Date: 11.12.2015

ANNEXURE TO CORRIGENDUM –II

Ref Enq: NKR0000048 dtd 18.11.2015

1. No.of terminations in the purchase specification is changed and revised specification PS4042612 Rev.01 is attached. The no.of terminations has been revised from 592 to 1184. Refer revised specification PS4042612 Rev.01 page no 04 of 20.
2. Separate line item created for Single-mode and Multi-mode pigtails as per specification in EPS .Quantity of pigtails is changed as per attached RFQ.

REQUEST FOR QUOTATION

MMI:PU:RF:003

BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

RFQ NUMBER: NKR0000048

RFQ DATE : 18.NOV.2015

Due Date 17.DEC.2015 Time: 13:00 HRS

VENUE : **NEW ENGG. BLDG**

PURCHASE FILE COPY

(for all correspondence)
Purchase Executive : Nilmani Kumar
Phone : 26998663
Fax : 00918026989227
E-mail: nilmanikumar@bheledn.co.in

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no.and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	PR0120006316 CBL, MULTIMODE, DUPLEX SC FIBRE PIGTAIL PIGTAILS # MULTIMODE 62.5µm /125µm, DUPLEX SC FIBRE PIGTAIL as per item. (C),Sl#1 of purchase specification PS4042525 Rev.00. DRW PS4042525 00 Test Certificate	460	ST	460	30.DEC.2015
2	PR0120006324 CBL, SINGLEMODE, DUPLEX SC FIBRE PIGTAIL PIGTAILS # SINGLE MODE 9µm /125µm, DUPLEX SC FIBRE PIGTAIL as per item. (C),Sl#2 of purchase specification PS4042525 Rev.00. DRW PS4042525 00 Test Certificate	840	ST	840	30.DEC.2015
3	PR0120006340 Corrugated flexible Steel tube/hose 1" Corrugated flexible Steel tube/hose of 1# diameter as per item (D),Sl#2 of PS4042525 DRW PS4042525 00 Test Certificate	380	M	380	30.DEC.2015
4	PR0120006359 GLANDS FOR COUPLING End Glands for coupling of 1# Flexible Steel Tube/hose to Gland Plates as per item(D),Sl#3 of PS4042525 DRW PS4042525 00 Test Certificate	380	NO	380	30.DEC.2015
5	PR0120006421 2" Rodent proof HDPE Conduit 2# rodent proof HDPE Conduit (As per ISI Standards) Spec. ref: PS/404/2525 item(D)Sl#6 DRW PS4042525 00	39,390	M	39,390	30.DEC.2015
6	PR0120006430 2" GI conduit/pipe 2# GI conduit/pipe (As per ISI Standards) Spec.Ref.: PS4042525, Item(D)Sl#5 DRW PS4042525 00	2,520	M	2,520	30.DEC.2015
7	PR0340000155 Coupler/joints (ISI) for 2# HDPE Conduit Coupler/joints for 2# HDPE Conduit (As per ISI Standards) as per item. (D),Sl#7 of PS4042525 DRW PS4042525 04 Test Certificate	810	NO	810	30.DEC.2015
8	PR0340000163 FO CABLE, 8 core SM multi-tube 8 core, multi-tube, Armoured, Direct Burial 9 µm /125 µm SM FO cable as per item.(B),Sl#4 of PS4042525	3,700	NO	3,700	30.DEC.2015

For and On behalf of BHEL.

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Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
	DRW PS4042525 04 Test Certificate				
9	PR0340000171 FO CABLE, 4 core SM multi-tube 4 core, multi-tube, Armoured, Direct Burial 9 µm /125 µm SM FO cable as per item.(B),Sl#1.1 of PS4042525 DRW PS4042525 04 Test Certificate	112,520	NO	112,520	30.DEC.2015
10	PR0340000180 FO CABLE, 4 core MM multi-tube 4 core, Multi-tube, Armoured, Direct Burial 62.5 µm /125 µm MM FO cable as per item.(A), Sl#1.1 of PS4042525 DRW PS4042525 04 Test Certificate	41,300	NO	41,300	30.DEC.2015
11	PR0900007362 OFC Markers OFC Markers of Granite or Cast metal with #OFC# engraving [For granite minimum dimensions shall be 1ft (ht.) x 6# (wd) x 1# (tk)], as per item(D), Sl.no:8 of PS4042525 . DRW PS4042525 04	3,152	NO	3,152	30.DEC.2015

Total Number of Items - 11

Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.

