



Urge to stay Ahead
IRCON INTERNATIONAL LIMITED
(A Govt. of India Undertaking)
इस्कॉन इंटरनेशनल लिमिटेड



1st Floor, Above Maruti Suzuki Show room (भारत सरकार का उपक्रम)
Near Jhinhari Police Station
Katni 483 501 (M.P.)
email - ircon.2065@ircon.org
Phone / Fax : 07622 - 262366

प्रथम तल, मारुती सुजुकी शोरूम के ऊपर
झिंझरी पुलिस चौकी के समीप,
कटनी - 483 501 (म.प्र.)
ई-मेल - ircon.2065@ircon.org
फोन/फैक्स : 07622 - 262366

No: IRCON/2065/S&T/KSD-KGS/Tender/Pkg-3/543

Date.08.06.2024

LETTER OF ACCEPTANCE (LOA)

To,

M/s Param Enterprises Pvt. Ltd.
23 A NETAJI SUBASH ROAD
FORTUNA TOWER 3RD FLOOR
ROOM NO 7,KOLKATA 700001

Sub: Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at UP DN IBS between NMWP & NKJ C Cabin alongwith associated works at adjoining stations/sections and Alteration & modification at NMWP & NKJ C Cabin in connection with Grade Separator work at Katni alongwith associated works at adjoining stations/sections. Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at Bargawan & Majhauri alongwith associated works at adjoining stations/sections in connection with Doubling work in Katni - Singrauli section."

Ref: (i) Tender No.: IRCON/2065/S&T/KSD-KGS/Tender/Pkg-3 Dtd.13.12.2023
(ii) Corrigendum no. 1 dated 28.12.2023
(ii) Your Technical Offer Opened on 12.01.2024 at 1500 hrs.
(iii) Your Financial Offer Opened on 25.05.2024 at 1755 hrs.

Dear Sir,

1. in reference to the tender referred (i) above, your offer for subject mentioned work has been accepted by the Competent Authority at a total cost of INR **Rs 27,41,65,819.65/-** (Rupees Twenty seven Crore fouty one Lakhs sixty five Thousand eight Hundred Nineteen And sixty five paisa Only) inclusive of all taxes and duties, freight, insurance, inspection, etc.

2. Bill of Quantities (BOQ), indicating the quantities and rates of the items included in the scope of work is enclosed as Annexure - A



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3. As per clause 7.4 of Special Conditions of Contract, if there is any change in the existing rates of statutory taxes/ duties of the state/central governments or levy of any new type of statutory taxes / duties or substitution of existing taxes / duties after the last date of submission of tender shall be borne by Employer/Engineer. The increase or decrease in the liability on this account will be dealt with accordingly. Increase in liability shall be reimbursed as per actual on submission of computation of increased liability statement with documentary evidences in the form of challans/ returns of the Contractors/suppliers to the satisfaction of Employer/Engineer. Similarly, in case of reduction of taxes/duties by either the Central/state Governments/local bodies due to change in the rate of taxes/ duties by either the Central/ State Governments/ local bodies due to change in the rate of taxes/ duties or due to introduction of new tax or substitution of existing tax the benefits of reduction in liability shall be passed on to Employer/ Engineer immediately commencing from the first periodical return falls due. Computation of decrease in liability shall be submitted by the contractors/suppliers/service providers, examined and agreed by Employer Engineer. All the changes in rules and consequent payments should be supported by documentary evidences. In case the contractor fails to intimate and does not pass on the benefit to Employer, he may be liable to a penal interest for the period for which benefit has not been passed on at the rate of **SBIMCLR + 3% (SBIMCLR + Three percent)**. In addition to this penalty equal to **10% (Ten percent)** of amount of benefit shall also be levied in case benefit fallen due has not been intimated to Employer.

