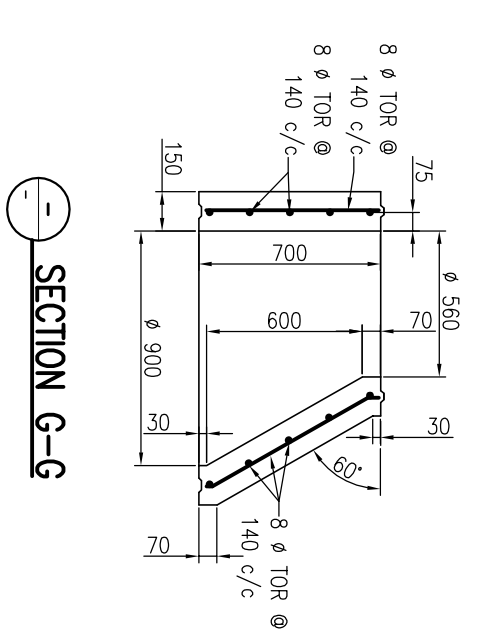
PURPOSE OF ISSUE	SCALE	AS SHOWN
DRAWN	BY	DATE OF FIRST ISSUE
DESIGNED	JR	MAY 2013
CHECKED	RP	MAY 2013
APPROVED	CRR	MAY 2013
JOB NO.	DISCIPLINE	DRAWING NO.
1092.01	PH	STD-07
		REVISION
		00



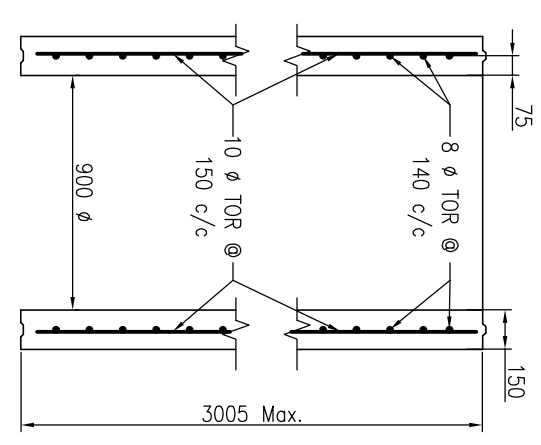
**REINFORCEMENT DETAIL OF ADJUSTING RING**  
SCALE:- 1 : 5



**SECTION D-D**  
REINFORCEMENT DETAIL OF INTERMEDIATE SLAB



**REINFORCEMENT DETAIL OF CONICAL SHAFT**



**REINFORCEMENT DETAIL OF 900 ID CYLINDRICAL SHAFT**

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB.
  3. WHERE MINIMUM CLEAR COVER IS 25 MM.
  4. GR. OF STEEL Fc 415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE EXCEPT JOINTS
  6. SCALE 1:20 UNLESS OTHERWISE STATED

Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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CLIENT:-



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URBAN INFRASTRUCTURE  
DEVELOPMENT CORPORATION

**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS:**  
TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

**MEINHARDT**  
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CONSULTANT:

DRAWING TITLE

PROJECT:-

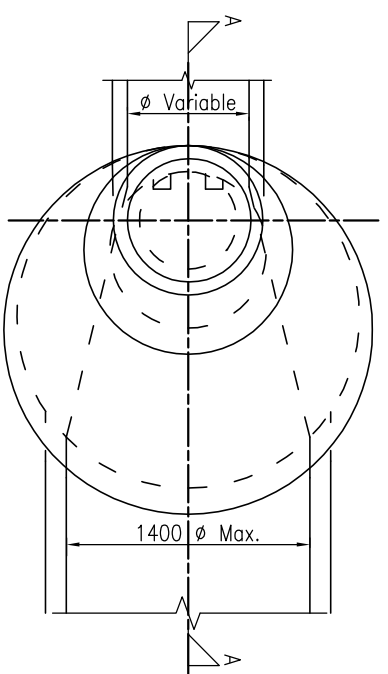
PURPOSE OF ISSUE

DATE OF FIRST ISSUE	DATE OF ISSUE
MAY 2013	MAY 2013

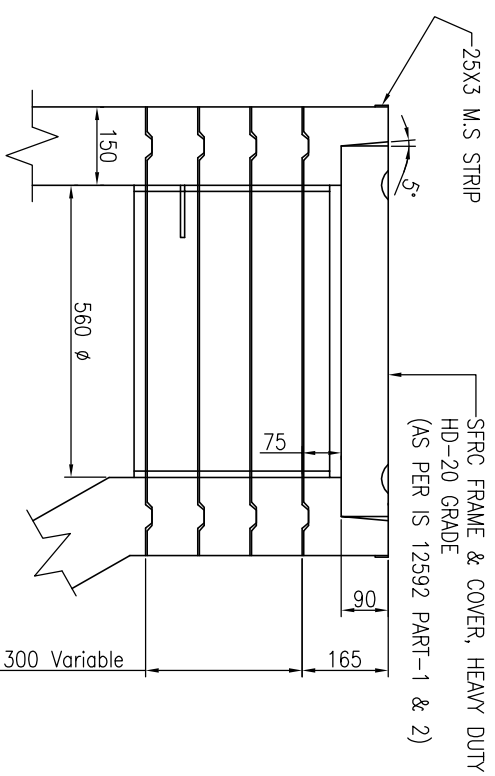
SCALE:- 1 : 20

SHEET - 2/2

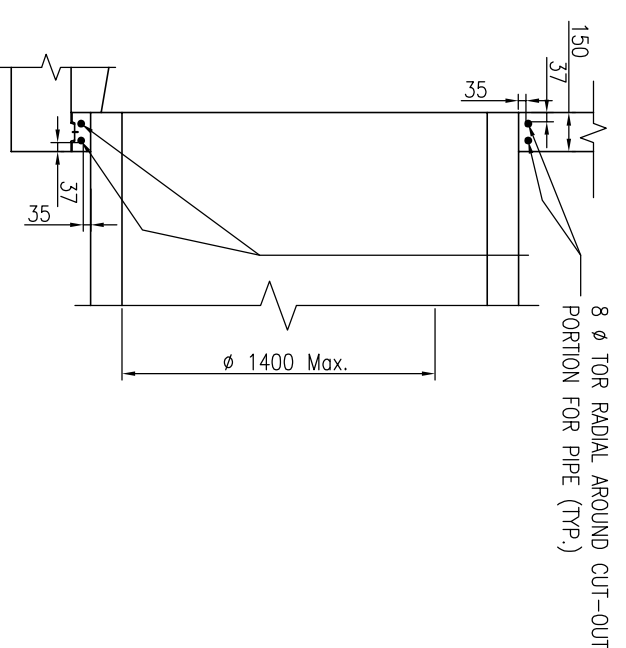
JOB NO.	DISCIPLINE	DRAWING NO.	REVISION
1092.01	PH	STD-07	00



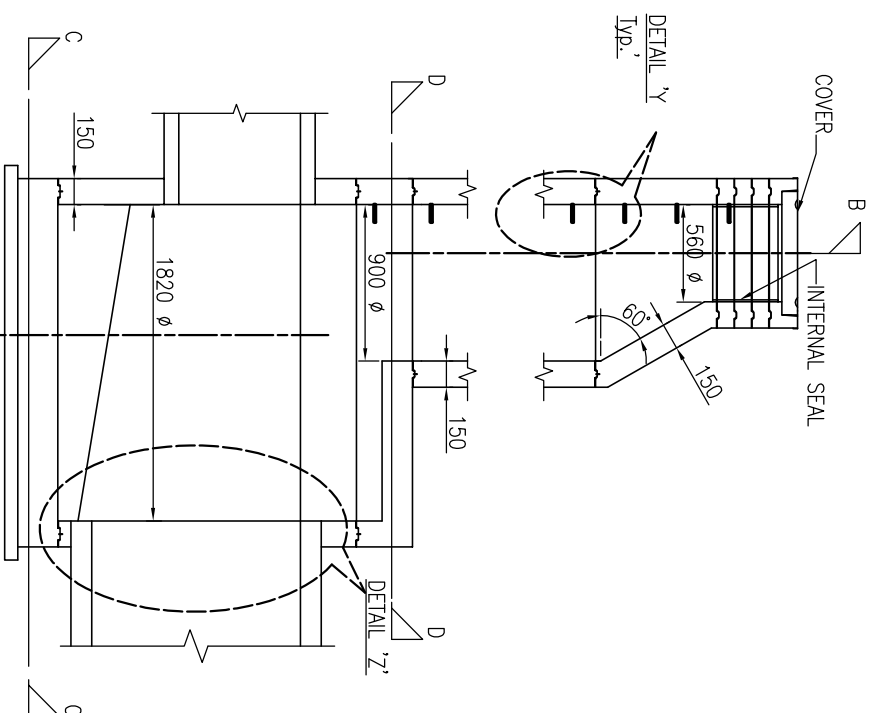
PLAN OF PREFAB RCC MANHOLE



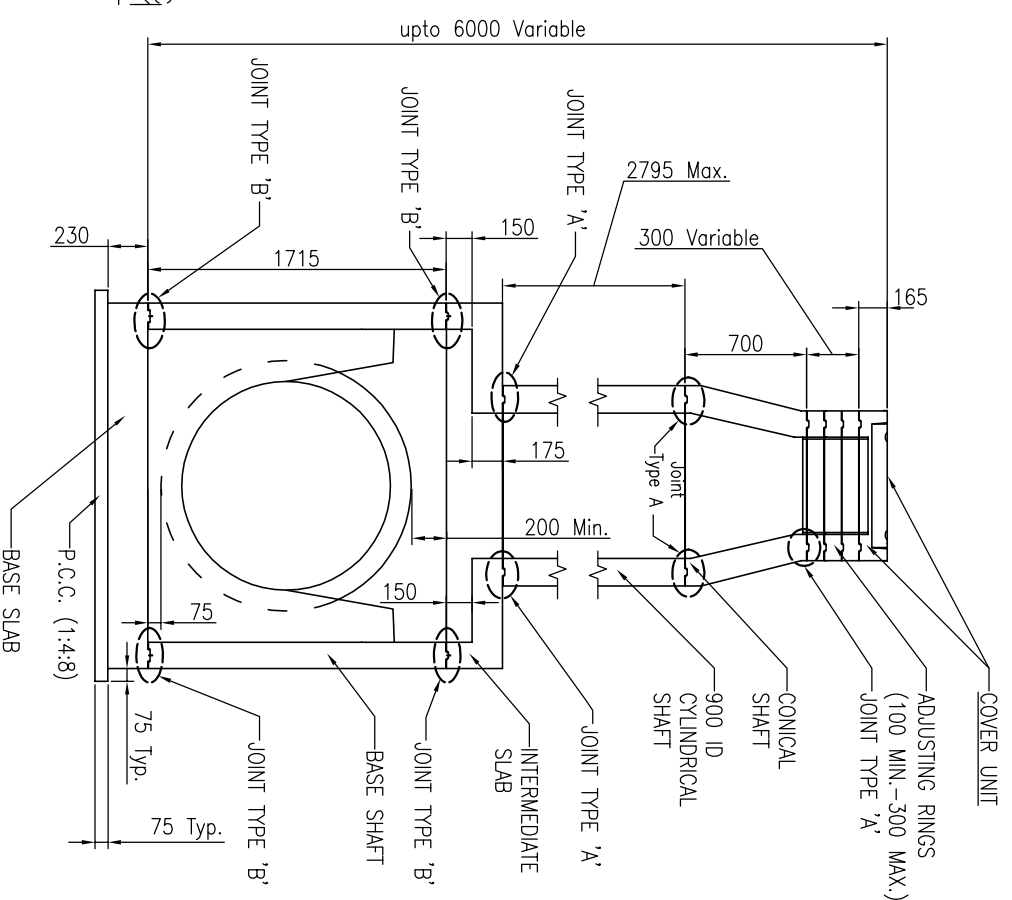
DETAIL OF MANHOLE COVER & ADJUSTABLE RING  
SCALE 1:15



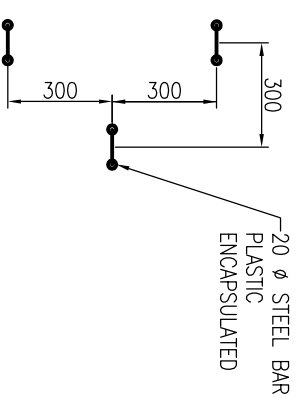
DETAIL-Z  
SCALE: - 1 : 20



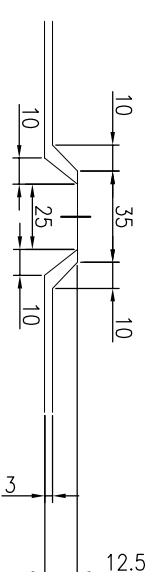
SECTION A-A  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



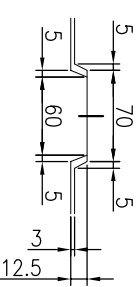
SECTION B-B  
TYPICAL DETAIL OF PREFAB RCC MANHOLE



DETAIL-Y (TYP.)  
SCALE 1:15



JOINT DETAIL TYPE 'A' (TYP.)  
SCALE: - 1 : 2

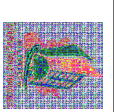


JOINT DETAIL TYPE 'B' (TYP.)  
SCALE: - 1 : 4

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB, WHERE MINIMUM CLEAR COVER IS 25 MM.
  3. GRADE OF CONCRETE M30.
  4. GR. OF STEEL F415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE 'A' EXCEPT JOINTS UNDER JNNURM.
  6. SCALE 1:20, UNLESS OTHERWISE STATED.

