

INSTITUTE FOR PLASMA RESEARCH

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MINOR FABRICATION WORKS ENQUIRY

ENQUIRY NO : IPR/MFW/21-22/131

Date : 05-04-2022

Due Date : 20-04-2022 13:00 IST

Office Copy

Please send your offer in sealed envelope specifying Inquiry No, Date & Due Date, ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your queries (if any) to shukla@ipr.res.in

Please Ensure that your sealed quotation reaches this office not later than above mentioned due date and time.

Kindly go through the following document properly before Quoting which are available on the IPR web portal i.e.,
<http://www.ipr.res.in/documents/tenders.html> attached here with.

1. Technical specification as enclosed.
2. Instruction to the bidders & terms and Condition (refer Form NO:IPR-MFW-01-V1)
3. Bidding format(refer Biddingformat MFW-Bid.pdf)

CGST fro Goods and Services (IGST/CGST/SGST TAX BENEFITS): PLEASE REFER clause no:8 of Form
N IPR-MFW-01-V1

QUOTATION SHOULD BE ADDRESSED TO **BRAJ KISHORE SHUKLA ONLY.**

Sr.No.	Description	Quantity	Rate
1	Fabrication, supply and installation of MS support structure for GI cable tray, installation of cable tray with isolation at partial route length and laying of HV, fiber optics and control cables through it as per attached specification sheet and layout	1	No.


Free Issue Material

Sr.No.	Description	Quantity	Unit	Value
1	95 sq. mm 1 C, 33kV HV cable	200.00	Mtr	280000.00
2	Multi core fiber optics cable	1000.00	Mtr	600000.00

3	300 x 50 cable tray	200.00	Mtr	120000.00
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Note : Please quote with complete technical details (Technical Compliance sheet and product data sheet)

Encl:As per attachment

 Sd/-
BRAJ KISHORE SHUKLA
Scientific Officer-G

Technical Specification for Cable tray installation and cable laying work

1. Scope :-

This specification covers the following major activities;

- Fabrication, installation and supply of Mild Steel (MS) support structure for Galvanized Iron (GI) Cable tray.
- Installation of perforated GI Cable tray of size 300 x 50 mm at wall and existing metal support structure with required isolation.
- HV Cable laying and termination work.
- Fibre Optical (FO) cable (Four runs) by inserting all together in HDPE conduit and single run of 3 core 2.5 Sq. mm , single stranded ,armoured control cable laying.
- Supply of (1) HV Terminal Kit (2) 2.5 Sq. mm copper, single stranded 3 C, armoured Control Cable (3) Isolation material -sheet, sleeve, washers of G-10/ FRP/Teflon (4) HDPE Conduit for FO cable and cable dressing accessories – C clamps, nut bolt and bends for conduits and GI perforated Cable tray etc.

2. MS Support structure and cable tray Installation :-

2.1 Contractor has to carry out fabrication and Installation of MS support including following activities

- Contractor has to fabricate wall mounted support of MS angles (Minimum size 40 x 40 mm, 5mm thickness) for cable tray length ~ 150 M at ~10M height as stated in the drawing at interval of one meter.
- Fastening the MS Support with Hilti make (preferable) Nut Bolt of minimum 75 mm length with wall.
- Contractor has to fabricate bridge for cable tray length @ 30 m of MS 'C' channel size 125 x 75 , 7.5 mm thick and Angle not less than (40x40 mm, 5 mm thick) for supports of cable tray by welding the same with existing MS Structure as per situation at interval of one meter.
- Installation of GI Cable tray of size 300 x 50 x 1.6 mm thickness and complete with high tensile bolt, washers and nuts. Eight hardware sets of M8 size shall be used to prepare single joint of two cable tray with two coupler plates.
- Colour the fabricated MS Support structure and wherever welding operation made at existing MS support with Siemens grey enamelled colour with smooth finish after primer coating of red oxide.
- Required types bend- quantity of adequate radius of perforated cable tray on route is in scope of contractor. Also additional support other this tender as per site condition required to be supply and installed by contractor.
- Only perforated GI Cable tray of 2.5 M pieces for straight route length, its accessories and hardware will be provide by IPR as free issue materials.
- Isolate the complete cable tray structure by (i) G-10 sheet of 350 x 50 mm, 10 mm thick piece (ii) sleeve G-10/ FRP (wall thickness of 2mm min. ID 8mm) and (iii) G-10/ FRP/ Teflon washer both side (2mm thick min.) at each

support at entire length of existing metal support structure (Length @ 50 Metres). M-8 Galvanized nut bolt for this fastening and insulation materials is in scope of contractor.

