



BHARAT HEAVY ELECTRICALS LIMITED

BAP – Ranipet, 632406

MM – PURCHASE Department (FGD)

NIT

Date: 28-07-2022

RFQ towards BHEL Ranipet Enq for.: EoH for NTPC Mauda

Sub: Requirement for “Design, Manufacture, Pre-dispatch inspection (AIA-TPI), Packing, Forwarding, dispatch, transportation, Supply, Supervision for “installation, Erection, inspection, Testing, commissioning, & Trial run” of Electric wire rope Operated Hoist (EoH)” for BHEL Site NTPC Mauda by BHEL-Ranipet.

Scope of supply: As subjected above in confirmation with Quality plan and tech Spec. The package consists

Sl	Material code	DESCRIPTION	Qty Set	Delivery req	Quoted/ Not quoted
1	RFW11519 0001	Electric wire rope Hoist capacity 12T, monorail elevation at EL(+)10.4m, floor level at EL(-)2.0m, travel length 39.7m, minimum radius of travel 2m, as per spec, FGD:EWRH Rev 00 for ball mill inner	1	24-09-2022	
2	RFW11519 0002	Electric wire rope Hoist capacity 12T, monorail elevation at EL(+)10.4m, floor level at EL(-)2.0m, travel length 49.5 m, minimum radius of travel 2 m, as per spec, FGD:EWRH Rev 00 for ball mill outer	1	24-09-2022	
3	RFW11519 0003	Electric wire rope Hoist capacity 5T, monorail elevation at EL(+)10.8 m, floor level at EL(+)0.0m, travel length 30.2 m, Max height from bottom of monorail to hoist hook 1 m, as per spec, FGD:EWRH Rev 00 for RC Pump inlet valves	2	24-09-2022	
4	RFW11519 0004	Electric wire rope Hoist capacity 5T, monorail elevation at EL(+)15.7 m, floor level at EL(+) 0.0 m, travel length 23.6 m, Max height from bottom of monorail to hoist hook 1 m, as per spec, FGD:EWRH Rev 00 for RC Pump outlet valves	2	24-09-2022	
5	RFW11519 0005	Electric wire rope Hoist capacity 2T, monorail elevation at EL(+) 6.095 m, floor level at EL(+)0.0m, travel length 4.9 m, as per spec, FGD:EWRH Rev 00 for absorber agitator	4	24-09-2022	



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Sl	Material code	DESCRIPTION	Qty Set	Delivery req	Quoted/ Not quoted
6	RFW11519 0006	Electric wire rope Hoist capacity 20 T, monorail elevation at EL(+)10.127 m, floor level at EL(-)0.20 m, travel length 16.5 m, Max height from bottom of monorail to hoist hook 2.1 m, as per spec, FGD:EWRH Rev 00 for Buf motor	4	24-09-2022	
7	RFW11519 0007	Electric wire rope Hoist capacity 12T, monorail elevation at EL(+)12.98 m, floor level at EL(-)0.20 m, travel length 16.5 m, Max height from bottom of monorail to hoist hook 1.98 m, as per spec, FGD:EWRH Rev 00 for buf fan housing	4	24-09-2022	
8	RFW11519 0008	Electric wire rope Hoist capacity 3.5T, monorail elevation at EL(+)20.145 m, floor level at EL(-)0.5 m, travel length 11.5 m, as per spec, FGD:EWRH Rev 00 for Aux Abs Tank (AAT)	1	24-09-2022	
9	RFW11519 0009	Electric wire rope Hoist capacity 3.5T, monorail elevation at EL(+)17.945 m, floor level at EL(-)2.5 m, travel length 25 m, as per spec, FGD:EWRH Rev 00 for Limestone slurry storage tank (LSST)	1	24-09-2022	
10	RFW11519 0010	Supervision of erection & commissioning, inspection and testing of electric wire rope hoist as per spec FGD : EWRH Rev 00 at mouda (Each set consist of visit for 5 working days excluding travel)	5	24-12-2023	

Destination: BHEL Site, NTPC Mauda

Delivery required date: As per above table or within 5 months from the date of manufacturing clearance, whichever is later. Bidder to quote the best possible delivery from the date of manufacturing clearance. Abnormal quoted delivery, liable for rejection of offer.



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Technical Pre-Qualification requirement (PQR):

SL	Pre-Qualification Requirement (PQR)	Bidder's Reply with Supportive documents
1	Vendor should be a manufacturer of Crane / Hoist. Pls submit the relevant documentary evidences.	
2	List of customer to whom Underslung Cranes / EOT Cranes / Cranes of same capacity or higher supplied to silo/bunker application, FGD application, Coal fired Power plant, Industrial application, Nuclear power plant. Proof of such experience have to be submitted along with the bid in form of relevant documentary evidence.	
3	Minimum one number of Previous inspection and test report to be furnished for the same capacity or higher Capacity along with Previous purchase order of same item.	

Technical requirement

- (a). **Manufacturing: Document Submission**-Drawing, Data sheet and quality plan shall be submitted upon ordering for approval by BHEL. **Manufacturing clearance** will be provided upon approval of drawing with data sheet and QAP. Manufacturing shall be as per attached technical specification in the bid, Approved drawing, Quality plan and Data sheet. **Inspection**: as per CI (b) below stated. **Dispatch Clearance**: Upon submission of inspection reports along with test certificates in original and Packing list dispatch clearance will be provided by BHEL.
- (b). **Inspection**: Inspection (call to be raise by supplier at BHEL COIR portal) before despatch at supplier's works (as per Quality terms and Quality plan) by BHEL/authorised inspection agency (TPI-Third Party Inspection) and **customer-NTPC (joint inspection shall be applicable)**, for indigenous supplies at BHEL cost. **Inspection includes for painting and packing** also, as applicable. All the Test and inspection reports shall be sent to BHEL-Ranipet for review and dispatch clearance. Packing list and weighment details shall be sent for release of GMS by Engineering-BAP. Base on release of GMS, CoC No shall be issued by QC-BHEL. On receipt of CoC, and packing list, request letter from commercial-BAP to be submitted to QC-BHEL for issue of MDCC.
- (c). **Packing requirement**: Packing shall be waterproof as per tender technical specification, and the material code with description & Supplier name shall be marked on the packing.
- (d). **Documents**: Accepted IR copy along with relevant test certificates (in original) before despatch to be given to BHEL. This is required for Dispatch clearance.
- (e). **Reverse Auction** shall be conducted, Overall package basis L1 shall be taken for Ordering.
- (f). **Delivery Location**: FOR destination (BHEL Site), as per bid
- (g). **Supervision for Installation, E&C, Trial run, Testing and performance test**: Bidder to quote of overall cost basis including travel, boarding, lodging, local conveyance, tools and tackles etc. No payment will be given other than the quoted cost. **Detailed list of facilities (labours, technicians, Material handling equipment, General tools) required for supervision for E&C, to complete in 3 days shall be submitted along with drawing approval.**
- (h). **CEBG** : Not Applicable
- (i). **PBG for 10%** of supply value valid for agreed guarantee period. In case of not submitted, equivalent values shall be with hold for 36 months, and will be released with supplementary invoice.



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List of documents to be attached (filled in signed stamped copy):

1. NIT copy
2. Tech spec (BHEL) along with all annexures and drawings filled in along with all annexures
3. Painting scheme
4. Filled in QAP (Sample attached) along with CQR and annex Q.
5. Filled-in Make in India declaration on Letter head (format attached)
6. PBG format
7. Udyam portal registration copy if MSE bidder
8. PQR-Technical documents

Buyer Additional terms:

1. Quote shall be in INR only inclusive of Taxes (GST).
2. MSE firm shall upload the UDYAM portal registration certificate
3. Documentary evidences shall be uploaded for PQR
4. Bidder shall submit the filled-in signed stamped copy of documents as listed above
5. PBG for 10% of material value to be submitted shall be valid for 24 months from the date of supply plus 3 months for claim period. BG shall be as per format attached and from the list of consortium of bank as attached.
6. Non Submission of any of required documents as listed above, attracts for offer rejection.
7. Package wise package basis evaluation methodology shall be adopted
8. Payment: For supply, 90% payment through NEFT within 90 days (45 days for MSE and 60 days for Medium category for MSME quote and UDYAM registration certificate submission) after receipt and acceptance of material based on site delivery acknowledgement slip along with BG at BHEL Ranipet. Balance 10% of supply and 100% of supervision for E&C shall be paid within 90 days (45 days for MSE and 60 days for Medium category for MSME quote and UDYAM registration certificate submission) after completion of Supervision for E&C, based on site acknowledgement.

For any query: Kindly provide the "Hoist Mauda" in the subject of mail.

mail: ckbharti@bhel.in; jecashish@bhel.in

Ph: 9488 58 9287 / 7010 75 1675

You may raise the query through GeM also.



Technical Specification for
ELECTRIC WIRE ROPE HOIST (EWRH) WITH TROLLEY

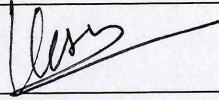
FGD:EWRH

REV. No. 00

TECHNICAL SPECIFICATION OF ELECTRIC WIRE ROPE HOIST (EWRH) WITH TROLLEY

Buyer(Purchaser)	:	M/s.BHEL
Application	:	Wet Limestone Flue Gas Desulphurization

Bharat Heavy Electricals Limited
Ranipet – 632 406

00	14-07-2022	Fresh Release	<i>Jyotish Kumar Patel</i>	
			JYOTISH KUMAR PATEL (DM/EDC-FGD)	KESAVAN V (SDGM/EDC-FGD)
REV	DATE	DESCRIPTION	PREPARED	APPROVED



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Bidder sign & seal:



**Technical Specification for
ELECTRIC WIRE ROPE HOIST (EWRH) WITH TROLLEY**

FGD:EWRH

REV. No. 00

1.0. INTENT OF SPECIFICATION

This specification covers design, manufacture, inspection, testing at bidder's and/ or his sub vendor's work(s), packing, and transportation of ELECTRIC WIRE ROPE HOIST along with accessories etc. which is to be furnished in the Flue Gas Desulphurization plant.

- a. It is not the intent to specify herein all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to Purchaser/ Customer, who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgment is not in full accordance herewith.
- b. The requirement(s) specified under different sections of this specification shall be considered while quoting for this tender.
- c. The bidder shall be deemed to have understood completely all the tender drawings and documents and quoted accordingly.
- d. The bidder has to note carefully the parameters, estimated capacities of equipment indicated and the tender drawing in the specification are only for guidance of the bidder. The system shall be designed as per relevant standards/ codes and exact capacities and quantities are to be estimated by the bidder. All such estimations and design calculations shall be submitted for Purchaser's approval.
- e. Contract shall be unit rate basis for this package. Variations in quantities during contract stage shall be settled on basis of unit rate quoted by the bidder in the tender. During contract stage, quantities of various items of BOQ may vary to any extent and same unit rates will be applicable.
- f. Deviation: There shall preferably be no deviation on technical specification. In case of any deviation, the bidder shall indicate separately the deviations clause-wise with respect to the specification in the 'Schedule of Deviation' given in **ANNEXURE-I**. Deviations in any other form including clarifications / assumptions / etc will not be considered and it will be construed that the bid conforms strictly to the specification.
- g. Compliance to this specification shall not relieve the Bidder of the responsibility of furnishing equipment and accessories/auxiliaries of proper design, materials and workmanship to meet the specified start up and operating conditions.
- h. All accessories, items of work, though not indicated but required to make the system complete for its safe, efficient, reliable and trouble free operation and maintenance shall also be in supplier's scope unless specifically excluded.

Bidder sign & seal:



**Technical Specification for
ELECTRIC WIRE ROPE HOIST (EWRH) WITH TROLLEY**

FGD:EWRH

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2.0 SCOPE:

This specification covers the design, material constructional features, manufacture, testing, inspection, packing, supervision for erection & commissioning and supply of electric wire rope hoists assembly, with cross travel complete in all respect including control box, flexible trailing cable, festooning arrangement of feeding power to trolley assembly (cable trolleys), drag chain, auxiliary girder, FUSE-SWITCH unit etc. The assembly shall be complete in all respect ready for erection & commissioning.

2.1 APPLICATION

The electric wire rope hoists and trolley are meant for handling for equipment installed at Flue Gas desulfurization plant.

2.2 SCOPE OF SUPPLY OF HOIST

Each Electric wire rope hoists should necessarily consists of the following items:

- Capacity : As per Enquiry
Maximum trolley travel speed for electric hoists : As per Annexure-III (Hoist Details)
Maximum trolley hoisting speed for electric hoists : As per Annexure-III (Hoist Details)

S. No	Description	Unit	<u>FOR EACH ELECTRIC WIRE ROPE HOISTS</u>
1	EWRH assembly for lifting & cross travel including brakes, drum with ropes suitable for required height of lift, electrical control panel, Pendant PB with control cable with link chain suitable against each EWRH capacity, Height (H), Length of travel (L) & Radius (R) as per As per Annexure-III (Hoist Details) & Layout GA as per Enquiry.	ST	As Per Enquiry
2	Fuse with enclosure suitable for outdoor installation, wall mounted Per Crane	NO	1 for Each Hoist
3	Trailing flexible copper cable for power supply	MR	To suit for Each Hoist
4	Galvanized link drag chain	MR	To suit for Each Hoist
5	Cable trolley assembly	ST	To suit for Each Hoist
6	Auxiliary girder assembly for trailing cable for a cross travel length	MR	To suit for Each Hoist
7	Rain hood for Hoist motor, cross travel motor and control box per Hoist	ST	1 for Each Hoist
8	Grease gun with grease	NO	1 for Each Hoist
9	10 % lubricant	ST	1 for Each Hoist

2.3 DESIGN & CONSTRUCTIONAL REQUIREMENTS

Construction of Electric wire rope hoists with Trolley shall be of consistent capacity, lift, head room, Hoist & Trolley speed, Travel Length, radius of Travel, Monorail beam size and any other parameters as specified in **Annexure-III** (Hoist Details) and **Annexure-V** (General arrangement layout drawing).

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Note: Vendor has to design Hoist Headroom as minimum as possible. The Hoist Headroom value shall be specified in Vendor technical offer itself.

3.0 CODES AND STANDARDS

The applicable codes and standards are as given below (with latest amendments if any) / equivalent international standards.

3.1.0	Electric wire rope hoist	: IS 3938
3.2.0	Service class	: IS 807
3.3.0	Drum, Sheave	: IS 3938
3.4.0	Gears	: IS 3681,IS 7403
3.5.0	Rope	: IS 2266
3.6.0	Hook	: IS 3815
3.7.0	Bearings	: IS 6455,IS 6457
3.8.0	Grease nipple	: IS 4009
3.9.0	Motor	: IS 325,IS 4691,IS 4729
3.10	Cables	: IS 694 Part I&II,IS 3961 IS 1554,IS 9968,IS 6380
3.11	Structural materials	: IS 2062
3.12	Earthing	: IS 3043
3.13	Colour shade	: IS 5
3.14	AC Contactors	: IS 13947 Part - IV
3.15	HRC Cartridge fuse links upto 650V	: IS 9224
3.16	Heavy duty air brake switches and composite units for air brake switches and fuses for voltage not exceeding 1000V	: IS 4064
3.17	General requirements for switchgear and control gear for voltage not exceeding 1000 V	: IS 4237
3.18	Control switches for voltage upto and including 1000 V AC, 1200 V DC	: IS 6875 (Part-I&II)
3.19	The offered Hoist shall comply with all the latest statutory regulation and safety code/standard applicable. Nothing in this specification shall relieve the vendor of his responsibility.	

4.0 DESIGN REQUIREMENT

The Electric wire rope hoists shall be designed and constructed in accordance with the latest revision of **IS: 3938** and shall be suitable for **Duty class 2**.

Electric wire rope hoists and trolley shall be complete with hoisting and cross travel motor, wire rope drum, wire rope, hook, gear box for CTs hoist wheels with Trolley necessary gearing, sheaves, shoe type electro Mechanical Type brakes with asbestos lining for hoisting & cross travel, guides, weather and dust proof pendent push button station, & control panel, all wiring, 4 core Power cable with Festoon arrangement of feeding power to trolley assembly, galvanised drag (link) chain with complete supporting arrangement, pendent cable, limit switches, earthing terminals and other accessories to make system complete and ready for erection &

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**Technical Specification for
ELECTRIC WIRE ROPE HOIST (EWRH) WITH TROLLEY**

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commissioning. The hoist assembly shall be fully balanced. Counter weight, if any, required shall be supplied as a part of the system. Limit switches shall be provided for over hoisting, over lowering and for cross travel limits at both extreme position.

The supplier shall provide 63A fuse switch unit (FSU) with enclosure designed for IP 55 degree of protection, to receive the power supply. The FSU shall be provided with crimping type ATC lug to receive owner's Aluminium unarmoured power cable. The FSU shall be located 5meters away from the hoist. Control supply shall be 110V AC, 50Hz and the same shall be derived from 3ph, 415V, and 50Hz supply provided at 63A FSU. Suitable earthing terminal shall be provided in the FSU enclosure for terminating the earth conductor of the flexible trailing cable. All outdoor Electrical equipment's shall be suitable for IP 55 Degree of protection. Power supply provided for the panels shall be 415V, 3 PH, 3 wire only. Vendor to make suitable transformer arrangement inside the panel for single-phase control supply.

5.0 FEATURES OF CONSTRUCTION (MECHANICAL SYSTEM)

5.1 DRUM

Rope drum shall be either cast/seamless/welded to sustain concentrated loads resulting from the rope pull. Drum shall be machine grooved right or left or both with grooves of a proper shape to suit the ropes used. Drum shall accommodate all the length of the rope required for the lift plus two dead wraps at each anchor point, without over lapping. Each end of the rope shall be anchored to the drum in such a way as the anchorage is readily available for maintenance Each rope shall have two (2) full turns of the drum when the hook is at its lowest position and one (1) spare groove when the hook is at its highest position. The leading rope taken by the drum should not slope sideways when slack and it should not be caught between the gear wheel.

5.2 BOTTOM BLOCK

The bottom block shall be of enclosed type and shall have guard against rope jamming in normal use. It shall have standard forged swivel shank hook fitted on antifriction thrust bearing. Lock to prevent hook from rotation and locking arrangement to prevent accidental unlocking shall be provided. Pulley of the bottom block shall be provided with antifriction bearings.

5.3 SHEAVES

Rope sheaves shall be cast steel, cast steel, or mild steel as suitable for the Duty conditions and shall be confirm the relevant IS. Grooves shall be machined to the proper shape for the rope used. Sheaves shall be equipped with sheave guards to retain the rope in groove. Sheaves shall be fully guarded so that the rope cannot come off.

When the load is supported by more than one fall of the rope off the drum and bottom block are used, the rope system shall be equalized by using equalizing sheaves.

5.4 GEARS

Gears shall be cut from quality alloy steel of chromium, nickel. Pinions shall be of heat treated alloy steel. All gears and pinions shall be of hardened and tempered steel with machine cut teeth in metric modules. Surface hardening of steel is not acceptable.

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5.5 **BEARINGS**

All running shafts and wheels shall be fitted with ball / roller bearings with a rated life not less than 20 years based on equivalent running time as per IS:3938. Bearings shall comply with relevant IS/BS. depending upon the capacity and loading conditions the manufacturer shall design suitable grease lubricated or oil lubricated bearings.

5.6 **ROTATING AND STATIONERY SHAFT**

Shafts and axles shall be of 080 M40 as per BS 970

5.7 **LUBRICATION**

The hoists shall be supplied with all required lubricants, one number grease gun shall be supplied.

5.8 **HOIST ROPE**

Hoist ropes shall be of extra flexible steel rope with a well lubricated and having six strands of 36 wires per strands, pre-formed type, hemp cored, and regular lay construction. The rope shall be of sufficient length so that two full wraps shall remain on the drum at the extreme low position of the hook. Braking loads for the hoist rope shall not be less than six times the calculated load in the ropes at the drum, based on rated load on hook plus the weight of the bottom block plus the weight of the rope. Hoisting rope shall confirm to IS 2266. The rope shall be hot dip galvanized. The rope shall be free from kinks and shall be continuous. **Minimum number of falls of rope shall be four (4).** Reverse bend of ropes is not acceptable.

5.9 **HOOK**

Swivelling type forged circular shank section Hooks shall be solid, forged, heat treated, high tensile steel of tough construction and shall be provided with a standard depress type safety latch. It shall have swivels and operate on bearings with hardened race. Lock to prevent hooks from unscrewing shall be provided. Hook shall be confirm to the relevant Indian standard. The materials Hooks shall be as per relevant Indian standard.

5.10 **BRAKES**

Hoisting motor and trolley motor shall be equipped with Electro Mechanical type with asbestos lining. The brakes shall apply when either the motor starter or the main power switch is in OFF position or in the event of "power failure". The braking capacity of the brakes shall be 150% of the rating of the hoist.

5.11 **ROPE GUIDE**

Rope guides shall have wear resistant property, prevents slack rope, and retains wire rope in the barrel grooves.

5.12 **TROLLEY WHEELS**

Trolley wheels shall be of single flange type in the taper treads. The wheels shall be mounted on antifriction bearings and shall be easily removable for repair/ replacement.

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5.13 LINK (DRAG) CHAIN

Hot dip Galvanised Link (drag) chain shall be provided for the Flexible Trailing cable, to avoid direct loading on the cable.

5.14 AUXILIARY GIRDER FOR TRAILING CABLE

Auxiliary girder system shall be provided for the support of Festoon arrangement of feeding power to trolley assembly. The Trolleys for the trailing cable shall be supported by the Auxiliary Girder. The Auxiliary Girder will be supported by the main beam (main beam will be supplied by the Purchaser). The hoist supplier shall provide obligatory support materials to support the Auxiliary Girder on the main beam at an interval not exceeding 750mm. complete structural materials required for Auxiliary Girder system shall be included in the scope of supply of the hoist supplier.

5.15 MOTOR OPERATED GEARED TROLLEY

Motor operated geared trolley shall have two (2) pairs of wheels, one pair of which shall be driven through motor. Trolley for cross travel shall be designed to accommodate a wide range of I-beams and shall Trolley shall be capable of travelling on straight as well as curved monorails with the design being such to maintain uniform distribution of pressure on the flanges.

6.0 ELECTRICAL SYSTEM

Electrical system comprises of 63A Fuse Switch Unit/MCB, Control panel, Pendent Push Button Station, Trailing cable, Pendent cable, Hoist & Cross travel motors with electro mechanical brake etc., to make the system complete. All these items are included in the scope of supply of the vendor.

6.1 CONTROL PANEL

Control panel shall be provided to house the electrical components like fuses, contactors, over load relays, isolators, switches, control supply transformers etc along with necessary wiring. The components shall be clearly identified by labels. The panel shall be made of sheet steel of minimum 2mm thick CRCA sheet steel and shall be dust and vermin proof, suitable for outdoor condition. The control panel shall be designed for IP 55 degree of protection. Adequate number of DOUBLE COMPRESSION type cable glands (heavy duty) of brass with nickel plating and Annealed Tinned Copper lugs shall be provided with dummy plugs. The door, removable cover plates and metal- to-metal joints shall be fully neoprene gasketed. The control panel shall be wall mounted type & easily approachable from the floor by a standing man.

6.2 CONTROL SUPPLY TRANSFORMER

Dry type step down control supply transformer 415V/110V AC shall be provided to derive control supply for starter operation and indication. The transformer shall have minimum class 'B' insulation. The rating of the transformer shall be decided based on maximum power consumption plus **25% margin**. The transformer shall meet IS 12021

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6.3 **MOTOR**

The motor shall meet IS 325 or equivalent international standards. The motor shall be designed for frequent reversal, braking and acceleration. Frequency of reversal shall be minimum 150 times/hour. The motor shall be rated for S4 duty 40% cyclic duration factor. Maximum continuous rating shall have **at least 10% margin** over maximum load demand including voltage and frequency variations, temperature rise and other variations. The body shall have two earthing points on opposite sides. For electric hoists, trolley movement and hoisting shall be effected by using two separate motors.

6.4 **ENCLOSURE**

The motor shall be provided with an enclosure fully meeting the requirements of IP 55 as per IS 4691 meant for outdoor service. In addition rain-hood shall be provided for the motors. The motor shall be Totally Enclosed Fan Cooled (TEFC) type

6.5 **INSULATION AND WINDING**

Motors shall have minimum class "B" type insulation. The winding shall be suitable for successful operation in hot, humid, & tropical climate with the ambient temperature of 50 degree centigrade. The temperature rise shall be limited to 70 degree C (by resistance method) over an ambient of 50 degree C. The insulation shall be given fungicidal and tropical treatment as per IS 3202.

6.6 **MOTOR FRAME**

The frame shall be cast and rigid.

6.7 **DIRECTION OF ROTATION**

The motors shall be designed for both directions of rotation.

6.8 **TERMINAL BOX OF MOTORS**

The terminal box shall be weather and water tight and suitable for outdoor service, having a degree of protection of IP 55. It shall be provided with removable front cover for making connections. Neoprene gaskets at cover joints shall be provided. The terminal box shall be suitable to withstand 31 MVA for 0.25 seconds without damaging the box with fuse protection. Nickel-plated brass double compression cables glands and ATC lugs shall be provided to receive the power cables.

6.9 **VIBRATION**

The motor vibration and noise shall be within the limits specified in IS 12065 and IS 12075. The noise level shall be limited to 85 dB when measured at a distance of 1.5m from the Hoist assembly.

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6.10 **SWITCHES**

Heavy-duty power switches with quick make and brake mechanism meeting relevant IS requirements shall be provided. The switches shall be adequately rated to get complete protection even under abnormal operating conditions.

6.11 **CONTACTOR**

All Contactors shall be suitable for DOL application of full voltage with coils suitable for the control voltage provided by the supplier. Contactor construction shall be rugged and such as to avoid ingress. For control purpose, only Auxiliary contactors shall be used. Relays are not acceptable in place of Auxiliary Contactors. The power contactors shall have Mechanical interlocking in addition to Electrical interlocking so that at any point of time only any one of the two Power contactors (either Up or Down, Left or Right) will be energized.

6.12 **THERMAL OVER LOAD RELAYS**

Thermal over load relays wherever provided shall be ambient temperature compensated with suitable setting ranges. The relay shall be provided with a door mounted hand reset push button. The O/L relay shall have inbuilt single phasing protection as built-in feature.

6.13 **FUSES**

Only HRC fuses of plug-in type with Class-4 AC duty shall be provided. Fuse base shall be rugged. Adequate shrouding shall be provided for live accessible parts and it shall be possible to replace any fuse without damages of contacts when the circuit is alive.

6.14 **INDICATING LAMPS**

LED type indicating lamps of low watt consumption with suitable built-in series resistor shall be used. LED and lenses shall be inter-changeable and easily replace- able from the front. The indication lamps shall be properly shrouded so as to prevent the dust and water entry. Indicating lamp shall be provided for "Hoist motor ON", "CT motor ON", "Hoist motor TRIP", " CT motor TRIP", "Supply ON" etc.,

6.15 **WIRING**

The control panel wiring shall be complete in all respects and ready for connection of external power for terminating external cables. Necessary cable glands along with suitable terminal blocks and lugs to receive trailing cable and pendent push button cable shall be provided. The cable glands, lugs and terminal blocks shall not be supplied loose. Point to point wiring shall be adopted. Not more than two wires shall be terminated at each terminal. Wiring shall be neatly laid out and bunched together suitably. The wiring shall be done with min. 2.5 sq.mm multistranded copper, PVC insulated 650V/1100V wires.

Bidder sign & seal:



6.16 **TERMINATION**

All power and control wires shall be terminated on terminal block/component using crimping type tinned copper lugs/connectors.

Terminal block shall be used for control wiring. The terminal blocks shall be complete with insulated barriers, terminal studs, washers, nuts, lock nuts and identification strips with terminal numbering.

6.17 **PENDANT PUSH BUTTON STATION**

Pendant shall be provided with flourscent up, down, forward, reverse travel & Emergency stop push buttons. The Emergency Pus Button shall be Lockable type. Its power supply shall be limited to 24V AC. The Pendant Push Button station shall have the following LED type Indicating lamps. SUPPLY ON, HOIST MOTOR ON, CT MOTOR ON, HOIST MOTOR TRIP, CT MOTOR TRIP, EMEGENCY STOP.

The Pendant Push Button station shall be supported from the Control Panel with hot dip galvanized Link Chain. The Pendant Push Button Station shall be connected to the Control Panel using multi-core copper flexible control cable of 10m length. The Enclosure of Pendant Push button station shall be designed for IP 55 degree of protection. Push button shall be spring return type with 2NO+2NC self reset contacts rated for 5A at 415 volts AC. The push buttons for different operations like "HOIST/ LOWER, FORWARD/ REVERSE", "STOP" shall have different colours. All push buttons shall be as per relevant Indian standard. The Push button shall be properly shrouded so as to prevent water & dust entry.

6.18 **LIMIT SWITCHES:**

Limit switches shall be provided for over hoisting, over lowering, extreme left and extreme right positions. Necessary Limit switch actuating arrangement shall be provided to actuate the limit switch at the above positions. The Limit switches shall have enclosures designed for IP 55 degree of protection. Proximity switches are not acceptable in place of Limit switches.

6.19 **FUSE SWITCH UNIT**

Metal enclosed, FOUR/THREE POLE as suitable fuse switch unit (SFU) of 63A, 415V, AC, rating suitable for indoor location shall be provided. Suitable Nickel-Chromium plated brass DOUBLE COMPRESSION glands and crimp type ATC lugs to receive purchaser's 3c-6 sq. mm AL unarmoured FRLS cable & vendor's 4C-4 sqmm copper unarmoured cable shall be provided. Cable glands and lugs shall also be provided for the flexible trailing cable. The FSU shall be provided with 2 Nos of earthing terminals with M12 screws, nuts and washers. FSU with enclosure suitable for outdoor installation, **Wall mounted.**

6.20 **CABLES**

The trailing cable shall be 1100 V grade extra flexible having 4 cores and as per IS 9968. The trailing flexible cable shall carry the power supply to the Hoist from the Switch Fuse unit. The conductor cross section shall be minimum 4 sq.mm multi- stranded tinned copper of class 5 of IS

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8130. The insulation shall be heat resistant elastomeric compound based on ETHYLENE PROPYLENE RUBBER (EPR) with continuous withstanding temperature of 90 Deg C The inner sheath shall be heat resistant elastomeric compound with black colour. The outer sheath shall be marked with cable size, voltage grade by embossing, sequential marking at every one meter of length by embossing.

The power cables between HOIST / CT MOTORS to control box, the pendent cable and other control cables shall be as per IS 1554. The conductor shall be multi- stranded PLAIN ANNEALED copper with minimum cross section of 1.5 sqmm for control. The insulation shall be extruded PVC. The inner sheath shall be extruded PVC and the outer sheath shall be extruded-PVC. In addition, the outer sheath shall be marked with cable size, voltage grade, the word FRLS at every 5 meters and sequential marking of length at every one meter. The sheath shall be black in colour. Power cable supports shall be festoon type arrangement.

7.0 EARTHING

The structure, motor frames and enclosures of electrical equipment shall be effectively connected to earth complying with Indian Electricity rules and IS 3043. The earthing materials from hoist to FSU shall be in supplier's scope. BHEL will provide the earthing material from the Switch Fuse Unit to the nearest Earth Grid. Any other Items/components other than specified above, which are required for proper functioning of the Hoist are also part of the vendor Scope of Supply.

8.0 MAKE OF COMPONENTS:

Only one of the following makes shall be used. Mix up of make for same item is not acceptable. Any deviation with respect to the makes given below is not acceptable.

Sl No.	Components	Make
1.	Hoist/Cross travel motor	AUTOLEC/SIEMENS/KEC/NGEF/ABB/CROMPTON GREAVES /BHARAT BIJLEE
2.	Cable	INCAB/CCI/DELTON/FORT/GLOSTER/UNIVERSAL CABLES / ASIAN CABLES/ NICCO
3.	Fuse switch unit/MCB	L&T / SIEMENS / CONTROLS & SWITCHGEAR (STROMBERG) /GE//SCHNEIDER/SPACEAGE SWITCHGEAR/CGL/ABB
4.	Power switch	L&T/ SIEMENS/CONTROLS & SWITCHGEAR/ SCHNEIDER/GE
5.	Power contactor	L&T/SIEMENS/TELEMECHANIQUE/BCH/GE
6.	Auxiliary contactor	L&T/SIEMENS/TELEMECHANIQUE/BCH/GE
7.	Thermal overload relay	L&T/SIEMENS/TELEMECHNIQUE/BCH/GE
8.	Fuse	L&T/SIEMENS/GE/CONTROLS&SWITCHGEAR/BUSMANN/GE
9.	Push button	L&T/SIEMENS/TEKNIK/BCH/CONTROLS&SWITCHGEAR/TELEMECHANIQUE/GE
10.	LED type Indicating lamp	L&T/SIEMENS/BCH/TEKNIK/RASS CONTROLS/GE
11.	Internal wiring	BIS (IS) CERTIFIED MAKE
12.	Glands	COMET/SUNIL&CO/QUALITYPRECISION/BRACCO/ARUP ENGINEERING.
13.	Lugs	DOWELLS/3D

Bidder sign & seal:



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14.	Terminal block	ELMEX/TOSHA/CONNECTWELL/WAGO/PHOENIX
15.	Control switch	L&T/SIEMENS/KAYCEE/CONTROLS&SWITCHGEAR/SCHNEIDER/GE
16.	Selector switch	L&T/ SIEMENS/KAYCEE/GE
17.	Fuse carriers	L&T/SIEMENS/GE/CONTROLS&SWITCHGEAR/BUSMANN
18.	Auxiliary transformer	AE/KAPPA/INDCOIL/LOGICSTAT/PRECISE/ SOUTHERNELECTRICAL/STATIC TRANSFORMER/G&M
19.	Limit switches	SIEMENS/BCH/JAI BALAJI
20.	Neutral link	L&T/SIEMENS/GE/SCHENIDER/CONTROLS & SWITCHGEAR
21.	Hoist Brake	BCH/L&T/ SIEMENS / NTPC APPROVED
22.	Cross Travel Brake	EMCO/PRETHE / NTPC APPROVED
23.	WIRE ROPE	USHA MARTIN/ BHARAT WIRE ROPES / MAYUR / ARADHYA
24.	Limit Switch	BCH/JAI BALAJI/SIEMENS/KAYCEE
25.	Bearings	SKF/FAG

Make of various components for NTPC projects are subject to NTPC approval. No additional delivery or price implication is acceptable due to NTPC comment on make of components. Mix up of make for same item is not acceptable in any enquiry.