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP



**BIHAR URBAN INFRASTRUCTURE DEVELOPMENT CORPORATION**

**PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS:**  
TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

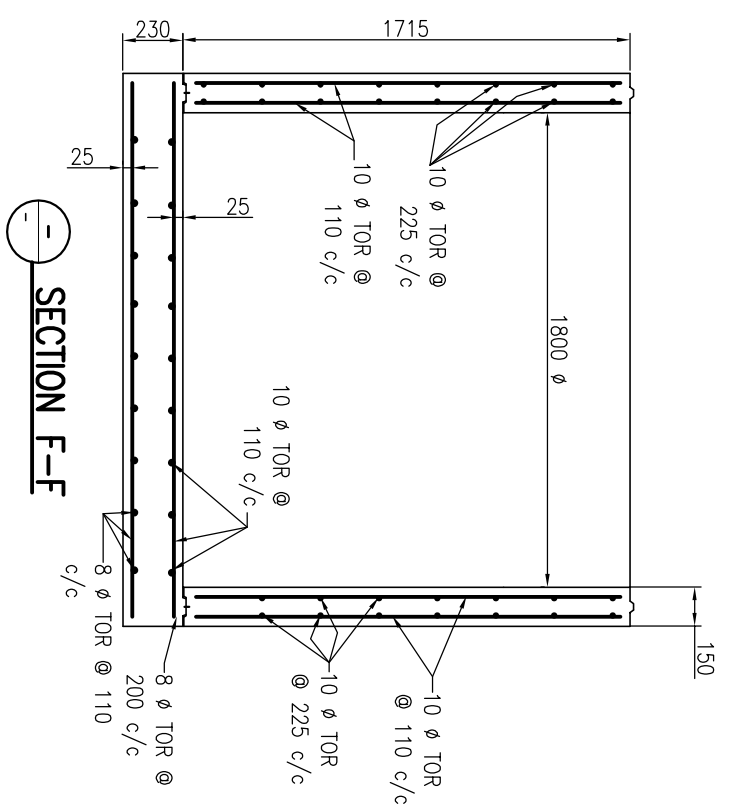
**WEINHARDT (SINGAPORE) PTE. LTD.**  
A-8, Seasia-16, Nohla-201301, India  
Ph.:+91 120 2516165, Fax No.:+91 120 2515745  
www.weinhardtgroup.com, Email:info@weinhartindia.com

**DRAWING TITLE**  
# 1820 Manhole, Depth 2300 to 9000 M, Max. Size of Outgoing Pipe # 1200 Np-3 with 60° Conical Shaft  
SHEET - 1/2

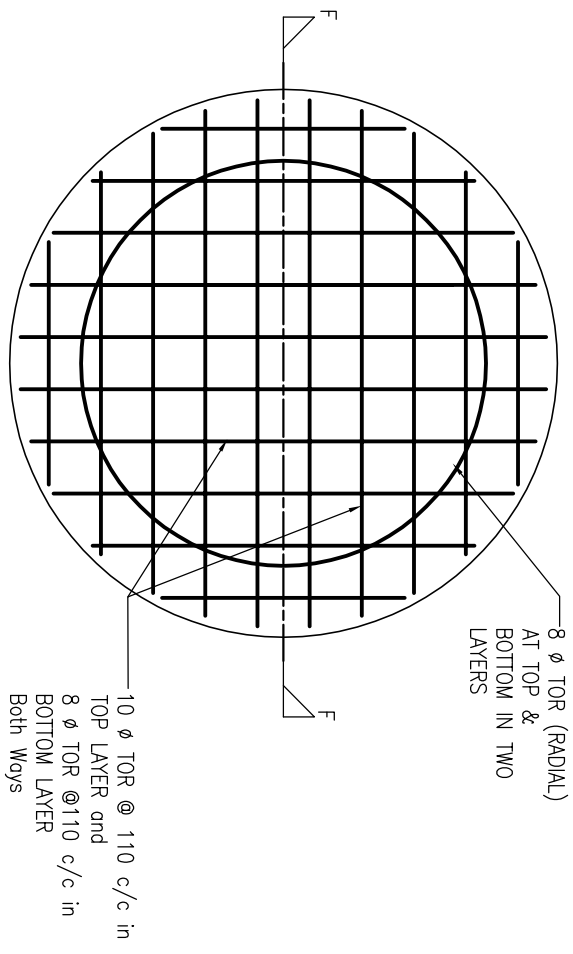
PURPOSE OF ISSUE	SCALE	DATE OF FIRST ISSUE
DRAWN	1 : 30	MAY 2013
DESIGNED		MAY 2013
CHECKED		MAY 2013
APPROVED		MAY 2013

**DISCIPLINE** PH **STD-08** **REVISION** 00

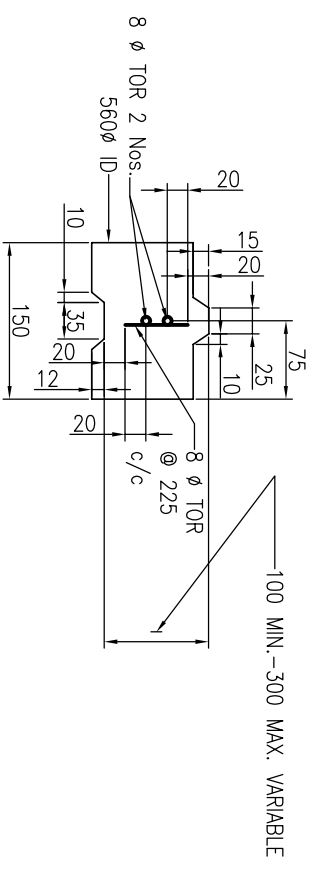




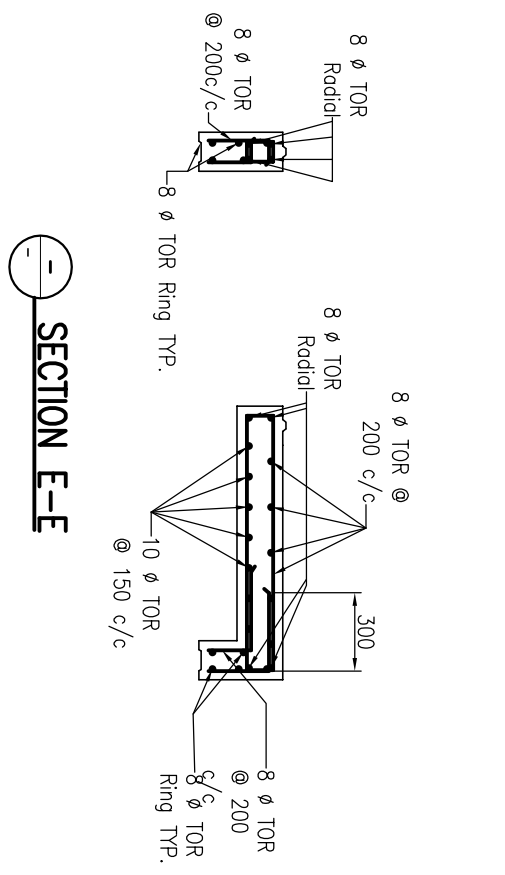
SECTION F-F



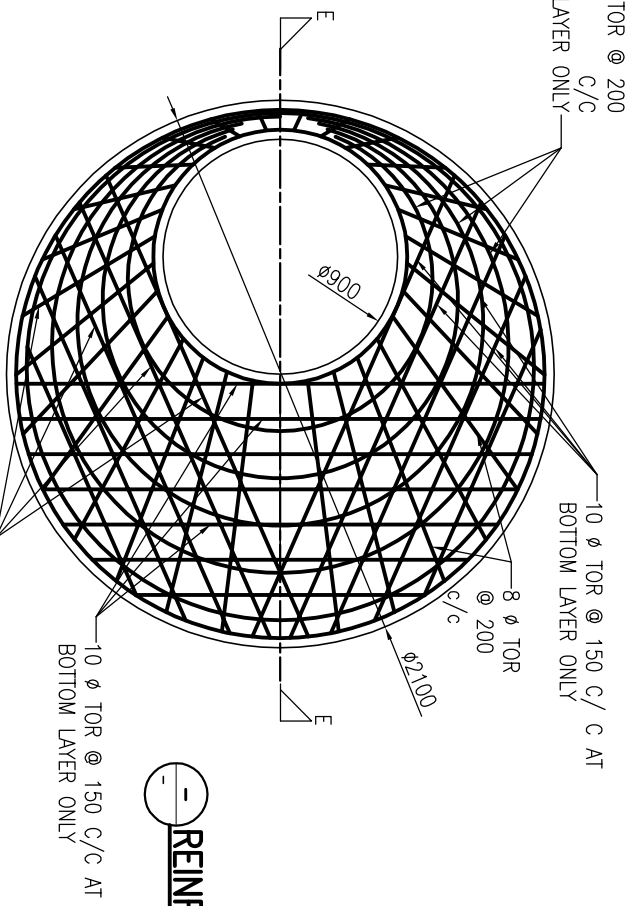
SECTION C-C



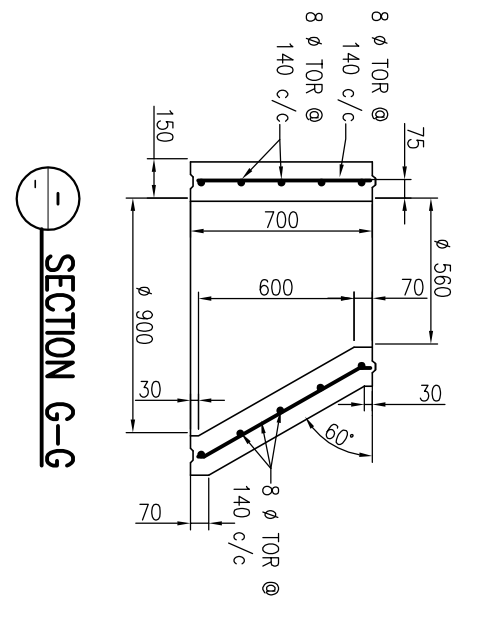
REINFORCEMENT DETAIL OF ADJUSTING RING



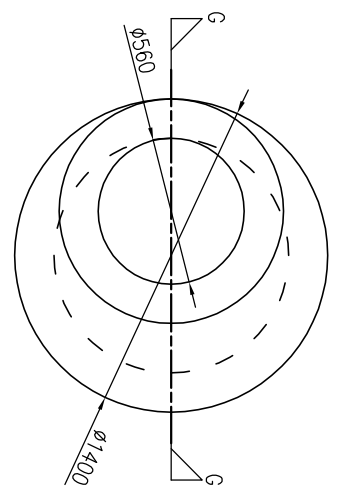
SECTION E-E



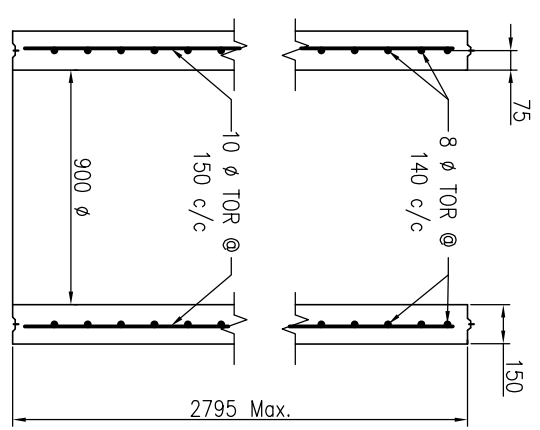
SECTION D-D



SECTION G-G



REINFORCEMENT DETAIL OF CONICAL SHAFT



REINFORCEMENT DETAIL OF 900 ID CYLINDRICAL SHAFT

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. MINIMUM CLEAR COVER 37 MM, EXCEPT BASE SLAB.
  3. WHERE MINIMUM CLEAR COVER IS 25 MM.
  4. GR. OF STEEL IS FE 415, CONFORMING TO IS 1786.
  5. ALL JOINTS ARE JOINT TYPE EXCEPT JOINTS IN BASE.
  6. SCALE: 1:20, UNLESS OTHERWISE STATED.

