

Subject: Engineering, Procurement and Construction (EPC) Contract for Renovation and Modernization of Existing Navigational Lock at Farakka, West Bengal.

Reference: IN-IWAI-350002-CW-RFB-2

CPP Portal Tender no: 2023_JMVP_782597_1

Amendment-5

Amendment triggered due to pre-bid responses:

Sr. No	Description	As per Bidding documents		Amended
1	General-Bathymetry			The available Bathymetry Survey is attached as Annexure-B for reference. Bidder shall do their due diligence.
2	Vol - 1 Bid Documents, 2.2.5.(a), pg 50 of 346	The bidder should have ISO 14000 & OHSAS certification.		The clause 2.2.5.(a) at Page 50 of 346 of Vol - 1 Bid Documents may be read as: “The bidder should have ISO 14000 & ISO 45001 certification. ”.
3	Vol - 1 Bid Documents, 2.5, pg 55 of 346	Position	Qualifications	Clause no 2.5, at page no 55 of Vol-1 may be read as:
		Project Manager & Team Leader	B.E. / B. Tech (Civil Engg.)	
		Asst. Project Manager	B.E. / B. Tech (Mechanical Engg.)	
		Mechanical Engineer	B.E. / B. Tech (Mechanical Engg.)	
		Electrical Engineer	B.E. / B. Tech (Electrical Engg.)	
		Position	Qualifications	
		Project Manager & Team Leader	B.E. / B. Tech (Civil Engg.)	
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		Hydraulics Engineer	B.E. / B. Tech (CIVIL ENGG.)	Electrical Engineer	B.E. / B. Tech (Electrical Engg.)
		Structural Engineer	B.E. / B. Tech (Civil Engg.)	Hydraulics Engineer	B.E. / B. Tech (CIVIL ENGG.) WITH M. TECH IN HYDRAULICS
		Planning Engineer	B.E. / B. Tech (CIVIL ENGG.)	Structural Engineer	B.E. / B. Tech (Civil Engg.) with M. Tech
		Geotechnical Engineer	B.E. / B. Tech (CIVIL ENGG.)	Planning Engineer	B.E. / B. Tech (CIVIL ENGG.)
		Billing Engineer	B.E. / B. Tech /Diploma	Geotechnical Engineer	B.E. / B. Tech (CIVIL ENGG.)
		Safety Engineer	B.E. / B. Tech /Diploma	Billing Engineer	B.E. / B. Tech /Diploma
		QC/QA Engineer-Mech.	B.E. / B. Tech (Mechanical Engg.)	Safety Engineer	B. Tech/ Diploma in Civil Engineering or Safety with additional training and qualification in EHS directly relevant to engineering aspects of construction management
		QC/QA Engineer-Civil	B.E. / B. Tech (Civil Engg.)	QC/QA Engineer- Mech.	B.E. / B. Tech (Mechanical Engg.)
		Surveyor	B.E. / B. Tech /Diploma	QC/QA Engineer- Civil	B.E. / B. Tech (Civil Engg.)
				Surveyor	Diploma/ B. Tech in Civil Engineering

4	Vol - 1 Bid Documents, 2.6, pg 56 of 346	Sl. No.	Type of Equipment	Minimum Capacity	Max. Age (Years)	Minimum Number required	Clause no 2.6 at page no 56 of Vol-1 may be read as: <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Type of Equipment</th> <th>Minimum Capacity</th> <th>Max. Age (Years)</th> <th>Minimum Number required</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Crane (Tyre mounted)</td> <td>100 T</td> <td>10</td> <td>1 No.</td> </tr> <tr> <td>2</td> <td>Crane (Tyre mounted)</td> <td>50 T</td> <td>10</td> <td>1 No.</td> </tr> <tr> <td>3*</td> <td>Pile Driving Rigs with minimum 10T winch complete with DMC/Bailor/Chiesel etc.</td> <td>-</td> <td>8</td> <td>1 No.</td> </tr> <tr> <td>4*</td> <td>Hydra</td> <td>10-12 T</td> <td>10</td> <td>4 Nos.</td> </tr> <tr> <td>5*</td> <td>Trailer</td> <td>-</td> <td>10</td> <td>2 Nos.</td> </tr> <tr> <td>6*</td> <td>Winches</td> <td>10-12 T</td> <td>10</td> <td>2 Nos.</td> </tr> <tr> <td>7</td> <td>Concrete Batching Plant</td> <td>30 cum/hour</td> <td></td> <td rowspan="2">As considered necessary by the Enginee</td> </tr> <tr> <td>8</td> <td>Transit Mixer</td> <td>5 cum</td> <td></td> </tr> </tbody> </table>	Sl. No.	Type of Equipment	Minimum Capacity	Max. Age (Years)	Minimum Number required	1	Crane (Tyre mounted)	100 T	10	1 No.	2	Crane (Tyre mounted)	50 T	10	1 No.	3*	Pile Driving Rigs with minimum 10T winch complete with DMC/Bailor/Chiesel etc.	-	8	1 No.	4*	Hydra	10-12 T	10	4 Nos.	5*	Trailer	-	10	2 Nos.	6*	Winches	10-12 T	10	2 Nos.	7	Concrete Batching Plant	30 cum/hour		As considered necessary by the Enginee	8	Transit Mixer	5 cum	
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		9	Concrete pump with adequate pipelines	30 cum/hour		r		9	Concrete pump with adequate pipelines	30 cum/hour		Engineer
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5	Volume 2: Bid document, ENL013	Length of slope protection works					The approx. length of bank protection has been provided in the Drawing No. ENL 013-R1 attached as Annexed A.					
6	Volume 1: Bid document, 2.3.1, pg 51 of 346	The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Employer, for the last five years, i.e., from FY 2017-18 to FY 2021-22 shall be submitted and must demonstrate the current soundness of the Bidder's financial position					Clause no 2.3.1 (iii) at Page no 51 may be read as: "The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Employer, for the last five years, i.e., from FY 2018-19 to FY 2022-23 shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability."					
7	Volume 1: Bid document, Schedule B, pg 262 of 346	The renovation and modernization of existing Navigational lock shall include but not limited to the following items:....."Diversion of Existing Road".....					Schedule B, pg 262 of 346 of Vol-1 may be read as: ".....The diversion of the existing internal road is under the scope of the Contractor....."					
8	General- DPR						The DPR with the supporting annexures are available on the website of IWAI.					
9	Volume 2: Technical Specifications, 2.3.5, Pg 79 of 571	Clause 2.3.5 states that load due to "Accidental impact from 3000 DWT fully loaded barge on Caisson and Mitre gate shall be considered while designing."					The Clause 2.3.5 at page no 79 of Vol-2 to be read as: "Mitre gate shall be designed for accidental impact load of 3000 DWT. Caisson gate shall be designed for the U/S hydrostatic head."					

12	Volume 2:Civil Structural, 1.2.7, Page No- 30	The Contractor shall plan, design and construct suitable roofed paved area for vehicle parking nearby the control room.	<p>Clause No 1.2.7 Vehicle Parking Area, at page no 30 in Vol-2 may be read as:</p> <p>“The Contractor shall plan, design and construct suitable covered (Corrugated Metal sheet) along with necessary support structure and paved (paver block) area for vehicle parking adjacent to the main control room building with capacity of 6 Nos. of four-wheeler and 10 Nos. of two-wheeler vehicles. Size and height of parking shall be as per NBC and IS code.”</p> <p>The site development is to be planned by the EPC contractor based on the requirement given. Accordingly, the vehicle parking area, if possible, shall be adjacent to the control room building.</p>						
11	Volume 2:Civil Structural, 1.2.5.4, Page No-30	The Contractor shall plan, design and construct security office at the suitable location to handle entry and exit clearances of the navigation lock	<p>The clause no 1.2.5.4 at page no 30 of Vol-2 may be read as:</p> <p>The Contractor shall plan, design and construct security office of 5m x 4m area at suitable location near the gates to handle entry and exit clearances in the Navigational lock area.</p> <p>The site development is to be planned by the EPC contractor based on the requirement given. Accordingly, the security office, if possible, shall be adjacent to the entry & exit gates (Refer Drawing No. ENL 013_R1 attached at Annexure-A).</p>						
12	Volume 2:Civil Structural, 1.2.5.3, Page No-29	The Contractor shall plan, design and construct toilet block at the suitable location	<p>The clause no 1.2.5, page no 28 of Vol-2 may be read as</p> <p>The following buildings shall be constructed/renovated/modernized as part of this Contract:</p> <table border="1" data-bbox="1339 1305 2083 1372"> <thead> <tr> <th data-bbox="1339 1305 1422 1372">S. No.</th> <th data-bbox="1422 1305 1639 1372">Building</th> <th data-bbox="1639 1305 2083 1372">Type</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	S. No.	Building	Type			
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13	2.3 (iv) Schedules, SCHEDULE - K (TESTS ON COMPLETION), pg 283 of 346 of Vol-1	Time taken for filling / emptying of the lock shall not exceed 8 minutes. If it does not meet the criteria, appropriate modification to the feeder channel shall be made.	<p>Clause no 2.3 (iv), Schedules, SCHEDULE - K (TESTS ON COMPLETION), at page no 283 of 346 of Vol-1 may be read as:</p> <p>“Currently it is around 8 minutes. The existing time taken to fill the lock shall be retained. No modification in the dimensions of the existing feeder canal is expected”.</p>															
14	Volume II, 2.1.3 Navigational	Based on these criteria, the fender of AN 800, grade E3.0	The bidder shall conduct its own assessment and design in accordance with the provisions, codes, specifications etc.															

	Lock and caisson gate parking bay Fendering System, Pg 44 of 571		Parameters for the designing the fender Maximum length of Vessel= 110m, the complete lock chambers will be provided with fenders so that the longest vessel can be accommodated. Maximum width of vessels= 18 M Draft of vessel= 3 M Limiting fender depth- 300-400 mm
15	Volume II, 2.3 HYDROMECHANICAL, 2.3.11 Material, pg 83 of 571	Ballast Cast Iron (IS:210) or concrete	Point no 10 in clause 2.3.11 at page no 83 of Vol-2 to be read as: Ballast Cast Iron (IS:210)/concrete/ lead material/steel/rebar.
16	Volume II, 6.2 MITRE GATE 6.2.4 Fixing Arrangements, pg 528 of 571	Sill and side walls at gate grooves should be made of polished granite as per IS codes 14223 (Part-I) as mentioned in Design Criteria,	Clause no 6.2.4 Fixing Arrangements at pg no 528 of 571 of Vol-2 may be read as: “Sill and side walls at gate grooves should be made of stainless steel as per relevant IS codes as mentioned in Design Criteria”.
17	Volume II, 6.3 CAISSON GATE, 6.3.1 Structure, pg 531 of 571	Sill and side walls at gate grooves should be made of polished granite as per IS codes 14223 (Part-I) as mentioned in Design Criteria	Clause no 6.3.1 Fixing Arrangements at pg no 531 of 571 of Vol-2 may be read as: “Sill and side walls at gate grooves should be made of stainless steel as per relevant IS codes as mentioned in Design Criteria”.
18	Volume II: Technical Specifications, Volume - 2 Clause no 2.3.9 pg 81 of 571	Floataion and Stability – Caisson Gate, The gate shall be capable of being ballasted for de-ballasted in 30 minutes or less.	Clause no 2.3.9 at page no 81 of Vol-2 may be read as: “Floataion and Stability – Caisson Gate: the gate shall be capable of being ballasted or de-ballasted in 30 minutes or less.”
19	"POWER SINGLE LINE DIAGRAM OF EXISTING NAVIGATION	Local Control Room	The modified SLD (ENL 011_R1) attached at Annexure-A for indicative purpose. However, the contractor shall design the SLD. There are 1 Central Control Room and 4 local control room.

	LOCK, FARAKKA (DRG. No: ENL011)" ELECTRICAL, Note no.15 & 16		
20	Electrical "Clause: 5.2.5.2, 110VDC System - Construction of Battery Charger cum DCDB", pg 422 of 571	Construction of Battery Charger cum DCDB: ".....Suitable synthetic rubber gaskets shall be provided to achieve a degree of protection of IP54....."	Clause: 5.2.5.2, 110VDC System - Construction of Battery Charger cum DCDB", page no 422 of 571 may be read as: ".....Suitable synthetic rubber gaskets shall be provided to achieve a degree of protection of IP42....."
21	Electrical "Clause: 5.2.5.1, 110VDC System - Construction of Battery" pg 421 & 422 of 571	Construction of Battery:Following accessories shall be provided with batteries. • Syringe type Hydrometer : 2 Nos per Battery • Thermometer with specific gravity correction scale: 2 Nos per Battery • Cell testing voltmeter 3-0-3 volts : 2 Nos per Battery • Acid resistant funnel : 2 Nos per Battery • Acid resistant jug. : 2 Nos per Battery • Rubber apron and gloves : 2 sets per Battery • Spanners : 2 sets per Battery • Wall mounted teak wood rack for above items : 2 Nos per Battery Following maintenance spares shall be provided as a minimum: • Inter cell connectors : 10 Nos. • Inter row connectors : 2 Nos. • Battery stand insulators : 2 Nos	Clause: 5.2.5.1, 110VDC System - Construction of Battery" pg 421 & 422 of 571 of Vol-2 may be read as: Construction of Battery:Following accessories shall be provided with batteries. • Cell testing voltmeter 3-0-3 volts : 2 Nos per Battery • Rubber apron and gloves : 2 sets per Battery • Spanners : 2 sets per Battery • Wall mounted teak wood rack for above items : 2 Nos per Battery Following maintenance spares shall be provided as a minimum: • Inter cell connectors : 10 Nos. • Inter row connectors : 2 Nos. • Nuts, bolts & washers : 10 pieces each • Vent plugs : 10 Nos.

		<ul style="list-style-type: none"> • Cell insulators : 2 Nos • Nuts, bolts & washers : 10 pieces each • Vent plugs : 10 Nos. • Spare dry cell : 4 Nos. 	<ul style="list-style-type: none"> • Spare dry cell : 4 Nos. 																		
22	Electrical "Clause: 5.2.10, 415V Silent Diesel Generator" pg 454 of 571	DG set ratingThe output from the unit shall be 400 KVA (at alternator output), 415 volts, 3 ph, 50 Hz, 0.8 power factor. It shall cater to 100% indoor lighting, Operation of Mitre & Radial Gates and 20% High Mast Load.....	Clause no 5.2.10, page no 454 of Vol-2 may be read as: “...The output from the unit shall be 400 KVA (at alternator output), 415 volts, 3 ph, 50 Hz, 0.8 power factor. It shall cater to 100% indoor lighting, Operation of Mitre & Radial Gates, 20% High Mast Load. Entre-Exit Gates, Boundary Wall lighting (both sides).....”																		
23	Clause no 2.2.6.1 at page no 68 of Vol-2	Boundary Wall: Single Arm Street light poles with GI pipe of 3.5m height (1 m Tilted at 45 degree & 2.5 m straight) above boundary wall with 30W LED luminaires @ 15m distance. <table border="1" data-bbox="539 751 1301 1374"> <thead> <tr> <th>Location</th> <th>Average lux level</th> <th>Type of Luminaire</th> </tr> </thead> <tbody> <tr> <td>Outdoor Area</td> <td>30</td> <td>2x400W HPSV twin lamp & 1x1000W Flood Light, weather proof, Heavy duty High Mast (30 m) in die cast Aluminum alloy housing</td> </tr> <tr> <td>Boundary Wall</td> <td>20</td> <td>Single Arm Street light poles with GI pipe of 3.5m height (1 m Tilted at 45 degree & 2.5 m straight) above boundary wall with</td> </tr> </tbody> </table>	Location	Average lux level	Type of Luminaire	Outdoor Area	30	2x400W HPSV twin lamp & 1x1000W Flood Light, weather proof, Heavy duty High Mast (30 m) in die cast Aluminum alloy housing	Boundary Wall	20	Single Arm Street light poles with GI pipe of 3.5m height (1 m Tilted at 45 degree & 2.5 m straight) above boundary wall with	Please refer to Clause No. 2.2.6.1 at page no 68 of Vol-2 may be read as: <table border="1" data-bbox="1352 683 2078 1345"> <thead> <tr> <th>Location</th> <th>Average lux level</th> <th>Type of Luminaire</th> </tr> </thead> <tbody> <tr> <td>Outdoor Area</td> <td>30</td> <td>2x400W HPSV twin lamp & 1x1000W Flood Light, weather proof, Heavy duty High Mast (30 m) in die cast Aluminum alloy housing</td> </tr> <tr> <td>Boundary Wall including Entry-Exit gate</td> <td>20</td> <td>Double Arm Street light poles with GI pipe of 3.5m height (1 m Tilted at 45 degree & 2.5 m straight) above boundary wall with 30W LED luminaires @ 15m distance</td> </tr> </tbody> </table>	Location	Average lux level	Type of Luminaire	Outdoor Area	30	2x400W HPSV twin lamp & 1x1000W Flood Light, weather proof, Heavy duty High Mast (30 m) in die cast Aluminum alloy housing	Boundary Wall including Entry-Exit gate	20	Double Arm Street light poles with GI pipe of 3.5m height (1 m Tilted at 45 degree & 2.5 m straight) above boundary wall with 30W LED luminaires @ 15m distance
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		Control Room Building (Ground Floor), DG & Transformer Room, & Local Control Panel Rooms	200	General Purpose Industrial compact batten suitable for 2x20 W LED Tube Light fitted with Aluminium heat sink	Control Room Building (Ground Floor), DG & Transformer Room, & Local Control Panel Rooms	200	General Purpose Industrial compact batten suitable for 2x20 W LED Tube Light fitted with Aluminum heat sink
		Control Room Building (First & Second Floor)	300	34Watt LED Panel with ultra-modern recess mounting luminaire suitable for Armstrong/grid/POP ceiling complete with separate electronic driver & high brightness Surface Mounted Device(SMD) LEDs	Control Room Building (First & Second Floor)	300	34Watt LED Panel with ultra-modern recess mounting luminaire suitable for Armstrong/grid/POP ceiling complete with separate electronic driver & high brightness Surface Mounted Device(SMD) LEDs
		Control Room Building (Ground, First & Second Floor) & Local Control Panel rooms & at all entry / exit points etc.	10 (Minimum)	Battery operated emergency lighting unit consist of aesthetically designed rechargeable 5 Watt LED lantern with dimming and SOS feature. Battery shall be rechargeable Li-ion type & 5V DC Li-ion charger with 1 hour battery backup.	Control Room Building (Ground, First & Second Floor) & Local Control Panel rooms & at all entry / exit points etc.	10 (Minimum)	Battery operated emergency lighting unit consist of aesthetically designed rechargeable 5 Watt LED lantern with dimming and SOS feature. Battery shall be rechargeable Li-ion type & 5V DC Li-ion charger with 1 hour battery backup.

24	Residential Buildings, Vol II, 1.2.5.2, Page No- 29	Location of the proposed quarters are shown in Drawing No. ENL 013	Please refer drawing number ENL 013_R1 attached at Annexure-A.
25	Synchronized Operation of Existing and New Navigational Lock through Integrated Signal System, Vol II, 1.2.16, Page no- 41	The movement of traffic through both the navigational locks (Existing & New) shall be managed from an integrated signal system. The integrated signal system should be installed at the upstream and downstream of the lock for synchronized operation through both the locks (Existing & New) resulting in safe and reliable and smooth movement of vessels. The integrated signal system should be interoperable from both the existing and new navigational lock control room . The Contractor shall do the design, installation, testing and commissioning of the integrated signal system for traffic management for synchronized operations of the movement of traffic through the Existing and New Navigational lock as per specifications for Signal System covered under Section 4.25.	Clause no 1.2.16 at Page no- 41, Vol-2 may be read as: The movement of traffic through both the navigational locks (Existing & New) shall be managed from an integrated signal & Hooter system. The integrated signal & Hooter system should be installed at the upstream and downstream of the lock for synchronized operation through both the locks (Existing & New) resulting in safe, reliable and smooth movement of vessels. The integrated signal system should be interoperable from both the existing and new navigational lock control room. The Contractor shall do the design, installation, testing and commissioning of the integrated signal & Hooter system for traffic management for synchronized operations of the movement of traffic through the Existing and New Navigational lock as per specifications for Signal System covered under Section 4.25. The Hooter system shall be duly synchronized with the opening & closing of the gates.
26	MITRE Gate control system, Vol II, 6.2.3, Page no- 526	The electro-hydraulic system shall be proven and selected from reputed manufacturer who had supplied similar system in Navigational lock and the same is working satisfactorily for at least 10 years. A performance certificate from the users for similar system designed and installed by the manufacturer shall be submitted along with the offer	The clause 6.2.3 at page no 526 of Vol-2 may be read as: “The electro-hydraulic system shall be proven and selected from reputed manufacturer who had supplied similar system in Navigational lock / Irrigation/ Hydropower Projects and the same is working satisfactorily for at least 10 years. A performance certificate from the users for similar

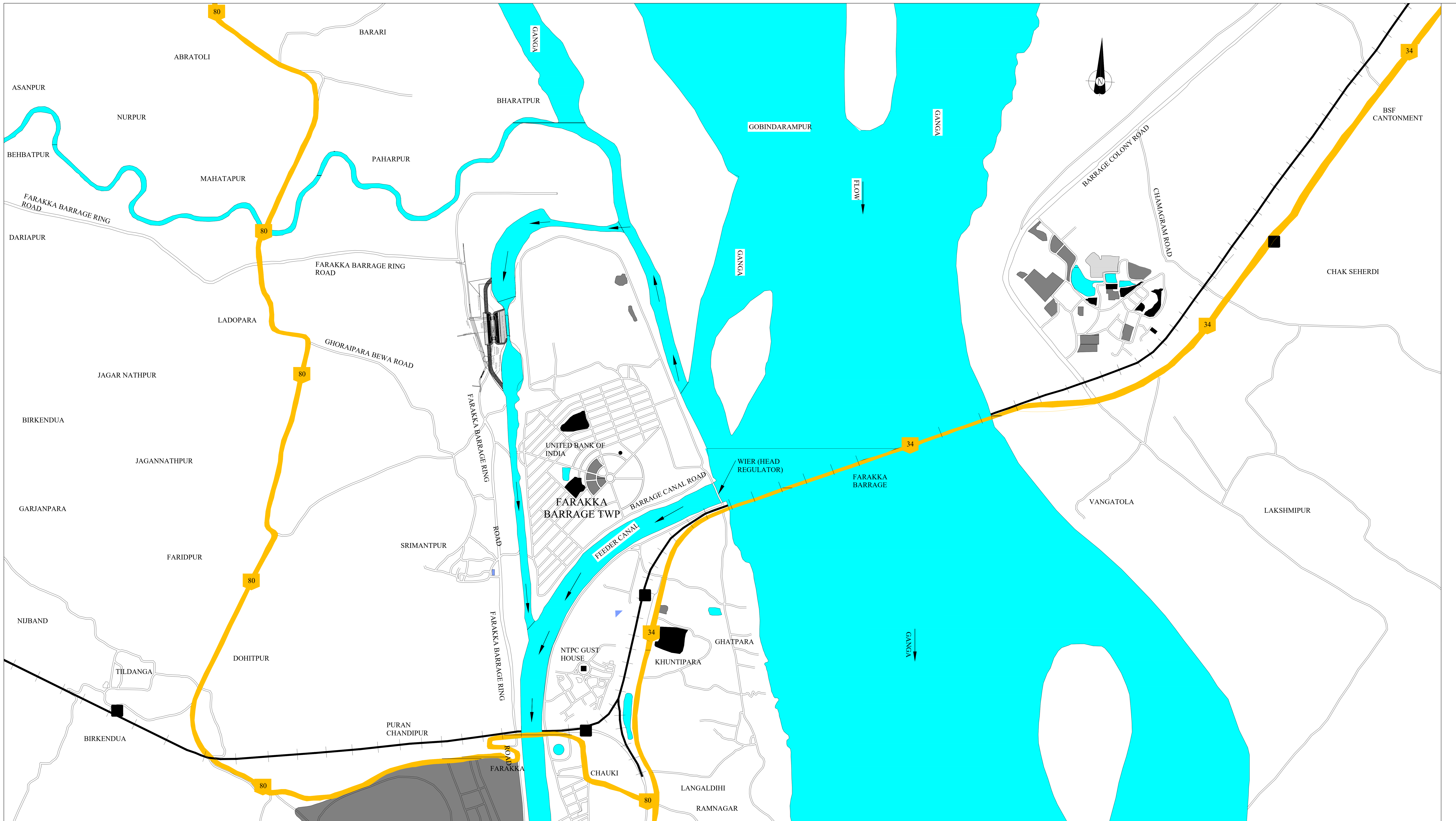
			system designed and installed by the manufacturer shall be submitted along with the offer.”
27	Radial Gate control system, Vol II, 6.4.14, Page no- 540	The electro-hydraulic system shall be proven and selected from reputed manufacturer who had supplied similar system in Navigational lock and the same is working satisfactorily for at least 10 years. A performance certificate from the users for similar system designed and installed by the manufacturer shall be submitted along with the offer	Please refer 6.4.14 at page no 540 of Vol-2 may be read as: “The electro-hydraulic system shall be proven and selected from reputed manufacturer who had supplied similar system in Navigational lock / Irrigation/ Hydropower Projects and the same is working satisfactorily for at least 10 years. A performance certificate from the users for similar system designed and installed by the manufacturer shall be submitted along with the offer”.
28	Clause no 2.3.4 Range of Differential Water Levels, Page no- 79, Vol-2	Clause No. 2.3.4 Range of Differential Water Levels	Clause No. 2.3.4 Range of Differential Water Heads
29	Volume 3: Bill of Quantities, 2.8.7 Engineering, Procurement and Construction of Hydro Mechanical work/ operating mechanism of Bulkhead gates, Page No-20	Sl.no 8.7.1 Hydro Mechanical Works - Hydraulic hoist / Other operating mechanism for Bulkhead gate	The Clause no 2.8.7 (8.7.1) at page no 20 & item no 19.01 of BoQ may be read as: “Supply, Installation and Commissioning of Hydro mechanical works such as electrical wire rope hoist / Other operating mechanism for Bulkhead gate operations including mobilization, designing, fabricating, Supplying, painting, welding, drilling, grouting & fixing in position as necessary for complete operation and ready to use as per approved designs, drawings and specifications including testing, inspection, commissioning and defect rectifications, complete in all respects”.

30	Drawing No. ENL-003, Vol-2, BoQ item no 7 & clause no 2.5.3 of Vol-3 at page no 12	<p>Control Rooms</p> <p>Engineering, Procurement and Construction of Control Room Building including local control rooms (2 Nos)</p> <p>Control Room Building Renovation and modernization of existing main control room building along with local control rooms (2 Nos) including mobilization & de-mobilization as per approved designs, drawings and specifications including testing, inspection and defect rectifications, complete in all respects.</p>	<p>BoQ item no 7 & clause no 2.5.3 of Vol-3 at page no 12 may be read as:</p> <p>Engineering, Procurement and Construction of Control Room Building including local control rooms (4 Nos)</p> <p>Control Room Building Renovation and modernization of existing main control room building along with local control rooms (4 Nos) including mobilization & de-mobilization as per approved designs, drawings and specifications including testing, inspection and defect rectifications, complete in all respects.</p>
31	Volume - 2 Clause no 1.2.5 Page No 28	<p>1.2.5.2 Residential Building</p> <p>The Contractor shall plan, design and construct Residential quarters for the chief lock officer and lock officer of the Navigational lock s. 2 units of Type IV and 4 units of Type III quarters have been proposed. The plinth area shall be fixed as per the New Plinth Area Norms 2012 of CPWD. In the proposed quarters following amenities shall be available:</p> <ol style="list-style-type: none"> 1. Kitchen 2. Kitchen sink 3. Ceramic glazed tiles 4. Built in cupboard with open shelves below cooking platform 5. Cooking platform standing 6. Wardrobes 7. Curtain rods with bracket 8. Storage tank 9. Ceiling Fans 10. Exhaust Fans <p>All other required amenities shall be provided as per the Revised Specifications & Scale of Amenities for</p>	<p><i>The clause no 1.2.5.2 at page no 28 of Vol-2 may be read as</i></p> <p>1.2.5.2 Residential Building</p> <p>The Contractor shall plan, design and construct residential quarters for the chief lock officer and lock officer and other lock operating staff of the Navigational locks. 2 units of Type IV and 4 units of Type III residential quarters s have been proposed. The plinth area shall be fixed as per the New Plinth Area Norms 2012 of CPWD. In the proposed residential quarters following amenities shall be available:</p> <ol style="list-style-type: none"> 1. Kitchen 2. Kitchen sink 3. Ceramic glazed tiles 4. Built in cupboard with open shelves below cooking platform 5. Cooking platform standing 6. Wardrobes 7. Curtain rods with bracket 8. Storage tank 9. Ceiling Fans

		<p>General Pool Residential Accommodation (Type I to VI). Location of the proposed quarters are shown in Drawing No. ENL 013.</p>	<p>10.Exhaust Fans All other required amenities shall be provided as per the Revised Specifications & Scale of Amenities for General Pool Residential Accommodation (Type I to VI). Location of the proposed residential quarters are shown in Drawing No. ENL 013_R1 attached at Annexure-A.</p>
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List of Drawings

S.N.	Drawing No.	Revision	Title Of Drawing
1	ENL001	R1	Index Plan of The Existing and New Navigation Lock, Farakka
2	ENL002	R1	Topography Survey of The Navigation Lock Farakka
3	ENL003	R1	General Arrangement Drawing of Existing Navigation Lock
4	ENL004	R1	General Arrangement Drawing of Parking Bay
5	ENL005	R1	General Arrangement Drawing of Mooring Equipment
6	ENL006	R1	General Arrangement Drawing of Bank Protection
7	ENL007-SH1	R1	General Arrangement Drawing of Mitre Gate (Sheet No.1)
8	ENL007-SH2	R1	General Arrangement Drawing of Mitre Gate (Sheet No.2)
9	ENL007-SH3	R1	General Arrangement Drawing of Mitre Gate (Sheet No.3)
10	ENL008-SH1	R1	General Arrangement Drawing of Radial Gate (Sheet No.1)
11	ENL008-SH2	R1	General Arrangement Drawing of Radial Gate (Sheet No.2)
12	ENL009-SH1	R1	General Arrangement Drawing of Bulkhead Gate (Sheet No.1)
13	ENL009-SH2	R1	General Arrangement Drawing of Bulkhead Gate (Sheet No.2)
14	ENL010-SH1	R1	General Arrangement Drawing of Caisson Gate (Sheet No.1)
15	ENL010-SH2	R1	General Arrangement Drawing of Caisson Gate (Sheet No.2)
16	ENL010-SH3	R1	General Arrangement Drawing of Caisson Gate (Sheet No.3)
17	ENL010-SH3	R1	General Arrangement Drawing and Detail of Caisson Gate Movement for Operation of Existing Navigation Lock (Sheet No.4)
18	ENL011	R1	Power Single Line Diagram of Existing Navigation Lock, Farakka
19	ENL012	R1	Basic Control Architecture of Existing Navigation Lock, Farakka
20	ENL013	R1	General Arrangement Drawing of Bank Protection, Parking Bay, Storm Water Drainage and Road, Retiring Area
21	ENL014	R1	General Location Plan for Monitoring Instrumentation of Existing Navigation Lock, Farakka



INLAND WATERWAYS AUTHORITY OF INDIA

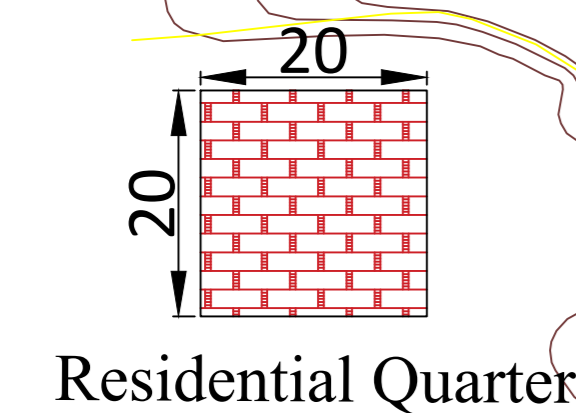
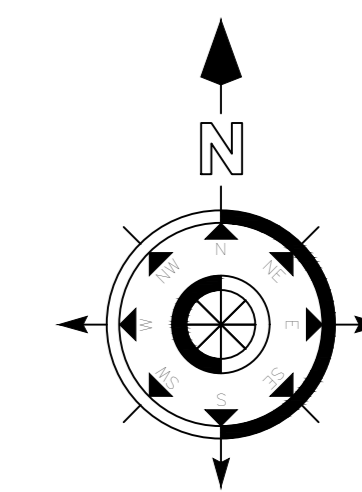
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
 PKS FLOODKON JV 	DRN		
	CHD		
	APD		

TITLE INDEX PLAN OF THE EXISTING AND NEW NAVIGATION LOCK, FARAKKA

JOB. NO.	DRG. NO. ENL001
----------	-----------------

REV.	DATE	DESCRIPTION	DRN	CHD	APD

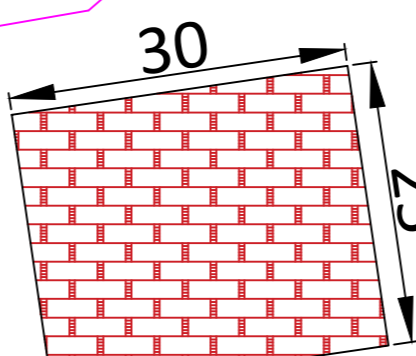


Residential Quarter

PARKING BAY FOR
CAISSON GATE

32.804

Security Office
cum Check Post
5mX4m



Temporary
Buildings

Residential Quarter

Existing Control Room Building

Temporary
Buildings

EXISTING STORM
WATER DRAINAGE

Security Office
cum Check Post
5mX4m

14.036

PARKING BAY FOR
CAISSON GATE

56.426

ROAD

ROAD

AL

Legends

- Contour Lines
- Canal
- New Navigation Lock

NOTE:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
- NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

