



MEGHALAYA POWER GENERATION CORPORATION LIMITED
Corporate Identification Number : U40101ML2009SGC008392
Office of the Chief Engineer (C), Hydro Planning & Hydro Construction
Lumjingshai, Short Round Road, Shillong – 793001
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No. MePGCL/CE/C/HP&HC/T-33(C)/2023/26

Dated February 7, 2023

To,

The Chief Engineer (Generation),
MePGCL, Shillong.

Sub: RM&U Stage III HEPP: Replies to the Queries.

Sir,

With reference to the above and as directed, enclosed please find herewith the Replies to the queries raised by the Bidder for the work “Rehabilitation of Hydro Mechanical and Civil Facilities (Package-II)” under the Project for “Renovation and Modernization of Umiam-Umtru Stage-III Hydroelectric Power Station”.

This is for favour of your information and necessary action.

Enclo:- As stated

Yours faithfully,

(B. Wann)

Superintending Engineer (C),
O/o CE (C), HP&HC,
Me.P.G.C.L, Shillong.

Memo No. MePGCL/CE/C/HP&HC/T-33(C)/2023/26(a)

Dated February 7, 2023

Copy to:

1. The Director (Generation) MePGCL, Shillong for kind information.
2. The Additional Chief Engineer (C), HP, MePGCL, Umiam.
3. The Superintending Engineer (C), HSMC, MePGCL, Shillong
4. The Executive Engineer (MIS), MeECL, Shillong with a request to upload the Replies to the Queries in the www.meecl.nic.in website. A soft copy is sent via e-mail.
5. Relevant file.

(Signature)
SUPERINTENDING ENGINEER (C)

**PROJECT NAME: RENOVATION AND MODERNIZATION OF UMIAM-UMTRU STAGE-III HYDROELECTRIC
POWER STATION**

CONTRACT NAME: REHABILITATION OF HYDRO-MECHANICAL AND CIVIL FACILITIES (PACKAGE-II)

JICA LOAN NO.ID-P-271

IFB No. CE/C/HP&HC/T-33(C)/2022/03 Dated 20.9.2022

EMPLOYER: MEGHALAYA POWER GENERATION CORPORATION LIMITED (MEPGCL)

SL. No	TENDER CLAUSE	BIDDER'S QUERIES	REPLIES
BIDDER 1			
1	1.1.3.3 of GCC	Looking to the nature of work, the period of completion shall be 30 months excluding intervening rainy season from Jun to August months.	Completion period is 30 (thirty) months including rainy season
2	Clause 2.02,2.04, 2.04, 2.05, 2.10	Land for temporary works as identified within the project area shall be provided by MePGCL free of cost.	Yes
		The land for dumping yard may please be identified and indicate.	Dumping yard has been identified and will be shown to the bidder if he wishes to inspect the site.
		Land for new road if any shall be handed over to us by MePGCL free of cost	Yes
		The capacity of existing bridges to site shall be informed by MEPGCL.	The Nongmahir Spillway Bridge, which is the only bridge at the project site , has the capacity to cater to heavy vehicles carrying equipment to the Stage -III Power Station during its construction.
		Construction power shall be provided by MEPGCL at fixed tariff/price which shall be the applicable same throughout the contract period.	The tariff for construction power will be as per Distribution tariff decided by the State Electricity Commission.
3	4.2 -GCC	Performance Security @ 15% is high and not as a normal practice. The same shall be 10% of Accepted Contract Price (ACP)	Performance Security shall be @15 % of Accepted Contract Price.
4	Release of retention money- 14.9 of GCC	Instead of proportion release of 50 % of proportion calculated by dividing the estimated contract value of the section /part by estimated final contract price, 50% of estimated contract price of completed value of section /work may be released.	No change in GCC clause.
5	Limitation of liability	Shall be reduced to the balance value of work once taking over certificate of section/part work is issued.	No Change in GCC clause.
6	Related with Bill No. 6- HRT & Link Tunnel	The details of survey for repair work of Link & HRT tunnel based on which estimated quantity worked out may please be provided.	Relevant extract of Survey Report is enclosed as Annexure – A
7	Link & HRT Tunnel- Item No - 604	The quantity of 15000cum seems to be on higher side	The quantity includes removal of silt from inside the Link Tunnel, its exit into the Nongmahir Forebay and the Forebay.
8	Link & HRT Tunnel- Item No - 609	Depth of grouting may be indicated.	Contact grouting: The depth of grout holes will be equal to the thickness of lining +300mm into the rock, as provided in IS: 5878 (Part – VII) Consolidation Grouting:- Depth of grout holes is 0.75D to D , where D is the finished tunnel diameter, as per IS :5878(Part – VII) specifications.

9	Item /no 702- repair of expansion joint.	Drawing of existing expansion joint to be repaired may be supplied	Details of expansion joint:- i)Circumference of Penstock is 8.25m, ii)Gland packing size varies from 25 to 28 mm, iii)No of gland packing in one expansion joint is 6 to 8 nos.
10	Bill No 14Item no 1407	Explain and clarify the repair work of roof to avoid leakages	Damaged portions of roof are to be repaired. Polymer Modified Bituminous Membrane (3 mm thickness) to be applied to the roof as water-proofing treatment.
11	Bill No 14- Item 1409	Pl confirm that whether the item is for tiles of GI sheet.	The item is for Ceiling
12	Item no 1417	PL confirm non-destructive test is to be carried out with Hammer only.	Test to include Ultrasonic Pulse Velocity Method.
13	Bill No 22- Item No 2222	The size of sink with drain board is not mentioned.	Size of sink is 370mm X 320mm
14	Item No 2229	If the size of the septic tank is informed.	Size of septic tank is for 50 users.
15	Bill No 30- Item No 3003 and 3004	Both items are same. Why 2 different items?	Grading of Material is different. Grading I material shall be as per MORT specifications.
16	Bill no 33. Item No 3301	Please provide drawing of LOG BOOM	Drawings enclosed as Annexure - B(i) to (x).
17	HM works-Bill No1- Item No101	Measurement of Rope drum hoist should be in numbers for a capacity of 20T. Quantity is one number only.	The number of Rope Drum Hoist is 1(one) with a capacity of 20 MT instead of quantity 20 MT.
18	HM works-Bill No1- Item No102	Pl inform size of Guide rollers	Diameter of guide rollers is 89 cm.
19	HMW- Bill No1-Item No 104	Pl inform size of seals	Drawing enclosed as Annexure – C.
20	HMW- Bill no1- Item no 109	Please provide the drawing of trash rack	Drawing of trash rack is enclosed as Annexure -D
21		The length of Head race tunnel is 601m and 3.96m as specified in site data and not 39.5m long and 3.69m dia. as indicated in tender drawings. Please confirm.	The length of the HRT is 601.69 m as shown in the tender drawings.The diameter is 3.96 m.
22		CLAUSE 1.2.2(2) General Technical Specification-Land for camp & field houses for MePGCL shall be provided by MePGCL free of cost being established there since may years. Please confirm.	Land for camp and field houses shall be provided free of cost by MePGCL
23		a)The Adjustment for changes in cost (price adjustment) clause 13.8 of GCC will be applicable for price variations. It needs further clarity. In the formula, define clearly L _n , L _o , E _n , M _n & M _o (whether labour, cement, mild steel & fuel) as to correctly relate with weighting co-efficient stated in Table A for schedule of adjustment data. As per clause 14.5 (under bid prices & discounts) the bidder shall furnish the indices and/or whereas part C- (preparation of Bids) under Bid data Sheet specifies that the bidder is not required to	Ln & Lo refer to labour (index L in Table A for Schedule of adjustment data).En & Eo refer to Fuel (Index F in Table A),Mn & Mo refer to Cement (index C in Table A), Sn & So refer to mild steel (index S in Table A).The bidder shall fill in the total amount of each index component and the proposed weightage within the ranges given as explained in the