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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**BIHAR**  
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 DEVELOPMENT CORPORATION

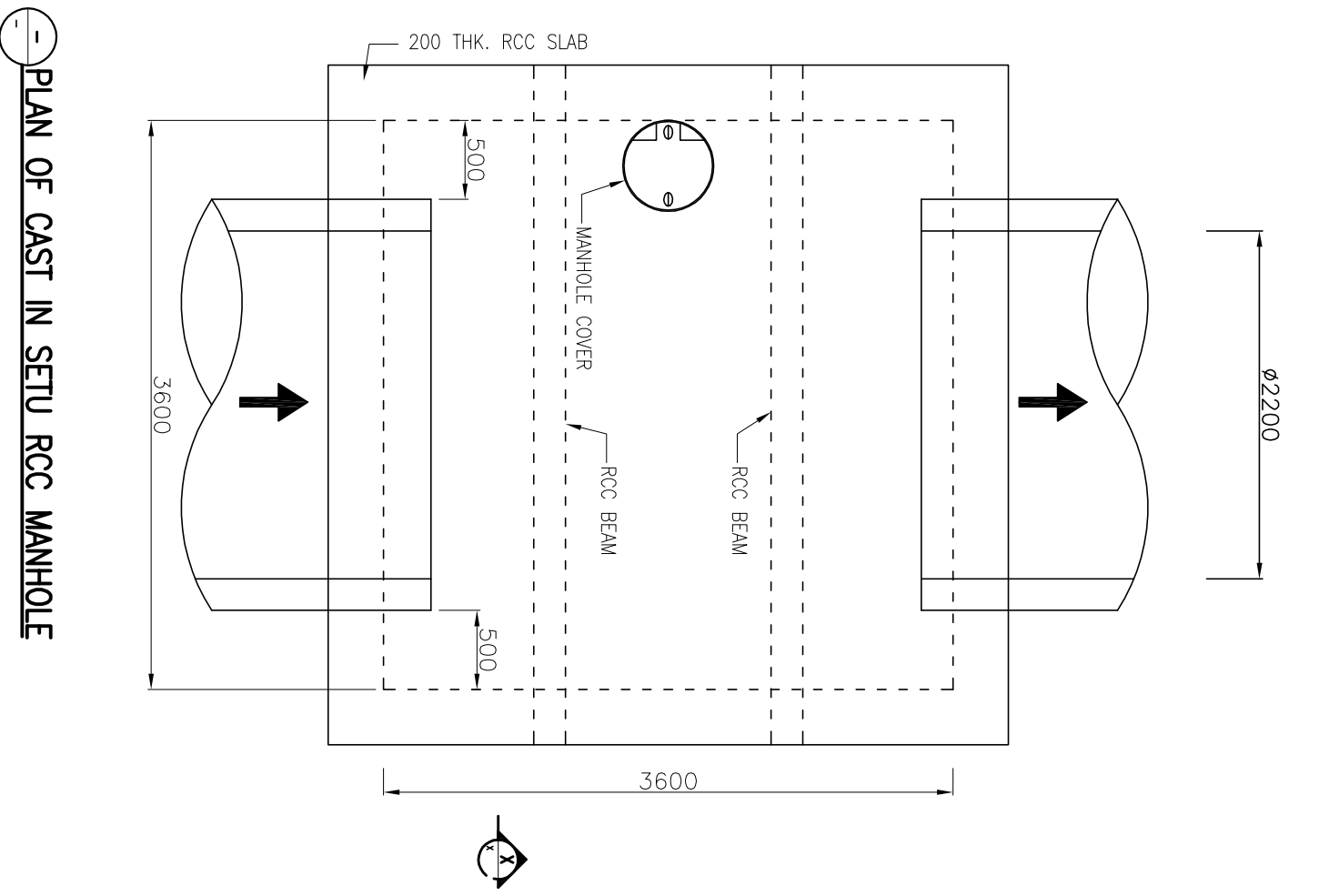
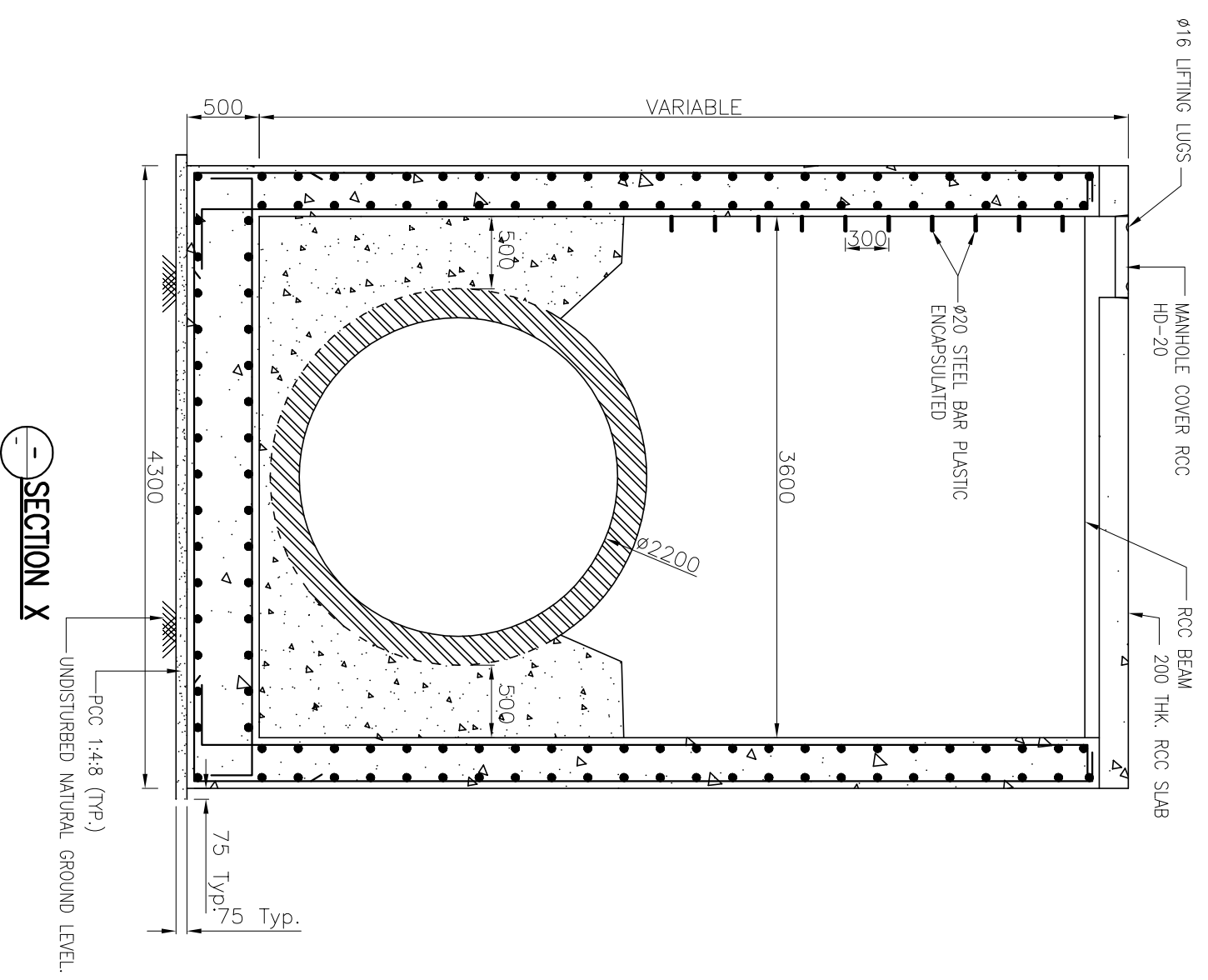
**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS:**  
 TENDERING FOR EXECUTION, CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM

**MEINHARDT**  
 MEINHARDT (SINGAPORE) PTE. LTD.  
 A-8, Seasia-16, Nohda-201301, India  
 Ph.:+91 120 2516165, Fax No.:+91 120 2515745  
 www.meinhardtgroup.com, Email:info@meinhardtindia.com

**DRAWING TITLE**  
 Ø 1820 Manhole, Depth upto 2.30 M, Max. Size of Outgoing Pipe Ø 1400 NP-5 with 60° Conical Shaft  
 SHEET - 2/2

PURPOSE OF ISSUE		SCALE:- 1 : 20	
DRAWN	SKS	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	JR	DATE OF SECOND ISSUE	MAY 2013
CHECKED	RP	DATE OF THIRD ISSUE	MAY 2013
APPROVED	CRR	DATE OF FINAL ISSUE	MAY 2013
JOB NO.	1092.01	DISCIPLINE	PH
DRAWING NO.	STD-08	REVISION	00





- NOTES:-**
1. ALL DIMENSION ARE IN mm. UNLESS OTHERWISE SPECIFIED.
  2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE COMMENCEMENT OF WORK ON SITE.
  3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.

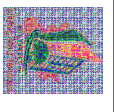
Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY/13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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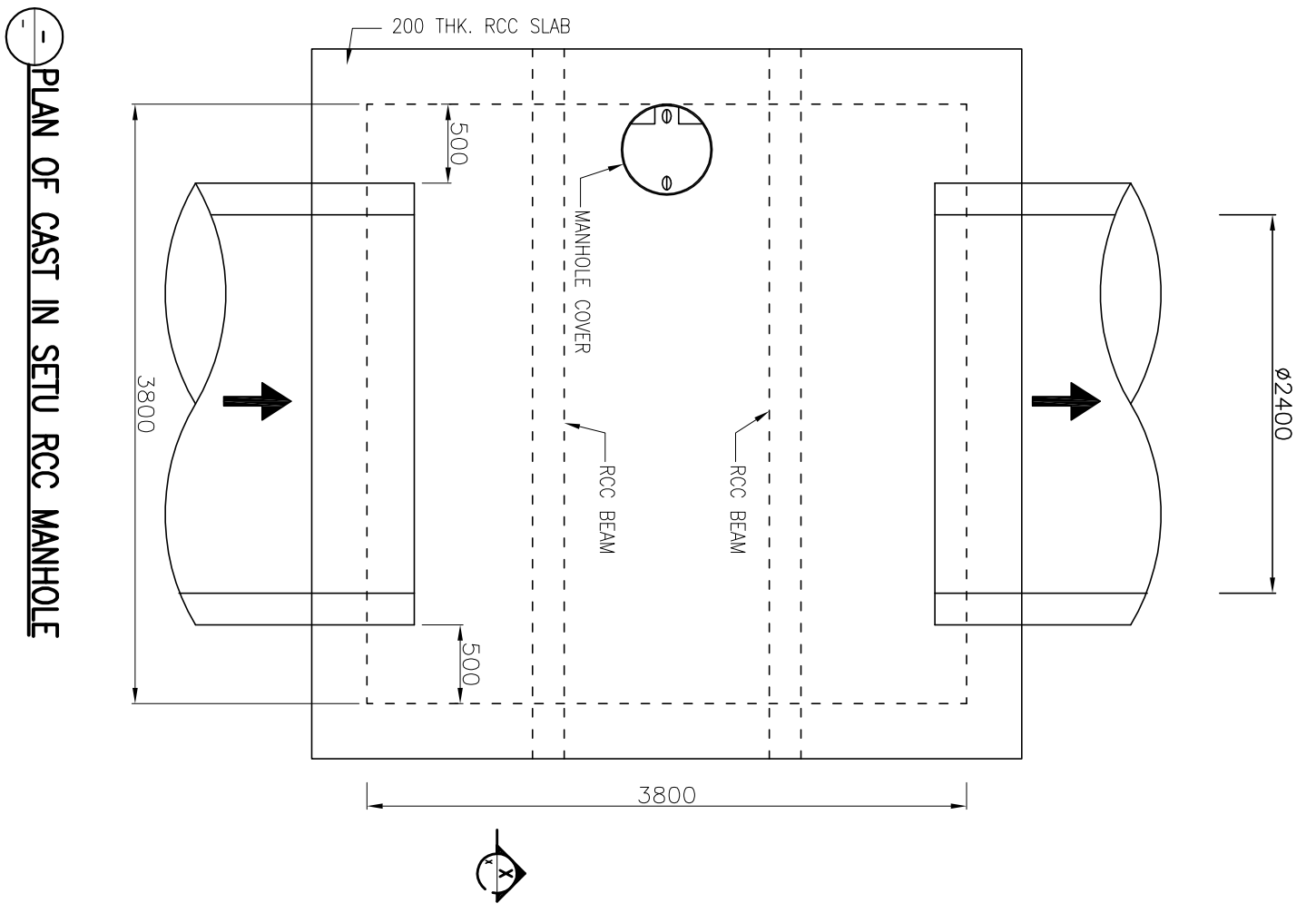
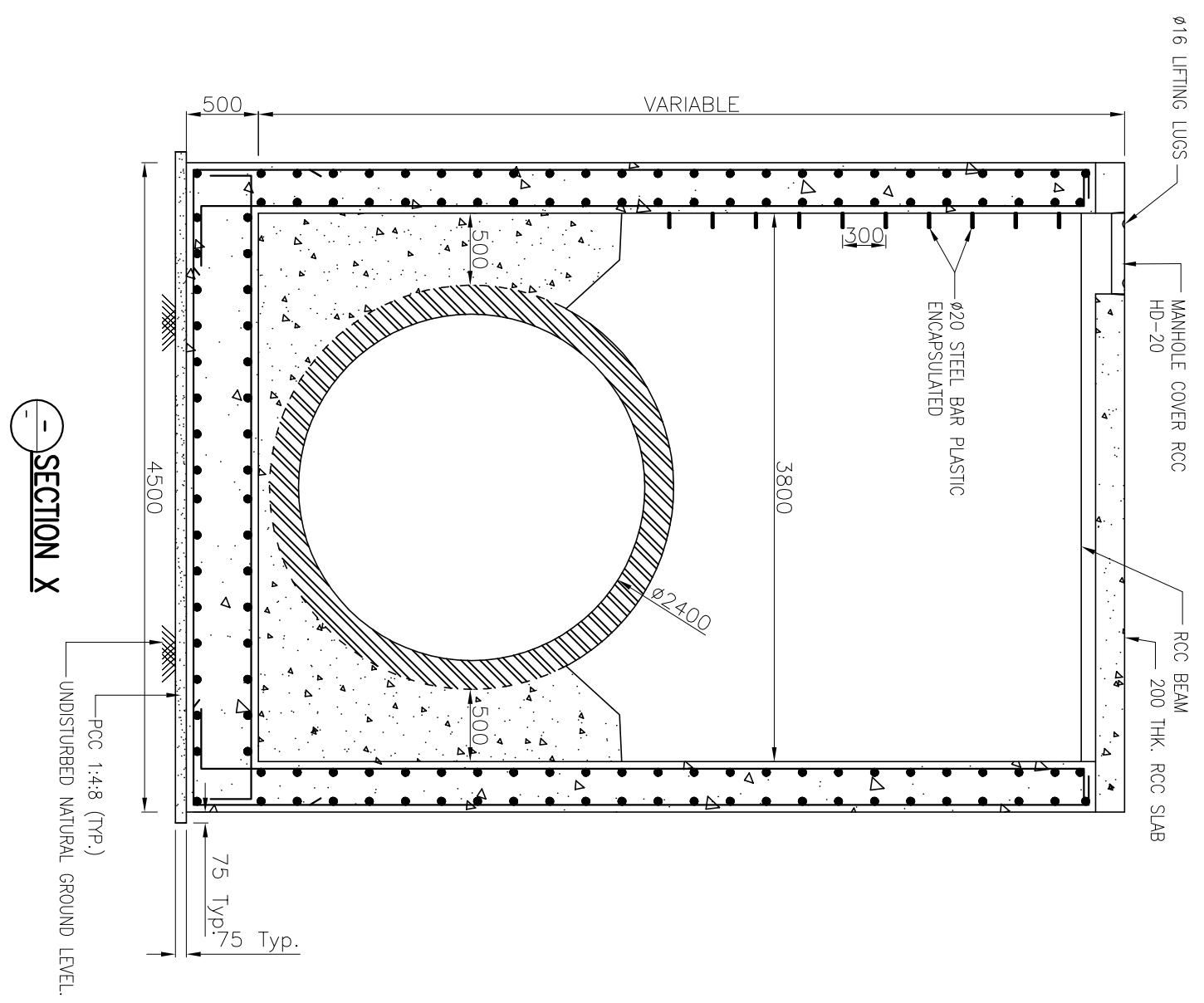
**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS;**  
**TENDERING FOR EXECUTION;**  
**CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM**

