

	PROJECT		Standby SRU & Additional Tanks IOCL Paradip Refinery		
	CLIENT		INDIAN OIL CORPORATION LIMITED		
CONSTRUCTION STANDARD FOR UNDERGROUND WORKS	Project No. 080557C001	Document No. 080557C-000-LD-1490-001		Rev. No. C	Page 1 of 2

CONSTRUCTION STANDARD FOR UNDERGROUND WORKS

C	19.11.2019	ISSUED FOR DESIGN	NDR	KRK	JP / KC	JMC
B	01.11.2019	ISSUED FOR DESIGN	NDR	KRK	JP / KC	JMC
A	16.10.2019	ISSUED FOR DESIGN	NDR	KRK	JP / KC	JMC
REV.	DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED	AUTHORIZED

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CONSTRUCTION STANDARD FOR CONCRETE WORKS	Project No. 080557C001	Document No. 080557C-000-LD-1490-001	Rev. No. C	Page 2 of 2

SL. NO.	DRAWING NO.	DESCRIPTION	REV	DATE	REMARKS
1	080557C-000-STC-1490-001	ABBREVIATIONS, LEGENDS AND SYMBOLS FOR GENERAL CIVIL WORKS	A	16.10.2019	1 SHEET
2	080557C-000-STC-1490-002	TYPICAL ROAD SECTION DETAILS	A	16.10.2019	1 SHEET
3	080557C-000-STC-1490-003	STANDARD R.C.C PAVEMENT DETAILS	A	16.10.2019	1 SHEET
4	080557C-000-STC-1490-004	STORM WATER SYSTEMS STANDARDS DITCHES	A	16.10.2019	1 SHEET
5	080557C-000-STC-1490-005	STORM WATER SYSTEMS DESANDER FOR STANDARD DITCH	A	16.10.2019	1 SHEET
6	080557C-000-STC-1490-006	MANHOLE WITH OR WITHOUT SUBMERGED CONNECTION OILY WATER AND CONTAMINATED RAIN WATER SYSTEM OWS AND CRWS -TYPE-1	A	16.10.2019	1 SHEET
7	080557C-000-STC-1490-007	MANHOLE WITH OR WITHOUT SUBMERGED CONNECTION OILY WATER AND CONTAMINATED RAIN WATER SYSTEM OWS AND CRWS -TYPE-2	A	16.10.2019	1 SHEET
8	080557C-000-STC-1490-008	SEALED MANHOLE DOUBLE CHAMBER	A	16.10.2019	1 SHEET
9	080557C-000-STC-1490-009	HYDRAULIC SEALS (SUBMERGED CONNECTION - STEEL SYSTEM)	A	16.10.2019	1 SHEET
10	080557C-000-STC-1490-010	SAND TRAP & VALVE PIT DETAILS	B	01.11.2019	1 SHEET
11	080557C-000-STC-1490-011	CONTAMINATED RAIN WATER SYSTEM CATCH BASIN (OWS / CRWS)	A	16.10.2019	1 SHEET
12	080557C-000-STC-1490-012	CONDUITS UNDER PIPE WAYS	A	16.10.2019	1 SHEET
13	080557C-000-STC-1490-013	ROAD CROSSING DUCT BANK FOR CABLE TRENCHES	A	16.10.2019	1 SHEET
14	080557C-000-STC-1490-014	CONCRETE CABLE TRENCH (IN PAVED AREA)	A	16.10.2019	1 SHEET
15	080557C-000-STC-1490-015	PIPE SLEEVE DETAIL	A	16.10.2019	1 SHEET
16	080557C-000-STC-1490-016	STANDARD DETAILS OF CLEAN OUT TYPE-I	A	16.10.2019	1 SHEET
17	080557C-000-STC-1490-017	STANDARD DETAILS FOR CLEAN OUT TYPE-II	A	16.10.2019	1 SHEET
18	080557C-000-STC-1490-018	STANDARD DETAILS OF LAYING ABD & CBD NETWORKS	A	16.10.2019	1 SHEET
19	080557C-000-STC-1490-019	STANDARD DETAIL FOR DRAIN FUNNELS	B	19.12.2019	1 SHEET
20	080557C-000-STC-1490-020	GRAVITY AND PRESSURIZED SYSTEMS STANDARD VALVE PITS	A	16.10.2019	1 SHEET
21	080557C-000-STC-1490-021	STANDARD DETAIL OF BARBED WIRE FENCING (WITH ANGLE IRON POST)	A	16.10.2019	1 SHEET
22	080557C-000-STC-1490-022	FIRE SYSTEM HYDRANT-TYPICAL INSTALLATION	A	16.10.2019	1 SHEET
23	080557C-000-STC-1490-023	FIRE SYSTEM WATER CUM FOAM MONITOR -TYPICAL INSTALLATION	A	16.10.2019	1 SHEET
24	080557C-000-STC-1490-024	DETAILS FOR RUNGS	A	16.10.2019	1 SHEET
25	080557C-000-STC-1490-025	VENT FOR MANHOLES	A	16.10.2019	1 SHEET

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5	080557C-000-STC-1490-005	STORM WATER SYSTEMS DESANDER FOR STANDARD DITCH	A	16.10.2019	1 SHEET
6	080557C-000-STC-1490-006	MANHOLE WITH OR WITHOUT SUBMERGED CONNECTION OILY WATER AND CONTAMINATED RAIN WATER SYSTEM OWS AND CRWS -TYPE-1	A	16.10.2019	1 SHEET
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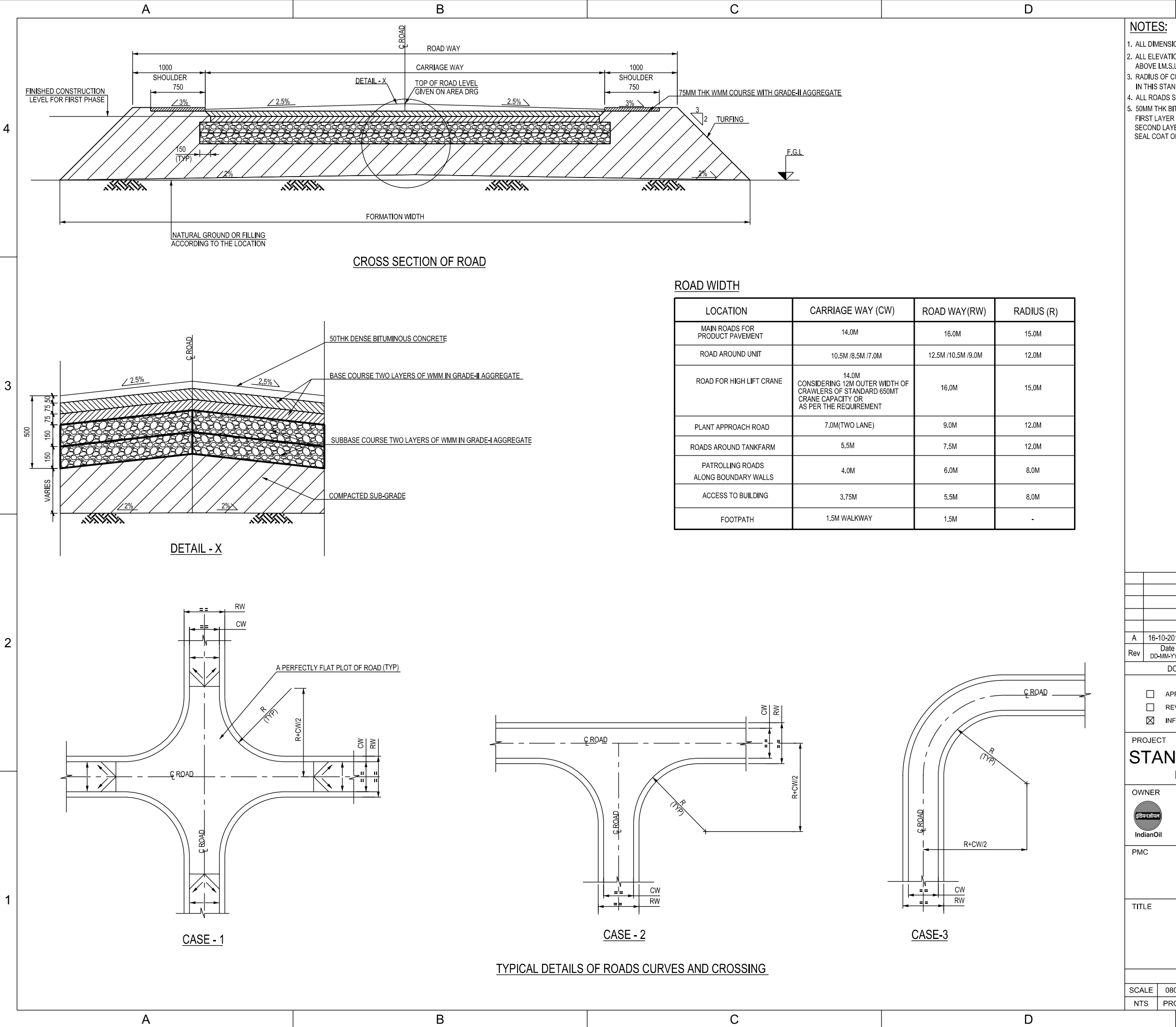
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		B	C	D	E		
GENERAL NOTES - UNDERGROUND NETWORKS		SYMBOLS		ABBREVIATIONS			
UNLESS NOTED OTHERWISE :		FOR GENERAL		UNIT			
4	3	<div><div><div><div><div></div><div>MATCH LINE</div></div><div><div></div><div>REINFORCED CONCRETE</div></div><div><div></div><div>PLAIN CONCRETE</div></div><div><div><div>SHOULDER</div><div>TOE</div></div><div>SLOPE</div></div><div><div></div><div>EXISTING FACILITIES</div></div><div><div><div>X</div><div>X</div><div>X</div></div><div>FENCE</div></div><div><div><div></div><div></div></div><div>GROUND OR GRADING LINE IN SECTION OR ELEVATION</div></div></div><div><div><div></div><div>200 THK. CONCRETE PAVING (HEAVY DUTY)</div></div><div><div></div><div>150 THK. CONCRETE PAVING (MEDIUM DUTY)</div></div><div><div></div><div>100 THK. CONCRETE PAVING (LIGHT DUTY)</div></div><div><div></div><div>GRAVEL PAVING</div></div><div><div></div><div>ASPHALT PAVING</div></div><div><div><div>CATCHMENT AREA</div><div>HPP</div><div>ELEVATION TRNSITION LINE</div><div>CB</div></div></div></div></div></div>		<div><div><div><div><div></div><div>CONCRETE CABLE TRENCH</div></div><div><div></div><div>DIRECT BURIED CABLE TRENCH</div></div><div><div><div></div><div>DUCT BANK</div></div><div><div><div></div><div>DIRECT BURIED CABLE TRENCH</div><div>TYPICALLY SHOWS DOWN SLOPE</div><div>SLOPE</div></div></div><div><div><div></div><div>CONCRETE TRENCH</div><div>B.O.T</div><div>W</div></div><div><div></div><div>DIRECT BURIED CABLE TRENCH</div><div>B.O.T</div><div>W</div></div></div><div><div><div>NO OF DUCTS WIDE</div><div><div>4</div><div>3</div></div><div><div>EL.XX.XXX</div><div>EL.XX.XXX</div></div><div><div>NO OF DUCTS DEEP</div><div>TOP OF CONG. EL</div><div>BOT OF CONG. EL</div></div></div></div><div><div>TYPICAL DUCT BANK NOTATION</div></div></div></div></div></div>		<div><div><div><div><div>M OR (m)</div><div>METERS</div></div><div><div>MM OR (mm)</div><div>MILLIMETERS</div></div><div><div>NOS.</div><div>NUMBERS</div></div></div><div><div>ABBREVIATIONS</div></div><div><div>A. BOLT</div><div>ANCHOR BOLT</div></div><div><div>ADD.</div><div>ADDITION</div></div><div><div>A / G</div><div>ABOVE GROUND</div></div><div><div>APPROX.</div><div>APPROXIMATELY</div></div><div><div>@</div><div>AT</div></div><div><div>AVE.</div><div>AVERAGE</div></div><div><div>B. F</div><div>BOTTOM FLAT</div></div><div><div>B / L</div><div>BATTERY LIMIT</div></div><div><div>BLDG</div><div>BUILDING</div></div><div><div>B. M</div><div>BENCH MARK</div></div><div><div>B. O. D</div><div>INVERT BOTTOM OF DITCH</div></div><div><div>B. O. DB</div><div>BOTTOM OF DUCT BANK</div></div><div><div>B. O. P</div><div>BOTTOM OF PIPE</div></div><div><div>B. O. T</div><div>BOTTOM OF TRENCH</div></div><div><div>C B</div><div>CATCH BASIN</div></div><div><div>C. J</div><div>CONSTRUCTION JOINT</div></div><div><div>¢</div><div>CENTER LINE</div></div><div><div>CON</div><div>CONCENTRIC</div></div><div><div>CONC.</div><div>CONCRETE</div></div><div><div>CON. JT</div><div>CONTRACTION JOINT</div></div><div><div>C. O</div><div>CLEAN OUT</div></div><div><div>C S</div><div>CARBON STEEL</div></div><div><div>DB</div><div>DUCT BANK</div></div><div><div>DET</div><div>DEATAIL</div></div><div><div>DIA. OR Ø</div><div>DIAMETER</div></div><div><div>D I</div><div>DUCTILE IRON</div></div><div><div>DWG</div><div>DRAWING</div></div><div><div>ECC</div><div>ECCENTRIC</div></div><div><div>ELEC.</div><div>ELECTRICAL</div></div><div><div>EXIST.</div><div>EXISTING FACILITIES</div></div><div><div>EXP. JT</div><div>EXPANSION JOINT</div></div><div><div>FDN.</div><div>FOUNDATION</div></div><div><div>F.G.L</div><div>FINISHED GROUND LEVEL / FINISHED GRADE LEVEL</div></div><div><div>FLG.</div><div>FLANGE</div></div><div><div>GEN.</div><div>GENERAL</div></div><div><div>H</div><div>HEIGHT</div></div><div><div>HORIZ.</div><div>HORIZONTAL</div></div><div><div>HPP</div><div>HIGH POINT OF PAVING</div></div><div><div>H. W. L</div><div>HIGH WATER LEVEL</div></div><div><div>I. D</div><div>INSIDE DIAMETER</div></div><div><div>IL</div><div>INVERT LEVEL</div></div><div><div>INCL.</div><div>INCLUDING</div></div><div><div>INST.</div><div>INTRUMENT</div></div><div><div>ISO. JT</div><div>ISOLATION JOINT</div></div><div><div>L</div><div>LENGTH</div></div><div><div>LPP</div><div>LOW POINT OF PAVING</div></div><div><div>L. W. L</div><div>LOW WATER LEVEL</div></div><div><div>MATL.</div><div>MATERIAL</div></div><div><div>MAX.</div><div>MAXIMUM</div></div><div><div>MH</div><div>MANHOLE</div></div><div><div>MIN.</div><div>MINIMUM</div></div><div><div>MISC.</div><div>MISCELLANEOUS</div></div><div><div>M / L</div><div>MATCH LINE</div></div><div><div>MSL</div><div>MEAN SEA LEVEL</div></div><div><div>NOM.</div><div>NOMINAL</div></div><div><div>NTS</div><div>NOT TO SCALE</div></div><div><div>O. D</div><div>OUTSIDE DIAMETER</div></div><div><div>P.C.C</div><div>PLAIN CEMENT CONCRETE</div></div><div><div>PS</div><div>PIPE SUPPORT</div></div><div><div>PVC</div><div>POLYVINYAL CHLORIDE</div></div><div><div>R</div><div>RADIUS</div></div><div><div>RE- BAR</div><div>REINFORCING BAR</div></div><div><div>REF</div><div>REFERENCE</div></div></div><div><div>REQD</div><div>REQUIRED</div></div><div><div>REV.</div><div>REVISION</div></div><div><div>RCC</div><div>REINFORCED CEMENT CONCRETE</div></div><div><div>RCP</div><div>REINFORCED CONCRETE PILE</div></div><div><div>SB</div><div>SUMP BOX</div></div><div><div>SCH.</div><div>SCHEDULE</div></div><div><div>SEC</div><div>SECTION</div></div><div><div>SPEC</div><div>SPECIFACTION</div></div><div><div>SQ. OR □</div><div>SQUARE</div></div><div><div>S / S</div><div>SUBSTATION</div></div><div><div>STD</div><div>STANDARD</div></div><div><div>STR</div><div>STRUCTURE</div></div><div><div>t (OR) THK</div><div>THICKNESS</div></div><div><div>T. O. D</div><div>TOP OF DITCH</div></div><div><div>TOP</div><div>TOP OF PIPE</div></div><div><div>TYP</div><div>TYPICAL</div></div><div><div>U / G</div><div>UNDER GROUND</div></div><div><div>UON</div><div>UNLESS OTHERWISE NOTED</div></div><div><div>VP</div><div>VALVE PIT</div></div><div><div>VERT</div><div>VERTICAL</div></div><div><div>V</div><div>VENT PIPE</div></div><div><div>W</div><div>WIDTH</div></div><div><div>W / O</div><div>WITH OUT</div></div></div>	
		FOR ROAD AND PAVING		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
2	1	FOR SEWER AND DRAINAGE		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
LINE NAME OF PIPING (FLUID CODE)		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
<div><div><div>CWS</div><div>COOLING WATER SUPPLY</div></div><div><div>CWR</div><div>COOLING WATER RETURN</div></div><div><div>DM</div><div>DEMINERALIZED WATER</div></div><div><div>WF</div><div>FIRE WATER</div></div><div><div>WR</div><div>RAW WATER</div></div><div><div>WDK</div><div>DRINKING WATER</div></div><div><div>WS</div><div>SERVICE WATER (FRESH WATER)</div></div><div><div>CRWS</div><div>CONTAMINATED RAIN WATER SEWER</div></div><div><div>OWS</div><div>OILY WATER SEWER</div></div><div><div>CS</div><div>CHEMICAL SEWER</div></div><div><div>ABD</div><div>AMINE BLOW DRAIN</div></div><div><div>CBD</div><div>CLOSED BLOW DRAIN</div></div><div><div>SS</div><div>STORM WATER</div></div><div><div>SWS</div><div>SOUR WATER SEWER</div></div></div>		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
MANHOLE NUMBERING		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
<div><div><div>UUU - FF - MM - NNN</div><div>SERAIL NUMBER</div></div><div><div>MANHOLE TYPE : MH : MANHOLE CB : CATCHBASIN VP : VALVE PIT CO : CLEAN - OUT</div></div><div><div>FLUID CODE</div></div><div><div>UNIT NUMBER</div></div></div>		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
A		B	C	D	E		
GENERAL NOTES - UNDERGROUND NETWORKS		SYMBOLS		ABBREVIATIONS			
UNLESS NOTED OTHERWISE :		FOR GENERAL		UNIT			
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EL</div></div></div></div><div><div>TYPICAL DUCT BANK NOTATION</div></div></div></div></div></div>		<div><div><div><div><div>M OR (m)</div><div>METERS</div></div><div><div>MM OR (mm)</div><div>MILLIMETERS</div></div><div><div>NOS.</div><div>NUMBERS</div></div></div><div><div>ABBREVIATIONS</div></div><div><div>A. BOLT</div><div>ANCHOR BOLT</div></div><div><div>ADD.</div><div>ADDITION</div></div><div><div>A / G</div><div>ABOVE GROUND</div></div><div><div>APPROX.</div><div>APPROXIMATELY</div></div><div><div>@</div><div>AT</div></div><div><div>AVE.</div><div>AVERAGE</div></div><div><div>B. F</div><div>BOTTOM FLAT</div></div><div><div>B / L</div><div>BATTERY LIMIT</div></div><div><div>BLDG</div><div>BUILDING</div></div><div><div>B. M</div><div>BENCH MARK</div></div><div><div>B. O. D</div><div>INVERT BOTTOM OF DITCH</div></div><div><div>B. O. DB</div><div>BOTTOM OF DUCT BANK</div></div><div><div>B. O. P</div><div>BOTTOM OF PIPE</div></div><div><div>B. O. T</div><div>BOTTOM OF TRENCH</div></div><div><div>C B</div><div>CATCH BASIN</div></div><div><div>C. J</div><div>CONSTRUCTION JOINT</div></div><div><div>¢</div><div>CENTER LINE</div></div><div><div>CON</div><div>CONCENTRIC</div></div><div><div>CONC.</div><div>CONCRETE</div></div><div><div>CON. JT</div><div>CONTRACTION JOINT</div></div><div><div>C. O</div><div>CLEAN OUT</div></div><div><div>C S</div><div>CARBON STEEL</div></div><div><div>DB</div><div>DUCT BANK</div></div><div><div>DET</div><div>DEATAIL</div></div><div><div>DIA. OR Ø</div><div>DIAMETER</div></div><div><div>D I</div><div>DUCTILE IRON</div></div><div><div>DWG</div><div>DRAWING</div></div><div><div>ECC</div><div>ECCENTRIC</div></div><div><div>ELEC.</div><div>ELECTRICAL</div></div><div><div>EXIST.</div><div>EXISTING FACILITIES</div></div><div><div>EXP. JT</div><div>EXPANSION JOINT</div></div><div><div>FDN.</div><div>FOUNDATION</div></div><div><div>F.G.L</div><div>FINISHED GROUND LEVEL / FINISHED GRADE LEVEL</div></div><div><div>FLG.</div><div>FLANGE</div></div><div><div>GEN.</div><div>GENERAL</div></div><div><div>H</div><div>HEIGHT</div></div><div><div>HORIZ.</div><div>HORIZONTAL</div></div><div><div>HPP</div><div>HIGH POINT OF PAVING</div></div><div><div>H. W. L</div><div>HIGH WATER LEVEL</div></div><div><div>I. D</div><div>INSIDE DIAMETER</div></div><div><div>IL</div><div>INVERT LEVEL</div></div><div><div>INCL.</div><div>INCLUDING</div></div><div><div>INST.</div><div>INTRUMENT</div></div><div><div>ISO. JT</div><div>ISOLATION JOINT</div></div><div><div>L</div><div>LENGTH</div></div><div><div>LPP</div><div>LOW POINT OF PAVING</div></div><div><div>L. W. L</div><div>LOW WATER LEVEL</div></div><div><div>MATL.</div><div>MATERIAL</div></div><div><div>MAX.</div><div>MAXIMUM</div></div><div><div>MH</div><div>MANHOLE</div></div><div><div>MIN.</div><div>MINIMUM</div></div><div><div>MISC.</div><div>MISCELLANEOUS</div></div><div><div>M / L</div><div>MATCH LINE</div></div><div><div>MSL</div><div>MEAN SEA LEVEL</div></div><div><div>NOM.</div><div>NOMINAL</div></div><div><div>NTS</div><div>NOT TO SCALE</div></div><div><div>O. D</div><div>OUTSIDE DIAMETER</div></div><div><div>P.C.C</div><div>PLAIN CEMENT CONCRETE</div></div><div><div>PS</div><div>PIPE SUPPORT</div></div><div><div>PVC</div><div>POLYVINYAL CHLORIDE</div></div><div><div>R</div><div>RADIUS</div></div><div><div>RE- BAR</div><div>REINFORCING BAR</div></div><div><div>REF</div><div>REFERENCE</div></div></div><div><div>REQD</div><div>REQUIRED</div></div><div><div>REV.</div><div>REVISION</div></div><div><div>RCC</div><div>REINFORCED CEMENT CONCRETE</div></div><div><div>RCP</div><div>REINFORCED CONCRETE PILE</div></div><div><div>SB</div><div>SUMP BOX</div></div><div><div>SCH.</div><div>SCHEDULE</div></div><div><div>SEC</div><div>SECTION</div></div><div><div>SPEC</div><div>SPECIFACTION</div></div><div><div>SQ. OR □</div><div>SQUARE</div></div><div><div>S / S</div><div>SUBSTATION</div></div><div><div>STD</div><div>STANDARD</div></div><div><div>STR</div><div>STRUCTURE</div></div><div><div>t (OR) THK</div><div>THICKNESS</div></div><div><div>T. O. D</div><div>TOP OF DITCH</div></div><div><div>TOP</div><div>TOP OF PIPE</div></div><div><div>TYP</div><div>TYPICAL</div></div><div><div>U / G</div><div>UNDER GROUND</div></div><div><div>UON</div><div>UNLESS OTHERWISE NOTED</div></div><div><div>VP</div><div>VALVE PIT</div></div><div><div>VERT</div><div>VERTICAL</div></div><div><div>V</div><div>VENT PIPE</div></div><div><div>W</div><div>WIDTH</div></div><div><div>W / O</div><div>WITH OUT</div></div></div>	
		FOR ROAD AND PAVING		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
2	1	FOR SEWER AND DRAINAGE		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
		FOR SEWER AND DRAINAGE		ABBREVIATIONS			
LINE NAME OF PIPING (FLUID CODE)		FOR SEWER AND DRAINAGE					

