

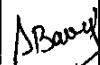

SUPERSEDES INVENTORY
 सामग्री सूची संख्या को


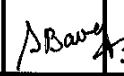

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स्वत्वाधिकार एवं गोपनीय
 इस प्रलेख में दी गई सूचना भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रलेख एवं अवलोकन के बिना किसी भी रूप में प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए।


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- 3.03 All gears shall conform to relevant Indian standards and also to IS: 3177. Straight spur gears shall normally be used for all motions. Worm or bevel gears shall not be used without prior consent of the purchaser. Gearboxes shall generally conform to IS: 3177.
- 3.04 All chains for driving and lifting shall be of electrically welded link type, pitched and polished and shall conform to IS: 6216 / IS: 3109 and general conditions of acceptance as per IS: 5616.
- 3.05 Adequate provision shall be made for proper lubrication of all gears, bearings and pulleys. Bearings shall be provided with arrangement for grease lubrication by grease gun.
- 3.06 Suitable runway rails of adequate size shall be furnished by the ^{Vendor} alongwith the cranes. Bridge stops shall be provided at each end of the rails. All clamps and fittings necessary for fixing the rails shall be provided by the tenderer.
- 3.07 The lifting hooks of chain pulley blocks shall be made of high tensile forged steel, which shall be able to rotate & swivel freely as per IS: 3815.
- 3.08 The trolleys shall be manufactured with suitable certified materials. The material of all major components shall be indicated in the offer by the bidder. Qualified welders and fitters shall be employed for manufacturing the trolleys.
- 3.09 D/Bow shackle shall be as per IS:6132.
- 3.10 A BHEL drawing based upon project to project requirement shall be sent to the vendor along with enquiry having important technical information like main dimensions, capacity, lift, bottom of structure, painting scheme (If there is any customer specific requirement other then specified here) etc. The vendor shall include these requirements in his drawings to be submitted for BHEL approval after placement of purchase order.

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			जांचकर्ता CHECKED BY S.BARAI	 3.11.04

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सापेक्ष सूची संख्या को SUPERSEDES INVENTORY NO.	4. SURFACE PREPARATION / PAINTING: Before despatch of the crane, the structural & mechanical parts shall be thoroughly cleaned of all dirt, grease, scale. The cleaning shall be carried out by sand / shot blasting and painting shall be carried out as below:			
5. QUALITY ASSURANCE, INSPECTION & TESTING: The manufacturer shall conduct all the tests required to ensure that all component parts of the crane/handling arrangement offered, conform to the requirements of the specification and are in compliance with requirement of applicable codes and standards. The bidder shall submit, alongwith his offer, quality plan in the prescribed format, alongwith all the reference documents.				
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सापेक्ष सूची संख्या INVENTORY NO. P-6307	REV.NO. 01		निर्माणकर्ता WORKED BY S.K.BAVEJA	 3.11.04
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						पृष्ठ Page 4	का Of 8
TESTING OF MATERIALS:					6. OPERATION AND MAINTENACE:		
a) The material of all major components shall be tested as per relevant specification for its chemical composition and mechanical properties. Suitable NDT to ensure freedom from internal, surface and subsurface defects shall be carried out.					Supplier shall send 20 copies of the Instruction Manual for the H.O.T. crane including chain pulley blocks at the time of dispatch.		
b) All the welding shall be done as per qualified procedures and by welders qualified as per ASME IX. All welds shall be subjected to DPT to ensure freedom from surface/ sub surface defects.							
c) DPT on shaft, axle shaft, gear wheels/ plain wheels, pawl and ratchet to be carried out to ensure freedom from surface defects.							
d) Hooks shall be proof load tested at manufacturer's works as per the requirements of relevant code.							
e) Hooks shall be subjected to U.T. before and after proof load test to ensure freedom form internal defects.							
f) Hooks shall be subjected to DPT to ensure freedom from surface/sub-surface defects before and after proof load test.							
g) Each chain pulley block shall be subjected to proof load test and operational test to a proof load of 1.5 times the safe working load as per the requirements of IS: 3832.							
h) Load chain shall be tested for the checks/ tests as per IS: 6216 & IS: 5616.							
i) Hand chain shall be tested for the checks/ tests as per IS: 3109 & IS: 5616.							
j) The crane shall be tested for deflection test as per IS: 807 at manufacturer's works.							
k) The crane shall be tested for all motions at manufacturer's works at safe working load and 25% over load as per IS: 807. The self-braking arrangement shall also be tested along with motion tests.							
l) Procedure and acceptance criterion for UT & DPT shall be as per Annexure-A.							
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		PRODUCT STANDARD		8	5
संख्या एवं दिनांक	संख्या को	<p>Additional four copies of the documents shall be sent to the following address with in one month from the placement of order</p> <p>Head of Department, Heat Exchangers Engg., BHEL, Ranipur, Haridwar, (UTTARANCHAL) Pin : 249 403</p>			
संख्या एवं दिनांक	संख्या को	<p>6.01 Instruction Manuals :</p> <p>The instruction manuals shall present the following basic categories of information in a comprehensive manner prepared for use by operating & maintenance personnel:</p> <p>i) Instruction for erection.</p> <p>ii) Instructions for pre-commissioning check-up operation, abnormal condition, maintenance & repair.</p> <p>iii) Recommended inspection points & periods of inspection.</p> <p>iv) Schedule of preventive maintenance.</p> <p>v) Ordering information for all replaceable parts.</p> <p>vi) Recommendation for type of lubricants, lubricating points, frequency of lubrication & lubricant changing schedule.</p>			
संख्या एवं दिनांक	संख्या को	<p>6.02 The information shall be organized in a logical and orderly sequence. A general description of the equipment including significant technical characteristics shall be included to familiarize operation & maintenance personnel with the equipment.</p>			
संख्या एवं दिनांक	संख्या को	<p>6.03 Necessary drawing and/ or other illustrations shall be included or copies of appropriate final drawings shall be bound in the manual. Test, adjustment & calibration information, as appropriate, shall be included & identified to the specific equipment. Safety and other warning notices & installation, maintenance & operating cautions shall be emphasized.</p>			
संख्या एवं दिनांक	संख्या को	<p>6.04 Instruction manual shall be securely bound in a durable folder.</p>			
संख्या एवं दिनांक	संख्या को	<p>6.05 A part list shall be included showing part nomenclature, manufacturer's part number and / or other information necessary for proper identification and ordering of replaceable parts.</p>			
संख्या एवं दिनांक	संख्या को	REV.NO.	शुभमार्गकर्ता	जांचकर्ता	
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INVENTORY NO.