		furnish the indices and weightage. Please clarify.	footnotes of Table A (Schedule of Adjustment Data)
		b) Also the note No. 3 of Schedule of adjustment data, the base cost index will be provided by the employer prior to contract signing. The date & value of base cost index shall be clearly defined by MePGCL at this stage.	The base cost indices will be provided by the employer prior to contract signing. The base cost indices will be those prevailing as on the base date.
24		The reply to the query No. 6 submitted vide e-mail dated 24 th Jan 2023 is awaited, however it may please be confirmed that full lining of tunnel (HRT/Link) in a certain length (section) shall be carried out & not in a patch/patch as shuttering for patch is not practically inside & feasible.	In many places patch repair of concrete lining is required while in some places repair of full section may be necessary.
25		The quantity of dismantling (Item No. 608) of HRT/Link Tunnel lining is not commensurate with the quantity of concrete lining required under (Item No. 611) repair works in Tunnel. It shows that lining is already got dismantled or else, may please look into it and clarify.	In many places cavities have formed in the tunnel lining. Dismantling will be required only in sections where the concrete lining has badly deteriorated.
26		Clause 2.13.2 of Tech spec- The sealing in the tunnel whenever required is to be done. Please specify the sealing compound and its specification and a separate item may please be provided in a BOQ so as not to load about uncertainty under lining item.	Polysulphide based sealant as provided in IS: 12118(Part -I) is recommended as sealing compound
27		Measurement & Payment- Clause 2.14.1-1 & 2 and 2.14.2.1 (a)- The quantity of concrete laid in tunnel shall be paid as per above clause of the technical specification but limited to the pay-limits (lines). Please specify the pay limits (lines).	The pay limits for the quantity of concrete in tunnels will be as established at the site by the Engineer-in-charge as mentioned in Clause 2.14.1(1).
28		Cement Content as per Clause 2.5- Cement concrete is to be provided as per design mix after trials. Clause 2.14.5 of technical specification stipulates variation in cement consumption over nominal cement content. The minimum (nominal) cement content in nominal mix as per IS 456-2000 shall be considered by bidder while quoting rates which may please be confirmed or minimum cement content for every grade of concrete be informed. (Through it is mentioned in clause 2.14.1 (3c) as given in sub chapter but not found).	Minimum cement content as per IS 456:2000 for each grade of concrete maybe considered by bidder. The type of exposure for concrete in tunnels or members submerged in water will be of 'severe exposure' category while for others it will be of 'moderate exposure' category.
29		As surge shaft road was not accessible, please inform whether there is a gate in the surge shaft and overhead crane exists. Capacity of crane may please be informed.	Surge shaft road is accessible. There is no gate or overhead crane in the surge shaft.
BIDDER 2			
30	2.4.2	<p>(a) A minimum number of one (01) similar contract, each of minimum value of Rs. 10 Crore (Rupees Ten Crore) (ii) that have been satisfactorily completed (iii) as a prime contractor (i) (single entity or JV member) (iv) between 1st January 2017 and Bid submission deadline.</p> <p>The similarity of the contracts shall be based on the following: [Construction or Repair of</p>	Since tunnel work is involved, experience in tunnel construction/repair is necessary. Therefore there will be no change in this regard.

		concrete lined tunnel conveying water/Civil Work for Hydro Project costing not less than Rs. 10Crore (Rupees Ten Crore) only] In case of JV please allow any one member should Posses the said experience.	
		b)For the above or other contracts completed and under implementation as prime contractor(i) (single entity or JV member) or subcontractor (ii) between 1st January 2017 and Bid submission deadline, a minimum experience in the following key activities successfully completed (iii)[(1) Construction or Repair of concrete lining in tunnels/Civil work in Hydro project with not less than 1000 cum of concrete lining (2) Supply and Installation or Renovation of at least one Fixed Wheels Vertical Lift Gate of minimum size 3.00m x 3.00m in hydropower projects]	Experience in tunnel construction or repair is necessary. No change can be considered.
31	Section VIII 4.2	The Performance Security shall be in the form of a "demand guarantee" on the amount(s) of (3%) Three percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount Office memorandum of Ministry of Finance enclosed.	No change in Performance Security of 15% of accepted contract amount.
BIDDER 3			
32	2.4.2	(a)A minimum number of one (01) similar contract, each of minimum value of Rs. 10 Crore (Rupees Ten Crore) (ii) that have been satisfactorily completed(iii) as a prime contractor (i) (single entity or JV member) (iv) between 1st January 2017 and Bid submission deadline. The similarity of the contracts shall be based on the following: [Construction or Repair of concrete lined tunnel conveying water/Civil Work for Hydro Project costing not less than Rs. 10Crore (Rupees Ten Crore) only] In case of JV please allow any one member should Posses the said experience.	Since tunnel work is involved, experience in tunnel construction/repair is necessary. Therefore there will be no change in this regard.
		b)For the above or other contracts completed and under implementation as prime contractor(i) (single entity or JV member) or subcontractor (ii) between 1st January 2017 and Bid submission deadline, a minimum experience in the following key activities successfully completed (iii)[(1) Construction or Repair of concrete lining in tunnels/Civil work in Hydro project with not less than 1000 cum of concrete lining (2) Supply and Installation or Renovation of at least one Fixed Wheels Vertical Lift Gate of minimum size 3.00m x 3.00m in hydropower projects]	Experience in tunnel construction or repair is necessary. No change can be considered.
33	Section VIII 4.2	The Performance Security shall be in the form of a "demand guarantee" on the amount(s) of (3%) Three percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount Office memorandum of Ministry of Finance enclosed.	No change in Performance Security of 15% of accepted contract amount.

