



MAHARASHTRA NATURAL GAS LIMITED

(MNGL)

**TENDER DOCUMENT
FOR
LAYING AND CONSTRUCTION OF U/G STEEL PIPELINE &
ASSOCIATED WORKS FROM DODO MAULI KRUPA, MOSHI
LINK ROAD TO MAGAZINE CHOWK, VISHRANTWADI PUNE
GA OF MNGL.**

**UNDER OPEN DOMESTIC
COMPETITIVE BIDDING
(THROUGH E-TENDERING MODE)**

Bid Document No.: MNGL/CP/2026-27/113

VOLUME III OF III

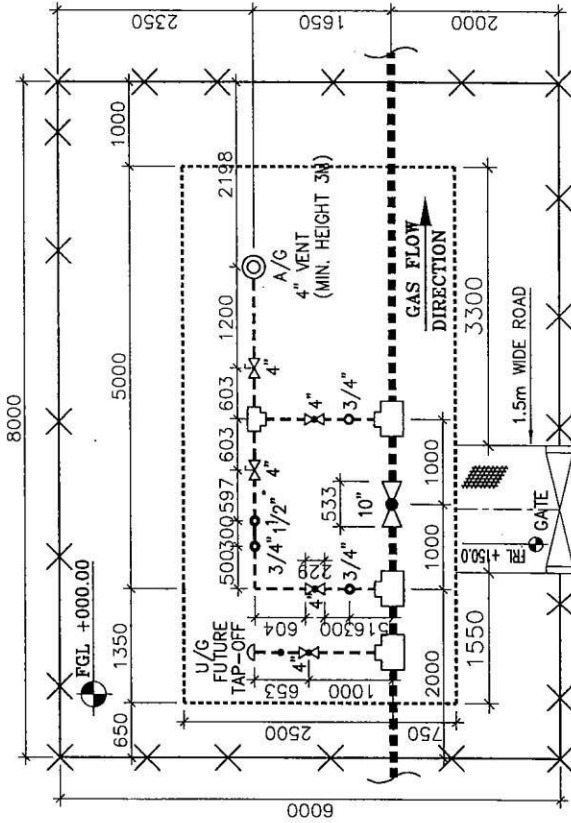
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- | | |
|--|-----------------------|
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- | | |
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23. Typical drawing of isolation/tap-off valve assembly	- MNGL/Plng./Steel/40
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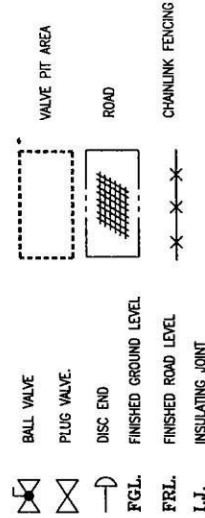


TYPE-II
SV STATION WITH A/G VENT AND TAP-OFF
TYP. PLOT PLAN WITH PLOT SIZE (8.0M x 6.0M)

BILL OF MATERIAL

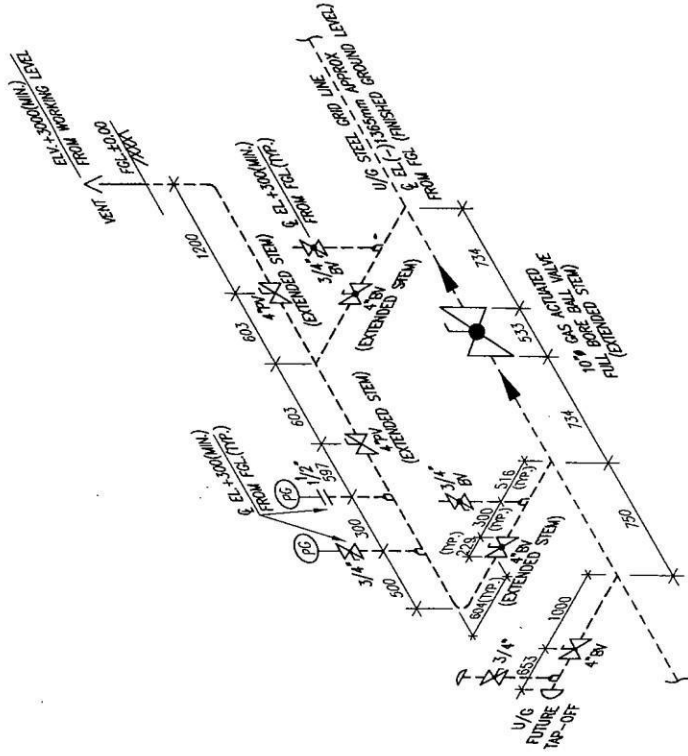
S.No.	DESCRIPTION	QTY.
1	10" BALL VALVE (EXTENDED STEM) WITH ACTUATOR	- 01 NO.
2	4" BALL VALVE (EXTENDED STEM)	- 02 NOS.
3	4" PLUG VALVE (EXTENDED STEM)	- 02 NOS.
4	4" BALL VALVE	- 01 NO.
5	3/4" BALL VALVE	- 04 NOS.
6	BARRED TEE 10"x10"x4"	- 03 NOS.
7	TEE 4"x4"x4"	- 01 NO.
8	ELBOW (1.5D) 4"	- 01 NO.

LEGEND:



NOTES:

1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE MENTIONED.
2. FINISHED GROUND LEVEL +0.00 CORRESPONDS TO THE TOP OF THE NEAREST EXISTING ROAD LEVEL.
3. LOCATION OF GATE SHOWN ABOVE ARE OF INDICATIVE ONLY. HOWEVER FIRM LOCATION OF GATE SHALL BE DECIDED AS PER SITE CONDITION.



TYPICAL ISOMETRIC DETAIL OF SECTIONALISING VALVE (TYPE-II)



महाराष्ट्र नैचुरल गॅस लिमिटेड
MAHARASHTRA NATURAL GAS LTD

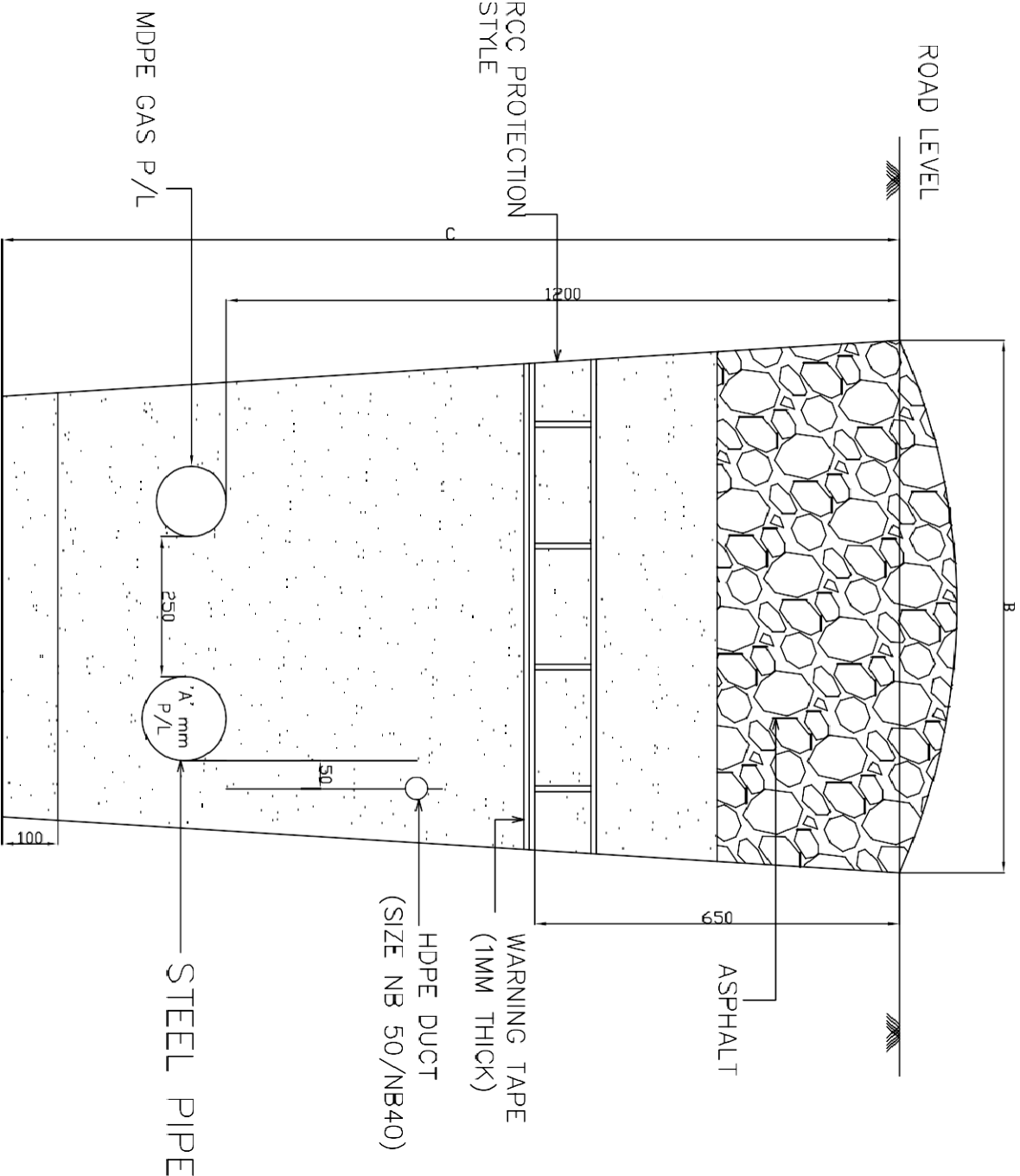
DRG No. MNG-L Png./Spec/02

CNG & CITY GAS DISTRIBUTION IN PUNE

TYPICAL DETAIL OF SV STATION (TYPE-II)

SCALE: 1:100
DRG. NO. 0

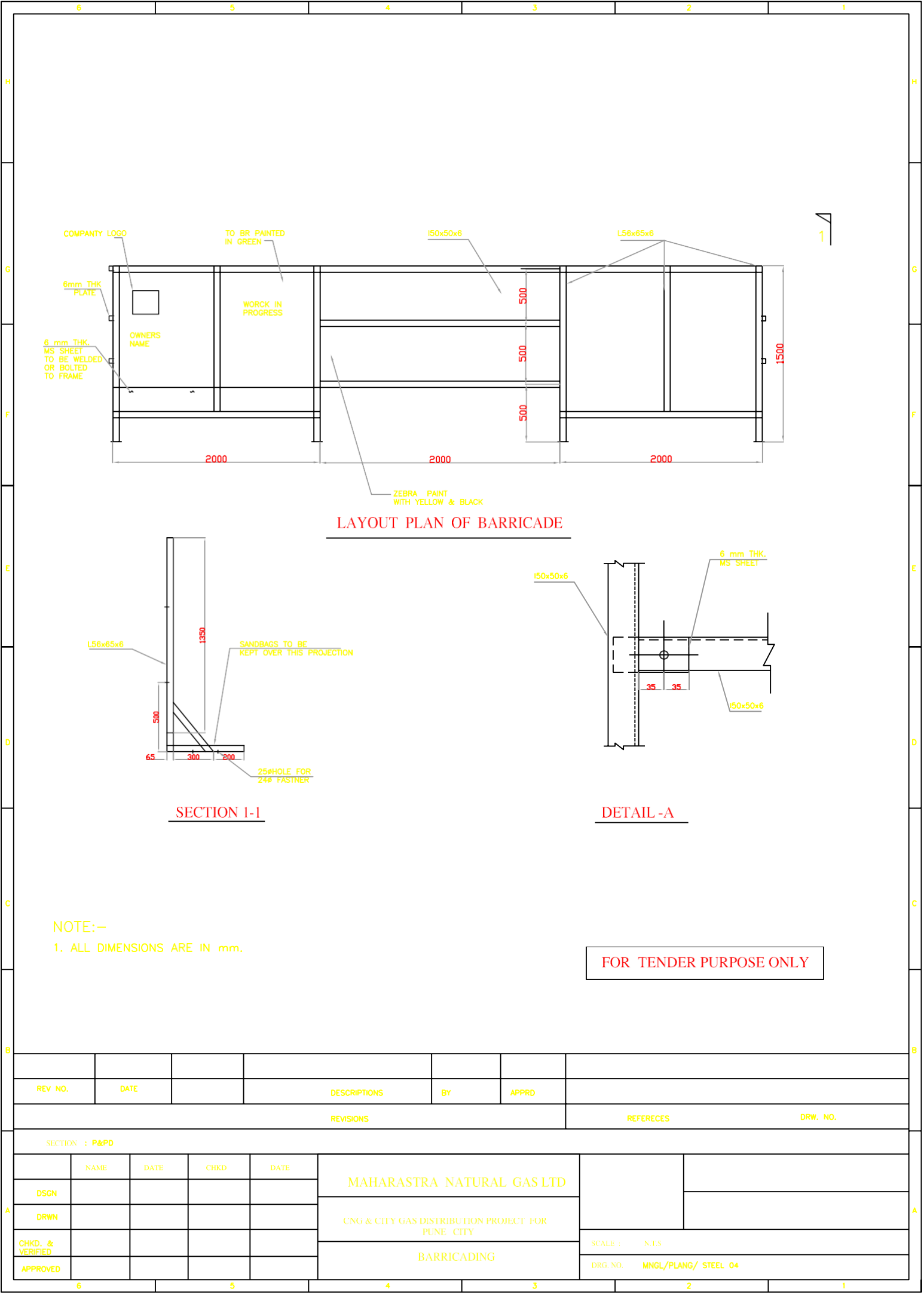
REV. INST. CONVEYED BY



'A' mm	B mm	C mm
10" NB	950 mm	1650 mm
06" MB	800 mm	1450 mm
04" NB	750 mm	1400 mm

ALL DIMENSIONS ARE IN MM

DRG. NO.- MNGL /PLANG /STEEL/ 03



LAYOUT PLAN OF BARRICADE

SECTION 1-1

DETAIL -A

NOTE:-
1. ALL DIMENSIONS ARE IN mm.

FOR TENDER PURPOSE ONLY

REV NO.	DATE		DESCRIPTIONS	BY	APPRD	
REVISIONS					REFERECES	DRW. NO.
SECTION : P&PD						
	NAME	DATE	CHKD	DATE	MAHARASTRA NATURAL GAS LTD	
DSGN						
DRWN						
CHKD. & VERIFIED					CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE CITY	
APPROVED					BARRICADING	SCALE : N.T.S
						DRG. NO. MNGL/PLANG/ STEEL 04

5 1 24 3 3 42 15

G

G

F

F

E

E

D

D

C

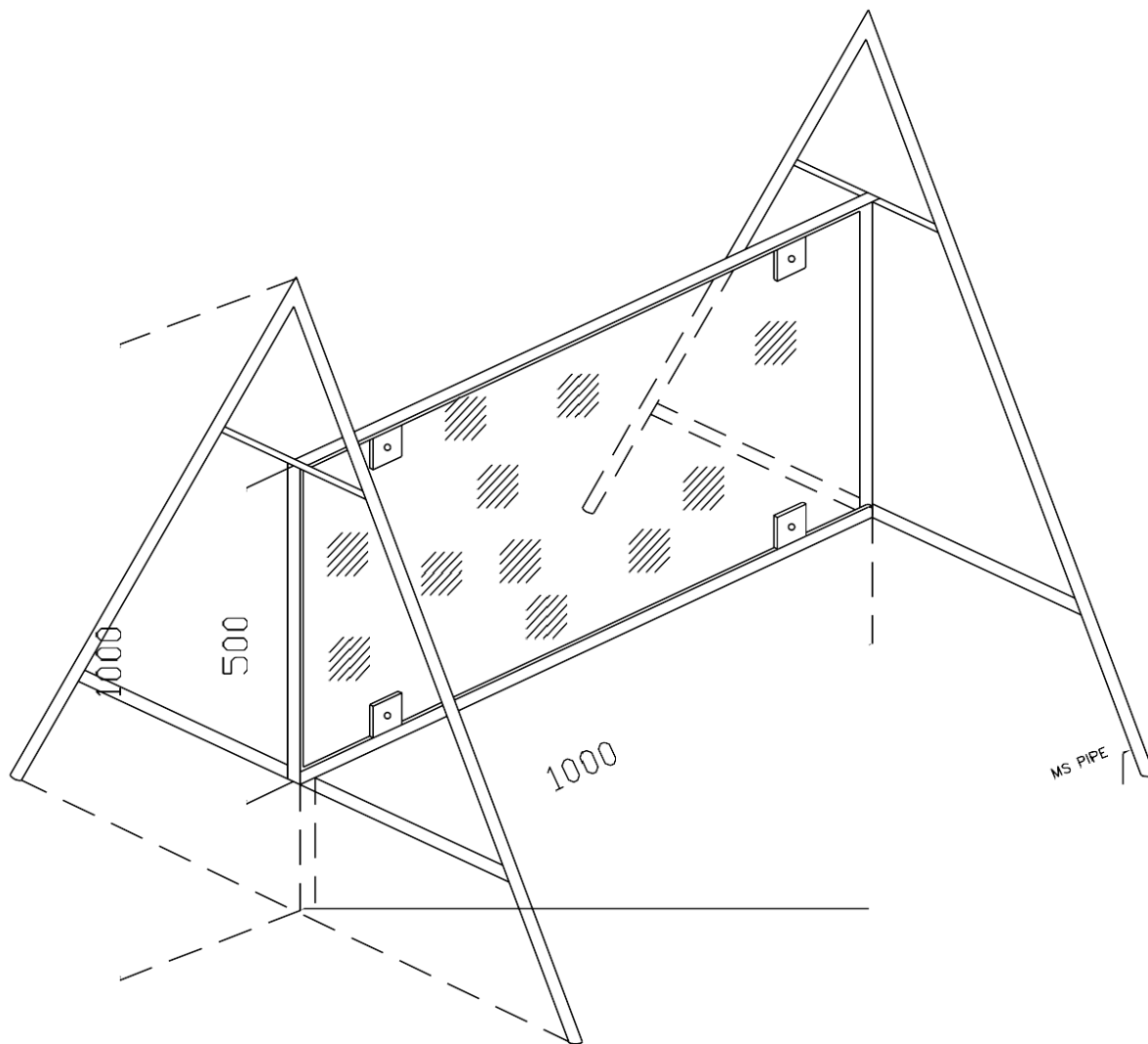
C

B

B

A

A



IN RED

IN BLACK

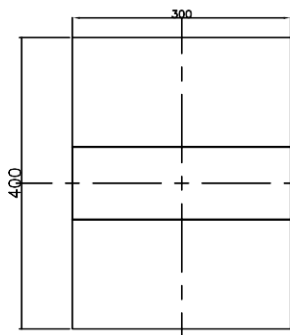
CAUTION
WORK IN PROGRESS
LATING OF HITH PRESSURE PIPELINE
CLIENT : CLIENT'S NAME
CONTRACTOR : CONTRACTOR'S NAME
EMERGENCY PHONE NOS :

