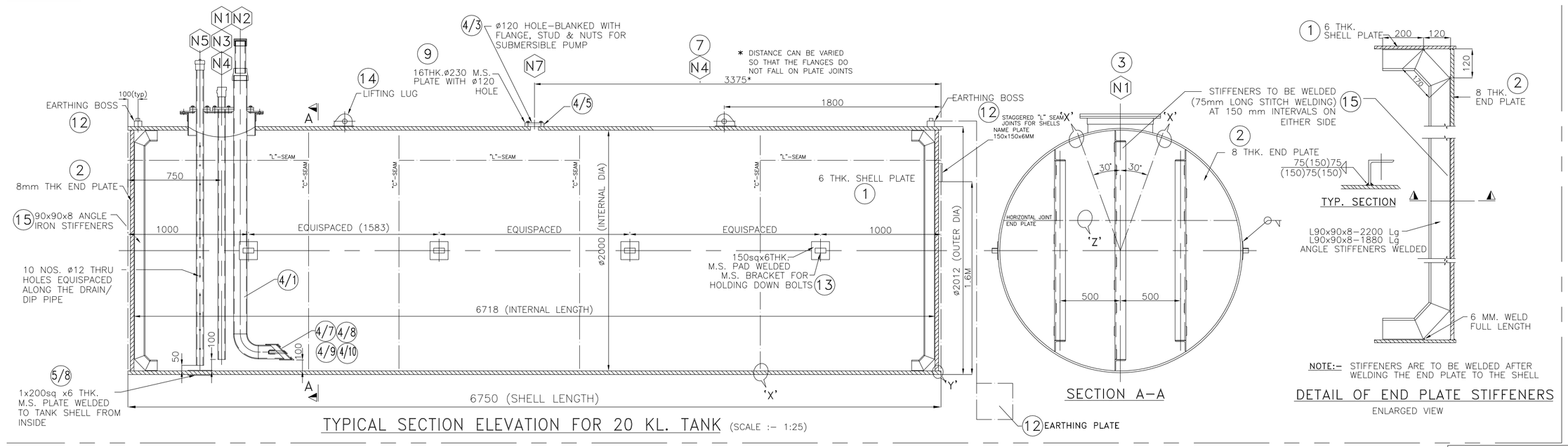
RE. DRG. 003




TYPICAL SECTION ELEVATION FOR 20 KL. TANK (SCALE :- 1:25)