17/11/04

P-6307

REV.NO.
01

शुभमार्गकर्ता
WORKED BY

S.K.BAVEJA

S. Baveja


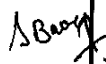

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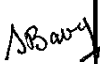

जांचकर्ता
CHECKED BY

S.BARAI

S. Barai

3.11.04

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सामग्री सूची संख्या को SUPERSEDES INVENTORY	6.06 The Instruction manual shall include the list of spare parts that have been procured alongwith the equipment. It shall also include list of all special tools and tackles furnished, with complete drawing and instruction for use of such tools & tackles. 6.07 The instructions manual will need approval of Engineer in the same fashion as that for drawings.				
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited It must not be used directly or indirectly in any way detrimental to the interest of the company	7. Following information shall be submitted by each bidder with his offer: i) Arrangement drawing & sectional drawing showing details of all components and bill of material with applicable standards. i) Manual effort required to operate the main trolley and the chain pulley blocks. iii) A sketch/ drawing showing the movement of trolleys. iv) Overall dimensions and points of lifting of the trolleys along with end side clearance diagrams. v) Crane loading diagram and impact load on end stoppers. vi) Size of beams (crane girder) selected by the bidder. vii) Any specific recommendation for opening and closing of water boxes. viii) Any specific erection/ testing requirements bidder wishes to specify. ix) Drawing and data of the crane runway rail, and its method of attachment to gantry girder and general arrangement of end stoppers. x) A comprehensive write-up and/ or brochure on the details of the manufacturing facilities and the test facilities in the shop of the supplier. xi) Sub-vendors for major items like hooks, forging & chain pulley block.				
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सामग्री सूची संख्या को SUPERSIDES INVENTORY	<p>8. TEST CERTIFICATES:</p> <p>8.01 Vendor shall submit four copies of test certificates of all the tests/checks as per approved Quality Plan, These should including test certificates for H.O.T. crane as per IS: 807 & test certificates for chain pulley blocks as per IS: 3832.</p> <p>8.02 Vender shall also submit the test certificates of the materials used for the manufacture of the H.O.T. crane and chain pulley blocks.</p> <p>9. DISPATCH:</p> <p>The H.O.T. crane shall be dispatched to the site by the supplier with suitable packing to protect the component parts from any damage during transit.</p> <p>The supplier shall send a packing list, alongwith details of each package, in 10 copies, <u>two</u> months before the dispatch of the item for our reference. Packing lists shall also be sent alongwith the packages, at the time of dispatch.</p> <p>10. ERECTION:</p> <p>The erection supervision of the H.O.T. crane shall be in supplier's scope.</p> <p>11. GUARANTEE:</p> <p>The complete equipment shall be guaranteed for trouble free operation for a period of 18 months from the date of dispatch or for a period of 12 months after erection, which ever is earlier.</p> <p>12. List of Cross referred Standards:</p> <p>IS: 807 ; IS:3109; IS:3177 ; IS:3815 ; IS:3832 ; IS:5616 ; IS:6132; IS:6216</p>				
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SUPERSEDES INVENTORY
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Annexure-A