NOTES: -
1. ALL DIMENSIONS ARE IN mm

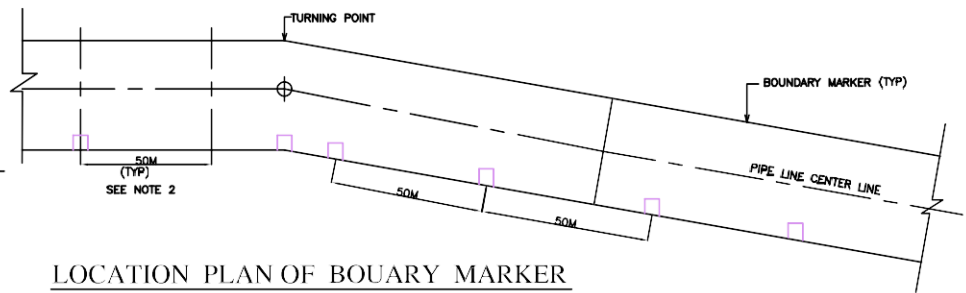
FOR TENDER PURPOSE ONLY

REV NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD		
REVISIONS						REVISIONS	DRG NO.
		NAME	SIG.	DATE	MAHARASTRA NATURAL GAS LTD.		
DSGN					CNG & CITY GAS DISTRBUTION IN PUNE		
DRWN					CAUTION BOARD		
CHD. & VERIFIED					SCAFFOLDING		
APPROVED					DRG. NO. M N G L / PLANG STEEL/05		

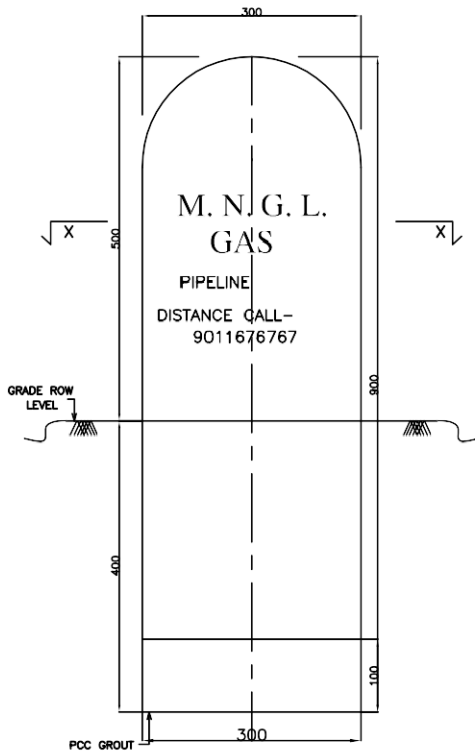
5 3 2 1



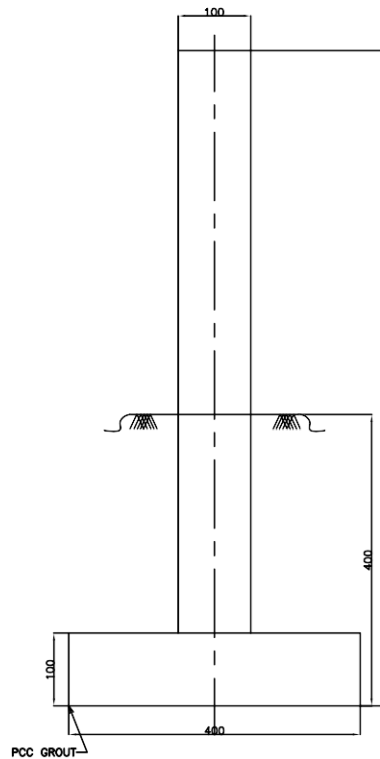
PLAN



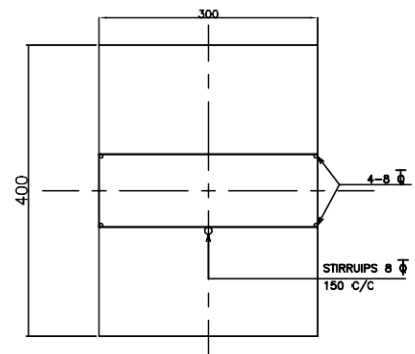
LOCATION PLAN OF BOUARY MARKER



ELEVATION



SIDE VIWE

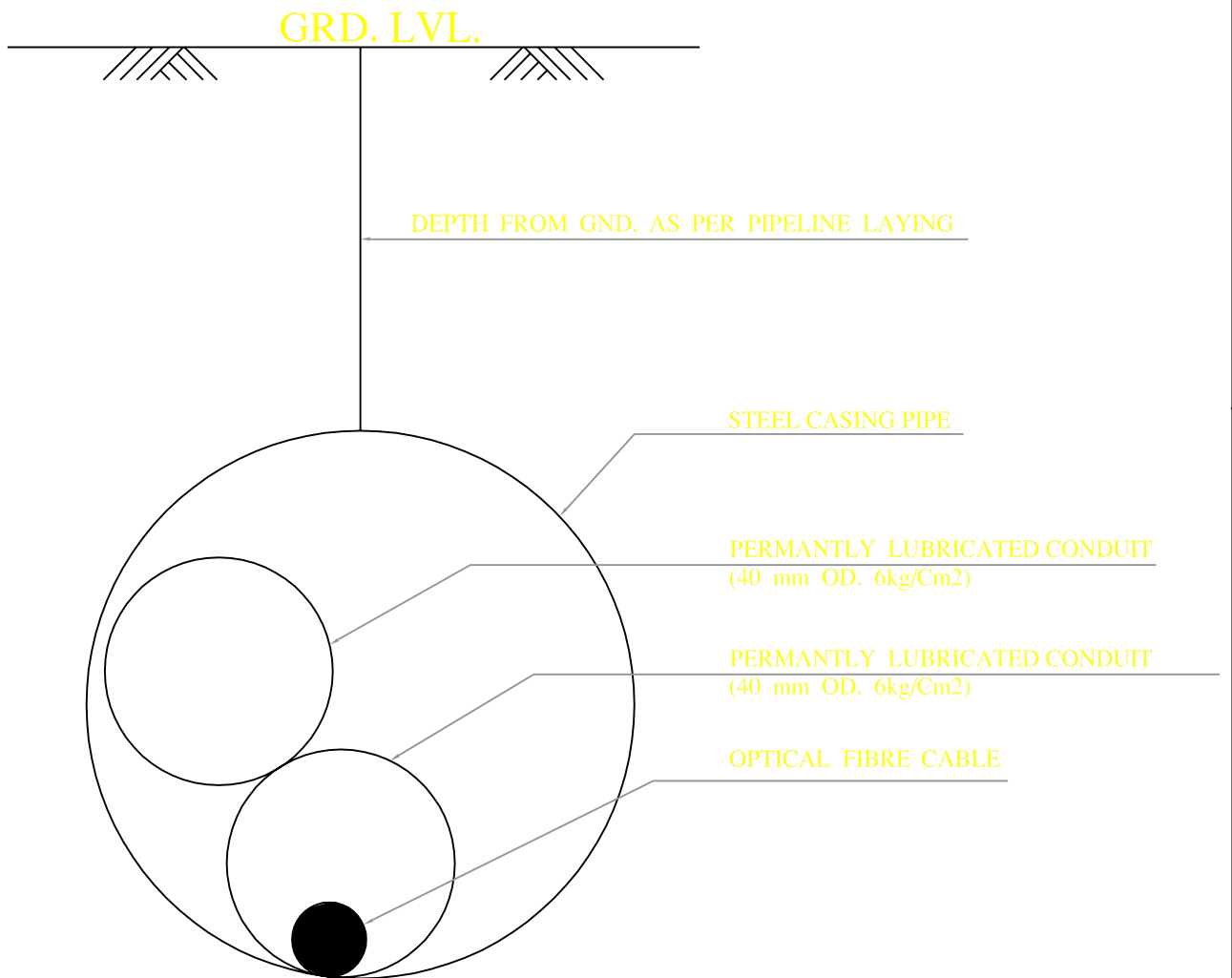


SECTION X-X

NOTES:-

1. ALL DIMENSIONS ARE MM UNLESS OTHARWISE SPECIFIED.
2. MARKERS SHALL BE INSTALLED IN EVERY 50M INTERVAL AS PER INSTRUCTION OF EIC
3. ALL BOUNDRY MARKERS SHALL BE PRECAST AND INSCRIPTIONS SHALL BE ENGAVED CENTRALLY IN THE MOLULD ON ONE FACE .
4. LETTERS SHALL BE 60 HIGH AND 5 DEEP.
5. INSCRIPTIONS SHALL THE PIPELINE.
6. CONCRETE FOR BOUNDARY MARKERS SHALL BE 20.
7. ABOVE GROUND PART OF BOUNDARY MARKERS BE PAINTED YELLOW WITH MINIMUM THREE COATS OF APPROVED QUALITY PAINT INSCRIPTIONS SHALL BE PAINTED BLACK.(35MICRONS COAT)

REV NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	DRG. NO.
REVISIONS					REFRECNES	DRG. NO.
MAHARASTRA NACHURAL GAS LTD						
CNG & CITY GAS DISTRIBUTION IN PUNE						
ROUTE BOUNDARY MARKER					SCALE : N.T.S	
					DRG. NO. M N G L / PLAN / STEEL #06	

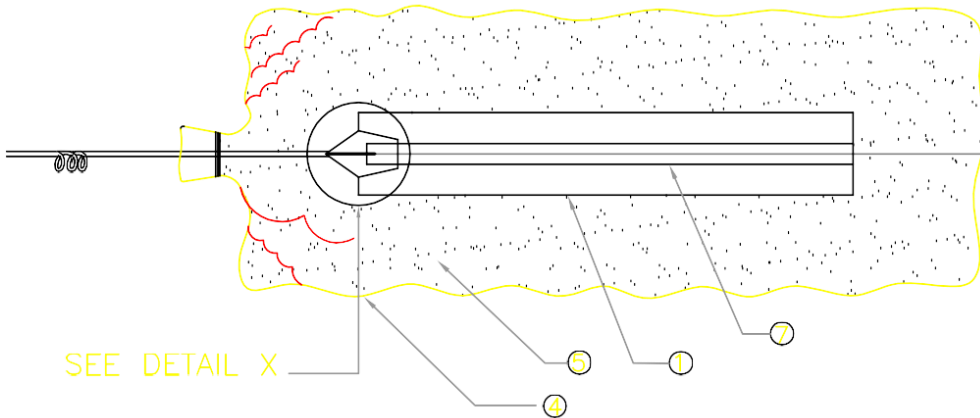
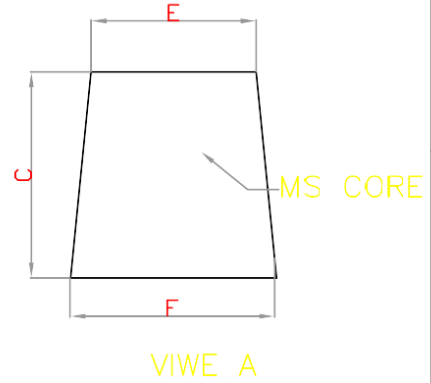
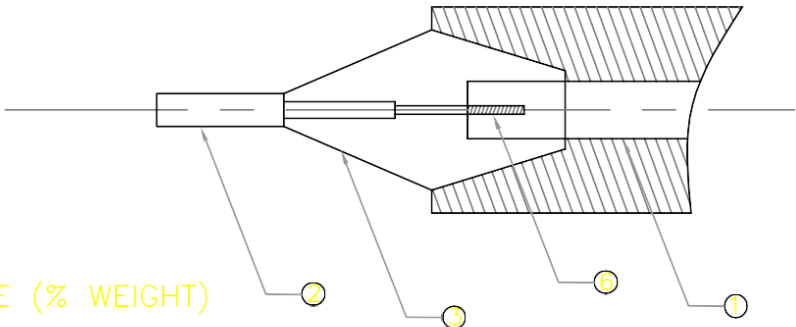


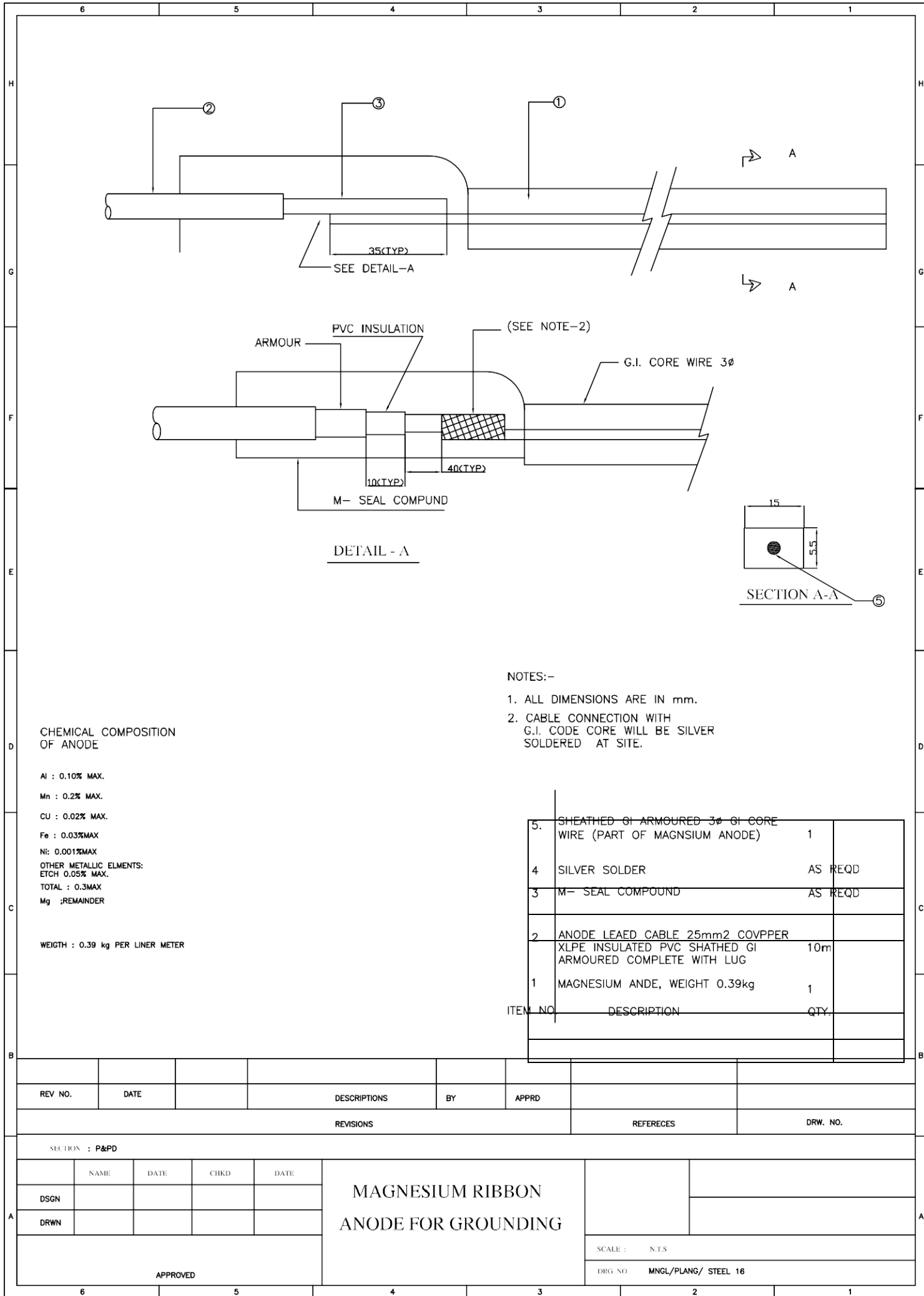
NOTE :-

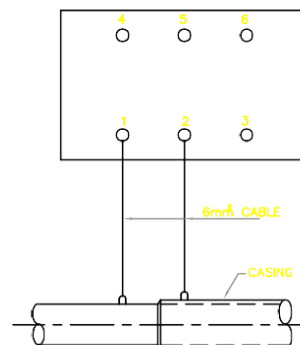
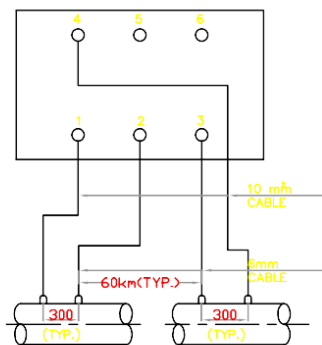
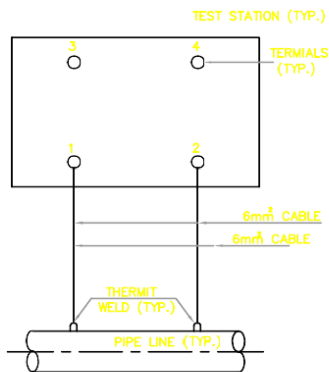
1. OPTICAL FIBER SHALL BE LAID ON RIGHT SIDE OF THE PIPELINE IN THE DIRECTION OF GAS FLOW.
2. OFC SHALL BE LAID AS PER THE SPECIFICATION NO. MEC/S/05/E5/T/001 REV-0

