



MAHARASHTRA NATURAL GAS LIMITED

(MNGL)

TENDER FOR LAYING AND CONSTRUCTION OF U/G STEEL PIPELINE AND ASSOCIATED WORKS FROM GAIL'S IP-4 (SHAHAPUR) TO MEHKAR AND LONAR TO DEGAON PHATA (PARBHANI DISTRICT).

UNDER OPEN DOMESTIC

COMPETITIVE BIDDING

(THROUGH E-TENDERING MODE)

Bid Document No.: MNGL/CP/2024-25/109

VOLUME III OF III

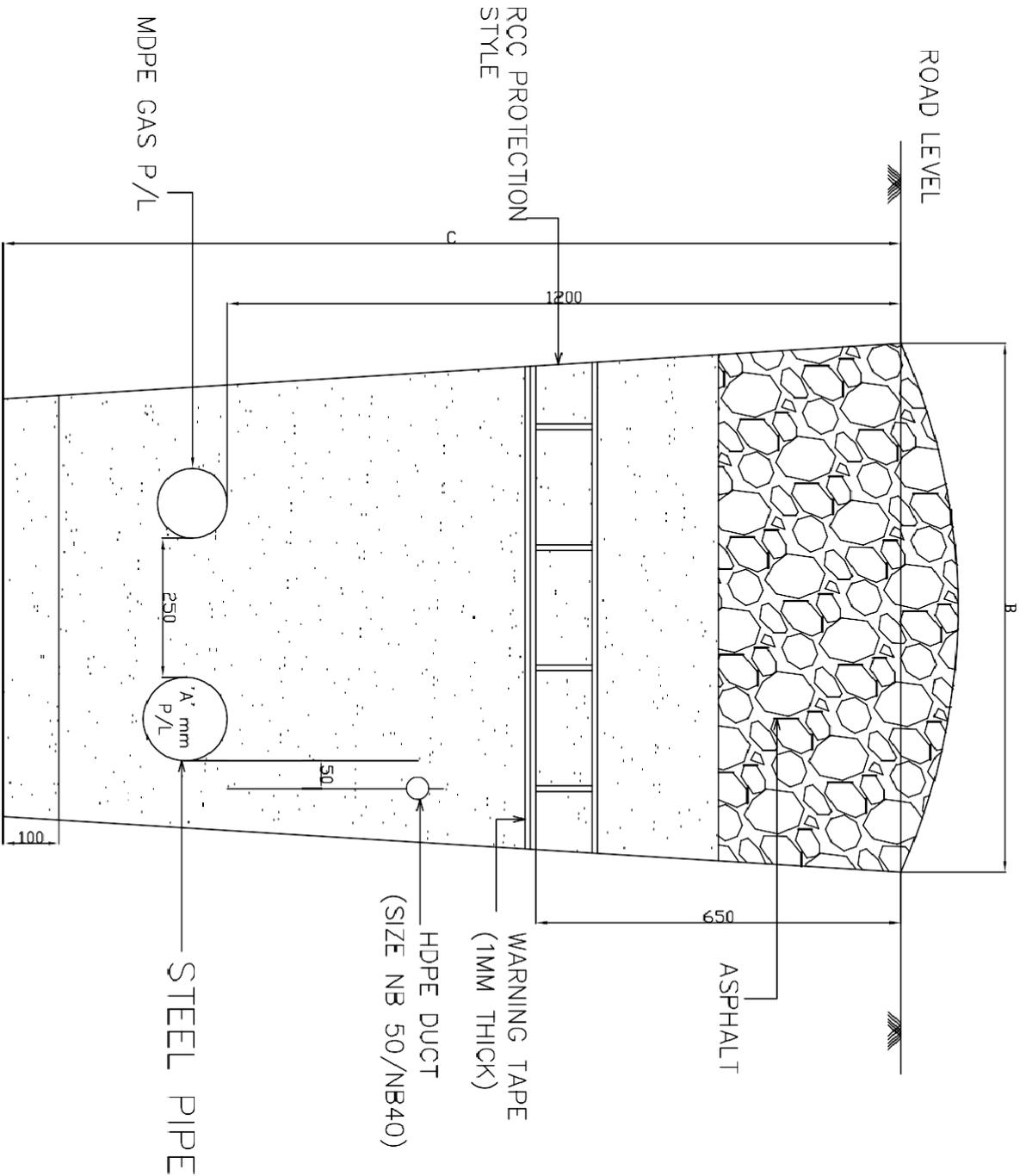
A) GENERAL PIPELINE & MECHANICAL DRAWINGS

- | | |
|--|-----------------------|
| 1. Typical Detail of SV Stations (type-I) | - MNGL/PIng./Steel/01 |
| 2. Typical Detail of SV Stations (type-II) | - MNGL/PIng./Steel/02 |
| 3. Trench cross section detail | - MNGL/PIng./Steel/03 |
| 4. Barricading | - MNGL/PIng./Steel/04 |
| 5. Cautions Board | - MNGL/PIng./Steel/05 |
| 6. Typical Detail of Marker | - MNGL/PIng./Steel/06 |

B) CP DRAWINGS

- | | |
|--|-----------------------|
| 1. Prepacked Zinc Anode | - MNGL/PIng./Steel/14 |
| 2. Magnesium Ribbon Anode for Grounding | - MNGL/PIng./Steel/16 |
| 3. Test Station with Foundation Details | - MNGL/PIng./Steel/18 |
| 4. Test Station Connection Schemes | - MNGL/PIng./Steel/19 |
| 5. Prepacked Permanent Ref. Electrode & Installation Details | - MNGL/PIng./Steel/20 |
| 6. Details of Zinc Grounding Cell | - MNGL/PIng./Steel/21 |
| 7. Pipeline Grounding through Polarization Cell & Galvanic anode | - MNGL/PIng./Steel/23 |
| 8. Galvanic Anode Installation | - MNGL/PIng./Steel/24 |
| 9. Test Station for Polarization Cell | - MNGL/PIng./Steel/27 |
| 10. Zinc Ribbon Anode for Cased Crossings with Coated Casing | - MNGL/PIng./Steel/22 |
| 11. Std. detail of backfill for Drain Crossing | - MNGL/PIng./Steel/29 |
| 12. Restoration of roads, footpath, channel | - MNGL/PIng./Steel/30 |
| 13. Vent & Drain for Line 2" & Above | - MNGL/PIng./Steel/31 |

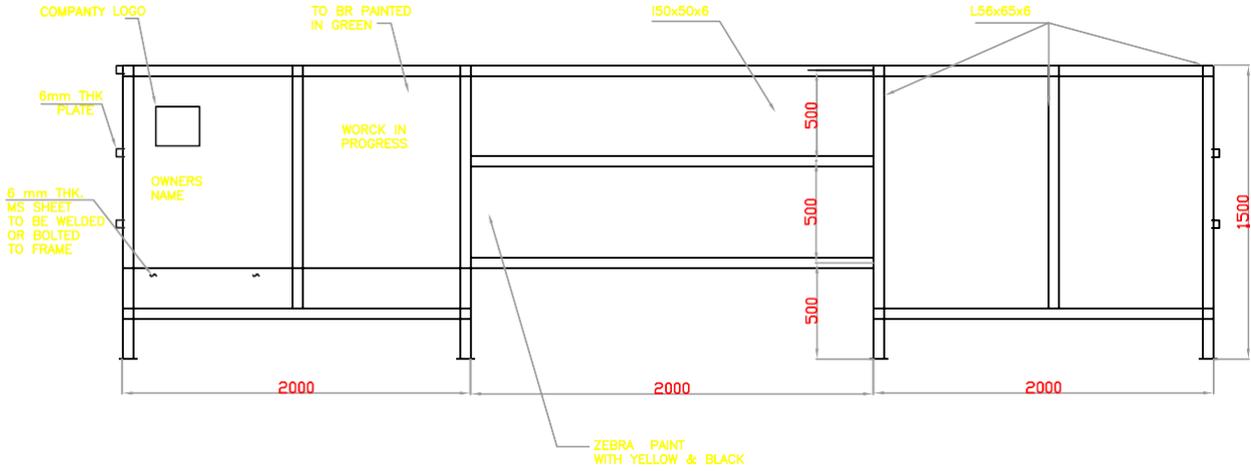
14. Wells Installation 1 ½" & Above (1 of 2) - MNGL/Plng./Steel/32
15. Wells Installation 1 ½" & Above (2 of 2) - MNGL/Plng./Steel/33
16. Pressure Tapping - MNGL/Plng./Steel/34
17. Barred Tees (12" NB x 12" NB x 4"NB) - MNGL/Plng./Steel/37
18. Barred Tees (6" NB x 6" NB x 6"NB) - MNGL/Plng./Steel/38
19. Barred Tees (6" NB x 6" NB x 4"NB) - MNGL/Plng./Steel/39
20. Valve Chamber Details
21. RCC Slab Typical Drawing
22. PE stop off valve drawing -MNGL/ENG/CIVIL/0A
23. Typical drawing of isolation/tap-off valve assembly - MNGL/Plng./Steel/40



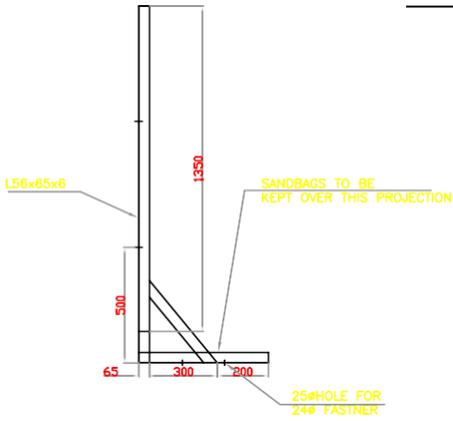
'A' mm	B mm	C mm
10" NB	950 mm	1650 mm
06" MB	800 mm	1450 mm
04" NB	750 mm	1400 mm

ALL DIMENSIONS ARE IN MM

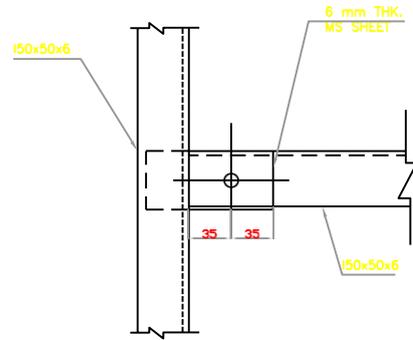
DRG. NO. - MNGL /PLANG /STEEL/ 03



LAYOUT PLAN OF BARRICADE



SECTION 1-1



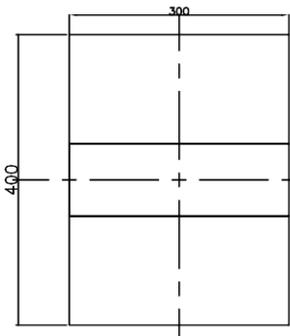
DETAIL -A

NOTE:-
1. ALL DIMENSIONS ARE IN mm.

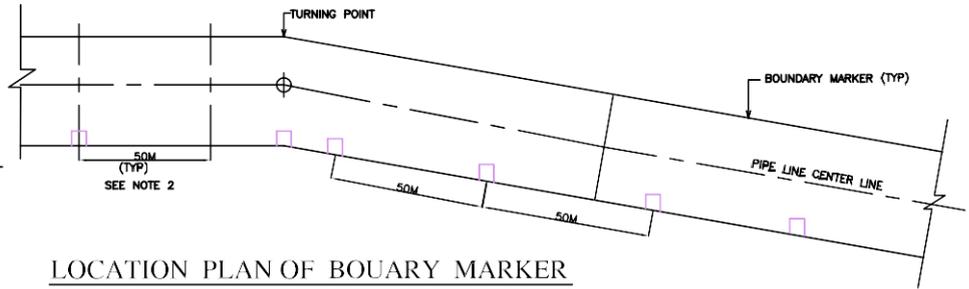
FOR TENDER PURPOSE ONLY

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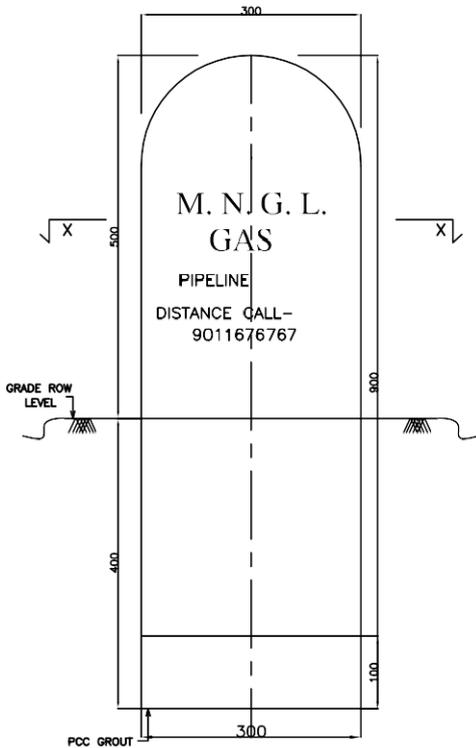
SECTION : P&PD							
NAME	DATE	CHKD	DATE	MAHARASTRA NATURAL GAS LTD			
DSGN				CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE CITY			
DRWN				BARRICADING			
CHKD. & VERIFIED				SCALE : N.T.S			
APPROVED				DRG. NO. MNGL/PLANG/ STEEL 04			