9.0 PAINTING PROCEDURE:

For Painting of Hoist Refer **ANNEXURE-IV**.

PAINTING OF CONTROL PANELS:

(The below details are Tentative, Final details will be given in during drawing approval stage)

- 1) Surface treatment with minimum seven tank process.
- 2) Panel 2 coats of synthetic Enamel paint.
- 3) Shade- Siemens Grey.
- 4) The minimum coating thickness of power coated surfaces shall be minimum of 80 microns.

Paint shade shall be as per RAL 5012 (Blue) for Motor.

10.0 WARRANTY:

The warranty period shall be twenty four (24) months from the date of Supply or eighteen (18) months from the date of commissioning, whichever earlier.

11.0 START UP & COMMISSIONING SPARES:

Start-up & Commissioning Spares shall be part of the main supply of the EWRH. Start-up & commissioning spares are those spares, which may be required during the start- up, and commissioning of the equipment/system. Bidder shall provide an adequate stock of such start up and commissioning spares to be brought by him to the site for the equipment erection and commissioning. The spares must be available at site before the equipment's are energized.

Bidder sign & seal:



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Items/comenponets belong to a HOIST shall be send to site in a single packing as far as possible or traceable identical number mark needs to mention in sub-assembly /sub parts.

FIRST FILL OF CONSUMABLES:

Bidder's scope shall also include supply and filling of all chemicals, reagents, resins, lubricants, grease, filters and consumable items for operation up to COD including top up requirements at the time of issuance of PAC/declaration of COD. All lubricants proposed for the plant operation shall be suitable for all operating and environmental conditions that will be met on site consistent with good maintenance procedures as instructed in the maintenance manuals. First fill of consumable shall be part of the main supply.

RECOMENDATED SPARE

The Bidder shall offer electrical / electronic / mechanical spares for 2 years trouble free operation of the Electric wire rope Hoists. (Unit Price along with quantity of each item of spare shall be offered in the price bid)

12.0 Price of each item is to be given separately for SUPERVISION OF ERECTION, TESTING AND COMMISSIONING

Erection of EWRH will be done by owner as per vendor's Erection Manual and check List. Supervision of Erection and Commissioning of the EWRH at project site is in bidder's scope. Bidder shall include towards supervision of erection, pre-commissioning & post- commissioning check-up, start-up, testing and trial runs. TA/DA, boarding and lodging shall be borne by the bidder and shall be inclusive in supply portion.

However, refer the **ANNEXURE- II** for minimum day's consideration for supervision of EWRH. **The charges quoted for the supervision will be considered for L1 evaluation.** However, BHEL reserves the right to engage the services of the bidder for supervision of E&C.

13.0 DOCUMENTS TO BE SUBMITTED DURING BID STAGE

Along with the offer

1. Clause by clause confirmation for this Technical specification.
2. In case, Deviations are considered essential by the Bidder (after exhausting all possible efforts), the same shall be separately listed, to be spelt out clearly in **Annexure-I**.
3. Typical GA of HOIST with BOM for the system.
4. Rating of cross travel and hoist motor.
5. Headroom of Hoist.

The bidders are instructed not to submit bidders' own technical specification and any other technical details.

Bidder sign & seal:



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14.0 DOCUMENTS TO BE FURNISHED ON PLACEMENT OF ORDER:

Immediately on placement of order, the supplier shall submit the following Documents to BHEL for approval. Manufacturing shall be initiated only after obtaining approval from BHEL.

1. General Arrangement drawing of Hoist, Cross Travel arrangement, Auxiliary Girder & Trailing cable system, Control Panel, Pendant Push button station etc.
2. Bill of materials for the Hoist, Cross travel arrangement, Auxiliary Girder System, all cables under the scope etc.
3. Calculation for Factor of safety on selection of Steel wire rope.
4. Power and Control scheme.
5. Bill of material indicating description of the item, rating, make, quantity, type reference etc., for a) Panel mounted components, b) Pendant mounted components, c) Items covered in the system like trailing cable, trolley etc., the make of components shall be separate and form part of vendor QP.
6. Hoist mounting arrangement.
7. Gasketting and locking arrangement of Control panel.
8. Justification for a) Motor rating selected, b) Rope selected, c) VA rating of control transformer.
9. List of items mounted in the assembly and list of loose item supplied along with weight.
10. Packing drawings.
11. Data sheet for Hoist, Data sheet for Hoist & cross travel motor, Data sheet for Brake and Data sheet for trailing & pendant cable.
12. Cable schedule for hoist indicating size, termination between which equipment, Rating, quantity, make etc.
13. Shipping list indicating items, quantity, and weight and package number to be submitted before inspection call is given. Despatch shall be maintained in line With the shipping list.
14. All the drawings shall be prepared in AutoCAD. After final approval the above documents shall be submitted in CD apart from hard copy.
15. The drawings and data sheets shall be submitted in soft media.pdf format, apart from 6 sets from hard copy. For BHEL approval.

15.0 INSEPCION:

The inspection will be carried out based on the following documents.

1. BHEL Purchase order
2. BHEL Technical specification
3. Quality plan, Quality checklist indicated in the Enquiry.
4. BHEL approved supplier drawing/data sheets.

Bidder sign & seal:



16.0 O&M MANUAL:

O&M instruction manual in the required quantity as in enquiry shall be supplied directly to BHEL Ranipet in required numbers as per enquiry immediately after the despatch of the hoist. Instruction manual shall be submitted in soft media apart from hard copies. Hard copy of the O&M manual shall be sent along with the hoist. Ten (10) hard copies and five (05) sets of electronic copies of all documents are to be submitted in the English language.

The O&M manual shall include but not limited to the following.

1. Dos & Don'ts during receipt, storage, erection & commissioning.
2. Instruction to be followed on receipt, storage & erection.
3. Construction details of the hoist assembly.
4. Drawing indicating various parts of EOH assembly with part numbers.
5. Recommended lubrication & maintenance schedule.
6. Cut view drawing for the Gear box assembly.
7. As built drawings, BOM, cable schedule.
8. Disposal procedure for environmental hazardous material if any.

17.0 PACKING AND FORWARDING:

The ELECTRICAL HOIST and accessories shall be properly packed to avoid damage during transit & storage. Wooden crate (fumigated) shall be covered with GI sheet of minimum 1mm thickness and same shall be used for packing various equipment / items as per shipping list. Lining with plastic sheet (water Proof) shall be provided inside the crate to avoid water entry during transit / storage. Two sets of manual (hard copies) with drawing & data sheet shall be sent along with the packing box. Each packing shall be accompanied with packing slip & all relevant drawings. Each package or shipping units shall be clearly marked or stenciled on at least two sides –

NTPC SITE (ADDRESS AS PER ENQUIRY), PO number, Supplier name. In addition, each package or shipping unit shall have the symbol painted in red on at least two sides of the package, covering one fourth of the area of the side.

Items/comenponets belong to a HOIST shall be send to site in a single packing as far as possible or traceable identical number mark needs to mention in sub-assembly /sub parts.

18.0 NAME PLATE

The name plate shall be non-corrosive material (metallic) indicating manufacturer's name, serial number, rating, capacity type. Name plate to be written in English. Equipment identification number to be mentioned in the name plate. Hoists shall have permanent inscription in English on each side readily recognizable from floor level stating safe working load.

19.0 MARKING

As per IS 3938 latest.

Bidder sign & seal:



20.0 ANNEXURES

ANNEXURE-I

LIST OF DEVIATIONS/EXCEPTIONS TO THE ENQUIRY DOCUMENT

Sl No	Clause No	Page No	Description of Deviation

Note: Enlarge the table to incorporate items

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

Bidder sign & seal:



**Technical Specification for
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		Bidders Acceptance / Comments
ANNEXURE - II Supervision of erection, testing and commissioning	Refer Enclosed specification.	
ANNEXURE - III HOIST details	Refer Enclosed specification.	
ANNEXURE - IV Painting of Hoist	Refer Enclosed specification.	
ANNEXURE - V General Arrangement layout Drawing	Refer Enclosed specification.	

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

Bidder sign & seal:

ANNEXURE-II

SUPERVISION OF ERECTION, TESTING AND COMMISSIONING

Price of each item is to be given separately for SUPERVISION OF ERECTION, TESTING AND COMMISSIONING

Erection of Electric wire rope HOIST (EWRH) will be done by owner as per vendor's Erection Manual and check List. However, the Bidder/vendor shall make visit for the supervision of erection, pre-commissioning & post-commissioning check-up, start-up, testing and trial runs of all the items covered under the scope of supply.

1	SUPERVISION OF ERECTION & COMMISSIONING, INSPECTION AND TESTING OF ELECTRIC WIRE ROPE HOIST AS PER SPEC FGD:EWRH REV00 AT MOUDA SITE FOR 5 WORKING DAYS AS FRIST VISIT
2	SUPERVISION OF ERECTION & COMMISSIONING, INSPECTION AND TESTING OF ELECTRIC WIRE ROPE HOIST AS PER SPEC FGD:EWRH REV00 AT MOUDA SITE FOR 5 WORKING DAYS AS SECOND VISIT
3	SUPERVISION OF ERECTION & COMMISSIONING, INSPECTION AND TESTING OF ELECTRIC WIRE ROPE HOIST AS PER SPEC FGD:EWRH REV00 AT MOUDA SITE FOR 5 WORKING DAYS AS THIRD VISIT
4	SUPERVISION OF ERECTION & COMMISSIONING, INSPECTION AND TESTING OF ELECTRIC WIRE ROPE HOIST AS PER SPEC FGD:EWRH REV00 AT MOUDA SITE FOR 5 WORKING DAYS AS FOURTH VISIT
5	SUPERVISION OF ERECTION & COMMISSIONING, INSPECTION AND TESTING OF ELECTRIC WIRE ROPE HOIST AS PER SPEC FGD:EWRH REV00 AT MOUDA SITE FOR 5 WORKING DAYS AS FIFTH VISIT

Travel charges (visa/passport, all the to/fro travel charges to the site) , TA/DA, boarding and lodging shall be borne by the Bidder/vendor and shall be inclusive in this portion.

The charges quoted for the supervision will be considered for L1 evaluation. However, BHEL reserves the right to engage the services of the bidder for supervision of E&C.

Bidder sign & seal:

ANNEXURE - III HOIST DETAILS

ELECTRIC WIRE ROPE HOIST (EWRH)												FGD MOUDA		
SL NO	LOCATION	TYPE OF HOIST	VARIANT	CAPACITY OF HOIST	MAXIMUM SPEED		HOIST MONO-RAIL I BEAM <u>BOTTOM</u> ELEVATIONS (Hoist Monorail in BHEL Scope)	FLOOR LEVEL	TRAVEL LENGTH	PATH	MINIMUM RADIUS OF TRAVEL	HOIST MONORAIL I-BEAM (in BHEL scope)	MAXIMUM HEIGHT OF BOTTOM OF MONORAIL I-BEAM TO HOIST HOOK	TOTAL QNTY
					HOSTING	CROSS TRAVEL								
A. BALL MILL BUILDING														
1	ELECTRIC HOIST FOR BALL MILL INNER	ELECTRIC	EWRH -1	12	6	15	EL (+) 10.4 M	EL (-) 2.0 M	39.7	CURVED	2000	NPB600X220X122.4	Vendor to specify Actaul value	As per Enquiry
2	ELECTRIC HOIST FOR BALL MILL OUTER	ELECTRIC	EWRH -2	12	6	15	EL (+) 10.4 M	EL (-) 2.0 M	49.5	CURVED	2000	NPB600X220X122.4	Vendor to specify Actaul value	As per Enquiry
B. ABSORBER														
3	ELECTRIC HOIST FOR RC PUMP INLET VALVE	ELECTRIC	EWRH -3	5	6	15	EL (+) 10.8 M	EL (+) 0.0 M	30.2	STRAIGHT	NA	NPB600X220X122.4	1000	As per Enquiry
4	ELECTRIC HOIST FOR RC PUMP OUTLET VALVE	ELECTRIC	EWRH -4	5	6	15	EL (+) 15.07 M	EL (+) 0.0 M	23.6	STRAIGHT	NA	NPB600X220X122.4	1000	As per Enquiry
5	ELECTRIC HOIST ABSORBER AGITATOR	ELECTRIC	EWRH -5	2	6	15	EL (+) 6.095 M	EL (+) 0.0 M	4.9	STRAIGHT	NA	UB 305X165X46	Vendor to specify Actaul value	As per Enquiry
C. BOOSTER FAN & MOTOR														
6	ELECTRIC HOIST FOR BUF MOTOR	ELECTRIC	EWRH -6	20	6	15	EL (+) 10.127 M	EL (-) 0.20 M	16.5	STRAIGHT	NA	NPB600X220X122.4 +CAPPING	2100	As per Enquiry
7	ELECTRIC HOIST FOR BUF FAN HOUSING	ELECTRIC	EWRH -7	12	6	15	EL (+) 12.98 M	EL (-) 0.20 M	16.5	STRAIGHT	NA	NPB600X220X122.4 +CAPPING	1980	As per Enquiry
D. TANKS														
8	ELECTRIC HOIST FOR AUXILIARY ABSORBER TANK (AAT)	ELECTRIC	EWRH -8	3.5	6	15	EL (+) 20.145 M	EL (-) 0.5 M	11.5	STRAIGHT	NA	UB 305X165X46	Vendor to specify Actaul value	As per Enquiry
9	ELECTRIC HOIST FOR LIMESTONE SLURRY STORAGE TANK A&B (LSST)	ELECTRIC	EWRH -9	3.5	6	15	EL (+) 17.945 M	EL (-) 2.5 M	25	STRAIGHT	NA	UB 305X165X46	Vendor to specify Actaul value	As per Enquiry

NOTE : 1) Depending upon Hoist head room , the actual height of lift for hoist shall be arrived.
 2) For PATH & Radius of travel, Pls refer attached "ANNEXURE - V General Arrangement layout Drawing".

Bidder Signed with seal

SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

ANNEXURE - IV Painting of Hoist

32	Handling Equipment- Hoists& Man hole door (Clause 20.03.00 of Part-C Section VI)	FW 713 FW 714 FW 717	Power Tool Cleaning to st3 (SSPC-SP3	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats) Idler roller shall be applied with two coats of 70 microns at shop	70	Synthetic Enamel to IS 2932 Shade: Grey white RAL 9002 (Two coats)	60	130
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Bidder sign & seal:

SI No	SURFACE LOCATION	PGMA	SURFACE PREPARATION	PRIMER		FINISH		TOTAL DFT IN (µm min.)
				PAINT	DFT (µm min.)	PAINT	DFT (µm min.)	

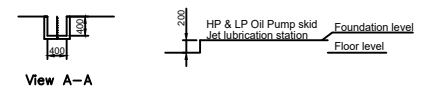
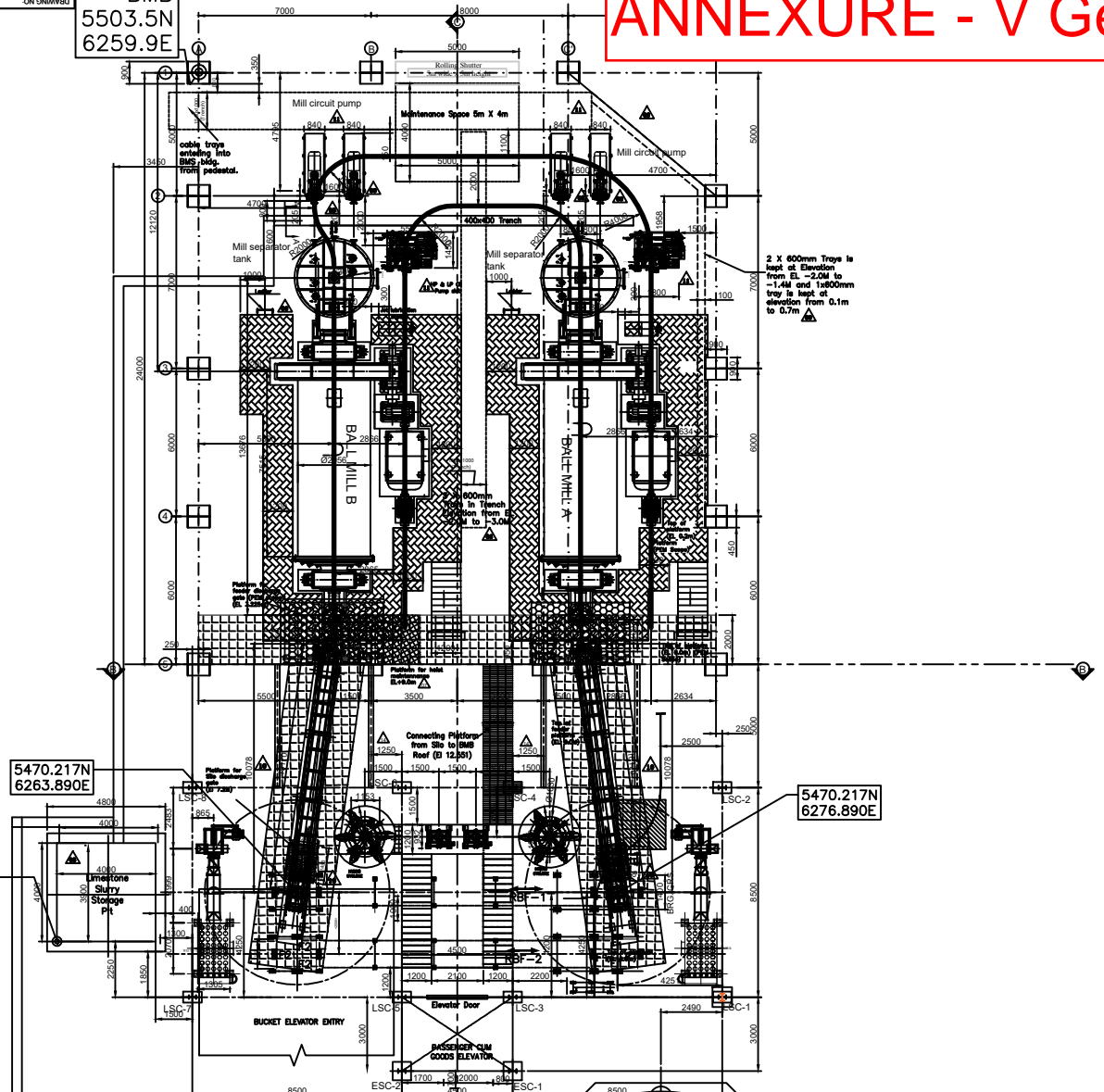
ANNEXURE - IV Painting of Hoist

GENERAL NOTES

1. No painting is required for Galvanized, non-ferrous & stainless steel items, except as indicated above.
2. Machined items are to be applied with coat of temporary rust preventive oil
3. PGMA's covered in sub-supplier (ie., Purchased) items viz., Agitator/ slide bearing and other sub-delivery components etc., are not indicated in the above list. However, the Painting Schedule for all items supplied by all sub-suppliers and BOI under the scope of BHEL shall be same as for main equipment covered in this document.
4. In sub-assy, wherever plates / sheets of thickness less than or equal to 5mm and rods are used - very minor items like clamps, small items etc Power Tool or Hand Tool Cleaning to SSPC - SP 3 / SP 2 shall be followed and painting under SI no:01 of Fans shall be followed.
5. Ground shade/colour of finish paints and identification tag/band for equipments, fans, piping, pipe services, supporting structures and other components is followed as per NTPC doc no: QS-01-DIV-W-4 at site.
6. All components covered under different PGMA's are to be painted. In case any component is left out, the same shall deemed to be included under the relevant section.
7. All threaded and other surfaces of foundation bolts and its materials, insulation pins, Anchor channels, Sleeves shall be coated with temporary rust preventive fluid and during execution of civil works; the dried film of coating shall be removed using organic solvents.
8. Painting requirement for all electrical equipment shall be as per the details identified in specification for the respective equipment.
9. All steel structures shall be provided with painting as given in the specification. Further, painting system shall also meet the requirements of corrosivity category C3 (durability high) as per ISO 12944.
10. Finish coat to be applied after an interval of min 10 hrs and within 6 months (after completion of intermediate coat).
11. Primer coat on steel shall be applied in shop immediately after blast cleaning by airless spray technique.
12. For the portion of steel surfaces embedded in concrete, the surface shall be prepared by Manual cleaning and provided with Primer coat of Chlorinated Rubber based Zinc Phosphate Primer of Minimum 50 Micron DFT.

Bidder sign & seal:

ANNEXURE - V General Arrangement layout Drawing

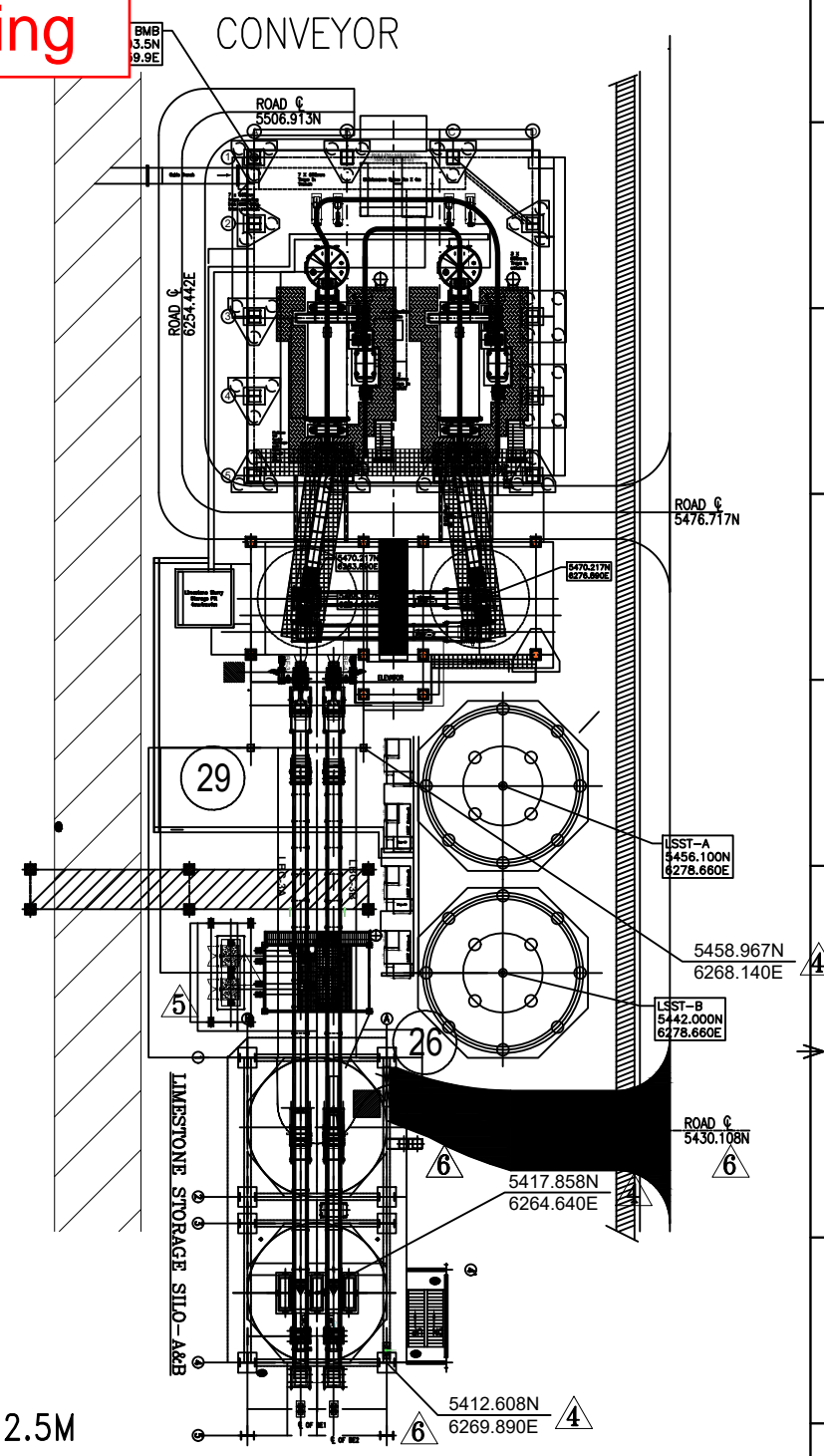


Note: Tray weight to be taken as 75kg/m for each 600mm Tray.

06

LIST OF EQUIPMENTS

1. WET BALL MILL	- 2NOS
2. MILL CIRCUIT TANK	- 2NOS
3. MILL CIRCUIT PUMP	- 4NOS
4. MILL HYDROCYCLONE	- 2NOS
5. DISTRIBUTION BOX	- 2NOS
6. DEDUSTING SYSTEM	- 2NOS
7. GRAVIMETRIC FEEDER	- 2NOS
8. HP&LP OIL PUMP SKID	- 2NOS
9. JET LUBRICATION STATION	- 2NOS
10. ELECTRICAL HOIST	- 2NOS
11. ELEVATOR	- 1NO



Key Plan

BALL MILL BUILDING GA

LSST-A
5456.100N
6278.660E
Limestone Slurry Storage Tank

LSST-B
5442.000N
6278.660E
Limestone Slurry Storage Tank

- Reference Drawings
- 9561-109-RP-PVM-B-375 - General Arrangement of Limestone Pulverizer(Wet ball Mill)
 - 9561-109-RP-PVM-F-386 - Plant Layout of FGD System
 - 9561-109-RP-PVM-B-390 - Data Sheet and General Arrangement of Wet ball mill and its accessories

Note:
Elevation 0.0 corresponds to RL 271.5
FGL at Ball mill building area is at RL 269m
All dimensions are in millimeters

No.	Item	Dead load (ton)	Dynamic load(ton)
1.	Mill circuit pump	2	3
2.	Mill separator tank	25	35
3.	Belt weighing feeder	7	10
4.	Hydro cyclone	1.8	2.7
5.	Distributor Box	0.8	1.2
6.	Oil station	2	3
7.	The injection station	1.4	2.1
8.	pipe	19	
9.	Ball Mill	see Anchor plan and civil foundation loading details	

No.	Date	Drawn	Checked	Approved	Remarks
01	06.11.18	MINI	KBP	VVS	Initial release
02	06.11.18	MINI	KBP	VVS	Initial release
03	17.08.20	MINI	VMS	KK	Updated as per Vendor arrangement drawing vide mail dt 17.08.20
04	03.07.20	MINI	VMS	KK	Updated as per Revised vendor GA. Cells from Revised details added
05	13.06.20	MINI	VMS	KK	Updated as per Vendor arrangement drawing vide mail dt 13.06.20
06	26.08.20	PKMANK	VMS	KK	Updated as per NTPC comments
07	20.08.20	PKMANK	VMS	KK	Updated as per NTPC comments
08	10.11.20	PKMANK	VMS	KK	Updated as per NTPC comments
09	03.03.21	PKMANK	VMS	KK	Updated as per NTPC comments
10	03.03.21	PKMANK	VMS	KK	Updated as per NTPC comments
11	01.09.21	PKMANK	VMS	KK	Updated as per NTPC comments
12	22.12.21	PKMANK	VMS	KK	Updated as per NTPC comments
13	22.12.21	PKMANK	VMS	KK	Updated as per NTPC comments
14	04.03.22	PKMANK	VMS	KK	Updated as per NTPC comments

NTPC Dwg. No.: 9561-109-RP-PVM-B-389

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NTPC / Mauda, STAGE-1 / 2x500MW

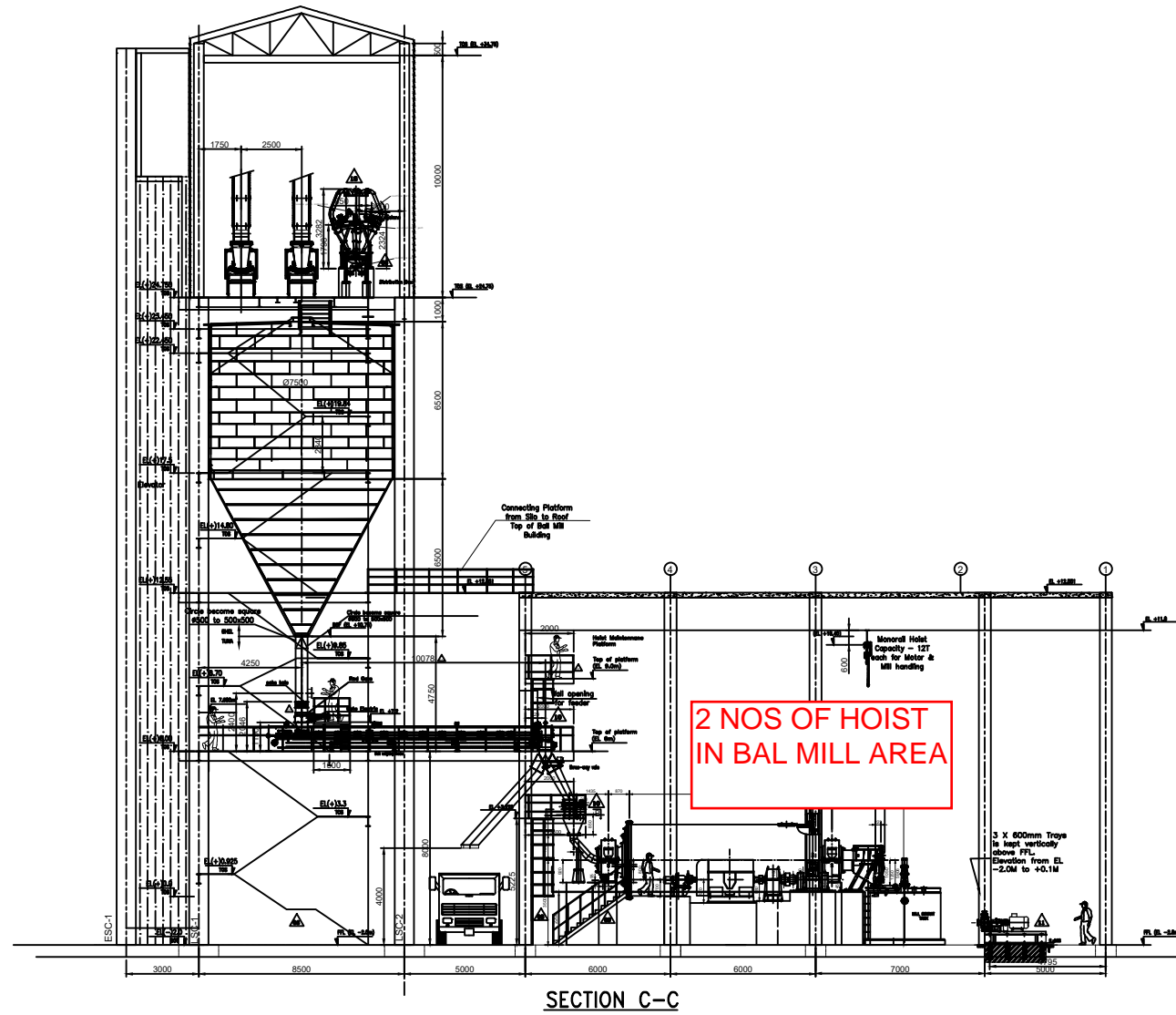
CUST.NO-G503 & G504

Bharat Heavy Electricals Ltd
ROLEX MANUFACTURING PLANT
RANIPET-632 406

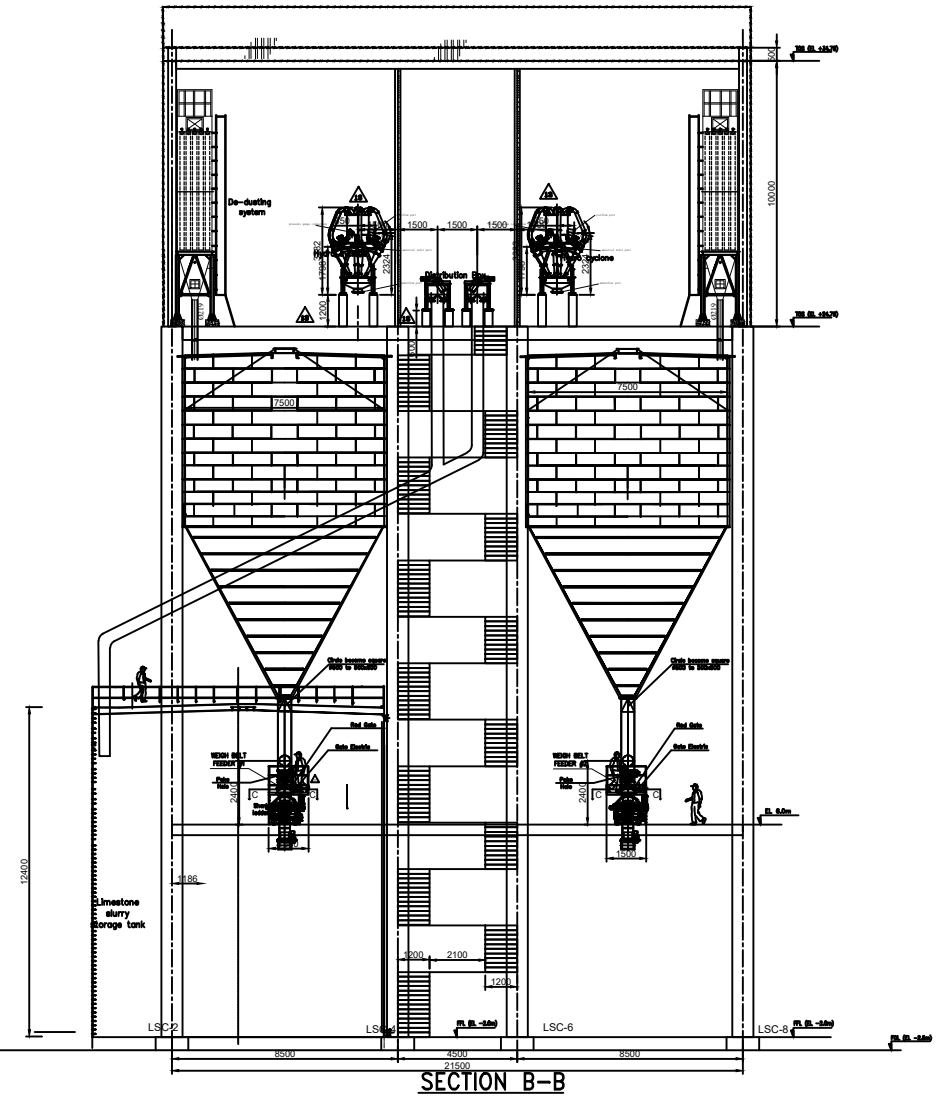
DATE: 06.11.18
SCALE: 1:100
WEIGHT: 600g

TITLE: GA of Ball mill building
Sh 01 of 02

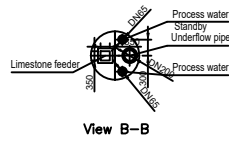
DRAWING NO: 0-FW-000-01336
REV: 14



SECTION C-C



SECTION B-B

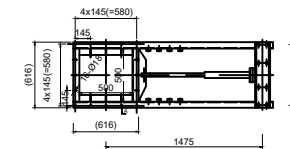


View B-B

Note:

1. Overflow slurry from hydro cyclone will receive by distributor box and further the slurry will go to Mill separator tank till the fineness is achieved. Afterwards the slurry will go to limestone slurry tank. Fineness is measured by mass flow meter.
2. All structures within Ball mill building are in PEM scope.

