**T E N D E R  S P E C I F I C A T I O N**

# NO: BHE/PW/PUR/DHJOP-FENCING/1586

**JOB:** Providing fencing at Naphtha/HSD tank & FOPH area for safety & statuary clearance at 2X30MW STG + 4GTG WITH HRSG + 2 UB AT **OPAL, DAHEJ- BHARUCH, GUJARAT**

# VOLUME – IE

# Technical Specification & Drawing

**Bharat Heavy Electricals Limited**
(*A Government of India Undertaking*)
Power Sector - Western Region
345-Kingsway, Nagpur-440001

**T E N D E R  S P E C I F I C A T I O N**

# NO: BHE/PW/PUR/DHJOP-FENCING/1586

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EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR TENDER SUBMISSION: Refer Notice Inviting Tender

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s. ……

…….

PLEASE NOTE:
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)
Place: Nagpur
Date

coming in contact with the liquid shall be designed according to IS:456 except ribs of beams of suspended floor slabs & counter forts of walls (located on the side remote from the liquid) and roof which shall be designed as uncracked section. No increase in permissible stresses in concrete and reinforcement shall be made under wind or seismic conditions for such structures.

e) The walls and base slabs of liquid retaining/storage structures shall be provided with reinforcement on both faces for thickness greater than or equal to 150mm. In all liquid retaining structures, PVC water bars (minimum size 230mm wide, 5mm thick) shall be provided at each construction joint.

f) Hot/cold water basin and other primary framing members of Cooling towers or similar liquid retaining structures which remain constantly in contact with water (stored/sprayed) shall be designed as uncracked sections.

## 8.2 REINFORCEMENT BARS

High Strength Deformed TMT steel bars of grade Fe 500 (with corrosion inhibitors in concrete) conforming to IS: 1786 shall be used for all structures.

## 8.3 CONCRETE

Minimum grade of reinforced cement concrete to be used for different structures and foundations shall be **M30**. From Durability considerations the minimum cement content and maximum water-cement ratio shall be as under. However, the maximum cement content shall not exceed 450 kg/m$^3$.

**For all stations/terminals**

| Type of cement | Plain concrete (M20) | | Reinforced concrete (M30) | | Exposure Condition |
|---|---|---|---|---|---|
| | Minimum cement content (kg/m$^3$) | Maximum water-cement ratio | Minimum cement content (kg/m$^3$) | Maximum water-cement ratio | |
| **OPC/Fly ash based PPC/SRC(*)** | 250 | 0.50 | 320 | 0.45 | **Severe** |

OPC: Ordinary Portland cement, PPC: Portland Pozzalana Cement

*SRC: Sulphate Resistant Cement (if required as per soil recommendation for respective site)

**75mm thick** lean concrete of grade 1:5:10 shall be provided under all RCC foundations except under base slab of liquid retaining structures where **100 thick** concrete of mix 1:3:6 shall be used. The lean concrete shall extend **50mm** beyond the foundation for normal foundations and **75mm** under liquid retaining structures.

Approved quality primer and paint in specified numbers of coats shall be applied as per manufacturer's recommendations either by brushing or spraying. Each subsequent coat shall be applied only after the preceding coat has dried.

### 3.6.7 Waterproof Cement Paint

The surface shall be thoroughly cleaned of all dirt, dust, mortar dropping and other foreign matter before paint is to be applied. Surfaces already white/colour washed shall be broomed down to remove all dust, dirt, loose scales of lime wash or other foreign matters.

Scaffolding, Preparation of Surface shall be same as white wash. The surface so prepared shall be thoroughly wetted with clean water before the paint is applied.

Waterproof cement paint of approved make shall be mixed with water and stirred to obtain a thick paste, which shall then be diluted to brushable consistency. The proportion of mixture shall be as per manufacturer's recommendation. The paint shall be mixed in such quantity, which can be used up within an hour of mixing to avoid setting and thickening of the paint.

The surface shall be treated with minimum two coats of waterproof cement paint. No less than 24 hours shall be allowed between two coats and subsequent coats shall be applied only after the preceding coat has become hard to resist marking by subsequent brushing. The finished surface shall be even and uniform in shade without patches, brush marks, paint drops etc. Cement paints shall be applied with a brush with relatively short stiff hog or fibre bristles.

Curing shall be started after the paint has hardened. Curing shall be done by sprinkling with water two or three times a day. This shall be done between coats and for at least two days following the final coat.

Surfaces of doors, windows, floors etc. shall be protected from being splashed upon. Such surfaces shall be cleaned of paint splashes.