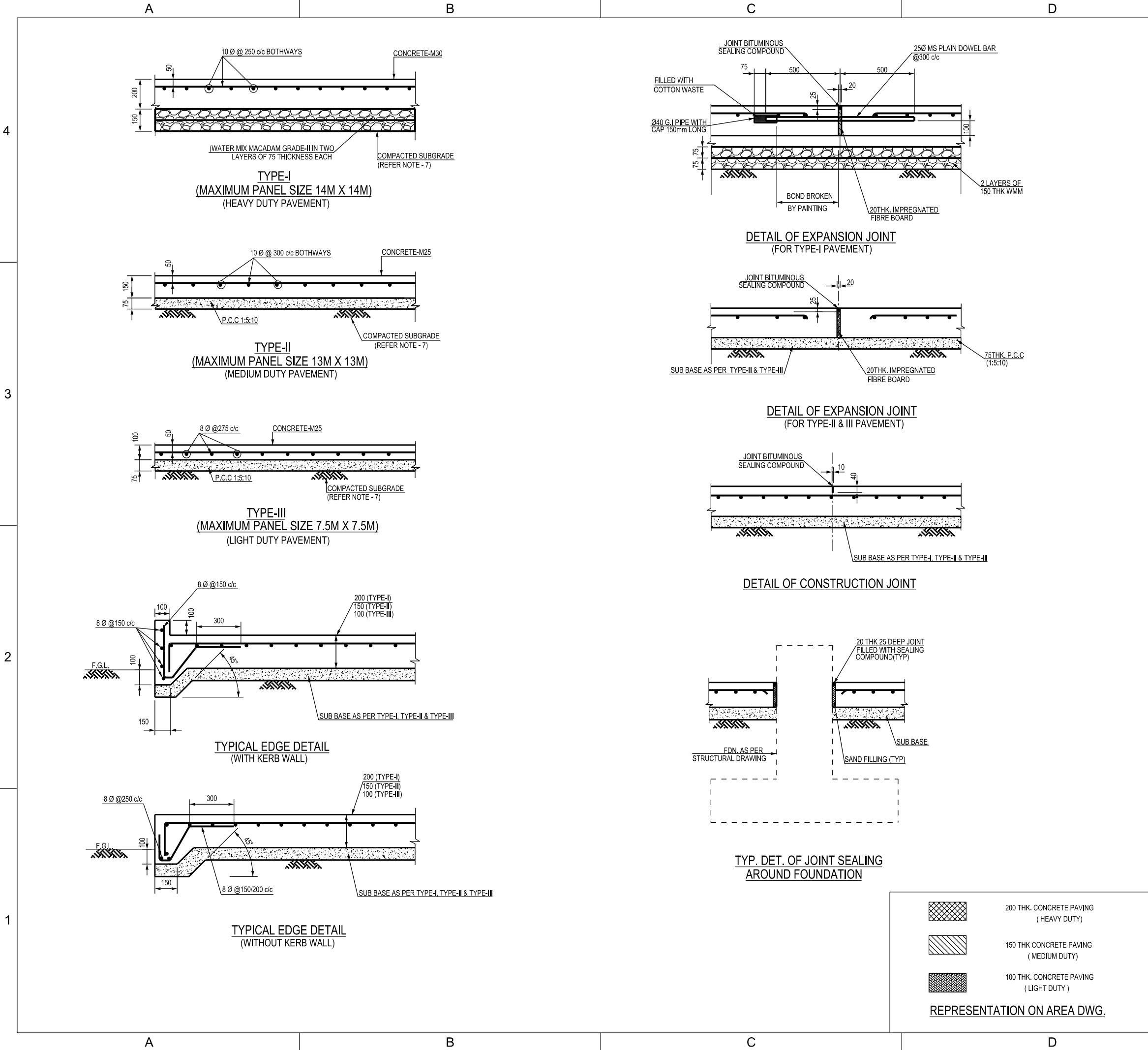
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- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS.
 2. ALL ELEVATIONS ARE WITH REFERENCE TO HPP LEVEL. HPP LEVEL +100.300M IS EQUAL TO 4.360M ABOVE I.M.S.L. (INDIAN MEAN SEA LEVEL).
 3. RADIUS OF CURVES AND CROSSING WHEN DIFFERENT FROM THOSE GIVEN IN THIS STANDARD TO MEET IN THIS STANDARD TO MEET ANY SPECIAL REQUIREMENT SHALL BE MARKED IN THE AREA DRAWINGS.
 4. ALL ROADS SHALL HAVE 1M WIDE SHOULDER ON EACH SIDE.
 5. 50MM THK BITUMEN CARPET SHALL CONSIST OF:-
FIRST LAYER OF 20mm THK
SECOND LAYER OF 20mm THK
SEAL COAT OF 10mm THK

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Rev	Date	Description of Issue	Written by	Checked by	Approved by	Authorized by
	DD-MM-YYYY					
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<input type="checkbox"/> REVIEW						
<input checked="" type="checkbox"/> INFORMATION						
PROJECT						
STANDBY SRU & ADDITIONAL TANKS						
IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
 INDIAN OIL CORPORATION LTD.						
PMC						
						
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TITLE						
TYPICAL ROAD SECTION DETAILS						
DRAWING NO.						PAGE
SCALE	080557C	000	STC	1490	002	1 OF 1
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	A



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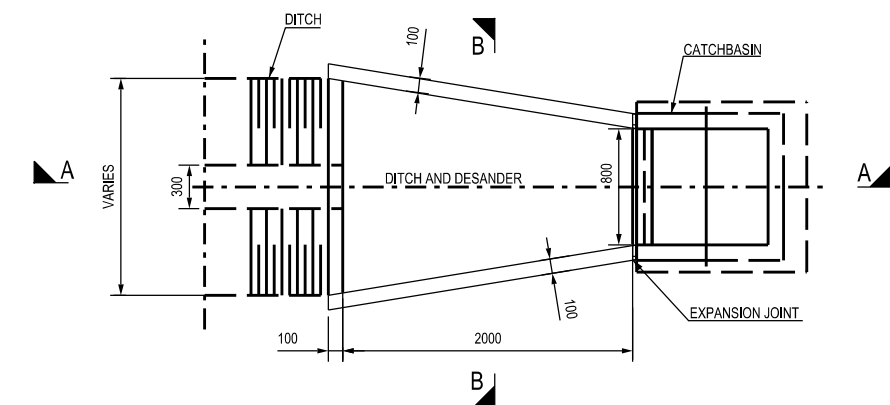
- NOTES:**
1. ALL DIMENSION ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
 2. CONC. SHALL CONFORM TO IS:456.
 3. REINFORCEMENT SHALL BE HIGH YIELD DEFORMED BARS CONFORMING TO IS:1786.
 4. JOINT SEALING COMPOUND IN PAVING AROUND FOUNDATIONS SHALL CONFORM TO IS:1834 TYPE-B.
 5. EXPANSION JOINT SHALL BE FILLED WITH PRE-MOULDED FIBRE IMPREGNATED FELT BOARDS, CONFORMING TO IS:1838, PART-I WITH THE TOP 25mm FILLED WITH FLEXIBLE BITUMINOUS JOINT SEALING COMPOUND CONFORMING TO IS:1834, PART-B.
 6. CONC. PAVING SHALL BE SLOPED STEEPEST TO 1:100 UNLESS OTHERWISE SHOWN IN DETAIL ENGINEERING DRGS. SLOPE OF THE SUB GRADE SHALL BE PREPARED TO MATCH WITH THE SLOPE OF PAVEMENT.
 7. SUB GRADE SHALL BE THOROUGHLY COMPACTED TO 95% OF LAB DRY DENSITY AS PER IS:2720 PART VIII PROPER SLOPE & GRADE BEFORE LAYING WBM/PCC 1:4:8.
 8. CONCRETE PAVEMENT SHALL BE LAID IN ALTERNATE PANELS OF 3.0Mx3.0M SIZE, PANEL SIZE SHALL BE SUITABLY MODIFIED TO MATCH EQUIPMENT FOUNDATION WITH IN THE SIZE LIMIT STATED ABOVE.
 9. EXPANSIONS JOINTS SHALL BE SPACED AT 14.0m c/c. CONSTRUCTION JOINT MAY BE PROVIDED IN CASE OF PANEL SIZE IS LESS THAN THE REQUIREMENT OF EXPANSION JOINT TO SUIT SITE REQUIREMENT.
 10. CONSTRUCTION JOINTS SHALL BE AT 7.5M MAXIMUM FOR TYPE-I & TYPE II PAVEMENTS. PROVIDED IN CASE OF PANEL SIZE IS LESS THAN THE REQUIREMENT
 11. FOR GENERAL NOTES OF CONCRETE REFER STC NO.- 080557C-000-DW-1702-001.

