



इरकॉन इन्टरनेशनल लिमिटेड
नवरत्न कम्पनी
(भारत सरकार का उपक्रम)
IRCON INTERNATIONAL LIMITED
NAVRATNA COMPANY
(A Govt. of India Undertaking)



IRCON/2060/CGRP/e-TENDER/24-25/CEWRL/ GAD-PND/S&T/01

Date: 13/08/2025

LETTER OF ACCEPTANCE (LOA)

M/s RAIL VIKAS NIGAM LIMITED,
1ST FLOOR, 1ST Floor, August Kranti Bhawan,
Bhikaji Cama Place, R.K. Puram, South Delhi,
Delhi - 110066

Sub: "Supply of various signalling, telecommunications and EIMWB materials; Installation, Testing and Commissioning of Distributed/Centralised Electronic Interlocking (EI) Installations at 10 new stations, viz., Surakachhar, Block Cabin, Katghora Road, Bhingra, Putuwa, Matin, Sendurgarh, Putipakhana, Dhangawan and Bhadi stations; 06 new IBSs in the Bhingra-Putuwa, Putuwa-Matin, Sendurgarh-Putipakhana, Putipakhana-Bhadi, Bhadi-Dhangawan & Dhangawan-Pendra Road block sections; Installation, Testing and Commissioning of New Section Control System with Headquarters and Wayside Train Control Communication Equipment / System in the Gevra Road – Pendra Road section; Installation, Testing and commissioning of new Telephone Exchange and EIMWBs at appropriate location(s) through execution of various signalling & telecommunications works; alterations / modifications in the existing Panel Interlocking Installation at Kusmunda Block Station (KBS) yard and the existing Electronic Interlocking Installation at East Cabin of the SECL SILO Siding (KMKA) yard including other miscellaneous works." - **Letter of Acceptance**

Ref: 1. E-procurement Notice No IRCON/2060/CGRP/e-TENDER/24-25/CEWRL/ GAD-PND/S&T/01 dtd. 08/01/2025
2. Your Technical Offer Opened on 07.02.2025 at 15:00 Hrs
3. Your Financial Offer Opened on 16.05.2025 at 16:00 Hrs

Dear Sir,

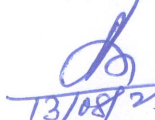
1. In reference to above referred Tender your offer for subject mentioned work has been accepted by the Competent Authority at a total cost of **Rs. 178,64,60,939.78** (Rupees One Hundred Seventy-Eight Crore Sixty-Four Lakh Sixty Thousand Nine Hundred Thirty-Nine and Seventy-Eight Paise Only). inclusive of transportation, insurance and all taxes and duties, etc. (BOQ attached as Annexure – A).
2. The completion period of the work is **11 (Eleven) months** from the date of issue of this Letter of Acceptance as per clause No 12.1 of SCC.
3. Performance Security for an amount of **Rs. 8,93,23,047/- (Rupees Eight Crore Ninety-Three Lakh Twenty-Three Thousand & Forty-Seven Only)** in the prescribed form, in favour of IRCON INTERNATIONAL LTD, within 21 (Twenty-One) days of issue of this letter as per Clause No. 17 of SCC.
4. This letter will constitute a legal and binding contract between **IRCON INTERNATIONAL LTD** and **M/s RAIL VIKAS NIGAM LIMITED**, till such time the Contract Agreement is signed. You will enter into and execute the Contract Agreement within **28 (Twenty-Eight) days** from the date of issue of this letter as per Clause No.20

of SCC on the Stamp paper of the requisite value as per the prevailing laws to be arranged at your own cost.

5. Insurance shall be as per Clause 14 of SCC.
6. Terms of payment shall be as per Clause 23 of SCC.
7. Retention Money shall be as per Clause 17.2 of SCC.
8. As per clause 12.3 of the SCC, within 7 (Seven) days of the acceptance of the tender and before the work is commenced; the contractor shall have to submit a detailed programme for each major element of the work, using the modern networking techniques for Project monitoring, for approval of the Engineer. The construction programme will show the general methods, arrangements, order and timing for all the significant activities in the works identifying the critical path for the work clearly, along with monthly cash flow. The programme shall clearly provide for and indicate the time required for the preliminaries before starting the work and shall indicate the dates of commencement and completion of the various sections of the work.
9. All other terms and conditions shall be as per Tender documents, which shall form an integral part of this contract and shall be binding on you.
10. The Contractor shall not claim any undue benefit arising due to any calculations / printing error in the LOA. In case any calculation/ printing error is detected in the LOA, the same shall be corrected at the time of signing of Contract Agreement.
11. Until a Formal Agreement is executed, acceptance of this LOA by you shall constitute to be a binding of Contract.
12. Two copies of this LOA are being sent herewith. Kindly acknowledge receipt as a token of unconditional acceptance and return one copy of the LOA, duly signed and stamped by you authorized representative on each and every page, to this office, within one week of issue of this LOA.
13. Bill of Quantities (BOQ), indicating the quantities and rates of the items included in the scope of work is enclosed as Annexure – A.

Yours Sincerely,

For and on behalf of
IRCON INTERNATIONAL LIMITED


13/08/25
(P.K. Suman)
CGM/S&T & PH



Encl.: Annexure - A

Copy to: CGM/S&T/Co-ord for information and necessary action please.

2

ANNEXURE - A

Name of the Work : Supply of various signalling, telecommunications and EIMWB materials; Installation, Testing and Commissioning of Distributed/Centralised Electronic Interlocking (EI) Installations at 10 new stations, viz., Surakachhar, Block Cabin, Katghora Road, Bhingra, Putuwa, Matin, Sendurgarh, Putipakhana, Dhangawan and Bhadi stations; 06 new IBSs in the Bhingra-Putuwa, Putuwa-Matin, Sendurgarh-Putipakhana, Putipakhana-Bhadi, Bhadi-Dhangawan & Dhangawan-Pendra Road block sections; Installation, Testing and Commissioning of New Section Control System with Headquarters and Wayside Train Control Communication Equipment / System in the Gevra Road – Pendra Road section; Installation, Testing and commissioning of new Telephone Exchange and EIMWBs at appropriate location(s) through execution of various signalling & telecommunications works; alterations / modifications in the existing Panel Interlocking Installation at Kusmunda Block Station (KBS) yard and the existing Electronic Interlocking Installation at East Cabin of the SECL SILO Siding (KMKA) yard including other miscellaneous works

Ref : NIT No IRCON/2060/CGRP/e-TENDER/24-25/CEWRL/ GAD-PND/S&T/01 dtd. 08/01/2025

AWARDED SUMMARY SHEET

SN	SCHEDULE	AMOUNT
1	Schedule A : Supply	₹ 1,28,01,37,379.86
2	Schedule B : Installation	₹ 49,45,07,971.18
3	Grand Total Of All Schedules Exclusive of 18% GST	₹ 1,77,46,45,351.04
4	Grand Total Of All Schedules Inclusive of 18% GST	₹ 2,09,40,81,514.22
5	Awarded at	14.69% Below
6	Awarded total Amount inclusive of 18% GST	₹ 1,78,64,60,939.78



BOQ Schedule A

Scope of Work: Design, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signaling System & Telecommunication System at Sendurgarh, Putipakhana, Bhadi and Dhangawan station of CEWRL Project, Chhattisgarh

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
SCHEDULE- A (SUPPLY)					
Signalling					
A	Electronic Interlocking				
1	Design, Manufacture and Supply of Distributed / Consolidated Electronic Interlocking System (Hot standby functioning shall be ensured at all locations, i.e. Station Signal Equipment Room, South Cabin/Goomty & North Cabin/Goomty) conforming to RDSO specification no. RDSO/SPN/192/2019 version 2.0 with latest amendments and directives issued by Railway Board and RDSO as applicable at the date of supply / installation as per the enclosed Tentative Signal Interlocking Plans (SIP).				
i)	Surakachhar	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
ii)	Block Cabin	System	1	₹ 2,75,80,948.14	₹ 2,75,80,948.14
iii)	Katghora Road	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
iv)	Bhingra with IBS Podi Gosian	System	1	₹ 2,75,80,948.14	₹ 2,75,80,948.14
v)	Putwa With IBS Katori Nagoi	System	1	₹ 2,75,80,948.14	₹ 2,75,80,948.14
vi)	Martin	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
vii)	Sendurgarh With Kudri IBH	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
viii)	Puti pakhana with IBH (Dumdum)	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
ix)	Bhadi with Jhabar IBH	System	1	₹ 2,75,80,948.14	₹ 2,75,80,948.14
x)	Dhangawan with IBH	System	1	₹ 3,66,34,639.61	₹ 3,66,34,639.61
a)	EI to be installed at IBSs				
b)	Microprocessor Equipment (hot standby functioning shall be ensured at all locations, i.e. Station Signal Equipment Room, South Cabin/Goomty & North Cabin/Goomty), other cards and assemblies/sub-assemblies.				
c)	All type of interface Relays such as TPR's, WKR's, KLCRs, ECR's (suitable for LED signals), point operation Relays, other interface Relays etc. and any other Relay required to make the given EI and associated system functional. The relays shall be provided to make the installation 25 KV RE fit.				
d)	Industrial grade Operator Console with professional / industrial grade VDU 42" (2 Nos) & Industrial grade Maintenance console with professional / Industrial grade VDU 32" as per latest RDSO Guideline & Technical Advisory Note(TAN), online Dot matrix printer with power supply etc.				
e)	Equipment racks, Relay racks, Rack fixture mounting arrangements and accessories.				
f)	Interconnecting cables and interfacing equipments required for interfacing the EI system with outdoor gears, Data Logger system, Block Proving Axle counter system, monitoring of Power Supply for IPS system etc.				
g)	Protective Devices like Fuses, Lightning arrestors and surge protection arrangement, equipotential bonding as per latest RDSO guidelines, etc.				
h)	All the consumables, wiring materials, fixtures, mounting arrangements and necessary accessories to install and make the EI system functional.				
i)	Supply of Software as per design for Electronic Interlocking System conforming to RDSO's specification No. RDSO/SPN/192/2005 or latest to suit enclosed Approved Signal Interlocking Plan (SIP).				
j)	Station master is to be provided with two VDU only. However, SM Room & Equipment Rooms may be situated in two different buildings and therefore may be required to be provided with augmented surge protection /optical interface by EI manufacture.				



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
k)	Supply of documents/manuals(six set per station) as per RDSO specification no. RDSO/SPN/192/2019 version 2.0 with latest amendments				
l)	Fuse Alarm system as per RDSO specification no. RDSO/SPN/192/2019 version 2.0 with latest amendments				
m)	Supply of RDSO recommended essential spares 10% for EI system.				
n)	EI to be installed at IBSS				
	Notes				
	a) The Successful bidder as per the rly board letter no.2013/sig/23/01/(pt) dt 17.02.2022, should give break up of total cost of BOQ item no.1 indicating separately unit rates, quantities and total cost of each type of equipment, modules, assemblies /sub-assemblies, cards etc. as Annexures A & B. This list of material will be only indicative. Contractor has to supply the complete material for the commissioning of Electronic Interlocking in RE area. No Extra payment shall be paid to contractor for any additional items/Cards/Modules. As per the latest railways board				
	b) The EI equipment offered shall cater for 10% increase in field input quantities in future. The necessary hardware provided shall be such that it shall be possible to incorporate 10% increase in field input quantities without requirement of any additional hardware other than relays, cables.				
2	Supply of portable workstation to run alongwith EI configuration tools, data inputs, simulation and functional testing, diagnostic, trouble-shooting & commissioning of EI System as per Technical Specifications of the tender document. NOTE: Workstation should be capable of reconfiguring the system in case of any alterations in the yard or interlocking in future. Hardware configuration to be approved by IRCON before supply.	Nos	10	₹ 1,08,352.17	₹ 10,83,521.74
3	Supply of powder coated Main Cable Termination rack complete with scaffolding, fixtures & accessories including square bars for mounting 8-way terminal / WAGO make terminal blocks, ladders, string rods, frame, base assembly, insulators, J bolt, nut/bolts & fasteners (Bakelite strips), Rack arrangement etc. as per extant practice on Rly for EI. Rack should be made of first class steel powder coated painting and rack manufacturer's certificate should be submitted. All runway for cables / wires shall be provided with PVC sleeve of proper size.	Nos.	53	₹ 43,040.83	₹ 22,81,163.94
4	Necessary arrangement for manufacture, transportation & installation of station masters console for fixing telephones & other equipments as per instruction of Engineer incharge. This includes : All materials like 25mm thick hylum sheet etc. required for the above including sundry items like bolts & nuts, screws, MS angle / flat shall be supplied by the contractor. The table shall be as per the existing design of Pendra and Gevra Road station SM table	Nos.	10	₹ 1,79,386.07	₹ 17,93,860.74
5	Supply of all types of necessary maintainers tool kit and measuring instruments for technicians for testing, maintenance and repair at site as specified by original equipment manufacturer of proposed Electronic interlocking system.	Set	12	₹ 1,72,930.31	₹ 20,75,163.71
6	Supply of Universal Earth Leakage Detector 12 Channel AC/ DC as per RDSO/SPN/256/2002 or latest amendment.	Nos.	34	₹ 1,51,526.63	₹ 51,51,905.48
B	Datalogger				
7	Supply of Microprocessor based data logger with 1024 Digital & 32 Analog Inputs as per RDSO specification No. IRS:S 99/2006 (amdt. 3) with latest amendments and shall be suitable to work with Electronic Interlocking system. It includes all interfacing equipment like protocol converter unit etc. It also includes design, supply and installation of all software required as standard practice of SECR and as per RDSO specification no. IRS:S 99/2006 or latest. Digital input to be taken from EI through Protocol Converter and in addition one digital input card to be provided for digital input of important interface relays. This also includes supply of Leased line MODEM for networking of Datalogger, power supply of adequate capacity, battery and fault diagnostic software for failure analysis. Complete Data Logger & Processor Module shall be placed in President/Rittel rack of suitable size to be supplied. This also includes supply of one no. of Computer, Computer Table (Godrej make), UPS, Printer and one no. Operator Chair (Godrej make) as per Technical Specification.	Nos.	23	₹ 6,49,207.82	₹ 1,49,31,779.94
8	Supply of Microprocessor based data logger with 512 Digital & 32 Analog Inputs as per RDSO specification No. IRS:S 99/2006 (amdt. 3) with latest amendments and shall be suitable to work with Electronic Interlocking system. It includes all interfacing equipment like protocol converter unit etc. It also includes design, supply and installation of all software required as standard practice of SECR and as per RDSO specification no. IRS:S 99/2006 or latest. Digital input to be taken from EI through Protocol Converter and in addition one digital input card to be provided for digital input of important interface relays. This also includes supply of Leased line MODEM for networking of Datalogger, power supply of adequate capacity, battery and fault diagnostic software for failure analysis. Complete Data Logger & Processor Module shall be placed in President/Rittel rack of suitable size to be supplied. This also includes supply of one no. of Computer, Computer Table (Godrej make), UPS, Printer and one no. Operator Chair (Godrej make) as per Technical Specification.	Nos.	6	₹ 5,51,277.33	₹ 33,07,663.99
9	Supply of Door Proximity switches along with 2 way rigid connector for wire termination between proximity switches.	Nos.	100	₹ 731.17	₹ 73,117.08
10	Supply of serial to fibre converters.	Nos.	31	₹ 33,656.47	₹ 10,43,350.68
C	Power Supply				