Preference will be given to vendors who accepts our standard payment terms .

Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance, P&F, Freight and other taxes very clearly .

For evaluation, exchange rate(TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid incase of two part bid) shall be considered.

The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected.The list of banned firms is available on BHEL web site www.bhel.com

i). This is only RFQ not an order.
ii). In all correspondence quote RFQ No. & due date.
iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly.
iv). Quotation Envelope / Fax not superscribed with RFQ No.and due date is liable for rejection.
v). Quotation should remain valid for a minimum peiod of 120 days from date of TBO.
vi). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list.
vii). All Prices should be written in words and numbers.
viii). Excise Chapter Heading should be mentioned for all items where VAT is applicable .

For and On behalf of BHEL.

REQUEST FOR QUOTATION

MMI:PU:RF:003

BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

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For and On behalf of BHEL.

PROJECT : Suratgarh Units 7&8 (2 x 660 MW)

CUSTOMER : RRVUNL

EQUIPMENT : OPTICAL FIBER CABLE

REVISION HISTORY SHEET

REV No.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	REVIEWED BY
00	19.09.2015	FIRST ISSUE	---	MS	RKA
01	12.11.2015	SECOND ISSUE	No of terminations clarified	MS	RKA

Supply of Optical Fiber Cable for RRVUNL at Suratgarh Units 7&8 (2 x 660 MW) project.
1.1 Project Location: Suratgarh, Rajasthan.
1.2 Scope of Supply: Supply of Fiber Optic Cable as per "Technical specification" (Purchase Spec.# PS/404/2525) and quantities as mentioned in the table below:

1.2a. Bill of Material (Please quote for quantity mentioned in last column i.e. Total Project requirement considering both Main and Reserve Line segments): Specification Reference for line items: PS4042525 REV.04

Sl. No.	Description	Material Code	PLC (Main Line)	SLAN (Main Line)	DCS (Main Line)	CMMS SPARE (Main Line)	Total (Main & Reserve Line)
1	FO CABLE, 4 core SM multi-tube (Make: Birla Ericsson/ Aksh Fibre/ D-Link/ Finolex)	PR0340000171	17530 mtrs	7680 mtrs	21450 mtrs	9600 mtrs	**112520 mtrs**
2	FO CABLE, 8 core SM multi-tube (Make: Birla Ericsson/ Aksh Fibre/ D-Link/ Finolex)	PR0340000163	1850 mtrs				**3700 mtrs**
3	FO CABLE, 4 core MM multi-tube (Make: Birla Ericsson/ Aksh Fibre/ D-Link/ Finolex)	PR0340000180			20650 mtrs		**41300 mtrs**
4	PIGTAILS – SINGLEMODE 9µm /125µm, DUPLEX SC FIBRE PIGTAIL	PR0120006324	170 Nos	100 Nos	80 Nos	70 Nos	**840 Nos**
5	PIGTAILS – MULTIMODE 62.5µm /125µm, DUPLEX SC FIBRE PIGTAIL	PR0120006316			230 Nos		**460 Nos**
6	2" GI CONDUIT PIPE	PR0120006430	288 meters	198 meters	630 meters	144 meters	**2520 meters**
7	2" rodent proof HDPE Conduit	PR0120006421	4850 meters	1920 meters	10525 meters	2400 meters	**39390 meters**
8	Coupler/joints for 2" HDPE Conduit (As per ISI Standards)	PR0340000155	100 Nos	40 Nos	215 Nos	50 Nos	**810 Nos**
9	Corrugated flexible Steel tube/hose 1"	PR0120006340	40 mtrs	30 mtrs	70 mtrs	20 mtrs	**380 mtrs**
10	Glands For Coupling	PR0120006359	40 Nos	30 Nos	70 Nos	20 Nos	**380 Nos**

11	OFC Markers (at every 50 meters of OFC)	PR0900007362	388 Nos	154 Nos	842 Nos	192 Nos	**3152 Nos**

1.2b Supply of tubing, epoxy, Splicing KITS/BOXES (as applicable) & all other consumables in required quantities for termination of FO cable to LIU.