REV NO.	DATE		DESCRIPTIONS	BY	APPRD		
REVISIONS						REFERECES	DRW. NO.
SECTION : P&PD							
	NAME	DATE	CHKD	DATE	OPRICAL FIBER CABLE LAYING (CASSED CROSSING) 2 Nos. HDPE DUCT		
DSGN							
DRWN							
CHKD& VERIFIED						SCALE :	N.T.S
APPROVED						DRG. NO.	MNGL/PLANG/ STEEL 11
6	5		4	3	2		1

5	4	3	2	1																												
G					G																											
F					F																											
E					E																											
D					D																											
C	<u>NOTES:</u> 1. ALL DIMENSIONS ARE IN mm. 2. GI ANGLE SUPPORT SHALL BE OF 30X3mm 3. MINIMUM SPARE CABLE SHALL BE PROVIDED AND PROPERTY ROLLED IN JOINTING PIT AS PER SPECIFICATION 4.HDPE CONDUIT END SHALL BE SEAL IN THE IN JOINTING PIT AFTIER TESTING				C																											
B					B																											
<table><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTIONS</td><td>BY</td><td>CHKD</td><td>APPRD</td><td>REFERENCES</td><td>DRG. NO.</td></tr><tr><td colspan="6">REVISIONS</td><td>REFERENCES</td><td>DRG. NO.</td></tr></table>					REV. NO.	DATE	DESCRIPTIONS	BY	CHKD	APPRD	REFERENCES	DRG. NO.	REVISIONS						REFERENCES	DRG. NO.												
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A	<table><tr><td>SECTION</td><td colspan="3"></td></tr><tr><td>NAME</td><td>DATE</td><td>SIG.</td><td></td></tr><tr><td>DESIGN</td><td></td><td></td><td></td></tr><tr><td>DRWN</td><td></td><td></td><td></td></tr><tr><td>CHKD.&VERIFIED</td><td></td><td></td><td></td></tr><tr><td>APPROVED</td><td></td><td></td><td></td></tr></table>				SECTION				NAME	DATE	SIG.		DESIGN				DRWN				CHKD.&VERIFIED				APPROVED				STANDARD SKETCH OFC JOINTING PIT BLOWING PIT		SCALE : NTS DRG.NO. M N G L / PLNG / STEEL 12	A
SECTION																																
NAME	DATE	SIG.																														
DESIGN																																
DRWN																																
CHKD.&VERIFIED																																
APPROVED																																
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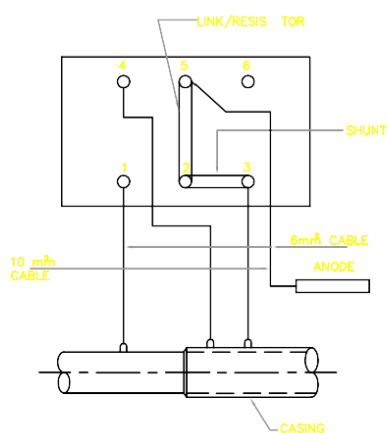
6	5	4	3	2	1																									
H						H																								
G	SEE DETAIL X MS CORE VIWE A					G																								
F						F																								
E	PER-PACKED ZINC ANODE 					E																								
D	CHEMICAL COPOISTON OF ANODE (% WEIGHT) <table><thead><tr><th>CHEMICAL</th><th>TYPE- I</th><th>TYPE- II</th></tr></thead><tbody><tr><td>Al</td><td>: 0.1% - 0.5 %</td><td>0.005% MAX</td></tr><tr><td>Cd</td><td>: 0.25% -0.07%</td><td>0.003% MAX</td></tr><tr><td>Cu</td><td>: 0.005% MAX</td><td>0.002% MAX</td></tr><tr><td>Fe</td><td>: 0.005% MAX</td><td>0.0014% MAX</td></tr><tr><td>Pb</td><td>: 0.006% MAX</td><td>0.003% MAX</td></tr><tr><td>OTHERS</td><td>: 0.1% MAX</td><td>—</td></tr><tr><td>Zn</td><td>: REMAINDER</td><td>REMAIDER</td></tr></tbody></table> NOTES:— 1. ANODE COMPOSITION, NET WEIGHT GROSS WIGHTE DIMENSIONS SHALL BE FURNISHED BY CONTRACTOR 2. ANODE TAIL CABLE SHALL BE HIGH CONDUCTIVITY, STRANDED, COPPER CONDUCTOR, 600/1100 V GRADE XLPE INSULATED, PVC SHATHED & UNARMoured.					CHEMICAL	TYPE- I	TYPE- II	Al	: 0.1% - 0.5 %	0.005% MAX	Cd	: 0.25% -0.07%	0.003% MAX	Cu	: 0.005% MAX	0.002% MAX	Fe	: 0.005% MAX	0.0014% MAX	Pb	: 0.006% MAX	0.003% MAX	OTHERS	: 0.1% MAX	—	Zn	: REMAINDER	REMAIDER	D
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REV NO.	DATE	DESCRIPTIONS	BY	APPRD																										
REVISIONS																														
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A	SECTION : P&PD <table><thead><tr><th>NAME</th><th>DATE</th><th>CHKD</th><th>DATE</th></tr></thead><tbody><tr><td>DSGN</td><td></td><td></td><td></td></tr><tr><td>DRWN</td><td></td><td></td><td></td></tr></tbody></table> APPROVED PREPACKAGED ZINC ANODE SCALE : N.T.S DRG NO : MNGI/PLANG/ STEEL 14					NAME	DATE	CHKD	DATE	DSGN				DRWN				A												
NAME	DATE	CHKD	DATE																											
DSGN																														
DRWN																														
6	5	4	3	2	1																									



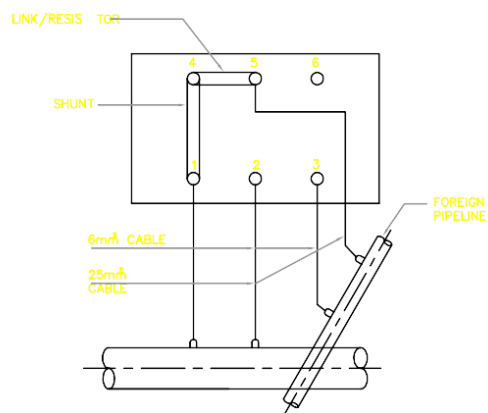


POTENTIAL MEASUREMENT CURRENT MEASUREMENT
(CONNECTION SCHEME-A) (CONNECTION SCHEME-B)

CASED CROSSING WITH
UNCOATED CASING
(CONNECTION SCHEME-C)

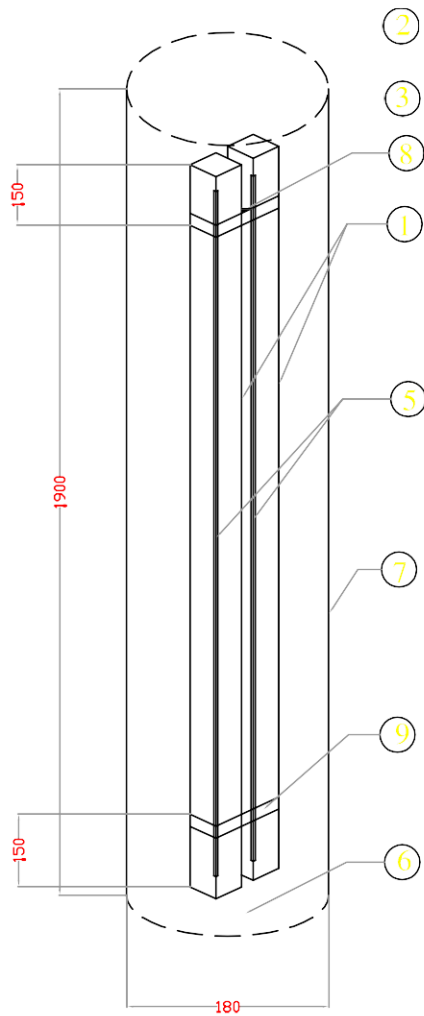


CASED CROSSING WITH
COATED CASING
(CONNECTION SCHEME - D)

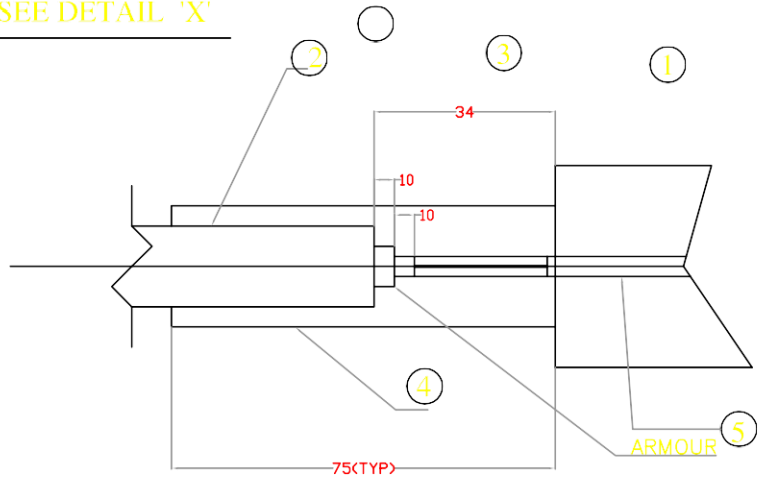


FOREING PIPELINE CROSSING
(CONNECTION SCHEME -E)

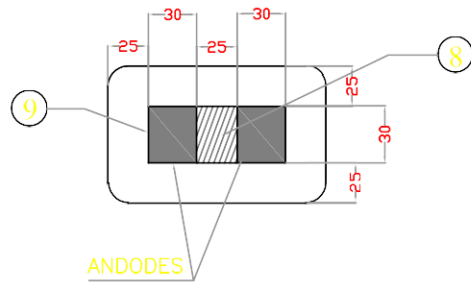
REV. NO.	DATE		DESCRIPTIONS	BY	APPRD		
REVISIONS						REFERECES	DRW. NO.
SECTION : P&PD							
	NAME	DATE	CHKD	DATE	TEST STATION CONNECTION SCHEMES		
DSGN							
DRWN							
APPROVED					SCALE : N.T.S		
					DRG. NO. MNGI/PLANG/ STEEL 19		



SEE DETAIL 'X'



DETAIL 'X'



NOTES :-

1. ALL DIMENSIONS ARE IN mm.
2. ZINC GROUNDING CELLS SHALL BE INSTALLED VERTICALLY SUCH THAT THE TOP OF THE CELL IS APPROX AT THE SAME ELEV. AS PIPE BOTTOM.
3. ALL CABLE LEADS FOR ZINC GROUNDING CELL SHALL BE AS SHORT AND DIRECT AS POSSIBLE.
4. GROUNDING CELL CABLE ARMOUR SHALL NOT HAVE ELECT. CONNECTION TO ANODE

ZINC ANODE COMPOSITION (% WEIGHT)

ALUMINIUM	0.005% MAX
MAGNESIUM	0.003% MAX
COPPER	0.002% MAX
IRON	0.0014% MAX
LEAD	0.003% MAX
OTHERS	—
ZINC	REMAINDER

ZINC ALLOY CONFORMING TO ASTM-B-418-G7

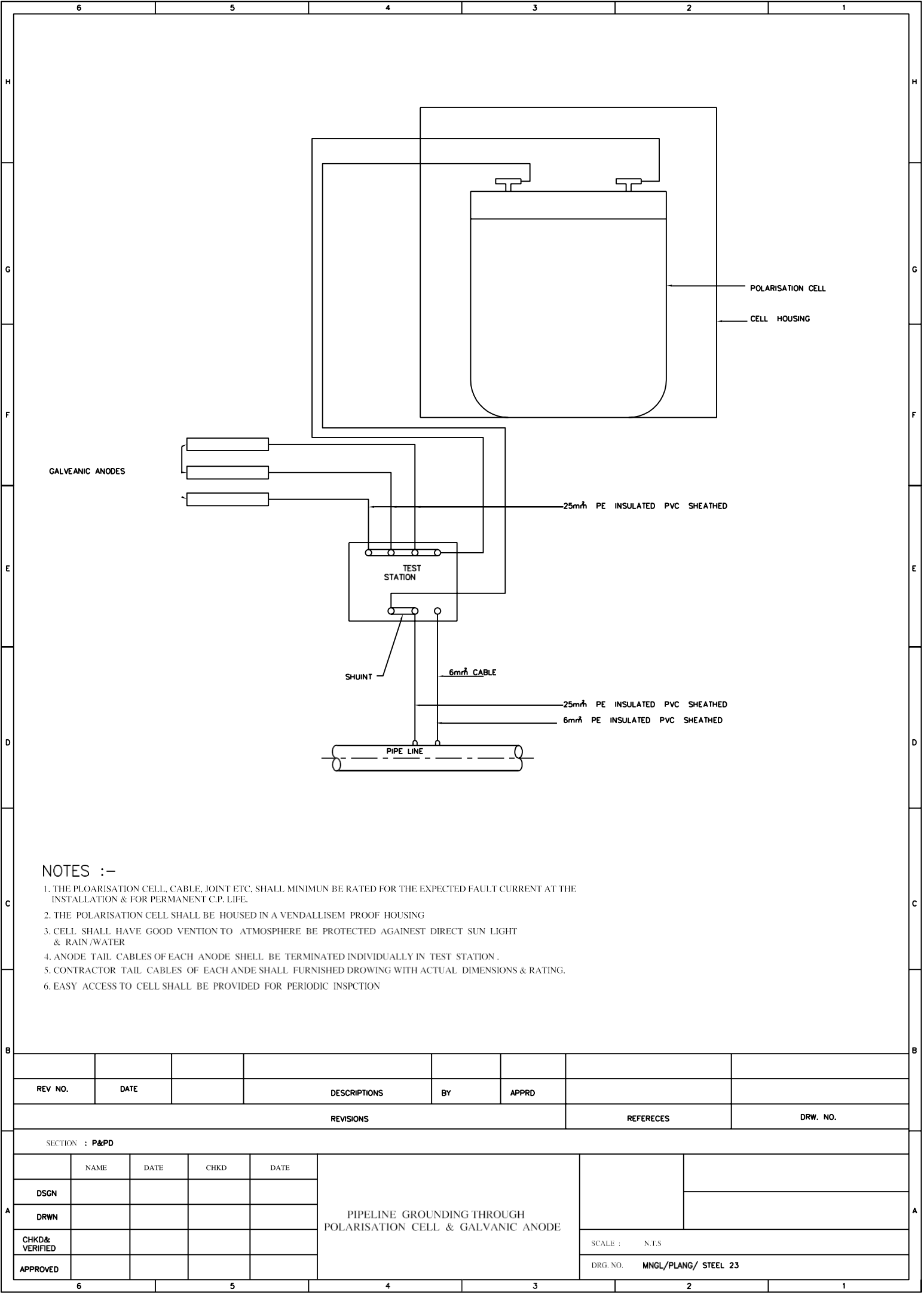
BACKFILL COMPOSITION

GYPSUM	75%
BENTONITE	20%
SODIUM SULPHATE	5%

1 IAP= SIRAP AS REQD.

1	SPRINT INSULATING SPACER 25X36X50	2 NOS.		
1	COTTON BAG 180#	1 NO.		
1	BACK FILL MAT.	AS REQD.		
1	6mm GALVANISED STEEL CORE	AS REQD.		
1	HEAT SHINK SLEEVE	2 NOS.		
1	SILVER BRAZED CONNECTION	2 NOS.		
1	ANODE WIL CABLE 25mm Sq 10 Cu XLPE/PVC SHI A11 IS ARMOURED 600/1000 V.	30 mL		
1	ZINC ANODE 36X36X1525	2 NOS.		
ITEM NO.	DESCRIPTION	QTY.		
BILL OF MATERIALS				

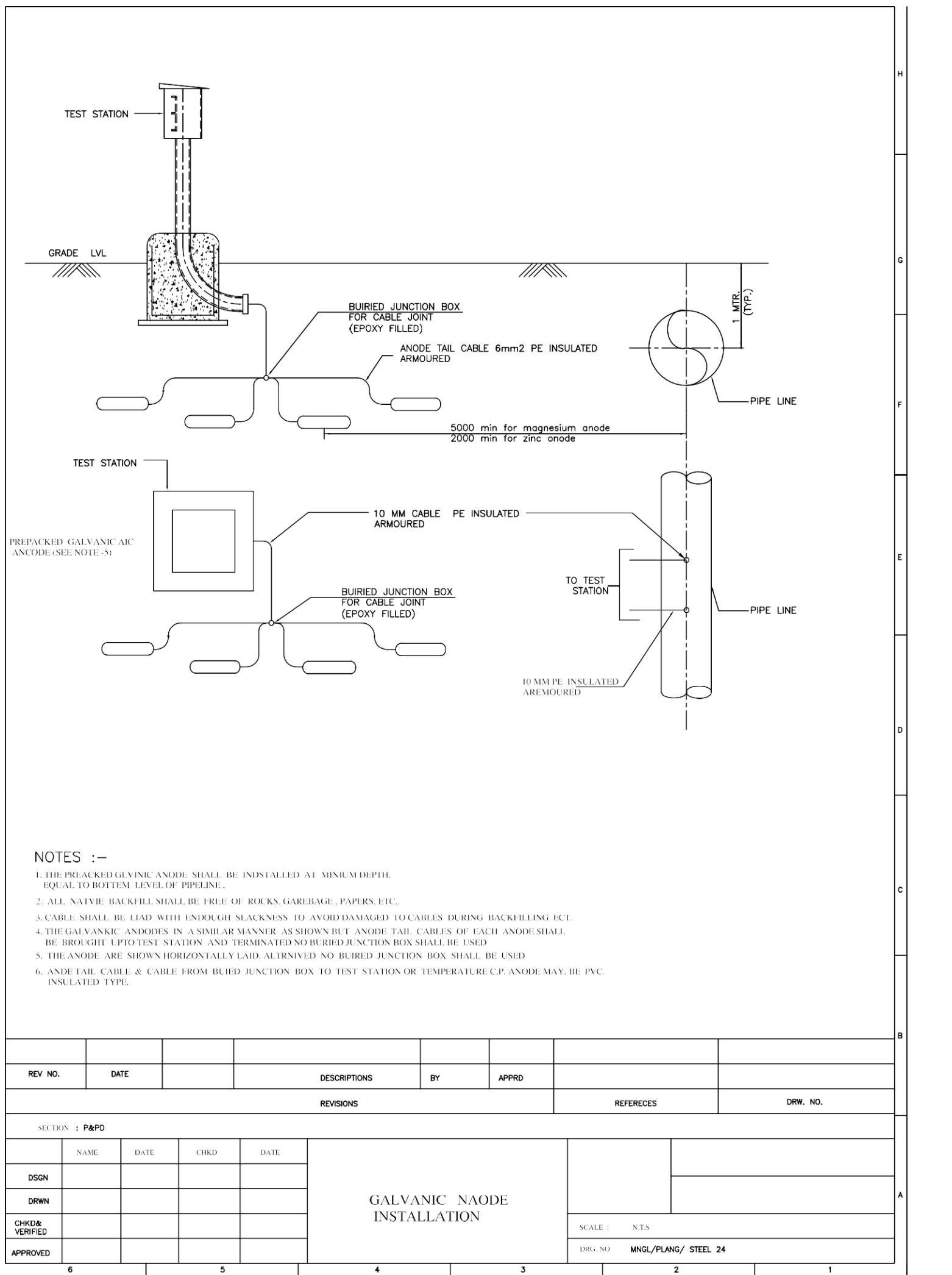
REV NO.						DATE		ZONE		DESCRIPTIONS		BY		APPRD		REVISED		REFRECEES		DRW. NO.	
SECTION : P&PD																					
NAME		DATE		CHKD		DATE		DETAILS OF ZINC GROUNDING CELL													
DSGN																					
DRWN																					
APPROVED								SCALE : N.T.S.													
								DRG NO. MNG/PLANG/ STEEL/21													