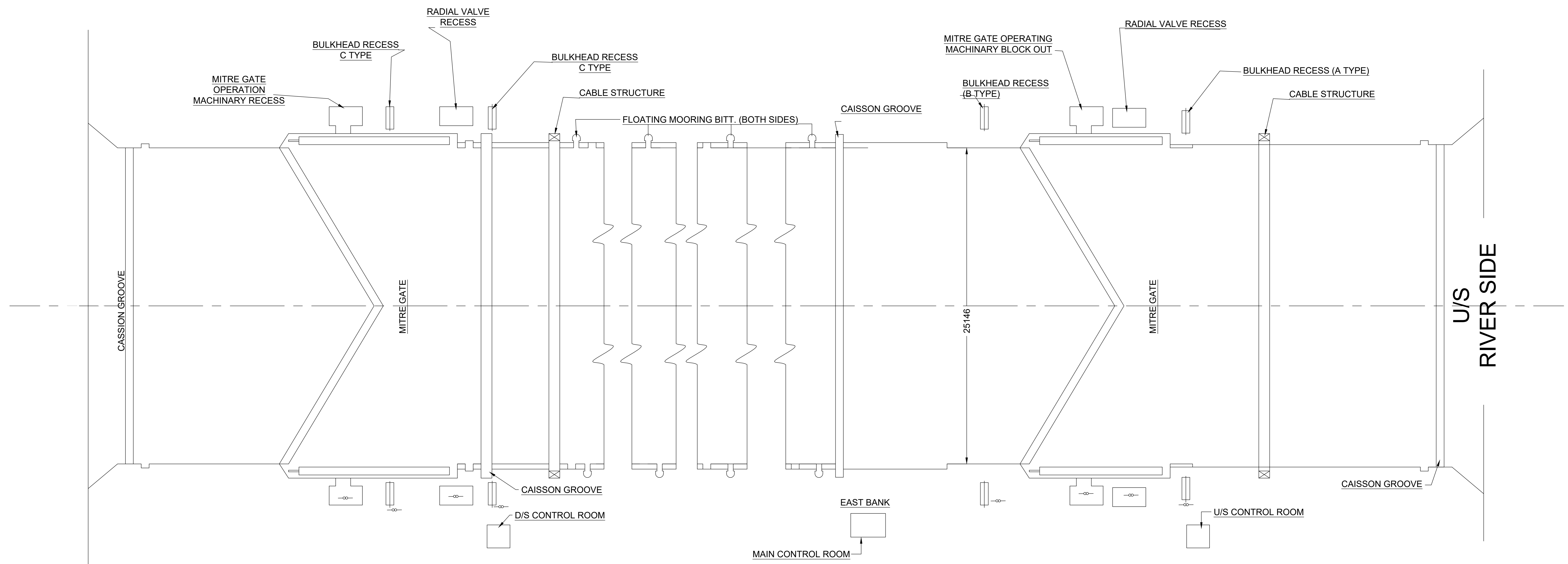
INLAND WATERWAYS AUTHORITY OF INDIA

PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
PKS Infra Engineers PKS FLOODKON JV	DRN		
	CHD		
	APD		

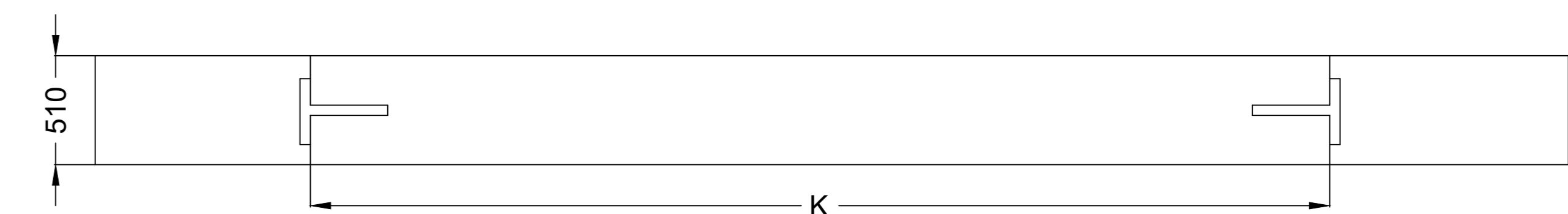
TITLE TOPOGRAPHY SURVEY OF THE NAVIGATION LOCK, FARAKKA

JOB. NO. DRG. NO.
ENL002



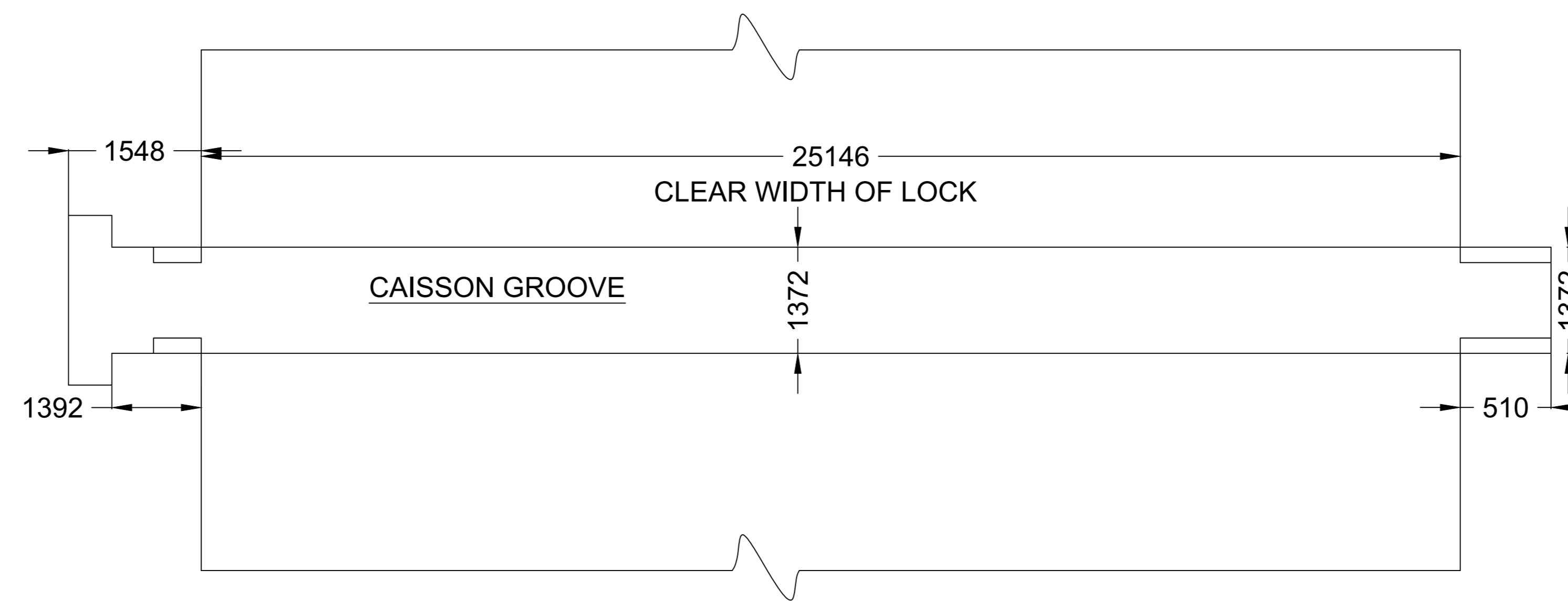
**U/S NAVIGATION LOCK FARAKKA
GENERAL LAYOUT**

- LOCK : 1 NO.
 - MITRE GATES : 2 NOS. with 2 leaf each
 - RADIAL GATES : 4 NOS
 - MOORING BITS : 8 NOS. (Floating Bollard)
 - CAISSON GATES : 2 NOS.
 - BULK HEAD GATES : 8 NOS.
 - CONTROL ROOMS : 1 NO. Main Control Room and 2 NOS. Local Control Control Room
- Currently, the lock operations are carried out through four temporary local control rooms located at each radial gate.

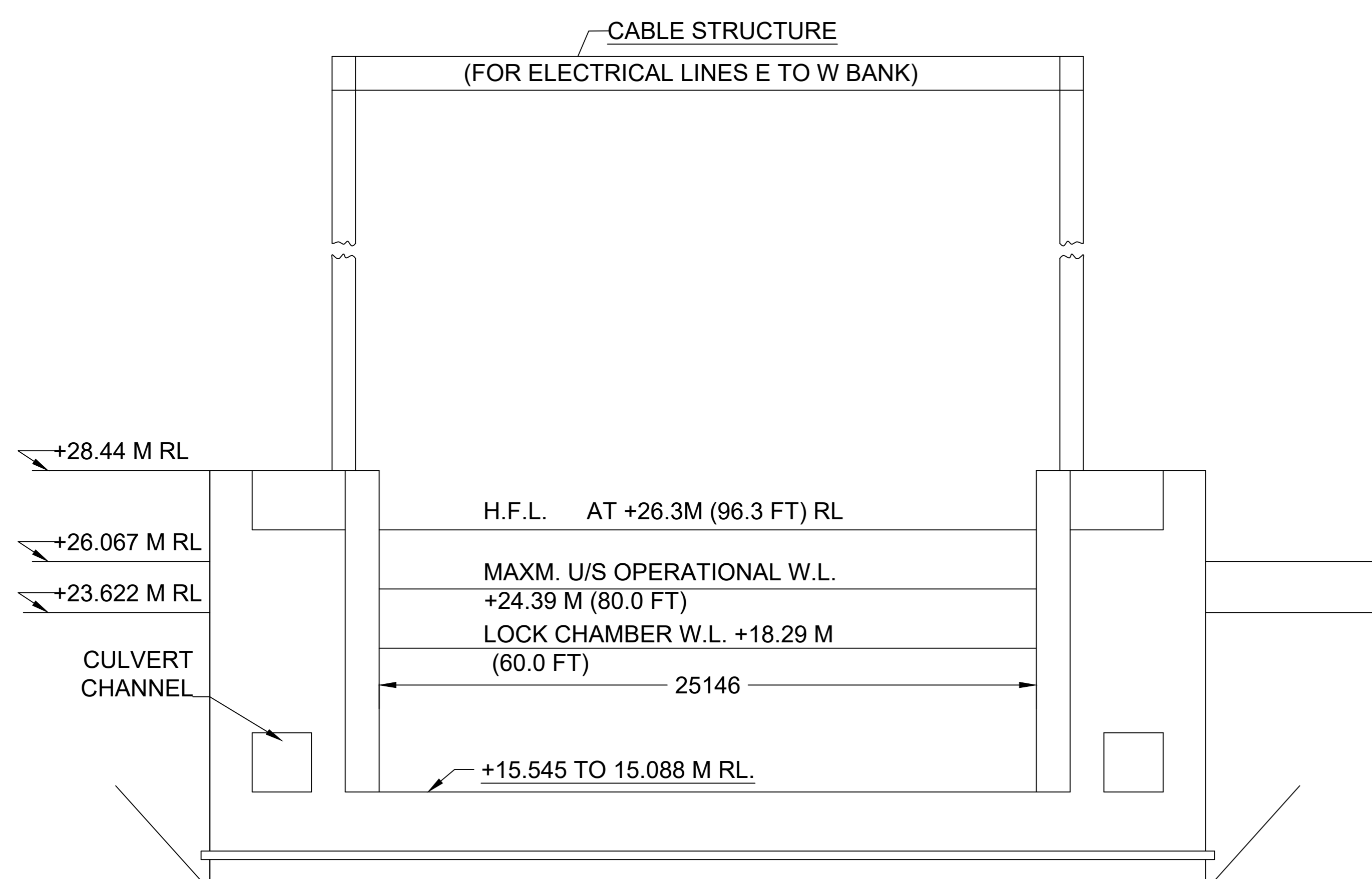


**ENLARGED DETAIL OF
BULKHEAD RECESS**

"K" FOR TYPE - "A" = 4118
 "K" FOR TYPE - "B" = 3328
 "K" FOR TYPE - "C" = 2670



**ENLARGED DETAIL OF
CAISSON GROOVE**



**SECTIONAL ELEVATION
OF LOCK CHAMBER**

- NOTE:
- ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
 - NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

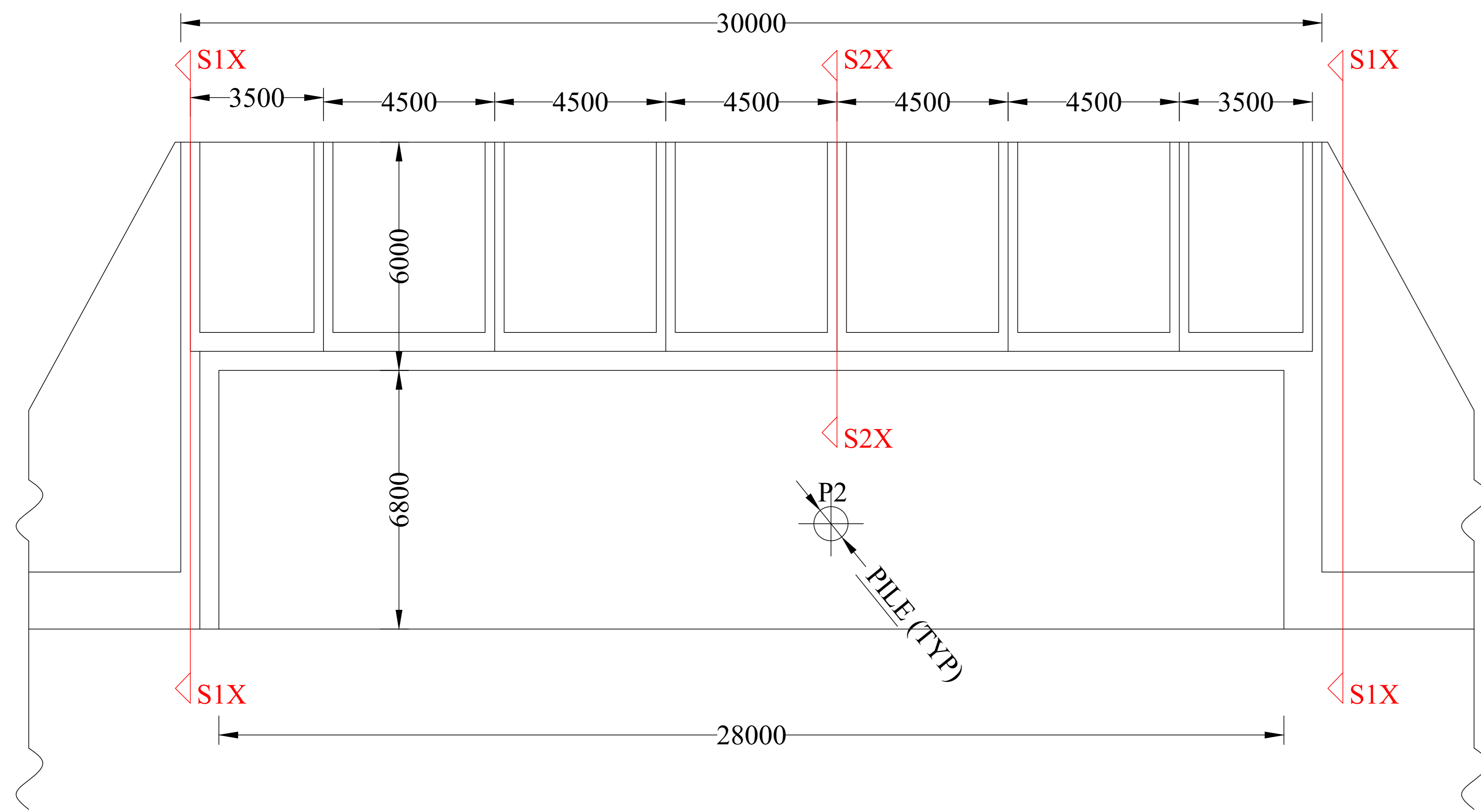
REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA

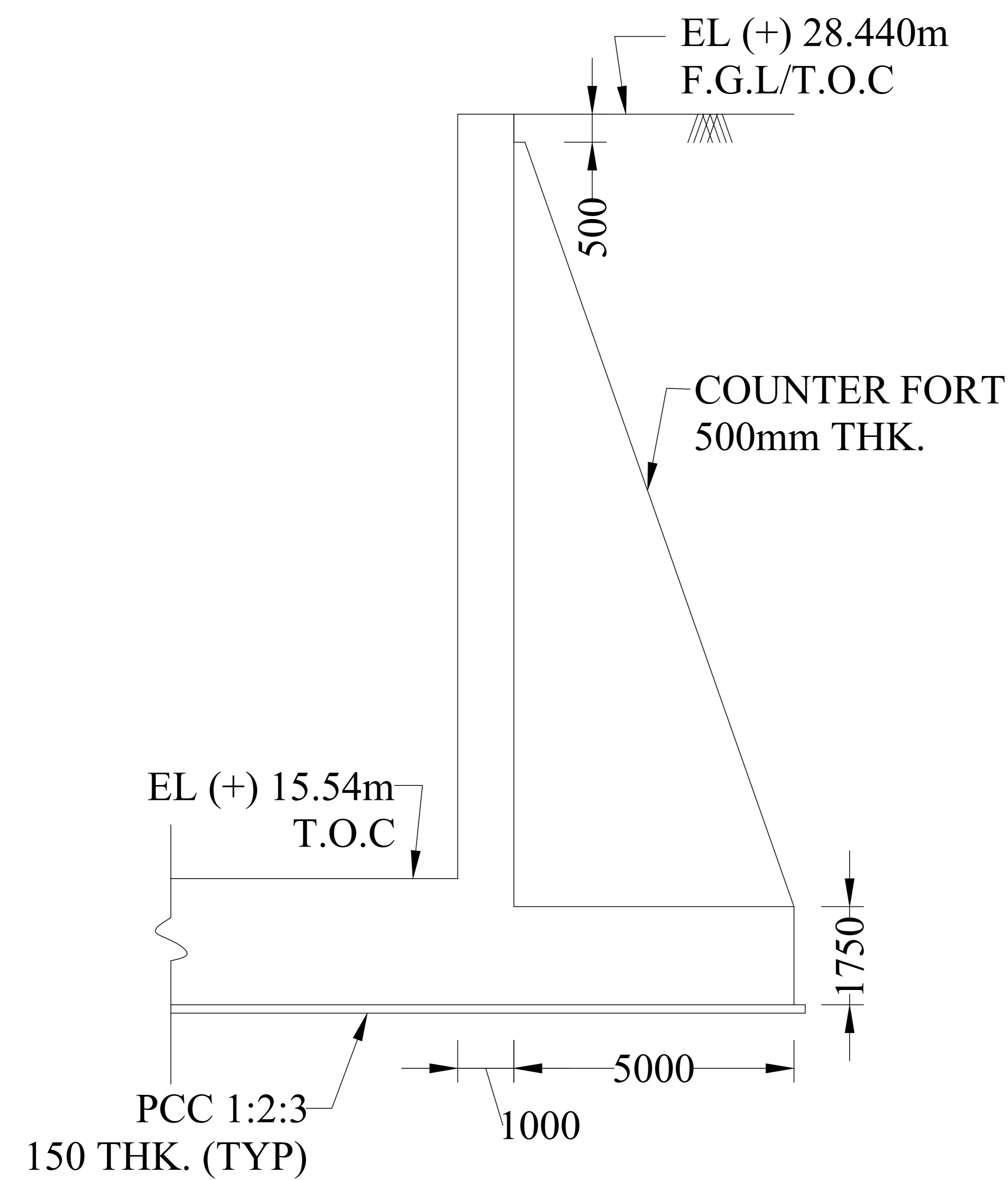
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
PKS FLOODKON JV	DRN		
	CHD		
	APD		
TITLE	JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING OF EXISTING NAVIGATION LOCK, FARAKKA		ENL003	

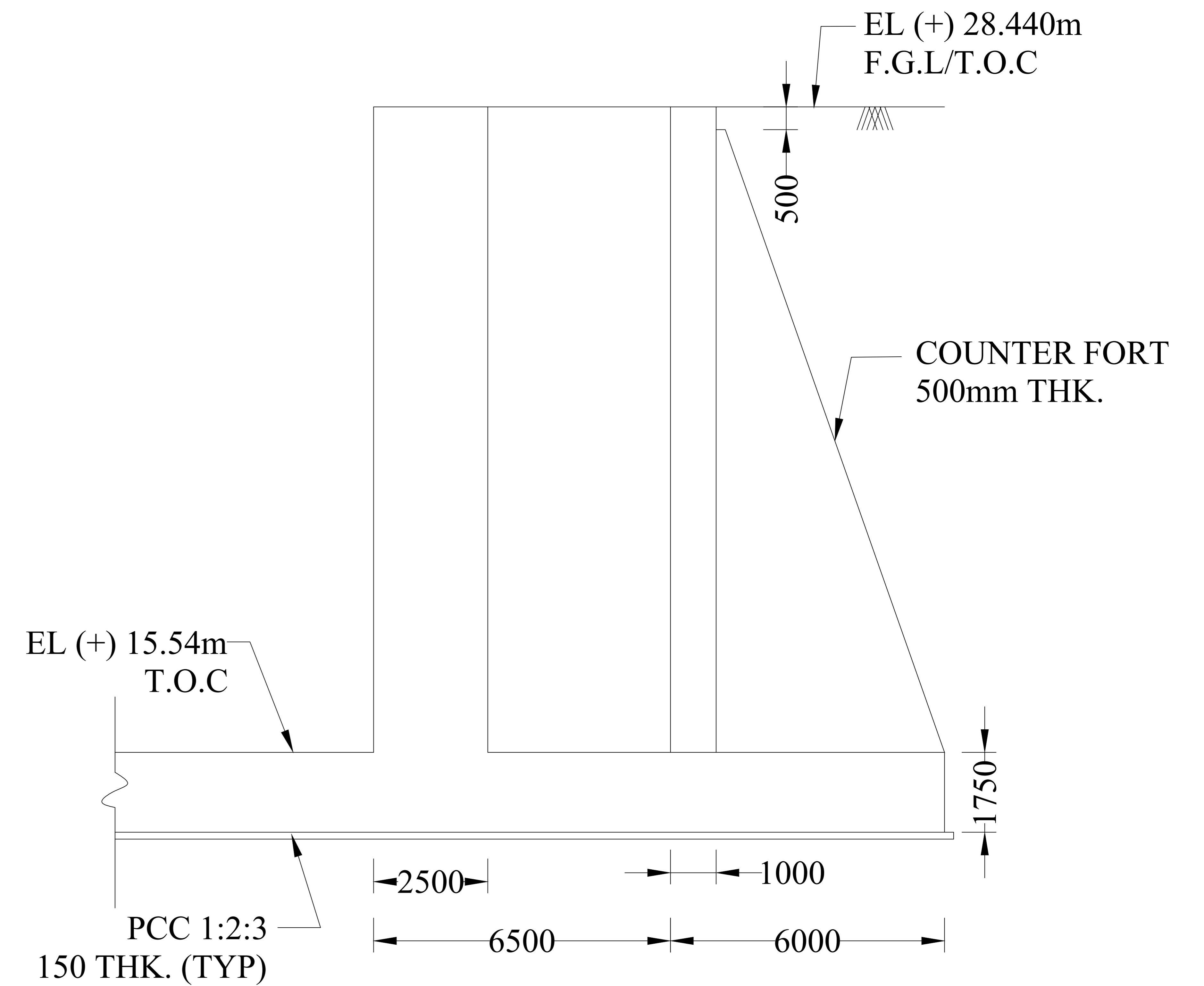
SIZE : A0 REV. R1



PLAN





**SECTION S2X-S2X
NUM. DETAIL FOR LOCK PORTION**

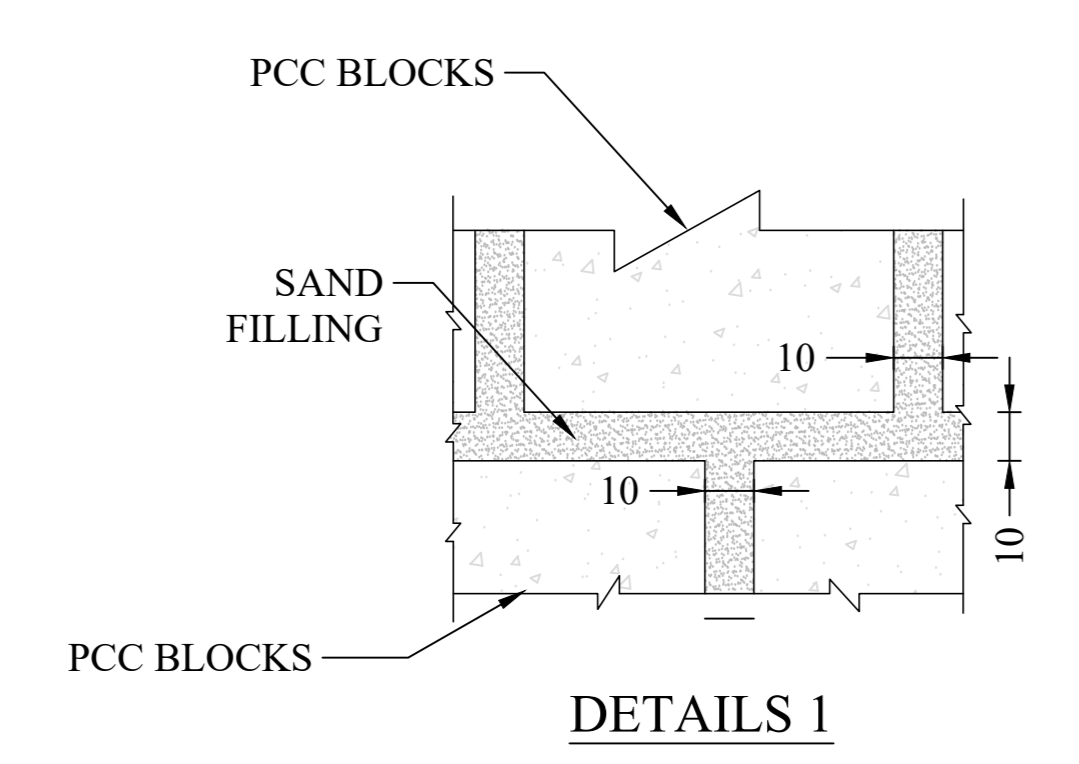
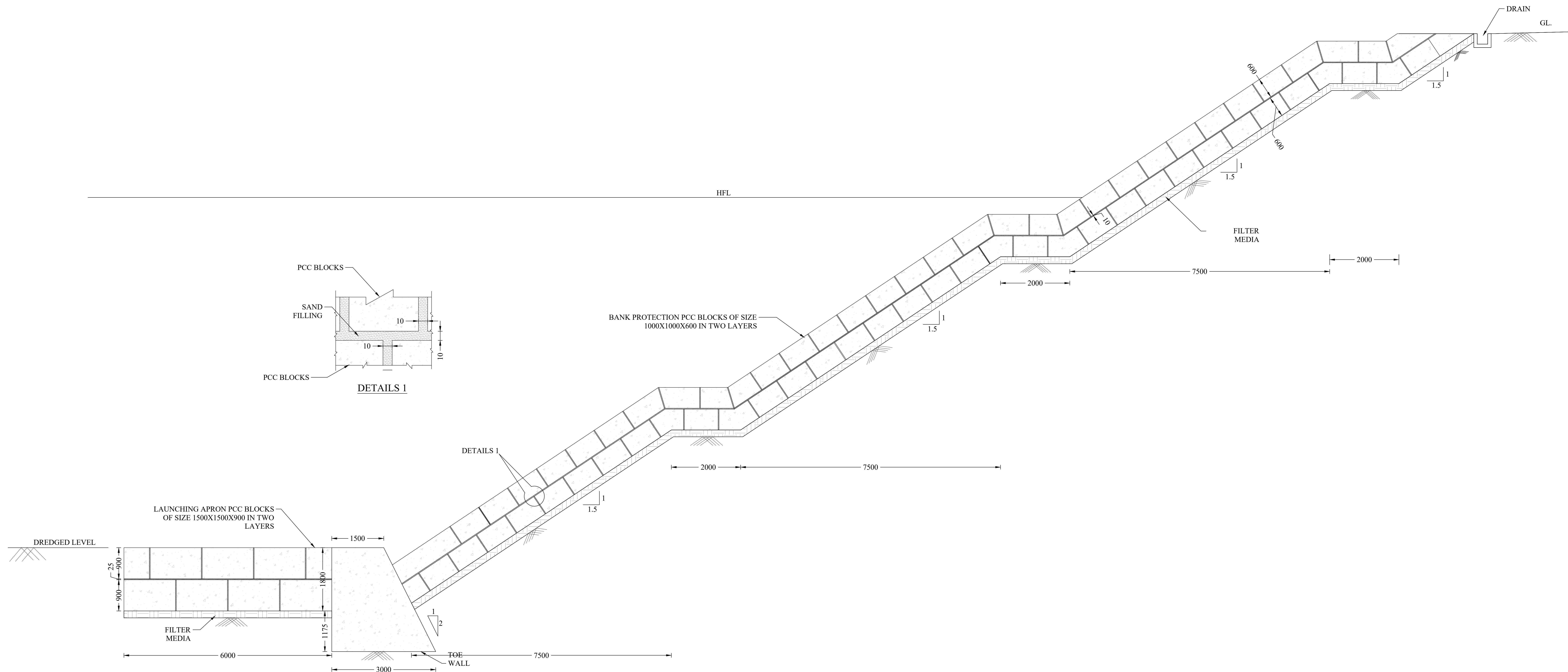


**SECTION S1X-S1X
NUM. DETAIL FOR LOCK PORTION**

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA						
CONSULTANT				NAME	SIGN	DATE
 PKS FLOODKON JV 				DRN		
				CHD		
				APD		
TITLE				JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING AND DETAIL OF PARKING BAY OF EXISTING NAVIGATION LOCK					ENL004	
				SIZE: A0	REV. R1	






BANK PROTECTION PCC BLOCKS OF SIZE 1000X1000X600 IN TWO LAYERS

LAUNCHING APRON PCC BLOCKS OF SIZE 1500X1500X900 IN TWO LAYERS

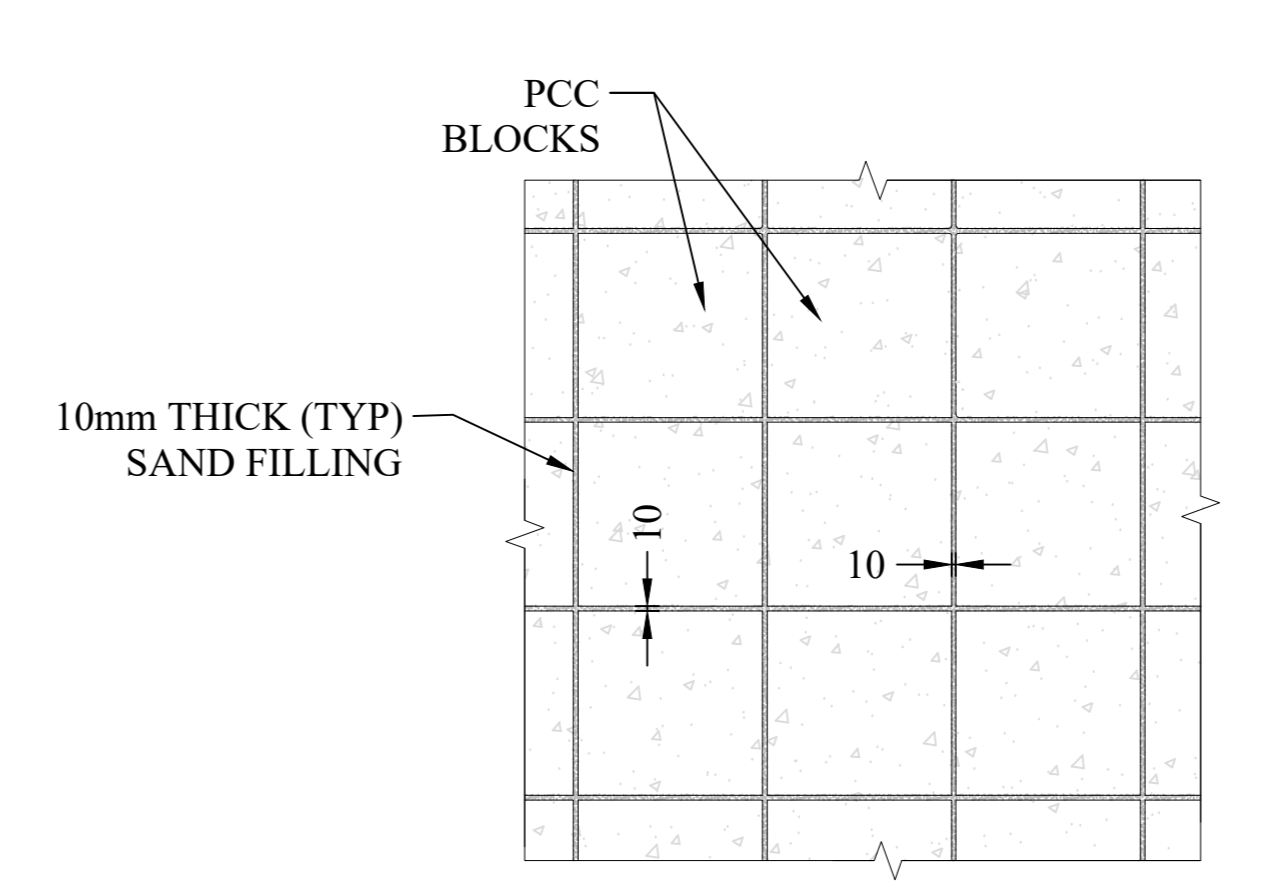
SECTION OF U/S BANK PROTECTION

LEGEND :-

-  PCC
-  FILTER MEDIA
-  SAND



NOTES :-

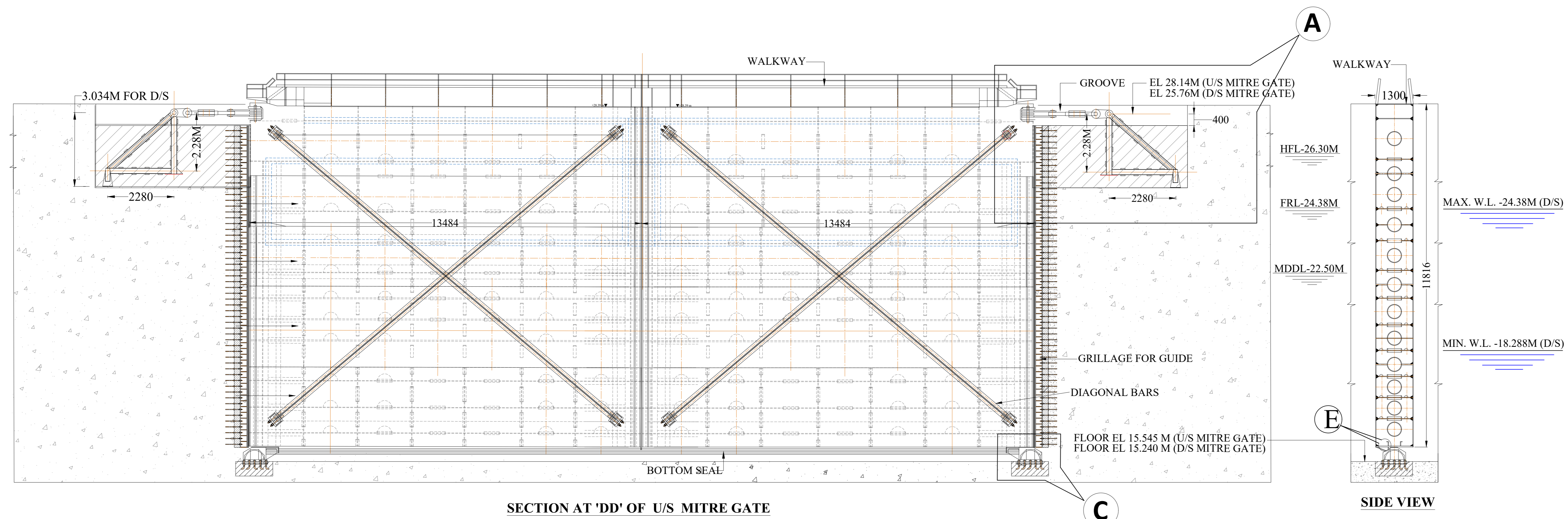
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. PCC SHALL BE OF GRADE M15 AS PER IS 456:2000.