1.2c Specification for Fibre optic (FO) cable: Detailed specifications of FO cables, pigtails, and all other accessories required for successful terminations are given in purchase specification document no. PS/404/2525 latest revision (attached). Make for FO cables is limited to Birla Ericsson/ Aksh Fibre/ D-Link/ Finolex. Confirmation for meeting all the specification requirements are to be given for each of the applicable items.

1.3 Services: Fiber terminations and testing of OFC network.

Sl. No.	Description	Quantity	Unit Price	Total Price
1	**a)Termination** Termination of Fiber optic cable cores using Pigtails by fusion splicing methods. b) **Testing, System Integration and Documentation:** i. Fiber optic cable healthiness must be tested before & after installation for all individual fibers. Site Test should include continuity & attenuation test. ii. System Integration including OFC connection to BHEL supplied LIU, using BHEL supplied patch cords to connect from LIU to BHEL supplied Ethernet switch's fiber ports/ SFPs or BHEL supplied converters. iii. Documentation: Standard Test certificates/reports for all states as per the relevant IEC, EIA and other international standards and data sheets where applicable should be submitted. iv. Demonstration at site MOM with BHEL site stating successful completion of supply, installation & demonstration of OFC at site.	1184 Nos.		
2	Travel, lodging & boarding charges and transportation of men and material to site for carrying out the above activities (**estimated 6 visits comprising of 5 working days stay at site)**	**LUMP-SUM**		
	Services (to be quoted as optional) 3, 4, 5			
3	Travel, lodging & boarding charges and transportation of men and material to site (**estimated 1 visit comprising of 5 working days stay at site)**	**LUMP-SUM**		
4	Travel charges per trip for per person for extended Site Stay, in addition to the above stay at site, if warranted. These charges will be payable only after visit, as given in clause 1.3 sl. no. 2, is completed.	**LUMP-SUM**		
5	Charges (inclusive of all expenses) per day for one person for extended Site Stay in addition to the above stay at site for supervision activity. These charges will be payable only after above mentioned days are consumed.	**LUMP-SUM**		

Notes on Scope of Supply and Scope of Services:

i. Supplier has to provide additional pigtails (as replacement) free of cost in case of failed connection for any reason.

ii. Vendor should mention the price of fiber optic cable per meter. The offered prices should be valid for ±25% quantity of the overall scope of the purchase enquiry.

iii. Termination and testing of full network comprising all listed cables/Segments (+ 10%). (Travel & other expenses for termination per person to be included & will not be payable by BHEL). Vendor should mention the termination and testing charges on per fiber basis. The offered prices for termination should be Valid for + 25% quantity of the overall scope of the purchase.

v. No offer of any of the services listed above will result in technical disqualification of offer.

vi. Vendor should also submit optional quote for additional visit and additional stay as per sl no 3, 4 & 5 from clause 1.3.

vii. Laying of Optical Fiber cables will be in BHEL site scope.