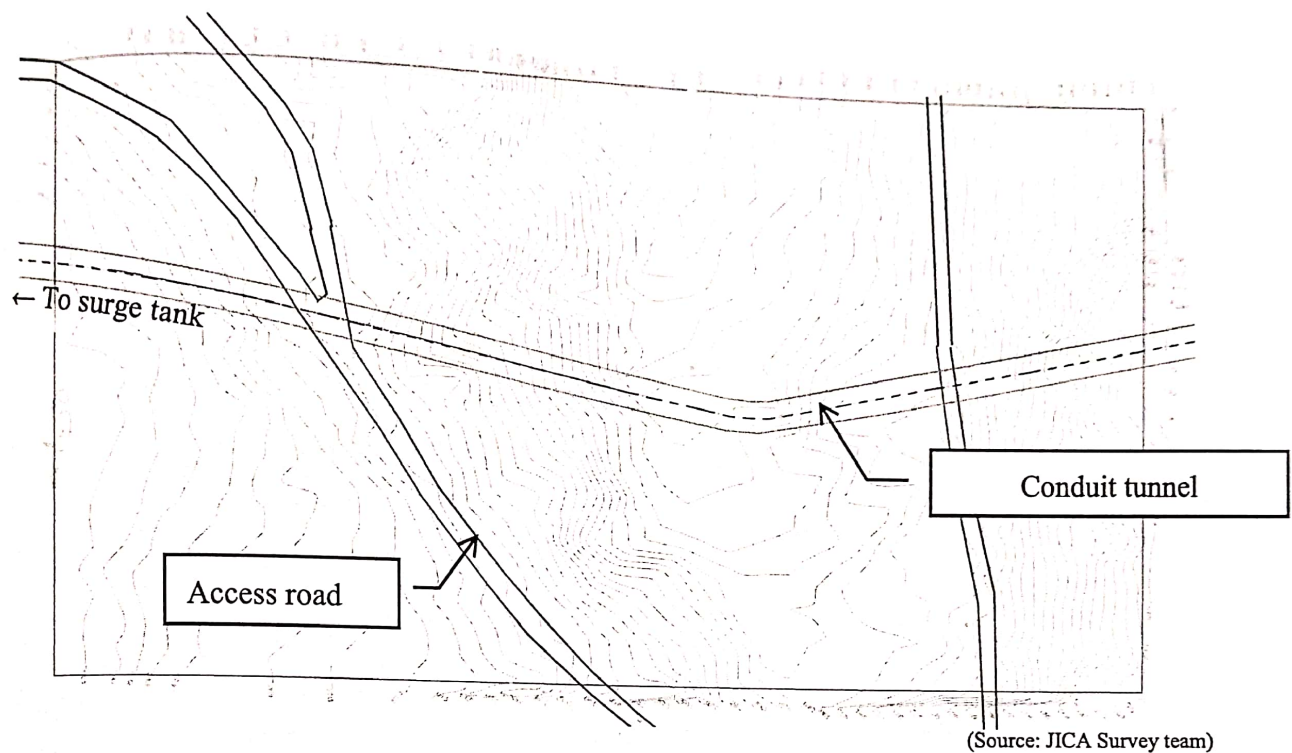
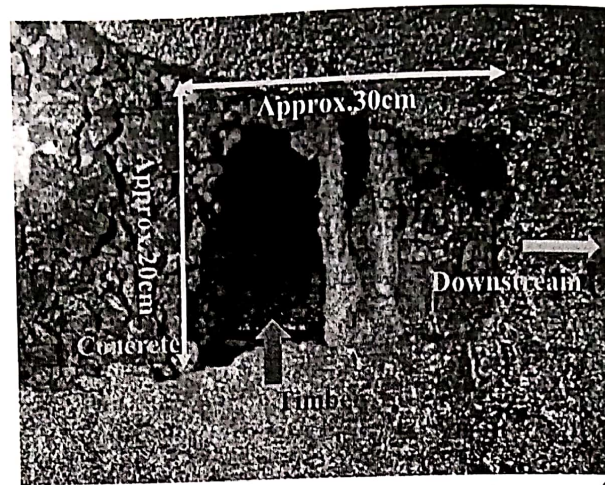


Figure 7-29 Survey results around the leakage point of the conduit tunnel

Internal inspection of the conduit tunnel was conducted in the preparatory survey. The confirmed defects were mainly cavities/ holes of the concrete lining, and concrete flakes. There was a large hole in the concrete lining as shown in Figure 7-30. Furthermore, red-soil drips were confirmed from the lining concrete defects as shown in Figure 7-31. There was no significant defect of the concrete lining indicating geological instability, such as longitudinal crack and progressive deformation.

The conduit tunnel will be rehabilitated by the renovation project as follows.

- Repairing the defects of the concrete lining by thoroughly placing the cement mortar
- Plug the major holes by concreting
- Low pressure grouting along the conduit tunnel



(Source: JICA Survey team)

Figure 7-30 Large hole at the crown of the tunnel lining



(Source: JICA Survey team)

Figure 7-31 Red-soil drips from the lining concrete defects

Table 7-7 Summary of the internal inspection of the conduit tunnel

Total distance from surge tank (m)	Section length (m)	Concrete Defect			Leakage into the conduit	Note
		Flaking	Exposure of rebar	Hollow through the lining		
-	-	-	-	-	-	Intake & inclined part of the conduit tunnel
567-392	157	2	1	-	17	
392	-	-	1	1	-	The Big Hole
392-288	104	1	-	-	5	
288-180	108	4	-	-	10	The area tunnel was estimated to be constructed by open cut
180-0	180	11	2	-	24	
-	-	-	-	-	-	Surge tank
		18	4	1	56	

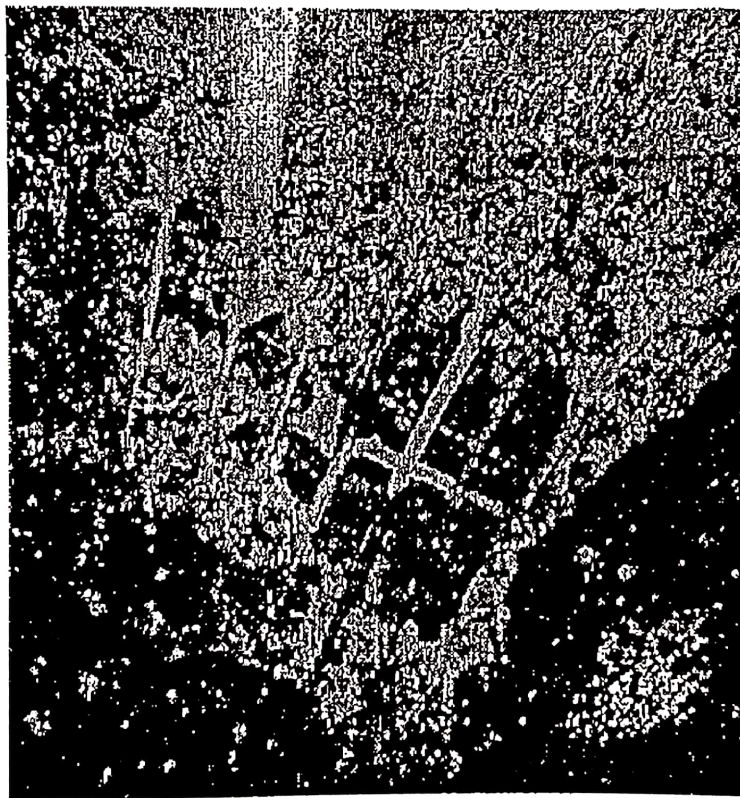
(Source: JICA Survey team)

(2) Link tunnel

MePGCL carried out internal inspection of the link tunnel in 2014. The water level of the Kyrdenkulai reservoir was lowered for the inspection, and internal inspection was conducted from the intake up to 180m downstream. The inspection recorded totally 28 numbers of defects. It counts 1 defect per 6 m distance. The defects were flaking of concrete, exposure of rebar's, and holes in the lining. Figure 7-32 shows the major defect confirmed by the internal inspection. Results of the link tunnel inspection was summarized in Table 7-8.