TYPICAL VIEW OF P.C.C BLOCKS

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA						
CONSULTANT				NAME	SIGN	DATE
 PKS FLOODKON JV 				DRN		
				CHD		
				APD		
TITLE				JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING AND DETAIL OF BANK PROTECTION OF EXISTING NAVIGATION LOCK					ENL006	
REV. DATE DESCRIPTION DRN CHD APD				SIZE: A0	REV. R1	



SECTION AT 'DD' OF U/S MITRE GATE

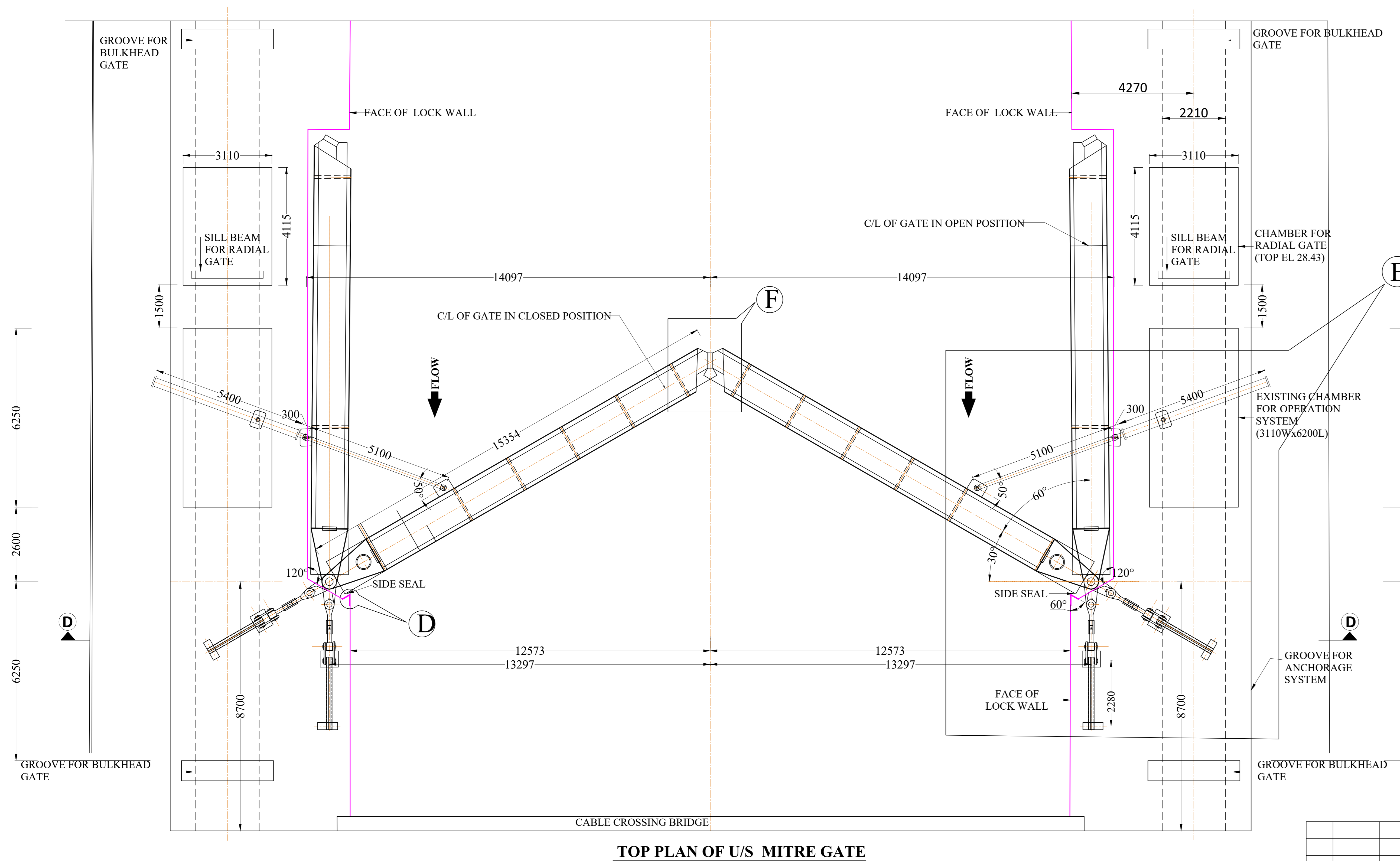
SIDE VIEW

DETAILS OF HYDRAULIC HOIST	
1	TYPE OF HOIST : DOUBLE ACTING
2	NO OF HOIST : 1+1=2 FOR EACH GATE
3	HOISTING CAPACITY : ADEQUATE FOR OPERATION OF GATE
4	WORKING / DESIGN PRESSURE : MAX.200KG/CM2
5	TEST PRESSURE : 1.5 TIMES OF THE DESIGN PRESSURE
6	STROKE : 5.4M
7	SPEED OF OPENING : 0.50M/MIN
8	HOIST : BOUGHT OUT ITEM
9	MAKE OF HYDRAULIC CYLINDER : MONTAN HYDRAULIK/BOSCH REXROTH/EATON
10	MAKE OF POWER PACK : MONTAN HYDRAULIK / BOSCH REXROTH /EATON

TECHNICAL DETAILS	
1	NO.OF GATES : 2NOS. (U/S & D/S)
2	VENT WIDTH : 25.146M
3	FLOOR LEVEL : 15.545M (U/S) AND 15.240M (D/S)
4	TOP OF WALL : 27.74M (U/S) AND 25.36M (D/S)
5	HEIGHT OF GATE LEAF : 27.74M (U/S) AND 25.36M (D/S)
6	OPERATION : HYDRAULIC HOIST
7	SKIN PLATE : RIVER SIDE OF GATE (U/S) AND LOCK SIDE OF GATE (D/S)



NOTE:

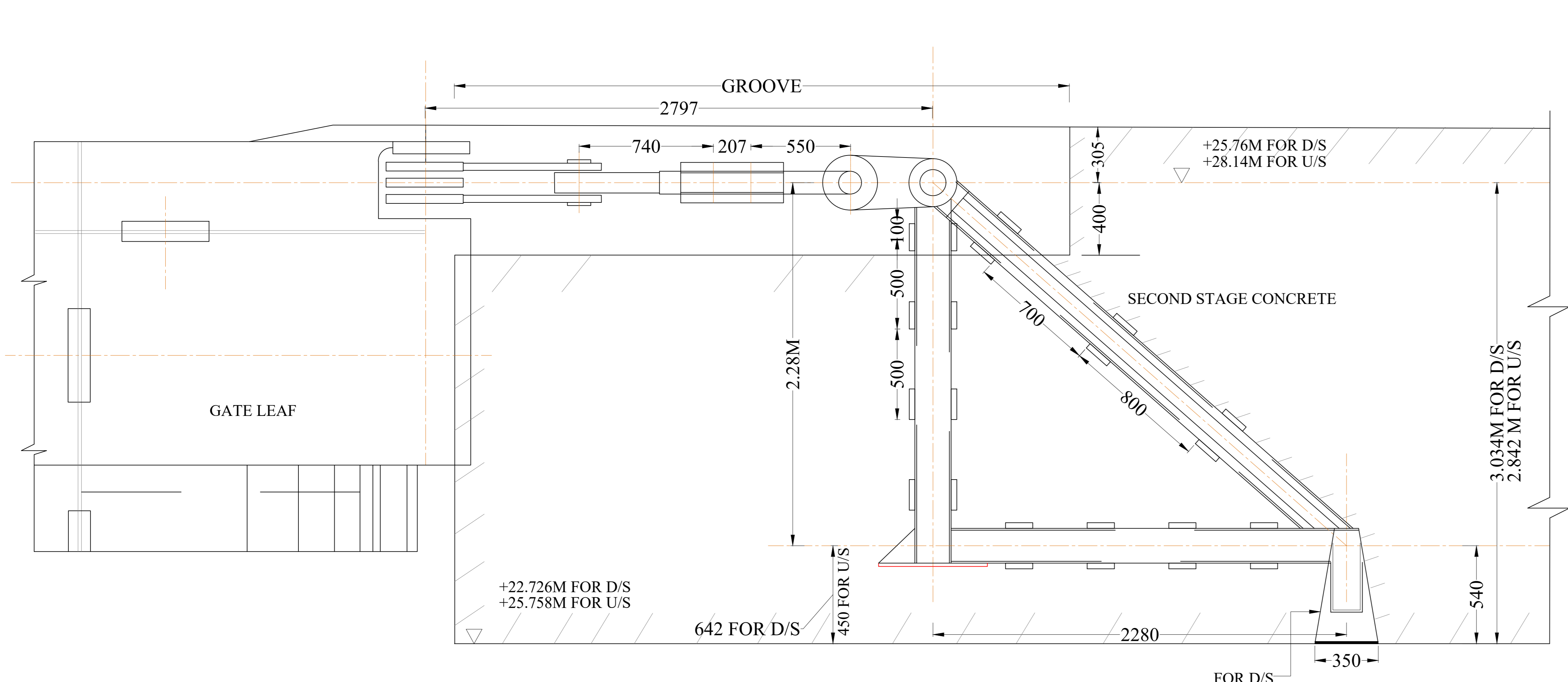
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
2. ALL STRUCTURAL STEEL CONFORMING TO IS:2062 GRADE E-250B.
3. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.



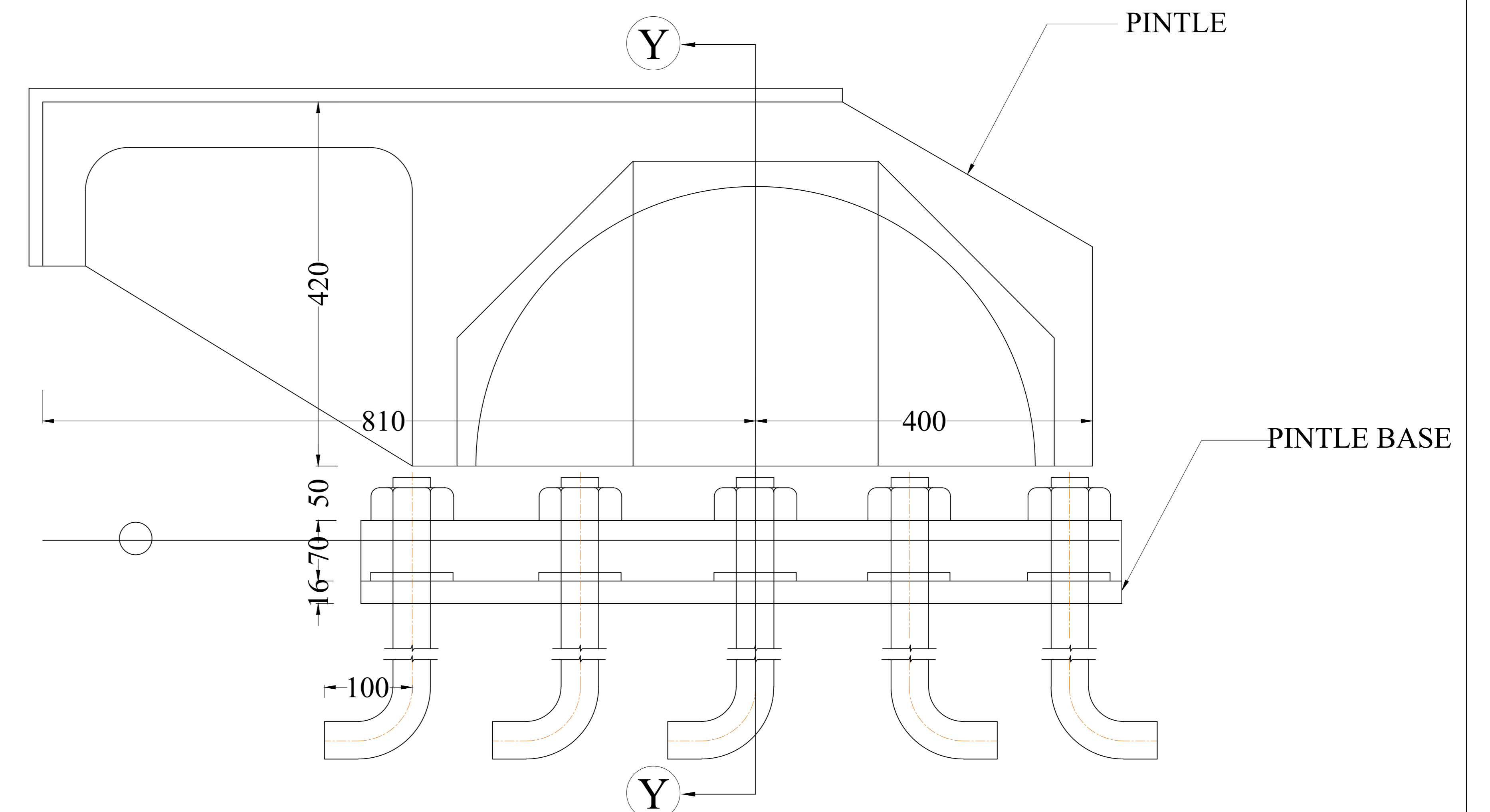
TOP PLAN OF U/S MITRE GATE

REV.	DATE	DESCRIPTION	DRN	CHD	APD

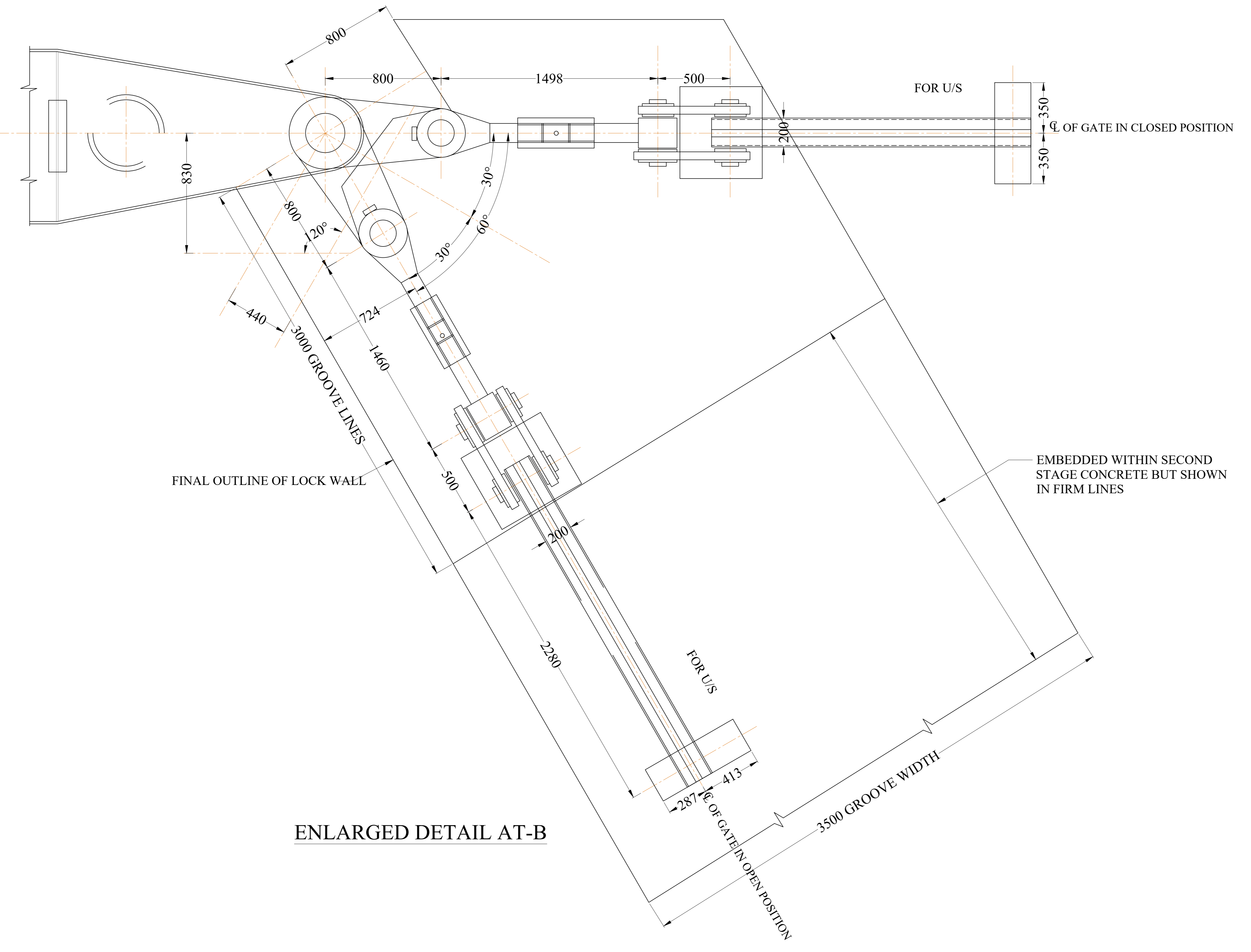
INLAND WATERWAYS AUTHORITY OF INDIA					
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA					
CONSULTANT			NAME	SIGN	DATE
 PKS FLOODKON JV 			DRN		
			CHD		
			APD		
TITLE			JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING AND DETAIL OF MITRE GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 01 OF 03)				ENL007-SH1	
REV. DATE			SIZE : A0 REV. R1		



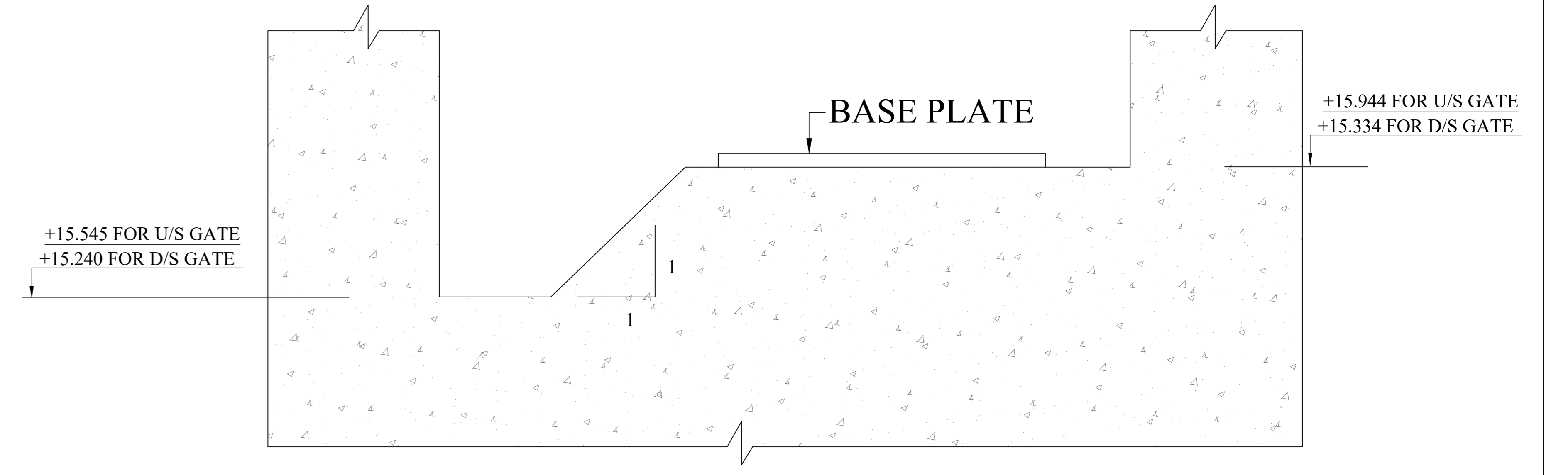
ENLARGED DETAIL AT -A



PINTLE & ITS BASE ARRANGEMENT
DETAIL AT - C





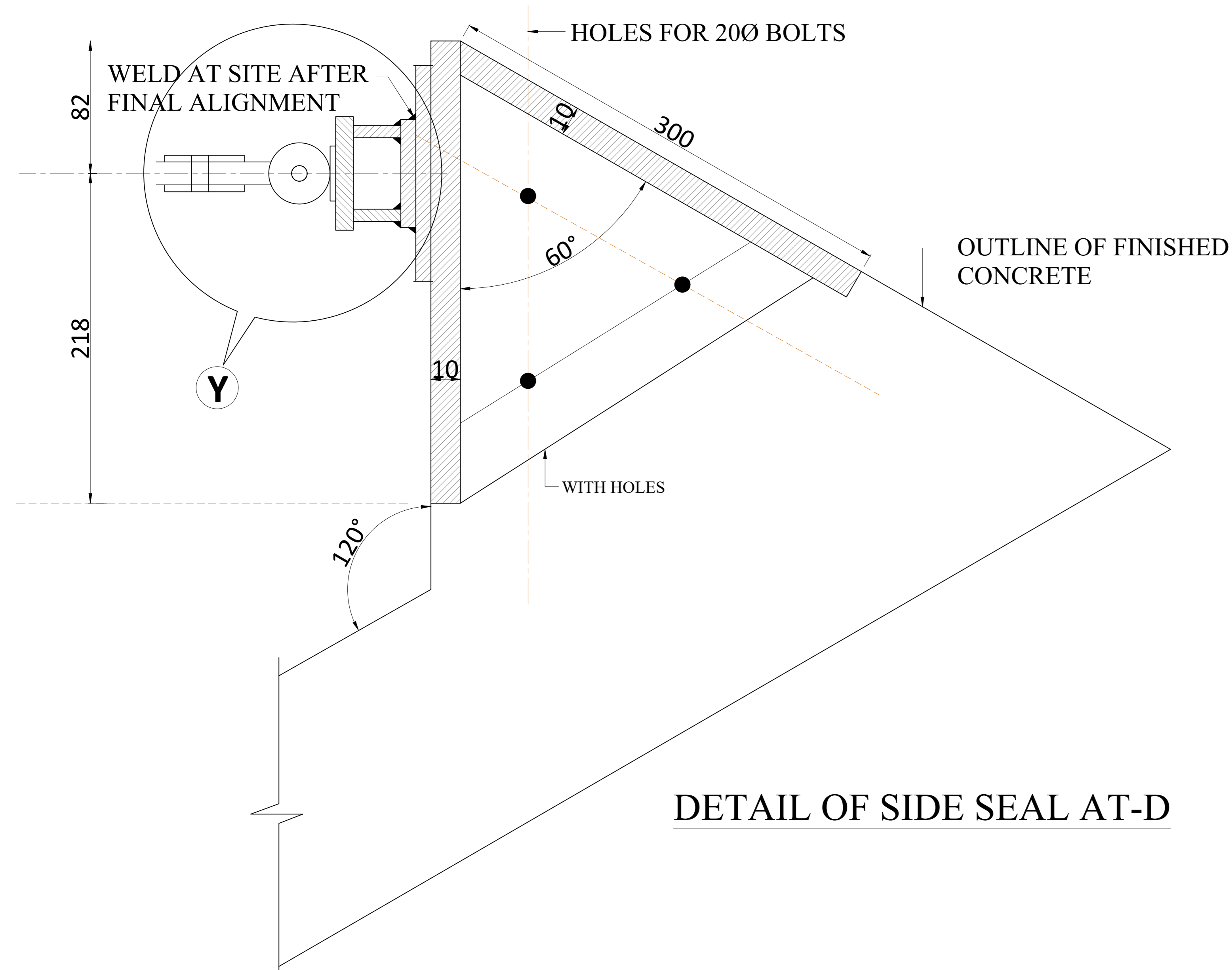
ENLARGED DETAIL AT-B



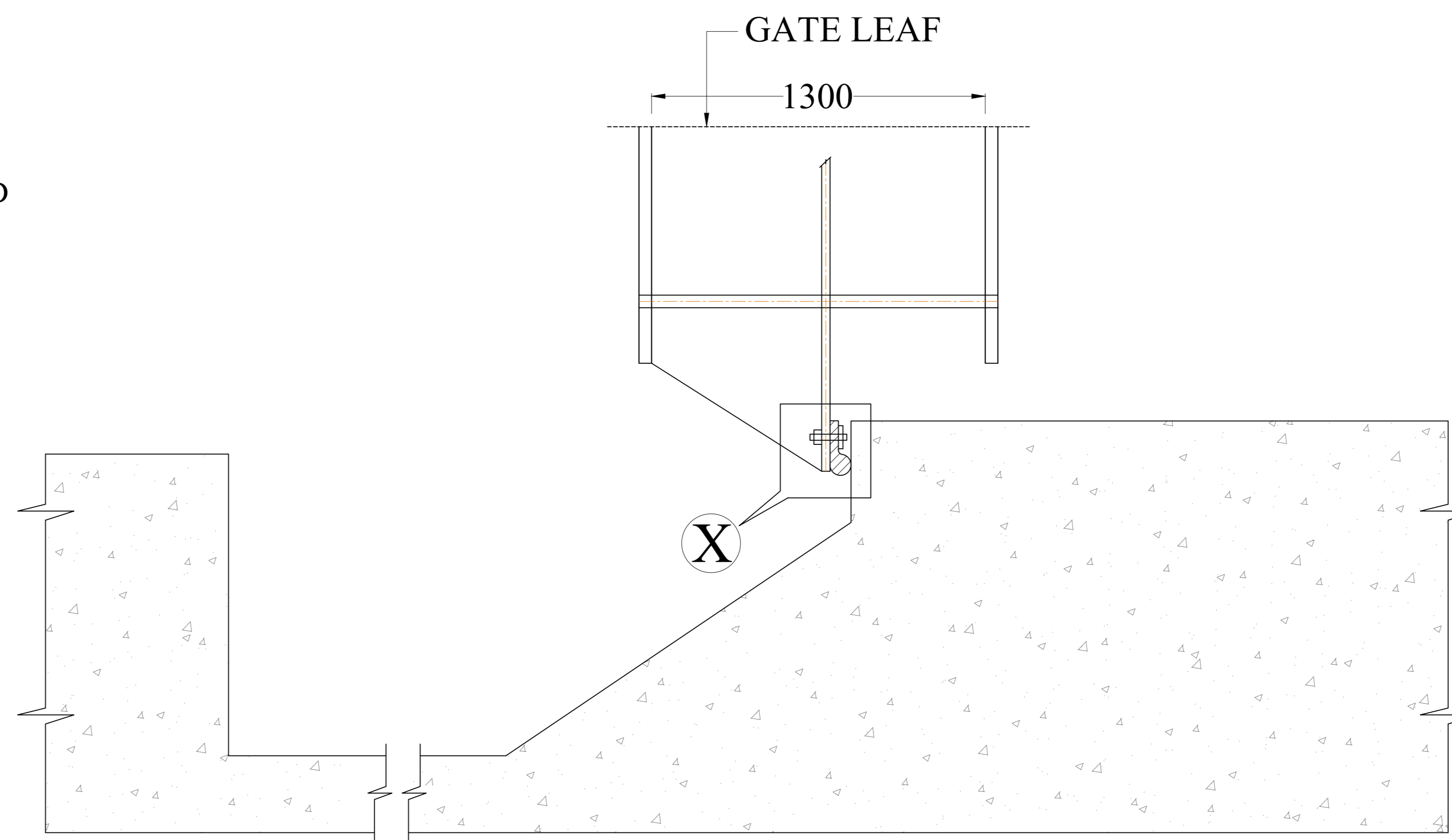
SECTION Y-Y

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
 2. ALL STRUCTURAL STEEL CONFIRMING TO IS:2062 GRADE E-250B.
 3. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

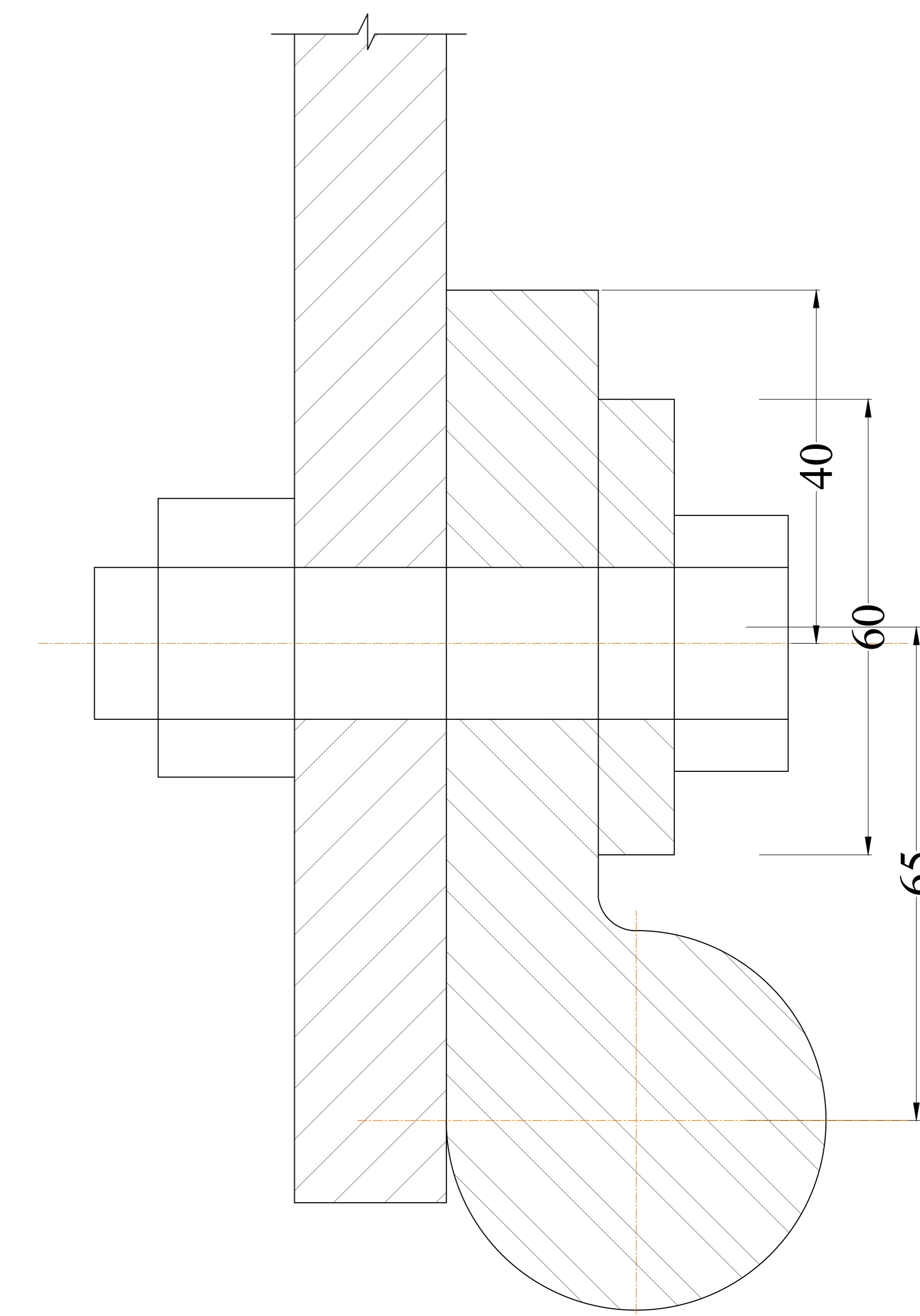
INLAND WATERWAYS AUTHORITY OF INDIA					
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA					
CONSULTANT		NAME	SIGN	DATE	
 PKS FLOODKON JV 		DRN			
		CHD			
		APD			
TITLE		JOB. NO.	DRG. NO.		
GENERAL ARRANGEMENT DRAWING AND DETAIL OF MITRE GATE OF NAVIGATION LOCK (SHEET NO. 02 OF 03)			ENL007-SH2		
REV.	DATE	DESCRIPTION	DRN	CHD	APD
			SIZE: A0	REV. R1	