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Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by
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PROJECT						
STANDBY SRU & ADDITIONAL TANKS IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
<div> INDIAN OIL CORPORATION LTD.</div>						
PMC						
<div> TechnipFMC</div>						
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TITLE						
STANDARD R.C.C PAVEMENT DETAILS						

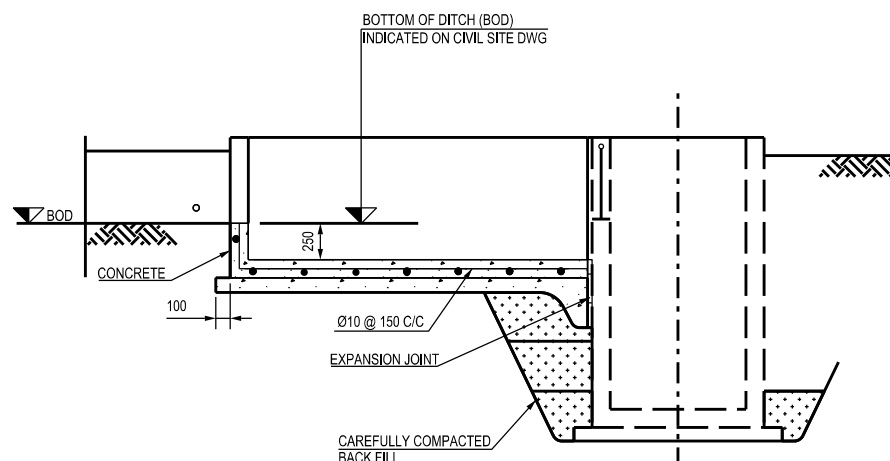
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SCALE	080557C	000	STC	1490	003	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

NOTES :						
1. ALL DIMENSIONS ARE IN MM.						
2. REFER STRUCTURAL GENERAL NOTES 080557C-000-DW-1702-001 FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING						
a) GRADE OF CONCRETE						
b) GRADE OF TYPE OF CEMENT						
c) GRADE OF REINFORCEMENT STEEL BARS						
d) CLEAR COVER IN RCC WORKS						
MINIMUM WIDTH OF RECTANGULAR DRAINS SHALL BE AS FOLLOWS: FOR DEPTH \leq 500 mm : 300 mm FOR DEPTH > 500 mm : 500 mm						
A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by
DOCUMENT CATEGORY (USE " X " MARK)			DOCUMENT REVIEW STATUS (BY CLIENT)			
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STANDBY SRU & ADDITIONAL TANKS IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
 INDIAN OIL CORPORATION LTD.						
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TITLE						
STORM WATER SYSTEMS STANDARDS DITCHES						
DRAWING NO.					PAGE	REV.
SCALE	080557C	000	STC	1490	004	1 OF 1
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	

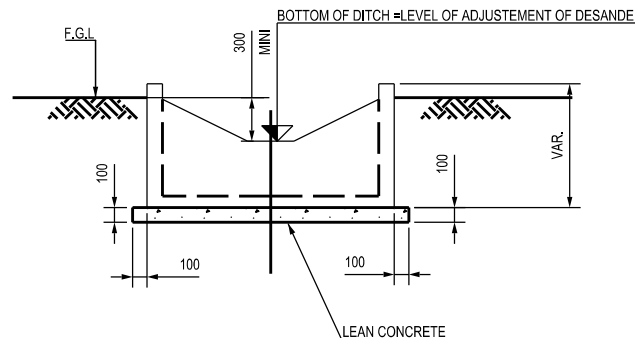
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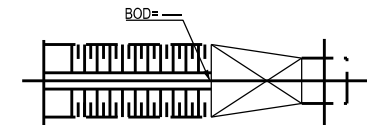
PLAN



SECTION A - A



SECTION B - B



REPRESENTATION ON CIVIL AREA DWG

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. REFER STRUCTURAL GENERAL NOTES 080557C-000-DW-1702-001 FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING
 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS

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<input type="checkbox"/> REVIEW			
<input checked="" type="checkbox"/> INFORMATION			

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STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

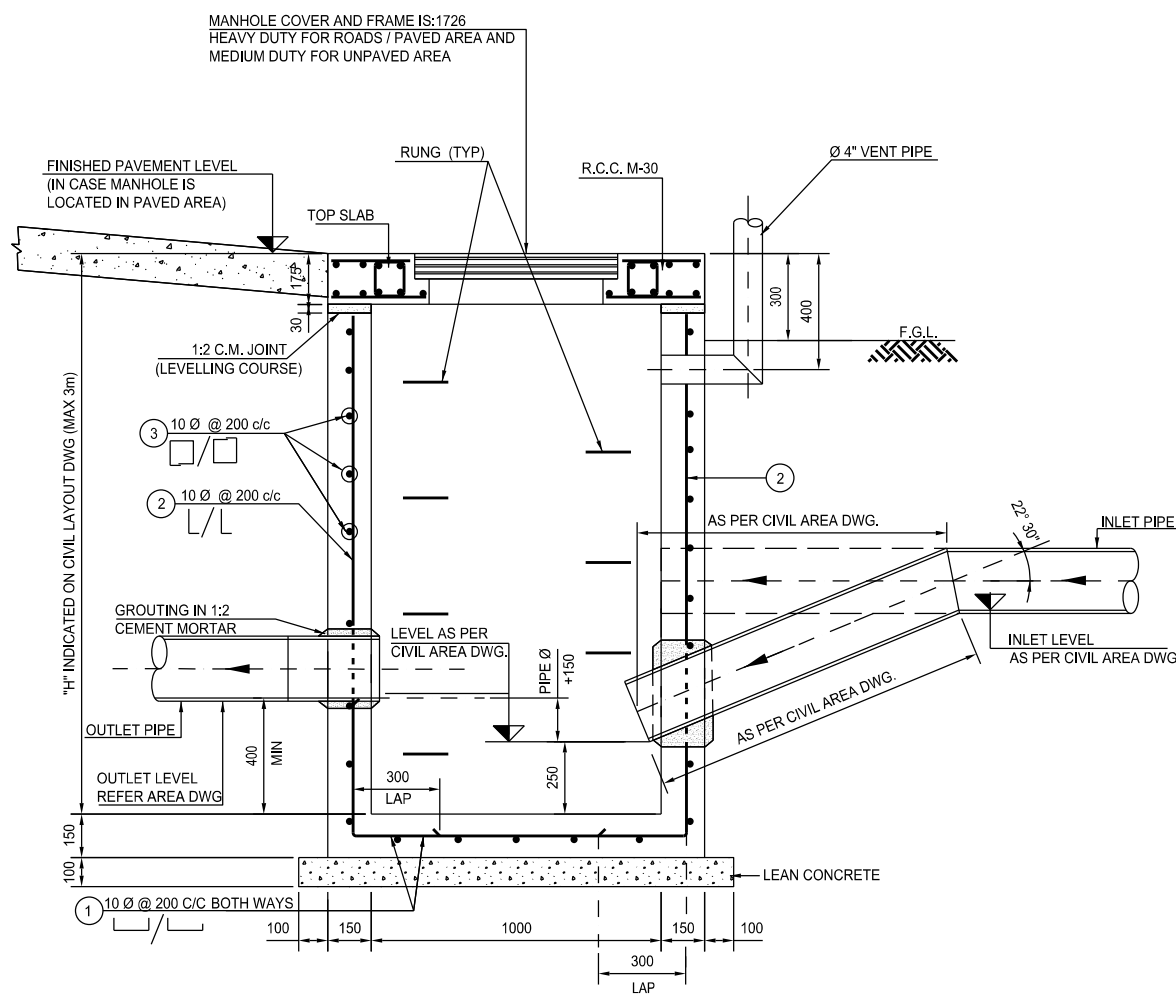
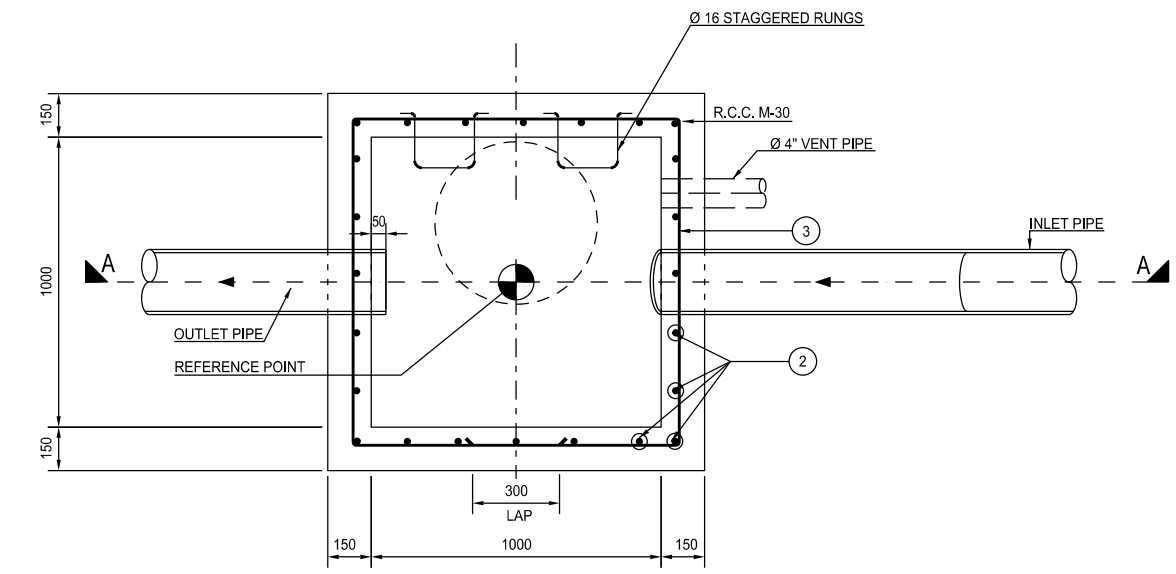
OWNER
 **INDIAN OIL CORPORATION LTD.**

PMC
 **TechnipFMC**
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TITLE
**STORM WATER SYSTEMS
DE SANDER FOR STANDARD DITCH**

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	005	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

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- NOTES:-**
1. ALL DIEMENSIONS ARE IN MM.
 2. REFER STRUCTURAL GENERAL NOTES 080557C - 000 - DW-1702 - 001 FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING
 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS
 3. FOR EXACT DIMENSION OF BEND REFER RESPECTIVE ISOMETRICS.
 4. WATER PROOFING COMPOUND SHALL BE MIXED WITH CONCRETE FOR MANHOLES.
 5. ALL MANHOLES FOR UNDERGROUND SEWWERS SHALL BE RCC CONSTRUCTION WITH ROUND SFRC (STEEL FIBRE REINFORCED CONCRETE) COVERS.

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by
DOCUMENT CATEGORY			DOCUMENT REVIEW STATUS (BY CLIENT)			
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PROJECT
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IOCL PARADIP REFINERY, ODISHA, INDIA

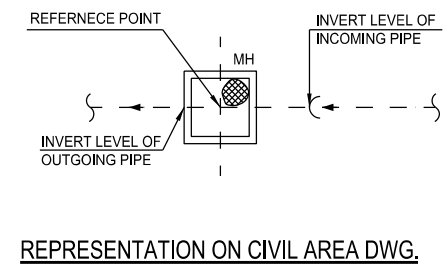
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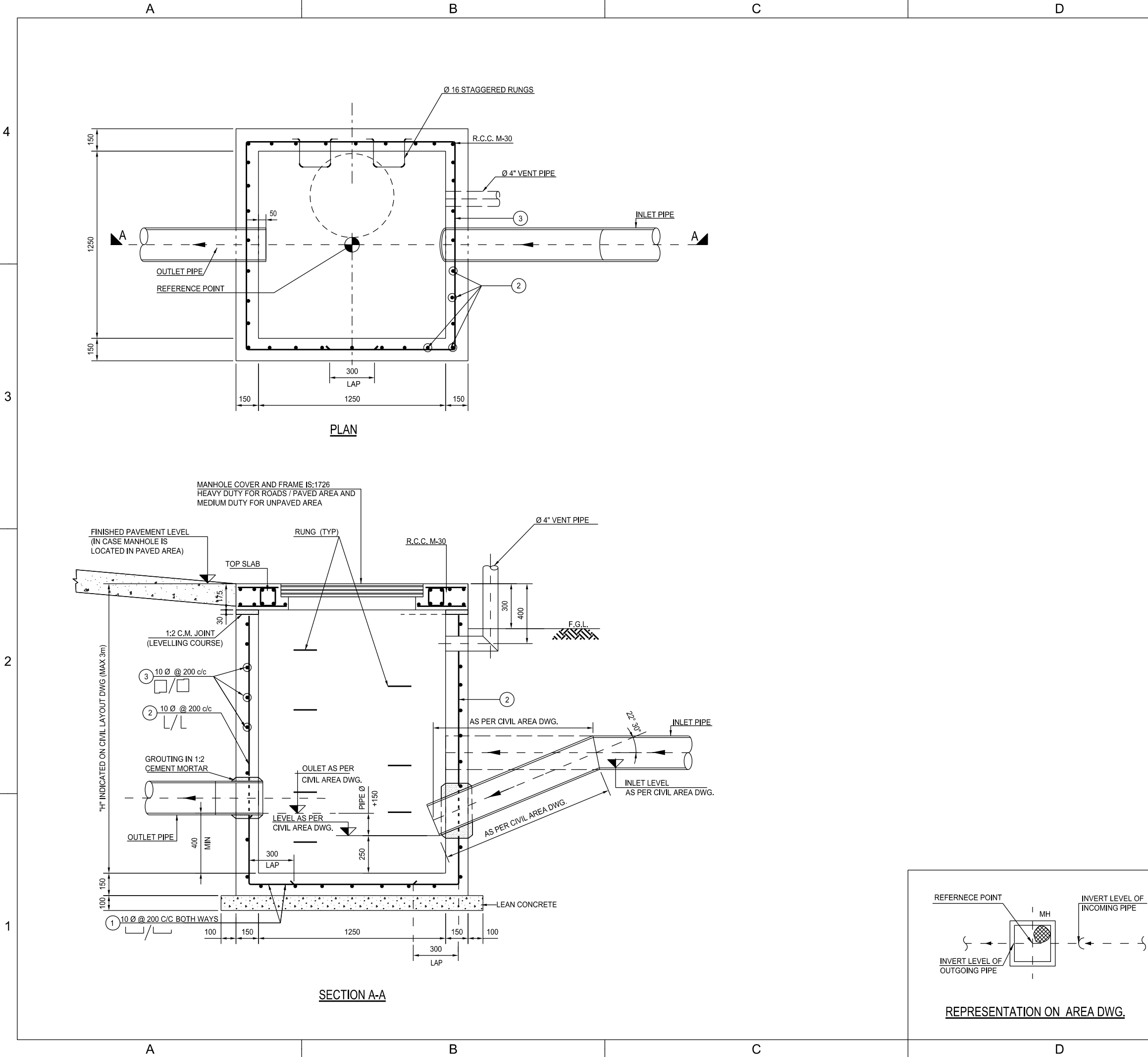
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TITLE
MANHOLE WITH OR WITHOUT SUBMERGED CONNECTION
OILY WATER AND CONTAMINATED RAIN WATER SYSTEM
OWS AND CRWS (DIA ≤ 20")

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	006	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		



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 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS
 - 3. FOR EXACT DIMENSION OF BEND REFER RESPECTIVE ISOMETRICS.
 - 4. WATER PROOFING COMPOUND SHALL BE MIXED WITH CONCRETE FOR MANHOLES.
 - 5. ALL MANHOLES FOR UNDERGROUND SEWERS SHALL BE RCC CONSTRUCTION WITH ROUND SFRC (STEEL FIBRE REINFORCED CONCRETE) COVERS.

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Rev	Date	Description of Issue	Written by	Checked by	Approved by	Authorized by
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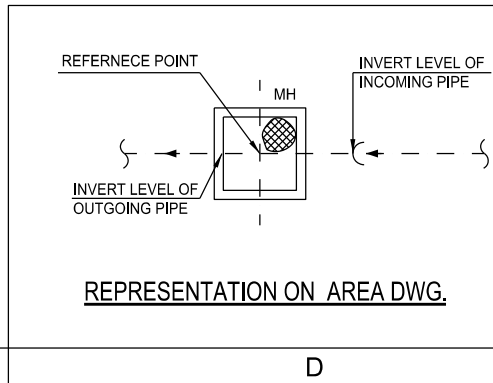
PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

OWNER
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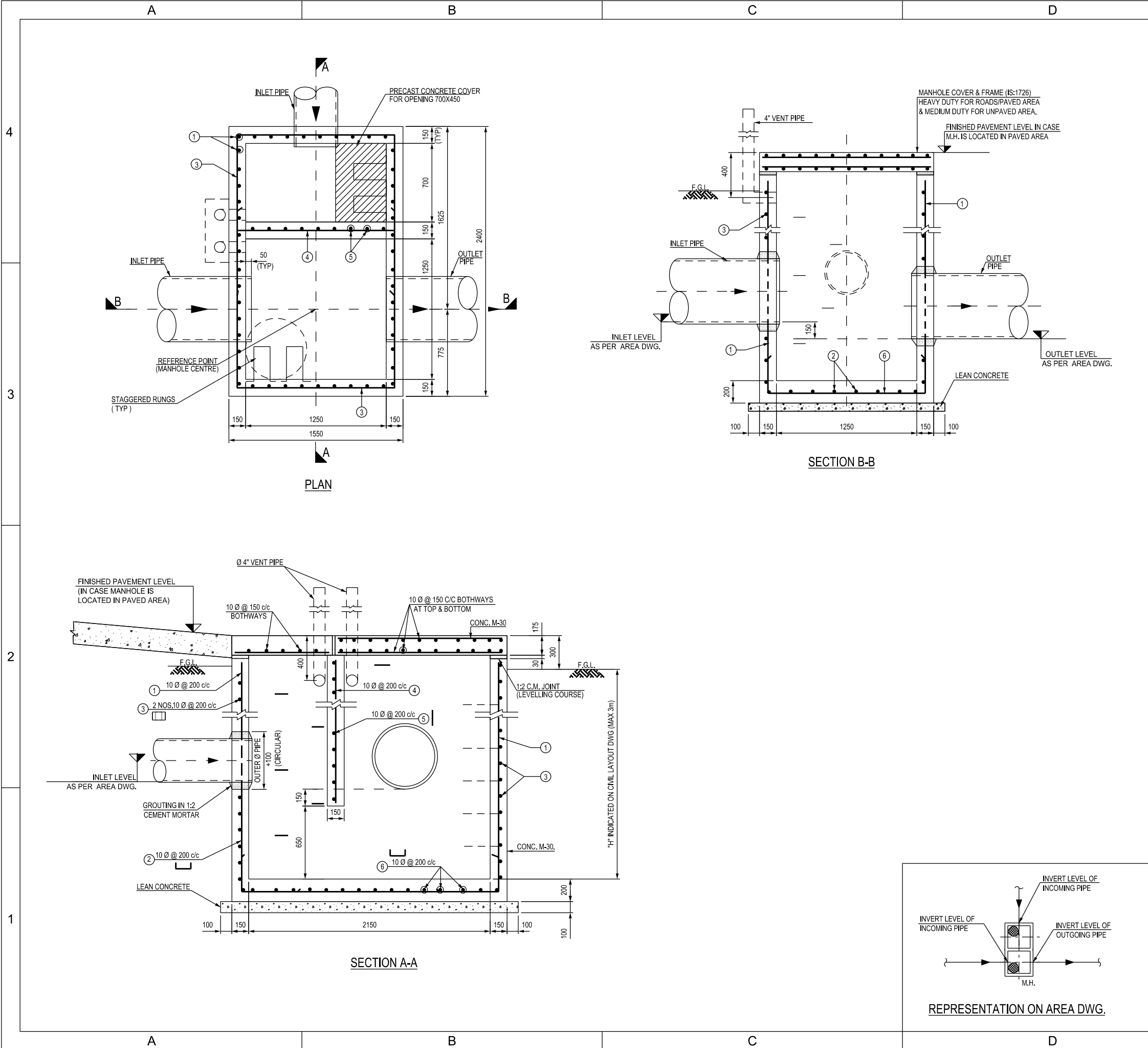
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TITLE
MANHOLE WITH OR WITHOUT SUBMERGED CONNECTION
OILY WATER AND CONTAMINATED RAIN WATER SYSTEM
OWS AND CRWS (DIA 20" TO 24")