PROCEDURE AND ACCEPTANCE CRITERION FOR ULTRASONIC AND DYE PENETRANT TESTING.

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1. ULTRASONIC TESTING:

UT shall be done as per ASTM A 388 and acceptance criterion shall be as follows:

ECHOFORM / ECHO HEIGHT				
EE + VE WITHOUT EXTENSION		EE + VE WITH EXTENSION (GA GN RZ)		BACK WALL ECHO LOSS
RECORDABLE LIMIT (mm EFH)	ACCEPTANCE LIMIT (mm EFH)	RECORDABLE LIMIT (mm EFH)	ACCEPTANCE LIMIT (mm EFH)	ACCEPTANCE LIMIT (db)
2	4	1	2	4

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EE: INDIVIDUAL DEFECT
 VE: MANY INDIVIDUAL DEFECTS
 GA: GROUP ECHO, RESOLVABLE
 GN: GROUP ECHO, NON RESOLVABLE
 GZ: RING ZONE

2. DYE PENETRANT TESTING:

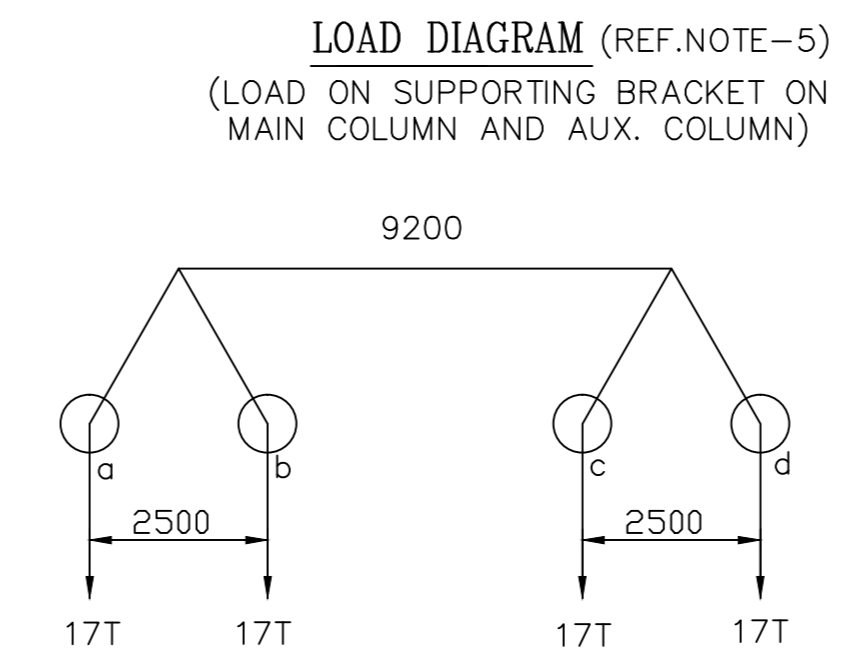
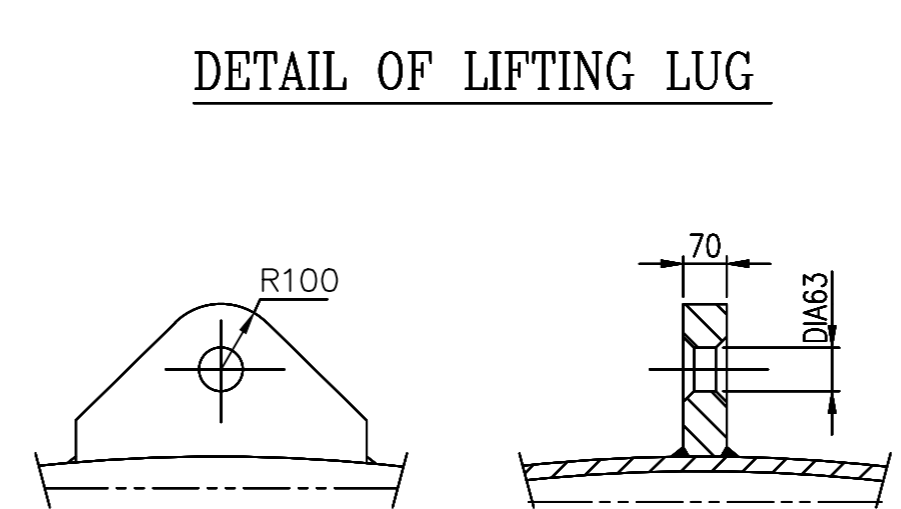
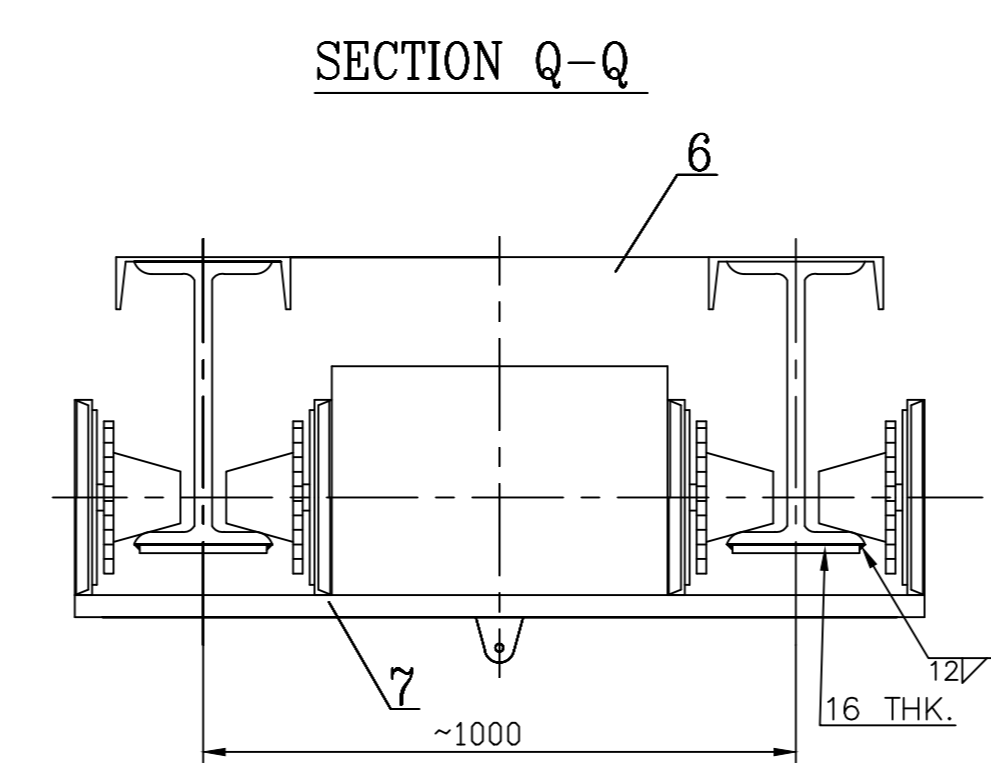
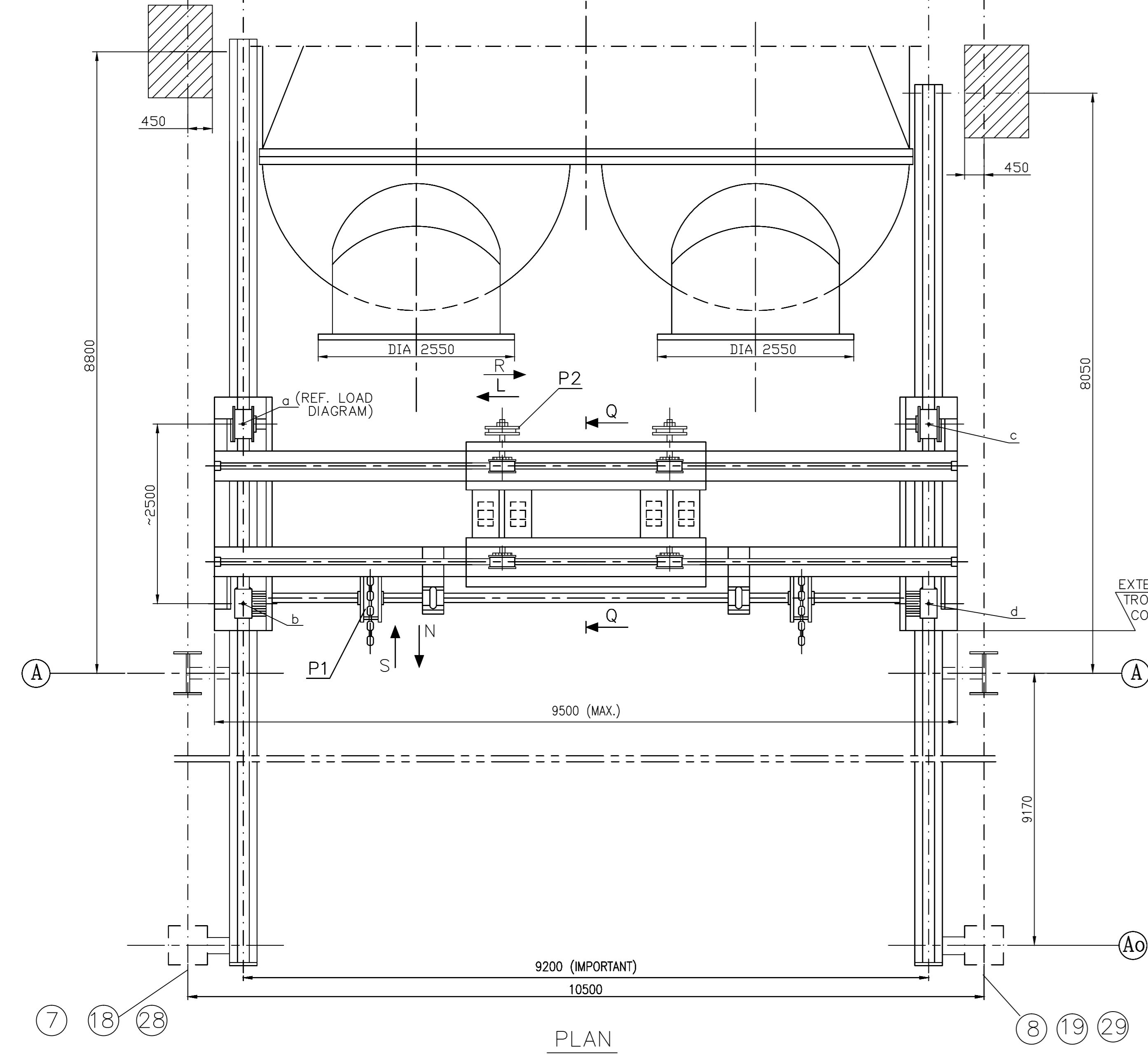