5



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
11	Supply of SMPS Based Integrated Power Supply System as per RDSO Specification No. RDSO/SPN/165/2023 (Ver. 4.0) or latest with latest amendments. including supply of battery and remote indication panel, and spares with tool kit as per RDSO list. Supply of 02 sets (each set 55 nos) of 110V/200AH Low Maintenance Lead Acid (LMLA) Stationary Battery for S&T installations as per IRS: S-93/96(A) (Amd. 1) & Railway Board's letter No. 2010/SIG/SGF/2/ LMLA Battery Dt. 20.12.10 (with latest amendments) with battery rack and 05 no of spare batteries	Set	15	₹ 16,49,153.14	₹ 2,47,37,297.11
12	Supply of MINI SMPS based Integrated Power Supply as per RDSO Specification No. RDSO/SPN/165/2023 (Ver. 4.0) or latest with latest amendments. & as per technical specification alongwith the supply of 02 sets (each set 55 nos) of 110V/200AH Low Maintenance Lead Acid (LMLA) Battery Bank of 200AH Confirming to RDSO Spec. No. IRS:S93/96(A) Amndt.-1 or latest.	Set	14	₹ 9,88,545.95	₹ 1,38,39,643.36
D	Block Working				
13	Supply of Block Proving with Axle Counter System as per RDSO Specn. IRS:S-105/2012 (Ver.0) or latest using UFSBI & Block Panel for Single Line operation complete with Relays, timers consisting of following but not limited to:	Pair	2	₹ 15,86,878.87	₹ 31,73,757.73
	Electronic Signaling Equipment: Universal Fail- Safe Block Interface (2nos) complete with all accessories as per RDSO Specn. No. IRS:S- 104/2012 (Ver.0) or latest.				
	Relay Rack with locking and sealing arrangement including Relays duly wired along with Relay bases (as per RDSO/S/32020 – Latest Amendment).				
	SM's Panel/Block Panel (2nos) with accessories as per RDSO Drg. No. RDSO/S/32019 (Latest Amendment).				
	Block Telephone with accessories (2nos) as per RDSO's Specification No. RDSO/SPN/191/2006.				
	NOTE: UFSBI shall be capable of Single Line operation upgradable to Double Line operation. There shall be Modification of Block Proving System from Single Line Block system to Double Line in future.				
14	Supply of Automatic Media changeover System of modem working on redundant channels for data transmission on OFC/ Quad for seamless operation of UFSBI over multiple media as per RDSO specification no. RDSO/SPN/147/2005 with Amendment 1 or latest.	Pair	2	₹ 32,297.25	₹ 64,594.49
15	Supply of Modem compatible with existing UFSBI System to work on backup media. The backup media can either be on unframed 2 Mbps E1 Channel from STM or on VF-channel from P-Mux or direct dark Single mode optic Fiber Cable upto 30 Km.	Pair	2	₹ 61,480.15	₹ 1,22,960.29
16	Supply of SGE type double line block instrument complete with bell unit, block bell unit, filter unit, DC polarized 3 position biased BPR relay, wooden block counter, VF transformer.	Nos	22	₹ 1,07,465.58	₹ 23,64,242.83
a	Supply of SGE type double line block instrument complete as per IRS S: 22/2016 Ver 1.0 along with bell unit 1 qty in nos				
b	Supply of block bell equipment to specification IRS (TC) 48/88 amendment 1 or latest RDSO specification in qty 1 no per block instrument				
c	Supply of filter unit to specification IRS (TC) 68/89 amendment 1 or latest RDSO specification in qty 1 no per block instrument				
d	Supply of DC polarized 3 position biased BPR relay to specification IRS (TC) 31/80 amendment 1 or latest RDSO specification in qty 1 no per block instrument				
e	Supply of Wooden block counter of size 700mm x 700mm WX 900mm made of teak wood frame and 10mm/20mm thick water proof ply with Formica finish on top and all four sides having two compartment inside and two doors on opposite sides - in quantity 01 no per block instrument				
f	Supply of VF Transformer of various types 470:470, 470:600, 470:1120, 600:1120: 600:600, 1120:1120 etc as per IRS Specification No TC / 22-76 or latest RDSO specification - in quantity as per requirement.				
E	Digital Axle Counter for Block Section				
17	Supply of Multi-section Digital Axle counter for block sections complete with Counting Heads / Detection Points (each block section shall be proved with two Detection points with full redundancy), two Evaluators, one at each station, vital relays and with Reset arrangement (LV Box, Reset Box etc.) provided at the SM room along with necessary fitting arrangements required for fixing of Counting Heads / Detection Points as per RDSO specification no RDSO/SPN/176/2013 (Ver.3) This also includes submission & approval of design & drawings. Offered MSDAC equipment shall cater for 10% increase in field as well as Central Evaluator equipment for future requirement and 10% spare cards for Central Evaluator and field equipment. The Equipment must also include but not limited to: (i) Micro Controller/Event Logger Card with Required Software. (ii) Surge protection Device (iii) Installation material - Reduction Plates, Deflectors, Mounting Frames for Evaluation computers, Counting head housing, Lighting protection module with accessories, earthing bolt for counting Head. (iv) Mushroom housing for track side electronic equipment with complete assembly and fixing arrangement for each detection point will be supplied NOTE: a) The tenderer should indicate total cost of DAC & list of RDSO recommended spares along with break up of total cost indicating separately unit rates, quantities and total cost of each type of equipments, modules, assemblies, cards etc as per Annexure-C & Annex D for spares. This list of material is indicative. Contractor has to supply complete material for commissioning of DAC. No Extra payment shall be paid to contractor for any additional items /Cards/Modules.	DP	96	₹ 2,85,894.06	₹ 2,74,45,829.96



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
	Supply of MSDAC Tool Kit. Each Set will consist of:	No.	2	₹ 2,84,280.68	₹ 5,68,561.36
	a) Portable Data Analyzer (Downloading Event Logger Data for analysis and report generation) - 1 No.				
	b) Pure Sine Wave Digital Multimeter Fluke Make(Model-1871) or Rishab Make (Model- 28S)- 1No.				
18	c) Train Simulator Mode 11TS267P)- 1 No.				
	d) Extender Card- 1 No.				
	e) Dummy Wheel- 1 No.				
	f) Ring Spanner- 1 No. each				
	g) Open End Spanner- 1 No. each				
	h) Socket Spanner with handle- 1 No.				
	i) Torque Wrench(Jaicom JPR 65 or equivalent 88NM)- 1 No.				
	j) Screw Driver no.902- 1 No.				
	k) Screw Driver no.935- 1 No				
	l) Marking Jig for drilling as applicable				
	m) Dummy Load to check Power Supply(Resistive)- 1 No.				
F	Digital Axle Counter for Station (Yard)				
	Supply of Multi-section Digital Axle counter for stations complete with Counting Heads / Detection Points, Central Evaluator (or group of evaluators) , one each at the South Cabin/Goomty and North Cabin/Goomty, vital relays and with Reset arrangement (LV Box, Reset Box etc.) provided at the SM room along with necessary fitting arrangements required for fixing of Counting Heads / Detection Points as per RDSO/SPN/176/2013 (Ver. 3) with latest amendments. - Stations with IBS	DP	774	₹ 2,85,894.06	₹ 22,12,82,004.04
	NOTE: Offered MSDAC equipment shall cater for 10% increase in field as well as Central Evaluator equipment for future requirement and 10% spare cards for Central Evaluator and field equipment. The Equipment must also include but not limited to: (i) Micro Controller/Event Logger Card with Required Software. (ii) Surge protection Device (iii) Installation material - Reduction Plates, Deflectors, Mounting Frames for Evaluation computers, Counting head housing, Lighting protection module with accessories, earthing bolt for counting Head. (iv) Mushroom housing for track side electronic equipment with complete assembly and fixing arrangement for each detection point will be supplied				
19	a) The evaluators in End Cabins/Goomties, connected through OFC link, shall work as a single Track Vacancy System for the station, with Reset facilities with SM. Only OFC cable shall be provided between central and goomties. b) The tenderer should indicate total cost of MSDAC & list of 10% spares along with breakup of total cost indicating separately unit rates, quantities and total cost of each type of equipments, modules, assemblies/sub- assemblies, cards etc. for spares. This list of material will be only indicative. Contractor has to supply the complete material for the commissioning of MSDAC. No Extra payment shall be paid to contractor for any additional items/Cards/Modules.				
	Supply of MSDAC Tool Kit. Each Set will consist of:	No.	5	₹ 2,84,280.68	₹ 14,21,403.41
	a) Portable Data Analyzer (Downloading Event Logger Data for analysis and report generation) - 1 No.				
	b) Pure Sine Wave Digital Multimeter Fluke Make(Model-1871)or Rishab Make (Model- 28S)- 1No.				
	c) Train Simulator Mode 11TS267P)- 1 No.				
	d) Extender Card- 1 No.				
20	e) Dummy Wheel- 1 No.				
	f) Ring Spanner- 1 No. each				
	g) Open End Spanner- 1 No. each				
	h) Socket Spanner with handle- 1 No.				
	i) Torque Wrench(Jaicom JPR 65 or equivalent 88NM)- 1 No.				
	j) Screw Driver no.902- 1 No.				
	k) Screw Driver no.935- 1 No				
	l) Marking Jig for drilling as applicable				
	m) Dummy Load to check Power Supply(Resistive)- 1 No.				
G	Signals				
21	Supply of FRP CLS Unit 2 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest.	Nos.	119	₹ 31,508.84	₹ 37,49,552.39
22	Supply of FRP CLS Unit 3 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest.	Nos.	161	₹ 34,438.97	₹ 55,44,673.85
23	Supply of FRP CLS Unit 4 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest.	Nos.	6	₹ 34,438.97	₹ 2,06,633.81
24	Supply of Main Signal Post 140 mm outer dia 5.5/4.5 Mtr Length as per spec Nos IRS S 6/81 with latest amendments alongwith surface base with Anchor bolts, ladder complete with platform .	Nos.	173	₹ 20,219.07	₹ 34,97,898.75
25	Supply of Main Signal Post 140 mm outer dia 3.5 Mtr Length as per spec Nos IRS S 6/81 with latest amendments alongwith surface base with Anchor bolts, ladder complete with platform.	Nos.	106	₹ 21,691.21	₹ 22,99,267.76

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
26	Supply of FRP Route Indicator 1/2 way (without lenses and lamps) as per RDSO Spec. no. RDSO/SPN/194/2006 Ver 2.0 with latest amendments.	Nos.	37	₹ 53,957.25	₹ 19,96,418.21
27	Supply of FRP Route Indicator 3/4 way (without lenses and lamps) as per RDSO Spec. no. RDSO/SPN/194/2006 Ver 2.0 with latest amendments.	Nos.	6	₹ 56,579.44	₹ 3,39,476.62
28	Supply of Junction type/Directional type route indicator 5/6 way to drawing no.SA.23405 with IRS - S 66/84 with amendment-1or latest	Nos.	3	₹ 80,552.05	₹ 2,41,656.14
29	Supply & installation of universal AC/ DC numeric route indicator for 1-19 routes with left & right arm complete with optical sensor, housing w/o mounting pole for use with LED ECR.	Nos.	3	₹ 1,87,299.79	₹ 5,61,899.38
30	Supply of FRP Calling-on signal(without Lens & lamps) as per RDS Spec. No-RDSO/SPN/194/2006 ver 2.0 with latest ammendements.	Nos.	25	₹ 6,224.90	₹ 1,55,622.45
31	Supply of FRP Shunt signal Dependent type complete along with offset bracket (without lenses and lamps) as per spec.no. RDSO/SPN/194/2006 Ver 2.0 or latest	Nos.	54	₹ 12,536.46	₹ 6,76,968.95
32	Supply of FRP Shunt signal Independent type complete as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest with steel post & CI base along with anchor bolts as per RDSO drawing (without lenses and lamps). This includes supply of Hand cuff Locks & signal number plate.	Nos.	78	₹ 14,735.81	₹ 11,49,393.29
33	Supply of LED Signal Lighting Unit (Red) for Main Signals as per specification no. RDSO/SPN/199/2010 (Rev 1.0) dated 11.04.14.	Nos.	161	₹ 14,002.51	₹ 22,54,404.59
34	Supply of LED Signal Lighting Unit (Yellow) for Main Signals as per specification No. RDSO/SPN/199/2010 (Rev 1.0) dated 11.04.14	Nos.	231	₹ 14,270.01	₹ 32,96,371.30
35	Supply of LED Signal Lighting Unit (Green) for Main Signals as per secification no. RDSO/SPN/199/2010 (Rev 1.0) dated 11.04.14.	Nos.	152	₹ 18,701.88	₹ 28,42,685.91
36	Supply of LED Signal Lighting Unit for Route Indicator as per specification no. RDSO/SPN/153/2011 (Rev 4.1).	Nos.	216	₹ 7,867.63	₹ 16,99,408.82
37	Supply of LED Signal Lighting Unit for Calling On Signals as per specification No. RDSO/SPN/153/2011 (Rev 4.1)	Nos.	25	₹ 10,345.71	₹ 2,58,642.64
38	Supply of LED Signal Lighting Unit for Shunt Signals as per specification No. RDSO/SPN/153/2011 (Rev 4.1).	Nos.	270	₹ 8,483.21	₹ 22,90,467.04
39	Supply & Fixing of screen on signal by expandend Metal size 20mm X 60mm (strand 3.25 mm wide and 1.6 mm thick) as per instruction at site by Engineer incharge .This includes supply of all materials including earth electrode and earthing arrangement	Nos.	43	₹ 3,003.35	₹ 1,29,144.19
40	Supply of QNA1 relay, 24V DC, 8F/8B along with plug-in board, retaining clip and connectors, conforming to BRS:931A, IRS:S60, IRS:S34 & IRS:S23.	Nos.	404	₹ 5,575.36	₹ 22,52,445.98
41	Supply of offset bracket for 140 mm dia Signal Post as per RDSO Specifications, Drg No SA- 23080 Adv Alt-1	Nos.	55	₹ 4,000.64	₹ 2,20,035.16
42	supply of QNA1K relay and plug board for signal lighting circuit of Distant and inner distant signal	Nos.	68	₹ 5,861.23	₹ 3,98,563.77
H	Point machine				
43	Supply of Electric Point Machine 143 mm stroke, IRS type to operate on 110 V DC as per RDSO spec. no. IRS:S 24/2002 (amd. 1) including supply of FRP type Cable Termination Box, GI Pipe B class 50 mm dia. and Tool Box as per RDSO specification.	Nos.	38	₹ 99,783.96	₹ 37,91,790.35
44	Supply of Ground Connection along with insulation suitable for 143mm stroke IRS Point machine as per RDSO Drg. S/3361/62/63 with latest amendments	Nos.	38	₹ 26,064.56	₹ 9,90,453.12
45	Supply of Electric Point Machine 220mm stroke working on 110 V DC confirming to RDSO spec. IRS:S-24/2002 with latest amendments, with external clamp point lock as per Drg. No. RDSO/S/3376 for 60 Kg clamp lock and ground connections to Drg No. RDSO/S/3455.	Nos.	124	₹ 1,69,652.09	₹ 2,10,36,859.06
46	Supply of Insulation Set for 220mm IRS point machine ground connections, using for 60 Kg rail, as per RDSO drawings.	Set	124	₹ 4,260.01	₹ 5,28,241.13
47	Supply of Key Lock Relay with different ward combinations (One extra set of ward plates for Point Machine to be supplied with each relay) as per Railway Practice.	Nos.	162	₹ 10,324.89	₹ 16,72,632.12
48	Supply & fixing of KLCR boxes and fixing of KLCR Relays in Location Box. It includes supply of any minor bracket, nuts, bolts, teakwood, sunmica, lock, drilling holes as directed by engineer at site. It also includes supply and wiring of push buttons along with LED's for KLCR Circuit.	Nos.	52	₹ 1,469.44	₹ 76,410.73
I	Location Box				