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	007	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		





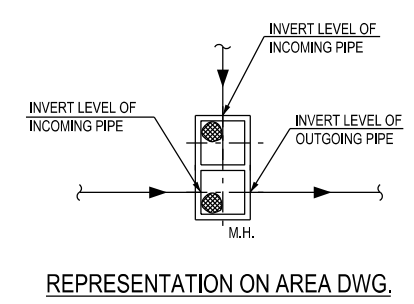
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NOTES:-

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 - GRADE OF CONCRETE
 - GRADE OF TYPE OF CEMENT
 - GRADE OF REINFORCEMENT STEEL BARS
 - CLEAR COVER IN RCC WORKS

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
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IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
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TITLE						
SEALED MANHOLE DOUBLE CHAMBER (TYPE-I)						
DRAWING NO.						PAGE
SCALE	080557C	000	STC	1490	008	1 OF 1
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	REV.
						A



A

B

4
3
2
1

DIMENSION INDICATED ON SITE DWG= A+D-C AND ISO

INLET

OUTLET

STEEL

P=DIMENSION ON ISOMETRICS

GROUTING

WELDED STEEL COLLAR THK.= PIPE THK. (STEEL PIPES ONLY) Ø = Ø PIPE +80

TYPE-I

DETERMINATION OF DIMENSION .P. TO BE INDICATED ON ISOMETRICS

$P = 1.08 \text{ } A$

SUBMERGED INLET CONNECTION $A = 2.414 [(NIV.X-NIV.Y)+B+(a-b)]$

SUBMERGED OUTLET CONNECTION $A=(2.414xB)+(a-b)$

IMPORTANT:

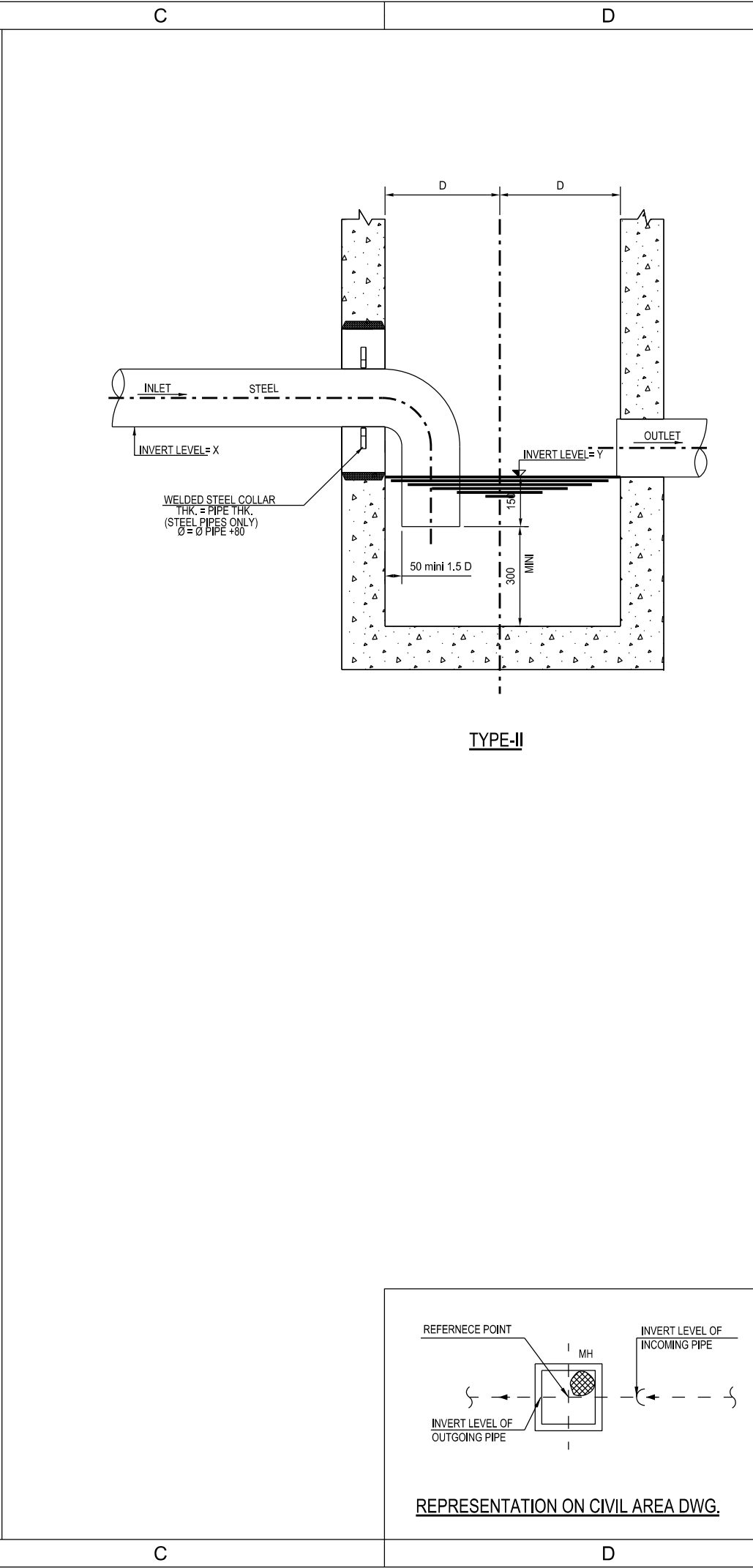
WHEN SEVERAL INLET CONNECTIONS ARE SUBMERGED IN MANHOLE USE VALUE B OF THE LARGEST DIAMETER FOR CALCULATING DIMENSION "A" OF EACH PIPE



VALUE OF (a-b), B, AND C ACCORDING TO PIPE DIAMETER					
DIAMETER		(a-b)	B	C	
STEEL	CAST IRON				
4"	100	10	250	70	
6"	150	15	310	80	
8"	200	20	360	90	
10"	250	25	410	100	
12"	300	30	460	110	
14"	350	30	500	115	
16"	400	35	550	125	
18"	450	40	600	135	
20"	500	45	650	145	

ALL DIMENSIONS IN THIS TABLE ARE GIVEN AS ROUND NUMBERS FOR SIMPLIFICATION AND TO ALLOW FOR SIZE VARIATIONS IN STEEL AND CAST IRON PIPE DIAMETERS.

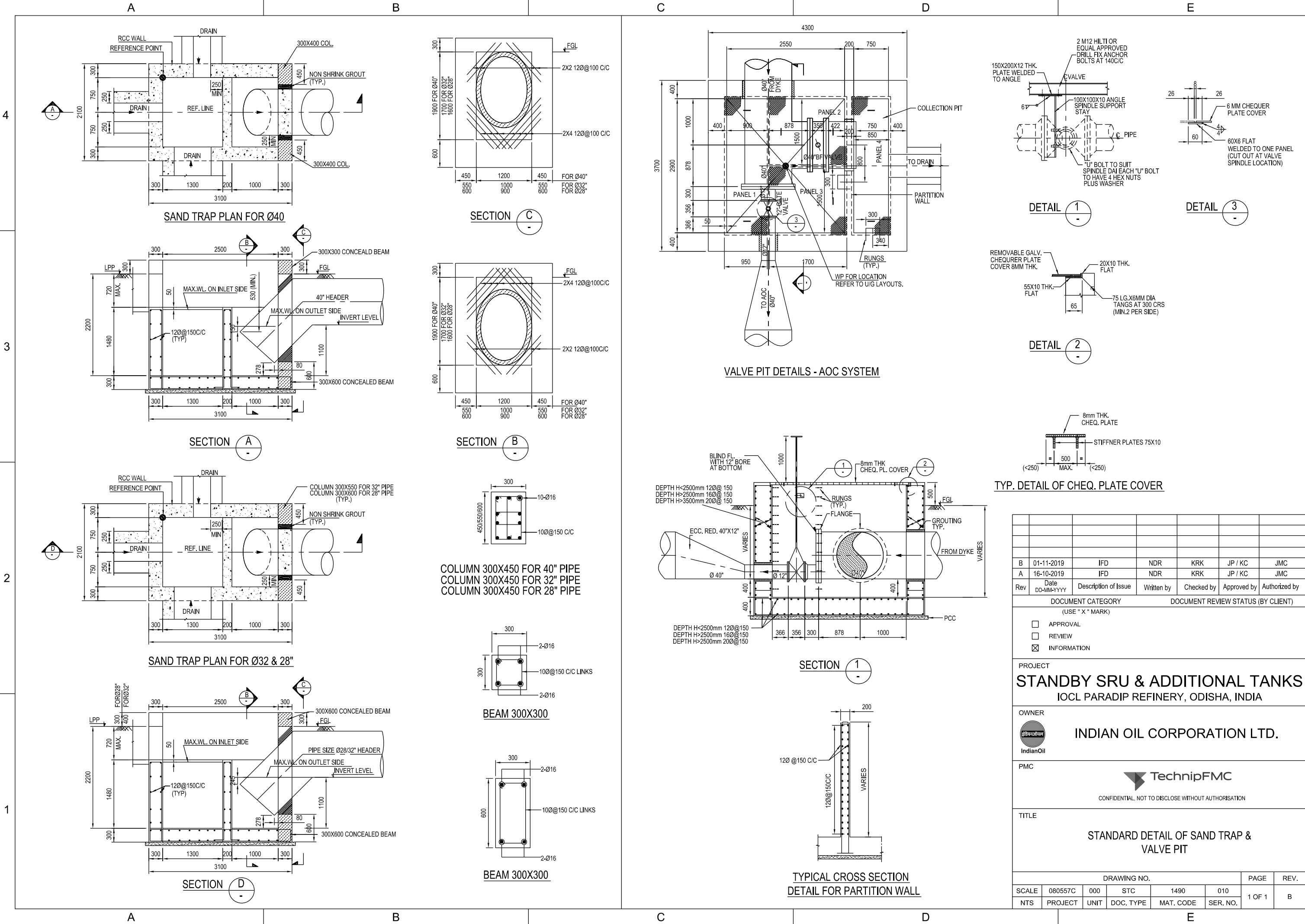
A



B



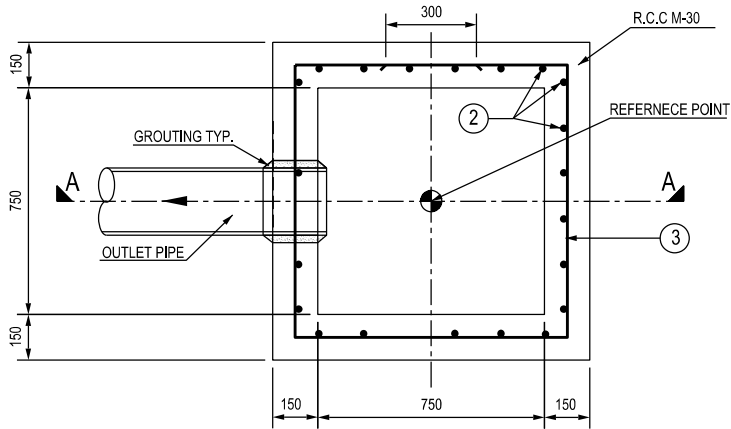
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PROJECT							
STANDBY SRU & ADDITIONAL TANKS IOCL PARADIP REFINERY, ODISHA, INDIA							
OWNER							
 INDIAN OIL CORPORATION LTD. IndianOil							
PMC							
 TechnipFMC CONFIDENTIAL, NOT TO DISCLOSE WITHOUT AUTHORISATION							
TITLE							
HYDRAULIC SEALS (SUBMERGED CONNECTION - STEEL SYSTEM)							
DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	009	1 OF 1	A
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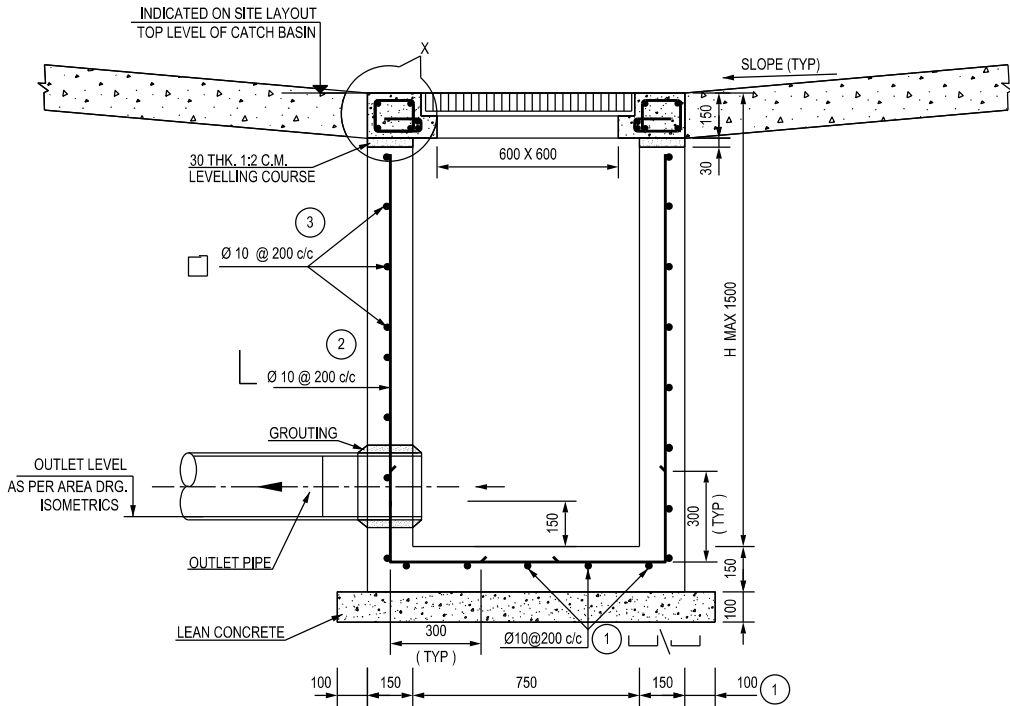


B	01-11-2019	IFD	NDR	KRK	JP / KC	JMC
A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by
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(USE " X " MARK)						
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PROJECT						
STANDBY SRU & ADDITIONAL TANKS						
IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
<div><div><div>IndianOil</div></div><div>INDIAN OIL CORPORATION LTD.</div></div>						
PMC						
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TITLE						
STANDARD DETAIL OF SAND TRAP & VALVE PIT						
DRAWING NO.					PAGE	REV.
SCALE	080557C	000	STC	1490	010	
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	
					1 OF 1	B

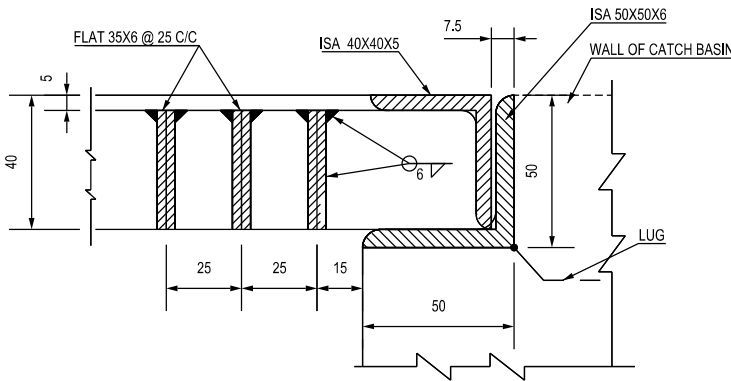
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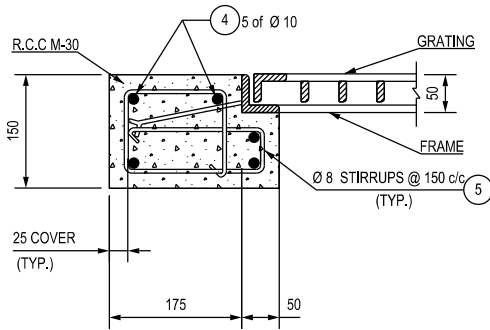
PLAN



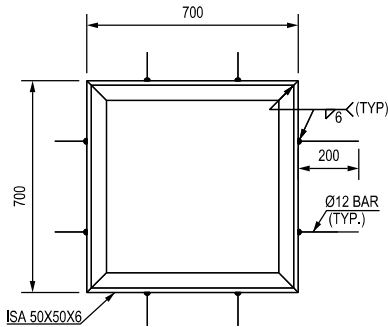
SECTION A-A



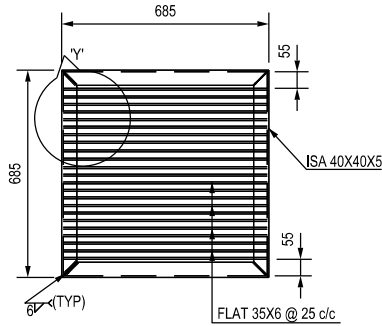
DETAIL 'Y'



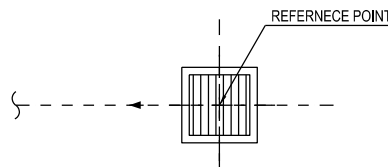
DETAIL X



DETAIL OF FRAME



DETAIL OF GRATING



REPRESENTATION ON UNIT AREA DRG.

