

 PROJECTS & DEVELOPMENT INDIA LTD	EM150-TS-405	0	
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AEGIS LOGISTICS LIMITED

Unit No. 1202, 12th floor, Tower B, Peninsula Business Park,
G.K. Marg, Lower Parel (West), Mumbai - 400013

NOTICE INVITING TENDERS / BIDS

Tender Number: TD/ALL/TANK/H2

Date: 25/02/2016

Aegis Logistics Limited invites the tenders for tank construction at Haldia (W.B.) as the details given below:



INTRODUCTION

ALL is India's leading Logistics Company engaged extensively in Liquefied Petroleum Gases (LPG), Liquid POL products, Petrochemicals and Chemicals, serving the Oil, Petrochemical and Gas Industry since 1977. The registered office of the Company is at Unit No. 1202, 12th floor, Tower B, Peninsula Business Park, G. K. Marg, Lower Parel (West), Mumbai 400 013. Aegis Logistics Limited is a listed public limited company and a leading Logistics Company in India.

ALL is India's leading Logistics Company engaged extensively in Liquefied Petroleum Gases (LPG), Liquid POL products, Petrochemicals and Chemicals, serving the Oil, Petrochemical and Gas Industry since 1977. Aegis group owns / operates India's largest Integrated bulk Liquid cum LPG Terminal in the port of Mumbai and also the largest private bulk Liquid Terminal at Kochi port, Liquid and pressurized LPG Storage Terminal at Pipavav Port, Liquid Bulk Storage Terminal at Haldia and a LPG Bottling / Blending Unit at Kheda, Gujarat.

The Group aims to create 'necklace' of similar port terminals around the coastline of India. It has firmed up plans to put up new/additional storage capacity at Pipavav, Kochi and Haldia during the next 18-24 months at an investment exceeding INR 4,000 million.

0	05.02.16	05.02.16	ISSUED FOR ENQUIRY	PK	NB	SM
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

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ELIGIBILITY CRITERIA FOR TENDERER



The tenderer shall meet all the following conditions for qualifying for the job of construction of Tanks

1. The tenderer should have fabricated, supplied, erected, tested and commissioned cryogenic storage tanks as per API 620 of similar capacities in terms of dimensions and MOC.
2. Should have completed at least 1 project of similar size

OR

Should have completed 3 projects of 50% size of bidding project

3. Average Annual Financial Turnover during the last 3 years, ending 31st March, of the previous financial year should be at least 200% of Bid value. Bidders are required to submit the audited balance sheets, profit & loss statements for the last 3 financial years.
4. Bidder shall furnish documentary evidence i.e. copies of work orders/relevant pages of contract, completion certificate or certified final bill from their clients, annual reports containing audited balance sheets and profit & loss accounts statement, in the first instance itself, in support of their fulfilling the qualification criteria. ALL reserve the right to complete the evaluation based on the details furnished without seeking any additional information.
5. Parties who are affiliates of one another can decide which Affiliate will make a bid. Only one affiliate may submit a bid. Two or more affiliates are not permitted to make separate bids directly or indirectly. If 2 or more affiliates submit a bid, then any one or all of them are liable for disqualification.
6. Aberrance to the above can be defined based on agreed scope and the same can be discussed and mutually agreed during pre-bid meeting.

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Sealed item rate tender for tank construction at Haldia (W.B.) at Aegis Logistics Limited (ALL)

Bid submission Address	Project Location
President – Projects and Operations Aegis Logistics Limited C/O Sealord Containers Limited Ambapada, Mahul Village, Trombay Near BPCL Refinery Main Gate, Chembur Mumbai - 400 074, Maharashtra.	Aegis Logistics Limited Industrial Zone of HDC, Jagatchak, JL-140, Barakumar chak, JL-138, PS Durga chak, Haldia – 721604 West Bengal.

On behalf of: (Corporate Address)

Aegis Logistics Limited

1202, Tower B, Peninsula Business Park,

G. K. Marg, Lower Parel (West) Mumbai-400013 Maharashtra.



The company reserves the right:

1. To accept or reject any / all tender(s) / Bid(s) without assigning any reason.
2. To place an order on one or more Bidders. Even individual Part can be considered for placing on multiple Bidders.
3. To split and / or combine quantum of purchase at its own discretion.
4. The company will not entertain any affiliated / associated bids.



The bid shall be submitted in Sealed envelopes or vide e-bid. The last date for submission of complete tender shall be **15.03.2016** by 1700 hours. The sealed bids shall be sent to above mentioned Bid Submission Address, in the proper format before the closing date. E-bids shall be addressed to eprocurementh2@aegisindia.com. Bidder has to adhere to the closing date in the Tender.

In case of any queries or clarification pertaining to tender document or clauses, the bidders are requested to write the same as per correspondence clause in the general Conditions of Tender.

Bidders are requested to send in their pre bid queries by **01.03.2016** on the Email id above.



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The pre bid meeting, if required shall be arranged. The confirmation of pre bid meeting will be uploaded on the website www.aegisindia.com or will be conveyed to you in advance through mail. The Minutes of Pre bid meeting shall be posted on the website or by email within 2 days of the meeting.

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MASTER INDEX

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2	PART 2	
	SECTION A	GENERAL CONDITIONS OF TENDER
	SECTION B	SCHEDULE OF RATES FOR FABRICATION & ERECTION TANKS
	SECTION C	SPECIAL CONDITIONS OF TENDER
	SECTION D	OTHER SPECIAL CONDITION OF THE TENDER
3	DRAWINGS AND DOCUMENTS	

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Fabrication / Construction, Installation, Testing and providing Commissioning assistance for LPG Cryogenic Storage above ground Tanks at Haldia (W.B.) along with associated facilities designed as per API 620 Code (latest edition)

Summary of Tanks				
Sr. No.	MOC	No. of tanks	Total Capacity	Unit
1	LTCS	2	12500	MT

The scope is detailed in Scope Matrix in Annexure I

Note -

1. The quantities in the tender are estimated and hence likely to vary to any extent in either direction
2. The frame of Contract shall be Rate Contract.
3. The rates quoted shall not be subjected to any escalation during the tenure of project for any reason whatsoever.
4. The Unit of Measurement shall not be considered to be amended for bidding / Contractual stages.

The last date for submission of tender in the given format (Refer Annex - I) through e-mail at eprocurement2@aegisindia.com is on or before 15.03.2016.



Project Location

The project shall be executed at the following location:

Aegis Logistics Limited
Industrial Zone of HDC,
Jagatchak, JL-140,
Barakumar chak,
JL-138, PS Durga chak,
Haldia - 721604 W.B.

The company reserves the right:



1. To accept or reject any / all tender(s) / Bid(s) without assigning any reason.
2. To place an order on one or more vendors.
3. To split and / or combine quantum of purchase at its own discretion.
4. The company will not entertain any affiliated / associated bids.

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**TENDER FOR FABRICATION AND ERECTION OF PROPANE
/ BUTANE STORAGE TANKS (T-201/202) AT HALDIA (W.B.)**



PART 1
SCOPE OF WORK & TECHNICAL SPECIFICATION
(DOC: EM150-TS-405)

LOCATION - HALDIA

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LIST OF ATTACHMENTS

SN	DESCRIPTION	DOCUMENT NO.
1.	PDIL Tank Specification document (5 Sheets)	EM150-DD5611-T-201/202 Rev. 3
2.	Documentation Schedule	EM150-PNMV-TS-405-DOC
3.	List of Deviation	EM150-PNMV-TS-405-D1
4.	Waiver / Deviation / Concession	EM150-PNMV-TS-405-W1
5.	General Arrangements Drawing of PROPANE / BUTANE Storage Tanks Drawing. (2 Sheets)	3190-CT-LPG-D-101-03 Rev. 5
6.	Nozzle orientations Drawing	EM150-9511-1401_R3
7.	Platform position Drawing Document	EM150-9511-1402_R4
8.	Support Cleat for fire fighting on Roof Document	EM150-9511-1403_R1
9.	Standard for Platform, Ladder & Hand Rail Doc.	EM150-0000-208
10.	Standard for grating Document	PDS-ST-105
11.	Nozzle details (for reference only)	817 - T0 - 1950
12.	Break up of Indicative BOQ for plates & anchorage, Flanges, Pipes, Gaskets and structural materials.	EM150-TS-BOQ

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1.0 Introduction



M/s AEGIS Logistics Limited, Mumbai intends to install 2 Nos. of 12500 MT each LPG Cryogenic Storage Tanks above ground at Haldia (W.B.) along with associated facilities. The tanks are double wall full containment, Cup in Tank, with a dome roof having insulated suspended deck type.

2.0 Scope of work

Bidder's scope includes procurement & supply of all materials (except free issue of ASTM SA 537 Cl. 1 material of plates for tanks & ASTM SA 240 GR 304 for anchor straps by M/s AEGIS Logistics Limited - Owner) and bought-out items, Loading & Unloading of all materials and bought - out items (including free issue materials), transportation, handling & storage at project site, fabrication, installation & erection of 2 Nos. of Cryogenic Storage Tanks (Capacity 12500 MT) on foundations at project site, Haldia (W.B.), inclusive of all fittings, appurtenances and other attachments like staircases/ladders/platforms & firefighting support pads and sub-assemblies, mounting of pumps and instruments etc., whatsoever required, inspection & NDT, Hydro/ Hydro-Pneumatic testing, painting, calibration & commissioning, obtaining approvals handing over of tanks in accordance with the applicable equipment specification /Codes/ Standards , Drawings & documents enclosed with tender. The detailed fabrications drawings shall be provided by the Owner to the successful bidder.

The Cryogenic Storage tanks have been designed as per API 620 code (latest Edition). The storage tanks are to be fabricated, installed & erected by the Bidder on the foundations (to be provided by others). The supply and application of insulation is excluded from Bidder's scope.



The Bidder's scope of work is defined in general and shall include all other items/works required to complete the job in all respects whether specifically mentioned or not in the tender documents.

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S. No.	Item Code	Description	Quantity
1.	T-201/202	<p>PROPANE/BUTANE STORAGE TANK:</p> <p>i) PDIL Tank Specification Document No. EM150-DD5611-T-201/202 Rev. 3 (5 Sheets)</p> <p>ii) General Arrangements Drawing of PROPANE/BUTANE Storage Tanks Drg. No. 3190-CT-LPG-D-101-03 Rev. 5 (2 Sheets)</p> <p>iii) Nozzle orientations Drawing Doc. No. EM150-9511-1401_R3.</p> <p>iv) Platform position Drawing Doc. No. EM150-9511-1402_R4.</p> <p>v) Support Cleat for fire fighting on Roof Doc. No: EM150-9511-1403_R1.</p> <p>vi) Standard for Platform, Ladder & Hand Rail Doc. No. EM150-0000-208</p> <p>vii) Standard for grating Doc. No. PDS-ST-105</p> <p>viii) Break up of Indicative BOQ for plates & anchorage, Flanges, Pipes, Gaskets and structural</p>	2Nos (Two)

Remarks:

1. Any document referred in the tender gets revised with minor changes shall be forwarded to Bidder for compliance.
2. Detailed fabrication drawings shall be supplied by Owner.

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3.0 Technical Requirements

3.1 The design of Cryogenic storage tanks has been carried out as per API 620 Code (latest edition). The thicknesses and size of major components, roof support structure, suspended deck/hangers, anchor strap details etc. are indicated in the various documents enclosed/referred with the tender. The detailed fabrication drawings shall be provided to the successful Bidder by Owner.



3.2 Bidder shall submit Complete write up along with necessary procedures for site fabrication, erection and installation scheme including testing and commissioning etc. as required. The bidder shall develop the details of welding joints, location of weld seams joints, welding procedures, specification of all electrodes, detailed NDT requirements, Hydrostatic/hydro-pneumatics/ pneumatic testing details, general & construction requirements etc. The approval on the same shall be taken by the bidder from the concerned site in charge/Owner's representative.

3.3 After receipt of approval on the various procedures/drawings/ documents required as per documentation schedule Document No. EM150-TS-DOC-405 attached with tender, any changes/comments made on such submission to meet the requirements of specifications, codes/standards & tender documents shall have to be incorporated by the Bidder without any commercial implications to Owner. Review and approval of various procedures/drawings/ documents by concerned site in charge/Owner's representative shall in no way relieve the Bidder from his responsibilities for the subject work of cryogenic tanks w.r.t contractual tender documents.

3.4 Procurement of all raw materials & bought-out items (except free issue of plates materials) like nozzle pipes & flanges, internal pipes & flanges, mountings of pumps and instrumentation , structural, fasteners such as bolts, nuts, gaskets, washers, anchor straps, consumables like welding electrodes, fillers, wires including spares etc., whatsoever required during supply, fabrication, installation & erection to complete the job as per tender requirements shall be supplied by the Bidder , Any materials/items /work not specifically mentioned but required for completion of work shall also be under the Bidder's scope. Costs of all such materials/items /work shall be considered by Bidder while quoting.

3.5 Materials indicated in tender are recommended for the required Service conditions. All such materials (except free issue plate materials) must be procured with proper Test Certificates.

3.6 Unless otherwise specified, removable internal parts shall be fabricated such that they can be installed through the nearest manhole or opening. Bolts and nuts for fixing internals shall be SS316 and minimum size of bolt shall be M10. All internal bolts shall be provided with locking nuts.

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3.7 Bidder shall provide Quality assurance plan for the job, WPS/PQR, erection sequence drawings, site erection procedure, NDT, hydro-pneumatic test procedure etc. for PDIL/Owner's approvals.

3.8 Bidder shall provide adequate lifting arrangement of prefabricated items for safe Handling.

3.9 All necessary cleats/pads/members etc. for piping support, firefighting, structural and earthing etc. shall be provided on the tanks as per tender documents.

3.10 Bidder to arrange and supply the required competent man power (skilled/unskilled), machinery, tools, tackles, equipment, Bending and cutting machines, scaffolding, cranes, including all special tools and test equipment, consumables such as electrodes filler wire, acetylene, grease oil, gases and other non - consumables items etc. whatsoever required to execute the work at Bidder's own cost.

3.11 Due records will be maintained by Bidder throughout the work period as per instructions of site in-Charge/RCM/Owner's representative.

3.12 Monthly/weekly Execution Plans will be developed by Bidder in consultation with site in-Charge/RCM/Owner's representative & execution of work as per these plans and Scheduling & Monitoring of awarded work will be the sole responsibility of Bidder.

3.13 Bidder shall arrange all necessary facilities required for developing fabrication yard with barricading nearby the plant. However, Bidder to refer commercial part of tender for the various facilities to be provided by Owner like construction power, construction water and water/air for hydro/hydro-pneumatic test etc.



4.0 Fabrication/Erection

4.1 The Bidder shall comply in all respects with the provision of the applicable codes, standards and specifications w.r.t tolerances, welding, fabrication, radiography, heat treatment, inspection, testing and quality control etc.

4.2 The fabrication and welding of the tanks shall generally conform to latest edition of API 620 code of practice and to the provisions in the Tender document.

4.3 Quality of the work is of prime consideration. All cutting, shaping, strengthening, straightening, making smooth & straight edges, rolling, making grooves for welding etc., including fabrication, erection and other works shall be carried out to the satisfaction of site In-Charge/RCM/Owner's representative.

4.4 Shell plates shall be rolled to suit the curvature of the tanks.

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4.5 Prefabricated parts shall be tagged to ensure proper assembly on site.

4.6 All welding jobs shall be carried out by qualified welders using welding procedures that has already been qualified to the requirement of code and specifications etc. and approved by the authorised inspection authority before starting any fabrication job.

4.7 Bidder shall issue an individual certificate with photograph of each qualified welder. Without such documents, welders shall not be allowed to carry out any welding.

4.8 Pre-qualified welders shall not be accepted. Welding qualifications shall be established at site.

4.9 Plates of different thickness shall be made flush with the inner surfaces of equipment unless otherwise stated.

4.10 Production control coupons, when required as per code and specifications, shall be subjected to all tests like impact test, Post weld heat treatment etc. in addition to mechanical tests as required. In case of heat treated equipment, test coupons shall be given similar heat treatment as for the equipment.

4.11 Location of weld seams shall be kept so as to avoid fouling with any part strictly as per API 620. Longitudinal seams of adjacent course shall be staggered and meet requirements of API 620.

4.12 All sharp corners shall be rounded off with smooth radius.

4.13 All flanges shall be bored to suit nozzle I.D.

4.14 All parts involving welding construction shall have continuous welds unless otherwise stated.



4.15 Due provisions must be kept for venting out entrapped gases during welding of cleats/pads.

4.16 All nozzles shall be provided with sleeves (ref. dwg. 817 - T0 - 1950)

4.16 All nozzle reinforcing pads shall be tested pneumatically at 0.5 kg/cm²g pressure with soap solution on attachment welds. Vent holes shall be plugged.

4.17 All nozzles \leq NPS 2 1/2" shall be stiffened with three equispaced plate ribs of the same material as that of shell.

4.18 All flange bolts shall straddle centre line unless otherwise stated.

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4.19 Unless otherwise specified, all welds shall be full penetration welds with back chipping and rewelding from the second side. For those joints which are inaccessible for back chipping the root run shall be carried out with TIG process.

4.20 Further welding on roof, shell and bottom after completion of the hydrostatic tests shall be carried out only after written permission of the site in-Charge/RCM/Owner's representative.

4.21 Arc strikes on primary components shall be avoided and temporary attachment welds of primary components removed. The surface of the primary component where arc strikes have occurred and where temporary attachment welds have been removed shall be properly conditioned to eliminate surface stress raisers. Such surfaces shall be examined by either the magnetic particle or liquid penetrant method of examination and any defects found shall be removed and the surface repaired and re-examined before the tanks are hydro- pneumatic tested.



4.22 Any plate or other part of the tank subjected to cold forming involving a strain greater than 5% shall be stress relieved after forming.

4.23 Erection holes shall not be cut into the inner shell of double wall tanks for erection purposes unless prior written approval has been obtained from the site in-Charge / RCM / Owner's representative.

4.24 All erection lugs shall be removed before hydro-pneumatic testing. All other temporary attachments may be allowed to remain only after attachment weld is inspected with MP examination as per API 620.

4.25 Welding of all parts must be completed before heat treatment.

4.26 Scrap / cutting allowances for owner free issue materials: A Tabulated statement showing the size wise plates issued and total consumption will be prepared by the Bidder as per Owner instructions. Bidder shall make an all-out effort at the time of preparation of fabrications drawings / BOQ including development of plate cutting drawings to ensure minimum generation of scrap during fabrication of tanks. All returnable accountable scrap/ wastage shall be handed over to Owner at their store yard/ scrap yard as per the Owner instructions. Loading & Unloading and handing over of such materials shall be the Bidder's responsibility.

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5.0 Surface Preparation/painting

5.1 All painting material whatsoever required shall be procured from approved manufacturers like Berger Paints or Asian Paints. Bidder shall supply certificates from paint manufacturers / supplier's that the materials used are free from manufacturing defects & will meet the performance criteria when properly applied.

5.2 Outer surface of outer shell & roof: 75microns DFT of Ethyl silicate inorganic zinc rich primer to be applied.

Intermediate coat: 75 microns DFT of MI.

Finish coat: two coats of two pack polyamide cured epoxy paint of 40 microns DFT per coat.

5.3 External Painting system for Nozzle pipes / Structural / Supporting



- Erection of pipe scaffolding for external painting of Pipes, structures, tanks & dismantling of the same after completion of painting with all proper safety methods using all necessary safety gadgets like safety belt, safety shoes, safety helmet etc.
- Surface preparation with copper slag blasting method confirming to SA 2 1/2.
- Application of one coat of Inorganic Zinc Silicate primer of DFT 65 μ .
- Application of one coat of Protectomastic on weld joints and damaged (grounded) portion where ever required of DFT 100 μ .
- Application of one full coat of Epoxy HB MIO of DFT-100 μ .
- Application of one full coat of Epoxy HB coating -Polyamide (white) of DFT 50 μ .
- Finish with application of one coat of Aliphatic Acrylic polyurethane re-coatable paint of DFT 50 μ of approved color shade.

5.4 External Painting system for tank bottom plates

The surface preparation shall be done copper slag blasting method confirming to SA 2 1/2. Application of two coats of coal tar epoxy of DFT 125 μ each (Total DFT 250 μ).

5.5 The surface to be painted shall be thoroughly cleaned to remove rust, mill scale, oil, flaky paint and primer. Rusted surface shall be degreased using suitable solvents. The surface then shall be grit / shot / Cu slag blasted to SA 2 1/2. No painting shall be carried out when the surfaces are damp or during raining.

5.6 All paint & painting materials shall be stored only in such rooms assigned for the purpose. All necessary precautions and arrangement of safety apparatus whatsoever required against prevention of for it shall be the responsibility of Bidder.

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5.5 All workmen working at unsafe elevations during the painting work shall have safe & adequate passage and should be properly instructed to take necessary precautions & observe safe practices to prevent accidental fall. Safety belts shall be used wherever necessary.

5.7 Bidder shall ensure that as & when work is over, the floor & all other things around working area are cleaned & that no paint or stains are left anywhere. All debris, clips, rubbish etc. shall be removed periodically from the work areas.

5.8 Tank shall be covered with jute curtain during air less spray painting to protect from wind/dust etc.

5.9 All tank bottom plates shall be blasted and painted before laying on tank foundation.

5.10 Outer shell, roof plates, pipes and structural steel shall be blasted and primer coated before erection.

6.0 Packing, Shipping & Transportation



6.1 All prefabricated materials and bought - out items shall be suitably packaged and preserved for inland shipment & transportation from the point of origin to the project site. The prefabricated materials and bought - out items shall be prepared and packed in suitably sized lots for shipment. In general, prefabricated items shall be shipped / transported within generally acceptable shipping/transportation limits.

6.2 Packaging shall be sufficient to permit the safe handling and stacking of boxes, crates, containers and bundles during inland shipment and outdoor storage at the project site.

6.3 The Bidder shall preserve and protect prefabricated materials and bought - out items so as to prevent corrosion and deterioration due to the effects of adverse environmental conditions during shipment/ transportation, storage and construction. The effects of environmental conditions such as rain, high humidity, water splashing, sunlight and mild dew shall be taken into consideration. The effects of rough handling, jolting and impact must also be considered.

6.4 All parts shall be tagged or marked with the item number for which it is intended. All such parts shall be suitably boxed and shipped/transported.

6.5 All materials shall be dispatched to site with proper identification mark as per fabrication drawing, and material shall be identifiable throughout the fabrication.

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7.0 Inspection & Testing

7.1 Inspection

7.1.1 All inspection shall be done by PDIL/Owner's Authorized Inspection Agency. All imported materials shall be inspected by Third party at source and test certificates endorsed by him to enable proper identification Indigenous materials shall be inspected by Site in-Charge/RCM/Owner's representative.

7.1.2 Tanks shall be inspected during various stages of fabrication starting from identification of raw materials & bought-out items till completion. The equipment shall be considered acceptable only after final certification for acceptance is issued by Site in-Charge / RCM / Owner's representative.

7.1.3 Bought-out item or items sub-contracted to other approved sub-suppliers shall also be inspected at the sub-suppliers works. However, standard items like bolts, nuts, gaskets etc. may be exempted from the inspection with specific approval from PDIL / Owner.

7.1.4 Inspection by Third party, if specified, shall be arranged / appointed by the Owner. It shall be the responsibility of the Bidder to co-ordinate, make available to the inspector all the new / revised latest drawings, calculations and other tender documents.



7.1.5 Inspection order on Third party shall also include specific instructions for making copies of all correspondence from inspecting authorities to PDIL / Owner and reporting monthly progress of the order to Owner / PDIL. Complete responsibility of getting approval on documents and incorporation of the same and obtaining approval shall be the responsibility of the Bidder.

7.1.6 The sectioning of welds shall not be permitted.

7.2 Hydro, Hydro-Pneumatic & Pneumatic Tests:

7.2.1 Tanks shall be tested as per API 620 Appendix R. The river water shall be used for Hydrotest. The water for Hydrotest shall be checked / tested. The report shall be approved by TPI / PDIL / Owner. Necessary additive (corrosion inhibitors, pH neutralizers, etc.) shall be used as per approved procedure. Bidder has to make necessary arrangement like pump, hoses, fittings, etc. to take water from nearest point (250m to 450m) of river.

7.2.1.1 Pump columns shall be hydro tested before installation.

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7.2.1.2 Tanks shall be hydro tested with inner tank water filled up to maximum liquid level (HHL) and outer tank to be pneumatic tested to the test pressure in line with code requirements.

7.2.2 On completion of hydro-static & pneumatic tests, the Bidder and the authorised inspector shall carefully examine the tanks for evidence of structural damage or leakage and make any necessary repairs in accordance with the code / tender requirements.

7.2.3 After completion of the hydro-pneumatics & vacuum box test, the Bidder shall clean and remove, rubbish etc. from the inside / outside of the tanks which may have accumulated during the tests till tank becomes clean and dried.

7.3 NDT requirements

The following requirements are mandatory in addition to the requirements of code / specifications for both inner / outer tanks.

A) Radiography of Butt weld joints:

- i) All longitudinal and circumferential Butt weld seams, on inner and outer tank shall be 100% radiographed.
- ii) 50% of the Butt welded annular plate radial joints shall be spot examined for a minimum length of 6 inch. The location shall be under the tank shell, at the outer edge of the joint.
- iii) All Butt weld joints which are not radiographed shall be examined visually from inside & outside.
- iv) All Butt weld joints of inner nozzle in vapour zone shall be 100% radiographed.
- v) All nozzles neck to flange butt welds shall be 100% radiographed.
- vi) Longitudinal seams of all fabricated nozzles shall be fully radiographed.
- vii) All remaining butt welded "T" joints shall be radiographed

Note* - The Bidder shall consider in-situ Radiography source with necessary pit room and needful approvals.



B) D.P/ MPT Examination

Before Hydro test:

- i) All welded joints between shell & annular plate

After Hydro test:

- i) After back gauging of root run
- ii) All attachment welds e.g. Lap joints in the bottom plate & roof
- iii) Rafter splice joint
- iv) Annular plate
- v) All welds on permanent connection/ attachments
- vi) All Butt weld joints which are not radiographed shall be examined inside & outside

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- vii) L seam of bottom most two courses
- viii) Compression plate to roof plate

C) Vacuum Box test:

- i) All fillet weld on Bottom plates (inner & outer)
- ii) shell to bottom welds joints of (inner & outer)

7.4 Settlement Monitoring

- i) During construction and hydro-testing, the settlement of the outer tank and inner tank shall be carefully monitored.
- ii) Along the perimeter of the outer tank, eighteen (18) reference points shall be installed. Surveys shall be taken at every 5.0 m of filling and emptying of the tank and at full liquid level. The accuracy of the measurements shall be ± 1 mm.
- iii) The settlement of the inner tank shall be monitored at the same 18 locations.
- iv) Allowable foundation settlement = 25 mm between centre of the tank to outside radius of the foundation.



7.5 Repairs:

- i) In addition to the defects listed in API 620, the following conditions are considered defective and detrimental to the safety and appearance of a tank and shall be repaired or removed. Plate laminations, dents, flat spots, buckled or warped areas, wavy plates or plate edges, welded joints with distinct peaks and tank sides excessively out of round or out of plumb.
- ii) When a plate is discovered to have a defective condition during fabrication all further work on that plate and each adjacent plate shall be stopped until the defective condition is corrected. Water filling or guying shall not be considered adequate repair method.
- iii) Welds (with defective areas removed) shall be rewelded using qualified welding procedures and the repair welds shall be re-post weld heat treated, if originally required and re-examined by the original NDT methods. If correction involves serious alteration, the approval of the Owner / PDIL shall be obtained before proceeding with such corrections.

7.6 The purging and chill down of the tank during the initial fill shall be done under the supervision of the site in-Charge / RCM / Owner's representative.

7.7 Dry high purity Nitrogen shall be supplied by-owner

7.8 Both the inner tank and the annular space shall be purged to a final O₂ level of 3% or less by volume with Nitrogen of 99.95% purity. The inner tank shall be purged first. Nitrogen shall be introduced to inner tank through purge nozzle(s).

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8.0 Quality Assurance & control

8.1 Quality Assurance (QA) shall mean the organizational set up, procedures as well as test methods and facilities developed by Bidder in order to assure that the cryogenics storage tanks made by Bidder's have highest possible quality i.e. either equal to or better than the requirement specified.

8.2 Quality Control (QC), shall mean all the tests, measurement, checks and calibration which are to be carried out in Bidder's in order to compare the actual characteristics of the tanks with the specified ones, along with furnishing of the relevant documentation (certificates / records) containing the data or result of these activities.



8.3 Bidder shall submit a comprehensive description (manual) of QA / QC measures contemplated by him for implementation with regard to this tender. It is contractual obligation of the Bidder to develop and implement adequate QA / QC systems.

8.4 QA / QC system shall cover all products and services required for the tanks as per Scope defined in the tender.

8.5 Marking / Name Plate

Marking on vessels - Every vessel shall have a metal plate permanently fixed to it showing the following particulars which shall be visible from the ground level namely:

- i) The standard or code to which the vessel is constructed
- ii) Official stamp of the Inspector
- iii) Design pressure in Kg/cm²
- iv) Date of initial hydrostatic test and the subsequent test.
- v) Hydrostatic test pressure in Kg/cm²
- vi) Water Capacity in litres.
- vii) Gas capacity if filled with gas in metric tonnes.
- viii) Name of chemical symbol of the gas for which the vessel is to be used.
- ix) Owners emblem and logo

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9.0 Mechanical Guarantees

9.1 All equipment and component parts including bought-out items shall be guaranteed by the Bidder against defects in improper materials / items, poor workmanship and failure from normal usage for 12 months after commissioning or 18 months after handing over of the equipment, whichever is earlier.

9.2 Approval by PDIL / Owner on detailed documents will not in any way absolve the Bidder from his responsibilities.

9.3 Should any repair or replacement be necessary owing to any type of failure on account of materials / items or workmanship of equipment, the Bidder shall by dint of this guarantee be bound to replace the same either in part or in entirety without additional cost to Owner. Required or replaced parts shall be covered by same guarantee as in case of main supply.

10.0 Rejection

Tanks or parts thereof and materials / items entering therein, indicating irremediable or injurious defects, improper fabrication, excessive repairs or that they are not in accordance with this specification shall be subject to rejection. They shall also be subject to rejection if, such conditions are discovered after acceptance of the items.

11.0 List of spares (erection & commissioning, 2 years' operation & special spares etc.

Bidder shall procure and supply the following spares:

11.1 Erection & commissioning:

- 100% gasket for each nozzle having blind flange
- 10% internal & external bolting (min. 2 pieces)

11.2 Two years' operation:

- 200% gasket for each nozzle having blind flange
- 10% internal & external bolting (Min. 4 pieces)



(Note: Additional Mechanical spares, if any, as per Bidder's recommendation)

12.0 Documentation

Bidder shall submit all relevant information & details along with the bid and drawings, documents, procedure, reports, test certificate etc. at various stages of execution of job as per documentation schedule Doc. no. EM150-PNMV- TS405-DOC.

13.0 List of Deviations (in prescribed format)

Refer attached format Doc. no. EM150-PNMV-TS405-D1.

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14.0 Waiver / Deviation / Concession (in prescribed ISO format) to be used by the Bidder after award of contract)



Refer attached format Doc. no. EM150-PNMV-TS401-W1.

15.0 References List

Bidder shall provide detailed references list for executing similar jobs for large capacity cryogenic storage tanks of in the last five years along with offer.

16.0 Completion Period

Completion period shall be as per commercial part.



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**TENDER FOR FABRICATION AND ERECTION OF PROPANE
/ BUTANE STORAGE TANKS (T-201/202) AT HALDIA (W.B.)**

PART 2

SECTION A- GENERAL CONDITIONS OF TENDER

LOCATION - HALDIA

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1. Definitions

The following expressions hereunder and elsewhere in the contract documents used will have the following meanings hereunder respectively assigned to them namely: -

The “Owner” shall mean “Aegis Logistics Limited (ALL)” incorporated in have its office at AEGIS LOGISTICS LTD. C/O Sealord Containers Limited Ambapada, Mahul Village, Trombay, Near BPCL Refinery Main Gate, Chembur Mumbai - 400 074 and corporate office at Unit No. 1202, 12th floor, Tower B, Peninsula Business Park, G. K. Marg, Lower Parel (West), Mumbai 400 013, shall include its successors and assigns.

1.1. The “Bidder” shall mean the tenderer selected by the owner for the performance of the work and shall include the successors and permitted assigns of the Bidders.

1.2. The “Project” shall mean Procurement of bought out items (excluding free issue material), fabrication, Site Erection and Commissioning of 2 nos of Tanks at the Aegis Logistics Limited (ALL)

1.3. The “Project Manager” shall mean the officer nominated by owner to co-ordinate and supervise all the activities connected with the implementation of project on their behalf. The “Project Manager” may at his discretion depute owner’s officer to co-ordinate/supervise the work of Bidder.



1.4. The “Site-in-Charge” shall mean the Engineer nominated by the owner for the purpose of the contract or any work covered there under.

1.5. The “Job Site” shall mean any site at which the work is to be performed by the Bidder under the contract.

1.6. The “Work” and “Scope of Work” shall mean the totality of the work by expression or implication envisaged in the contract and shall include all material equipment and labour required for or relative or incidental to or in connection of any work and/or for incorporation in the work.

1.7. The “Contract” shall mean the totality of the agreement between the parties as derived from the contract documents.

1.8. The “Contract Documents” shall mean the contract documents as laid out in the Owner’s standard contract format which is based on General and Special conditions of Tender.

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1.9. The “Specification(s)” shall mean the various specification as set out in the specifications forming part of the tender documents and as referred to derived from the contract and any order (s) or instruction(s) there under, and in the absence of any specifications as aforesaid covering any particular work or part of portion thereof, shall mean the relevant Indian Standard Institution specifications for or relative to the particular work or part thereof, and in the absence of any Indian Standard Institution Specification covering the relative work or part or portion thereof, shall mean the standard or specification of any other country applied in India as a matter of standard engineering practice and approved in writing by the Site-in-Charge with or without modifications.

1.10. “Order” and Instruction” shall respectively mean and written order or instruction given by the Owner/Site-In-Charge within the scope of their respective powers in terms of the contract.

1.11. “Plans” and “Drawings” shall mean maps drawing, sketches, tracings and prints forming part of the tender documents and any details or working drawings, amendments and/or modifications thereof approved in writing by the Site-In-charge or any agency notified by the Site-In-Charge, to the Bidder for the purpose and shall include any other drawings or plans in connection with the work as may from time to time be furnished by or approved in writing by the Owner /Site-In-Charge or any other agency nominated by the Owner/Site-In-charge in this behalf in connection with the work.

1.12. “Inspector” means Third Party Inspection Agency” (TPIA) as specified by the Owner / Owner’s authorized representative as specified in the special condition of tender.

1.13. “Final Test Certificates” shall mean the final Test Certificate issued by Owner.



1.14. “Completion Certificate” shall mean the completion certificate issued by the Site-in-Charge”

1.15. “Final Certificate” shall mean the final certificate issued by the Site-In-Charge.



1.16. “Acceptance of Tender” shall mean the Acceptance of Tender issued by the Owner of the Tender”

1.17. The “Total Contract Value” shall mean the total contract value as specified in the acceptance of Tender, and after calculation of the entire remuneration due to the Bidder the Bidder on successful of the works.

1.18. “Progress Schedule” shall mean the time schedule of progress of work.

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- 1.19. “Running Account Bill” shall mean a bill for payment of “on Account’ to the Bidder.
- 1.20. “Schedule of Prices” shall mean the schedule or prices annexed to the Acceptance of Tender and shall include any remuneration payable to the Bidder for any work determined in accordance with the conditions.
- 1.21. “Tender Documents” shall mean the Tender Documents comprising Part-I (Technical Bid) – Invitation to Tenders, Project information, General Conditions of Tender, Special Conditions of Tender, Tender Schedule, Drawings/Sketches, Data Sheets, Form of Tender and Price Schedule, Annexure, and Part II (Commercial Bid)-Form of Tender and Price Schedule, and Annexure.
- 1.22. “Agreed Variation” shall mean the statement of Agreed Variation annexed to the Acceptance of Tender or a further amendment annexed to the Contract forming part thereof.
- 1.23. The “Sub-Bidder” means any person of firm of Company (other than the Bidder) to whom any part of the work has been entrusted by the Bidder with the written consent of the Owner.
- 1.24. The “Permanent Work” means and includes works which will be incorporated and form a part of the works to be handed over to the Owner by the Bidder on completion of the Contract.
- 1.25. The “Construction Equipment” means all appliances and equipment of whatever nature for the use in or for the execution and completion of the works unless intended to form part of the permanent work.
- 1.26. “Letter of Intent” shall mean intimation by a letter to tenderer that the tender has been accepted in accordance with the provisions contained in the letter.
- 1.27. The “Alteration Order or Variation Order” means an order given in writing by the Owner to effect additions to or deletions from and alterations in the works.
- 1.28. All headings of the Clauses in these General Conditions of Tender or otherwise in any contract document are intended solely for the purpose of giving a broad indication of the contents of the clause and not as a summary of the contents thereof.
- 1.29. Unless otherwise specifically stated, a masculine gender shall include the feminine and natural genders and vice-versa and the singular shall include the plural and vice versa.