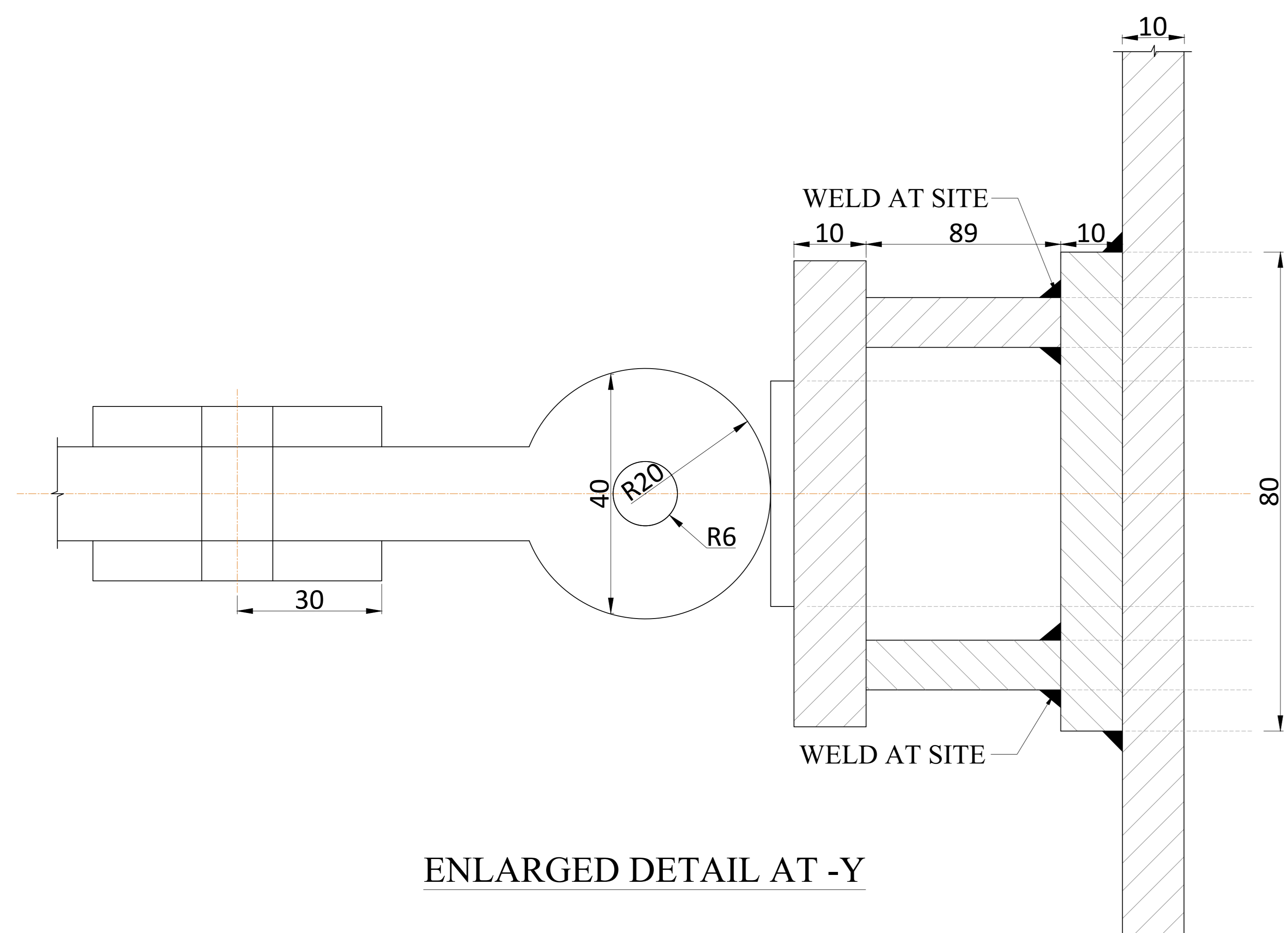
DETAIL OF SIDE SEAL AT-D



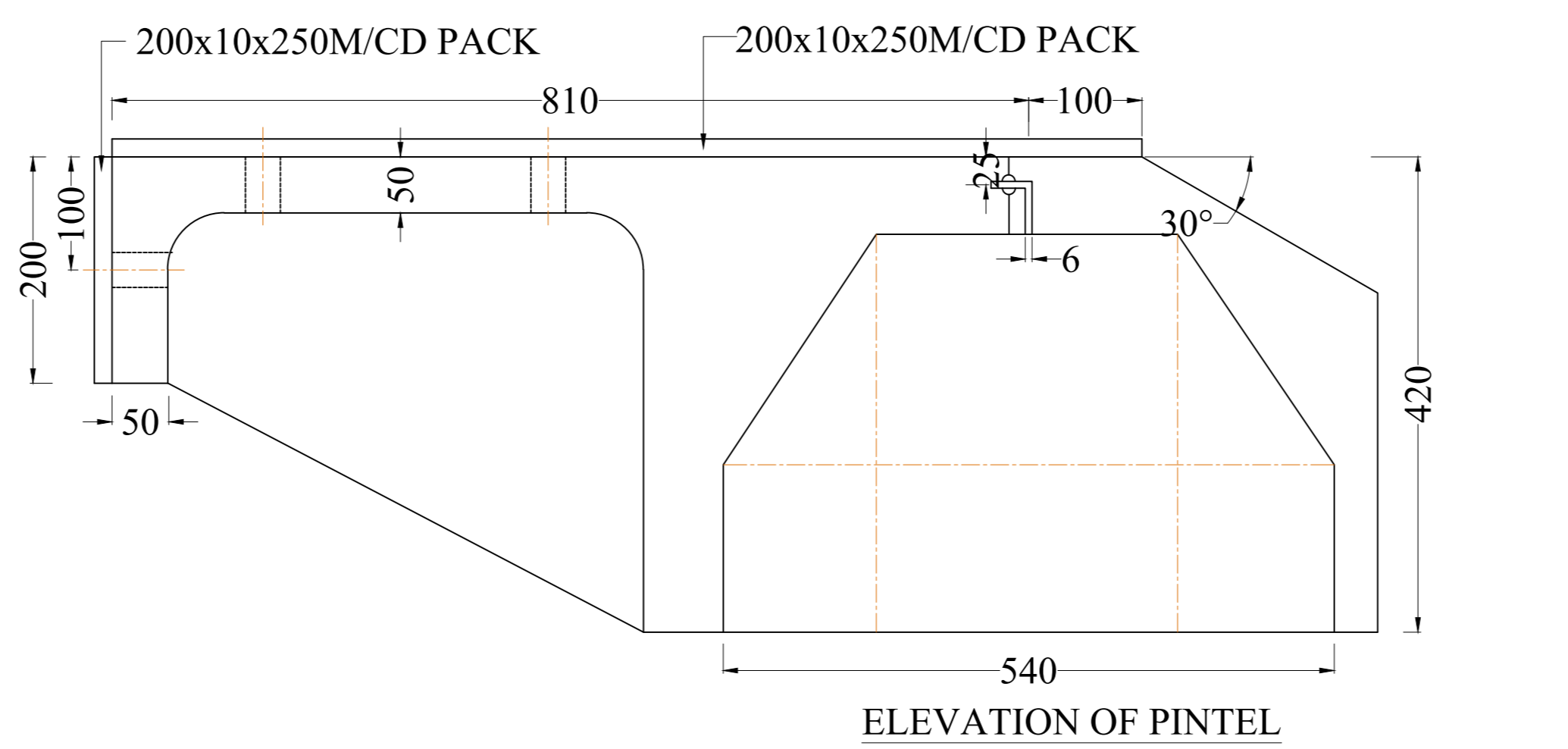
DETAIL OF BOTTOM SEAL AT-E



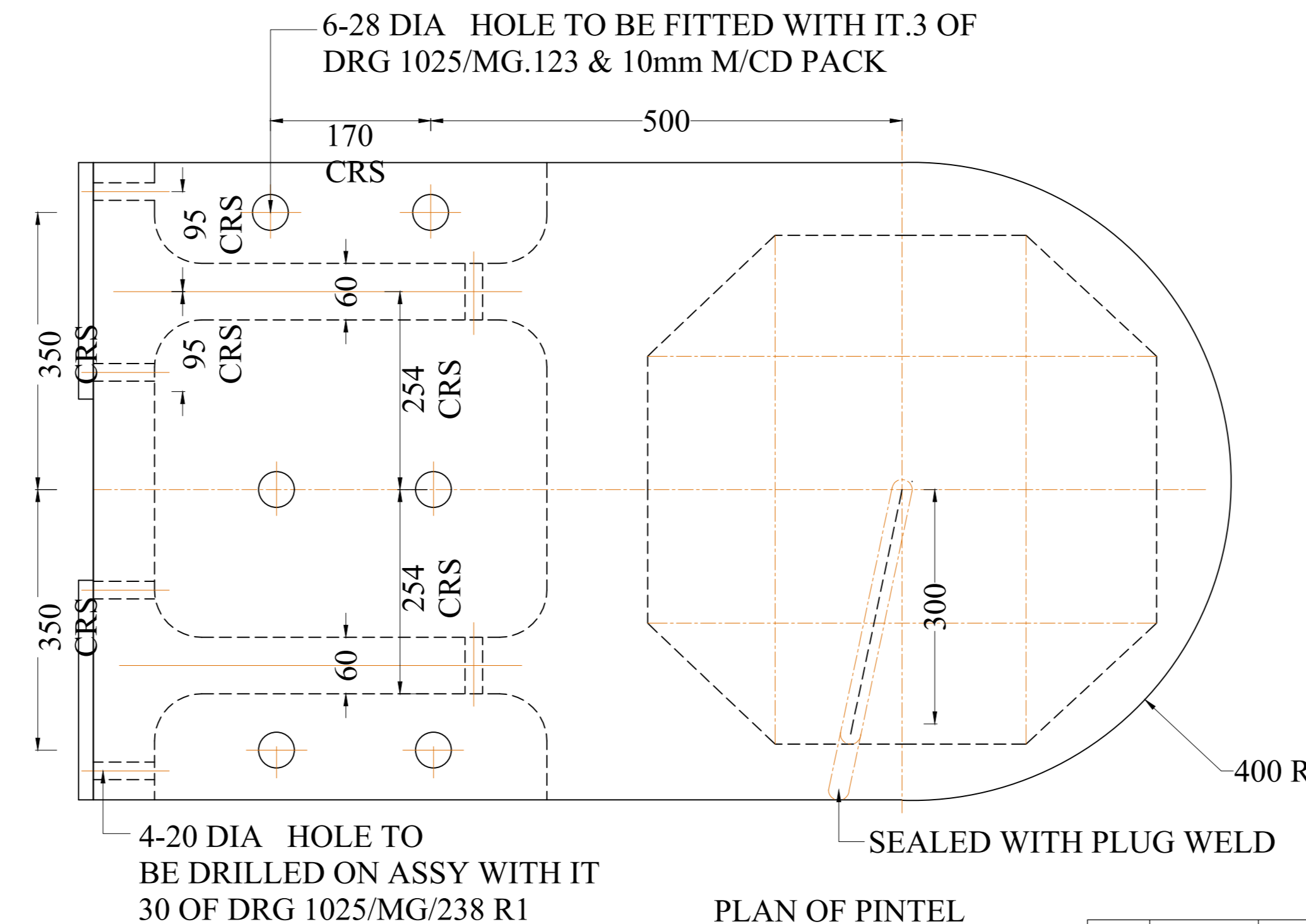
ENLARGED DETAIL AT-X



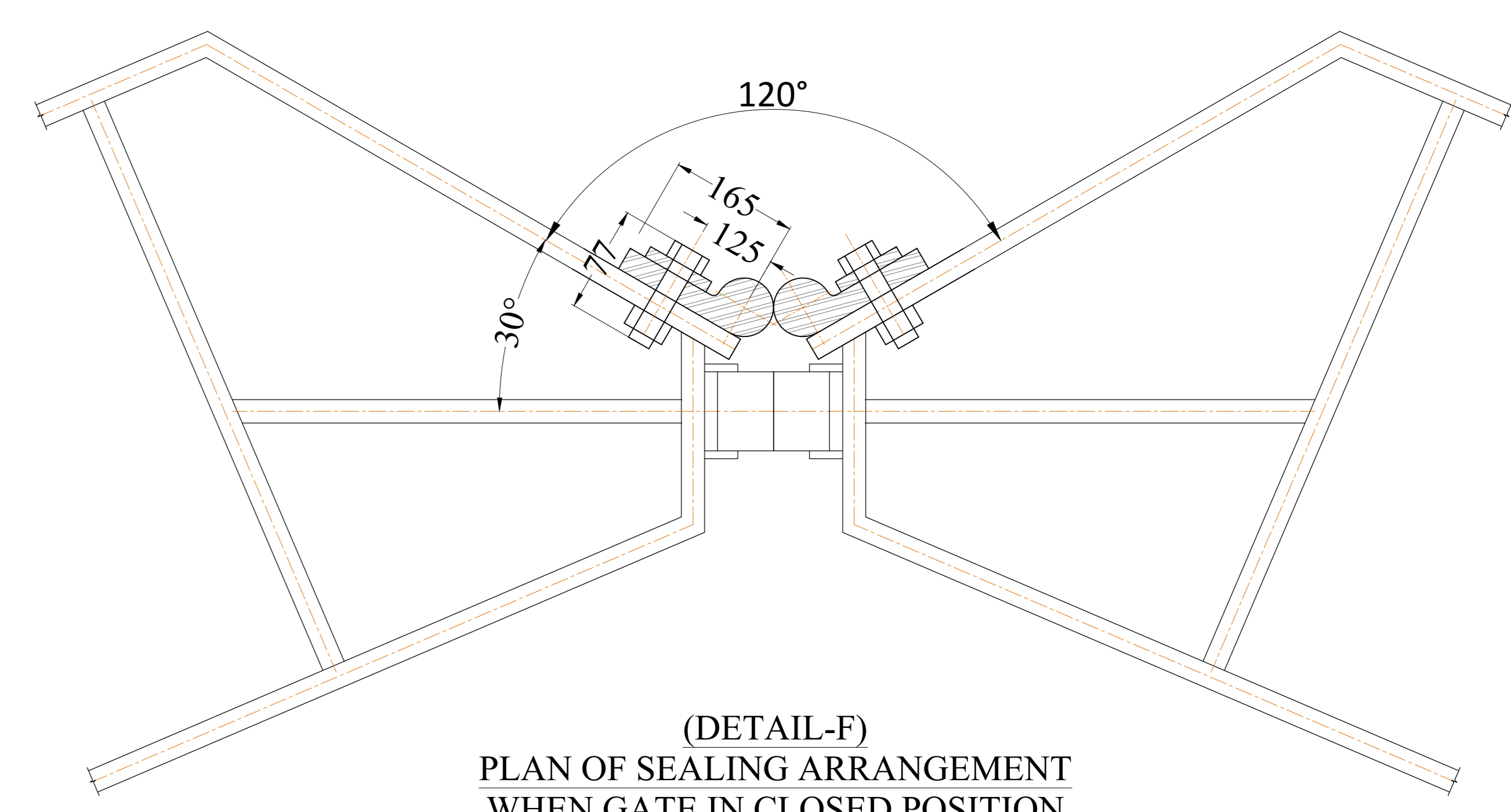
ENLARGED DETAIL AT-Y



ELEVATION OF PINTEL





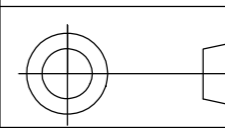
PLAN OF PINTEL

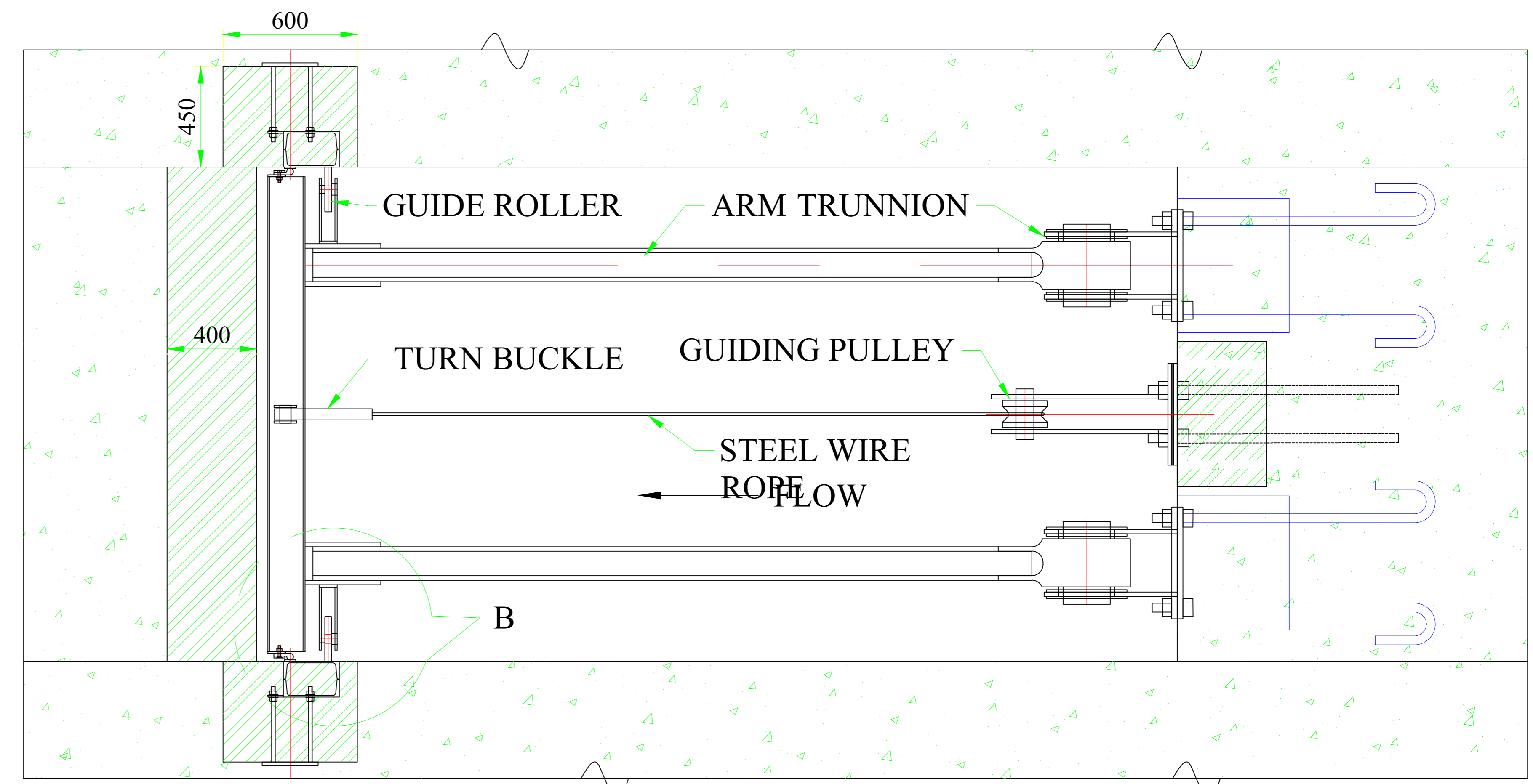
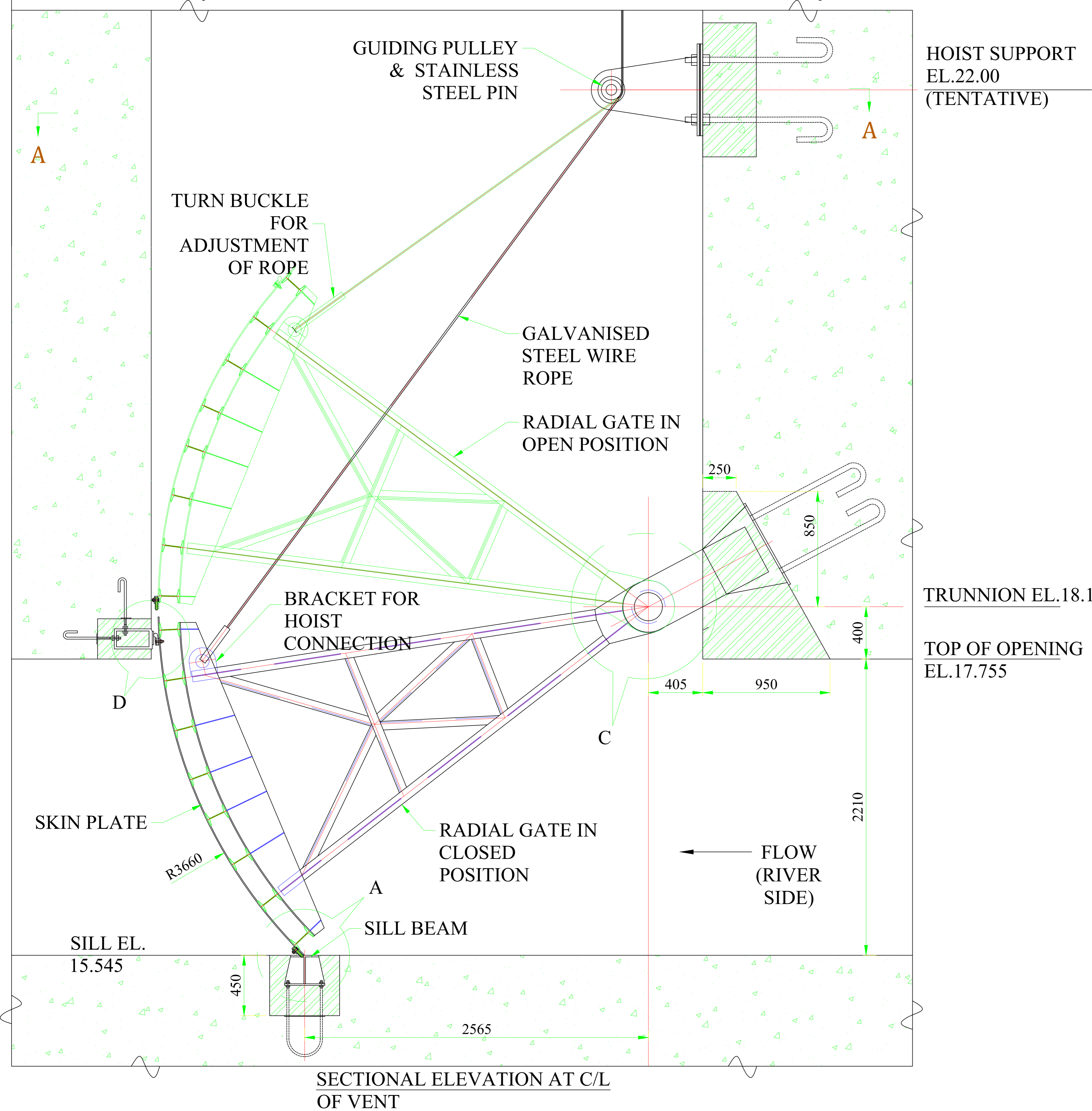
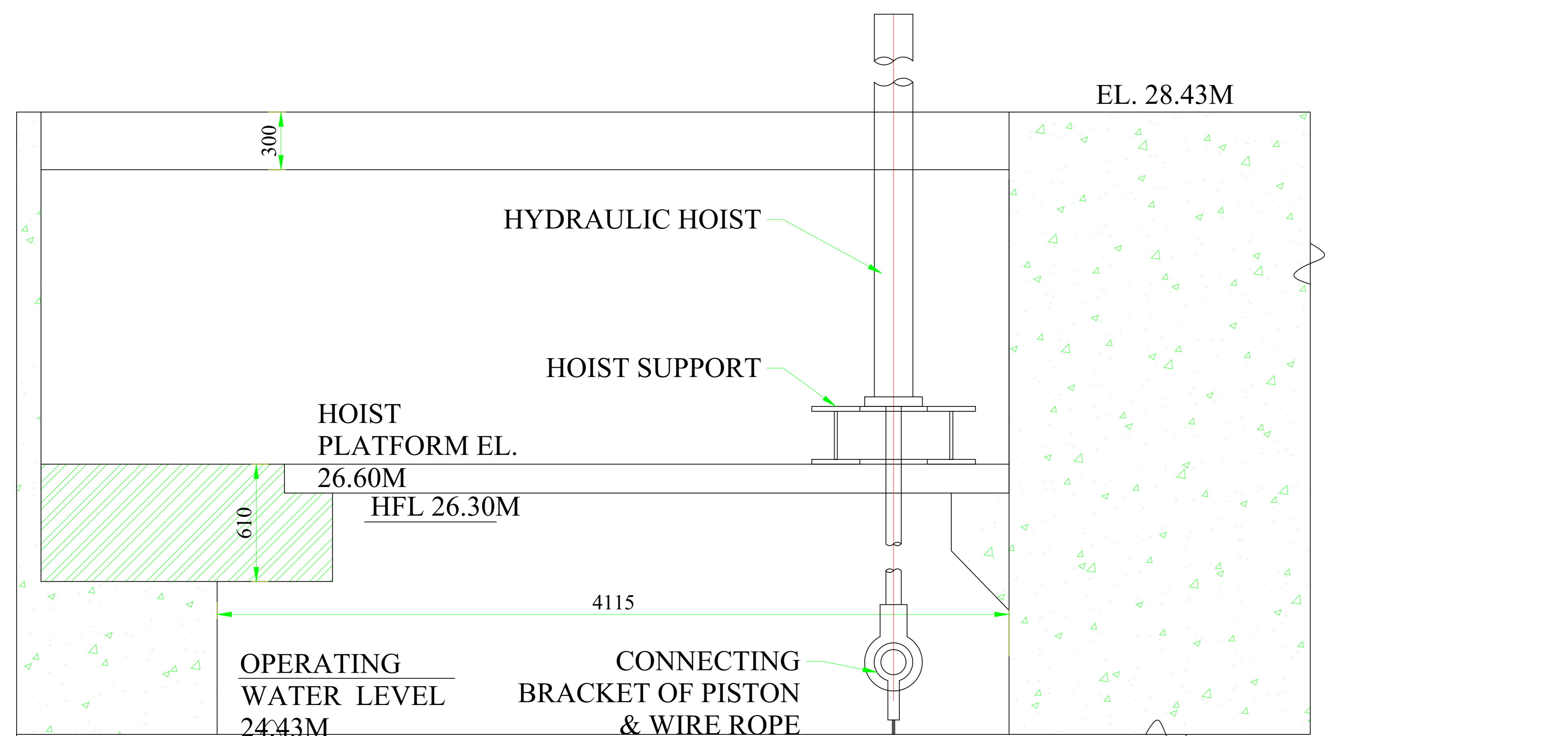


(DETAIL-F)
PLAN OF SEALING ARRANGEMENT
WHEN GATE IN CLOSED POSITION

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
 2. ALL STRUCTURAL STEEL CONFIRMING TO IS:2062 GRADE E-250B.
 3. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA						
CONSULTANT				NAME	SIGN	DATE
 PKS FLOODKON JV 				DRN		
				CHD		
				APD		
TITLE				JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING AND DETAIL OF MITRE GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 03 OF 03)					ENL007-SH3	
				SIZE: A0	REV. R1	



SECTION : A-A

- TECHNICAL DETAILS OF RADIAL GATE :**
- NO. OF FILLING CULVERTS : 2 NOS. (1 IN EACH SIDE OF LOCK WALL)
 - NO. OF EMPTYING CULVERTS: 2 NOS. (1 IN EACH SIDE OF LOCK WALL)
 - TOTAL NO. OF OPENINGS : 4 Nos.
 - NO. OF RADIAL GATES : 4 Nos.
 - SIZE OF GATE OPENING : 2210MM X 2210MM
 - SILL LEVEL : 15.545M
 - TOP OF OPENING : 17.755 M
 - TOP SEAL LEVEL : 17.855 M
 - TRUNNION LEVEL : 18.155 M
 - OPERATING BY : HYDRULIC HOIST
 - HOIST STROKE : 2.275M (TENTATIVE)

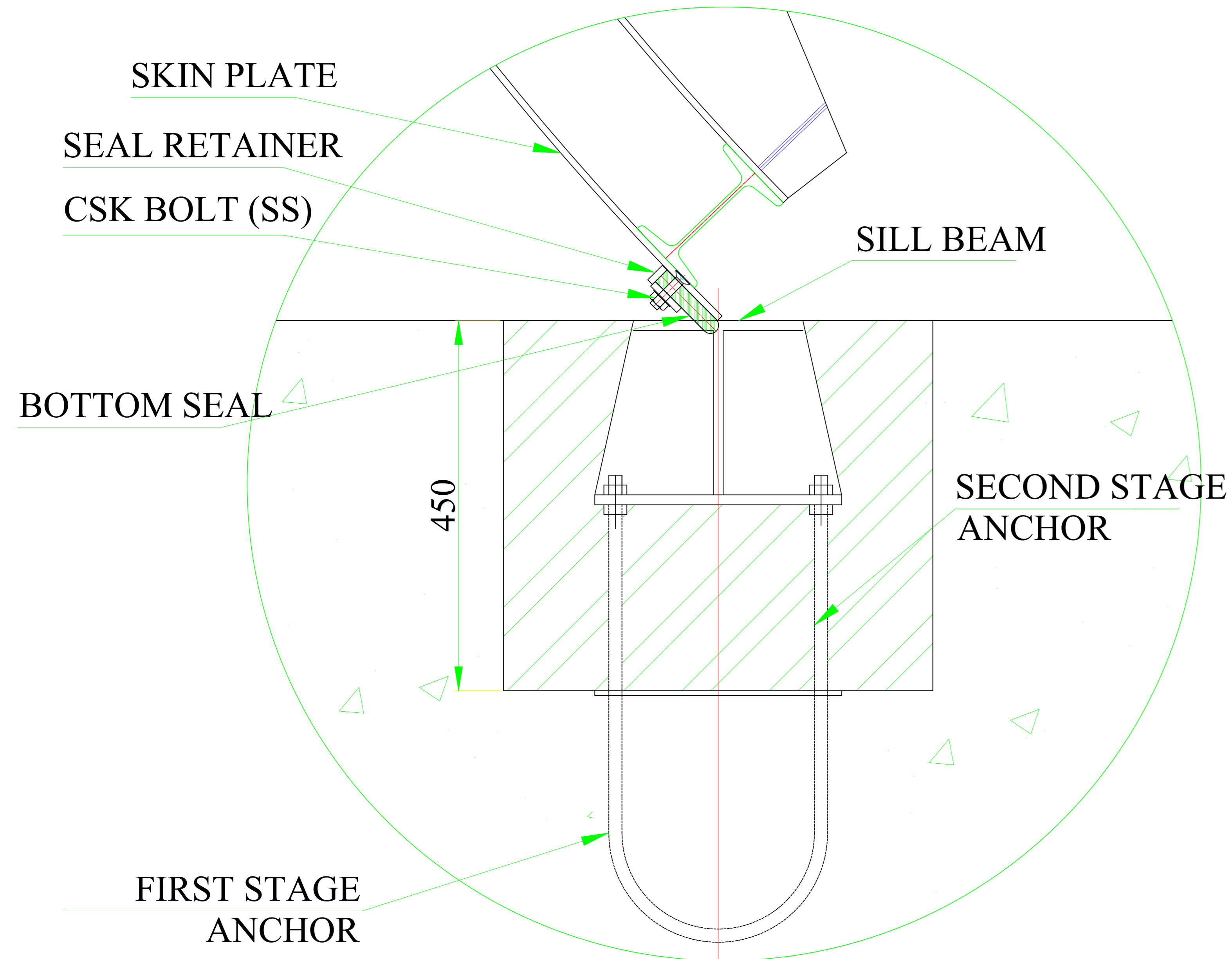
NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.
3. CONCRETE IN BLOCK OUTS SHALL BE TO ONE GRADE HIGHER THAN FIRST STAGE CONCRETE BUT NOT LESS THAN M-25 OF IS:456 (LATEST VERSION)
4. SURFACE OF CONCRETE BLOCK OUTS SHALL BE THOROUGHLY ROUGH FOR PROPER BONDAGE BETWEEN FIRST STAGE AND SECOND STAGE CONCRETE.
5. THE GATE SHALL BE OPERATED BY HYDRAULIC HOIST OF ADEQUATE CAPACITY, CONNECTED ON UPSTREAM (RIVER) SIDE.
6. EACH HOIST SHALL CONSIST OF A CYLINDER, INDEPENDENT POWER PACK, GATE POSITION INDICATOR ETC.
7. ALL FILLET WELDS SHALL BE CONTINUOUS AND MINIMUM OF 6MM LEG SIZE UNLESS STATED OTHERWISE. ALL BUTT WELDS SHALL BE FULL PENETRATION WELDS.
8. REFER SHEET 2 OF 2 FOR OTHER NOTES.