NOTES :-

- 1. THE PLOARISATION CELL, CABLE, JOINT ETC, SHALL MINIMUM BE RATED FOR THE EXPECTED FAULT CURRENT AT THE INSTALLATION & FOR PERMANENT C.P. LIFE.
- 2. THE POLARISATION CELL SHALL BE HOUSED IN A VENDALLISEM PROOF HOUSING
- 3. CELL SHALL HAVE GOOD VENTION TO ATMOSPHERE BE PROTECTED AGAINST DIRECT SUN LIGHT & RAIN/WATER
- 4. ANODE TAIL CABLES OF EACH ANODE SHELL BE TERMINATED INDIVIDUALLY IN TEST STATION .
- 5. CONTRACTOR TAIL CABLES OF EACH ANDE SHALL FURNISHED DROWING WITH ACTUAL DIMENSIONS & RATING.
- 6. EASY ACCESS TO CELL SHALL BE PROVIDED FOR PERIODIC INSPCTION

REV NO.	DATE		DESCRIPTIONS	BY	APPRD		
REVISIONS						REFERECES	DRW. NO.
SECTION : P&PD							
	NAME	DATE	CHKD	DATE	PIPELINE GROUNDING THROUGH POLARISATION CELL & GALVANIC ANODE		
DSGN							
DRWN							
CHKD& VERIFIED						SCALE : N.T.S	
APPROVED						DRG. NO. MNGL/PLANG/ STEEL 23	
6		5		4		3	
						2	
						1	

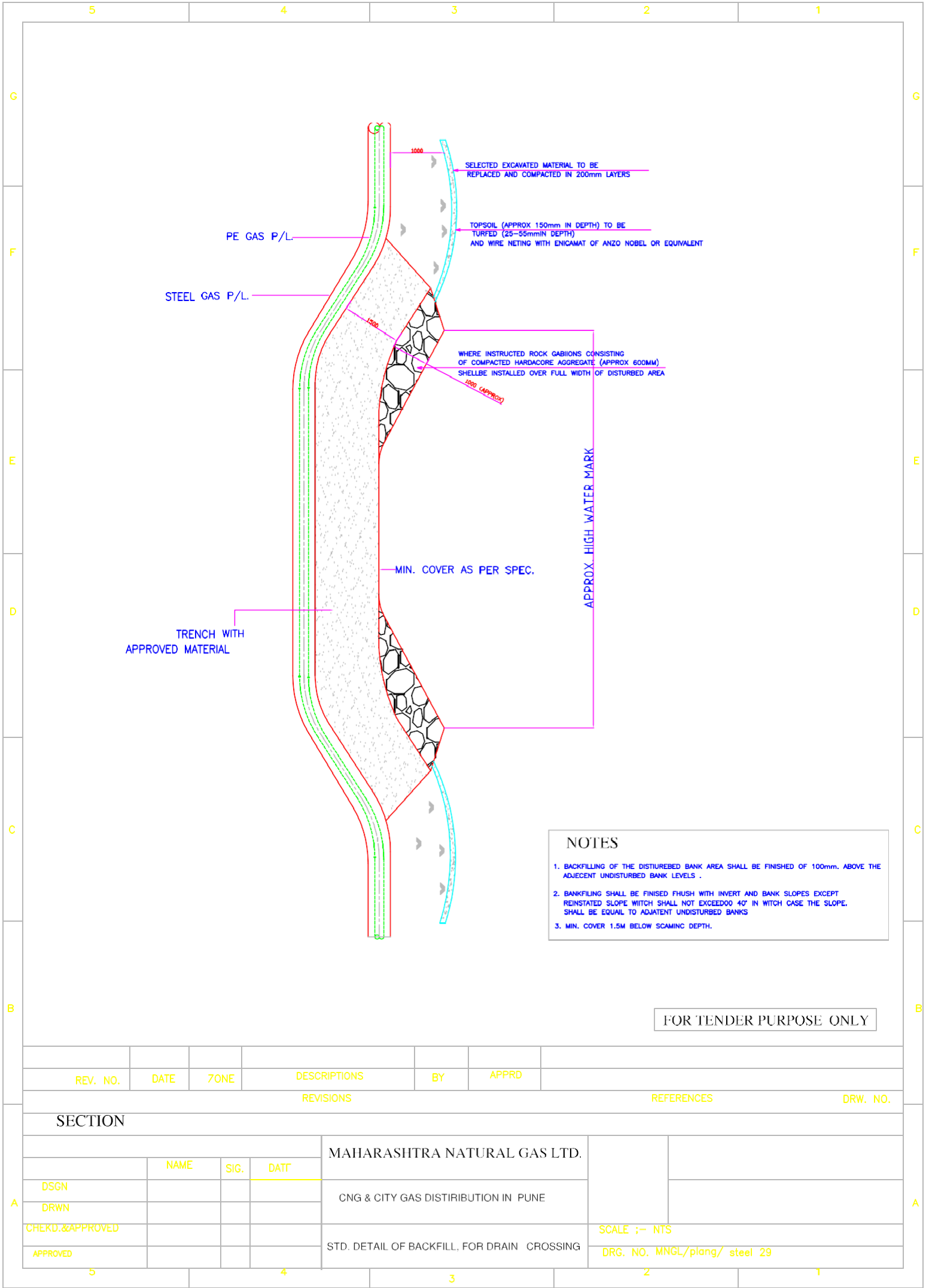


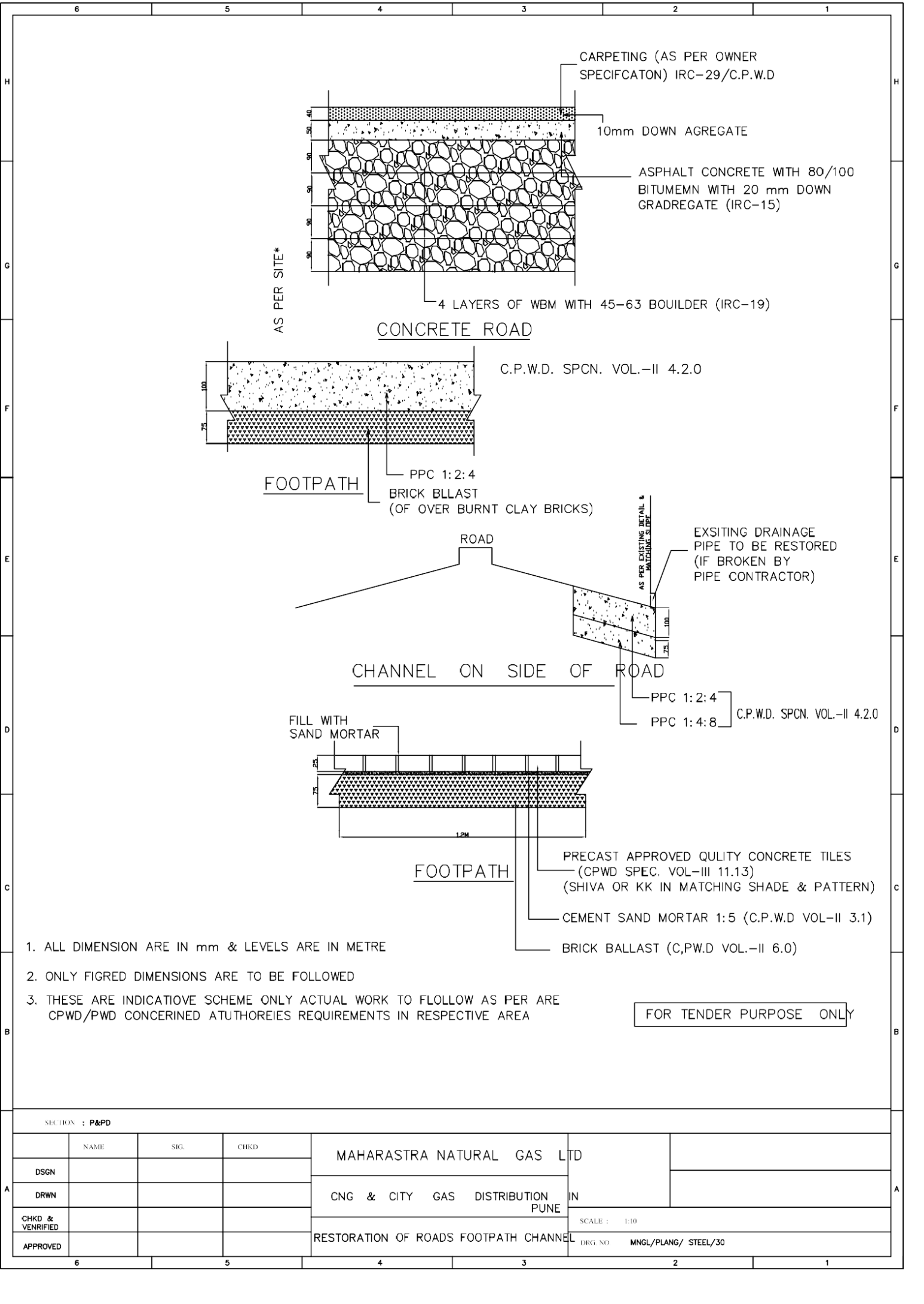
NOTES :-

1. THE PREPACKED GALVANIC ANODE SHALL BE INSTALLED AT MINIMUM DEPTH, EQUAL TO BOTTOM LEVEL OF PIPELINE.
2. ALL NATIVE BACKFILL SHALL BE FREE OF ROCKS, GARBAGE, PAPERS, ETC.
3. CABLE SHALL BE LAID WITH ENOUGH SLACKNESS TO AVOID DAMAGED TO CABLES DURING BACKFILLING ETC.
4. THE GALVANIC ANODES IN A SIMILAR MANNER AS SHOWN BUT ANODE TAIL CABLES OF EACH ANODE SHALL BE BROUGHT UP TO TEST STATION AND TERMINATED NO BURIED JUNCTION BOX SHALL BE USED
5. THE ANODE ARE SHOWN HORIZONTALLY LAID, ALTRNIVE NO BURIED JUNCTION BOX SHALL BE USED
6. ANODE TAIL CABLE & CABLE FROM BURIED JUNCTION BOX TO TEST STATION OR TEMPERATURE C.P. ANODE MAY, BE PVC INSULATED TYPE.

REV NO.	DATE		DESCRIPTIONS	BY	APPRD			
REVISIONS						REFERECES	DRW. NO.	
SECTION : P&PD								
	NAME	DATE	CHKD	DATE	GALVANIC NAODE INSTALLATION			
DSGN								
DRWN								
CHKD& VERIFIED						SCALE : N.T.S		
APPROVED						DRG. NO MNGL/PLANG/ STEEL 24		
6		5		4		3		2
								1

	6	5	4	3	2	1																																																																																																
	NOTES 1. TEST STATION SHALL HAVE WEATHRPROOF ENCLOSURE HAVING DEGREE OF PROTECTION IP-55,DEFINED IN AS DEFINED IP AS DEFINED INIEC-529(1989)/IS:2147 (1962) THE SHUTTER AND THE BOX HINGED TYPE WITH CONCEALED LOCK AND SHALL HAVE DOOR GASKET 2. THE HINGES SHALL BE WELDED TO THE SHUTTER AND THE BOX SUITABLY. 3. THE MS ANGLES SHALL BE WELDED TO THE SIDES THE ANGLES SHALL HAVE TAPPED HOLES FOR FIXIG TERMINAL PLATE. 4. THE INNER SURFACE OF THE TEST STATION SHALL BE PAPPED WITH LAED OXIDE TAPPED FOR FIXING PRIMER GRADE. 5. THE OUTSIDE OF TEST STATION SHALL BE PANTED WITH TWO COATS OF ZINC RED EPOXY PRIMER AND THREE COATS OF GREY COLOURED EXPOXY PAINT COMPLETE WITH CABLE PIPE & FDN PLATE. 6. THE NAME PLATE SHALL BE OF ANODISED OF ALUMINIUM WITH BLACK BACKGROUND AND WHITE LETTERS (SIZE 3mm) THE NAME PLATE SHALL BE FIXED TO INNER SIDE OF SHUER BY ARALDITE OR EQUIVALENT 7. THE NAME PLATE OF EACH TEST STATION SHALL CARRY THE FOLLOWING INFORMATION. A) TEST STACTION CONNECTION SCHEME TYPE B) RELEVANT TEST STATION CONNECTION SCHEME DIAGRAM C) TEST STATION NO. D) CHAINAGE IN KM E) DISTANCE FROM PIPE IN m F) DISTANCE OF GAS FLOW 8. WHEN ERECTED THE TEST STAION SHALL BE IN UIPRIGHT POSITION. 9. TEST STATION SHALL BE SO ERCTED AS TO SERVE ALSO AS PIPELINE MARKER. AND ANODE GRAUNDBED MARKER .THEIR SHUTTER SHALL BE TO THE LINE OF AXIS OF 10. THE NUMBER OF ALL TEST STATION SHALL BE WRITTEN WITH BLACK PAINT USING 40mm STENCIL BLOCK ON THE OUTER SIDE OF THE SHUTTER IN A UNIFORM MANNER AN ARROW SHOWING DIRECTION OF OF FLOW OF GAS SHALL BE MARKED TO UNDERLINE THE TEST STECHTION NUMBER ON SHUTTER 11. HEIGHT OF THE STATION ABOVE GROUND LEVEL SHOWN IN THE DRAWING IS TYPICAL. 12. ALL CABLES COMMING TO TEST STATION SHALL BE LABELLED ON BOTH ENDS WHITH INDENTIFICATION NUMBERS 13. TOTAL NUMMBER OF TEST STATIONS AND THEIR TYPE ARE MENNTIONED IN CONSOLIDATED B.O.M. 14. TEST BETWEEN BRASS TERMINALS AND BODY AT 2KV FOR ONE MINUTE 15. ALL DIMENSION ARE APPROXIMATE AND CAN VARY SLIGHTLY. 17. THE ENTRY SHALL BE SEALED WITH BITUIMEN COMPOUND AFTER CABLE LAYING TO PREVENT WATER ENTRY. 16. ALL DIMENSION ARE IN MM.																																																																																																					
	<table><tr><td>30</td><td>VARIABLE RESISTANCE 0-0.1 OHM.</td><td>01</td></tr><tr><td>29</td><td>100 MM ØM.S. SCH.40 90° ELBLOW R=50</td><td>01</td></tr><tr><td>28</td><td>BILDING WIRE MS,</td><td>AS REQD.</td></tr><tr><td>27</td><td>PCC MIX 1:5:10</td><td>0.064m3</td></tr><tr><td>26</td><td>PCC MIX M20</td><td>0.324m3</td></tr><tr><td>25</td><td>ROD, 8Ø MS</td><td>28m</td></tr><tr><td>24</td><td>STIFFENER PLATE 8 THK</td><td>04</td></tr><tr><td>23</td><td>FONDATION BLOT M12</td><td>04</td></tr><tr><td>22</td><td>RUBBER BUSH MATCHING WITH PIPE</td><td>01</td></tr><tr><td>21</td><td>FOUNDATION PLATE 6THKX400X400MS PLATE</td><td>02</td></tr><tr><td>20</td><td>NEOPRENE RUBBER GASKET 6THK.</td><td>01SET</td></tr><tr><td>19</td><td>MS PIPE 100Ø IS: 1239 P,T (1990)- HAVY GRADYE</td><td>01</td></tr><tr><td>18</td><td>COUPLING PLATE 5THKX180X130 MS PLATE , 100ØHOLE AT CENTRE</td><td>01</td></tr><tr><td>17</td><td>LATCH FOR SHUTTER</td><td>01</td></tr><tr><td>16</td><td>BRASS SCREW M6XM16</td><td>04</td></tr><tr><td>15</td><td>ANGLE 5THK,X 50 X 50 X30</td><td>04</td></tr><tr><td>14</td><td>SHUNT , 0.1 OHM, 0.5 A, 50 mV</td><td>01</td></tr><tr><td>13</td><td>COPPER LINK 2.5 THK .X 12 X LENGTH AS REQD.</td><td>01</td></tr><tr><td>12</td><td>BRASS WASHER</td><td>AS REQD</td></tr><tr><td>11</td><td>BRASS NUT,M6</td><td>AS REQD</td></tr><tr><td>10</td><td>BRASS STUD, M6 X 50</td><td>AS REQD</td></tr><tr><td>9</td><td>TEMINAL PLATE,6THKX160X200PHLINOLICLAM SHT</td><td>01</td></tr><tr><td>8</td><td>HINGE FOR SHUTTER</td><td>02</td></tr><tr><td>7</td><td>CASTLE LOCK WITH ONE KEY PER TEST STATION</td><td>01</td></tr><tr><td>6</td><td>NAME PLATE 0.9THKX 120 X 160 X ANODISED ALUMINUM</td><td>01</td></tr><tr><td>5</td><td>SHUTTER 3mm THK MS SHT</td><td>01</td></tr><tr><td>4</td><td>TOP 475X350X3mm THK MS SHT</td><td>01</td></tr><tr><td>3</td><td>SIDE PLATE 300X420X300X3mm THK MS SHT</td><td>01</td></tr><tr><td>2</td><td>REAR PLATE 425X420X3mm THK. MS SHT</td><td>01</td></tr><tr><td>1</td><td>BOTTOM PLATE 250X175X3mmTHK, MS 100Ø HOLE AT CENTER</td><td>01</td></tr><tr><td>ITEM</td><td>DESCRIPTION</td><td>QTY</td></tr><tr><td colspan="3">BILL OF MATERIALS</td></tr></table>						30	VARIABLE RESISTANCE 0-0.1 OHM.	01	29	100 MM ØM.S. SCH.40 90° ELBLOW R=50	01	28	BILDING WIRE MS,	AS REQD.	27	PCC MIX 1:5:10	0.064m3	26	PCC MIX M20	0.324m3	25	ROD, 8Ø MS	28m	24	STIFFENER PLATE 8 THK	04	23	FONDATION BLOT M12	04	22	RUBBER BUSH MATCHING WITH PIPE	01	21	FOUNDATION PLATE 6THKX400X400MS PLATE	02	20	NEOPRENE RUBBER GASKET 6THK.	01SET	19	MS PIPE 100Ø IS: 1239 P,T (1990)- HAVY GRADYE	01	18	COUPLING PLATE 5THKX180X130 MS PLATE , 100ØHOLE AT CENTRE	01	17	LATCH FOR SHUTTER	01	16	BRASS SCREW M6XM16	04	15	ANGLE 5THK,X 50 X 50 X30	04	14	SHUNT , 0.1 OHM, 0.5 A, 50 mV	01	13	COPPER LINK 2.5 THK .X 12 X LENGTH AS REQD.	01	12	BRASS WASHER	AS REQD	11	BRASS NUT,M6	AS REQD	10	BRASS STUD, M6 X 50	AS REQD	9	TEMINAL PLATE,6THKX160X200PHLINOLICLAM SHT	01	8	HINGE FOR SHUTTER	02	7	CASTLE LOCK WITH ONE KEY PER TEST STATION	01	6	NAME PLATE 0.9THKX 120 X 160 X ANODISED ALUMINUM	01	5	SHUTTER 3mm THK MS SHT	01	4	TOP 475X350X3mm THK MS SHT	01	3	SIDE PLATE 300X420X300X3mm THK MS SHT	01	2	REAR PLATE 425X420X3mm THK. MS SHT	01	1	BOTTOM PLATE 250X175X3mmTHK, MS 100Ø HOLE AT CENTER	01	ITEM	DESCRIPTION	QTY	BILL OF MATERIALS		
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1. ALL DIMENSION ARE IN mm & LEVELS ARE IN METRE