4. As per Clause 13.2 (i) & (v) of Special Conditions of Contract, The tenderer who has offered lower total cost as compared to tender value by more than 10%, shall be required to submit additional Performance Guarantee of value equal to half the percentage of tender value by which offer is lower than 10%. (e.g. in a tender costing 100, if contract value is 80, additional Performance Guarantee shall be $[0.5 \times ((100-80)-10)]$ percentage of tender value.) i.e. **Rs. 2,58,08,717/- (Rupees Two Crore Fifty Eight Lakhs Eight Thousand Seven Hundred Seventeen Only)**, to be submitted within 21 (Twenty-One) days in favour of Ircon International Limited before Signing of Contract Agreement and shall be valid for a period of **60 (Sixty)** days beyond the completion period.

5. As per Clause 16 of Special Condition of Contract, the Contract Agreement shall be signed between the Contractor and IRCON INTERNATIONAL LIMITED within 28 (Twenty-Eight) days of issue of LOA. The Contractor shall submit stamp papers of requisite value as per prevailing laws and attend the office of Chief General Manager/S&T, New Delhi, for Signing of Contract Agreement.

6. As per Clause 10.2 of Special Condition of Contract, the entire work shall be completed in a period of 06 (Six) months from the date of issue of LOA. Although the completion period is D+06 (Six) months, with following milestones.

SN	Station/Section	Milestone/Completion period
1.	Bargawan	D+2 months
2.	Majhauili	D+4 months



3.	UP & DN IBS between NMWP & NKJ 'C' & alteration & modification at NMWP & NKJ 'C' cabin.	D+6 months
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The work has to be done in a phased manner progressively. The contractor shall submit the detailed PERT/Bar chart/time-plan of activities/work to achieve commissioning of entire work as programme of work submitted by the contractor alongwith the bid as approved by the Engineer

Note: D' stands for Date of issue of LOA

7 As per Clause 10.7 of Special Condition of Contract, 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.

8 Terms of Payment shall be as per Clause 27.2 of Special Condition of Contract.

8.1 Payment for Supply of material (Schedule A & B (Supply Signal & Telecom materials):

(i) Payment @ 80% (Eighty percent) of BOQ rates shall be made on delivery of material at specified location on Project, acceptance by Engineer and submission of following documents

(a) Original Inspection certificate issued by Inspecting Officer.

(b) 100% (Hundred percent) Tax Invoice with detailed packing List in duplicate.

(c) A certificate that the materials supplied are as per the contract and the amount claimed in the invoice is correct as per terms of the contract

(ii) 10% (Ten percent) payment at the accepted rate for the quantity shall be made after installation of the material on complete station/section

(iii) Balance 10% (Ten percent) payment at the accepted rate for the quantity shall be paid on successful commissioning and issue of Completion Certificate

(iv) Also, 20% (Twenty percent) payment against supply of material supplied for installation but not installed due to non-requirement of employer, due to change in design, drawing, scope of work etc. subsequent to the award of work, shall be paid after issue of Completion Certificate for the work and handing over the materials to the client.



Note: The Retention money shall be released to the contractor as per Clause 13.5 of Special Condition of Contract.

8.2 Payment for Installation-(Schedule-C & D (Execution of Signal & Telecom work):

(i) Payment @ 90% (Ninety percent) of BOQ rates for the quantity shall be made after installation of the items, duly verified by IRCON's Engineer for individual item.

(ii) Payment @ 10% (Ten percent) of BOQ rates for the quantity shall be paid on successful testing and commissioning of the work by contractor for the station including opening of traffic and issue of completion certificate, and submission of all as built documents as per the Contract.

8.3 Payment for Provision of Vehicle (Schedule-E):

Payment @ **100% (Hundred percent)** BOQ rates for the quantity executed each month shall be made at the end of the month after verification of necessary records like logbook etc

8.4 Payment for Deployment of skilled Manpower (Schedule-E):

Payment @ **100% (Hundred percent)** BOQ rates for the man month as per actual deployment of staff duly certified by employer or his representative.

8.5 Payment of Composite items involving both supply and installation:

On certification by IRCON's Engineer, such items shall be paid as under (only on production of documents as per clause 27.2. 1(1) of Special Condition of Contract)

(i) Payment @ **70% (Seventy percent)** BOQ rates of the item shall be made on delivery. submission of documents mentioned at clause 27.2.1(i) of Special Condition of Contract, and acceptance of material by Engineer.