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2. General

2.1 The plans have been evolved tentatively based on information available with Owner / Consultant but the dimensions and details etc. are liable to changes.

2.2 The Tenderers shall not be entitled to claim any higher rate or compensation on this account. The tender drawings are intended mainly to give an indication of the probable type of construction. The successful Tenderers will, however, be required to execute the work as per detailed approved drawings issued to them from time to time.



2.3 The Tenderers shall note that the quantities of the different Items, as given in the Schedule of Rates" are tentative based on tentative tender drawings and are subject to variation and they shall not be entitled to claim any higher rate or compensation on this account. Owner / Consultant reserve the right to change / modify the size and type of sections at any time. Owner / Consultant do not guarantee work under each item of the Schedule of Quantities. Quantum of individual item may vary to any extent.

2.4 Tenderers shall be fully responsible for the correct setting out and execution of the work in accordance with approved drawings which will be supplied to them progressively. All tools, tackles, construction equipment etc., required for the successful execution / construction of the complete work shall be responsibility of the Tenderers.

2.5 The quantities given in the "Schedule of Rates" are approximate and are given only for the guidance for quoting rates. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. The units shall remain as in the Tender and is not subjected to change.

2.6 The rates are being inclusive of the value of the work described under several items including all costs and expenses which may be required for the construction of the work described together with all taxes, general risks, liabilities and obligations such as temporary buildings / hutments, fencing, watching, lighting, insurance, labour regulations, indemnity, maintenance and the like. The prices shall be inclusive of all labours, materials, tools, plants, equipment, hoists, tackles, scaffoldings, the sundries, etc., as may be necessary for the completion of the work in all respects.

2.7 Fabrication shall not be undertaken at site until detailed approved drawings have been issued by the Owner / Consultant in writing. Subsequent revision in the drawings which become necessary shall be incorporated and revised drawings issued to the Bidder who shall execute the work as per the latest revised drawings. Nothing extra will be paid on this account and no claim whatsoever will be entertained on this account. The Owner / Consultant reserves to them the right to modify / revise / alter etc. in any drawing supplied to the Bidder.

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2.8 Any fabrication / construction done before final approval of the drawings shall be the Bidder's responsibility.

In case of any discrepancy between the description of items given in the "Schedule of Rates" and Specifications, drawings and other documents, the decision of the Engineer-in-charge in writing shall be final, binding and conclusive for the purpose of this contract.

2.9 The term "Design and drawings" mentioned in the description of Items in the "Schedule of Rates" means the detailed approved design drawings marked "Good for Construction".

2.10 The work "As described", "As shown", "As directed" or "As approved", "As mentioned" in the description of Items shall mean as directed in design or detailed drawings and as directed by the Engineer-in-Charge.

2.11 The tenderer should visit the site and acquaint himself with the site condition at his own cost including the boundary management issues.

3. Submission of Tender



3.1. Tender document Part A - Technical Bid and Part B-Commercial Bid should be sealed in separate covers, clearly marking 'COMMERCIAL BID' on the cover containing Commercial bid. Both the above covers should be sealed in one cover clearly marking the Tender No. and Vendor's name and address. The quotation must be submitted only in the prescribed tender schedule form supplied by the Owner along with draft for the earnest money deposit as specified in Section A of General Conditions of Tender.

3.2. The sealed tender should be addressed and sent by Registered post or personally handed over to the Tender Receiving Authority specified in Tender Notice or put in the Tender Box designated for the specific work located at the address specified in the Tender Notice.

3.3. The sealed Tender must reach the specified address before the date and time specified in the Tender Notice. Tender received after the due date and time will not be considered.

3.4. The tenderer should quote for all items in the tender schedule. The rate should be expressed both in figures and words. Where discrepancy exists between the two, the rates expressed in words will prevail. Similarly, if there is any discrepancy between unit rate and total amount the unit rate will prevail.

3.5. The rates should be quoted in the same units as mentioned in the tender schedule.

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3.6. All entries in the tender documents should be in ink / typed. Corrections if any should be attested by full signature of the tenderer.

3.7. Every page of the tender documents shall be "SIGNED" by the tenderer or his authorized representative.

3.8. Tenderers are required to state in the tenders their addresses fully and correctly. All notices, communications and reference to any tenderer by the Owner shall be deemed to have been duly given to the tenderer if delivered to the tenderer or left at or posted to the address given by the tenderer and shall be deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post and in other cases on the day on which they were so delivered or left.

4. Bank Guarantees

4.1 The tenderer shall be required to furnish Earnest Money Deposit vide Bank Guarantee drawn in favor of AEGIS LOGISTICS LIMITED for a sum of Rs. 25,00,000/- (Rupees Twenty-Five Lakhs only). The earnest money deposit shall be returned to the unsuccessful tenderer after the selection of the successful tenderer.

4.2 If the successful tenderer is unable to accept or execute orders when placed upon him or fails to furnish Performance Bank Guarantee as per clause 4 of Part 2 Section A or withdraws / revises his quoted prices and quantities offered, within the validity period of his tender or after placement of the Order / Letter of Acceptance, his Earnest Money Deposit shall be forfeited.



4.3 In case of successful tenderer, the Earnest Money Deposit will be returned after the receipt of Performance Bank Guarantee.

4.4 Please note that no interest shall be paid on Earnest Money Deposit and Performance Bank Guarantee.

4.5 The bidder can choose to give DD of equivalent amount in lieu of Bank Guarantee.

5. Contract Agreement

The successful Tenderers shall receive within 15 days the Owner's communication to him of the acceptance of the tender, execute a formal agreement with the Owner and also submit a Performance Bank Guarantee for 10% of contract Value. The cost of stamping the Agreement shall be borne by the successful tenderer. The Agreement shall be in conformity with Indian Laws and shall be subject to the jurisdiction of Court of Mumbai. The language in which the contract documents shall be drawn up is English.

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6. Other Conditions

6.1 The Bidder shall take all preventive measures against any damage caused by rain, snowfall, floods or any other natural calamity, whatsoever during the execution of the work.

6.2 The tenderer shall use materials bearing ISI Certification Mark or equivalent unless otherwise specified or allowed in writing by the Engineer in-charge. Any material banned by the company shall not be used in the work.

6.3 Other agencies doing works related with this project will also simultaneously execute the works and the Bidder shall afford necessary co-ordination for unhindered completion of these sub-works.

6.4 The Bidder shall continue to maintain watch and ward to safeguard the Owner's property in his possession until the same is formally handed over as per directions of the Engineer in-charge. Nothing extra over agreement rates shall be paid on this account.

6.5 The Bidder shall provide adequate lighting arrangements as approved by the Engineer in-charge for carrying out the work during night time, if so required and also provide all other facilities for the labour employed to carry out the work as per direction of Engineer in-charge.

6.6 In order to achieve the targeted date of completion the Bidder shall have to work in multiple shifts, round the clock and nothing extra shall be paid on this account.

6.7 The Bidder is supposed to abide the minimum wages act, and shall produce all records to the Engineer in-charge or any other statutory authority as and when called for. The Engineer in-charge does not hold any responsibility on account of any lapses in this regard.



6.8 No extension of time shall be granted to the Bidder on account of rains or inclement weather conditions.

6.9 For any clarification / doubt, the Engineer in-charge may organize regular meetings with Bidder in consultation with Consultant. The Bidder shall attend such meetings invariably as and when required.

7. Validity

The validity of the tender shall be as mentioned in the Special Conditions of the Tender. It shall there after continue to be valid, until,

- a) A written advice is given to the Owner giving 10 days' clear notice of their intention to reverse/alter the terms.
- b) The work is completed to the satisfaction of the Owner and so certified in writing by Owner or their accredited representative in the case of successful tenderer.

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8. Quantity Measurement

8.1 The quantities of work shown in the tender schedule are approximate and payment shall be made as per actual measurement. The Bidder is not entitled for any sort of compensation towards material procured/stored in excess of the measured quantities.

8.2 The owner reserves the right to increase or decrease the tendered quantity or replace specifications, drawings, design of any or every item or delete them at any stage of work. The Bidder's claim for compensation or damages on account this shall not be entertained. Such deviation shall be adjusted at the rates contained in the contract or arrived at by calculation from contract rates.

8.3 Detailed measurement of the work carried out shall be taken jointly by the Bidder and Owner/Site-in-Charge at every stage of work before proceeding to the next stage of work and shall be measured as per procedure laid down and payment shall be made as per measured quantities, subject to their conforming to the quantities ordered as per drawing/schedules and not as per tender schedule quantities.

9. Time for Completion of Work

The Owner desires the completion of this work within 9 months. The tenderer however, shall indicate the time required to complete the entire work from the date of receiving the order. The time indicated by the tenderer may have a bearing on the awarding of the contract. However, in no case, the time indicated should exceed 10 months.



10. Stoppage of Work

In case it becomes necessary for the Owner to temporarily suspend or postpone the work partly or fully due to unforeseen circumstances, Owner shall not be liable for any compensation on account of the resultant delay.

11. Inspection and Testing

11.1 Materials



i) All materials required for the execution of the work should conform to the standard specification and approved by the owner / Site-In-Charge before actually put to use. Commencement of work without prior approval shall be entirely at the risk and cost of the Bidder. No delay due to non-availability of the materials, tools, equipment, etc. will be entertained by the Owner. In case of certain machinery / equipment, the Owner / Site-in-Charge may inspect the item for approval before they are brought to site

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- ii) The Owner / Inspector or any agency authorized by Owner shall be entitled at all times at the risk of the Bidder to inspect and / or test or direct the Bidder to test any item supplied or proposed for supply for incorporation in the works. Necessary assistance for this will be provided by the Bidder and all the expenses incurred in such testing / inspection will be borne by the Bidder
- iii) The Bidder shall on receipt of intimation or any communication from Owner of any inspection or tests required to be carried out by the Owner on his behalf, present himself or his authorized representative at the place of inspection and / or testing to receive an order or instruction consequent thereto as shall be necessary
- iv) The Bidder shall furnish, to the Owner/site-in-charge for approval when requested or as required by the specification or other contract documents, adequate samples should be submitted before the work is commenced as also permit sufficient time to the Owner for tests, examination(s) thereto by the Owner. All materials finished and incorporated in the works shall conform to the approved sample(s) in all respects.
- v) The Site-in-charge shall be entitled to reject at any time any defective material supplied by the Bidder for incorporation in the works notwithstanding previous inspection and / or testing Upon such a rejection, the Bidder shall either perform such work again or improve thereon and inspect thereof as shall be necessary to bring the material to the requisite standard or if so required by the Site In-charge

11.2 Works

- i) The Bidder, at all time, shall ensure highest standard of workmanship, relating to the work to the satisfaction of the Site-in-Charge. The site-in-charge shall have the power to inspect the work in all respect at all times up to the completion of the work as also to test or give instruction to the Bidder to test the works or any structure material or component thereto at the risk and cost of the Bidder, either by the Bidder or by any agency nominated by the Owner/Site-in-charge in this behalf.
- ii) The Bidder shall provide all facilities, instruments, materials/labour required for testing the work (including checking set out of work) and shall accord site-in-charge all assistance necessary to conduct the test whenever and wherever required.
- iii) Notwithstanding anything provided in the aforesaid clause hereto, the Bidder shall be and remain liable at his own cost and initiate to conduct all tests at all times during supply, erection and installation of any work/structure material

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or component as shall be required in terms of the contract document or by the Site-in-Charge. Such tests to be conducted through agency(ies) or laboratory(ies) shall be approved by the Site-in-Charge



iv) The Site-In-Charge on inspection or test be not satisfied with the quality of workmanship of any work, structure, material item or component (decision of the Site-in-charge being final in this behalf), the Bidder shall re-perform, replace, reinstall and /or re-erect as the case may be such work structure, material or component and no such rejected work, structure, material item or component shall be re-used with reference to the work, structure, material item or component shall be re-used with reference to the work accepted with the prior permission of the reference to the work accepted with the prior permission of the Site-in-Charge.

v) Notwithstanding anything provided in aforesaid clause hereto and notwithstanding the Site-in-charge or his representative has inspected, tested and/or approved any particular work, structure, material or component, such inspection, test or approval shall not absolve the Bidder of his full responsibilities under the contract inclusive or relative to the specification, performance guarantee, the said inspection and test procedure being intended basically for satisfaction of the owner prima facie erection and/or material and equipment supplied for incorporation in the work is in order.

12. Bidder Compensation for Delay in Completion

12.1 In case of any delay in completion of the work beyond the specified completion date, the Owner shall be entitled to be paid Liquidated Damages by the Bidder. The liquidated damages shall be initially at the rate of 0.5% (half percent) of the total contract value for every week of the delay subject to a maximum of 5% of the total contract value. The liquidated damages shall be recovered by the Owner out of the amounts payable to the Bidder or from the Performance Bank Guarantees or from the Retention Money retained from the Bills of the Bidder, either under this contract or any other contract.

12.2 Notwithstanding what is stated in clause 11.1 above, the Owner shall have the right to employ any other agency to complete the remaining work at the risk and cost of the Bidder in the event of his failing to complete the work within the stipulated milestones of the schedule.

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12.3 The Bidder shall present in writing to the Site-in-Charge on account of the following for the extension in Contract period:

- Force Majeure
- Inclement Weather Conditions
- Delay from other Bidders engaged by the Owner
- Boundary or public disputes
- Legal Proceedings
- Insufficiencies in Schedule of Rates



12.4 The Site-in-charge shall thereby prepare a fair and reasonable Extension for the schedule and furnish to the Bidder, who shall constantly use his best endeavor to the satisfaction of the Engineer to proceed with the works. Nothing herein shall prejudice the right of the Owner under the Clause 11.1 and 11.2 herein after.

13. Performance / Failure of Bidder

13.1 If the performance of the successful tenderer is found to be unsatisfactory, the company reserves the right to cancel in part or whole of the contract and gets the work executed through alternate means at the entire risk and cost of the successful tenderer.

13.2 The successful tenderer shall not consider independently, any change in specifications mentioned in the tender documents. In case of doubt he will refer the matter in writing to the Owner/Site-In-Charge and act as per clarifications given by the Owner/Site-in-charge. Any change in the work involving changes in original specifications quantities / additional items of work, should be covered by obtaining suitable variation order (s) from the Owner/site in charge immediately.

13.3 If the Bidder after receipt of written notice from the Site-in-charge requiring compliance within 10 days fails to carry out and execute any work in accordance with this contract and or to comply with Site-in-charge's instructions then the Owner with the consent and may employ and pay other persons to execute any such work whatsoever that may be necessary to give effect thereto, and all costs incurred in connection there with shall be recoverable from the Bidder by the Owner as a debit and may at the option of the owner be deducted from any money due to or to become due to the Bidder.

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14. Termination of Contract by The Owner

The owner may terminate the contract at any stage of the construction for reasons to be recorded in the letter of termination. The Owner inter alia may terminate the Contract for any or all of the following reasons that the Bidder



- has abandoned the work/Contract.
- has failed to commence the works, or has without any lawful excuse under these conditions suspended the work for 15 consecutive days.
- has failed to remove materials from the site or to pull down and replace the work within 15 days after receiving from the Engineer written notice that the said materials or work were condemned and/or rejected by the Engineer under specified conditions.
- has neglected or failed to observe and perform all or any of the terms acts, matters or things under this Contract to be observed and performed by the Bidder.
- has to the detriment of good workmanship or in defiance of the Engineer's instructions to the contrary sub-let any part of the Contract.
- has acted in any manner to the detrimental interest, reputation, dignity, name or prestige of the Owner.
- has stopped attending to work without any prior notice and prior permission for a period of 15 days.
- has become untraceable.
- has without authority acted in violation of the terms and conditions of this contract and has committed breach of terms of the contract in best judgment of the owner.
- has been declared insolvent/bankrupt.
- in the event of sudden death of the Bidder.

15. Insurance and Labour

Bidder shall at his own expense obtain and maintain an insurance policy with a Nationalized Insurance Company to the satisfaction of the Owner as provided hereunder.

15.1. Employees State Insurance Act

The Bidder agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by Employees State Insurance Act, 1948, and the Bidder further agrees to defend indemnify and hold Owner harmless from any liability or penalty which may be imposed by the Central, State or local authority by reason of any asserted violation by Bidder, or sub-Bidder of the Employees' State Insurance Act, 1948 and also from all claims, suits or proceedings that may be brought against the Owner arising under, growing out of or by reason

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of the work provided for by this contract whether brought by employees of the Bidder, by third parties or by Central or State Government authority or any political sub-division thereof.

The Bidder agrees to file with the Employees State Insurance Corporation, the Declaration forms and all forms which may be required in respect of the Bidder's or sub-Bidder's employee whose aggregate remuneration is within the specified limit and who are employed in the work provided or those covered by ESI Act under any amendment to the Act from time to time.

The Bidder shall deduct and secure the agreement of the sub-Bidder to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the employee's contribution cards at wages payment intervals. The Bidder shall remit and secure the agreement of the sub-Bidder to remit to the State Bank of India, Employee's State Insurance Corporation Account, and the Employee's contribution as required by the Act.

The Bidder agrees to maintain all records as required under the Act in respect of employees and payments and the Bidder shall secure the agreement of the sub-Bidder to maintain such records. Any expenses incurred for the contributions, making contribution or maintaining records shall be to the Bidder's or sub-Bidder's account.

The Owner shall retain such sum as may be necessary from the total contract value until the Bidder shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948, have been paid.

15.2. Workman's Compensation and Employee's Liability Insurance



Provide Insurance for all the Bidder's employees engaged in the performance of this contract. If any of the work is sublet, the Bidder shall ensure that the sub-Bidder provides workmen's compensation and Employer's Liability Insurance for the latter's employees who are not covered under the Bidder's insurance.

15.2.1. Automobile Liability Insurance

Bidder shall take out Insurance to cover all risks to Owner for each of his vehicles plying on works of this contract and these insurances shall be valid for the total contract period. No extra payment will be made for this insurance. Owner shall not be liable for any damage or loss not made good by the Insurance Company, should such damage or loss result from unauthorized use of the vehicle. The provisions of the Motor Vehicle Act would apply.

15.2.2. Fire Insurance

Bidder shall within two weeks after award of contract insure the Works, Plant and Equipment and keep them insured until the final completion of the Contract

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against loss or damage by accident, fire or any other cause with an insurance company to be approved by the Employer/Consultant in the joint names of the Employer and the Bidder (name of the former being placed first in the Policy). Such Policy shall cover the property of the Employer only.

15.2.3. Any Other Insurance Required Under Law or Regulation or By Owner

- Bidder shall also provide and maintain any and all other insurance which may be required under any law or regulations from time to time. He shall also carry and maintain any other insurance which may be required by the Owner.
- The aforesaid insurance policy/policies shall provide that they shall not be cancelled till the Engineer-in-Charge has agreed to their cancellation.
- The Bidder shall satisfy to the Engineer-in-Charge/Site-in-Charge from time to time that he has taken out all insurance policies referred to above and has paid the necessary premium for keeping the policies alive till the expiry of the defects liability period.
- The Bidder shall ensure that similar insurance policies are taken out by his sub Bidder (if any) and shall be responsible for any claims or losses to the Owner resulting from their failure to obtain adequate insurance protections in connection thereof. The Bidder shall produce or cause to be produced by his sub-Bidder (if any) as the case may be, the relevant policy or policies and premium receipts as and when required by the Engineer-in-Charge/Site-in-Charge.



16. Site Supervision/Facilities and Work at night

16.1 The entire work will be carried out under the supervision of the authorized representative of the Owner, but this will not absolve the Bidders from his responsibilities for quality / period of execution of the work.

16.2 The successful tenderer shall arrange for at least one competent supervisor to be present at site at all times during the progress of the work, and shall be duly authorized to take instructions and execute them on his behalf.

16.3 In absence of adequate supervision, ALL shall engage supervisors after due notification / intimation. Supervision charges shall be debited against the Bidders immediate RA bill.

16.4 The Bidder's "Scope of Work" does not include 'erection' the Bidder will be required to provide supervisory services for the satisfactory erection, installation, testing and commissioning of the equipment / materials supplied by him. Bidder's supervisory services shall be requisitioned by the owner as and when required, on "per diem" basis during erection, installation, testing and commissioning. The

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Bidder will be intimated in advance regarding the time and likely duration of the erection, Testing and commissioning of the respective equipment / material(s). It will be the duty of the Bidder to depute his competent supervisory staff who will act independently on behalf of the Bidder. The supervision service will be deemed as “part and parcel’ of the fabrication and supply contract. During the Bidder’s supervision at site necessary tools, tackles, implements, labour etc., will be provided. However, to maintain uninterrupted progress of work, Bidder’s supervisor will prepare a Schedule and forward to the Site-in-Charge in writing sufficiently in advance.

16.5 If the Progress of the work is not upto the expectation / planned level of the Owner, the Bidder shall be intimated to reinforce resources or work extra hours to cover / compensate the time loss. No additional claim shall be accepted by Owner for this reinforcement or extra working hours. If the progress of work is still not satisfactory, Owner shall advise the Bidder to enact to the shortfall. In case of failure to enact effectively, Owner reserves the right to curtail the scope / annul the Contract. The curtailment shall be with a 15 days’ notice to the Bidder to arrange appropriate Corrective Action. The annulment shall be done in case the Bidder fails to act effectively to the notice. The completed work according to Measurement sheets / SOR shall only be paid in such circumstances.

17. Observance of Rules and Regulations in Force.

17.1 The Bidder and his men shall abide by all security, safety rules/regulations in force at a location and the laws, by-laws and statutes of Government/Semi-Government and other local authorities such as requirements/liability under enactments like the Workmen’s Compensation Act, Contract Labour Act., etc. and the Owner shall stand indemnified against any claims on these scores. The Bidder and his men shall strictly abide by “no smoking” and other petroleum regulations on the premises.



17.2 The Bidder shall conform to the provisions of acts at Parliament or State Legislatures and to say by-laws, rules, orders or notifications of any government Municipal or Local authority for the time being in force affecting the work undertaken by him and will give all necessary notices to and obtain requisite sanction and permits of and from the Municipal and any other authority in respect of the said work or the materials to be used there at and generally will comply with the building and other regulations of such authorities and will keep the Company indemnified against all claims, penalties and losses that may be incurred by it by reason of any breach by the Bidder of any statutes by-laws, rules, regulations, notifications etc.,

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17.3 The Bidder' and the sub-Bidder(s) of the Bidder shall obtain authority(ies) designated in this behalf under any applicable law, rule or regulations (including but not limited to the factories act and contract labors (Abolition and regulations) act 1970 (in far as applicable any and all such license (s) consent (s), and/or other authorization (s) as shall from time to time to be or become necessary for or relative to the execution of one work or any part or portion thereof or the storage or supply or any material (s) or otherwise in connection with the performance of the contract, and shall at all times observe and ensure due observance by the sub-Bidders, servants and agents of all terms and conditions of the said license (s), consent (s), regulations (s), and other authorization (s) and laws, rules and regulations applicable thereto.

17.4 The Bidder undertakes to ensure due and complete compliance with all laws, regulations, rules etc. whether of the central government or the state government or any other competent authority applicable to the workmen employed or whose services are otherwise availed of by the Bidder, whether in connection with the construction work at the site or otherwise. The owner shall have been right to inspect the records maintained by the Bidder, shall whenever required by the owner produce such records and as and when the owner may all upon the Bidder ascertain whether or not the requirements of all such laws, regulations, rules etc. have been complied with by the Bidder. In the event of any contravention of such laws, regulations, rules etc., coming to light whether as a results of such inspection or otherwise, the owner shall have the right to make the prejudice to his other rights be entitled to withhold from the amount payable to the workmen under any such laws, regulations or rules and to make payment thereof to the workmen. The owner shall also have in that event the right to terminate the contract with immediate effect and to exercise powers reserved to the owner under the contract as a result of termination.

17.5 The Bidder shall be responsible at his own cost in and relative to performance of the work and contract to observe and to ensure observance by his sub-Bidders, if any , agents and servants of the provisions of the safety goods, as hereinafter appearing and all fire, safety and security regulations, as may be prescribed by the owner from time to time and such other precautions and measures as shall be necessary and shall employ/ deploy all equipment necessary to protect all works, materials, properties, structures, installations, communication facilities, whatsoever from damage, loss or any other hazard (including but not limited to fire and explosion) and shall during construction and other operations minimize the disturbance and inconvenience to the owner, other Bidders, the public and the adjoining land, property, crops, trees and vegetation and shall indemnify and keep indemnified the owner from all losses, damages, costs, charges, expenses, penalties, actions, claims, demand and proceedings whatsoever suffered or

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incurred by or against the owner, as the case maybe, by virtue of any loss, alternation, displacement, disturbance, destruction or accident to any works, materials, properties, structure, equipment, installations, communication facilities, land property, crops, trees and vegetation as aforesaid with the intent that the Bidder shall be exclusively responsible for any accident, loss, damage, alteration, displacement, disturbance or destruction, as aforesaid resulting directly or indirectly from any breach by the Bidder of his obligations, aforesaid or upon any operations, act or omission of the Bidder, his subBidder (s), if any, agent (s) or servant (s).

18. Approvals

It will be the successful tender's responsibility to get the works approved and obtain all certificates / permissions for radiography, plumbing, electrical, etc. from local, municipal, governmental or other required authorities, if applicable.



19. Safety/Security of Equipment/Property

- The responsibility for the safety, security of the components, materials, equipment brought or installed by the Bidder or handed over to him by the owner for completion of the work will remain with him till acceptance of the work by the owner. Any damage caused to the material/equipment during the execution of the work will be made good by the Bidder to have a guarantee /indemnity bond executed for the value of the material supplied to him free of cost as per the terms of agreement.
- The Bidder should ensure the safety of adjoining property and shall prevent any loss to product/ property resulting from his negligence.

20. Dismantling / Damage to Property

20.1 During execution of work if it is found necessary to dismantle a portion of existing bund wall, enclosure wall, compound wall, fencing, etc. to facilitate the movement of materials and equipment, the same shall be carried out after obtaining permission in writing from owner's authorized representative and shall also be made good by the Bidder at his own cast.

20.2 Any material obtained by the Bidder consequent upon dismantling of any building, structure or construction whatsoever at the job site other than any building, structure or construction dismantled by the Bidder pursuant to the Bidder's liabilities for defects as elsewhere herein provided, shall be exclusive property of the owner.

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20.3 Bidder shall be responsible for making good to the satisfaction of the owner any loss of and any damage to all structures and properties belonging to the owner any loss of any damage to all structures and properties belonging to the owner or being executed or procured or being procured by the owner or of other agencies within the premises of all the work of the Owner, if such loss or damage is due to fault and/or the negligence or willful acts of omission of the Bidder, his employees, agents representative or sub-Bidder.

20.4 The Bidder shall indemnify and keep the Owner harmless of all claims for damage to property other than Owner's property arising under or by reason of this agreement, if such claims result from the fault and/or negligence or willful acts or omissions of the Bidder, his employees, agents, representative or sub-Bidder.

21. Working Conditions-Safety Code

21.1 General

Bidder shall adhere to safe construction practice and guard against hazardous and unsafe working conditions and shall comply with Owner's safety rules as set forth herein.

21.2 First aid and Industrial Injuries



Bidder shall maintain first aid facilities for its employees and those of its sub-Bidders.

Bidder shall make outside arrangements for ambulance or suitable service and for the treatment of industrial injuries. Names of those providing these services shall be furnished to Site-in-Charge prior to start of construction, and their telephone numbers shall be prominently posted in Bidder's field Office.

All critical industrial injuries shall be reported promptly to Site-in-Charge, and a copy of Bidder's report covering each personal injury requiring the report covering each personal injury requiring the attention of a physician shall be furnished to Owner.

21.3 General Rules

Carrying/striking of matches, lighters and smokers inside the hazardous area, is strictly prohibited. Violators of the No Smoking Rules shall be discharged immediately. Within the operation area, no hot work shall be permitted without valid gas/safety/fire permits issued by the Owner. The Bidder shall be held liable and responsible for all lapses of his sub-Bidder's employees in this regard.

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21.4 Bidders Barricades

Bidder shall erect and maintain barricades required in connection with his operations to guard to protect:

- Excavations.
- Hoisting areas
- Areas adjusted by Bidder's or Owners inspectors
- Owner's existing property liable to damage by Bidder's operations, in the opinion of Owner/site-in-charge.

Bidder's employees and those of his sub-Bidders shall become acquired with owner's barricading practice and shall respect the provisions thereof.

Barricades and hazardous areas adjacent to but not located in normal routes of travel shall not be marked by red flasher lanterns at night.

21.5 Scaffolding



Suitable scaffoldings shall be provided for workmen for all works that cannot safely be done from the ground or from solid constructions except such short period work, as can be done safely from ladders. When a ladder is used, an extra worker shall be engaged for holding the ladder and if the ladder is used for carrying materials as well as suitable foot-holds and hand-holds shall be provided on the ladder and the ladder shall be given an inclination not steeper than 1 in 4 (a horizontal and 4 vertical).

Scaffolding or staging more than 30cm above the ground or floor swing or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached, bolted braced and otherwise rewarded at least 1 m high above the floor or platform of scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery materials. Such scaffoldings or staging shall be so fastened, as to prevent it from swaying from the building structure.

Working platform, gangways and stairways should be so constructed that they should not sag unduly or unequally and if the height of the platform or the gangway or the stairway is more than 30 cm above ground level or floor level, they should be closely boarded, should have adequate width and should be suitably fastened as described above.

Every opening in the floor of a building or in a working platform be provided with suitable beam to prevent the fall of persons or materials by providing suitable fencing or failing whose minimum height shall be 1 meter.

Safe means of access shall be provided to all working platform and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over

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10 meter in lengths, while the width between the side rails in ring ladder shall in no case be less than 30 cm for ladder upto and including 3 meters in length. For longer ladders this width should be increased by at least 6mm for spacing shall not exceed 15 cm. adequate precautions shall be taken to prevent danger from the electrical equipment. No material on any of the site of work shall be so staked or placed as to cause danger or inconvenience to any person or public. The Bidder shall also provide all necessary fencing and lights to protect the workers and staff from accidents, and shall be bound to bear the expenses of defense of every suit, action or other proceedings, at law that may be brought by any person for injury sustained owing to negligence of the above precautions and to pay damages and costs which may be awarded in any such suit or action or proceedings to any such persons, or which may be with the consent of the Bidder be paid to compromises any claim by such person.

21.6 Safety equipment

21.6.1 All necessary personal safety equipment as considered adequately by the Site-in-Charge should be made available for the use to the persons employed on the site and maintained in a condition suitable for immediate use, and the Bidder should take adequate steps to ensure proper use of equipment by those concerned.

21.6.2 Those engaged in welding and cutting works shall be provided with protective face and eye-shields, hand gloves etc.



21.6.3 Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective gloves.

21.6.4 When workers are employed in sewers and manholes, which are in use, the Bidder shall not employ men and women below the age of 18 years and women on the work of painting of products containing lead in any form, Whatever men above the age of 18 years are employed on the work of lead painting, the following precautions should be taken.

21.6.5 No paint containing lead product shall be used, except in the form of paste or ready-made paint.

21.6.6 Suitable face masks shall be supplied for use by the workers, when paint is applied in the form of spray or a surface having lead paint dry, rubbed and scrapped.

21.6.7 Suitable face masks shall be supplied for use by the workers, when paint is applied in the form of spray or a surface having lead paint dry, rubbed and scrapped.

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21.6.8 Overall shall be supplied by the Bidder to the workmen and adequate facilities shall be provided to enable the working painters to wash during the on cessation of work.



21.6.9 Hot work should be carried out only in the areas earmarked for the purpose after taking required safety precautions and only after obtaining written permission from the Site-in-Charge. Any provision required to be made e.g wind screens of G.I sheets etc. to make the area safe for hot work, will be made by the successful tendered at his own cost.

21.7 Risky Places

When the work is done near any place where there is a risk of drowning all necessary safety equipment shall be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision should be made for prompt first aid treatment of all injuries likely to be sustained during the course of the work.

21.8 Hoisting Equipment

- All the lifting tools and tackles shall be tested from competitive authority as per local Factory Rules.
- Use of hoisting machine and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions.
- These shall be of good mechanical construction, sound materials, and adequate strength free from patent defect and shall be kept in good conditions and in good working order.
- Every rope used in hoisting or lowering materials or as a means of suspension shall be durable quality and adequate strength and free from patent defects.
- Every crane driver of hoisting appliance operator shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding, winch or give signals to the operator.
- In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or lowering or as means of suspension the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load and the conditions under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.
- In case of departmental machine, the safe working load shall be notified by the Site-in-Charge. As regards, Bidder's machines, the Bidder shall notify the safe working load of the machine to the Site-in-Charge, whenever he brings any machinery to site of work and get it verified by the Site-In-Charge, concerned.

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- Bidder has to organize and maintain record for regular health checkup of the Bidder's staff/workmen as per local Factory Rules.

21.9 Electrical Equipment

Motors, gear transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load; adequate precautions shall be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulation mats, wearing apparel, such as gloves and boots as may be necessary shall be provided. The workers shall not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

21.10 Safety in Radiography Works

21.10.1 Planning & procedure for radiography initially should be formulated by Bidders and submitted to the proper authority. Procedure should be thoroughly discussed by all related persons for familiarization.

21.10.2 All radiation equipment and radioactive materials should be stored, handled, transported or disposed of so that no persons receive an unnecessary dose of radiation.

21.10.3 Shield ability of the radioactive materials container should be inspected every six months.

21.10.4 Warning signs and posters used internationally should be displayed.

21.10.5 Radiography should be performed under the direction of radioactive supervisors/officers responsible for this work.



21.10.6 All workers should be given/should have extensive knowledge of the work such as radiation procedure, operation of radiation apparatus and effects of radiation on the body.

21.10.7 The following spaces or areas should be classified as restricted areas.

- Storage place of radioactive materials
- Any area where the radiation exists at levels such that large portion of the body could receive a dose in excess of 30 milligrams per week.
- Emergency storage area for radiation apparatus or radioactive material capsules.

21.10.8 Warning signs, labels and safety ropes or a fence should be provided for restricted area to prevent trespassing. Poster showing the rated powder output that radiation is taking place. No entry allowed and the danger should be displayed where radiation work is being carried out. Before starting radiological work, the restricted area should have checked that no unauthorized persons in the area and reconfirmed during the radiation work.

21.10.9 All workers entering a restricted area should wear film badges sensitive to radiation

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21.10.10 Radiation apparatus should be operated by a supervisor or an Assistant, authorized by a supervisor

21.10.11 All workers who could receive a dose of radiation in excess of 100 milligrams per day should be wearing a pocket dosimeter. And the dose of radiation received should be recorded every day. The dose of radiation should be checked by the supervisor for each radiation exposure when the dose of radiation exceeds 100 milligrams

21.10.12 A supervisor should stand by or suitable alternative such as shortening the radiation time, reinforcing the shield plate etc should be arranged.

21.10.13 During radiation work doses of radiation at the boundary of the restricted area should be measured and recorded

21.10.14 The radiography supervisor should measure and record the surface dose rate of restricted area every day.

- Date of measurement.
- Measuring method
- Description & capacity of apparatus
- Measured condition
- Measurement condition
- Results of measurement
- Name of measurement
- Any action taken

21.10.15 Radioactive materials should be stored separately from other material or equipment. The storage place of radioactive materials should be 10 cm or more above the ground & locked to prevent accidents

21.10.16 Radioactive materials should be stored in a case made of lead of ample thickness with a lock on the exterior surface of the case. The name of the Company, description of materials, quantity and danger sign should be distinctly visible, labels and posters must indicate the description and quantity of radioactive material.



Name of responsible person and sign limits

21.11 Maintenance of Safety devices

All scaffolding, ladders and other safety devices mentioned or described herein shall be maintained in safe conditions and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near place or work.

21.12 Display of safety instruction

Safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at the work-spot. The person responsible for compliance of the safety code shall be named therein by the Bidder.

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21.13 Inspection and Monitoring

To ensure effective enforcement of the rules and regulations relating to safety precautions, the arrangements made by the Bidder shall be open to inspection by the Site-in-Charge.

21.14 No exemption

Notwithstanding the above Clauses 20.1 to 20.14, there is nothing in these to exempt the Bidder from the operations of any ACT or rules in force.