### 3.6.8 Acrylic Copolymer Aggregate Finish

Material :

Material shall be acrylic based textured wall coating consisting of quartz and silica aggregate, inorganic pigment and other additives to form a crack-free, flexible, tough, waterproof coating.

Preparation of Surface :

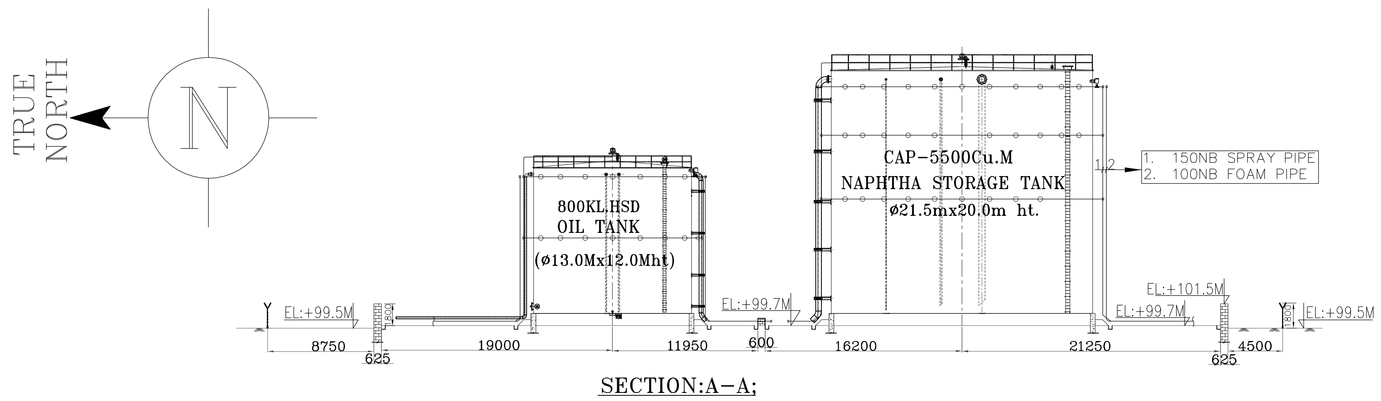
The surface to be coated shall be cleaned and all dirt, dust, grease and loose particles shall removed. Any old textured surface shall be removed with removing agent as per manufactures instructions.

Application :

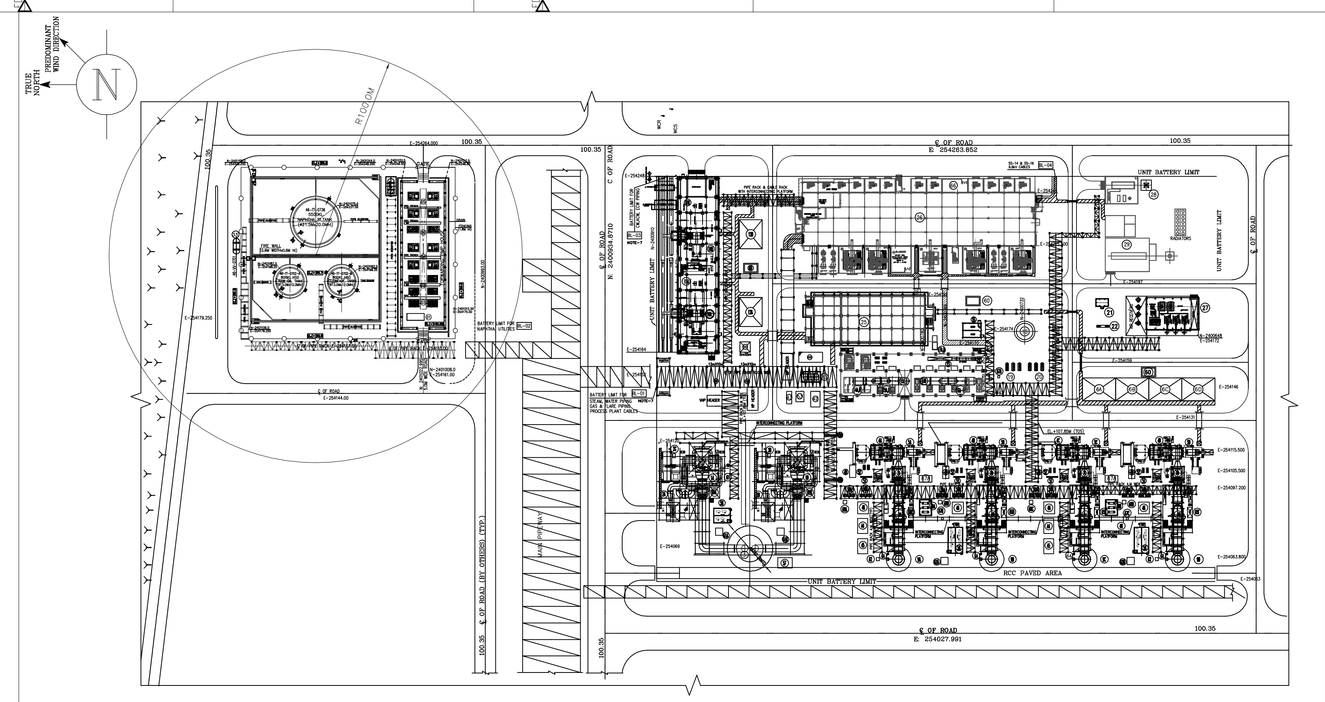
Bonding agent and water shall be mixed first. Then flakes/ granules shall be added and mixed thoroughly and kneaded till no lumps are found. The dough shall be left for 20-30 minutes before starting application. The bonding agent, flakes/ granules and water shall be mixed in different ratio for different finishes as per manufacture's specifications.