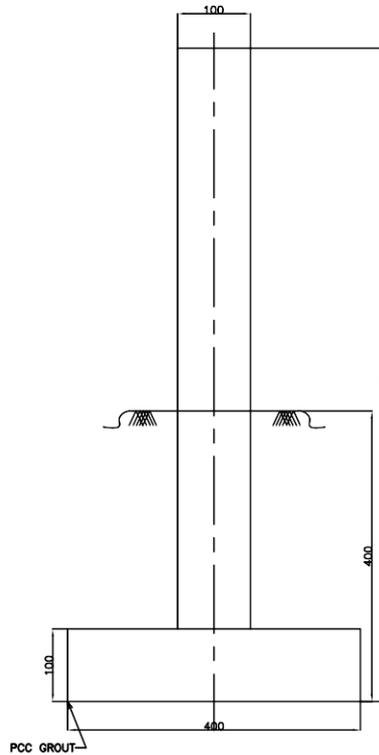
PLAN



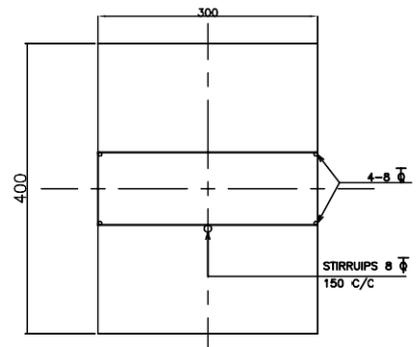
LOCATION PLAN OF BOUARY MARKER



ELEVATION



SIDE VIWE



SECTION X-X

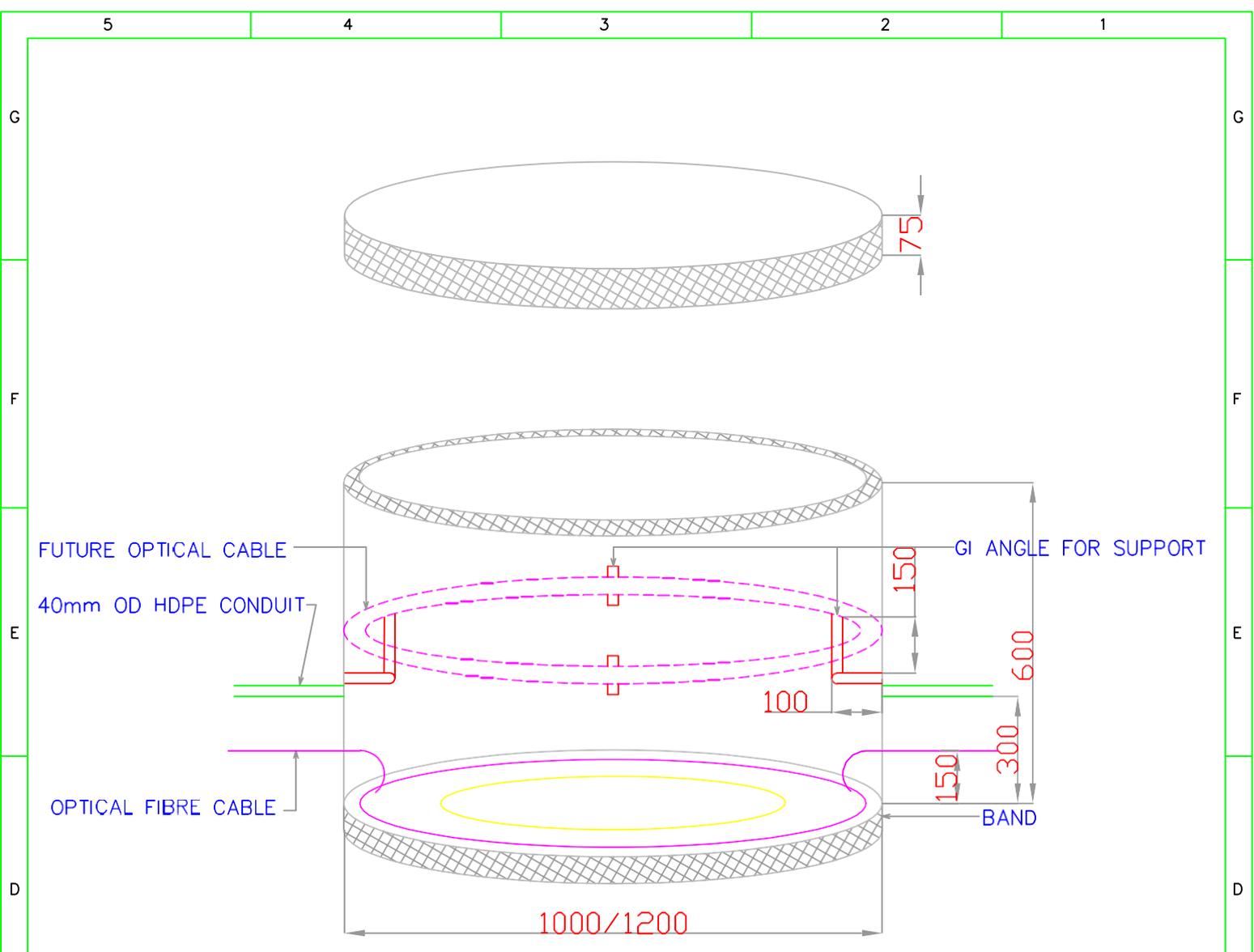
NOTES:-

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	REFFRENCES	DRG . NO.
REVISIONS				MAHARASTRA NACHURAL GAS LTD			
DSGN	NAME	DATE	CHKD	DATE	CNG & CITY GAS DIBUSTION IN PUNE	SCALE :	N.T.S
DRWN	ROUTE BOUNDARY MARKER				DRG. NO.	M N G L / PLAN / STEEL#06	

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

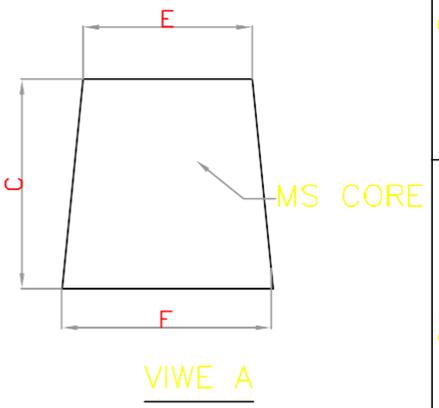
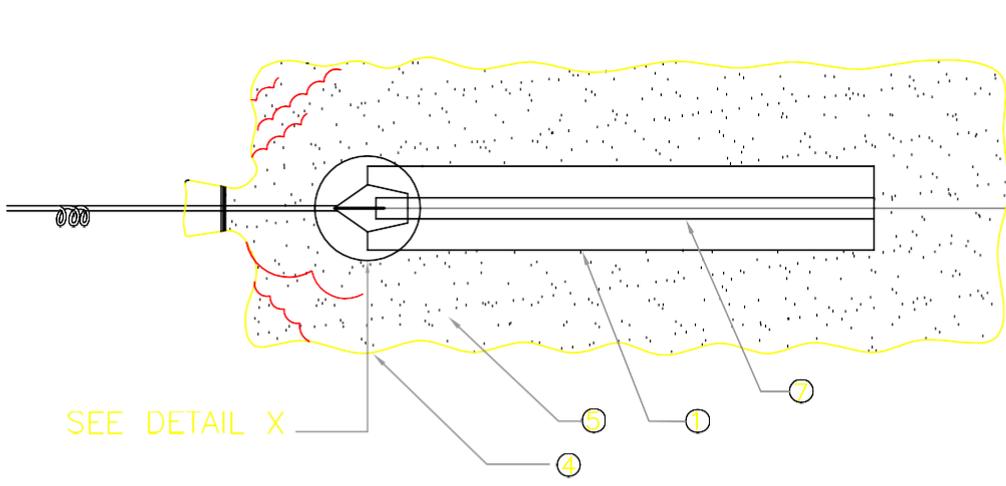


NOTES:

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

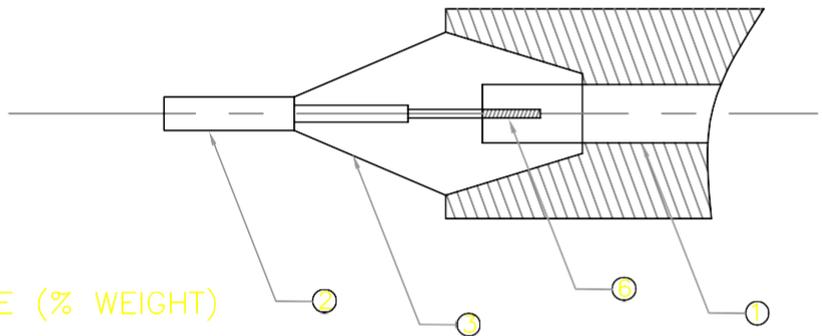
REV. NO.	DATE	DESCRIPTIONS	BY	CHKD	APPRD	REFERENCES	DRG. NO.
REVISIONS						REFERENCES	DRG. NO.

SECTION	NAME	DATE	SIG.	STANDARD SKETCH OFC JOINTING PIT BLOWING PIT	SCALE : NTS
DESIGN					
DRWN					
CHKD.&VERIFIED					
APPROVED					
					DRG.NO. M N G L / PLNG / STEEL 12



SEE DETAIL X

PER-PACKED ZINC ANODE



CHEMICAL COPOSITION OF ANODE (% WEIGHT)

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	REMAINDER

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.

ITEM	DESCRIPTION	QTY.
7	2.5 THICK X 15 WIDE GI CORE STRIP (PART OF ZINC ANODE)	
6	SILVER SOLDER	AS REQD.
5	BACKFILL MATERIAL	AS REQD.
4	COTTON BAG	1
3	M- SEAL COMPOUND	AS REQD.
2	ANODE TAIL CABLE PE INSULATED, PVC SHATHED, UNARMOURED 6 mm ² SINGLE CORE COPPER, 600/1100 V,	AS REQD.
1	ZINC ANODE, WEIGHT 17 lbs (7.7kg)	1
BILL OF MATERIALS		

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

SECTION : P&PD

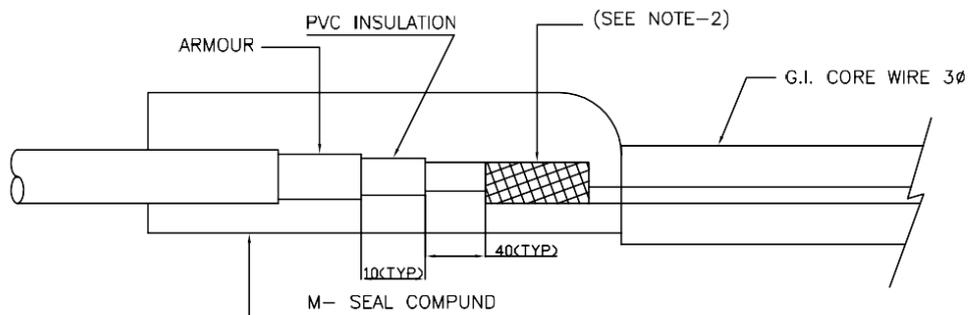
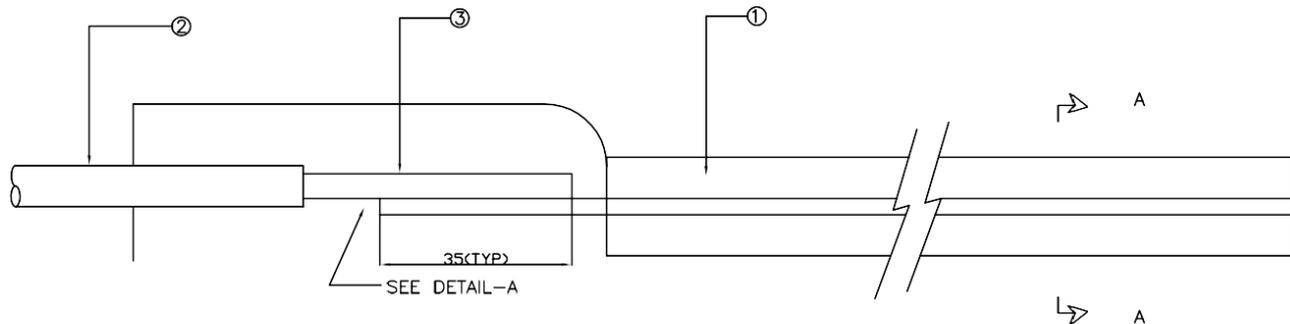
NAME	DATE	CHKD	DATE

PREPACKAGED ZINC ANODE

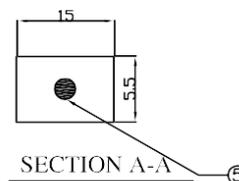
SCALE : N.T.S

DRG NO : MNGL/PLANG/ STEEL 14

APPROVED



DETAIL - A



CHEMICAL COMPOSITION OF ANODE

Al : 0.10% MAX.

Mn : 0.2% MAX.

CU : 0.02% MAX.

Fe : 0.03%MAX

Ni: 0.001%MAX

OTHER METALLIC ELMENTS:

ETCH 0.05% MAX.

TOTAL : 0.3MAX

Mg ;REMAINDER

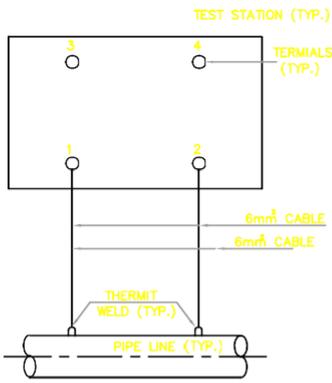
WEIGHT : 0.39 kg PER LINER METER

NOTES:-

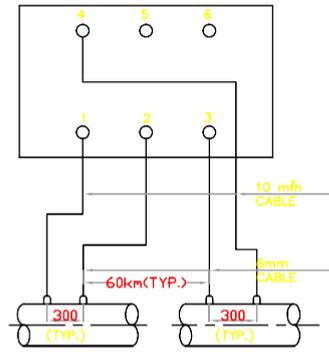
1. ALL DIMENSIONS ARE IN mm.
2. CABLE CONNECTION WITH G.I. CORE WIRE WILL BE SILVER SOLDERED AT SITE.

5.	SHEATHED GI ARMoured 3Ø GI CORE WIRE (PART OF MAGNSIUM ANODE)	1
4	SILVER SOLDER	AS REQD
3	M- SEAL COMPOUND	AS REQD
2	ANODE LEAED CABLE 25mm2 COVPPER XLPE INSULATED PVC SHATHED GI ARMoured COMPLETE WITH LUG	10m
1	MAGNESIUM ANDE, WEIGHT 0.39kg	1
ITEM NO.	DESCRIPTION	QTY.