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
49	Supply of Apparatus Case Half as per Drg no WS-8842/A with latest alteration along with miniature 'E' type locks with keys (1 key per 5 L.Boxes and handle) of ward nos. 41 (E type lock & key as per spec. no IRS S 30 & RDSO drg.nos. SA 3376/M & 3377/M respectively with latest Amdt) on both the doors, duly painted with red oxide. This item also includes supply of wooden plank of suitable size.	Nos.	215	₹ 18,139.57	₹ 39,00,007.20
50	Supply of HRC Fuses 2A / 4A / 6A (Spec. No. IRS:S-78/92) - with Fuse Block (Spec. No.IRS:S-75/2006 (Rev.2) and drg. no. SA- 23748 (Alt.4)).	Nos.	2700	₹ 239.39	₹ 6,46,356.77
51	Supply of 5A switch, 3 pin socket, lamp holder with 110V/60W lamp	Nos.	700	₹ 461.31	₹ 3,22,919.51
52	Supply of Hylam Sheet, resin bonded 10 mm thick, grade P3 in standard size of 1.22 x 1.22 Mtr as per spec. No (S 2036 of 1974.	Nos.	550	₹ 7,990.19	₹ 43,94,602.23
53	Supply of Wago/phoneix screwless 4 conductor disconnecting terminal suitable for copper wire of 0.5 sqmm to 4 sqmm as per RDSO spec no. RDSO/SPN/189/2004 ver 1.2. This also includes end stopper, End plate, Carriage Rail, Marker Strip etc. for the fixing of terminals.	Nos.	90000	₹ 84.33	₹ 75,89,293.04
54	Supply of ARA terminals Block made of PBT as per IRS Drg. No. SA 23741/A Alteration 4 or latest & spec. No. IRS:S- 75/2006 (Rev 2) (latest) with latest amendments with disconnecting links.	Nos.	3400	₹ 81.76	₹ 2,77,983.98
56	Supply of Apparatus Case Full as per RDSO Drg. No. WS-8842/A with latest alteration along with miniature 'E' type locks with keys (1 key per 5 location boxes and handle) of ward no. 41 (E type lock & key as per spec. Nos IRS S 30 & RDSO Drg. No. SA3376/M & 3377/M resp. with latest amendment) on both the doors duly painted with red oxide.	Nos.	540	₹ 24,505.05	₹ 1,32,32,726.10
57	RFID Electronic marker with capability of saving user specific data inside the marker memory chip later readable by locator during location (10m diameter with floating coil to detection of circuit always horizontal for better detection)	Nos	1300	₹ 3,174.15	₹ 41,26,400.69
58	Supply of Double Walled Corrugated (DWC) pipes as per RDSO spec. no.RDSO/SPN/204/2011, of length 6 meter and 120 mm outer dia. & 103.5mm inner dia. with one snap fit coupler with rubber ring, spacers, band, endcap, one V end and one T coupler for underground Power / Signal/ Telecom cable protection.	KM	12	₹ 2,60,620.00	₹ 31,27,439.99
J	Signalling & Telecom cables				
59	Supply of PVC insulated armoured unscreened, underground Railway Signalling cable 6 Core 1.5 sqmm (copper conductor) as per RDSOspecification No. IRS: S 63/2014 (Rev 4.0) or latest .	Km	88	₹ 1,22,790.79	₹ 1,08,05,589.31
60	Supply of PVC insulated armoured unscreened, underground Railway Signalling cable 12 Core 1.5 sqmm (copper conductor) as per RDSOspecification No. IRS: S 63/2014 (Rev 4.0) or latest .	Km	505	₹ 1,92,158.13	₹ 9,70,39,853.46
61	Supply of PVC Insulated armoured, Unscreended, underground, Railway Signalling cable 19 Core x 1.5 sq.mm. (Copper Conductor) as per RDSO Spec No; IRS:S- 63/2014 (Rev4.0) including latest amendments.	Km	155	₹ 3,09,350.00	₹ 4,79,49,250.00
62	Supply of Underground Railway Jelly filled 6 Quad Cable of size 0.9 mm dia for Signalling and Telecom Installation as per RDSO Spec.No.IRS:TC-30/2005 (Ver-1 with amend. No. 4)	Km	420	₹ 2,89,110.15	₹ 12,14,26,261.32
63	Supply of 24 fibre Amoured Optic fibre Cable as per spec. IRS:TC:55/2006 Rev-1 Amd. 2 or with latest amendment.	KM	345	₹ 77,691.70	₹ 2,68,03,638.10
64	Supply of HDPE duct 40/33 mm permanently lubricated in lengths of 500 mtrs and accessories including end caps for every drum length as per RDSO Spec. no. RDSO/SPN/TC/45/2013.Rev.2.0 Amendment 1.0, including latest amendment.	Mtr	345000	₹ 78.77	₹ 2,71,75,370.54
65	Supply of PVC Insulated armoured,Unscreended, underground, Railway Signalling cable 2 x 25 sq.mm. (Aluminium Conductor) as per RDSO Spec No; IRS:S- 63/2014 (Rev4.0) & IS : 1554 (Part-1) including latest amendments.	Km	45	₹ 1,01,753.00	₹ 45,78,885.00
66	Supply of 10 pair PIJF- .63 mm cable	km	24	₹ 97,460.90	₹ 23,39,061.55
67	Supply of PIJF Amoured telephone cable 5 pair 0.63 mm dia as per TC 41/96	Km	16	₹ 92,989.82	₹ 14,87,837.13
68	Supply of 20 Pair copper conductor size 0.63MM PIJF UG Cable as per RDSO Spec No.IRS TC 41/97 or latest	Km	16	₹ 1,61,442.76	₹ 25,83,084.19
69	Cable unarmoured PVC insulated, unseathed with plain annealed high conductivity 650V grade copper conductor as per colour coding scheme of Railways in 100 meter coils, confirming to RDSO Specification No: IRS-S-76/89 with latest amendment-				
a)	3 x 0.75 mm. (Red, Green & Black)	Coil (100M Each/per mtr)	400	₹ 1,792.73	₹ 7,17,090.52

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
b)	1 x 6 sq mm. (multistrand flexible wire)	KM	200	₹ 54,404.54	₹ 1,08,80,907.75
c)	1 x 10 sq mm. (multistrand flexible wire)	KM	160	₹ 1,06,910.81	₹ 1,71,05,729.14
70	PVC Insulated Railway Signalling Indoor Multi Core Cable as per IRS-S-76/89 (Amd.-3)				
a	60 Core x 0.6mm dia	Km	3	₹ 4,13,664.44	₹ 12,40,993.31
71	Supply of 2 Core 0.5 mm copper Jumper Wire	Mtrs	3400	₹ 5.47	₹ 18,591.88
72	Supply of S.B. Cable 0.5 mm dia	Mtrs	8000	₹ 101.94	₹ 8,15,521.19
K	Fire System				
73	Supply, Installation, Testing and commissioning of Automatic Fire Detection & Alarm System (AFDAS) for Signalling installations as per RDSO specification no. RDSO/SPN/217/2016 Version No. 1.0 or latest consisting of probe type bimetallic heat detector with base, UV & IR flame detectors with base, heat & smoke multisensor with base, aspirating type smoke detectors with base, linear heat sensing (LHS) cables, LHS interface module, CO2 Based Fire Extinguisher (Squeeze Grip Type) - 4.5 Kg, LHS cable end of line box with modular junction box, monitor module for LHS cable alarm input to fire panel, addressable hooter, fire alarm control panel with sufficient input ports for connecting various sensors/detectors along with their interfaces, if any, and shall have sufficient output ports for controlling fire extinguishing system, operating/switching off electrical units and having provision for remote monitoring network along with software, intelligent addressable Manual call points, audio visual alarm, fire survival circuit integrity cables etc. The AFDAS shall also consist of fire suppression system as per RDSO specification. The fire alarm panel should also consist of switched mode power supply system, battery backup and charger, display board which will have character display with touch key pad, RS-232/485 Networking Circuit, USB 2.0 Port, Programmable inputs, NAC's and Programmable relays, and loop card circuits, necessary software for display of fire alarm, necessary interconnecting cables etc. Power supply Board will have SMPS fully protected board, battery backup with built in charger as per RDSO specification. As per SECR's extant practice Automatic Fire Detection & Alarm System (AFDAS) to be installed at every station including central building and goomties.	Nos.	15	₹ 13,06,756.59	₹ 1,96,01,348.79
74	Supply of CO2 Based Fire Extinguisher (Squeeze Grip Type) - 4.5 Kg (Make: Ceasefire)	Nos	32	₹ 21,476.04	₹ 6,87,233.28
TELECOM					
L	IP-MPLS				
75	Supply of CWDM SFP+ -10Gbps-1x1nm (xx-47.49.....61)-40km-DDM-RoHs (suitable for the IP-MPLS network). Make Cisco, Eoptical or similar suitable for Neon	No	40	₹ 32,272.20	₹ 12,90,887.91
76	Supply of SFP Optical/Electrical 1 Gbps or 100/1000 Mbps support Electrical as required. Make: Cisco, Eoptical or similar suitable for Neon	No	50	₹ 4,517.86	₹ 2,25,893.13
77	Supply of (19" rack aggregator) Intelligent service aggregator device 2U/3U height /19 rack mountable NEON with two DC(48VDC) power supplies and two slot for main control and 6 slots for interface sub card, switching fabric speed of 120Gbps, unit to supports L2VPN/ L3VPN/MPLS-TP & IP MPLS, unit to capable to support 12x10Gbe, 48 Gbe, 96xE1, 24xSTM1 ports, support multiple routing function such as OSPF, ISIS, BGP & MP-BGP and support LDP and RSVP-TE to dynamically establish MPLS tunnels & PW service, unit consist of one number module of 10GE plus GE interface card providing 1 10GE SFP+ and 8 GE SFP Ethernet optical interface and one module TDMOP interface card providing 16E1 RJ45 balanced electrical interface or in lieu of TDMOP interface card 1 number module of 10GE plus GE interface card providing 1 10GE SFP+ and 8 GE SFP Ethernet optical interface module to be supplied, one main control card providing console interface and SNMP interface in the interface slot of sub card, unit to support dual main control card redundancy design supporting 1: 1 hot back up; unit to be capable to link up with TANSY; unit to work on single or dual core optical fiber 10Gbps and accordingly SFP to be provided of 40 Kms distance two numbers & unit to be capable to support CWDM 80Gbps single core module and 160 Gbps dual core in the unit to support existing SDH interface migration on to CWDM module make: Team Engineer/ NEON/LANTANA/NOKIA	No	10	₹ 7,18,977.30	₹ 71,89,772.95
78	Installation of the above item	No	10	₹ 1,14,230.86	₹ 11,42,308.60
79	Supply of TANSY hybrid multiservice device 1.5U Height & 19" rack mountable supporting STM1/4 interface, two SFP ports included for 1 Gbps optical fiber support: Four Gigabit Ethernet ports (Railnet); Eight E1 circuits for data: dual power supply, DC supported: Three empty slots to support FXO/FXS & E&M for auto phone and control phone (conference): Make: TANSY/NOKIA/LANTANA/CISCOWAVES or similar 910 STM 1/4 SFP module 10 Kms 902 numbers). (2) 10 Port FXS auto interface module. (01 no) suitable for TANSY (3) 4 Port E&M voice module (01 no) supporting control phone (conference facility) (4) 10 Port FXO module (01 no) suitable for TANSY all included.	No	10	₹ 7,17,835.58	₹ 71,78,355.77
80	Installation of the above item	No	10	₹ 1,12,147.92	₹ 11,21,479.20

10



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
81	Supply of 8 way CWDM module suitable for intelligent service aggregator device 2U height/ 19" rack mountable NEON; CWDM interface card providing 8 x 10 Gbps ports this ports can support the existing SDH network of STM 1/4/16 & 64 and also other networks as required, module will support 80 Gbps; this module will increase the present optical fiber capacity to 80 Gbps (8 x 10 Gbps) on the existing optical fiber. make: Team Engineer / NEON/LANTANA/NOKIA/ CISCO or better	No	20	₹ 80,912.74	₹ 16,18,254.74
M	STM & MUX				
82	Supply of SDH Add/Drop Mux (STM-1) as per TEC Specification No GR/SDH-04/04 January 2011 or latest amendment with L1.1 Optical Interface and as per technical requirement for OFC system equipped with 21 E1s (including engineering Order wire), expandable upto 63 E1s capacity, simply by addition of E1 cards, fully wired, cross connect granularity at VC-12, VC-3 & VC-4 levels, aggregate interface, with one Ethernet Interface card supporting minimum four 10/100 Base T Ethernet port, power unit, sub-racks, installation materials with all other accessories and technical manuals etc. The SDH equipment shall be TEC (TSEC)RDSO approved.	No.	10	₹ 2,17,794.15	₹ 21,77,941.55
83	Supply of managed expandable rack type STM-4, equipped STM- 1, ADM S1.1, as per technical Specification no. TEC GR NO. GR/SDH-10/02 March 05 (with latest amendment) with 2 Nos.STM-1 aggregate Optical interface upgradable to STM-4, 21 E1s, and minimum 8 Nos. of 10/100 base T Ethernet port, Order wise, Power supply unit, sub rack, DDF, Installation materials, manuals and other accessories. The equipment should be TEC/BSNL/RDSO approved. The equipment should be fully wired for its ultimate capacity and provide redundancy for Power supply and Synchronisation. It shall be possible to use the full capacity of the equipment by adding additional tributary cards. The upgradation of STM-1 to STM-4 shall be without change of any internal hardware of the STM equipment. The STM equipment shall have in-built L2 switch for Ethernet ports. It shall be compatible with existing Tejas make STM System and existing NMS in the section. Inspection by RDSO.	Nos	4	₹ 3,37,730.37	₹ 13,50,921.47
84	Supply of programmable Primary Digital Drop Insert Multiplexers with Digital conference facility as per technical specifications IRS:TC-68/2012 with latest amendments with other stipulations of tender document, fully wired for 30 channels complete with power supply unit, remote control supervision facility & all other accessories, technical manuals etc., The MUX shall be equipped with following Interface Cards: i) 4W-E&M Interface card (4 circuits per card) : 04 Nos. ii) Subscriber Interface Card (4 circuits per card) : 01 No iii) Exchange Loop Interface Card (4 circuits per card) : 01 No iv) G.703 64 kbps data If card (4 circuits per card) : 01 No v) Hot Line Interface card (4 circuits per card) : 01 Nos	No.	10	₹ 2,26,983.25	₹ 22,69,832.51
85	LI (O) Optical Card	No	3	₹ 74,180.85	₹ 2,22,542.54
86	E1 Branching Card	No	3	₹ 22,824.70	₹ 68,474.10
87	Supply of 19" 32 U covered Vero President / Rittel make or similar complete with all fitting for housing SDH equipment, Primary Digital Multiplexer, Digital Distribution Frame, Main distribution Frame using krone Module, Cooling Fan and other equipment like runaway ladder etc. completely wired and equipped with integration protection module for all channel with locking arrangement.	No	10	₹ 53,773.40	₹ 5,37,733.97
88	Supply of maintenance portable terminals including associated software (for STM) as per technical specifications complete with al accessories. It should be possible to plug in the maintenance portable terminal at any of the stations to be programmed for any network element from any location of network and read the full status of any element in the network from maintenance portable terminal.	No.	10	₹ 1,11,918.17	₹ 11,19,181.71
N	NMS for STM & MUX				
89	Supply of Network Management System for PD-Mux including associated application software (PC for NMS shall be used)	No	2	₹ 1,74,928.73	₹ 3,49,857.46
90	Supply of Network Management System for SDH including associated application software and hardware (CPU, monitor, keyboard only) (PC for NMS shall be used)	No	2	₹ 11,10,538.94	₹ 22,21,077.87
O	NMS for IP-MPLS				
91	Supply of Network Management System for IP-MPLS including associated application software and hardware (CPU, monitor, keyboard only) (PC for NMS shall be used)	No	1	₹ 11,10,538.94	₹ 11,10,538.94
P	Battery				
92	Supply of SMF-VRLA Battery set of rating 48V/200 AH recharged connectors consisting of 24 cells of 2V 200AH each as per RDSO SPEC No IRS:S93/96(A) Amdt 1 or latest if any. This includes supply of all necessary interconnecting cables , connectors and other essential Material like Topco Device 24v for monitoring.	Nos	10	₹ 1,31,972.51	₹ 13,19,725.11
93	Supply of SMPS based battery charger for telecom use of 230 V AC/48 V DC 25 Amps capacity. This shall be consisting of 3 modules of 12.5 Amp each in 2+1 configuration with automatic switching between the modules as per RDSO spec no RDSO/SPN/TL/23/99 (Ver-4) with latest amendment suitable for Batteries. This includes 1 sq mm copper wire in Red & Black colour for interconnecting charger to battery and equipment. This also includes surge lightening Class B, Class C & Class D protection arrangement along with other features including Annexure 1,2,3,4,5 given in RDSO spec no RDSO/SPN/TL/23/99 (Ver-4) with latest amendment	Nos	10	₹ 89,211.43	₹ 8,92,114.27