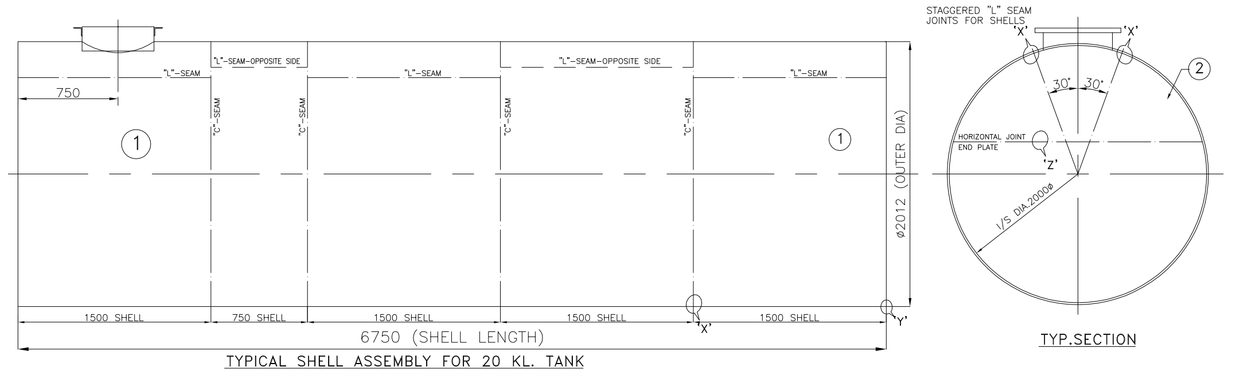



SECTION A–A



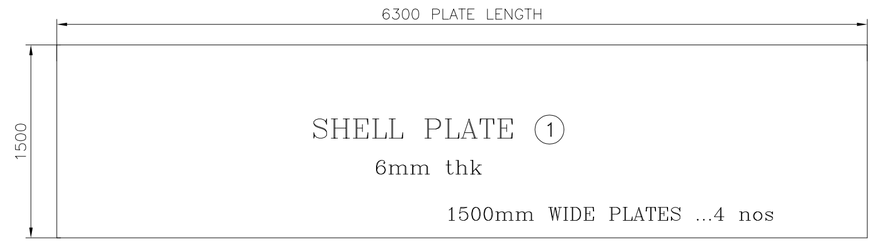

NOTE:– STIFFENERS ARE TO BE WELDED AFTER WELDING THE END PLATE TO THE SHELL

DETAIL OF END PLATE STIFFENERS
ENLARGED VIEW

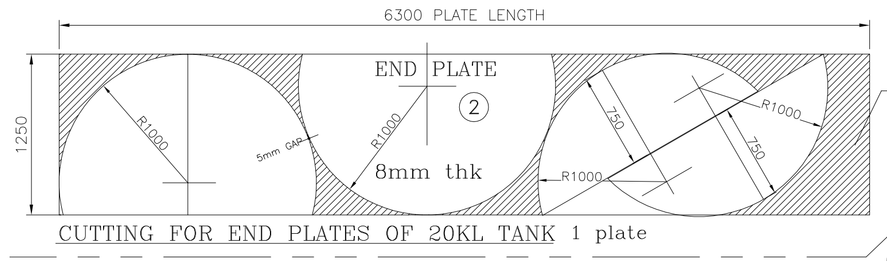



TYPICAL SHELL ASSEMBLY FOR 20 KL. TANK



CUTTING FOR SHELL PLATE OF 20KL TANK




CUTTING FOR END PLATES OF 20KL TANK 1 plate

| CUTTING SUMMARY FOR 1 No. 20KL TANK | | |
|---|---|---|
| 8mm PLATES FOR END PLATES(1250mm) | ..... 1p | 495 kg |
| 6mm PLATES FOR SHELL (1500mm PLT) | ... 4.5p | 2003 kg |
| NETT WEIGHT OF PLATES USED FOR 1 No. TANK ... | | 2498 kg |

CUT PIECES SCHEDULE

| | |
|---|---|
| A | 6mmX750X6300....1 no. FROM 1500mm WIDE PLATE TO BE USED FOR NEXT 20KL SHELL |
| B | 8mm CUT PIECES AS SHOWN HATCHED, TO BE USED FOR DATUM, SPLASH PLATES, etc. |

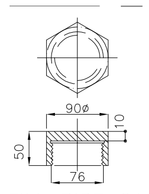
## TOLERANCE

TOLERANCE ON SHELL DIAMETER – THE TOLERANCE ON SHELL DIAMETER AT ANY POINT ON THE LENGTH OF THE TANK SHELL SHALL BE ±0.35% OF THE SPECIFIED DIAMETER (MAX) WHEN CALCULATED FROM AN EXTERNAL CIRCUMEFERENTIAL MEASUREMENT.
TOLERANCE OF CIRCULARITY – THE TOLERANCE ON CIRCULARITY AT ANY POINT ON THE LENGTH OF THE TANK SHELL THAT IS THE DIFFERENCE BETWEEN MAXIMUM AND MINIMUM INTERNAL SHELL DIAMETER SHALL NOT EXCEED 1% OF NOMINAL INTERNAL DIAMETER.
TOLERANCE ON OVERALL LENGTH – TOLERANCE ON OVERALL LENGTH OF THE TANK SHALL NOT DIFFER BY MORE THAN 0.5% OF THE OVRALL LENGTH.