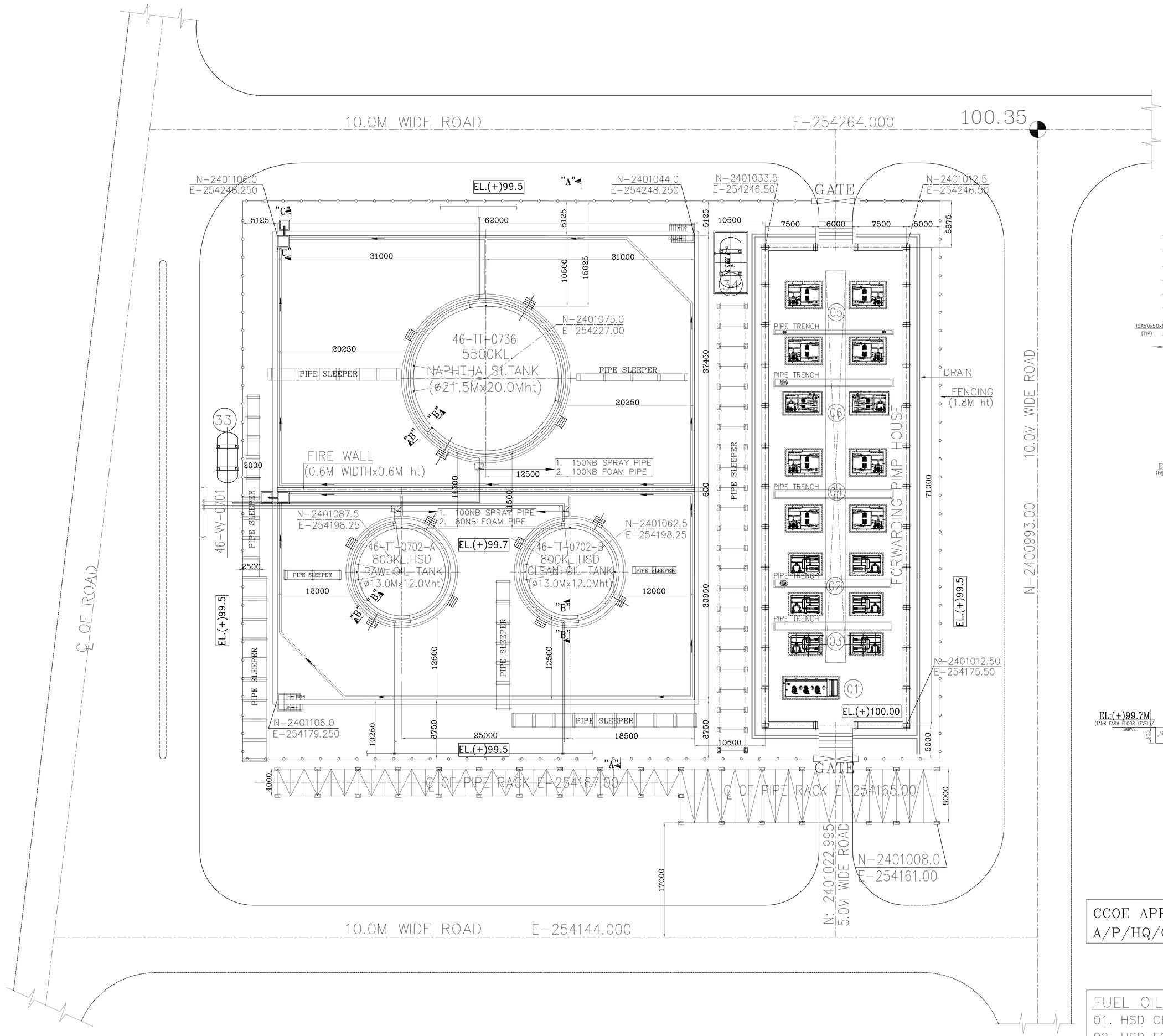
The first application shall be steel trowel. It shall be smoothened, if the specified finish requires, by a plastic trowel.