2.2 Contractor has to carry out laying of 33 kV HT Cables by following activities

- Laying Single run of 95 sq. mm single core XLPE insulated 33 kV HT cable in the cable tray.
- Avoid the scratching in the insulation of this HT cable by using suitable roller during laying.
- For lifting the cable drum (Wooden) to unwind cable, suitable jack should be arrange by contractor.
- Dressing the same HT cable by suitable clamping at interval of one meter.
- IPR will provide HV cable in required quantity as free issue material. However, contractor has to unwind and cut the cable from cable drum.

2.3 Contractor has to carry out laying of Fibre optics and control Cables by following Activities

- Measuring the length of fibre cable requirement end to end and cutting the four pieces of equal length of optical cable from 1000 Meter Cable spool.
- Test the optic cable before and after cutting by applying torch light at one end and receiving the light at other end.
- Test the 3 C, 2.5 sq. mm control cable by continuity test with multi meter before laying.
- Inserting Four runs of optical cable and one control cable in the HDPE conduit and laying the same in installed cable tray of 300 x 50 mm
- Required sized and quantity radius band for conduit to be arranged by the contractor.
- The HDPE conduit to be drop down from height of "D" (Refer plan) to ceiling of first floor (SST-1 , ECRH bay) and make holes by Boring machine in the wall for entry of conduit and control cable in the control room area.
- Contractor has to make cut out in the double layer glass window at Iiter-India building with diamond cutter for entry of cable and cable tray.
- Sealing the peripheral with leak proof Material after passing the conduit and cable through the holes at glass window at Iiter –India building as well as at on wall at ECRH- SST-1 building.
- The Length of FO cable is @ 10 M in and @ 20 M for control cable, in the ECRH system Area. In side route will be explain as per site condition while execution of work.
- The Length of FO cable and Control cable is @ 20 M in the Iiter-India building In side route will be explain as per site condition while execution of work.
- Contractor has supply square conduit and install and lay fibre optic cable in it as per required layout at the time of execution of work length approximately 20 meter in side Iiter –India building.

- Dressing the HDPE conduit (Cables inserted) along the length in cable tray by suitable size clamping in the tray and on the wall @ 1 M (one meter) intervals.
- Again test the optical cable after laying by applying torch light at one end and receiving the light at other end.
- Also test the continuity test for control cable by shorting the one end, after laying.
- Handle the optical cable with standard procedure and necessary care as the cable should not be damaged during cutting, inserting in conduit and laying the same in the cable tray.
- IPR will provide fibre optic cable in required quantity as free issue material. However, contractor has to unwind and cut the cable from cable drum.
- However contractor has to supply control cable 3 core. 2.5 sq. mm copper cable with armour 200 M single length and HDPE conduit of inner diameter 60 mm and of adequate thickness for 6 kg pressure.