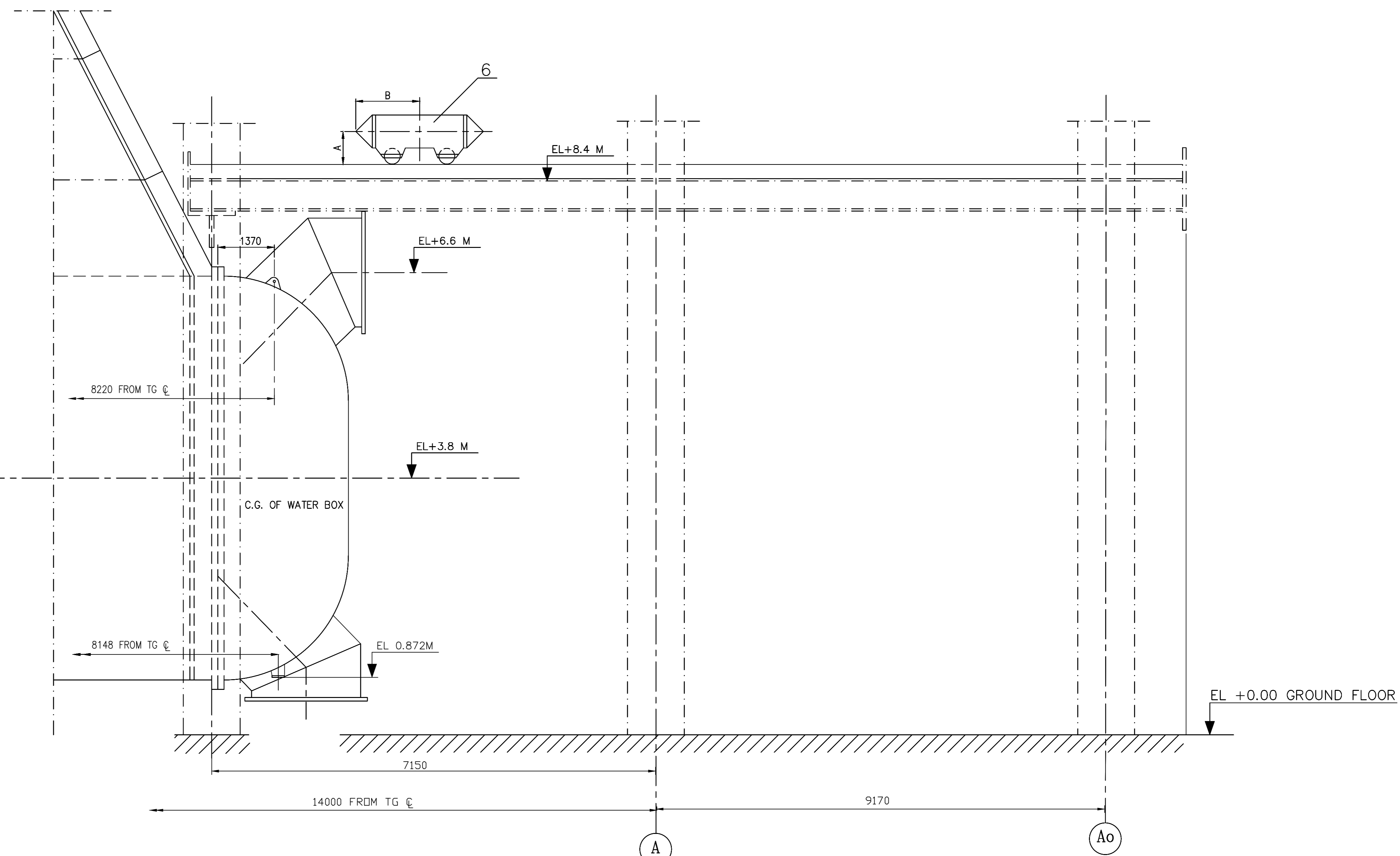
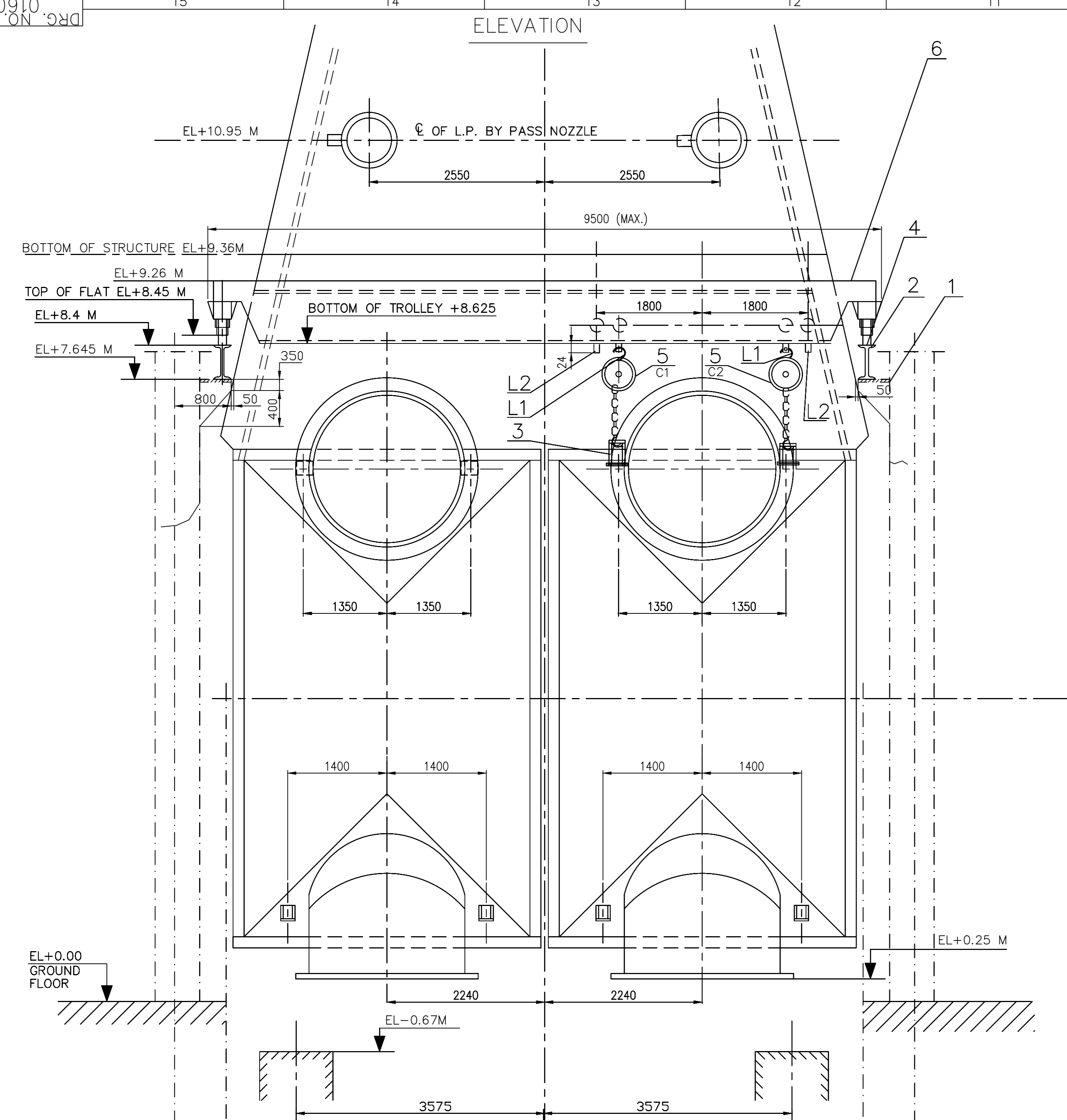
a) Weld Joints : As per ASME Section VIII, Div-I, Appendix -8.
 b) Forging : As per ASTM E-165 with no indication.
 c) Casting : As per ASTM E-165 and acceptance criterion shall be as follows