2**. General:**

a. Material has to be directly sent to site and service shall be provided at site.

b. The installations are at Suratgarh Units 6 & 7 (2 X 600 MW) in Rajasthan. Full Details of Address of the site will be intimated at time of placing PO.

c. Any deviations with respect to the above specification should be brought out in the offer, Otherwise offer may be rejected.

d. The man days as per clause 1.3 sl. no.2 would be sufficient for the total scope of activity. In case the work is not completed within the planned visit, an additional visit of 5 days as per clause 1.3 sl. no.3 may be used or a visit of different number of days other than 5 days may be employed by combining clause 1.3 sl. no. 4 (for travel) & 5 (for per day stay at site).

e. In case there is a need to stay back for completion of work, man-day charges as per clause 1.3 sl. no.5 will be paid for extra man days only if delay is due to BHEL.

f. The terms clause 1.3 sl. no3, 4 & 5 will not be payable with purchase order. However these rates will be binding on the supplier for the offered services, to complete the activities mentioned in this tender, in case the scope of work is not completed due to any unforeseen situation.

g. Travel charges as per clause 1.3 sl. no4 & man day charges as per clause 1.3 sl. no5 will be payable incase supplier deputes his engineer for trouble shooting purposes upon a written request from BHEL for already completed scope of activity.

h. The charges as mentioned under clause 1.3 sl. no1 & 2 will be paid to the supplier on pro-rata basis subject to submission of completion certificate by BHEL-Site/BHEL-Engg.

Advance intimation of one week will be given for deputing personnel to site.

3.1 Documents to Be Given Along With Quotation

Compliance sheet, Detailed BOM, Technical data sheet and cable dimension drawings ALONG WITH MAKES AND DATASHEET OF ALL EQUIPMENT. Cable should, in general, be ISO/IEC and EIA/TIA compliant and conform to Mechanical conditions as per IEC 794-1.

3.2 Acceptance Criteria:

- Completeness of supply as per 1.2a & b (Material) & 1.3 (Scope of Services).
- Demonstration of proper working of the network.
- Datasheet/drawing of OFC, pigtails, HDPE pipe, test certificate & documentation as per sl. no. 3.1 above
- Completion of work certificate obtained from BHEL site Engineers / Customer Engineers.
- Spliced / Repaired cables are not acceptable.

4. Pre Dispatch Inspection

Test certificates from OEM for having tested the cable in line with offer to be submitted for material being supplied.

5. Warranty

Supplier shall warrant that OFC cables will be free from defect in design, material and workmanship for period of 12 months commencing upon the completion of commissioning (includes laying, termination and testing) of the cable (segment wise) or 18 months from the date of dispatch whichever is earlier. The liability will be limited to replacement of defective parts arising solely from faulty design, materials and / or workmanship with cost of laying and termination and any visits for same.

6. Packaging For Dispatches

1. The packaging to be in drums of lengths such that total requirement (as provided in 1.2a) is met with zero/minimal wastage.
2. Acceptable tolerance is +5% of length specified.
3. Sufficient packaging should be provided for protection during transit.

ANNEXURE OFC CABLE SEGMENT LIST

PLC OFC Cable Segment List Suratgarh 7&8

Main Line Segments

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
1	CNP52 Panel (Z1-CORESWM Module 3 Port 1F) in CCR/CER	CNE47/PLC/SCADA enclosure (PLC1-A Port FX1) at Switchyard/SCADA PLC	16	8 core Single Mode	200	4 cores are used for PLC and 4 for Station LAN networks, 8 cores are spare
2	CNP52 Panel (Z1-CORESWM Module 3 Port 2F) in CCR/CER	CNE25/PLC/Eff enclosure (PLC2-A Port FX1) at Effluent Treatment Plant	8	4 core Single Mode	700	
3	CNP52 Panel (Z1-CORESWM Module 3 Port 15F) in CCR/CER	CNE26/PLC/Elec enclosure (PLC3-A Port FX1) at Electro Chlorination Plant	16	8 core Single Mode	650	4 cores are used for PLC and 4 for Station LAN networks, 8 cores are spare
4	CNP52 Panel (Z1-CORESWM Module 3 Port 16F) in CCR/CER	CNE48/PLC/AC enclosure (PLC4-A Port FX1) at Air Conditioning and Ventilation System	16	8 core Single Mode	150	4 cores are used for PLC and 4 for Station LAN networks, 8 cores are spare
5	CNP52 Panel (Z1-CORESWM Module 3 Port 17F) in CCR/CER	CNE49/PLC/CPU enclosure (PLC5-A Port FX1) at Condensate Polishing Unit	8	4 core Single Mode	500	
6	CNP52 Panel (Z1-CORESWM Module 3 Port 18F) in CCR/CER	CNE27/PLC/PTP enclosure (PLC6-A Port FX1) at Pre-Treatment Plant	8	4 core Single Mode	900	
7	CNP52 Panel (Z1-CORESWM Module 3 Port 19F) in CCR/CER	CNE71/PLC/HYD enclosure (PLC7-A Port FX1) at HYDROGEN PLANT	16	8 core Single Mode	850	4 cores are used for PLC and 4 for Station LAN networks, 8 cores are spare
8	CNP52 Panel (Z1-CORESWM Module 3 Port 20F) in CCR/CER	CNE28/PLC/DM enclosure (PLC8-A Port FX1) at DM PLANT	8	4 core Single Mode	500	
9	CNP52 Panel (Z1-CORESWM Module 3 Port 21F) in CCR/CER	CNE72/PLC/WTIP1 enclosure (PLC9-A Port FX1) at Wagon Tippler 1	8	4 core Single Mode	2500	