The link tunnel will be rehabilitated by the renovation project as follows.

- Repairing the defects of the concrete lining by thoroughly placing the cement mortar
- Plug the major holes by concreting
- Low pressure grouting all along the conduit tunnel



(Source: JICA Survey team)

Figure 7-32 Major defect in the concrete lining (2.1m x 1.5m x 0.6m)

Table 7-8 Summary of the internal inspection of the link tunnel by MePGCL

REPORT OF LINK TUNNEL BASED ON INSPECTION CONDUCTED ON 29th April, 2014

Hole No.	CHAINAGE (In metres)	SIZE OF HOLES			Location of Holes	Remarks
		Approx. length (In metres)	Approx. width (In metres)	Approx. depth (In metres)		
1	8.00			0.2	Crown	Reinforcements exposed
2	11.00	0.4	0.4		RHS	
3	17.80				Crown	
4	22.30				Crown	
5	26.70				Crown	
6	41.50	0.2	0.2	0.1	Crown	
7	46.00				Crown	
8	50.30	0.3	0.2	0.1	Crown	
9	54.10				Crown	
10	57.50	0.2	0.2	0.15	Crown	
11	60.10	0.4	0.2	0.20	RHS	
12	61.90	1.0	1.0	0.45	Crown	
13	64.50	0.2	0.2	0.10	Crown	
14	67.00	0.1	0.1	0.10	Crown	
15	68.80	0.1	0.1	0.25	Crown	
16	72.20	0.1	0.1	0.10	Crown	
17	73.70	0.3	0.4	0.30	Crown	
18	77.10	0.3	0.3	0.30	Crown	
19	80.90	0.2	0.1	0.10	Crown	
20	84.60	0.1	0.1	0.10	Crown	
21	88.60	1.8	0.45	0.25	Crown	
22	93.10	0.3	0.2	0.10	Crown	
23	98.10	0.3	0.2	0.10	Crown	
24	102.10	2.1	1.5	0.60	Crown	
25	122.60	0.1	0.3	0.10	Crown	
26	152.60	0.3	0.4	0.20	Crown	
27	165.60	0.3	0.45	0.60	Crown	
28	182.60				Crown	

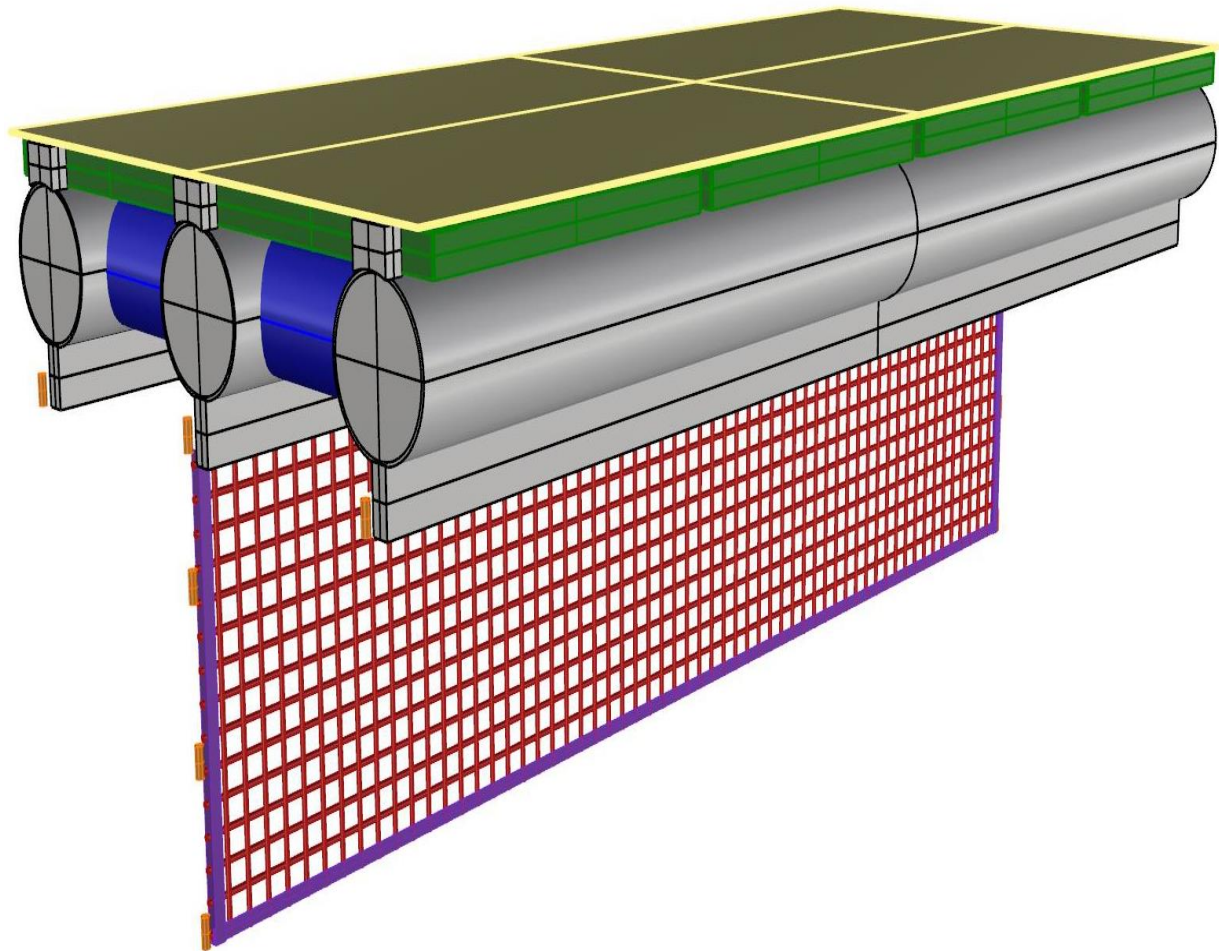
(Source: JICA Survey team)