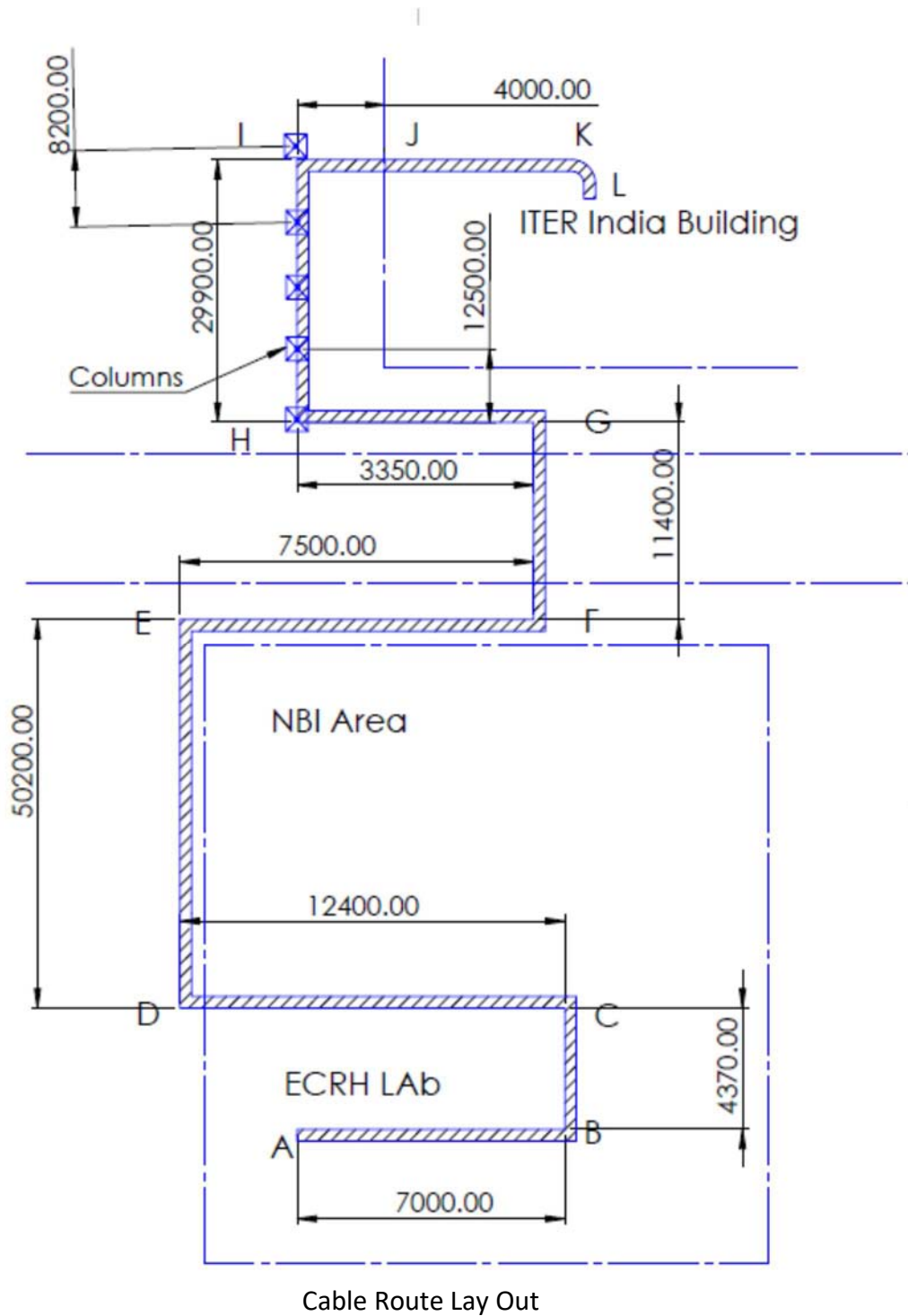
3. Cable termination work:-

- Contractor has to carry out HV cable termination including following activities
- Termination for 95 sq. mm 1 C copper, 33 kV HT cable at both the ends using HV termination kit for indoor application, suitable for above cable.
- Cable termination with suitable size copper lug connection with HV Distribution board.
- Cable dressing / laying shall ensure stress free connection with device. If required any additional support shall be provided by contractor.
- Termination kit shall be from **3M / Raychem** (Preferable) brand only.

4. Instruction for Site work and safety:-

1. IPR request the contractor to visit site first before submitting quotation. Please provide the rate as per the attached sheet. Technical visit is advisable, not mandatory, but in "no visit" case contractor may not have any relaxation in work or price.
2. Approval of IPR shall be obtained for site preparation and marking the cable tray routes and locations of cable tray support before proceeding with the erection and installation work.
3. The cable trays and the support structures are to be so arranged, they do not obstruct or impair clearance of the passage way or maintenance of adjacent equipment or other system/ cables.
4. All the necessary equipment, tools & tackles have to be arranged by the contractor, these include hydraulic ladder/ladder/ stack fold/ to access the height of @ 10-12 meter, welding machines, drill machine, cutting machine etc. for the fabrication and installation of MS section, and cable tray.
5. Clear height of ~7 meter from road level should be maintained everywhere near any road crossing or wherever required.
6. No drilling in Dry stone cladding is allowed in ITER Building.