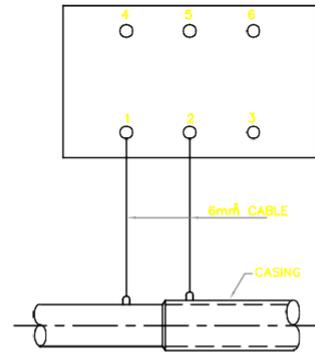
REV NO.	DATE	DESCRIPTIONS	BY	APPRD	REFERECES	DRW. NO.
REVISIONS				REFERECES		DRW. NO.
SECTION : P&PD						
DSGN	NAME	DATE	CHKD	DATE	MAGNESIUM RIBBON ANODE FOR GROUNDING	
DRWN						
APPROVED					SCALE :	N.T.S
					DRG NO	MNGL/PLANG/ STEEL 16



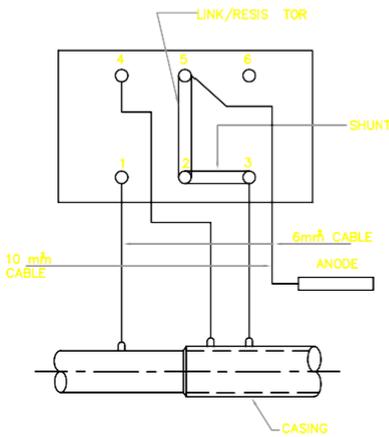
POTENTIAL MEASUREMENT (CONNECTION SCHEME-A)



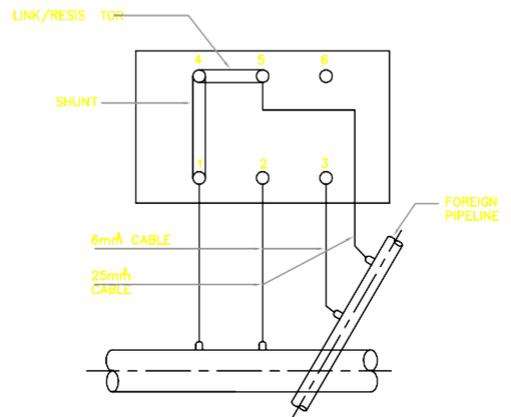
CURRENT MEASUREMENT (CONNECTION SCHEME-B)



CASED CROSSING WITH UNCOATED CASING (CONNECTION SCHEME-C)

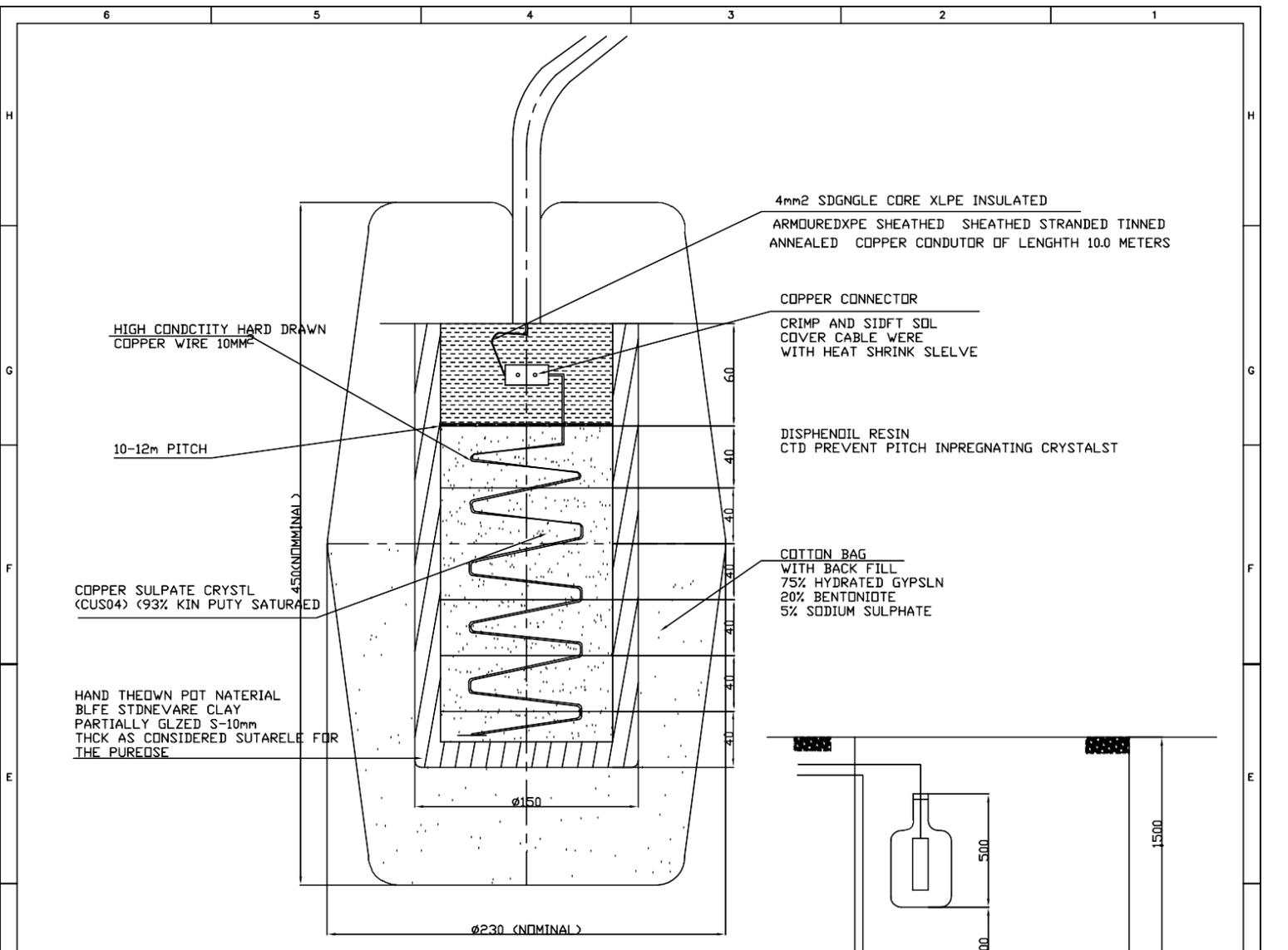


CASED CROSSING WITH COATED CASING (CONNECTION SCHEME - D)



FOREING PIPELINE CROSSING (CONNECTION SCHEME -E)

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



HIGH CONDUCTIVITY HARD DRAWN COPPER WIRE 10MM

10-12m PITCH

COPPER SULPATE CRYSTL (CUSO4) (93% KIN PUTY SATURAD)

HAND THROWN POT MATERIAL BLFE STDNEVARE CLAY PARTIALLY GLZED S-10mm THCK AS CONSIDERED SUTARELE FOR THE PUREOSE

4mm² SDGNLE CORE XLPE INSULATED ARMUREDXPE SHEATHED SHEATHED STRANDED TINNED ANNEALED COPPER CONDUTOR OF LENGTH 10.0 METERS

COPPER CONNECTOR CRIMP AND SIDFT SOL COVER CABLE WERE WITH HEAT SHRINK SLELVE

DISPHENDIL RESIN CTD PREVENT PITCH INPREGNATING CRYSTALST

COTTON BAG WITH BACK FILL 75% HYDRATED GYPSLN 20% BENTONITE 5% SODIUM SULPHATE

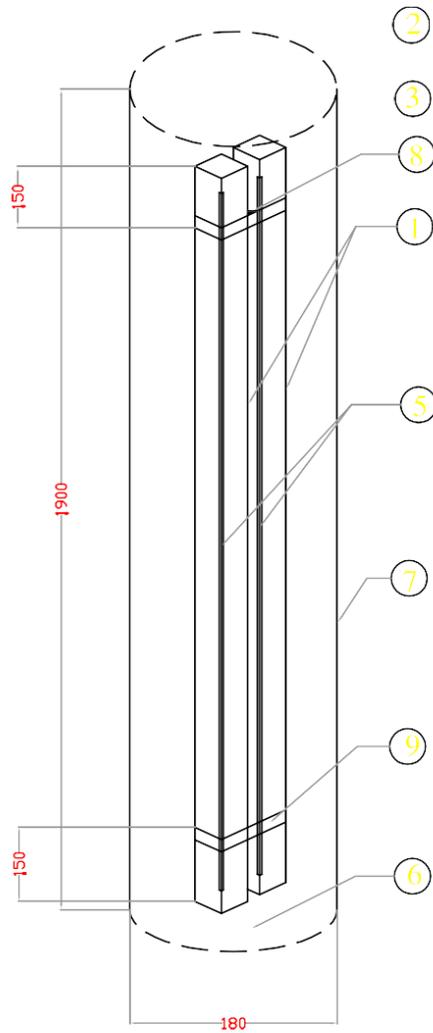
REF. CELL WEIGHT- 9.0 kg (APPROX)
GROSS WEIGHT =25.0 kg (APPROX)

REFERENCE : ELECTRODE INSTALLATION.

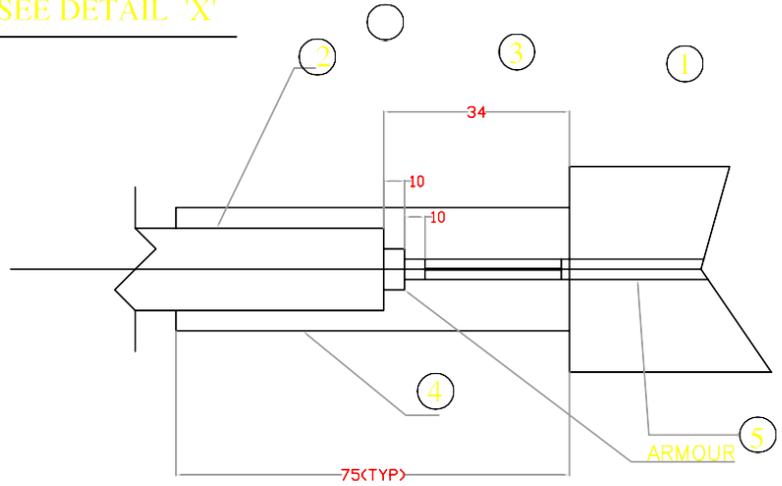
NOTE :-

1. THE DEVERALL DIMENSION ARE FOR GUIDDAGE ONLY
2. ALL DIMENSION ARE IN MM.
3. REFERENCE CELL SHALL BE BACK FILLED WITH BACK FILL MATERIAL SPECIFIED.
4. REFERENCE CELL SHALL BE INSTALLED APPDIXIMELY AT 500 mm (MAX) ABOVE THE TOP LEVEL OF THE PIPE LINE ALONG WITH COTTON
5. BACK FILL REFERENCE ELCTIRDDE SHALL BE SDAKED IN 20 LITERS OF CLEAN FRESH WATER FOR 24 HRS PRIIR TO INSTALLATION
6. REFERENCE CELL CABLE SHALL BE ROUTED ALONG THE TOP OF THE CARRIER PIPE LINE BY SECURILY STRAPPING IT WITH ADHESIVE TYPE AT APPROXIMATELY 3 mt INTERVALS.
7. CALLIBRATION OF REERENCE CELL w<r<t STANDARD CUL/CUSO4 CELL TO BE MADE PRIOR TO INSTALLATION

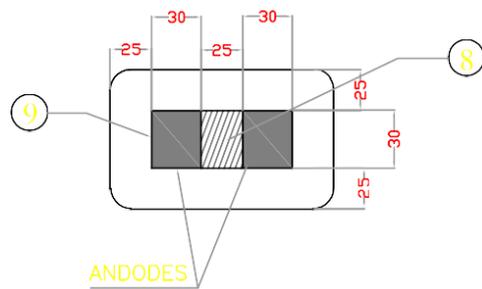
REV NO.	DATE	DESCRIPTIONS	BY	APPRD	REFEREES	DRW. NO.
SECTIONS : P&PD						
DSGN					PREPACKAGED PERMAENT REF. ELECTRODE (Cu/CuSO4 TYPE) & INSTALLATION DETAILS	
DRWN						
APPROVED				SCALE : N.T.S DRG NO : MNGL/PLANG/ STEEL 20		



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 LEADE FOR ZINC GROUNDING CELL SHALL BE AS SHORT AND DIRECT AS POSSIBLE.
4. GROUNDING CELL CABLE ARMOUR SHALL NOT HAVE ELLECT. 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%

ITEM NO.	DESCRIPTION	QTY.
1	IAP- SIRAP	AS REQD.
2	25KV GEL INSULATING SPIDER 25X30X50	2 NOS
3	25KV BAG 1520	1 NOS
4	BRICK FILL MAT.	AS REQD.
5	SPRINT GALVANIZED STEEL CURE	AS REQD.
6	HEAT SHRINK SLEEVE	2 NOS.
7	SILVER BRAZED CONNECTION	2 NOS.
8	ARMOR TRL CABLE 25mm Sq TO G3 ALP/7/16 SI ATILD ARMORED600/1000 V.	2 NOS.
9	ZINC ANODE 38X38X1525	2 NOS.

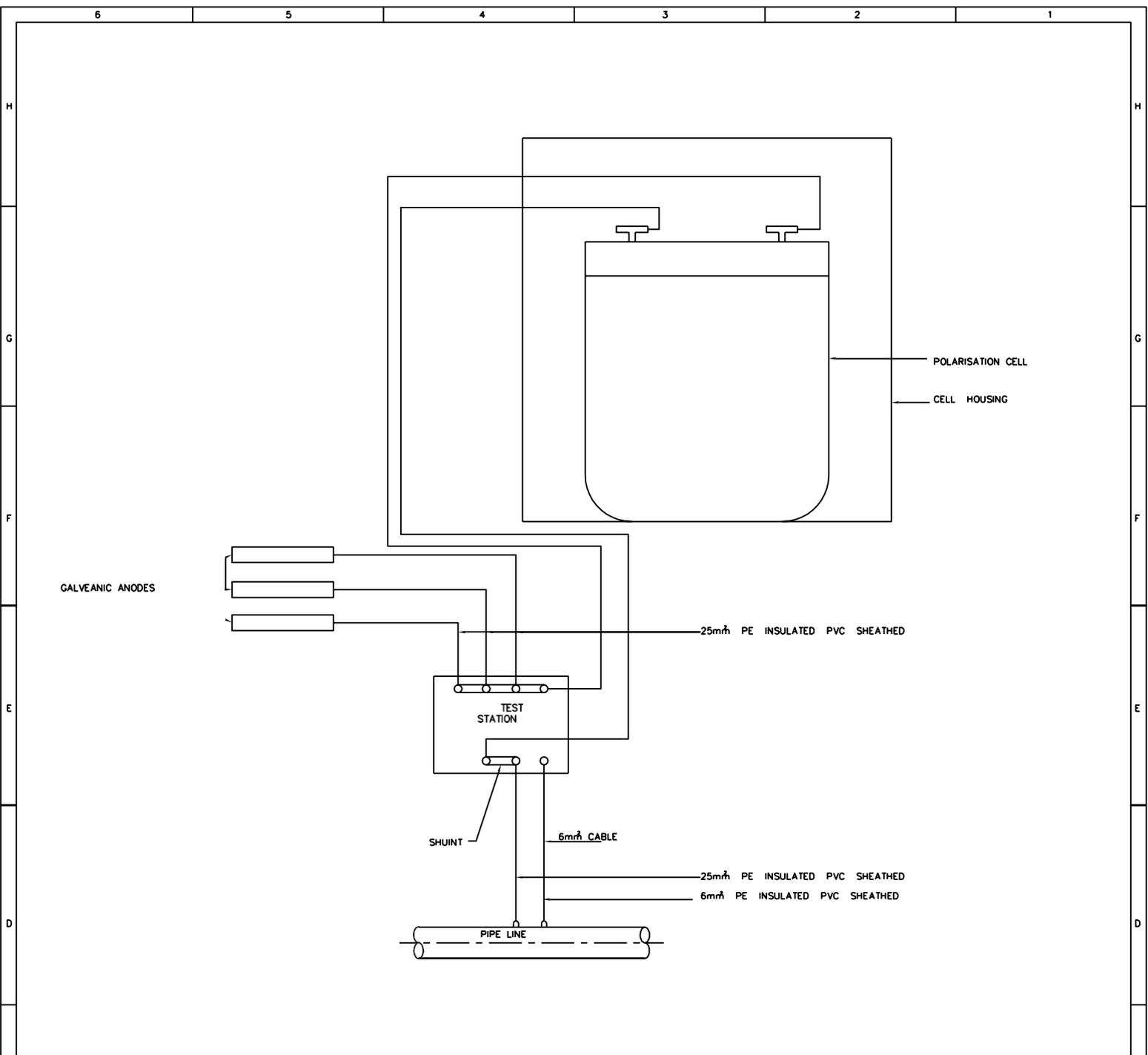
BILL OF MATERIALS

REV NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REVISIONS	REFERECES	DRW. NO.