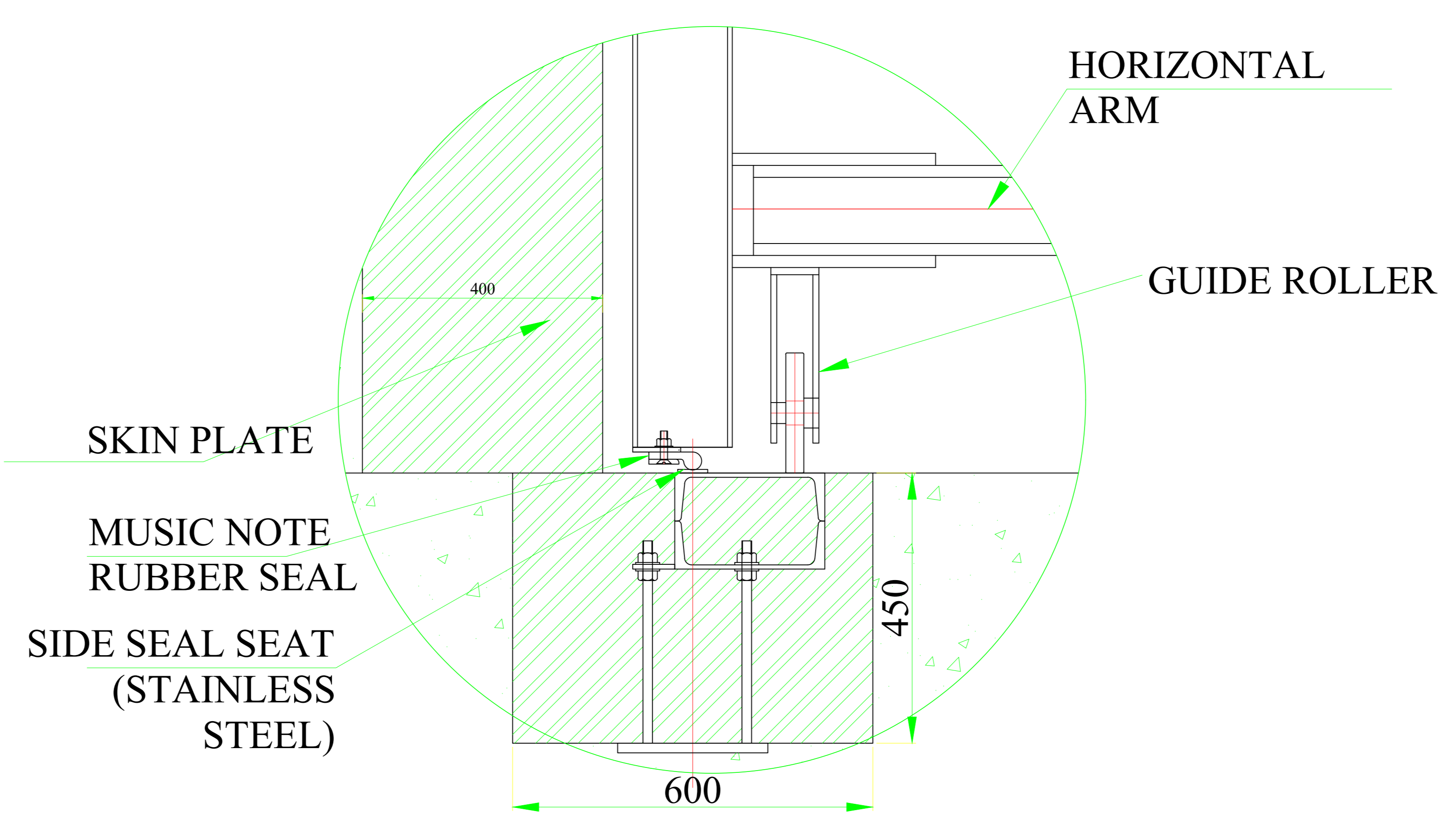
LEGENDS:

- 1st STAGE CONCRETING (PRIMARY)
- 2nd STAGE CONCRETING (SECONDARY)

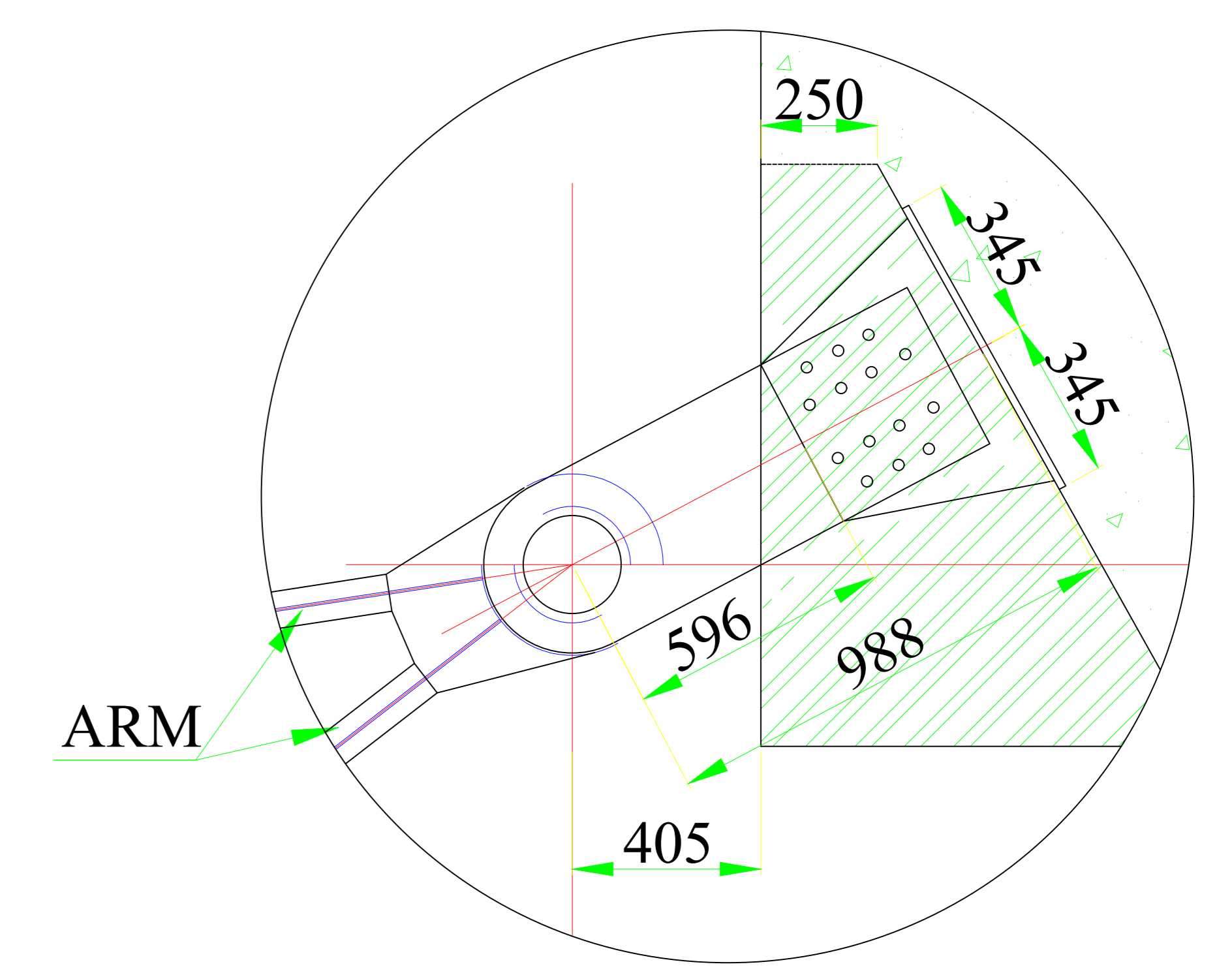
INLAND WATERWAYS AUTHORITY OF INDIA			
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA			
CONSULTANT		NAME	DATE
PKS FLOODKON JV		DRN	
		CHD	
		APD	
TITLE		JOB. NO.	DRG. NO.
GENERAL ARRANGEMENT DRAWING AND DETAIL OF RADIAL GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 01 OF 2)			ENL008-SH1
REV.	DATE	DESCRIPTION	DRN / CHD / APD
		SIZE: A0	REV. R1



DETAIL - A
(REFER SHEET 1 OF 2)



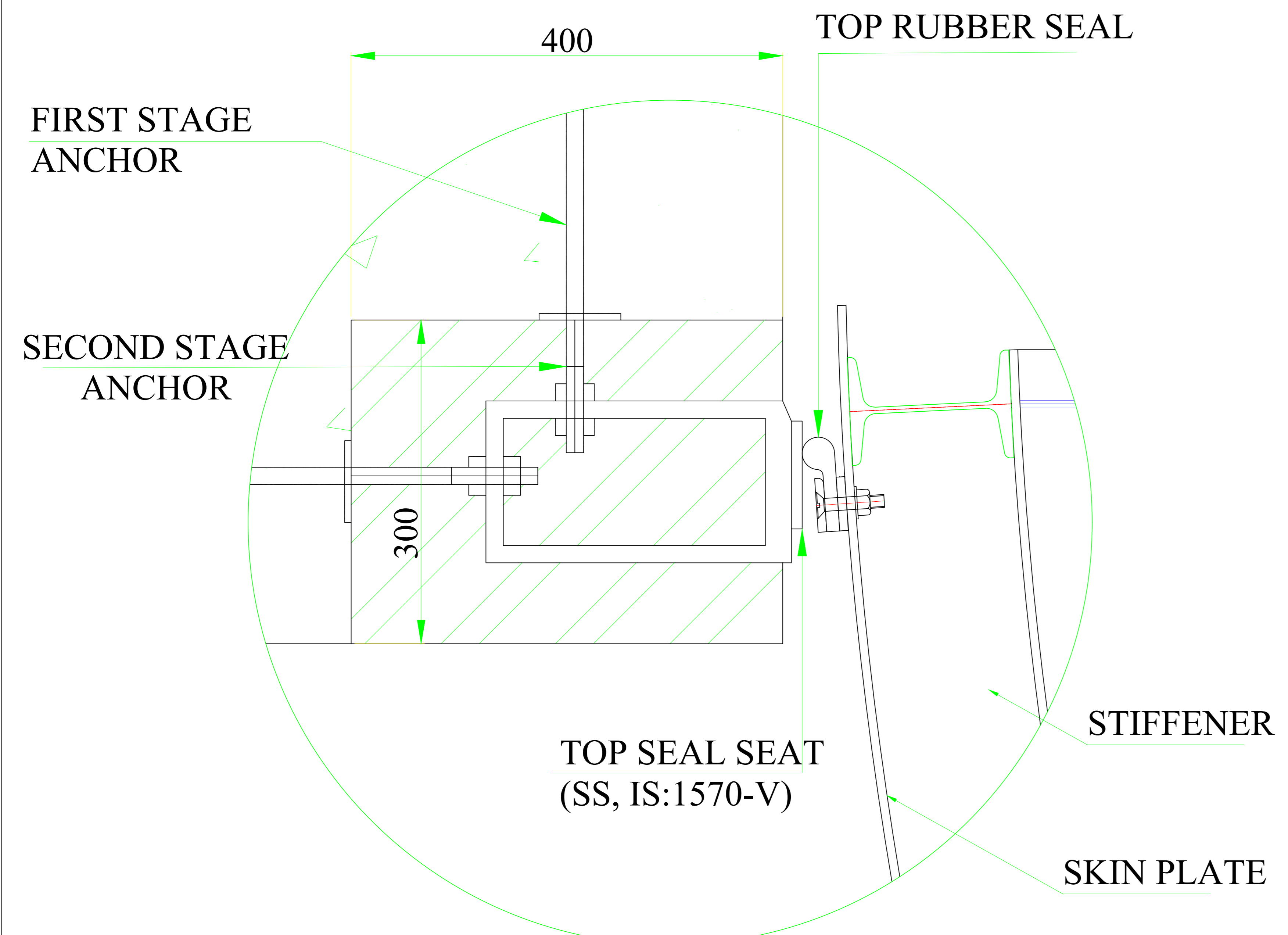
DETAILS - B
(REFER SHEET 1 OF 2)



DETAILS - C
(REFER SHEET 1 OF 2)

NOTE:

1. ALL THE SEALS SHALL BE CONTINUOUS AND WATER TIGHT.
2. ALL CORNERS AND EDGES IN CONTACT WITH RUBBER SEALS AND WELDING SHALL BE SMOOTH AND ROUNDED WITH MINIMUM ROUNDS OF 6MM.
3. THE GATE TRUNNIONS SHALL BE FITTED WITH EITHER SPHERICAL PLAIN BEARINGS OR SELF LUBRICATING TYPE BUSHINGS.
4. WELDING OF ALIGNMENT STUDS TO ANCHOR PLATES SHALL DEVELOP THE FULL STRENGTH OF THE STUD.
5. ARRANGEMENT SHOWN FOR BOTTOM SEAL IN THE DRAWING IS INDICATIVE TYPE ONLY. THE CONTRACTOR MAY PROPOSE AN ALTERNATIVE SUITABLE ARRANGEMENT FOR THE BOTTOM OF SEAL OF THE GATE KEEPING IN VIEW HEAVY SEDIMENT LOAD OF RIVER BUT IT SHALL BE ADOPTED, CONSIDERED APPROPRIATE BY THE EMPLOYER.
6. EXISTING SECOND STAGE EMBEDDED PARTS PROVIDED IN BLOCK OUTS SHALL BE MAINTAINED, HOWEVER IF THEY ARE FOUND INADEQUATE THE NEW EMBEDDED PARTS SHALL BE DESIGNED AND PROVIDED TO SUIT THE BLOCK OUTS PROVIDED AT SITE.
7. GATE SHALL BE DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF IS 4623 TO SUIT THE SIZE OF OPENING AND CHAMBER WHICH SHALL BE VERIFIED BY ACTUAL MEASUREMENT AT SITE.
8. THE METHODOLOGY FOR REMOVAL OF EXISTING GATES SHALL BE FINALIZED CONSIDERING THE BOTTLENECKS AT SITE, TRANSPORTATION LIMITATIONS ETC. THE SITE SHALL BE CLEARED OF ALL THE REPLACED MATERIALS.
9. THE TOLERANCES FOR EMBEDDED PARTS & COMPONENTS OF GATE SHALL BE AS PER ANNEX.-E OF IS 4623.



DETAILS - D
(REFER SHEET 1 OF 2)

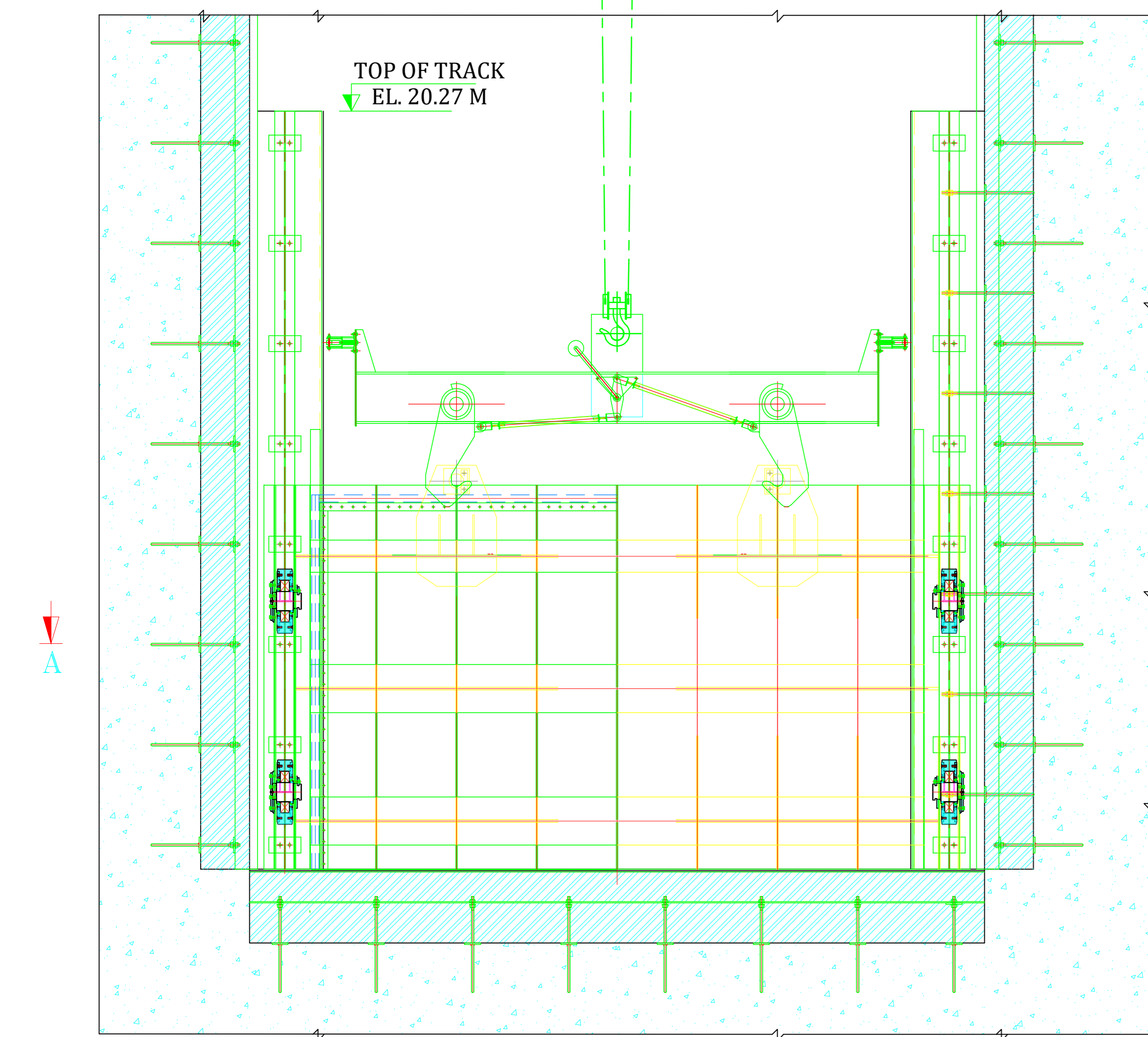
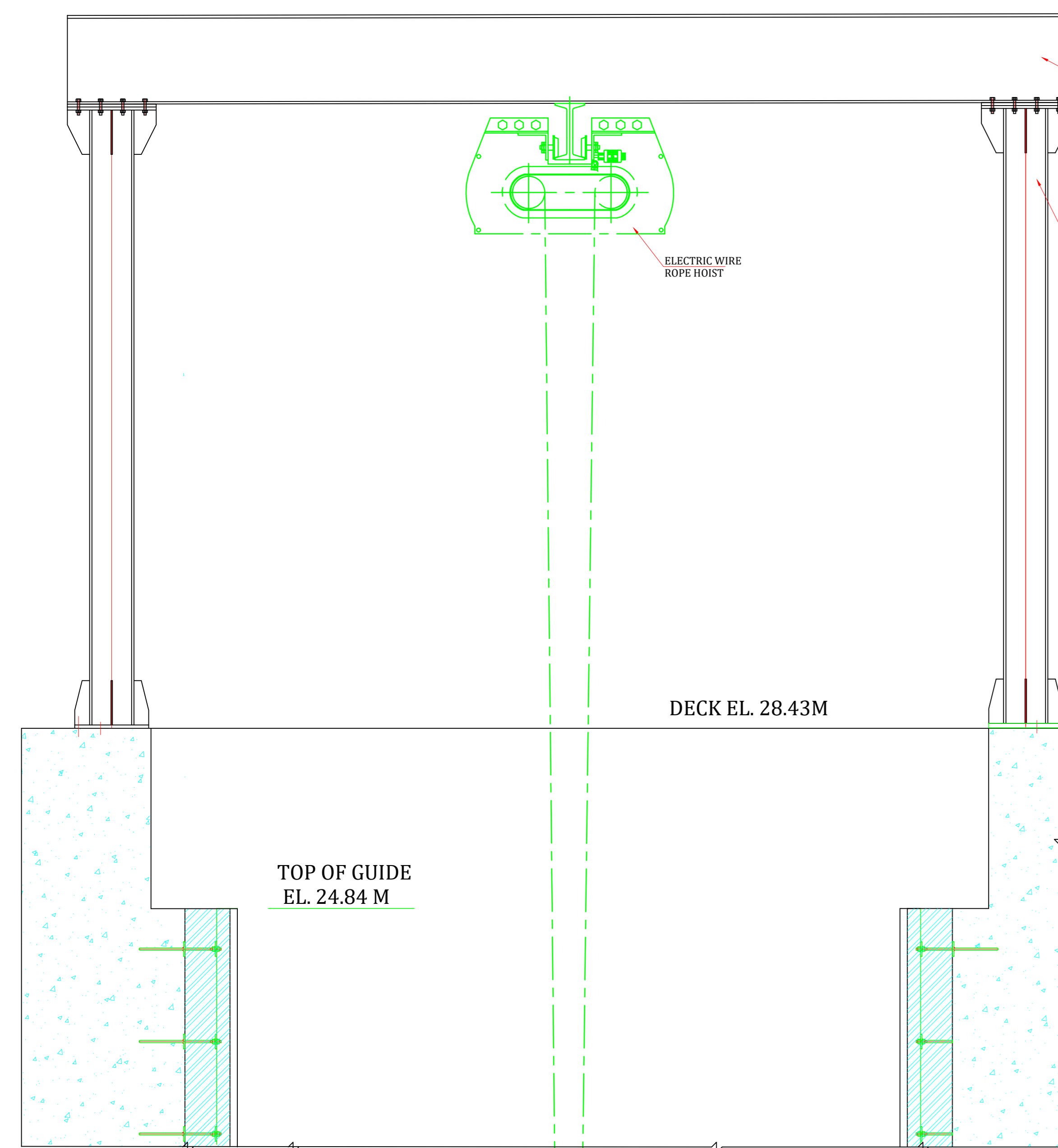
MACHINING DETAILS :	
▽	FOR GUIDES & PIN
▽▽	FOR TRACKS
▽▽▽	FOR SEAL SEATS

LEGENDS:

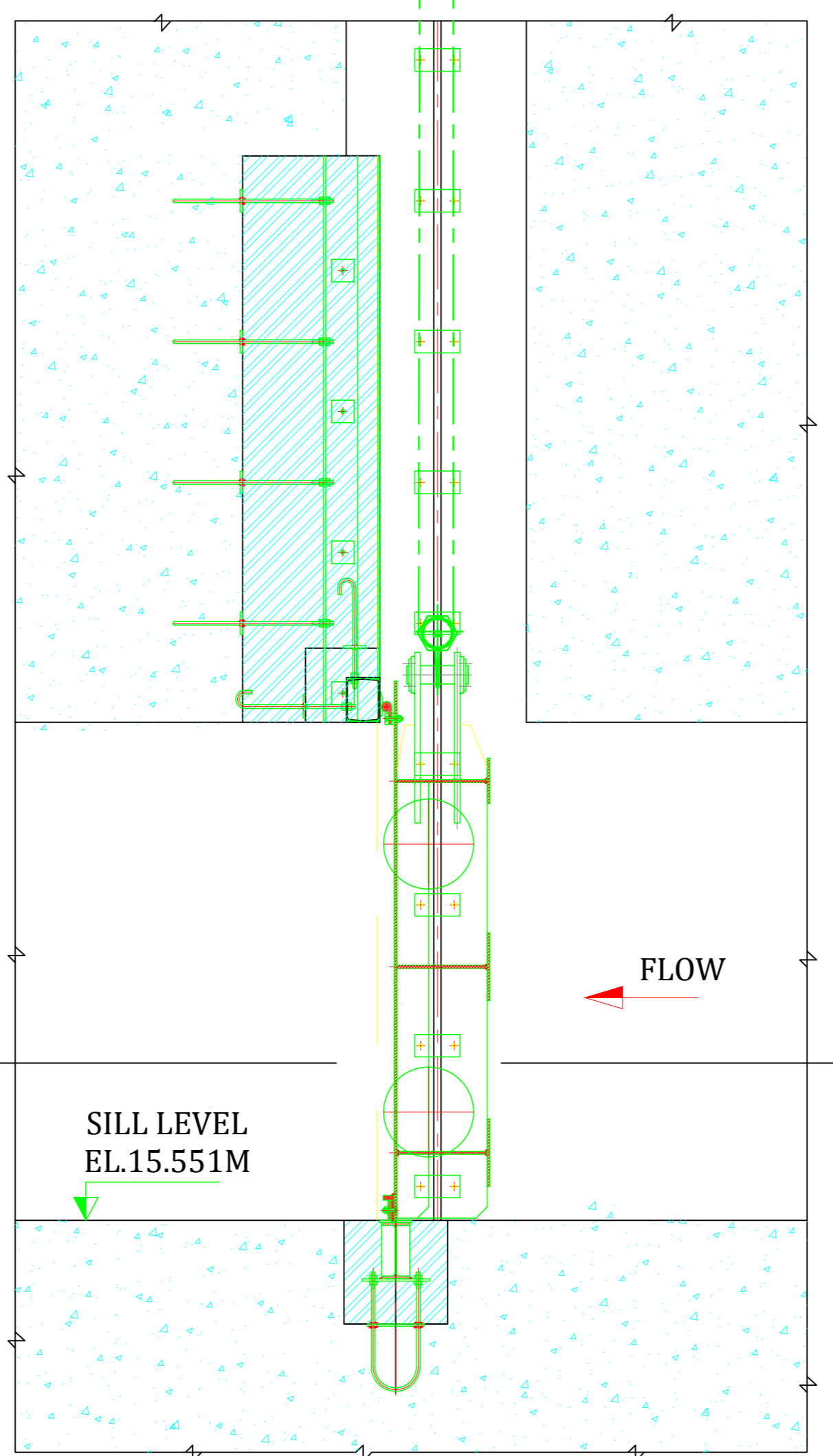
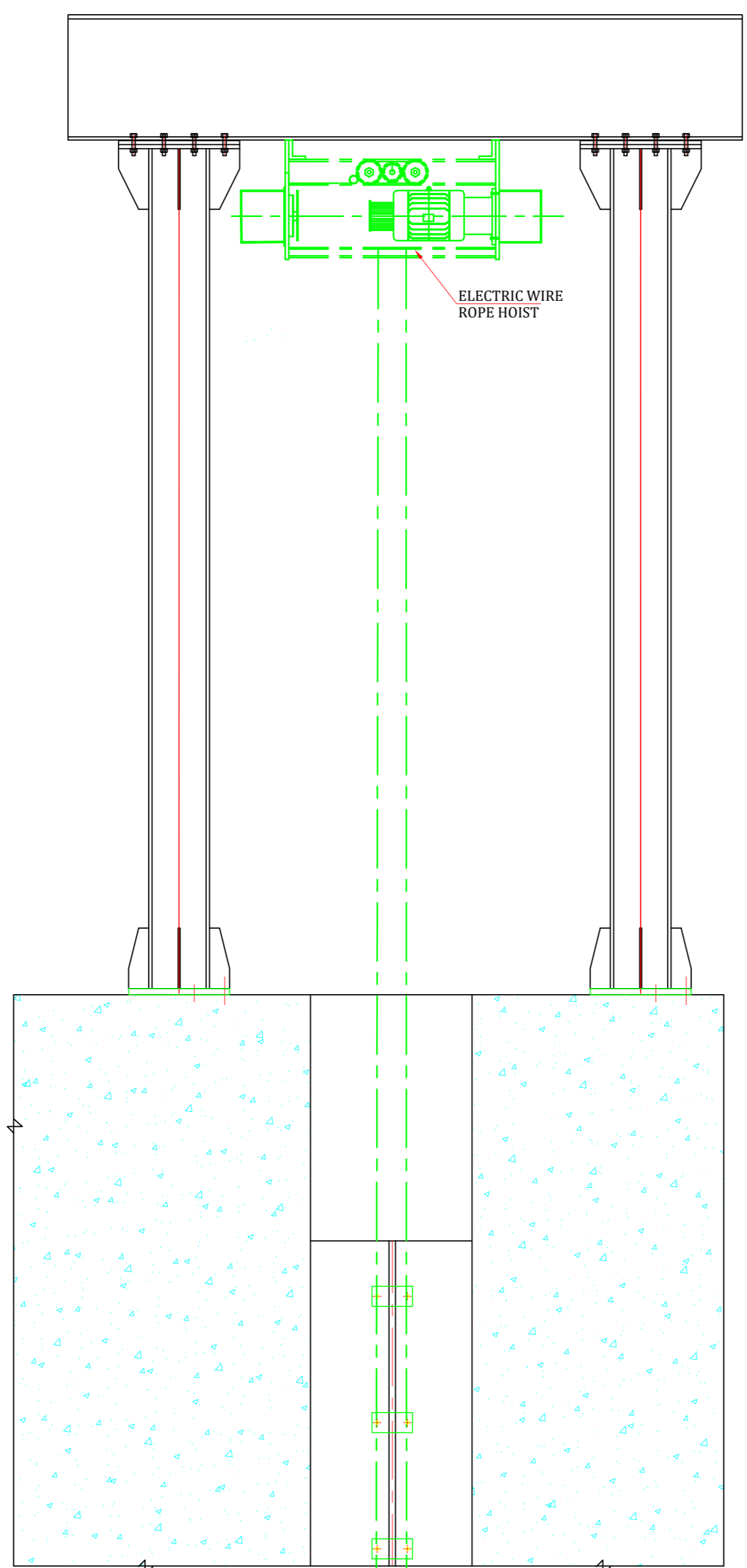
- 1st STAGE CONCRETING (PRIMARY)
- 2nd STAGE CONCRETING (SECONDARY)

REV.	DATE	DESCRIPTION	DRN	CHD	APD

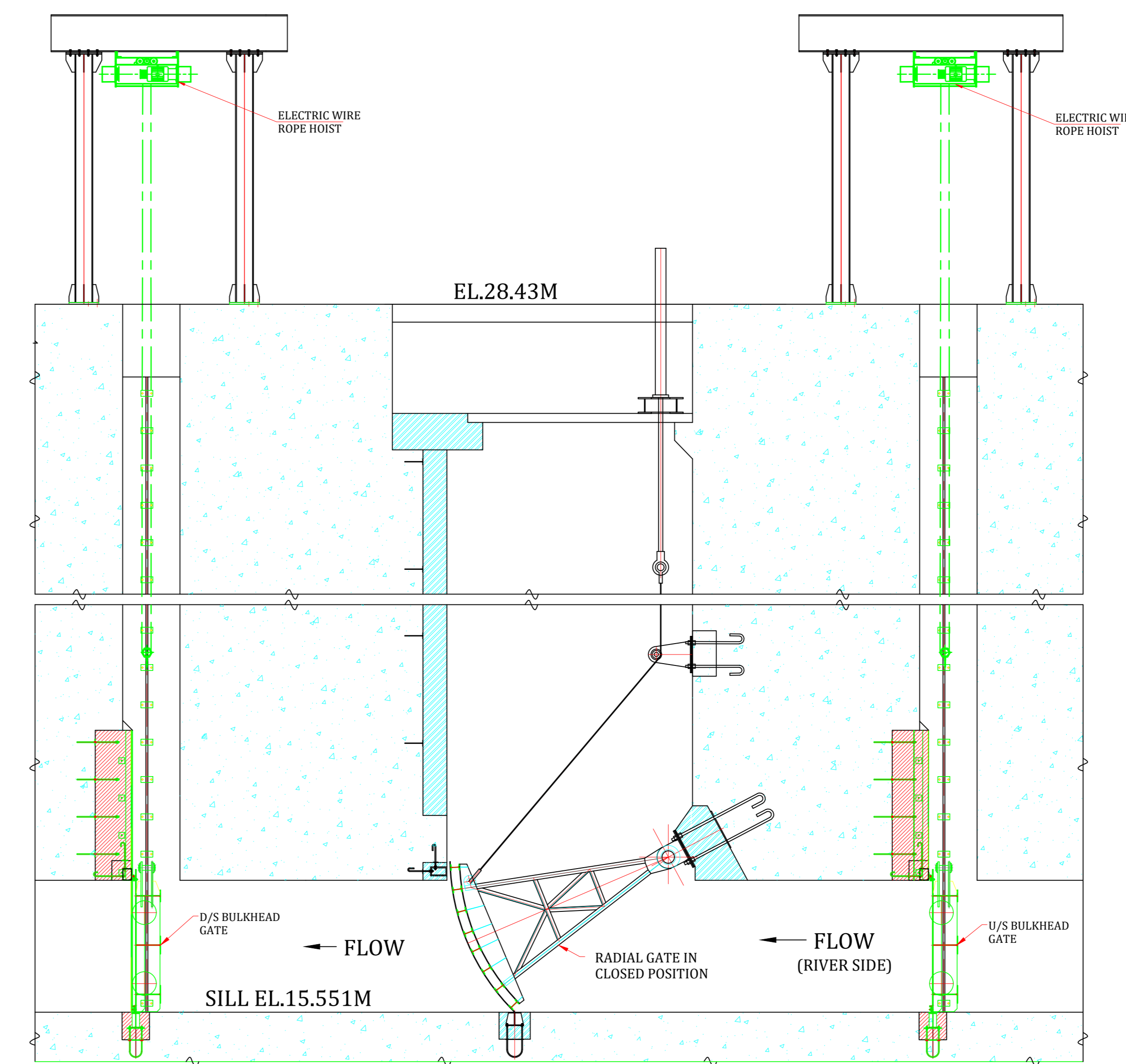
INLAND WATERWAYS AUTHORITY OF INDIA			
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA			
CONSULTANT		NAME	SIGN
PKS FLOODKON JV		DRN	
		CHD	
		APD	
TITLE		JOB. NO.	DRG. NO.
GENERAL ARRANGEMENT DRAWING AND DETAIL OF RADIAL GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 2 OF 2)			ENL008-SH2
		SIZE : A0	REV. R1



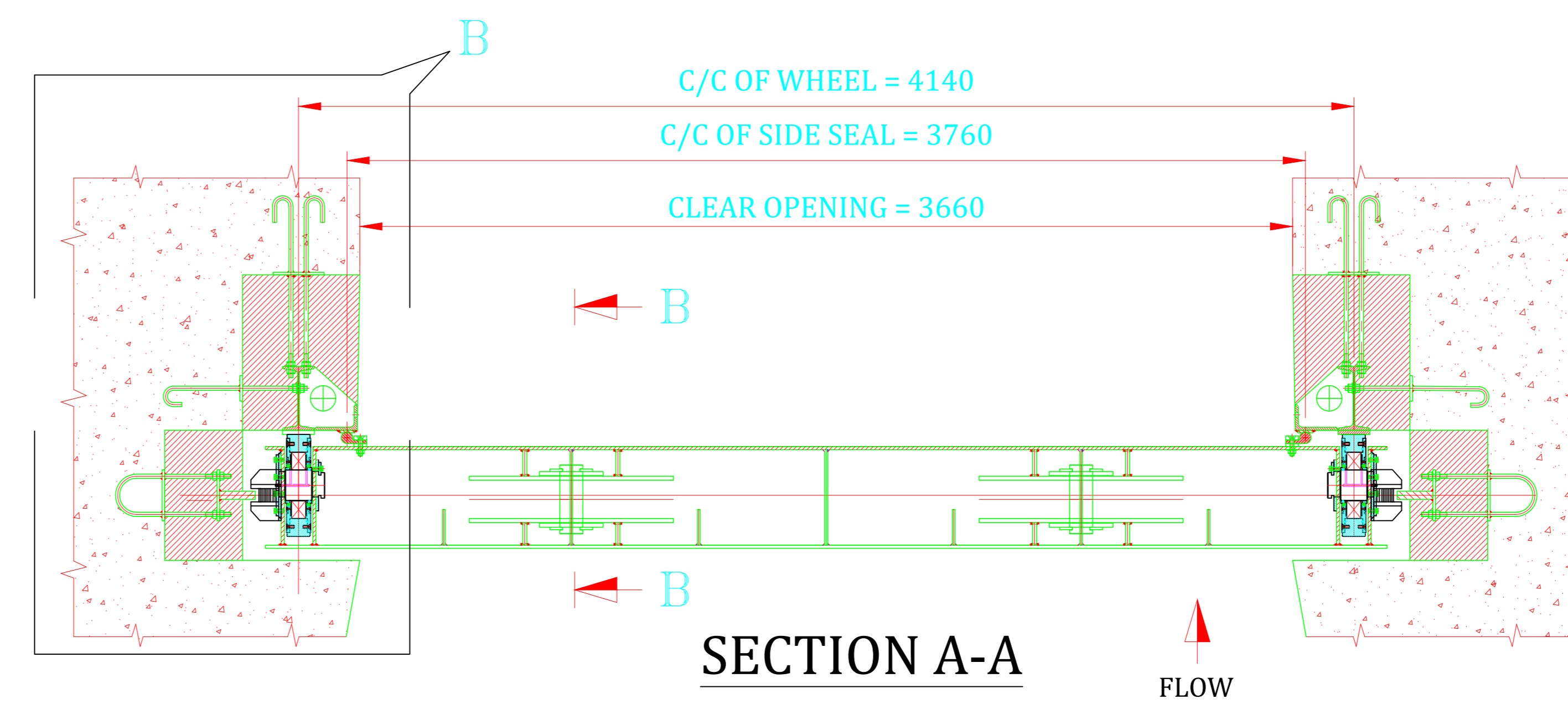
ELEVATION



SECTION : B-B



KEY ELEVATION



SECTION A-A

- NOTES :-
1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS IN METERS UNLESS OTHERWISE SPECIFIED.
 2. DIMENSIONS & BLOCK OUT SIZES INDICATED IN THE DRAWING ARE AS PER EXISTING STRUCTURE & MAY VARY AT SITE.
 3. ALL STRUCTURAL STEEL CONFORMING TO IS-2062 GRADE E-250.
 4. NO DIMENSIONS SHALL BE SCALED OUT ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.
 5. ALL SEALING ARRANGEMENT (BOTTOM, SIDE & TOP) SHALL BE WATER TIGHT.
 6. ERECTION TOLERANCE FOR EMBEDDED PARTS & GATES TO BE AS PER IS : 4622.
 7. DRY TESTING OF GATE SHALL BE CARRIED OUT BEFORE COMMISSIONING.
 7. ALL FILLET WELDS SHALL BE CONTINUOUS AND MINIMUM OF 6MM LEG SIZE UNLESS STATED OTHERWISE. ALL BUTT WELDS SHALL BE FULL PENETRATION WELDS.
 8. THE LEVELS AND DIMENSIONS SHALL BE VERIFIED AT SITE FOR ALL THE GATES.
 9. REFER SHEET 2 OF 2 FOR OTHER NOTES.