CONSULTANT:  
**MEINHARDT (SINGAPORE) PTE. LTD.**  
 A-8, Secher-16, Noida-201301, India  
 Ph:-+91 120 2516165, Fax No:-+91 120 2515145  
 www.meinhardtgroup.com, Email:-info@meinhardtindia.com

DRAWING TITLE  
**Rectangular Manhole, Size of Outgoing Pipe 2200 NP-3**

DATE	BY	SCALE	SHEET NO.	TOTAL SHEETS
DRAWN	SKS	1 : 30	A3	
DESIGNED	JR			
CHECKED	RP			
APPROVED	CRR			

PROJECT: 1092.01 PH  
 DRAWING NO.: STD-09  
 REVISION: 00



- NOTES:-**
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Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY/13	SKS	DRAFT DPR SUBMISSION	RP

**AMENDMENTS**

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**CLIENT:-**



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 DEVELOPMENT CORPORATION

303, Maruti, Patna - 800 001  
 Bhat, Patna - 800 001  
 Phone: (061) 2310101, Fax: (061) 2310103  
 Email: info@biurdc.com

**PROJECT:-**  
 PREPARATION OF DETAILED  
 PROJECT REPORTS (DPRS) & BID  
 DOCUMENTS;  
 TENDERING FOR EXECUTION;  
 CONSTRUCTION SUPERVISION &  
 QUALITY CONTROL OF SEWERAGE &  
 DRAINAGE PROJECTS OF PATNA  
 UNDER JNNURM

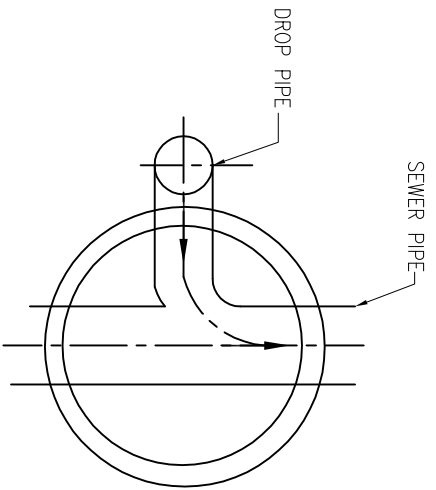
**CONSULTANT:-**



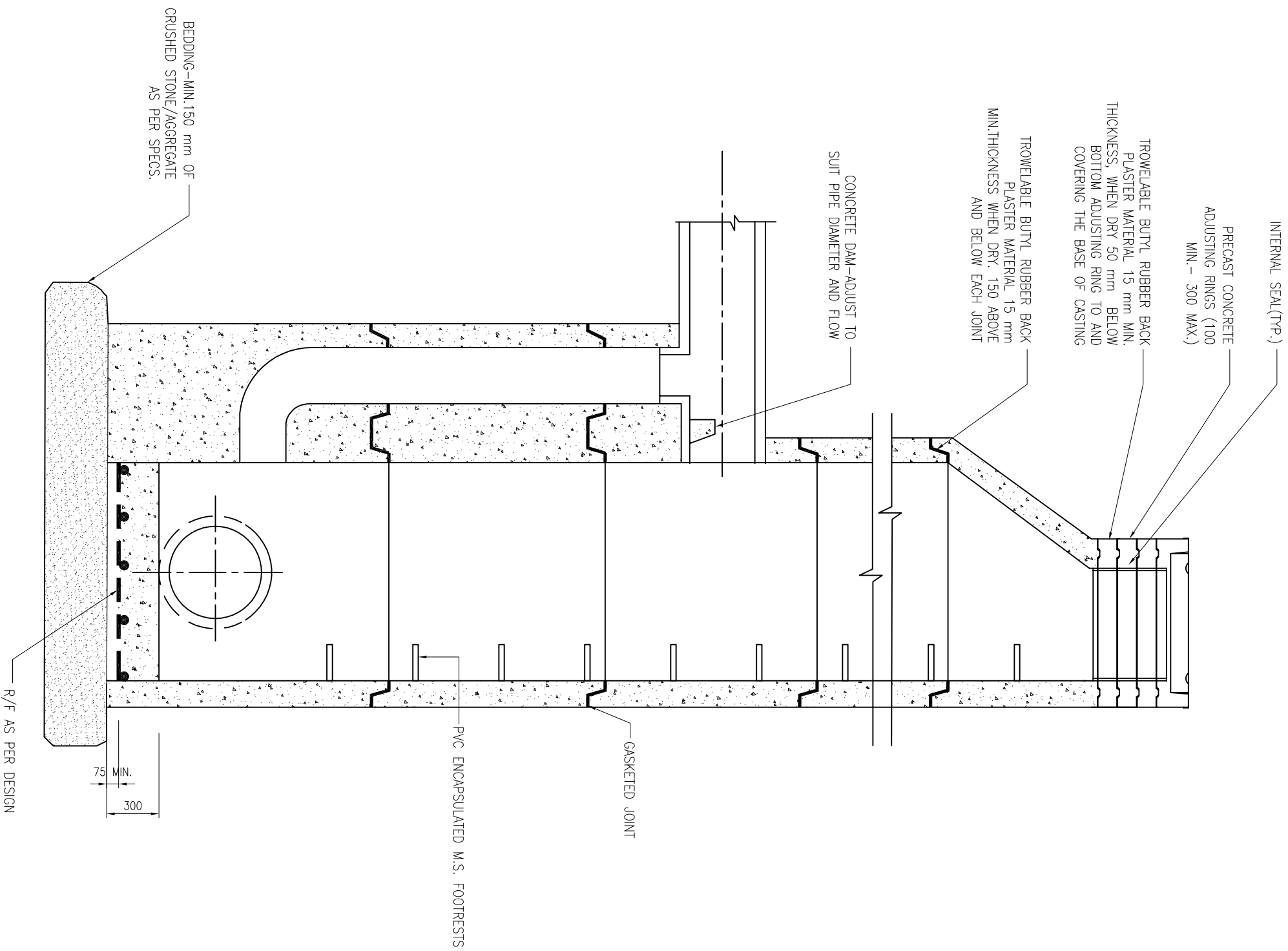
**MEINHARDT (SINGAPORE) PTE. LTD.**  
 A-8, Secher-16, Noida-201301, India  
 Ph:-+91 120 2516165, Fax No:-+91 120 2515145  
 www.meinhardtgroup.com, Email: info@meinhardtindia.com

**DRAWING TITLE**  
 Rectangular Manhole, Size of Outgoing  
 Pipe  $\phi$  2400 NP-3

DATE OF ISSUE	SCALE	1 : 30
<b>PROJECT</b>	<b>DRAWN</b>	<b>BY</b>
<b>DRAFT</b>	<b>DESIGNED</b>	<b>CHECKED</b>
<b>APPROVED</b>	<b>DATE OF FIRST ISSUE</b>	<b>REVISION</b>
<b>1092.01</b>	<b>PH</b>	<b>STD-10</b>
<b>00</b>		



DETAIL PLAN VIEW



- NOTES:-**
1. ALL DIMENSION ARE IN mm. UNLESS OTHERWISE SPECIFIED.
  2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF CONSULTANTS.
  3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	APRIL 13	SA	ISSUED FOR DPR	GP
<b>AMENDMENTS</b>				

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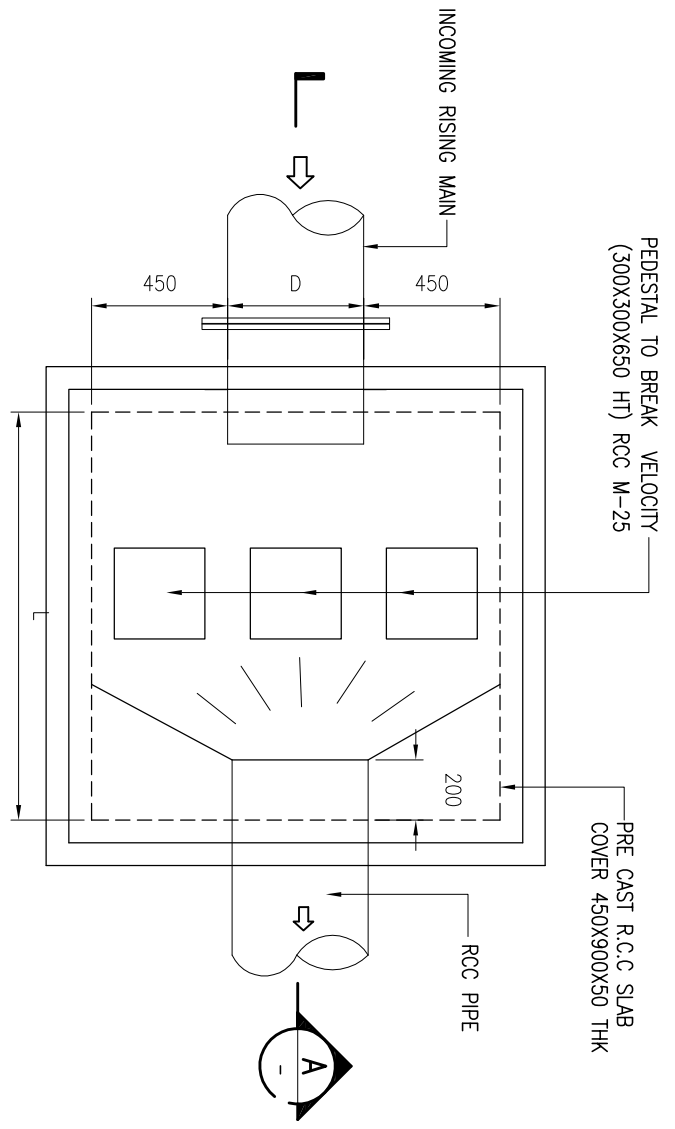
**CLIENT:-**  
 BIHAR  
 URBAN INFRASTRUCTURE  
 DEVELOPMENT CORPORATION

**PROJECT:-**  
 PREPARATION OF DETAILED  
 PROJECT REPORTS (DPRS) & BID  
 DOCUMENTS; TENDERING FOR  
 EXECUTION; CONSTRUCTION  
 SUPERVISION & QUALITY CONTROL  
 OF SEWERAGE & DRAINAGE  
 PROJECTS OF PATNA UNDER  
 JNNURM