2. ONLY FIGRED DIMENSIONS ARE TO BE FOLLOWED

3. THESE ARE INDICATIOVE SCHEME ONLY ACTUAL WORK TO FLOW AS PER ARE
CPWD/PWD CONCERNED ATUTHOREIES REQUIREMENTS IN RESPECTIVE AREA

FOR TENDER PURPOSE ONLY

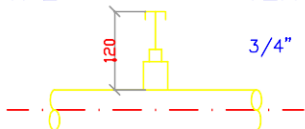
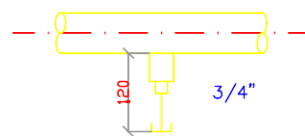
SECTION : P&PD

	NAME	SIG.	CHKD	MAHARAstra NATURAL GAS LTD	
DSGN					
DRWN				CNG & CITY GAS DISTRIBUTION PUNE	IN
CHKD & VERNIFIED					SCALE : 1:10
APPROVED				RESTORATION OF ROADS FOOTPATH CHANNEL	DRG NO. MNGL/PLANG/ STEEL/30

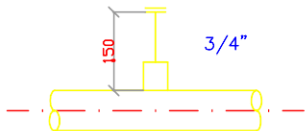
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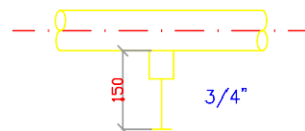
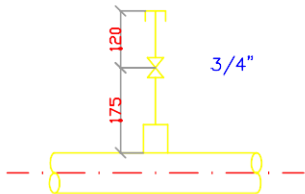
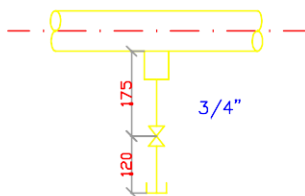
DRAIN

V1
V1PD1
D1P

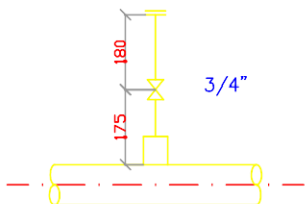
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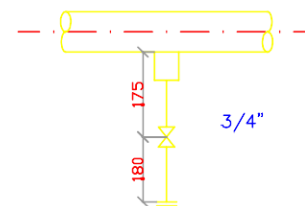
D2

V3
V3PD3
D3P

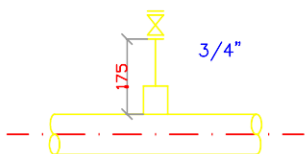
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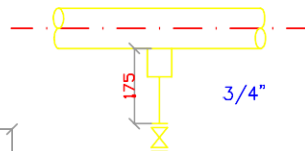
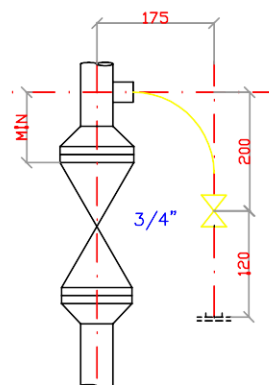
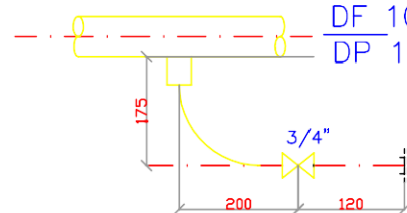
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V5



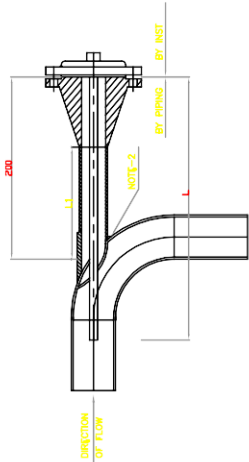
D5

DC 9
DF 9
DP 9DC 10
DF 10
DP 10

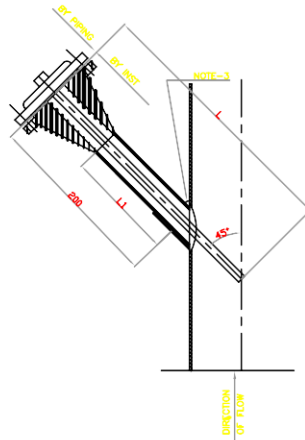
NOTES

1. DIMENSIONS ARE VALID FOR 75mm (MAX) THICKNESS INSULATION FOR HIGHER INSULATION THICKNESS INCREASE DIMENSION AS REQUIRED.
2. VENTS & DRAINS SHALL BE PROVIDED WITH GATE GLOBE OR PLUG VALVE WITH HALF COUPLING OR STUB IN WITH CAP OR FLANGE BLIND FLANGE AS PER PIPEING SPECIFICATIONS
3. VENTS/DRAINS CAN BE PROVIDED ON FLAT SIDE OF ECCENTRIC REDUCERS ON SIZES 4" & ABOVE
4. LEGND V=VENT, D=DRAIN, C=CAP, F=FLANGE, P=PLUG
5. PLUGGED END OF VELVE OR FITTING AHALL BE THREADED

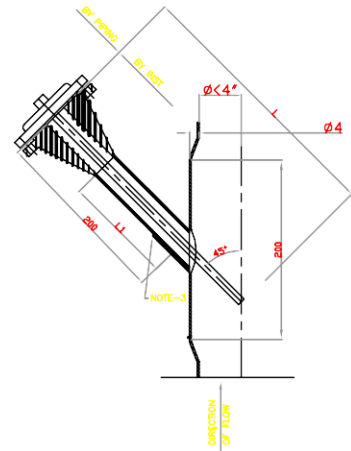
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REVISIONS												REFERECES				DRW. NO.			
SECTION : P&PD																			
		NAME	DATE	CHKD	DATE	VENT & DRAIN FOR LINE 2" & ABOVE													
DSGN																			
DRWN																			
APPROVED												SCALE : N.T.S							
												DRG NO. MNGI/PLANG/ STEEL/31							
6		5		4		3				2		1							



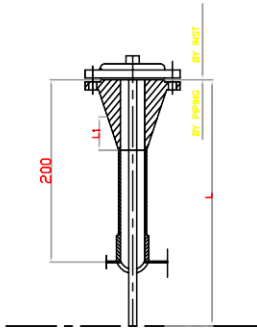
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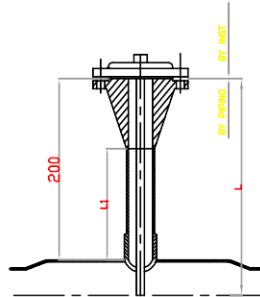
TYPE TW -7



TYPE TW -9



TYPE TW -8



TYPE TW -10

LINE	DIA	1.5" FLANGED WELD
4"	200	
6"	300	
8"	300	
10"	300	
12"	300	
14"	300	
16"	400	
18"	400	
20" & LARGER	500	
VESSELS	AS REQUIRED	

6. ELABOLW MIN. 4"Ø OR LARGER
7. VERTICAL LINE 4"Ø OR LARGER
8. HORIZONTAL LINE 4"Ø OR LARGER
9. VERTICAL LINE LESS THAN 4"
10. HORIZONTAL LINE DIA LESS THAN 4"

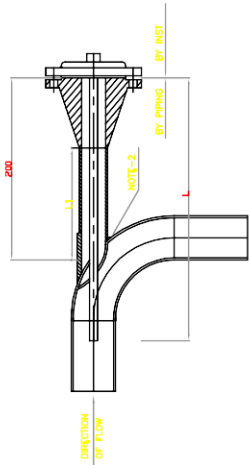
NOTES:

1. BOLTS, NUTS AND GASKETS BY PIPING.
2. MIN. CLERANCE FOR REMOVAL BY PIPING.
3. COUPLING TO SPECIAL LENGTH.

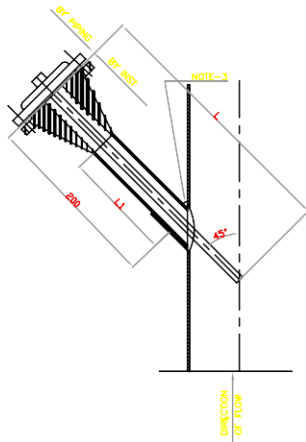
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SECTION : P&PD

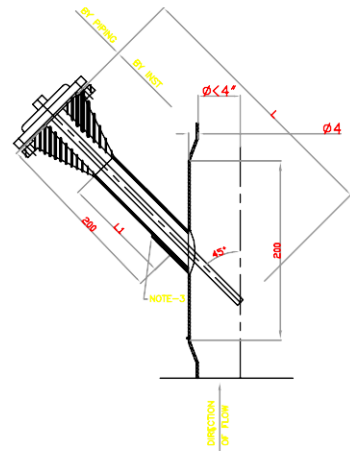
NAME	DATE	CHKD	DATE	WELLS INSTALLATION	SCALE : N.T.S
DSGN				1 1/2" DIA TAPS	
DRWN					
APPROVED				DRG. NO. MNGI/PLANG/ STEEL 32	



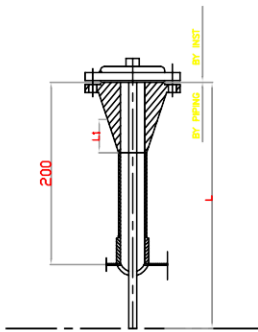
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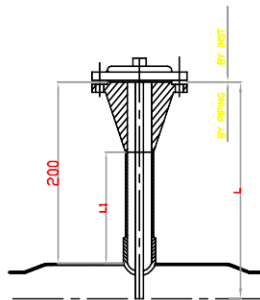
TYPE TW-7



TYPE TW-9



TYPE TW-8



TYPE TW-10

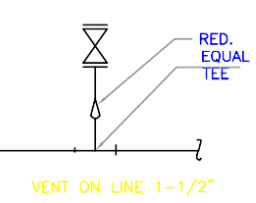
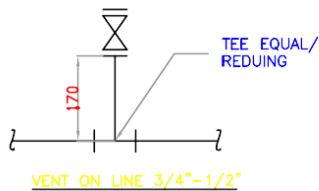
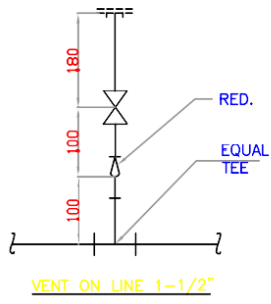
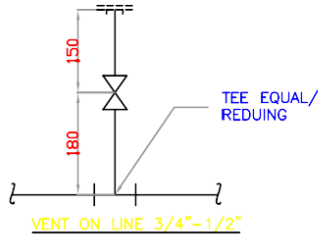
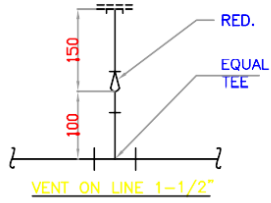
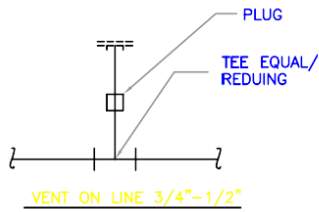
LINE	DIA	1.5" FLANGED WELD
4"	200	
6"	300	
8"	300	
10"	300	
12"	300	
14"	300	
16"	400	
18"	400	
20" & LARGER	500	
VESSELS	AS REQUIRED	

6. ELABOLW MIN. 4"Ø OR LARGER
7. VERTICAL LINE 4"Ø OR LARGER
8. HORIZONTAL LINE 4"Ø OR LARGER
9. VERTICAL LINE LESS THAN 4"
10. HORIZONTAL LINE DIA LESS THAN 4"

NOTES:

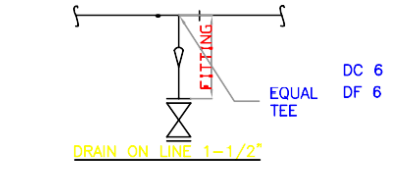
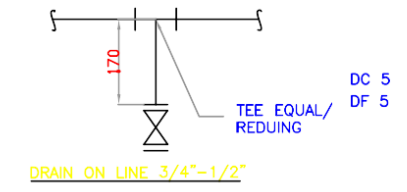
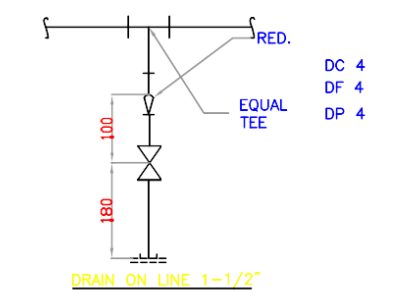
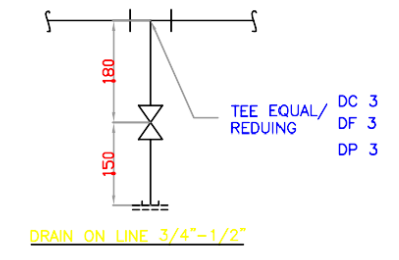
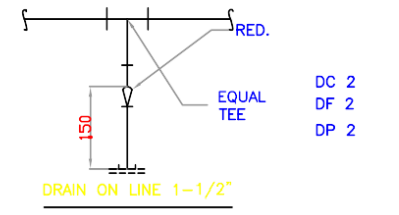
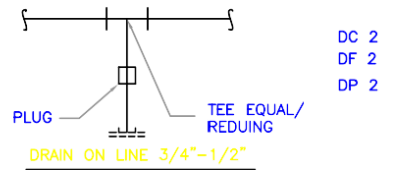
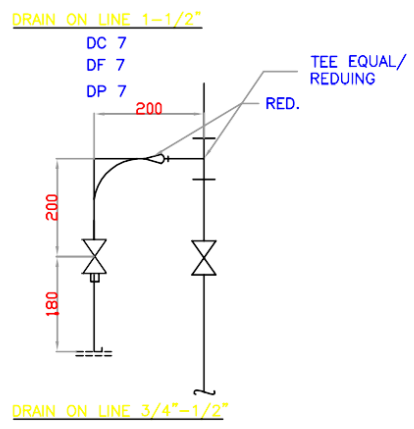
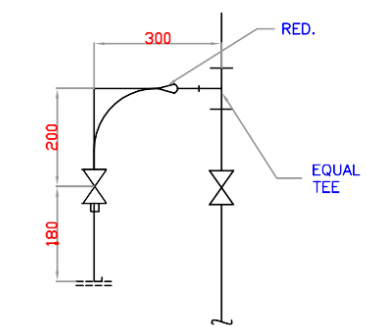
1. BOLTS, NUTS AND GASKETS BY PIPING.
2. MIN. CLERANCE FOR REMOVAL BY PIPING.
3. COUPLING TO SPECIAL LENGTH.