The works throughout including any temporary work shall be carried out in such a manner as not to interfere in any way whatsoever with the traffic on any roads or footpaths, at the site or in the vicinity thereto or any existing works, whether on the property of a third party.



No men/material equipment not covered by valid passes shall be permitted within the Project area and no material/equipment shall be permitted to be taken out of the Project area, unless authorized by the concerned authorities of the Project. The Bidder shall be held fully responsible for any or all delays/looses/damages that may result consequent on any lapse that may occur on the part of his sub-Bidders/employees in this regard.

22. Misconduct/Misbehavior of Bidders Employees

- The Bidder is expected to co-operate / co-ordinate with other Bidders carrying out work allocated to them so as to avoid breaking up of work already done by them or causing any hindrance in the progress of their work. In case there is any difficulty/dispute the same should be immediately brought to the notice of the Site-in-Charge.
- If any employee on behalf of the bidder shall, in the opinion of the Site-In-Charge be guilty of any misconduct of misbehavior, the Bidder if so directed by the Site-in-Charge shall at once, remove such person / persons from the site.

23. Patents and Royalties

- If any requirement, machinery or material to be used or supplied or method of processes to be practices or employed in the performance of the Bidder is/are covered by a patent under which the Bidder is not licensed, the Bidder shall before be supplying of using the equipment, machinery, materials, methods, processes, as the case may be, obtain such license (s) and pay such royalty (ies) and license fee (s) as may be necessary in connection with the performance of the contract. In the event that the Bidder fails to pay such royalty or obtain such license, the Bidder

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will defend at his own expense any suit for infringement of patent, which is brought against the Bidder to the owner, as a result of the failure, and shall pay any damage and costs awarded in such a suit and will keep the Owner indemnified from the against all other consequences thereof.

- The successful tenderer shall not sublet or assign any part of the work to another party without prior written consent of the owner. In any event, the successful tenderer will be solely responsible for the work so sublet or assigned.

24. Guarantee Period, Replacement of Defective Parts

A. Performance Guarantee

The Bidder shall guarantee the work done and any fittings designed / manufactured supplied by him against defective materials, poor workmanship, improper design and failure from normal usage, for a period of 12 (twelve) calendar months after being placed in service/operation or 18 (eighteen) calendar months after final acceptance of the work by the Owner, whichever is earlier.



B. WARRANTY

The Bidder will repair and/or replace all defective parts/components/fitting/accessories etc., which shall be notified to him in writing the “Guarantee Period” immediately on notification to the Bidder in writing by the Owner. The Bidder shall provide similar warranty on the parts, components, fittings, accessories etc, so repaired and/or replaced.

25. Packing, Marking and Dispatch Instructions

25.1 Packing & Marking

- All fragile and all exposed parts shall pack with care and the packages shall bear the works “WITH CARE” both in English and Hindi
- All nozzles, pipes and all sheets shall be marked with strips bearing progressive numbers.
- All holes /openings and also all delicate surfaces, shall be carefully protected against bad weather.
- All threaded fittings shall be greased and provided with plastic caps.
- All manufactured surfaces shall be painted with rust proof paint.
- All small pieces shall be packed in cases.

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The Bidder shall be held liable for all damages or breakages to the goods due to the defective or insufficient packing as well as for corrosion due to insufficient protections.

On three sides of the packages the following marks shall appear clearly visible and in indelible paint at Bidder's care and expenses.

FROM

.....

For M/s Aegis Logistics Limited

P.O No Item No

NET WT.....

GROSS WT.....

DIMENSIONS.....

CASE NO.....OF TOTAL.....CASES

All packages which require special handling and transport should have their centre of Gravity and the points at which they may be slung or gripped clearly indicated and marked 'ATTENTION SPECIAL LOAD HANDLING WITH CARE" both English and Hindi languages.

25.2 Dispatch Instructions

Bidder shall exercise due care and ensure that the consignment (s) shall be booked under appropriate railway classification, failing which any additional freight incurred by the Owner due to Bidder's booking the material under a wrong classification shall be to Bidder's account.



26. Miscellaneous

26.1 Weight and Measurements

All weight and measurements recorded by Site-In-Charge on receipt of goods at Site will be treated as final.

Bidders dispatch documents and invoices must contain the following data:-

- i. Unit Net Weight
- ii. Unit Gross Weight (Packing Included)
- iii. Dimensions of Packing
- iv. Packing list

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26.2 Oil and Lubricants

The first filling of oil and lubricants, if any, required for every equipment shall be included in the price and appropriate products blended or manufactured by BPCL, HPCL, IBP and IOC, Shell, Total etc. shall be used. The Bidder shall also recommend the quality/quantity of oils and lubricants required for one-year continuous operation.

26.3 Correspondence

The Communication Circle shall be identified in the Contract. However for pre-bid / post-bid clarifications, the Owner's representatives identified in the Tender introduction may be contacted or Email may be sent to eprocurement2@aegisindia.com



27. Progress Reports

The successful tenderer shall submit to the Office which has awarded the contract periodic (weekly / fortnightly) progress report of his works, as stipulated in the Special Conditions of the Tender.

28. Format for Bank Guarantee

The successful tenderer will have to furnish to the Owner the following Bank Guarantees as applicable in the Proforma enclosed:

- a) Proforma of Bank Guarantee In lieu of Earnest Money Deposit – Annexure II
- b) Proforma of Bank Guarantee for Performance – Annexure III



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29. Arbitration

29.1 Any dispute or difference of any nature whatsoever any claim, cross claim, counter-claim or set off of the Corporation against the Bidder or regarding any right, liability, act, omission or account of any of the parties hereto arising out of or in relation to this agreement shall be referred to the Sole Arbitration of the CEO, Aegis Logistics Limited., or to an Officer of the Company who may be nominated by the CEO. The Bidder will not be entitled to raise any objection to any such Arbitrator on the ground that the Arbitrator is an Office of the Company or that he has dealt with the matters to which the contract relates or that in the course of his duties as an Officer of the Company he had expressed views on all or any other matters in dispute or difference. In the event of the Arbitrator to whom the matter is originally referred being transferred or vacating his Office or being unable to act for any reason, the CEO as aforesaid at the time of such transfer, vacation of Officer of inability to act may in the discretion of the CEO designate another person to act as Arbitrator in accordance with the terms of the agreement to the end and intent that the original Arbitrator shall be entitled to continue the Arbitration proceedings notwithstanding his transfer or vacation of office as an officer of the Corporation if the Vice President LPG does not designate another person to act as Arbitrator on such transfer, vacation of officer or inability of original Arbitrator. Such persons shall be entitled to proceed with the reference from the point at which it was left by his predecessors. It is also a term of this contract that no person other than the CEO or a person nominated by such CEO of the Company as aforesaid shall act as Arbitrator hereunder. The award of the Arbitrator appointed shall be final conclusive and binding on all parties to the agreement subject to the provisions of the Arbitration Act, 1940 or any statutory modification or re-enactment thereof and the rules made there under for the time being in force shall apply to the arbitration proceedings under this clause.

29.2 The award shall be in writing and published by the Arbitrator within two years after entering upon the reference or within such extended time not exceeding further twelve months as the Sole Arbitrator shall by writing under his own hands appoint. The parties hereto shall be deemed to have irrevocably given their consent to the Arbitrator to make and publish the award within the period referred to hereinabove and shall not be entitled to raise any objection or protest thereto under any circumstances whatsoever.

29.3 The Arbitrator shall have power to order and direct either of the parties to abide by, observe and perform all such directions, as the Arbitrator may think fit having regard to the matters in difference i.e. dispute before him. The Arbitrator shall have all summary powers and may take such evidence oral and/or documentary, as the Arbitrator in his absolute discretion thinks fit and shall be

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entitled to exercise all powers under the Indian Arbitration Act 1940 including admission of any affidavit as evidence concerning the matter in difference i.e dispute before him.



29.4 The parties against whom the arbitration proceedings have been initiated, that is to say, the respondents in the proceedings, shall be entitled to prefer a cross-claim, or set off before the Arbitrator in respect of any matter in issue arising out of or in relation to the agreement without seeking a formal reference of arbitration to the CEO for such counter-claim, cross claim or set off and the Arbitrator shall be entitled to consider and deal with the same as if the matters arising there from has been referred to him originally and deemed to form part of the reference made by the CEO.

29.5 The Arbitrator shall be at liberty to appoint, if necessary any accountant or engineering or other technical person to assist him, and to act by the opinion so taken.

29.6 The Arbitration shall have power to make one or more awards whether interim or otherwise in respect of the dispute and difference and in particular will be entitled to make separate awards in respect of claims or cross-claims of the parties.

29.7 The arbitrator shall be entitled to direct any one of the parties to pay the costs of the other party in such manner and to such extent as the Arbitrator may in his discretion determine and shall also be entitled to require one or both the parties to deposit funds in such proportion to meet the Arbitrators expenses whenever called upon to do so.

29.8 The parties agree that the courts in the city of Mumbai alone shall have jurisdiction to entertain any application or other proceedings in respect of anything arising under this agreement and nay award or awards made by the Sole Arbitrator hereunder shall be filed in the concerned courts in the city of Mumbai only.

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30. Tender Checklist

Technical Bid Checklist:

- Bank Guarantee towards EMD.
- Balance Sheet as specified.
- Previous Similar Projects Details/Certificate of Controls copies issued by TPIA.
- JV Details if Applicable for previous Projects.
- JV/Consortium Details for this tender identifying Principle Bidder, if applicable.
- Deviation List, as applicable
- Details of Design and Construction facilities.
- Copies of ISO/OSHAS/other accreditations as applicable.
- Forms A-E
- QAP (Supply Items and Construction)
- Project Schedule – MS Project

Commercial Bid Checklist:

- Price Bid
- List of Outsourced Items
- Power of Attorney of the signatory to the tender.
- Solvency Certificate.



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**TENDER FOR FABRICATION AND ERECTION OF PROPANE
/ BUTANE STORAGE TANKS (T-201/202) AT HALDIA (W.B.)**

PART 2



**SECTION B - SCHEDULE OF RATES FOR FABRICATION & ERECTION
TANKS**

LOCATION - HALDIA



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SECT B - SCHEDULE OF RATES FOR FABRICATION & ERECTION TANKS



SN	Item Description	UO M	Qty *	Rate	Amount
1	Fabrication, Erection, Welding Testing and Calibration of 2 NOS. CRYOGENIC LPG Tanks (Capacity 12500MT each) on foundations at project site, Haldia (W.B.) including Loading & Unloading of all materials and bought - out items (including free issue plate materials), transportation, handling & storage at project site, inclusive of all fittings, appurtenances and other attachments like Staircases / ladders / platforms & firefighting support pads and sub-assemblies, etc. providing all machineries, equipment, tools, tackles, aids for construction / erection, mountings of pumps, instrumentation etc. whatsoever required, inspection & NDT, Hydro / hydro-Pneumatic testing, calibration & commissioning and mechanical guarantees in accordance with the applicable equipment specification / Codes / Standards, Drawings & documents enclosed / referred in the tender.	MT	2250		
2	Supply items other than Free Issue Materials				
2A	Nozzle Pipes (ASTM A333 GR. 6, Seamless)				
a	2" SCH-XS	Mtr	631		
b	3" SCH-XS	Mtr	21		
c	4" SCH-STD	Mtr	161		
d	6" SCH-STD	Mtr	302		
e	8" SCH-STD	Mtr	161		
f	12" SCH-STD	Mtr	48		
g	16" SCH-STD	Mtr	34		
h	18" SCH-STD	Mtr	17		
i	20" SCH-STD	Mtr	201		

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2B	Flanges				
2B.1	Flange (WNRF FLANGE ASME B16.5, A350 GR LF 2)				
a	2" - 300# - SCH-XS	No	24		
b	3" - 300# - SCH-XS	No	4		
c	4" - 300# - SCH-STD	No	8		
d	6" - 300# - SCH-STD	No	12		
e	8" - 300# - SCH-STD	No	14		
f	12" - 300# - SCH-STD	No	4		
g	12" - 150# - SCH-STD	No	4		
h	16" - 150# - SCH-STD	No	4		
h	18" - 300# - SCH-STD	No	2		
j	20" - 300# - SCH-STD (ASME B16.47 SERIES B, A350 GR LF 2)	No	6		
2B.2	Flange (WNRF FLANGE, ASME B16.47 SERIES B, A350 GR LF 2)				
a	24" - 150# - 6 THK	No	2		
b	36" - 150# - 6 THK	No	2		
c	48" - 150# - 6 THK	No	2		
2B.3	BLRF FLANGE (ASME B16.5, A350 GR LF 2)				
a	2" - 300#	No	8		
b	3" - 300#	No	2		
c	12" - 150#	No	2		
2B.4	BLRF FLANGE, ASME B16.47 SERIES B A350 GR LF 2				
a	24" - 150#	No	2		
b	36" - 150#	No	2		
c	48" - 150#	No	2		

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2C	Nozzle Fastner (STUD WITH TWO HEV.NUT, A350 GR L 7/ A 194 GR 4)			
a	1 1/8" UN 8 X 215 lg	No	100	
b	3/4" UNC X 110 lg	No	28	
c	5/8" UNC X 90 lg	No	112	
d	7/8" UNC X 130 lg	No	36	
e	7/8" UNC X 175 lg	No	100	
2D	Gasket (SS304 SPIRAL WOUND GASKET, ASME B 16.47 SERIES "B", DIN 1.4541 or equivalent)			
a	48" -150#-4.5 mm THK	No	8	
b	36" -150#-4.5 mm THK	No	8	
c	Gasket (SS304 SPIRAL WOUND GASKET, ASME B 16.5, DIN 1.4541 or equivalent))			
d	12" -150# - 4.5 mm THK	No	8	
e	3" -300# - 4.5mm THK	No	8	
f	2" -300# - 4.5mm THK	No	32	
2E	Sleeves for Nozzles			
a	48" Nozzle	No	2	
b	36" Nozzle	No	2	
c	20" Nozzle	No	6	
d	18" Nozzle	No	2	
e	16" Nozzle	No	4	
f	12" Nozzle	No	4	
g	8" Nozzle	No	3	
h	6" Nozzle	No	10	
i	4" Nozzle	No	8	
j	3" Nozzle	No	2	
k	2" Nozzle	No	12	



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3	Structural steel for stairways, ladders, platforms, hand railing, galvanized gratings etc. for single tank.				
A	Structural Steel	MT	28		
B	Galvanized Gratings	MT	20		
4	Painting				
A	Painting of Tanks - Outer Shell and Roof as per specifications of the tender	M ²	9000		
B	Painting of underneath of outer tank bottom plate as per specifications of the tender	M ²	2200		
C	Painting of Structural steel for stairways, ladders, platforms, hand railing etc. and nozzle pipes as per specifications of the tender	M ²	2300		
5	Manpower Supply on per diem basis for Pre-commissioning, commissioning, other requirements.				
A	Supervisor	Days	50		
B	Skilled	Days	200		
C	Semi-skilled	Days	200		
D	Unskilled	Days	200		



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Annexure I - SCOPE MATRIX



SN	Description	Client	Bidder
A.	<u>DESIGN & ENGINEERING</u>		
1.	Basic Design and GA drawings	*	
2.	Detailed Engineering / Fabrication drawings	*	
3.	Technical specification	*	
4.	Bill of quantities		*
5.	As built drawings (hard copies & soft copies in AutoCAD format)		*
6.	Civil Foundation	*	
B.	<u>SCOPE OF SUPPLY</u>		
1.	Tank plates	*	
2.	Structure, spiral staircase, platform, railing, gratings, etc.		*
3.	Nozzle pipes, flanges and plate material for manholes with cover and companion flanges.		*
4.	Tank mountings (Valves, breather valves, Instruments etc.)	*	
5.	Water for Hydro test (as per 7.2.1)		*
6.	All other materials and equipment required for the job.		*
C.	<u>CONSTRUCTION AIDS / TOOLS</u>		
1.	All construction Aids & Equipment		*
2.	Tools and tackles		*
3.	Hydraulic jacks / power packs etc.		*
4.	Temporary ladders, Lighting, scaffolding etc.		*
5.	Fire screen wall materials including GI sheets, pipes etc.		*
6.	Hydro test pumps, calibration meters, temporary piping, etc.,		*
7.	Temporary material for erection and hydro-testing like fasteners, gaskets, blinds, etc.		*
8.	Any other equipment / tools required.		*

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SN	Description	Client	Bidder
D.	<u>CONSUMABLES</u>		
1.	All consumables required for construction like welding electrodes, gases, grinding wheel etc.		*
2.	Consumables required for inspection and testing work.		*
3.	Consumable for construction aids like fasteners for rafter alignment.		*
4.	Other consumable materials		*
E.	<u>CONSTRUCTION UTILITIES</u>		
1.	Electricity		*
2.	Water		*
F.	<u>DOCUMENTATION</u>		
1.	QAP		*
2.	Project Schedule in MSP Format		*
3.	Fabrication drawings and BOQ	*	
4.	SOP for Erection, Testing, Welding, etc.		*
5.	WPS, PQR, WPQ		*
6.	Daily Progress Report		*
7.	Handing over documents consisting of internal inspection reports, RT films, As Built drawings, MTCs, welding electrodes certificate, Hydro test certificate, Calibration Report (duly certified by Weights and Measures department), tank settlement readings, etc. - in 4 set of spirally bind file and 1 CD for each tank		*
G.	<u>SCOPE OF WORK</u>		
1.	Procurement of plates	*	
2.	Unloading and Transportation of plates to required place from Storage yard to Tank Foundation.		*
3.	Procurement of Structures, gratings, nozzles, pipes, flanges, etc.		*
4.	Construction / Fabrication drawing.		*
5.	Preparations of material take off schedule.		*
6.	Overall quality control.	*	*
7.	Construction supervision and co-ordination work with owner / TPIA		*

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8.	Tank calibration & certification (Legal metrological dept./CPWD)		*
9.	Painting/coating of Tanks outer shell/ roof/ roof structure/ nozzle pipes/other structure etc.)		*
SN	Description	Client	Bidder
H.	<u>SCHEDULING</u>		
1.	Detailed scheduling, monitoring and progress reporting		*
I.	<u>QA/QC, INSPECTION AT SITE</u>		
1.	Carrying out all types of inspection and testing.		*
2	NDT (UT, RT, MPT, DP etc.) facility at site (radioactive source, storage incl. necessary permissions & handling facility, RT film developing / review facility etc.)		*
2.	Preparation of inspection test reports.		*
3.	Witnessing of Inspection / Tests & approvals of Inspection / Test Reports.	*	*
J.	<u>REPORTING</u>		
1.	All reports required by client.		*
K.	<u>INSURANCE</u>		
1.	Bidder's construction aid and temporary work.		*
2.	Workmen's compensation		*
3.	Any other insurances as per statutory requirement		*
4.	License from local labour commissioner		*

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ANNEXURE- II

PROFORMA OF BANK GUARANTEE

(In lieu of Earnest Money Deposit)

(On non-judicial paper of appropriate Value)

To,
M/s Aegis Logistics Limited
Unit No. 1202,
12th floor, Tower B,
Peninsula Business Park, G. K. Marg,
Lower Parel (West), Mumbai 400 013



Dear Sirs,

In consideration of Aegis Logistics Limited (hereinafter called "the Owner" which expression shall include its successors and assigns) having awarded certain work for an relative to _____

to _____ (Name and Address of the Bidder)



upon certain items and conditions interalia mentioned in the Owner's letter of Intent, (hereinafter collectively called the "the Bidder", expression shall include any formal contract entered into between the Owner and Bidder in suppression of the said Letter of Intent and all amendments and/or modifications in the Contract) inclusive of the condition that the owner may accept a Bank Guarantee of a Scheduled Bank in India in lieu of Cash Deposit of the EMD as provided for in Clause 4.1 of the General Conditions of Contract:

We, _____ (Name of the Bank) Having registered and head office at (hereinafter called "the Bank") at the request of the Bidder and with the intent to bind the Bank and its successors and permitted assigns, do hereby unconditionally and irrevocable guarantee payment to the Owner at Mumbai of the unpaid balance of the EMD up to an aggregate limit of Rs. 25,00,000/- (Rupees Twenty-Five Lacs only) AND undertake to pay the Owner on demand and without protect or demur.

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AND the Bank does hereby further agree as follows: -

- i. The guarantee/undertaking herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and the claims of the Owner relative thereto satisfied and/or discharged and the Owner accordingly discharges this Guarantee/Undertaking subject. However, that the Owner shall have no claim under this Guarantee/undertaking has been served on the Bank before the expiry of the said date, in which event the same shall be enforceable against the Bank notwithstanding that the same is enforced after the expiry of the said date namely
- ii. The Owner shall have the fullest liberty without reference to the Bank and without affecting in any way the liability of the Bank under this Guarantee/Undertaking, at any time and/or from time to time to anywise vary the said contract and/or any of the terms and conditions thereof or of or relative to the said EMD or to extend time of performance of the said Contract in whole or part or to postpone for any time and/or from time to time any of obligations of the Contract and/or power exercisable by the Owner against the Bidder the Bidder and either to enforce or for bear from enforcing any of the terms and conditions of or covering the said Contract or the said EMD or the securities available to the Owner or any of them and the Bank shall not be released from its liability under these presents and the liability of the Bank shall remain in full force and effect notwithstanding any exercise by the Owner of the liberty with reference to any or all the matters aforesaid or the reason of time being given to the Bidder or any other forbearance, act or omission on the part of the Owner or any indulgence by the Owner to the Bidder or of any other act, matter of thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of releasing the bank from its liability hereunder of any part.
- iii. It shall not be necessary for the Owner to proceed against the Bidder before proceeding against the Bank and the Guarantee/Undertaking herein contained shall be enforceable against the bank notwithstanding the existence of any other security for any indebtedness of the Bidder to the Owner (including relative to the said EMD) and notwithstanding any such security shall at the time when claim is made against the Bank or proceedings taken against the Bank hereunder, the outstanding or unrealized
- iv. The amount stated by the Owner in any demand, claim or notice as the unpaid balance of the said EMD for the time being shall as between the Bank and the Owner for the purpose of these presents be conclusive of the said balance.

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- v. The liability of the bank to the Owner under this Guarantee/undertaking shall remain in full force and effect notwithstanding the existence of any difference or dispute between the Bidder and the Bank/and or the Bank and the Owner, or otherwise howsoever touching or effecting these present or the liability of the Bidder to the Owner and notwithstanding the existence of any instructions or purported instructions by the Bidder or any other person to the Bank not to pay or for any cause withhold or defer payment to the Owner under these presents with the intent that notwithstanding the existence of such difference, dispute or instruction , the Bank shall be and remain liable to make payment to the Owner in terms hereof.
- vi. The bank shall not revoke this Guarantee/undertaking during its currency except with the previous consent of the Owner in writing and also agree that any change in the constitution of the Bidder or the Bank or Owner shall not discharge the Bank's liability hereunder.

-----who is-----is
(on behalf of the Bank) (his designation) authorized
to sign this Guarantee/undertaking on behalf of the bank and to bind the Bank
thereby.

Date this _____ day of _____ 20____



Yours faithfully,

For

Signature

Name & Designation

Name of the Branch.

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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ANNEXURE- III

PROFORMA OF BANK GURANTEE

(Performance)

(On Non-Judicial for 10% of Contract Value)

To,

M/s Aegis Logistics Limited

Unit No. 1202,

12th floor, Tower B,

Peninsula Business Park, G. K. Marg,



Lower Parel (West), Mumbai 400 013

Dear Sir,

In Consideration of the Aegis Logistics Limited (hereinafter called "the Owner" which expression shall include its successors and assigns) having awarded to M/s _____ (name) _____ (constitution) _____ (address) (hereinafter referred to as "the supplier/Bidder" which expression shall wherever the subject or context so permits include its successors and assigns) a supply contract in terms inter-alia, of the Owner's Purchase Order No. _____ dated _____ and the general Purchase Conditions of the Owner and upon the condition of Supplier's furnishing security for the performance of the Supplier's obligations and/or discharge of the Supplier's liability under and/or in connection with the said supply contract upto a sum of Rs. _____ (Rupees _____ only) amount to 10% (ten percent) of the total contract value.

We, _____ (name) _____ (constitution) (hereinafter called "the Bank which expression shall include its successors and assigns) hereby jointly and severally undertake the guarantee to pay to the Owner in Rupees forthwith on demand in writing and without process or demur of any and all moneys anywise payable by the supplier to the Company under, irrespective of or in connection with the said supply contract inclusive of all the Owner's losses and damages and costs (inclusive between attorney and client). Changes and expenses and other money anywise payable in respect of the above as specifies in any notice of demand made by the Owner to the Bank with reference to this Guarantee up to and aggregate limit of Rs _____ (Rupees _____ only) And the Bank hereby agrees with the Owner.

i) This Guarantee/Undertaking shall be a continuing Guarantee/Undertaking and shall remain valid and irrevocable for all claims of the Owner and liabilities of the Supplier arising up to and until midnight of _____. This date shall be a month from the last date of guarantee period.

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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ii) This Guarantee/Undertaking shall be addition to any other guarantee or security whatsoever that the Owner may now or at any time anyway have in relating to the Supplier's obligations/liabilities under and/or in connection with the said contract, and the Owner shall have full authority to take recourse to or reinforce this security in preference to the other security(ies) at it sole discretion, and no failure on the part of the Owner in enforcing or requiring enforcement of any other security shall have the effect of releasing the Bank from its full liability hereunder.



iii) The Owner shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder to take any other security in respect of the supplier's obligations and/or liabilities under or in connection with the said supply contract and to vary the terms vis-à-vis the supplier of the said supply contract or to grant time and/or indulgence to the supplier of the said supply contract or to grant time and/or indulgence to the supplier of the said supply contract or to grant time and/or indulgence to the supplier or to reduce or to increase or otherwise vary the prices of the total contract value or to release or to forebear from enforcement of all or any of the obligations of the supplier under the said supply contract and/or the remedies of the Owner under and other security(ies) now or here-after held by the Owner and no such dealing(s), variation(s), reduction(s), increase(s) or other indulgence(s), or arrangement(s) with the supplier or release or forbearance what-so-ever shall have the effect of releasing the Bank from its full liability to the Owner hereunder or of prejudicing rights of the Owner against the Bank.

iv) This Guarantee/Undertaking shall not be determined or affected by the liquidation or winding up, dissolution, or charge of constitution or insolvency of the supplier but shall in all respects and for all purposes be binding and operative until payment of all moneys payable to the Company in terms hereof

v) The bank hereby waives all rights at any time inconsistent with the terms of this Guarantee/Undertaking and obligations of the Bank in terms hereof shall not be anyway affected or suspended by reason of any dispute or disputes having been raised by the supplier (whether or not pending before any Arbitrator, Officer, Tribunal or Court) or any denial or liability by the supplier of any other order or communication whatsoever, by the supplier or preventing or purporting to stop or prevent any payment by the bank to the Owner in terms hereof.

The amount stated in any notice of demand addressed by the Owner to the Guarantor as liable to be paid to the Owner by the supplier or as suffered or incurred by the owner on account of any losses or damages of costs, charges and/or expenses shall as between the Bank and the Owner be conclusive of the amount so liable to be paid to the Owner or suffered or incurred by the Owner, as the case may be, and payable by the Guarantor to Owner in terms hereof.

Yours faithfully,



	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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**TENDER FOR FABRICATION AND ERECTION OF PROPANE
/ BUTANE STORAGE TANKS (T-201/202) AT HALDIA (W.B.)**

PART 2

SECTION C - SPECIAL CONDITIONS OF TENDER

LOCATION - HALDIA

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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SECTION C - Special Conditions of Tender

1. Basis of offer

- 1.1. The offer shall be valid for a minimum period of 3 months (90 days) from the due date of the tender.
- 1.2. The prices quoted shall remain firm without any escalation till the completion of contract.
- 1.3. If the items need to be imported involving foreign Exchange, the Bidder shall indicate the exchange value considered for the imports.

2. Progress Reports



The Bidder has to submit progress reports and inspection report of their work fortnightly and on critical items weekly to the Owner. The Bidder will also submit Project Plan in MS Projects including Resource Planning.

3. Guarantees

- 3.1. The Construction shall be guaranteed for a period of 12 months from the date of commissioning or 18 months from the date of handing over after the final acceptance for faulty design, workmanship, and material supplied by Bidder.
- 3.2. In case of bought out items by Bidder, Bidder will provide supplier's guarantee for a period of 12 months from the date of commissioning equipment or 18 months from the date of supply whichever is earlier for faulty design, workmanship, and material.
- 3.3. The above guarantees shall be supported by a performance Bank Guarantee (Proforma attached) for 10% of the total value of the order. This Guarantee shall be submitted before payment of first RA bill or expiry of EMD Bank Guarantee.

4. Delivery Schedule

- 4.1. The maximum duration of the Project will be (including erection and hydro testing) shall be 10 months from the date of handing over of the tank foundation.
- 4.2. The delivery period quoted shall be firm and guaranteed. It shall be counted from the date of Letter of Intent.
- 4.3. The Bidder shall also indicate along with the bid, the time schedule for various stages of work by way of Bar Chart using MS Projects.
- 4.4. In case of any delay in completion of the work beyond the scheduled completion date, the Owner shall be entitled to be paid Liquidated Damages by the

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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Bidder. The liquidated damages shall be initially at the rate of 0.5% (half percent) of the total contract value for every week of the delay subject to a maximum of 5% of the total contract value. The liquidated damages shall be recovered by the Owner out of the amounts payable to the Bidder or invoking from any of the Bank Guarantees.

4.5. In case the Bidder is instructed by the owner to delay mobilization to site, the delivery period will be adjusted accordingly. However, no compensation will be payable on this account to the Bidder.

4.6. Delay in procurement of the material in the Bidder's scope will not be considered as a reason for extension of delivery period.

4.7. Tenderer may improve upon the delivery schedule and indicate the same.

5. Earnest Money Deposit

The tenderers are required to pay Earnest Money Deposit of Rs. 25,00,000/- (Rupees Twenty-Five Lakhs only) in form of Bank Guarantee, valid atleast until 180 days from the date of opening of tender as per Proforma attached.

Any bid without the enclosure of EMD shall be rejected.

6. Terms of Payment

Fabrication, Erection & Commissioning

The stages of payment for Tank Construction shall be as under:

20 % against fabrication

25 % against erection

35 % against welding



10 % against testing and calibration

10 % after completion / submission of handover documents including As-Built drawings and bank guarantee for period stated above

The payment for supply of Bought-out shall be 100% upon supply and acceptance at site.

7. Taxes, Excise Duty and Levies

The Bidder will quote separately the Service Tax and any other statutory levies as applicable on the date of tendering. Any change in levies / excise duty / other statutory levies after the due date of tender will be paid / reimbursed separately on production of documentary evidence.

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8. Information to Be Furnished by The Tenderer

The tenderer is required to enclose the following documents as part of his tender: -

- a) Power of attorney of the signatory to the tender.
- b) Details of equipment, tools and tackles proposed to be deployed at site - **Form 'A'**.
- c) Site organization proposed to be set up by the tenderer including bio data of site - in-charge and key personnel in the **Form 'B'**.
- d) Exception and deviation, if any as a separate Annexure.
- e) Additional and necessary informational elaborated write-up etc. (except price figures) in regard to their offer/tender in Annexure.
- f) Schedule of labour rates.
- g) Details of similar work done during past Seven Years **Form 'C'**.
- h) Concurrent commitments of the tenderer in **Form 'D'**.
- i) Latest Income tax clearance certificate & Solvency Certificate from a Nationalized / RBI approved Foreign bank, certifying Bidders capability to undertake the jobs costing Rs. 20 crores and above.
- j) Declaration of Understanding - **Form 'E'**.

Additional Information:



1. Year of incorporation / establishment
2. VAT / CST / Excise registration number
3. PAN number
4. Any other details

Name and Address of Bidder

Authorized Signatory

Place and company seal

Name and designation

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FORM 'A'

AEGIS LOGISTICS LIMITED

NAME OF WORK: FABRICATION / CONSTRUCTION OF TANKS



NAME OF TENDERER:

DETAILS OF EQUIPMENT, TOOLS, TACKLES ETC (FORM-A)

Tenderer shall submit herein details of equipment, tools, tackles etc. required to perform the work and shall note in each case whether the same is (a) already owned by tenderer and available for use on his contract, (b) anticipated to be hired by Bidder or (c) anticipated to be purchased by Bidder. In case of (a), present location shall be stated. In case of (b) and (c), location of hirer or supplier shall be stated.

No. of items	Description & Capacity	Make, Model	Year of manufacture	Category (a) or (b) or (c) above	Location	Remarks if any

1. Bidder agrees to augment the above chart with additional number / categories of equipment, if required to complete the work within the agreed time schedule of completion as directed by the Site - In - Charge.

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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FORM B

AEGIS LOGISTICS LIMITED

NAME OF WORK: FABRICATION / CONSTRUCTION OF TANKS

NAME OF TENDERER:



PROPOSED SITE ORGANISATION

The tenderer is to indicate here the proposed site organization he proposes to set up at each site for execution of the work. It is understood that this will be augmented from time to time depending on the requirements for timely completion of work, as directed by site in charge.

Note:

Bio-data of Site -In-Charge and key personnel proposed to be posted for this job should be attached.

A Planning Engineer for scheduling card monitoring of the work, of the tenderer will be associated full time for the entire duration of the work.

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FORM -C



NAME OF WORK: FABRICATION / CONSTRUCTION OF TANKS

NAME OF TENDERER

Details of Similar Works done during past Seven Years

S N	Full Postal address of the Client & Name of Officer-in charge	Description of the Work	Value of the Contract	Comme ncement Date of Work	Actual completi on time	Year of comple tion	Remar ks
1	2	3	4	5	6	7	8

Signature of Tenderer

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FORM-D

NAME OF WORK: FABRICATION / CONSTRUCTION OF TANKS

NAME OF TENDERER :

Concurrent Commitments of the Tenderer

S N	Full Postal address of the client & Name of Officer-in charge	Descriptio n of the Work	Value of the Contract	Date of commenc ement of Work	Schedule d completi on time	% of comple tion	Expecte d date of complet ion
1	2	3	4	5	6	7	8

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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FORM E

Declaration of Understanding

I / We hereby declare that we have read and understood the scope and specifications in every minute detail. The Site Conditions are verified and the rates quoted are in adherence to statutory and site conditions.

The Standards referred in the Tender Specifications are also been reviewed and understood prior to bidding. Upon being awarded, we shall execute the complete Contract with total satisfaction to the Owner.

The deviation request has been presented for items deemed needful.

This understanding is being endorsed by us even on behalf of the Sub-Bidders, Vendors, and JV partners.