10	CNP52 Panel (Z1-CORESWM Module 3 Port 22F) in CCR/CER	CNE73/PLC/WTIP2 enclosure (PLC10-A Port FX1) at Wagon Tippler 2	8	4 core Single Mode	2500	
11	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE74/PLC/WTIP3 enclosure (PLC11-A Port FX1) at Wagon Tippler 3	8	4 core Single Mode	2300	
12	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE75/PLC/WTIP4 enclosure (PLC12-A Port FX1) at Wagon Tippler 4	8	4 core Single Mode	2300	
13	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE76/PLC/CSU1 enclosure (PLC13-A Port FX1) at Coal Sampling Unit PLC at JNT-11	8	4 core Single Mode	2200	
14	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE77/PLC/CSU2 enclosure (PLC14-A Port FX1) at Coal Sampling Unit PLC at JNT-29	8	4 core Single Mode	2000	
15	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE78/PLC/CSU3 enclosure (PLC15-A Port FX1) at Coal Sampling Unit PLC at JNT-2	8	4 core Single Mode	750	
16	CNP52 Panel (Z1-CORESWM Module 3 Port 23F) in CCR/CER	CNE79/PLC/CSU4 enclosure (PLC16-A Port FX1) at Coal Sampling Unit PLC at JNT-21	8	4 core Single Mode	380	
		Total Length Main Line 4C Single Mode:			**17530**	
		Total Length Main Line 8C Single Mode:			**1850**	

Another set of OFC segments same as above are applicable for reserve line segments

Station LAN OFC Cable Segment List Suratgarh 7&8

Main Line Segments

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)
1	CNP52 Panel (Z1-CORESWM Module 1 Port 1F) in CCR/CER	CNE01/SLAN/Stn enclosure (SLAN1-A Port FX1) at Station Building- Central Control Room	8	4 core Single Mode	100
2	CNP52 Panel (Z1-CORESWM Module 1 Port 2F) in CCR/CER	CNE41/SLAN/Srvc enclosure (SLAN2-A Port FX1) at Service Building	8	4 core Single Mode	180
3	CNP52 Panel (Z1-CORESWM Module 1 Port 15F) in CCR/CER	CNE42/SLAN/SWAS enclosure (SLAN3-A Port FX1) at SWAS Room	8	4 core Single Mode	100
4	CNP52 Panel (Z1-CORESWM Module 1 Port 16F) in CCR/CER	CNE55/SLAN/CHP enclosure (SLAN4-A Port FX1) at Coal Handling Plant Local Control Room	8	4 core Single Mode	1500
5	CNP52 Panel (Z1-CORESWM Module 1 Port 17F) in CCR/CER	CNE51/SLAN/AHP enclosure (SLAN5-A Port FX1) at Ash Handling Plant Local Control Room	8	4 core Single Mode	1200
6	CNP52 Panel (Z1-CORESWM Module 1 Port 18F) in CCR/CER	CNE43/SLAN/ESP enclosure (SLAN6-A Port FX1) at ESP Local Control Room	8	4 core Single Mode	400
7	CNP52 Panel (Z1-CORESWM Module 1 Port 19F) in CCR/CER	CNE23/SLAN/WTP enclosure (SLAN7-A Port FX1) at Water Treatment Plant Local Control Room	8	4 core Single Mode	1200
8	CNP52 Panel (Z1-CORESWM Module 1 Port 20F) in CCR/CER	CNE24/SLAN/CW enclosure (SLAN8-A Port FX1) at CW & ACW Pump House Local Control Room	8	4 core Single Mode	200