REV. NO.	DATE	DESCRIPTIONS	BY	APPRD	REFERECEES	DRW. NO.
SECTION : P&PD						
DSGN	NAME	DATE	CHKD	DATE	WELLS INSTALLATION 1 1/2" DIA TAPS	
DRWN						
APPROVED					SCALE : N.T.S	
					DRG. NO. MNGI/PLANG/ STEEL 32	



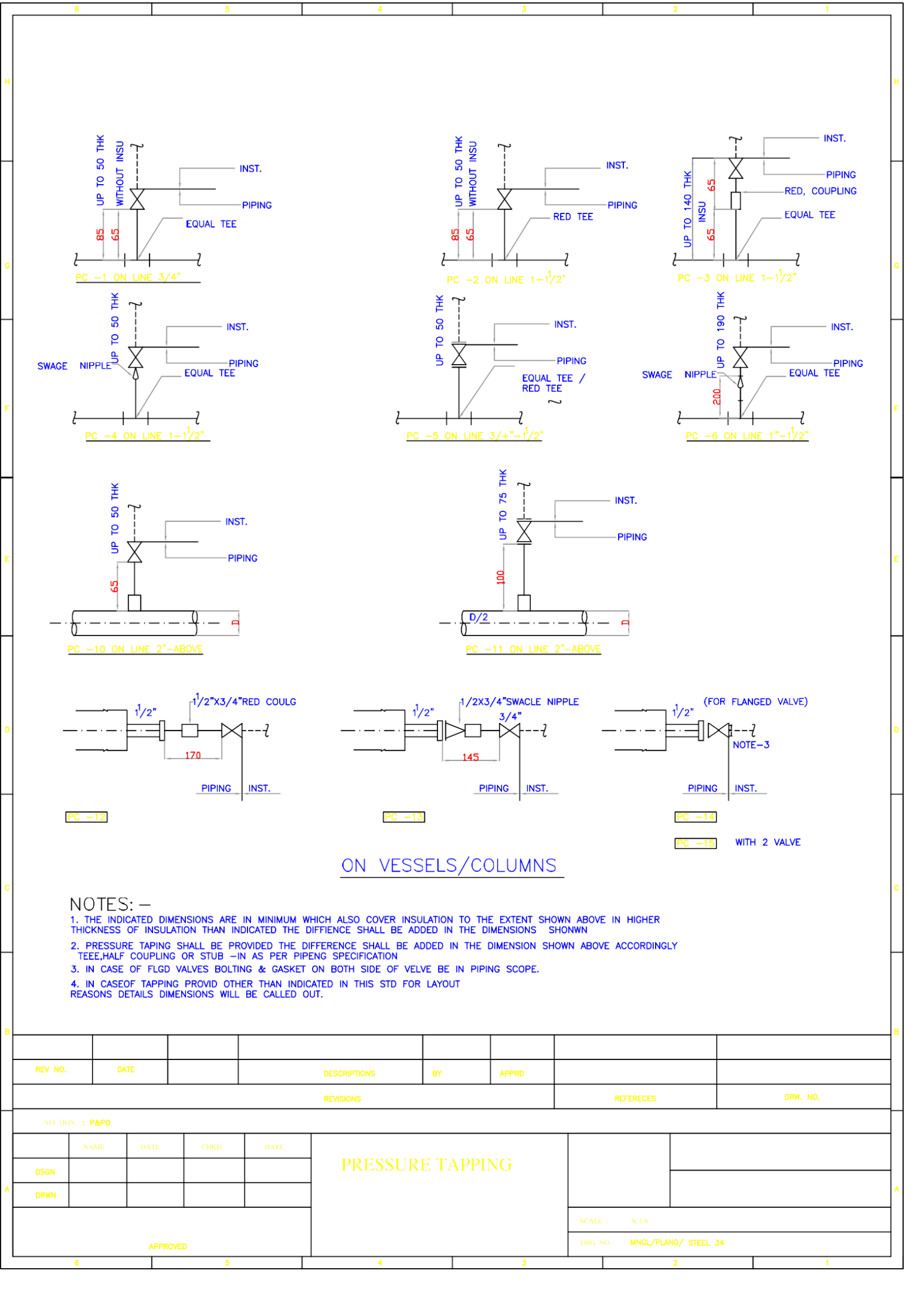
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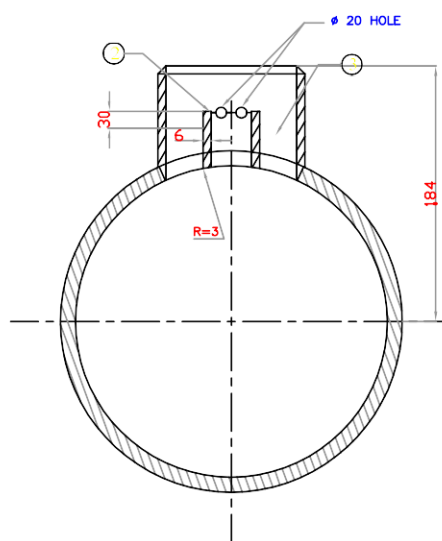
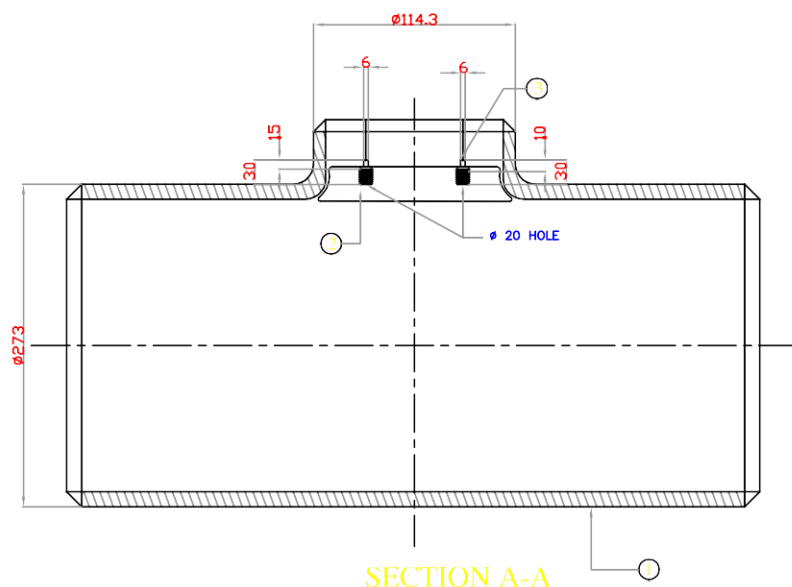
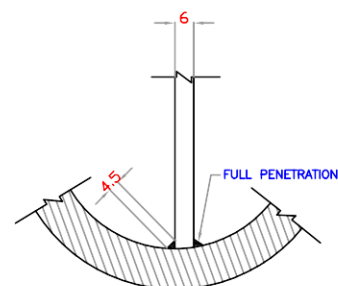
1. DIMENSIONS ARE VALID FOR 50mm (MAX) THICKNESS INSULATION FOR HIGHER INSULATION THICKNESS IN CASE DIMENSIONS AS PREQUIRED.
2. VENTS & DRANS SHALL BE PROVIDED WITH GATE GLOBE OR PLUG VALVE
3. LEGEND V=VENT D=DRAIN C=CAP F=LANGE R=REDUCER
4. PLUGGED END OF VELVE OR FITING SHALL BE THREADED



REV NO.	DATE	DESCRIPTIONS	BY	APPRD	REFRECES	DRW. NO.
REVISIONS						

SECTION : P&PD					
DSGN	NAME	DATE	CHKD	DATE	WELLS INSTALLATION ON LINES 1 1/2" DIA TAPS
DRWN					
APPROVED					SCALE : N.T.S
					DRG NO. MNGI/PLANG/ STEEL 33



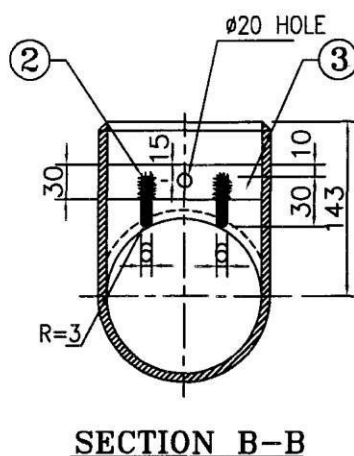
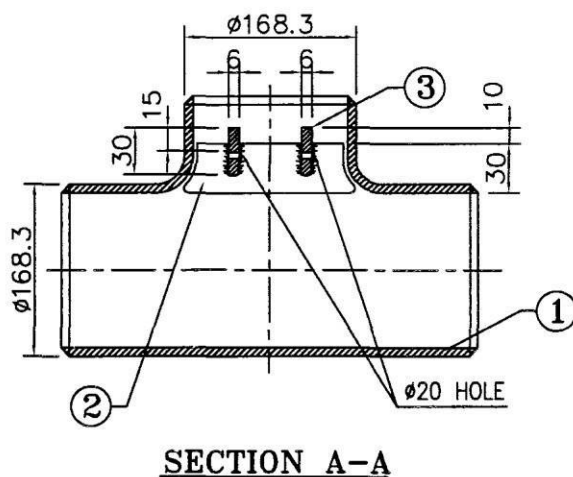
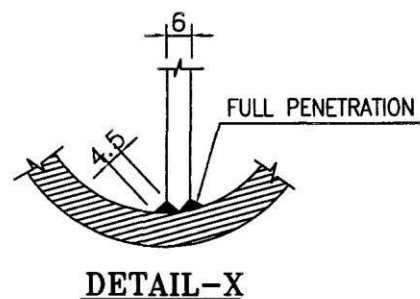
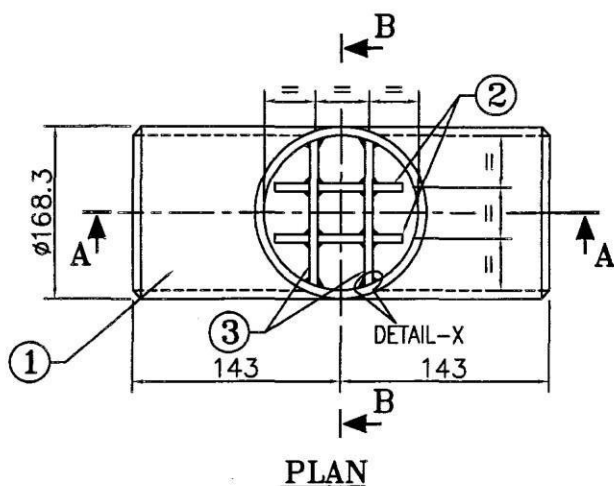


ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	RED TEE B.W. END PER ASME 16.9 SIZE 10"X10"X4"	1	A 234 WP Sdln, stdXsdh thk(mm)
2	GUDE BAR	2	ASTMA-36/ ASTMA-516Gr.70
3	CONNECTING PLATE	2	ASTMA-36/ ASTMA-516Gr.70

- | | | |
|------------------------|---|-------------|
| 1. SERVICE | : | NATURAL GAS |
| 2. DESIGN PRESSURE | : | 19 KG/cm |
| 3. DESIGN TEMP. | : | 0 TO 65°C |
| 4. CORROSION ALLOWANCE | : | 1.5mm |
| 5. HYDRO-TEST PRESSURE | : | 28.5 Kg/cm |

- CONNECTING PIPE DETAILS:
- | | |
|----------------|---|
| 1. RUN PIPE | : $\phi 10''(273)$ x WT 6.4mm. |
| 2. BRANCH PIPE | : $\phi 4(114.3)$ XWT ,6mm
API 5L Gr.B |

REV. NO.		DATE		DESCRIPTIONS		BY		APPRD		REVERECES		DRW. NO.	
SECTION : P&PD													
DSGN		DATE		CHKD		DATE		MAHARASTRA NATURAL GAS LTD					
DRWN								CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE - CITY					
APPROVED								BARRAED TEES		SCALE : N.T.S			
										DRG NO		MNGI/PLANG/ STEEL 37	



QUANTITY - As per SOR

NOTES:-

1. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR SCRAPER PIGS AND USE IN LINE FOR BIRDIRECTIONAL GAS FLOW.
2. THE GUIDE BARS SHALL BE EXTENDED INTO THE RUN SO THAT THEY GET FLUSHED WITH THE INSIDE DIAMETER OF THE SAME.
3. THE CONTOUR OF THE GUIDE BARS SHALL BE SUCH THAT THEY GO ALONG THE INTERNAL SHAPE OF THE BRANCH.
4. THE CONNECTING PLATE SHALL BE WELED WITH THE STRAIGHT PORTION OF THE BRANCH.
5. READ THIS DRAWING TOGETHER WITH MNGI TECHNICAL SPECIFICATION NO. MNGI/Spec/T-119 FOR BARRED TEES.
6. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR UNDER GROUND INSTALLATION.
7. BUTT-WELD ENDS SHALL BE BEVELED IN ACCORDANCE WITH MSS-SP-75 / B 16.25 AND SHOULD MATCH WITH RUN PIPE AND BRANCH PIPE'S WALL THICKNESS AS INDICATED IN CONNECTING PIPE DETAILS.

DESIGN DATA

1. SERVICE : NATURAL GAS
2. DESIGN PRESSURE : 19 Kg/cm²
3. DESIGN TEMP. : 0 TO 65°C
4. COEESION ALLOWANCE : 0.5mm
5. HYDRO-TEST PRESSURE : 28.5 Kg/cm²

CONNECTING PIPE DETAILS

1. RUN PIPE : #6"(168.3) x WT 6.4 mm, API 5L GR. B
2. BRANCH PIPE : #6"(168.3) x WT 6.4 mm, API 5L GR. B

REV NO	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REFERENCES	DRG. NO.
			REVISIONS				



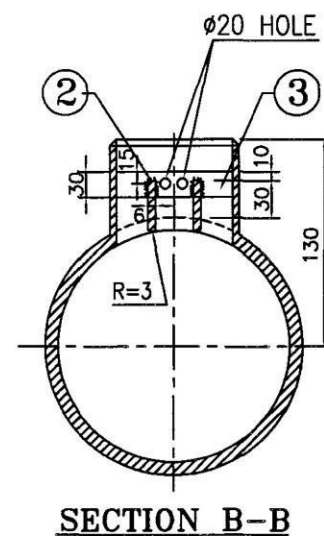
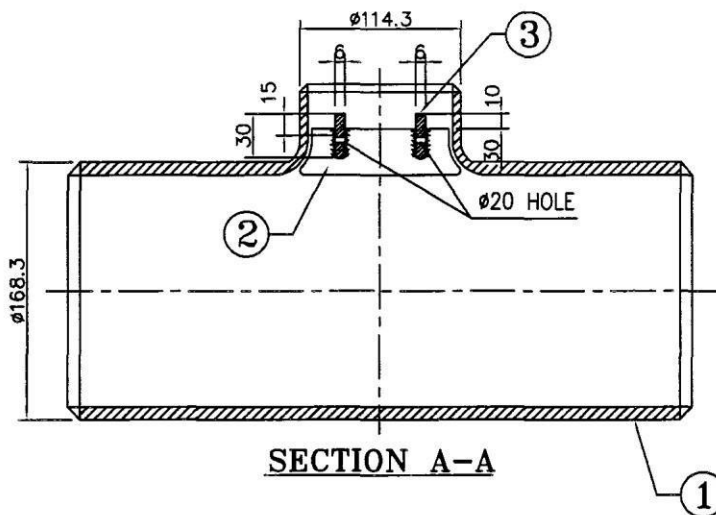
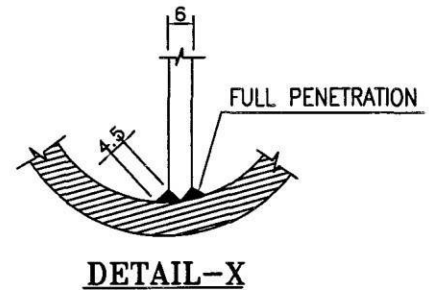
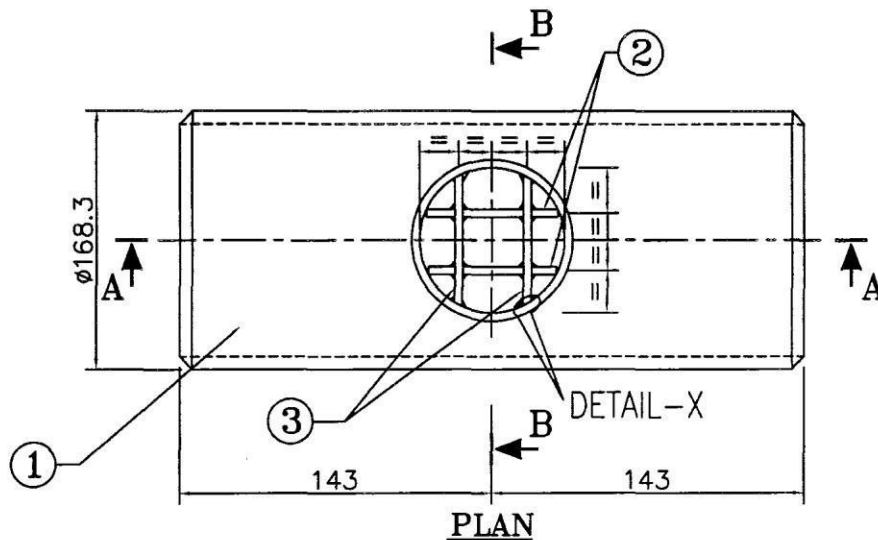
महाराष्ट्र नैचुरल गॅस लिमिटेड
MAHARASTRA NATURAL GAS LTD

**CNG & CITY GAS DISTRIBUTION
PROJECT FOR PUNE CITY**

BARRED TEES

SCALE : NTS

DRG.NO. MNGI/Plng./Spec/138



QUANTITY - As per SOR

NOTES:-

1. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR SCRAPPY PIGS AND USE IN LINE FOR BIRDIRECTIONAL GAS FLOW.
2. THE GUIDE BARS SHALL BE EXTENDED INTO THE RUN SO THAT THEY GET FLUSHED WITH THE INSIDE DIAMETER OF THE SAME.
3. THE CONTOUR OF THE GUIDE BARS SHALL BE SUCH THAT THEY GO ALONG THE INTERNAL SHAPE OF THE BRANCH.
4. THE CONNECTING PLATE SHALL BE WELDED WITH THE STRAIGHT PORTION OF THE BRANCH.
5. READ THIS DRAWING TOGETHER WITH MNGE'S TECHNICAL SPECIFICATION NO MNGE/Steel/TS/19
6. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR UNDER GROUND INSTALLATION.
7. BUTT-WELD ENDS SHALL BE BEVELED IN ACCORDANCE WITH MSS-SP-75 / B 16.25 AND SHOULD MATCH WITH RUN PIPE AND BRANCH PIPE'S WALL THICKNESS AS INDICATED IN CONNECTING PIPE DETAILS.

ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	RED. TEE B.W. END AS PER ASME16.9 SIZE 6"x6"x4"	1	A 234 WPB, Sch. Std. X Sch. XS Thk. (Min.)
2	GUIDE BAR	2	ASTMA - 36 / ASTMA - 516 Gr. 70
3	CONNECTING PLATE	2	ASTMA - 36 / ASTMA - 516 Gr. 70

DESIGN DATA

1. SERVICE : NATURAL GAS
2. DESIGN PRESSURE : 19 Kg/cm²
3. DESIGN TEMP. : 0 TO 65°C
4. CORROSION ALLOWANCE : 1.5mm
5. HYDRO-TEST PRESSURE : 28.5 Kg/cm²

CONNECTING PIPE DETAILS

1. RUN PIPE : #6"(168.3) x WT 6.4 mm. API 5L Gr. B
2. BRANCH PIPE : #4"(114.3) x WT 6.4 mm. API 5L Gr. B

REV NO	DATE	ZONE	DESCRIPTIONS	BY	APPROD	REFERENCES	DRG. NO.
			REVISIONS				



महाराष्ट्र नैचुरल गॅस लिमिटेड
MAHARASTRA NATURAL GAS LTD

**CNG & CITY GAS DISTRIBUTION
PROJECT FOR PUNE CITY**



BARRED TEES

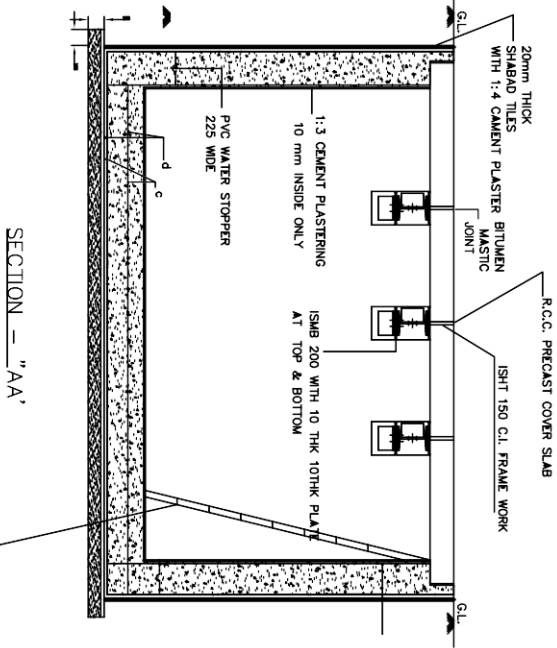
SCALE : NTS

DRG. NO MNGE/Ping/Steel/739

DETAILS OF CHAMBER I										
VALVE PIT		REINFORCEMENT DETAIL								
NO.	L	B	H	T	a	b	c	d	REMARKS	
01	3000	2600	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		
02	2600	2300	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		
03	2800	2000	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		
04	1300	1000	2200	150	10Y@50CRS	10Y@50CRS	10Y@50CRS	10Y@50CRS		
05	2100	2000	2200	150	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		
06	2800	2500	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		
07	2000	1720	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS		

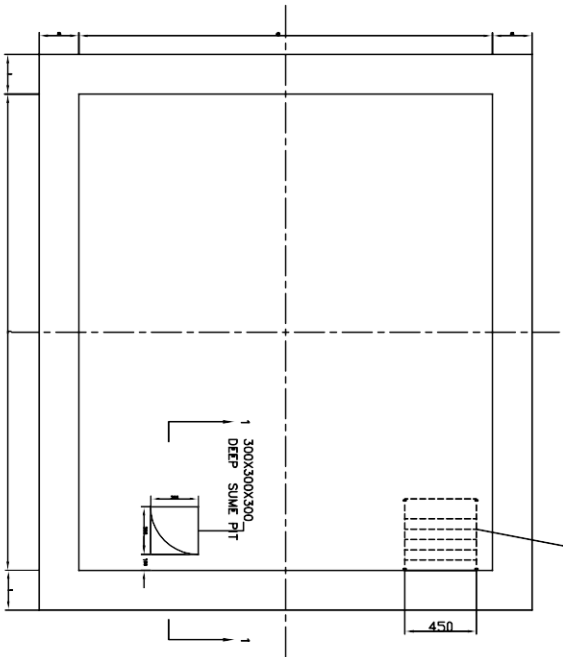
NOTES

01. ALL DIMENSIONS ARE IN MM
02. GRADE OF C ONCRETE SHALL BE M25
03. Y INDICATES COLD TWIST DEFORMED RODS CONFORMING IS 1786
04. PROVIDE 25mm CLAYER COVER TO MAIN REINFORCEMENT UNLESS OTHERWISE SPECIFIED
05. SBC OF SOIL IS ASSUMED AS 15/SOM
06. WATER TABLE IS ASSUMED AT 1M BELOW GRADE LEVEL
07. FOR COVER SLAB DETAILS REFER DRG. NO. 50046-12-DG-00002
08. BOX TYPE WATER PROOFING SHOULD BE DONE TO MAKE THE CHAMBER WATER PROOF
09. APPLY BITUMEN MASTIC ON ALL THE JOINTS OF THE COVER FOR MAKING IT LEAKPROOF
10. PROVIDE SLOPE FOR THE BASE SLAB TOWARDS THE SUMP PIT
11. ENGRAVING TO BE DONE ON COVER SLABS
- I. MAHARASTRA NATURAL GAS LTD
- II. YEAR OF CONSTRUCTION
- III. MANUFACTURERS NAME

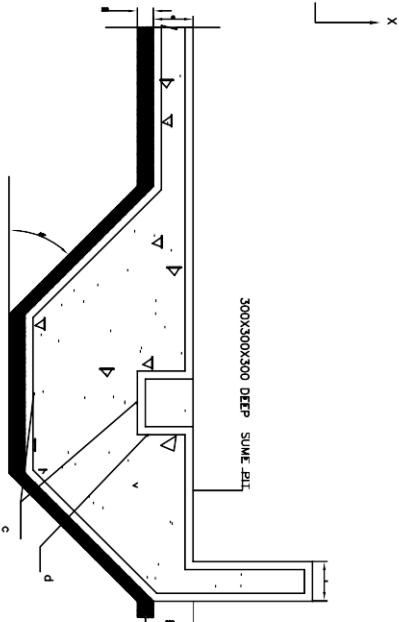


SECTION - "AA"

MS LADDER
(ISMC 50 FRAME
ISMA40X40X3 STEPS)

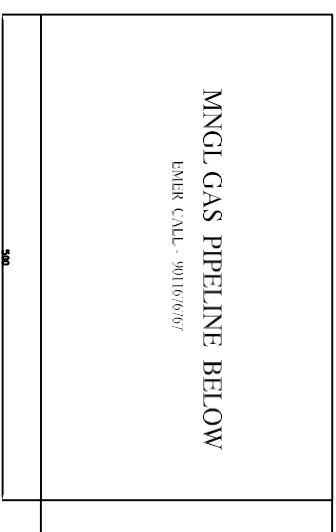
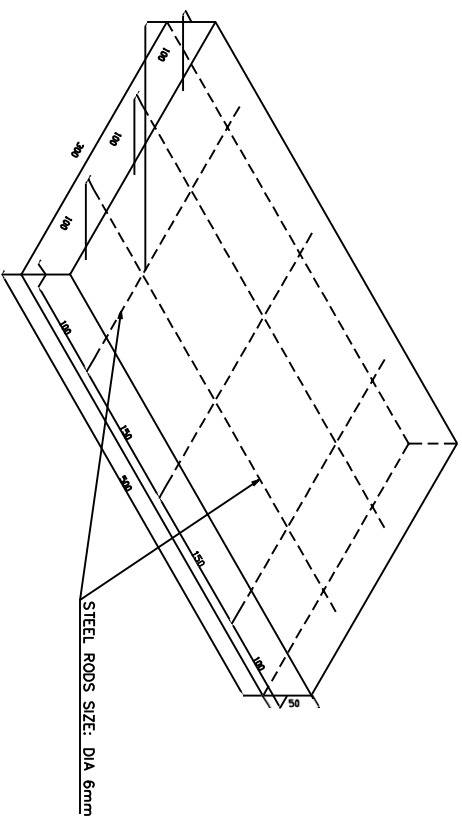


PLAN VIEW



SECTION-I

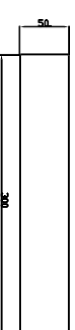
MAHARASTRA NATURAL GAS LTD.				TITLE			
DATE	13.07.04	DATE	13.07.04	DATE	13.07.04	DATE	13.07.04
REV	DATE	DATE	DATE	REV	DATE	DATE	DATE
1				1			



PLAN



FRONT VIEW



SIDE VIEW

NOTES:

1. ALL DIMENSION ARE IN MM UNLESS OTHERWISE SPECIFIER SPECIFIED.

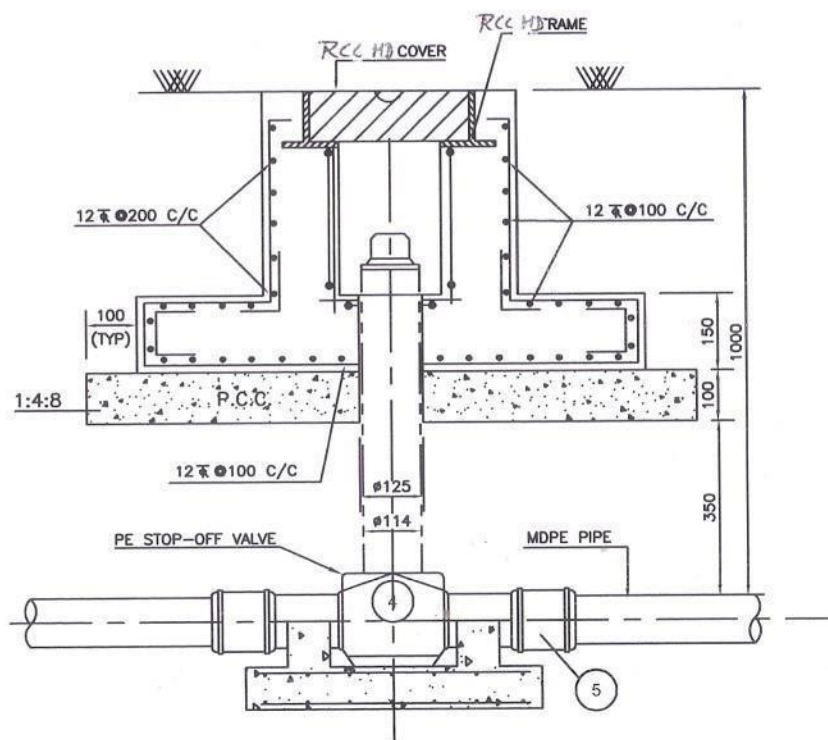
2. CONCRETE FOR MARKER SHALL BE M-20.

THIS PRINT IS THE PROPERTY OF MAHARASHTRA GAS LTD. IT IS TO BE USED ONLY FOR THE PURPOSE FOR WHICH IT WAS LENT AND MUST NOT BE USED IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY AND IS SUBJECT TO RETURN ON DEMAND.

NOTES -

1. ALL DIMENSIONS ARE IN MM.
2. THE CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 20 N/MM²
3. THE COVER FOR REINFORCEMENT SHALL BE 50 MM ON OUTER FACES AND 50 MM ON INNER FACE.
4. THE SFRC COVER SHALL HAVE REINFORCED CONCRETE OF GRADE M-35 CONFORMING TO IS:456-1978.
5. DEBRIS BACKFILL TO BE REMOVED & GOOD EARTH TO BE FILLED IN AREA OF 1.5 M x 1.5 M WITH PROPER COMPACTION AND CONSOLIDATION BY WATER.
6. GASKET OF RUBBER OR ANY OTHER EQUIVALENT MATERIAL OF MATCHING DIMENSIONS SHALL BE SUPPLIED & USED BY THE CONTRACTOR TO PREVENT INGRESS OF WATER INTO THE VALVE PIT.
7. 75mm THICK PCC(1:2:4) OF DIMENSION 300mm X 300mm FOR VALVE OF SIZES FROM 63mm TO 125mm SHOULD BE PROVIDED FOR SUPPORTING THE PE STOP OFF VALVE AT THE BASE.
8. RUBBER SHEET OF MIN. 6mm THICK SHOULD BE PROVIDED BETWEEN BASE OF THE VALVE AND PCC TOP SURFACE.

MAHARASHTRA NATURAL GAS LIMITED			
DRAWN BY PLNG	DATE: 06/05/04	TITLE - RCC PIT FOR PE STOP-OFF VALVE(Ø63 TO 125 mm)	
CHECKED BY	DATE:		
APPRD. BY	DATE:	DRAWING NO: MNG/ENG/CIVIL/10A	REV. 0



5

1. ALL DIMENSIONS ARE IN MM.
2. THE CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 20 N/MM²
3. THE COVER FOR REINFORCEMENT SHALL BE 50 MM ON OUTER FACES AND 50 MM ON INNER FACE.
4. THE SFRC COVER SHALL HAVE REINFORCED CONCRETE OF GRADE M-35 CONFORMING TO IS:456-1978.
5. DEBRIS BACKFILL TO BE REMOVED & GOOD EARTH TO BE FILLED IN AREA OF 1.5 M x 1.5 M WITH PROPER COMPACTION AND CONSOLIDATION BY WATER.
6. GASKET OF RUBBER OR ANY OTHER EQUIVALENT MATERIAL OF MATCHING DIMENSIONS SHALL BE SUPPLIED & USED BY THE CONTRACTOR TO PREVENT INGRESS OF WATER INTO THE VALVE PIT.
7. 75mm THICK PCC(1:2:4) OF DIMENSION 300mm X 300mm FOR VALVE OF SIZES FROM 63mm TO 125mm SHOULD BE PROVIDED FOR SUPPORTING THE PE STOP OFF VALVE AT THE BASE.
8. RUBBER SHEET OF MIN. 6mm THICK SHOULD BE PROVIDED BETWEEN BASE OF THE VALVE AND PCC TOP SURFACE.

MAHARASHTRA NATURAL GAS LIMITED			
DRAWN BY PLNG	DATE: 06/05/04	TITLE - RCC PIT FOR PE STOP-OFF VALVE(ø63 TO 125 mm)	
CHECKED BY	DATE:		
APPRD. BY —	DATE:	DRAWING NO: MNG/L/ENG/CIVIL/10A	REV. 0

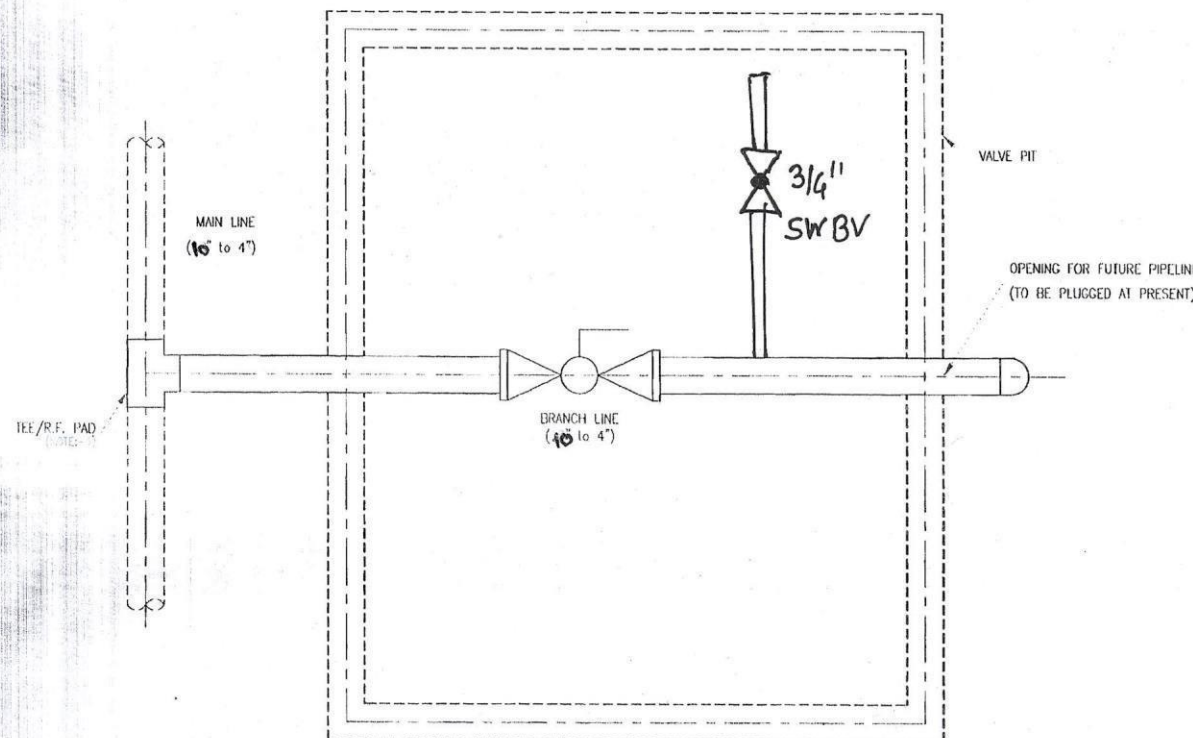
NOTES

1. TOP OF THE PIPE SHALL BE AT MINIMUM 1.2M DLPIT.
2. APPROXIMATE SIZE OF THE PIT WILL BE 2Mx2M & 2Mx1.5M. IT DEPENDS ON THE SITE CONDITION.
3. BRANCHING CONNECTIONS (TEE/ R.F. PAD) SHALL DEPEND UPON THE MAIN LINE & BRANCH LINE.