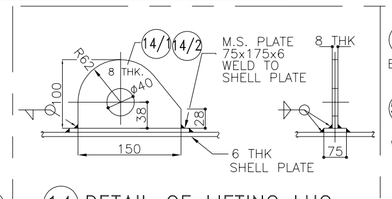
## NOZZLE/PIPE/FLANGE SCHEDULE

| Nozzle No. | Sr. No. | SIZE NB | NOZZLE CONNECTION | ØO.D | Thk | LENGTH | L1 | L2 | ØmXp–Nos@pitch | Sr. No. | ØD | thk | Ødxn–Nos | Øpcd | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PIPE DETAILS | | | | | | | FLANGE DETAILS | | | | |
| N7 | | 100NB | BLANK CONN. (SUBMERSIBLE PUMP) | | | | | | | 9 | 230 | 16 | 19.0x8 | 190 | WITH BLIND FLANGE |
| N6 | 11 | 50NB | VENT PIPE CONNECTION | 60.3 | 4.5 | | | | | | | | | | |
| N5 | 5 | 50NB | DIP / DRAIN PIPE ASSEMBLY FOR DRAWING OUT WATER REMOVE DIP–ROD & INSERT ø25 TUBING | 60.3 | 4.5 | 2250 | 155 | 235 | 12x10@200 | 5/3 | 150 | 16 | 19.0x4 | 120 | |
| N4 | 7 | 50NB | SUCTION PIPE ON TANK SHELL WITH 50NB ANGLE CHECK VALVE REFER DRG.No.CD/R–23 | 60.3 | 4.5 | 2050 | 125 | -- | --- | 5/3 | 150 | 16 | 19.0x4 | 120 | |
| N3 | 6 | 100NB | BLIND FLANGE FOR ATG | 114.3 | 5.4 | 2130 | 280 | -- | --- | 5/3 | 150 | 16 | 19.0x4 | 120 | |
| N2 | 4 | 100NB | TANK LORRY DISCHARGE/FILL PIPE | 114.3 | 5.4 | 2130 | 280 | -- | --- | 4/3 | 230 | 16 | 19.0x8 | 190 | BOTTOM WITH BEND & CUT ø45°/ BAFFLED |
| N1 | 3 | ID520ø | MANHOLE COVER ASSEMBLY | | | | | | | 3/1 | 662 | 10 | 17.5x24 | 612 | MANHOLE COVER |