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
94	Supply of Surge Suppressor for all the 30 circuits derived from primary MUX's (Z protection) complete as per latest RDSO specifications. Make OBO/Phoenix/Finder/Webfil (or) similar	No.	10	₹ 44,674.74	₹ 4,46,747.41
95	Drawing & Design work	Is	10	₹ 16,467.54	₹ 1,64,675.41
Q	Control Communication				
96	Supply of control room equipment on 48 V DC, with three digit 7 segment LED display and way station calling facility upto 30 stations by pressing push button along with 20 local Telephone calling facility with microphone speaker and handset along with remote patching equipment, capacity as per RDSO specification No RDSO/SPN/TC/66/2007 with amendment 2, including latest amendment.	No	2	₹ 1,92,741.15	₹ 3,85,482.30
97	Supply of push button telephone pulse/tone switchable Telephone set with Redial, Mute, Pause, Flash Tone / Pulse Facility as per TEC Spec No GR/TEL-02/04 Sept 02 with Amendment 2 including latest amendment.	No	76	₹ 755.82	₹ 57,442.22
98	Supply of way station control equipment as per RDSO spec No IRS:TC:60/2007 with latest amendment with 4/2 wire Control Telephone as per Spec No IRS:TC:38/97 with Amendment No 1 including latest amendment with necessary mounting arrangement as decided by site engineer.	No	60	₹ 8,152.83	₹ 4,89,169.99
99	Supply of Power Supply unit (2 Amps) with 12V/7AH MF Battery as per RDSO Spec No IRS:72/97	No	20	₹ 5,560.79	₹ 1,11,215.83
100	Supply of loose tube pigtail with FC-SC/FC/FC/SC-SC connector at one end each of minimum 15 mtrs. length as per TEC Specn No. G/OFJ-01/03 JUN 99 (with latest amdt)	No.	55	₹ 1,977.79	₹ 1,08,778.23
R	VHF Communication				
101	Supply of Digital TDMA (2 slots) based Fixed/Mobile Radio, synthesized transceiver with display operating in 136-174 MHz frequency Band, 25 watt with F1st mic, Power cable, 160 channels comprising of Rugged body meeting IP 54 standard with Channel Announcement Features.	Nos	10	₹ 35,807.49	₹ 3,58,074.87
102	Supply of loose tube pigtail with FC-SC/FC/FC/SC-SC connector at one end each of minimum 15 mtrs. length as per TEC Specn No. G/OFJ-01/03 JUN 99 (with latest amdt)	Nos	70	₹ 1,977.79	₹ 1,38,445.02
103	Supply & Installation of Maintenance Free Lead Acid battery (VRLA) of 12 Volt DC, 100 AH (06 nos. cell of 2 Volt each) complete with fitting as RDSO specification no IRS/93/96.	Nos	10	₹ 8,008.44	₹ 80,084.38
104	Supply of VHF handheld synthesized Transceiver, handheld Radio operating in 136-174 frequency band, emergency feature, Internal VOX, Switchable RF power output 5W, DTMF keypad, name & tone tagging, 14 character display, clock and reminder alarm, receive signal strength and battery indicator, 128 programmable channel, 12.5/25 KHz channel spacing, heliflex antenna, Alpha numeric display, 1450 mAH Ni - mH Battery and single Unit Rapid rate Trichemestry battery charger with adapter for hand held Mobile radio.	Nos	56	₹ 76,649.08	₹ 42,92,348.52
105	Supply of single Unit Rapid Battery Charger and adapter for above.	Nos.	56	₹ 4,576.38	₹ 2,56,277.34
106	Supply of Spare Battery for above (handheld radio) Ni - mH battery with 1600 mAH capacity for VHF set above or similar.	Nos	54	₹ 1,562.62	₹ 84,381.64
107	Supply of frequency Programming kit with all accessories and necessary software and hardware required for programming.	Nos	10	₹ 4,235.94	₹ 42,359.38
108	Wiring Material for VHF	L.S	4	₹ 1,19,130.20	₹ 4,76,520.80
S	PA System				
109	Supply of fully redundant Control Console with all necessary accessories for feeding data with relevant Operating Software, cabling, UPS, Racks as per RDSO specification RDSO/SPN/TC/61/2007 (Rev 2.0) (latest amendments) for Integrated Passenger Information system	Nos.	10	₹ 3,44,864.63	₹ 34,48,646.32
110	Supply of DRIVING software for integrated for passenger information system as per RDSO specification RDSO/SPN/TC/61/2007 (Rev 2.0) (latest amendments) for item no 27. This includes supply and installation of software for announcement with necessary interface for announcement, voice recording, for making voice files as per RDSO specification. The software shall support all types display announcements i.e., Arrival Departure Train Information Display Boards, Coach Guidance Display Boards. At a glance Boards and standard slogans as advised by site engineer. 2 set CDs of DRIVING software to be also pleased.	Nos.	10	₹ 73,375.40	₹ 7,33,754.05
111	Supply of 240 Watt Audio Amplifier working on 230 V AC/ 24 V DC as per technical specifications.	Nos	10	₹ 26,123.13	₹ 2,61,231.27
112	Supply of Condenser table top microphone with flexible goose neck and on/off switch as per technical specification.	Nos	10	₹ 2,933.46	₹ 29,334.60

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
113	Supply of Unit Horn Speaker 25 Watt & 100 V Line with LMT taps of 25 Watt, 15 Watt, 10 Watt and 5 Watt (all fixing material shall be supplied by the contractor).	Nos	42	₹ 6,245.62	₹ 2,62,315.87
114	Supply of Unit Column Speaker 15 Watt & 100 V Line with LMT taps of 15 watt, 10 watt and 5 watt (all fixing material shall be supplied by the contractor).	Nos	13	₹ 3,145.12	₹ 40,886.53
115	Supply of 19" rack, 22 U Vero president / Rittel make or similar complete with all fitting for housing two amplifier, UPS and other audio equipment with cooling fan and other equipment like suitable electric point for connection of various equipment, completely wired and equipped with integrated protection module with locking arrangements.	Nos	9	₹ 37,001.18	₹ 3,33,010.66
T	GPS Clock				
116	Supply of GPS Synchronized Double face Digital Clock (RED color LED) for platform area with GPS synchronized to operate in stand-alone mode as per RDSO Specification no RDSO/SPN/TC/62/2008 Rev 3.0 (Latest amendments) (It is inclusive of GPS receiver and connecting RF cable).	Nos	24	₹ 66,849.49	₹ 16,04,387.65
117	Supply of GPS Synchronized Single sided Digital Clock (RED color LED) for platform area with GPS synchronized to operate in stand-alone mode as per RDSO Specification no RDSO/SPN/TC/62/2008 Rev 3.0 (Latest amendments) (It is inclusive of GPS receiver and connecting RF cable).	Nos	18	₹ 58,431.23	₹ 10,51,762.19
118	Supply of GPS Synchronized Single sided Digital Clock (RED color LED) for office area with GPS synchronized to operate in stand-alone mode as per RDSO Specification no RDSO/SPN/TC/62/2008 Rev 3.0 (Latest amendments) (It is inclusive of GPS receiver and connecting RF cable).	Nos	18	₹ 43,714.74	₹ 7,86,865.24
U	CCTV				
119	Supply of 4K UHD Fixed Box type camera complete with varifocal lenses and housing, mounting and all accessories	Nos.	60	₹ 51,356.15	₹ 30,81,368.86
120	Hardware for Network Video Recording. Video Management Software and Network Video Recording Software as per Specs	No	10	₹ 3,29,959.36	₹ 32,99,593.59
121	Supply of 8 port (manageable) with 2 nos.1000 baseX SM SFP port with optical module and 6 nos. Ethernet port Layer 2 POE switch with SFP module	Nos.	20	₹ 19,392.41	₹ 3,87,848.29
122	Media Converter for OFC	Nos.	20	₹ 21,136.02	₹ 4,22,720.31
123	Supply of one Table with one chair for CCTV	Set	10	₹ 18,472.56	₹ 1,84,725.62
124	Supply of Flexible PVC insulated 3-core x 1.5 sq. mm multi strand power cables provided for each of the display boards shall conform to specification no. IS: 694:1990 reaffirmed 1995 or latest	Mtr	25000	₹ 43.48	₹ 10,86,890.49
125	Supply of 6 Fiber Core armored single mode optic fiber cable	Mtr	3000	₹ 32.03	₹ 96,104.00
126	Supply of 12 Port OFC Termination rack mountable LIU. LIU should be provided for terminating the optic fiber cables	Nos.	20	₹ 4,658.76	₹ 93,175.12
127	Supply of Portable program Maintenance console for system monitoring	Set	10	₹ 33,666.15	₹ 3,36,661.47
V	Telecom Exchange				
128	Supply, installation, testing and commissioning of 512 Ports Digital/ISDN and IP ready EPABX System with Attendant Console as per RDSO Spec No SPN/TC/27/2007 Revision 1.0 or Latest, with fully equipped for 208 Analog DTMF Extension Ports 96 Digital Extension Ports 24 Co lines Ports 4-Wire E&M Cards for 16 Ports 32 Ports SIP IP Gateway that can be used as SIP Trunk or Subscriber. 6 Nos PRI Cards	System	1	₹ 10,42,538.21	₹ 10,42,538.21
129	Supply and installation of 600 pairs MDF along with IPM including wiring from Exchange to MDF	Set	1	₹ 1,08,272.25	₹ 1,08,272.25
130	Supply and installation of Digital Phone as per specification given in Para No 1.1.1 of Cheptor IV	No	10	₹ 8,780.19	₹ 87,801.87
131	Supply and installation of CLI Push button Telephone Betal or LG or Sony or Panasonic Make as per specification given in Para No 1.1.2 of Cheptor IV	No	50	₹ 1,345.99	₹ 67,299.63
W	Others				
132	Supply of OFC Joint Enclosure for straight through joint with modification for 24 fibre OFC as per TEC spec GR/OJC-02/02 SEP 2003 (with latest amendment) or latest	No.	120	₹ 40,389.50	₹ 48,46,740.07



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
133	Supply and installation of Universal thermoshrink jointing kit for derivation/ transformer joint for Jelly filled 6 quad cable conforming to RDSO Spec. no: IRS-TC-77/2006(Rev.1)(with latest amendment). VF Transformer shall be procured against separate item of Schedule A and issued to contractor for execution of work. This also includes excavation of cable joint pit of size 1.2m x 1.2m x 1.0m in all types of soil for jointing of copper cables, backfilling and ramming after jointing.	Nos	240	₹ 6,832.57	₹ 16,39,817.56
134	Supply of VF Tapping Transformer 1120:470 (rack mountable) as per specification no. IRS-TC-76/2000 amdt no. 1 (including latest Amendment).	Nos	20	₹ 1,811.29	₹ 36,225.70
135	Supply of one quad VF transformer assembly 2T for quad cable (470:1120) for derivation joints to specification No. IRS-TC-76/2000 (with latest amendments).	Nos	160	₹ 1,811.29	₹ 2,89,805.64
136	Supply of Emergency Socket box made of FRP material as per Spec. No. RDSO/SPN/TC/44/2002 Ver.2 (with latest amendment).	Nos	160	₹ 8,189.45	₹ 13,10,311.28
137	Supply of 6 pin Emergency Socket	Nos	160	₹ 474.07	₹ 75,851.45
138	Supply and fixing of 20 pair CT box(of Thermoplastic material complying with standards IEC 60670-1 & IEC 60670-22) and termination of cable.	Nos	72	₹ 6,404.60	₹ 4,61,131.27
139	Supply of PVC conduit pipe 25 mm as per ISI mark	Km	4.5	₹ 35,945.33	₹ 1,61,754.01
140	Supply of Flexi Pipe	Mtrs	4000	₹ 11.44	₹ 45,763.81
141	Supply, installation, testing and commissioning of 2 Mbps digital modem with Digital Interface E1.G703 working on 48V DC as per RDSO spect. No. RDSO/SPN/TC/80/2008 (Revision 0.0 or latest)	Pairs	20	₹ 44,579.19	₹ 8,91,583.74
X	For IBS				
142	Supply, installation wiring testing and commissioning of SPT at IBS location and adjacent stations. Each set shall comprise one no. of signal post telephone (SPT) master unit (which shall be installed on IBS posi) along with one no. of slave unit being installed in SM'S office (both master and slave unit must work on 24V DC and must be suitable for 25KVAC RE area). Note: The contractor shall ensure that there is no interference in communication between the master and slave units owing to power hump due to RE induction. Cable from IB signal unit to the cable termination board in SM'S room/relay room. It shall work on OFC or quad cable & it shall be ensured by contractor before supply of the items. Telephone shall be ACES make or similar.	Set	7	₹ 33,050.45	₹ 2,31,353.18
143	Supply and installation of OFC integrated access device 1U height of 15U 19" height rack mountable for LVCD/Digital Axle counter purpose, optical module integrated in the unit supporting dual core OFC and 100 Mbps ethernet port for surveillance/smoke detector, optical distance support distance to be Rikins, unit to support 1 E&M card supporting four 2w/4w, each port configurable to support axle counter/ UFSBV/Cortal phone IECIRTU and one TELNEUSNMP part unit to support Dc/Ac power supply, unit to support changeover mechanism between Quad and optical fiber for E&M interface options, one no, cable to be provided along with E&M FA810/2CX/OFC/IDC and module 2w/4w four port. Make : TEAM ENGG/FABIO or equivalent.	Nos	7	₹ 2,40,723.76	₹ 16,85,066.32
Y	OFC Tools				
144	Supply and installation of Fibre distribution management system including accessories complete as per RDSO specification No. RDSO/SPN/TC/037-2000(Rev 2) suitable for termination of two nos 24 fibre OFC at repeater station/ cable hut (wall mountable) and splicing of fibre with pig tail cable as per specification. This includes end to end testing of all fibres of OFC cable(All items required for execution of work shall be supplied by the contractor.)	Nos	45	₹ 45,131.49	₹ 20,30,917.14
145	Supply of Optical domain reflectometer (OTDR)	Nos	2	₹ 3,61,896.04	₹ 7,23,792.09
146	Supply of Automatic fusion splicing machine fully automatic RTC microprocessor controlled (Arc fusion type) with automatic selection of fusion current and warm image processing with video display, heat oven, fiber cleaver, stripping tool, battery backup, sufficient no. of splice protection sleeves and isopropyl alcohol to be used for splicing as per TEC spec. no. G/ OSM-01/02 May99 with latest amendments, if any.	Nos	1	₹ 7,34,142.91	₹ 7,34,142.91
147	Supply of Krone Tool Original make Dlink or Sennheiser	No.	6	₹ 1,491.46	₹ 8,948.73
148	Supply of LAN extender as per Specification CR/ SPN/ TC/ 80 /2015	Pairs	20	₹ 15,976.14	₹ 3,19,522.83

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
149	Integrated Electronic Cable route tracer/locator with high power transmitter for effective long distance locating. 04 active locating frequency (512.8KHz, 33KHz, 133KHz) depth range upto 09mtrs. . Passive power frequency, current and resistance measurement in both transmitter and receiver, Super induction mode, with capability of electronic marker locating (both passive and RFID) and sheath fault locating in a single equipment. Weight less than 2.5Kgs for transmitter as well as receiver. Signal Current measurement in cable as per technical specification no.TEC/GR/TX/TIE-07/02, March- 2014.	Nos	2	₹ 6,26,854.26	₹ 12,53,708.53
Z	Weighbridge				
150	Supply and installation of In-motion weigh bridge at Loading Line NOTE: The contractor shall successfully install, test, calibrate, stamp & commission the EIMWB procured under this contract at the said locations by IRCON/CERL/SECR representatives. The contractor shall supply the materials & do the works as mentioned below: (i) Supply & installation of EIMWB as per RDSO specification no. WD-29-Misc-19 (Rev.1) or latest. This shall consist of: a. Weighment Rails with load cells b. Track Switches/sensors for speed and wagon type detection c. Control console with electronic cards for reading track switch logic and receiving signals from load cells for further processing d. A personal computer & printer directly linked to control console for operation, viewing and printing output. e. A computer table with 2 chairs of Godrej make or superior for commercial staff operators f. Air Conditioner of 1.5ton capacity, split type, 5 star with stabilizer of at least 4KVA, 10Amps capacity. g. An Inverter with battery bank of 2KVA capacity. h. All Earthing arrangements shall be made at contractor's own cost as per the RDSO specifications & instructions of the engineer at site. i. Class-A protection with earthing arrangements shall be provided at contractor's own cost. j. A signal post & hooter for over speed detections. The foundation for the signal post shall be casted according to the OEM requirement & instructions of engineer at site. (ii) The contractor shall coordinate and bear all the charges to call authorized representative from Weights & measurement Department of Legal Metrology of the C.G. state Govt. for stamping. (iii) The contractor shall arrange all the facilities & coordinate with SECR officials, Legal Metrology officials at the time calibration and stamping. (iv) Any other required work as per the instruction of engineer at site shall be carried out at contractors own cost.	Nos.	2	₹ 25,10,584.81	₹ 50,21,169.62
AA	FOIS Connectivity				
151	Router in accordance to TEC/IR/IT/TCP-001/05.MAR.2014 or compatible for FOIS connectivity				
a)	4 port router	Nos	4	₹ 66,715.64	₹ 2,66,862.57
152	2 mbps modem in according to tec specification no. IR/DCA -18/04 oct 2005	Pair	4	₹ 36,757.76	₹ 1,47,031.03
153	Optical Switch loaded with 2 nos SFP modules along with 24 nos ethernet port	Nos	4	₹ 50,036.73	₹ 2,00,146.93
154	UPS 1 KVA with 2 hours backup	Nos	2	₹ 50,034.23	₹ 1,00,068.45
155	CAT-6 Cable	Mtr	600	₹ 33.14	₹ 19,882.61
156	Casing capping	Mtr	300	₹ 64.15	₹ 19,244.36
157	M/F Earthing	Nos	4	₹ 9,622.45	₹ 38,489.78
158	RJ 45 connector	Nos	50	₹ 16.47	₹ 823.71
159	SPDs	Nos	4	₹ 7,138.57	₹ 28,554.27