SECTION : P&PD					<p style="text-align: center;">DETAILS OF ZINC GROUNDING CELL</p>	SCALE : N.T.S
DSGN	NAME	DATE	CHKD	DATE		DRG NO : MNG/PLANG/ STEEL/21
DRWN						
APPROVED						

B
A

B
A



NOTES :-

1. THE POLARISATION 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 VANDALISEM 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							
APPROVED							
SCALE : N.T.S							
DRG. NO. MNG/PLANG/ STEEL 23							

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 EPOXY 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 STACION CONNECTION SCHEME TYPE
 - B) RELEVANT TEST STACION 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 UPRIGHT POSITION.
9. TEST STACION 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 PIPELINE AND FACING IT.
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
11. HEIGHT OF THE STATION ABOVE GROUND LEVEL SHOWN IN THE DRAWING IS TYPICAL.
12. ALL CABLES COMMING TO TEST STACION SHALL BE LABELLED ON BOTH ENDS WHITH IDENTIFICATION NUMBERS
13. TOTAL NUMMBER OF TEST STATIONS AND THEIR TYPE ARE MENENTIONED 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.

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	FOUNDATION 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		

REV NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REFERECEES	DRW. NO.
REVISIONS							

SECTION : P&PD								
DSGN	NAME	DATE	CHKD	DATE	<h3 style="margin: 0;">DETAILS OF TEST STATION</h3> <h3 style="margin: 0;">POLARISATION CELL</h3>			
DRWN	DATE	DATE	DATE					
APPROVED					SCALE : N.T.S			
					DRG NO : MNGL/PLANG/ STEEL/ 27			

5

4

3

2

1

G

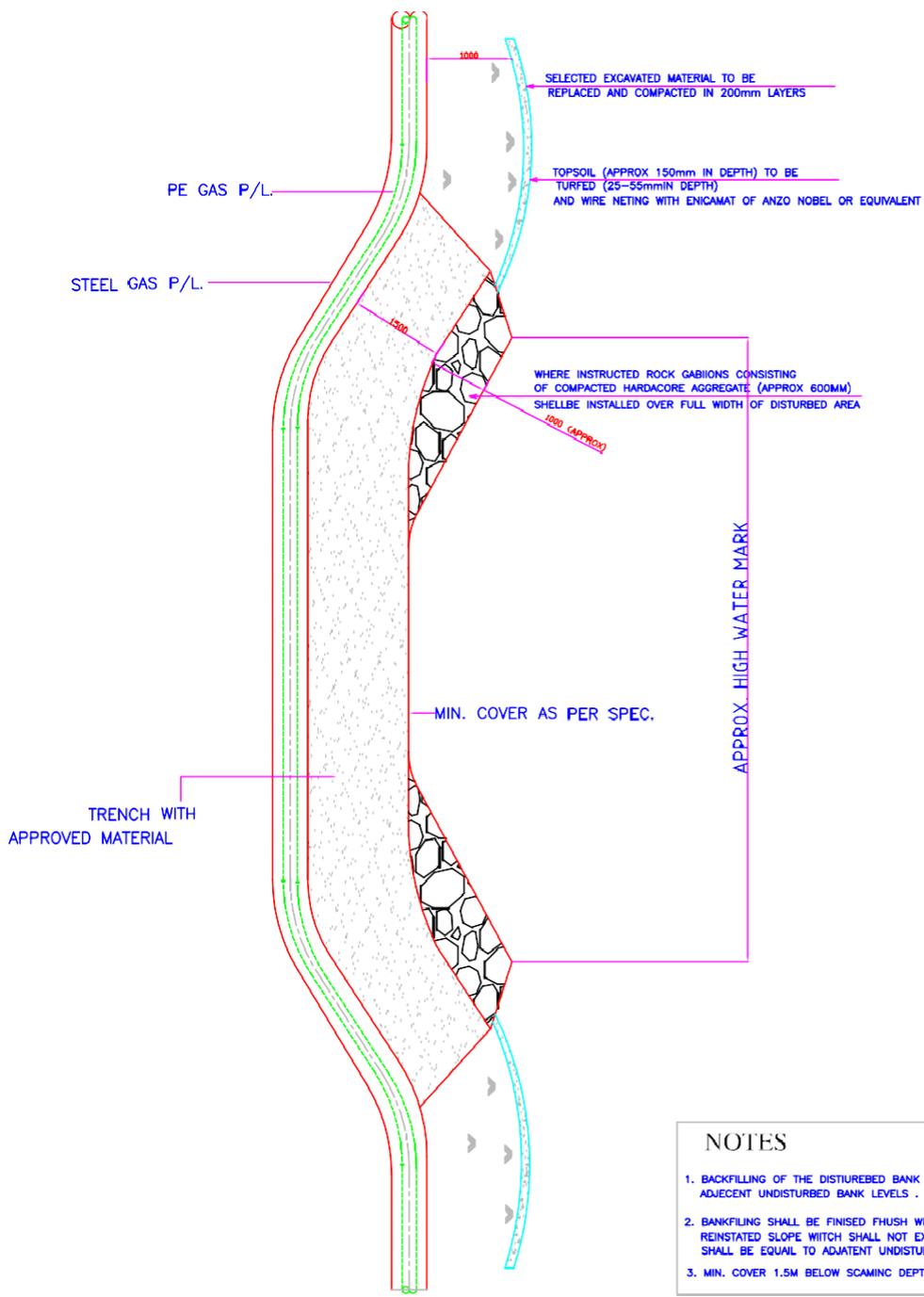
F

E

D

C

B



- NOTES**
1. BACKFILLING OF THE DISTURBED BANK AREA SHALL BE FINISHED OF 100mm. ABOVE THE ADJECENT UNDISTURBED BANK LEVELS .
 2. BANKFILING SHALL BE FINISED FHUSH WITH INVERT AND BANK SLOPES EXCEPT REINSTATED SLOPE WITCH SHALL NOT EXCEEDOO 40' IN WITCH CASE THE SLOPE. SHALL BE EQUAL TO ADJATENT UNDISTURBED BANKS
 3. MIN. COVER 1.5M BELOW SCAMING DEPTH.

FOR TENDER PURPOSE ONLY

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

SECTION				MAHARASHTRA NATURAL GAS LTD.			
DSGN	NAME	SIG.	DATT	CNG & CITY GAS DISTRIBUION IN PUNE			
DRWN							
CHEKD.&APPROVED				SCALE :- NTS			
APPROVED				STD. DETAIL OF BACKFILL, FOR DRAIN CROSSING			
				DRG. NO. MNGL/plang/ steel 29			

5

4

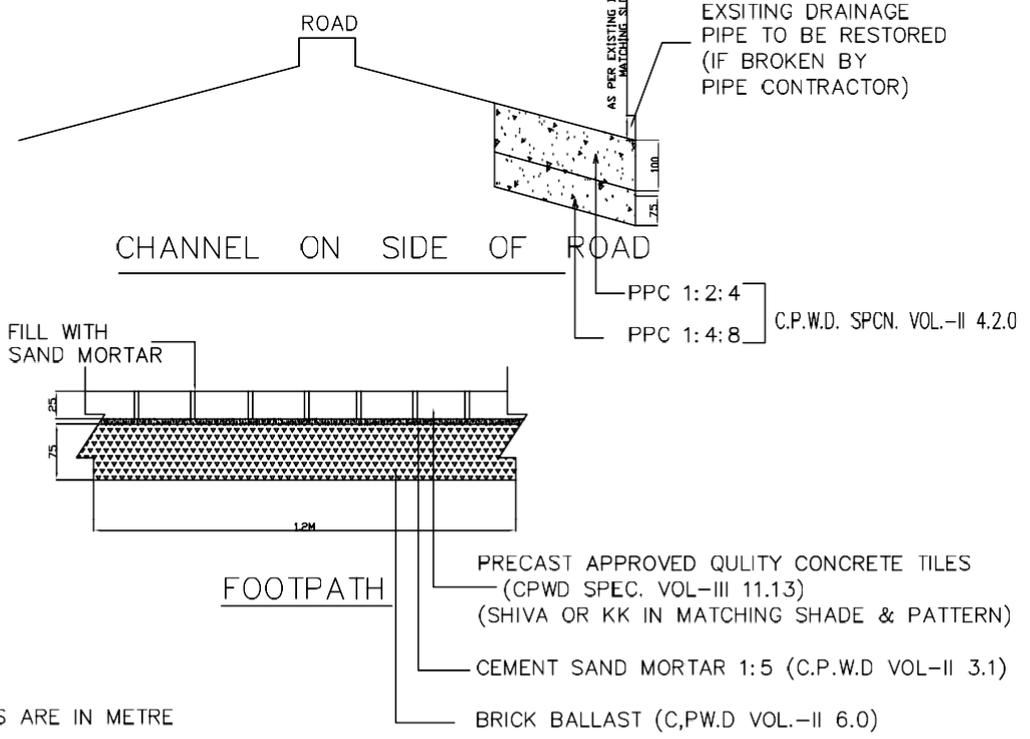
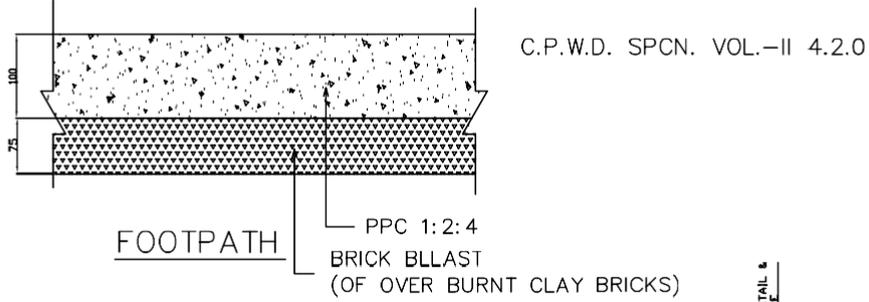
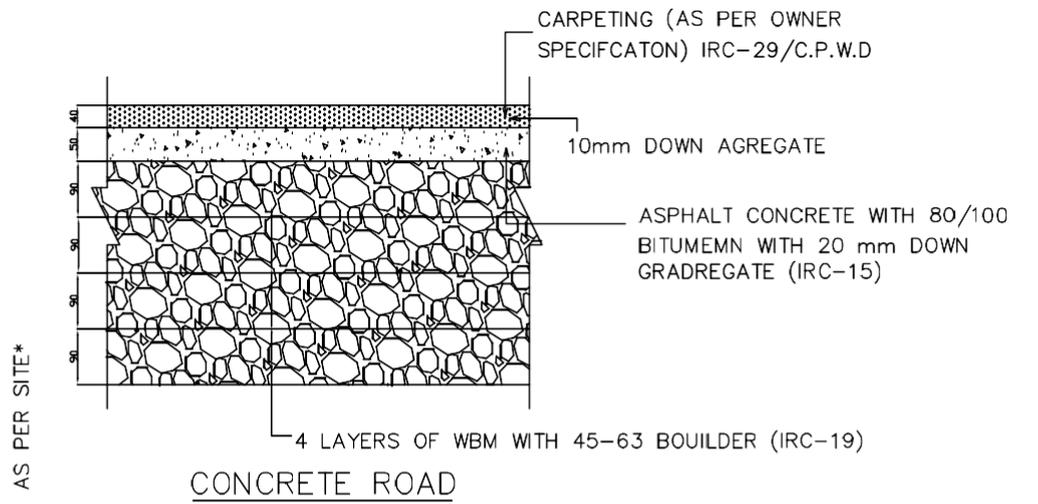
3

2

1

A

A



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 FLOLOW AS PER ARE CPWD/PWD CONCERNED ATUTHOREIES REQUIREMENTS IN RESPECTIVE AREA

FOR TENDER PURPOSE ONLY

SECTION : P&PD

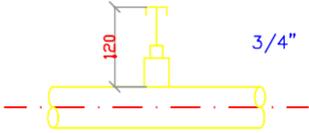
NAME	SIG.	CHKD	MAHARASTRA NATURAL GAS LTD	
DSGN			CNG & CITY GAS DISTRIBUTION IN PUNE	
DRWN			RESTORATION OF ROADS FOOTPATH CHANNEL	
CHKD & VERNIFIED			SCALE : 1:10	DRG NO
APPROVED			MNGL/PLANG/ STEEL/30	

TYPE

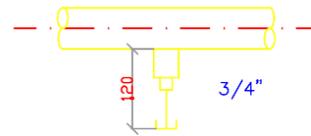
VENT

DRAIN

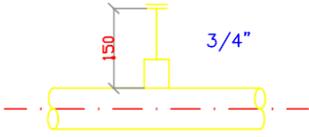
V1
V1P



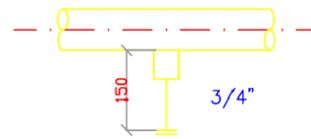
D1
D1P



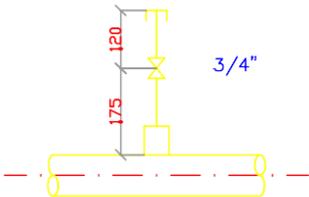
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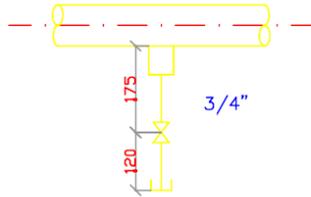
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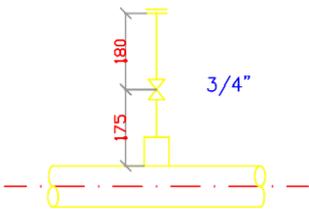
V3
V3P