(ii) Payment @ **30% (Thirty percent)** BOQ rates of the item shall be made on successful installation of the materials/equipment duly certified by IRCON's Engineer OR

(iii) For items which could not be installed because of valid reasons, balance payment @ **30% (Thirty percent)** of BOQ rates shall be made on issue of completion certificate for the work.

9. As per Clause 13.3 of Special Condition of Contract, the Retention Money shall be as under

9.1 Retention money for all contracts shall be recovered from on account/ final bills of the Contractor @ **10% (Ten percent)** of gross value of each bill after adjusting EMD amount



till the amount so recovered including EMD amount adds up to 5% (Five percent) of the contract value of the work.

9.2 No interest shall be payable to the Contractor on the amount retained in cash towards retention money.

10. All other terms & conditions shall be as per Tender Documents, which shall form an integral part of this contract and shall be binding on you

11. The contractor shall not claim any undue benefit arising due to any calculation/ 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 the Contract Agreement

12. Until a formal agreement is executed, acceptance of this LOA by you shall constitute to be a binding of contract

13. 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 your authorized representative on each and every page, to this office within one week of issue of this LOA

14. **Your are requested to submit the breakup with Rate & Amounts of (i) EI & 10% Spare (ii) MSDAC & 10% Spare before signing of LOA.**

Thanking you,

Yours Sincerely.

कृते - इरकॉन इंटरनेशनल लिमिटेड


(अखिलेश साहू)
मुख्य महाप्रबंधक / परियोजना प्रमुख
कटनी-सिंगरौली रेल दोहरीकरण परियोजना

1st Floor, Above Maruti Suzuki Showroom,
Near Jhinhri Police Station, NH-7, Jabalpur Road, Katni (M.P.)-483501

Enclosed:

- (i) Annexure-A, Annexure-I

प्रतिलिपि:

- मुख्य महाप्रबंधक/ सिग्नल और दूरसंचार/सीओ कृपया जानकारी के लिए.
- महाप्रबंधक / वित्त / केएसडीपी कृपया जानकारी के लिए.

Annexure-A

Summary

Name of Work: Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at UP DN IBS between NMWP & NKJ C Cabin alongwith associated works at adjoining stations/sections and Alteration and modification at NMWP & NKJ 'C in connection with Grade Separator work at Katni alongwith associated works at adjoining stations/sections. Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at Bargawan & Majhauri alongwith associated works at adjoining stations/sections in connection with Doubling work in Katni - Singrauli section

Bill Of Quantity

Summary Sheet

S. No.	Schedule	Total Amount (Rs.)
KGS		
1	Total Amount of Schedule - A (Signalling Supply portion)	23,13,20,488.0
2	Total Amount of Schedule - B (Telecommunication Supply portion)	72,10,844.0
3	Total Amount of Schedule - C (Signalling Execution portion)	3,52,65,878.0
4	Total Amount of Schedule - D (Telecommunication Execution portion)	9,65,700.0
5	Total Amount of Schedule - E (Provision of Vehicle and Provision of Technical & Design Consultant)	61,84,992.0
Total Amount of all Schedules - (A+B+C+D+E) (without GST Rs.) =		28,09,47,902.0
18% GST (Rs.)=		5,05,70,622.4
Grand Total Amount of all Schedules - (A+B+C+D+E) (with GST Rs.) =		33,15,18,524.4
% below=		17.3
Awarded Total Amount (With GST Rs.) =		27,41,65,819.65

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Name of Work : Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at UP DN IBS between NMWP & NKJ C Cabin alongwith associated works at adjoining stations/sections and Alteration and modification at NMWP & NKJ 'C' in connection with Grade Separator work at Katni alongwith associated works at adjoining stations/sections. Design, Alterations, Supply, Installation, Testing & Commissioning of Electronic Interlocking based Signalling System at Bargawan & Majhauili alongwith associated works at adjoining stations/sections in connection with Doubling work in Katni - Singrauli section.