Authorized Signatory



**ATTACHMENTS FOR
SUPPLY, FABRICATION & ERECTION OF
PROPANE / BUTANE STORAGE TANKS,
AEGIS LOGISTICS LIMITED, HALDIA**

 PROJECTS & DEVELOPMENT INDIA LTD	EM150-DD-9511-T201/202	3	
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	SHEET 1 OF 5		

PROPANE/BUTANE STORAGE TANK (T-201/202)

FOR

CRYOGENIC LPG STORAGE TERMINAL, HALDIA

REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD
3	28.08.15	28.08.15	Client's comments incorporated	PM	SCA	SCA
2	19.06.15	19.06.15	Client's comments incorporated	PM	SCA	SCA
1	08.05.15	08.05.15	Client's comments incorporated	PM	SCA	SCA
0	17.04.15	17.04.15	Client's comments incorporated	PM	SCA	SCA

	PROCESS DATA SHEET PROPANE/BUTANE STORAGE TANK (T-201/202)	EM150-DD-9511- T201/202	3
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Project : Cryogenic LPG Storage Terminal Haldia		Plant/Section : Propane/Butane Storage	
Equipment: Propane/Butane Storage tank		Equipment Name: T-201,T-202	
No. Of Units: 2		Service : Storage of Liquid Propane/Butane	
Size: (Inner/Outer) mm ID: 35000/37000 (Inner/Outer)mm HT: 25000/26000		Position: Horizontal () Vertical (✓)	
Design Data		Material Of Construction	
Fluid : Liquid Propane/Butane		Outer Tank	Inner Tank
Capacity: 12500 MT Type: Double Wall Full Containment ² , Cup in Tank, Insulated with suspended deck		Shell & Bottom	LTCS
	Outer Tank	Inner Tank	Roof
			LTCS
Working Pressure	1200 mmWC	Liq. Head	
Design Pressure	Liq. Head + 2000 mmWC & (-) 50 mmWC	Liq. Head	
Working Temp, °C ²	-43.1	-43.1	
Design Temp, °C ²	-45/55	-45/55	
Design Specific Gravity	0.600		
Corrosion Allowance, mm	Note-1	Note-1	

Nozzle Details:

Nozzles For	Name	No	Size (inch)	Rating	Remarks
Roof Manhole	N1	1	48	150#RF	With Blind Flange
Roof Manhole	N2	1	36	150#RF	With Blind Flange
Spare Nozzle	N3	1	3	300#RF	With Blind Flange
Pump Column ¹	N4-A,B,C	3	30	300#RF	Size On Hold. To be confirmed by Pump Vendor.
Liquid Outlet from Pump Discharge ¹	N5-A,B,C	3	8	300#RF	Size On Hold. To be confirmed by Pump Vendor.
Column Purge Top ¹	N6-A,B,C	3	2	300#RF	
Column Purge Bottom ¹	N7-A,B,C	3	2	300#RF	With Blind Flange. Nozzle location to be confirmed by Pump Vendor.
Liquid Inlet from Jetty	N8-A,B	2	12	300#RF	
Vapour Outlet(Compressor Suction) ³	N9	1	18	150#RF	

	PROCESS DATA SHEET PROPANE/BUTANE STORAGE TANK (T-201/202)	EM150-DD-9511- T201/202	3
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Top Spray	N10	1	2	300#RF	
Vacuum Protection (from Heater/ Condenser) 	N11	1	6	300#RF	
Pump Minimum Recirculation Line (In Tank Pump & Booster Pump) 	N12	1	4	300#RF	
Outer Tank Purge 	N13	1	2	300#RF	To be provided with distribution pipe along whole annular space.
Level Transmitter(Radar Type) 	N14	1	6	150#RF	To be provided with guide pipe. Instrument Vendor to provide details.
Level Transmitter(Servo Type) 	N15	1	8	150#RF	To be provided with guide pipe. Instrument Vendor to provide details.
Vent Top on Roof	N16	1	2	300#RF	
Safety Valve 	N17-A,B	2	16	150#RF	
Level Transmitter(Servo Type) 	N18	1	8	150#RF	To be provided with guide pipe. Instrument Vendor to provide details.
Breather Valve 	N19-A,B	2	12	150#RF	One nozzle to be provided with blind flange.
Pressure Transmitter	N20-A,B	2	2	300#RF	
Multipoint Temperature Element (Bulk Liquid) 	N21-A,B	2	4	300#RF	To be provided with guide pipe. Instrument Vendor to provide details.
Vacuum Protection by Nitrogen 	N22	1	4	300#RF	
Multipoint Temperature Indicator for Bottom & Shell (Cool Down Temperature) 	N23-A,B	2	6	300#RF	Instrument Vendor to provide details. Location Details indicated on Sheet 5 of 5.
Vent below deck 	N24	1	6	300#RF	
Vent above deck/N ₂ inlet to outer tank 	N25	1	8	300#RF	
N ₂ inlet to inner tank 	N26	1	2	300#RF	To be provided with blind flange. To be extended up to bottom for puddle heating purpose.
PSV Return line to Tank 	N27	1	6	300#RF	

General Notes:

1. Corrosion Allowance:

a) Shell & Bottom Plate: 1.5 mm (Inner & Outer tank)

b) Roof & Deck: 1.0 mm

2. The dimensions of storage tank have been specified for storing 12500MT Liquid Propane/Butane.

3. Minimum Liquid Level of tank to be confirmed by Intank Pump Vendor.

	PROCESS DATA SHEET PROPANE/BUTANE STORAGE TANK (T-201/202)	EM150-DD-9511- T201/202	3
		DOCUMENT NO	REV
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4. Operating Temperature of butane is -6.2°C. Δ 1
5. Insulation of all nozzles to be provided. Δ 1
6. Tank inner piping alongwith expansion loops for the same shall be taken care of.
7. Δ 1 Insulation Details: (a) Shell: 250mm Polyurethane Foam & covering of GI pre colour coated sheet. Δ 2 (b) Suspended Deck: 300mm Fibre Glass Wool (c) Bottom: 300mm Foam Glass Maximum Thermal conductivity of insulations at 0°C is as follows: (i) Fibre Glass Wool = 0.035W/m-°K (ii) Polyurethane Foam = 0.03 W/m-°K (iii) Foam Glass = 0.048 W/m-°K
8. Δ 2 Safety Valve (1 WORKING + 1 STANDBY) details are as follows: (i) SET PRESSURE : 0.2Kg/cm ² g, (ii) BACK PRESSURE : 0.1Kg/cm ² g, (iii) OVER PRESSURE = 10% (iv) Maximum Allowable FLOW RATE = 44000Hg/hr
9. Δ 2 Maximum Liquid Pump Out Rate from Tank = 280m ³ /hr
10. Δ 2 Maximum Vapour Out Rate from Tank = 15174Kg/hr
11. Δ 2 Maximum Liquid Inlet from Jetty = 900T/hr

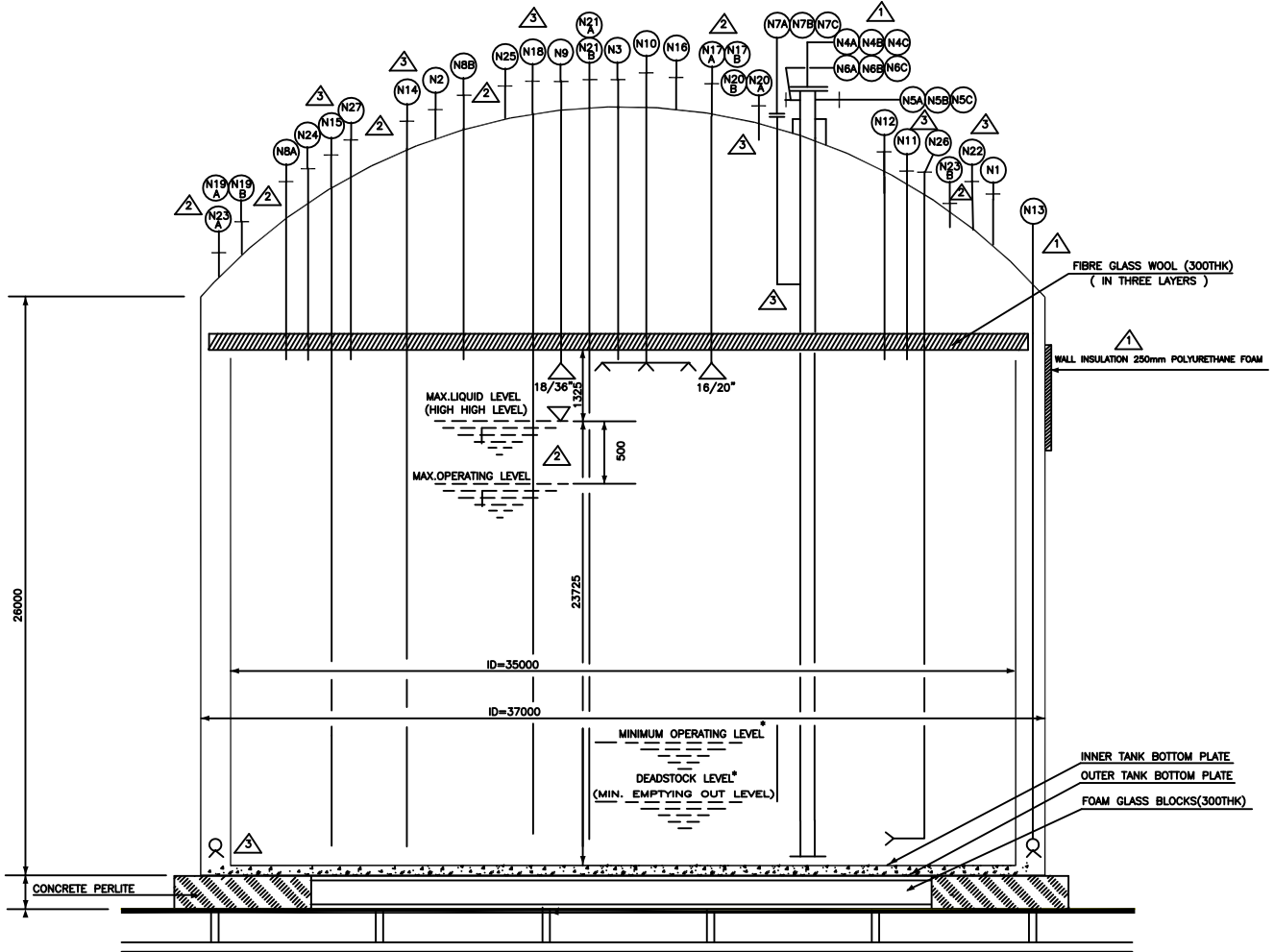
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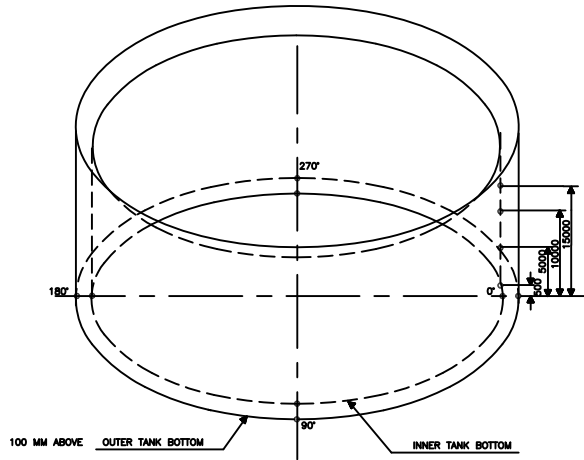
TITLE: PROPANE/BUTANE STORAGE TANK
 PLANT: LPG TERMINAL
 CLIENT: AEGIS LOGISTICS LIMITED

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DRAWING NO.	REV
SHEET 5	OF 5



T-201/202

NOTE- * TO BE PROVIDED BY IN TANK PUMP VENDOR



ORIENTATION OF TEMPERATURE ELEMENTS (N23A&B)



3	28.08.2015	CLIENT'S COMMENTS INCORPORATED	PM	SCA	SCA
REV NO.	DATE	DESCRIPTION	PPD. BY	CHKD. BY	APPD. BY
DOCUMENT/DRAWING NO. EM150-DD-9511-T201/202				SHEET 5 OF 5	

 PROJECTS & DEVELOPMENT INDIA LTD	EM150-TS-DOC-405	0	
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GENERAL INSTRUCTION
FOR
DOCUMENTATION SCHEDULE
OF
PROPANE / BUTANE STORAGE TANKS (T-201/202)

CRYOGENIC LPG STORAGE TERMINAL
M/S AEGIS, LOCATION – HALDIA



0	05.02.16	05.02.16	ISSUED FOR ENQUIRY	PK	NB	SM
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

	DOCUMENTATION SCHEDULE PROPANE / BUTANE STORAGE TANKS CLIENT: AEGIS, HALDIA	EM150-DOC-405	0	
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		SHEET 2 OF 4		



GENERAL INSTRUCTION FOR DOCUMENTATION SCHEDULE

The Bidder shall furnish the information/ documentation as listed below in the table at various stages right from bid submission to execution of job:

- a) Complete write up along with necessary procedures for site fabrication, assembly and erection scheme & testing and commissioning etc. as required. The bidder shall develop the details of welding joints, location of weld seams joints, welding procedures, specification of all electrodes, detailed NDT requirements, Hydrostatic/hydro-pneumatics/pneumatic testing details, general & construction requirements etc. The approval on the same shall be taken from the concerned site in charge/Owner's representative.
- b) All drawings/documents shall be in the metric system.
- c) Necessary changes required during fabrications and erections shall be marked on the fabrications drawings and all such final As-built drawings shall be properly arranged, indexed and bound in one folder.
- d) All drawings/documents, their number of copies and schedule for approval and submission shall be as specified below:
- e) The delivery time in days from the date of letter/telex of intent/order for each document is given below. Drawings/documents are to be received in a state suitable for action required.

	DOCUMENTATION SCHEDULE	EM150-DOC-405	0	
	PROPANE / BUTANE STORAGE TANKS	DOCUMENT NO	REV	
	CLIENT: AEGIS, HALDIA	SHEET 3 OF 4		

Sl. No.	Documentation	with Bid	Delivery Time in Weeks from placement of Letter of Intent (LOI)		
			For approval	For information	Final / approved/ As-built
1.		Y/N			
(a)	List of drgs. / documents	N	4	-	10
(b)	Hydrostatic/hydro-pneumatics/pneumatics pressure-time diagram	N	4	-	10
2.	Quality assurance plan / testing plan**	N	4	-	10
3.	Marked up As-Built drawings **	N	4	-	- After Completion
4.	Fabrication, installation & erection scheme, Hydrostatic/hydro-pneumatics/pneumatic & vacuum test procedures, painting specifications & application, calibration procedures etc.	N	4	-	- Do -
5.	Welding procedure specification, welding procedure qualification reports, welder test reports & manufacturing technology reports (**)	N	4	-	- Do -
6.	Mill test certificates/report, radiography and stress relieving chart, welding procedure report & welders test report, hydro-pneumatic & vacuum test reports and other NDT reports etc. (to be submitted in a consolidated bound volume) (**)	N	-	-	- Do -
7.	Site inspection record (**)	N	-	-	- Do -
8.	Manufacturer's data report signed by the tank manufacturer and the qualified inspector (together with all partial data reports if any) and facsimiles (photographs or "pencil rubbings") of the required stamping as per code and spec. the Bidder however, may submit his own standard type of report provided all the information (includes the certified statement) required is contained on the manufacture's report (**)	N	-	-	- Do -
9.	Final acceptance certificate (**)	N	-	-	- Do -
10.	Mechanical guarantee certificate duly signed by Owner's authorised representative (**)	N	-	-	- Do -
11.	Record / drawings, charts duly approved, signed and stamped copies by statutory authority/ approving authorities (**)	N	-	-	- Do -
12.	All radiography films (**)		-	-	- Do -
13.	Record of Differential settlement(**)		-	-	-
GENERAL					

	DOCUMENTATION SCHEDULE PROPANE / BUTANE STORAGE TANKS CLIENT: AEGIS, HALDIA	EM150-DOC-405	0	
		DOCUMENT NO	REV	
		SHEET 4 OF 4		

1.	Master Time Schedule/Network (PERT Network/Bar chart) showing all the activities required for work (like material procurement, fabrication, installation & erection, PWHT, painting, hydro/hydro-pneumatic testing, calibration including transportation etc.)	Y	-	4	-
2.	Man Power deployment schedule along with major list of tools, tackles, equipments , machinery etc.	Y	-	4	-
3.	Complete write up for site fabrication, installation and erection scheme, Hydrostatic/hydropneumatics/pneumatic testing etc.	Y	-	4	-
4.	Reference list of executing similar jobs for large capacity cryogenic storage tanks of in the last five years.	Y	-	-	-

Note:

- Final documentations shall be supplied in hard copies as well as soft copies in CD formats. Applicable software's are PDF, AUTOCAD, MS Office 2000 and above, Word, Access, Excel etc. Document marked as (**) are to be approved by authorised Inspection Agency.
- Bidder shall submit document in required number of sets as stated elsewhere in commercial part.

	LIST OF DEVIATIONS PROPANE / BUTANE STORAGE TANKS CLIENT: AEGIS, HALDIA	EM150-PNMV-TS405-D1	0	
		DOCUMENT NO	REV	
		SHEET 1 of 2		

FORMAT FOR LIST OF DEVIATIONS

The requirements and guidelines set forth in the Technical part of tender are binding and the Bidder shall take due cognizance of all the causes before submitting the Bid. If however any deviation from Technical part of Tender requirements, sought by the Bidder the same shall be indicated clearly against the relevant clauses in the enclosed format. Any deviation not listed in the enclosed format shall not be considered. It will be presumed that the Bidder has accepted all the other conditions stipulated in Technical part of tender for all intent and purposes - wherever the deviations are not clearly earmarked.

0	05.02.16	05.02.16	ISSUED FOR ENQUIRY	PK	NB	SM
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

	LIST OF DEVIATIONS		EM150-PNMV-TS405-D1	0	
	PROPANE / BUTANE STORAGE TANKS		DOCUMENT NO	REV	
	CLIENT: AEGIS, HALDIA		SHEET 2 of 2		

LIST OF DEVIATIONS

SL. NO.	TENDER REF. NO.	CLAUSE	DESCRIPTION OF CLAUSES	PROPOSED DEVIATION

0	05.02.16	05.02.16	ISSUED FOR ENQUIRY	PK	NB	SM
REV	REV DATE	EFF DATE	PURPOSE	PREPD	REVWD	APPD

	DEVIATION/CONCESSION/WAIVER PERMIT PROPANE / BUTANE STORAGE TANKS CLIENT: AEGIS, HALDIA	EM150-PNMV-TS405-W1	0	
		DOCUMENT NO	REV	
		SHEET 2 of 2		

Inspectors/RCM Comments/Recommendations :
(Incase of deviation from subcontractors)

Signature: _____
Name : _____
(RCM/Inspecting Officer, Owner)

COMMENTS/RECOMMENDATIONS:



Signature: _____
Name : _____
(Originator of specified requirements)

Co-ordination with interfacing departments:

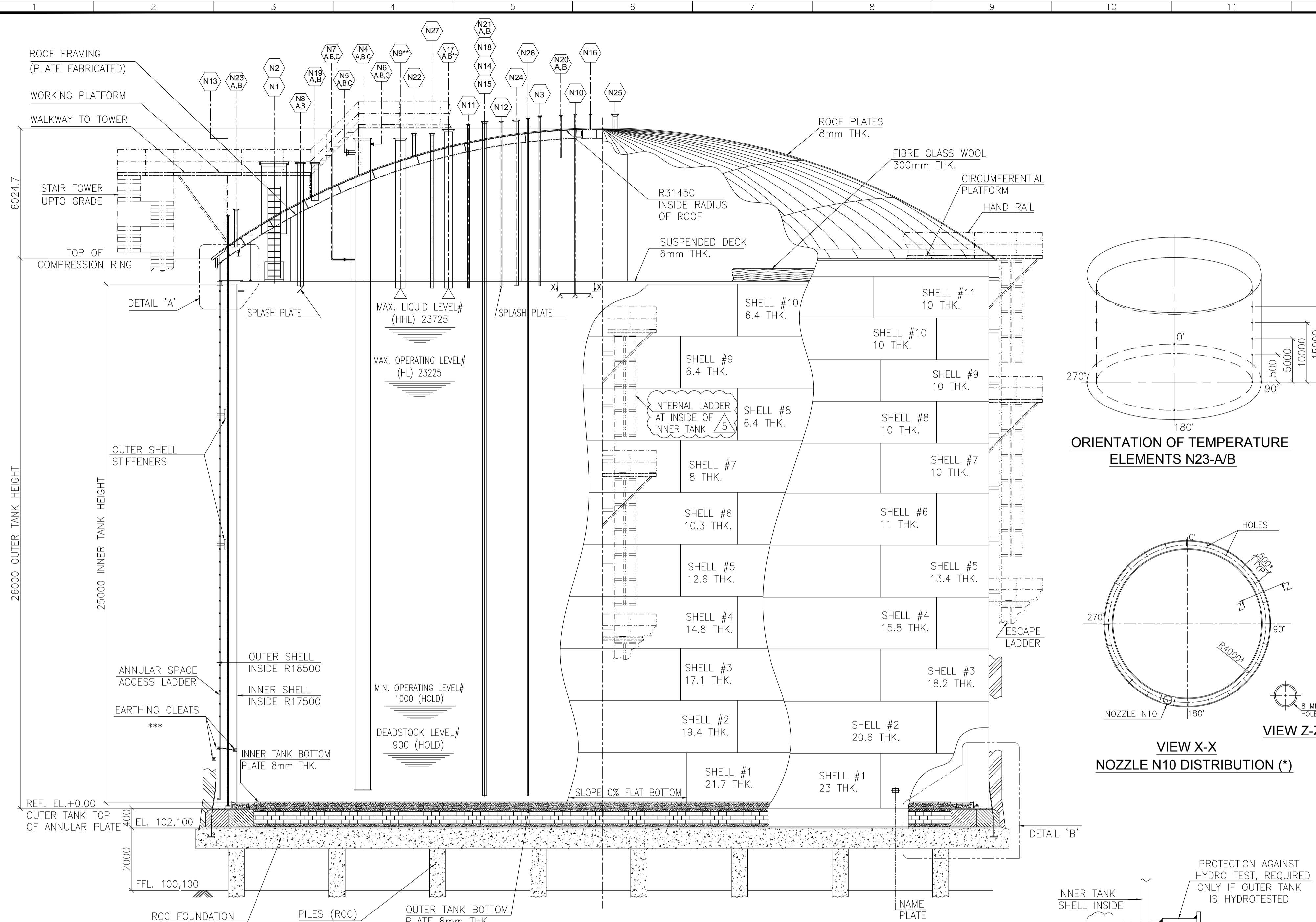
The above opinion has been arrived at in consultation and with agreement with the following departments by this deviation:

- 1) _____ 2) _____ 3) _____
4) _____

These affected groups/departments are carrying out necessary changes in their outputs.

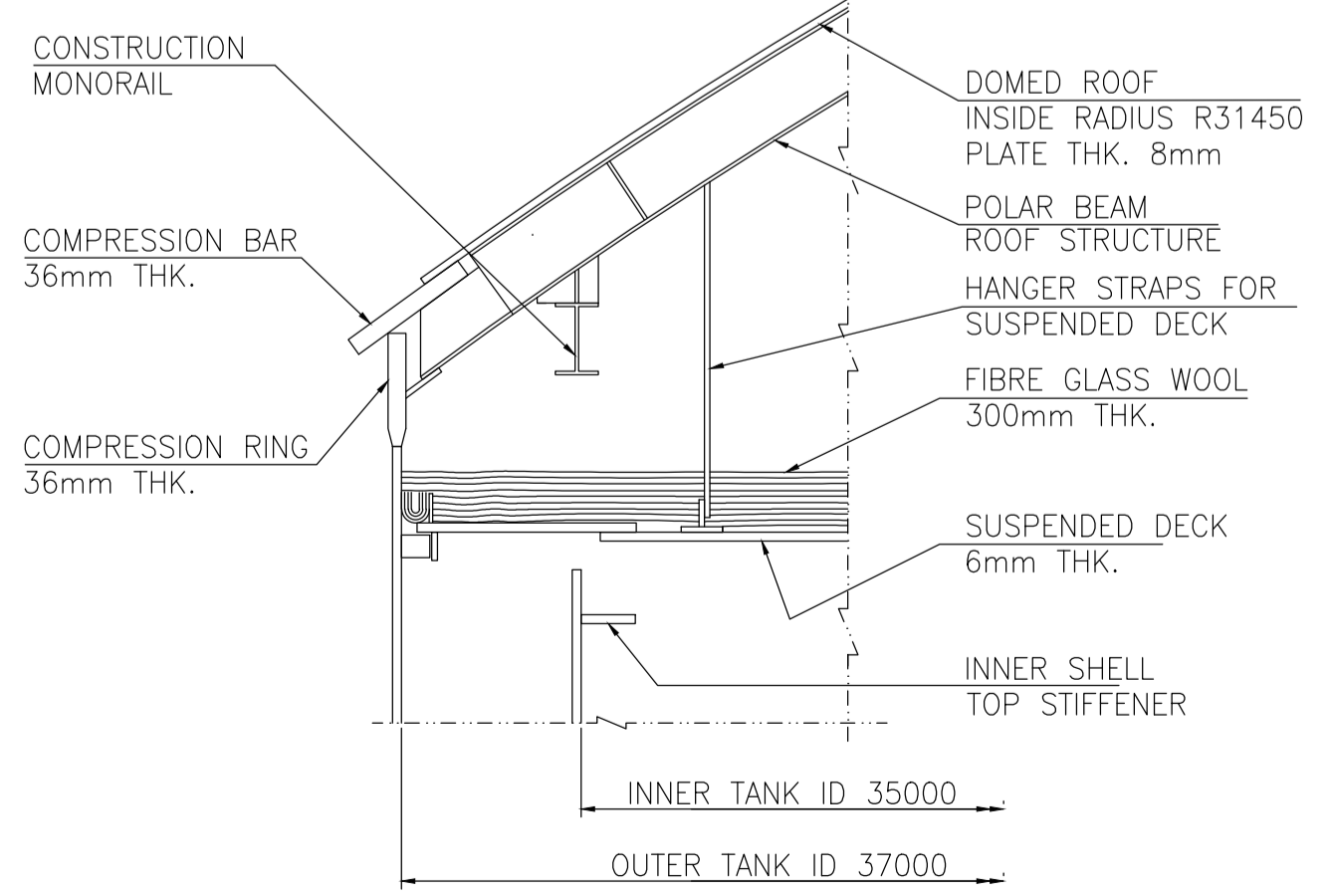
To, Disposing Authority

DO NOT SCALE, IF IN DOUBT ASK

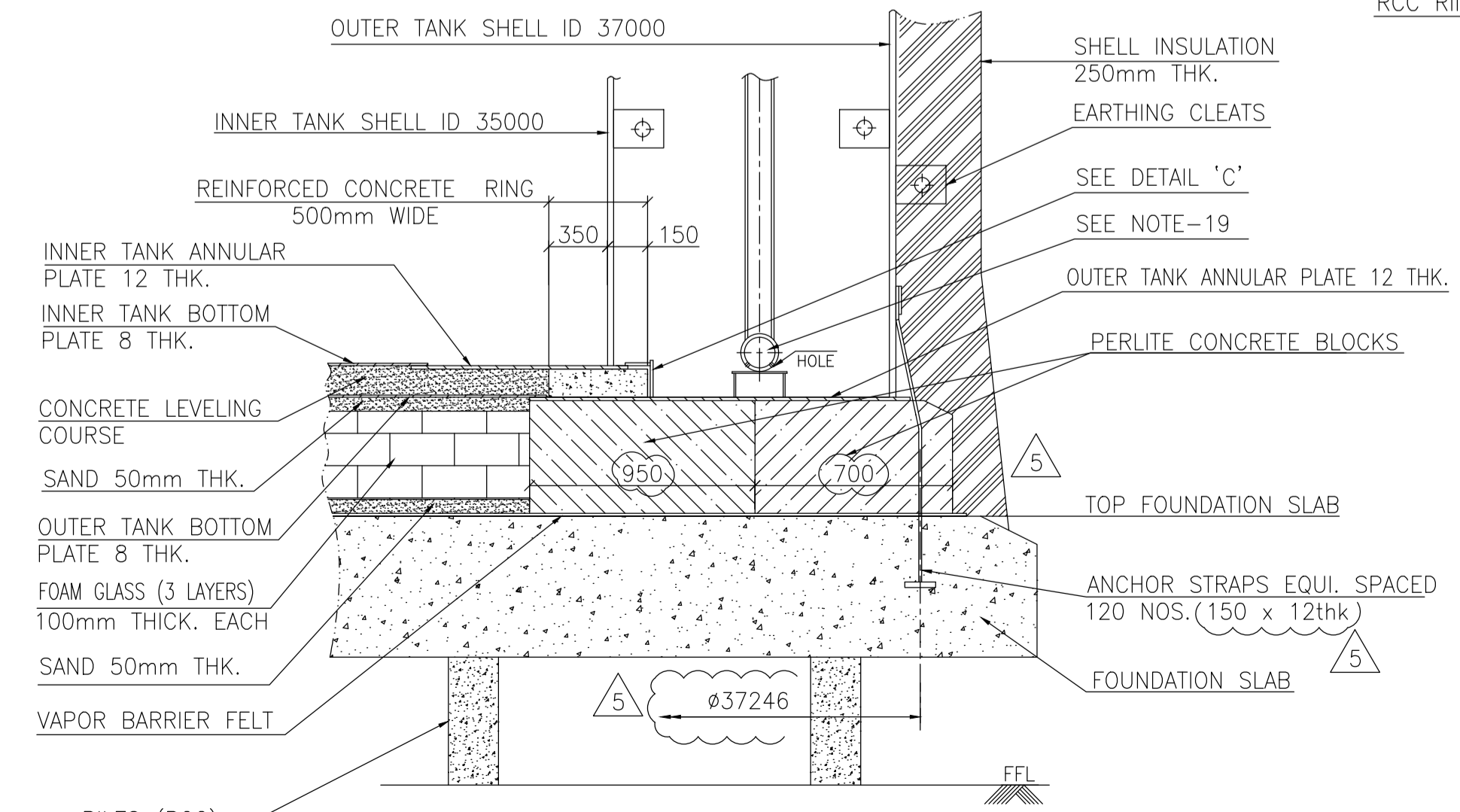


SECTIONAL ELEVATION

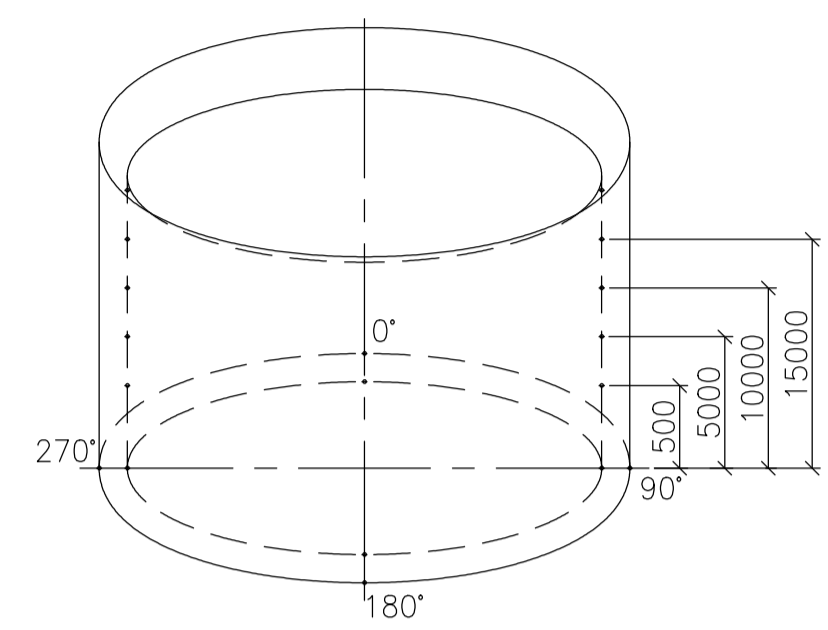
FROM TOP OF INNER TANK BOTTOM ANNULAR PLATE
 * TO BE ADVISED BY POIL
 ** REDUCER - 36"x18" FOR N9 & 20"x16" FOR N17-A/B
 *** MIN. 3 NO'S ON OUTSIDE OF INNER TANK
 MIN. 3 NO'S ON INSIDE OF OUTER TANK
 MIN. 3 NO'S ON OUTSIDE OF OUTER TANK.
 EARTHING CLEATS TO BE INTERCONNECTED.



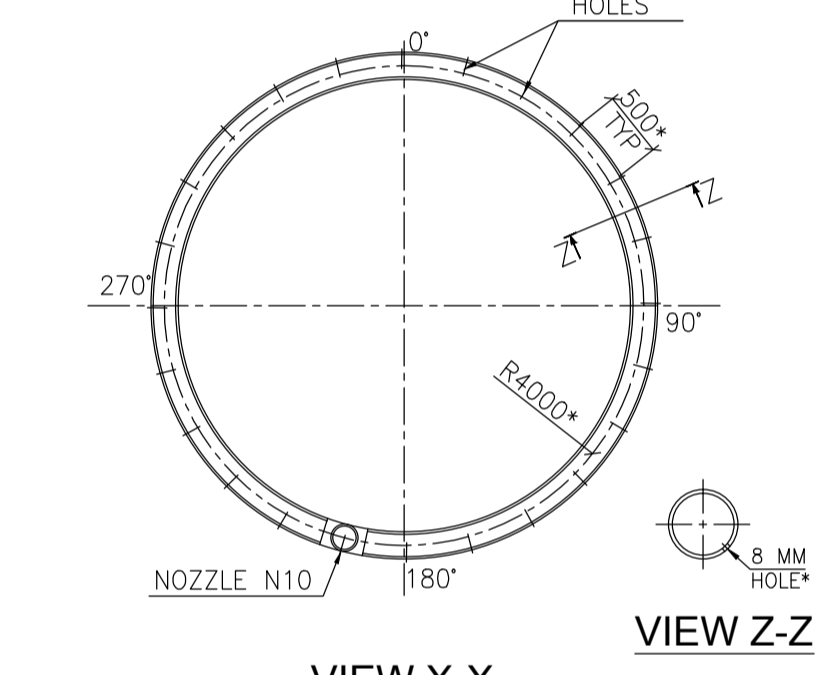
DETAIL 'A'



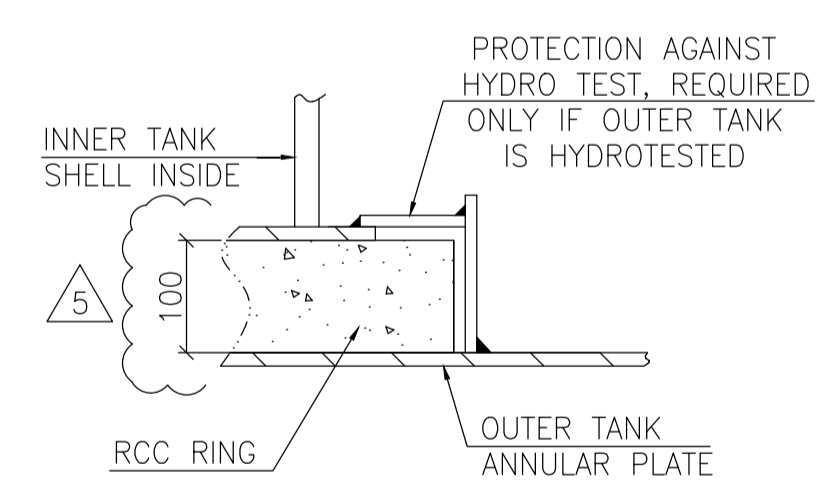
DETAIL 'B'



ORIENTATION OF TEMPERATURE ELEMENTS N23-A/B



VIEW X-X NOZZLE N10 DISTRIBUTION (*)



DETAIL 'C'

CODE	STATUS	DRN.	CHKD.	APPR.
<input type="checkbox"/> 1	APPROVED			
<input type="checkbox"/> 2	APPROVED WITH COMMENTS			
<input type="checkbox"/> 3	REJECTED			
<input type="checkbox"/> 4	RETAIN FOR INFORMATION			

REV.	DATE	DESCRIPTION	DRN.	CHKD.	APPR.
5	04.01.16	REVISED FOR CONSOLIDATED COMMENTS OF CLIENT & RE-ISSUED FOR APPROVAL	SRM	VEERA	llk
4	15.10.15	REVISED & RE-ISSUED FOR APPROVAL	SRM	VEERA	SCB
3	05.10.15	REVISED & RE-ISSUED FOR APPROVAL	SRM	VEERA	SCB
2	11.08.15	REVISED & RE-ISSUED FOR APPROVAL	YOGESH	VEERA	SCB
1	01.08.15	REVISED & RE-ISSUED FOR APPROVAL	YOGESH	VEERA	SCB
0	23.07.15	ISSUED FOR APPROVAL	YOGESH	VEERA	SCB
A	22.07.15	ISSUED FOR INTERNAL REVIEW	YOGESH	VEERA	SCB

DESIGN CODE		
SHELL & BOTTOM	API 620 ANNEX. 'R' 12th EDITION 2013, ADD. 1 (2014)	
ROOF STRUCTURE	BASIC ENGINEERING + DIN 4119 (Ed. 1961)	
COMPRESSION RING & ROOF PLATE	API 620 12th EDITION 2013, ADD. 1 (2014)	
WIND DESIGN	IS 875 (PART-III) + API 620	
SEISMIC DESIGN	IS 1893 + API 620 ANNEX. 'L'	
MANUFACTURING CODE	API 620 12th EDITION 2013, ADD. 1 (2014)	
DESIGN DATA		
	INNER TANK	OUTER TANK
TYPE OF EQUIPMENT	DOUBLE WALL FULL CONTAINMENT, CUP IN TANK INSULATED WITH SUSPENDED DECK	
QUANTITY	2 NOS.	
TANK DIAMETER	mm	35000
TANK HEIGHT	mm	25000
ROOF RADIUS	mm	31450
DESIGN PRESSURE	LIQUID HEAD	LIQUID HEAD + 2000 mmWC
DESIGN VACUUM	-	-50 mmWC
DESIGN TEMPERATURE (MIN./MAX.)	°C	-45/55
MDMT	°C	-45
OPERATING PRESSURE	LIQUID HEAD	1200 mmWC
OPERATING TEMPERATURE	°C	-43.1
CORROSION ALLOWANCE IN mm	SHELL	1.5
	BOTTOM	1.5
	DECK & ROOF	-
	ANCHOR STRAP	-
JOINT EFFICIENCY	AS PER CODE	AS PER CODE
PROCESS FLUID	PROPANE/BUTANE	
DESIGN DENSITY	Kg/m ³	600
CAPACITY	MT	12500
DESIGN LIQUID LEVEL	mm	23725
MAX. LIQUID LEVEL	mm	23725
MIN. LIQUID LEVEL	mm	1000 (HOLD)
DEADSTOCK LEVEL	mm	900 (HOLD)
MAX. OPERATING LEVEL	mm	23225
PUMP OUT RATE	m ³ /hr	280
PUMP IN RATE (PROPANE/BUTANE)	m ³ /hr	1554 / 1500
INSULATION THK. (COLD)	PUF INSULATION WITH CLADDING	250 mm THK. - OUTER SHELL
	FIBRE GLASS WOOL	300 mm THK. - SUSPENDED DECK
	FOAM GLASS	300 mm THK. - OUTER TANK BOTTOM
	PERLITE CONCRETE BLOCK	400 mm THK. - OUTER TANK ANNULAR
DESIGN WIND VELOCITY	m/s	55
SEISMIC ZONE		ZONE-III
LIVE LOAD	Kg/m ²	200
PAINTING		NOTE-35
TANK WEIGHT		
	APPOX. WT. PER TANK	
EMPTY		1537.42 MT
OPERATING		15223.81 MT
HYDROTEST		24348.01 MT
TESTING AND INSPECTION		
TESTING OF TANK	API 620 12th EDITION 2013, ADD. 1 (2014)	
INSPECTION OF TANK BY	THIRD PARTY/ CLIENT	
TEST PRESSURE	INNER TANK WATER UP TO DESIGN LIQUID LEVEL + OUTER TANK 2500 mmWC PNEUMATIC PRESSURE	
RADIOGRAPHY	REFER NOTE 32	REFER NOTE 32
IMPACT TESTING	API 620 12th EDITION 2013, ADD. 1 (2014)	

PROJECT: CRYOGENIC LPG STORAGE TERMINAL - HALDIA

OWNER: AEGIS LOGISTICS LTD.