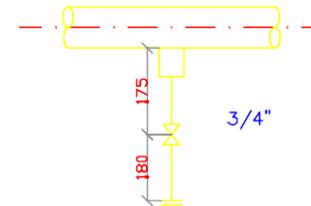
D3
D3P



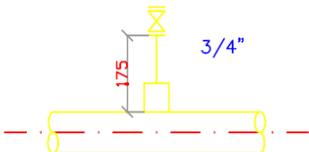
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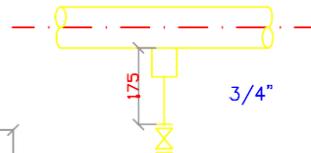
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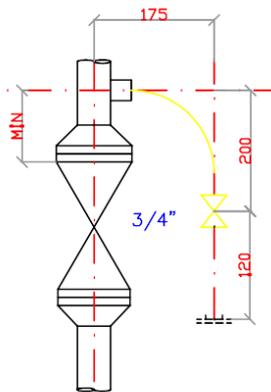
V5



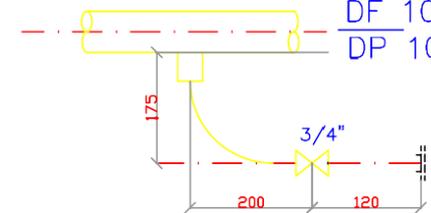
D5



DC 9
DF 9
DP 9



DC 10
DF 10
DP 10

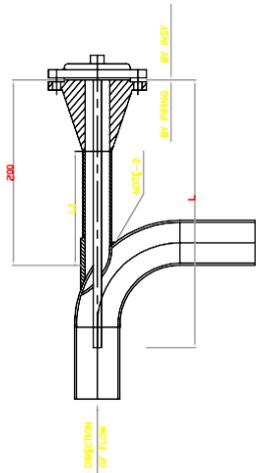


NOTES

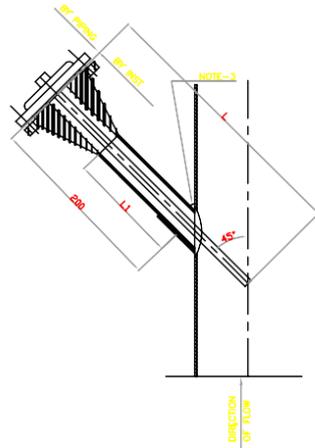
1. DIMENSIONS ARE VALID FOR 75mm (MAX) THICKNESS INSULATION FOR HIGHER INSULATION THICKNESS INCREASE DIMENSION AS REQUIRED.
2. VENTS & DRAINS SHALL BE PROVIDED WITH GATE GLOBE OR PLUG VALVE WITH HALF COUPLING OR STUB IN WITH CAP OR FLANGE BLIND FLANGE AS PER PIPEING SPECIFICATIONS
3. VENTS/DRAINS CAN 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

REV NO.	DATE	ZONE	DESCRIPTIONS	BY	APPRD	REVISIONS	REFERECES	DRW. NO.

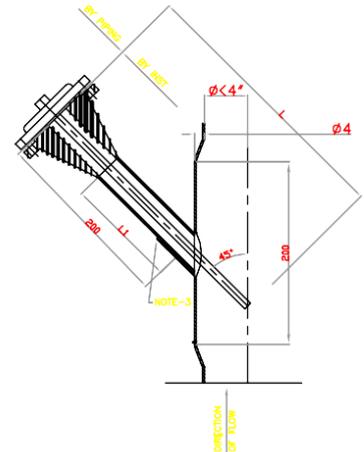
SECTION : P&PD					<p>VENT & DRAIN FOR LINE 2" & ABOVE</p>	SCALE : N.T.S
DSGN	NAME	DATE	CHKD	DATE		DRG NO : MNGL/PLANG/ STEEL/31
DRWN						
APPROVED						



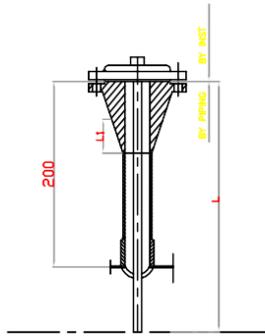
TYPE TW-6



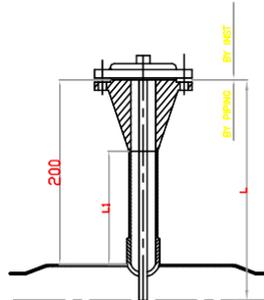
TYPE TW-7



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

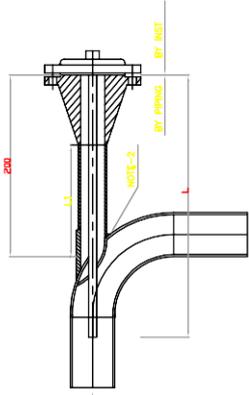
- 6. ELABOLW MIN. 4"Ø OR LARGER
- 7. VERTICAL LINE 4"Ø OR LARGER
- 8. HORIZNTAL LINE 4"Ø OR LARGER
- 9. VERTICAL LINE LESS THAN 4"
- 10. HORIZNTAL LINE DIA LESS THAN 4"

NOTES:

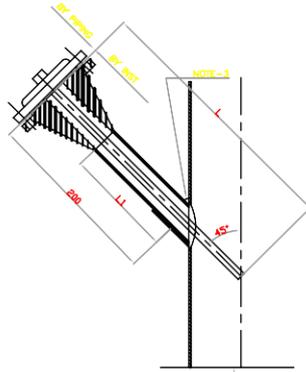
- 1. BOLTS, NUTS AND GASCKETS BY PIPING.
- 2. MIN. CLERANCE FOR REMOVAL BY PIPING.
- 3. COUPLING TO SPECIAL LENGTH.

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

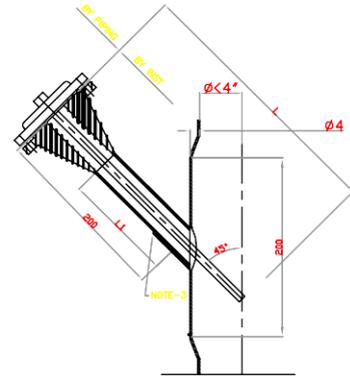
SECTION : P&PD					<h2 style="margin: 0;">WELLS INSTALLATION</h2> <h3 style="margin: 0;">1 1/2" DIA TAPS</h3>	SCALE : N.T.S DRG NO. MNGL/PLANG/ STEEL 32
DSGN	NAME	DATE	CHKD	DATE		
DRWN						
APPROVED						



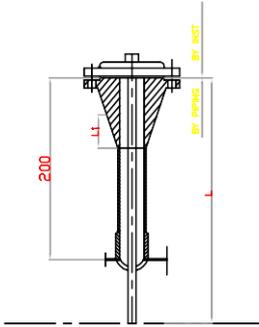
TYPE TW-6



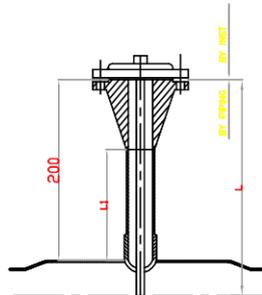
TYPE TW-7



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"

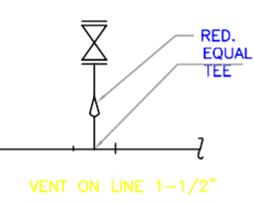
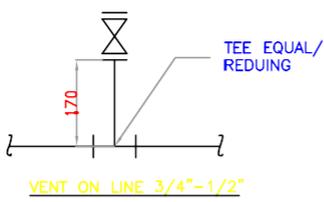
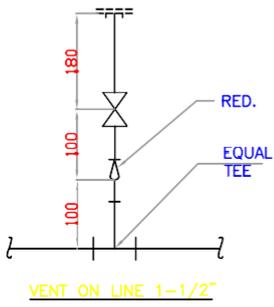
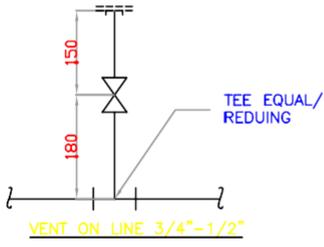
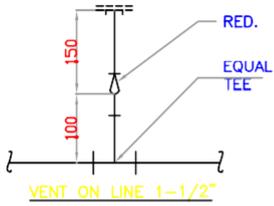
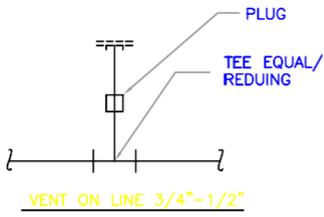
NOTES:

- 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	REFERECES	DRW. NO.

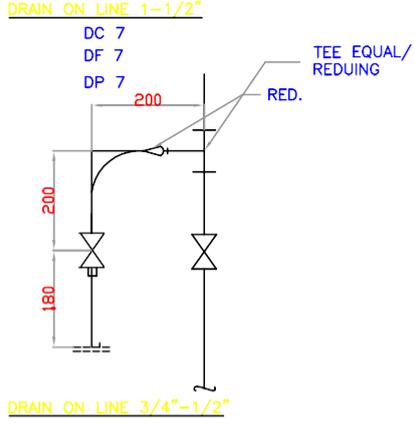
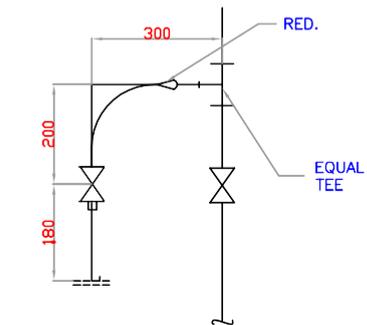
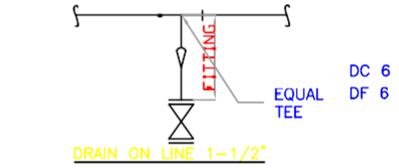
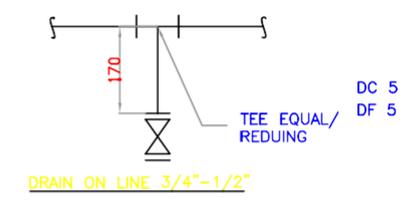
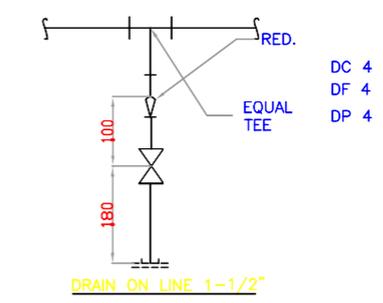
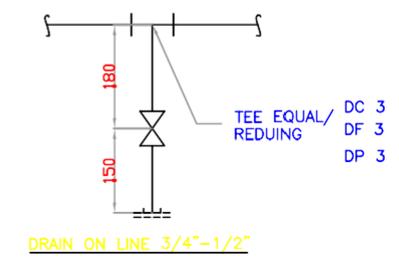
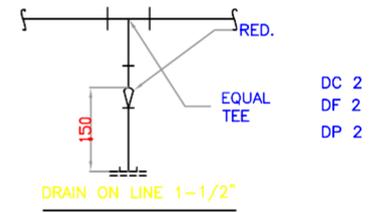
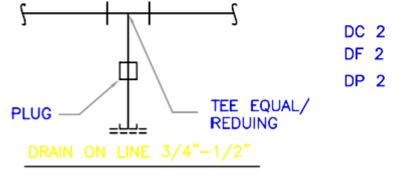
SECTION : P&PD

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



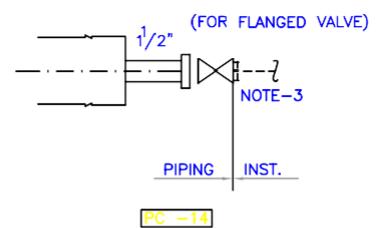
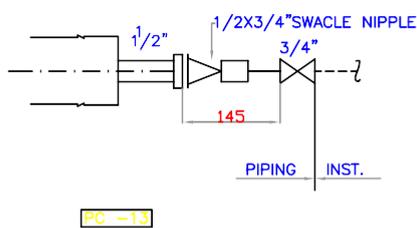
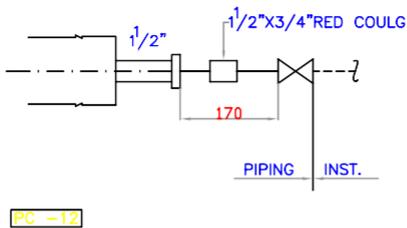
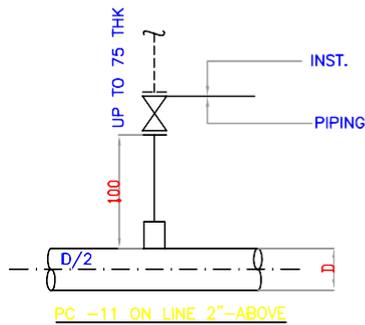
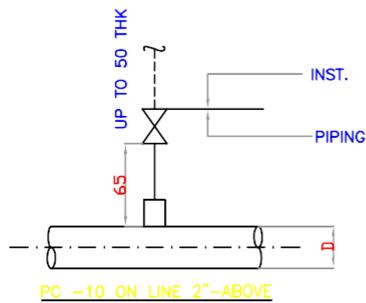
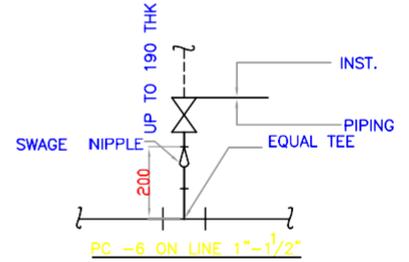
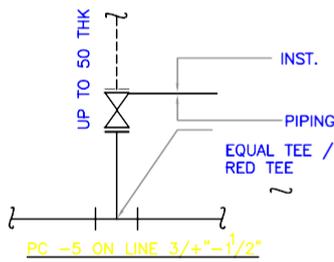
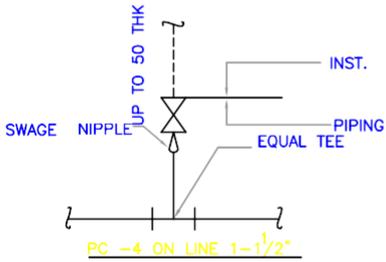
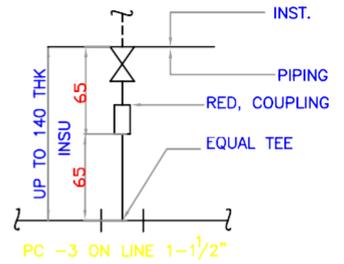
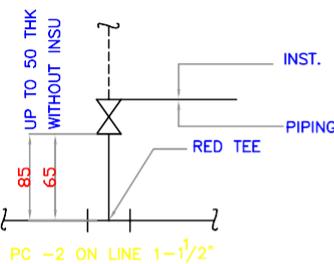
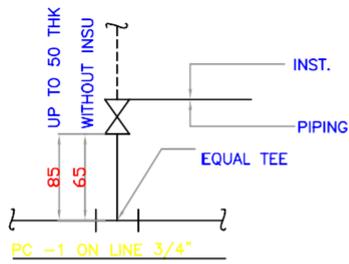
NOTES:-

1. DIMENSIONS ARE VALID FOR 50mm (MAX) THICKNESS INSULATION FOR HIGHER INSULATION THICKNES INCASE 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	REVISIONS	REFERECES	DRW. NO.