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. REFER STRUCTURAL GENERAL NOTES 080557C-000-DW-1702-001 FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING
 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY			DOCUMENT REVIEW STATUS (BY CLIENT)			
(USE "X" MARK)						
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<input type="checkbox"/> REVIEW						
<input checked="" type="checkbox"/> INFORMATION						

PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

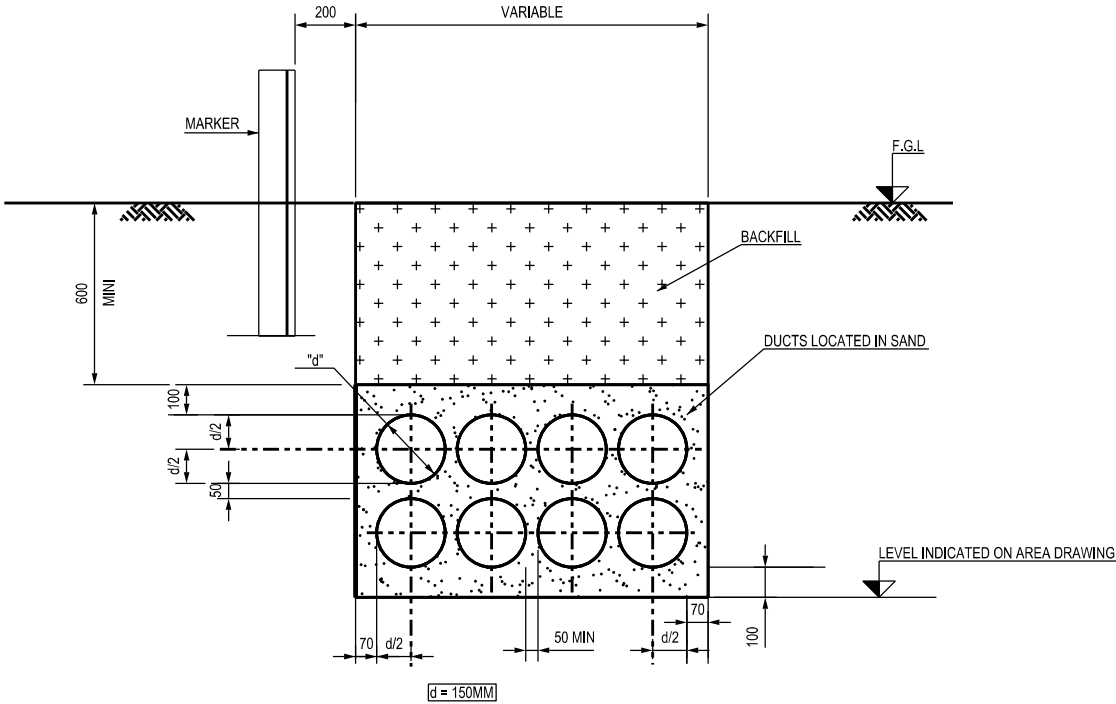
OWNER
 **INDIAN OIL CORPORATION LTD.**

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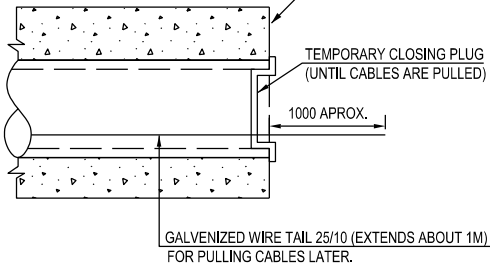
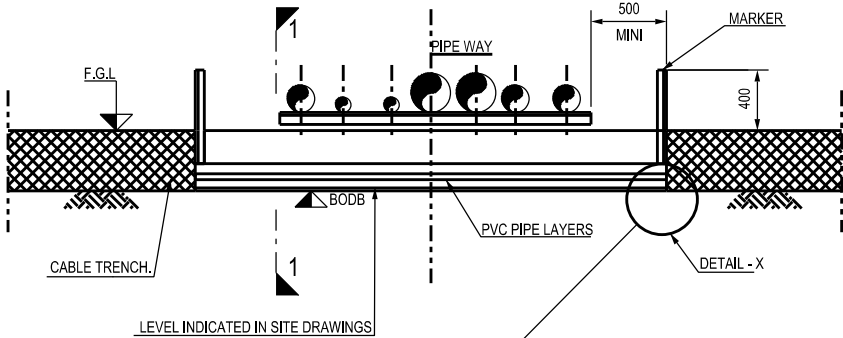
TITLE
**CONSTRUCTION STANDARD
SITE ARRANGEMENT
CONTAMINATED RAIN WATER SYSTEM
CATCH BASIN (OWS / CRWS)**

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	011	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

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SECTION 1-1



DETAIL - X
SLEEVE END PLUGGING DETAIL

REPRESENTATION ON AREA DWG.

NO OF DUCTS WIDE	4	3	NO OF DUCTS DEEP
	EL. XX . XXX		
	EL. XX . XXX		

NOTES:-

1. MATERIAL USED FOR CONDUITS PIPE ;PVC

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DOCUMENT CATEGORY (USE " X " MARK)		DOCUMENT REVIEW STATUS (BY CLIENT)	
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

OWNER
 **INDIAN OIL CORPORATION LTD.**

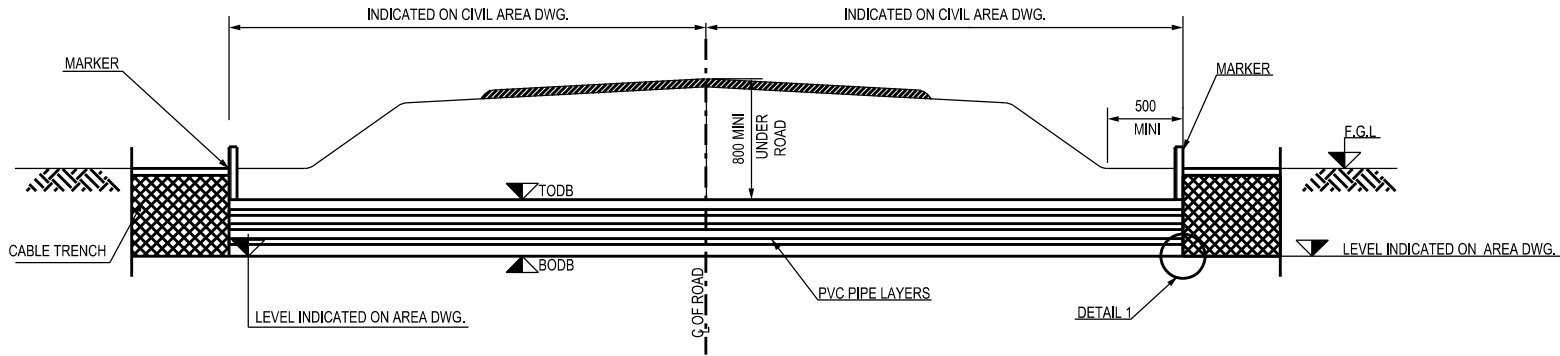
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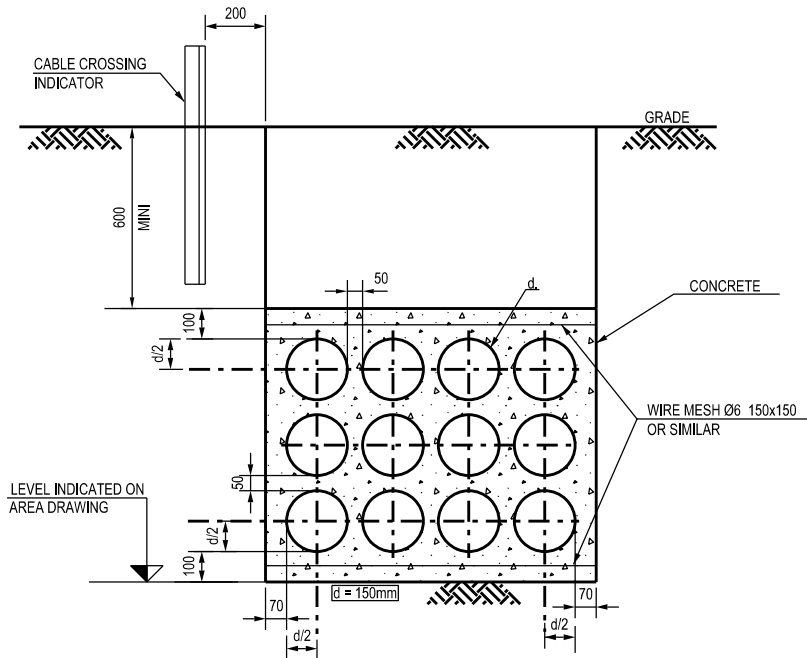
TITLE
CONDUITS UNDER PIPE WAYS

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	012	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

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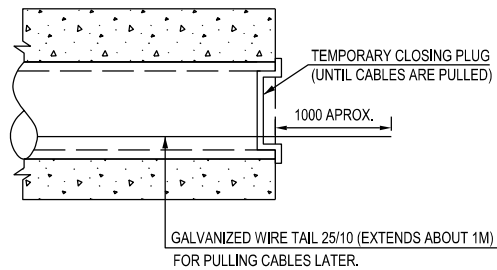


TRANSVERSAL SECTION ON ROAD



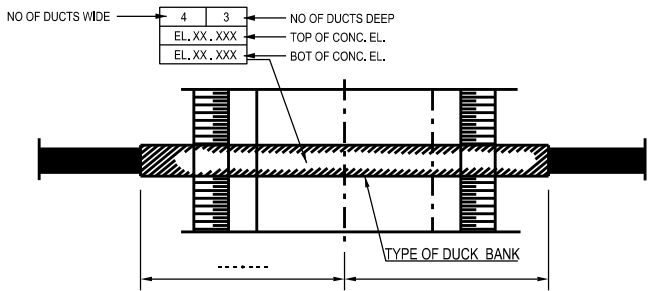
DUCT BANK

FOR UNITS ELECTRICAL CABLE ROUTING AND FOR
INSTRUMENTATION COPPER CABLE ROUTING



DETAIL 1

SLEEVE END PLUGGING DETAIL



REPRESENTATION ON CIVIL AREA DWG.

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. MATERIAL USED FOR CONDUITS : PVC

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Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY		DOCUMENT REVIEW STATUS (BY CLIENT)	
(USE " X " MARK)			
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

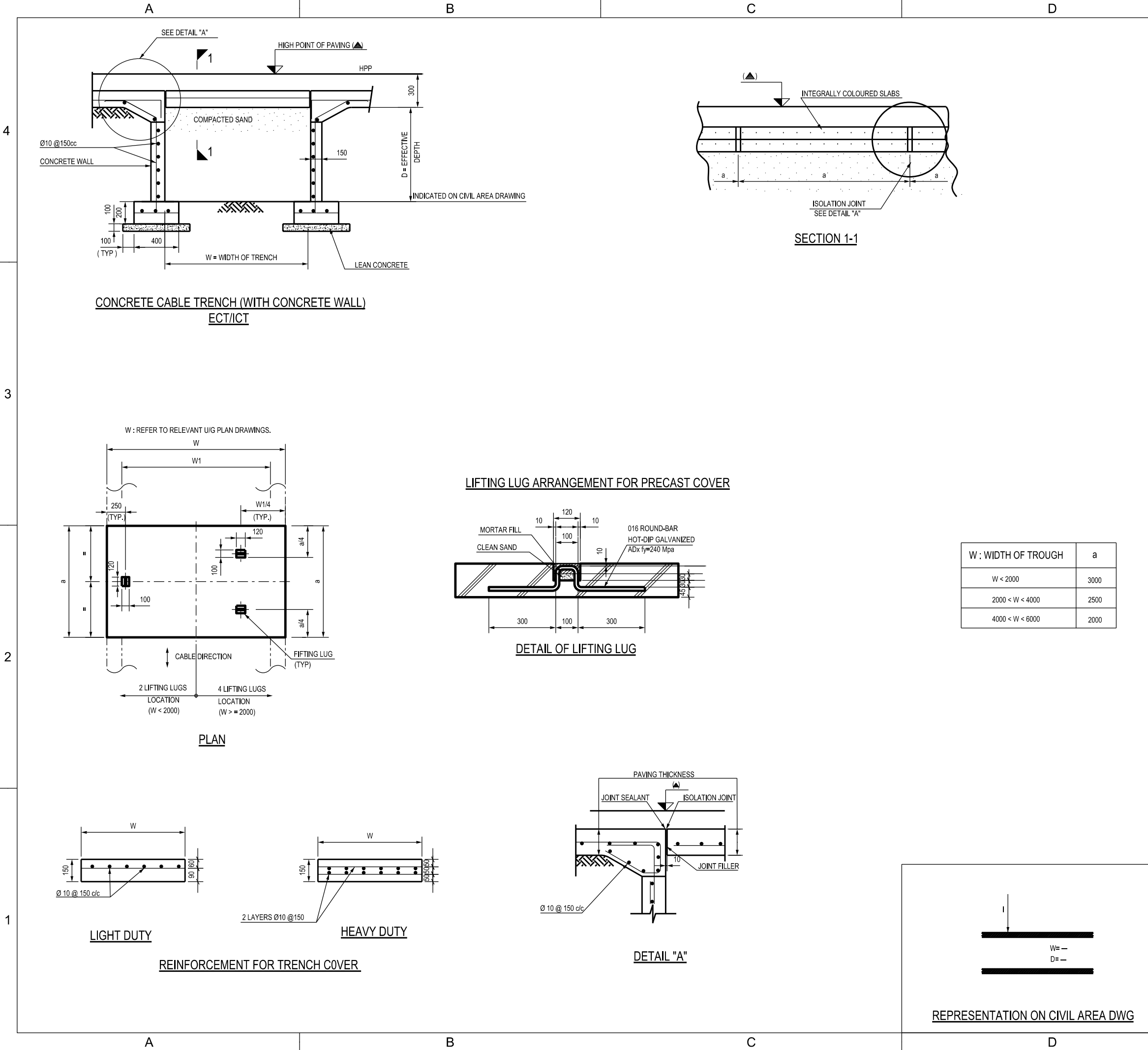
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TITLE
**ROAD CROSSING DUCT BANK
FOR CABLE TRENCHES**

DRAWING NO.					PAGE	REV.
SCALE	080557C	000	STC	1490	013	
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	
					1 OF 1	A

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W : WIDTH OF TROUGH	a
W < 2000	3000
2000 < W < 4000	2500
4000 < W < 6000	2000

NOTES

1. ALL DIMENSIONS ARE IN MM.
2. FOR PRECAST CABLES TRENCH ONLY THE HEIGHT 'D' CAN BE PRECAST. THE REMAINING PART WILL BE POURED IN PLACE DURING THE EXECUTION OF PAVING. (ADJUSTMENT AS PER SLOPES OF PAVING)
3. TRENCH COVER TO BE CAST-IN-SITU TRENCH COVER SHALL BE FLUSHED WITH THE FINISHED LEVEL OF PAVING
4. FOR CONCRETE WALL TRENCH, EXPANSION JOINTS SHALL BE PROVIDED AT INTERVAL OF MAX.15 METERS
5. COATING: CONCRETE SURFACE PROTECTION AS PER SPECIFICATION
6. REFER STRUCTURAL GENERAL NOTES 080557C-000-DW-1702-001 FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING
 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY		DOCUMENT REVIEW STATUS (BY CLIENT)	
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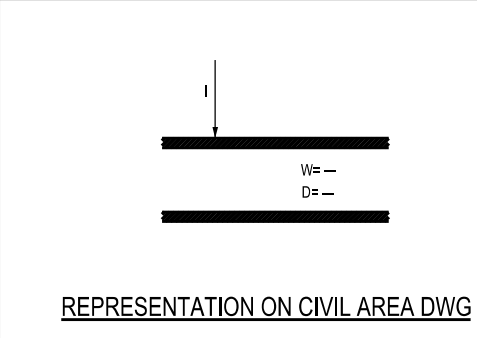
PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

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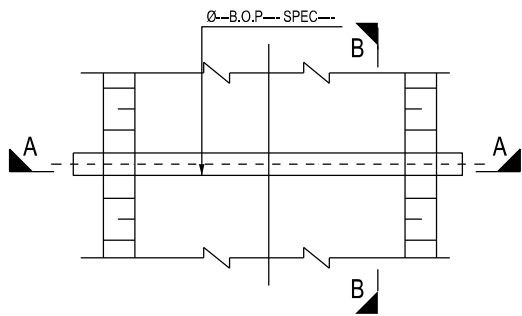
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TITLE
**CONCRETE CABLE TRENCH
(IN PAVED AREA)**

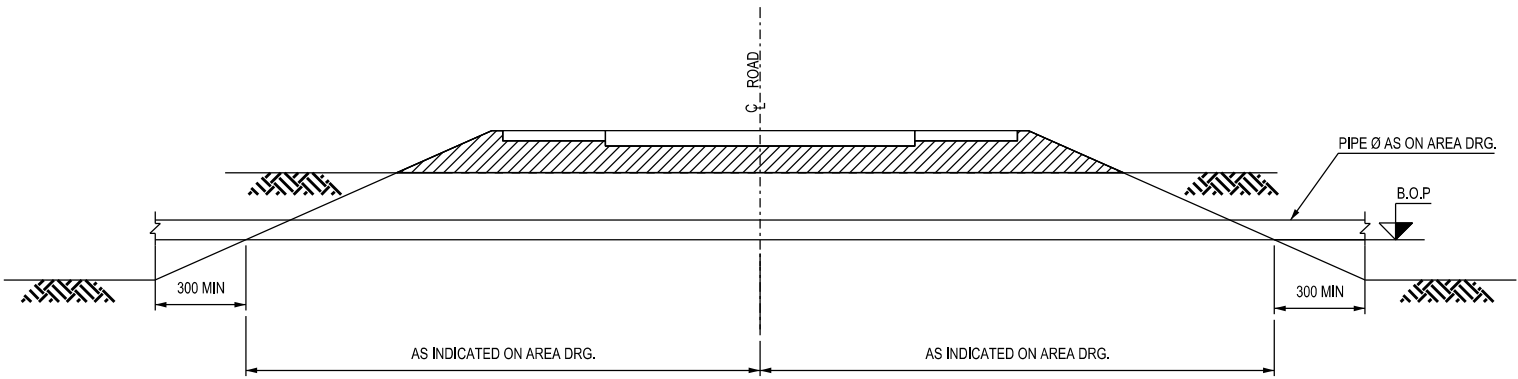
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SCALE	080557C	000	STC	1490	014	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		



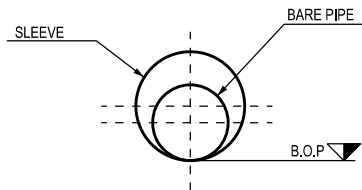
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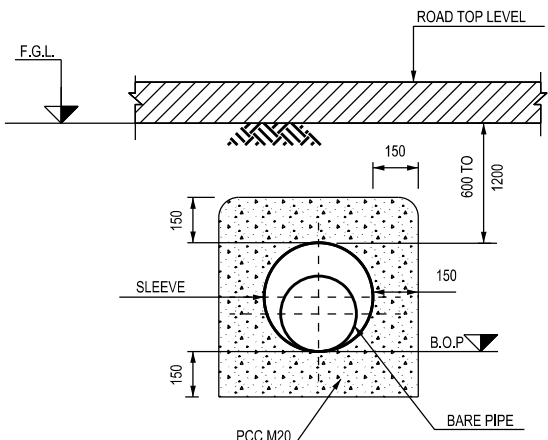
PLAN



SECTION - A A



SECTION B-B
(CASE I-FOR COVER > 1200)
(FOR OSBL ONLY)



SECTION B-B
(CASE II-FOR COVER 600 TO 1200)
(FOR OSBL ONLY)

TABLE OF SLEEVE

BARE PIPE SIZE OR OUTER Ø OF INSULATION IN CASE OF INSULATED PIPE	SLEEVE PIPE SIZE
1"	3"
2"	4"
3"	4"
4"	6"
6"	8"
8"	10"
10"	12"
12"	14"
14"	16"
16"	18"
18"	20"
20"	22"
22"	24"
24"	30"

NOTES:

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. FOR GENERAL NOTES ON CONCRETE REFER STD. NO 080557C-000-DW-1702-001.