Pipe load on Ball Mill Building
Load on each column at 9m above FFL,
Vertical load: 10T
Moment: 15T-M



View C-C

NO	DATE	BY	CHKD	APPD	REVISION
14	04.03.22	PK	VMR	KK	PLATFORM BEAM LOCATION REVISED AS PER PEM COMMENT
13	22.12.21	PK	VMR	KK	DRAIN SLUMP, HYDROCYCLONE & DIST BOX UPDATED
12	29.10.21	PK/MNA	VMR	KK	ESST TANK LOCATION UPDATED AS PER LAYOUT
11	29.09.21	PK/MNA	VMR	KK	ESST TANK LOCATION UPDATED AS PER LAYOUT
10	29.03.21	PK/MNA	VMR	KK	Updated as per NTPC comments
09	23.12.20	PK/MNA	VMR	KK	Updated as per NTPC comments
08	10.11.20	PK/MNA	VMR	KK	Updated as per NTPC comments
07	29.09.20	PK/MNA	VMR	KK	Updated as per NTPC comments
06	26.08.20	PK/MNA	VMR	KK	Updated as per NTPC comments
05	15.07.20	MINK	VMS	KK	Updated as per NTPC comments
04	03.07.20	MINK	VMS	KK	Updated as per Revised vendor DA. Cable bracket detail update added
03	17.06.20	MINK	VMS	KK	Updated as per Revised arrangement drawing from vendor as per 19.05.20
02	10.06.20	MINK	VMS	KK	Updated as per Revised Vendor Ball Mill DA
01	02.04.20	MINK	VMS	KK	Not per revised layout
00	06.11.19	MINK	KBP	VVS	Initial release
Rev	06.11.19	Drawn	Checked	Approved	Remarks

NTPC Dwg. No.: 9561-109-RP-PVM-B-389

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: NTPC / Mauda, STAGE-1 / 2x500MW

CUSTOMER/PROJECT: Bhat Heavy Electricals Ltd BOILER AUXILIARIES PLANT RANPET-632 406

CUST.NO-G503 & G504

NO	DATE	BY	CHKD	APPD	REVISION
01	08.11.19	MINK	KBP	VVS	
02	08.11.19	MINK	KBP	VVS	

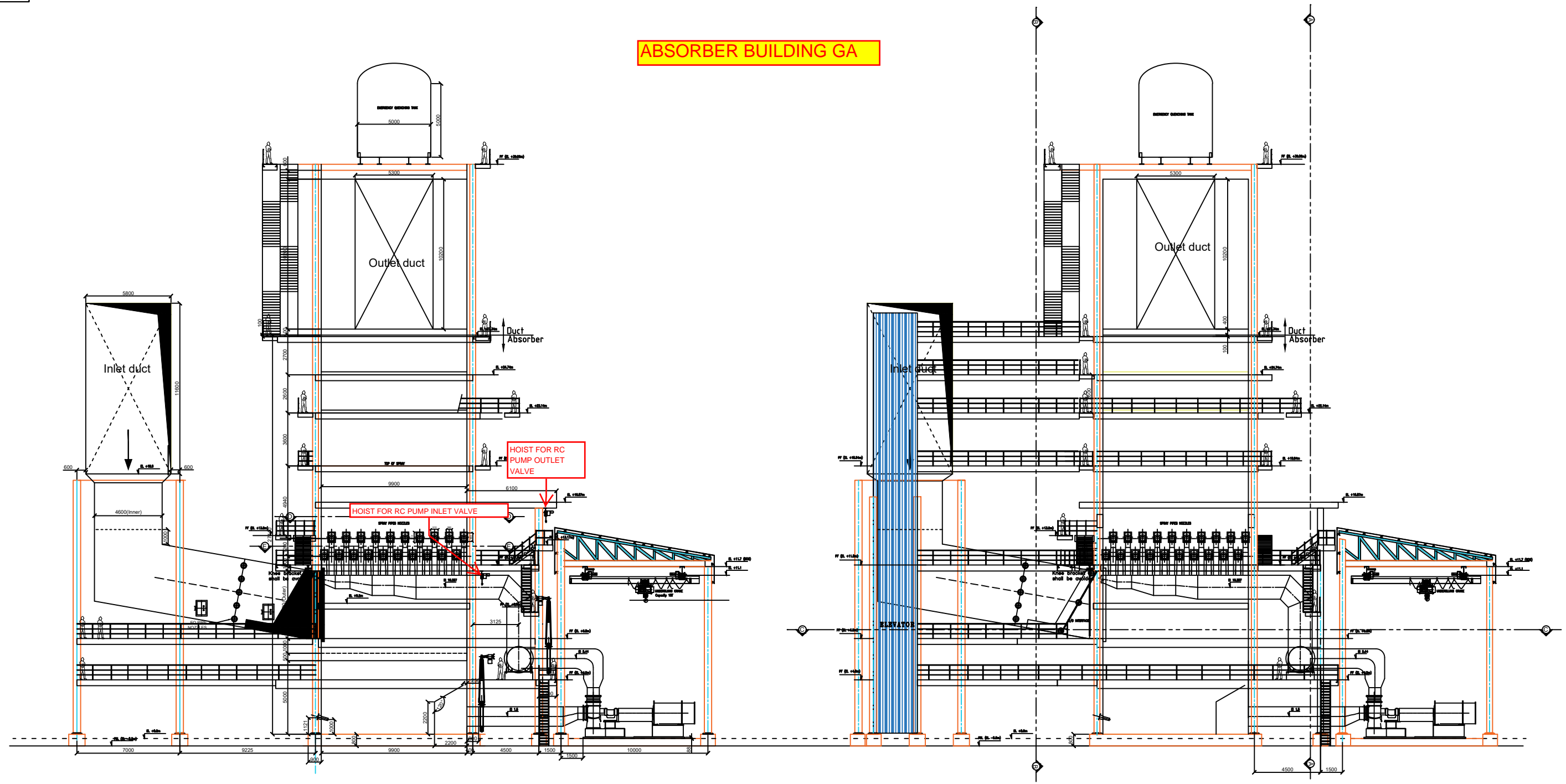
SCALE: 1:100

TITLE: GA of Ball mill building

DRIVING NO: 0-FW-000-01362

REV: 14

ABSORBER BUILDING GA



- Reference drawings:**
 0-FW-000-01333: GA of Absorber Sheet 2
 0-FW-000-01334: GA of Absorber Sheet 3
 0-FW-000-01335: GA of Absorber Sheet 4

Note:
 Elevation 0.0 corresponds to RL 271.5
 FGL at Absorber area is at RL 271m
 All dimensions are in millimeters and levels are in Meters
 Absorber casing dimensions are outer dimensions

REV	DATE	ALTERED	CHECKED	APPROVED	REVISION	REMARKS
07	15.03.22	PK	VNR	KK	Platform added to 27.2m elevation.	
06	17.11.21	PK	VNR	KK	Site file added.	
05A	19.12.20	MRK	VNR	KK	Stage 1 RC working plan for 10M22 completed.	
04	25.11.20	MRK	VNR	KK	Revised based on internal discussion.	
03	03.08.20	MRK	VNR	KK	Revised based on NTPC & internal comments.	
02	22.08.20	MRK	VNR	KK	Revised based on NTPC & internal comments.	
01	27.02.20	MRK	VNR	KK	Revised based on NTPC & internal comments.	
00	31.10.19	MRK	KBP	VNS	Initial issue.	

NTPC Dwg. No.: 9561-109-RP-PVC-B-367

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: **NTPC / Mauda, STAGE-1**
2x500MW

CUSTOMER/PROJECT: **Bharat Heavy Electricals Ltd**
BOILER AUXILIARIES PLANT
RANIPET-632 406

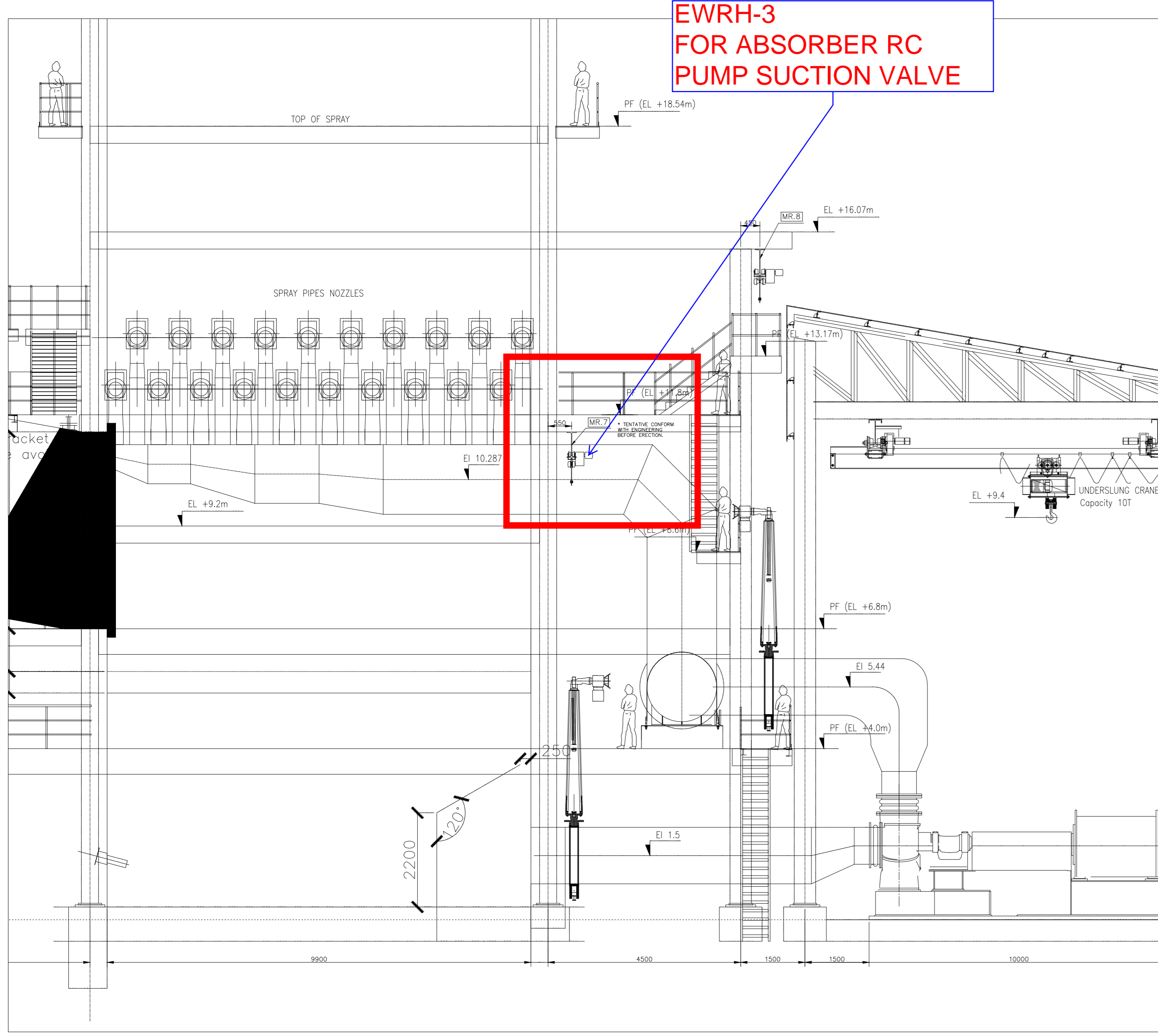
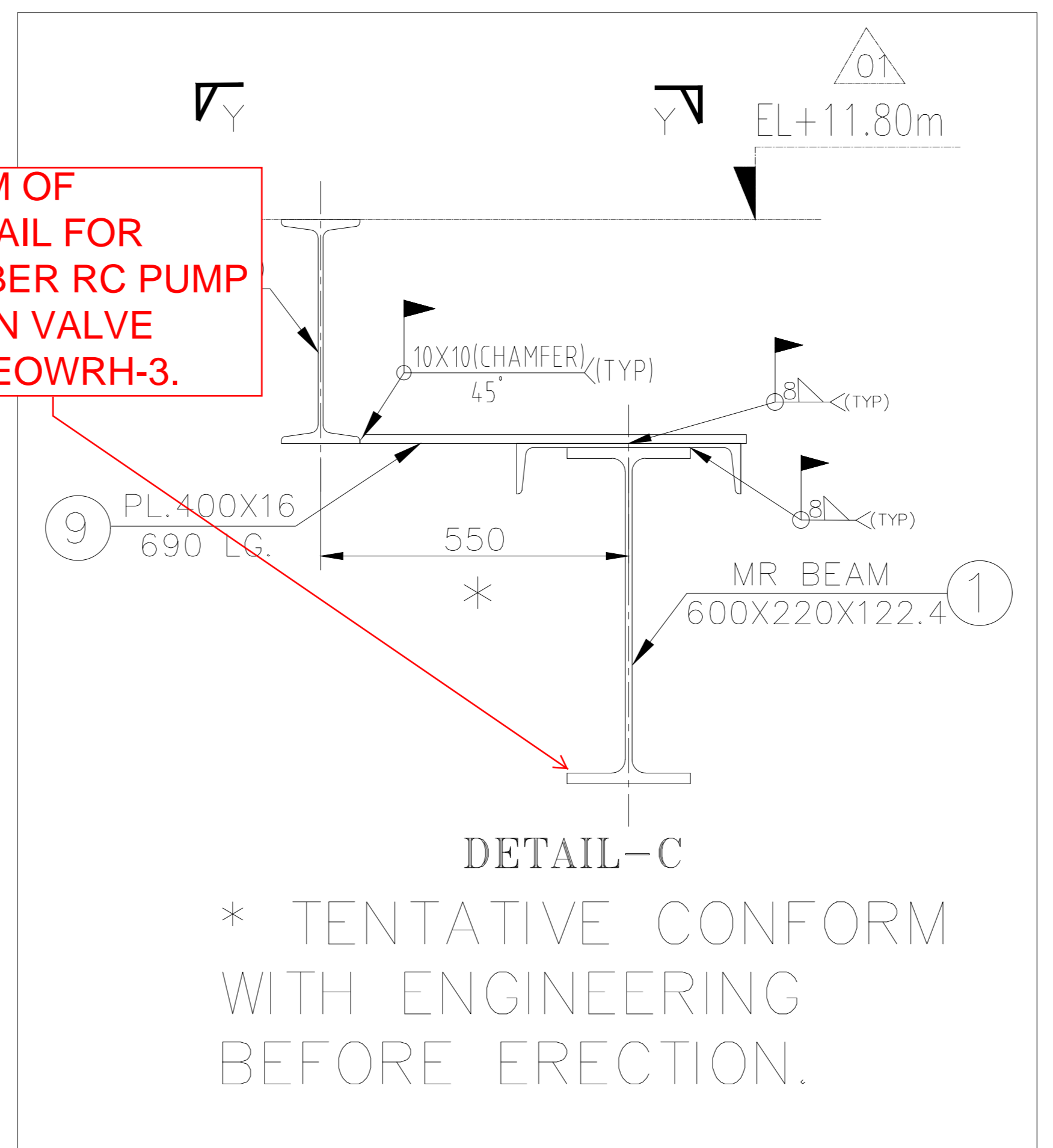
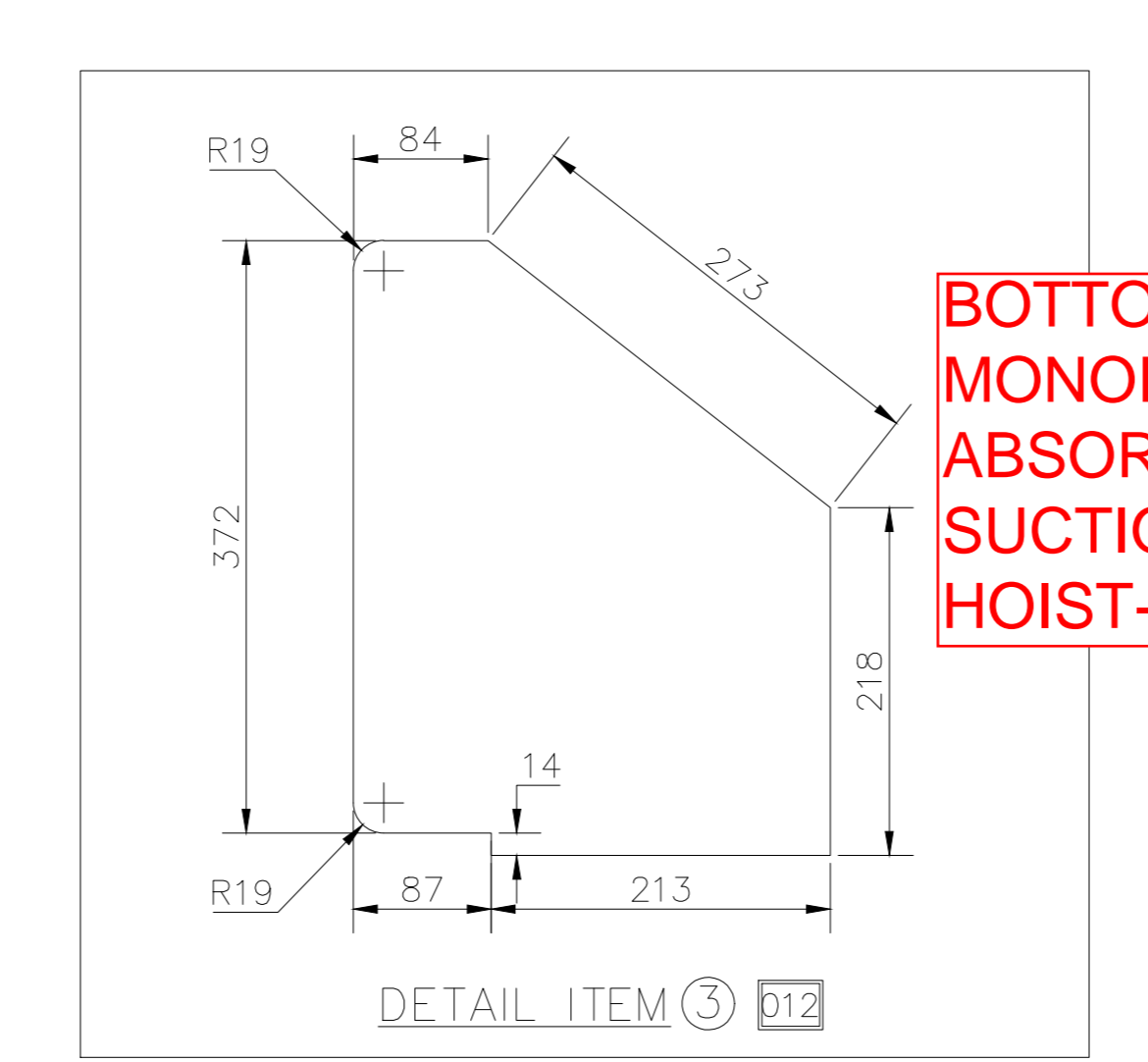
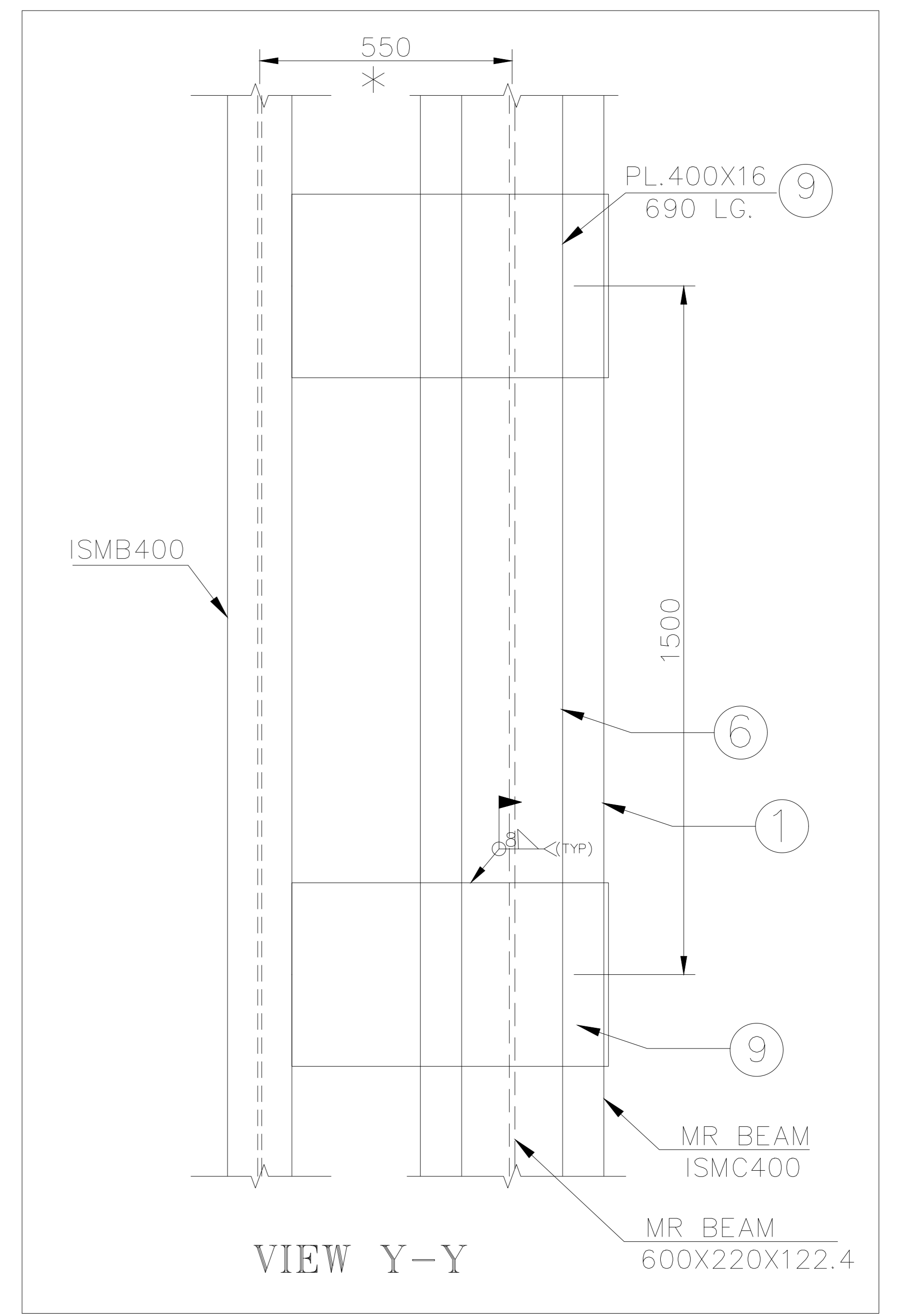
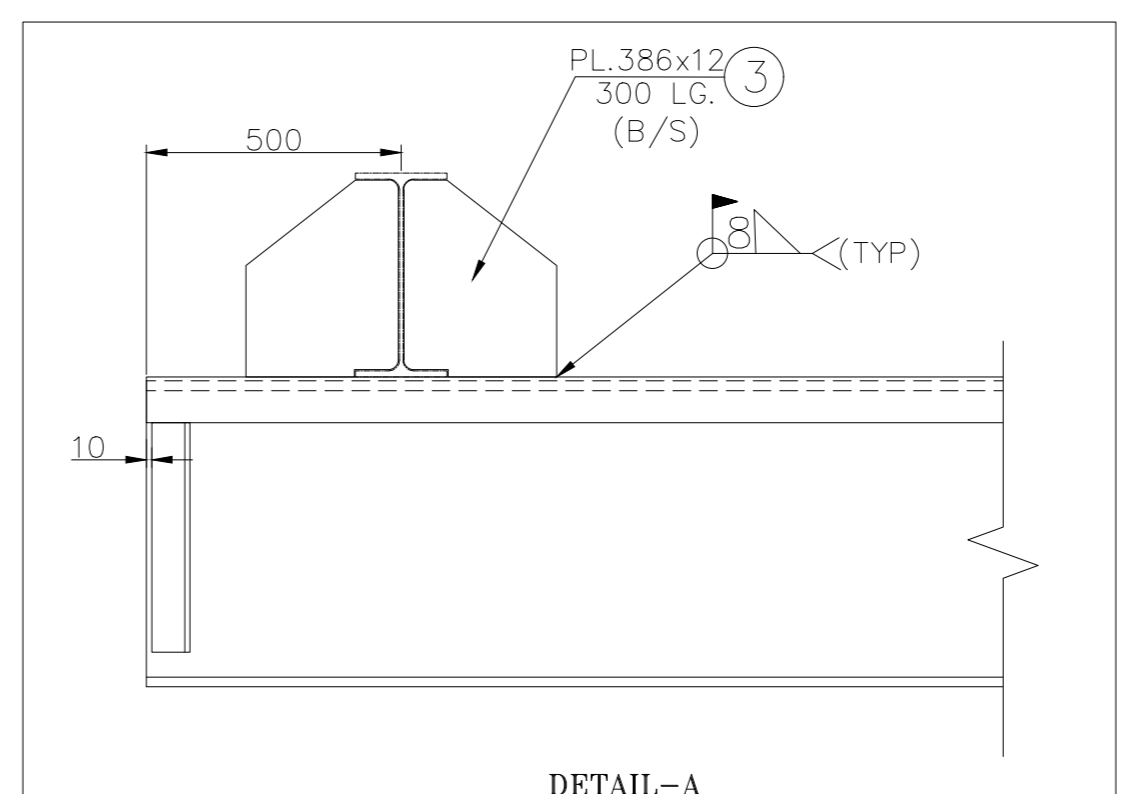
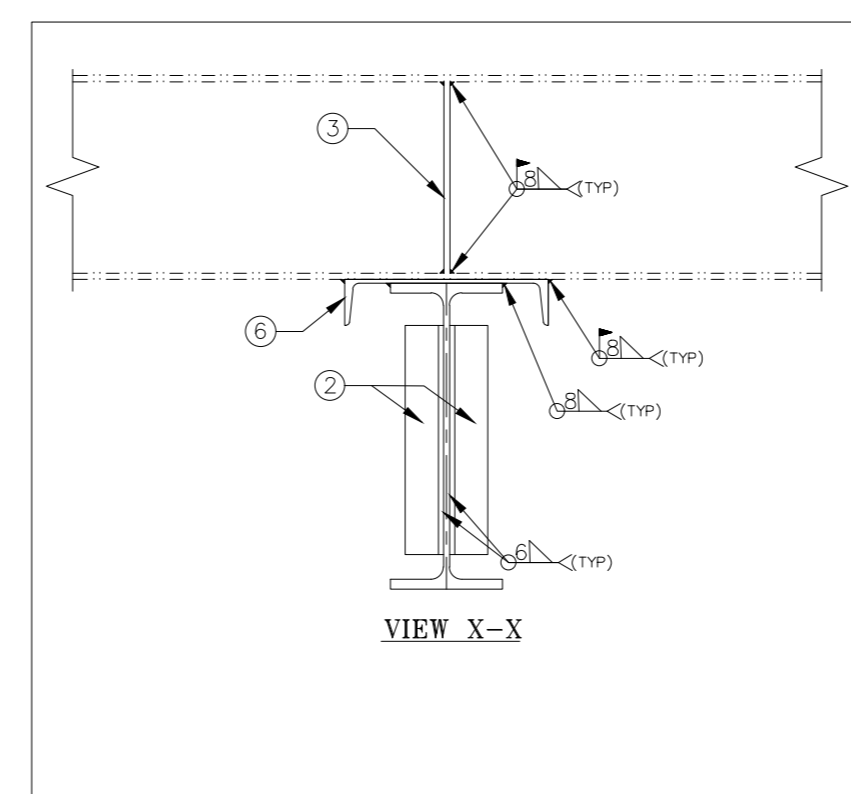
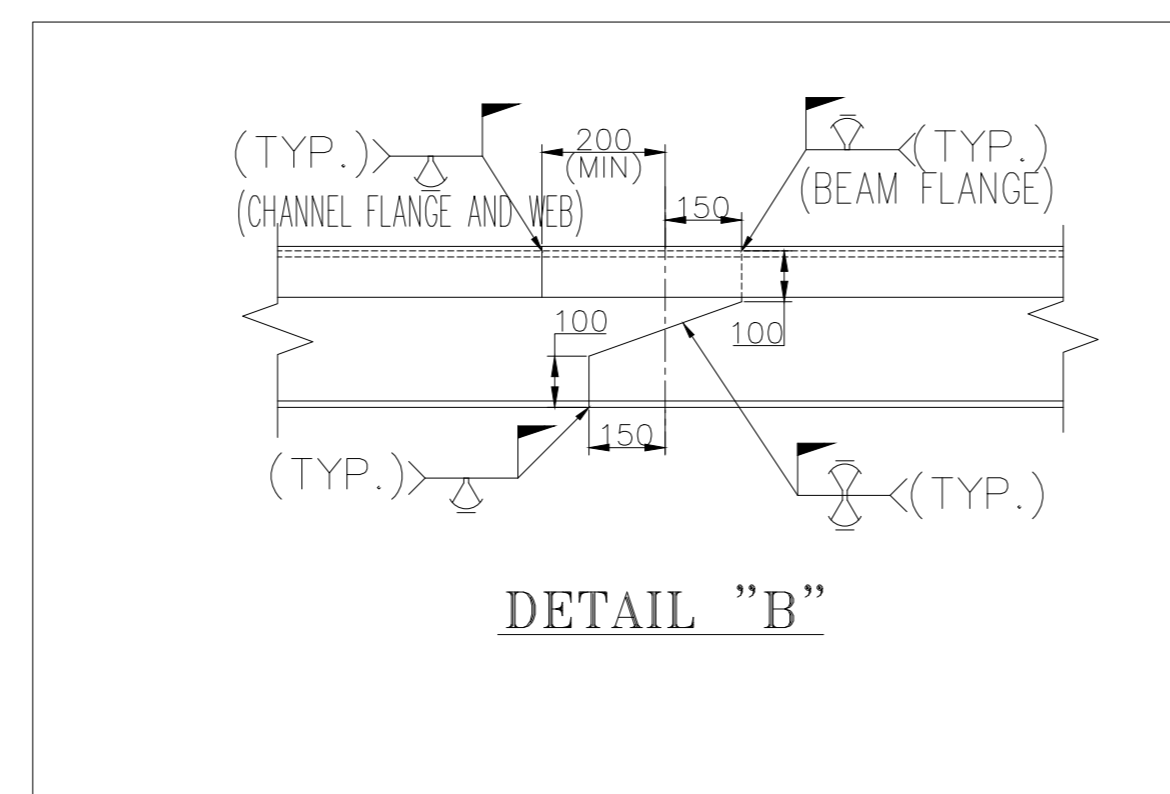
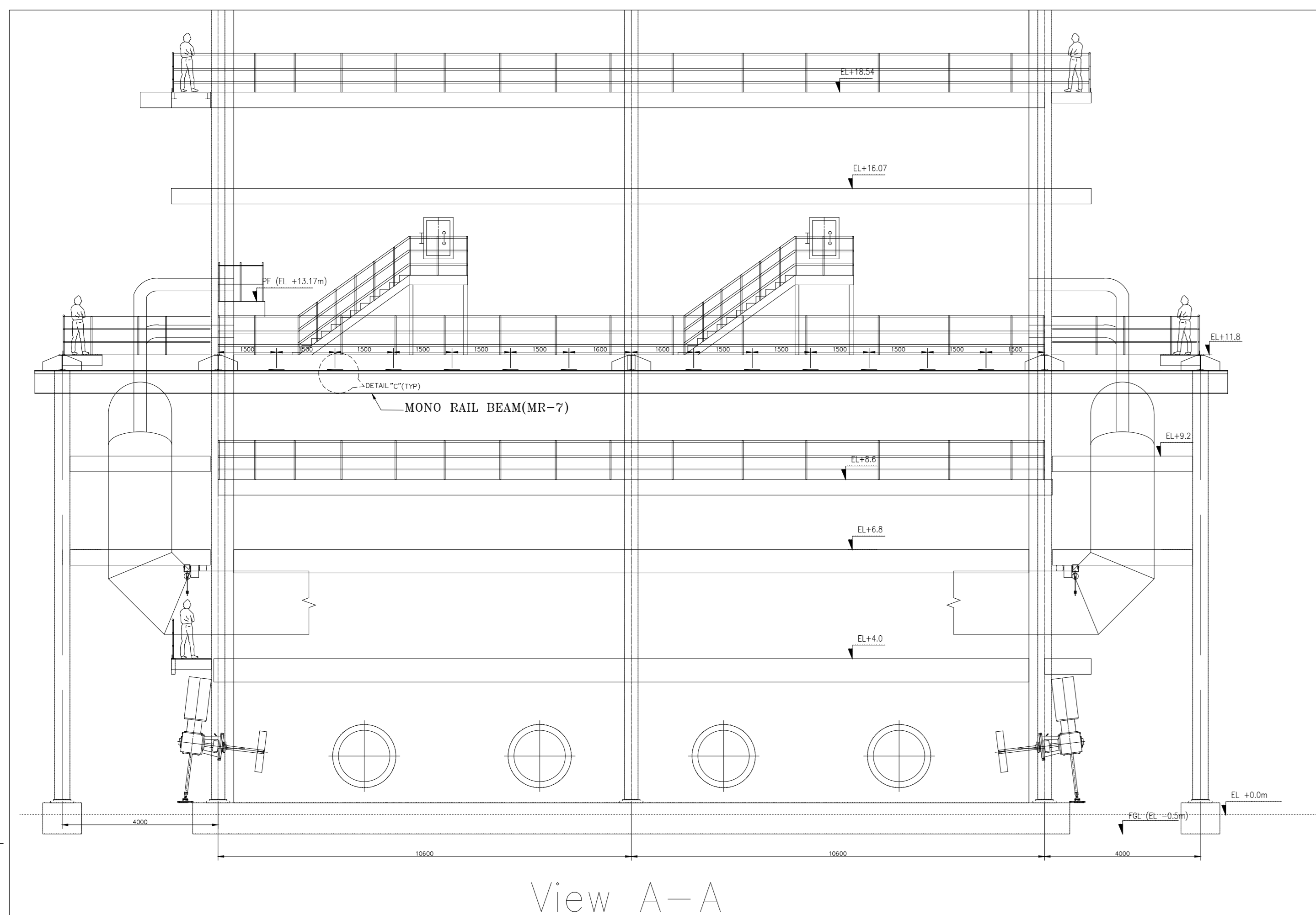
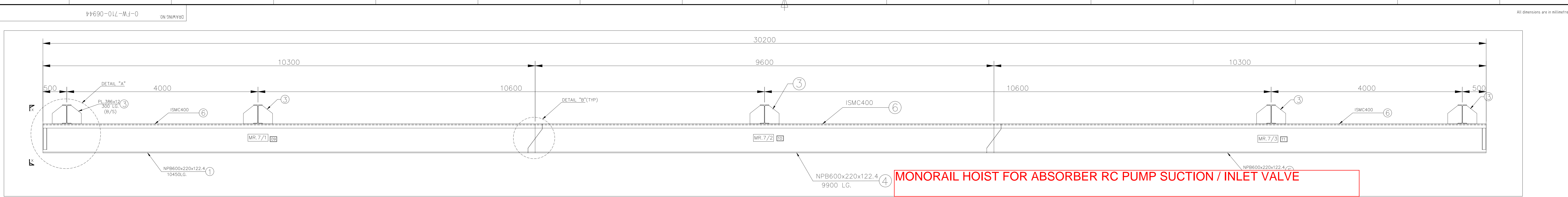
CUST.NO-G503 & G504