CLIENT: पी डी आई एल PDIL PROJECTS & DEVELOPMENT INDIA LTD.

TANK DESIGNER: VTV VIJAY TANKS & VESSELS (P) LTD.

WO No.: 11/PINMM/E/4802/2015-16/4030000160 Dt.: 25.06.2015

TITLE: GENERAL ARRANGEMENT FOR PROPANE/BUTANE STORAGE TANK (T-201/202)

SCALE	VTV JOB No.	VTV DRG NO.	SHT.	REV.
NTS	3190	3190-CT-LPG-D-101	1/2	5

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DO NOT SCALE, IF IN DOUBT ASK

NOTES

GENERAL

- 1 ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE STATED.
2 ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE STATED.
3 TANK SHALL BE PROPERLY EARTHED.
4 THE DIMENSIONS OF STORAGE TANK HAVE BEEN SPECIFIED FOR STORING 12500 MT LIQUID PROPANE/BUTANE.
5 MINIMUM & DEADSTOCK LIQUID LEVELS OF TANK TO BE CONFIRMED BY PDIL.
6 OPERATING TEMPERATURE OF BUTANE IS -6.2 °C
7 TANK INSULATION TO BE DESIGNED BY PDIL BASED ON THE BOIL-OFF AS ADVISED BY PDIL.
8 SAFETY VALVES TO BE DESIGNED BY PDIL FOR PROCESS SCENARIOS ADVISED BY OWNER & EMERGENCY VENTING AS REQUIRED BY CODE.
9 SAFETY VALVE (1 WORKING + 1 STANDBY) DETAILS ARE AS FOLLOWS:
- SET PRESSURE : 0.2 Kg/cm²g
- BACK PRESSURE : 0.1 Kg/cm²g
- OVER PRESSURE : 10%
- MAXIMUM ALLOWABLE FLOW RATE : 44000 Kg/hr
10 MAXIMUM VAPOUR OUT RATE FROM TANK : 15174 Kg/hr
11 FOUNDATION SHALL BE INSPECTED BY THE TANK FABRICATOR TO ENSURE COMPLIANCE WITH TOLERANCE SPECIFIED IN API 620
12 SPECIFIED THICKNESS FOR PLATES ARE WITHOUT UNDER TOLERANCE.
13 AS PER OISD STD-180, PROVISION FOR INSTALLATION OF 6 NO'S. AIR TERMINALS OF 6m HEIGHT SHALL BE PROVIDED ON EACH TANK FOR THE AUGMENTATION OF THE LIGHTNING PROTECTION.

NOZZLE

- 14 ALL NOZZLE BOLTS TO STRADDLE TANK CENTERLINE, UNLESS OTHERWISE STATED.
15 FLANGES LESS THEN 24" NB IN SIZE SHALL BE AS PER ASME B16.5 (LATEST ED.) FLANGES. FLANGES ABOVE 24" NB IN SIZE SHALL BE AS PER ASME B16.47 SERIES-B (LATEST ED.)
16 ALL NOZZLES LESS THAN 8" NB IN SIZE SHALL BE IN SEAMLESS CONDITION, NOZZLES GREATER THAN 8" NB IN SIZE SHALL BE PLATE FABRICATED.
17 ALL NOZZLES SHALL BE PROVIDED WITH INSULATION.
18 FOR NOZZLES N21 A/B AND N23 A/B; THE SUPPLIER SHALL GIVE THE DETAILS OF WALL CLEATS & WALL BRACKETS, AS REQUIRED. THE ERECTION OF MULTI-POINT ASSEMBLY SHALL BE IN TANK VENDOR'S SCOPE.
19 NOZZLE N13 (OUTER TANK PURGE) TO BE PROVIDED WITH DISTRIBUTION PIPE ALONG WHOLE ANNULAR SPACE.
20 6" NOZZLE AND 4" PERFORATED STILL WELL WITH MOUNTING BRACKET, AT THE BOTTOM.
21 8" NOZZLE AND 8" PERFORATED STILL WELL WITH MOUNTING BRACKET, AT THE BOTTOM.

MATERIALS

- 22 ALL LTCS MATERIAL SHALL BE FULLY KILLED, NORMALISED & IMPACT TESTED AS PER SUPPLEMENTARY REQUIREMENT S5 OF ASTM A20.
23 ALL THE PLATES FOR SHELL, BOTTOM & ROOF SHALL BE PROCURED IN UT TESTED CONDITION EXCEPT FOR SUSPENDED DECK.
24 ALL FORGINGS SHALL BE EXAMINED FOR SURFACE DEFECT BY MP/DP AFTER MACHINING.
25 COPPER & COPPER BASED ALLOYS SHALL NOT BE USED IN PROPANE/BUTANE STORAGE TANK.

FABRICATION

- 26 ALL SHARP CORNERS SHALL BE ROUNDED OFF WITH SMOOTH RADIUS OF 3 mm MINIMUM UNLESS OTHERWISE STATED.
27 ALL SINGLE BUTT WELDED SEAMS WITHOUT BACKING STRIPS & ALL DOUBLE BUTT WELDED SEAMS SHALL BE CHIPPED BACK TO SOUND METAL & RE-WELDED FROM OTHER SIDE, UNLESS OTHERWISE SPECIFIED.
28 ALL ERECTION LUGS/CLEATS AND ANY OTHER TEMPORARY ATTACHMENTS SHALL BE OF THE SAME MATERIAL AS THE BASE MATERIAL TO WHICH THEY ARE WELDED AND WELDING SHALL BE PERFORMED ACCORDING TO THE QUALIFIED PROCEDURE.
29 ALL ERECTION LUGS SHALL BE REMOVED BEFORE HYDRO/PNEUMATIC TESTING. ALL OTHER TEMPORARY ATTACHMENTS MAY BE ALLOWED TO REMAIN ONLY AFTER ATTACHMENT WELD IS INSPECTED WITH MP EXAMINATION AS PER API 620.

INSPECTION & TESTING

- 30 TANK SHALL BE HYDRO TESTED WITH INNER TANK WATER FILLED UP TO MAXIMUM LIQUID LEVEL (HHL) AND OUTER TANK PNEUMATICALLY TESTED TO THE TEST PRESSURE.
31 ALL NOZZLE RF PADS SHALL BE TESTED PNEUMATICALLY AT 0.5 Kg/cm²g PRESSURE WITH SOAP SOLUTION ON ATTACHMENT WELDS.
32 RADIOGRAPHY OF BUTT WELDED JOINTS:
- ALL LONGITUDINAL AND CIRCUMFERENTIAL BUTT WELD SEAMS, ON INNER AND OUTER TANK SHELLS, SHALL BE 100% RADIOGRAPHED.
- 25% OF THE BUTT-WELDED ANNULAR PLATE RADIAL JOINTS SHALL BE SPOT EXAMINED FOR A MINIMUM LENGTH OF 6 INCH. THE LOCATION SHALL BE UNDER THE TANK SHELL, AT THE OUTER EDGE OF THE JOINT.
- ALL BUTT WELD JOINT WHICH ARE NOT RADIOGRAPHED SHALL BE EXAMINED VISUALLY FROM INSIDE & OUTSIDE.
- ALL BUTT WELD JOINT OF INTERNAL NOZZLES IN VAPOUR ZONE SHALL BE 100% RADIOGRAPHED.
- ALL NOZZLES NECK TO FLANGE BUTT WELDS SHALL BE 100% RADIOGRAPHED.
- LONGITUDINAL SEAMS OF ALL FABRICATED NOZZLES SHALL BE FULLY RADIOGRAPHED.
- ALL REMAINING BUTT WELDED "T" JOINTS SHALL BE RADIOGRAPHED.
33 VACUUM BOX TEST:
- ALL FILLET WELDS ON BOTTOM PLATES (INNER AND OUTER)
- SHELL TO BOTTOM WELDS OF INNER AND OUTER TANK.
34 D.P / MPT EXAMINATION:
BEFORE HYDROTEST:
- ALL WELDED JOINTS BETWEEN SHELL & ANNULAR PLATE
AFTER HYDROTEST:
- AFTER BACK GAUGING OF ROOT RUN.
- ALL LAP JOINTS IN THE BOTTOM PLATE & ROOF.
- RAFTER SPLICE JOINT.
- ANNULAR PLATE.
- ALL WELDS ON PERMANENT CONNECTIONS / ATTACHMENTS
- ALL BUTT WELD JOINT WHICH ARE NOT RADIOGRAPHED SHALL BE EXAMINED INSIDE & OUTSIDE.
- L-SEAMS OF BOTTOM MOST TWO COURSES.
- COMPRESSION PLATE TO ROOF PLATE

NOZZLE DATA table with columns: NOZZLE MARK, QTY. RECD., NOZZLE SIZE(NPS), NOZZLE PROJECTION, SERVICE, FLANGE (NOTE-12) [RATING, TYPE, FACE, SCH./THK.], R.F PAD [OD, THK.], REMARKS. Includes rows N1 to N27.

- 35 PAINTING:
- OUTER SURFACE OF OUTER SHELL & ROOF: IN ADDITION TO MILL PAINT, 50-60 MICRONS DFT OF ETHYLSILICATE INORGANIC ZINC RICH PRIMER TO BE APPLIED, SUCH THAT TOTAL PRIMER THK OF 75 MICRONS IS ACHIEVED.
- INTERMEDIATE COAT 75 MICRONS DFT OF MI
- FINISH COAT: TWO COATS OF TWO PACK POLY-AMIDE CURED EPOXY PAINT OF 40 MICRONS DFT PER COAT.
36 ALLOWABLE FOUNDATION SETTLEMENT=25 mm. BETWEEN CENTER OF TANK TO OUTSIDE RADIUS OF FOUNDATION.
37 PERMISSIBLE TOLERANCE IN ANCHOR STRAP.
a) SETTING RADIUS +15 mm./-0 mm.
b) PLUMB OF EMBEDDED PORTION +/- 3 mm.
c) CHORD DIMENSIONS +/- 6 mm.

MATERIAL OF CONSTRUCTION

Table with columns: SHELL PLATE/COMPRESION RING, INNER TANK, OUTER TANK. Lists materials like ASTM A537 CL.1 + SA 20 S5, ASTM A537 CL.1 + SA 20 S5, etc.

VTV DOCUMENT LIST

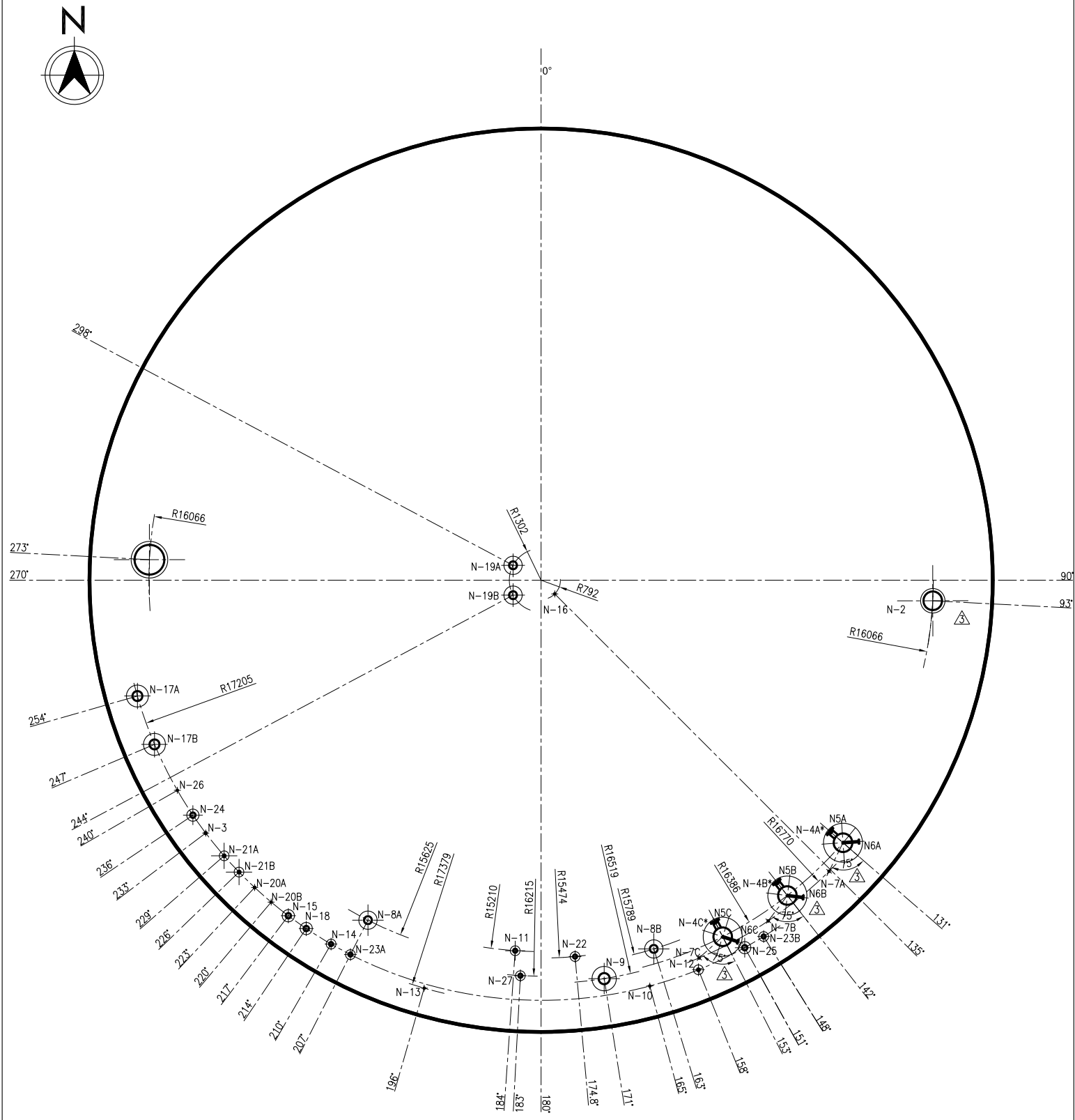
Table with columns: SR. NO., VTV DOC. NO., DOCUMENT TITLE, NO OF SHEET. Lists documents like TANK DESIGN CALCULATION, ROOF STRUCTURE CALCULATION, etc.

REFERENCE DOCUMENTS

Table with columns: SR. NO., DOCUMENT NUMBER, DOCUMENT TITLE. Lists documents like PDIL PROCESS DATA SHEET PROPANE/BUTANE STORAGE TANK, PDIL DESIGN SCOPE DOCUMENT, etc.

Approval and project information section including CODE, STATUS, PROJECT: CRYOGENIC LPG STORAGE TERMINAL - HALDIA, OWNER: AEGIS LOGISTICS LTD., CLIENT: PDIL, TANK DESIGNER: VIJAY TANKS & VESSELS (P) LTD., and a revision table.

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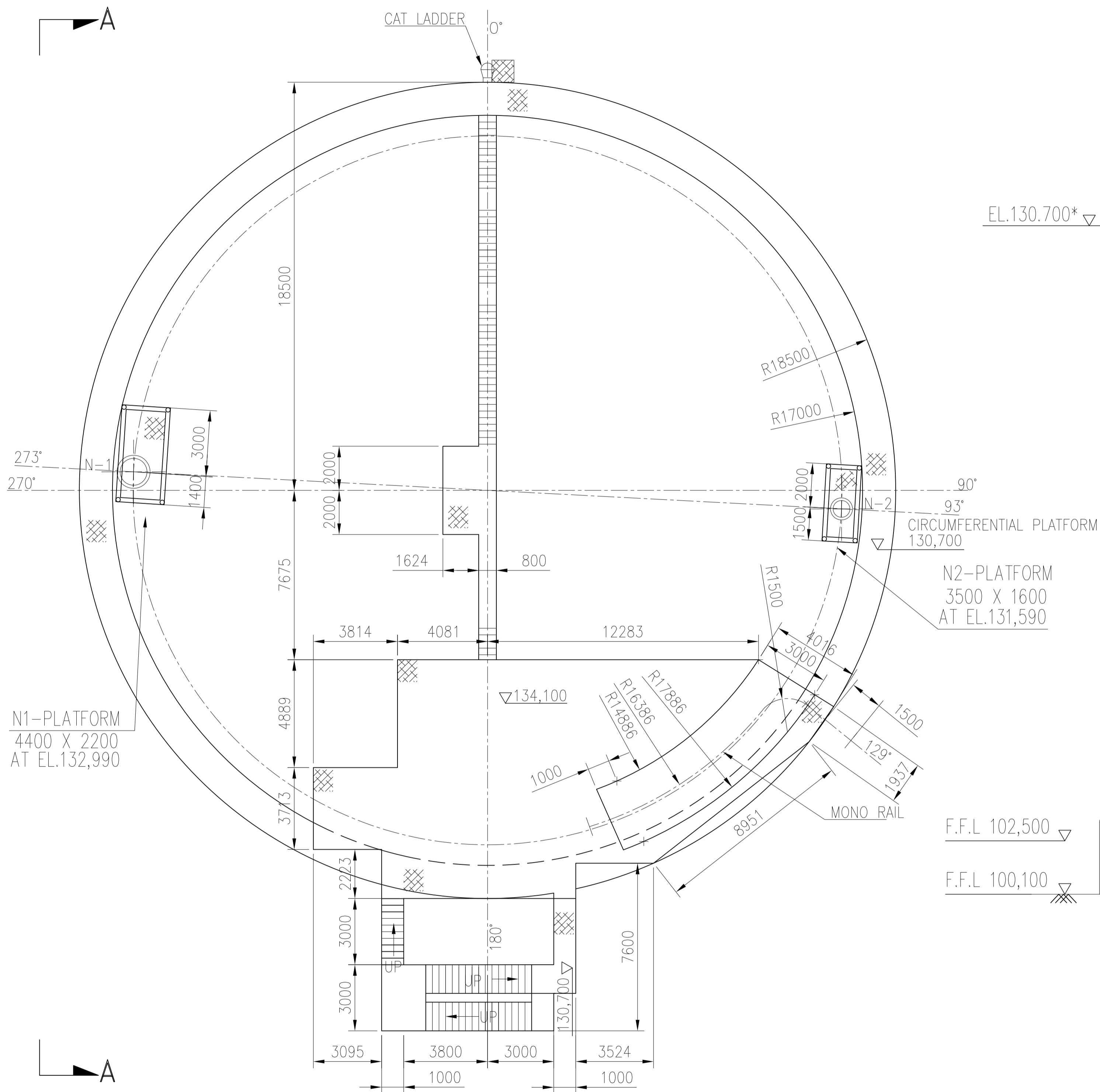
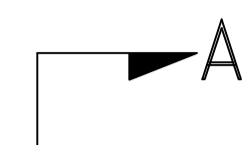


T-201 & T-202

NOTE:-

1. ALL DIMENSIONS ARE IN MM.
2. * INDICATES HOLD.

REV	REV DATE	PURPOSE	PREPARED	REVIEWED	APPROVED
3	05.02.16	GENERAL REVISION	AK	RKV/SRS	AMAR
2	08.12.15	REVISED AS PER VTV COMMENT'S	AK	RKV/SRS	AMAR
1	06.10.15	REVISED AS PER VTV COMMENT'S	YK	RKV/SRS	AMAR
0	04.08.15	ISSUE	YK	ALOK/SRS	AMAR

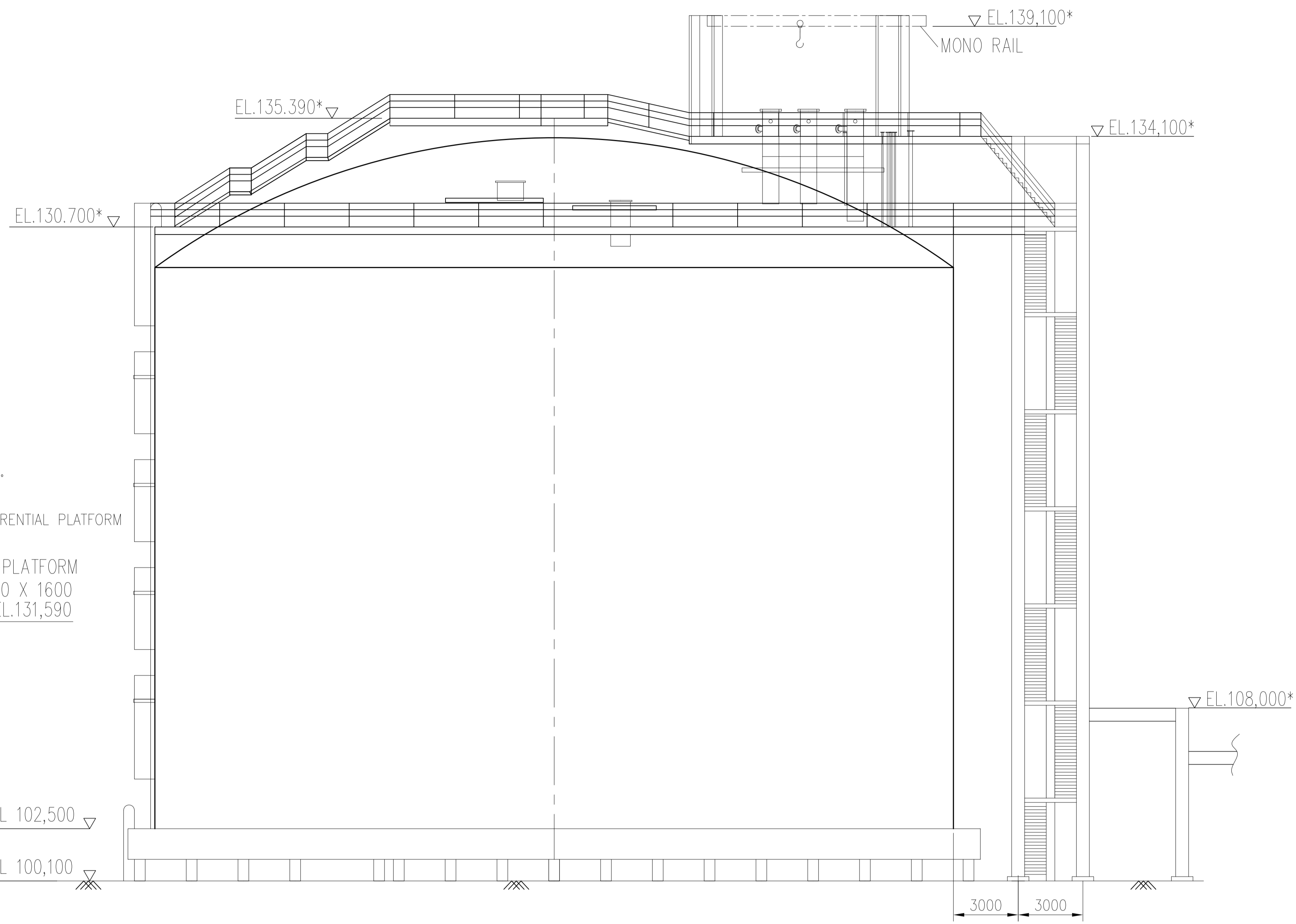


N1-PLATFORM
4400 X 2200
AT EL.132,990

N2-PLATFORM
3500 X 1600
AT EL.131,590

CIRCUMFERENTIAL PLATFORM
130,700

T-201 & T-202

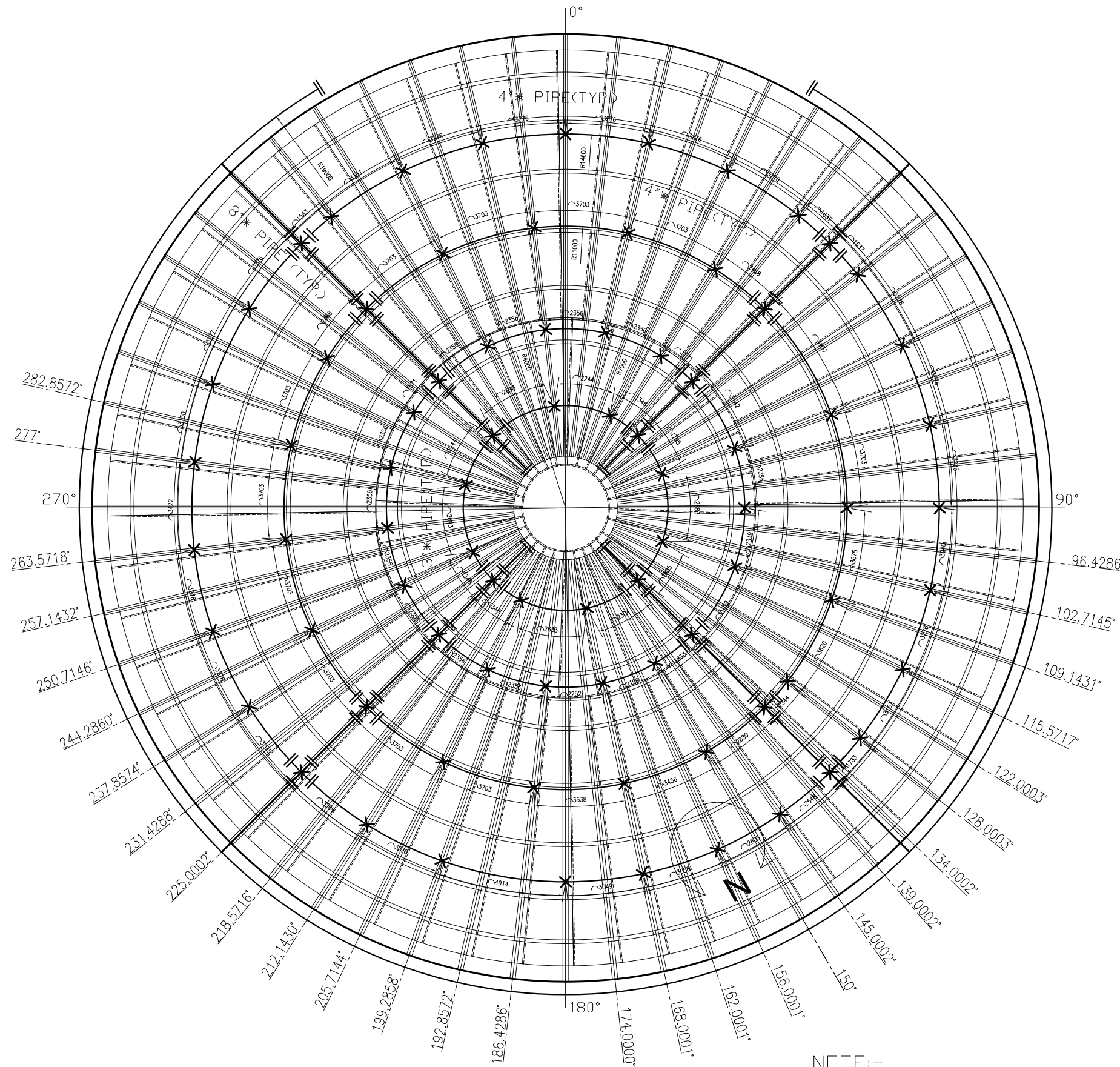


VIEW AT A-A
(NTS)

NOTES:-
1. * INDICATES HOLD.

REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
04	28.01.16	GENERAL REVISION	AK	RKV/SRS	AMAR
03	08.12.15	GENERAL REVISION	AK	RKV/SRS	AMAR
02	03.11.15	GENERAL REVISION	AK	RKV/SRS	AMAR
01	06.10.15	GENERAL REVISION	YK	RKV/SRS	AMAR
00	10.08.15	PRELIMINARY ISSUE	PD	AS/SRS	AMAR

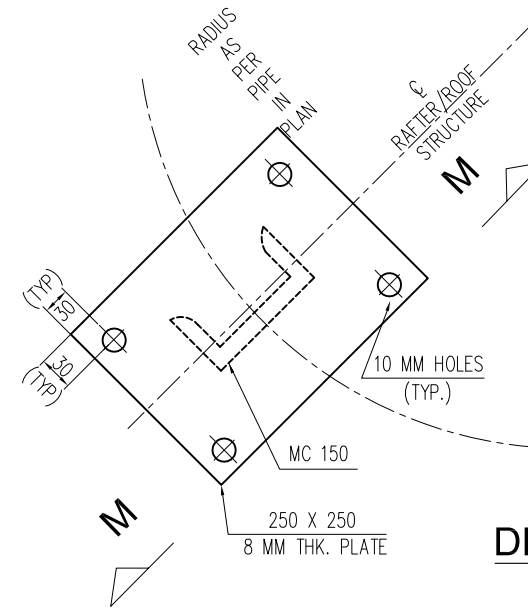
CLIENT:		AEGIS LOGISTICS LIMITED				CLIENT DOCUMENT NO.
		DIST-MIDNAPUR (NOW PURBAMEDINIPURE),				
		WEST BENGAL				
PROJECT:		CRYOGENIC LIQUID STORAGE	PRJ/JND	PLANT	SECTION	DEPT.
		TERMINAL, HALDIA	EM150			PIP.
TITLE:		PLATFORM POSITION FOR	DWG. NO.			
		DOUBLE WALL CRYOGENIC STORAGE TANK	EM150-9511-1402			
		HALDIA TANK T-201 & T-202	DWG. A3-SHEET			
			SHEET: 1 OF 1			
			SIZE: 420x297			



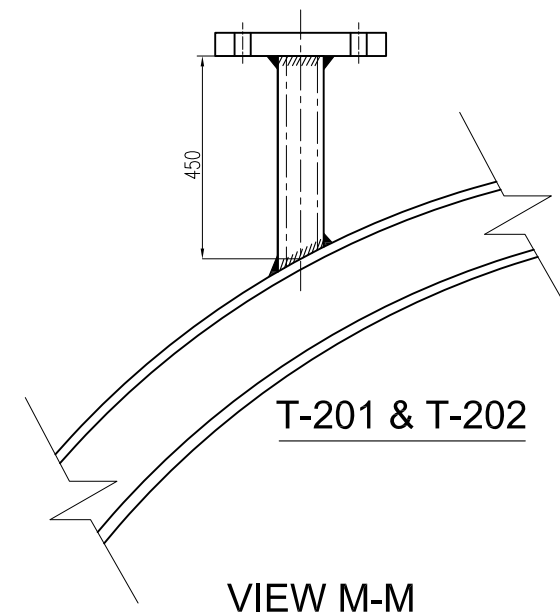
T-201 & T-202

NOTE:-

1. ALL DIMENSIONS ARE IN MM.
2. * INDICATES HOLD.
3. X INDICATES PIPE SUPPORT CLEAT PAD
4. TOTAL NO. OF CLEAT PAD SHALL BE SUITABLY ADJUSTED AS PER PIPE RING.
5. CLEAT PAD SHALL LIE ON RAFTER OF ROOF STRUCTURE.
6. CLEAT PAD NOS. = 30 IN 14600 MM RADIUS.
7. CLEAT PAD NOS. = 20 IN 11000 MM RADIUS.
8. CLEAT PAD NOS. = 19 IN 7000 MM RADIUS.
9. CLEAT PAD NOS. = 12 IN 4000 MM RADIUS.