BILL OF QUANTITY

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	(1) The Materials which is to be inspected by RDSO should be supplied from RDSO Listed Firms/Suppliers (RDSO approved vendors and RDSO vendors for Developmental Order). If RDSO's Listed Firms/Suppliers are not available then from any other reputed manufacturer/firm as approved by IRCON/Railways/Client.							
	(2) All critical items as per RDSO guidelines will continue to be inspected by RDSO as per instruction contained in Board's letter No. 74/RS(G)/379/2Pt.dated;4/3/91 and 18/6/91:-0							

	(3) The materials, which are procured from RDSO Listed Firms/Suppliers (RDSO approved vendors and RDSO vendors for Developmental Order) with RDSO specification and if the cost of the material is over Rs. 5 Lakh, the inspection shall be carried out by RDSO.							
	(4) Inspection in respect of order above Rs.5 lakh, not done by RDSO, will be got done by RITES/Consignee, subject to supplies being from sources listed by RDSO.							
	(5) Signalling items which are not inspected by RDSO/RITES shall be inspected by Consignee.							
	(6) Current RDSO/TEC specifications are mentioned here. However, while procuring only the LATEST RDSO/TEC SPECIFICATION will prevail and material to be supplied & inspected as per latest specifications.							
	(7) Design, Supply, Installation, Testing and Commissioning of the Signalling & Telecom system shall be planned and to be executed as per to Suit 25 KV RE.							

SCHEDULE-A (SUPPLY-Signalling Materials)

A	Electronic Interlocking System							
1	Design, Manufacture and Supply of Electronic Interlocking System (Hot standby configuration) conforming to specification no. RDSO/SPN/192/2019 ver 2.0 or latest amendment, as applicable, and directive issued by Railway Board and RDSO, till the date of supply / installation as per the enclosed Signalling Interlocking Plans (SIP)							
i	Bargawan (Distributed EI)	Syst em	1		3,70,41,270.00	3,70,41,270.00	-	3,70,41,270.00
	Supply of additional Electronic Interlocking items for End Goomty with Distributed Architecture in connection with Bargawan station.	Per Goomty	2		6,32,666.00	12,65,332.00	-	12,65,332.00
ii	Supply of additional Electronic Interlocking items for IBS with Distributed Architecture in connection with New Majhagawan Phatak station.	IBS		1	6,95,453.00	-	6,95,453.00	6,95,453.00
iii	Majhauili (Centralized EI)	Syst em	1		3,23,31,073.00	3,23,31,073.00	-	3,23,31,073.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	EI system shall be designed and supplied considering the complete requirement of Ph-1 and Ph-2 but not limited to:							
a)	Microprocessor Equipment (having hot standby system with facility of automatic changeover), other cards and assemblies							
b)	All type of interface Relays such as TPR's, WKR's, WCR's, point operation relays, other interface Relays like QN1/QNA1/QL1/ LED ECR /Flasher etc. to be provided as per extent practice of WC Rly & to suit 25 KV RE.							
c)	Industrial grade Operator Console with 55" VDU (2 Nos each per station) & Industrial grade Maintenance console with 42" VDU as per latest RDSO. Guideline & technical advisory note (TAN), online Dot matrix printer with power supply etc. Also the furniture like table etc required for mounting the VDU shall be provided by the contractor.							
d)	Equipment Racks, Relay Racks, Rack fixtures, mounting arrangements and accessories.							
e)	Interconnecting cables and interfacing equipments required for interfacing the EI with outdoor gears, Data Logger system, Block Instruments, Axle counters, monitoring of Power Supply for IPS system etc.							
f)	Optical cables along with interfacing equipment etc.							
g)	Protective Devices like Fuses, Active Lightning arrestors (Class - A) and surge protection arrangement, equipotential bonding as per latest RDSO guidelines, etc.							
h)	All the consumables, wiring materials, fixtures, tag blocks of various sorts, mounting arrangements and necessary accessories to install and make the EI system functional.							