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY (USE " X " MARK)	DOCUMENT REVIEW STATUS (BY CLIENT)
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

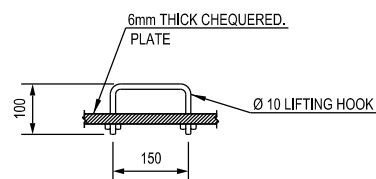
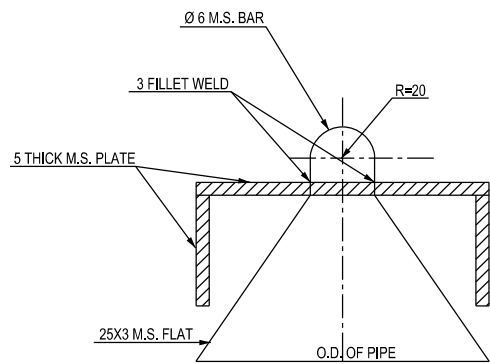
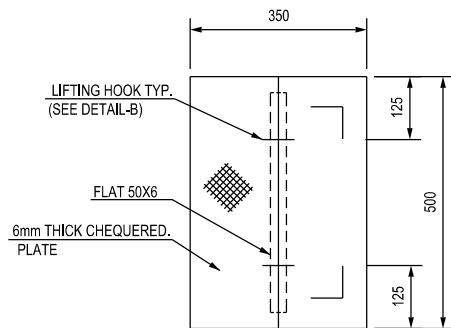
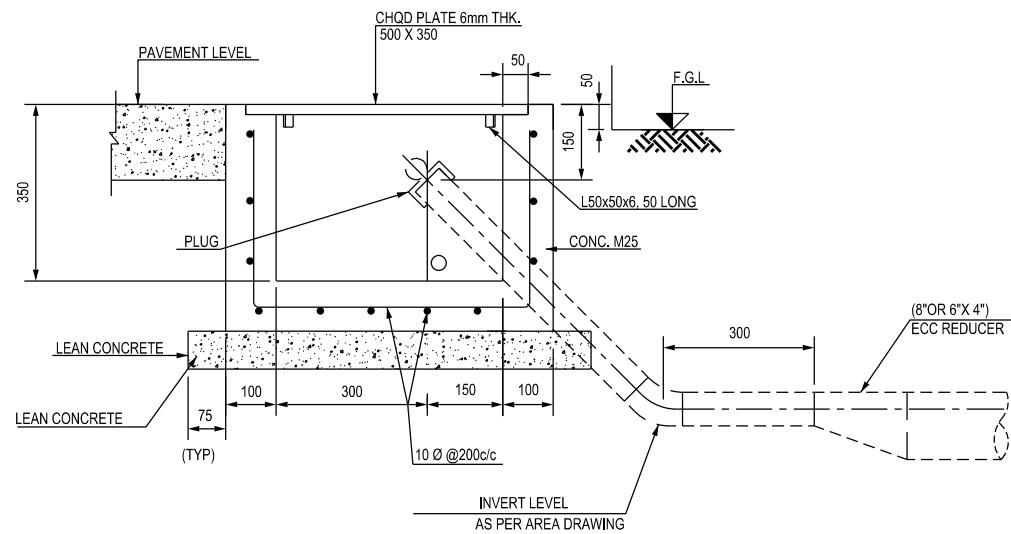
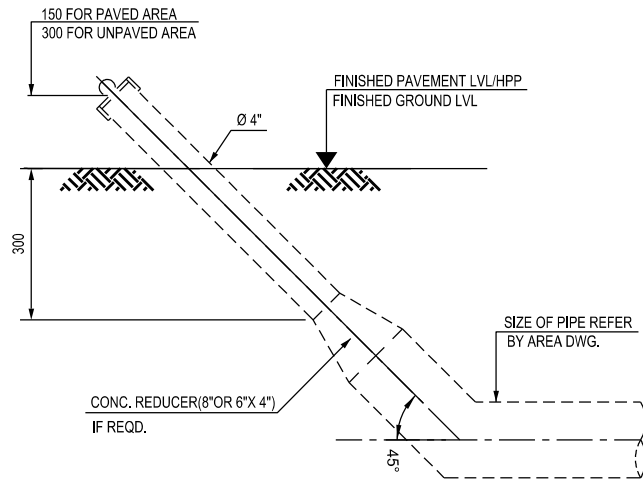
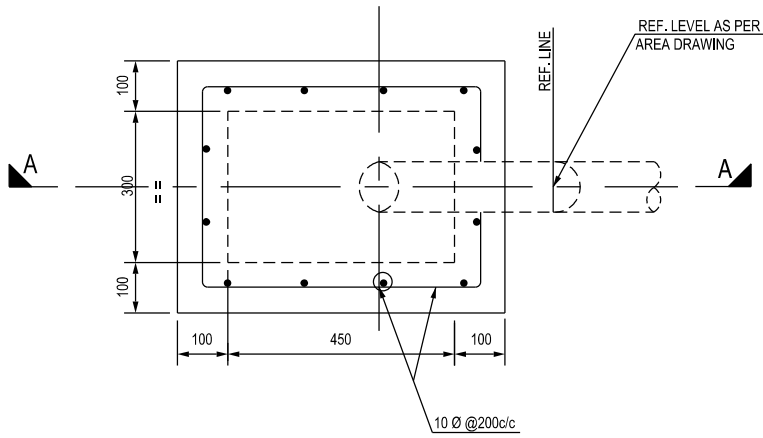
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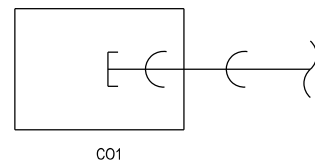
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PIPE SLEEVE DETAIL

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	015	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

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REPRESENTATION ON
LAYOUT/AREA DRG.



NOTES :-

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
2. FOR GENERAL NOTES ON CONCRETE WORK REFER DRAWING NO 080557C-000-DW-1702-001.
3. WATER PROOFING COMPOUND SHALL BE MIXED WITH CONCRETE FOR CLEAN OUT.

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Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY (USE " X " MARK)			DOCUMENT REVIEW STATUS (BY CLIENT)		
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

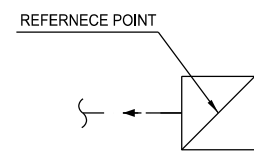
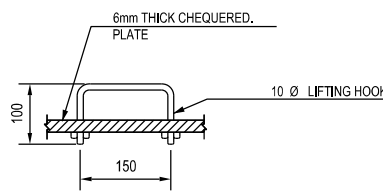
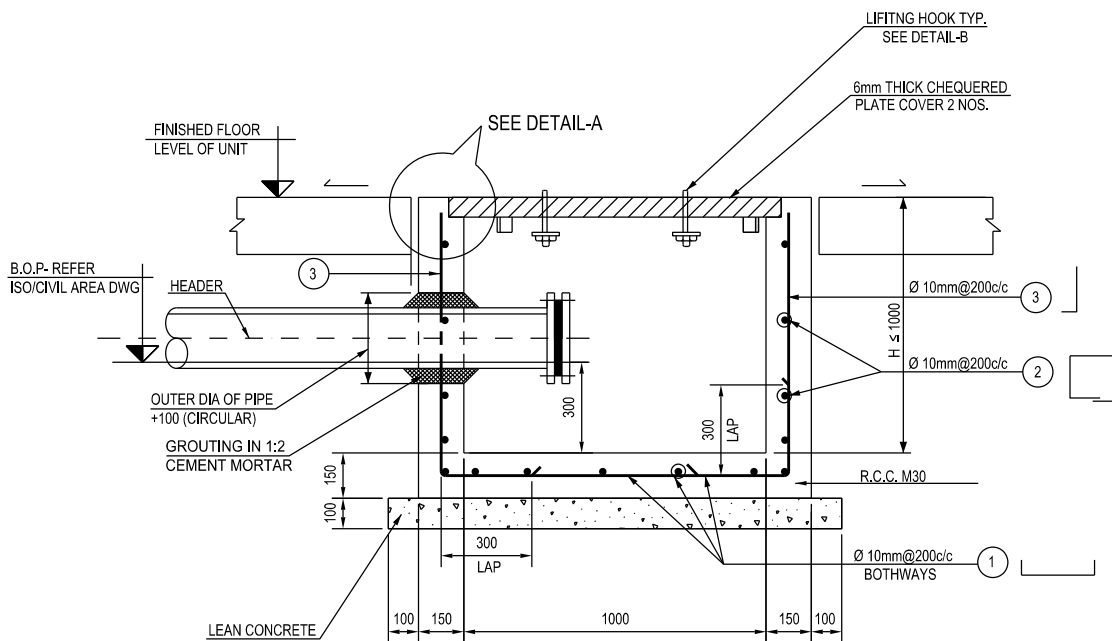
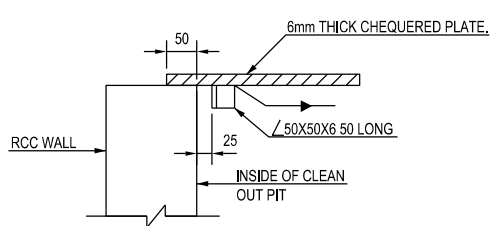
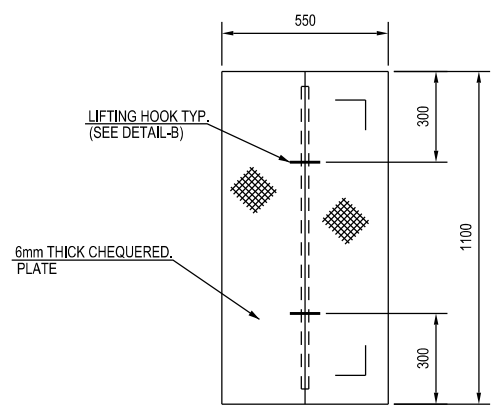
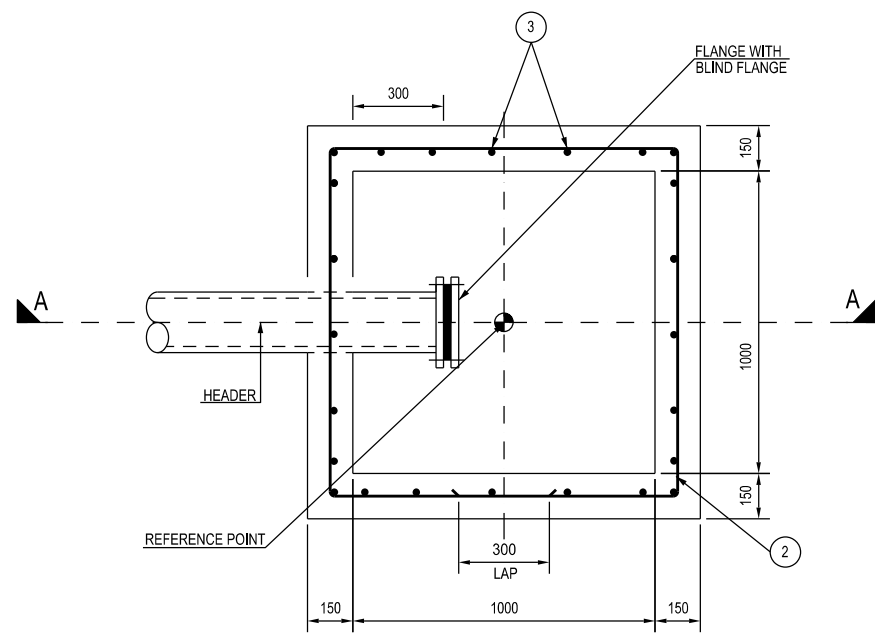
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- NOTES:-
1. ALL DIMENSIONS ARE IN MM.
 2. REFER STRUCTURAL GENERAL NOTES FOR REINFORCED CONCRETE STRUCTURES FOR FOLLOWING
 - a) GRADE OF CONCRETE
 - b) GRADE OF TYPE OF CEMENT
 - c) GRADE OF REINFORCEMENT STEEL BARS
 - d) CLEAR COVER IN RCC WORKS

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date	Description of Issue	Written by	Checked by	Approved by	Authorized by

DOCUMENT CATEGORY (USE " X " MARK)		DOCUMENT REVIEW STATUS (BY CLIENT)	
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

OWNER
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TITLE
STANDARD DETAILS FOR CLEAN OUT TYPE-II

DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	017	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

4

3

2

1

A B C D

NOTES:-

1. ALL DIMENSIONS ARE IN MM.
2. PEBBLE/ROUND GRAVELS FILLING OF 25 mm SIZE AS PER IS:383.
3. REFER STRUCTURAL DRAWING FOR REINFORCED CONCRETE SLAB.
4. GRADE OF CONCRETE: a) GRADE OF CONCRETE: b) GRADE OF TYPICAL: c) GRADE OF REINFORCEMENT: d) CLEAR COVER: 50 mm.

FINISHED PAVED LEVEL OF UNIT

REFERENCE LINE

EXCAVATED TRENCH

BACK FILL IN EXCAVATED TRENCH

PEBBLE/ROUND GRAVELS FILLING OF 25 mm SIZE AS PER IS:383.

FOR PIPE DETAILS REFER RESPECTIVE ISOMETRICS

CBD/ABD HEADER WITH CORROSION PROTECTION AS PER SPECIFICATION

IL OF PIPE AS PER AREA DWG.

150

OUTER DIA OF PIPE

150

150

OUTER DIA OF PIPE

150

CROSS SECTION OF PIPE LAYING DETAIL

Rev	Date	DD-MM-YY
A	16-10-20	



PROJECT: STAN

OWNER: IndianOil

PMC

TITLE

SCALE	080
NTS	PRO

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC	
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by	
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IOCL PARADIP REFINERY, ODISHA, INDIA							
OWNER							
 IndianOil		INDIAN OIL CORPORATION LTD.					
PMC							
 TechnipFMC		CONFIDENTIAL, NOT TO DISCLOSE WITHOUT AUTHORISATION					
TITLE							
STANDARD DETAILS OF LAYING							
ABD & CBD NETWORKS							
DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	018		
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	1 OF 1	A