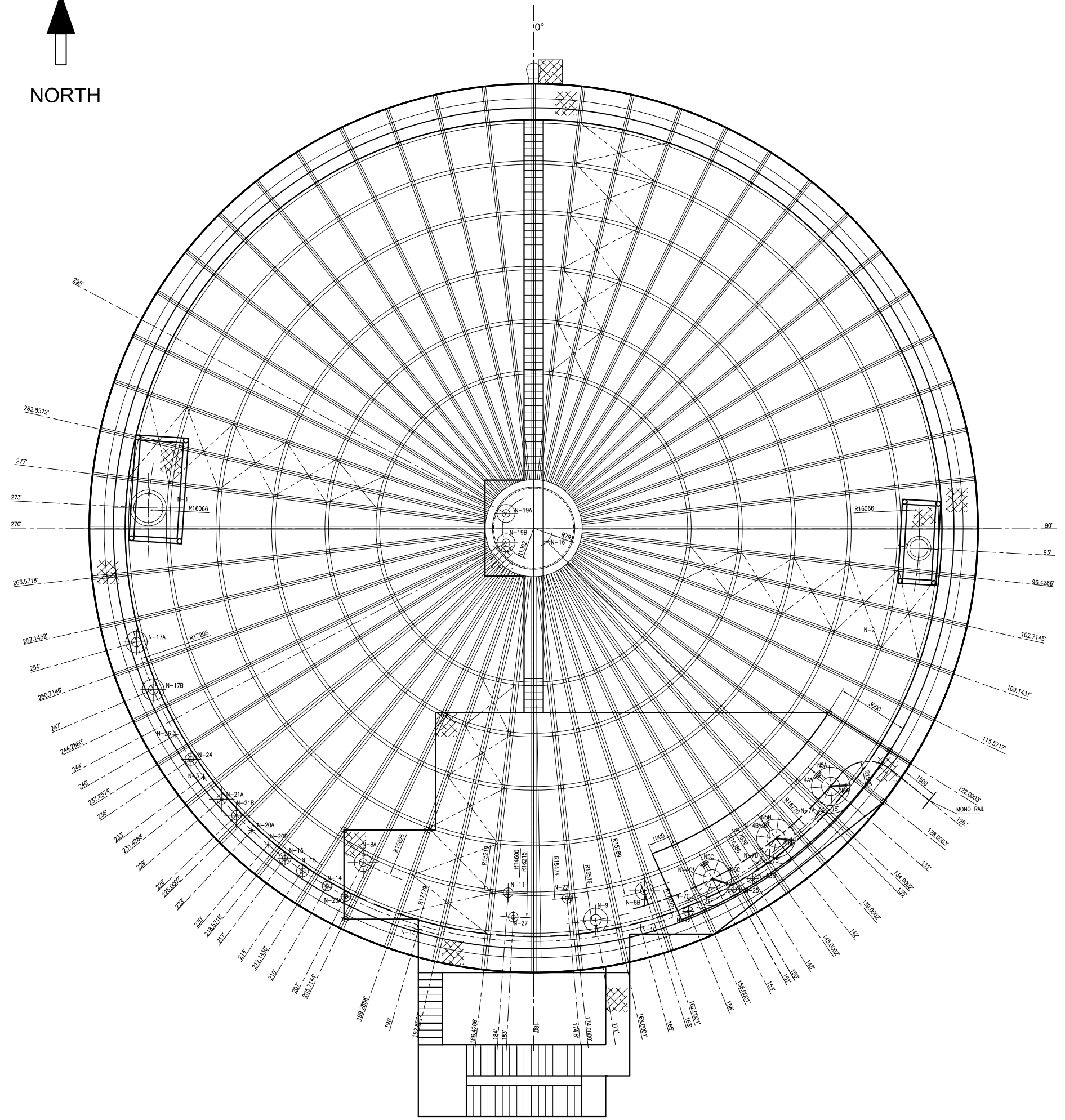
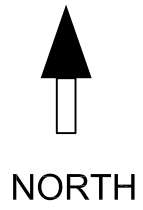
DETAIL - 'N'



VIEW M-M

FOR TENDER PURPOSE ONLY

01	08.12.15	ISSUE	AK	RKV/SRS	AMAR
00	13.10.15	ISSUE	AVINASH	AS/SRS	AMAR
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT: AEGIS LOGISTICS LIMITED DIST-MIDNAPUR (NOW PURBAMEDINIPURE), WEST BENGAL			CLIENT DOCUMENT NO.		
PROJECT: CRYOGENIC LIQUID STORAGE TERMINAL, HALDIA			PRJ.LND	PLANT	SECTION
TITLE: SUPPORT CLEAT FOR FIRE FIGHTING ON ROOF (DOUBLE WALL CRYOGENIC STORAGE TANK) HALDIA TANK T-201 & T-202			EH150	9511	PTP.
DWG. NO. EM150-9511-1403			DWG. A3-SHEET		
SHEET: 1 OF 1			SIZE: 420x297		
PROJECTS & DEVELOPMENT INDIA LTD.-NOIDA					

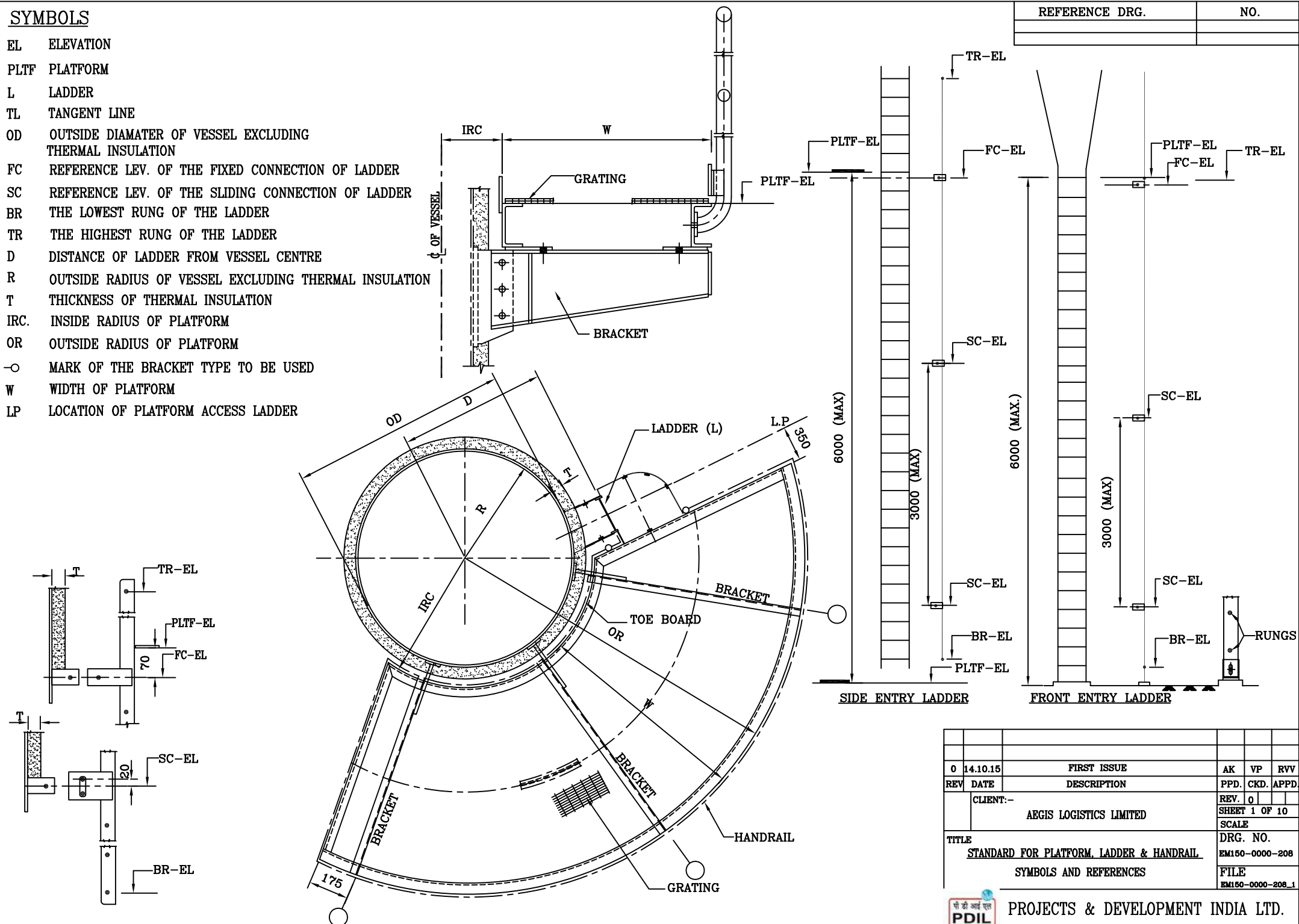


NOZZLE ORIENTATION WITH ROOF STRUCTURE AND ROOF PLATE LAYOUT

SYMBOLS

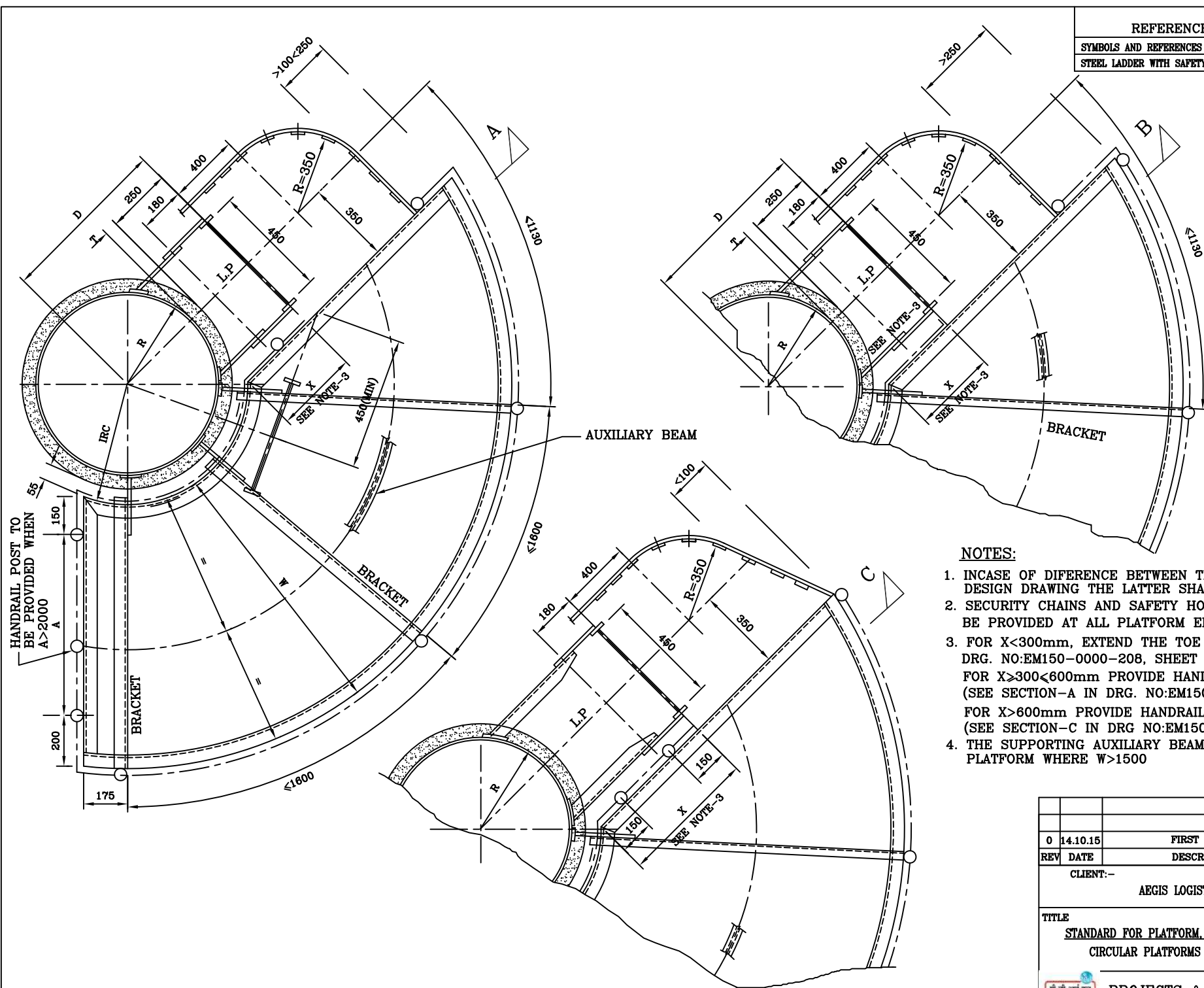
- EL ELEVATION
- PLTF PLATFORM
- L LADDER
- TL TANGENT LINE
- OD OUTSIDE DIAMETER OF VESSEL EXCLUDING THERMAL INSULATION
- FC REFERENCE LEV. OF THE FIXED CONNECTION OF LADDER
- SC REFERENCE LEV. OF THE SLIDING CONNECTION OF LADDER
- BR THE LOWEST RUNG OF THE LADDER
- TR THE HIGHEST RUNG OF THE LADDER
- D DISTANCE OF LADDER FROM VESSEL CENTRE
- R OUTSIDE RADIUS OF VESSEL EXCLUDING THERMAL INSULATION
- T THICKNESS OF THERMAL INSULATION
- IRC INSIDE RADIUS OF PLATFORM
- OR OUTSIDE RADIUS OF PLATFORM
- MARK OF THE BRACKET TYPE TO BE USED
- W WIDTH OF PLATFORM
- LP LOCATION OF PLATFORM ACCESS LADDER

REFERENCE DRG.	NO.



0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 1 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
SYMBOLS AND REFERENCES			EM150-0000-208		
			FILE		
			EM150-0000-208_1		

REFERENCE DRG.	NO.
SYMBOLS AND REFERENCES	EM150-0000-208(SH 1 OF 10)
STEEL LADDER WITH SAFETY CAGE	EM150-0000-208(SH 5 OF 10)



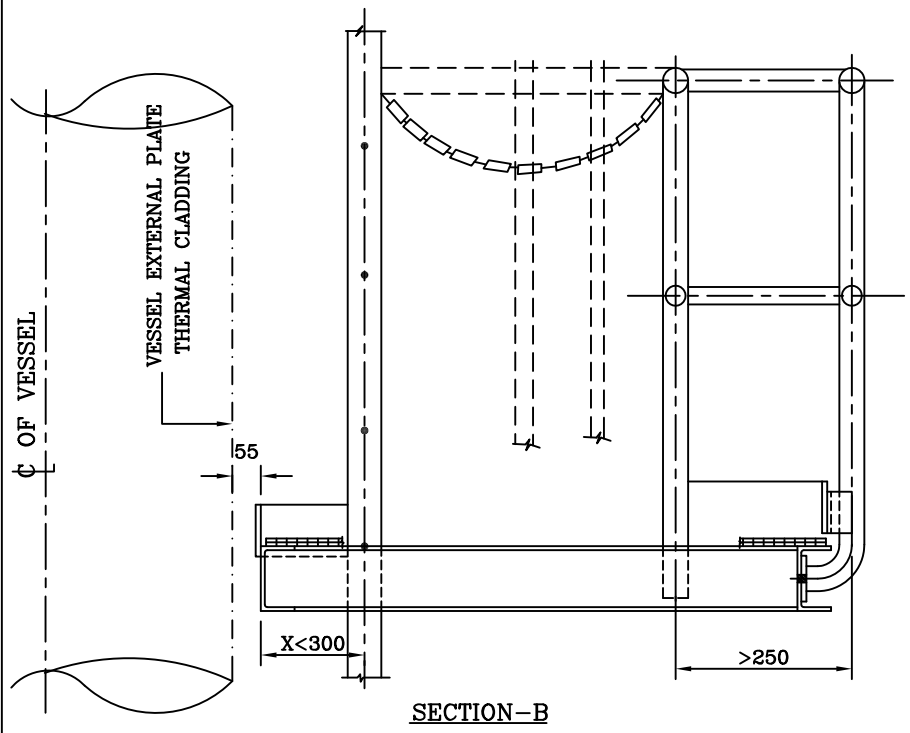
NOTES:

1. INCASE OF DIFFERENCE BETWEEN THIS DRAWING AND DESIGN DRAWING THE LATTER SHALL GOVERN.
2. SECURITY CHAINS AND SAFETY HOOKS HAVE TO BE PROVIDED AT ALL PLATFORM ENTRANCES.
3. FOR $X < 300\text{mm}$, EXTEND THE TOE BOARD ONLY (SEE SEC-B IN DRG. NO:EM150-0000-208, SHEET 3 OF 10)
 FOR $X > 300 < 600\text{mm}$ PROVIDE HAND RAIL WITH CENTER POST (SEE SECTION-A IN DRG. NO:EM150-0000-208, SHEET 3 OF 10)
 FOR $X > 600\text{mm}$ PROVIDE HANDRAIL WITH TWO POSTS. (SEE SECTION-C IN DRG NO:EM150-0000-208,SHEET 3 OF 10)
4. THE SUPPORTING AUXILIARY BEAM SHALL BE PROVIDED ON PLATFORM WHERE $W > 1500$

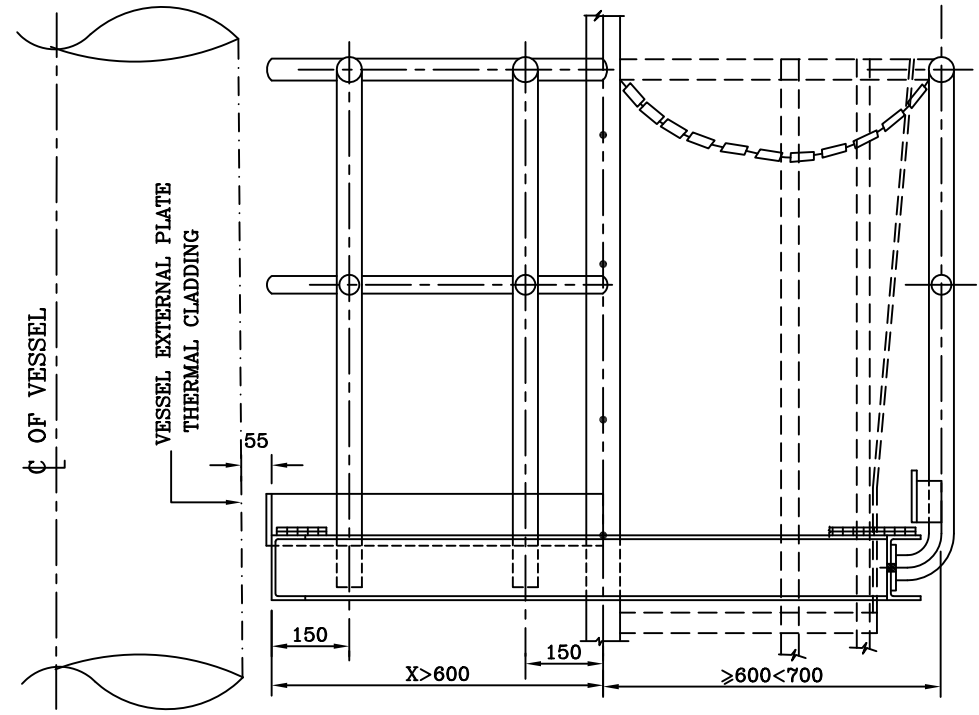
0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LTD			SHEET 2 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
CIRCULAR PLATFORMS FOR VESSELS			EM150-0000-208		
			FILE		
			EM150-0000-208_2		



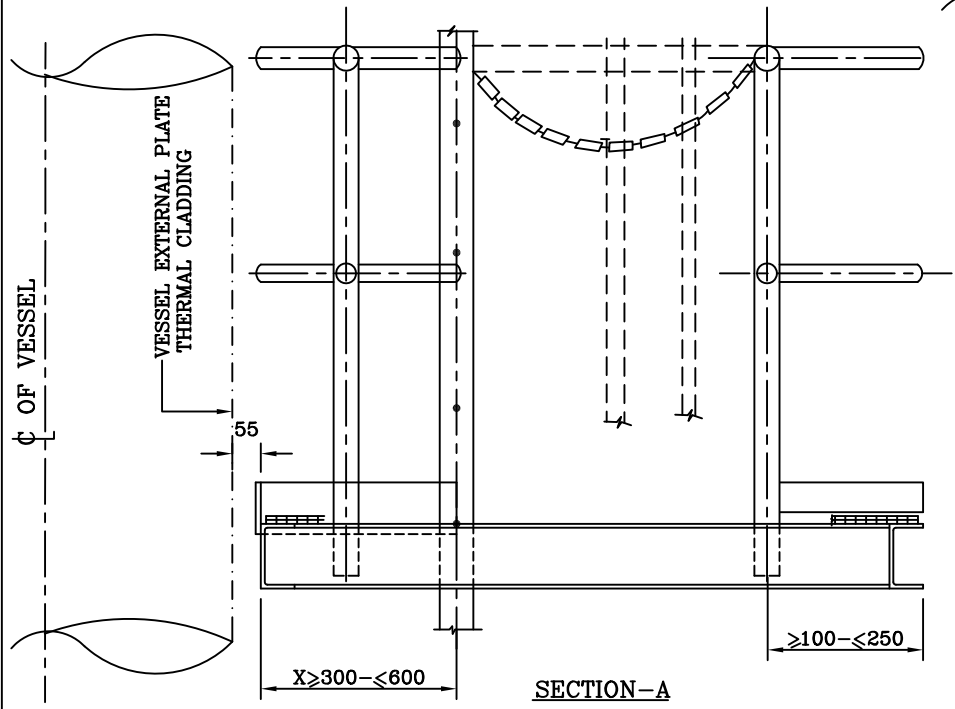
REFERENCE DRG.	NO.



SECTION-B



SECTION-C

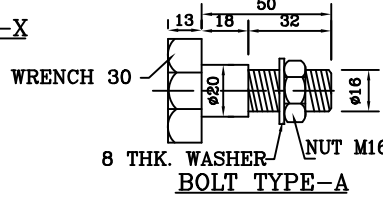
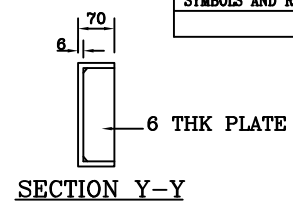
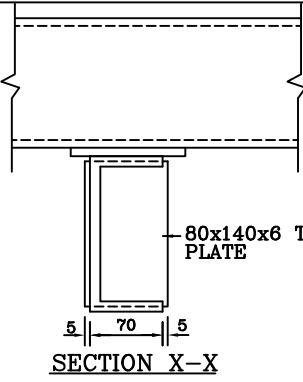
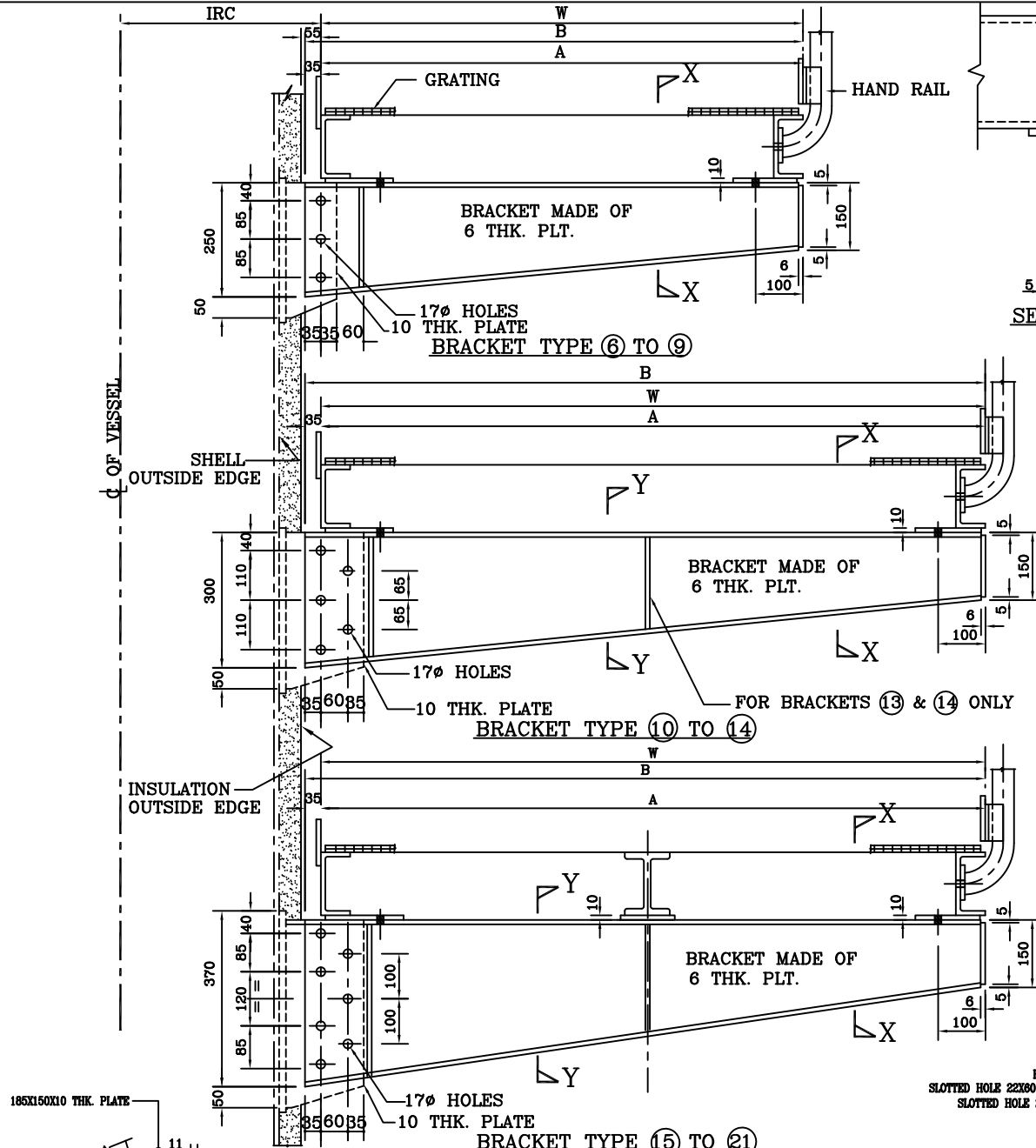


SECTION-A

0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 3 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
CIRCULAR PLATFORMS FOR VESSELS (SECTIONS & DETAILS)			EM150-0000-208		
			FILE		
			EM150-0000-208_3		



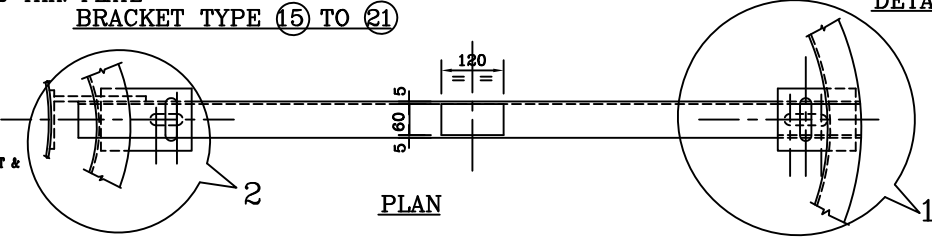
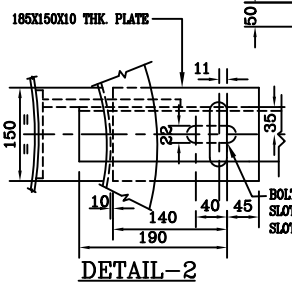
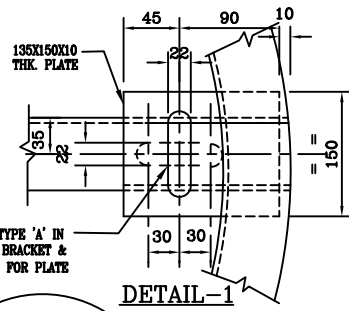
PROJECTS & DEVELOPMENT INDIA LTD.



TYPES OF BRACKETS	HOLE DIA.	BOLT DIA.	A	B
			6	600
7	700	735	17	16
8	800	835	17	16
9	900	935	17	16
10	1000	1035	17	16
11	1100	1135	17	16
12	1200	1235	17	16
13	1300	1335	17	16
14	1400	1435	17	16
15	1500	1535	17	16
16	1600	1635	17	16
17	1700	1735	17	16
18	1800	1835	17	16
19	1900	1935	17	16
20	2000	2035	17	16
21	2100	2135	17	16

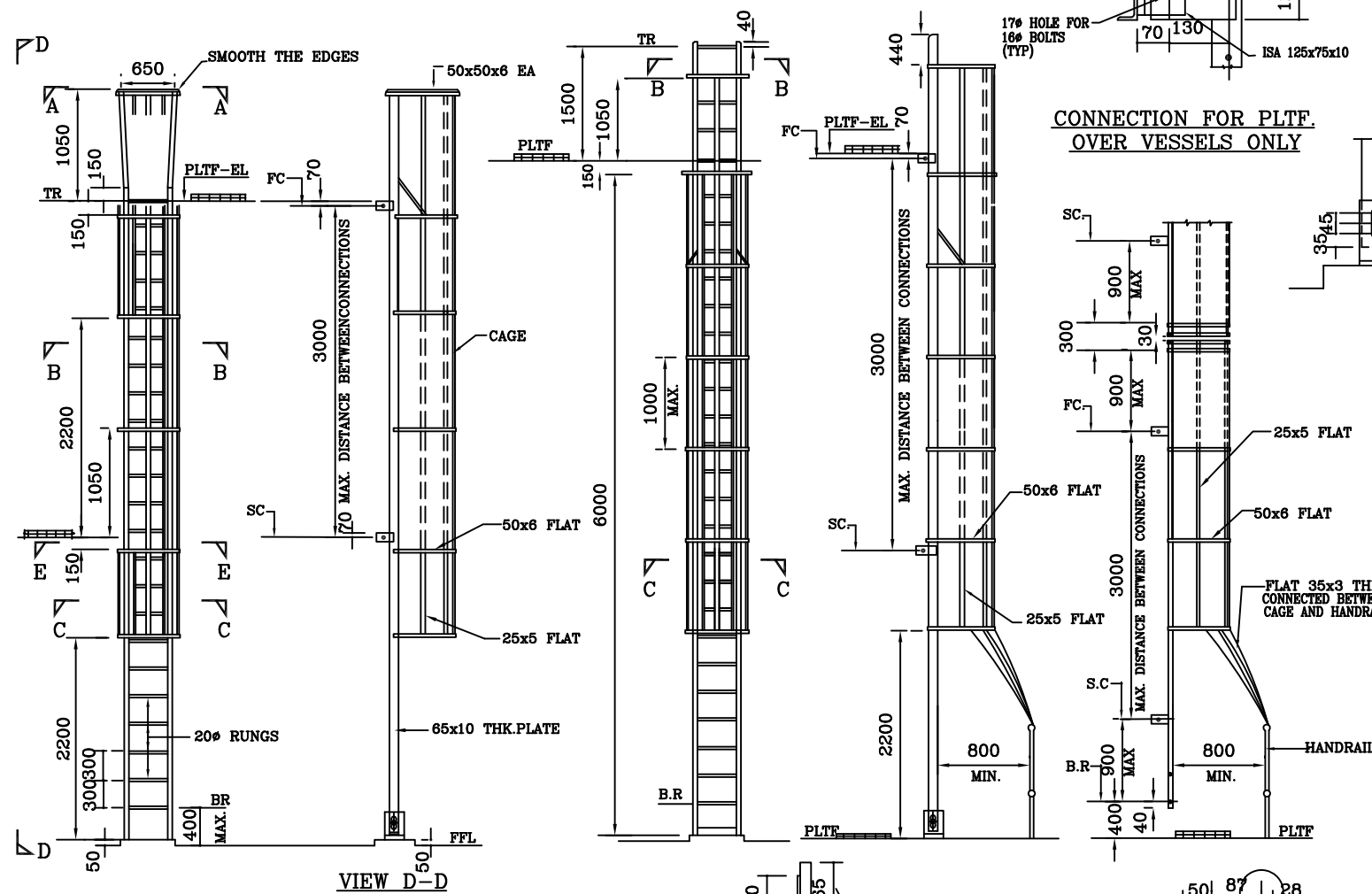
NOTES

- BRACKETS SHALL BE MADE OUT OF SINGLE PIECE PLATE OF 6mm THICKNESS.
- REINFORCEMENT PLATES FOR BRACKETS SHELL CONNECTIONS SHALL BE APPLIED ONLY FOR SHELL THICKNESS <15mm.
- BRACKET ATTACHMENT PLATES ARE EXCLUDED FROM STRUCTURAL STEEL SUPPLY
- UNLESS OTHERWISE INDICATED THE BOLTS TO BE USED SHALL CONFORM TO IS: 1367 CLASS 4.6
THE THREADED PORTION SHALL NEVER BE INSIDE THE PLATES TO BE CONNECTED
THE BOLTS SHALL BE PROVIDED WITH 8mm. THK. FLAT WASHER
- IN CASE OF DIFFERENCE BETWEEN THIS DRG. AND DESIGN DRAWING THE LATTER DRAWING SHALL GOVERN.
- BOLTS FOR CONNECTIONS TO BE SUPPLIED BY STRUCTURAL STEEL CONTRACTOR
- CLEATS SHOWN IN DOTTED LINES TO BE SUPPLIED BY EQUIPMENT SUPPLIER REST PORTION TO BE SUPPLIED BY STRUCTURAL STEEL CONTRACTOR.

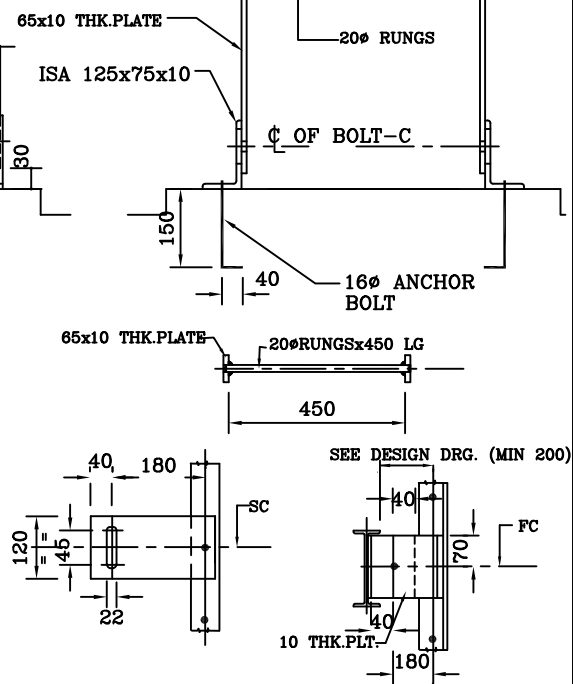
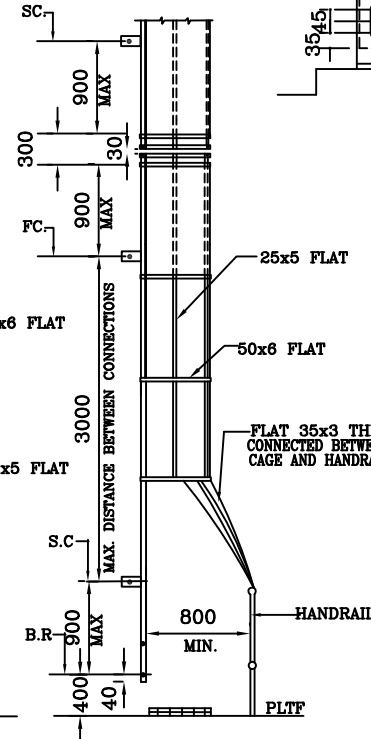


0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 4 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
BRACKETS FOR CIRCULAR PLATFORMS			EM150-0000-208		
			FILE		
			EM150-0000-208_4		

REFERENCE DRG.	NO.



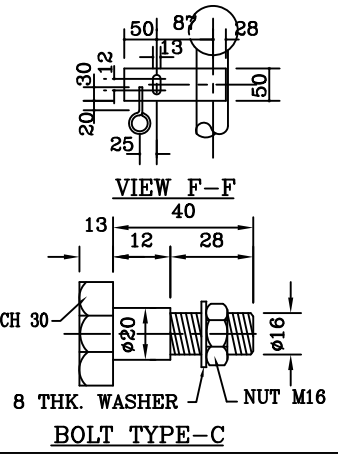
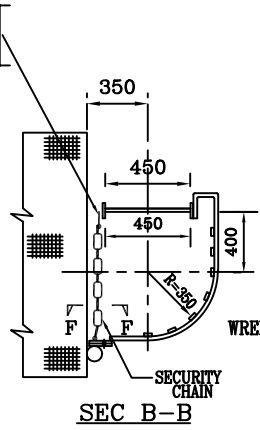
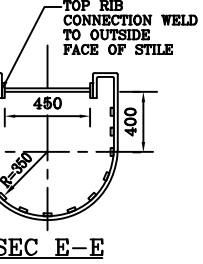
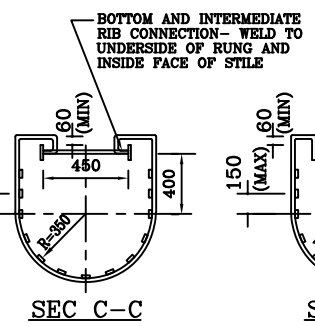
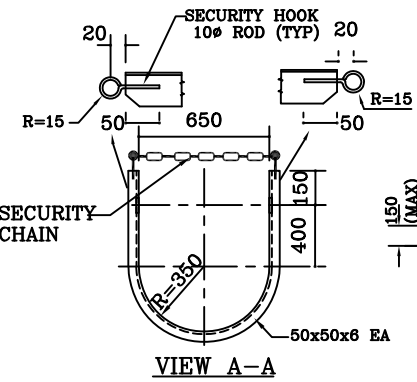
CONNECTION FOR PLTF. OVER VESSELS ONLY



CONNECTIONS FOR STRUCTURES

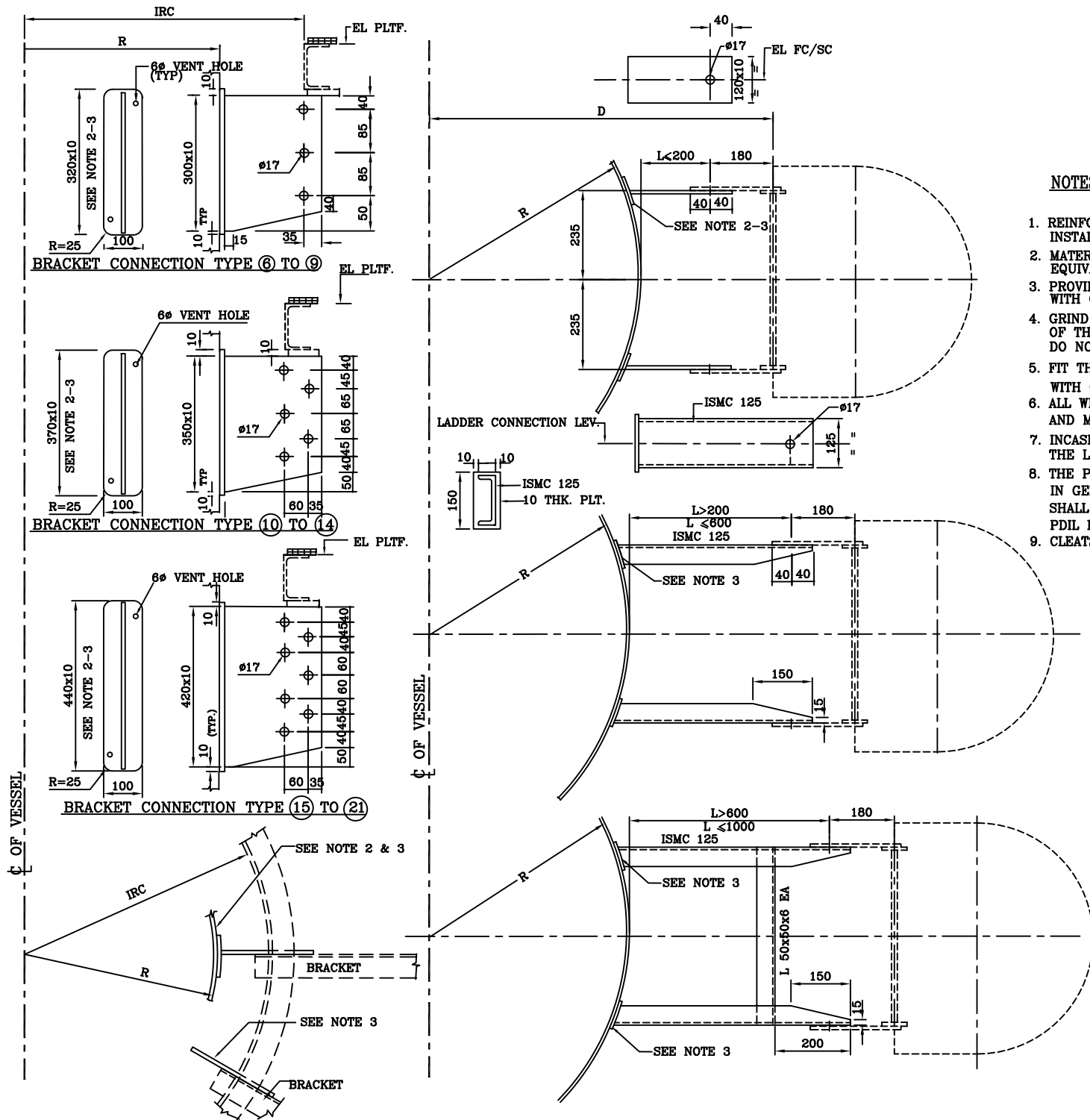
NOTE

1. BOLTS FOR CONNECTIONS TO BE SUPPLIED BY STRUCT. STEEL CONTRACTOR
2. SECURITY CHAINS AND SAFETY HOOKS TO BE PROVIDED AT ALL PLATFORM ENTRANCES.
3. IN CASE OF DIFFERENCE BETWEEN THIS DRG AND DESIGN DRAWING THE LATTER DRAWING SHALL GOVERN.