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
i)	Supply of Software as per design for Electronic Interlocking System conforming to specn no. RDSO/SPN/192/2019 ver 2.0 or latest to suit Signal Interlocking Plans (SIP) enclosed, including FAT							
j)	Station master is to be provided with 2 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.							
k)	Supply of industrial grade embedded PC for Operator and Maintenance VDU as per RDSO TAN No. STS/TAN/3007 Version 1.0 or latest with adequate storage memory to work in Hot standby mode.							
l)	Supply of documents/manuals (six set per station) as per specification no. RDSO/SPN/192/2019 ver 2.0 or latest.							
m)	Supply of 10% spares on items such as relays, group relays, indoor cable, wire, tag block, terminals, cards/modules, connectors / couplers, fuses, EI tools etc., minimum of one for use in the complete EI system.							
n)	Supply & installation of Ring/Perimetric Earth for EI system shall be done by the OEM as per latest TAN and guidelines issued by RDSO.							
	Notes :-							

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	a) The tenderer should indicate total cost of EI & list of 10% spares along with break up of total cost indicating separately unit rates, quantities and total cost of each type of equipments, modules, assemblies/sub assemblies, cards etc. as Annexure A & Annexure B for spares. This list of material will be only indicative. Contractor has to supply the complete material for the commissioning of Electronic Interlocking. No Extra payment shall be made to contractor for any additional item /Cards /Modules							
	b) The EI equipment offered for the complete EI system shall cater for 20% increase in field input quantities in future. The necessary hardware provided shall be such that it shall be possible to incorporate 20% 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	2	0	1,43,891.00	2,87,782.00	-	2,87,782.00




S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
3	Supply of powder coated Main Cable Termination rack complete with scaffolding, fixtures & accessories including 10 mm thick Hylam or any other suitable arrangement 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 WC 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.	12	4	54,150.00	6,49,800.00	2,16,600.00	8,66,400.00
4	Supply of Wago/phoneix screwless 4 conductor disconnecting terminal suitable for copper wire of 0.5 sqmm to 4 sqmm as per 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.	12000	8000	92.00	11,04,000.00	7,36,000.00	18,40,000.00
5	Supply and installation of Universal Earth Leakage Detector 12 Channel AC/DC as per RDSO/SPN/256/2002 or latest amendment.	Nos.	8	2	1,78,526.00	14,28,208.00	3,57,052.00	17,85,260.00
B	Datalogger:				-			

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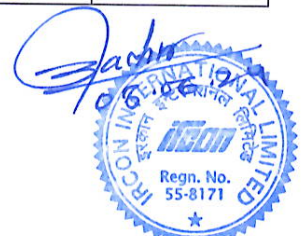


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
6	Supply of Microprocessor based data logger with 512 Digital & 48 Analog Inputs as per specification no. IRS:S 99/2006 (amdt. 3) with latest amendments and shall be suitable to work with electronic interlocking system. It includes all interfacing equipments like protocol converter unit etc. It also includes design, supply and installation of all software required as standard practice of WCR and as per 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.	4	0	4,66,991.00	18,67,964.00	-	18,67,964.00
7	Supply of Remote Terminal Units (RTUs) in 128 Digital and 32 Analog inputs as per specification no. IRS:S 99/2006 (amdt. 3) with latest amendments and shall be suitable to work with electronic interlocking system. It also includes design, supply and installation of all software required as standard practice of WCR and as per specification no. IRS:S 99/2006 or latest. Digital input to be taken from 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 Module shall be placed in President /	Nos.	0	1	2,52,992.00	-	2,52,992.00	2,52,992.00