DATE	BY	CHKD	APPD	REV
27.02.20	MRK	MRK	KBP	01
27.02.20	MRK	MRK	VNS	02

SCALE: 1:100

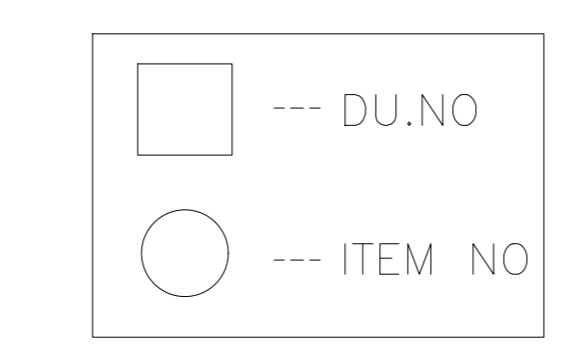
TITLE: **GA of Absorber Unit#1**
 Sh 01 of 08

DRAWING NO: **0-FW-000-01332**
 REV: **07**



ISMC 400 & PL.16MM SHALL BE SENT TO SITE IN RUNNING METRES.

DU.NO	ITEM NO.	DESCRIPTION	STD	DRAWING NUMBER	VAR.NO	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNITWEIGH	GS	ZONE
069	09	PL 16				AA1011808110	IS2062		NO	125.6		
068	06	ISMC 400				AA1012708209	IS2062		NO	50.1		
012	03	GUSSET-(GS 7/3)		3-FW-710-06973					NO	9.063		
									NO	10+10		
011	05	MONORAIL (MR-7/3)		3-FW-710-06973					NO	1269.24		
010	04	MONORAIL (MR-7/2)		3-FW-710-06973					NO	1175.52		
009	01	MONORAIL (MR-7/1)		3-FW-710-06973					NO	1269.24		
									NO	1+1		
									NO	1+1		
									NO	1+1		
									NO	1+1		



NOTES:-

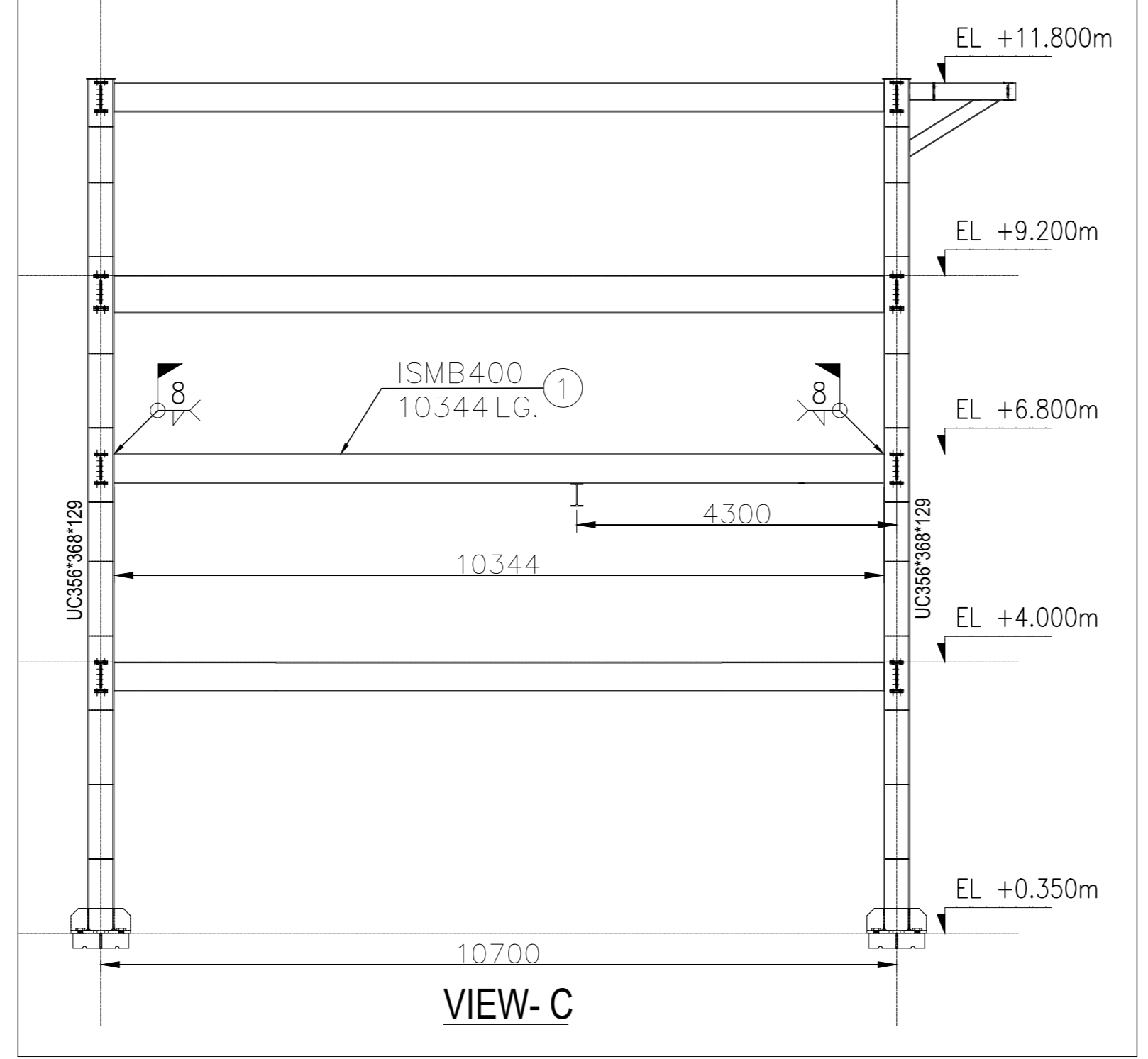
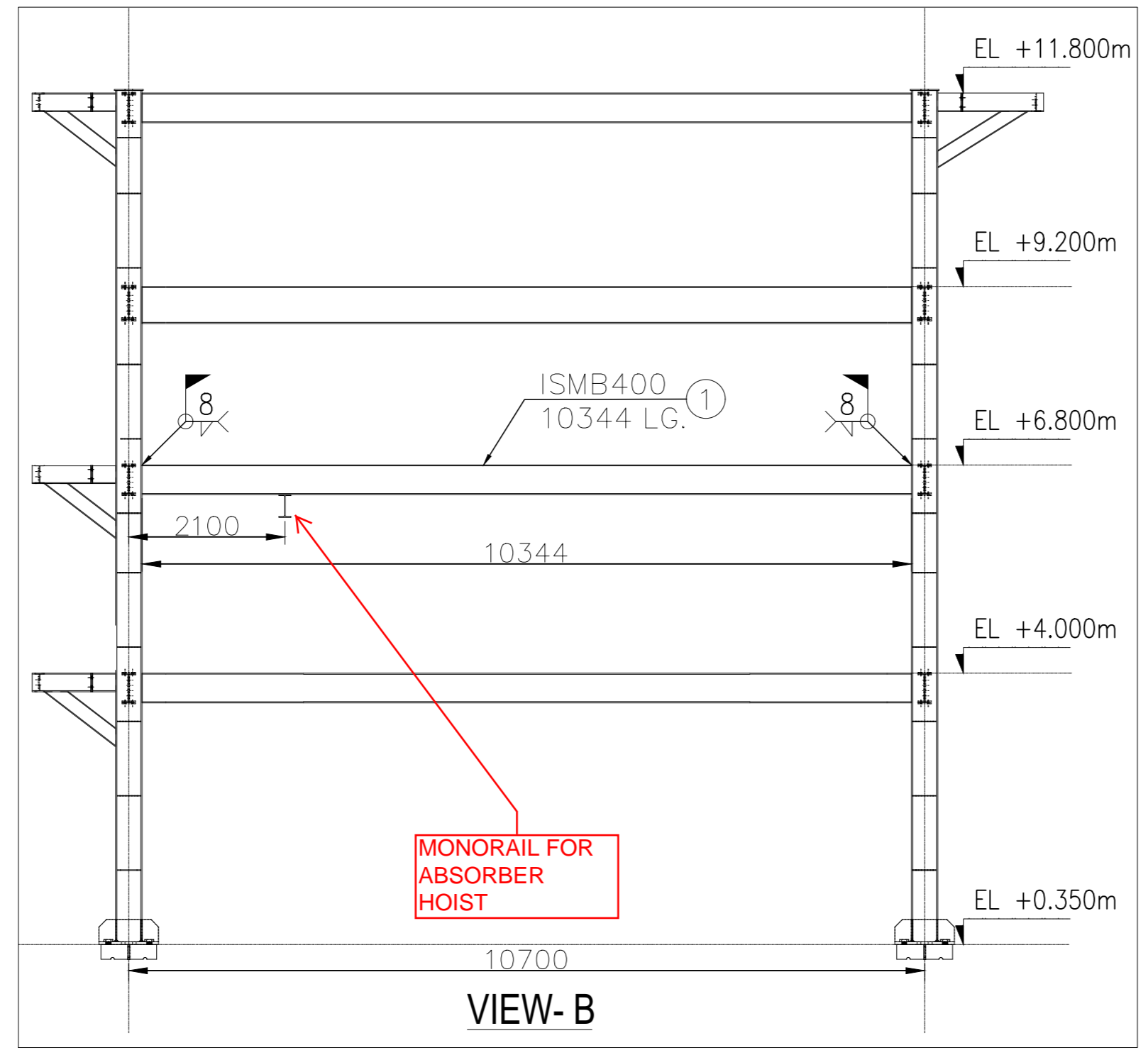
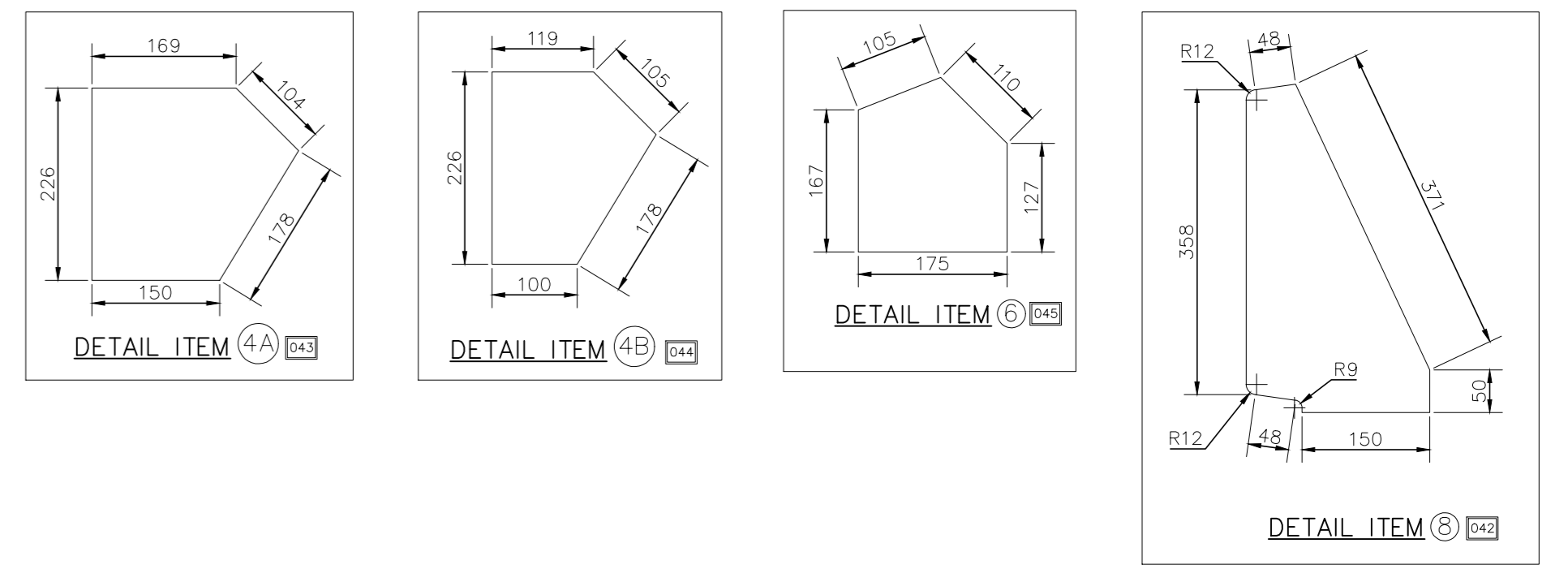
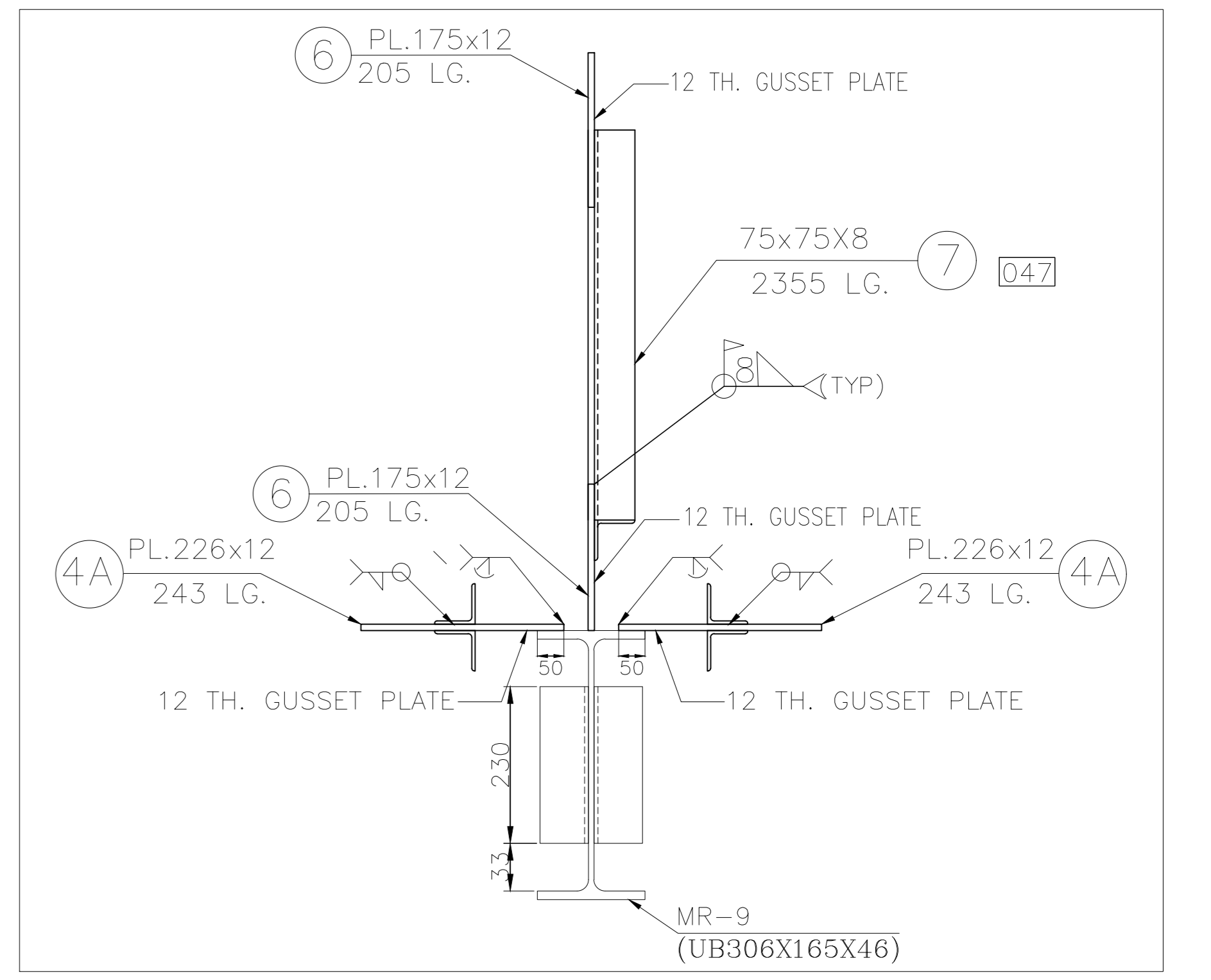
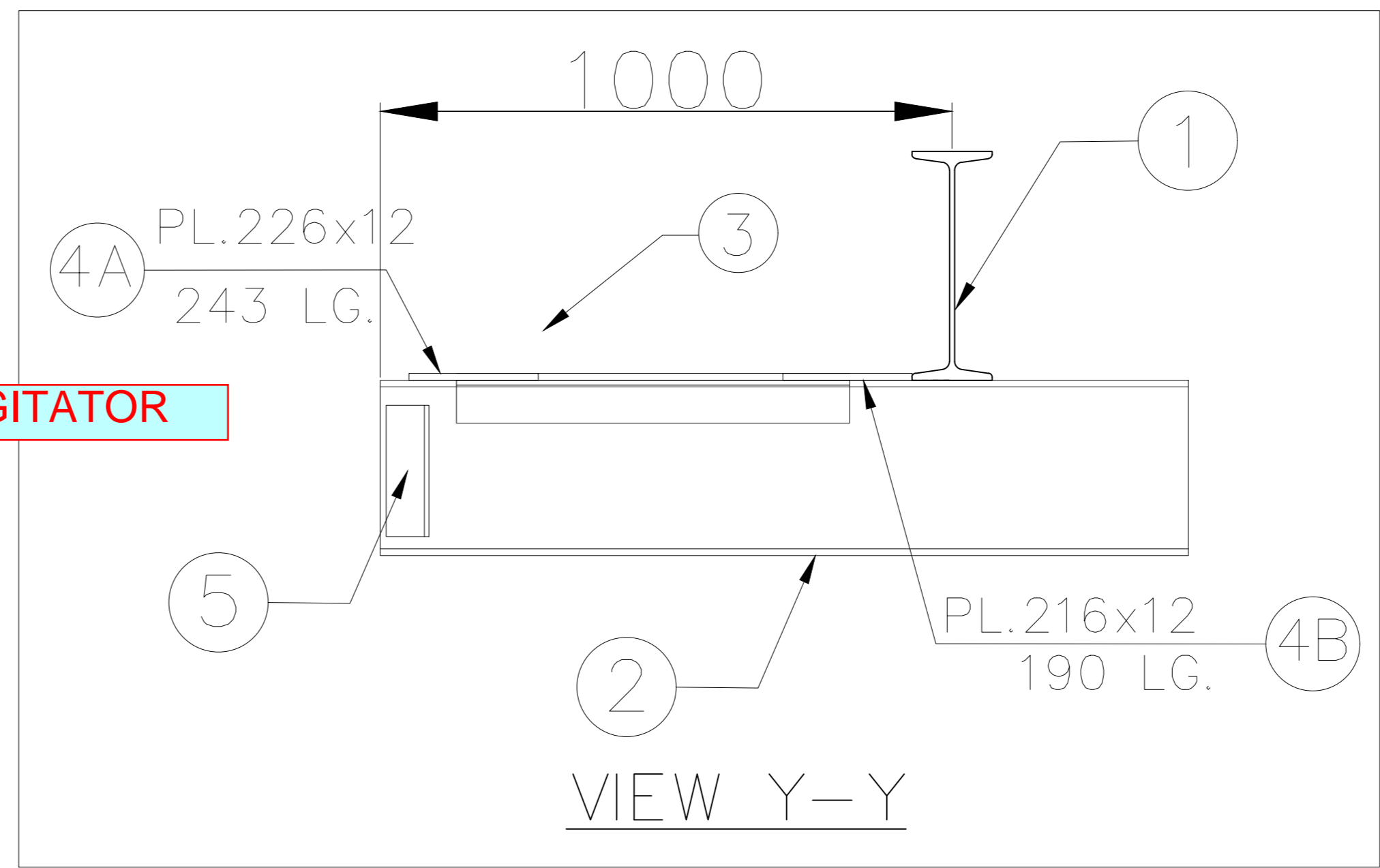
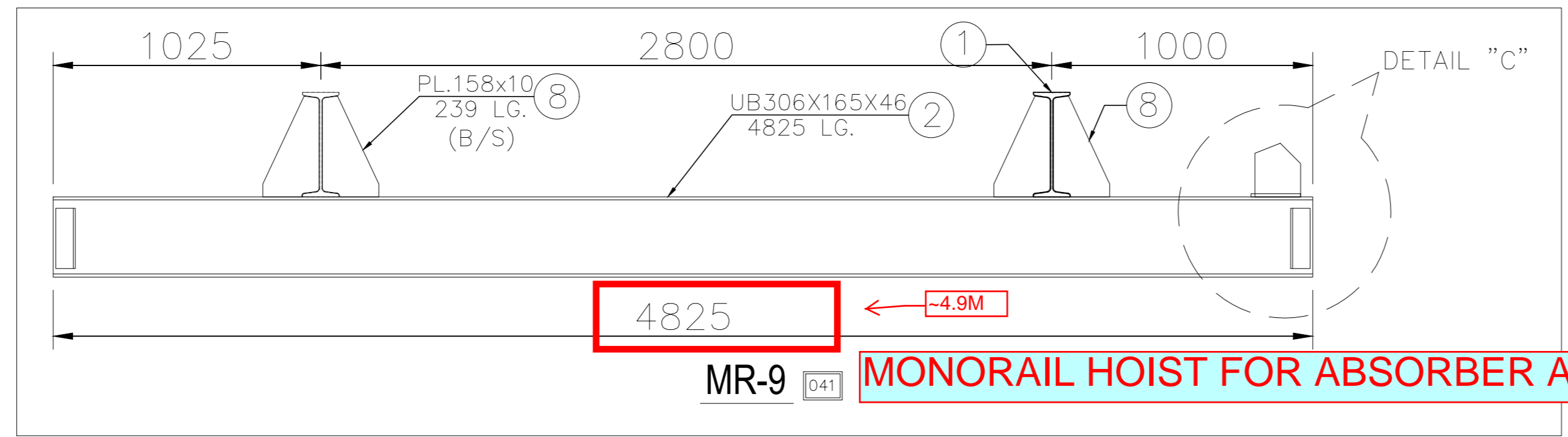
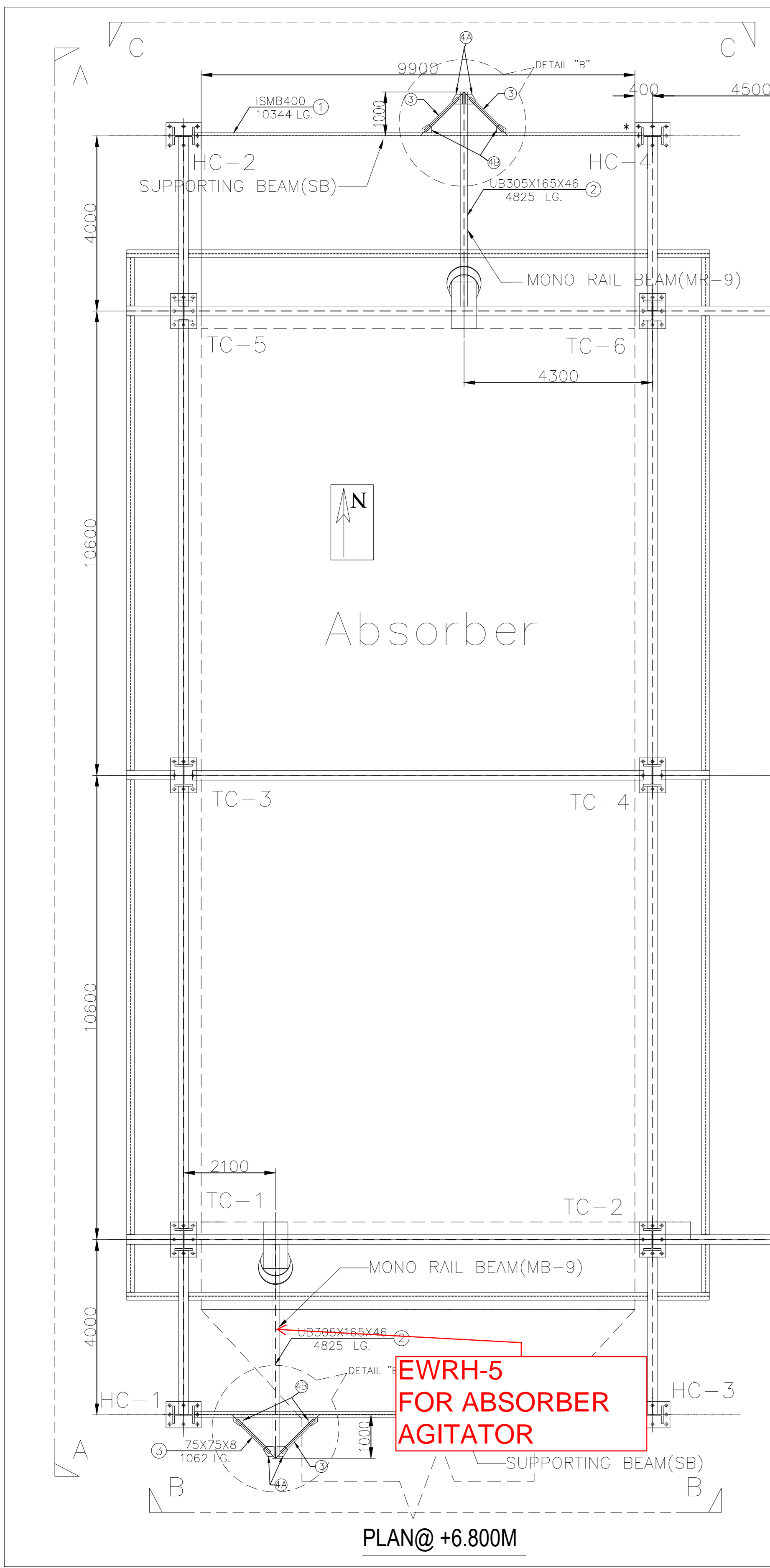
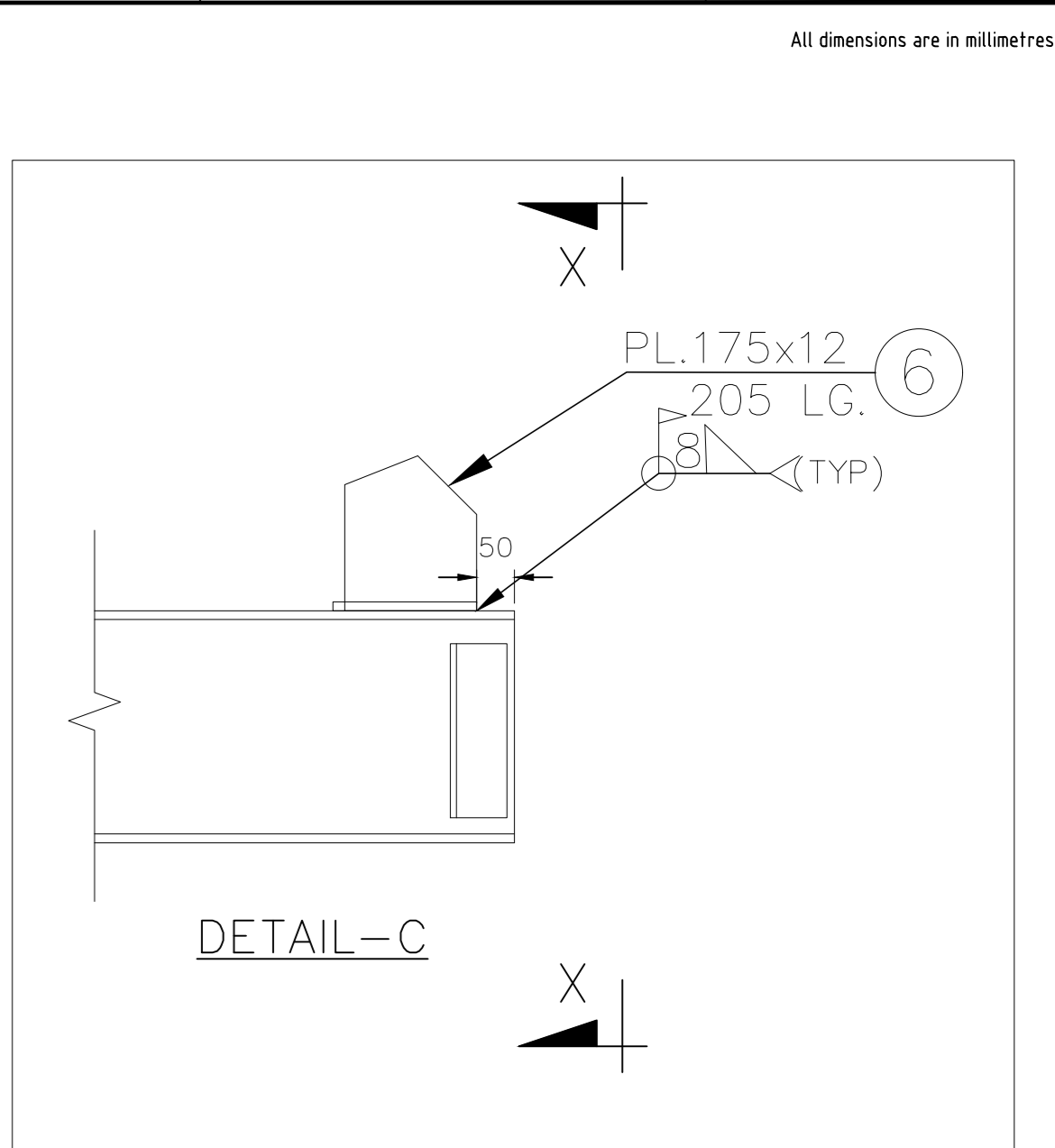
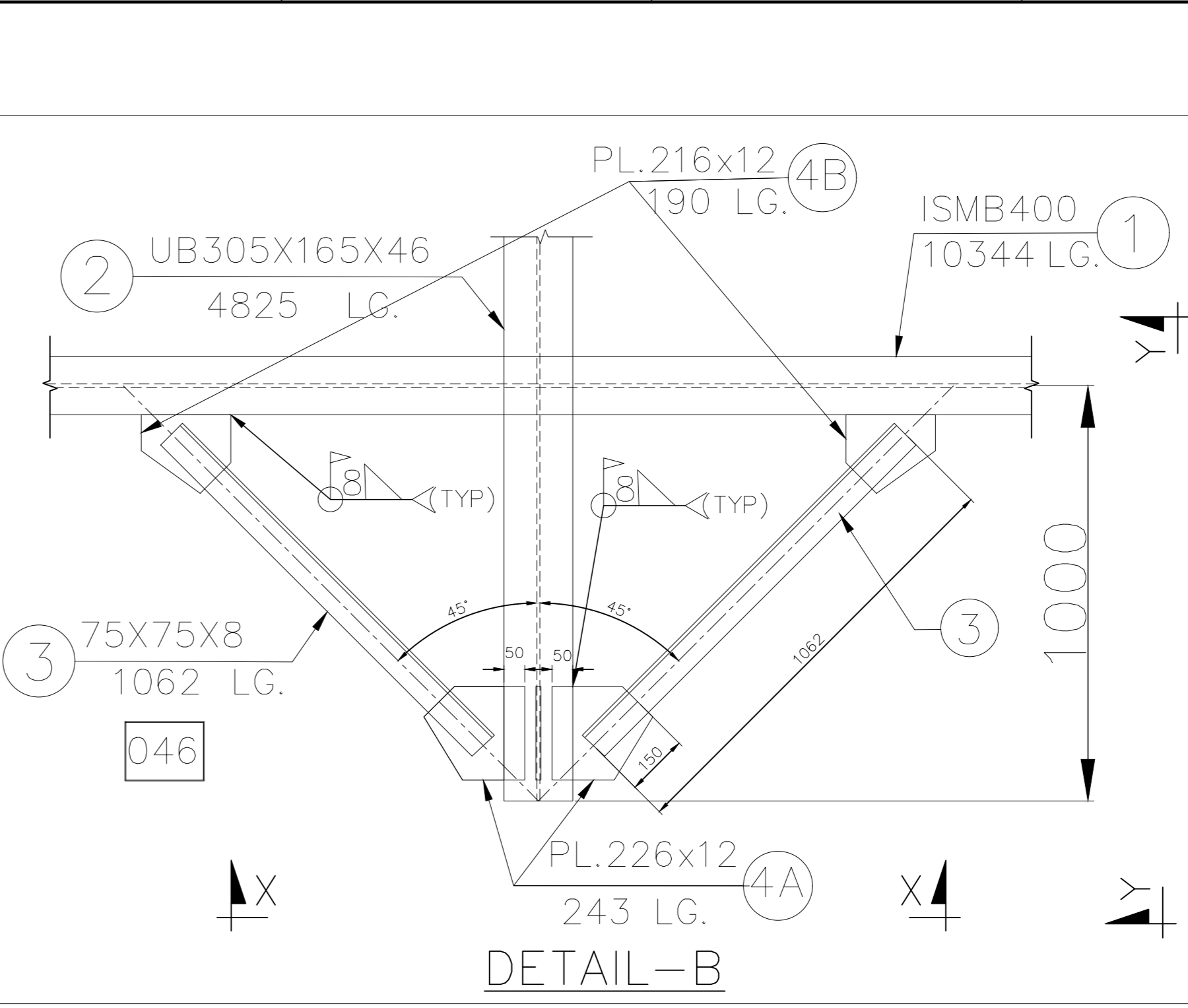
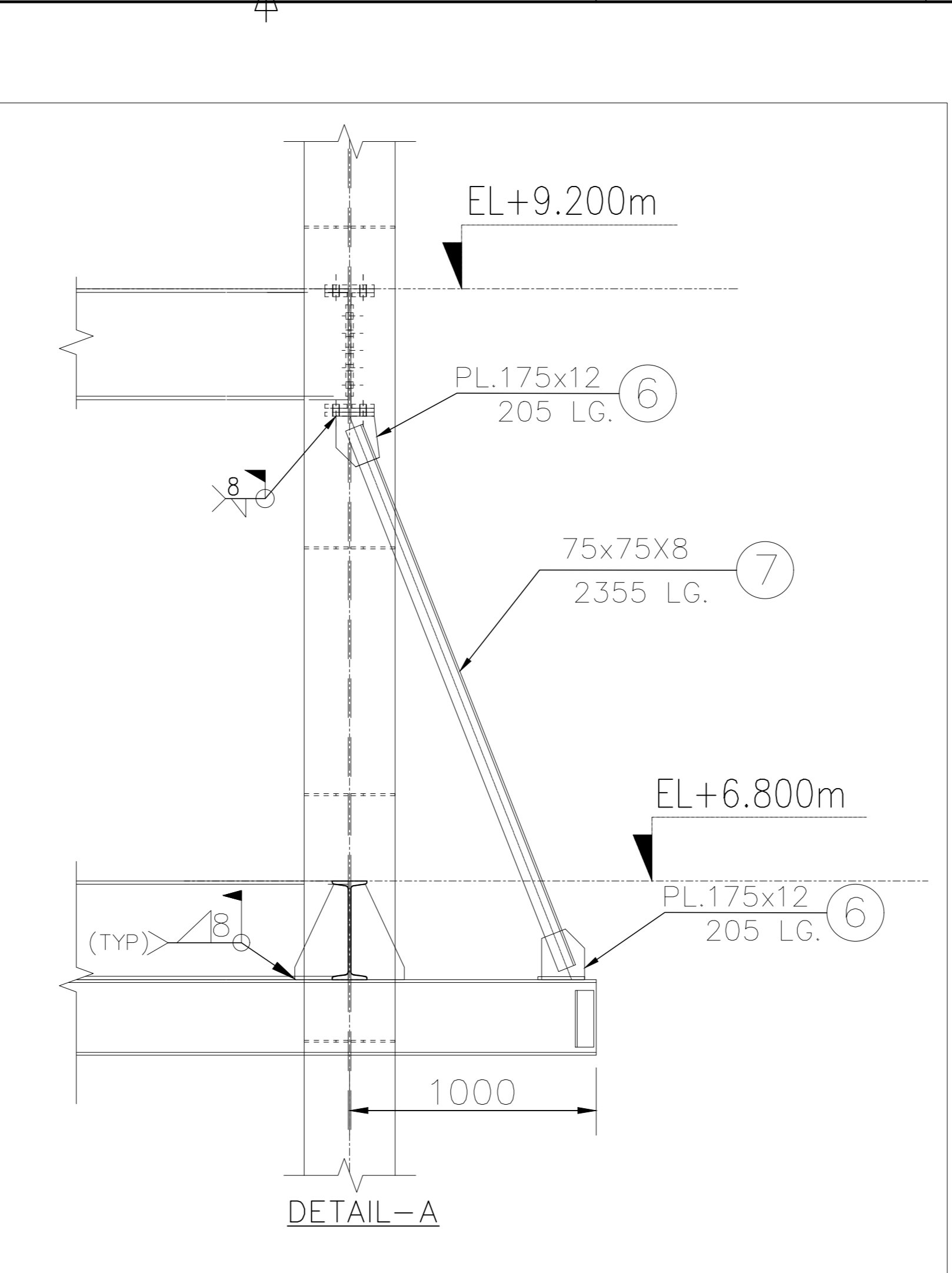
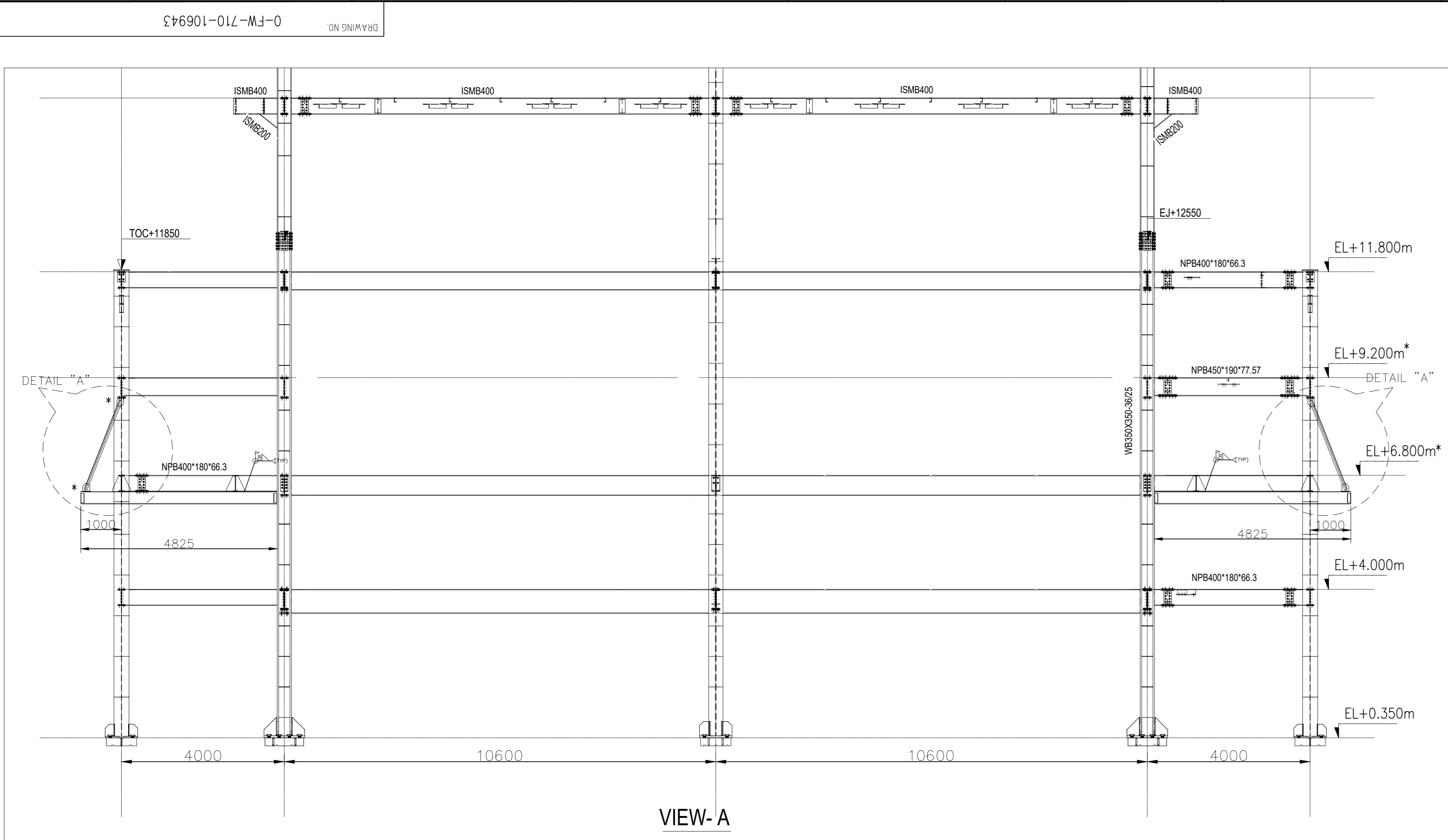
1. ALL DIMENSIONS ARE IN MM. & LEVELS ARE IN M.
2. ALL MEMBERS AND GUSSETS PLATES TO BE CUT AFTER FULL SCALE SHOP LAYOUT BEFORE FABRICATION
3. ALL SHOP WELD ARE 8mm. THICK U.N.O.
4. STANDARD FABRICATION NOTES IN DRAWING NO: 4-00-000-32487 TO BE FOLLOWED
5. * TENTATIVE - CONFORM WITH ENGINEERING BEFORE ERECTION.
6. BOM FOR BOTH UNITS (G503, G504)