Location of Gate	Filling culvert		Emptying culvert		No. of gates
	Width (m)	Height (m)	Height	Width	
Bulk Head Gate on U/S of upstream radial gates Type A	3.658 m	2.21	-	-	2
Bulk Head Gate on D/S of upstream radial gates Type B	3.268 m	-	-	-	2
Bulk Head Gate on upstream and downstream for D/S radial gates. Type C	-	-	2.210 m	2.205 m	(2+2)=4

TECHNICAL DATA			
DESCRIPTION	GATE: TYPE-A	TYPE-B	TYPE-C
• TOTAL NO. OF OPENING	02	02	04
• TOTAL NO. OF GATES	02	02	04
• OPENING WIDTH	3.66M	3.27M	2.20M
• DESIGN WATER LEVEL	24.38M	24.38M	24.38M
• C/C OF ROLLER TRACKS	4.14M	3.75M	2.68M
• C/C OF SIDE SEAL	3.76M	3.37M	2.30M
• OPERATING BY	ELECTRIC WIRE ROPE HOIST		

LEGENDS:

- 1st STAGE CONCRETING (PRIMARY)
- 2nd STAGE CONCRETING (SECONDARY)

INLAND WATERWAYS AUTHORITY OF INDIA

PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

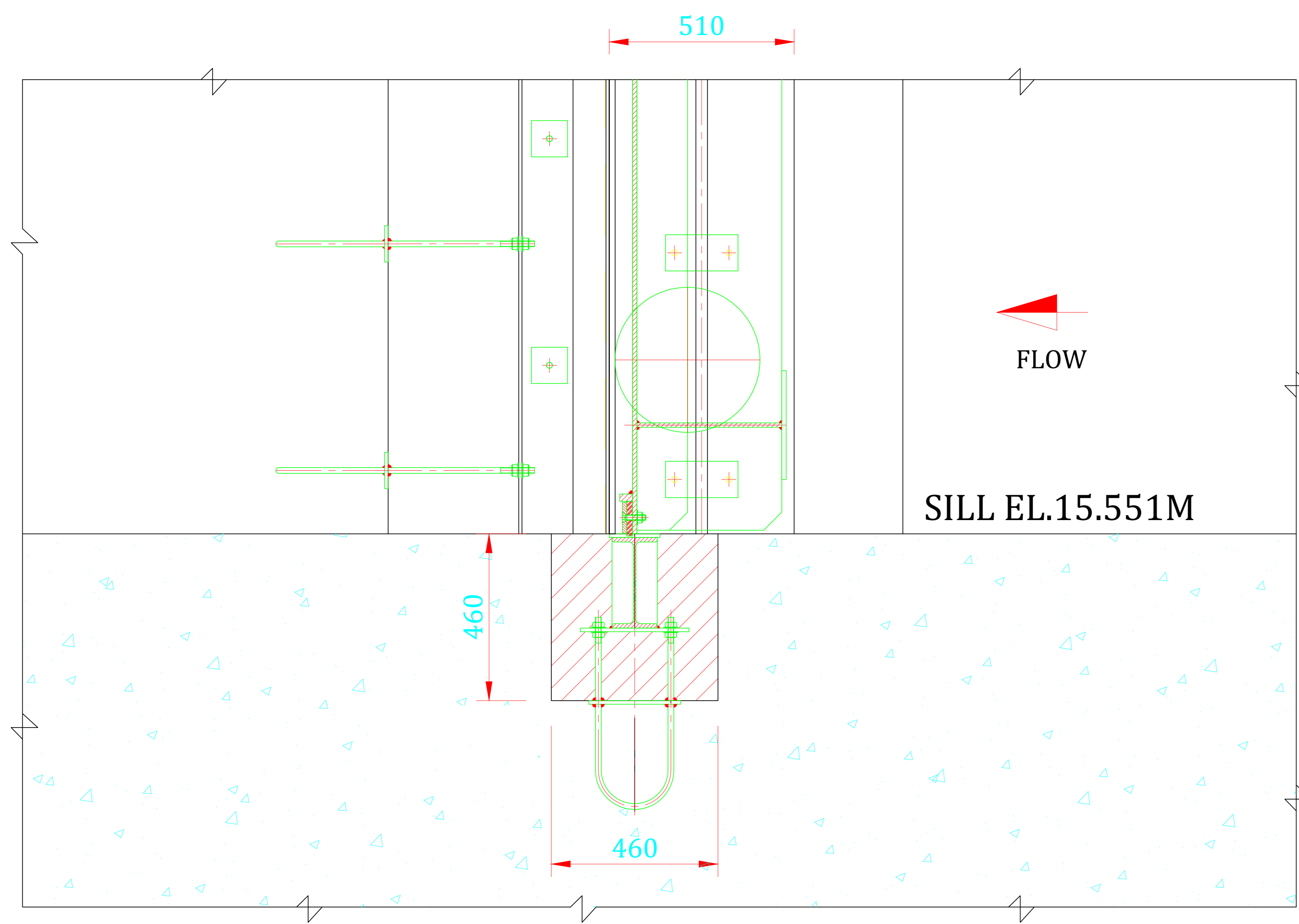
CONSULTANT	NAME	SIGN	DATE
	DRN		
	CHD		
	APD		

TITLE GENERAL ARRANGEMENT DRAWING AND DETAIL OF BULKHEAD GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 01 OF 02)

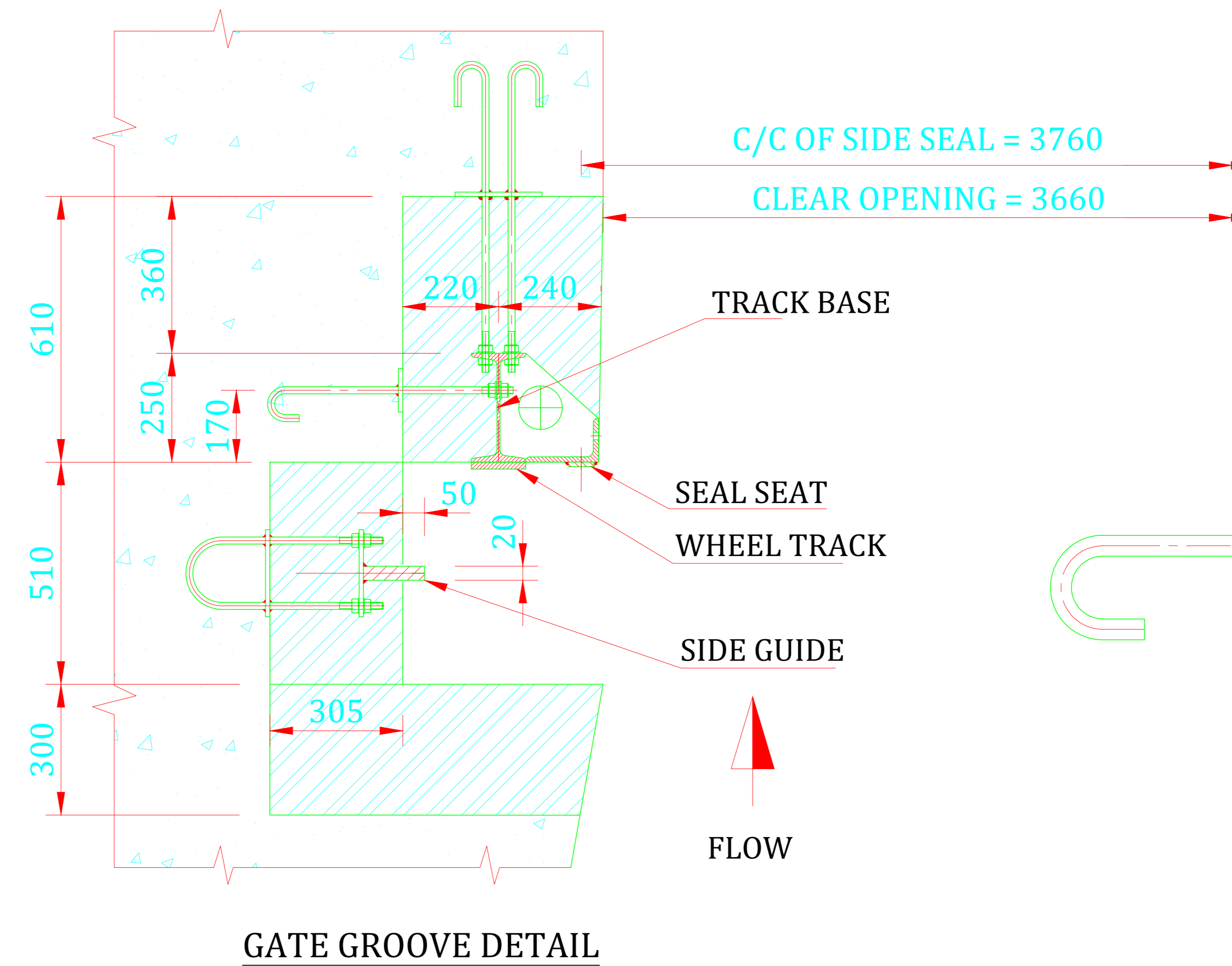
JOB. NO. DRG. NO. ENL009-SH1

REV.	DATE	DESCRIPTION	DRN	CHD	APD

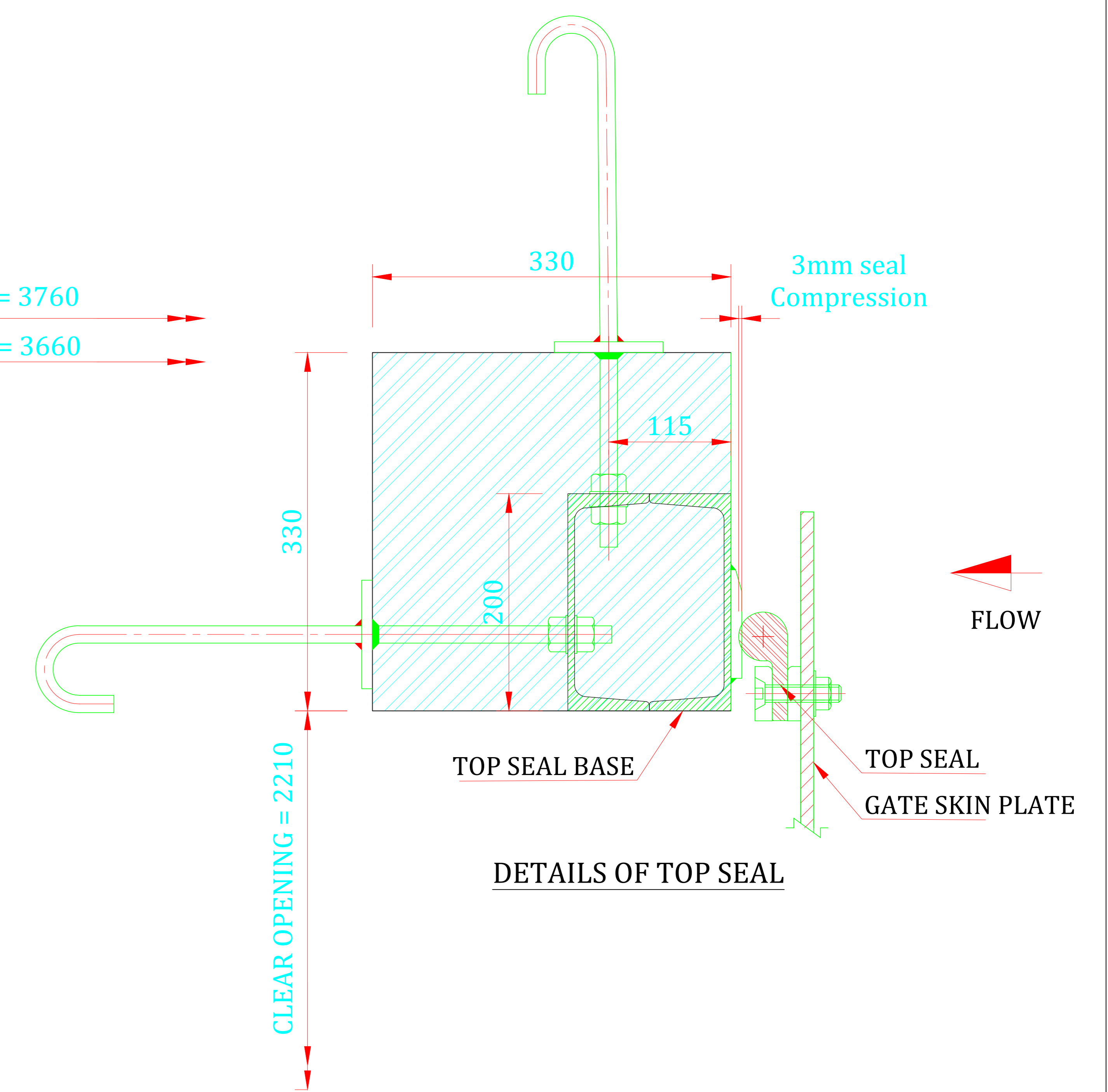
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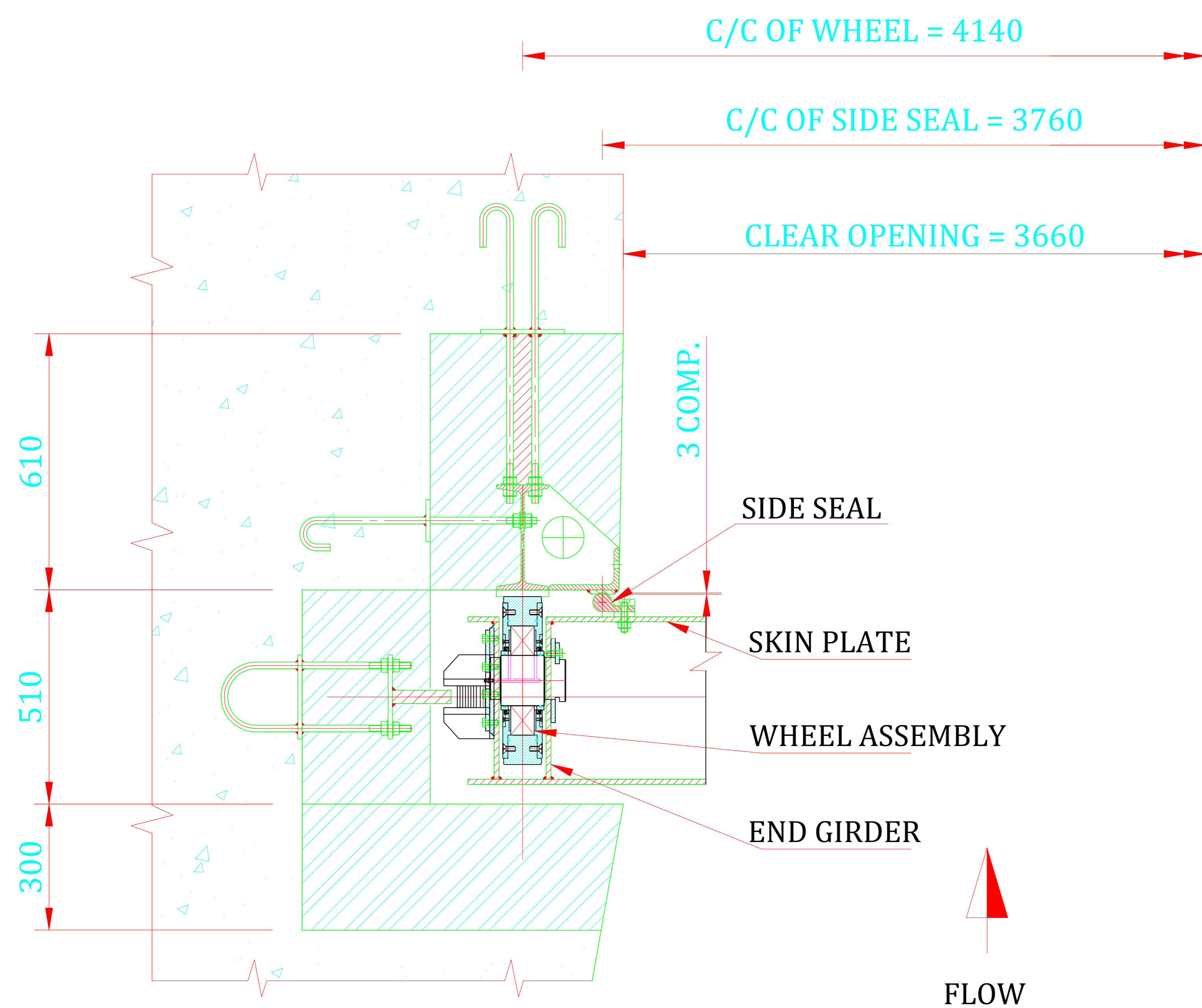
DETAIL : A
(REFER SHEET 1 OF 2)



GATE GROOVE DETAIL



DETAILS OF TOP SEAL



DETAIL : B
(REFER SHEET 1 OF 2)

NOTE:

1. ALL THE SEALS SHALL BE CONTINUOUS AND WATER TIGHT.
2. ALL CORNERS AND EDGES IN CONTACT WITH RUBBER SEALS AND WELDING SHALL BE SMOOTH AND ROUNDED WITH MINIMUM ROUNDS OF 6MM.
3. EXISTING SECOND STAGE EMBEDDED PARTS PROVIDED IN BLOCK OUTS SHALL BE MAINTAINED, HOWEVER IF THEY ARE FOUND INADEQUATE THE NEW EMBEDDED PARTS SHALL BE DESIGNED AND PROVIDED TO SUIT THE BLOCK OUTS PROVIDED AT SITE.
4. GATE SHALL BE DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF IS 4622 TO SUIT THE SIZE OF OPENING AND CHAMBER WHICH SHALL BE VERIFIED BY ACTUAL MEASUREMENT AT SITE.
5. THE METHODOLOGY FOR REMOVAL OF EXISTING GATES SHALL BE FINALIZED CONSIDERING THE BOTTLENECKS AT SITE, TRANSPORTATION LIMITATIONS ETC. THE SITE SHALL BE CLEARED OF ALL THE REPLACED MATERIALS.
6. THE TOLERANCES FOR EMBEDDED PARTS & COMPONENTS OF GATE SHALL BE AS PER ANNEX.-E OF IS 4622.

MACHINING DETAILS :

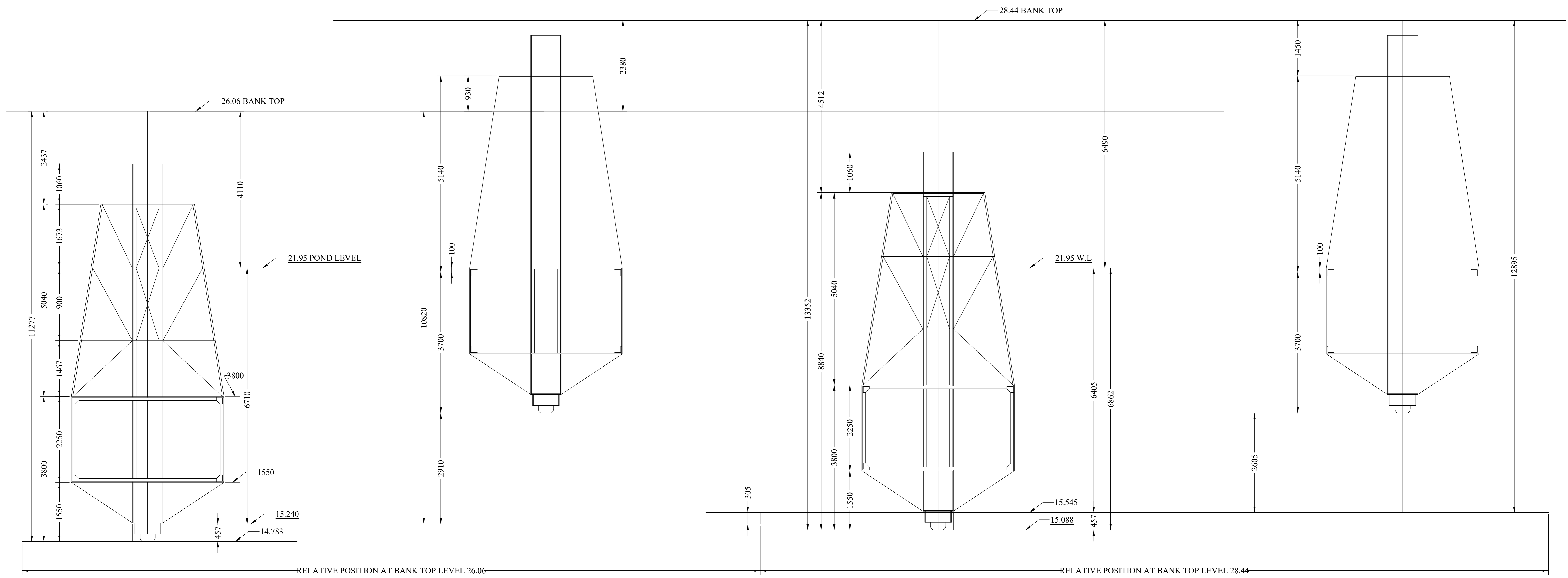
	FOR GUIDES & PIN
	FOR TRACKS
	FOR SEAL SEATS

LEGENDS :

	Ist STAGE CONCRETING (PRIMARY)
	IInd STAGE CONCRETING (SECONDARY)

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT	CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA					
CONSULTANT	PKS FLOODKON JV			NAME	SIGN	DATE
TITLE	GENERAL ARRANGEMENT DRAWING AND DETAIL OF BULKHEAD GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 02 OF 02)			DRN		
				CHD		
				APD		
				JOB. NO.	DRG. NO. ENL009-SH2	
				SIZE :	A0	REV. R1

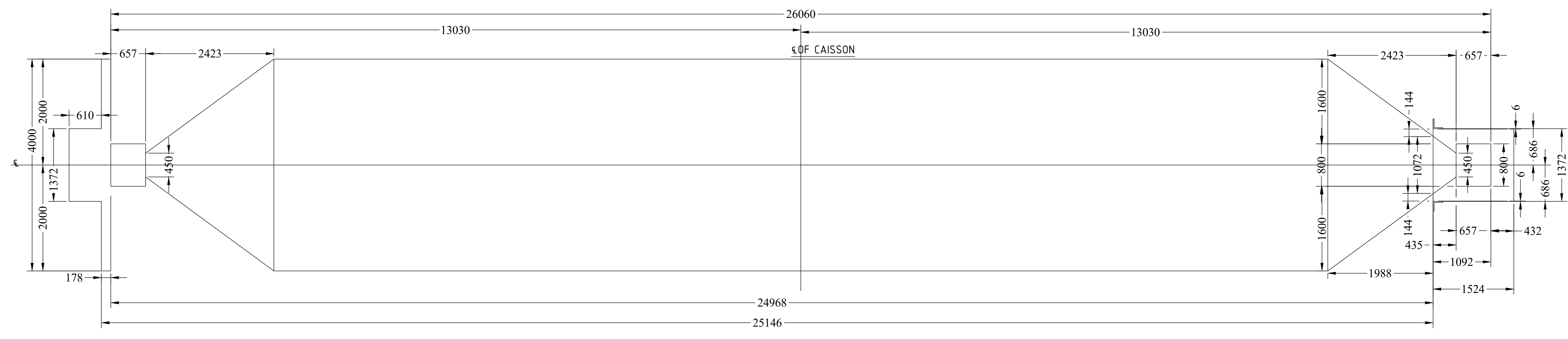


CAISSON GATE
SUNK

CAISSON GATE
FLOATING

CAISSON GATE
SUNK

CAISSON GATE
FLOATING



PLAN

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
 2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

INLAND WATERWAYS AUTHORITY OF INDIA

PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

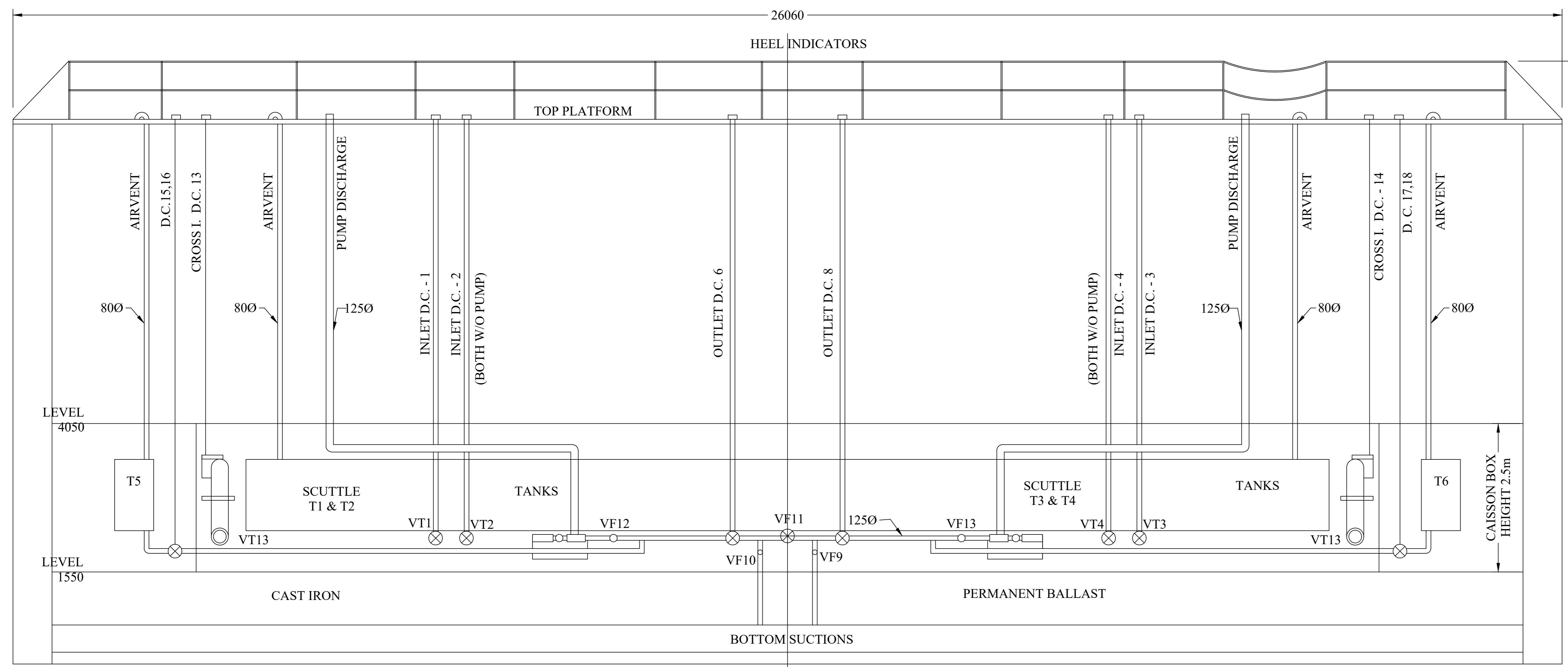
CONSULTANT	NAME	SIGN	DATE
PKS FLOODKON JV	DRN		
	CHD		
	APD		

TITLE GENERAL ARRANGEMENT DRAWING AND DETAIL OF CAISSON GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 01 OF 04)

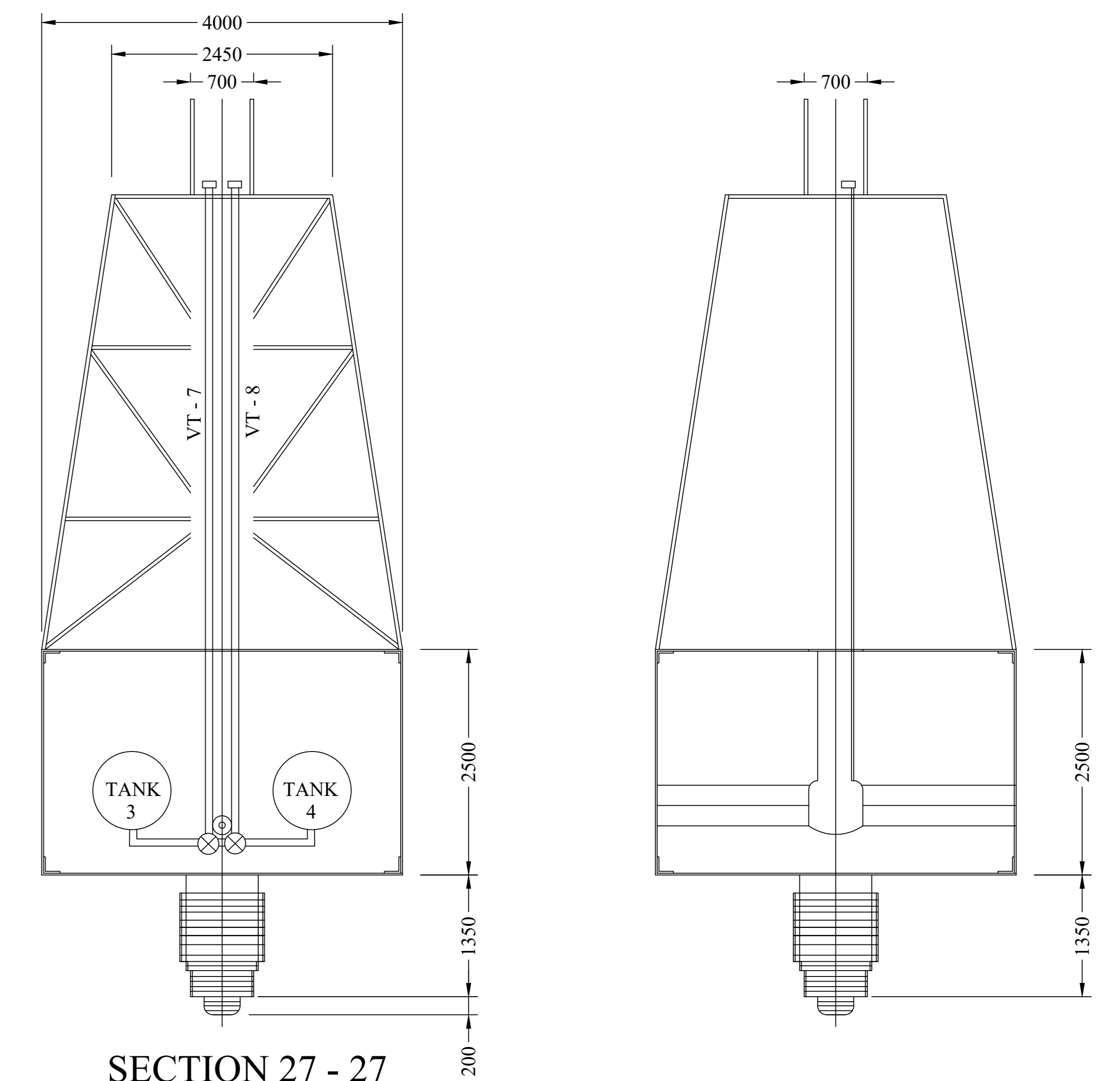
JOB NO. DRG. NO.
ENL010-SH1

REV.	DATE	DESCRIPTION	DRN	CHD	APD

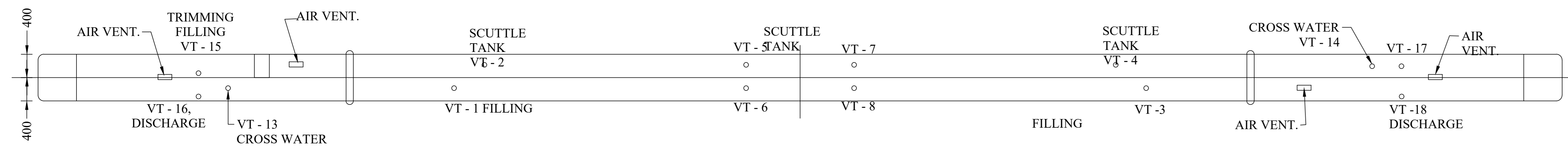
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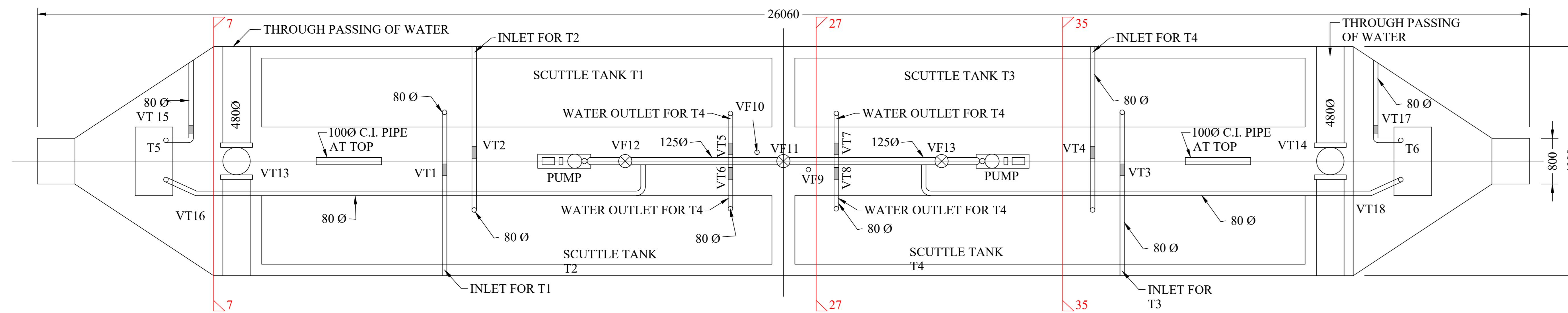
SECTIONAL ELEVATION