7. The cable should be supported with Clamps wherever they required.
8. Proper bending radius should be maintained at every turn.
9. Electrical Power point needed for the equipment shall be provided by IPR as per possible location. Any Extension required should be arrange by contractor with electrical safety measure.
10. Contractor has to quote unit rate of job as per bid format and payment will be done on the basis of actual work certified by Engineer In-charge, IPR.
11. Contractor has to arrange personal safety aids like helmets, shoes and safety belts, aprons and gloves, spectacles etc. for working personnel.
12. Contractor should ensure that the material quoted should have equal or higher quality that the standard mentioned.
13. Packing and forward transportation of cable trays along with their accessories for delivery at customer site the freight and insurance charges will be under contractor's scope.
14. Contractor has to follow all the safety rule of IPR during work in IPR premise and safety measure has to consider and followed by contractor and their staff.
15. Contractor has to clean the site after work.
16. Contractor/ their representative shall be available on site for necessary instruction for installation work and layout.



Note:

1. All dimension are in "mm"
2. Layout shown here is for guideline purpose only, it may modify during work execution as per site constrain.
3. Contractor has to verify the dimension before start of work

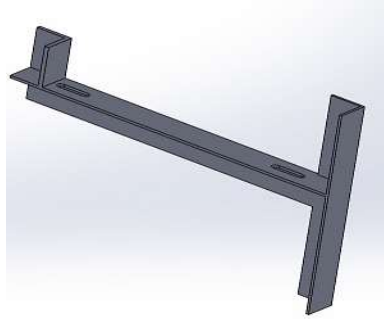


Figure-1 (Wall Support)

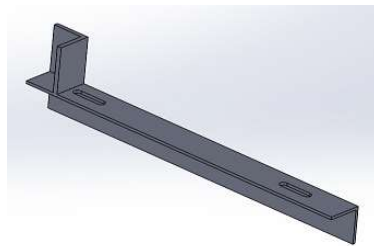


Figure-2 (To be weld with Existing MS Structure)



Figure-3 (To be weld with Existing MS Structure)



Figure-4 (Wall Support)

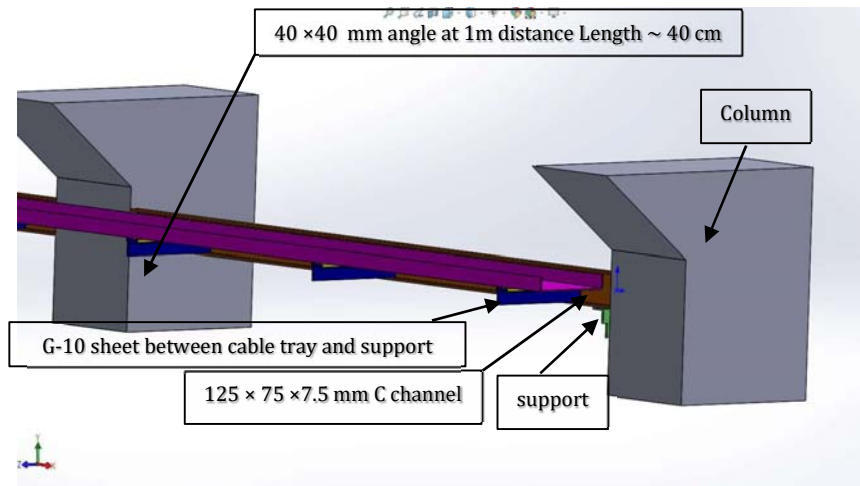
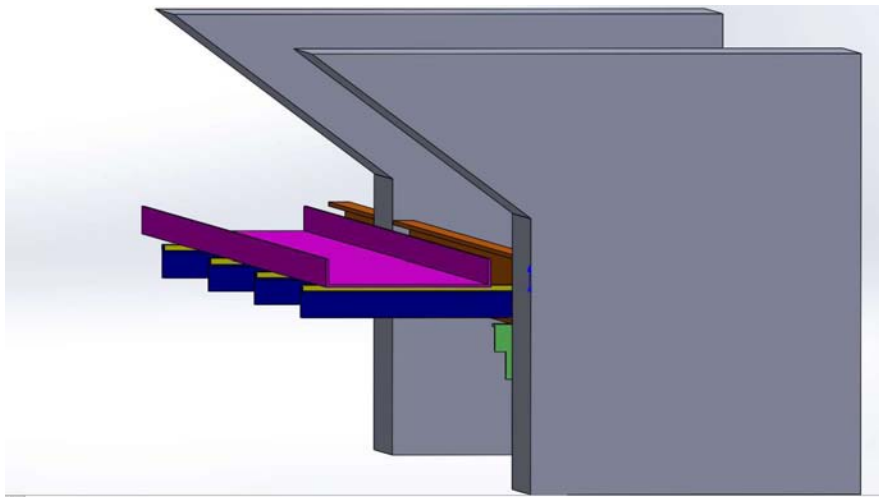