REV	DATE	BY	CHECKED	SCALE	NO OF SHEETS	TOTAL SHEETS
01	28/12/21	AL/1000	FELIX	1:1	1	1
CORRECTED ELEVATION IN DETAIL C						

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	NAME	SSN	DATE	NO OF SHEETS
BHARAT HEAVY ELECTRICALS LTD. UNIT BOILER AUXILIARIES PLANT RAIPUR - 832 038	AMR PRASAD		22/01/2021	1
	PRASAD		22/01/2021	1
	APPS		22/01/2021	1

TITLE	SCALE	WEIGHT	NO. OF SHEETS
MONORAIL BEAM (ABSORBER RECIRCULATION PUMP SUCTION VALVE)	1:1		1

DRAWING NO	REV
0-FW-710-06944	00



□ --- DU.NO
 ○ --- ITEM NO

DU.NO	ITEM NO	DESCRIPTION	STD	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNITWEIGH	GS	ZONE
073	01	ISMB 400			AA1012808149		MR	61.5		
					IS2062			REFER GMS		
045	6	GUSSET-(GS-9/6)		3-FW-710-06986			NO	2.75		
								4+4		
047	7	L75X75X8-2355		GS-9/7			NO	20.96		
								2+2		
046	3	L75X75X8-1062		GS-9/3			NO	9.45		
								4+4		
044	4B	GUSSET-(GS-9/4)		3-FW-710-06986			NO	2.9		
								4+4		
043	4A	GUSSET-(GS-9/4)		3-FW-710-06986			NO	4.24		
								4+4		
042	08	GUSSET-(GS-9/8)		3-FW-710-06986			NO	5.2		
								8+8		
041	02	MONORAIL (MR-9)		3-FW-710-06986			NO	230.62		
								2+2		

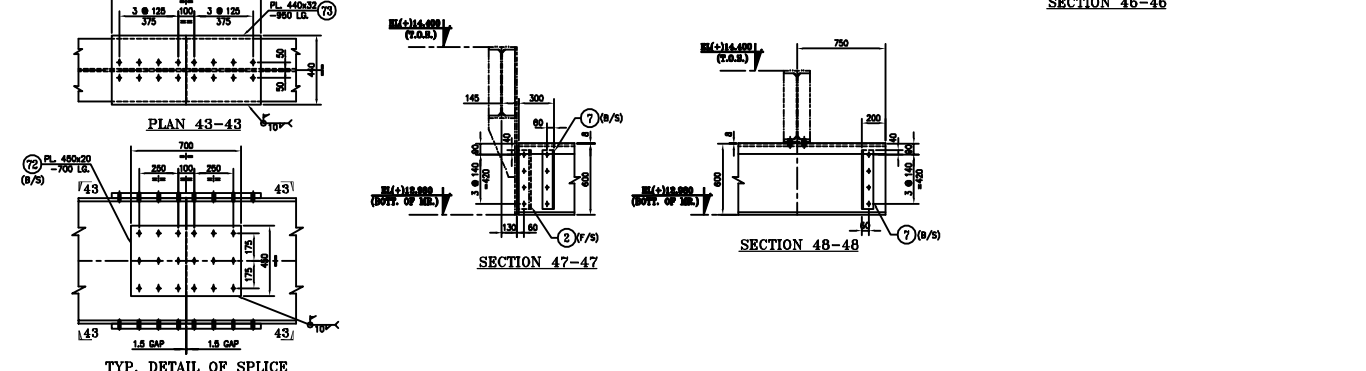
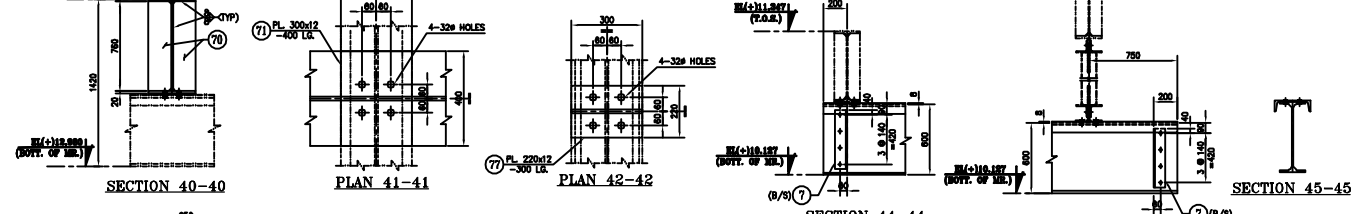
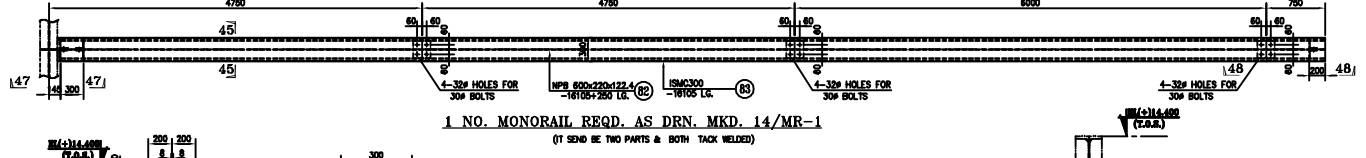
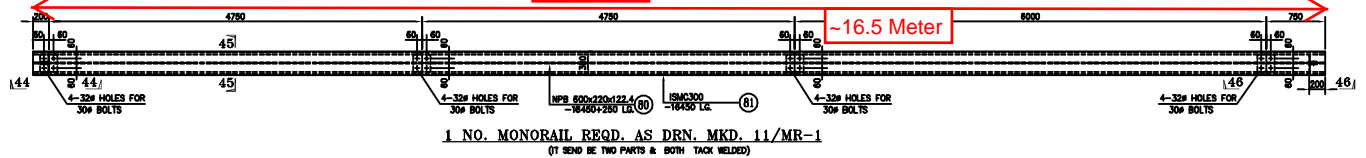
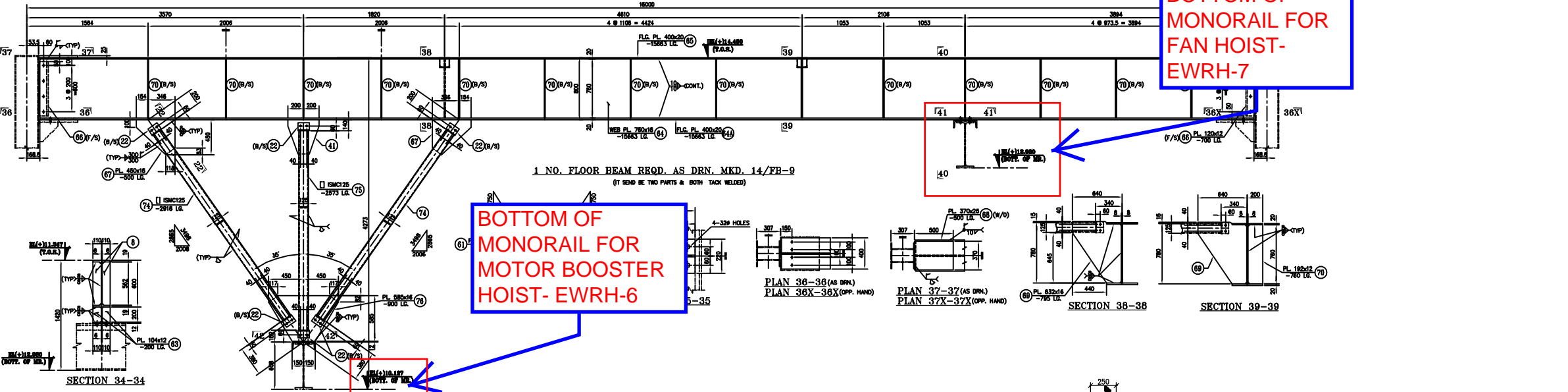
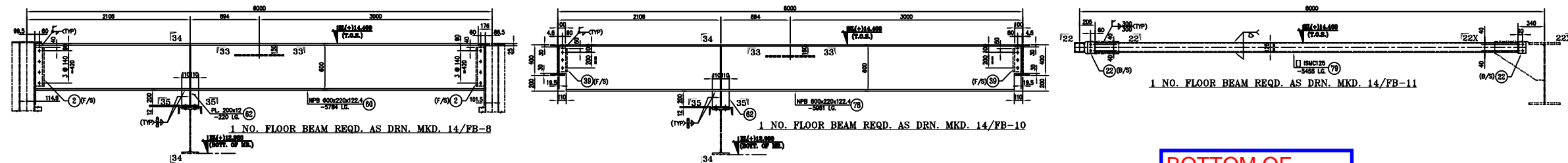
BILL OF MATERIALS

NOTES: --

- ALL DIMENSIONS ARE IN MM. & LEVELS ARE IN M.
- ALL MEMBERS AND GUSSETS PLATES TO BE CUT AFTER FULL SCALE SHOP LAYOUT BEFORE FABRICATION
- ALL SHOP WELD ARE 8mm. THICK U.N.O.
- STANDARD FABRICATION NOTES IN DRAWING NO: 4-00-000-32487 TO BE FOLLOWED
- BOM FOR BOTH UNITS (G503, G504)
- * TENTATIVE--CONFIRM WITH ENGINEERING BEFORE ERECTION.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		SEEN	DATE	NO OF
BHARAT HEAVY ELECTRICALS LTD.		PRADEEP			25/09/2021	1
UNIT: BOILER AUXILIARIES PLANT		PRADEEP			25/09/2021	1
PROJECT: 632-408		ANIL K SHARMA			25/09/2021	1
DEPT	APPC	GRADE OF	SCALE	WEIGHT	REF TO ASSY/DWG	REV
CODE	NO	UNIT/DWG	NTS			
TITLE		CARD	DRAWING NO			
MONORAIL BEAM (ABSORBER AGITATOR)		U 01	0-FW-710-106943			00

BOOSTER FAN & MOTOR HOISTS



BOTTOM OF MONORAIL FOR FAN HOIST-EWRH-7

BOTTOM OF MONORAIL FOR MOTOR BOOSTER HOIST-EWRH-6

SL. NO.	SECTION	TOTAL WT. (Kg.)	MATL. SPCH.
1.	NPB 600x220x12.4	9191.91	
2.	NPB 450x190x7.7	708.64	
3.	NPB 600x180x4.3	1392.35	
4.	UB 305x165x6	397.87	
5.	ISM300	1181.75	
6.	ISM225	622.39	
7.	ISM100	125.45	
8.	L 100x10x10	186.02	
9.	PL 32 THK.	210.00	
10.	PL 25 THK.	72.81	
11.	PL 20 THK.	3009.39	
12.	PL 16 THK.	3488.19	
13.	PL 12 THK.	483.49	
14.	PL 10 THK.	163.91	

- NOTES:-**
01. ALL DIMENSIONS ARE IN MM. & LEVELS ARE IN MTR.
 02. ALL FILLET SHOP WELDS ARE 6mm. & SITE WELDS 8mm. THK.(U.N.G.O.)
 03. ALL HOLES ARE 25W FOR M-20 BOLTS UNL.O
 04. REFER STANDARD DRAWING NO. 4-00-000-32487, FOR RELEVANT DETAILS.
 05. EDGE PREPARATION FOR ALL SITE WELD JOINTS ARE TO BE DONE AT SHOP.
 06. ALL HORIZONTAL AND VERTICAL STIFFENERS ARE OF CONTINUOUS FILLET WELD APPLICABLE.
 07. FOR ALL OTHER DETAILS REFER RELEVANT STANDARD QUALITY PROCEDURE.
 08. FOR SURFACE TO BE FINISHED ARE SHOWN THUS .f . .
 09. ALL ERECTION BOLTS SHALL BE RETAINED IN POSITION.
 10. ALL INCLINED ITEMS AND GUSSET PLATES TO BE CUT AFTER FULL SCALE SHOP LAYOUT BEFORE FABRICATION.
 11. THE NECESSARY OF BUNDLE ARRANGEMENT FOR TRANSPORTATION OF MULTIPLE ITEMS AS SINGLE DU ARE TO BE DONE AT SHOP.
 12. SITE HAS TO GROUND ASSEMBLE THE SUPPLIED ITEMS BY WELDING BEFORE ERECTION AT SITE.
 13. IF NECESSARY, ADDITIONAL STIFFNER/SPIDER ARE TO BE PROVIDED FOR TRANSPORT FROM SHOP.
 14. ALL INDIVIDUAL ITEM TO BE PART MARKED WITH PGM, ITEM NO. & DU NO.
 15. QUALITY REQUIREMENTS OF MANUFACTURING AND WELDING SHOULD BE AS PER RELEVANT QUALITY PROCEDURE.
 16. ALL WELDED CONNECTIONS ARE TO BE CONTINUOUS WELD WITH MIN WELD LENGTH OF 150 mm AND FILLET SIZE OF 6mm UNL.G
 17. FOR MARKING REF.DRG. NO. 0-FW-260-02305 & 0-FW-260-02362.
 18. THIS DRG. IS TO BE READ IN CONJUNCTION WITH DRG. 0-FW-260-02307.

BILL OF MATERIALS GIVEN I ASSEMBLY, BILL OF MATERIALS REQUIRED FOR CUSTOMER NO. 0064 (2 NO OF ASST.) & CUSTOMER NO. 0064 (2 NO OF ASSEMBLY).

SECTION	PART NO.	SECTION	QTY.	UNIT	NET WT. (Kg.)	GROSS WT. (Kg.)	REMARKS
147F-10	1	NPB 600x220x12.4	1	NO.	9191.91	9191.91	
	2	NPB 450x190x7.7	1	NO.	708.64	708.64	
	3	NPB 600x180x4.3	1	NO.	1392.35	1392.35	
	4	UB 305x165x6	1	NO.	397.87	397.87	
	5	ISM300	1	NO.	1181.75	1181.75	
	6	ISM225	1	NO.	622.39	622.39	
	7	ISM100	1	NO.	125.45	125.45	
	8	L 100x10x10	1	NO.	186.02	186.02	
	9	PL 32 THK.	1	NO.	210.00	210.00	
	10	PL 25 THK.	1	NO.	72.81	72.81	
	11	PL 20 THK.	1	NO.	3009.39	3009.39	
	12	PL 16 THK.	1	NO.	3488.19	3488.19	
	13	PL 12 THK.	1	NO.	483.49	483.49	
	14	PL 10 THK.	1	NO.	163.91	163.91	
	15	ISM300	1	NO.	1181.75	1181.75	
	16	ISM225	1	NO.	622.39	622.39	
	17	ISM100	1	NO.	125.45	125.45	

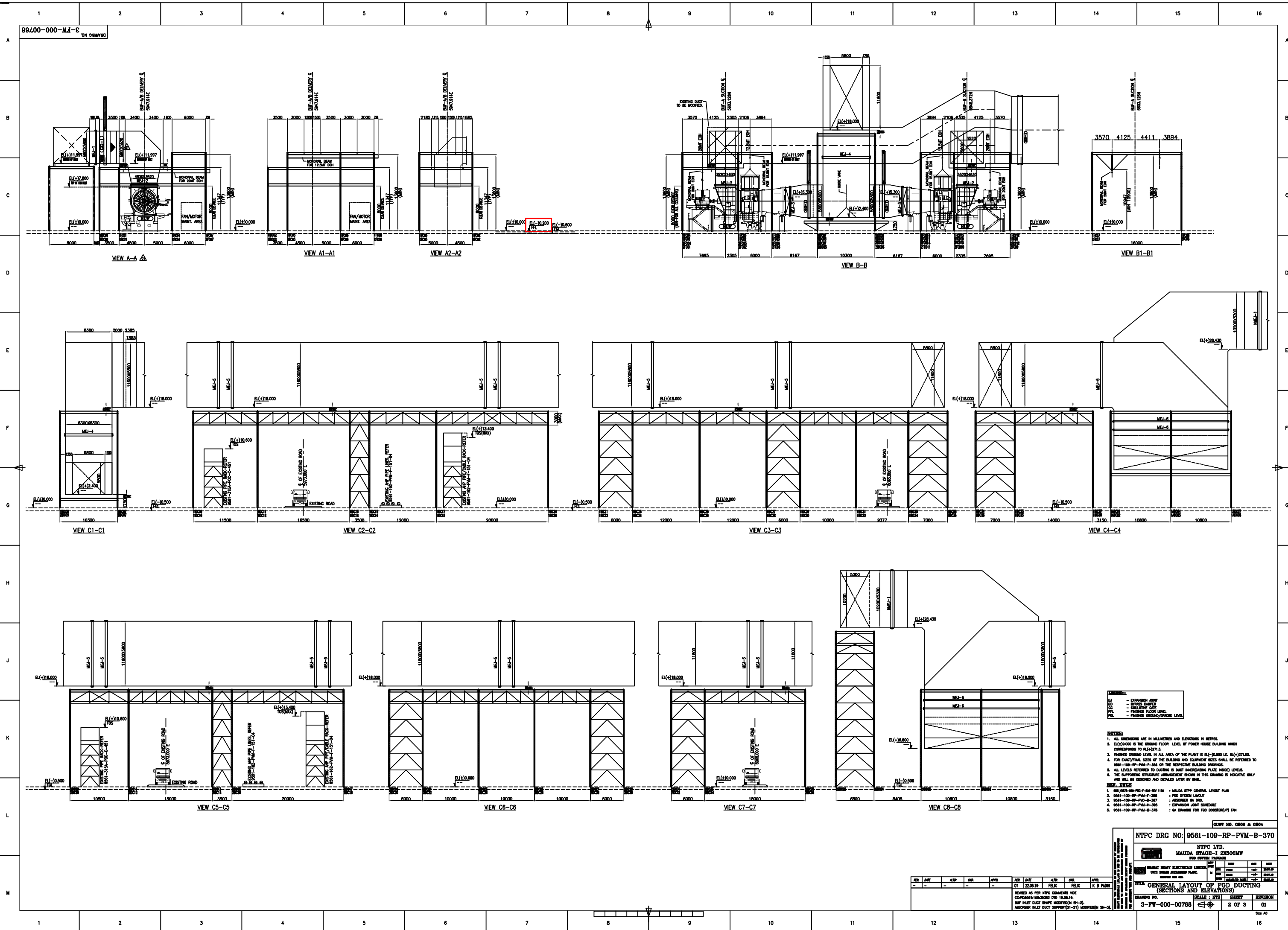
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.
UNIT: BOILER AUXILIARIES PLANT.
RANIPET - 632 406.

DRW. NO. 0-FW-260-02308

REV. DATE | **ALTERED (CHECKED)** | **SCALE** | **WEIGHT (KG.)** | **REF. TO ASST/OLD DRG.**

FILE | **DATE** | **BY** | **CHECKED** | **DATE** | **BY**



LEGEND:
EJ - EXPANSION JOINT
FD - FLOW DIRECTION
GCL - BUILDING OR GROUND LEVEL
FSL - FINISHED FLOOR LEVEL
FGL - FINISHED GROUND/RAISED LEVEL

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS.
2. EL(+30.000) IS THE GROUND FLOOR LEVEL OF POWER HOUSE BUILDING WHICH CORRESPONDS TO RL(+377.6).
3. FINISHED GROUND LEVEL IN ALL AREA OF THE PLANT IS EL(-30.000 I.E. RL(+271.0).
4. FOR EXACT/FINAL SIZES OF THE BUILDING AND EQUIPMENT SIZES SHALL BE REFERRED TO 8081-108-RP-PAM-7-386 OR THE RESPECTIVE BUILDING DRAWINGS.
5. ALL LEVELS REFERRED TO EXISTING IS DUCT INSPECTION/PLATE MARKING LEVELS.
6. THE SUPPORTING STRUCTURE ARRANGEMENT SHOWN IN THIS DRAWING IS INDICATIVE ONLY AND WILL BE DESIGNED AND DETAIL LATER BY SHEL.