9	CNP52 Panel (Z1-CORESWM Module 1 Port 21F) in CCR/CER	CNE44/SLAN/FOPH enclosure (SLAN9-A Port FX1) at Fuel oil handling system Local Control Room	8	4 core Single Mode	800
10	CNP52 Panel (Z1-CORESWM Module 1 Port 22F) in CCR/CER	CNE45/SLAN/WSHP enclosure (SLAN10-A Port FX1) at Workshop	8	4 core Single Mode	1200
11	CNP52 Panel (Z1-CORESWM Module 1 Port 23F) in CCR/CER	CNE46/SLAN/STR enclosure (SLAN11-A Port FX1) at Stores	8	4 core Single Mode	800
		Total Length Main Line 4C Single Mode:			**7680**

Another set of OFC segments same as above are applicable for reserve line segments

DCS OFC Cable Segment List connecting ACN controller in CCR/CER to ACN controller in remote locations

Main Line Segments

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
1	CNP32 Panel (Z1-SW211 Port 1X) connected to 19/20 Slot Media Converter Chassis-A Port1 at **Central Control Room**	CNE11 enclosure (Z1-SW215 Port 1X) connected to 2 Slot Media Converter Chassis Slot1 Port1 at **Fuel Oil Pump House LDO Unloading System**	8	4 core Single Mode	700	
2	CNP32 Panel (Z1-SW211 Port 2X) connected to 19/20 Slot Media Converter Chassis-A Port2 at **Central Control Room**	CNE21 enclosure (Z1-SW219 Port 1X) connected to 2 Slot Media Converter Chassis Slot1 Port1 at **River Water Pump House**	8	4 core Single Mode	7000	
3	CNP32 Panel (Z1-SW211 Port 3X) connected to 19/20 Slot Media Converter Chassis-A Port3 at **Central Control Room**	CNE22 enclosure (Z1-SW221 Port 1X) connected to 2 Slot Media Converter Chassis Slot1 Port1 at **Raw Water Pump House**	8	4 core Single Mode	1000	
4	CNP32 Panel (Z1-SW211 Port 4X) connected to 19/20 Slot Media Converter Chassis-A Port4 at **Central Control Room**	CNE13 enclosure (Z1-SW223 Port 1X) connected to 2 Slot Media Converter Chassis Slot1 Port1 at **Auxiliary Boiler**	8	4 core Single Mode	550	
5	CNE11 enclosure (Z1-SW215 Port 2X) connected to 2 Slot Media Converter Chassis Slot1 Port2 at **Fuel Oil Pump House LDO Unloading System**	CNE12 enclosure (Z1-SW225 Port 1X) connected to 2 Slot Media Converter Chassis Slot1 Port1 at **HFO Unloading Pump House**	8	4 core Single Mode	1700	

6	CNP32 Panel (Z1-SW211 Port 5X) connected to 19/20 Slot Media Converter Chassis-A Port5 at **Central Control Room**	CNR01 panel (Z1-SW225 Port 1X) connected to 2 Slot Media Converter Chassis1 Slot1 Port1 at **Ash Handling Plant Control Room**	8	4 core Single Mode	1200	
7	CNP32 Panel (Z1-SW211 Port 6X) connected to 19/20 Slot Media Converter Chassis-A Port6 at **Central Control Room**	CNR11 panel (Z1-SW217 Port 1X) connected to 8 Slot Media Converter Chassis1 Slot1 Port1 at **Coal Handling Plant Control Room**	8	4 core Single Mode	1500	