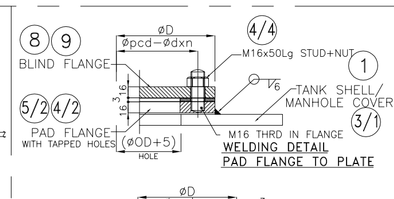
| NOS. | LIST OF FITTINGS – DESCRIPTION | MATERIAL | QTY. | SIZE | WT(kg) | 2764.2 |
|---|---|---|---|---|---|---|
| 17 | REDUCER (NOT IN FABRICATORS SCOPE OF SUPPLY) | M.S.–IS1239 | 1 | 80NBX100NB–"C" CLASS | -- | |
| 16 | FILL PIPE SPOOL–80NB (NOT IN FABRICATORS SCOPE OF SUPPLY) | M.S.–IS1239 | 1 | ø88.9odx4.8thk | -- | |
| 15 | STIFFENERS WELDED TO TANK END PLATES. | M.S.–IS2062 | 2 | L90X90X8–6000Lg(total) | | 129.6 |
| 14/2 | REINFORCEMENT PAD PLATE | M.S.–IS2062 | 1 | 75x175x6 thk | 0.6 | |
| 14/1 | LIFTING EYE | M.S.–IS2062 | 1 | 100x150x8 thk | 0.9 | |
| 14 | LIFTING EYE WELDED TO TANK INCL. REINFORCEMENT PLATE. | M.S. | 2 | | | 1.5X2=3.0 |
| 13/2 | CHANNEL | M.S.–IS2062 | 1 | ISMC 100X50–100 Lg | 0.9 | |
| 13/1 | PAD PLATE | M.S.–IS2062 | 1 | Sq.150x6 thk | 1.1 | |
| 13 | BRACKETS WELDED TO TANK SHELL FOR HOLDING DOWN BOLTS. | M.S. | 8 | | | 2.0X8=16.0 |
| 12/4 | PLAIN WASHER | BRASS | 2 | ø40odxø18idx3 thk | -- | |
| 12/3 | EARTHING BOSS | M.S–IS2062 | 1 | ø45X30 Lg | 0.4 | |
| 12/2 | EARTHING CONDUCTOR STRIP | G.I. | 1 | F40x5 thk–3000 Lg | 4.7 | |
| 12/1 | EARTHING PLATE | G.I. | 1 | Sq.300 x 5 thk | 3.5 | |
| 12 | EARTHING BOSS WITH STUD & NUT WELDED TO TANK SHELL. | M.S. | 2 | | | 6.6X2=13.2 |
| 11 | TEE SCREWED TYPE FOR 50NB VENT PIPE CONNECTION. | M.S. CLASS 'C' | 1 | 50NBx50NBx50NB | | 0.9 |
| 10 | ANGULAR CHECK VALVE SIZE 50 NB. (AS PER DRG. NO. CO.23) NOT IN FABRICATORS SCOPE OF SUPPLY | G.G. TYPE | 2 | 50NB | -- | |
| 9 | BLIND FLANGE–100NB, 150# | M.S.–IS2062 | 1 | ø230dx16thk | | 5.2 |
| | | | | | | |
| 7 | SUCTION PIPE ON TANK SHELL–50 NB | M.S.–IS1239 | 1 | ø60.3odX4.5thkx2050Lg | | 12.7 |
| 6 | BLIND FLANGE ON MANHOLE COVER–100 NB FOR ATG | M.S.–IS1239 | 1 | ø60.3odX4.5thkx2285Lg | | 14.2 |
| 5/17 | PIPE SPOOL–50NB | M.S–IS1239 | 1 | ø60.3odx4.5thkx190 Lg | 1.2 | |
| 5/16 | STOPPER RINGS | M.S | 2 | Sq.6 x200 Lg | 0.1 | |
| 5/15 | RIVET | M.S | 6 | ø5 x10 Lg | -- | |
| 5/14 | GI COLLAR | G.I | 1 | 20x250 Lgx2 thk | 0.1 | |
| 5/13 | GI CHAIN | G.I | 1 | 10gx150 Lg | -- | |
| 5/12 | BRASS RIVET | BRASS | 2 | ø5x32 Lg | -- | |