LEGEND



BW BALL VALVE



PLAN

STATUS

TITLE: GENERAL ARRANGEMENT DRAWING FOR FUTURE TAP-OFF POINTS

CLIENT: MING L. PUNE

PROJECT: CGD PUNE

MING L. PUNE / Steel / 40



LEGENDS:

- | | | |
|------|-------|-------------------------------|
| ℄ | ----- | CENTRE LINE |
| OGI. | ----- | ORIGINAL GROUND LEVEL |
| NGI. | ----- | NATURAL GROUND LEVEL |
| EL | ----- | ELEVATION |
| FFL | ----- | FINISHED FLOOR LEVEL |
| TYP. | ----- | TYPICAL |
| LVL. | ----- | LEVEL |
| THK. | ----- | THICK / THICKNESS |
| DET. | ----- | DETAIL |
| RCC | ----- | REINFORCED CEMENT
CONCRETE |
| PCC | ----- | PLAIN CEMENT CONCRETE |

NOTES:

- 1) IF DOUBT ASK, DO NOT SCALE THE DRAWING.
- 2) BEARING CAPACITY = 400 KN/SQM IS CONSIDERED FOR DESIGN
- 3) GRADE OF MATERIAL:-
CONCRETE:- M25 WITH 20MM DOWN GRADED AGGREGATES.
STEEL:- FE500 DEFORMED BARS AS PER IS-1786.

ENGINEERING REFERENCE

CONSTRUCTION REFERENCE

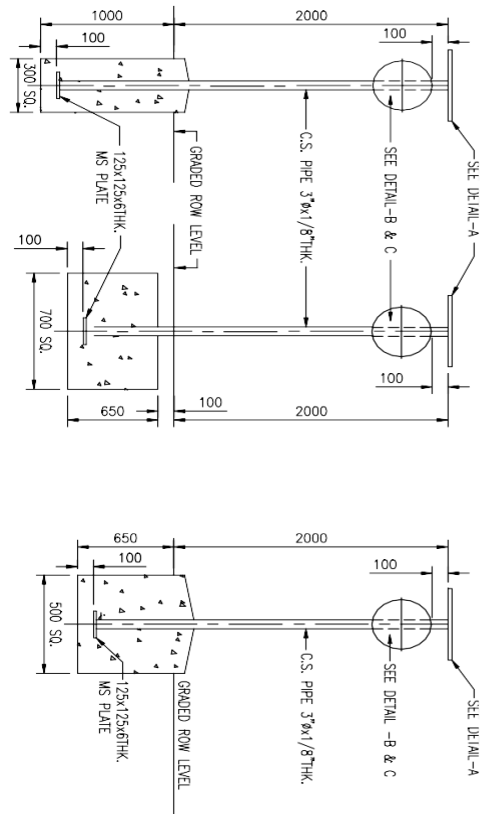
HOLD

REVISION STATUS

DO NOT SCALE

FOR RO ISSUE ONLY			ISSUE	REVSIONS	DRN	CLEARED				APPD	DATE	FILE NAME :33339999	MAHARASHTRA NATURAL GAS LTD. CONSULTANT : PROJECT :	CHAMBER RC DETAILS				
	CLEARED					CHEM	CIVIL	ELEC	I&C					MECH	SCALE: NTS	APPROVED PVP	DATE (RO ISSUE)	
DEPT	SIGNATURE	DATE													OFFICE-DISC:		DATE (CURRENT ISSUE)	
CIVIL															DRN: SKL	DWG	ECS-2019-MNGL-DK-02-RC-07	ISSUE RO
															CHD: AM			

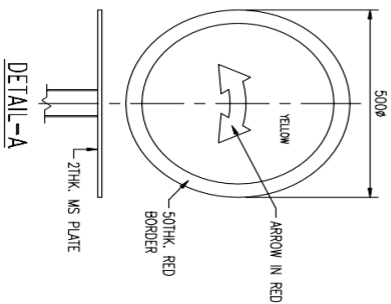
Steel Markers Drawing



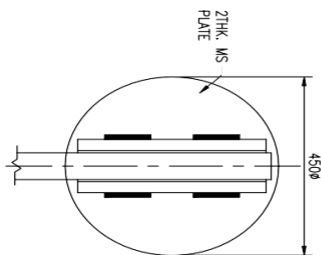
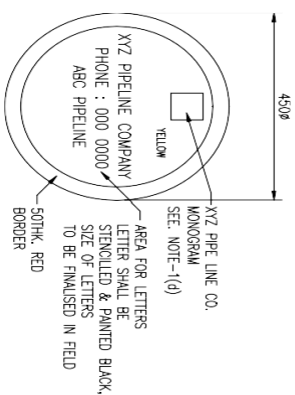
TYPE-I
FOR NORMAL SOIL

TYPE-II
FOR DRIFTING
SAND SOIL

TYPE-III
FOR ROCKY AREAS



DETAIL-A

DETAIL-BDETAIL--C

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING:
 - (a) UNDERGROUND STEEL STRUCTURE (EXCEPT THAT EMBEDDED IN CONCRETE) COAT TIER EPOXY MM. 300 MICRON THK.
 - (b) OVERGROUND STEEL STRUCTURE : ONE COAT OF PRIMER & TWO COATS SPECIFIED COLOUR PAINT.
 - (c) FIGURES SHALL BE STENCILED ON BOTH SIDES OF THE POSTS IN BLACK.
 - (d) COLOUR SCHEME FOR RZT PIPELINE CO. MONOGRAM SHALL BE AS DIRECTED BY OWNER.
 - (e) POST SHALL BE PAINTED WITH 250 WIDE ALTERNATE BANDS OF BLACK AND WHITE PAINT.
 - (f) ALL OTHER ABOVEGROUND STEEL SHALL BE PAINTED YELLOW.
3. LOCATION:
 - (a) DIRECTION MARKER SHALL BE INSTALLED AS PER SPECIFICATIONS AS DIRECTED IN APPROVED DRAWINGS AND AS DIRECTED BY OWNER.
 - (b) TWO NOS. ADDITIONAL DIRECTIONAL MARKERS SHALL BE PROVIDED 200M AWAY FROM CHANGE IN DIRECTION ON EITHER SIDE.
 - (c) OWNER NAME PLATE SHALL FACE THE PIPELINE.
 - (d) DIRECTION MARKER SHALL BE INSTALLED 1000MM TO LEFT OF THE PIPE CENTER LINE/VIEWING TOWARDS THE DIRECTION OF FLOW AND AS INDICATED IN LOCATION SHEET.
 - (e) THE FOUNDATION SHALL BE MADE OF CONCRETE M20.
5. SIGN PLATE IN REGIONAL LANGUAGE SHALL BE PREPARED BY CONTRACTOR ON SIMILAR LINES AND APPROVED BY THE OWNER.
6. ALL WELDS SHALL BE 4 MM.
7. IN ADDITION TO THIS, OSD AND PROBE GUIDELINES MUST BE COMPLIED WITH

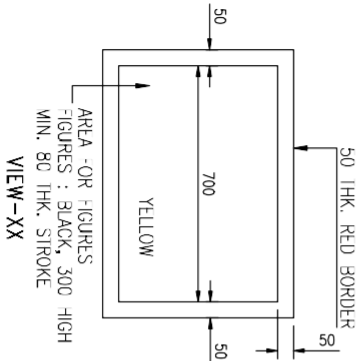
NOTES

1

SUBJECT

TYPICAL DIRECTION MARKER DETAILS

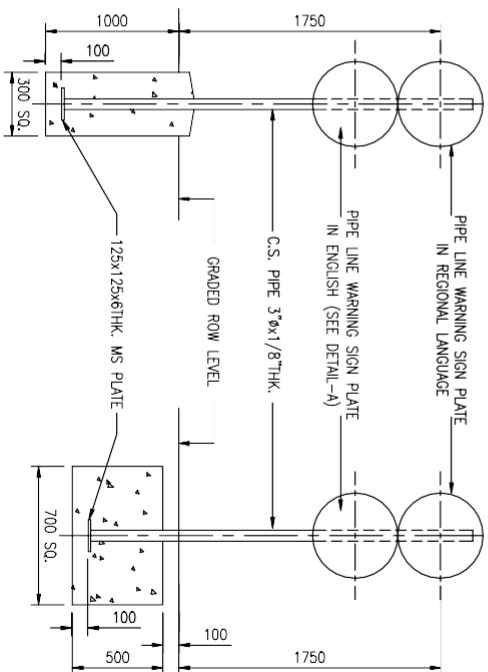
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING.
 - (a) UNDERGROUND STEEL STRUCTURE (EXCEPT THAT EMBEDDED IN CONCRETE) : COAL TAR EPOXY MIN. 300 MICRON THK.
 - (b) OVERGROUND STEEL STRUCTURE : ONE COAT OF PRIMER & TWO COATS SPECIFIED COLOUR PAINT.
 - (c) FIGURES SHALL BE STENCILED ON BOTH SIDES OF THE POSTS IN BLACK.
- (d) COLOUR SCHEME FOR XYZ PIPELINE CO. MONOGRAM SHALL BE AS DIRECTED BY OWNER.
- (e) POST SHALL BE PAINTED WITH 250 WIDE ALTERNATE BANDS OF BLACK AND WHITE PAINT.
3. LOCATION
 - (f) ALL OTHER ABOVEGROUND STEEL SHALL BE PAINTED YELLOW.
- (g) K.M. POST SHALL BE INSTALLED AT EVERY KILOMETERS AS PER REQUIREMENTS OF CONTRACT AND AS DIRECTED BY OWNER.
- (h) OWNER NAME PLATE SHALL FACE THE PIPELINE.
- (i) K.M. POST SHALL BE 500MM TO THE LEFT OF THE PIPE CENTRE LINE VIEWING TOWARDS THE DIRECTION OF FLOW AND AS INDICATED IN SKETCH.
4. THE FOUNDATION SHALL BE MADE OF CONCRETE M20.
5. THE HEIGHT OF THE K.M. POST MAY BE VARIED TO SUIT FIELD REQUIREMENTS.
6. IN ADDITION TO THIS, OSD AND PWR&B GUIDELINES MUST BE COMPLIED WITH.



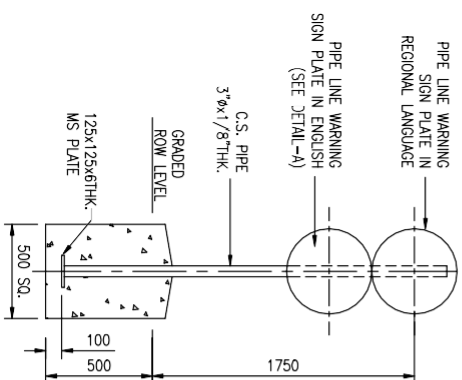
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NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING.
- (a) UNDERGROUND STEEL STRUCTURE EXCEPT THAT EMBEDDED IN CONCRETE) COAL TAR EPOXY MIN. 300 MICRON THK.
- (b) OVERGROUND STEEL STRUCTURE : ONE COAT OF PRIMER & TWO COATS SPECIFIED COLOUR PAINT.
- (c) ALL LETTERS EXCEPT WARNING SHALL BE PAINTED BLACK..
- (d) COLOUR SCHEME FOR XYZ PIPELINE CO. MONOGRAM SHALL BE AS DIRECTED BY OWNER.
- (e) POST SHALL BE PAINTED WITH 250 WIDE ALTERNATE BANDS OF BLACK AND WHITE PAINT.
- (f) ALL OTHER ABOVEGROUND STEEL SHALL BE PAINTED YELLOW.
3. LOCATION
- (i) THE PIPE LINE WARNING SIGN SHALL BE INSTALLED IN ACCORDANCE WITH CONTRACT REQUIREMENTS AND AS DIRECTED BY OWNER. IT SHALL BE INSTALLED TO THE LEFT OF THE PIPE CENTER LINE, VIEWING IN THE DIRECTION OF FLOW AT 300MM FROM PIPELINE O.D. AND THE WARNING SIGN PLATE SHALL FACE THE UTILITY BEING CROSSED.
- (b) THE WARNING SIGN PLATE MAY BE MOUNTED ON VENT PIPES OR KM POST WHERE EVER POSSIBLE.
- (c) THE FOUNDATION SHALL BE MADE OF CONCRETE M20.
4. SIGN PLATE IN REGIONAL LANGUAGE SHALL BE PREPARED BY CONTRACTOR ON SIMILAR LINES AND APPROVED BY THE OWNER.
5. IN ADDITION TO THIS, OSD AND PUNGB GUIDELINES MUST BE COMPLIED WITH.

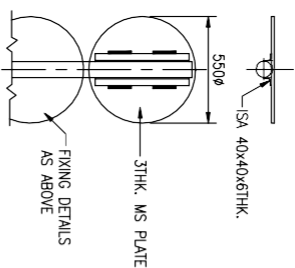


TYPE-1
FOR NORMAL SOIL



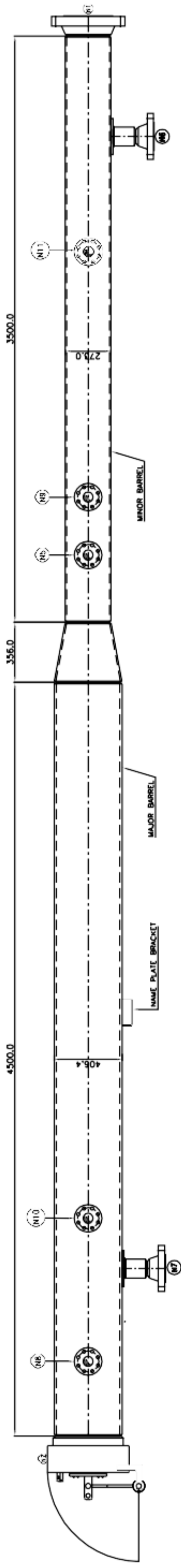
TYPE-II
FOR DRIFTING SAND SOIL

TYPE-III
FOR ROCKY AREAS

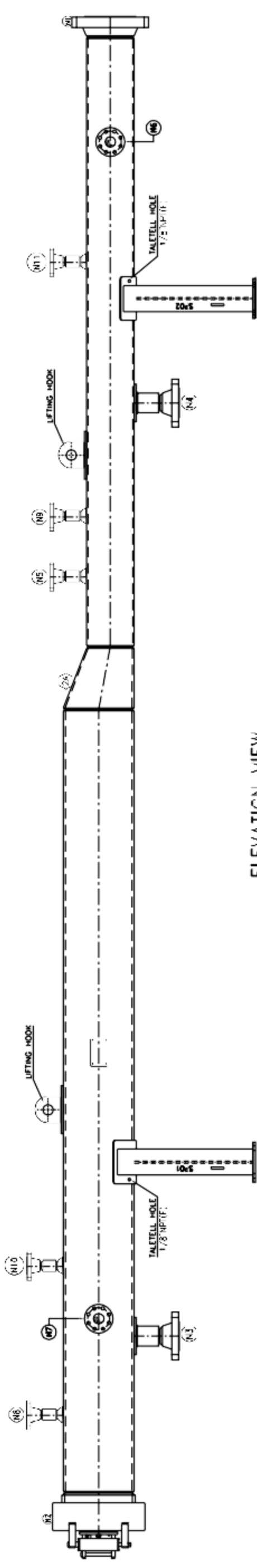
DETAIL-A

WARNING SIGN PLATE

FIXING DETAILS



PLAN VIEW



ELEVATION VIEW

DESIGN & MFG. CODE		DESIGN DATA
BARREL SIZE (MAJOR x MINOR)		ASME SEC VIII DIV. 1
ORIENTATION		16' x 10' NF - 6000
DESIGN TEMPERATURE(°C)		HORIZONTAL
DESIGN FACTOR		0 TO 65°
DESIGN PRESSURE		0.72
CORROSION ALLOWANCE		92.0
HYDROTEST PRESSURE		3 mm
		NATURAL GAS
		138.0 (1.5 x DESIGN PRESSURE)

NOZZLE	SERVICE	SIZE	QTY.	CLASS	TYPE
N1	NECK FLANGE	16"	1 NOS.	6000	WHRF
N2	DOCK (END CLOSURE)	16"	1 NOS.	6000	WHRF
N3	DRAIN (MAJOR BARREL)	4"	1 NOS.	6000	WHRF
N4	DRAIN (MINOR BARREL)	4"	1 NOS.	6000	WHRF
N5	PRESSURE INDICATOR	2"	1 NOS.	6000	WHRF
N6	KICKER LINE (MINOR BARREL)	4"	1 NOS.	6000	WHRF
N7	BY PASS LINE (MAJOR BARREL)	4"	1 NOS.	6000	WHRF
N8	VENT	2"	1 NOS.	6000	WHRF
N9	PIC SIGNALLER	2"	1 NOS.	6000	WHRF
N10	PRESSURE INDICATOR	2"	1 NOS.	6000	WHRF
N11	PURGE CONNECTION	2"	1 NOS.	6000	WHRF



DRAWING PREPARED BY:

REV.	DATE	SUBJECT OF REVISION	APP.	VVC	INL. SIGN.	INL. SIGN.	APPROVED
00	08.10.2024	TYPICAL DRAWING					

REVISIONS

CLIENT :	
MANUFACTURER :	COI P/L PL 3 / 11, 1
PROJECT :	
EQUIPMENT :	B DIRECTION SCRAPLER LAUNCHER/RECEIVER, 16" x 3" - 5000
DWG. TITLE :	TYPICAL DRAWING
PO. No.:	
DATE :	
SCALE :	NIS
DWG. No. :	
REV. :	
SHEET :	1 OF 1