OFC Cable Segments connecting ACN controller in CCR/CER to Remote I/O module in remote locations

Main Line Segments FOPH

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
8	CAF41/42 panel (unmanaged switch with Fiber converter) connected to LIU at **Fuel Oil Pump House LDO Unloading System**	CAF95 panel (unmanaged switch with Fiber converter) connected to LIU at **HFO Unloading Pump House**	8	4 core Multi Mode	1700	

Main Line Segments CWPH

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
9	CW Pump A Unit7 CCR/CER CRE29/30/31 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump A Unit7 R-I/O CRE85 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	

10	CW Pump B Unit7 CCR/CER CRE32/33/34 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump B Unit7 R-I/O CRE86 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	
11	CW Pump C Unit7 CCR/CER CRE35/36/37 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump C Unit7 R-I/O CRE87 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	
12	CW Pump A Unit8 CCR/CER CRE29/30/31 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump A Unit8 R-I/O CRE85 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	
13	CW Pump B Unit8 CCR/CER CRE32/33/34 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump B Unit8 R-I/O CRE86 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	
14	CW Pump C Unit8 CCR/CER CRE35/36/37 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump C Unit8 R-I/O CRE87 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	
15	CW Pump Common CCR/CER CRE53/54 Panel (unmanaged switch with Fiber converter) connected to LIU	CW Pump Common R-I/O CRE88 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	600	

Main Line Segments MRS/Compressor House

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
16	MRS ACN1 Unit7 CCR/CER CRE13/14 Panel (unmanaged switch with Fiber converter) connected to LIU	MRS R-I/O-1 Unit7 CRE81/82 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	400	
17	MRS ACN2 Unit7 CCR/CER CRE15/16 Panel (unmanaged switch with Fiber converter) connected to LIU	MRS R-I/O-2 Unit7 CRE83/84 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	400	
18	MRS ACN1 Unit8 CCR/CER CRE13/14 Panel (unmanaged switch with Fiber converter) connected to LIU	MRS R-I/O-1 Unit8 CRE81/82 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	400	
19	MRS ACN2 Unit8 CCR/CER CRE15/16 Panel (unmanaged switch with Fiber converter) connected to LIU	MRS R-I/O-2 Unit8 CRE83/84 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	400	

Main Line Segment Raw Water Pump House

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
20	Raw Water Pump House ACN Common CCR/CER CRE53/54 Panel (unmanaged switch with Fiber converter) connected to LIU	Raw Water Pump House R-I/O Common CRE89 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	1000	

Main Line Segment River Water Pump House

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
21	River Water Pump House ACN Common CCR/CER CRE55/56 Panel (unmanaged switch with Fiber converter) connected to LIU	River Water Pump House R-I/O Common CRE90/91 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Single Mode	7000	

Main Line Segment Filter Water Pump House

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
22	Filter Water Pump House ACN Common CCR/CER CRE57 Panel (unmanaged switch with Fiber converter) connected to LIU	Filter Water Pump House R-I/O Common CRE92/93/94 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	450	

Main Line Segments Ash Handling Plant

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
23	AHP MCC2 Area-1 ACN AHPCR CRC10 Panel (unmanaged switch with Fiber converter) connected to LIU	AHP MCC2 Area-1 R-I/O CRC51/52/53 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	800	
24	AHP MCC2 Area-2 ACN AHPCR CRC11/12 Panel (unmanaged switch with Fiber converter) connected to LIU	AHP MCC2 Area-2 R-I/O CRC54/55 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	800	

25	AHP MCC3 Area ACN AHPCR CRC13/14/15 Panel (unmanaged switch with Fiber converter) connected to LIU	AHP MCC3 Area R-I/O CRC56 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	1500	