| 5/11 | DIP ROD | ALUMINIUM | 1 | Sq 12x2600 Lg | 1.0 | |
| 5/10 | CAP FOR DIP ROD | ALUMINIUM | 1 | ø55x55 Lg | 0.4 | |
| 5/9 | ADAPTOR | ALUMINIUM | 1 | ø80x80 Lg | 1.3 | |
| 5/8 | DATUM PLATE | M.S–IS2062 | 2 | 200X200X6thk | 3.8 | |
| 5/7 | RING WASHER | NEOPRENE RUBBER | 1 | ø75odix ø60idx3thk | -- | |
| 5/6 | EYE PIECE | ALUM. (CAST) | 2 | 30x15x5thk | -- | |
| 5/5 | DIP CAP | ALUM. (CAST) | 1 | ø90dia.x70thk | 1.4 | |
| 5/4 | GASKET PACKING | CAF | 4 | ø150odcø60idx3thk | -- | |
| 5/3 | SORF FLANGE–50NB, 150# | M.S.–IS2062 | 3 | ø150odxø63idx16thk | 6.7 | |
| | | | | | | |
| 5/1 | DIP PIPE–50NB | M.S.–IS1239 | 1 | ø60.3odX4.5thkx2250Lg | 14.0 | |
| 5 | DIP / DRAIN PIPE WITH CAP,DIP ROD,ADAPTOR etc | M.S./ALUM | 1 | 50NB | | 40.0 |
| 4/10 | BEND 100NB–SHORT RADIUS | M.S.–IS1239 | 1 | ø114.3odX5.4thk R=1.5d | 3.5 | |
| 4/9 | SPLICED 100NB PIPE | M.S.–IS1239 | 1 | ø114.3odX5.4thkx225Lg | 3.2 | |
| 4/8 | BAFFLE PLATE | M.S–IS2062 | 1 | 6thkx110x155 | 0.8 | |
| 4/7 | STRAPS | M.S–IS2062 | 4 | 6thkx25WIDEx125Lg | 0.6 | |
| 4/6 | FILL CAP | ALUM. (CAST) | 1 | HEX.ø90dia.x40thk | 0.8 | |
| 4/5 | GASKET PACKING | CAF | 2 | ø230odcø120idx3thk | -- | |
| 4/4 | STUDS & NUTS | M.S.–IS1367 | 34 | M16X50Lg | 6.8 | |
| 4/3 | SLIP–ON FLANGE–100NB, 150# | M.S.–IS2062 | 1 | ø230odxø117idx16thk | 5.2 | |
| 4/2 | PAD FLANGE–100NB, 150# | M.S.–IS2062 | 2 | ø230odxø120idx16thk | 10.4 | |
| 4/1 | FILL PIPE–100NB | M.S.–IS1239 | 1 | ø114.3odX5.4thkx2130Lg | 30.7 | |
| 4 | TANK LORRY DISCHARGE PIPE/FILL PIPE INCLUDING FILL CAP | M.S.–IS1239 | 1 | 100NB | | 62.0 |
| 3/5 | GASKET PACKING | CAF | 1 | ø662odcø520idx3thk | -- | |
| 3/4 | HEX.BOLTS & NUTS | M.S.–IS1367 | 24 | M16X50Lg | 4.8 | |
| 3/3 | MANHOLE NECK | M.S.–IS2062 | 1 | 165x1653x6thk | 12.8 | |
| 3/2 | MANHOLE FLANGE | M.S.–IS2062 | 1 | ø662odxø532idx8thk | 21.6 | |
| 3/1 | MANHOLE COVER | M.S.–IS2062 | 1 | ø662x10thk | 27.0 | |
| 3 | MANHOLE COVER WITH NECK & COVER PLATE/PAD/STUDS/NUTS | M.S.–IS2062 | 1 | ø520 | | 66.2 |
| 2 | TANK END PLATES 8 MM. THK. | M.S.–IS2062 | 2 | ø2000 | | 396.0 |
| 1 | TANK SHELL PLATES 6 MM. THK. | M.S.–IS2062 | 4<br>1 | 1500x6300<br>750x6300 | | 2003.0 |