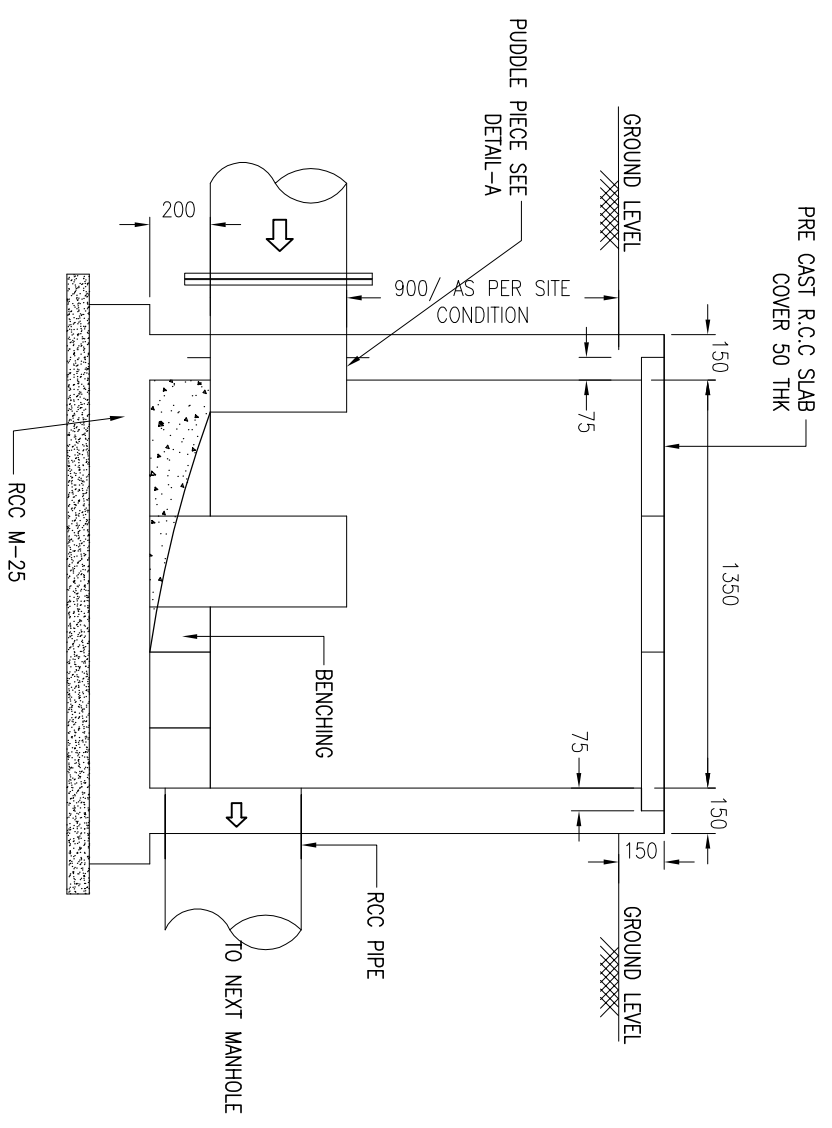
**CONSULTANT:-**  
  
**MEINHARDT**  
 MEINHARDT (SINGAPORE) PTE. LTD.  
 A-8, Sector-16, Noida-201301, India  
 Ph.: +91 120 2516165, Fax No.: +91 120 2515745  
 www.meinhardtgroup.com, Email: info@meinhardtindia.com

**DRAWING TITLE**  
 TYPICAL DETAILS OF PREFAB  
 RCC DROP MANHOLE

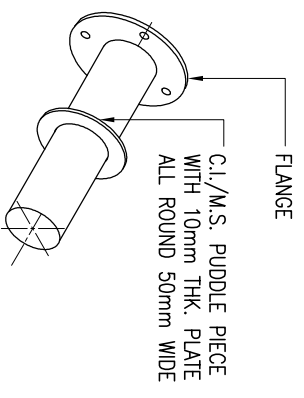
PURPOSE OF ISSUE		SCALE : 1:30	
DETAILS PROJECT REPORT (SEWERAGE)			
BY	DATE OF FIRST ISSUE	SHEET SIZE : A3	
DRAWN SA	APRIL 2013		
DESIGNED JR	APRIL 2013		
CHECKED GP	APRIL 2013		
APPROVED CHR	APRIL 2013		
JOB NO. 1092.01	DISCIPLINE PH	DRAWING NO. STD - 11	REVISION 00



PLAN



SECTION



DETAIL

- NOTES:-**
1. ALL DIMENSION ARE IN mm. UNLESS OTHERWISE SPECIFIED
  2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF CONSULTANTS
  3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY 13	SA	DRAFT DPR SUBMISSION	RP
<b>AMENDMENTS</b>				

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 DEVELOPMENT CORPORATION

**PROJECT:-**  
 PREPARATION OF DETAILED  
 PROJECT REPORTS (DPRS) & BID  
 DOCUMENTS; TENDERING FOR  
 EXECUTION; CONSTRUCTION  
 SUPERVISION & QUALITY CONTROL  
 OF SEWERAGE & DRAINAGE  
 PROJECTS OF PATNA UNDER  
 JNNURM

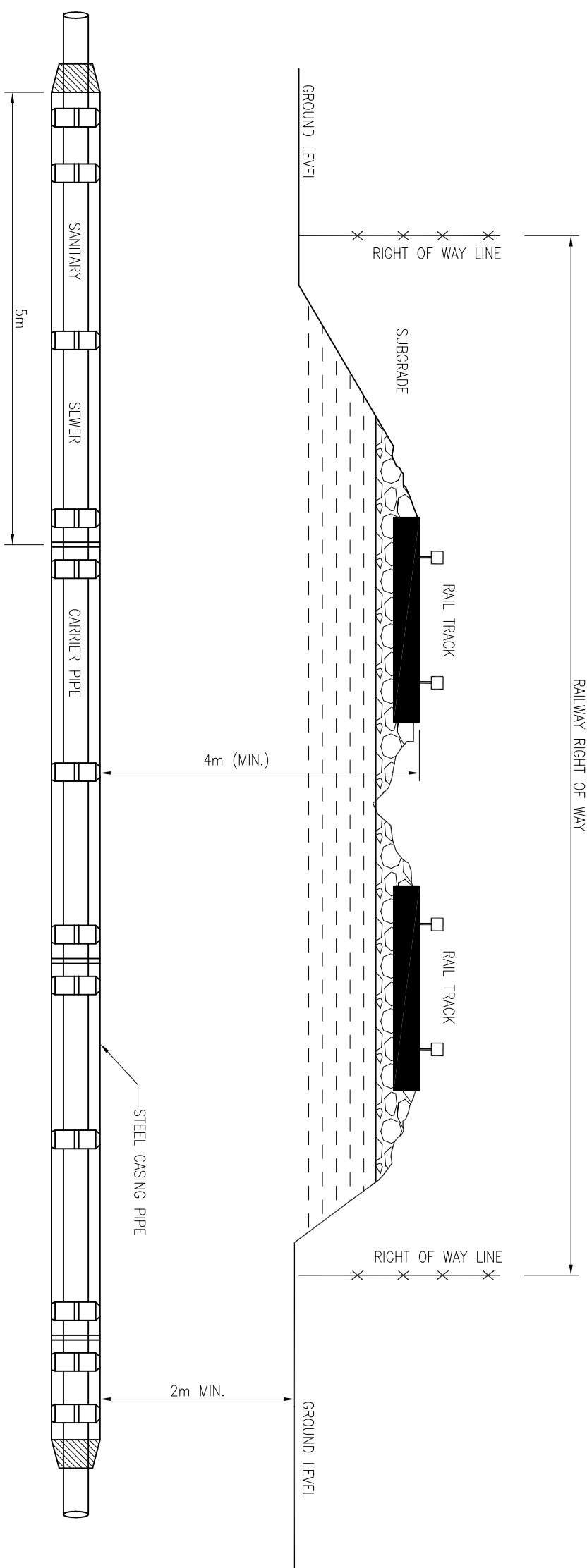
**CONSULTANT:-**  
**MEINHARDT**  
 MEINHARDT (SINGAPORE) PTE. LTD.  
 A-8, Sector-16, Noida-201301, India  
 Ph.: +91 120 2516165, Fax No.: +91 120 2515745  
 www.meinhardtgroup.com, Email: info@meinhardtindia.com

**DRAWING TITLE**  
**RISING MAIN DISCHARGE**  
**MANHOLE**

PURPOSE OF ISSUE		SCALE :
DRAFT DETAILED PROJECT REPORT	AS PER SITE CONDITION	1 : 25
BY	DATE OF FIRST ISSUE	SHEET SIZE : A3
SA	MAY 2013	
DESIGNED		
JR	MAY 2013	
CHECKED		
RP	MAY 2013	
APPROVED		
QRR	MAY 2013	
JOB NO.	DISCIPLINE	DRAWING NO.
1092.01	PH	STD - 12
		REVISION
		00

- NOTES:-**
1. ALL DIMENSION ARE IN mm. UNLESS OTHERWISE SPECIFIED.
  2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF CONSULTANTS.
  3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.

RAILWAY RIGHT OF WAY



Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY 13	SA	DRAFT DPR SUBMISSION	RP
<b>AMENDMENTS</b>				

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**BIHAR**  
**URBAN INFRASTRUCTURE**  
**DEVELOPMENT CORPORATION**

**PROJECT:-**  
**PREPARATION OF DETAILED PROJECT REPORTS (DPRS) & BID DOCUMENTS; TENDERING FOR EXECUTION; CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM**

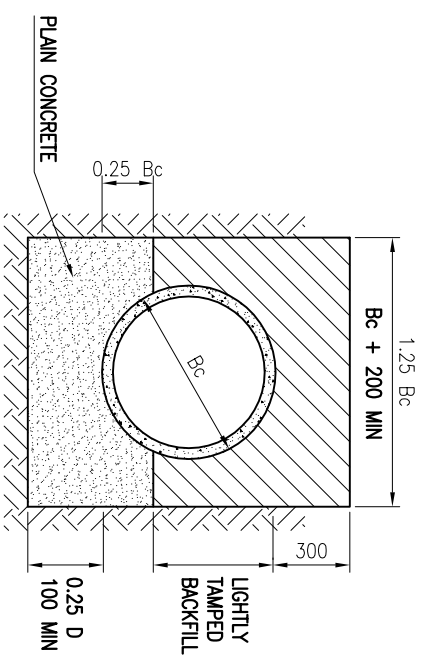
**CONSULTANT:-**

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 A-8, Sector-16, Noida-201301, India  
 Ph.:- +91 120 2516165, Fax No.:- +91 120 2515745  
 www.meinhardtgroup.com, Email:-info@meinhardtindia.com

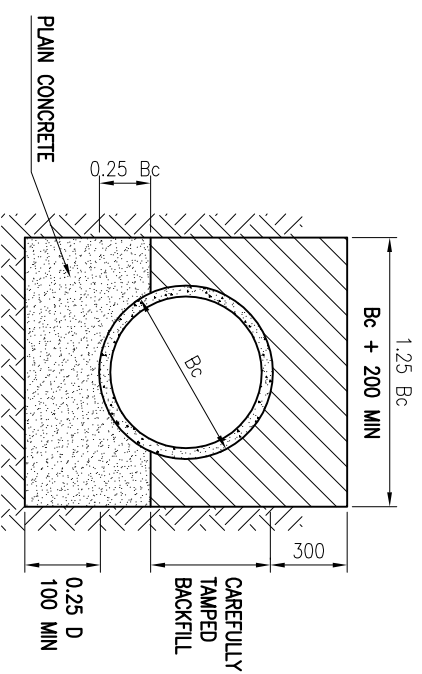
**DRAWING TITLE**  
**SCHEMATIC OF RAIL TRACK CROSSING**

PURPOSE OF ISSUE		SCALE :- MS	
DRAFT DETAILED PROJECT REPORT		SHEET SIZE :- A3	
BY	SA	DATE OF FIRST ISSUE	MAY 2013
DESIGNED	JR	MAY 2013	
CHECKED	RP	MAY 2013	
APPROVED	CR	MAY 2013	
JOB NO.	DISCIPLINE	DRAWING NO.	REVISION
1092.01	PH	STD - 13	00

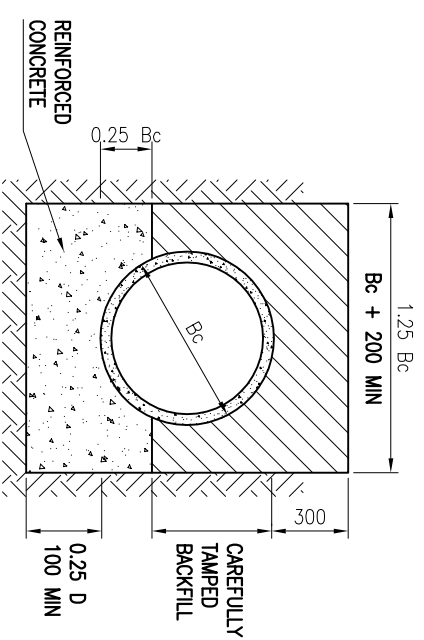




**BEDDING CLASS – Aq**  
(PCC GRADE AND LIGHTLY TAPPED BACKFILL)

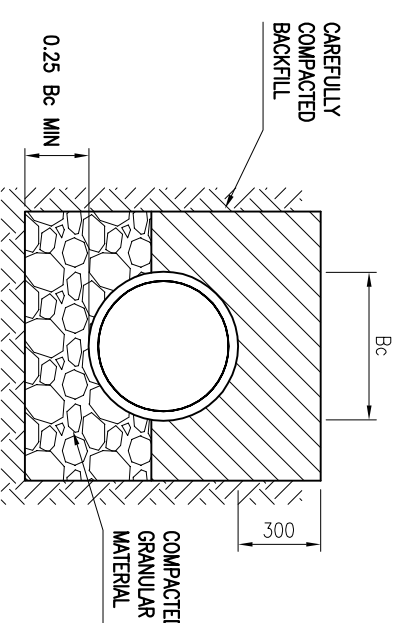


**BEDDING CLASS – Ab**  
(PCC GRADE AND CAREFULLY TAPPED BACKFILL)



**BEDDING CLASS – Ac**  
(RCC GRADE WITH P-0.4%)  
P: THE RATIO OF THE AREA OF STEEL TO THE AREA OF CONCRETE AT THE CROWN

**CLASS – A**



**BEDDING CLASS – B**  
COMPACTED GRANULAR BEDDING

**CLASS – B**

- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
  2. GRANULAR BEDDING AS PER APPROVAL OF ENGINEER.
  3. PCC MIX AS PER APPROVAL OF ENGINEER.
  4. IN ROCK, TRENCH IS EXCAVATED AT LEAST 150 MM BELOW THE BELL OF THE PIPE EXCEPT WHERE CONCRETE CRADLE IS USED.
  5. WELL GRADED CRUSHED ROCK OR GRAVEL WITH THE MAX. SIZE NOT EXCEEDING 25 MM IS RECOMMENDED.
  6. THE ENCASEMENT OF PIPE AND WIDTH OF EXCAVATION SHALL BE AS PER OPHEED MANUAL ON SEWERAGE AND SEWAGE TREATMENT.

Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY'13	SA	DRAFT DPR SUBMISSION	GP
<b>AMENDMENTS</b>				

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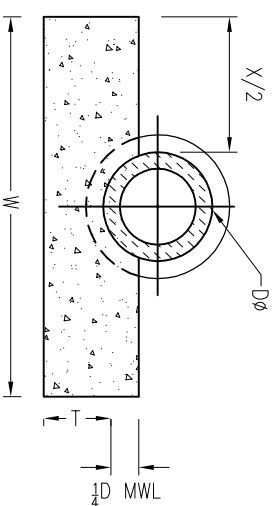
**CLIENT:-**  
BIHAR  
URBAN INFRASTRUCTURE  
DEVELOPMENT CORPORATION

**PROJECT:-**  
PREPARATION OF DETAILED  
PROJECT REPORTS (DPRs) & BID  
DOCUMENTS; TENDERING FOR  
EXECUTION; CONSTRUCTION  
SUPERVISION & QUALITY CONTROL  
OF SEWERAGE & DRAINAGE  
PROJECTS OF PATNA UNDER  
JNNURM

**CONSULTANT:-**  
MEINHARDT (SINGAPORE) PTE. LTD.  
A-9, Selegie Rd, #04-01/02, Singapore 180409  
P.O. Box 120, 231016, Patna, India  
www.meinhardtindia.com, Email: india@meinhardtindia.com

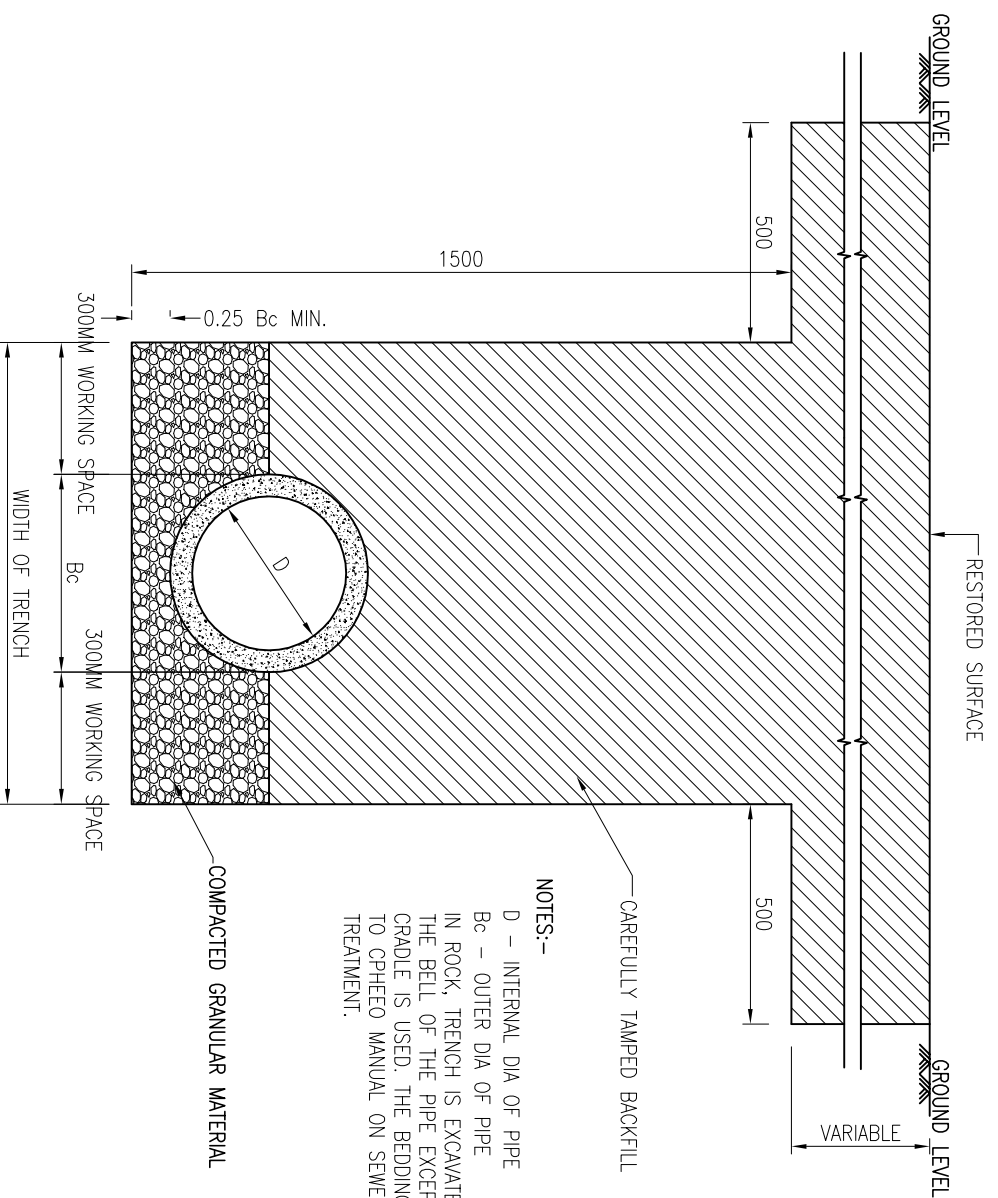
**DRAWING TITLE:**  
TYPICAL DRAWING FOR  
DIFFERENT CLASSES OF  
BEDDING FOR SEWER IN  
TRENCHES

DISCIPLINE	REVISION
PH	STD – 14
	00



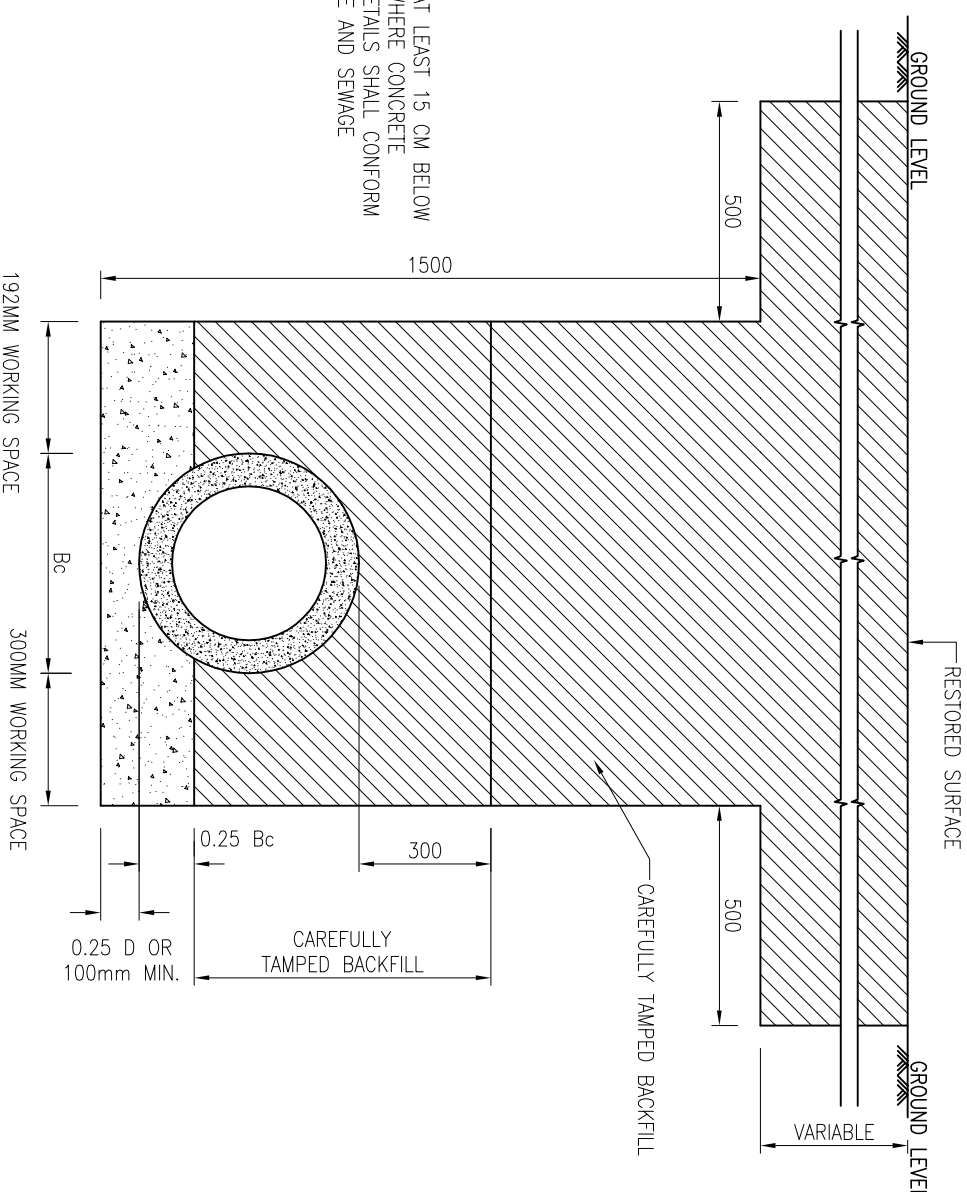
W = D+X, WHERE D IS THE EXTERNAL DIAMETER OF THE PIPE  
 X = 300MM, UPTO TRENCH DEPTH OF 1.2 M.  
 400MM, UPTO TRENCH DEPTH MORE THAN 1.2 M.  
 T = 100MM FOR PIPES UNDER 150MM NOMINAL DIAMETER;  
 ONE FOURTH OF INTERNAL DIAMETER SUBJECT TO A  
 MINIMUM OF 150MM AND MAXIMUM OF 300MM FOR  
 PIPES OF MORE THAN 150MM DIAMETER.  
 MWL = MAXIMUM WATER LEVEL.

### BEDDING-STONEWARE PIPE



**NOTES:-**  
 D - INTERNAL DIA OF PIPE  
 Bc - OUTER DIA OF PIPE  
 IN ROCK, TRENCH IS EXCAVATED AT LEAST 15 CM BELOW  
 THE BELL OF THE PIPE EXCEPT WHERE CONCRETE  
 CRADLE IS USED. THE BEDDING DETAILS SHALL CONFORM  
 TO CPHEEO MANUAL ON SEWERAGE AND SEWAGE  
 TREATMENT.

### COMPACTED GRANULAR BEDDING CLASS-B



**NOTES:-**  
 D - INTERNAL DIA OF PIPE  
 Bc - OUTER DIA OF PIPE  
 IN ROCK, TRENCH IS EXCAVATED AT LEAST 15 CM BELOW  
 THE BELL OF THE PIPE EXCEPT WHERE CONCRETE CRADLE  
 IS USED. THE BEDDING DETAILS SHALL CONFORM TO  
 CPHEEO MANUAL ON SEWERAGE AND SEWAGE TREATMENT.

### CONCRETE CRADLE CLASS-A

**NOTES:-**  
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 3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.