No. of acceptable indications per 100 sq cm. Surface area of length not exceeding 25cm.	Unacceptable linear defects.
2 Nos. of 3mm circular indication.	Crack and hot tears.

Note:
The minimum permissible distance between any two or more acceptable individual flaws shall not be less than the major dimension of the larger flaw.

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सामग्री सूची संख्या
 INVENTORY NO.
 P-6307



PROCEDURE FOR HANDLING OF FRONT WATER BOXES:

- ONLY ONE FRONT WATER BOX CAN BE OPENED AT A TIME.
- REMOVE BOLTING OF C.W. INLET FLANGE.
- REMOVE C.W. OUTLET PIPINGS (R.E. JOINTS, STRAINER ETC.) BY MANUAL OPERATED TROLLEY AND 2 CHAIN PULLEY BLOCKS (C1 & C2) AND PUT THEM AT APPROPRIATE LOCATIONS.
- BRING TROLLEY ABOVE THE WATER BOX WHICH IS TO BE OPENED BY OPERATING PULLEYS (P1 & P2) AS REQUIRED.
- PUT BOTH CHAIN PULLEY BLOCK BETWEEN HOOKS OF TROLLEY AND WATER BOX LIFTING LUGS.
- TIGHTEN THE CHAIN PULLEY BLOCK IN LIFTING POSITION TILL CHAIN IS TIGHT.
- LOOSEN THE NUT OF WATER BOXES FROM WATER CHAMBER.
- ENSURE THAT WATER BOX IS FULLY SUPPORTED ON CHAIN PULLEY BLOCKS. TIGHTEN/LOOSE CHAIN PULLEY BLOCKS, IF REQUIRED.
- REMOVE NUTS AND BOLTS BETWEEN WATER BOX AND WATER CHAMBER LEAVING STUDS BETWEEN WATER BOX AND WATER CHAMBER IN POSITION.
- MOVE THE TROLLEY TOWARDS N-DIRECTION WITH THE HELP OF PULLEY P1 SO THAT IT COMPLETELY CLEARS THE C.W. OUTLET PIPINGS OF OTHER WATER BOX.
- MOVE THE TROLLEY TO OTHER WATER BOX SIDE BY OPERATING THE PULLEY P2 EITHER IN DIRECTION 'L' OR 'R' (WHICH EVER MAY BE THE CASE).
- PUT THE WOODEN SLEEPERS ON GROUND BEFORE LOWERING THE WATER BOX.
- LOWER THE WATER BOX ON WOODEN SLEEPERS LOOSING THE CHAIN PULLEY BLOCKS EVENLY.
- SEQUENCE OF REASSEMBLING OF THE REMOVED WATER BOX WILL BE REVERSE OF THE STEPS 2 TO 13 ABOVE.