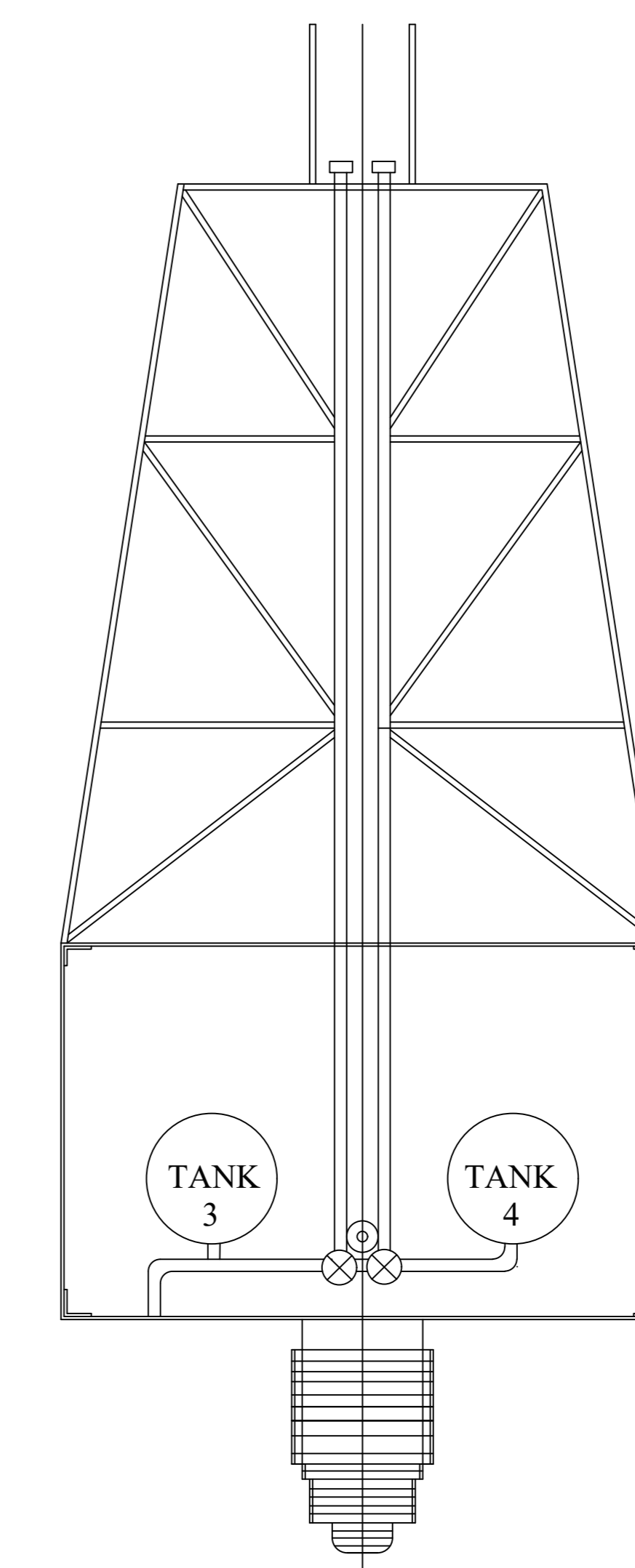
SECTION 27 - 27



PLAN AT LEVEL 9090



PLAN AT LEVEL (1550-4050)



SECTION 35 - 35

- NOTE:
1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
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INLAND WATERWAYS AUTHORITY OF INDIA

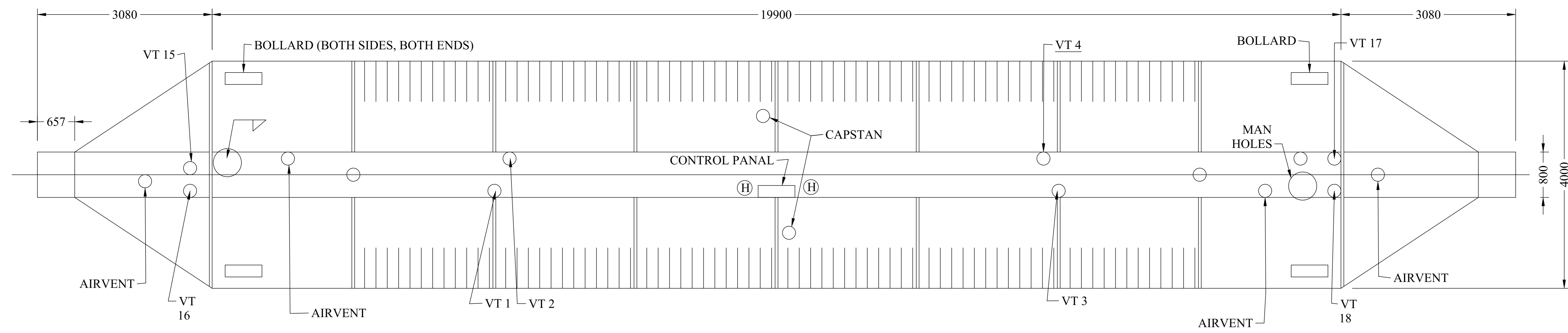
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
	DRN		
	CHD		
	APD		

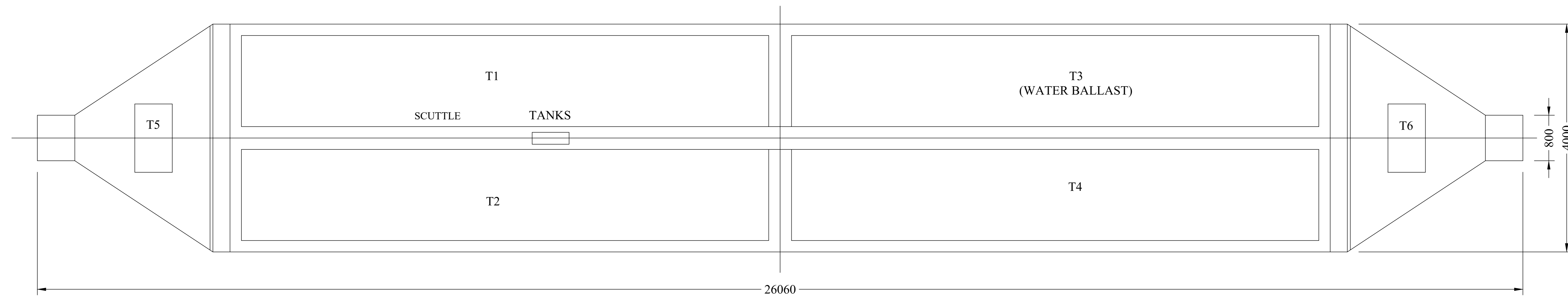
TITLE GENERAL ARRANGEMENT DRAWING AND DETAIL OF CAISSON GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 02 OF 04)

JOB. NO. DRG. NO. ENL010-SH2

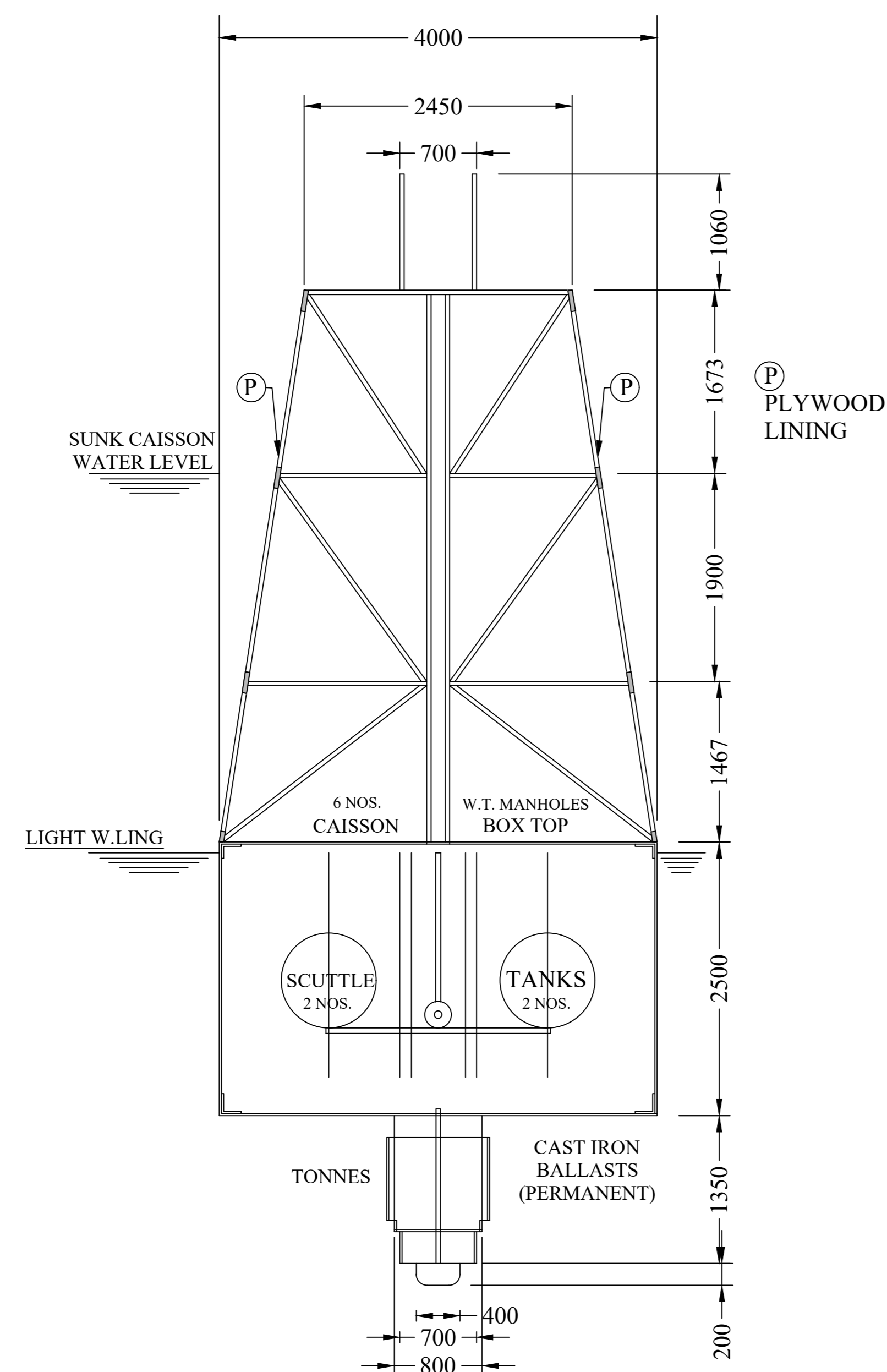
REV.	DATE	DESCRIPTION	DRN	CHD	APD



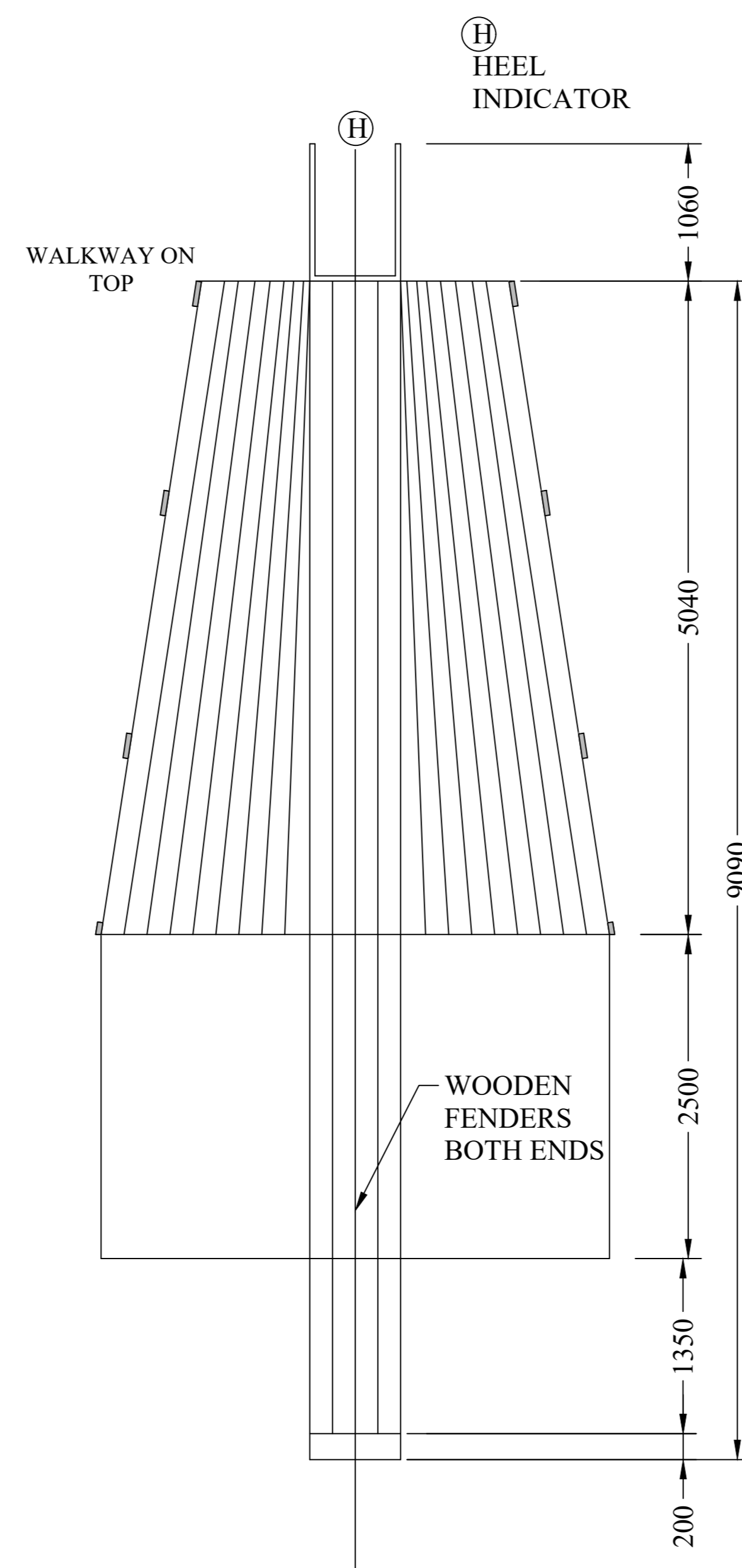
TOP PLAN



**SECTIONAL PLAN SHOWING (T1 TO T4)
SCUTTLE & TRIMMING TANKS (T5, T6)**



SECTIONAL VIEW


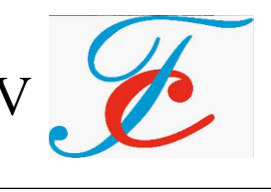
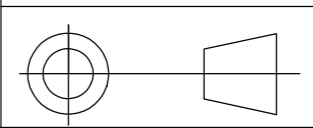


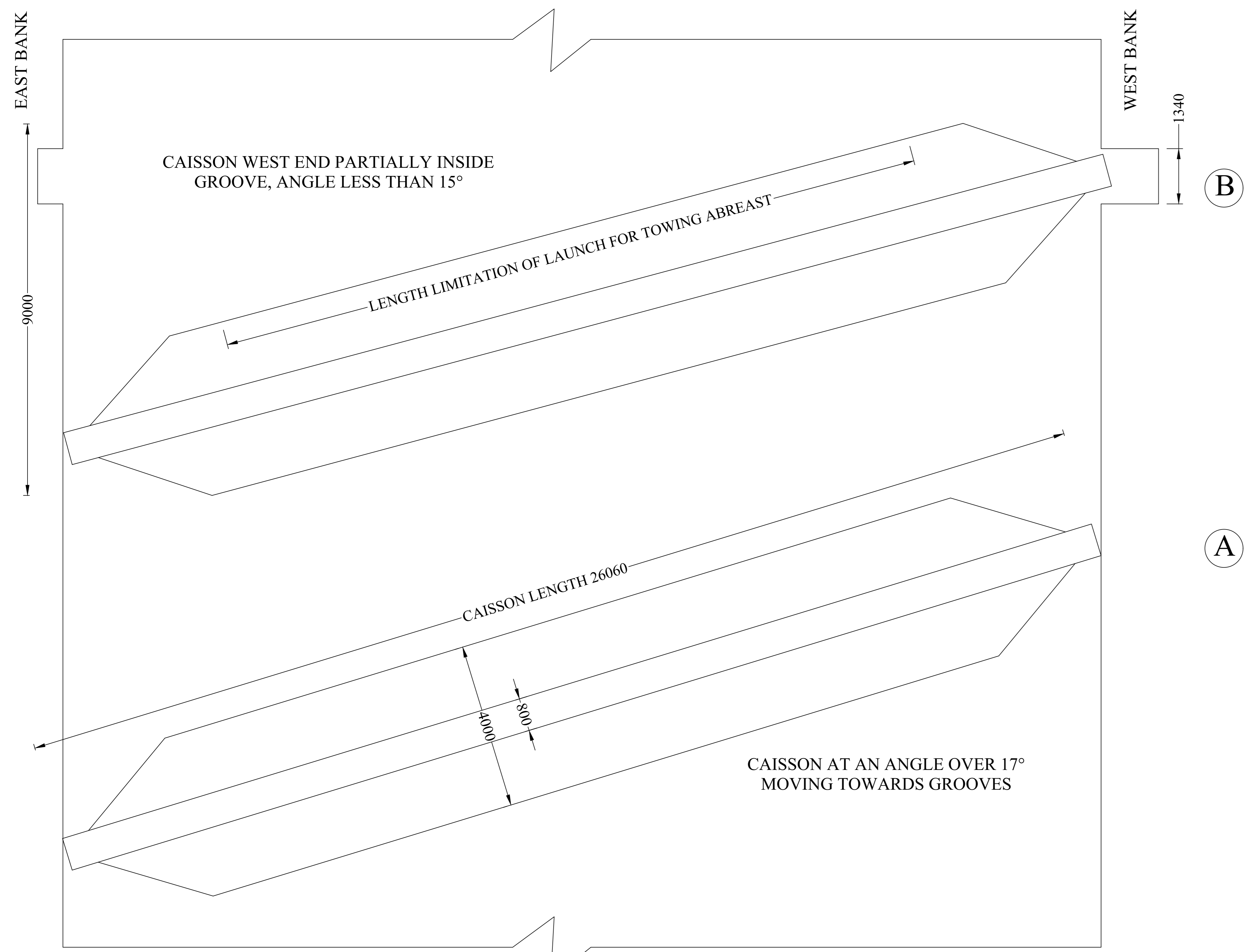
SIDE VIEW

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

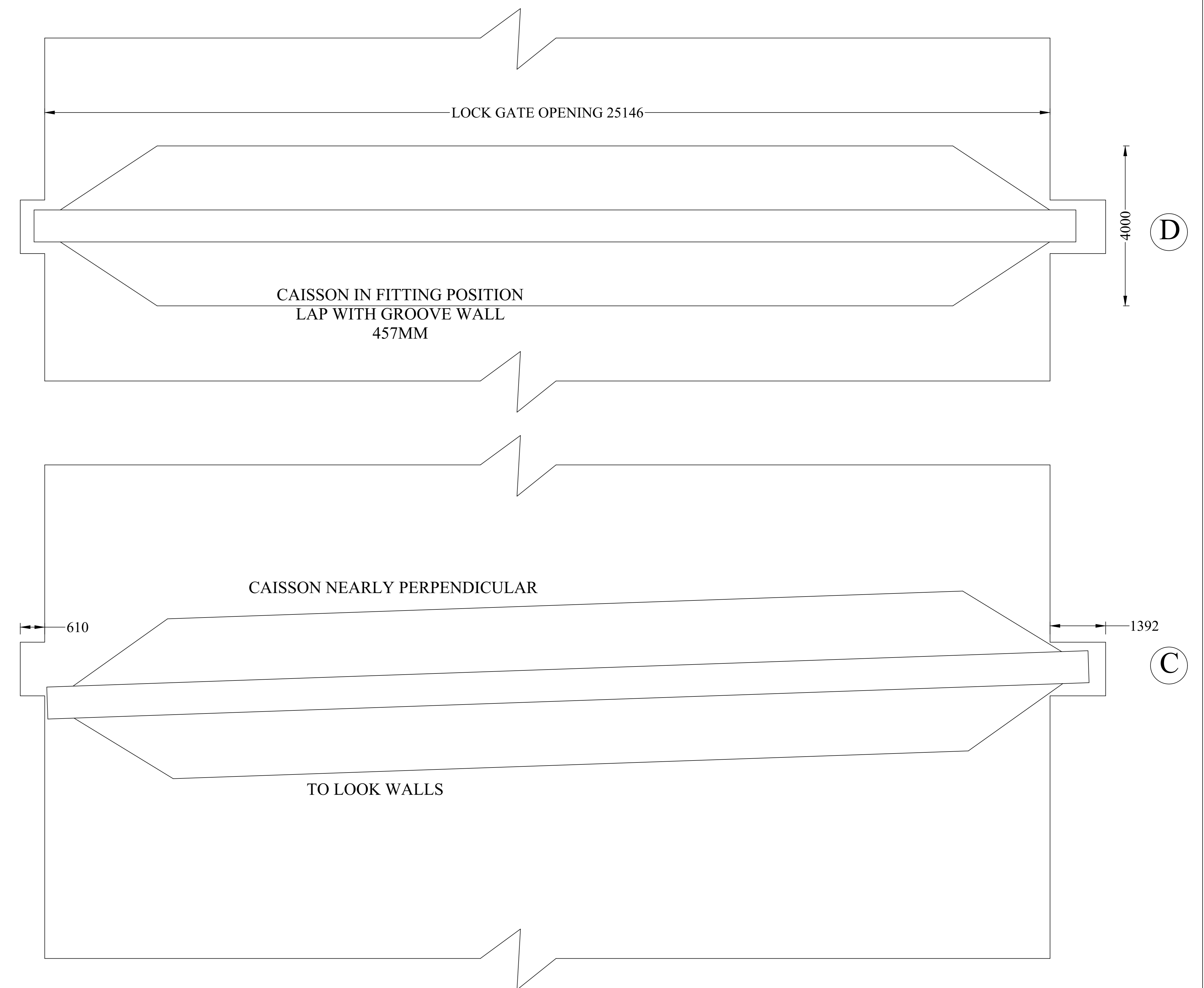
INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA						
CONSULTANT				NAME	SIGN	DATE
 PKS FLOODKON JV 				DRN		
				CHD		
				APD		
TITLE				JOB. NO.	DRG. NO.	
GENERAL ARRANGEMENT DRAWING AND DETAIL OF CAISSON GATE OF EXISTING NAVIGATION LOCK (SHEET NO. 03 OF 04)					ENL010-SH3	
				SIZE: A0	REV. R1	





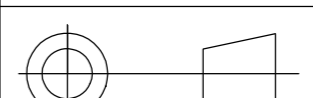
STAGES OF MOVEMENT

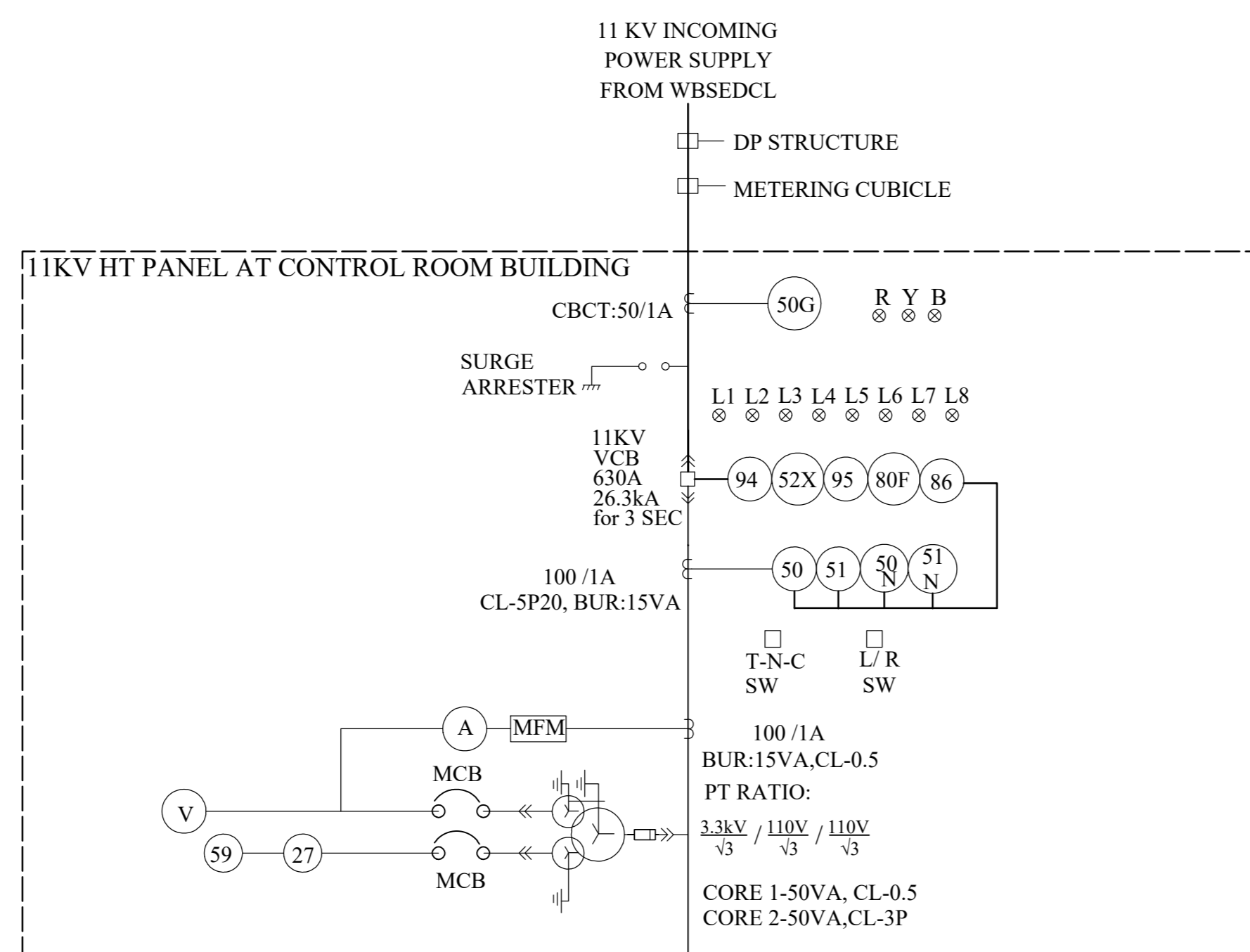
NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETER AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