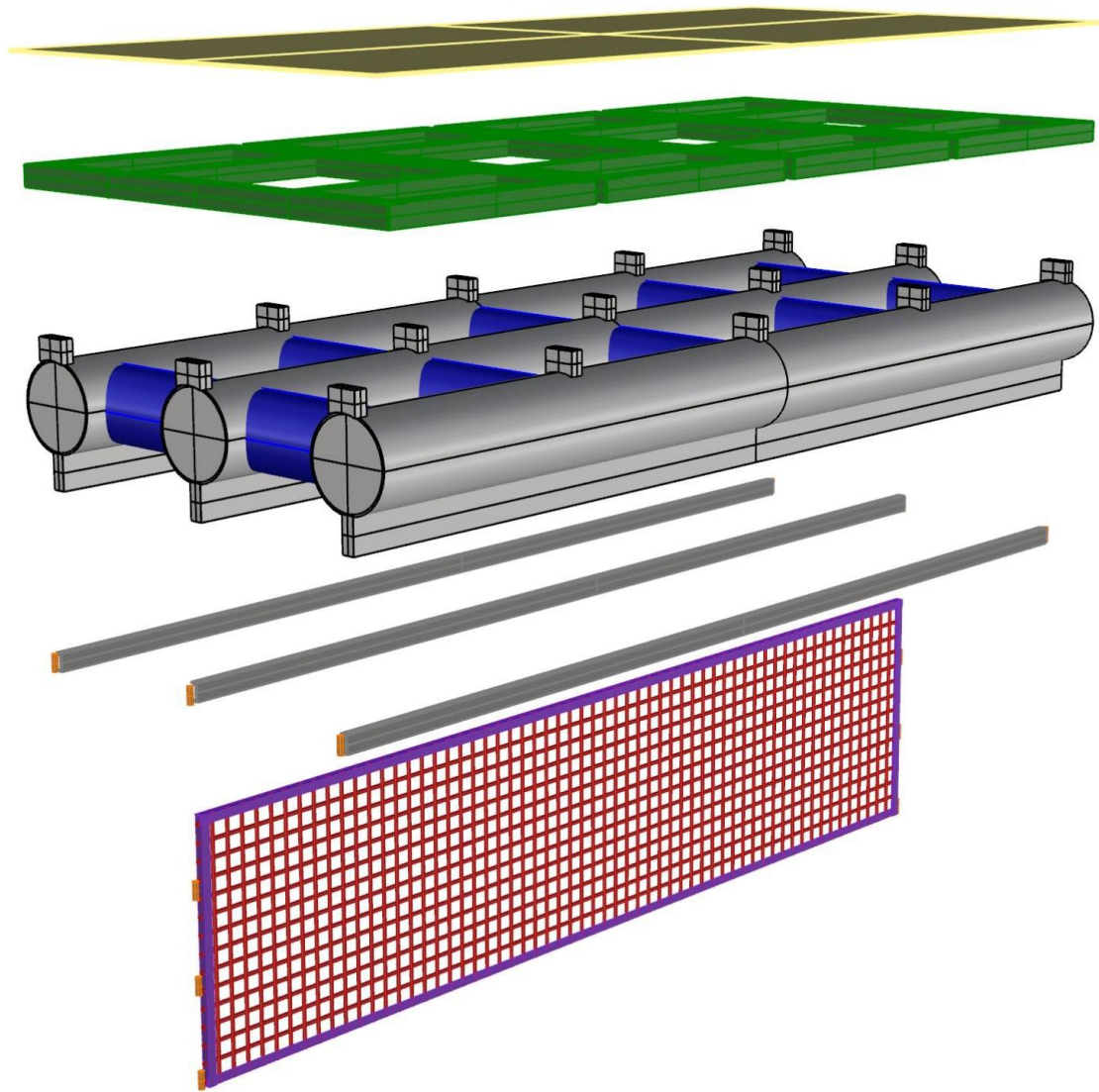
7.4.5 Penstock

The Umiam Umtru Stage III HEPP has 2 numbers of penstocks.

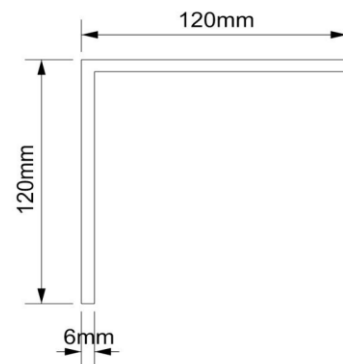
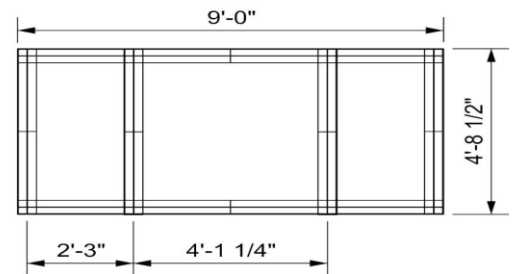
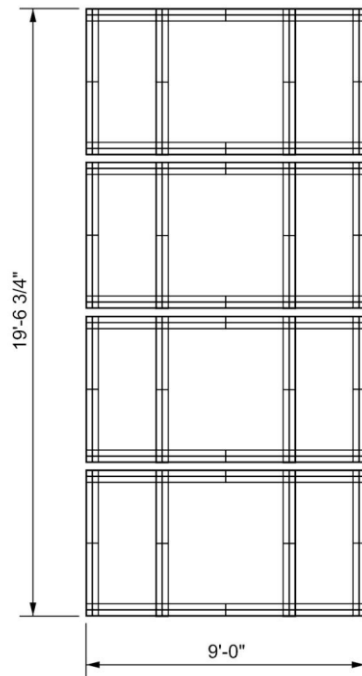
Internal inspection of the penstocks and measurement works of the penstock thickness by ultrasonic equipment were conducted in the preparatory survey.

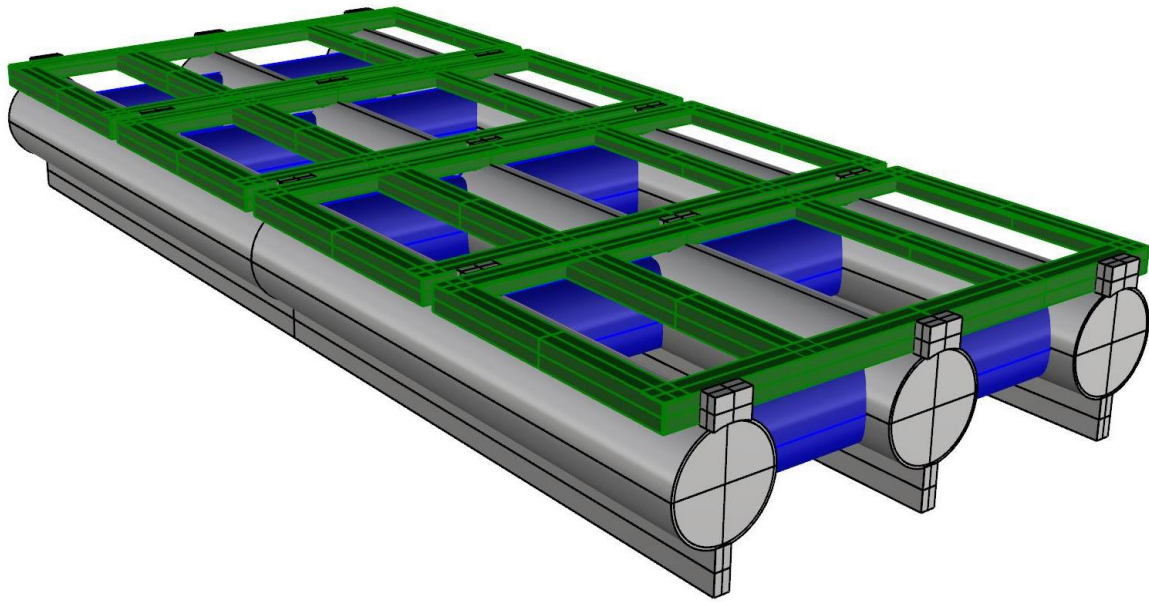
Heavy Duty Trash Boom with walkable Floor.