SECTION : P&PD					<h2 style="margin: 0;">WELLS INSTALLATION</h2> <h3 style="margin: 0;">ON LINES 1 1/2" DIA TAPS</h3>	SCALE : N.T.S	DRG. NO. MNGL/PLANG/ STEEL 33
DSGN							
DRWN							
APPROVED							



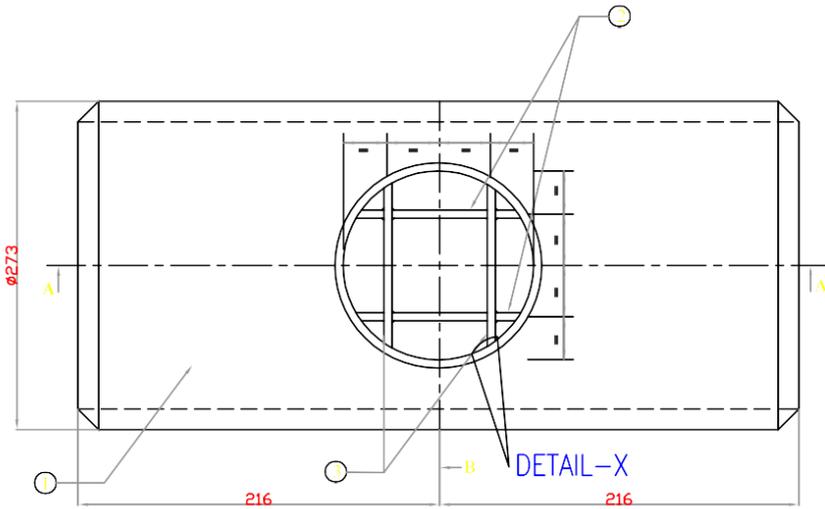
PC -15 WITH 2 VALVE

ON VESSELS/COLUMNS

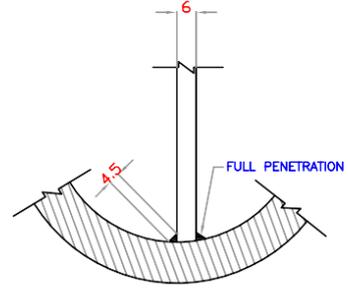
NOTES: -

1. THE INDICATED DIMENSIONS ARE IN MINIMUM WHICH ALSO COVER INSULATION TO THE EXTENT SHOWN ABOVE IN HIGHER THICKNESS OF INSULATION THAN INDICATED THE DIFFERENCE SHALL BE ADDED IN THE DIMENSIONS SHOWN
2. PRESSURE TAPPING SHALL BE PROVIDED THE DIFFERENCE SHALL BE ADDED IN THE DIMENSION SHOWN ABOVE ACCORDINGLY TEE, HALF COUPLING OR STUB -IN AS PER PIPING SPECIFICATION
3. IN CASE OF FLGD VALVES BOLTING & GASKET ON BOTH SIDE OF VALVE BE IN PIPING SCOPE.
4. IN CASE OF TAPPING PROVID OTHER THAN INDICATED IN THIS STD FOR LAYOUT REASONS DETAILS DIMENSIONS WILL BE CALLED OUT.

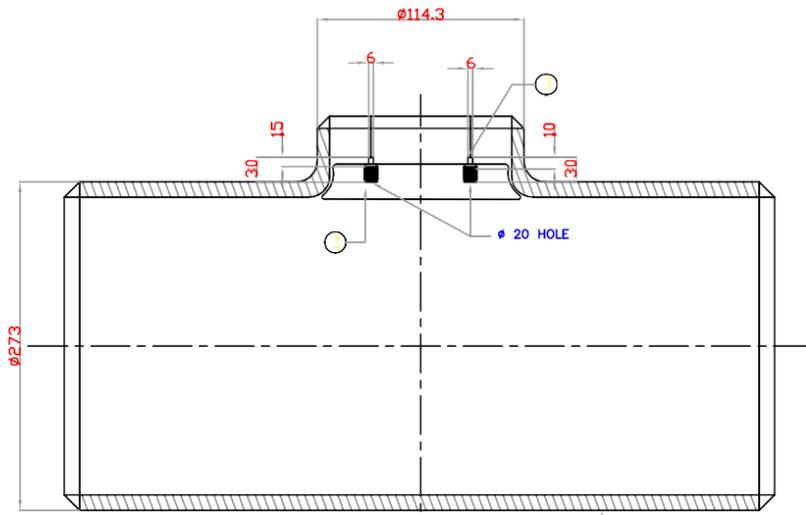
REV. NO.	DATE	DESCRIPTIONS	BY	APPRD	REFERENCES	DRW. NO.			
SECTION : P&PD		PRESSURE TAPPING				SCALE : N.T.S			
DSGN	DATE					CHKD	DATE	DRG NO MNGL/PLANG/ STEEL 34	
DRWN	DATE					CHKD	DATE	APPROVED	
APPROVED									



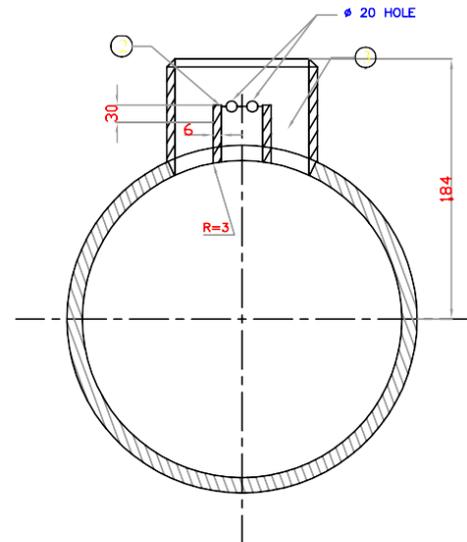
PLAN



DETAIL-X



SECTION A-A



SECTION B-B

QUANTITY – AS per SOR

NOTES :-

1. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR SCRAPPY PIGS AND USE LINE IN LINE FOR BIRDIRECTIONAL GAS FLOW
2. THE GUDE BARS SHALL BE EXTENDED NTC SO THAT THY GET FLUSHED WITH THE INSIDE DAMATER OF THE SAME.
3. THE CNTROUR OF THE GUDE BARS SHALL BE THAT THEY GO ANDNG THE INTERNAL SHAPE OF THE BRANCH
4. THE CONNNECTIONG PLATE SHALL BE WELDED WITH THE STAGHT OF THE BRANCH
5. RED THIS DROING TOGETHER WITH MNGL TECHNCL SPECIFICATOIN NO. MNGL SHEET /TS/19FOR BARRED TEES
6. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR UNDER INSTALLATION.
7. BUTT-WELD ENDS SHALL BE BELVELS IN ACCRDNCE WITH MSS-SP-75 / B 16.25 AND SHOLD MATCH WITH RUN AND BRANCH PIPES WILL THICNESS AS INDNNACATED PIPE DATELS

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

DESIGN DA-A

- | | |
|------------------------|---------------|
| 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 |

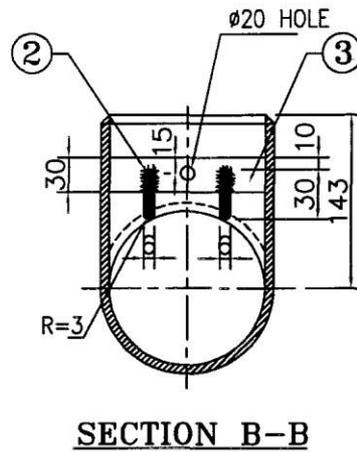
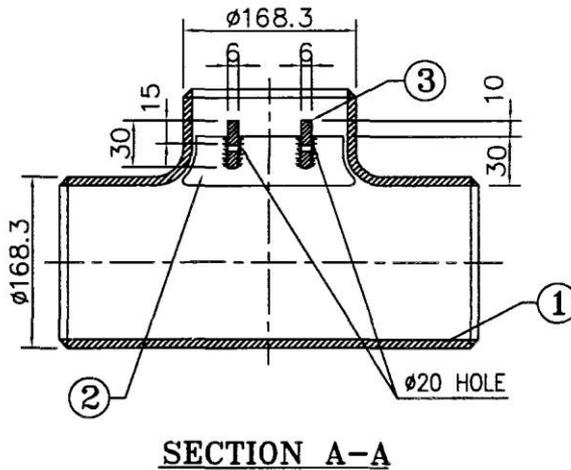
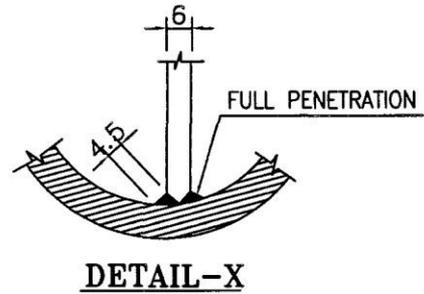
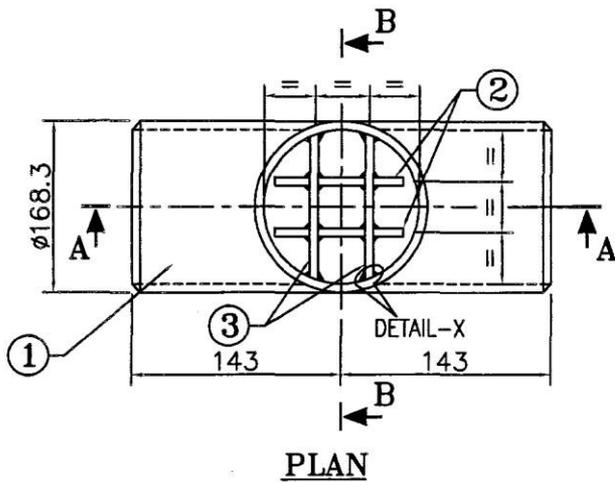
CONNECTING PIPE DETAILS:

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

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

SECTION : P&PD

NAME	DATE	CHKD	DATE	MAHARASTRA NATURAL GAS LTD		
DSGN				CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE CITY		
DRWN				BARRAED TEES		
APPROVED				SCALE :	N.T.S	
				DRG NO :	MNGL/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 TECHNICAL SPECIFICATION NO. MNG/L/Steel/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.

ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	TEE B.W. END AS PER ASME16.9 SIZE 6" x 6"	1	A 234 WPB, SCHLTD. x SCHLTD. 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. COEEOSSION 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							



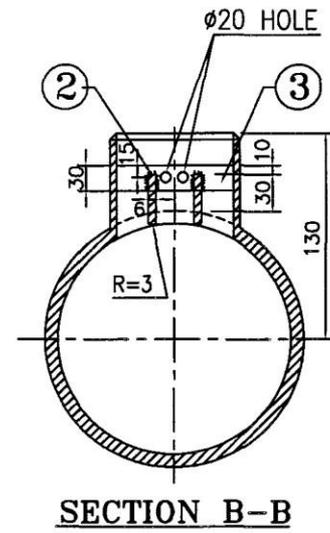
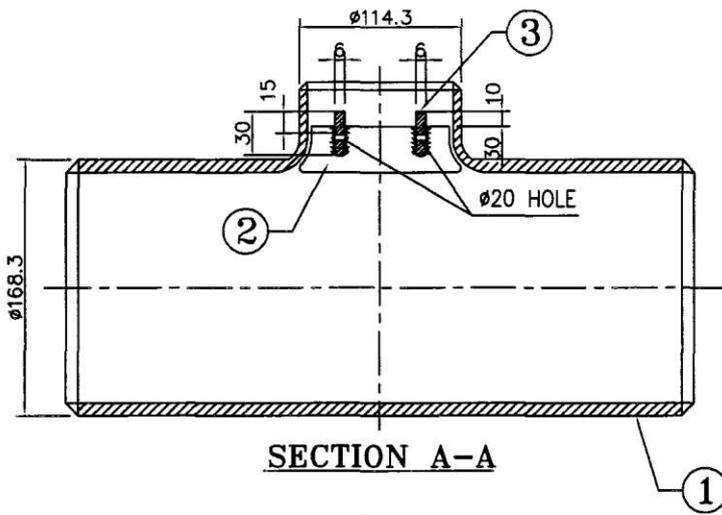
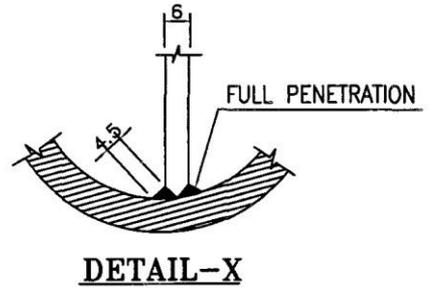
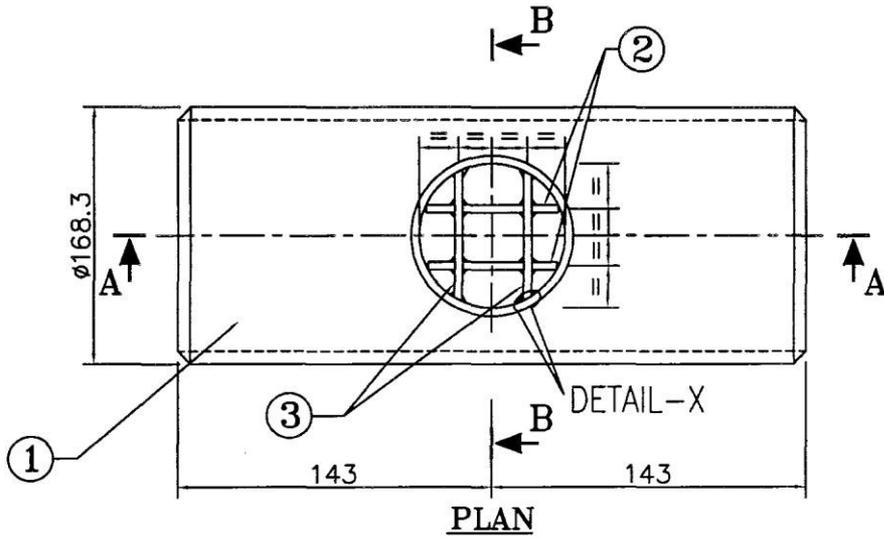
महाराष्ट्र नॅचुरल गॅस लिमिटेड
MAHARASTRA NATURAL GAS LTD

CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE CITY

BARRED TEES

SCALE : NTS

DRG.NO MNG/L/Plng./Steel/38



QUANTITY - As per SOR

NOTES:-

1. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR SCRAPPER 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 MNGL TECHNICAL SPECIFICATION NO MNGL/Steel/TS/19 FOR BARRED TEES
6. THE BARRED TEE IS INTENDED TO BE SUITABLE FOR UNDER GROUND INSTALLATION.
7. BUTT-WELD ENDS SHALL BE BEVELED IN ACCORDENCE 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/cm ² |
| 3. DESIGN TEMP. | : 0 TO 65°C |
| 4. CORROSION ALLOWANCE | : 1.5mm |
| 5. HYDRO-TEST PRESSURE | : 28.5 Kg/cm ² |

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	APPRD	REFERENCES	DRG. NO.
REVISIONS							

महाराष्ट्र नॅचरल गॅस लिमिटेड
 MAHARASTRA NATURAL GAS LTD
CNG & CITY GAS DISTRIBUTION PROJECT FOR PUNE CITY



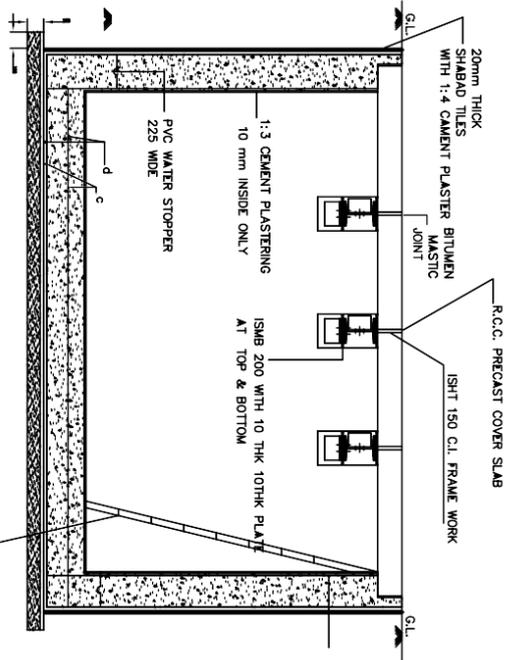
BARRED TEES

SCALE : NTS
DRG. NO MNGL/Ping/Steel/39

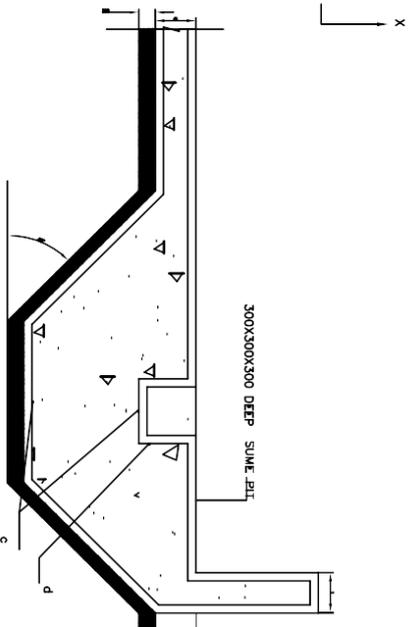
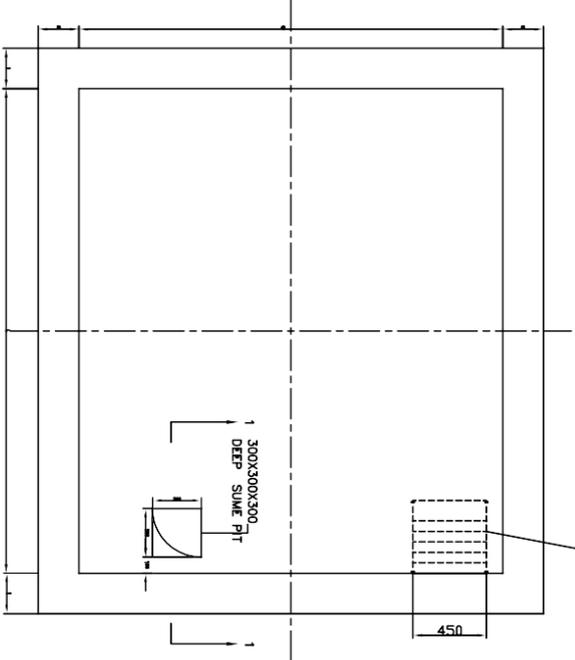
DETAILS OF CHAMBERI									
VALVE PIT NO.	REINFORCEMENT DETAIL								REMARKS
	L	B	H	T	Ø	b	c	d	
01	3000	2600	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS	
02	2600	2300	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS	
03	2800	2000	2200	250	10Y@50CRS	10Y@300CRS	10Y@50CRS	10Y@50CRS	
04	1300	1000	2200	150	10Y@50CRS	0Y@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 CONCRETE 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/SGM
06. WETTER 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



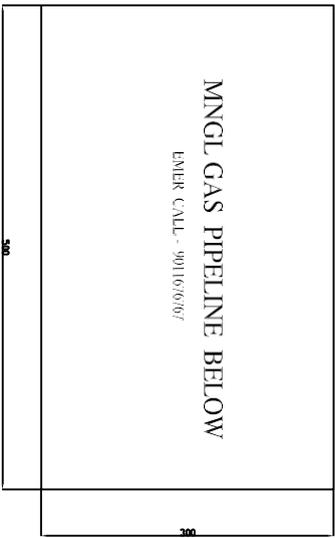
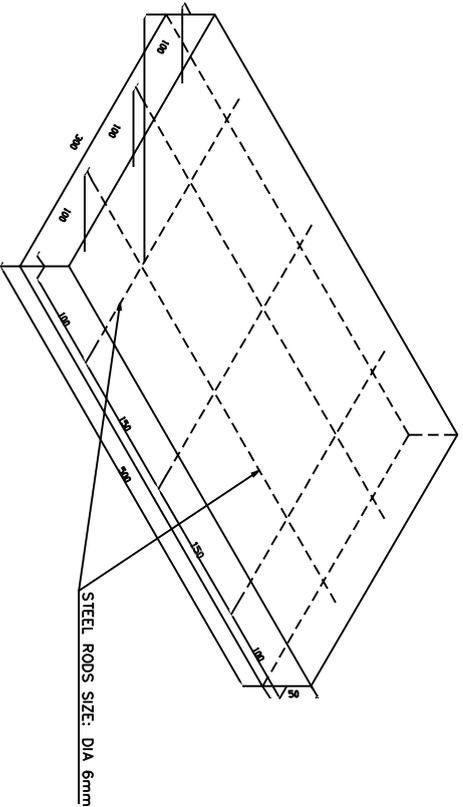
MS LADDER
(ISMC 50 FRAME
ISMA40X40X3 STEPS)



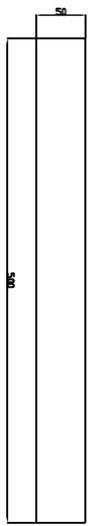
NOTES

01. ALL DIMENSIONS ARE IN MM
02. GRADE OF C CONCRETE 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/SGM
06. WETTER 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

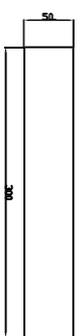
MAHARASTRA NATURAL GAS LTD.	
DATE	13.07.04
DESIGNED BY	DATE
APPROVED BY	DATE
DRAWING NO.	50046-12-DG-00001
REV	1



PLAN



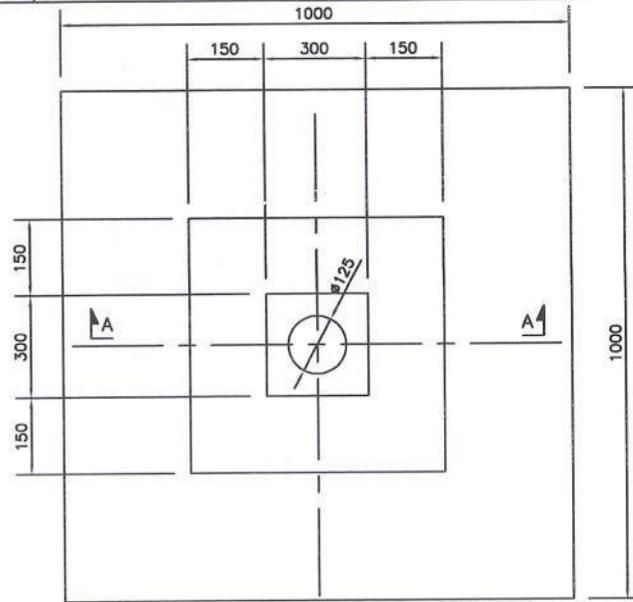
FRONT VIEW



SIDE VIEW

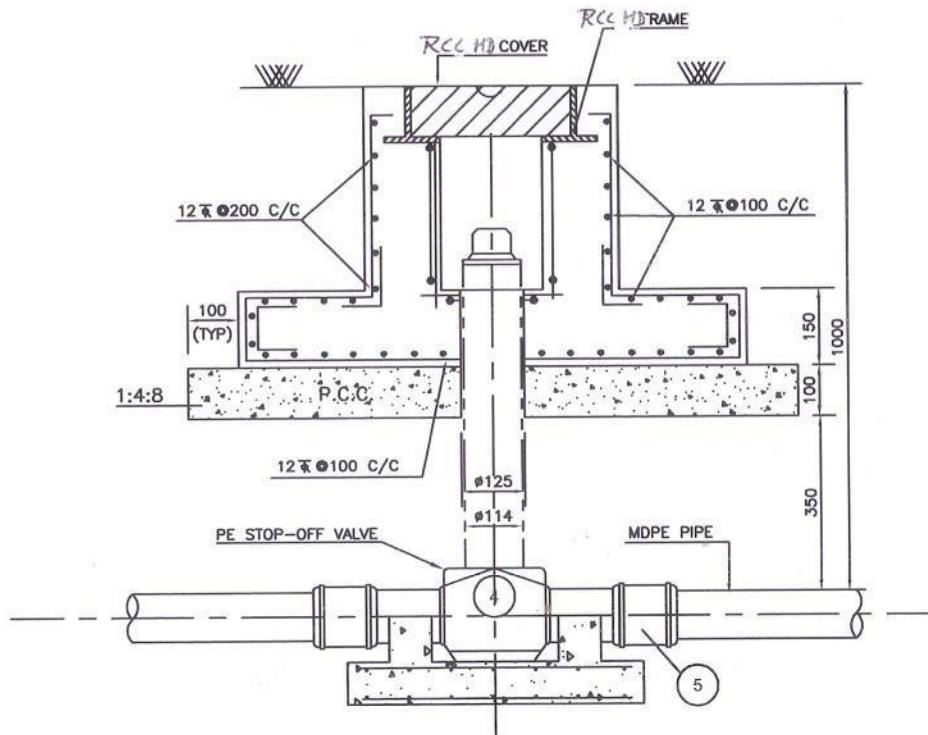
- NOTES:
1. ALL DIMENSION ARE IN MM UNLESS OTHERWISE SPECIFIER SPECIFIED.
 2. CONCRETE FOR MARKER SHALL BE M-20.

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 DERTIMENTAL TO THE INTEREST OF THIS COMPANY AND IS SUBJECT TO RETURN ON DEMAND.



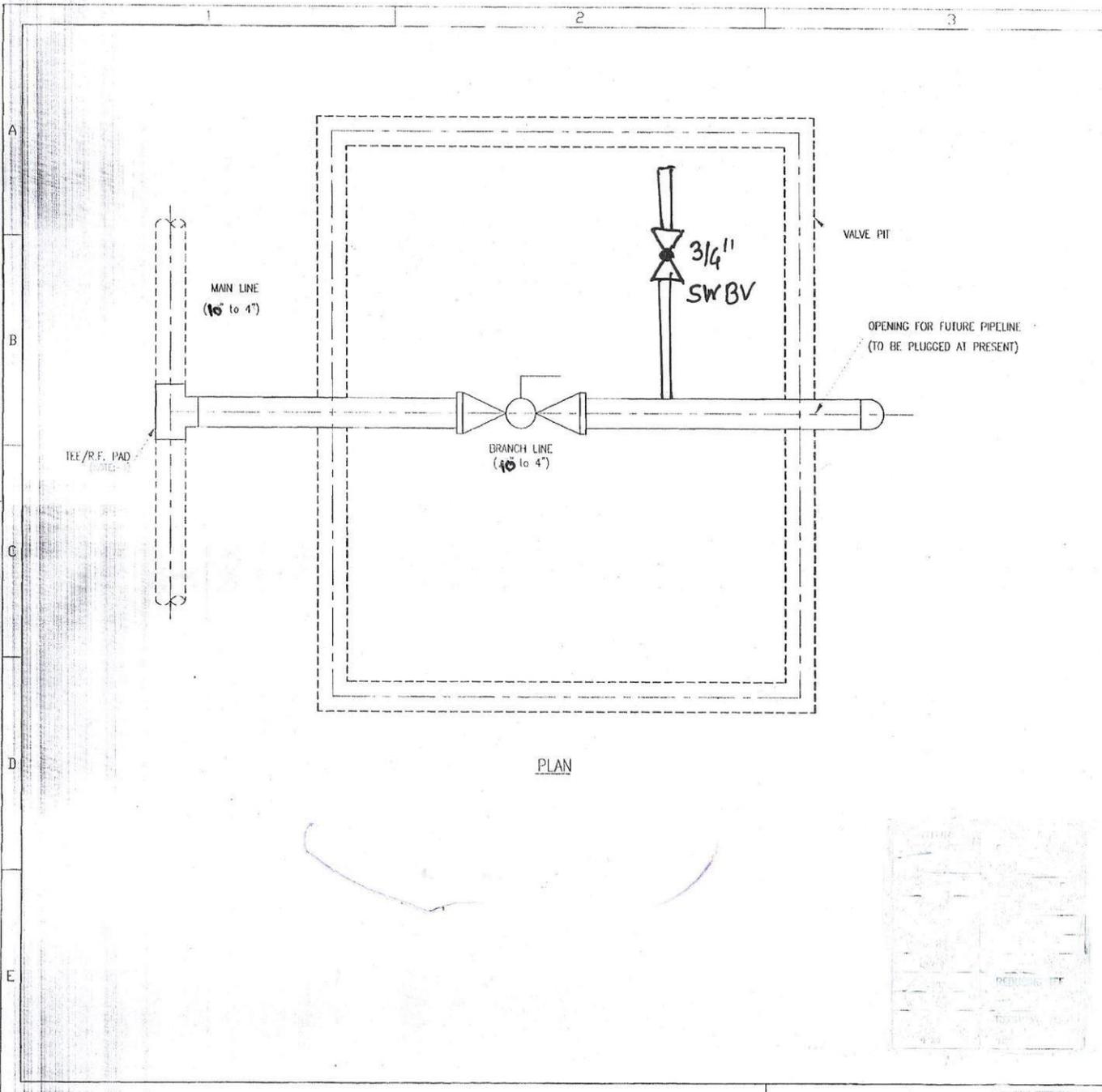
NOTES -

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.