NOTES:

- WEIGHT OF EACH FRONT WATER BOX IS 28 TONNES.
- AUXILIARY COLUMNS AT A0, SUPPORTING BRACKETS ON MAIN COLUMNS AND SUPPORTING BEAMS ARE IN BHEL (PSWR) SCOPE.
- 2 SETS OF LIFTING LUGS TO BE PROVIDED ON THE TROLLEY. ONE PAIR OF LUGS (L1, L1) TO BE USED FOR HANDLING OF WATER BOX AND OTHER PAIR (L2, L2) TO BE USED FOR HANDLING OF RUBBER EXPANSION JOINT AND CW PIPING ETC.
- 2 NO. CHAIN PULLEY BLOCKS (C1 & C2) EACH HAVING SAFE WORKING LOAD CAPACITY OF 15 TONNES HAVE BEEN PROVIDED ACTUAL WORKING LOAD ON EACH PULLEY IS 14 TONNES.
- LOAD DATA FURNISHED IS TENTATIVE. FINAL DATA WILL BE FURNISHED ON FINALISATION OF VENDOR.

TECHNICAL REQUIREMENTS:

- MAIN TROLLEY BUFFER ELEVATION (DIMENSION-A) AND DISTANCE FOR TROLLEY CENTRE LINE (DIMENSION-B) TO BE INDICATED BY FABRICATOR.
- LENGTH OF CHAINS OF CHAIN PULLEY BLOCK (IT. NO.5) SHOULD BE CAPABLE OF LOWERING THE WATER BOX ON GROUND FLOOR, EL +0.00.
- PAINTING OF WATER BOX HANDLING ARRANGEMENT SHALL BE AS BELOW :
 PRIMER PAINT : EPOXY BASED ZINC RICH PRIMER PAINT(2COATS, DFT 70 MICRONS)
 INTERMEDIATE PAINT : EPOXY TIO2 PIGMENTED POLYAMIDE CURED PAINT(1COAT, DFT 70 MICRONS)
 FINISH(FINAL) PAINT : ALIPHATIC ACRYLIC 2 PACK POLYURETHANE FINISH PAINT(2COATS, DFT 60 MICRONS)

FOR TENDER PURPOSE

SL.NO.	DESCRIPTION	NO.OFF	SCOPE	REMARKS
07	CROSSOVER TROLLEY	01	BHEL (HWR)	SUPPLY BY FABRICATOR
06	MAIN TROLLEY	01	BHEL (HWR)	-DO-
05	CHAIN PULLEY BLOCK	02	BHEL (HWR)	-DO- (REFER NOTE 4)
04	RAIL (FLAT 50x50)	02	BHEL (HWR)	-DO-
03	DEE SHACKLE	02	BHEL (HWR)	-DO- (REFER NOTE 4)
02	SUPPORTING BEAM	02	BHEL (PSSR)	SUPPLY BY BHEL (PSSR), ENCG. BY PEM
01	SUPPORTING BRACKET	06	BHEL (PSSR)	NO. OF BRACKETS AS REQUIRED

DESIGN NO./GR.SP.NO.	STATUS OF DRG.	CUSTOMER
PROJECT	PROJECT	PROJECT
DR. NAME	NAME	NAME
DATE	DATE	DATE
DESIGNER	NAME	NAME
DATE	DATE	DATE
SCALE	WEIGHT (KG)	ITEM NO.
SCALE	WEIGHT (KG)	ITEM NO.
TITLE	CARD CODE	DRAWING NO.
TITLE	CARD CODE	DRAWING NO.
SHEET NO.	NO. OF SHEETS	NO. OF SHEETS

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MANUFACTURER'S NAME AND ADDRESS			STANDARD QUALITY PLAN				TO BE FILLED BY BHEL		TO BE FILLED BY BHEL					
BHEL	VENDOR'S NAME	ITEM			QP NO.									
					DATED									
		DRG. NO.	AS PER PO											
		SPEC.	AS PER PO											
		REV						Page 1 of 3						
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS	
1	2	3	4	5	6	7	8	9	D	M	B	N	10	11

MANUFACTURER/SUBCONTRACTOR	LEGEND:	FOR CUSTOMER USE	APPROVED BY
	! RECORDS IDENTIFIED WITH 'TICK' SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE 'P' PERFORM 'W' WITNESS AND 'V' VERIFICATION ALL 'W' INDICATED IN COLUMN 'N' SHALL BE 'CHP' OF CUSTOMER		