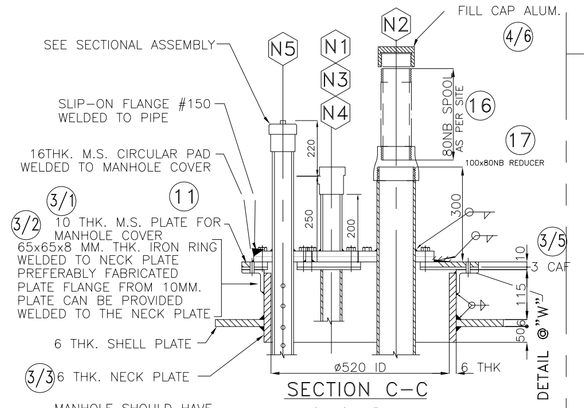


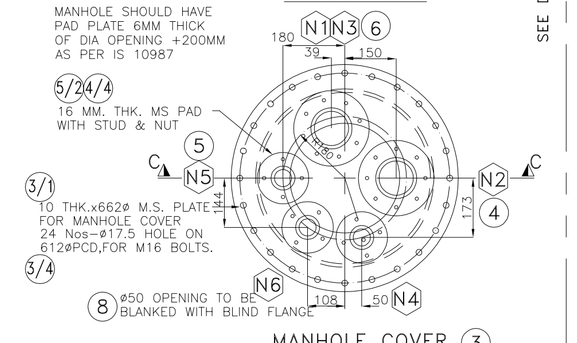

FILL PIPE CAP 4/6



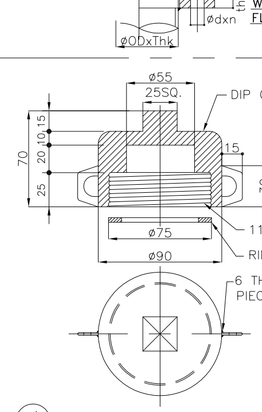

14 DETAIL OF LIFTING LUG

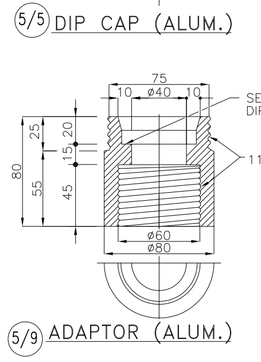


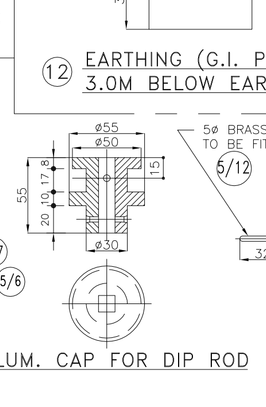



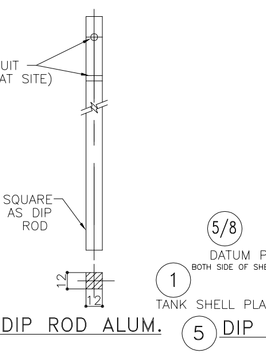




NOTE:–
MATCH MARKING – MANHOLE COVER PLATE & MANHOLE FLANGE TO BE SUITABLY MATCH MARKED FOR CENTERING DIP PIPE OVER BACK–UP PLATE