0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV. 0		
AEGIS LOGISTICS LIMITED			SHEET 5 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
STEEL LADDER WITH SAFETY CAGE			EM150-0000-208		
			FILE		
			EM150-0000-208.5		

REFERENCE DRG.	NO.
SYMBOLS AND REFERENCES	EM150-0000-208(SH 1 OF 10)
BRACKETS FOR CIRCULAR PLATFORMS	EM150-0000-208(SH 4 OF 10)
STEEL LADDER WITH SAFETY CAGE	EM150-0000-208(SH 5 OF 10)



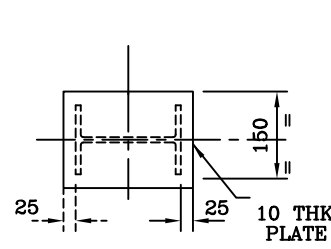
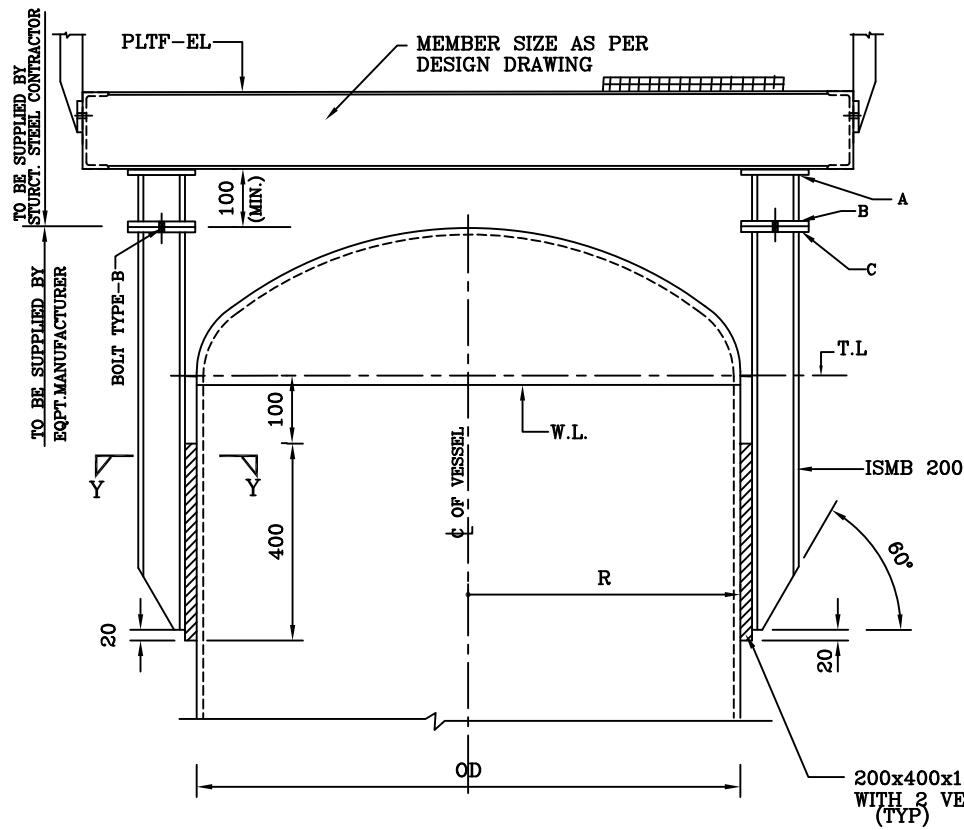
NOTES

1. REINFORCEMENT PLATES FOR BRACKET CONNECTIONS ARE TO BE INSTALLED ONLY ON SHELLS < 15mm. THICK.
2. MATERIALS OF PLATES WELDED ON SHELL MUST BE SAME AS OR EQUIVALENT TO SHELL MATERIAL.
3. PROVIDE HALF HOLE, 25mm.RADIUS ON CONNECTIONS WHICH INTERFERE WITH CIRCUMFERENTIAL JOINT OF THE VESSEL.
4. GRIND AND X-RAY THE VERTICAL AND CIRCUMFERENTIAL JOINT SECTIONS OF THE VESSEL WHICH INTERFERE WITH REINFORCING PLATES AND DO NOT WELD THESE PLATES FOR A 50mm SECTION ASTRIDE THE JOINTS.
5. FIT THE CONNECTION OR THE REINFORCING PLATE IN CASE OF INTERFERENCE WITH OTHER PLATES OF STIFFENING RINGS OF THE VESSEL.
6. ALL WELDINGS HAVE TO BE CARRIED OUT AT WORKSHOP BY MANUFACTURER AND MUST COMPLY WITH VESSEL MANUFACTURING STANDARD.
7. INCASE OF DIFFERENCE BETWEEN THIS DRG. AND DESIGN DRAWING THE LATTER DRAWING SHALL GOVERN.
8. THE PLATES FOR ATTACHMENT OF STAIRS, PLATFORMS AND STEEL STRUCTURE IN GENERAL WELDED ON THE EQUIPMENT [COLUMN,HEAT EXCHANGER,ETC.] SHALL BE SUPPLIED BY EQUIPMENT MANUFACTURER IN ACCORDANCE WITH PDIL DESIGN DRAWING.
9. CLEATS SHOWN IN FIRM LINES TO BE SUPPLIED BY EQUIPMENT SUPPLIER.

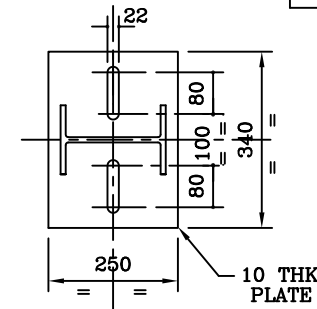
0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 6 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
PLATFORM AND LADDER CLEATS FOR VESSELS			EM150-0000-208		
			FILE		
			EM150-0000-208_6		



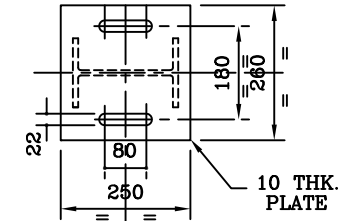
REFERENCE DRG.	NO.
SYMBOLS AND REFERENCES	EM150-0000-208(SH 1 OF 10)



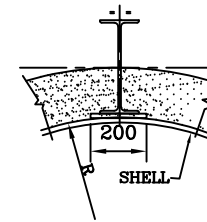
DETAIL-A



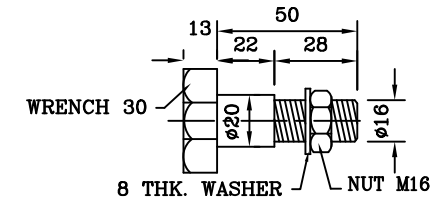
DETAIL-B



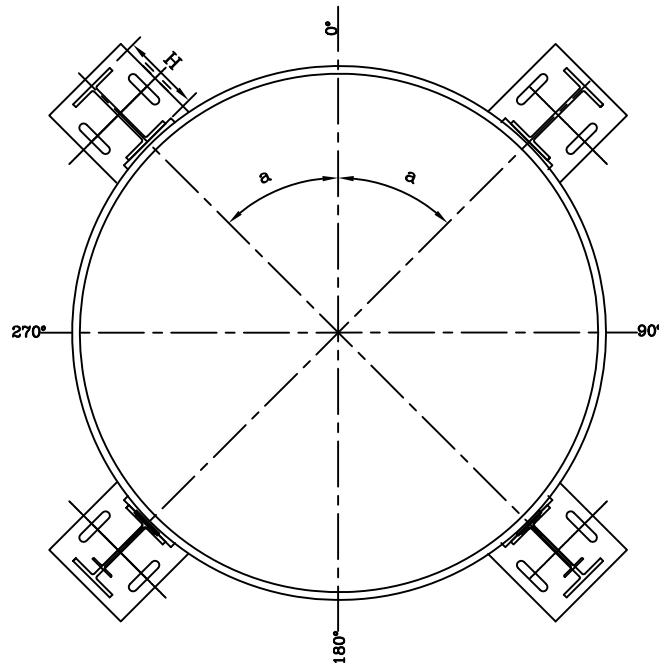
DETAIL-C



SECTION Y-Y



BOLT TYPE-B



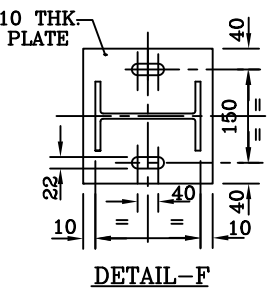
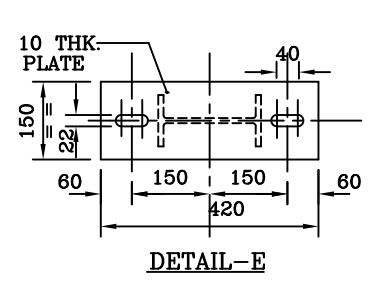
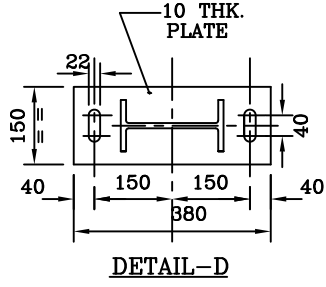
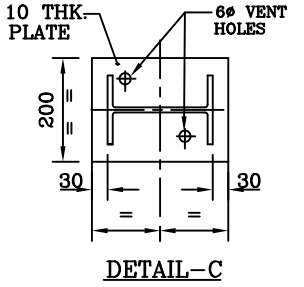
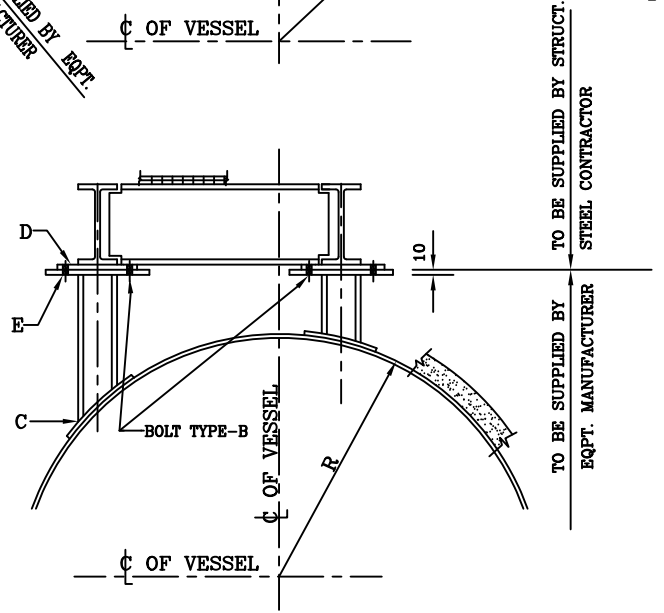
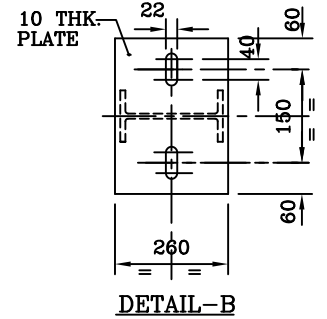
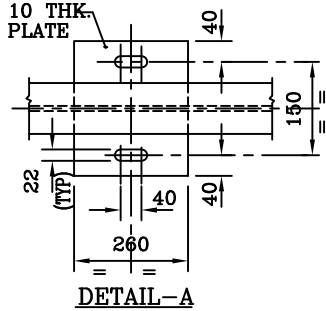
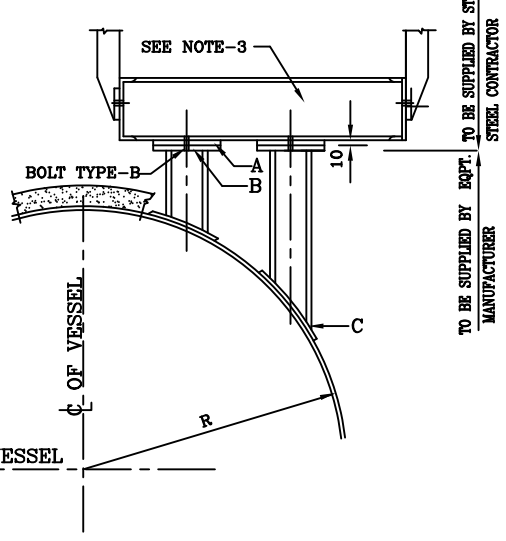
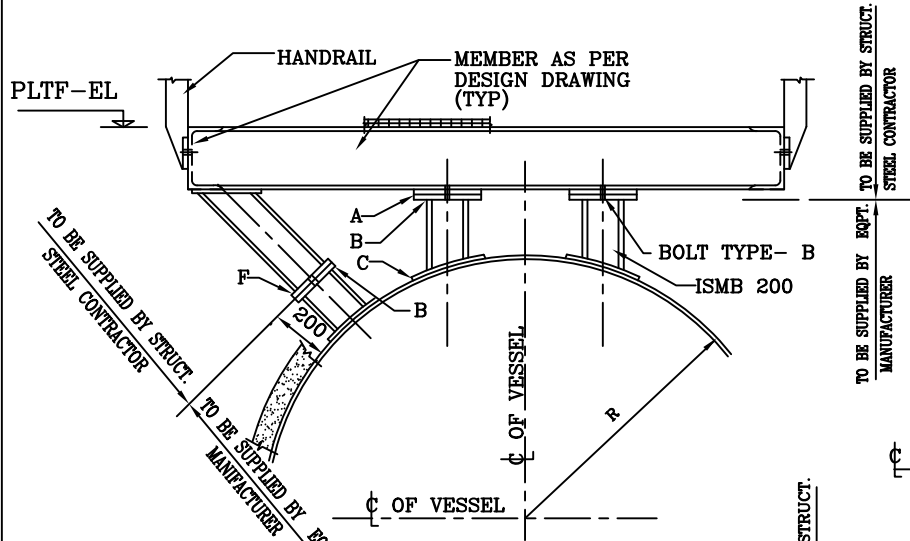
NOTES:-

1. REINFORCEMENT PLATES FOR ATTACHMENT OF STAIRS, PLATFORMS AND STEEL STRUCTURE SHALL GENERALLY BE WELDED ON THE EQUIPMENTS AND SHALL BE SUPPLIED BY THE EQUIPMENT MANUFACTURER IN ACCORDANCE WITH THE DESIGN DRAWING. THE PLATE MATERIAL SHALL BE SAME AS OR EQUIVALENT TO SHELL MATERIAL.
2. BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE SUPPLIED BY STRUCTURAL STEEL CONTRACTOR
3. IN CASE OF DIFFERENCE BETWEEN THIS DRAWING AND THE DESIGN DRAWING THE LATTER SHALL GOVERN.

0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 7 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
CONNECTION DETAILS OF PLATFORMS FOR VERTICAL VESSELS			EM150-0000-208		
			FILE		
			EM150-0000-208_7		

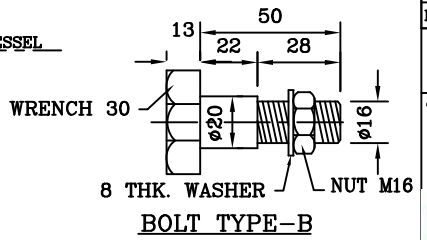
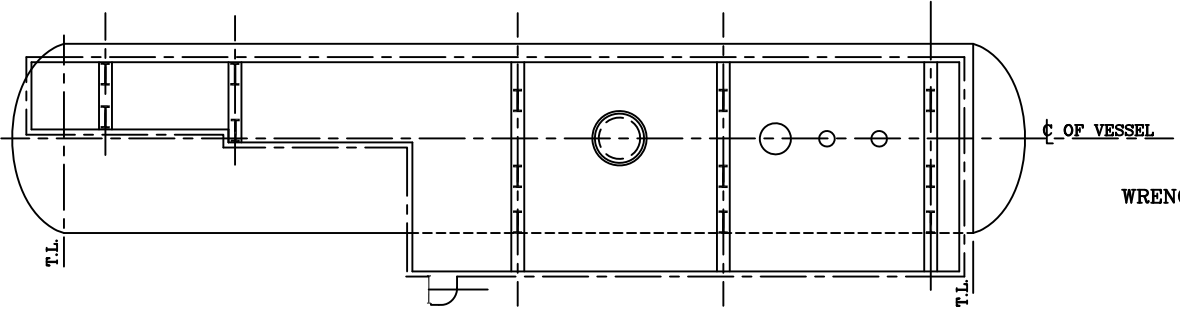


REFERENCE DRG.	NO.
SYMBOLS AND REFERENCES	EM150-0000-208(SH 1 OF 10)
STEEL LADDER WITH SAFETY CAGE	EM150-0000-208(SH 5 OF 10)



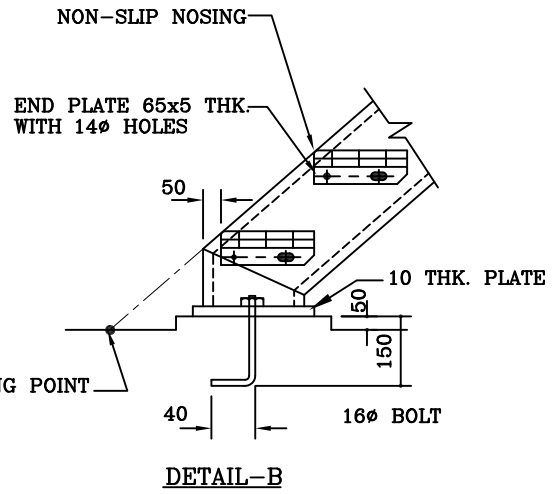
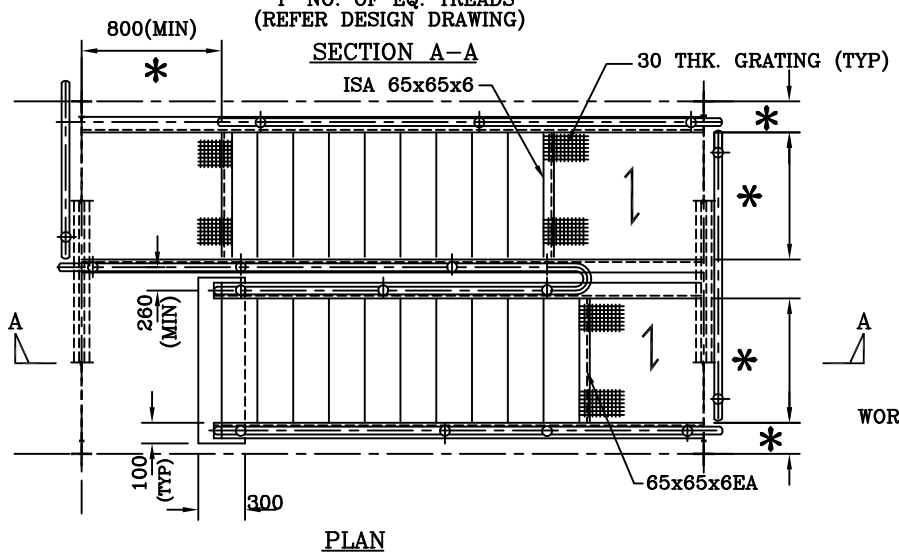
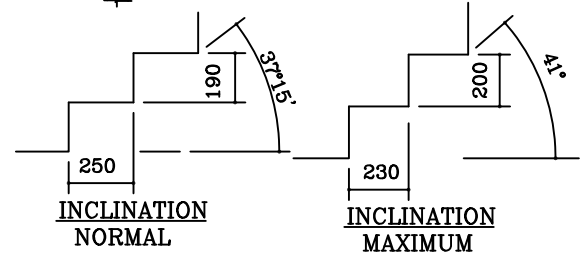
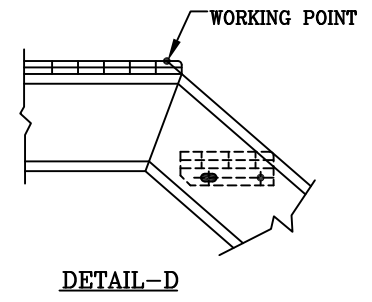
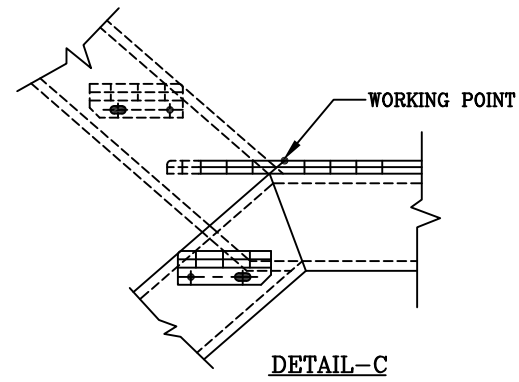
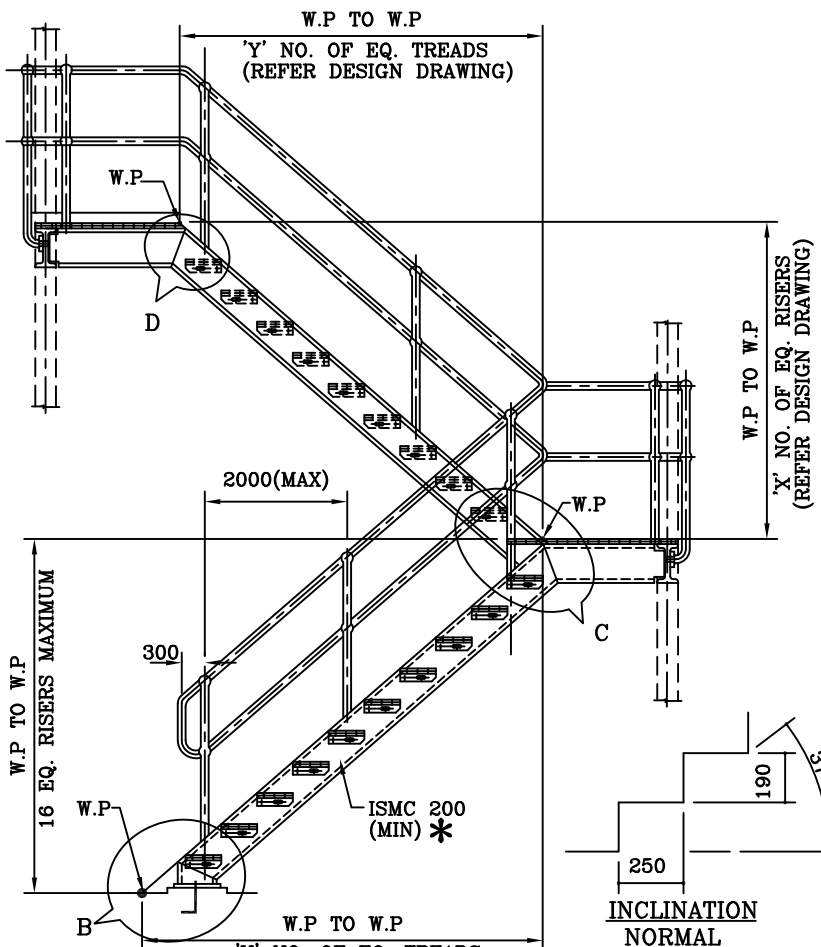
NOTES:-

1. REINFORCEMENT PLATES FOR ATTACHMENT OF STAIRS, PLATFORMS AND STEEL STRUCTURE SHALL GENERALLY BE WELDED ON THE EQUIPMENTS AND SHALL BE SUPPLIED BY THE EQUIPMENT MANUFACTURER IN ACCORDANCE WITH THE DESIGN DRAWING. THE PLATE MATERIAL SHALL BE SAME AS OR EQUIVALENT TO THE SHELL MATERIAL.
2. BOLTS FOR STRUCTURAL CONNECTIONS SHALL BE SUPPLIED BY STRUCTURAL STEEL CONTRACTOR.
3. IN CASE OF DIFFERENCE BETWEEN THIS DRAWING AND THE DESIGN DRAWING THE LATTER SHALL GOVERN.



0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 8 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
CONNECTION DETAIL OF PLATFORM FOR HORIZONTAL VESSELS			EM150-0000-208		
			FILE		
			EM150-0000-208_8		

REFERENCE DRG.	NO.
HANDRAILING SYSTEM	EM150-0000-208(SH 10 OF 10)



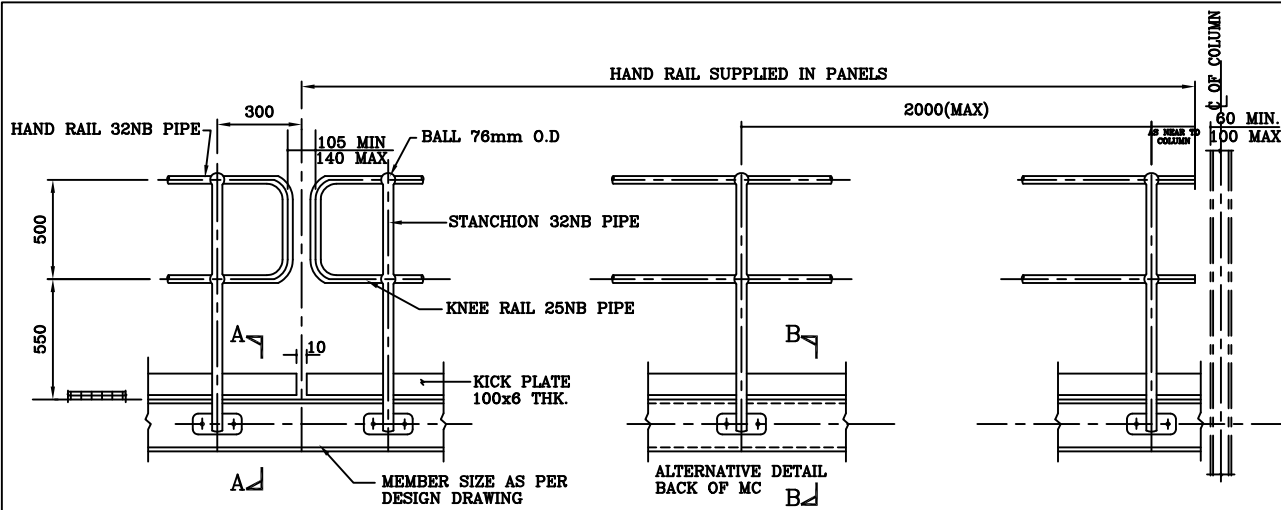
NOTES:-

1. INCASE OF DIFFERENCE BETWEEN THIS DRAWING AND THE DESIGN DRAWING THE LATTER SHALL GOVERN.
 2. STAIR W.P SHALL BE AT THE INTERSECTION OF THE NOSING LINE AND THE TOP OF THE FLOOR OR TREAD.
 3. NON-SLIP NOSING SHALL BE PROVIDED ON THE STAIR CASE STEPS AND LANDINGS.
- *-REFER DESIGN DRAWING

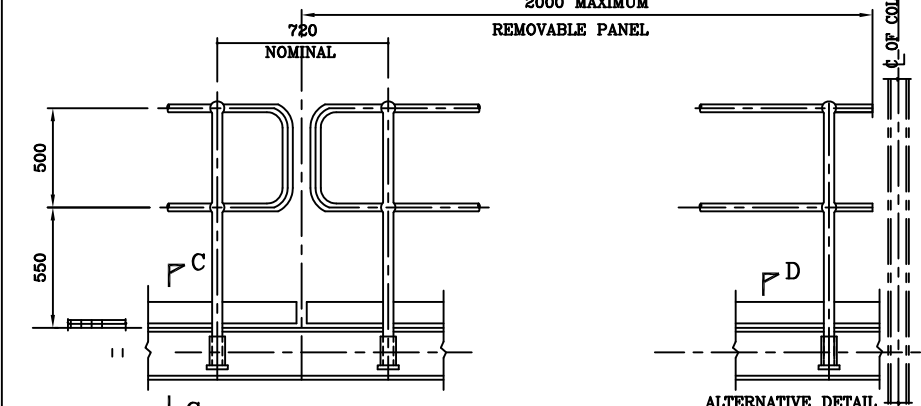
0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 9 OF 10		
TITLE			SCALE		
STAIRS			DRG. NO.		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			EM150-0000-208		
			FILE		
			EM150-0000-208_9		



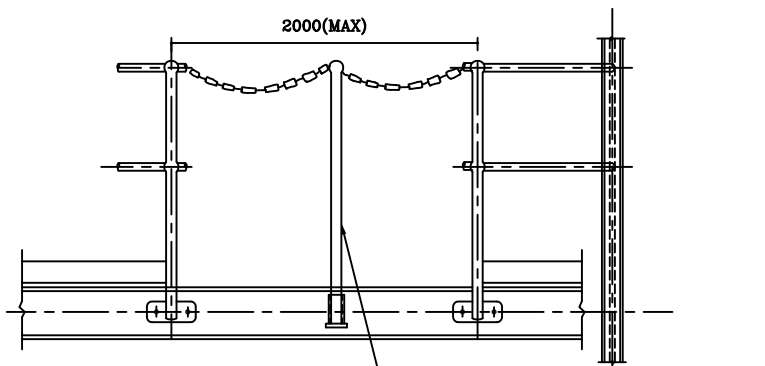
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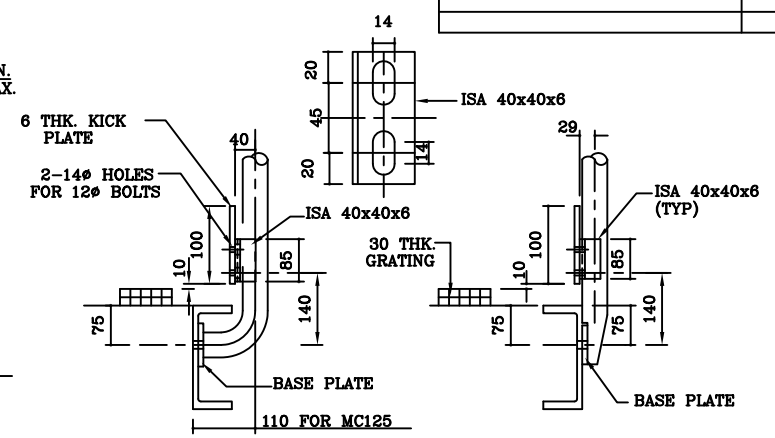
TYPICAL FIXED HAND RAIL DETAIL
2000 MAXIMUM



TYPICAL REMOVABLE PANEL
(ALL DIMENSIONS AND DETAILS ARE SAME AS FIXED HAND RAIL DETAIL)

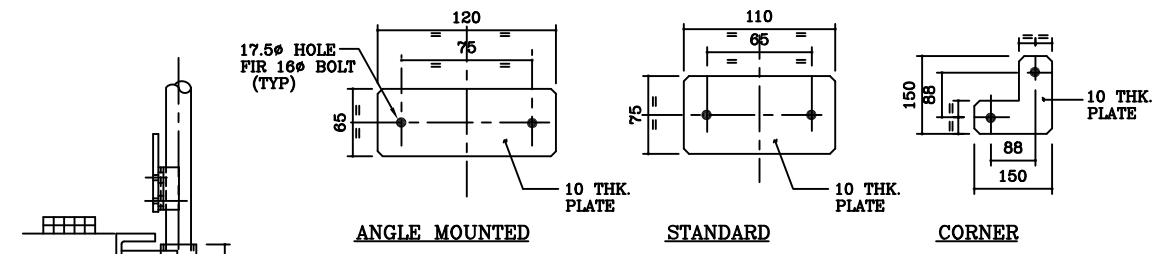


TYPICAL REMOVABLE SAFETY CHAIN & RAIL OR COLUMN CONNECTION DETAILS

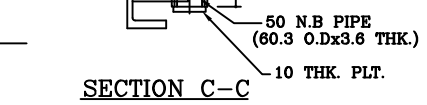


SECTION A-A

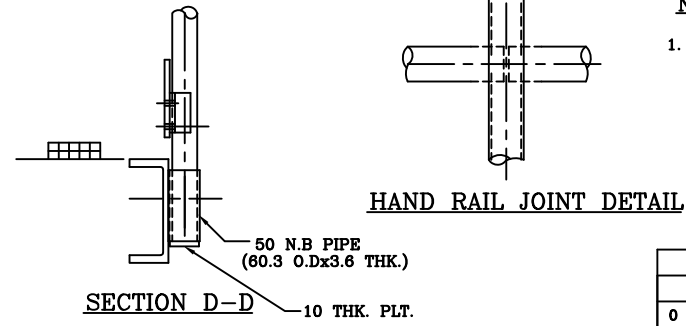
SECTION B-B



STANCHION BASE PLATE DETAIL



SECTION C-C



SECTION D-D

HAND RAIL JOINT DETAIL

NOTE:
1. PAINTING AS PER PAINTING SPECIFICATION.