Figure-5 (MS support structure)



Installation of cable tray fashion on cable route 'H' to 'I'

Cable Tray/ cable Route break up detail

Sr. #	Plan Segment	Length mm	Type	MS Support Detail	Approx. Height M	Support Type
1.	A - B	7000	Horizontal	@ Ground	0	
2.	B - B'	9000	Vertical Height	@ column	9	'C' Clamp
3.	B - C	4370	Horizontal	@ Existing Support	10	I 300 mm
4.	C - D	12400	Horizontal	@ Existing Support	10	I 300 mm
5.	D - D'	2000	Down	@ Wall	10	Figure - 1
6.	D - E	50200	Horizontal	@ Wall	9	Figure - 1
7.	E - F	7500	Horizontal	@ Wall	9	Figure - 1
8.	F - G	11400	Horizontal	@ Existing MS Support	8	Figure - 2
9.	G -H	3350	Horizontal	@ Existing MS Support	8	Figure - 2
10.	H - I	29900	Horizontal	@ Existing MS Support	8	Figure - 2 Figure - 5
11.	I - J	4000	Height	To make Bridge	10	Figure - 5
12.	J - J'	3000	Down	@ Wall	5	'C' Clamp
13.	J - K	6000	Horizontal	@ Wall	5	Figure - 4
14.	K - L	20000	Down	@ Wall	3	'C' Clamp
	Sub Total	170120				
	+ 10 %	17000				
	Total	~ 180000				

Price bid format

Sr. No.	Description	Quantity	Unit	Unit Rate	GST	Amount	
1.	Fabrication, Installation and supply of MS support structure and bends for perforated GI cable tray of size 300 x 50 mm 1.6 mm thick , provided isolation with G-10 (for Partial length)as per section 2.1 & 2.2	1	1 job				
2.	Supply of HDPE conduit for fibre optics cable as per section 2.3	200	Meter				
3.	Supply of 3core 2.5 Sq. mm copper with armour control cable as per section 2.3 (Single Length)	200	Meter				
4.	Supply of 33kV HV termination kit and cable termination as per section 3	02	Nos.				
5.	HT Cable laying & Dressing work as per section 2.2	200	Meter				
6.	4 Runs of ~ 180 M Fibre optics Cable laying by inserting it in HDPE conduit & Dressing work as per section 2.3	720	Meter				
7.	Control Cable (2.5 Sq. mm, single stranded, 3 C, armoured) Laying & Dressing as per section 2.3	200	Meter				
8.	<i>GST</i>						
9.	TOTAL						

Payment will be made against actual work performed for laying of cable per meter base.

Technical Compliance

Sr.#	IPR's Specification/Requirements	Vendor's Acceptance and response
1	Fabrication and supply & Installation of MS Support Structure and Installation of GI Perforated Cable tray on MS support Structure with required isolation at partial length at height~10M as per drawing	
3.	95 sq. MM 1 C HV Cable Laying & dressing as per Standards practice	
4.	4 runs of multi core FO cable laying by inserting all together in HDPE conduit and dressing the same as per Standards practice	
5.	2.5 sq . mm 3 C single stranded armoured cable laying as per drawing and Standards practice	
6.	Supply of HDPE conduit for FO cable and bend for it	
7.	Supply of Square conduit for FO cable and bend for it	
8.	Supply of 1.1 KV PVC Cable 3 C X 2.5 sq. mm, single stranded Cu conductor armoured cable 200 M in single length as per applicable standard	
9.	Supply of required types and quantity of GI Perforated bands for 300 x 50 mm cable tray with accessories as per drawing	
10.	Supply of Termination kit (2 nos.) for 33kV 95 sq. 1 C copper cable and its termination	