A

4

TYPE A

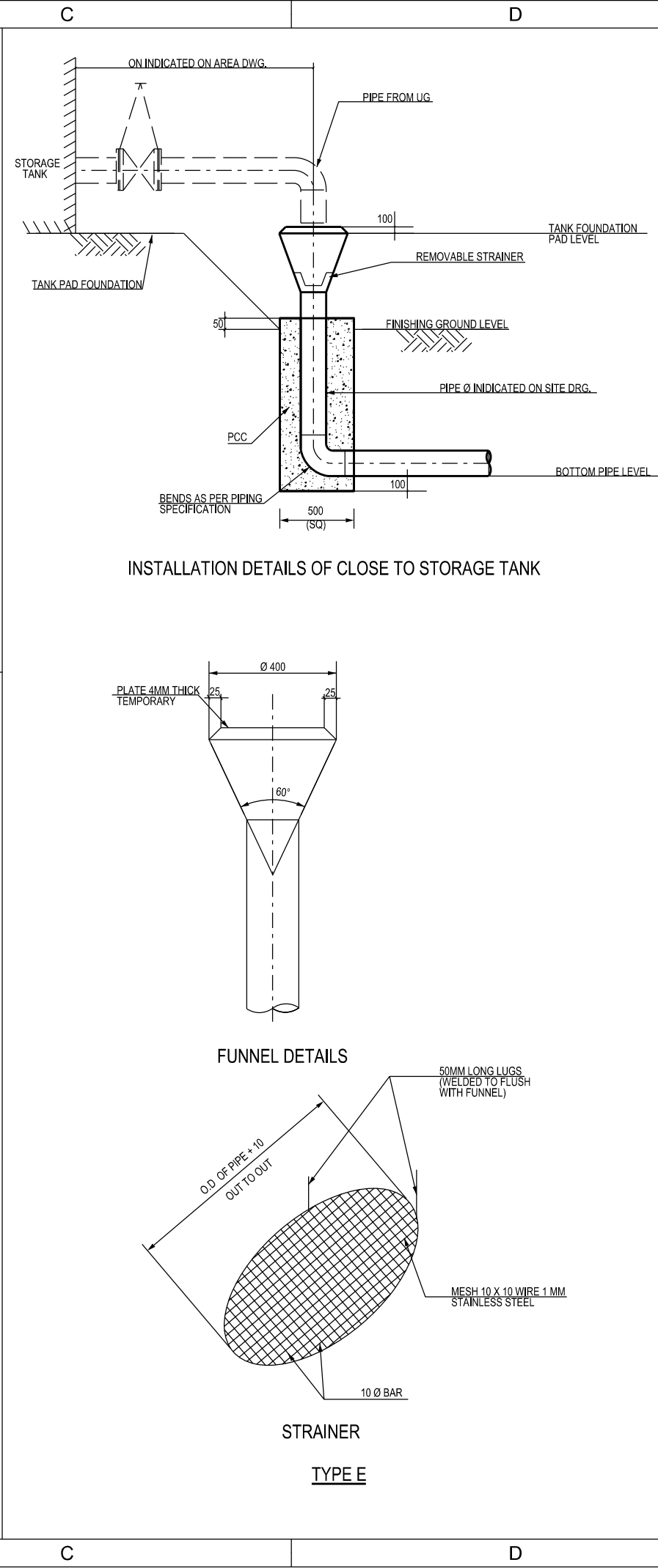
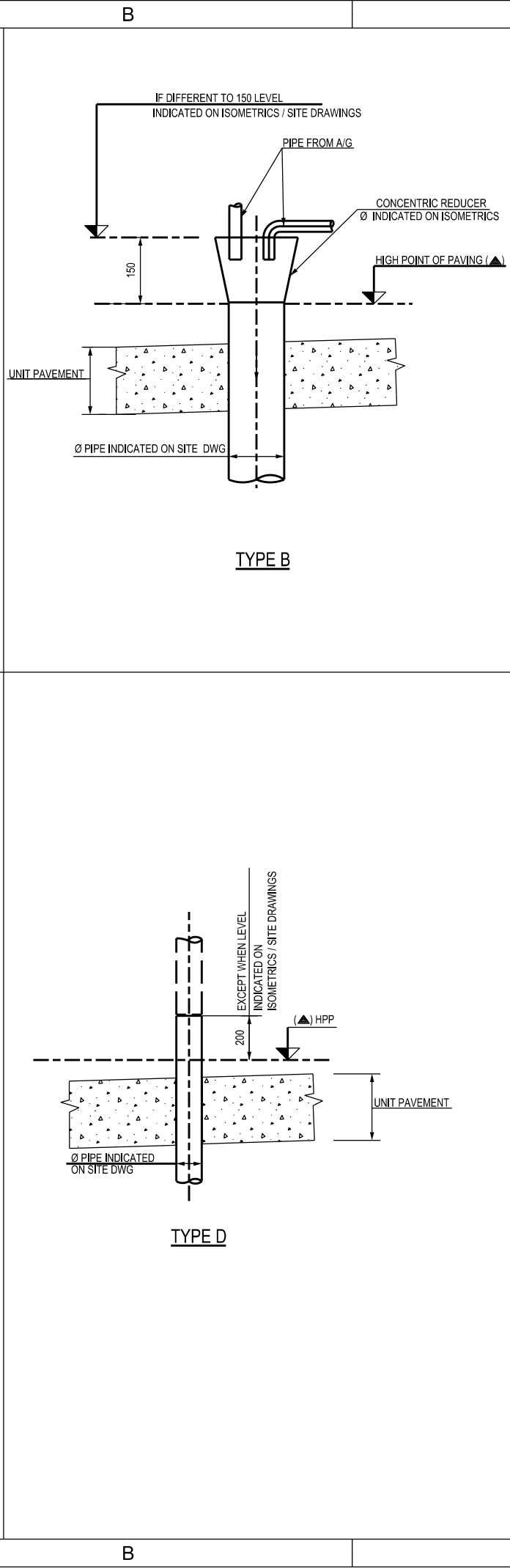
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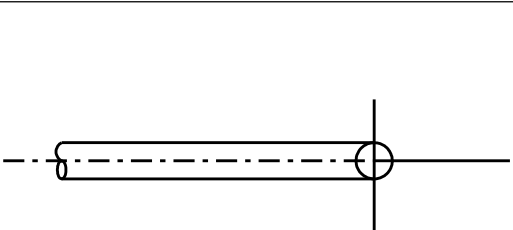


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TYPE C

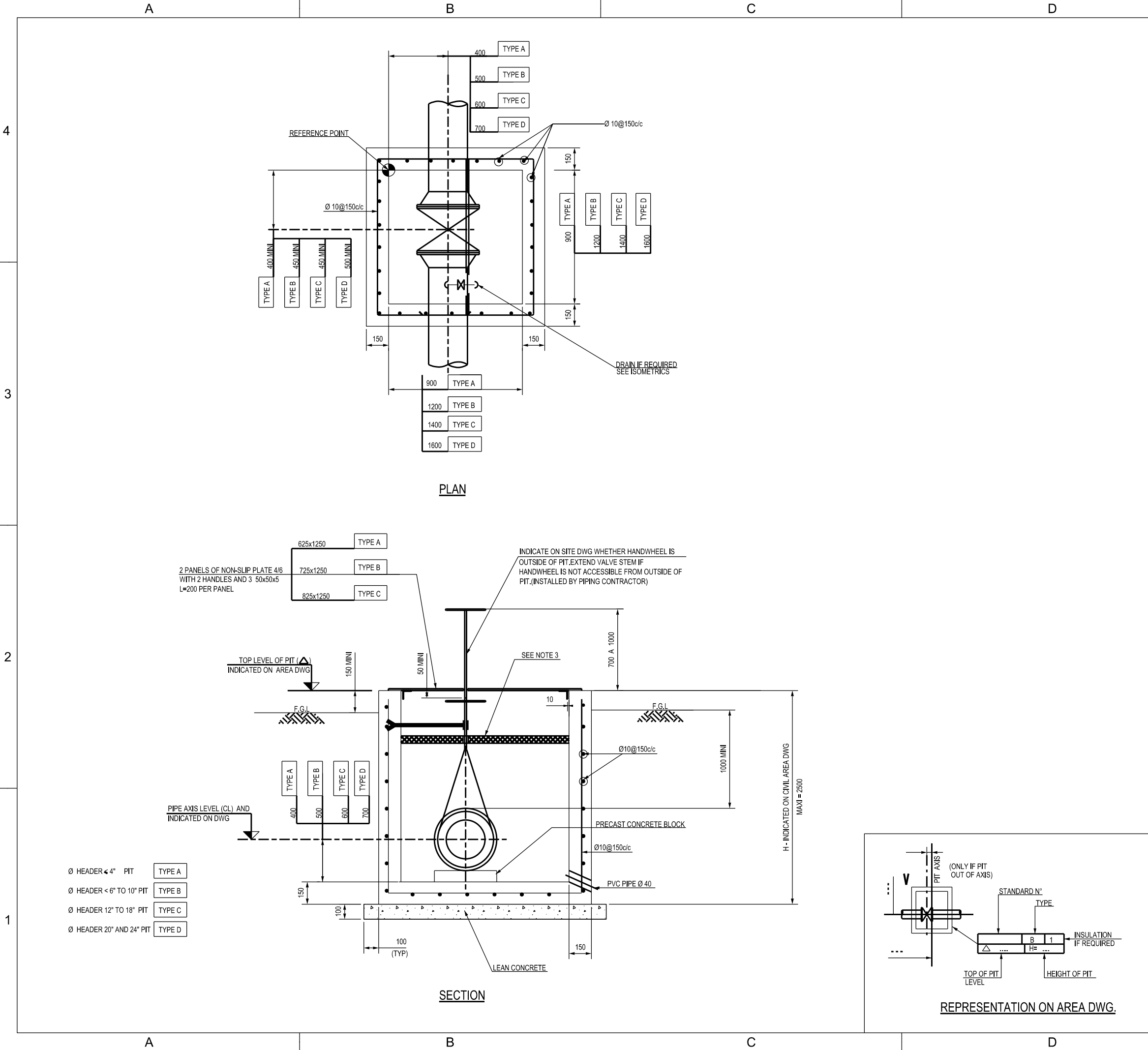
1

A



<u>NOTES :</u>						
1. FOR ALL PIPING DETAILS REFER ISOMETRICS.						
2. FOR PIPING CLASS REFER AREA DRAWING.						
 <p style="margin-top: 10px;">REPRESENTATION ON UNIT AREA DWG</p>						
B	19-12-2019	IFD	NDR	KRK	JP / KC	JMC
A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
Rev	Date DD-MM-YYYY	Description of Issue	Written by	Checked by	Approved by	Authorized by
DOCUMENT CATEGORY (USE " X " MARK)				DOCUMENT REVIEW STATUS (BY CLIENT)		
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PROJECT						
STANDBY SRU & ADDITIONAL TANKS						
IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
 INDIAN OIL CORPORATION LTD.						
PMC						
 TechnipFMC						
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TITLE						
STANDARD DETAIL FOR DRAIN FUNNELS						
DRAWING NO.					PAGE	REV.
SCALE	080557C	000	STC	1490	019	
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	1 OF 1
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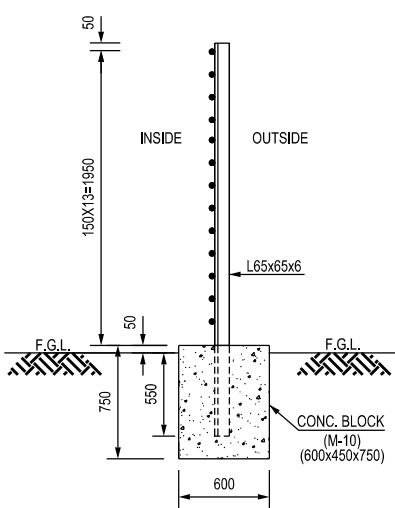
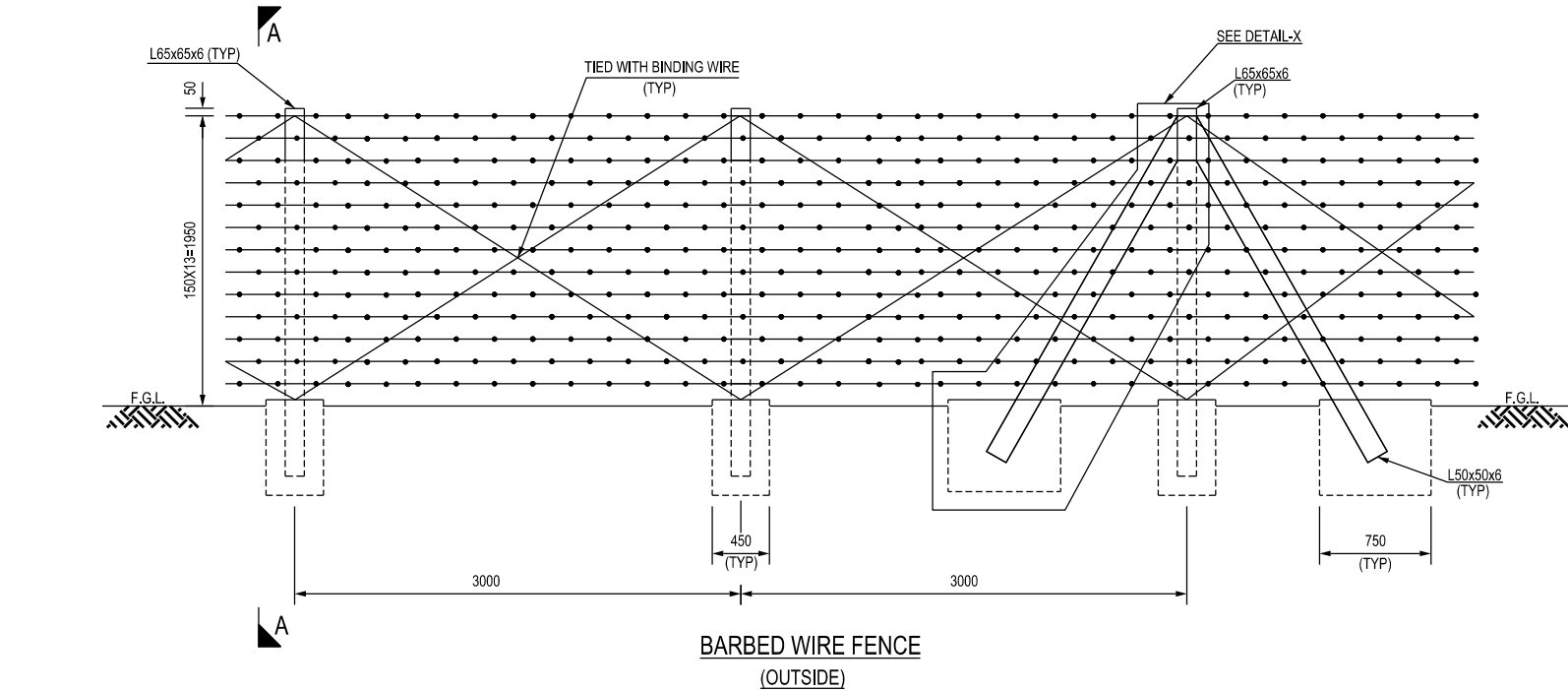
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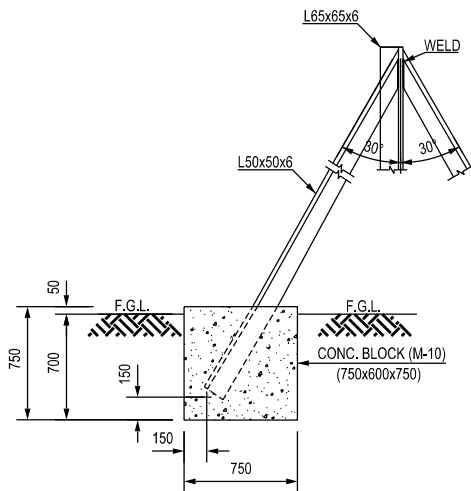
- NOTES:-**
1. ALL DIMENSIONS ARE IN MM.
 - 2 - THESE VALVE PITS WILL USUALLY BE INSTALLED FOR FIRE WATER AND AROUND BUILDINGS FOR DRINKING WATER, SERVICE WATER, STEAM, ETC... SUPPLY
 - 3 - INSULATION IF REQUIRED (DUE TO CLIMATIC CONDITIONS) POLYURETHANE FOAM OR SIMILAR.
 - 4 - LARGE VALVE PITS OR PITS FITTED WITH RUNGS, OR A SPECIAL DESIGN, WILL BE DETAILED ON CONTRACT DWGS.
 - 5 - FOR EXTERNAL HANDWHEEL, COVER DETAILS FOR FLOOR-STAND PASSAGE AND FIXATION WILL ALSO BE DETAILED.
 - 6 - IF USING OF GRE MATERIAL, IT WILL BE PROVIDED A SLEEVE IN CONCRETE WALL FOR PIPE CROSSING AND SUPPORT UNDER VALVE OR ON CONCRETE WALL

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DOCUMENT CATEGORY (USE "X" MARK)			DOCUMENT REVIEW STATUS (BY CLIENT)			
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PROJECT						
STANDBY SRU & ADDITIONAL TANKS IOCL PARADIP REFINERY, ODISHA, INDIA						
OWNER						
IndianOil						
PMO						
TechnipFMC						
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TITLE						
GRAVITY AND PRESSURIZED SYSTEMS STANDARD VALVE PITS						
DRAWING NO.						PAGE
SCALE	080557C	000	STC	1490	020	1 OF 1
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	A

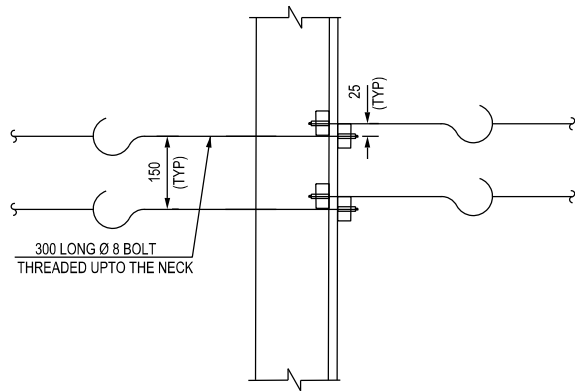
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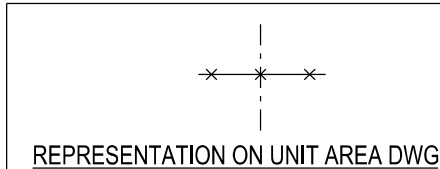
SECTION ELEVATION-AA



DETAIL-X



FIXING DETAIL OF STRAINING BOLT WITH POST



REPRESENTATION ON UNIT AREA DWG

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THE GALVANIZED STEEL BARBED WIRE DESIGNATED AS STEEL BARBED WIRE A-1 TO IS:278 SHALL HAVE LINE WIRE OF Ø 2.5MM, POINT WIRE OF Ø 20MM & MINIMUM WEIGHT OF COMPLETE BARBED WIRE SHALL BE 108gm/m WITH 75MM DISTANCE BETWEEN TWO BARBS.
3. LINE POST SHALL BE PLACED AT 3.0M C/C.
4. STRUT SHALL BE PROVIDED AT EVERY 15 th POST ON BOTH SIDE & END POST ON ONE SIDE.
5. STRAINING BOLTS SHALL BE PROVIDED AT THE END POST & AT PLACES AS DIRECTED BE ENGINEER INCHARGE.
6. EXPOSED FOUNDATION BLOCK AT GROUT LEVEL SHALL BE FINISHED SMOOTH IN CEMENT MORTAR 1:6.
7. GALVANIZED BARBED WIRE SHALL BE TIED TO THE ANGLE IRON POST EITHER WITH WELDED M.S. NIBS OR WITH G.I. WIRE THROUGH HOLES IN THE POST.