Coal Handling Plant

Main Line Segments CHP Crusher Unit

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)	Remarks
26	Crusher Unit ACN1&2 CHPCR CRD10 Panel (unmanaged switch with Fiber converter) connected to LIU	CHP Crusher Unit R-I/O CRD51/52/53 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	
27	Crusher Unit ACN3&4 CHPCR CRD10 Panel (unmanaged switch with Fiber converter) connected to LIU	CHP Crusher Unit R-I/O CRD54/55/56 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	
28	Crusher Unit ACN1&2 CHPCR CRD11 Panel (unmanaged switch with Fiber converter) connected to LIU	CHP Crusher Unit R-I/O CRD57/58/59 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	
29	Crusher Unit ACN3&4 CHPCR CRD11 Panel (unmanaged switch with Fiber converter) connected to LIU	CHP Crusher Unit R-I/O CRD60/61/62 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	

Main Line Segments Wagon Tippler

30	Wagon Tippler1&2 ACN1&2 CHPCR CRD12 Panel (unmanaged switch with Fiber converter) connected to LIU	Wagon Tippler1&2 R-I/O CRD63/64 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	1200	
31	Wagon Tippler3&4 ACN1&2 CHPCR CRD12 Panel (unmanaged switch with Fiber converter) connected to LIU	Wagon Tippler3&4 R-I/O CRD65/66 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	1200	

Main Line Segments Stockpile Area

32	Stockpile Area ACN1&2 CHPCR CRD13 Panel (unmanaged switch with Fiber converter) connected to LIU	Stockpile Area R-I/O CRD67/68/69 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	
33	Stockpile Area ACN3&4 CHPCR CRD13 Panel (unmanaged switch with Fiber converter) connected to LIU	Stockpile Area R-I/O CRD70/71/72 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	900	

Main Line Segments Bunker Level

34	Bunker Level ACN1&2 CHPCR CRD14 Panel (unmanaged switch with Fiber converter) connected to LIU	Bunker Level R-I/O CRD73/74/75 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	800	

35	Bunker Level ACN3&4 CHPCR CRD14 Panel (unmanaged switch with Fiber converter) connected to LIU	Bunker Level R-I/O CRD76/77/78 Panel (unmanaged switch with Fiber converter) connected to LIU	8	4 core Multi Mode	800	

Another set of OFC segments same as above are applicable for reserve line segments

Total Length Main Line 4C Multi Mode: 21450

Total Length Main Line 4C Single Mode: 20650

CMMS SPARE LOCATIONS Cable Segment List Suratgarh 7&8

Main Line Segments

Sl No	From	To	No of Terminations	OFC Cable	Distance (meters)
1	CNP52 Panel (Z1-CORESWM Module 2 Port 1F) in CCR/CER	CNE61/SLAN/SPR1 enclosure (SLAN16-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
2	CNP52 Panel (Z1-CORESWM Module 2 Port 2F) in CCR/CER	CNE62/SLAN/SPR2 enclosure (SLAN17-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
3	CNP52 Panel (Z1-CORESWM Module 2 Port 3F) in CCR/CER	CNE63/SLAN/SPR3 enclosure (SLAN18-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
4	CNP52 Panel (Z1-CORESWM Module 2 Port 4F) in CCR/CER	CNE64/SLAN/SPR4 enclosure (SLAN19-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
5	CNP52 Panel (Z1-CORESWM Module 2 Port 5F) in CCR/CER	CNE65/SLAN/SPR5 enclosure (SLAN20-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
6	CNP52 Panel (Z1-CORESWM Module 2 Port 6F) in CCR/CER	CNE66/SLAN/SPR6 enclosure (SLAN21-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
7	CNP52 Panel (Z1-CORESWM Module 2 Port 7F) in CCR/CER	CNE67/SLAN/SPR7 enclosure (SLAN22-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200

8	CNP52 Panel (Z1-CORESWM Module 2 Port 8F) in CCR/CER	CNE68/SLAN/SPR8 enclosure (SLAN23-A Port FX1) location to be decided by RRVUNL	8	4 core Single Mode	1200
		Total Length Main Line 4C Single Mode:			**9600**

Another set of OFC segments same as above are applicable for reserve line segments