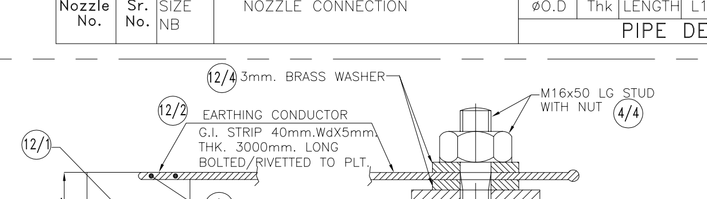


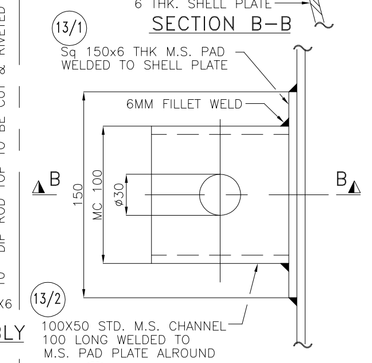



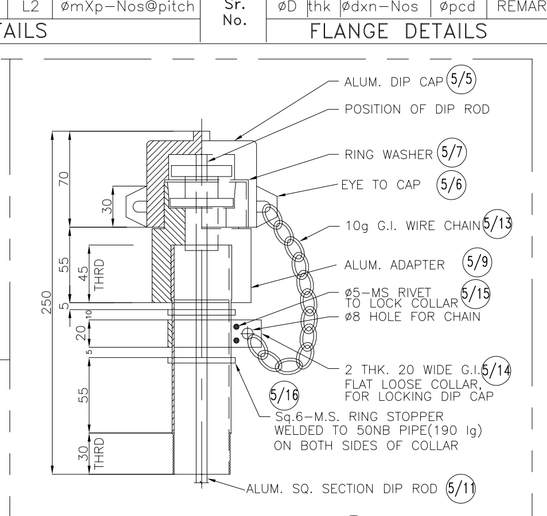



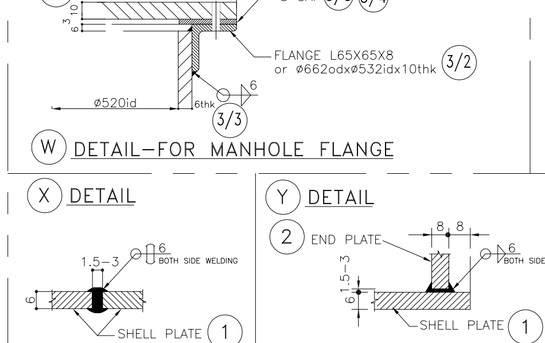




DETAILS OF DIP/VENT/DRAIN PIPE FITTINGS







TYPICAL WELDING DETAILS

## TANK DIMENSIONS

| | |
|---|---|
| CAPACITY | 20KL |
| INSIDE DIAMETER (mm) | 2000 |
| SHELL I/S LENGTH(mm) | 6718 |
| SHELL LENGTH (mm) | 6750 |
| TANK VOLUMETRIC CAP. | 21.1cub.mtr |
| TANK VAPOUR CAPACITY | 5% |
| SHELL PLATE DEV.(mm) | 6300 |
| END PLATE DIA. (mm) | 2000 |

## NOTES:

- DESIGN & CONSTRUCTION CODE : IS 10987 –1992
- TANK MATERIAL : ALL STEEL PLATES, STRUCTURAL STEEL TO CONFIRM TO I.S 2062
- TESTING : TANK AFTER FABRICATION WITH MANHOLE COVER & FITTINGS TO BE TESTED TO HYDRAULIC PRESSURE OF 0.50 KG. PER SQ. CM. WELD JOINTS TO BE HAMMER TESTED
- SHOP COAT : TANKS TO BE SCRAPED WITH WIRE BRUSH & CLEANED INTERNALLY & GIVEN A SHOP COAT OF RED LEAD PRIMER OF APPROVED QUALITY TO OUTER SURFACE.
- PIPES : SUCTION, VENT/DIP, FILL PIPES SHOULD BE M.S CLASS 'C' (IS1239)
- CRATING : ALUM. DIP ROD, FILL PIPE CAP FITTINGS, TO BE PACKED IN WOODEN BOX & LIST OF THESE ITEMS TO ACCOMPANY EACH TANK.
- "L" WELD SEAM : TO BE PROVIDED ON TOP HALF OF THE TANK.

NOTES:
ALL DIMENSIONS ARE IN MM.
DRAWING APPROVED BY CCOE NAGPUR VIDE LETTER NO. P–6 (5) 82 DTD 24–01–2000

BHARAT PETROLEUM CORPN. LTD.

SUBJECT : RETAIL OUTLET FACILITIES

FABRICATION DETAILS OF 20,000 LITRES CAPACITY CYLINDRICAL TANK FOR UNDER GROUND INSTALLATION

| REVISION DRG. NO. | DATE | ZONE OR PART | BRIEF RECORD | INITIALS |
|---|---|---|---|---|
| REVISIONS | | | | |

SCALE : 1:25 | DRAWN: REDCO | TRACED | CHECKED
DATE : 20/12/99 | SR. MGR. (DESIGN & DEVP.)

DATE | DRAWING NO.
NUMBERS CROSSED OUT SUPERCEDED DRWGS.
DRAWING NO : RE. DRG. 003