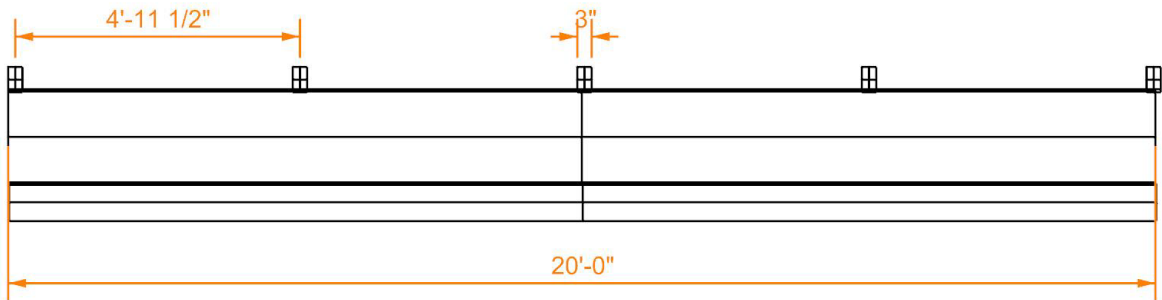
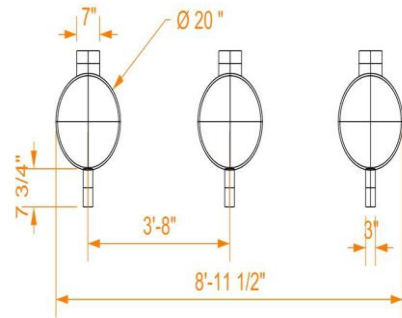
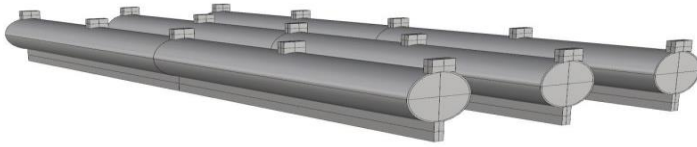


Aluminum bed

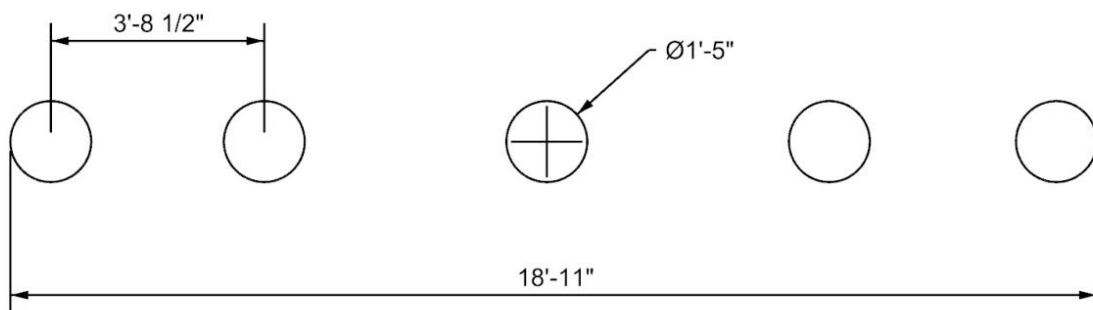
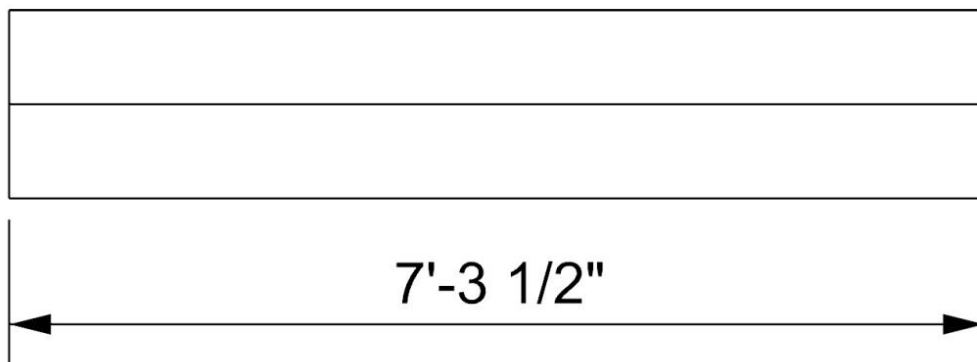
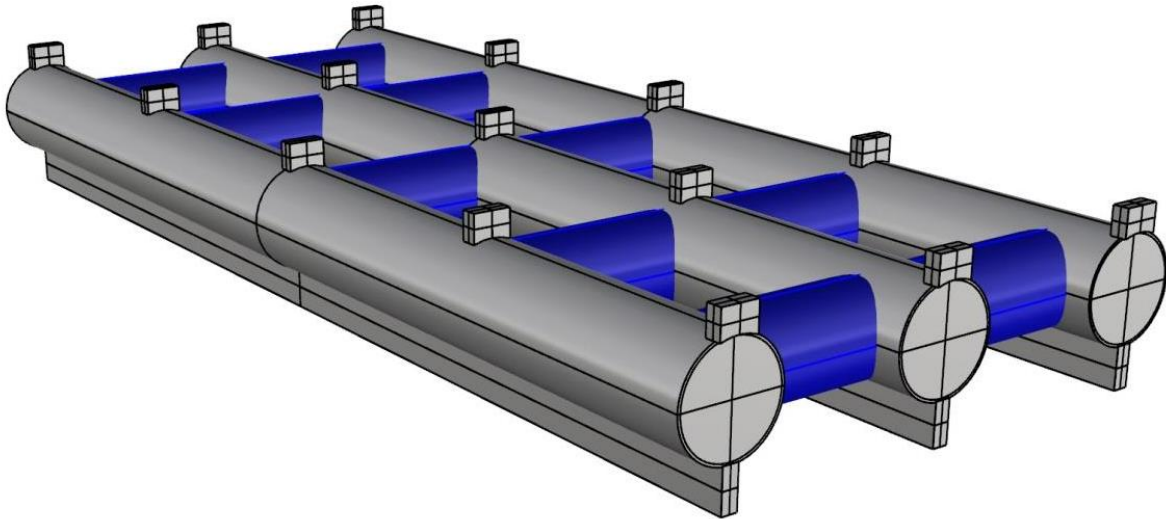