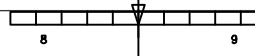
REF. DRAWINGS:
1. 8081-108-RP-PAM-7-386-REV 1183 : MAUDA STPP GENERAL LAYOUT PLAN
2. 8081-108-RP-PAM-7-386 : FGD SYSTEM LAYOUT
3. 8081-108-RP-PAM-8-387 : ASSEMBLER GA. ENCL.
4. 8081-108-RP-PAM-11-388 : EXPANSION JOINT SCHEDULE
5. 8081-108-RP-PAM-9-378 : GA DRAWING FOR FGD BOOSTER(S) FAN

CLIENT NO. 0808 & 0804
NTPC DRG NO: 9561-108-RP-PVM-B-370
NTPC LTD.
MAUDA STAGE-1 2X500MW
FGD SYSTEM PACKAGE

REV	DATE	BY	CHKD	APPV	REV	DATE	BY	CHKD	APPV
01	22.08.19	FELX	FELX	[Signature]					

SCALE: 1:500
SHEET: 2 OF 3
DRAWING NO. 3-FW-000-00788

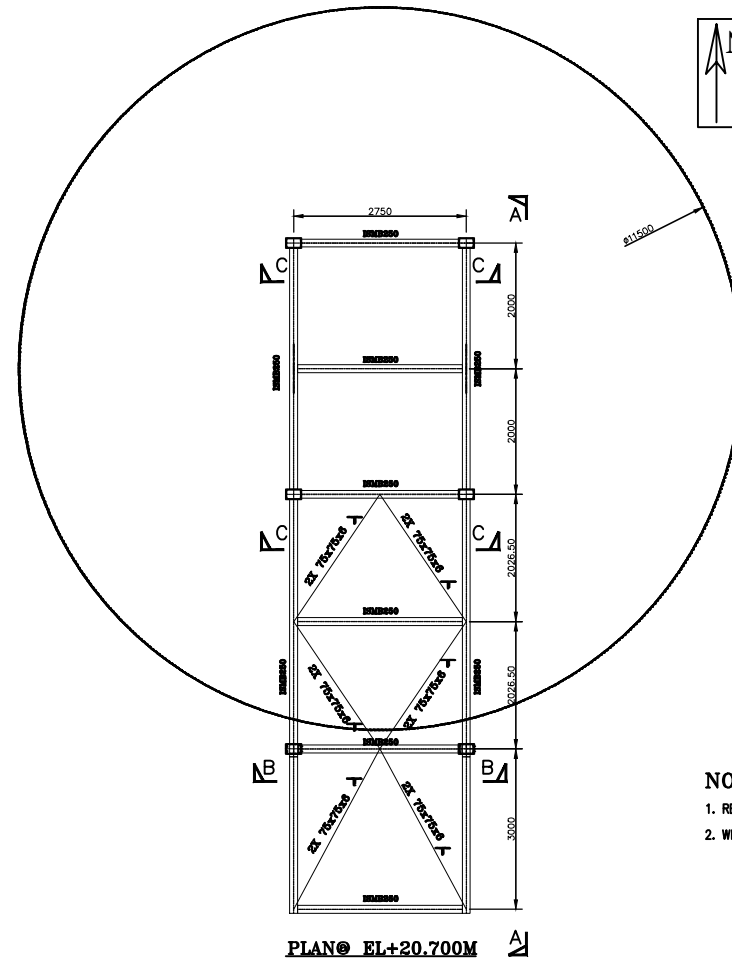
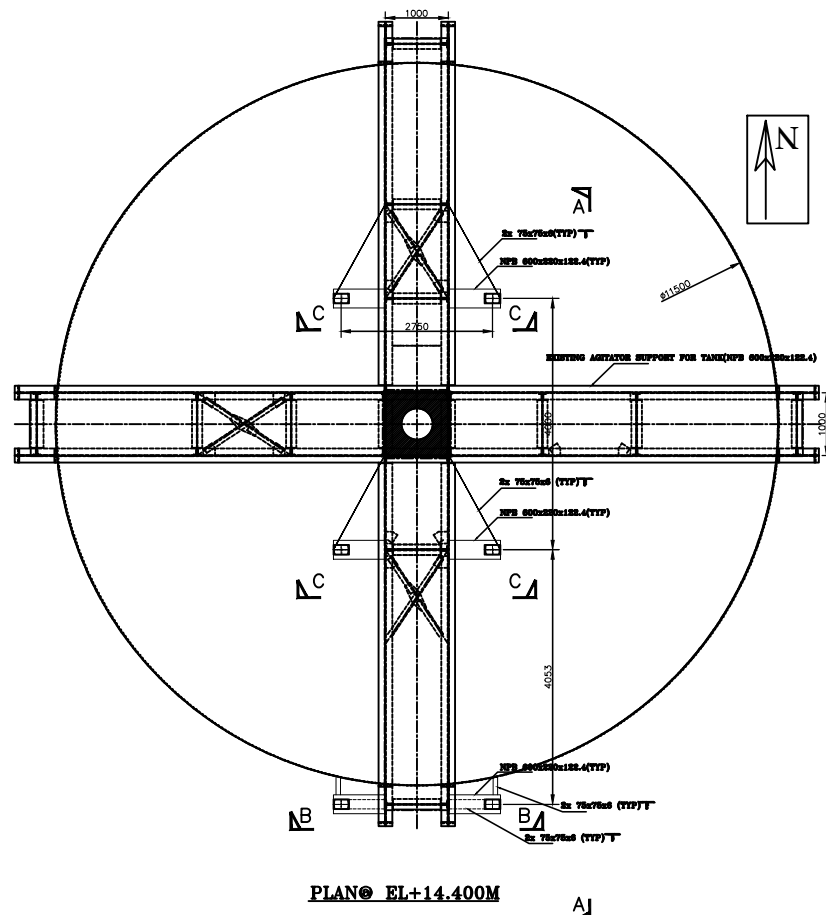
REVISIONS:
REVISED AS PER NTPC COMMENTS VICE COOPERATION/108-38283 DTD 19.08.19.
SUF INLET DUCT SHAPE MODIFIED(SH-2).
ASSEMBLER INLET DUCT SUPPORT(SH-3) MODIFIED(SH-3).



NTPC-MOUDA, ST-I , 2X500MW
 CUST NO: G503, G504
 AGITATOR HANDLING STRUCTURE
 PGMA: FW797

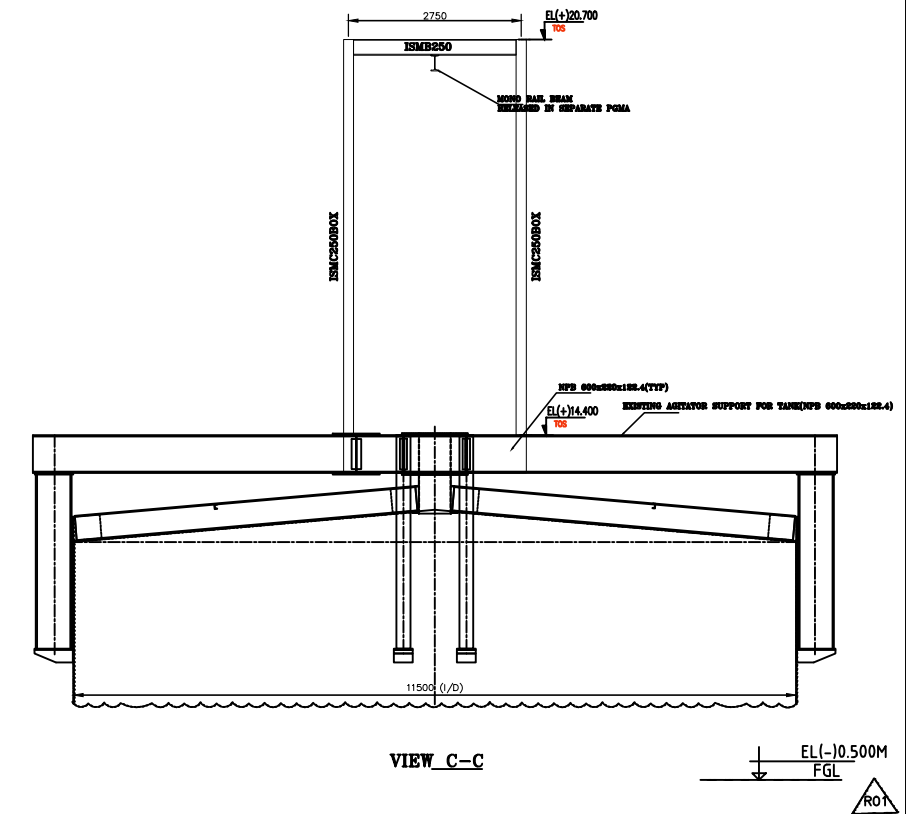
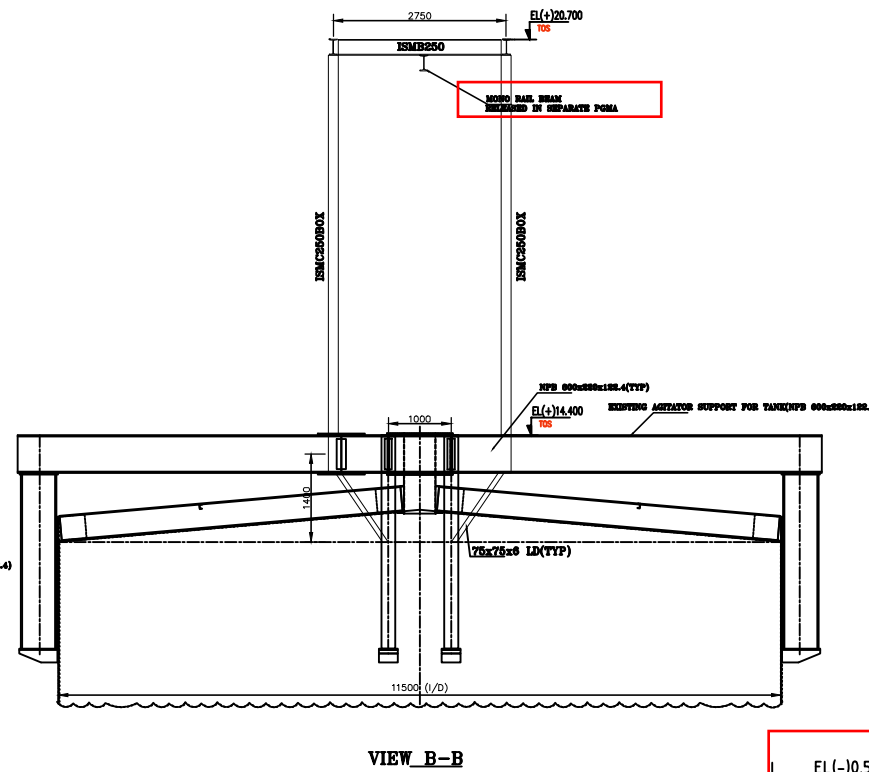
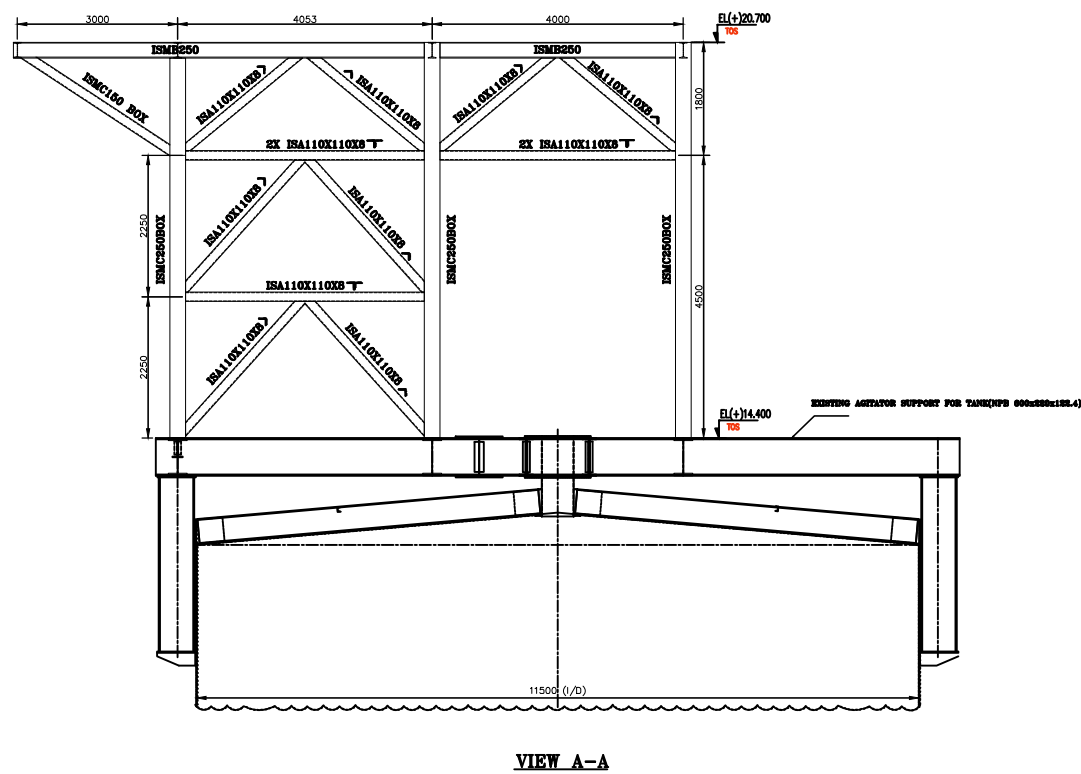
HOIST FOR AUXILIARY ABSORBENT TANK (ABT)

REV-01

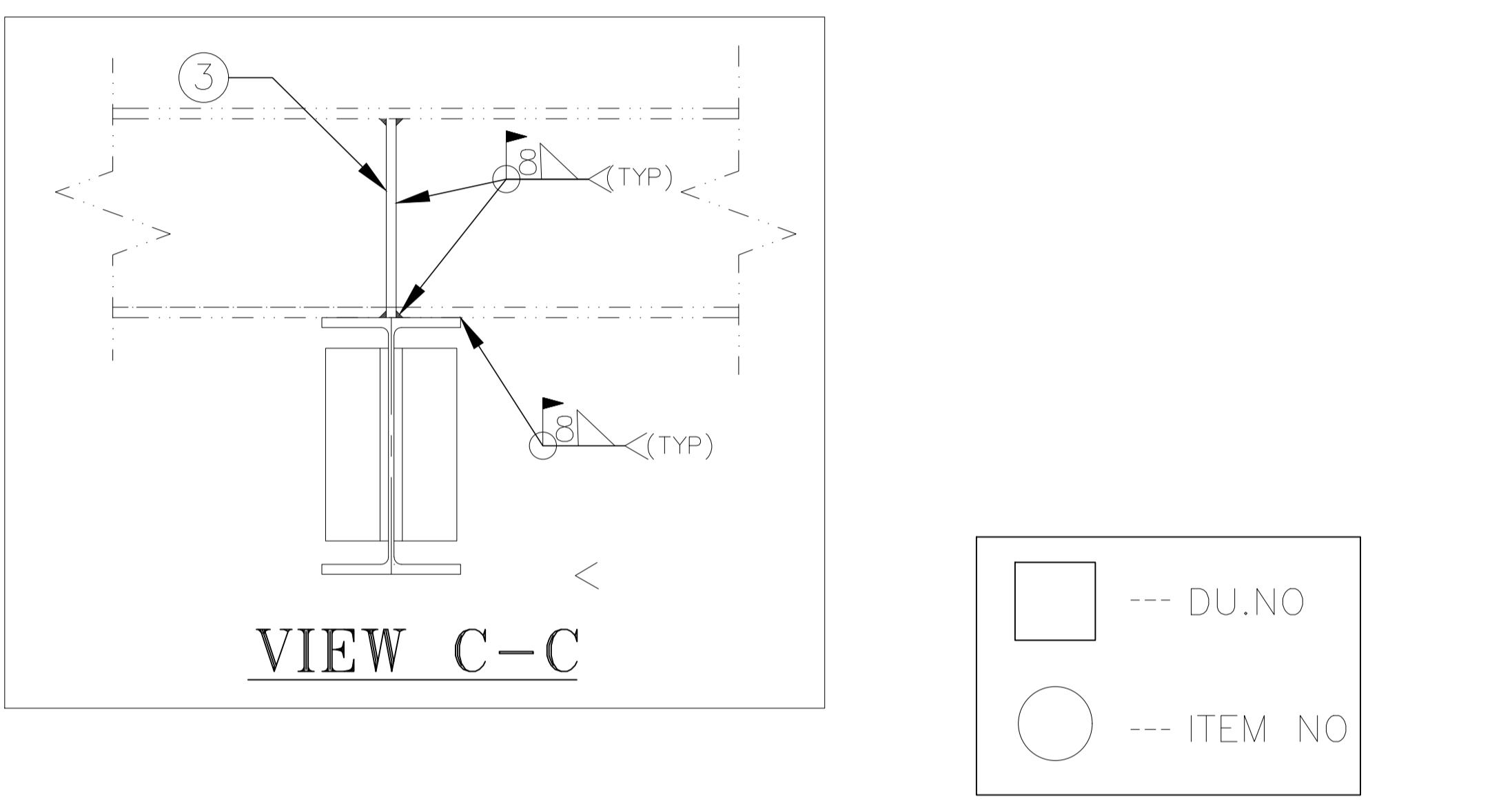
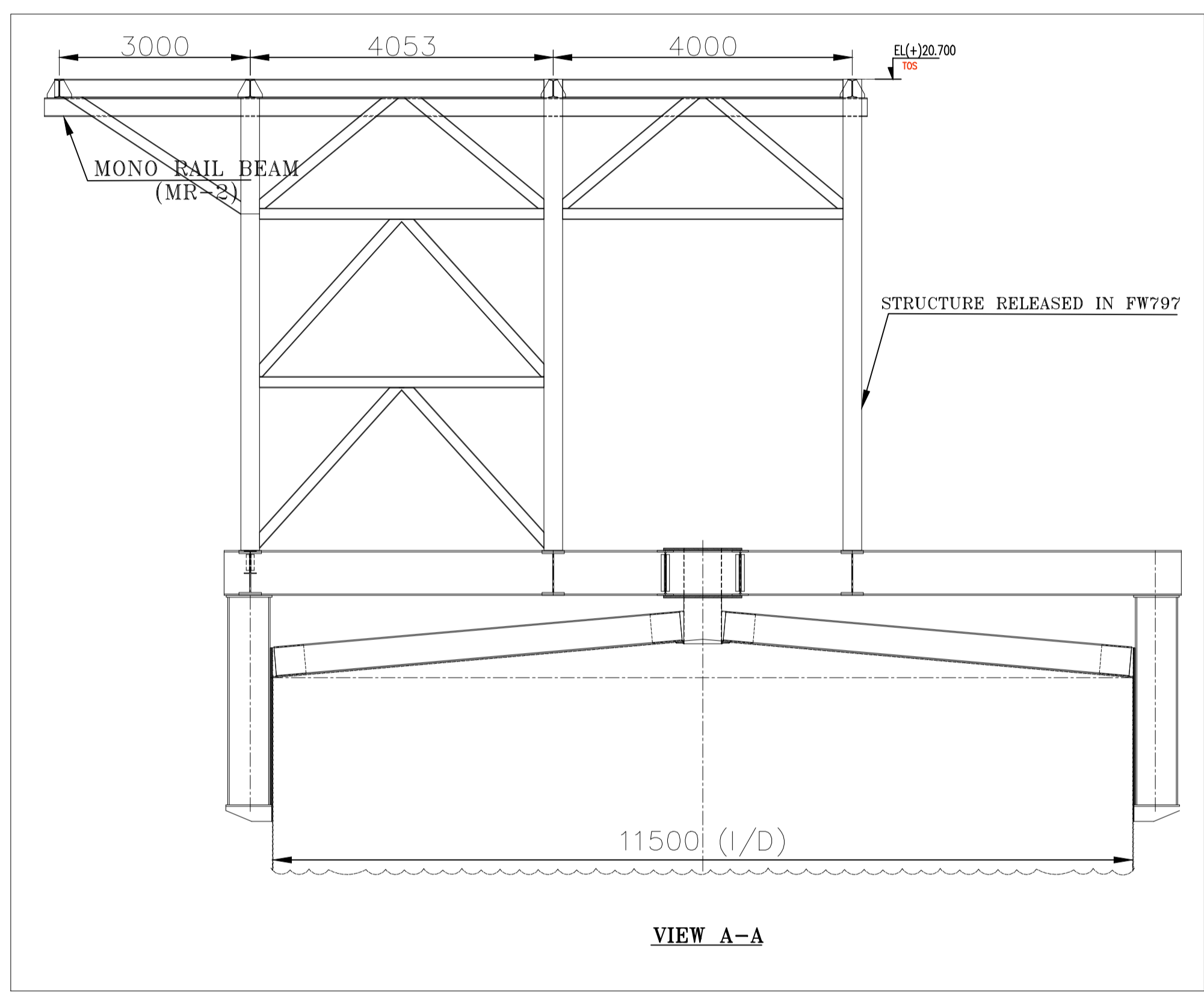
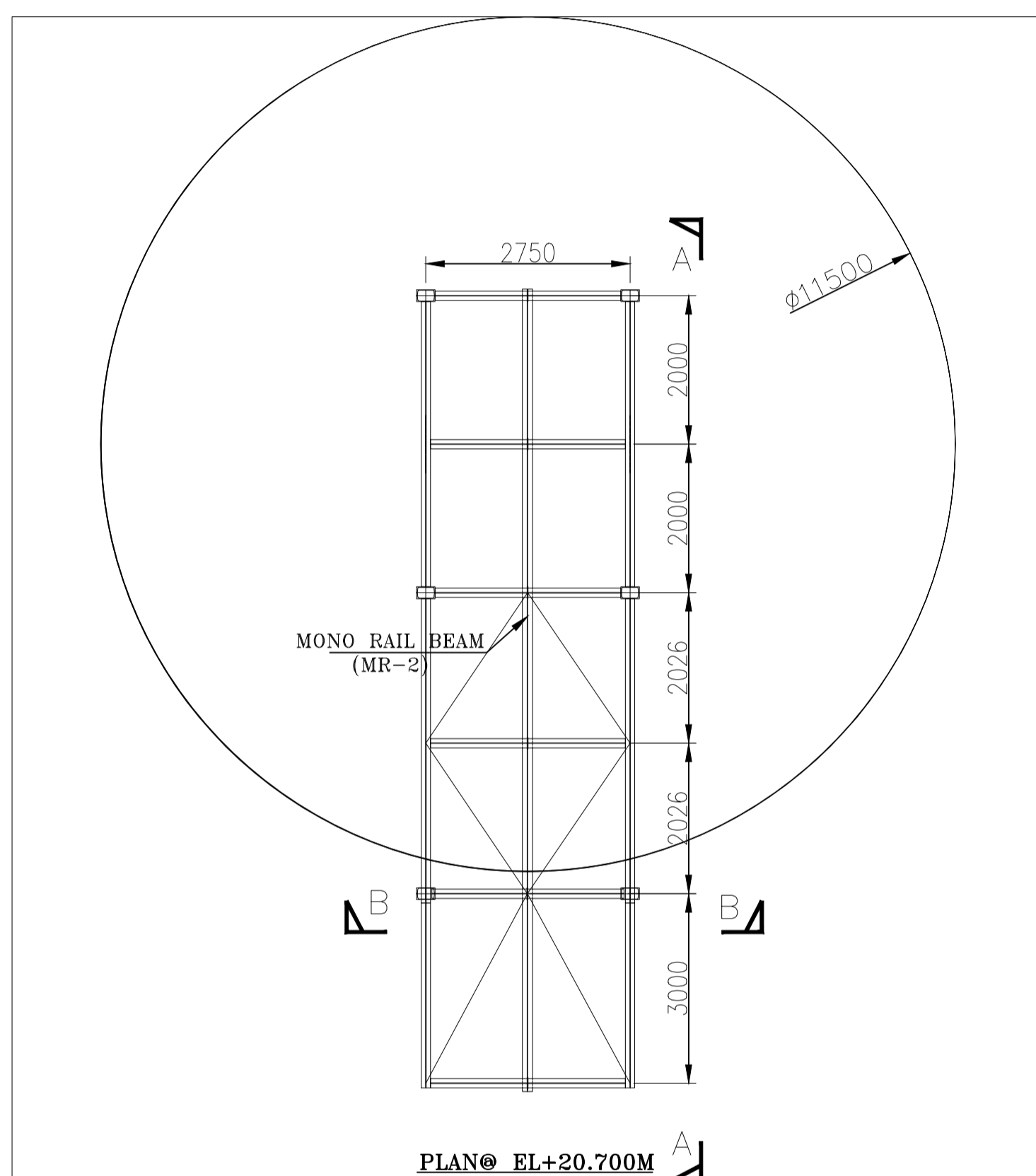
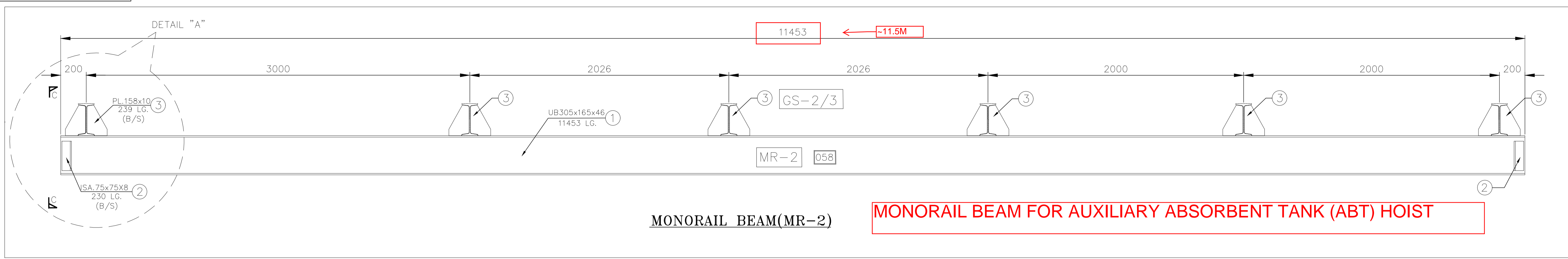


NOTES:-

1. REFR O-FW-721-01321 FOR AGITATOR SUPPORT FOR AUXILIARY ABSORBENT TANK
2. WHERE EVER THE STRUCTURE CONNECTED TO EXISTING MEMBER, WELDED CONNECTION SHALL BE PLANNED

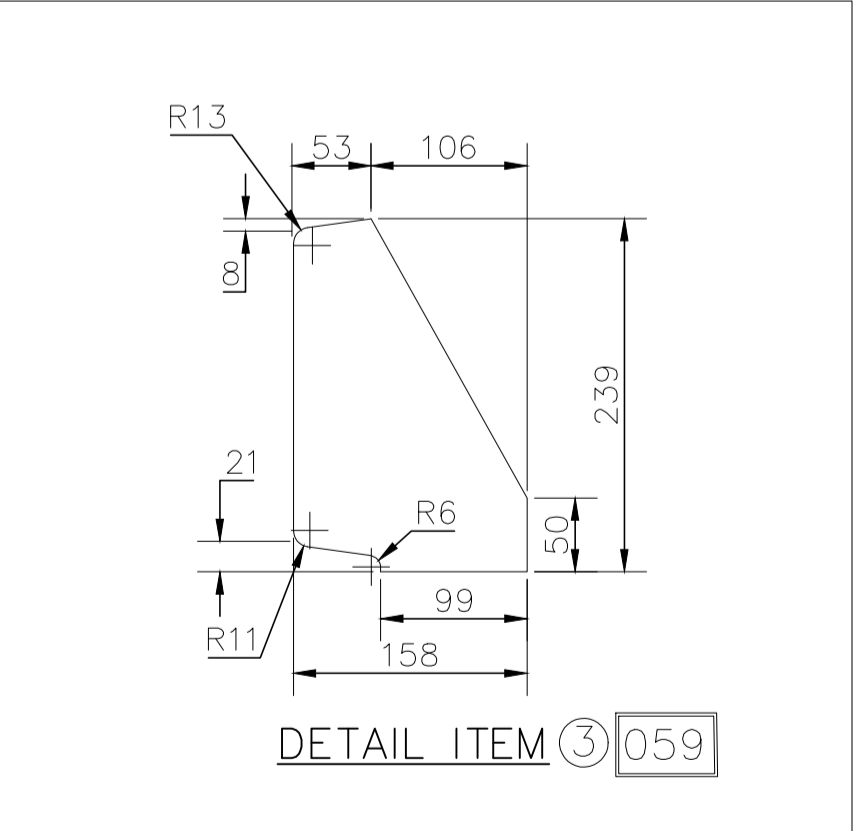
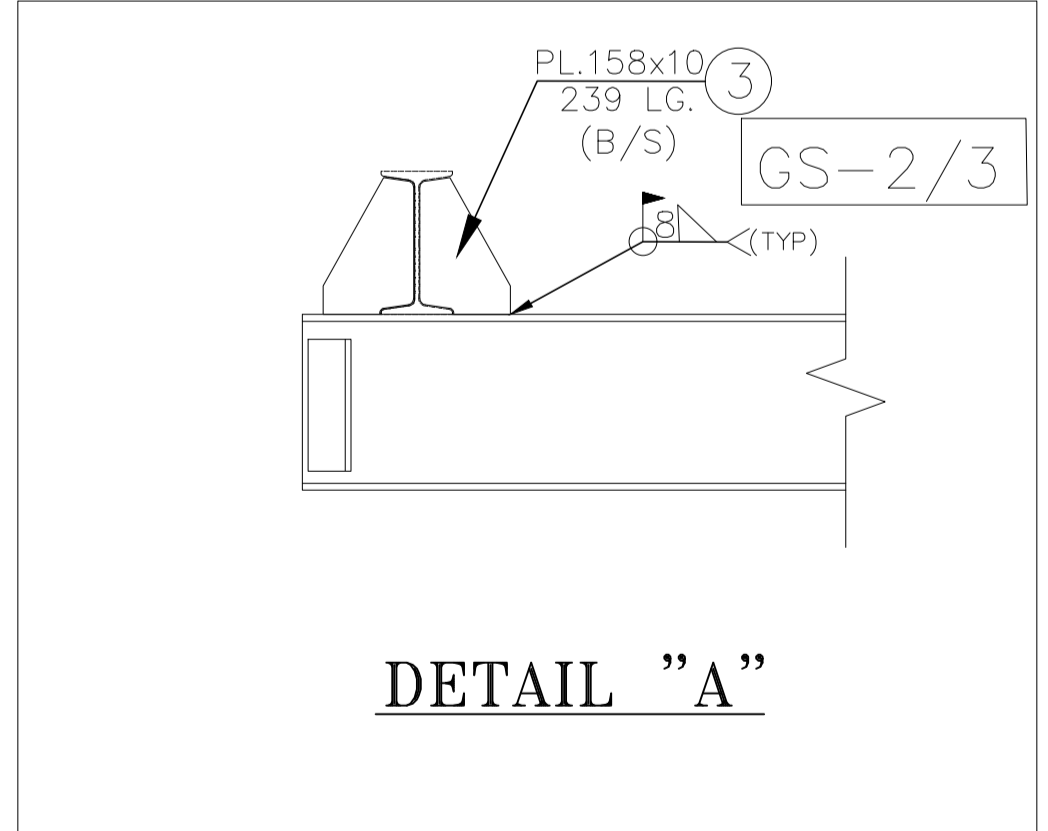
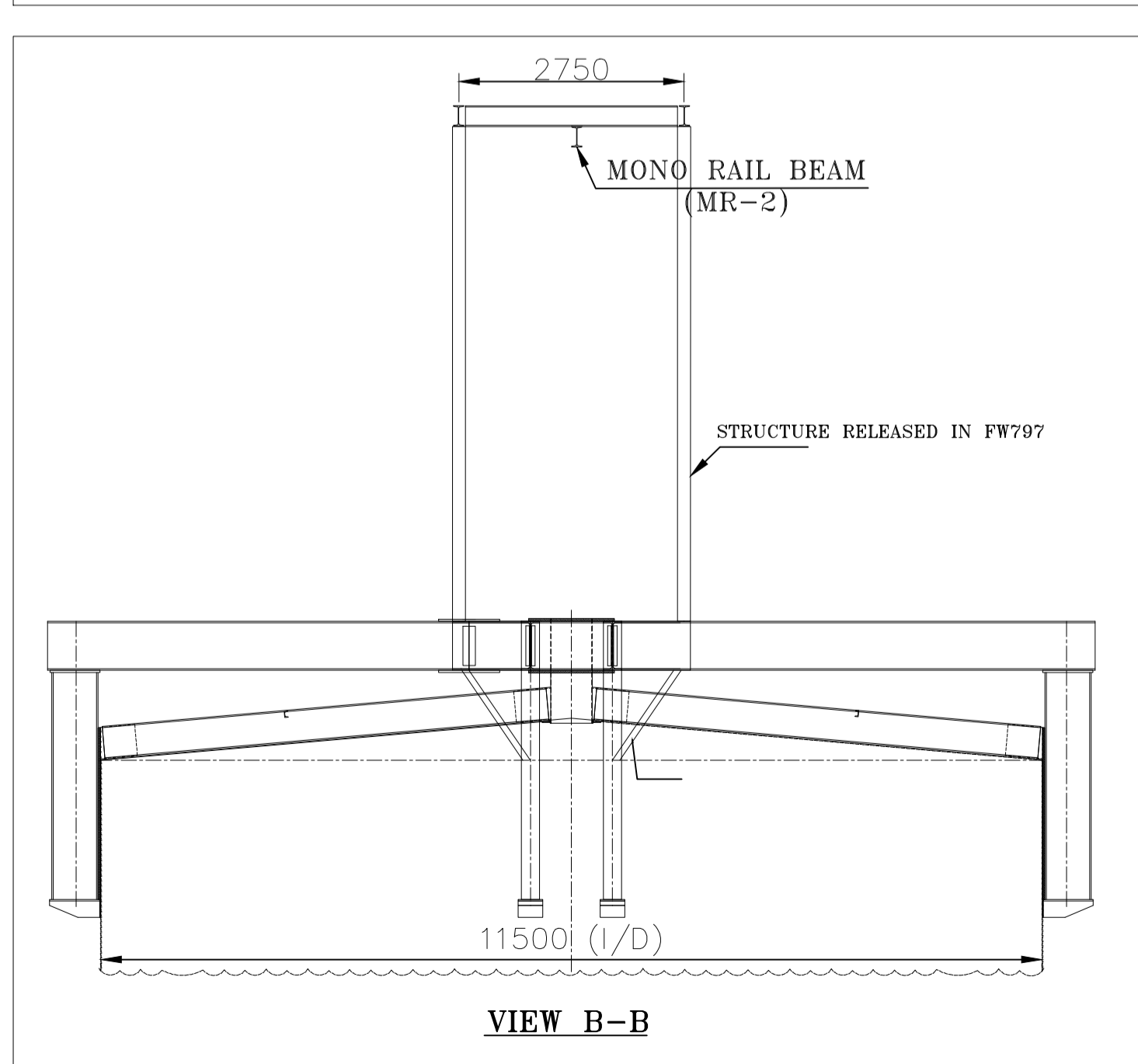