0	14.10.15	FIRST ISSUE	AK	VP	RVV
REV	DATE	DESCRIPTION	PPD.	CKD.	APPD.
CLIENT:-			REV.	0	
AEGIS LOGISTICS LIMITED			SHEET 10 OF 10		
TITLE			SCALE		
STANDARD FOR PLATFORM, LADDER & HANDRAIL			DRG. NO.		
HAND RAILING SYSTEM			EM150-0000-208		
			FILE		
			EM150-0000-208_10		



STANDARD FOR GRATING

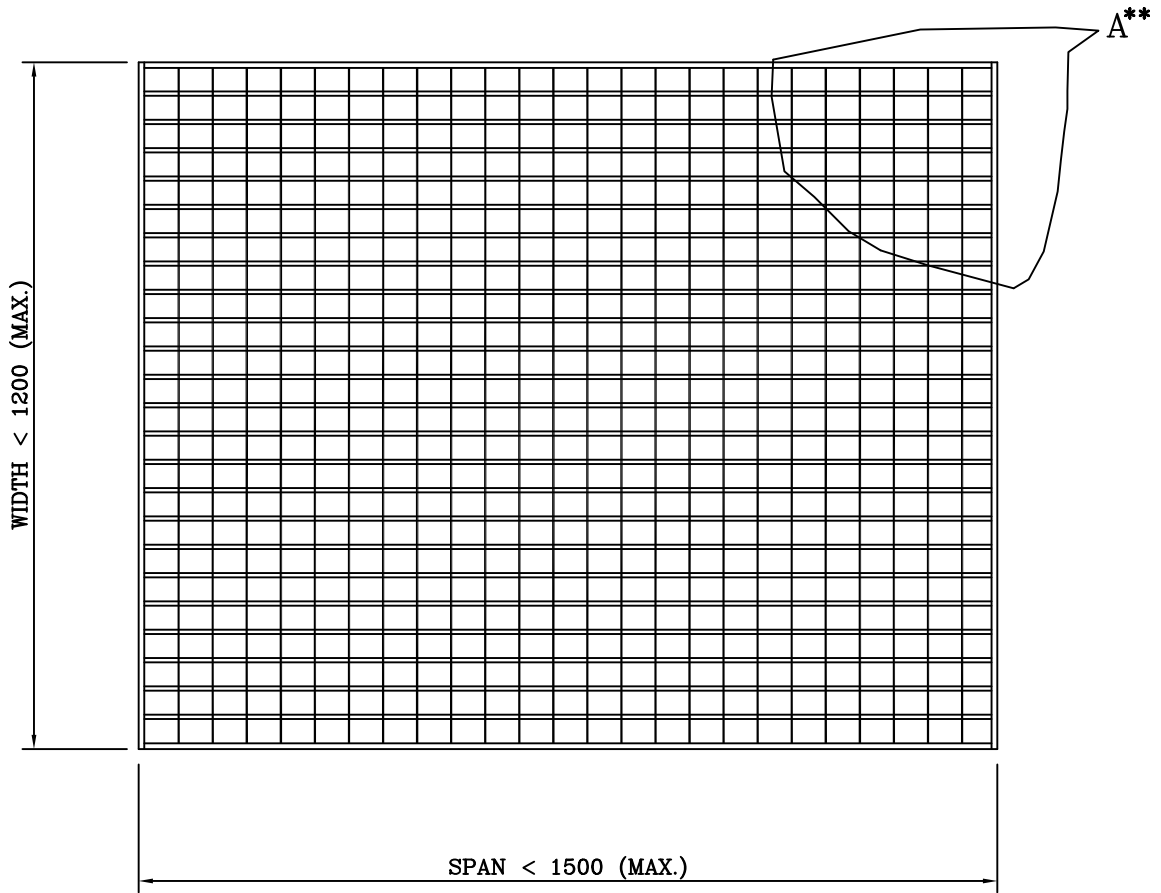
PDS: ST-105

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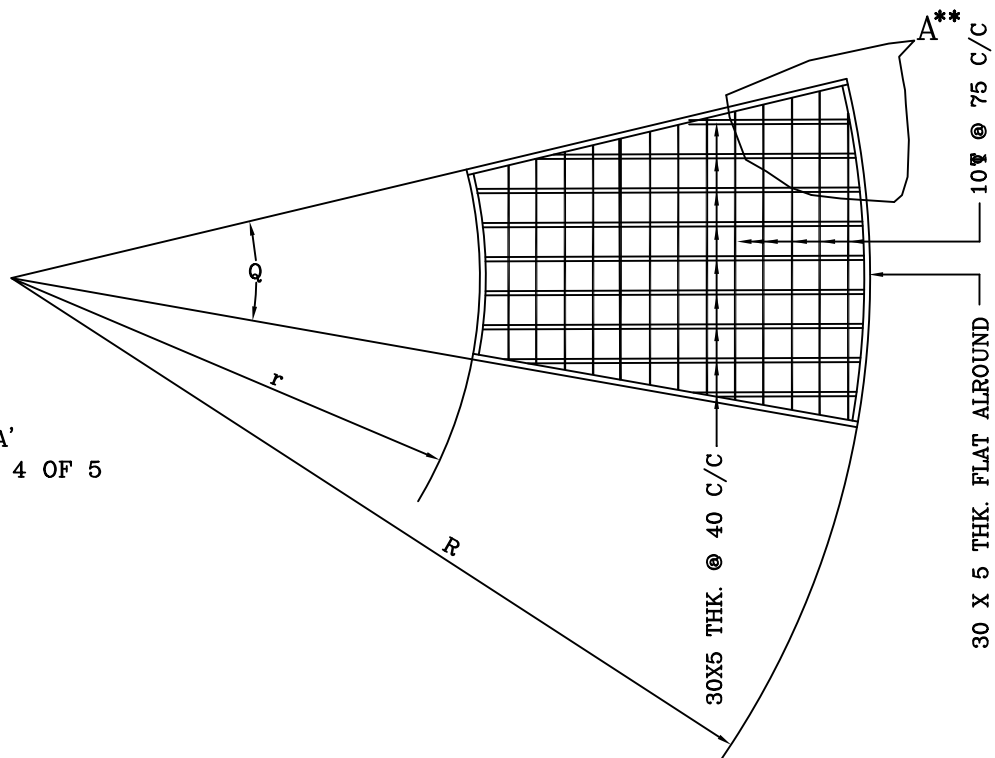
DOCUMENT NO.

REV.

SHEET 1 OF 4



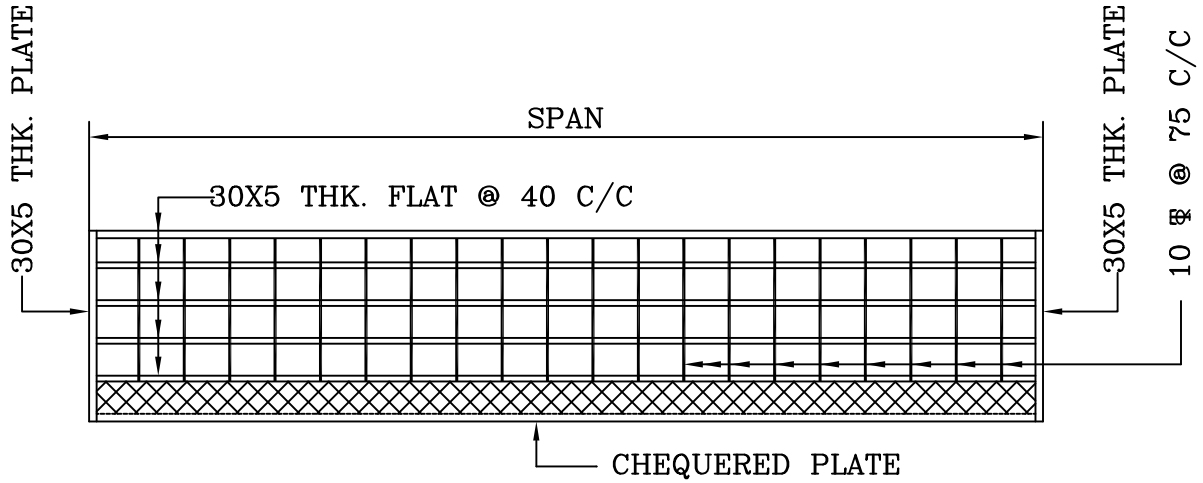
TYPICAL PLAN OF GRATING PLANK



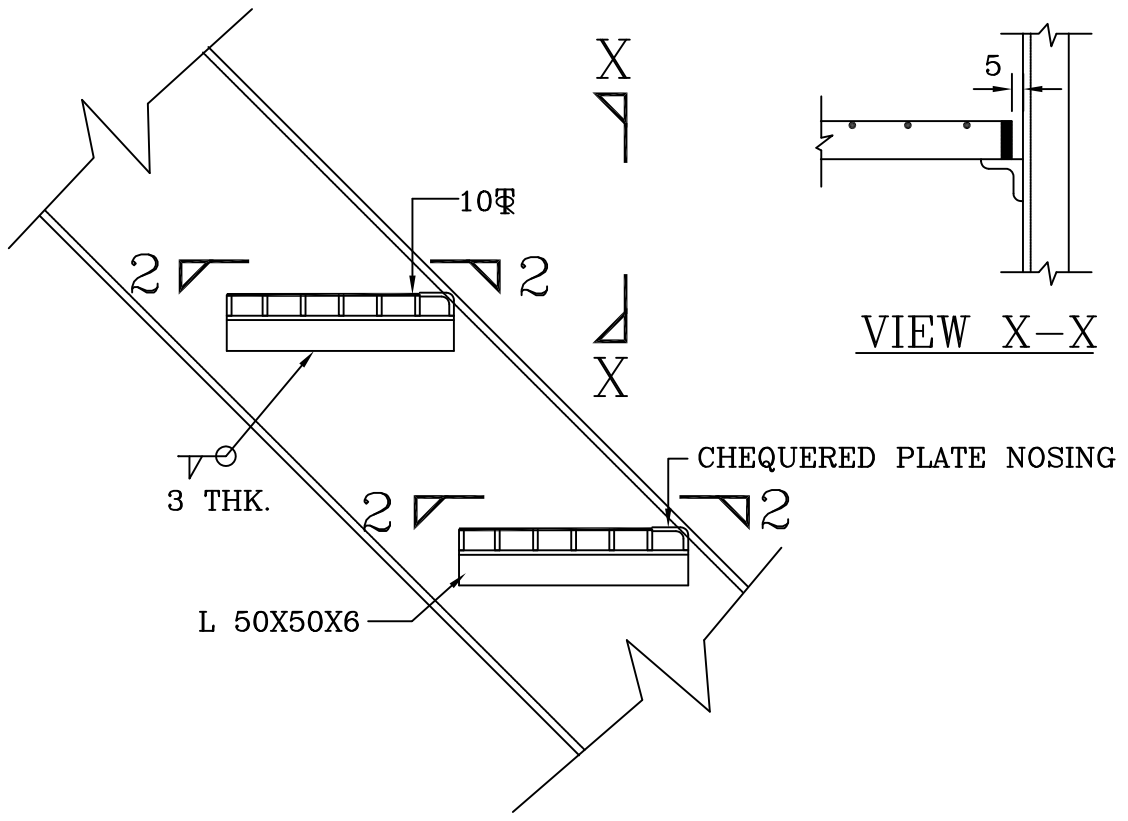
**
FOR DETAIL 'A'
REFER SHEET 4 OF 5

TYPICAL DETAIL OF PLANK AROUND TOWER

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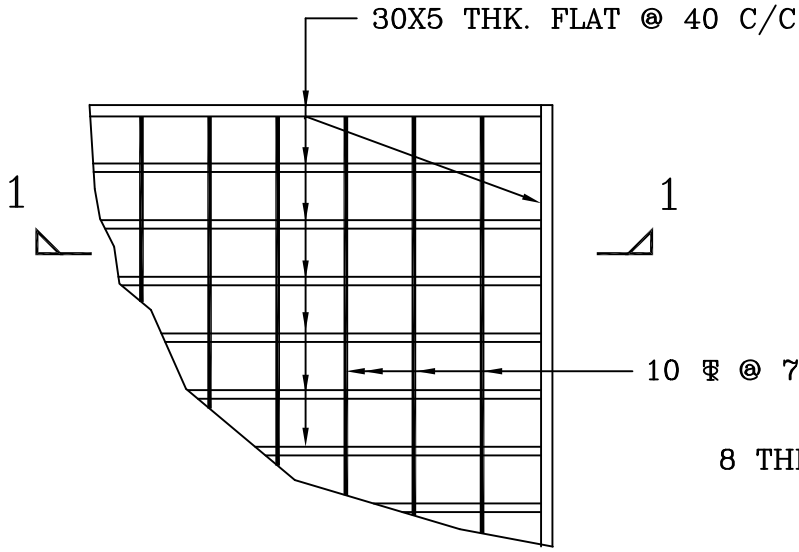
PLAN AT 2-2



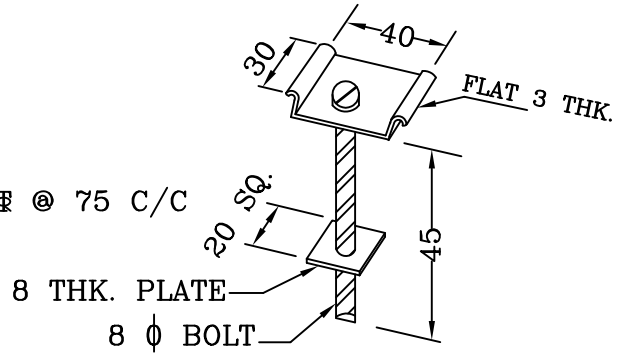
TYPICAL DETAIL OF GRATING FOR TREADS

(TREADS ARE TO FIXED TO ANGLE CLEATS THROUGH TWO NOS.
G.I. CLAMPS ON EACH SIDE)

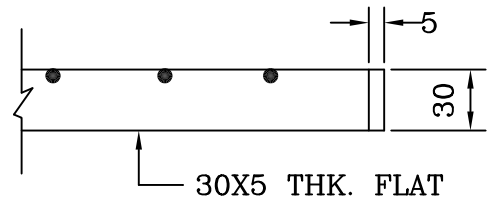
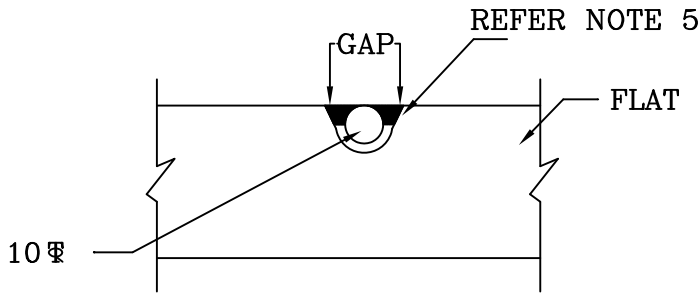
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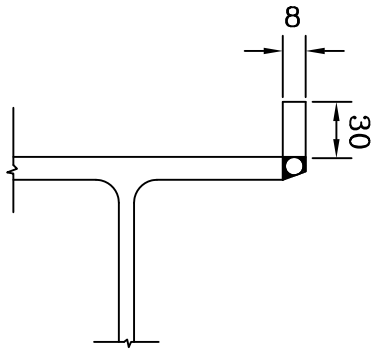
DETAIL A



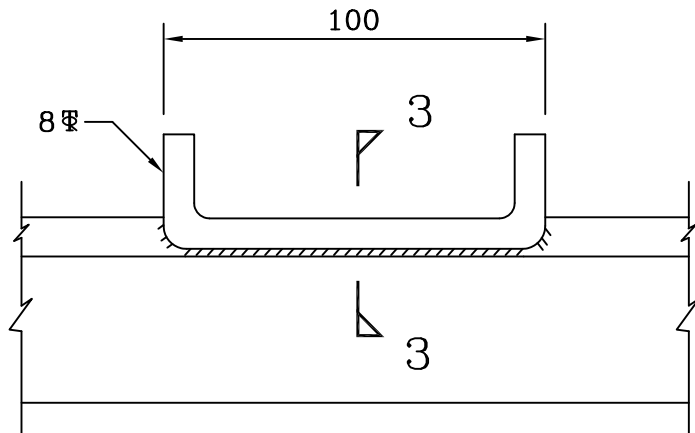
TYPE OF CLAMP



SECTION 1-1



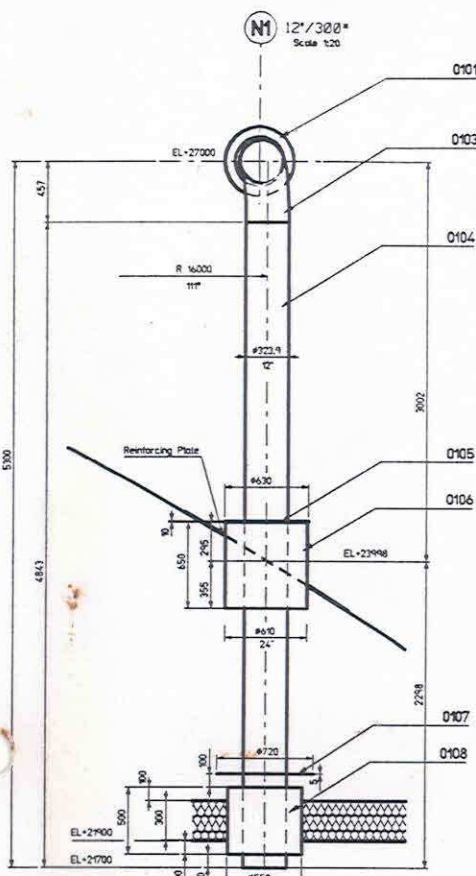
SECTION 3-3



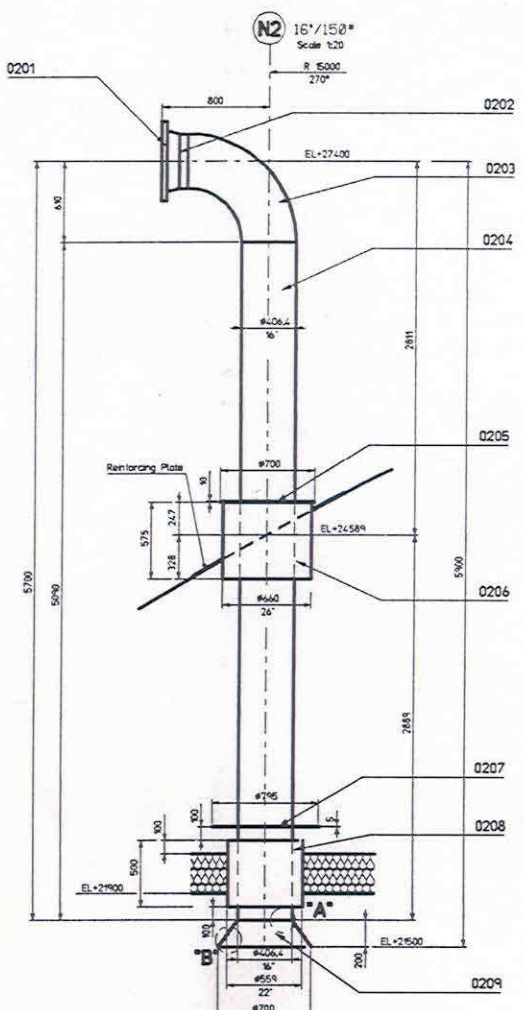
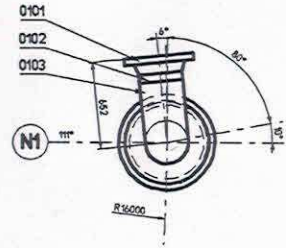
DETAIL OF STOP HOOK

NOTES:—

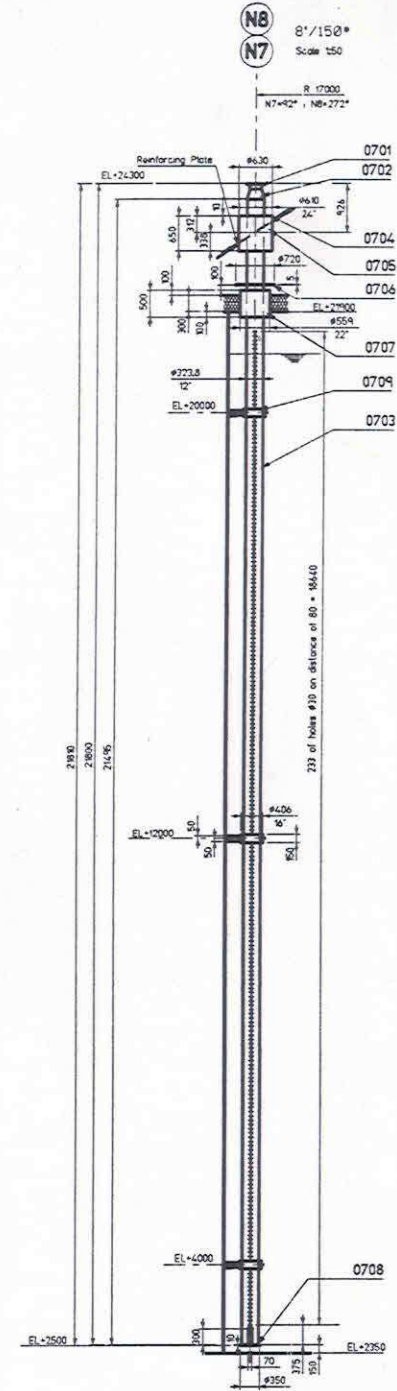
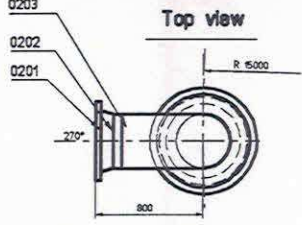
1. THIS DRAWING MUST BE READ IN CONJUNCTION WITH TECHNICAL SPECIFICATIONS/ RELEVANT CODES.
2. THE GRATING PLANKS SHALL BE FABRICATED AS PER IS:800, IS:813, IS:816 & APPROVED FABRICATION DRAWINGS ONLY.
3. GRATING PLANKS SHALL BE GALVANIZED.
4. GRATING HAS BEEN DESIGNED FOR LIVE LOAD OF 500 KG/SQ.M (MAXIMUM).
5. GAP BETWEEN FLATS AND RODS IS TO BE TACK WELDED.
6. TACK WELDING SHALL BE DONE ALONG THE PERIPHERY OF RODS.
7. HOLES ARE DRILLED IN BEAMS TO SUIT 8 ϕ SCREW HEADED BOLTS . NUTS ARE TIGHTENED FROM BOTTOM OF BEAM FLANGE.
8. EACH PLANK MUST BE HELD BY AT LEAST TWO CLAMPS AND ONE STOP HOOK ON EACH SIDE.



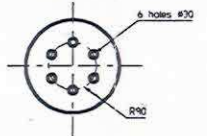
Top view



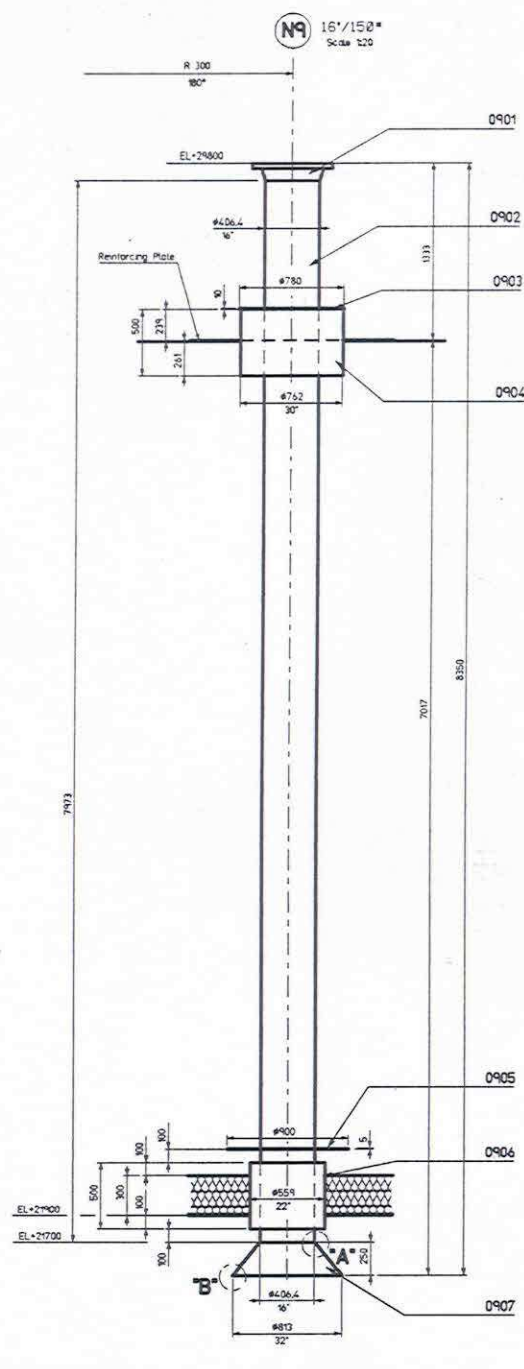
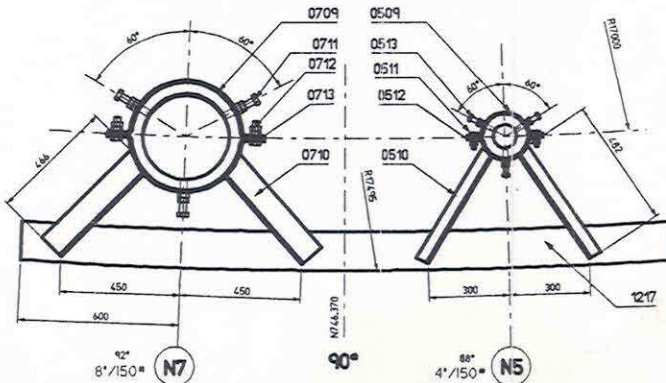
Top view



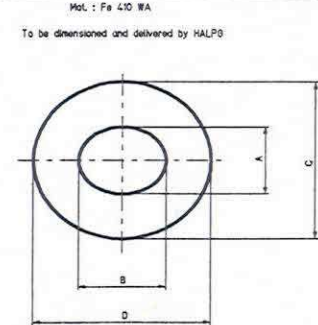
Top view of 0708



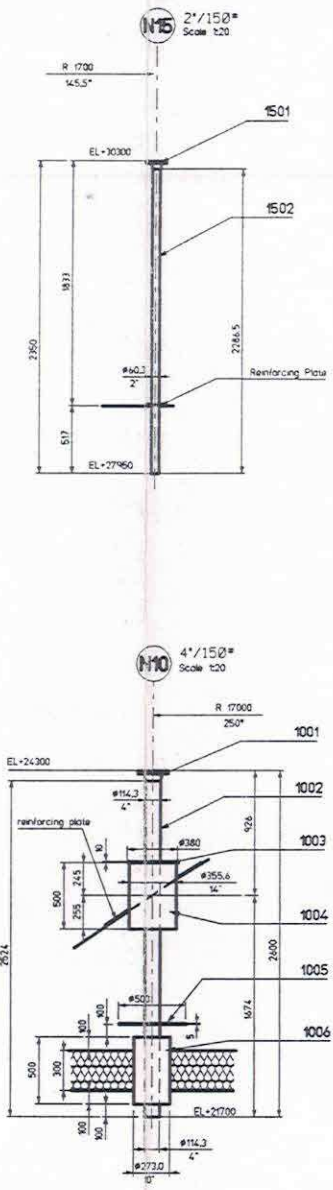
Top view of supports for vertical lines



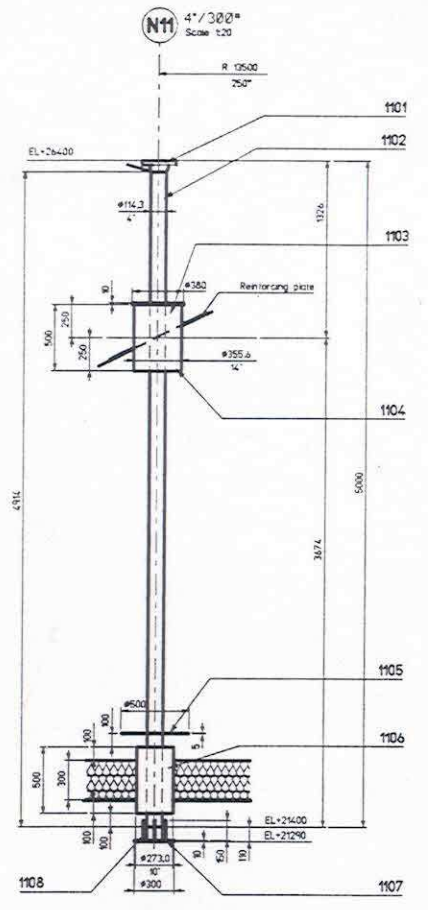
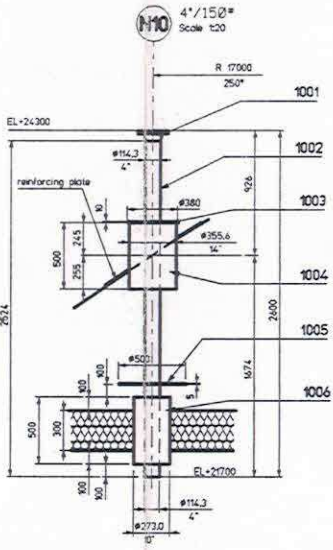
Typical detail for reinforcing plates



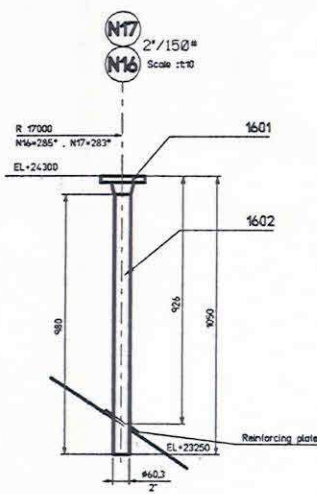
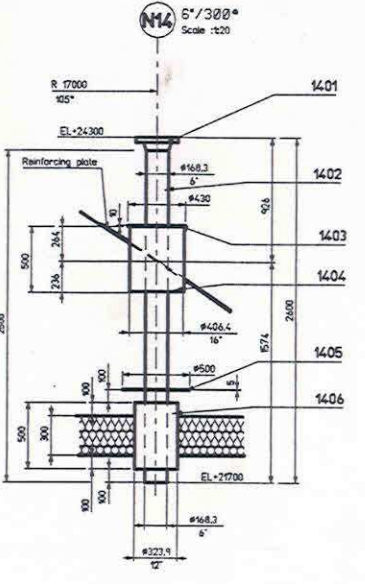
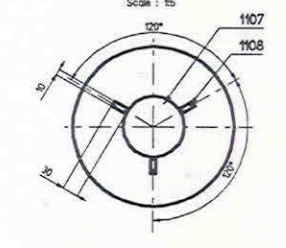
Nozzle No	Pipe Ø	A	C	B	D
N1	610	610	715	1258	1363
N2	660	660	762	1282	1364
N7/N8	559	560	673	1190	1205
N9	762	763	764	1435	1435
N10	355.6	356	428	860	935
N11	355.6	356	297	545	885
N14	406.4	407	489	945	1030
N15	663	61	62	270	270
N16/N17	663	61	74	285	300



Top view of 1007 and 1108



Details 'A' and 'B'



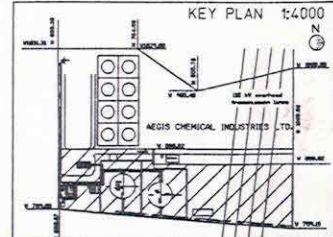
TGE-97

All weldings into the pipes shall be grinded after welding.

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No.	Revision	Date	Name
2	General revision	24.01.95	ng
1	N2	12.12.95	kl

Date	Name	Title
12.04.95	Ngasek	NOZZLE DETAIL N1, N2, N7, N8, N9, N10, N11, N14, N15, N16, N17







PROJECTS & DEVELOPMENT INDIA LTD

EM150-TS-405	0
DOCUMENT NO	REV
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BILL OF QUANTITIES

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
		DOCUMENT NO	REV	
		SHEET 2 OF 6		

1 BOQ FOR PLATES (FREE ISSUE)

A. TANK PLATES MATERIAL WITHOUT SUSPENDED DECK

S.NO	DESCRIPTION	LENGTH	WIDTH	THICKNESS	QUANTITY	REMARKS
		(MM)	(MM)	(MM)	(NOS.)	
1	PLATE	11700	2500	36	5	
2	PLATE	12000	1850	36	12	
3	PLATE	11700	2500	23	20	
4	PLATE	12250	2500	21.7	18	
5	PLATE	11700	2500	20.6	20	
6	PLATE	12000	1500	20	2	
7	PLATE	12000	2400	20	8	
8	PLATE	12250	2500	19.4	18	
9	PLATE	11700	2500	18.2	20	
10	PLATE	12250	2500	17.1	18	
11	PLATE	12000	2000	16	4	
12	PLATE	11700	2500	15.8	20	
13	PLATE	12250	2500	14.8	18	
14	PLATE	11700	2500	13.4	20	
15	PLATE	12250	2500	12.6	18	
16	PLATE	11500	1800	12	20	
17	PLATE	12000	2400	12	10	
18	PLATE	12000	2500	12	52	
19	PLATE	11700	2500	11	20	
20	PLATE	12250	2500	10.3	18	
21	PLATE	11700	2000	10	80	
22	PLATE	11700	2400	10	20	
23	PLATE	12000	1000	10	2	
24	PLATE	12000	2500	10	12	
25	PLATE	11600	2200	8	112	
26	PLATE	12000	2500	8	128	
27	PLATE	12000	1800	8	28	
28	PLATE	12250	2500	8	18	
29	PLATE	12250	2500	6.4	54	
30	PLATE	8000	2000	6	1	

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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B PLATE MATERIAL OF SUSPENDED DECK



S.NO	DESCRIPTION	LENGTH	WIDTH	THICKNESS	QUANTITY	REMARKS
		(MM)	(MM)	(MM)	(NOS.)	
1	PLATE	12000	2500	20	4	
2	PLATE	12000	2500	12	6	
3	PLATE	12000	2500	10	8	
4	PLATE	10000	2500	6	84	
5	PLATE	12000	1650	6	20	
(NOTE:-SUSPENDED DECK PLATES NOT TO BE UT TESTED)						

2. BOQ FOR SS PLATES (ASTM A 240 GR. 304) OF ANCHOR STRAP: (FREE ISSUE)

S.NO	DESCRIPTION	LENGTH	WIDTH	THICKNESS.	QUANTITY	REMARKS
		(mm)	(mm)	(mm)	(Nos)	
1	PLATE	6000	1250	12	12	
2	PLATE	6000	1250	14	4	
3	PLATE	6000	1250	20	4	

3. BOQ FOR PIPES

SL No	Material	SIZE	SCH/THK (mm)	QTY (m) for Two tanks	Remarks
1	ASTM A333 GR. 6	2"	SCH-XS	631	Seamless
2	ASTM A333 GR. 6	3"	SCH-XS	21	Seamless
3	ASTM A333 GR. 6	4"	SCH-STD	161	Seamless
4	ASTM A333 GR. 6	6"	SCH-STD	302	Seamless
5	ASTM A333 GR. 6	8"	SCH-STD	161	Seamless
6	ASTM A333 GR. 6	12"	SCH-STD	48	Seamless
7	ASTM A333 GR. 6	16"	SCH-STD	34	Seamless
8	ASTM A333 GR. 6	18"	SCH-STD	17	Seamless
9	ASTM A333 GR. 6	20"	SCH-STD	201	Seamless



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4. BOQ FOR FLANGES

SL No	Description	SIZE	Rating	SCH/THK (mm)	QTY (No) for two tanks	Remarks
1	WNRF FLANGE	2"	300#	SCH-XS	24	ASME B16.5
2	WNRF FLANGE	3"	300#	SCH-XS	4	ASME B16.5
3	WNRF FLANGE	4"	300#	SCH-STD	8	ASME B16.5
4	WNRF FLANGE	6"	300#	SCH-STD	12	ASME B16.5
5	WNRF FLANGE	8"	300#	SCH-STD	14	ASME B16.5
6	WNRF FLANGE	12"	300#	SCH-STD	4	ASME B16.5
7	WNRF FLANGE	12"	150#	SCH-STD	4	ASME B16.5
8	WNRF FLANGE	16"	150#	SCH-STD	4	ASME B16.5
9	WNRF FLANGE	18"	300#	SCH-STD	2	ASME B16.5
10	WNRF FLANGE	20"	300#	SCH-STD	6	ASME B16.47 SERIES B
11	WNRF FLANGE (NOTE 3)	36"	150#	6 THK	2	ASME B16.47 SERIES B
12	WNRF FLANGE (NOTE 3)	48"	150#	6 THK	2	ASME B16.47 SERIES B
13	BLRF FLANGE	2"	300#	-	8	ASME B16.5
14	BLRF FLANGE	3"	300#	-	2	ASME B16.5
15	BLRF FLANGE	12"	150#	-	2	ASME B16.5
16	BLRF FLANGE(NOTE 3)	36"	150#	-	2	ASME B16.47 SERIES B
17	BLRF FLANGE(NOTE 3)	48"	150#	-	2	ASME B16.47 SERIES B

5. BOQ FOR NOZZLE FASTENERS

SL No	Description	SIZE	QTY (m) for two tanks	Remarks
1	STUD WITH TWO HEV.NUT	1 1/8" UN 8 X 215 lg	100	
2	STUD WITH TWO HEV.NUT	3/4" UNC X 110 lg	28	
3	STUD WITH TWO HEV.NUT	5/8" UNC X 90 lg	112	
4	STUD WITH TWO HEV.NUT	7/8" UNC X 130 lg	36	
5	STUD WITH TWO HEV.NUT	7/8" UNC X 175 lg	100	



	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
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6. BOQ FOR GASKETS

SL No	Description	SIZE	Rating	THK (mm)	QTY (Nos.) for two tanks	Remarks
1	SS304 SPIRAL WOUND GASKET	48"	150#	4.5	8	ASME B 16.47 SERIES "B"
2	SS304 SPIRAL WOUND GASKET	36"	150#	4.5	8	ASME B 16.47 SERIES "B"
3	SS304 SPIRAL WOUND GASKET	12"	150#	4.5	8	ASME B 16.5
4	SS304 SPIRAL WOUND GASKET	3"	300#	4.5	8	ASME B 16.5
5	SS304 SPIRAL WOUND GASKET	2"	300#	4.5	32	ASME B 16.5

7 BOQ FOR SLEEVES

SL No	NOZZLE SIZE	QTY (NOS) FOR TWO TANKS	Remarks
1	48"	2	
2	36"	2	
3	20"	6	
4	18"	2	
5	16"	4	
6	12"	4	
7	8"	3	
8	6"	10	
9	4"	8	
10	3"	2	
11	2"	12	

	SPECIFICATION FOR SUPPLY, FABRICATION & ERECTION OF PROPANE / BUTANE STORAGE TANKS AEGIS, HALDIA	EM150-TS-405	0	
		DOCUMENT NO	REV	
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7 BOQ FOR STRUCTURALS, HAND RAILING FOR SINGLE TANK

- a) Structural Steel = 25 MT
- b) Galvanized Gratings = 20 MT
- c) MS Handrails = 03 MT

NOTE:

1. Bidder is requested to recheck the above indicated & minimum BOQ before procurement. If any deviations in quantities are found it shall be bring in notice to the PDIL/Owner and shall be taken care accordingly without price implications.
2. BOQ of free issue materials is likely to change and it will be informed accordingly)