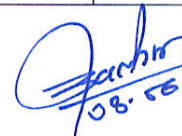




S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	Rittel rack of suitable size to be supplied.							
8	Supply of Door Proximity switches along with 2 way rigid connector for wire termination between proximity switches and Datalogger Tag blocks as per specs.	Nos.	4	1	772.00	3,088.00	772.00	3,860.00
C	Track Detection Equipment (MSDAC)				-			
9	Supply of Multisection Digital Axle Counter system (MSDAC), including the central Evaluator/processor (s), final track clearance relay for each track section, detection points, including supply of mush room housing for Track side electronic equipments, Reset Box, LV Box, earthing & earthing material, fixing arrangement for each detection point, accessories (if required as per Installation Manual of the OEM), fully wired and fully equipped as per attached SIPs as per specn no. RDSO/SPN/176/2013 (Ver.3) or latest.	DP	65	28	3,11,000.00	2,02,15,000.00	87,08,000.00	2,89,23,000.00
	NOTE: a) Offered MSDAC equipment above shall cater for RDSO recommended spares. b) The tenderer should indicate total cost of MSDAC & list of 10% spares along with break up of total cost indicating separately unit rates, quantities and total cost of each type of equipments, modules, assemblies/sub assemblies, cards etc as per Annexure-C & Annexure-D for spares for each station. 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/software.							

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
10	Supply of MSDAC Tool Kit, as recommended by OEM. Tentative list of each set is as under: 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. 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.	Set	1	1	2,27,319.00	2,27,319.00	2,27,319.00	4,54,638.00
	DC Track Circuit				-			
11	Supply of DC Track circuit Equipment including battery charger, 'B' type choke, adjustable Track Feed Resistance, QTA2 relay, QSPA1 relay, Fuse block, ND type fuses, 80 AH batteries etc.	Nos.	0	25	25,317.00	-	6,32,925.00	6,32,925.00
a	Supply of Track feed battery charger 110V AC/6 V DC - suitable to charge 3 cells of 80 AH, to IRS-S-89/2013 or latest RDSO specification. - 1 no				-			
b	Supply of 'B' type choke as per specification No.IRS-S-65/83 amndt-1 or latest RDSO specification. - One in AC RE Area, Two as per Railway Practice				-			
c	Supply of adjustable Track Feed Resistance (Disc type) 30 ohms as per RDSO Drg. No. SA 20166/M (Adv) with latest amendments (with Phenolic moulded base)or latest RDSO specification. - 1 no							


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
d	Supply of Relay DC track plug in type neutral, 9 ohms, tractive armature 2 F/1B with front contacts metal to carbon (QTA 2 type) complete with plug board, retaining clip and connector to BRS-939A, and BRS-966(appendix F-2), IRS-S-34/68 & IRS-S-23/86. Or QBAT track relay, 9 ohms, 2F/2B complete with plug board, retaining clip and connector as per RDSO/SPN/84/88 - 1 no				-			
e	Supply of Relay DC plug in neutral line slow to pickup tractive armature 24 VDC 8F/ 4B contacts, front & back contacts metal to carbon complete with plug board, retaining clips & connectors etc. to BRS-933/933A, IRS-S-34/68, IRS-S-23/86 & IRS-S-60 similar to QSPA1 interlocking code ABDEJ - 1 no				-			
f	Supply of Fuse block made of PBT as per IRS-S-75/2006 Rev 2 & drg.No. SA-23748, along with supply of Non deteriorating type fuses as per IRS-S-78/92 to suit the bases supplied of Capacity as per requirement and wiring diagram - in quantity as per requirement. This includes replacement of fuses blown off during testing and commissioning.				-			
g	Supply of Stationery low maintenance Secondary lead acid cells as per RDSO specification IRS-S-88/2004 with topping up frequency upto 6 months. This includes supply of inter cell connectors, bolts, nuts, acid level indicating floats and vent plugs. 2 Volts, 80 AH				-			
D	Power Supply:				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
12	Supply of SMPS Based Integrated Power Supply System as per specification no. RDSO/SPN/165/2012 (Ver. 3.0) including supply of 110/300AH Low Maintenance Lead Acid (LMLA) secondary Battery for S&T installation as per IRS S-88/2004 and battery rack (if required), remote indication panel, and 05 nos of spares batteries, tool kit and spares as per RDSO specifications suitable for EI. Tentative drawing of IPS is attached with this tender document but current/voltage ratings of different modules may change as per actual load requirement.	Set	4	0	12,65,312.00	50,61,248.00	-	50,61,248.00
13	Supply of SMPS Based Integrated Power Supply System as per specification no. RDSO/SPN/165/2012 (Ver. 3.0) including supply of 110/200AH Low Maintenance Lead Acid (LMLA) secondary Battery for S&T installation as per IRS S-88/2004 and battery rack (if required), remote indication panel, and 05 nos of spares batteries, tool kit and spares as per RDSO specifications suitable for IBS. Tentative drawing of IPS is attached with this tender document but current/voltage ratings of different modules may change as per actual load requirement.	Set	0	1	8,24,773.00	-	8,24,773.00	8,24,773.00
E	Block Working				-			
14	Supply of SGE type double line block instrument complete with bell unit, Block bell equipment, Filter unit, DC polarized 3 position biased BPR relay, Wooden block counter, VF Transformer etc.	Nos	4	6	1,10,888.00	4,43,552.00	6,65,328.00	11,08,880.00
a	Supply of SGE type double line block instrument complete as per IRS S :22/ 2016 Ver. 1.0 along with bell unit - in quantity 01 no.				-			