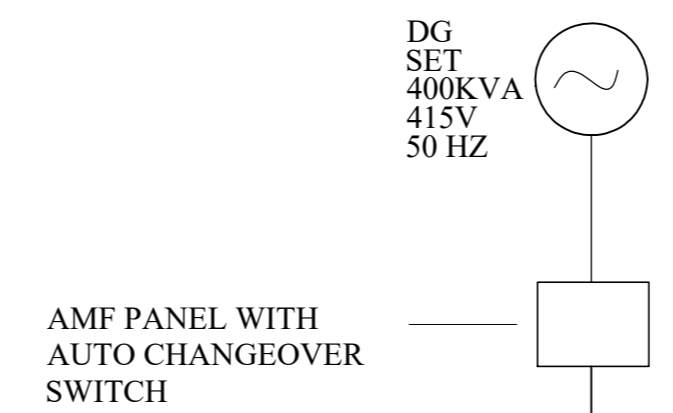


REV.	DATE	DESCRIPTION	DRN	CHD	APD

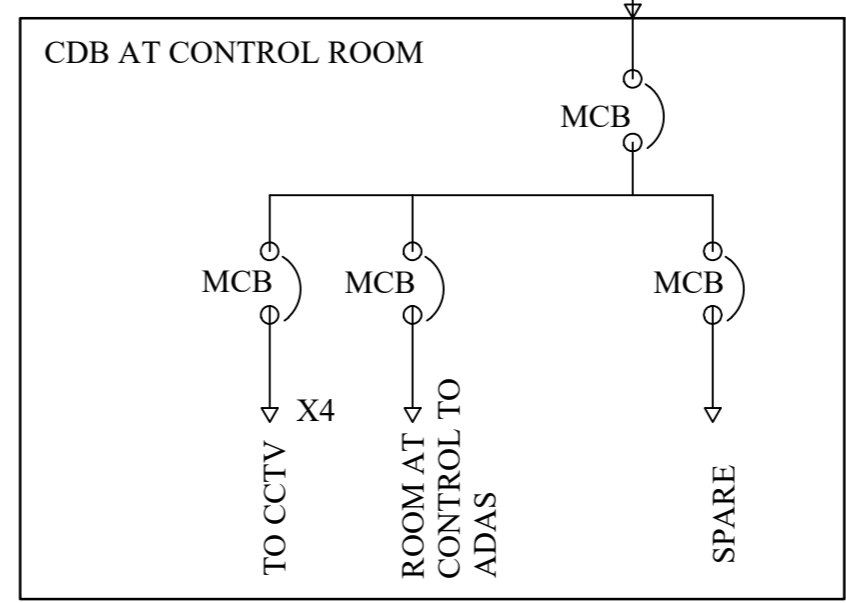
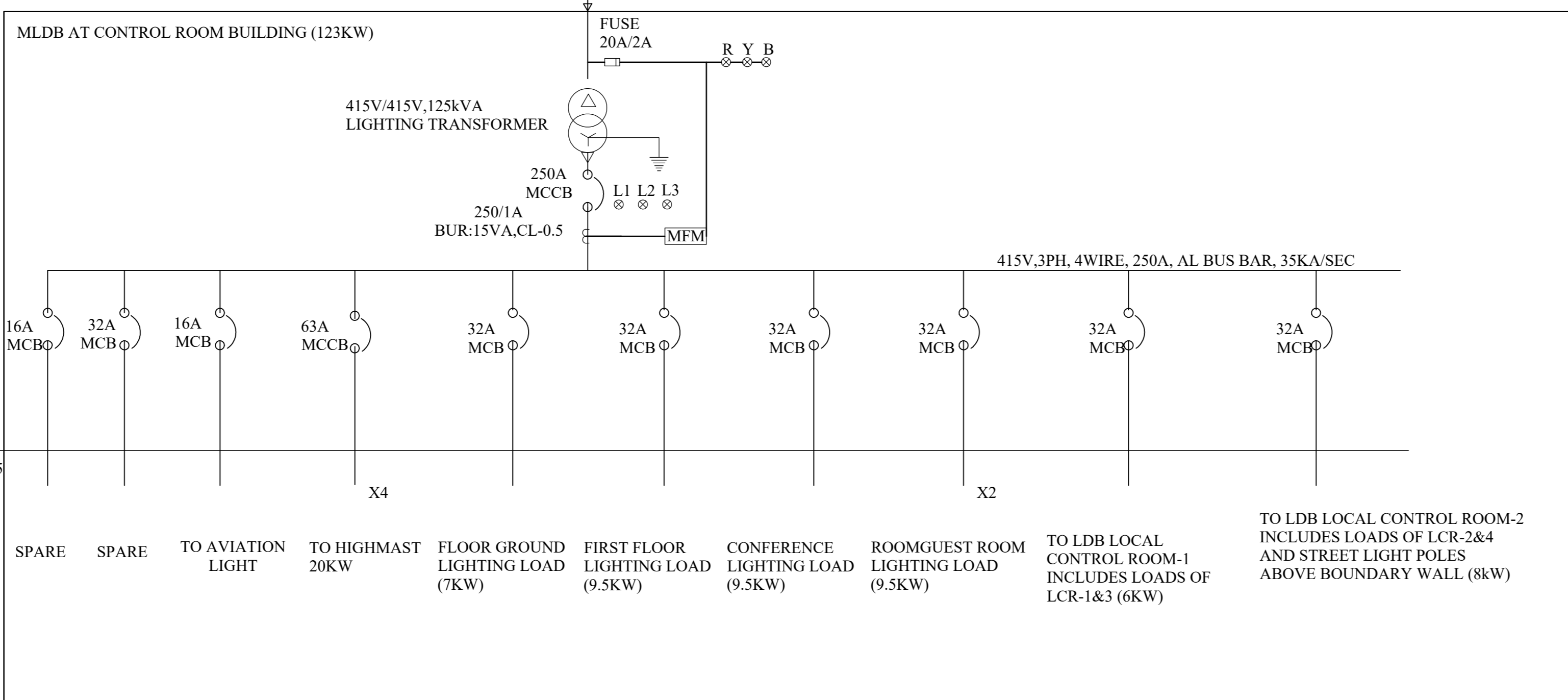
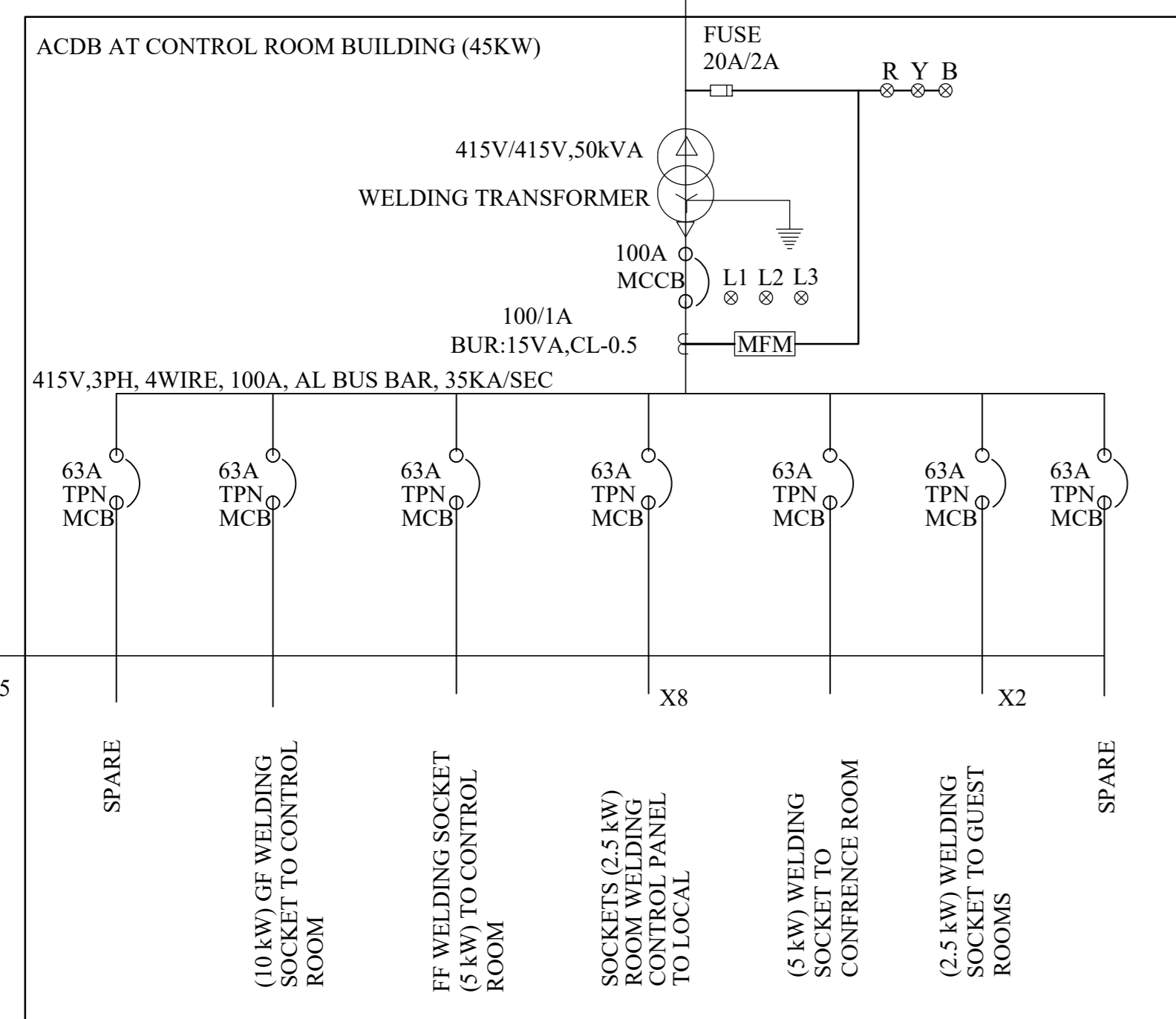
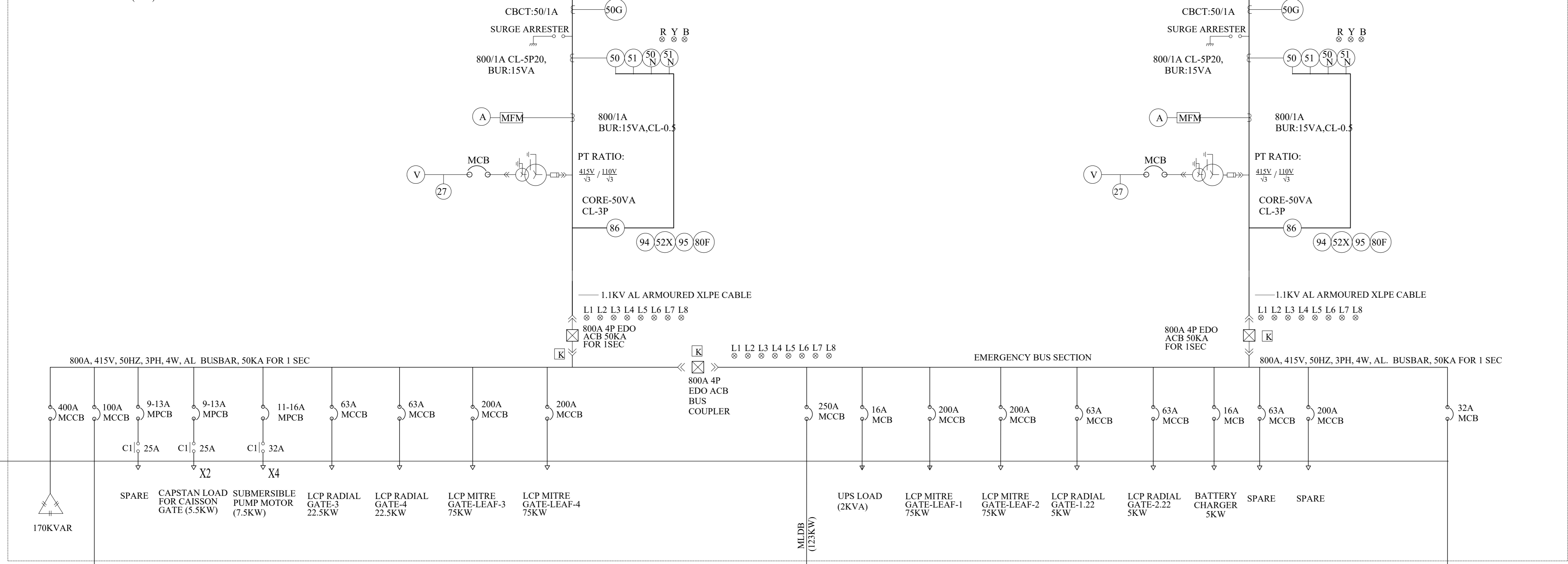
INLAND WATERWAYS AUTHORITY OF INDIA						
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA						
CONSULTANT				NAME	SIGN	DATE
 PKS FLOODKON JV 				DRN		
				CHD		
				APD		
TITLE GENERAL ARRANGEMENT DRAWING AND DETAIL OF CAISSON GATE MOVEMENT FOR OPERATION OF EXISTING NAVIGATION LOCK (SHEET NO. 04 OF 04)				JOB. NO.	DRG. NO.	
					ENL010-SH4	
				SIZE: A0	REV: R1	



11-0 433KV 400KVA
Z=4%+10% DRY TYPE
TRANSFORMER



POWER CONTROL CENTER (PCC) AT CONTROL ROOM BUILDING



POWER SINGLE LINE DIAGRAM

NOTES:-

- 1) HT & LT SWITCHGEAR PANEL SHALL BE SUITABLE FOR FUTURE EXPANSION ON BOTH SIDES.
- 2) AT LEAST 20% SPARE FEEDERS OF EACH TYPE AND RATING SHALL BE PROVIDED IN LT SWITCHBOARD.
- 3) DESIGN AMBIENT TEMPERATURE: 45°C.
- 4) CABLE SIZES & TRANSFORMER RATINGS SHALL BE AS PER APPROVED CALCULATIONS.
- 5) WELDING SOCKETS SHALL BE FED FROM 3PH, 4WIRE, AC DISTRIBUTION BOARD (ACDB) IN CONTROL ROOM.
- 6) POWER SOCKETS & LIGHTING LOAD SHALL BE FED FROM MAIN LIGHTING DISTRIBUTION BOARD (MLDB).
- 7) RATING OF COMPONENTS SHALL BE SELECTED AS PER TYPE-2 CO-ORDINATION OF IS 13947.
- 8) INDICATING LAMPS SHALL BE CLUSTER LED.
- 9) EACH PANEL OF HT & LT SWITCHGEAR SHALL BE PROVIDED WITH FLUORESCENT LIGHTING FIXTURE RATED FOR 240V, 50 HZ SUPPLY FOR INTERNAL ILLUMINATION. FITTING SHALL BE CONTROLLED BY THE RESPECTIVE PANEL DOOR SWITCH.
- 10) VA RATINGS OF CTs & PTs ARE INDICATIVE ONLY. VENDOR HAS TO CHECK THE SAME BASED ON LOAD.
- 11) ALL INCOMERS AND OUTGOINGS 125A AND ABOVE SHALL HAVE MICROPROCESSOR BASED O/L, S/C & E/F RELEASES AND BELOW 125A SHALL HAVE THERMAL MAGNETIC BASED O/L, S/C & THERMAL MAGNETIC BASED O/L, S/C & E/F RELEASES.
- 12) ALL RELAYS SHALL BE OF NUMERICAL TYPE.
- 13) DG SET RATING IS BASED ON EMERGENCY LOADS TO BE OPERATED IN CASE OF MAIN SUPPLY POWER FAILURE.
- 14) MLDB IN CONTROL ROOM SHALL FED POWER TO LIGHTING LOAD & POWER SOCKET LOAD OF CONTROL ROOM GROUND FLOOR, CONTROL ROOM FIRST FLOOR, CONFERENCE ROOM, GUEST ROOM-1&2 AND STAIRCASE LIGHTING.
- 15) LDB IN LOCAL CONTROL ROOM-1 SHALL FED POWER TO LIGHTING LOAD & POWER SOCKET LOAD OF LOCAL CONTROL ROOMS- 1 & 3.
- 16) LDB IN LOCAL CONTROL ROOM-2 SHALL FED POWER TO LIGHTING LOAD & POWER SOCKET LOAD OF LOCAL CONTROL ROOMS-2 & 4 AND STREET LIGHTING POLES ABOVE BOUNDARY WALL.

SYMBOL	DESCRIPTION
ACDB	AC DISTRIBUTION BOARD
CDB	CONTROL DISTRIBUTION BOARD
GF	GROUND FLOOR
FF	FIRST FLOOR
ADAS	AUTOMATIC DATA ACQUISITION SYSTEM
LCR	LOCAL CONTROL ROOM

SYMBOL	DESCRIPTION
	TRANSFORMER
	DG SET
	MCCB/MPCB
	CONTACTOR
	ACB
	VCB
	INDICATION
	UNDER VOLTAGE RELAY
	INSTANTANEOUS OVER CURRENT RELAY
	INSTANTANEOUS EARTH FAULT RELAY
	IDMT OVER CURRENT RELAY
	IDMT EARTH FAULT RELAY
	LOCK OUT RELAY
	ANTI PUMPING RELAY
	INSTANTANEOUS GROUND FAULT RELAY
	DC FAIL RELAY
	BREAKER CONTACT MULTIPLIER RELAY
	TRIP CIRCUIT SUP. RELAY
	OVER VOLTAGE RELAY
	SURGE ARRESTER
	BREAKER ON RED
	BREAKER OFF GREEN
	BREAKER TRIP AMBER
	SPRING CHARGED RED
	TRIP CIRCUIT HEALTHY
	BREAKER IN TEST POSITION
	BREAKER IN SERVICE POSITION
	DC FAIL
	POTENTIAL TRANSFORMER
	ELECTRICAL & MECHANICAL INTERLOCK
	LIGHTING DISTRIBUTION BOARD
	MAIN LIGHTING DISTRIBUTION BOARD

INLAND WATERWAYS AUTHORITY OF INDIA

PROJECT: CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
PKS FLOODKON JV	DRN		
	CHD		
	APD		

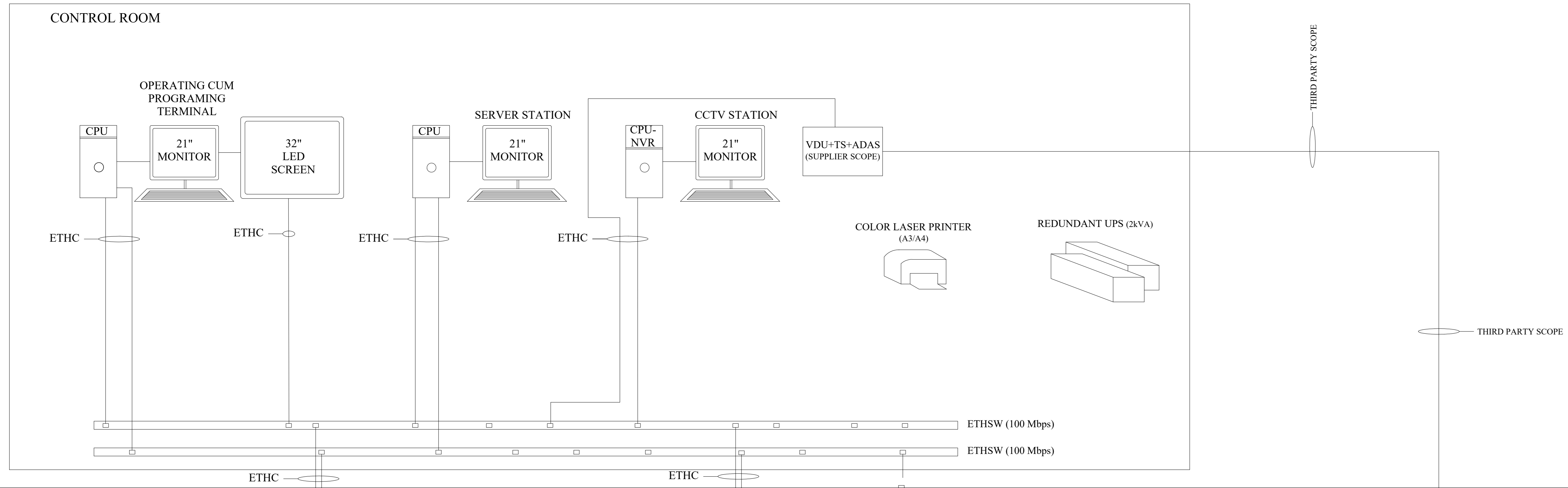
TITLE: POWER SINGLE LINE DIAGRAM OF EXISTING NAVIGATION LOCK, FARAKKA

JOB. NO.	DRG. NO.
	ENL011

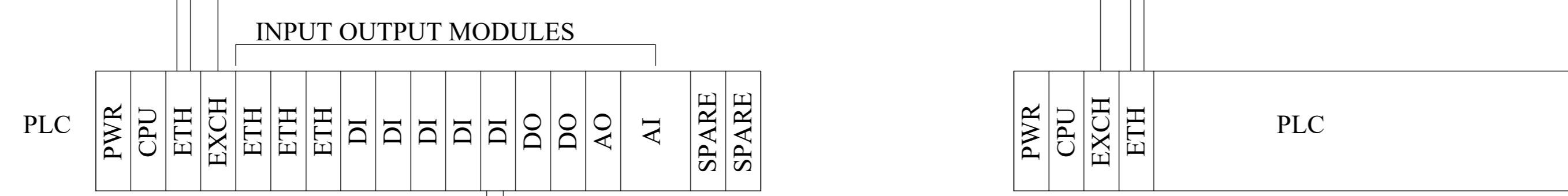
REV.	DATE	DESCRIPTION	DRN	CHD	APD

SIZE: A0 REV: R1

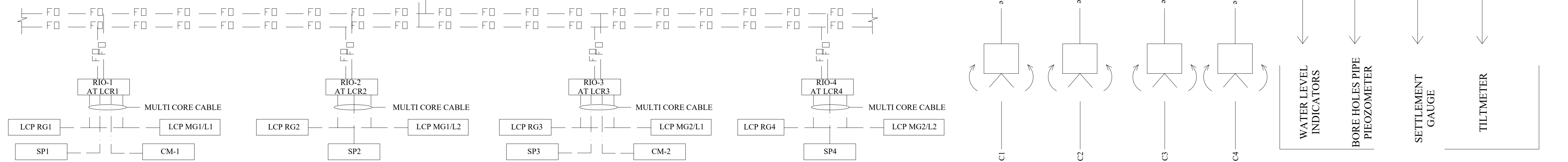
IN CONTROL ROOM
PC, SERVER, NETWORK SWITCH AND
AUXILIARIES



PLC



RIO PANEL, JUNCTION BOX AND FIELD
DEVICES & INSTRUMENTATION



LEGEND:-

UPS	UNINTERRUPTED POWER SUPPLY
ETHSW	ETHERNET SWITCH
PLC	PROGRAMMABLE LOGIC CONTROLLER
PWR	PLC POWER SUPPLY
CPU	PLC CENTRAL PROCESSING UNIT
EXCH	PLC MEMORY EXCHANGE WITH REDUNDANT PLC
ETH	PLC ETHERNET MODULE
DI	PLC DIGITAL INPUT MODULES
DO	PLC DIGITAL OUTPUT MODULES
SPARE	PLC SPARE I/O BASE
LCP	LOCAL CONTROL PANEL
CPU	CENTRAL PROCESSING UNIT
RG	RADIAL GATE
JB	JUNCTION BOX
MG/L	MITRE GATE/LEAF
CM	CAPSTAN MOTOR FOR CASSION GATE
SP	SUBMERSIBLE PUMP MOTOR
RIO	REMOTE INPUT OUTPUT
(CCTV)	CCTV CAMERA (Pan Tilt Zoom)
NVR	NETWORK VIDEO RECORDER
LCR	LOCAL CONTROL ROOM

CABLE LEGEND

FO	FIBRE OPTIC CABLE
ETHC	ETHERNET CABLE (ETHC)
MC	MULTICORE/MULTIPAIR CABLES
Cat5e	Cat 5e ETHERNET CABLE

INLAND WATERWAYS AUTHORITY OF INDIA

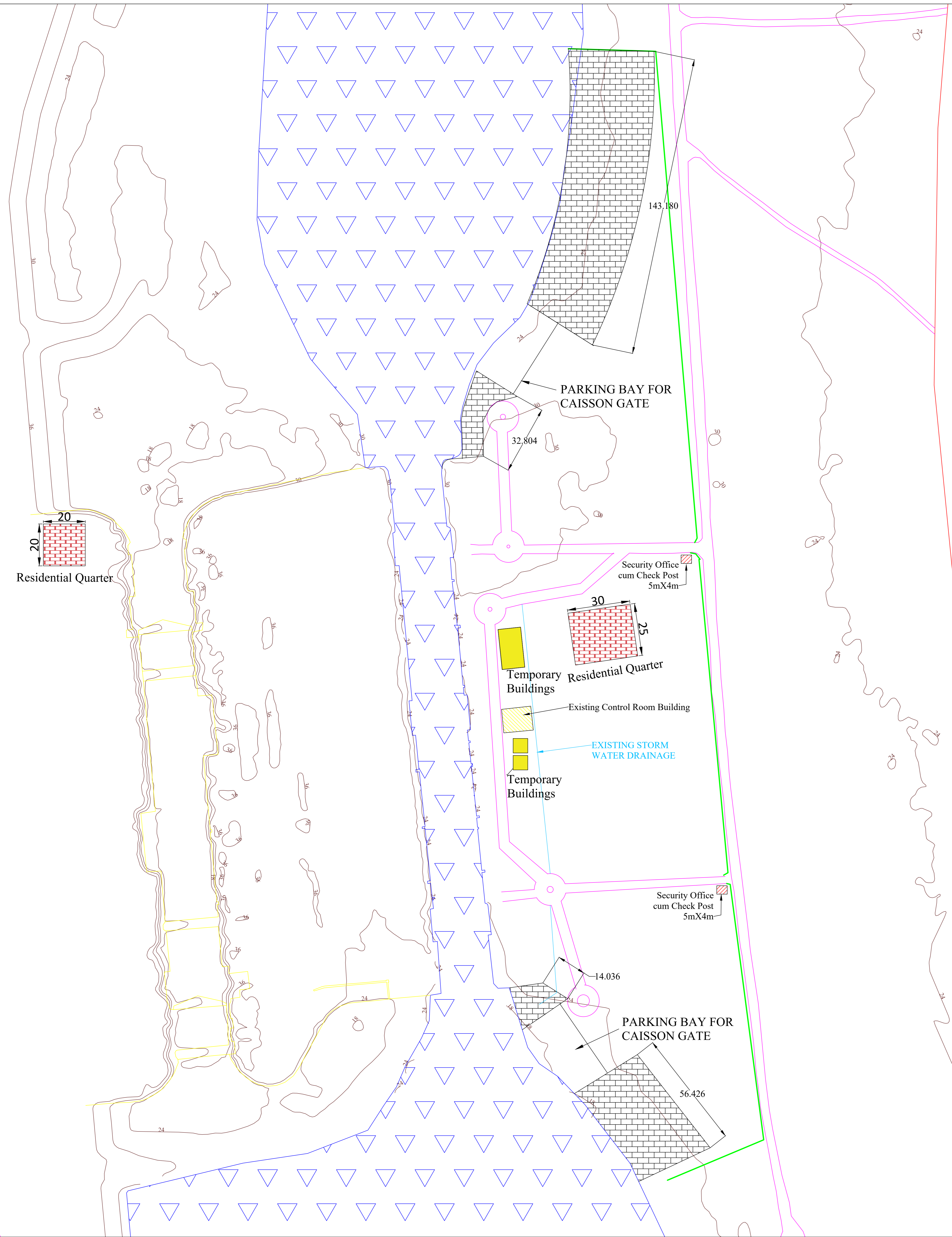
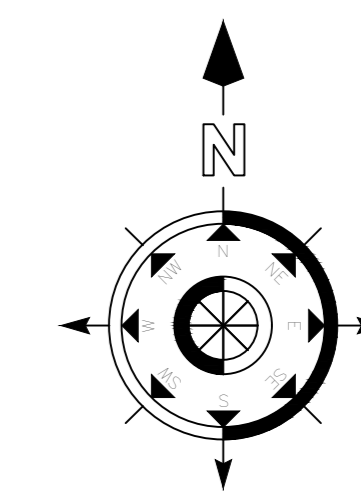
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

CONSULTANT	NAME	SIGN	DATE
PKS FLOODKON JV	DRN		
	CHD		
	APD		

TITLE BASIC CONTROL ARCHITECTURE OF EXISTING NAVIGATION LOCK, FARAKKA

JOB. NO.	DRG. NO.
	ENL012

REV.	DATE	DESCRIPTION	DRN	CHD	APD



Legends	
	Contour Lines
	Roads
	Canal
	Bank Protection
	Temporary Buildings
	Residential Quarter
	Boundary Wall
	Security Office cum Check Post
	Existing Control Room Building

NOTE:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA

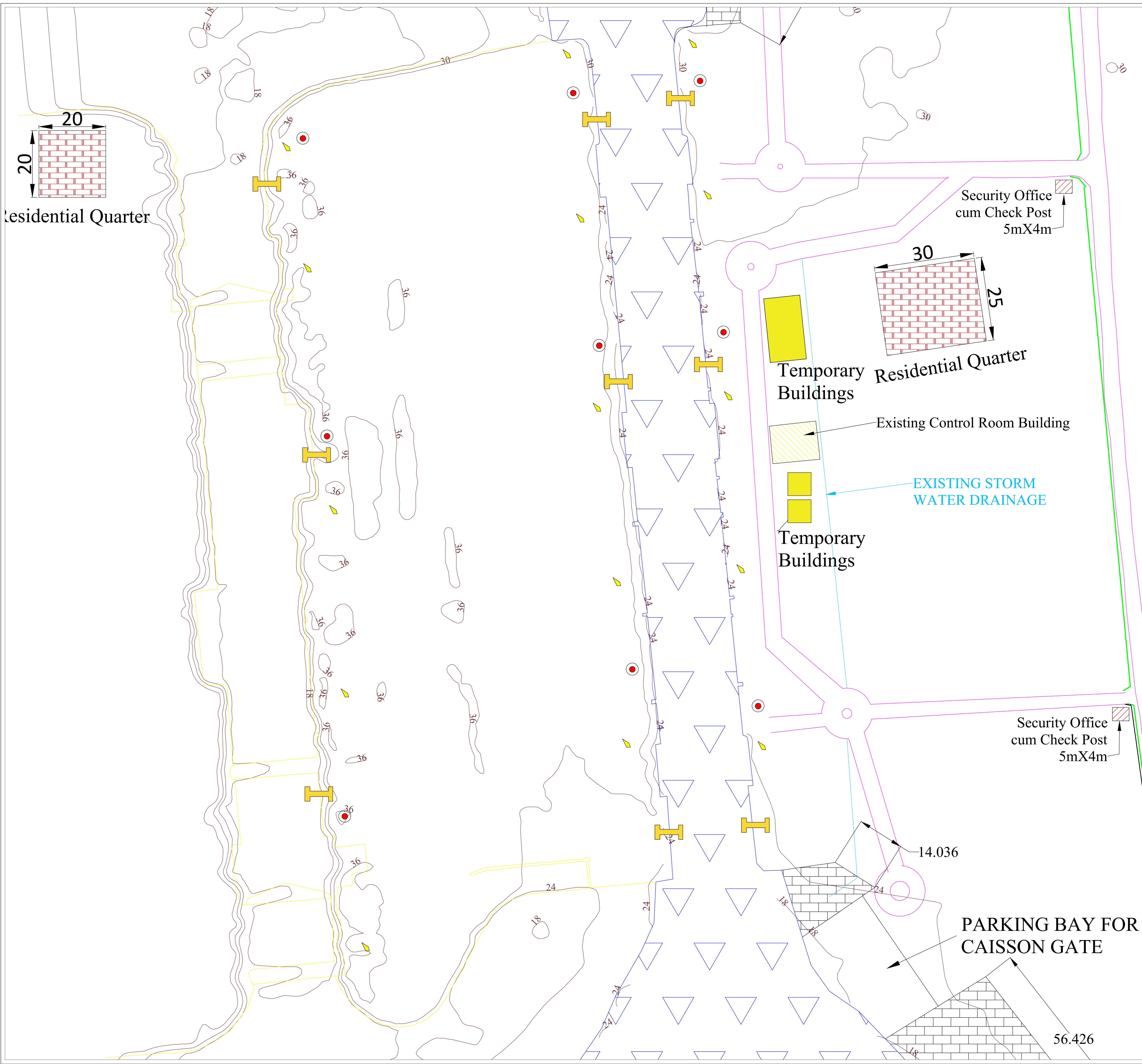
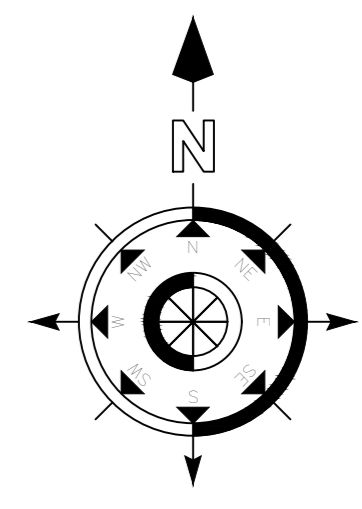
PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

	CONSULTANT	NAME	SIGN	DATE
		DRN		
		CHD		
		APD		

TITLE GENERAL ARRANGEMENT DRAWING OF BANK PROTECTION, PARKING BAY, STORM WATER DRAINAGE AND ROAD, RETIRING AREA OF EXISTING NAVIGATION LOCK, FARAKKA

JOB. NO.	DRG. NO.
	ENL013

SIZE: A0 REV. R1



Legends

- Piezometer (15 NO.)
- Settlement Gauge (9 NO.)
- Inclinometer (9 NO.)
- New Navigation Lock
- Contour Lines
- Roads

NOTE:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SPECIFIED.
2. NO DIMENSION SHALL BE SCALED OUT, ONLY WRITTEN DIMENSIONS ARE TO BE TAKEN AS CORRECT.

REV.	DATE	DESCRIPTION	DRN	CHD	APD

INLAND WATERWAYS AUTHORITY OF INDIA

PROJECT CONSULTANCY SERVICES FOR PREPARATION OF DETAILED PROJECT REPORT (DPR) FOR THE WORK OF RENOVATION / MODERNIZATION OF EXISTING NAVIGATION LOCK AT FARAKKA

 PKS FLOODKON JV	NAME	SIGN	DATE
	DRN		
	CHD		
	APD		

TITLE GENERAL LOCATION PLAN FOR MONITORING INSTRUMENTATION OF EXISTING NAVIGATION LOCK, FARAKKA

JOB. NO. DRG. NO. ENL014

SIZE: A0 REV. R1

E 87°54'0"

E 87°54'20"

E 87°54'40"

N 24°49'20"

N 24°49'20"

N 24°49'0"

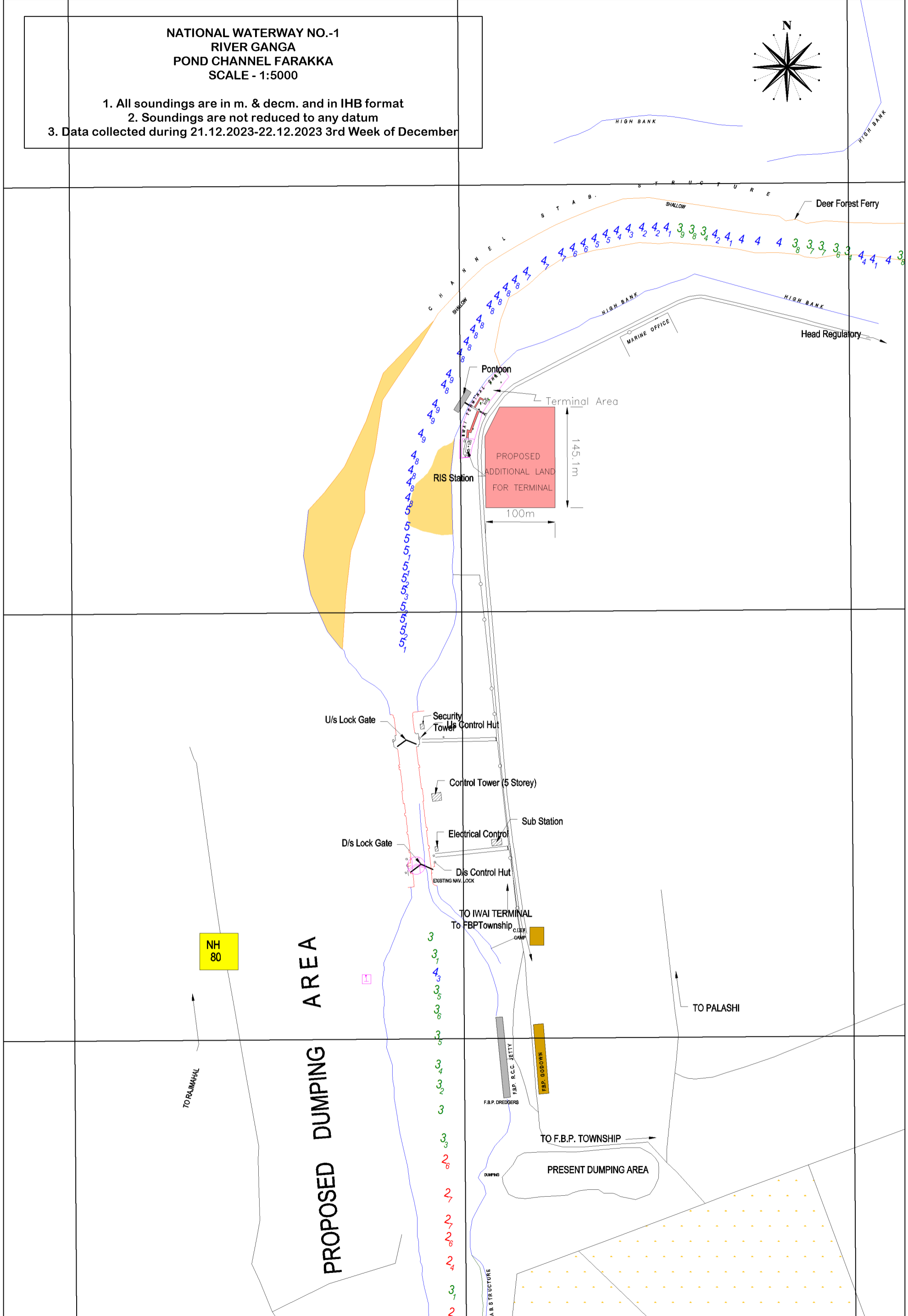
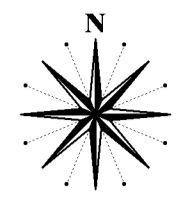
N 24°49'0"

N 24°48'40"

N 24°48'40"

NATIONAL WATERWAY NO.-1
 RIVER GANGA
 POND CHANNEL FARAKKA
 SCALE - 1:5000

1. All soundings are in m. & decm. and in IHB format
 2. Soundings are not reduced to any datum
 3. Data collected during 21.12.2023-22.12.2023 3rd Week of December



E 87°54'0"

E 87°54'20"

E 87°54'40"