PREPARED : ARUN
 CHECKED : KSS
 APPROVED : KB PADHI



DU.NO	ITEM NO.	DESCRIPTION	STD	DRAWING NUMBER	VAR.NO	MATERIAL CODE	A/C/P	UNIT	QUANTITY	GS	ZONE
059	03	GUSSET (GS-2/3)		3-FW-710-06999				NO	2.1		
									12		
058	01	MONORAIL (MR-2)		3-FW-710-06999				NO	536.17		
									1		

BILL OF MATERIALS



- NOTES: -**
- ALL DIMENSIONS ARE IN MM. & LEVELS ARE IN M.
 - ALL MEMBERS AND GUSSETS PLATES TO BE CUT AFTER FULL SCALE SHOP LAYOUT BEFORE FABRICATION
 - ALL SHOP WELD ARE 8mm. THICK U.N.O.
 - STANDARD FABRICATION NOTES IN DRAWING NO: 4-00-000-32487 TO BE FOLLOWED

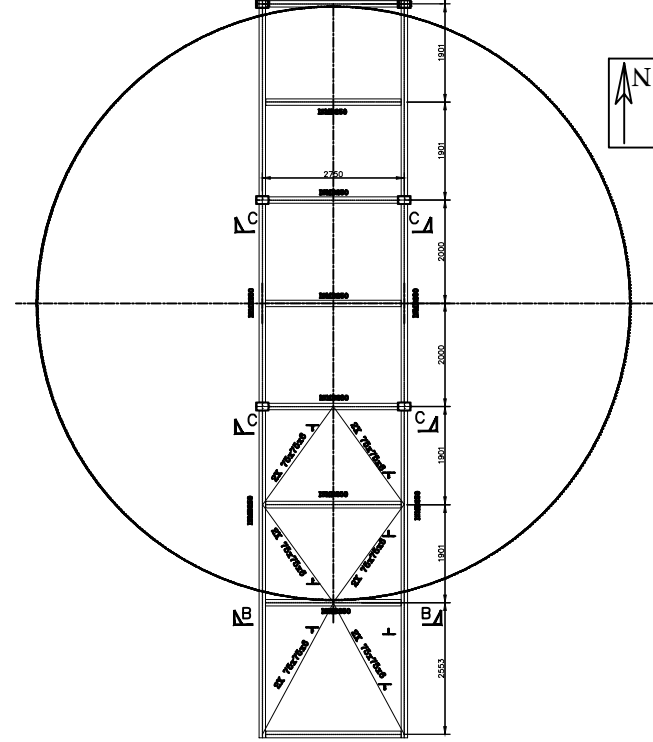
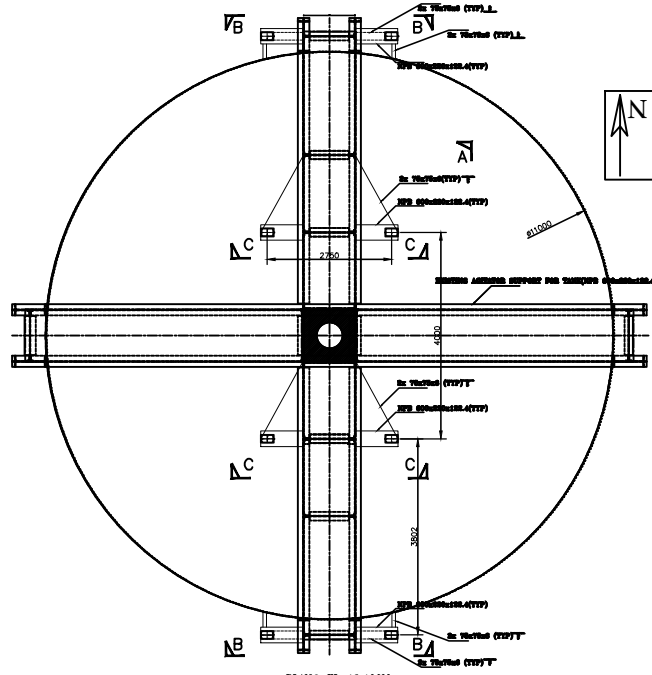
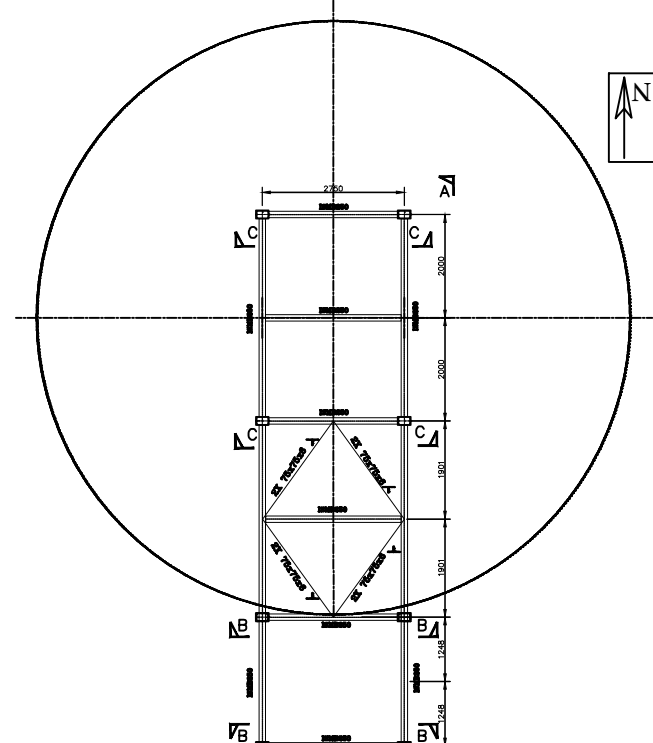
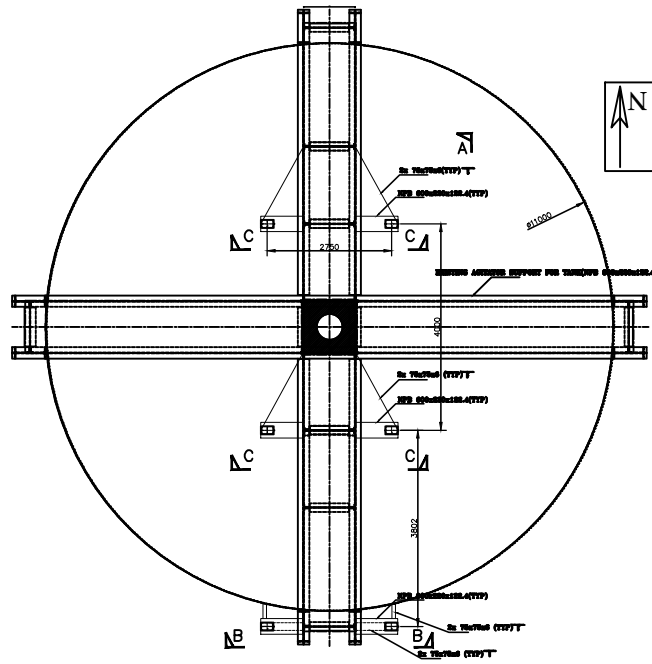
CAUTION: The information on this drawing is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the prior written consent of this company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME SIGN DATE		NO OF VAR.	
 BHARAT HEAVY ELECTRICALS LTD. UNIT: BOILER AUXILIARIES PLANT. RANIPET - 632 406.		DRN M.K.NAHAK		15.09.2021		15.09.2021	
DEPT AGES GRADE OF CODE 862 PR QA 500		SCALE NTS		WEIGHT (KG)		REF. TO ASSY/OLD DRG	
TITLE MONORAIL BEAM (AUXILIARY ABSORBENT TANK)		CARD DRAWING NO. U 01		CODE U 01		REV 1-FW-710-09232 00	

REV	DATE	ALTERED	CHECKED
ZONE			

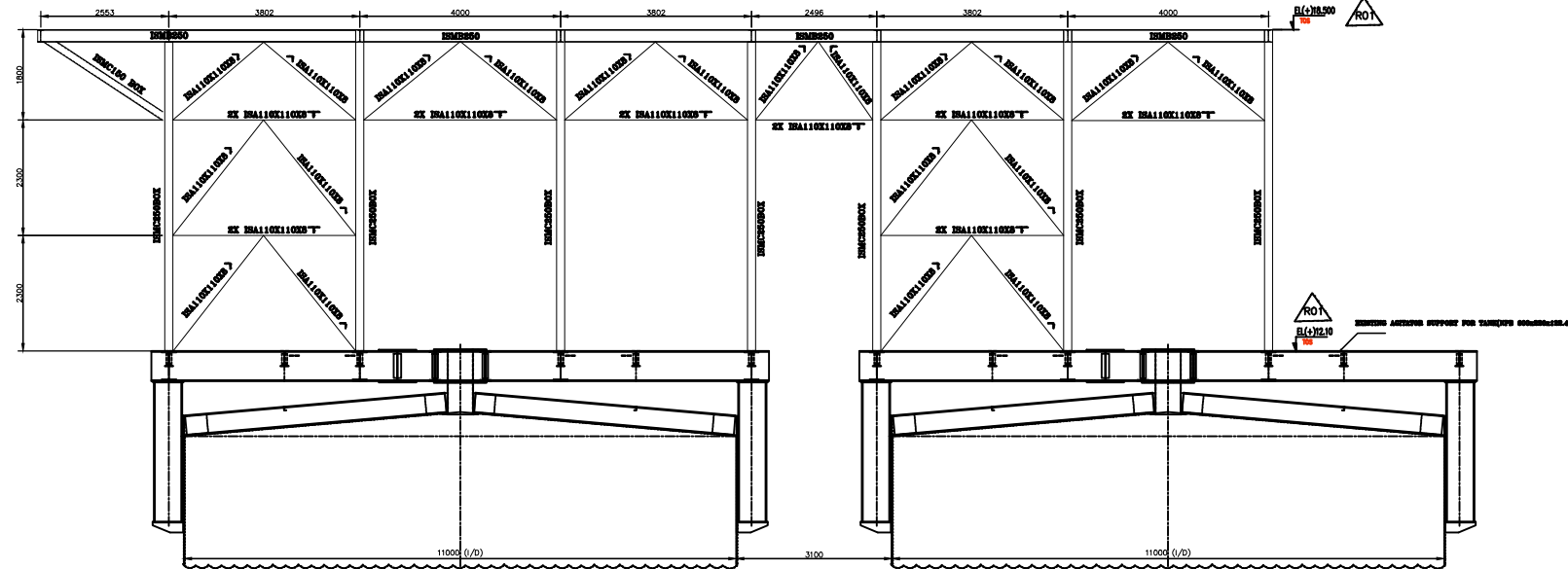
NTPC-MOUDA, ST-I , 2X500MW
 CUST NO: G503, G504
 AGITATOR HANDLING STRUCTURE
 PGMA: FW797

HOIST FOR LIMESTONE SLURRY STORAGE TANK

PAGE 02 OF 04
 REV-01
 DATE:04.09.2021

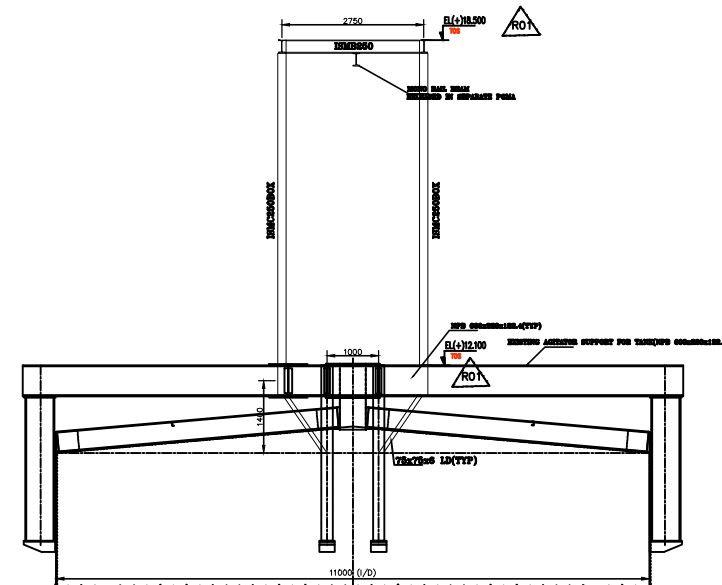


NOTES:-
 1. REFER O-FW-721-01316 FOR AGITATOR SUPPORT FOR LIMESTONE SLURRY STORAGE TANK
 2. WHERE EVER THE STRUCTURE CONNECTED TO EXISTING MEMBER, WELDED CONNECTION SHALL BE PLANNED



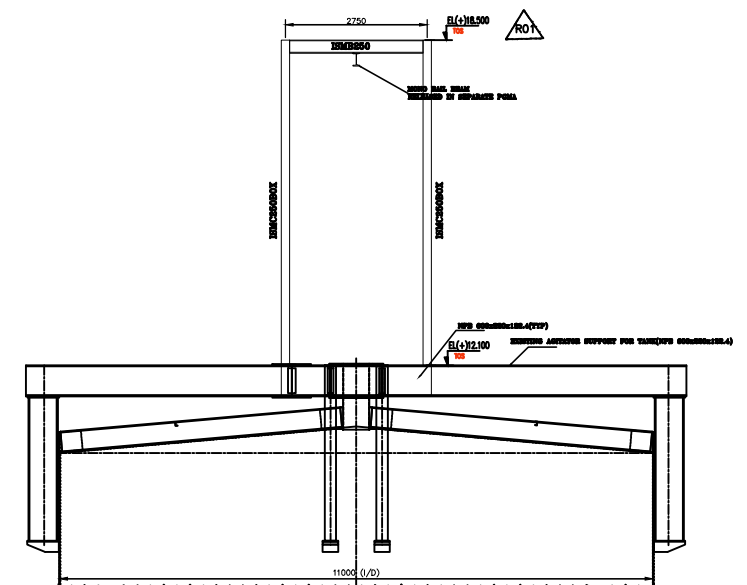
VIEW A-A

EL(-12.500M)
 FGL



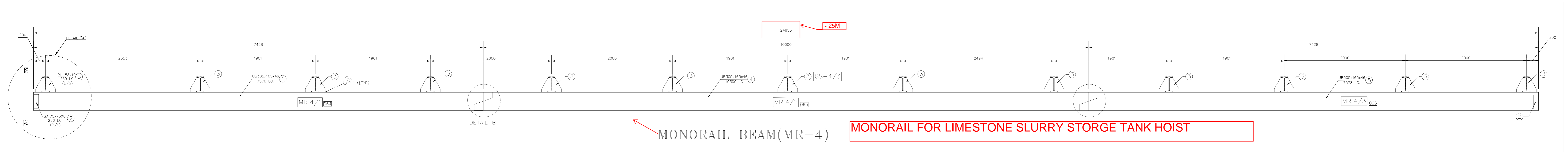
VIEW B-B

EL(-12.500M)
 FGL

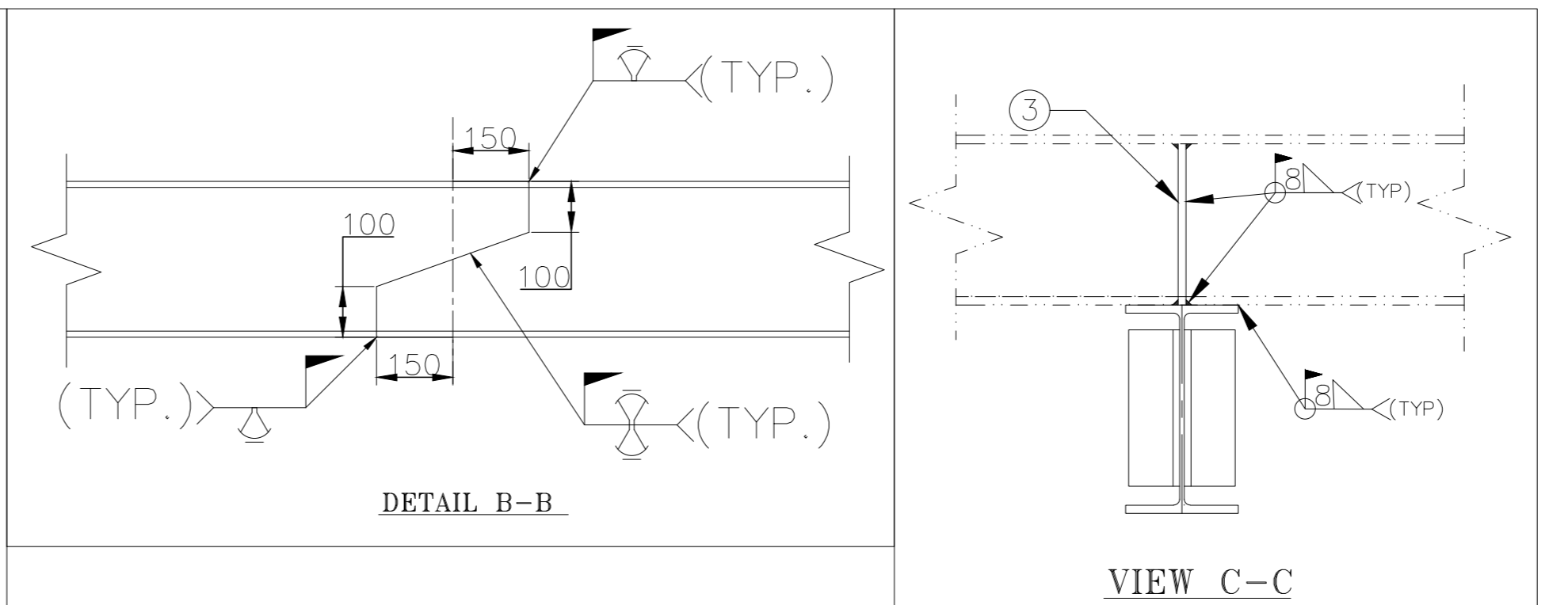
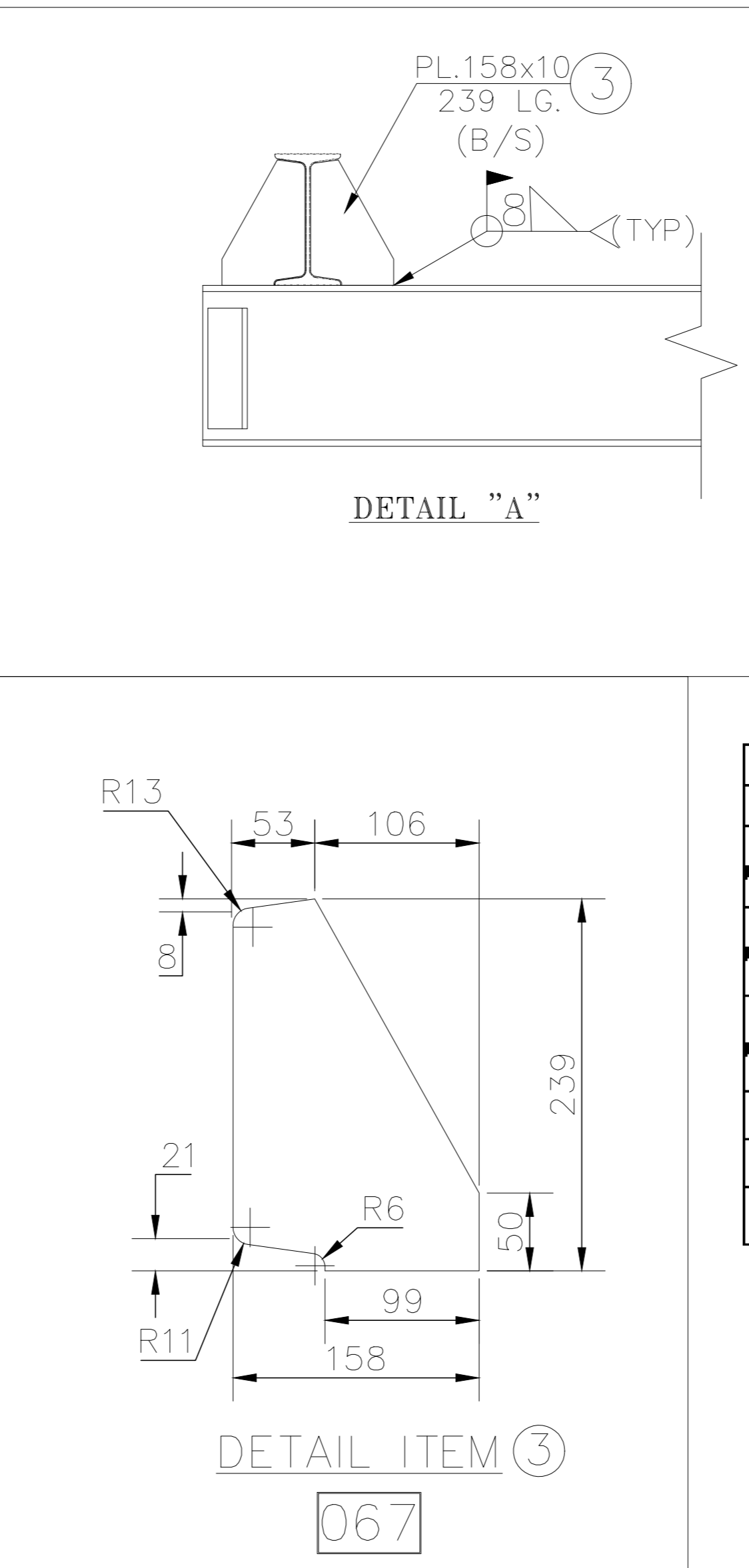
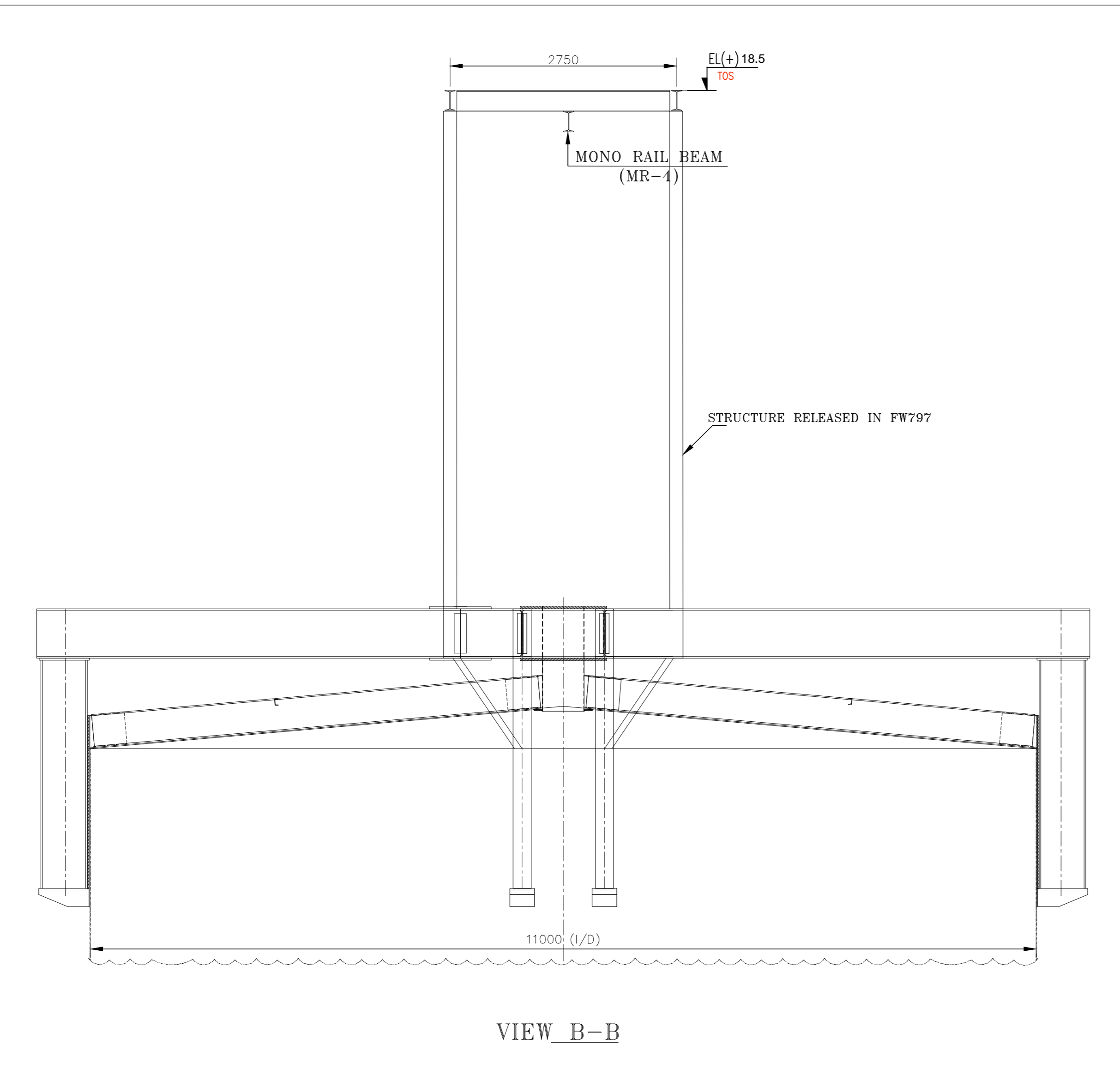
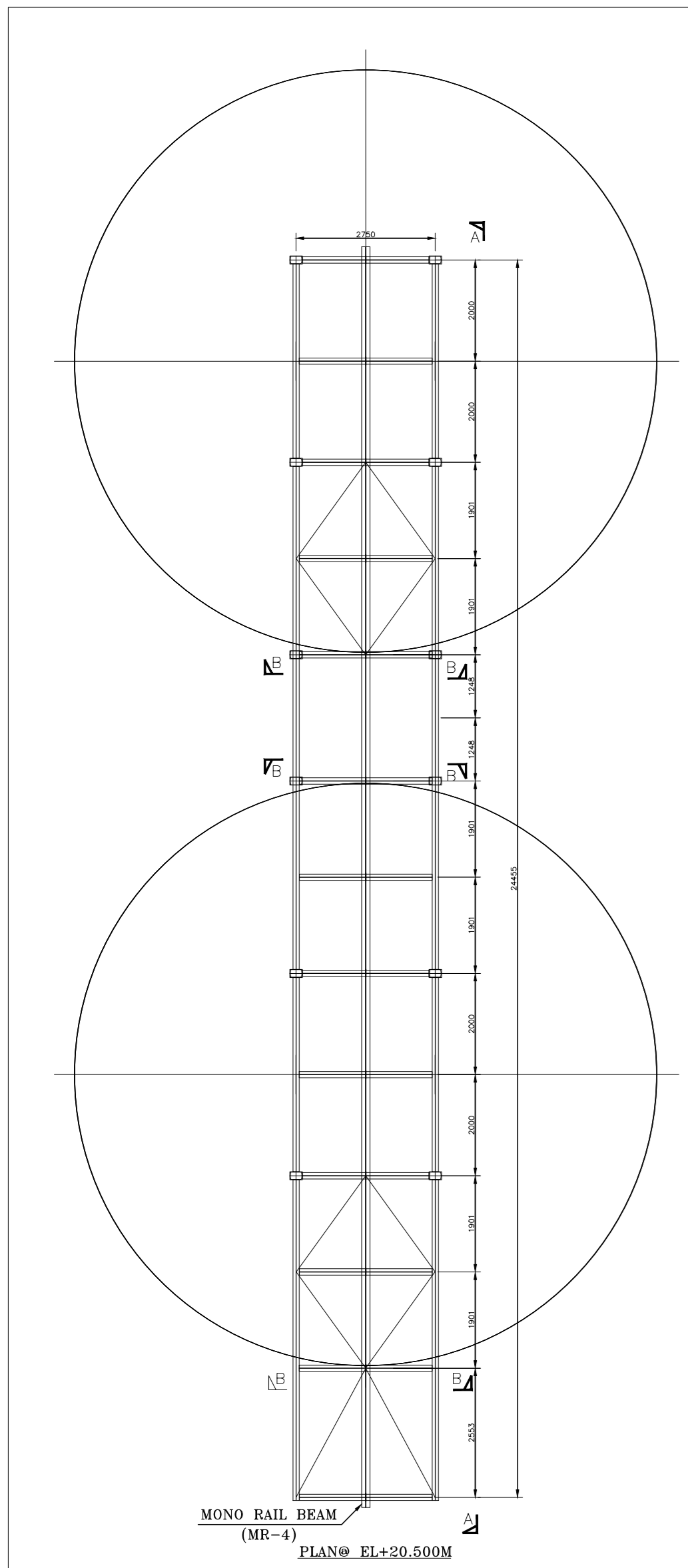


VIEW C-C

EL(-12.500M)
 FGL

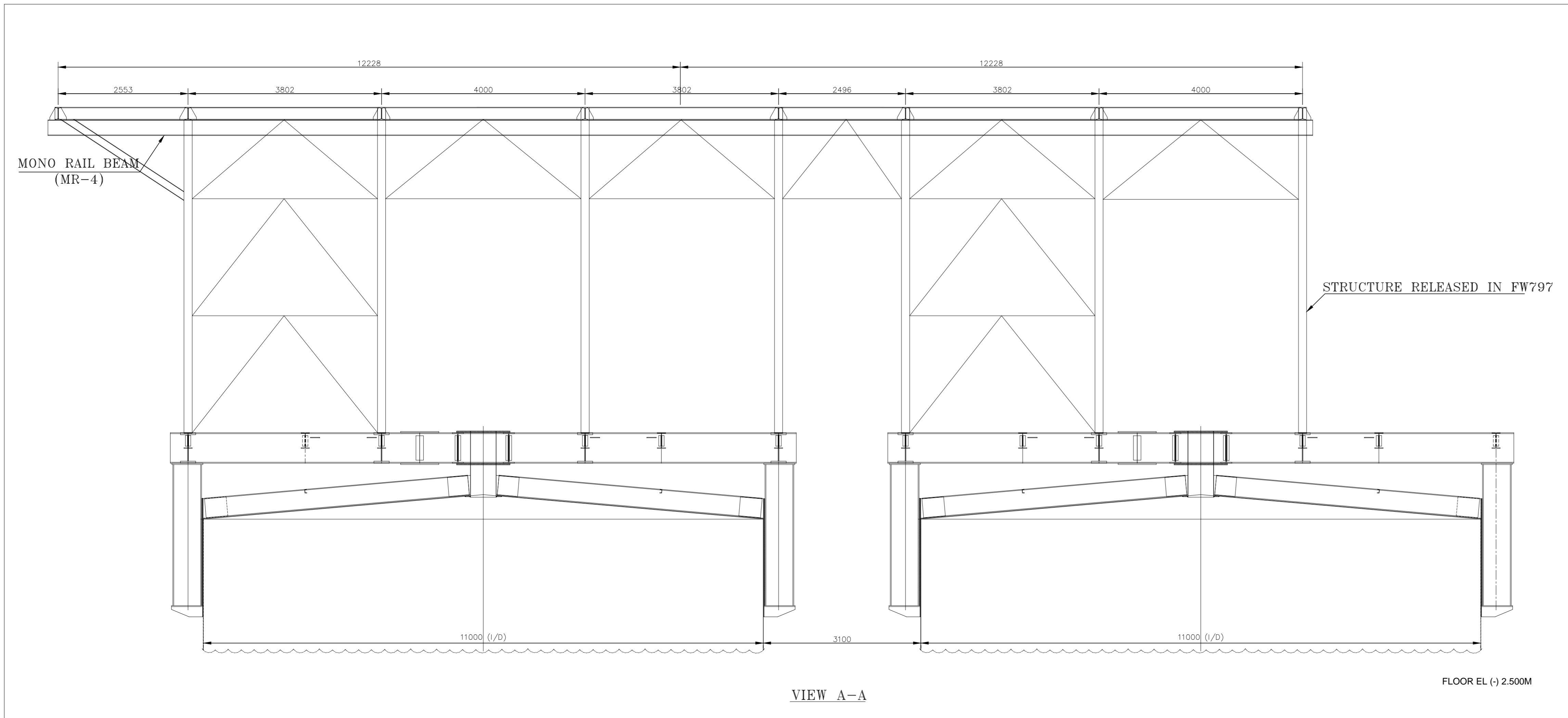
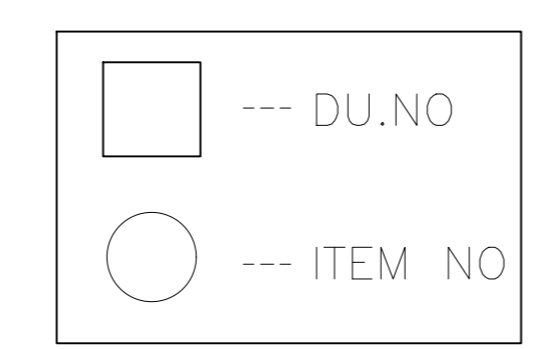


MONORAIL BEAM(MR-4) **MONORAIL FOR LIMESTONE SLURRY STORAGE TANK HOIST**



DU.NO	ITEM NO.	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNITWEIGH	GS	ZONE
	067	GUSSET -(GS4/3)		3-FW-710-07001				NO	2.1		
	066	MONORAIL (MR-4/3)		3-FW-710-07001				NO	346.52		
	065	MONORAIL (MR-4/2)		3-FW-710-07001				NO	461		
	064	MONORAIL (MR-4/1)		3-FW-710-07001				NO	346.52		

BILL OF MATERIALS



- NOTES: -**
1. ALL DIMENSIONS ARE IN MM. & LEVELS ARE IN M.
 2. ALL MEMBERS AND GUSSETS PLATES TO BE CUT AFTER FULL SCALE SHOP LAYOUT BEFORE FABRICATION
 3. ALL SHOP WELD ARE 8mm. THICK U.N.O.
 4. STANDARD FABRICATION NOTES IN DRAWING NO: 4-00-000-32487 TO BE FOLLOWED

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		NAME		DATE	NO OF
BHARAT HEAVY ELECTRICALS LTD.		BHARAT HEAVY ELECTRICALS LTD.		15.09.2021	1
UNIT: BOILER AUXILIARIES PLANT		UNIT: BOILER AUXILIARIES PLANT		15.09.2021	1
PROJECT: 4-00-000-32487		PROJECT: 4-00-000-32487		15.09.2021	1
DEPT	APPC	GRADE OF	SCALE	WEIGHT	REF TO ASSY/OLD DRG
001	001	SR. ASST. ENGR.	1:1	1000	
TITLE		MONORAIL BEAM		DRAWING NO	
(AGITATOR SUPPORT FOR LIMESTONE SLURRY STORAGE TANK)		U 01		0-FW-710-06927	
REV	DATE	ALTERED	CHECKED	BY	NO OF
					1

Annexure to Enquiry no:		Date	##Specific confirmations by the manufacture
Sl.No	BHEL / Customer Requirement		
1	Quality Plan Requirement:		
1a	MQP (Manuafcutering Quality Plan) shall be submitted in attached format for BHEL/Customer review & approval. Typical MQP is attached for indicative purposes for guidance & use.		
1b	MQP shall invariably cover w.r.t Inward inspection including on Raw materail Procurement, In process and Final inspection in elaborated way/details.		
1c	Bidder shall also to give specific confirmation that on need basis, their competent officials shall visit to BHEL/customer for finalization of Quality plan including test procedure/methodology during preaward / post award approval / detailed engineering in the event of an order.		
1d	No deviation on BHEL/Customer approved MQP is acceptable.		
1e	Bidder shall agree to submit all cross referred documents other than codes/standrads to BHEL/Customer/Consultant.		
2	Important Notes shall be included in MQP : (a) Latest revision of Standard s & Specification shall apply. Only International Standards are applicable. Indian & Chinese Standards are not applicable. (b) Materials shall be procured in compliance to Functional Technical Specification. (c) Inspection shall be in compliance with Approved Quality Control Procedure for the Product. (d) NDT shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V. (e) Gauges and measuring Instruments, with valid calibration only shall be used. (f) Cleaning and Painting of products shall be carried out as per Approved Painting Schedule. (g) Finished Products shall be packed to comply with Approved Packing Schedule. (h) Welding shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V.		
3	Domestic / Inland Inspection will be carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable). "The inspection charges at actuals incurred by BHEL will be loaded to compare with foreign suppliers".		
4	Inspection Agency for Foreign Bidders and also for Indian Bidder but importing from Forgign Sources: (1) Any one of the flollowing Third Party Inspection Agency (TPIA) shall be appointed by the bidder and same shall be furnished by the bidder in techno commercial bid itself. (2) The details of TPIA with contact details like Name of the official, Phone no, Email id shall also to be submitted during pre/post award. However cost for such inspection agency shall be borne by the bidder only. Inspection charges for such inspection agency shall be indicated separately so that if BHEL/Customer is undertaking the inspection by on their own , then these charges non claimable by the bidder. List of TPIA (1). M/s Bureau Veritas, (2). M/s TUV-Nord, (3). M/s TUV-SUD, (4). M/s TUV Rheinland, (5). M/s Lloyds Register, (6). M/s SGS, (7). M/s Germanischer Lloyds, (8). M/s QUEST, (9). M/s Certification Engineers International, (10). M/s Intertek, (11). M/s IR Class Systems and Solutions, (12). M/s DNV, (13). M/s Fichtner, (14). M/s ABS Inspection Services.		
5	Stage Inspection during manufacturing Process : Stage Inspection during manufacturing shall be carried out as per approved quality plan and all necessary documents shall be provided for review,verification and clearanace for further processing. This inspection call shall be given well in advance (atleast 2 weeks before) to TPI/Bidder's own inspection agency to avoid delay in the manufacturing processes.		
6	Inspection before despatch for domestic supplier : Inspection before despatch at supplier's works shall be carried out by BHEL/BHEL appointed Inspection agency. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet .		