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PROJECT
STANDBY SRU & ADDITIONAL TANKS
IOCL PARADIP REFINERY, ODISHA, INDIA

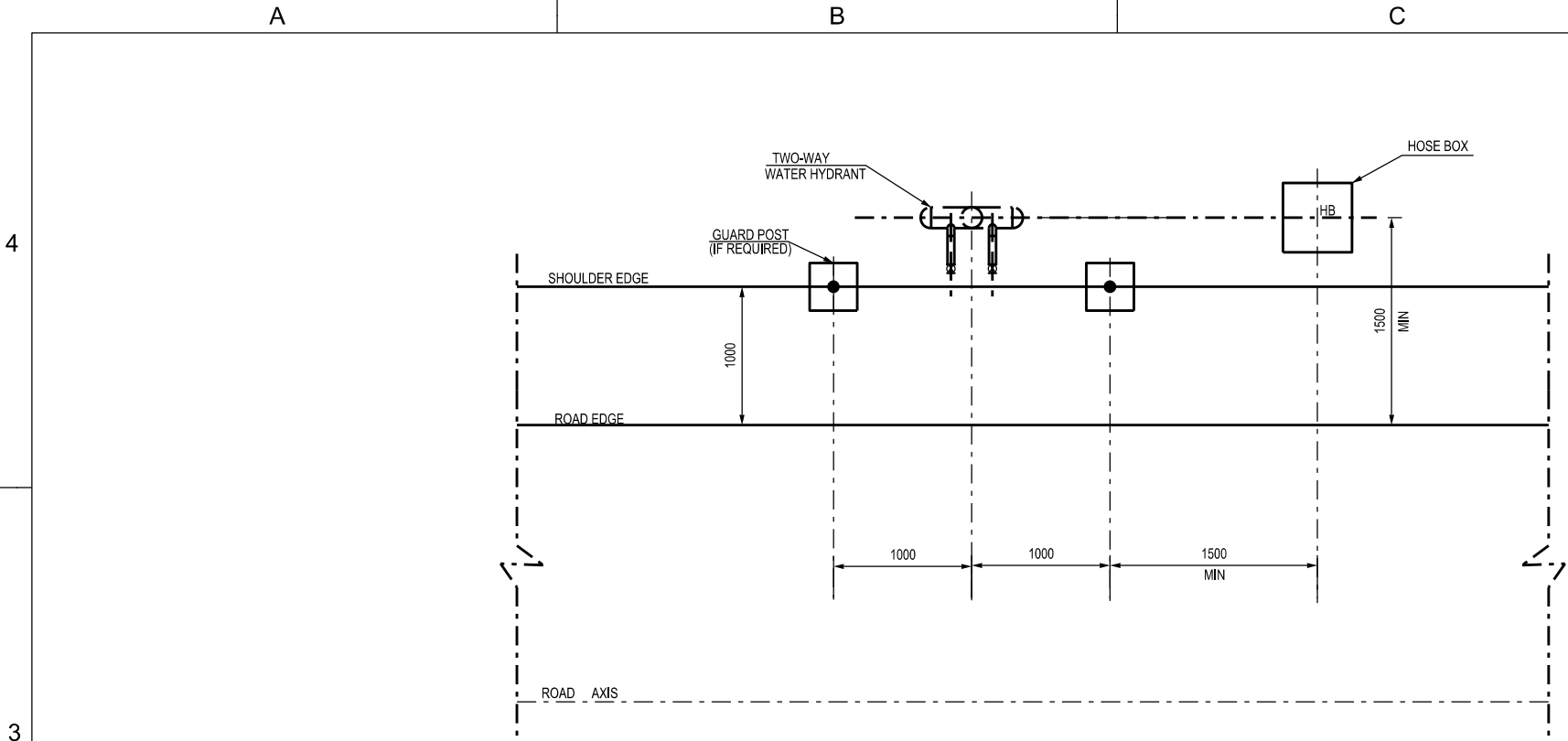
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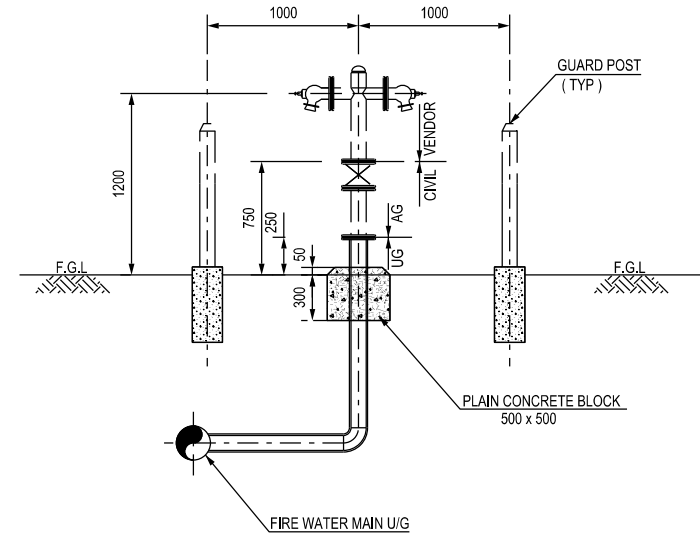
TITLE
**STANDARD DETAIL OF BARBED WIRE FENCING
(WITH ANGLE IRON POST)**

DRAWING NO.					PAGE	REV.
SCALE	080557C	000	STC	1490	021	
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	
					1 OF 1	A

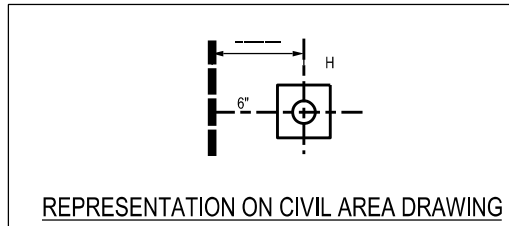
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TYPICAL INSTALLATION OF TWO-WAY WITH HOSE BOX



TYPICAL ELEVATION OF TWO-WAY HYDRANT
(FOR UNDER GROUND PIPING)



REPRESENTATION ON CIVIL AREA DRAWING

NOTES

- 1. REFERENCE TO THIS STANDARD WILL NOT BE MADE ON AREA DRAWING FOR EACH HYDRANT. IT WILL BE INDICATED BY A GENERAL NOTE OR INDICATED ON REFERENCE DRAWINGS.
- 2. WHERE THE SOIL IS IMPERVIOUS PROVISION SHOULD BE MADE FOR PROMPT REMOVAL OF WATER ORIGINATING FROM LEAKS AND DRAINS AND RETAINED AROUND THE DRAIN VALVE DISCHARGE (TO THE OILY WATER SEWER FOR INSTANCE). THE SYSTEM SHALL BE DESIGNED ON THE BASIS OF THE SPECIFIC CONDITIONS OF THE SITE ESPECIALLY IN COLD COUNTRIES SO AS TO PREVENT FREEZING OF THE WHOLE FIRE SYSTEM.
- 3. FOR ALL PIPING DETAILS SEE ISOMETRICS

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TITLE
**FIRE SYSTEM
HYDRANT-TYPICAL INSTALLATION**

DRAWING NO.						PAGE	REV.
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NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

4

3

2

1

A B C D

GUARD POST (IF REQUIRED)

SHOULDER EDGE

ROAD EDGE

1500

1500

500 (TYP)

1000

1500

1500

1500

1500

10 Ø @ 250 c/c BOTHWAYS

F.G.L.

200

50

50

250

1200

VENDOR

CIVIL

AG

UG

1500 X 1500

GUARD POST (TYP)

F.G.L.

U/G FIRE WATER HEADER

TYPICAL INSTALLATION OF WATER CUM FOAM MONITOR

REPRESENTATION ON AREA DRAWING

1. REFERENCE TO THIS STANDARD WILL NOT BE MADE ON AREA DRAWING FOR EACH HYDRANT. IT WILL BE INDICATED BY A GENERAL NOTE OR INDICATED ON REFERENCE DRAWINGS.
2. WHERE THE SOIL IS IMPERVIOUS PROVISION SHOULD BE MADE FOR PROMPT REMOVAL OF WATER ORIGINATING FROM LEAKS AND DRAINS AND RETAINED AROUND THE DRAIN VALVE DISCHARGE (TO THE OILY WATER SEWER FOR INSTANCE). THE SYSTEM SHALL BE DESIGNED ON THE BASIS OF THE SPECIFIC CONDITIONS OF THE SITE ESPECIALLY IN COLD COUNTRIES SO AS TO PREVENT FREEZING OF THE WHOLE FIRE SYSTEM.
3. FOR ALL PIPING DETAILS SEE ISOMETRICS

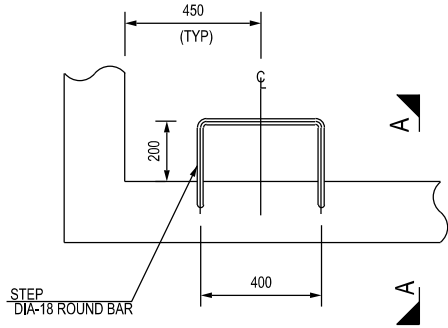
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OWNER

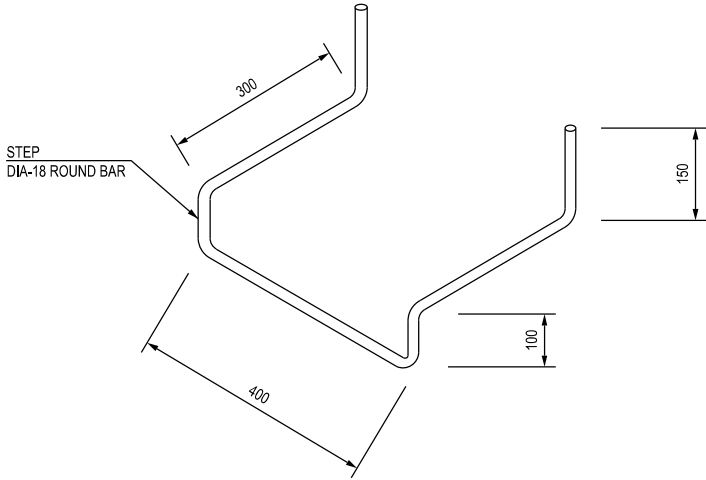
 INDIAN OIL CORPORATION LTD.

TITLE	FIRE SYSTEM WATER CUM FOAM MONITOR
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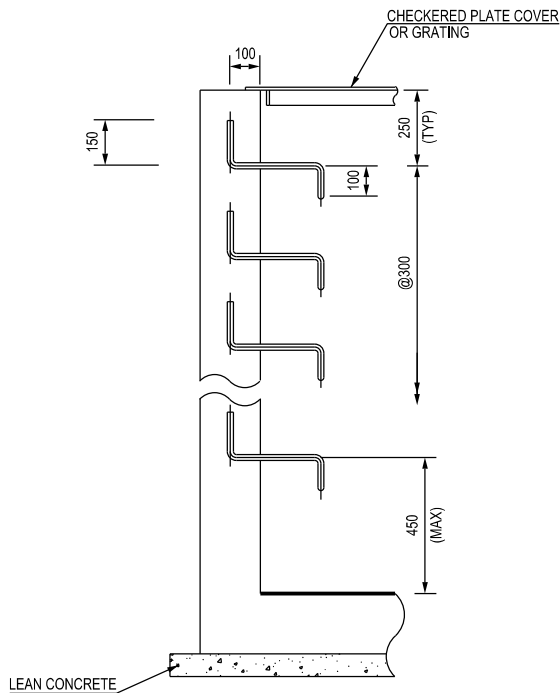
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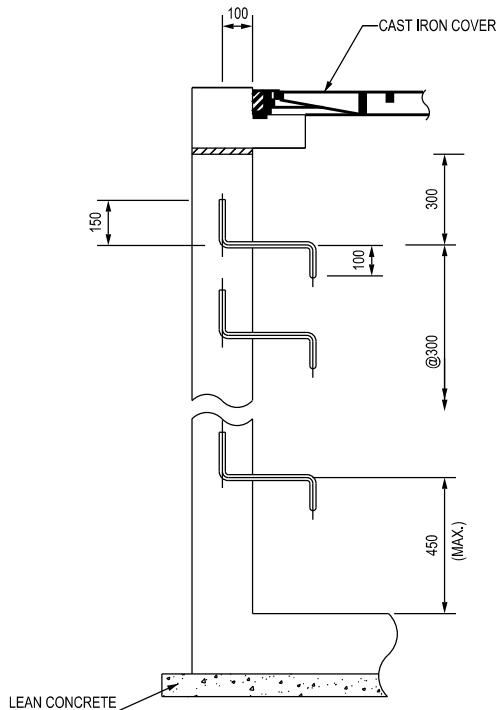
PLAN VIEW



ISOMETRIC VIEW



FOR CHECKERED PLATE COVER
OR GRATING COVER



FOR CAST IRON COVER

SECTION A-A

NOTES:

A	16-10-2019	IFD	NDR	KRK	JP / KC	JMC
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PROJECT
STANDBY SRU & ADDITIONAL TANKS
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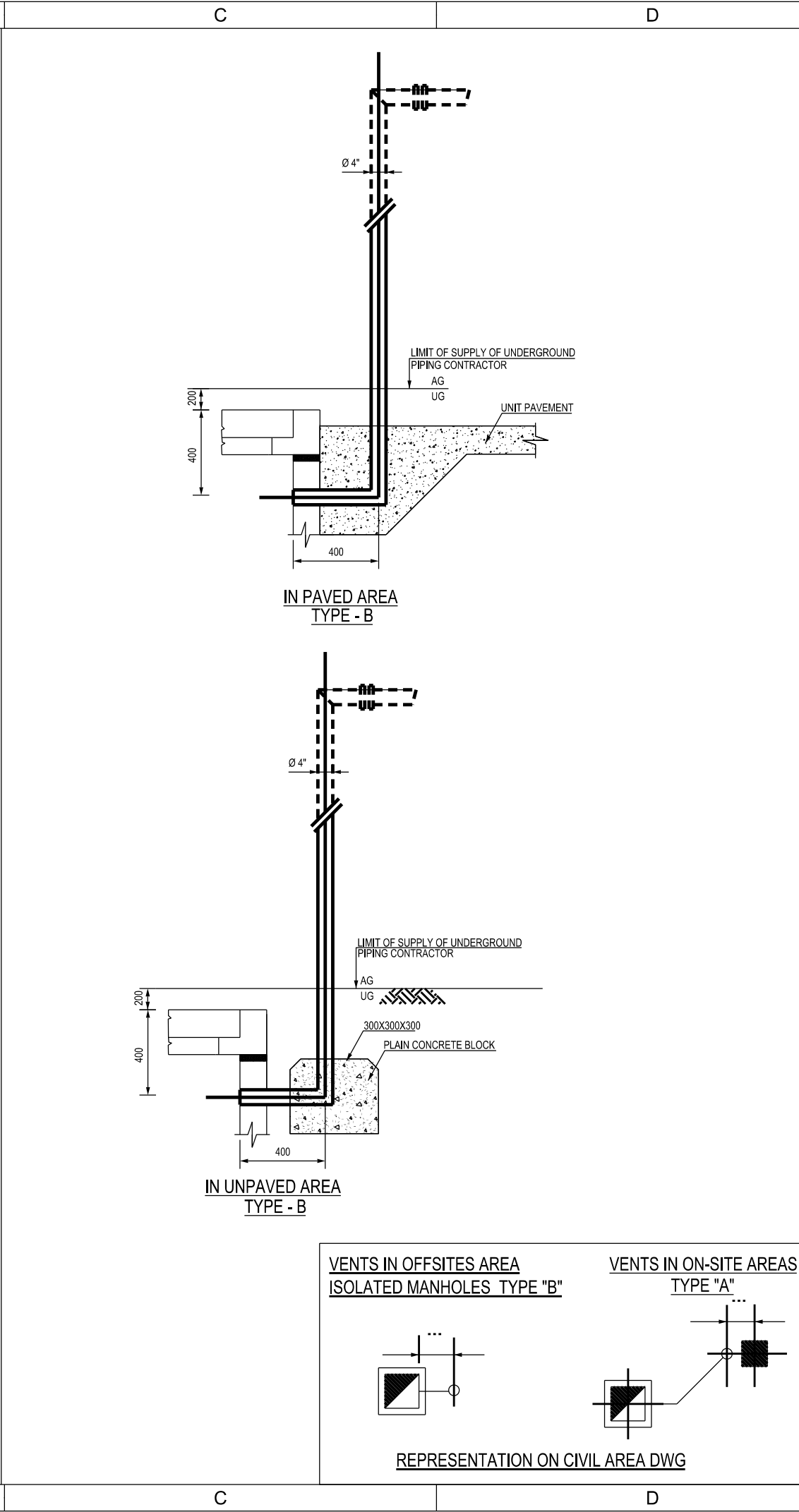
TITLE
**RUNGS FOR MANHOLE, CATCH BASIN
AND VALVE PITS**



DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	024	1 OF 1	A
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.		

The diagram consists of two cross-sectional views of a manhole, labeled 'IN PAVED AREA TYPE - A' and 'IN UNPAVED AREA TYPE - A'.

IN PAVED AREA TYPE - A: This drawing shows a manhole installed in a paved surface. The manhole structure is shown in cross-section, with a vertical shaft and a horizontal base. The shaft is labeled 'Ø 4"'. The base is labeled 'AG' and 'UG'. The manhole is shown with a 'LIMIT OF SUPPLY OF UNDERGROUND PIPING CONTRACTOR' indicated by a dashed line. The manhole is shown with a 'LEVEL INDICATED ON PIPING DWG' and a 'DIMENSION INDICATED ON SITE DWG'.

IN UNPAVED AREA TYPE - A: This drawing shows a manhole installed in an unpaved area. The manhole structure is shown in cross-section, with a vertical shaft and a horizontal base. The shaft is labeled 'Ø 4"'. The base is labeled 'AG' and 'UG'. The manhole is shown with a 'LIMIT OF SUPPLY OF UNDERGROUND PIPING CONTRACTOR' indicated by a dashed line. The manhole is shown with a 'LEVEL INDICATED ON PIPING DWG' and a 'DIMENSION INDICATED ON SITE DWG'.



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PROJECT							
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TITLE							
VENTS FOR MANHOLES							
DRAWING NO.						PAGE	REV.
SCALE	080557C	000	STC	1490	025		
NTS	PROJECT	UNIT	DOC. TYPE	MAT. CODE	SER. NO.	1 OF 1	A