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
160	Installation,testing,commssioning of FOIS system (all the above mentioned materials) Note: a) No extra cost will be paid if any extra material is required for the FOIS connectivity and satisfactory functionality. b) The works shall be carried out with the coordination of SECR, IRCON & CEWRL. c) The agency has submitted the block diagram of the equipments used for FOIS connectivity. d) The agency has to submit all required "As-built" documents & drawings, compliances for the conditions. e)This also include the Electrical work (Including 2 racks, switch boards,wires busbars & accessories etc.)	Station	2	₹ 1,02,639.46	₹ 2,05,278.91
AB	Furniture & AC				
161	Supply of Office Chair model no CH-7	Nos	80	₹ 5,539.85	₹ 4,43,187.78
162	Supply of Table Godrej model no. T-101	Nos	50	₹ 22,272.69	₹ 11,13,634.51
163	Supply of Steel Almirah Full size (61/2') Godrej model Storewel plain	Nos	50	₹ 36,428.87	₹ 18,21,443.61
164	Supply of Steel Almirah Half size (41/2') Godrej model Storewel minor plain	Nos	16	₹ 31,529.05	₹ 5,04,464.82
165	Supply of Airy Revolving and tilting Chair model no. CH-1014	Nos	24	₹ 6,240.09	₹ 1,49,762.04
166	Supply of Godrej Steel slotted rack (2mm thick) with six adjustable shelves, minimum size height 1800mm x width 900mm x depth 450 mm	Nos	24	₹ 13,907.69	₹ 3,33,784.47
167	Supply of Godrej stool model no. ST-2	Nos	100	₹ 2,278.20	₹ 2,27,820.29
168	Supply & installation of air conditioners (Capacity:1.5 Ton, Split type, 5 Star) with stabilizer of at least 4KVA, 10 Amps capacity for relay room.	Nos	137	₹ 87,268.83	₹ 1,19,55,829.64
169	Study of the existing EI/PI system at Kusmunda and Kusmunda Block cabin. Submission of new design for KBS East Panel and KBS Block Cabin as per SIP issued to you. The contractor shall deploy OEM/ any authorised engineer to study and understand the existing system and changes needed.This includes supply of the 4 sets of report on the detailed study of the existing system & changes/ modifications/ alterations to be done for double line according to SIP. This also includes the complete details of existing crucial material and details of extra materials required for successful commissioning of the station as per SECR standards in accordance to latest guidelines issued by RDSO. 1) The contractor shall also prepare & submit 4 sets of the TSAA (Technical System Application Approval) documents as per RDSO guidelines (this includes coordination with IRCON & SECR till final approval). 2) The contractor shall coordinate with IRCON/SECR till the commissioning of the station and shall be ready to comply any design changes/alterations/ modifications proposed time to time according to latest RDSO guidelines. 3) Preparation of & Submission of 'as planned' and 'as made' documents for EI. It includes but not limited to: a) Equivalent Circuit Application logic b) Interface circuits and wiring diagram. c) Selection table/Route Control Chart. d) Video Display Diagram. 4) Writing of application logic and FAT for KBS and block cabin. 5) Supply of all the required materials for the changes/ alterations/ modifications & for interfacing with other indoor equipment in cluding power supply arrangement which are related EI according to the submit design documents. The contractor shall give a break up for all the materials supplied along with their rates. The contract shall supply all the required materials for succesful commissioning of the station according to approved SIP. After installation and commissioning according to the updated SIP the bill list shall have atleast 20%				
a	Kusmunda East Panel and Kusmunda Block Cabin	Stns	1	₹ 97,64,508.06	₹ 97,64,508.06
170	Alteration and Modification of Control cum indication panel, as per the attached SIP of inplant yard, Domino type with LED indications to RDSO spec. IRS: S36/87. Size of panel suitable to suit the SIP and size of each domino shall be 54mm.X34mm. All the dominos shall be prewired with tag block. Panel diagram shall be got approved from consutant before manufacturing of the Panel. This item includes 25% spare panel LEDs,all types of dominos and button assemblies complete, panel rests, front and side tables to accomodate telephones, block instruments etc.	No.	1	₹ 8,73,654.56	₹ 8,73,654.56
171	Preparation/Revision and supply of station working rule (SWR) and SWR diagram as per Rly practice. The item includes supply of four sets of drawing and writeup for approval. Contractor will supply completion SWR and SWR diagram and two CDs after final commissioning of the station.	Set	4	₹ 3,660.92	₹ 14,643.69
172	Relay, point contactor unit, Non-AC Immune, plug-In type, 24V DC and capable of controlling Electric point machine operating on 110V DC conforming to IRS:S 46, IRS:S 34 & IRS:S 23 (as applicable). The unit shall consist of N/R relay (Double wound DC neutral line relay), XR relay (DC Neutral relay), W(N)/R/W (R) R - mechanically interlocked relay & WCR (Heavy duty contactor relay with 16 Ampere breaking capacity). All the above relays shall be mounted on pre-wired base plate.	Nos	4	₹ 23,437.84	₹ 93,751.38

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
173	Relay Rack assembly complete with fixtures for mounting point group relays/'Q' style relays in Relay or El Hut with all accessories like scaffolding, ladder, runway for indoor cables/wires alongwith mounting arrangement as per drg. No. RITES/SIG/GEN/006A-07.	Nos	4	₹ 19,186.20	₹ 76,744.81
174	Relay 'Q' series neutral line, AC Immune, plug-in type, Style 'QNA1'. DC Neutral line, 24V, 8F/8B contacts, front and back contacts metal to carbon with plug board, retaining clip & connectors conforming to BRS:931A, IRS:S 60, IRS:S 34 & IRS:S 23 with latest amendment (as applicable). The interlocking code for this unit shall be ABDFH.	Nos	150	₹ 3,527.98	₹ 5,29,197.30
175	Relay, Non-AC immune, plug-in type, Style 'QN1'. DC Neutral line, 24V, 8F.8B contacts, front and back contacts metal to carbon with plug board, retaining clip & connectors conforming to BRS:930, IRS:S 34 & IRS:S 23 (as applicable). The interlocking code for this unit shall be ABCDF.	Nos	80	₹ 4,537.39	₹ 3,62,991.22
176	Relay, Non-AC immune, plug-in type, Style 'QN1'. DC Neutral line, 24V, 12F.4B contacts, front and back contacts metal to carbon with plug board, retaining clip & connectors conforming to BRS:930, IRS:S 34 & IRS:S 23 (as applicable). The interlocking code for this unit shall be ABCDE.	Nos	80	₹ 4,537.39	₹ 3,62,991.22
177	Relay, AC Immune, plug-in type, Style 'QSPA1'. Neutral line, slow to pickup, 24V DC, 8F.4B contacts, front and back contacts metal to carbon, complete with plug board, retaining clip & connectors conforming to BRS:933A, IRS:S 60, IRS:S 34 & IRS:S 23. The interlocking code for this unit shall be ABDEJ.	Nos	20	₹ 8,604.50	₹ 1,72,090.03
178	Relay, AC Immune, plug-in type, Style 'QNA1K', Neutral line, 24V DC 1000 ohms 6F.6B contacts, front and back contacts metal to carbon with plug board, retaining clip & connectors conforming to BRS:931A, IRS:S 60, IRS:S 34 & IRS:S 23 & RDSO Spec. no. STS/E/Relay/UEA(PI). The interlocking code for this unit shall be CDEKY.	Nos	12	₹ 4,115.15	₹ 49,381.82
179	Relay Rack for 'Q' Series Relay. The relay racks must be powder coated of stone grey colour.	Nos.	4	₹ 10,626.40	₹ 42,505.60
180	Composite Relay Rack with sunmica top for fixing C.T. etc. TW. Board for fixing terminal strips etc. The relay racks must be powder coated of stone grey colour.	Nos.	1	₹ 11,768.34	₹ 11,768.34
181	Non-deteriorating type low voltage electric fuse for Railway signalling, rated voltage 240 V AC/DC fuse with cylindrical cap without indication size :14x 51 mm. Spec. no: IRS-S-78/92 with latest amendment if any.			₹ 0.00	₹ 0.00
a	2 Amp	Nos.	200	₹ 131.05	₹ 26,210.81
b	4/6 Amp	Nos.	200	₹ 131.05	₹ 26,210.81
c	16amp.	Nos.	200	₹ 131.05	₹ 26,210.81
182	Fuse block made of PBT as per Specn.No. IRS-S-75/2006(Rev.2) and Drg.No. SA-23748	Nos.	200	₹ 151.45	₹ 30,290.18
183	Provision of simulation arrangement(Track and Point simulation board as well as signal lamp simulation board) and its complete wiring ; arrangement of free home, advance starters, IBS etc as may be required with block working with required temporary relay wiring for controlling the train movement in NI - period with the provision of temporary miniature operation cum indication panel board; deputation of fitter round the clock in NI - period for assisting simulation testing for all the routes as per approved RCC by the Railway officials ; mobilization of additional man power for attending to the Pre - NI block and commissioning of the station within prescribed time limit of NI - period as decided by Railway officials; deputation of staff (one fitter & one helper) at the station for attending to the packing and realignment of point and crossing etc, in connection with P. Way block for a period of 30 days beyond the commissioning date.				
a	Station more than 6 lines	Nos.	1	₹ 4,12,949.89	₹ 4,12,949.89
184	Supply of Single section Digital Axle counter as per RDSO specification no. RDSO/SPN/177/2012(Ver- 3) or latest, Phase Reversal Type, consisting of the following:-	Set	2	₹ 7,81,816.00	₹ 15,63,632.00
	(a) High frequency Tx coil & Rx coil=1 set. including mounting accessories, fastening parts, protective tube etc.(Each set consisting of Web mounting type 2 nos. Tx and 2 nos. Rx coil with 10m cable) (b) Track side digital axle counter unit =2 Nos. (c) Vital Relay box-2 nos. duly wired with following relays: (i) Vital Relay QN1K, 24V, 6F-6B-1 no. (ii) PR relay QN1K, 24 V., 6F-6B-1 no. (d) Clamp with deflector plates and hardware etc =4 Sets. (e) Reset box = 2 Nos. (f) Surge voltage protection device box(SV-121)=2 Nos. or inbuilt equivalent device for effecting surge protection.				
185	Tool Kit for single section digital axle counters as as under	Set	1	₹ 2,48,159.48	₹ 2,48,159.48
a	Pure sine wave Digital Multimeter: Kusa m-MECO make model no. 859 CF or similar- 1 No.(one)				
b	Train simulator high frequency (TTS267P) SSDAC- 1 No.(one)				
c	Extender card no. 557				
d	Dummy wheel -1 No.(one)				
e	Spanner:- (a)Ring spanner 17-19, 24-26 one each (b) Open end spanner: 17-19,24-26-one each (c)Socket spanner with handle- one no.				
f	screw driver no.-902- one no.				
g	screw drive no.-935- one no				
h	Marking jig for drilling -1 no.				
i	Torque wrench- one no.				
j	Dummy load to check power supply(resistive)- one no.				

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
k	Data Analyzer for downloading data from event logger- 1 no. make Dell Inspiron 15 5559(Y566509HIN9) model or similar, having configuration:- (a) 6th generation intel core i5-6200U processor, clock speed- 2.3 GHz (b) Memory – 8GB, DDR3 RAM. (c) Operating system- Windows 10 , 64-bit. (d) HDD capacity- 1 TB SATA 5400 RPM speed (e) Display size -15.6 inch LED(1366 X 768) pixel resolution, (f) Antivirus - 12 month subscription, (g) USB 2.0 Slot – 2, USB 3.0 Slot – 1, HDMI-1 (h) Battery- 4 Cell Li-ion battery, (i) warranty- 1 Yr, Retail Supplied Accessories- Leather carry Bag.				
186	Cable unarmoured PVC insulated, unseathed with plain annealed high conductivity 650V grade copper conductor as per colour coding scheme of Railways in 100 meter coils, conforming to RDSO Specification No: IRS-S-76/89 with latest amendment-				
a	16 x 0.2 mm.(Grey)	Coil (100M. Each)	100	₹ 770.69	₹ 77,069.29
b	3 x 0.75 mm. (Red, Green & Black)	Coil (100M. Each)	100	₹ 1,792.73	₹ 1,79,272.63
187	Supply of power wire(copper multistrand)PVC insulated UNSHEATHED SINGLE CORE BRIGHT ANNEALED BARE copper conductor flexible cable for voltage grade Upto 1100V conforming to IS 2465/1984 & IS:694/1990 or latest				
a	Size 10.0 Sq mm	KM	1	₹ 1,06,910.81	₹ 1,06,910.81
b	Size 6.0sq mm	KM	1	₹ 54,404.54	₹ 54,404.54
AC	DC Track circuit				
188	Supply of QTA2 Track Relay , 9 ohms, 2F/1B along with plug board, retaining clip and connectors conforming to BRS-938A, BRS-966, IRS-S-34,IRS-S-23,	Nos,	7	₹ 4,831.07	₹ 33,817.51
189	Supply of 110V/2-6V DC, 10A, track feed battery chargers for charging of lead acid cells of 40/80AH used in track circuit as per RDSO spec no, S-89/2013 Ver, 1.0 or latest,	Nos.	7	₹ 2,678.61	₹ 18,750.30
190	Supply of Adjustable Track feed Resistance disc type 30 ohm as per RDSO Drg no, SA~ 20166 M (adv.) with latest amendments (with Phenolic moulded base).	Nos.	14	₹ 1,492.37	₹ 20,893.20
191	Supply of Low Maintenance Lead Acid Stationary Secondary Cells 2V, 80AH for S&T Installations as per RDSO spec no. IRS: S-88/2004 or latest with micro porous vent plugs cum sealed floats, with inter cell connectors, nuts, bolts and washers for signalling purpose.	Nos.	21	₹ 3,922.26	₹ 82,367.41
192	Supply of B-type Choke as per RDSO spec. no. IRS:S-65/83 or latest.	Nos.	14	₹ 4,257.08	₹ 59,599.18
193	Channel bond pin single groove. tinned or zinc coated 7mm dia.as per RDSO Specn. No.IRS:S-17/75 with Amendment 1. for bonding track circuit wires.	No.	1500	₹ 4.57	₹ 6,852.82
194	G.I.Bond wire soft 8 SWG for bonding resistance -132 ohm/Km. at 27 deg.C to IS-279.	Kg.	30	₹ 180.97	₹ 5,429.12
195	Supply of FRP Track lead Junction Box as per standard SECR rdsO drawing no. Sa 20101/m and rdsO specification no. RdsO/spn/151/1997 with pbt terminals.	Nos	50	₹ 1,664.70	₹ 83,235.14
196	Supply and installation of MAINTENANCE FREE EARTHING AND BONDING SYSTEM (Two Earth Pit) as per specification RDSO/SPN/197/2008 latest no: or RDSO specificationconsisting of (a) Earth electrodes made of high tensile low carbon steel circular rods copper on outer surface as per RDSO spn2 no. (b) RDSO approved Earth Enhancing compound (c) (MEEB) Main equipotential earth busbar of Copper of 300x25x6 mm(Min) and (SEEB) Sub equipotential earth busbar of copper 150x25x6 mm(Min) (d) Multistrand single core PVC insulated copper. cable as per IS:694 (1) of size 10 sqmm to connect individual equipment to SEEB using copper lugs with stainless steel nuts and bolts, (ii) of size 16 sqmm to connect SEEB to MEEB using copper lugs with stainless steel nut and bolts (iii) of size 16sqmm to connect Surge protection devices(SPD) to MEEB using copper lugs with stainless steel nut and bolts (iv) of size 35 sqmm(duplicated) to connect MEEB to main earth electrode (e) Copper tape of size 25x2mm to connect the two earth pits. (1) Earhpits x 150 mm to terminate on earth electrode, (g) Construction of earthpit and making of earth as per RDSO specification no.RDSO/SPN/197/2008 or latest RDSO	Set	5	₹ 43,262.85	₹ 2,16,314.26
197	Alterations to wiring of Electronic Interlocking system as per modifications done for the approved SIP. Note: Testing and commissioning of EI system at a station as a whole includes outdoor gears. All Engineers, Artisan Staff and labours required for testing and commissioning of EI with MACLS work shall be provided by contractor for indoor and outdoor work. Testing equipment such as simulation panel, signal and point operation simulation arrangement, multimeter etc. shall be provided by contractor at his own cost. Testing shall be carried out by contractor in presence of engineer-in-charge up to his satisfaction and necessary alterations shall be done. Testing & commissioning of overall circuits & ground gears, signals & commissioning of approved interlocking arrangements.	Stn	1	₹ 5,39,360.11	₹ 5,39,360.11



BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
198	Installation, wiring, testing & commissioning of complete indoor EI system and other associated equipment as supplied in item-1 of Schedule -A. It shall consist of the following but not limited to: 1. Grouting, cutting of floors, walls etc. refilling of same, re plastering, required CC/ masonry works. 2. Termination of indoor cables on disconnecting terminals on Din rail, painting / lettering on Equipment Rack, Relay Rack/Termination Rack . 3. Fixing of racks PBT terminals Disconnect Type/Wago terminals, ND Fuses, Bus Bars, Eyelets, hylam strips of required thickness (12mm, ISI mark) as per length required at site etc. 4. Fixing of VDU, all types of Relays, Wiring and testing as per wiring diagram. 5. Installation, wiring & testing of Relay Rack/Equipment Rack/CT Rack. 6. Testing of earthing arrangement as per latest RDSO guidelines / Technical Advisory Note.	Strn	1	₹ 17,09,643.76	₹ 17,09,643.76
199	Re-configuration of Datalogger system for SIP and altered signalling system according to SIP. This includes modification in software and alteration in wiring. This also includes supply of all materials such as wire coils, terminals etc. NOTE: Data Logger will be installed, wired, tested and commissioned by OEM's engineer as per guidelines issued by RDSO. The Pre-commissioning checklist issued by RDSO for Data Logger System will be prepared by OEM's engineer and signed jointly with Employer's Site Engineer. Before commissioning of Data Logger, OEM will submit Site Installation Certificate to Employer by mentioning that Data Logger has been installed, wired, tested and commissioned by approved vendor of RDSO (i.e., by OEM). Modification in Programming of Datalogger to be done by Contactor.	Nos.	1	₹ 2,48,212.92	₹ 2,48,212.92
200	Re-configuration of existing IPS system to suit the given SIP for new S&T gears. This includes supply of all required modules, multi strand copper cables of different sizes i.e., 10sq.mm/16sq.mm/ 4sq.mm of black & red color with all petty materials such as connectors, terminals, fuses, fuse blocks, copper strips etc. Note: IPS will be installed, wired, tested and commissioned by OEM's engineer as per guidelines issued by RDSO. The Pre-commissioning checklist issued by RDSO for IPS System will be prepared by OEM's engineer and signed jointly with Employer's Site Engineer.	Nos.	1	₹ 98,134.95	₹ 98,134.95
201	Installation, Testing and Commissioning of Single section Digital Axle counter.	Set	2	₹ 57,415.40	₹ 1,14,830.80
202	Installation of DC track circuits covering points zones also. The item includes provision of doubled continuity GI wire bonds on rail joints after drilling bond-hole of 7.0/7.2 mm dia., skimming of fish plate, insertion of insulated block joint if required, fixing of FRP type TLJB with angle iron for track feed/jumper/track relays ends of track circuits and also for fixing jumper cables as per approved Track circuit plan, making rail connections through suitable insulated sleeves from TLJB at TF, jumper & TR end with GI wire, rail clips for fixing bond wire on the TLJB as per standard practice, termination of tail cables on TLJB terminals/fuse block/HRC fuse, fixing & wiring of track feed charger, resistance, track relay, battery etc in Apparatus case as per standard practice. TF/TR wiring shall be fixed on the suitable arrangement on PRC sleepers with the help of Hooks. Hooks shall be provided on PRC sleepers with the help of suitable steel bracket. This item also includes fixing & supply of channel pins, Hooks etc. The item includes supply of terminals, angle iron, GI wire and rail clips, bracket, insulation material, insulated track lead wire etc.	Nos	7	₹ 10,896.22	₹ 76,273.56
203	Erection, wiring, testing & commissioning of Position Light Shunt Signal complete (Dependent type) including Post, Surface base, Signal unit, and supply & fixing of No plates. This work also includes termination of tail cable on Shunt Signal Units and wiring with Contractor's own material, fixing of LED, Signal Unit etc.	Nos	7	₹ 8,216.45	₹ 57,515.15
204	Provision of signal screen when they fall within two meter from live conductor by expanding metal size 20mm x 60mm (strand 3.25 mm wide and 1.6 mm wide thick) as per instruction at site by engineer incharge. This includes supply of all material including earth electrode and earthing arrangement	Nos	4	₹ 15,449.87	₹ 61,799.47
205	Modification of the already erected signals for by fixing extra LEDs, dependent shunts and route indicator as per requirement, wiring, testing & commissioning of Signal complete including supply & fixing of No plates. This work also includes insertion of cables into the post & termination of tail cable on Signal Units and wiring with Contractor's own material, fixing of LED, Signal Unit etc. the work shall be done as per instruction of Site Engineers.	Nos	10	₹ 2,869.94	₹ 28,699.45
206	Dismantling of Existing signals by cutting the foundation till the ground level and safely returning the materials such as signal post, FRP units and its associated parts, ladders, LED's, padlocks, anchor bolts, terminals etc. to IRCON/contractor stores or any other place as decided by engineer at site without any damage. This also includes cleaning of the ground after dismantling the signals.	Nos	5	₹ 15,210.71	₹ 76,053.53
207	Dismantling of Existing shunt signals by cutting the foundation till the ground level and safely returning the materials such as signal post, FRP units and its associated parts, ladders, LED's, padlocks, anchor bolts, terminals etc. to IRCON/contractor stores or any other place as decided by engineer at site without any damage. This also includes cleaning of the ground after dismantling the signals.	Nos	1	₹ 7,174.86	₹ 7,174.86

BOQ S.N.	Description of item	Unit	Total Qty	Rate (excluding GST)	Amount
208	Modification of Existing DC track circuits as per site requirements. The item includes provision of doubled continuity GI wire bonds on rail joints after drilling bond-hole of 7.0/7.2 mm dia., skimming of fish plate, insertion of insulated block joint if required, fixing of FRP type TLJB with angle iron for track feed/jumper/track relays ends of track circuits and also for fixing jumper cables as per approved Track circuit plan, making rail connections through suitable insulated sleeves from TLJB at TF, jumper & TR end with GI wire, rail clips for fixing bond wire on the TLJB as per standard practice, termination of tail cables on TLJB terminals/fuse block/HRC fuse	Nos	4	₹ 8,896.83	₹ 35,587.31
AD	LC-Gate				
209	Electrically operated lifting barrier complete as per RDSO SPN no. 208/2012 Ver-2 with latest Amendment, operating voltage 110V AC, without hand generator, length of the boom is 10 mtrs.				
	Note:- Spare shall also be supplied as per RDSO specifications (rates for them are included above).				
a	Station section	No	5	₹ 5,18,099.77	₹ 25,90,498.84
210	Control panel for LC gate complete with indication diagram switches and push button.				
a	Station section	No	5	₹ 14,712.72	₹ 73,563.60
211	Supply of solid state electronic flasher 110AC/24V DC operated.				
a	Station section	Set	5	₹ 4,224.85	₹ 21,124.26
212	Supply of dual tone warning bell with 20W horn and 16W amplifier with operating voltage 110VAC/24V DC				
a	Station section	Set	5	₹ 8,449.69	₹ 42,248.45
213	2 way ground lever frame.				
a	Station section	No.	5	₹ 41,703.95	₹ 2,08,519.77
214	Sliding boom type LC gate				
a	Station section	Set	5	₹ 1,53,838.05	₹ 7,69,190.24
215	MINI SMPS based Integrated Power Supply as per RDSO Specification No.RDSO/SPN/165/2012 (Ver 3.0) with latest amendment & as per technical specification alongwith VRLA Battery Bank of 200AH Confirming to RDSO Spec. No. IRS:S93/96(A) Amndt.-1 or latest. Note: contractor shall get approval for size and module from Engineer In charge for each gate.				
a	Station section	No.	5	₹ 10,86,908.73	₹ 54,34,543.65
216	Supply, installation, wiring and commissioning of Remote terminal unit with 64 digital & 16 analog inputs with modem of LC Gates as per RDSO spec. no - IRS-S- 99/2006 or latest.				
a	Station section	No.	5	₹ 1,29,889.26	₹ 6,49,446.28
223	Installation, Testing & commissioning of Power operated Lifting Barrier complete as per instruction of Engineer at site. It includes RCC foundation for pedestal, fixing of boom supports, warning bells, hooters, flashers etc, both lifting barrier along with boom locking arrangements, sliding boom barrier. The item includes wiring of road signals, LED lamps and installation & wiring of the road signals as per site requirements. Any other material required for installation and commissioning of lifting barrier will be supplied by the contractor. Note: this includes Painting of particulars at gate lodge	Set	5	₹ 1,22,872.44	₹ 6,14,362.22
224	Excavation & casting of foundation for stop post.	each	5	₹ 1,715.86	₹ 8,579.31
225	Fixation of ground lever frame	each	5	₹ 4,751.35	₹ 23,756.73
Total of Schedule A =					₹ 1,28,01,37,379.86
GST @18 %					₹ 23,04,24,728.37
Total					₹ 1,51,05,62,108.23



SCHEDULE-B - INSTALLATION					
BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
SCHEDULE - B (INSTALLATION)					
Signalling					
A	Electronic Interlocking				
1	Successfully completion of Factory Acceptance Test for EI (FAT) according to approved SIP following all latest RDSO guidelines.	Station	11	₹ 6,07,975.28	₹ 66,87,728.09
2	Provision of services during NI (Non Interlocking) works. This includes provision of 4 vehicles round the clock, food packets for working staff for each shift, staying arrangements for all the officers, refreshments etc. These services shall be provided during the whole NI period of Stations.	Station	11	₹ 1,70,775.54	₹ 18,78,530.96
3	Successfully completion of SAT (Site Acceptance test) for EI of station according to approved SIP following all latest RDSO guidelines. This includes preparation of Simulation board at site with contractors own materials such as switches, cables, fuses, bulbs, sockets, plywood as per standards of SECR/instructions of site engineer. This also includes preparation of free home circuit & its implementation during NI.	Station	12	₹ 6,73,115.15	₹ 80,77,381.78
4	Installation, wiring, testing & commissioning of complete indoor EI system and other associated equipment as supplied in item-1 of Schedule -A. It shall consists of the following but not limited to: 1. Grouting, cutting of floors, walls etc. refilling of same, re plastering, required CC/ masonry works. 2. Termination of indoor cables on disconnecting terminals on Din rail, painting / lettering on Equipment Rack, Relay Rack/Termination Rack. 3. Fixing of racks PBT terminals Disconnect Type/Wago terminals, ND Fuses, Bus Bars, Eyelets, hylam strips of required thickness (12mm, ISI mark) as per length required at site etc. 4. Fixing of VDU, all types of Relays, Wiring and testing as per wiring diagram. 5. Installation, wiring & testing of Relay Rack/Equipment Rack/CT Rack. 6. Testing of earthing arrangement as per latest RDSO guidelines / Technical Advisory Note.				
i)	Sendurgarh With Kudri IBH	System	1	₹ 12,91,827.61	₹ 12,91,827.61
ii)	Puti pakhana with IBH (Dumdum)	System	1	₹ 12,91,827.61	₹ 12,91,827.61
iii)	Bhadi with Jhabar IBH	System	1	₹ 12,91,827.61	₹ 12,91,827.61
iv)	Surakachhar	System	1	₹ 12,91,827.61	₹ 12,91,827.61
V	Block Cabin	System	1	₹ 12,91,827.61	₹ 12,91,827.61
VI	Katghora Road	System	1	₹ 12,91,827.61	₹ 12,91,827.61
VII	Bhingra with IBS Podi Gosian	System	1	₹ 12,91,827.61	₹ 12,91,827.61
VIII	Matin with IBS Katori nagoi	System	1	₹ 12,91,827.61	₹ 12,91,827.61
IX	Putwa With IBS Katori Nagoi	System	1	₹ 12,91,827.61	₹ 12,91,827.61
X	Dhangawan with IBH	System	1	₹ 12,91,827.61	₹ 12,91,827.61
	NOTE : 1. The quoted rate includes the rate for Complete work including installation of software and hardware etc. 2. For testing and commissioning of EI system at a station, Contractor shall depute sufficient staff to execute outdoor work during commissioning to complete the testing work within stipulated time. Testing equipment such as simulation panel, signal and point operation simulation arrangement, multimeter etc. shall be provided by contractor at his own cost. Testing of overall circuits, outdoor gears & all works for commissioning of approved interlocking arrangements shall be done by contractor in presence of engineer-in-charge up to his satisfaction, including alterations, if any. 3. All installation & wiring material shall be supplied by contractor & sourced from RDSO approved sources, wherever applicable. 4. Pre-commissioning check list for EI, signed jointly by OEM and IRCON representative, have to be submitted alongwith OEM Certificate as per RDSO guidelines.				
5	Training Consisting of training of Railway Personnel for EI system. This also includes supply of Hard and soft copies of course materials.	Man days	200	₹ 3,556.21	₹ 7,11,242.38
6	Preparation & Submission of 'as planned' and 'as made' documents for EI, including but not limited to: 1. Equivalent Circuit Application logic 2. Interface circuits. 3. Selection table/Route Control Chart. 4. Video Display Diagram. It should be done as per extant practice of Railway. The documents shall be supplied as per technical specification of tender document. Note: This also includes arrangement of design at division/HQ as and where required during approvals drawings should be issued by license holder (IRSTELO)	Set	10	₹ 2,54,852.56	₹ 25,48,525.64

BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
7	Preparation & Submission of 'as planned' and 'as built' of following documents : 1. Cable route plan, 2. Cable core chart, 3. Power supply arrangement, 4. Circuit route termination chart, 5. Cable termination chart in relay room and Apparatus cases, 6. Apparatus Cases wiring plan, 7. Cable Insulation chart, 8. Earth resistant chart, 9. Track circuit Test Card, 10. Signal Lamp/LED Register, 11. Battery History Card, 12. Fuse Analysis chart, 13. Equipment disposition plan, 14. Polarity Chart (track insulation plan), 15. Terminal & contact analysis plans, 16. Track Bonding Plan, 17. Station Working Rule, 18. Station Working Rule Diagram (SWRD) with board and obtaining approval of Competent Authority as per Technical Specification of tender document. The circuits shall be designed by the contractor to suit 25KV RE. Note: It should be done as per extent practice of SECR.	Station	17	₹ 1,44,303.11	₹ 24,53,152.89
	Note: Only two sheets of circuits shall be placed in one polythene cover each (with all the documents in thick plastic folder.) shall be submitted to the Rlys in case there are no further alteration suggested by the Rlys. Contractor shall issue that each sheet has a block for signature of Rly. official as well block for signature of firm. Name of work should also be written on each page. Note:- The contractor shall arrange for designing of route section plan, panel diagram, selection table, etc. based on approved interlocking plan handed over to him by Rlys.				
8	Termination and meggering of cable cores on terminals at Cable Termination Rack . This includes all associated works of pulling out the cable from under ground, peeling off insulation, dressing of cable core supported on sting rod with contractors own material. e.	Nos.	45000	₹ 19.85	₹ 8,93,150.27
B	Earthing				
9	Supply, Installation, testing & commissioning of Ring Earth for EI system which includes supply of all components of earthing & bonding system like earth electrode, earth enhancement material, earth pit, equipotential earth bus bar, connecting cables and tape/strips and other associated accessories in accordance with RDSO Specification No. RDSO/SPN/197/2008 or latest consisting minimum 08 Nos. of earth pits connected in a ring to achieve less than 1 Ohms earth resistance for connecting EI equipment, relay racks, panel, power equipment as per Signal Engineering Practice. Diagram of ring earth should be supplied to IRCON for approval before execution. All related materials as recommended by RDSO in Specn. No. RDSO/197/2008 or latest, will be supplied by contractor. All connecting wires (like power cables etc) shall be supplied by the contractor. NOTE: 1- Earthing arrangement for EI must be as per latest RDSO guidelines issued by Rly bd. vide letter No. 2008/Sig/G/2 RDSO dt 21.06.2011 & technical advisory note(TAN) & OEM's requirement. 2- One Set of Ring Earth shall consist of minimum 08 Earth Rods along with all associated materials, such as materials for Equipment bonding, Main Equipment Bus Bar, Sub Equipment Bus Bar, interconnection of these Bus Bars to various equipment, welding materials etc. This also includes supply of copper cable/strip required for interconnections & connecting of equipment for equipotential bonding. This includes shielding of Relay Room with copper strip.	Sets	29	₹ 2,20,446.28	₹ 63,92,941.98
10	Supply & Installation of Active lightning Arrestor system of Class-A type with latest amendment consisting of the following:-	Set	29	₹ 2,81,291.83	₹ 81,57,463.21
i)	Lightning Rod(Air terminal) with Non- Electronic early streamer Emission(ESE) System, standardised according to norms NFC 17-102, made of AISI 316 SS and EPOXY resin, guarantee if electrical continuity and operation after lightning strike, in any atmospheric conditions,				
ii)	Adaptor head mast made of brass with holes provided to terminate the down conductor and the lightning rod(Air Terminal) with one inch brass bolt and nut washer, 3/4 inch allen screw with 107mm length.- 1 Nos.				
iii)	Lightning Event Counter to log the lightning strikes which occur within external lightning protection system tested for a minimum intensity of 1 KVA of 8/20 and 10/350 microseconds wave form and maximum intensity of 100KVA of 10/350 microseconds waveform.- 1 Nos.				
iv)	Mast for holding the air terminal(5 mtrs) made of SS pipe with mast holding clamps 3 inch anger fastener bolt, 1.5 inch bolt, nut, double washer, to be erected on a suitable foundation.- 1 Nos.				
v)	Mounting Accessories to mount the down conductor, wooden screws, U clamps, wooden plugs and metal screws.- 1 Nos.				
vi)	70 sq mm IS, 1.1KV grade single core multistrand PVC insulated copper cable as down conductor.- 25mtrs				
vii)	Test joint with enclosure PS 2518-11-1m, 25X3(6 inch) copper tape, round insulator, 1/2 inch bolt with washer, 70 sq mm copper ring lug, 1 inch SS bolt, nut washer, M 32 IP 68 gland.- 1 Nos.				
viii)	Maintenance free earthing with 16 mm dia, 3 M length copper coated steel rod UL approved and 30 Kgs of Earth enhancing mineral compound PRO-CEM(approved by RDSO), Chamber(1.5ft X 1.5ft) brick work, 1 inch PVC pipe, flexible hose.- 2 Nos.				
ix)	Insulated Cadmium bronze cable of 3/16" to RDSO specn. RDSO/SPN/178/2003 to connect equipotential bus bar in Relay Room(Equipment Room) - 40mtrs				
11	Installation, testing and commissioning of 8-12 Channel Earth Leakage Detector.	Nos.	34	₹ 21,676.33	₹ 7,36,995.12
12	Supply and installation of Maintenance free earth as per RDSO specification no. RDSO/SPN/197/2008 consisting of single earth pit which includes supply of 35 mm2 multistrand single core PVC insulated copper cable as per IS 694 for connecting main earth electrode to MEEB in the equipment room in duplicate as per manufacturer's recommendations and as per RDSO specifications as follows: a) Copper bonded steel electrode of 3 meters long, 17mm diameter with copper bonding thickness of minimum 250 microns and UL listed and marked : 1 Nos.b) Earth enhancement compound of RDSO approved brand supplied in sealed bag of minimum 10 KG : 3 Nos.c) Copper strip of 150mm x 25mm x 6mm to terminate earth rod: 1 Nos.d) Copper strip of 300mm x 25mm x 6mm (MEEB): 1 No.e) Copper strip of 150mm x 25mm x 6mm (SEEB): 1 No.f) Digging/Auguring/Boring of Single earth pit of 100 mm to 125 mm dia to the depth of approximate 2.8 Meter.g) Insertion of 3 Meter Electrode & penetrating it at least 0.2 Mtr. by pushing gently with sledge hammer where the neutral soil is assumed.h) All connecting wires (like power cables etc) shall be supplied by the contractor.	Set	134	₹ 69,397.20	₹ 92,99,224.99
13	Supply of Normal Earth Electrode for earthing of S&T installation with all the associated assembly/materials as per standard railway practice conforming to drawing no. TCA 565 as mentioned in the technical specifications.	Nos	1030	₹ 5,832.05	₹ 60,07,009.47

BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
14	Installation, Wiring & Testing of Conventional Earth Electrode assembly including earth wire connected through GI wire 8 SWG supported on M.S. flat of size 40mm X 6mm to earth electrode for outdoor signalling equipments . The earth value should not be more than 10 Ohm including lead wire. The value to be measured in presence of Engineer. It should be documented & painted on earth enclosure made of concrete.	Nos.	1030	₹ 684.52	₹ 7,05,053.42
C	Data Logger				
15	Installation, wiring, testing and commissioning of Data Logger as per spec. IRS: S-99/2006 with Amdt-2 or latest, including but not limited to the following: 1. Supply and loading of diagnostic software for failure analysis . 2. Interface wiring between Relay Rack to Datalogger for all the digital & Analog inputs as per standard Railway practice. 3. Relay Room Door locking checking arrangement, commercial power supply monitoring arrangement & DG Sets, 4. Interlinking & Networking of Datalogger with adjoining stations and IBSSs. 5. Modification to Software & Hardware, if required, and networking with other Data Loggers along with fault logic design at Control Centre. 6. Training as per Railway Practice. 7. Software programming of Datalogger to enable Preventive maintenance of S&T assets, 8. Failure analysis, GUI of Yard Layout, extract of report in common language, accident analysis as per RDSO Guideline. 9. All installation & wiring material including supply of Relay Room Door locking checking arrangement shall be supplied by contractor & shall be procured from RDSO approved sources, wherever applicable.	Nos.	29	₹ 68,526.33	₹ 19,87,263.66
	NOTE: Data Logger will be installed, wired, tested and commissioned by OEM's engineer as per RDSO guidelines. RDSO pre-commissioning checklist for Data Logger System will be prepared by OEM's engineer and signed jointly with Employer's Site Engineer. Before commissioning of Data Logger, OEM will submit Site Installation Certificate to Employer by mentioning that Data Logger has been installed, wired tested and commissioned by RDSO approved vendor (i.e., by OEM). Modification in Programming of Datalogger at associated stations to be done by Contactor.				
D	Power Supply				
16	Installation, Wiring, Testing & commissioning of SMPS Based Integrated Power Supply System as per RDSO Specification No. RDSO/SPN/165/2023 (Ver. 4.0) or latest with latest amendments.) and as per Distributed Structure indicated in Block Diagram enclosed in Tender Document. Any masonry work, if required, will be carried out by contractor's own material. The contractor will provide fitting of exhaust fan in IPS room & Battery Room including hole on wall (if not available), wire mesh and flap cover to protect the room against dust.All wiring will be done by using flexible multi strand copper wires of suitable size as recommended by RDSO in IPS's pre commissioning checklist. This includes extending various power supplies (by connecting power cables etc) up to bus bars in relay room and up to battery room. IPS should be connected to Ring earth of EI. This also includes supply of all types of wires/distribution Board required for interconnection from IPS to Relay rack, CT Rack etc. as per RDSO guidelines/Railway practice. Part of the IPS systems for Distributed EI shall be installed in North and South Goomties, and Central Signal Equipment RoomNote:- IPS will be installed, wired, tested and commissioned by OEM's engineer as per guidelines issued by RDSO. The pre commissioning checklist issued by RDSO for IPS will be prepared by OEM's engineer and signed jointly with Site engineer. Before commissioning of IPS, OEM will submit Site Installation Certificate by mentioning that IPS has been installed, wired, tested and commissioned by approved vendor of RDSO, i.e by OEM.	Nos.	29	₹ 2,46,870.94	₹ 71,59,257.23
	Note:- IPS will be installed, wired, tested and commissioned by OEM's engineer as per guidelines issued by RDSO. The pre commissioning checklist issued by RDSO for IPS will be prepared by OEM's engineer and signed jointly with Site engineer. Before commissioning of IPS, OEM will submit Site installation Certificate by mentioning that IPS has been installed, wired, tested and commissioned by approved vendor of RDSO, i.e by OEM.				
E	Block Working				
17	Installation, wiring, testing and commissioning of UFSBI (Universal fail Safe Block Interface). This item also includes installation, wiring, testing and commissioning of suitable Media change Over System with Modem for UFSBI. Note: Installation, testing & commissioning of UFSBI shall be done by RDSO approved equipment manufacturer and Pre-commissioning check list should be signed jointly by representative of OEM's & Engineer at site as per guidelines issued by RDSO.	Pair	2	₹ 1,25,123.04	₹ 2,50,246.09
18	Installation, Wiring & testing of Double Line block instruments. The work involves supply of wiring material and wiring right from telecom DP to block Panel and Block Panel to relay room and connection with power supply including fuse wiring. This also includes installation, wiring & testing of Block Bell units and Block Filter units supplied under BOQ schedule A.	Nos	22	₹ 10,427.91	₹ 2,29,413.94
F	Signals				
19	Casting of Main Signal foundation as per Drg No IRCON/S&T/SF/01 with contractor's own materials including cement and anchor bolts of standard size. The required scaffolding Forma etc for casting of foundation will have to be brought by the contractor at his own cost.	Nos.	286	₹ 20,973.03	₹ 59,98,287.87
20	Erection, wiring, testing & commissioning of 2-Aspect Color Light Signal complete including Post, Surface Base, Signal Unit, Off-set Bracket, front and back staging, Ladder and Guards, signal name plates and A/AG/C/P/G marker board etc., supply of Handcuff locks, termination of tail cable, fixing of LED Signal Unit, Signal wiring, supply & fixing of Signal No. plates, blanking of ladder (0.6mm MS sheet) if any, with contractors own brackets and fixing materials.This also includes erection of auxiliary signals like calling on, shunt signal if any. Wooden white cross-arms (1000x100 mm) to be provided by the contractor till the signals are commissioned with contractor's own material. Contractor's own flexible single core copper wire 2.5 sq.mm (50/0.25) conforming to IS-694:1990 (as per aspect colour) and lugs etc. will be used for this work.This includes insertion of tail cables from ground to signal unit. The work shall be done as per instruction of Rly engineer at site.	Nos.	119	₹ 15,155.49	₹ 18,03,503.19
21	Erection, wiring, testing & commissioning of 3 Aspect Color Light Signal complete including Post, Surface Base, Signal Unit, Off-set Bracket, front and back staging, Ladder and Guards, signal name plates and A/AG/C/P/G marker board etc., supply of handcuff lockes, termination of tail cable , fixing of LED Signal Unit, Signal wiring, supply & fixing of Signal No. plates, blanking of ladder (0.6mm MS sheet) if any with contractors own brackets and fixing materials.This also includes erection of auxiliary signals like calling on, shunt signal if any. Wooden white cross-arms (1000x100 mm) to be provided by the contractor till the signals are commissioned with contractor's own material. Flexible Single core copper wire 2.5 sq.mm (50/0.25) conforming to IS-694:1990 (as per aspect colour) and lugs etc. will be supplied by the contractor.This includes insertion of tail cables from ground to signal unit.	Nos.	159	₹ 15,376.11	₹ 24,44,801.96

BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
22	Installation of signal posts for Multiple Aspect Colour Light Signals complete with signal units, bases, LED unit, fixing and wiring of current transformers of LED units, ladders & other fittings, excavation of pit, casting of cement concrete foundations with necessary water outlets, erection and fixing of complete fittings of the signal/signal post with necessary earthed screen protection arrangement, including drawing of cable through signal posts, termination of cables, wiring, focussing, testing and commissioning, as per SECR practice, two coat painting and lettering, supply and fixing of speed boards if required for the following:-				
a	4 Aspect	Nos	6	₹ 6,318.57	₹ 37,911.41
26	Casting of Shunt Signal foundation as per Rly practice with contractor's own materials including cement. The required scaffolding Ferma etc for casting of foundation will have to be brought by the contractor at his own cost. This also includes necessary excavation, plastering etc.	Nos.	78	₹ 10,116.70	₹ 7,89,102.27
27	Erection, wiring, testing & commissioning of Position Light Shunt Signal complete (Independent Type) with Surface Base, Post, Signal Unit and supply and fixing of No. plates. This work also includes supply of handcuff locks, termination of tail cable on Shunt Signal units and wiring with contractor's own material, fixing of LED Signal Unit etc. The work shall be done as per instruction of Site Engineer. Flexible Single core copper wire 2.5 sq.mm (50/0.25) conforming to IS-694:1990 copper wire as per Rly. Standard and lugs etc. will be supplied by the contractor. This includes insertion of tail cables from ground to signal unit. The work shall be done as per instruction of Rly engineer at site.	Nos.	78	₹ 9,139.88	₹ 7,12,910.43
28	Supply and installation of Calling on board/ Goods Warning Board/ Caution Board/ Stop Board/ Block Section Limit Board (BSLB)/ Shunting Limit Board/ change of Signalling territory board etc as per Drg no. Dy CSTE /C/BPL/003. All the above said boards will be supplied, in sizes and dimensions as mentioned in Signal Engineering Manual & GR with luminous strips yellow as well as black. This includes burying of post atleast 1.2 mtrs and concreting of size 0.5 mtr x 0.5 mtr with cement concrete in the ratio 1:3:6. All material will be supplied by the contractor.	Nos.	125.00	₹ 13,333.20	₹ 16,66,649.94
27	Supply and fixing of 'P', 'C' etc marker disk on signals conforming to RDSO Drg no. SA-23456 as per standard practice with contractor's complete material including fixing of clamps.	Nos.	100	₹ 1,092.12	₹ 1,09,211.75
	Note: The above signal items includes supply and installation of petty materials for fixing, clamping & mounting arrangement including wiring material (different sorts of wires etc).				
28	Installation, wiring, testing and commissioning of Calling On Signal Complete.	Nos.	25	₹ 8,330.78	₹ 2,08,269.53
29	Installation, wiring, testing and commissioning of Junction Type Route Indicator.	Nos.	53	₹ 9,735.81	₹ 5,15,998.04
F	Point Machine				
30	Installation, Wiring, Testing & Commissioning of Point Machines including wiring of point JB, fixing of GI Pipe, Ground Connections and other work related to functioning of Point Machine. The work shall be done as per practice of Rly.	Nos.	162	₹ 27,819.75	₹ 45,06,800.10
G	Track Vacancy Detection System				
31	Installation, wiring, testing and commissioning of Multi Section Digital Axle Counter - Central Evaluator Units for stations and block sections including its associated indoor equipments and wiring of same to integrate with existing EI. Note:- Installation to be done by OEM/Authorized Representative of OEM & pre commissioning check list should be duly signed by OEM / Representative of OEM & Ircon's representative.	No.	54	₹ 35,246.81	₹ 19,03,327.76
32	Installation of track device including crossing of axle counter in foundation track crossing, laying of antiodent, antioxidant and nonflammable propagating type DWG pipe as per IS-14930 part-I or II or latest and all other accessories as per site requirements for installations and commissioning of Transmitter, Receiver and track side Electronics including foundation and earthing as per OEM's guidelines and specifications (All material required for installation of equipment to be supplied by firm).	No.	878	₹ 24,878.92	₹ 2,18,43,692.97
H	Location Boxes				
33	Excavation, casting, concreting, curing and plastering (above ground level) of Apparatus case foundation as per practice of Rly, and erection with contractors own Metal Sheet frame, cement, anchor bolts with nuts & washers and other materials. The items also include additional earth work if required as per instruction of Rly. Engineer at site for :-				
a)	Full Location Box as per Drg No JBP/S&T/C/084	Nos.	520	₹ 12,206.51	₹ 63,47,387.13
b)	Half Location Box as per Drg No JBP/S&T/C/085	Nos.	195	₹ 9,380.64	₹ 18,29,225.15
	Note: The above item includes supply and installation of petty material for fixing, clamping & mounting arrangement.				
34	Fabrication and fixing of Hylam sheet in location box with all fixtures as per Rly drawings, including fixing of PVC coated string rods at the back side for cable support with contractor's own material. This includes including fixing of PVC coated string rods at the back side for cable support with contractor's own materials. Lasing and dressing of cables/wires terminated with contractors own supply of lasing thread. The work shall be done as per instructions of Engineer Incharge.				
a)	Full Location Box	Nos.	540	₹ 3,829.88	₹ 20,68,133.39



BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
b)	Half Location Box	Nos.	215	₹ 3,457.12	₹ 7,43,281.53
35	Fixing of ARA /WAGO/Disconnect type Terminals and fuse blocks with provision of holes on hylem sheets and fixing by galvanised nuts & bolts. This includes provision of two additional holes on the hylam board on either side for cable conductor entry. The work shall be done as per Engg. at site.	Nos.	94400	₹ 20.85	₹ 19,68,565.34
36	Termination, Meggering & Testing of cable cores on Disconnect Type Terminals / ARA / Fuse Blocks in the Apparatus cases. This includes all associated works of pulling out the cable from underground. The work shall be done as per Instruction of Engineer.	Nos.	54400	₹ 24.85	₹ 13,52,023.88
	Note: The above item includes supply and installation of petty materials for fixing, clamping & mounting arrangement including different sorts of wires and wiring material.				
I	Trenching & Laying Works				
37	Digging of cable pit (minimum inside size of 2m x 2m x 1m) and construction of brick wall in the pit, width of the wall shall not be less than 200mm as per instructions given by engineer in charge. It includes supply and filling of sand before and after coiling of cables, covering top of the cable pit by stones and brick masonry work for sides and thereafter plastering.	Nos.	70	₹ 20,035.89	₹ 14,02,512.34
38	Cutting of all types of Roads/Platforms/Concrete preparatory to trenching and excavation to depth of 1m & 300mm wide approx. and refilling after laying of DWC pipe & to restore them to original condition. The work shall be done as per existant practice of West Central Railway & Instruction of Engineer.	Mtr	3500	₹ 602.07	₹ 21,07,260.14
39	Excavation of trench 1m deep and 300 mm wide across the track for Track crossing & refilling. The work shall be done as per existant practice of WVC Railway & Instruction of Engineer.	Mtr	15000	₹ 194.50	₹ 29,17,429.56
40	Preparation of cable Duct 150mm wideX300mm deep for laying of cable in rocky area and refilling the duct (after cable laying) with concrete mixture of proportion 1:3:6 and grouting ends at either side of the rocky portion using concrete mixture with contractor's own materials and excavated earth to its original condition.	Mtr	30000	₹ 770.43	₹ 2,31,13,024.01
41	Supply and fixing of perforated GI pipes of diameter given below for entry of cable on girder bridges, RCC bridges, drains, culverts, rocky places, tunnels/ dep cuttings or at places as advised by the engineer in charge of the work.				
a)	100 mm dia	Mtr	18780	₹ 1,934.65	₹ 3,63,32,765.81
42	Supply and placing of second class bricks in excavated trenches within station limit/ station area. The contractor shall arrange to place the bricks flat and position them breadthwise so that an average eight to nine bricks shall be laid.	Nos.	1000000	₹ 20.85	₹ 2,08,53,446.43
43	Laying of Signalling/Power/Telecom Cables of various cores in trench and meggering of main and tail cables.	km	1319	₹ 8,756.14	₹ 1,15,49,355.24
44	Laying of Double Walled Corrugated Pipe length 6 meter, 120 & 200mm outer dia , with couplers as per specification no. BSEN 50086-2-4 for under ground power/communication /signal cable protection and used for track/pucca road/ Platform crossing/ level crossing gate etc.	Mtr.	12000	₹ 186.85	₹ 22,42,158.94
45	Trenching in all type of soil (normal soil, hard soil and black cotton soil) and refilling of trenches for 1 meter depth and 300mm width.	km	250	₹ 1,22,692.10	₹ 3,06,73,023.93
46	Alteration/Shifting/ Modifications in the existing location boxes, fixing of equipments, cable insertion, termination, wiring, testing & commissioning, two coat painting, lettering to suit the circuits as per approved wiring diagrams. This includes filling with sand and plastering the same.	Nos	180	₹ 8,280.52	₹ 14,90,493.68
47	Transportation of cables in roll with or without wooden drums to work site and meggering before loading and after laying, and recording the values in cable insulation register along with representative if required.	Drums/Rolls	1250	₹ 15,147.90	₹ 1,89,34,873.70
48	Supply and laying of NP2 RCC pipe of 150 mm dia to spec. no. IS-458, 2 meter in length, at places under track and road. Level crossing gate. platforms near FP for protection of OFC & Quad or OFC or 6 Quad cable/PIJF cable to be laid.	Mtr	8150	₹ 859.39	₹ 70,04,027.46
49	Trenching upto depth of 1200mm with 300 mm wide base at bottom of trench including clearing of roots bushes etc in all types of soil (Normal, hard, black cotton, morrum, soft rock, hard soil mixed with boulders) and backfilling after laying of HDPE pipe/OFC cable and 6 quad/PIJF cable etc. at 1200 mm & 1000 mm depth respectively as per approved Drg. Ramming and consolidation of soil in trenches as well as disposal of extra soil if any.	km	270	₹ 1,49,676.46	₹ 4,04,12,644.48
50	Execution of trenchless horizontal boring(HDD) work using machine (boring size upto 125mm) upto a depth of minimum 1 m from the ground level at location, as per direction of engineer in charge. This includes supply & laying of DWC HDPE pipe as per specification no. IS 14930 part II or latest of 120mm Outer dia/103.5mm inner dia). This includes all accessories and tools required to do the trenchless horizontal boring	Mtr	8350	₹ 3,050.26	₹ 2,54,69,688.78
51	Physical tracing and opening/locating of existing working cables by precession digging for diversion of cables in connection with cable clearance for engineering earth work without interfering the circuits as per the advice of Railway site engineer.	Mtr	80000	₹ 264.09	₹ 2,11,27,214.38
52	Laying of HDPE duct in the trenches and in the protective works already provided including in HDD portion and supply pulling of Nylon rope through it at different places as per direction of engineer in charge or site engineer.	Km	345	₹ 13,544.72	₹ 46,72,929.58
53	Blowing/drawing of OFC cable in the HDPE pipe duct and in protective works already provided. This includes transportation, loading/unloading of OFC from the stores to the work site with care, sealing of the duct by sealing/caps plugs. This also includes testing of cable drums in the store premises before transportation and submissions of results thereof. The cable drums with unused cable at site to be returned by the contractor from site to stores depot.	Km	345	₹ 12,503.95	₹ 43,13,862.53
54	Supply and placing of warning tape Orange colour of 100 mm wide printed in black as "CAUTION RLY OFC CABLE" at every 1 meter interval (minimum) and to be laid in the trench in station area and as directed by the site engineer.	Km	345	₹ 12,883.63	₹ 44,44,853.60
55	Cutting the masonry wall to the depth of 0.25 M to 0.75 M at the entry of room placing of flexible HDPE Pipe or GI Pipe (including supply) of suitable size as per instructions of site incharge and repairing of masonry wall and cement plastering after the cable is taken inside the flexible HDPE pipe/GI Pipe with clamps as per drawing no. RE/S&T/ALD/SK/161/81.	Nos	140	₹ 880.24	₹ 1,23,234.06
56	Masonry chase cutting 3/2" x 3/2" at the work site, transport of 5/10/20/50 pair indoor, PVC switch board cable from the stores to the work site and drawal of same in HDPE/ flexible HDPE pipe of suitable dia placed on the chase and covering /replastering the chase with cement after drawal of cable. HDPE / flexible HDPE pipe of suitable dia to be supplied by the contractor.	Mtr	2000	₹ 313.20	₹ 6,26,393.24

BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
57	Fixing of concrete cable route marker at 50 meter(approx) and at diversion point including supply & transportation of cable route marker at site. Detail size & fixing of cable route marker should be followed as per drawing of SECR. Marker should be written as "RLY SIG CABLE/ TELE CABLE" both sides	Nos	7500	₹ 821.76	₹ 61,63,173.85
58	Videography of trenching & cable laying of OFC and 6 quad cable in the through out section and supply 6 set soft copy CD/DVD/Memory disk.	1 job	8	₹ 40,186.35	₹ 3,21,490.82
59	Cleaning, scraping, Painting & lettering of all newly installed and existing gears by the contractor including supply of all materials for the work by contractor. IBS or Medium Station 4/5/6/7/8/9 lines	LS	16	₹ 54,887.08	₹ 8,78,193.22
J	Surveying				
60	Location survey of cable route plan (Quad/OFC cable) and preparation of tentative and final cable route plan, termination plan, jointing schedule, taping chart etc as per approved format to be submitted for approval of Railway/Employer. Contractor will submit two copies of prints with soft copy to checking by Railway/Employer. If alterations are suggested by Railways/Employer, then again two copies of prints will be provided for advance approval after carrying out all the alterations as suggested/proposed by Railways/Employer. Tracing will be provided to approval by Railway/Employer. All drawings will be prepared in AutoCAD. It also includes preparation and submission of final cable route plan on 75 micron standard polyester film which includes details of entire station in which quad/OFC cables are laid indicating clearly the exact position of the cables, joints and other critical items with reference to fixed structures, etc. It will be as per RDSO code of practice for installation and commissioning of OFC & 6 quad cable system. Once Railway/Employer has approved and signed tracings for cable route plan then contractor will submit 06(Six) sets of hard bound copies on white bond paper of maximum A-3 size(well documented and bound with plastic covers) for cable route plan in proper binding form along with 2 CDs/Memory disk in autocad of latest version.	km	362	₹ 2,176.26	₹ 7,87,806.76
K	Telecom				
61	Installation of DTMF/way side Telephone in all stations, SP, SSP, and TSS. This includes supply and fixing of DP, PVC Channel, Telephone bracket and laying/termination of switch board cable. (This included supply of all materials of execution of work such as PVC casing & capping, fixing materials for 10/20 pair indoor PVC cable, wiring & masonry works except control room HQ equipment which will be procured through item in supply schedule)	No	10	₹ 1,321.43	₹ 13,214.30
62	Installation, wiring, testing and commissioning of Public address system.	Nos	10	₹ 2,41,582.58	₹ 24,15,825.77
63	Installation and commissioning Chargers for the complete CCTV System alongwith required consumables.	Job	4	₹ 43,574.01	₹ 1,74,296.05
64	Installation, wiring, testing & commissioning of control room HQ equipment for controller's use operated on 12V DC. (This includes supply of all materials for execution of work such as PVC casing & capping, fixing materials for 10/20 pair indoor PVC cable, wiring & masonry works except control room HQ equipment which will be procured through item in supply schedule.)	Nos	2	₹ 1,705.85	₹ 3,411.69
65	Installation, wiring, testing & commissioning of emergency control room equipment operated on 12V DC. (This includes supply of all materials for execution of work such as PVC casing & capping, fixing materials for 10/20 pair indoor PVC cable, wiring & masonry works except emergency control room equipment which will be procured through item in supply schedule.)	Nos	10	₹ 1,705.85	₹ 17,058.46
66	Installation, wiring, testing and commissioning of Digital clock with GPS synchronisation.	Lot	9	₹ 1,12,070.42	₹ 10,08,633.80
67	Wiring of VHF material	LS	6	₹ 2,68,917.29	₹ 16,13,503.77
68	Installation, wiring, testing and commissioning of Battery charger in TER. This also includes grouting on the floor.	No.	12	₹ 1,797.85	₹ 21,574.18
69	Installation, wiring, testing and commissioning of VHF System.	Lot	10	₹ 2,21,848.00	₹ 22,18,479.99
70	Installation, wiring, testing and commissioning of Primary digital drop insert Multiplexer, SDH add/Drop Multiplexers(main stream) with all accessories and power supply connection, surge and lightning protection arrangement, racks including indoor Krone box, ladder etc. in cable hut including wiring of all the equipments upto Krone/CT Box of outdoor quad/ derivation cables.	No.	10	₹ 27,522.36	₹ 2,75,223.55



BOQ S.N.	Description of Item	Unit	Total Qty	Rate (Excluding GST)	Amount
71	Installation, wiring, testing & commissioning of way side equipments on the rack per station.(This includes supply of all materials for execution of work such as PVC casing & capping, fixing materials for 10/20 pair indoor PVC cable, wiring & masonry works except way side equipment which will be procured through item in supply schedule).	No.	10	₹ 3,664.51	₹ 36,645.13
72	Supply of cable termination panel fitted with two nos of 32 way U link feed panel along U links complete and mounting arrangements.	No.	10	₹ 52,631.51	₹ 5,26,315.13
73	Transportation, installation of optical fibre joint enclosure and splicing of Optical fibre cable (24 fibres) and testing, Optical fibre cable splicing shall be done in the presence of representative. All other tools/ test equipments required shall be arranged by the contractor. This also includes excavation of earth for construction of masonry pit of bricks(inside complete plastered), the inner size of pit 1.2m x 1.2m (depth 0.75m) in all types of soils for keeping cable coil sat the location of OFC joints, filling the pit with sand after jointing of cables, ramming and covering with RCC slab.	Nos	180	₹ 26,325.55	₹ 47,38,599.40
74	Fabrication of EC socket box assembly and erection of fabricated assembly at the location indicated in the route chart and as per direction of engineer in charge. This includes cutting of rails, to required size, supply and welding of GI pipe and base plate, fixing of EC socket box, transportation of material to site, digging of pit and erection of whole assembly at site. The work also includes the fixing of EC socket in the EC socket box and termination of 6 Quad/PIJF derivation cable on the strips of 6 pin EC socket inside emergency socket box. The Emergency socket box made of FRP material as per Spec. no. RDSO/SPN/TC/44/2002 Ver.2(with latest amendment) and its wiring alongside the Railway track at locations to be indicated by the engineer. All other items shall be supplied/arranged by the contractor.	Nos	180	₹ 7,153.17	₹ 12,87,571.36
L	Maintenance				
75	The maintenance period shall commence from the date of opening of traffic.the contractor shall deploy 2 Technicians alongwith one vehicle round the clock for 24 hrs Per station during entire maintenance periode for maintenance of all telecom gears in station/ section. the contracotr shall provide Engineers as per Tender requirments.	Per Month	24	₹ 82,374.86	₹ 19,76,996.59
76	The maintenance period shall commence from the date of opening of traffic. The contractor shall deploy atleast 1 engineer, 2 technicians and 2 helpers along with one vehicle round the clock for 24 hours per station during the entire maintenance period for maintenance of all S&T gears in the station/section. The contractor shall also keep sufficient provision of additional engineers (at least 2 nos as Rest Giver/Leave reserve) as per tender requirements.	per month	24	₹ 9,62,806.13	₹ 2,31,07,347.02
M	Vehicle				
77	Provision of dedicated 7-seater passenger SUV Vehicles for movement of IRCON S&T Engineers on project site, including cost of driver, fuel, mobile etc. with no. of vehicles availability as per Ircon Engineer's requirement. (Numbers of vehicle should be decided by the engineer in charge.)	Vehicle KM. month	600000	₹ 27.28	₹ 1,63,66,409.65
N	Manpower				
78	Technical and Design Consultant and Project Construction Manager to be provided by the Contractor as per the following plan:-				
i	Resident Engineer/S&T	Man months	60	₹ 1,36,152.99	₹ 81,69,179.17
ii	S&T/Expert - Personnel	Man month	72	₹ 93,452.66	₹ 67,28,591.80
iii)	Supervisor/S&T - Personnel	Man month	96	₹ 70,788.94	₹ 67,95,738.05
iv)	CAD operator/S&T - Personnel	Man month	72	₹ 60,787.13	₹ 43,76,673.69
79	Supply of Unskilled labour for immediate restoration of normal traffic by jointing Signalling/Telecom/Power cables of damaged during excavation of earth work of engineering department or for shifting, stacking of stores materials. Unskilled staff will remain available in working hours.	Man Days	10200	₹ 313.80	₹ 32,00,719.00
80	Running and maintenance of site office(220 to 270 sqm) by providing watch and ward (3 persons), paying electricity bills, water bills, providing consumables for making tea, providing internet of at least 10 MBPS, with AC, lights, fans, cubicles, tables/workstations, furniture, desktops/laptops with application software and UPS, printers, network photocopier, land line connection with wi-fi, fridge, stove for making tea etc,	Months	42	₹ 1,79,337.29	₹ 75,32,166.24
Total of Schedule B=					₹ 49,45,07,971.18
GST @ 18%					₹ 8,90,11,434.81
Total					₹ 58,35,19,405.99
Total Of SCH A & B					₹ 1,77,46,45,351.04
GST @18%					₹ 31,94,36,163.19
Total Of SCH A & B Including GST					₹ 2,09,40,81,514.22