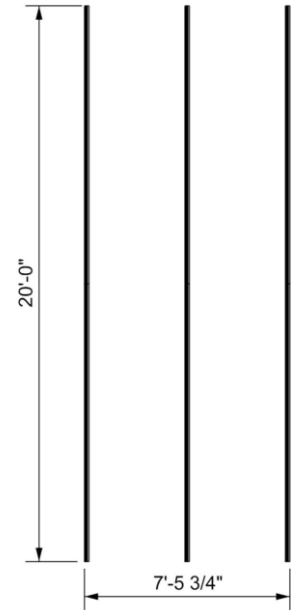
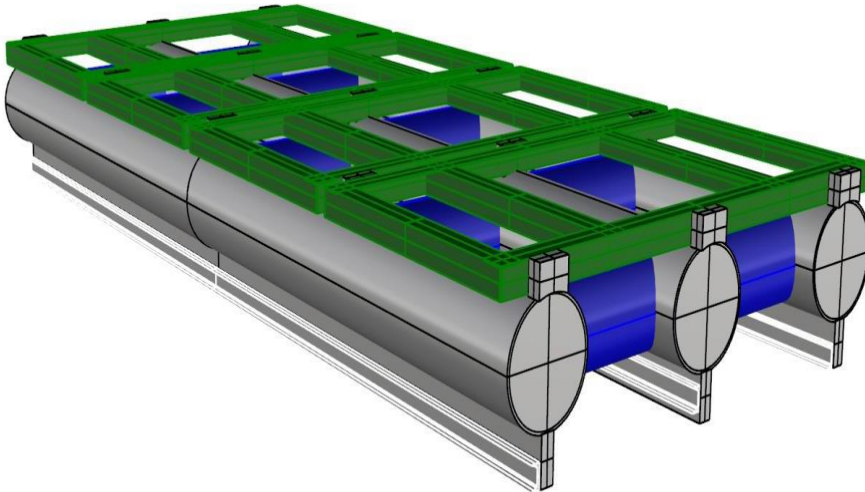
HDPE Pipe 20" Dia



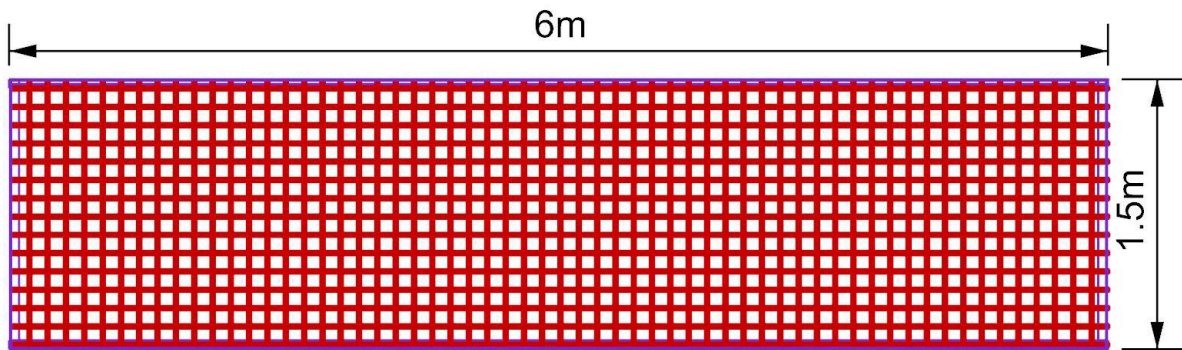
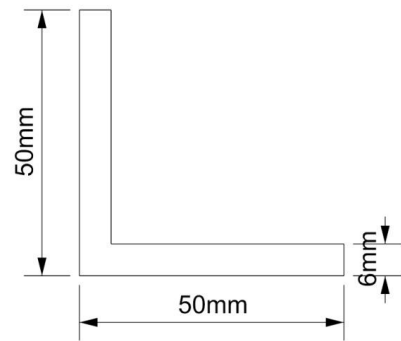
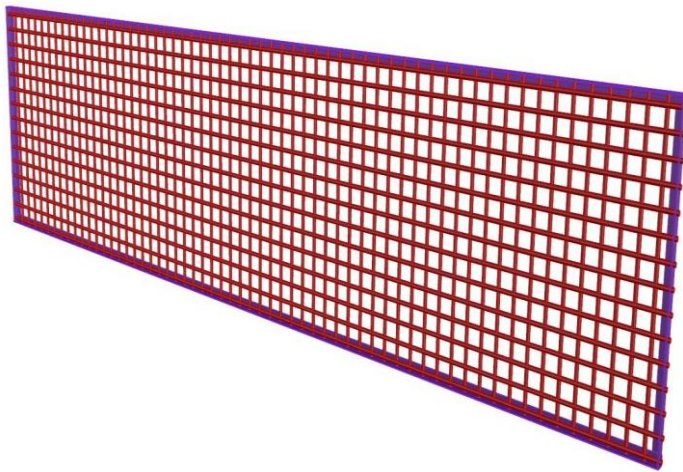
HDPE Pipe 17" Dia



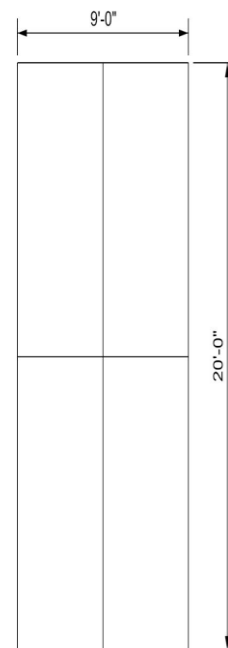
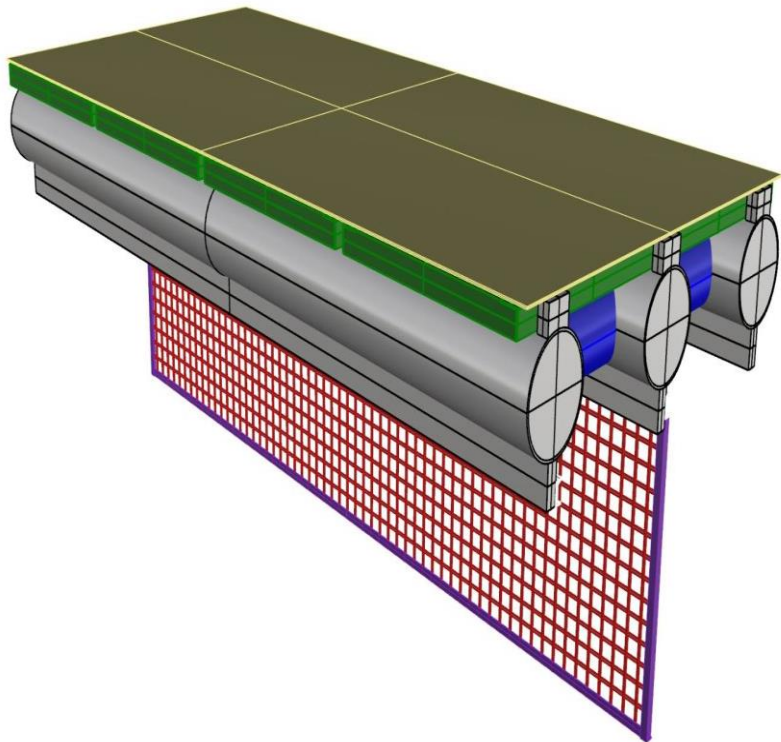
ISMIC 100X50