Sl.No	BHEL / Customer Requirement	##Specific confirmations by the manufacture
7	<p>Inspection at Foreign Source/Supplier: (a) As in sl no: 3. shall be ensured without fail, (b) No materail / items shall be despatched without getting the written communication from BHEL / Customer inspection carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable). (c) Inspection before despatch at supplier's works shall be carried out by bidder appointed inspection agencies having international presence at vendors and or vendor's sub vendor works. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet by TPIA mentioned in Sl no: 03 at supplier's cost.</p>	
8	<p>Painting shall be done strictly as per BHEL/Customer approved painting schedule / scheme only. Paint Thickness / Paint shade shall be ensured as per BHEL / Customer approved painting schedule / specification / data sheet etc. No deviation is acceptable unless otherwise accepted by BHEL/Customer in writing. Any conflict if any among BHEL / Customer approved painting schedule / Spec / data sheet etc shall be brought to the notice to BHEL well in advance before proceding including the BOI being procured for assy / skid like motors etc</p>	
9	<p>Specific conformation for document package in the event of an order (2 Hard copies & soft copy in PDF file) is to be given containing the following with proper linkages (i) Index Sheet, (ii) MQP/RQP/Endorsement Sheet (As applicable), (iii) TCs identified by BHEL/ Customer for record for "CHP" / "W" and Verification portion ("V") as given in approved QP, (iv) Final inspection report + TC including Chemical + Mechnaical + HT + NDT etc, (v) Third party Inspection report + TC, (vi) Customer CHP/ MDCC, (vii) Type test / Performance Test reports conducted, (viii) Type test / Performance Test approval/ clearance obtained from BHEL/Customer, (ix) BOM with As Build Drgs with actual make / rating used with BHEL/customer approved drawings.</p>	
10	<p>Packing / Seaworthy Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care tarnsit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.</p>	
10	<p>Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care tarnsit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.</p>	
11	<p>Outsourcing of test facilities: Bidder shall ensure all the testing facilities in house. However If any of the test facilities are not available with successful bidder, then bidder shall ensure the same at NABL accreadted third party lab / Govt / Govt Lab for major testing such as NDT, Electrical & Mechanical testing.</p>	
12	<p>Important Note: No deviation on the above requirement 01 to 11 is acceptable w.r.t Quality Requirement and those offers not meeting these specific customer requirement is liable for rejection and hence the bidder shall submit all the required documentary evidances in the offer itself.</p>	
13	<p>## Necessorily to be filled up by the bidder at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirement being customer specific requirement.</p>	

955767/2022/BAP-QA_MECH

PROJECT: NTPC Mouda 2 X 500MW (BHEL WO no: G503 & G504)		CONTRACT QUALITY REQUIREMENTS (CQR) for ELECTRICALLY OPERATED HOISTS used in FGD APPLICATION		DOC.NO: BAP/QR/ G503, G504/ Mouda/ EOH 001 Rev NO.: 00 PAGE : Page 1 of 1 DATE: 22.07.2022		##Enquiry No: ## Supplier Name & Address: ##Offer reference: ##Date: Contact Official Name: Mobile no: Email id:	
CONTRACT NO: CS-9561-109(1B)-9-FC-NOA-6722		NTPC Mouda 2 X 500MW (BHEL WO no: G503 & G504)					
PACKAGE: FGD PACKAGE MAIN CONTRACTOR: BHEL - RANIPET SUB CONTRACTOR & ADDRESS: (To be filled by VENDOR)							
Sl. NO.	DESCRIPTION	BHEL/NTPC Requirements				##Specific confirmations by the vendor	

ITEM: ELECTRICALLY OPERATED HOISTS

01	Quality plan Requirement	Vendor shall confirm to meet the requirement of SQP ref no. SQP QP No. 0000-999-QOM-S-053 Rev 00 dt 05.04.2013 and arrange to submit the SQP duly endorsed (signature and stamp) in all pages along with duly filled in Endorsement sheet for accepting the QAP in totality in the event of Purchase Order.	
02	Type test requirements	Vendor shall confirm for successful conduction & completion of all the tests & type tests if any as indicated in the attached SQP ref no. SQP QP No. 0000-999-QOM-S-053 Rev 00 dt 05.04.2013.	
05	Inspection Methodology	BHEL/BHEL AIA and Ultimate customer NTPC Inspection as per this SQP is must before dispatch. NTPC Inspection Not Applicable No material shall be dispatched without BHEL/Ultime Customer NTPC, inspection with required CHP/MDCC clearances.	
06	For inspection call	To raise inspection call by BHEL/BHEL AIA inspection including for type test witnessing, vendor is requested to contact Mr M S Aditya Chakravarthy, Manager (QC-Proc)., Mobile no: +91 9489202788., Email id: msachakravarthy@bhel.in and Mr Zeeshan Ali, DM (QC-Proc)., Mobile no: +91 9443149691., Email id: zeeshan@bhel.in for inspection related activities for immediate response / resolution.	
07	Packing	Required Packing & preservation shall also to be ensured as per requirements stipulated in Engg spec / drg / data sheet/PO condition to avoid any damage during transit., handling damages & storage at site.	
08	Painting	Paint color and coating thickness to be ensured as per requirements stipulated in Engg spec / drg / data sheet.	
09	Document package	Specific confirmation for Document Package in the event of an order (2 hard copies + 2 CDs in PDF file) is to be given containing the following with proper linkages (.) (i) Index Sheet (ii) SQP (iii) TCs identified by BHEL/NTPC for record for "CHP" and Verification portion as given in. (iv) Final Inspection Report + all applicable Test Certificates (v) BHEL/BHEL authorized Inspection Agency report + TC (vi) Type test reports conducted/submitted with approval (vii) NTPC CHP/MDCC	

##Supplier signature with seal

Necessarily to be filled up by the vendor at the time of offer itself otherwise their offer may not be considered w.r.t Quality Requirements being customer specific requirements.

955767/2022/BAP-QA MECH

ENDORSEMENT SHEET FOR QP
REFERENCE / STANDARD / FIELD QUALITY PLAN (RQP/ SQP/RFQP/SFQP)

TO BE FILLED IN BY SUPPLIER AT TIME OF SUBMISSION



To be filled in by NTPC

PROJECT NAME	NTPC Mouda 2 x 500MW (BHEL W.O no: G503 & G504)	<p><u>2REVIEW & ENDORSEMENT BY NTPC</u> PROJECT SPECIFIC QP NUMBER ALLOTTED</p> <p>QP NO:</p> <p>REV. NO.: 00 DT :</p>
CONTRACT NO.:	CS-9561-109(1B)-9-FC-NOA-6722 for Mouda (2 X 500MW)	
MAIN SUPPLIER	M/S.BHEL, RANIPET , TAMIL NADU., INDIA	
MANUFACTURER WORKS & ADDRESS	(TO BE FILLED BY EOH MANUFACTURER)	
ITEM /EQUIPMENT / SYSTEM/ SUB-SYSTEM DETAILS i.e. MODEL TYPE/SIZE/RATING etc.	ELECTRICALLY OPERATED WIRE ROPE HOIST FOR FGD APPLICATION	
APPROVED QP NO.: RQP/SQP/RFQP/SFQP	0000-999-QOM-S053 Rev No. 00 dt 05.04.2013	
Confirmation by Main Supplier (TICK WHICHEVER APPLICABLE)		<i>(TICK APPLICABLE)</i>
I. That the item/ component is identical to that considered for SQP approval.		The MQP/RQP/SQP is endorsed for this project without any change
II. That there are minor changes in the item/ component with respect to that considered for MQP/RQP/SQP approval, however the same do not affect the contents of MQP/RQP/SQP		
III. That there are minor changes in the item/ component with respect to that considered for MQP/RQP/SQP approval, however the same affect the MQP/RQP/SQP slightly, as indicated below / in attached sheet.		The SQP is endorsed for this project with changes as indicated.
		<p><u>DISTRIBUTION OF ENDORSEMENT OF</u></p> <p>A) MQP/RQP/SQP:</p> <p>1. MAIN SUPPLIER (WITH A COPY OF MQP/RQP/SQP)</p> <p>2. MANUFACTURER</p> <p>3. RIO</p> <p>4. CQA-SPL</p> <p>5. CQA-O/C</p> <p>B) RFQP/SFQP:</p> <p>1. MAIN SUPPLIER (with a copy of MQP/RQP/SQP)</p> <p>2. MANUFACTURER</p> <p>3. NTPC FQA (with a copy of MQP/RQP/SQP)</p> <p>4. NTPC Erection (with a copy of MQP/RQP/SQP)</p> <p>5. CQA-SPL</p> <p>6. CQA-O/C</p>
SIGN.: (Main Supplier) DATE:	<p>(TO BE FILLED BY EOH MANUFACTURER)</p> <p>SIGN.: (Manufacturer) DATE:</p>	NTPC (Reviewed /Approved by/ Date & Seal)



ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)
ELECTRIC OPERATED HOIST
UPTO SWL 15 T

STANDARD QUALITY PLAN
 CONFORMING TO CODE:
 IS: 3938

OP NO. 0000-999-QDM-S-063
 REV. NO. 00
 DATE 05.04.2013
 PAGE Page 1 of 4
 VALID UPTO 04.04.2016

REVIEWED BY: H.S. MAURYA
 S. SINGH
 M.K. ASTHANA
 RAJESH KUMAR
 APPROVED BY: [Signature]
 APPROVED BY: [Signature]
 APPROVED BY: [Signature]

SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORM	Format of RECORD	AGENCY			REMARKS
				M	C/N	M	C				N			
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														
11.														

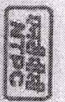
A. RAW MATERIAL INSPECTION:														
A.1	MS PLATES FOR STRUCTURAL MEMBERS & FABRICATED ROPE DRUM	CHEMICAL & MECHANICAL PROPERTIES	MAJOR	CHEM & MECH	1 SAMPLE/HEAT	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS/DRAWINGS	MTC	✓	P	V	V	V	V	IN THE ABSENCE OF CORRELATED TC CHECK TESTING SHALL BE DONE ONLY FOR THICKNESS ≥ 25 MM.
A.2	PIPE FOR ROPE DRUM (IF SEAMLESS PIPE IS USED)	ULTRASONIC TEST OF PLATES	MAJOR	NDT	100%	ASTM A-435	IR	✓	P	V	V	V	V	
A.3	FORGINGS/ ROLLED BARS FOR GEARS, PINIONS, WHEELS AND BRAKE DRUM	CHEMICAL, MECHANICAL PROPERTIES & ACID ETCHING	MAJOR	CHEM & MECH	1 SAMPLE / HEAT SIZE	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS/DRAWINGS.	MTC	✓	P	V	V	V	V	IN THE ABSENCE OF CORRELATED TC CHECK TESTING SHALL BE DONE ONLY FOR DIA ≥ 40 MM.
B. BOUGHT OUT ITEMS:														
B.1	HOOKS	MAKE & IDENTIFICATION	MAJOR	VISUAL	100%	100%	HOOK TC FROM COMPETANT AUTHORITY/ APPROVED MAKES	TC	✓	P	V	V	V	REFER ANNEX-I FOR MAKE
B.2	WIRE ROPES	CHEMICAL & MECHANICAL PROPERTIES	MAJOR	CHEM & MECH	1 SAMPLE/ HEAT/ HT BATCH	MATERIAL SPECIFICATION AS PER APPROVED DATA SHEETS/DRAWINGS	MTC	✓	P	V	V	V	V	
B.3	MOTOR	PROOF LOAD TEST	MAJOR	MECHANICAL	100%	IS-15560/IS-5748	IR	✓	P	V	V	V	V	ON SHANK PORTION ONLY
B.4	GEAR BOX	INTERNAL DEFECTS BEFORE & AFTER PROOF LOAD TEST	CRITICAL	NDT	100%	ASTM - A 388	IR	✓	P	V	V	V	V	
		DPF TEST BEFORE & AFTER PROOF LOAD TEST	CRITICAL	NDT	100%	ASTM E-185	IR	✓	P	V	V	V	V	
		MAKE & IDENTIFICATION	MAJOR	VISUAL	100%	APPROVED MAKES	MTC	✓	P	V	V	V	V	REFER ANNEX-I FOR MAKE
		DIMENSION & BREAKING STRENGTH	MAJOR	REVIEW	100% (EACH BATCH)	IS-2266 / APPROVED DATA SHEET	MTC	✓	P	V	V	V	V	
		MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ IS-325	IR	✓	P	V	V	V	V	REFER ANNEX-I FOR MAKE
		ROUTINE TESTS	MAJOR	REVIEW	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ IS-325	MTC	✓	P	V	V	V	V	
		MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ APPROVED MAKES	IR	✓	P	V	V	V	V	REFER ANNEX-I FOR MAKE
		BRONKASH, TOOTH CONTACT & REDUCTION RATIO	MAJOR	REVIEW	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ APPROVED MAKES	MTC	✓	P	V	V	V	V	
		NO LOAD RUN TEST (NOISE LEVEL, TEMP RISE & OIL LEAKAGE)	MAJOR	REVIEW	100%	NTPC APPROVED DRAWING/ DATA SHEET/ NTPC SPECIFICATION/ NO LEAKAGE	MTC	✓	P	V	V	V	V	

LEGEND: * RECORDS, IDENTIFIED WITH 'TICK' (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION
 ** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN 'N' AS W

FORMAT NO.: QS-01-QAI-P-10/F-1-R1

1/1

ENGG. DIV./DAB&I



ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)
ELECTRIC OPERATED HOIST
UPTO SWL 15 TON

STANDARD QUALITY PLAN
CONFORMING TO CODE :
IS: 3938

Q.P. NO. 0000-999-QOM-S-063
 REV. NO. 00
 DATE 05.04.2013
 PAGE Page 2 of 4

REVIEWED BY: H S MAURYA
 APPROVED BY: S SINGH
 M K ASTHANA
 RALEEV GARG
 04.04.2016
 ACCEPTANCE NO. 04.04.2016
 Format of RECORD

SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT	YIELD U/P TO	ACCEPTANCE NO. / DATE	Format of RECORD	AGENCY			REMARKS
				CHECK	M	C/N	M					C	N		
1.															
2.															
B5	BRAKES - EM/ EHT	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	100%	NTPC APPROVED DRAWING/NTPC SPECIFICATION/ IS: 3938	IR	04.04.2016	IR	P	V	V	REFER ANNEX1 FOR MAKE
B6	LIMIT SWITCH/ OVERLOAD RELAY/ SFU/ CONTACTOR/ CONTROL TRANSFORMER/ PUSH BUTTON/ TERMINAL BLOCK/ INDICATING LAMP/ SELECTOR SWITCH	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	100%	APPROVED DRAWING/NTPC TECH. SPECS/ APPROVED MAKES	IR	04.04.2016	IR	V	V	V	REFER ANNEX1 FOR MAKE
B7	CABLES - LT POWER/ CONTROL/ EHT FLEXIBLE TRAILING	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ IS: 1554/ IS: 9969/ IS: 4289/ IS: 7098	IR	04.04.2016	IR	V	V	V	REFER ANNEX1 FOR MAKE
B8	VVFD (AS APPLICABLE)	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ APPROVED MAKES	IR	04.04.2016	IR	V	V	V	REFER ANNEX1 FOR MAKE
B9	CONTROL PANEL & PENDENT STATION HOUSING/ BOX	MAKE/ TYPE/RATING	MAJOR	VISUAL	100%	100%	100%	NTPC APPROVED DRAWING/ NTPC SPECIFICATION/ APPROVED MAKES	IR	04.04.2016	IR	V	V	V	REFER ANNEX1 FOR MAKE
C IN PROCESS INSPECTION:															
C1	ROLLING & WELDING OF ROPE DRUM (FABRICATED)	WPS, POR WMPQ	MAJOR	REVIEW	100%	100%	100%	APPROVED WPS, ASME SEC. IX MANUFACTURING DRAWING/ APPROVED WPS	IR	04.04.2016	IR	P	V	V	REFER NOTE 2
C2	ROPE DRUM WHEELS, PULLEYS & HOOK SHANK AFTER MACHINING	ROLLING & WELD EDGE PREPARATION	MAJOR	VISUAL & MEASURE	100%	100%	100%	ASME SEC. - V	DPT	04.04.2016	DPT	V	V	V	SR CHART REVIEW BY NTPC DURING FINAL INSPECTION.
		POST WELD HEAT TREATMENT	MAJOR	REVIEW	100%	100%	100%	ASME SEC. VIII DIV. 1 (UGS-86)	SR CHART	04.04.2016	SR	V	V	V	SR CHART REVIEW BY NTPC DURING FINAL INSPECTION.
		NDI TEST ON WELD	MAJOR	DPT	100%	100%	100%	ASME SECTION - VIII DIV. 1, APP. 6/ B	DPT REPORT	04.04.2016	DPT	V	V	V	SR CHART REVIEW BY NTPC DURING FINAL INSPECTION.
		RADIOGRAPHY OF BUTT WELD JOINTS	CRITICAL	RT	100%	100%	100%	ASME - SEC. VIII DIVISION - I, UW-51 & UW-52	RT FILMS & REPORT	04.04.2016	RT	V	V	V	FLIM REVIEW BY NTPC DURING THE FINAL INSPECTION. CHP
		VISUAL & DIMENSIONAL	MAJOR	VISUAL & MEASURE	100%	100%	100%	MANUFACTURER'S DRAWINGS	IR	04.04.2016	IR	V	V	V	
		NDI ON MACHINED SURFACES	MAJOR	DPT	100%	100%	100%	ASTM E-765	IR	04.04.2016	IR	V	V	V	

LEGEND: * RECORDS IDENTIFIED WITH TICK (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
**** M: MANUFACTURER/SUB-SUPPLIER G: MAIN SUPPLIER N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE. CHP: NTPC SHALL IDENTIFY IN COLUMN 'V' AS 'V'.**

FORMAT NO.: QS-01-QA-P-10/F1-R1

1/1

ENG. DIV/QA&I





ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)

STANDARD QUALITY PLAN

ELECTRIC OPERATED HOIST
UPTO SWL 15 TON

CONFORMING TO CODE :
IS: 3938

QIP NO.	0000-999-QOM-S-053	REV. NO.	00
DATE	05.04.2013	DATE	05.04.2013
PAGE	Page 3 of 4	REFERENCE DOCUMENT	IS: 3938/ APPROVED DRAWING/ DATA SHEET
ACCEPTANCE NORM	04.04.2016	AGENCY	RAJEEV GARG

REVIEWED BY: H S MAURVA
S SINGH
M K ASTHANA
RAJEEV GARG



SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORM	Format of RECORD	AGENCY			REMARKS
				M	C/N	M	C				N			
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.				

D FINAL INSPECTION:														
D.1	COMPLETE ASSEMBLED HOIST ALONG WITH ACTUAL CONTROL PANEL, VVVF & PUSH BUTTON (AS APPLICABLE)	VISUAL & DIMENSIONAL	MAJOR	VISUAL & MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P	W	W	REFER NOTE-	
	OVERLOAD TEST AT 125%	HOLDING CAPACITY OF BREAK, LIMIT RELAYS OPERATION	MAJOR	VISUAL	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P	W	W		
	NO LOAD TEST & FULL LOAD TEST	CURRENT OF HOIST OPERATION, INTERLOCKING SEQUENCE OPERATION	MAJOR	VISUAL MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P	W	W		
D.2	CONTROL PANEL	VISUAL, MAKE VERIFICATION & DIMENSION	MAJOR	VISUAL MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P	W	W		
		DEGREE OF PROTECTION TEST BY PAPER INSERTION METHOD HV, IR	MAJOR	MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET	IR	✓	P	W	W		
		PAINT SHADE ADHESION, THICKNESS, ADHESION, VISUAL & DFT MEASUREMENT	MAJOR	VISUAL MEASURE & VISUAL & MEASURE	100%	100%	IS: 3938/ APPROVED DRAWING/ DATA SHEET AS PER NTPC SPECIFICATION	IR	✓	P	W	W	THICKNESS-70 MICRON	
D.3	PAINTING OF HOIST		MAJOR											
NOTES:														
1.	BACK WALL ECHO SHALL BE SET AT 100% OF FULL SCREEN HEIGHT AT SOUND AREA OF THE BAR USING NORMAL BEAM PROBE OF 2 MHz TO 5 MHz. AT THIS SENSITIVITY LEVEL, ANY DEFECT ECHO EXCEEDING 20% OF FSH IS NOT ACCEPTABLE. IN ADDITION, LOSS OF BACK WALL ECHO MORE THAN 20% OF FSH IS ALSO NOT ACCEPTABLE.													
2.	WPS, POR & WELDERS QUALIFIED BY LLOYDS, BVQI, TVY, DMV, NTPC, BHEL, NPCIL ARE ACCEPTABLE. ONLY QUALIFIED WELDERS SHALL BE DEPLOYED FOR WELDING.													
3.	MOTOR POWER RATING LESS THAN 30KW: ACCEPTANCE OF MOTOR LESS THAN 30KW IS BASED ON COC OF THE MANUFACTURER & THE CONTRACTOR CONFIRMING AS FOLLOWS: IT IS HEREBY CONFIRMED THAT THE ABOVE MENTIONED MOTOR/ MOTORS WAS/WERE MANUFACTURED TAKING CARE OF NTPC SPECIFIC REQUIREMENTS REGARDING AMBIENT TEMP., VOLTAGE & FREQUENCY VARIATION, HOT STARTS, PULL OUT TORQUE, STARTING KV/AKW, TEMP. RISE, DISTANCE BETWEEN CENTRE OF STUD & GLAND PLATE AND TESTED IN ACCORDANCE WITH APPROVED DRAWING/ DATA SHEETS.													
4.	HV TEST ON CONTROL PANELS WILL BE DONE ISOLATING VVVF DRIVE AND OTHER ELECTRONIC PARTS. HV TEST AT 2 KV FOR POWER & 1.5 KV FOR CONTROL CIRCUIT. ALL CRITICAL DIMENSIONS SHALL BE MEASURED. THE CURRENT AND SPEED FOR HOISTING MOTION AND LONG TRAVEL MOTION SHALL BE MEASURED DURING NO LOAD TEST AND SAFE WORKING LOAD (SWL) TEST. ALL INTERLOCKS, BRAKE OPERATION, LIMIT SWITCHES AND SAFETY MEASURES SHALL BE CHECKED.													

LEGEND: * RECORDS IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
M: MANUFACTURER/SUB-SUPPLIER G: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION AS APPROPRIATE, CHP: NTPC SHALL IDENTIFY IN COLUMN 'N' AS W

FORMAT NO.: QS-01-QA1-P-10F1-R1



ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC)
ELECTRIC OPERATED HOIST
UPTO SWL 15 TON

STANDARD QUALITY PLAN
CONFORMING TO CODE:
IS: 3938

QP NO. 0000-990-QCM-S-053
 REV. NO. 00
 DATE 05.04.2013
 PAGE Page 4 of 4

REVIEWED BY: H S MAURYA
 S SINGH
 M K ASTHANA



SN	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK		QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	AGENCY		REMARKS
				M	C/N				M	C N	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	

LIST OF ALL MAJOR BOUGHT OUT ITEMS AND THEIR ACCEPTABLE MAKES ARE LISTED BELOW

LIST OF BOUGHT OUT ITEMS AND THEIR SOURCES

1	STEEL										
2	WIRE ROPE										
3	HOOK										
4	GEAR BOX										
5	MOTOR										
6	LIMIT SWITCHES										
7	CONTACTOR&OR TIME DELAY RELAY , AUX RELAY										
8	FUSES, SFU, MCB MCCB										
9	FLEXIBLE CABLE, LT POWER AND CONTROL CABLE										
10	BEARING										
11	PUSH BUTTONS										
12	PUSH BUTTON STATIONS (PENDANT)										
13	INDICATING LIGHT										
14	TRANSFORMERS (CONTROL)										
15	CURRENT TRANSFORMERS										
16	VVVF DRIVE										
17	CONTROL PANEL										
18	BRAKES - DCEM										
19	BRAKES - EHT										
20	TERMINAL BLOCK										
21	INDICATING METER										
22	DSL&CURRENT COLLECTING SYSTEM										
23	SELECTOR SWITCH										

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 ** M: MANUFACTURER/SUB-SUPPLIER G: MAIN SUPPLIER N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE. CHP: NTPC SHALL IDENTIFY IN COLUMN 'N' AS W

FORMAT NO.: QS-01-QA-IP-10/F1-R1
 Note: # NTPC Inspection Engineer to check approval date / revision no. of reference documents at the time of inspection

*(To be submitted In the company letter head by supplier)

Form - 1

Subject: Public Procurement (Preference to Make In india)

References:

- 1.P-45021/2/2017-B.E-II dated. 15th June-2017,
- 2.P-45021/2/2017-PP(BE-II) dated. 28th May-2018 ,
- 3.P-45021/2/2017-PP(BE-II) dated. 29th May-2019.
- 4.P-45021/2/2017-PP(BE-II) dated. 4th June-2020

We hereby declare with reference to above subject and references that M/s -----(Tick whichever is applicable as below)

"Class-I local supplier" meeting the requirement of minimum local content equal to 50%(fifty percent) or more defined in the above government notification for the goods and services (or)

"Class-II local Supplier" meeting the requirement of local content 20% to less than 50%(fifty percent) defined in the above government notification for the goods and services

Please mention the details against the following:

Enquiry no:----- dated. -----

Type of Supplier (Class-I/Class-II)

Product:-----

Project:.....

Details of location at which local value addition will be made is as follows:

We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Authorized Signature M/s _____

(Signature and seal)

Place:.....

Date:.....

From.

M/s _____

Address: _____

Note: For offer value INR 10 crores or more, shall be vetted/endorsed by statutory auditor or cost auditor, for the declared local content.

***(To be submitted In the company letter head by supplier)**

Form – 2

I/we are bidder from _____ (Address with country). We do not belong to any of the below category mentioned.

1. Any of entity/office/workshop of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
2. Any of subsidiary of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.
3. Any of entity/office/workshop of your organisation/incorporation, controlled in a country sharing land border with India, If yes, provide the full address of all such locations.
4. Any of entity whose beneficial owner is situated in a country sharing land border with India, If yes, provide the full name, address of all such locations.
5. Any Indian Agent available, If so, Provide details of address and contacts.
6. Any employee/directors who is/are citizen of country sharing land border with India, If yes, provide the full name, employee code and address of all such locations.
7. Any of consortium/joint venture of your organisation/incorporation, established in a country sharing land border with India, If yes, provide the full address of all such locations.

Meaning of beneficial owner

- 1) In case of a company or limited liability partnership, beneficial owner is the natural person, who, whether acting alone or together, or through one or more judicial person, has a controlling ownership interest or who exercises control through other means.

Explanation

- a) Controlling ownership interest means ownership of or entitlement to more than twenty-five percent of shares or capital or profits of the company.
 - b) “control” shall include the right to appoint majority of the directors or to control the management rights or shareholder’s agreement or voting agreement.
- 2) In case or a partnership firm the beneficial owner is the natural person (s) who whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of capital or profits of the partnership.
 - 3) In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together or through one or more judicial person, has ownership of the entitlement to more than fifteen percent of the property or capital or [profits of such association or body of individual.
 - 4) Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
 - 5) In case of a trust, the identification of beneficial owner (s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust and any other

***(To be submitted In the company letter head by supplier)**

natural person exercising the ultimate effective control over the trust through a chain of control of ownership.

- 6) An agent is a person employed to do any act for another, or to represent another in dealing with third person.

We have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India, we hereby declare that we do not belongs to any such country and are eligible to be considered.

In case, any of information is found to be false, even after bid acceptance, immediate termination may happen and action will be taken as per law.

Format is being filled without altering any of the clause mentioned in the given format**

Dated: _____

Authorised Sign and stamp_____

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

Bharat Heavy Electricals Limited,
Boiler Auxiliaries Plant,
RANIPET -632 406,
Tamil Nadu,
INDIA

Dear Sirs,

In consideration of the **Bharat Heavy Electricals Limited** 1 (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at "BHEL House", SRI Fort, New Delhi- 110049 through its Unit at **Boiler Auxiliaries Plant located at Ranipet-632406, Tamil Nadu, INDIA** having awarded to 2 having its registered office at _____ herein after referred to as the 'Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No. / **PO No** _____ dated 3. Valued at Rs _____ 4 (Rupees (In words) _____) for _____ 5 (hereinafter called the 'Contract') and the Contractor having agreed to provide a Contract Performance Guarantee equivalent to 10% (Ten Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract.

We _____ (hereinafter referred to as the Bank), having registered/Head Office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs _____ (**Rupees** _____) without any demur, immediately on a demand from the Employer. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding **Rs. _____ (Rupees _____)**.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force up to _____ 6 with a validity period of ___ months & claim period of 3 months and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____ 7 we shall be discharged from all liabilities under this guarantee thereafter.

We _____ BANK, lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed Rs _____ (Rupees _____ Only) 8
- b) This Guarantee shall be valid up to _____ 9
- c) Unless the Bank is served a written claim or demand on or before _____ 10 all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dtd :

Place of Issue:

1. NAME AND ADDRESS OF EMPLOYER i.e., Bharat Heavy Electricals Limited.
2. NAME AND ADDRESS OF VENDOR/CONTRACTOR/SUPPLIER
3. DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE
4. BG AMOUNT IN FIGURES AND WORDS
5. PROJECT/SUPPLY DETAILS
6. VALIDITY DATE with a validity of 3 months claim period.
7. DATE OF EXPIRY OF CLAIM PERIOD
8. BG AMOUNT IN FIGURES AND WORDS
9. VALIDITY DATE
10. DATE OF EXPIRY OF CLAIM PERIOD

Ple note: The Validity period wrt our conditions applicable for the Supply / Erection & condition.