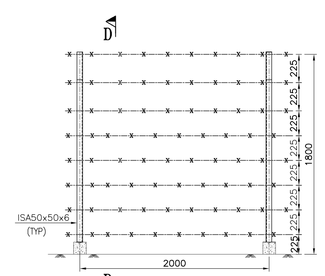
| S.NO. | DESCRIPTION | DETAILS |
|---|---|---|
| 1. | PLOT / KHASRA NO | Z1 AND Z83 |
| 2. | NEAREST POLICE STATION | BHARUCH, 50KM FROM SITE |
| 3. | PLANT LOCATION | OPAL – DAHEJ, GUJARAT. |
| 4. | NEAREST RAILWAY STATION | BHARUCH |
| 5. | NEAREST AIRPORT | BARODA |
| 6. | NEAREST TOWN | BHARUCH |
| 7. | NEAREST VILLAGE | DAHEJ |



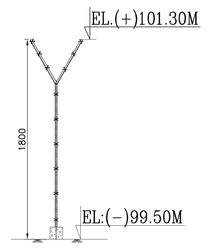

SECTION:A–A;




FENCING DETAILS

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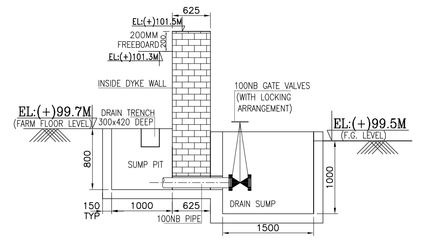
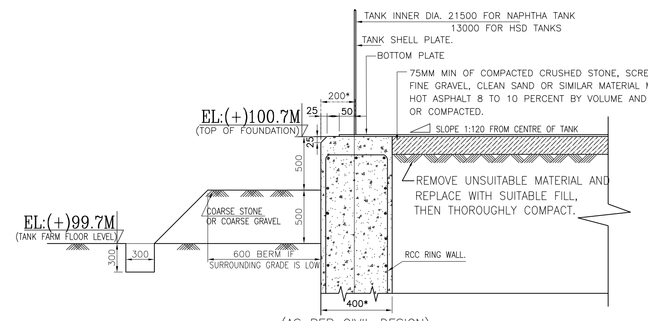



SECTION : C–C;
(SCALE :1:5)




(AS PER CIVIL DESIGN)

SECTION:B–B;
(SCALE :NTS)

| DYKE WALL HEIGHT CALCULATION FOR STORAGE TANK FARM AREA. | |
|---|---|
| DYKE AREA | = 62.00Mx69.00M = 4278 SqM |
| DYKE WALL HEIGHT (INSIDE) | = 1.800 M (INCLUDING FREE BOARD) |
| DYKE WALL HEIGHT(EXCLUDING FREE BOARD) | = 1.800 M –0.2 M =1.6 M. |
| DYKE VOLUME | = 4278x1.600 = 6844.8CuM. |
| NAPHTHA TANK FOUNDATION VOLUME | = 407.059CuM x 1 = 407.059 CuM. |
| HSD TANK FOUNDATIONS VOLUME | = 160.052 CuM x 2 = 320.104 CuM. |
| FIRE WALL VOLUME | = 22.32 CuM x 1 = 22.32 CuM. |
| HSD TANKS VOLUME UP TO DYKE HT. | = 106.185 x 2 = 212.37 CuM. |
| TOTAL DEDUCTION VOLUME | = 407.059+320.104+22.32+212.37=961.853CuM. |
| NET VOLUME | = 6844.8–961.853 = 5882.947 CuM. |
| VOLUME OF BIGGEST TANK | = 5500KL. |

AS PER THE OISD CL 7.1.1(b)THE VOLUME OCCUPIED BY THE DYKE SHOULD BE EQUAL TO THE CAPACITY OF LARGER TANK. HENCE THE DYKE HEIGHT OF 1.8MTR IS SUFFICIENT.