Drawing Base Reference:  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY 13	SA	DRAFT DPR SUBMISSION	RP
<b>AMENDMENTS</b>				

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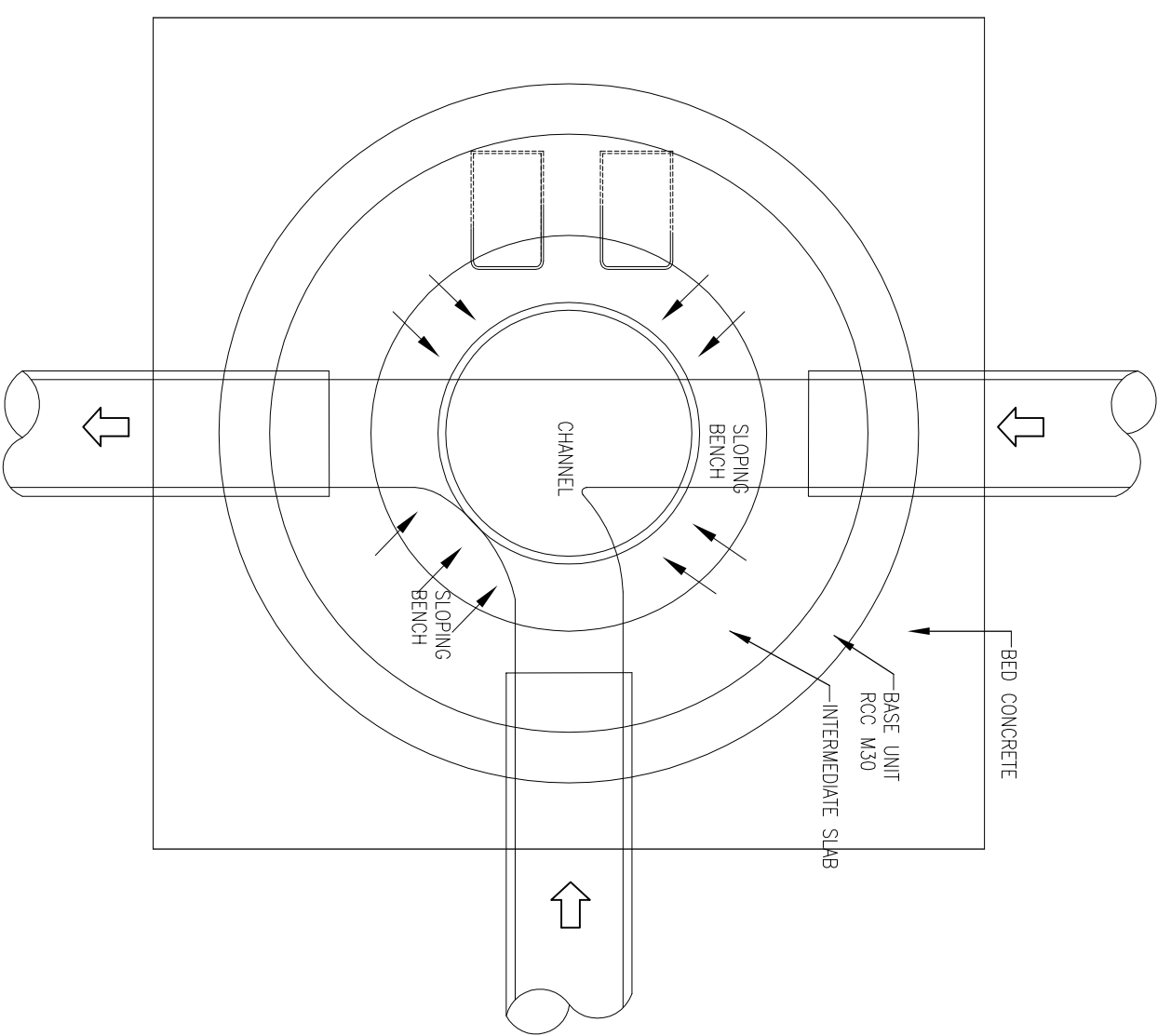
**CLIENT:-**  
 BIHAR  
 URBAN INFRASTRUCTURE  
 DEVELOPMENT CORPORATION

**CONSULTANT:-**  
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 P.N.: +91 120 2516165, Fax No.: +91 120 2515745  
 www.meinhardtgroup.com, Email: info@meinhardtindia.com

**PROJECT:-**  
 PREPARATION OF DETAILED  
 PROJECT REPORTS (DPRS) & BID  
 DOCUMENTS: TENDERING FOR  
 EXECUTION: CONSTRUCTION  
 SUPERVISION & QUALITY CONTROL  
 OF SEWERAGE & DRAINAGE  
 PROJECTS OF PATNA UNDER  
 JNNURM

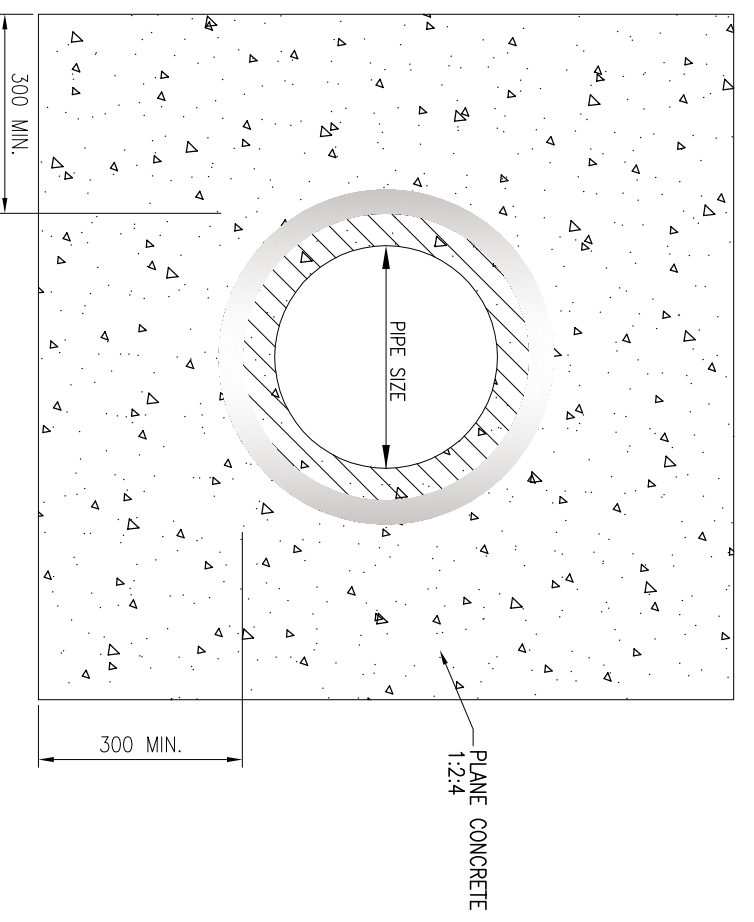
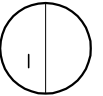
**DRAWING TITLE**  
 TYPICAL DETAILS OF BEDDING OF  
 SEWER IN TRENCHES

DISCIPLINE	NO.	DATE	REVISION
PH	STD - 15		00

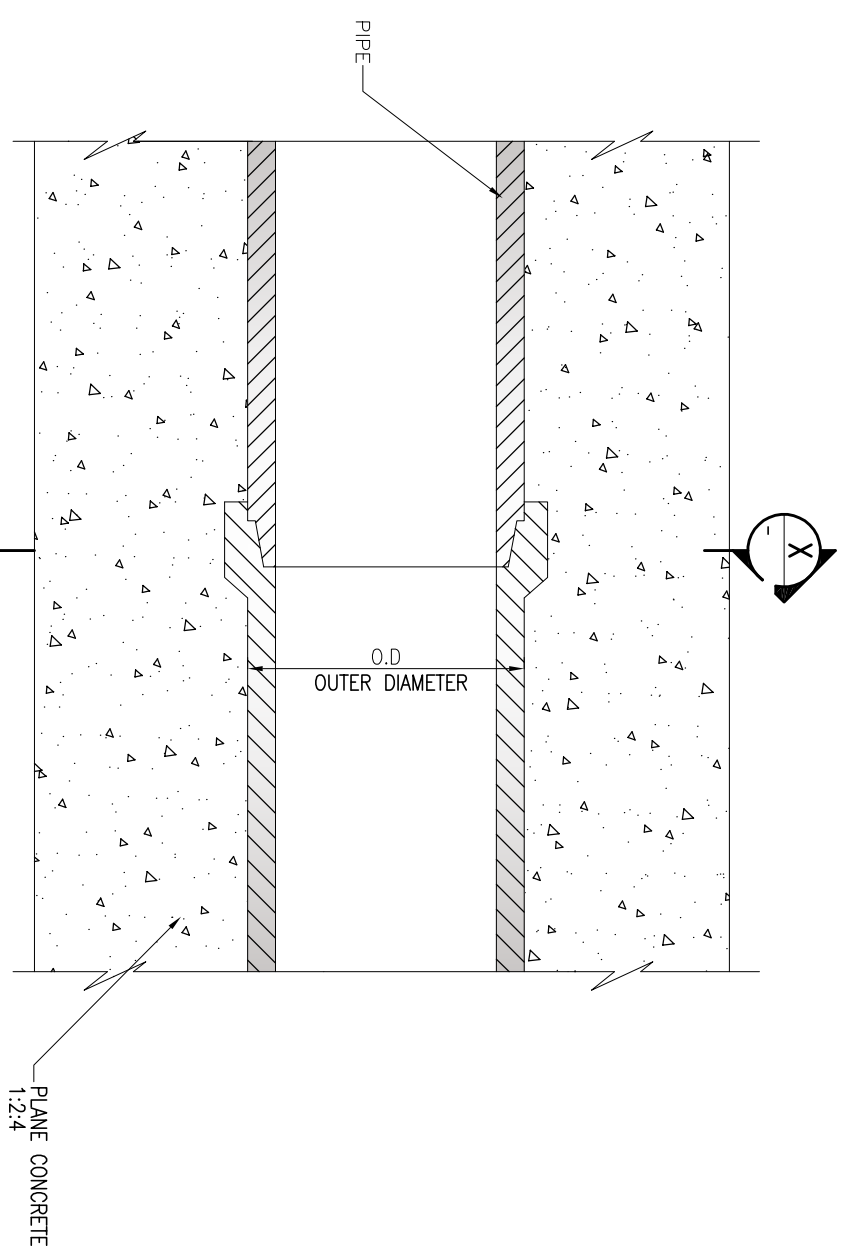


CHANNEL INVERT AT ENDS TO MATCH WITH IL OF INCOMING/OUTGOING PIPES- CHANNEL BOTTOM TO SLOPE WHERE IL OF PIPES DIFFER

### MANHOLE-TYPICAL PLAN



### CROSS SECTION



### LONGITUDINAL SECTION (TYPICAL ENCASING OF PIPE UNDER STREAM BED & ROADS)

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  3. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.
  4. ENCASMENT TO BE USED WHERE SEWER IS CROSSING STREAM BED OR ROAD.

Drawing Base Reference:  
**PNC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHKD
00	MAY 13	SA	DRAFT DPR SUBMISSION	RP
<b>AMENDMENTS</b>				

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**PROJECT:-**  
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**CONSULTANT:-**  
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 www.meinhardtgroup.com, Email: info@meinhardtindia.com

**DRAWING TITLE**  
 MANHOLE DETAIL AT PIPE JUNCTION & ENCASING DETAIL OF SEWER UNDER STREAM BED & ROAD CROSSING

DISCIPLINE	JOB NO.	APPROVED	CHECKED	DESIGNED	DRAWN
PH	1092.01	CR	RP	JR	SA

SCALE: . NIS

PURPOSE OF ISSUE: DRAFT DETAIL PROJECT REPORT

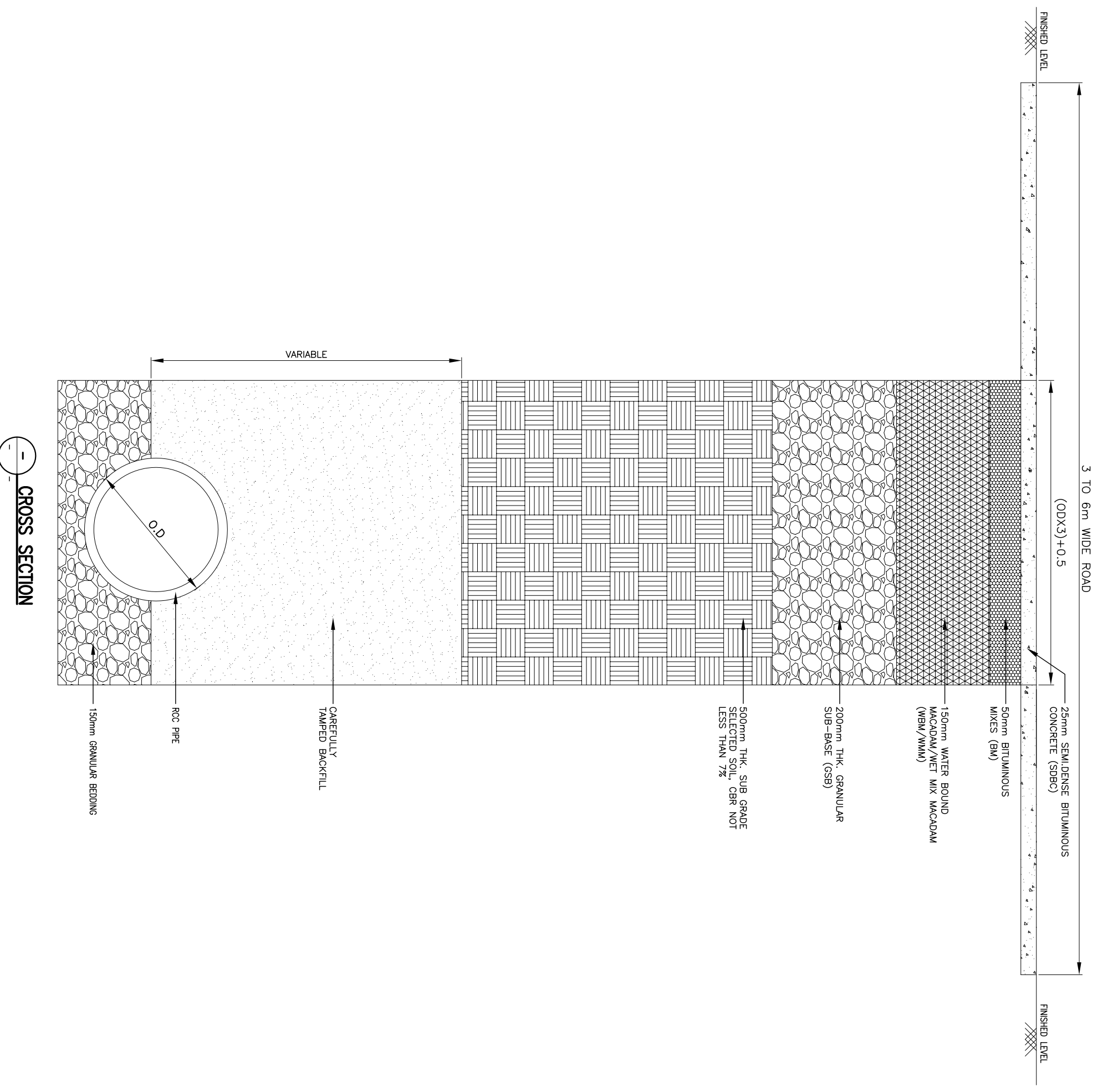
SHEET SIZE: A3

DATE OF FIRST ISSUE: MAY 2013

DATE OF THIS ISSUE: MAY 2013

REVISION: 00

DRAWING NO.: STD - 19



- NOTES:-**
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Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER, 2009**