SECTION A-A

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



4

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

STATUS

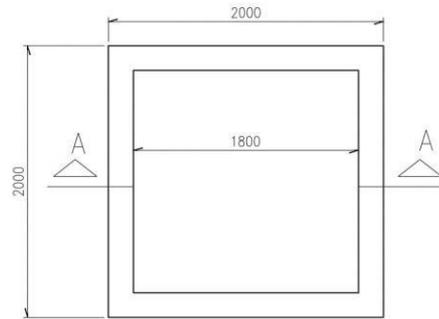
NO.	REVISION	DATE	BY	CHKD.	APPR.

TITLE: GENERAL ARRANGEMENT DRAWING FOR FUTURE TAP-OFF POINTS

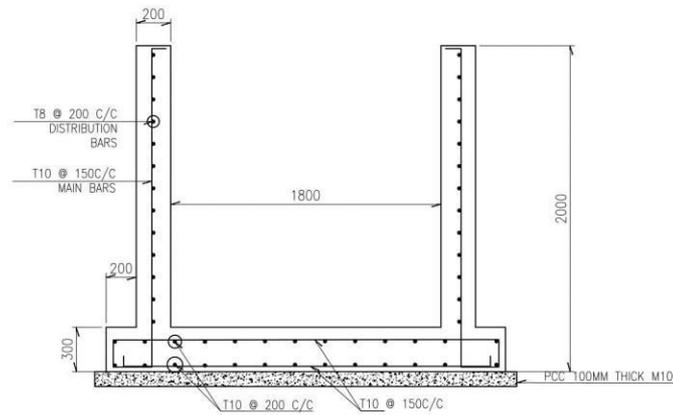
CLIENT: MINGL PUNE

PROJECT: CGD PUNE

MINGL/Plng./Steel/40



TYP PLAN OF CHAMBER



SECTION A-A

LEGENDS:

- CL ----- CENTRE LINE
- OGL ----- ORIGINAL GROUND LEVEL
- NGL ----- 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

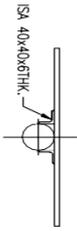
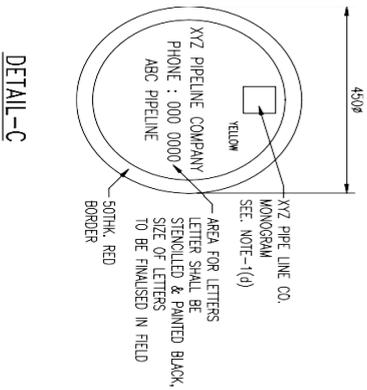
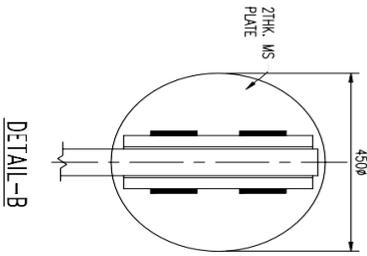
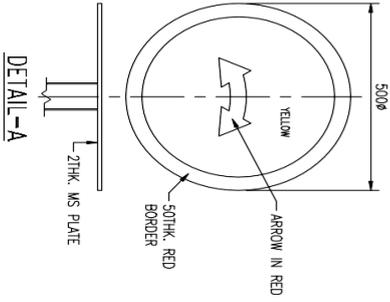
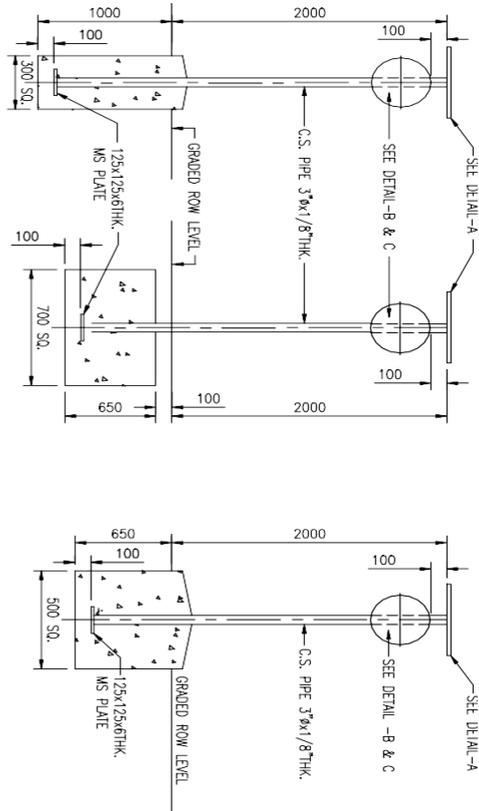
HOLD
--NIL--

REVISION STATUS

DO NOT SCALE

FOR RO ISSUE ONLY		ISSUE	REVISIONS	DRN	CLEARED					APPD	DATE	FILE NAME : 33339999	MAHARASHTRA NATURAL GAS LTD. CONSULTANT : PROJECT :	CHAMBER RC DETAILS		
DEPT	SIGNATURE				DATE	CHEM	CIVIL	ELEC	I&C					MECH	SCALE: NTS	APPROVED PVP
CIVIL									OFFICE-DISC:	DATE (CURRENT ISSUE)						
									DRN: SKL							
									CHD: AM	DWG NO	ECS-2019-MNGL-DK-02-RC-07	ISSUE RO				

Steel Markers Drawing



1

2

3

4

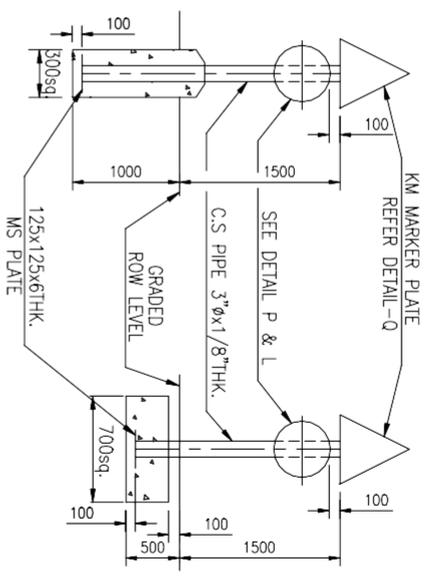
NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING:
 - (a) UNDERGROUND STEEL STRUCTURE (EXCEPT THAT EMBEDDED IN CONCRETE) COAT 1ST 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.
 - (f) ALL OTHER ABOVEGROUND STEEL SHALL BE PAINTED YELLOW.
 - (g) LOCATION
 - (g) DIRECTION MARKER SHALL BE INSTALLED AS PER SPECIFICATIONS AS DIRECTED IN APPROVED DRAWINGS AND AS DIRECTED BY OWNER.
 - (h) TWO NOS. ADDITIONAL DIRECTIONAL MARKERS SHALL BE PROVIDED 200M AWAY FROM CHANGE IN DIRECTION ON EITHER SIDE.
 - (i) OWNER NAME PLATE SHALL FACE THE PIPELINE.
 - (j) DIRECTION MARKER SHALL BE INSTALLED 1000MM TO LEFT OF THE PIPE CENTER LINE/VEINING TOWARDS THE DIRECTION OF FLOW AND AS INDICATED IN LOCATION SKETCH.
3. 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. ALL WELDS SHALL BE 4 MM.
6. IN ADDITION TO THIS, OISD AND PNGRR GUIDELINES MUST BE COMPLIED WITH.
- 7.

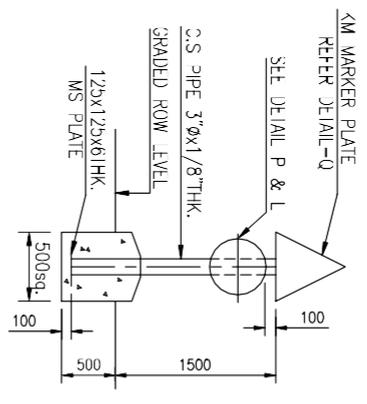
STANDARD

TYPICAL DIRECTION MARKER DETAILS

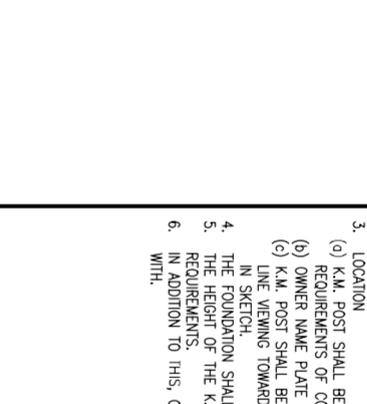
1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING:
 - (a) UNDERGROUND STEEL STRUCTURE (EXCEPT THAT EMBEDDED IN CONCRETE) COAT TAR EPOXY MIN. 300 MICRON THK.
 - (b) OVERGROUND STEEL STRUCTURE : ONE COAT OF PRIMER & TWO COATS SPECIFIED COLOUR PAINT.
 - (c) FIGURES SHALL BE STENCILED ON BOTH SIDES OF THE POSTS IN BLACK.
3. LOCATION
 - (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.
4. THE FOUNDATION SHALL BE MADE OF CONCRETE M20.
5. REQUIREMENTS.
6. IN ADDITION TO THIS, OISD AND PNGRB GUIDELINES MUST BE COMPLIED WITH.



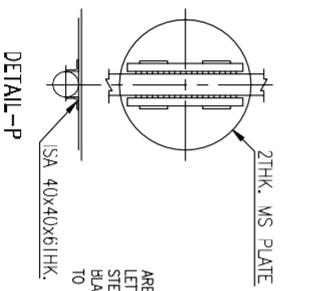
TYPE-I FOR NORMAL SOIL



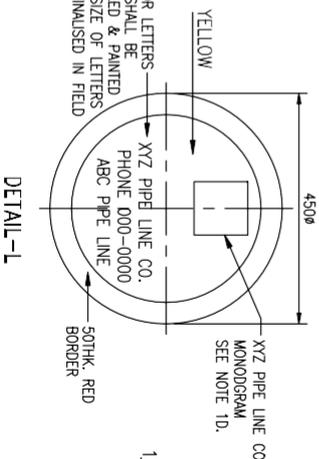
TYPE-II FOR DRIFTING SAND SOIL



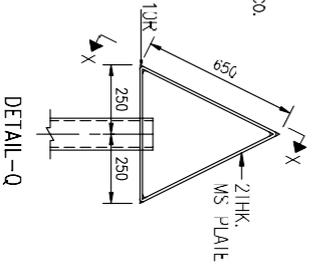
TYPE-III FOR ROCKY AREAS



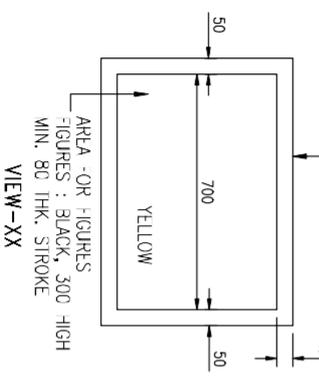
DETAIL-P



DETAIL-L

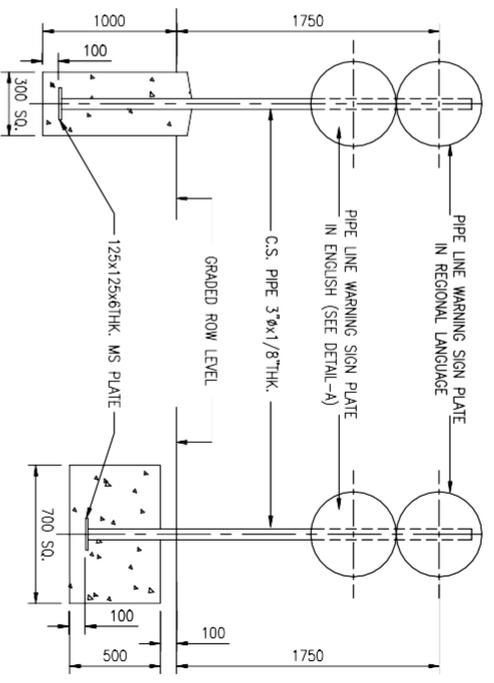


DETAIL-Q

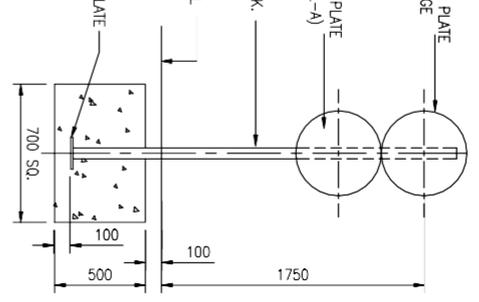


VIEW-XX

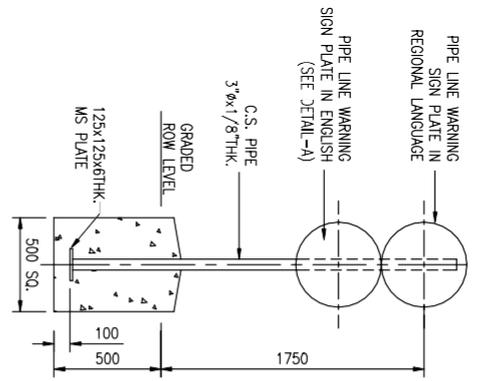
TYPICAL KM POST DETAILS



TYPE-I
FOR NORMAL SOIL



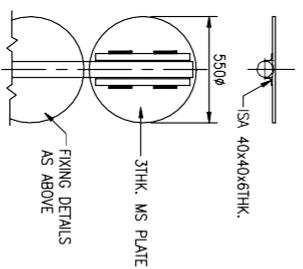
TYPE-II
FOR DRIFTING SAND SOIL



TYPE-III
FOR ROCKY AREAS



DETAIL-A



WARNING SIGN PLATE
FIXING DETAILS

1. ALL DIMENSIONS ARE IN MM UNLESS NOTED OTHERWISE.
2. SCHEME OF PAINTING & COLOURING.
 - (a) UNDERGROUND STEEL STRUCTURE (EXCEPT THAT EMBEDDED IN CONCRETE) COAT 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
 - (a) 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 PRESS OR KM POST WHERE EVER POSSIBLE.
4. 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. IN ADDITION TO THIS, OSD AND PNGRB GUIDELINES MUST BE COMPLIED WITH.

SUBJECT
TYPICAL PIPE LINE WARNING SIGN DETAILS