Skirt 6m x 1.5m

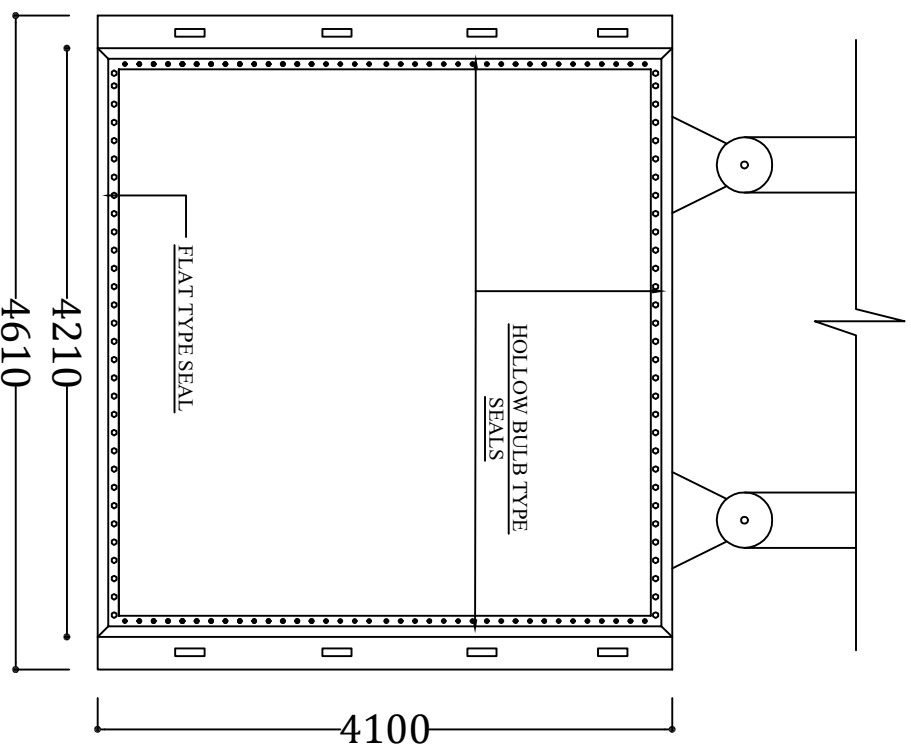


Marine Ply 12mm thickness



INDEX

- i) HOLLOW BULB TYPE (TOP & SIDES) L = 1 x 4.21m & 2 x 4.10m
- ii) FLAT TYPE SEAL (BOTTOM) L = 1 x 4.21m.
- iii) SIDE NUTS & BOLTS (ALONG WITH WASHERS) = M12 X 70 (85 Nos)
- iv) TOP & BOTTOM NUTS & BOLTS (ALONG WITH WASHERS) = M12 X 60 (110 Nos)
- v) FASTENER PLATE (TOP & SIDES) = 38 x 6 (L = 1 x 4.21m & 2 x 4.10m)
- vi) FASTENER PLATE (BOTTOM) = 63 x 6 (L = 1 x 4.21m)

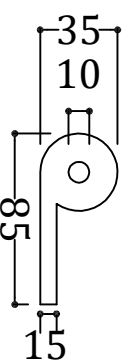


ELEVATION STAGE III FACE III INTAKE GATE,
KYRDEMUKULAI

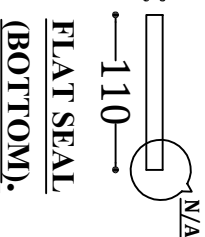
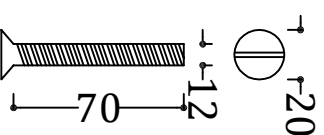
ALL DIMENSION ARE IN MM EXCEPT OTHERWISE MENTIONED

DRAWING IS NOT TO SCALE

Note:- The Bottom portion of the Bottom Seal is Damaged and cannot be measured.



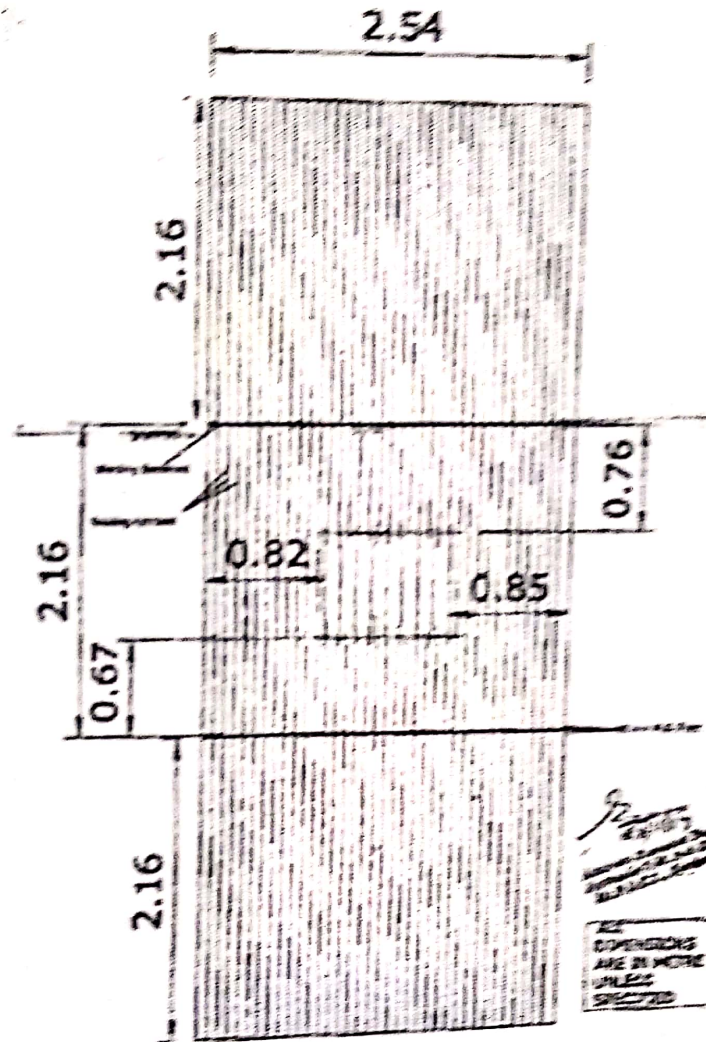
HOLLOW BULB SEAL
(TOP & SIDES)



FLAT SEAL
(BOTTOM).

ROUNDED STAINLESS STEEL
NUT BOLTS
(SIDES).

HEXAGONAL STAINLESS
STEEL NUT BOLTS
(TOP & BOTTOM).



(Source: JICA Survey team)

Figure 7-26 Dimension of the existing trash rack