| | SCHEDULE OF TANKS | TANK | TANK |
|---|---|---|---|
| 01 | FLUID STORED. | HSD (STORAGE) | NAPHTHA (STORAGE) |
| 02 | CLASS OF PETROLEUM | B | A |
| 03 | FLASH POINT | 35°C | 23°C < |
| 04 | SPECIFIC GRAVITY | 0.95 | 0.85 |
| 05 | TANK VOLUME IN KL. | 800 | 5500 |
| 06 | TANK DIA IN MTR. | 13.0 | 21.5 |
| 07 | TANK HEIGHT IN MTR. | 12.0 | 20.0 |
| 08 | FOUNDATION HEIGHT IN MTR.(ABOVE TANK FARM FL) | 1.0 | 1.0 |
| 09 | NO OF TANKS | 1+1 | 1 |

NOTE: –

1. ALL DIMENSIONS ARE IN MM AND ALL ELEVATIONS ARE IN METER UNLESS NOTED OTHERWISE.
2. THE ENTIRE FUEL OIL UNLOADING AND,STORAGE FACILITIES ARE DESIGNED IN ACCORDANCE WITH THE PETROLEUM RULES 2004 AND THE STIPULATIONS OF O.I.S.D.118.
3. ENTIRE PETROLEUM STORAGE FACILITY IS FENCED.
4. OPENINGS IN DYKE WALL SHALL BE SEALED WITH PCC AFTER THE HYDRO TEST OF PIPING IS COMPLETED.
5. THE SUMP VALVE IN DYKE AREA SHALL ALWAYS BE IN CLOSED POSITION.
6. TWO NOS. OF SIGN BOARDS ON EACH END OF THE ENTRY GATES SHALL BE PROVIDED IN ENGLISH & LOCAL LANGUAGE SAYING "ENTRY RESTRICTED"&"NO SMOKING".
8. ALL THE FOEWARDING PUMPS SHALL BE PROVIDED WITH FLAME PROOF ELECTRIC MOTORS CONFIRMING TO IS 2148.
9. ALL VALVES FOR OIL SERVICE ARE OF CARBON STEEL BODY AND FIRE SAFE DESIGN.
10. NO H.T. ELECTRICAL WIRE SHALL PASS ABOVE THE TANK LOCATION.
11. TRENCH / DRAINS SHALL BE RCC CONSTRUCTION.
12. ALL ELEVATIONS MARKED ARE W.R.T TO TG BUILDING FFL EL ± 0.00 M. WHICH CORRESPONDS TO RL --- M.
13. ALL THE FIRE SYSTEM REQUIREMENTS FOR THIS ENTIRE AREA SHALL BE AS PER APPROVAL DRAWING/CALCULATIONS.
14. THE PIPING & SUPPORT DETAILS SHALL BE COVERED IN RESPECTIVE AREA PIPING–LAYOUT WITH ALL VIEWS .

CCOE APPROVED REF. NO:
A/P/HQ/GJ/15/5575 (P307686), DATED 21.12.2012

FUEL OIL FORWARDING PUMP HOUSE

01. HSD CENTRIFUGE SKID – 3.0Mwx8.0Mlg
02. HSD FORWARDING SKID TO GTs – 2.5Mwx4.0Mlg
03. HSD FORWARDING SKID TO HRSGs – 2.5Mwx4.0Mlg
04. NAPHTHA FORWARDING SKID TO GTs – 3.5Mwx4.5Mlg
05. NAPHTHA FORWARDING SKID TO HRSGs – 3.5Mwx4.5Mlg
06. NAPHTHA FORWARDING SKID TO UBs – 3.5Mwx4.5Mlg

OPaL

**ONGC PETRO-ADDITIONS LIMITED,**
PLOT NO. Z–1 AND Z–83, DAHEJ SPECIAL ECONOMIC ZONE, DAHEJ, DIST. BHARUCH, GUJARAT.

PROJECT:
DAHEJ PETROCHEMICAL COMPLEX
STEAM & POWER GENERATION SYSTEM

TITLE:
PETROLEUM CLASS 'A & B' INSTALLATION OF NAPTHA– 1X5500KL & HSD – 2X800KL

| | NAME | SIGN | DATE |
|---|---|---|---|
| Designed By | KRISHNA | | 02.08.12 |
| Drawn By | M.U.Rao | | 02.08.12 |
| Checked By | KRISHNA | | 03.08.12 |
| Approved By | GOPI | | 03.08.12 |

DEPT. SIGN DATE SCALE

DRAWING NO. TSPL–P204–GAD–206

SHEET : 1 OF 1 REV : 00