REV	DATE	NAME	DESCRIPTION	CHK'D
00	MAY 13	SA	DRAFT DPR SUBMISSION	RP
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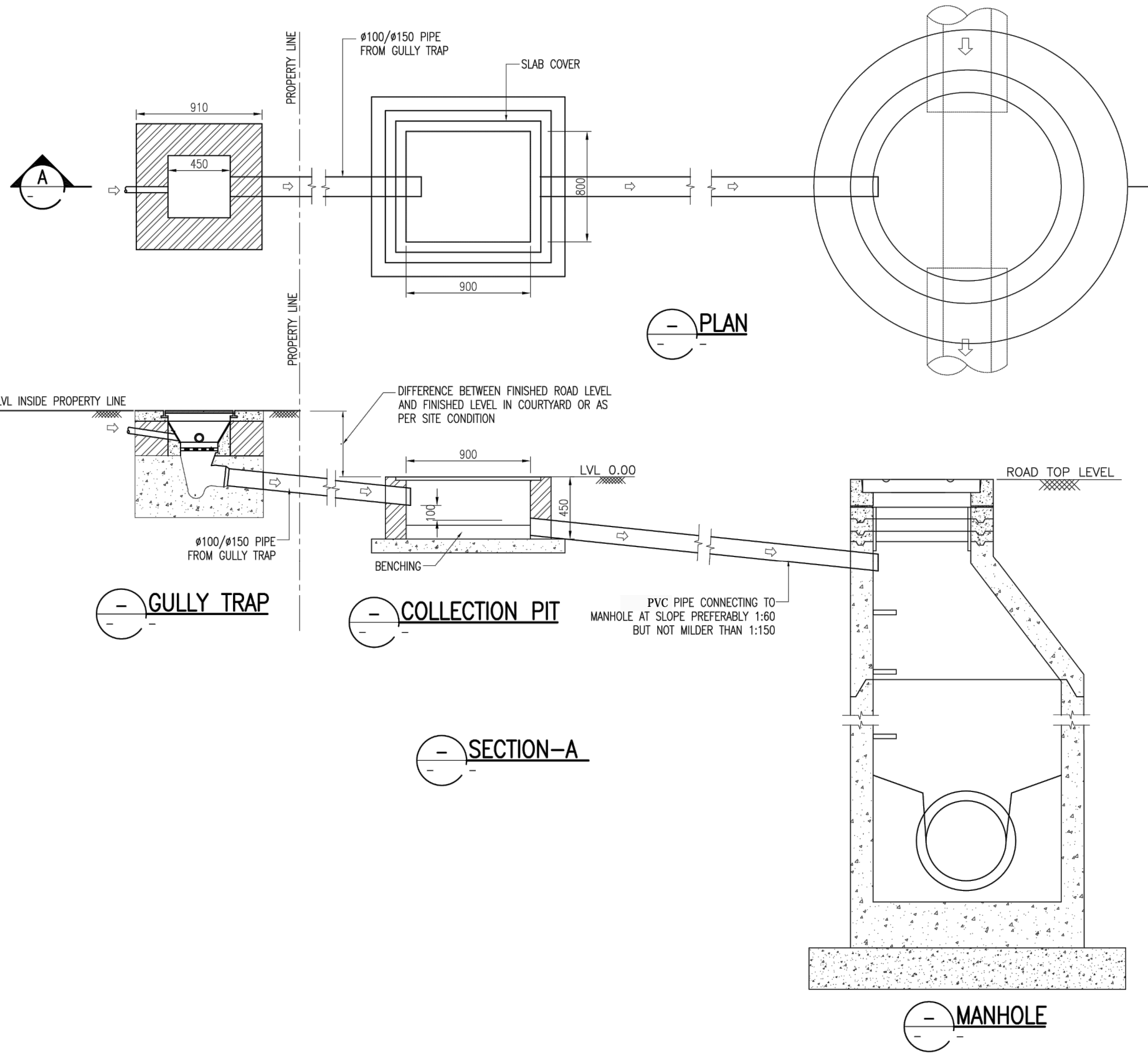
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**PROJECT:-**  
 PREPARATION OF DETAILED  
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**DRAWING TITLE**  
**TYPICAL CROSS SECTION  
 DETAILS FOR ROAD  
 RESTORATION**

PURPOSE OF ISSUE		SCALE :- N.T.S	
DRAWN	SA	SHEET SIZE :- A3	
DESIGNED	JR	DATE OF FIRST ISSUE	
CHECKED	RP	MAY 2013	
APPROVED	CRP	MAY 2013	
JOB NO.	DISCIPLINE	DRAWING NO.	REVISION
1092.01	PH	STD - 20	00



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Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

NO	DATE	SA	NAME	DESCRIPTION	CHKD
00	MAY'13	SA		DRAFT DPR SUBMISSION	RP

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 Website: http://www.buidc.co.in

PROJECT:-  
**PREPARATION OF DETAILED PROJECT REPORTS (DPRs) & BID DOCUMENTS; TENDERING FOR EXECUTION; CONSTRUCTION SUPERVISION & QUALITY CONTROL OF SEWERAGE & DRAINAGE PROJECTS OF PATNA UNDER JNNURM**

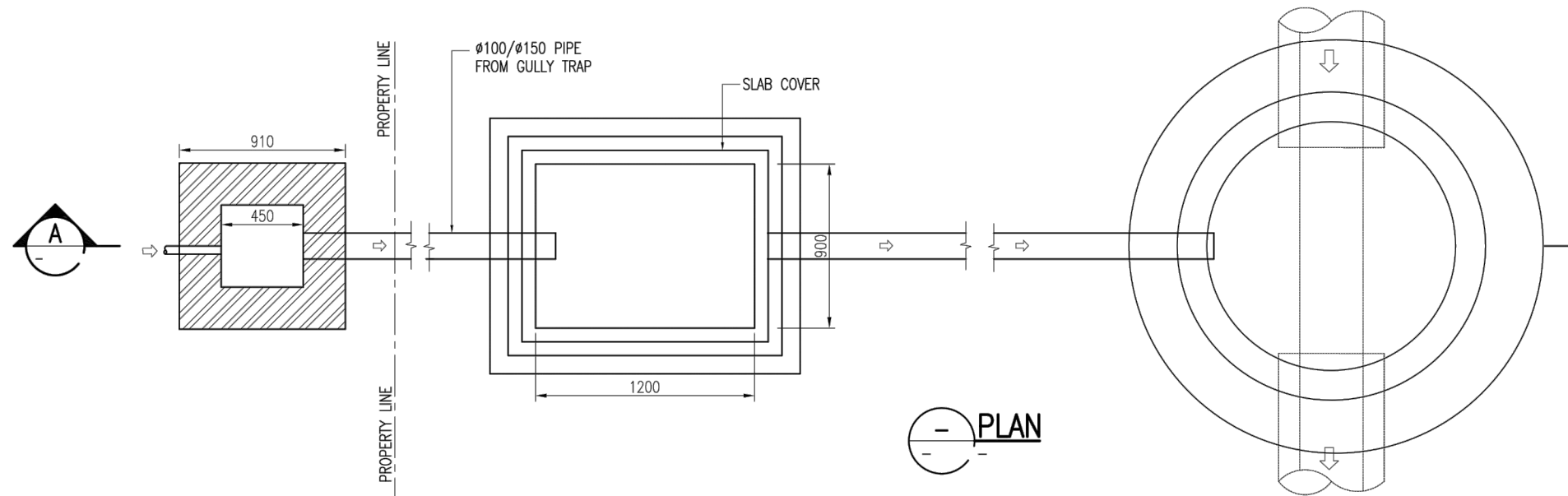
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DRAWING TITLE  
**TYPICAL CONNECTION FROM PROPERTY LINE TO SEWER LINE (TYPE-1)**

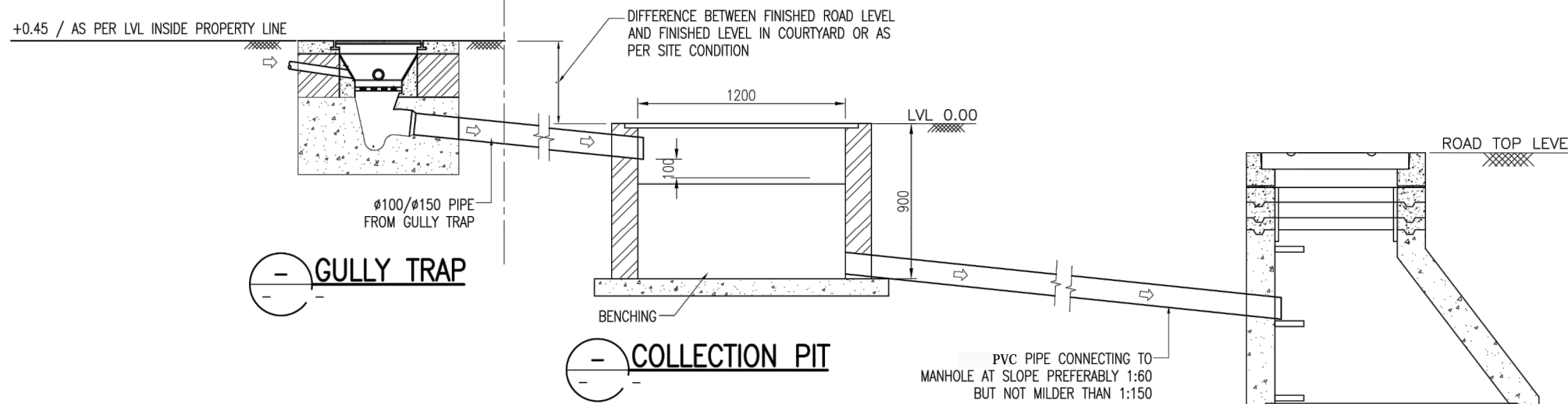
PURPOSE OF ISSUE	SCALE:-	1 : 30
DRAFT DETAILED PROJECT REPORT	SHEET SIZE :-	A3
BY	DATE OF FIRST ISSUE	
DRAWN SA	MAY 2013	
DESIGNED JR	MAY 2013	
CHECKED RP	MAY 2013	
APPROVED CRR	MAY 2013	
JOB NO.	DISCIPLINE	DRAWING NO.
1092.01	PH	STD-21
		REVISION
		00

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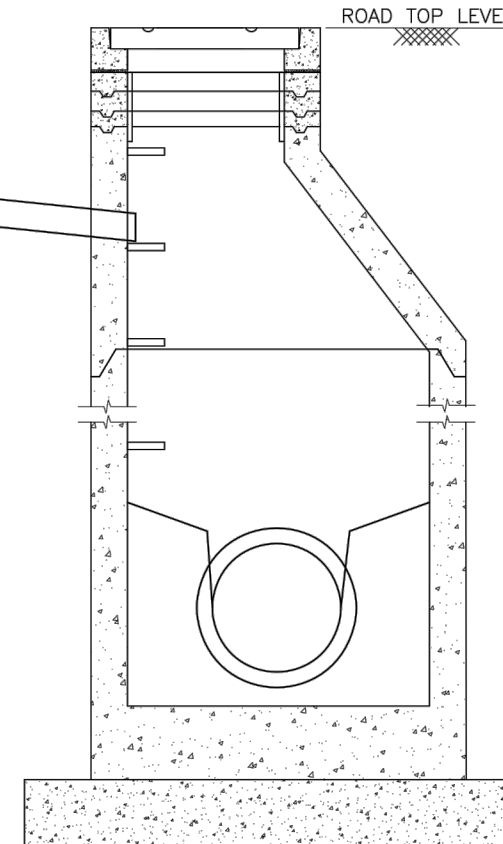




PLAN



SECTION-A



MANHOLE

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Drawing Base Reference:-  
**PMC WORK ORDER 3489, DATED 15 DECEMBER 2009.**

NO	REV	DATE	SA	NAME	DRAFT DPR SUBMISSION	RP
00	MAY'13		SA		DRAFT DPR SUBMISSION	RP

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PROJECT:-  
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CONSULTANT:-



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DRAWING TITLE  
**TYPICAL CONNECTION FROM PROPERTY LINE TO SEWER LINE (TYPE-2)**

PURPOSE OF ISSUE	SCALE:- 1 : 30
DRAFT DETAILED PROJECT REPORT	SHEET SIZE - A3
BY	DATE OF FIRST ISSUE
DRAWN SA	MAY 2013
DESIGNED JR	MAY 2013
CHECKED RP	MAY 2013
APPROVED CRR	MAY 2013
JOB NO. DISCIPLINE	DRAWING NO. REVISION
1092.01 PH	STD-22 00

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