S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
b	Supply of Block bell equipment to Specification IRS (TC) 44/88 Amendment 1 or latest RDSO specification . in quantity 01 no per block instrument				-			
c	Supply of Filter unit to Specification IRS(S) 68/89 or latest RDSO specification - in quantity 01 no per block instrument				-			
d	Supply of DC polarized 3 position biased BPR relay IRS-S-31/80 amndt-1or latest RDSO specification- in quantity 01 no per block instrument				-			
e	Supply of Wooden block counter of size 700mm x 700mm W X 900mm H 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.				-			
15	Supply of UFSBI (2 nos. as per RDSO/SPN/147/2005 or latest RDSO specn), SM's Panel for single line (2 nos as per RDSO/S/32019 or latest RDSO specification), block telephone & Relay Rack completely wired fully with all relays required for Block working with Axle Counter in RE area.	Set	0	1	9,01,116.00	-	9,01,116.00	9,01,116.00
16	Supply of High Availability Single section Digital Axle counter System complete with dual sensor as per Specification No. RDSO/SPN/177/2012 with version 3 or latest complete in all respect. Including reset box. It shall have dual sensors.	Set	0	4	10,26,989.00	-	41,07,956.00	41,07,956.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
17	Supply of Standard Single section Digital Axle Counter System for monitoring track section as per RDSO Spcn.No.RDSO/SPN/177/2012 Version-3.0 or latest RDSO specification. This will cover all equipments required to work the single track section clearance and consist of High Frq Tx,Rx coil, track side digital axle counter unit, vital relay with relay box duly wired, Clamp, reset box, surge protection device etc. The set stands for the equipment required at either end of track section. The manufacturer shall advise complete list of items in a set required for this system before placing demand for RDSO call letter.The reset box shall comply the resetting requirements in connection with dual detection of the track section having redundancy as per latest RDSO Guidelines.	Set	0	1	9,76,937.00	-	9,76,937.00	9,76,937.00
F	Signals				-			
18	Supply of FRP CLS Unit 2 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest. This includes:(a) Signal post 140 mm dia 4.6 / 3.6 mtrs. long to IRS-S-6-81.=1no (b) Signal Base C I 140 mm dia. to drg. No.S-2011.=1no (c) CLS ladder complete with platform and Signal front staging as per Drg,Base 4.5 / 3.5 mtrs. long to drg.No.SA-23153 (Adv.) Alt 1.= 1no (d) FRP CLS unit 2 aspect complete to drg.No SA – 23003 A/M to C/M (Adv.), without Lamps,transformer,Lamp holder & lenses =1no. (e) 4 nos of Anchor bolt complete with nut washer etc as per Drg no 116 A/H (f) Supply of Universal lock with key (hand cuff) & signal number plate.	Nos.	15	12	43,812.00	6,57,180.00	5,25,744.00	11,82,924.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
19	Supply of FRP CLS Unit 3 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest. This includes: (a) Signal post 140 mm dia 4.6 / 3.6 mtrs. long to IRS-S-6-81.=1no (b) Signal Base C I 140 mm dia. to drg. No.S-2011.=1no (c) CLS ladder complete with platform and Signal front staging as per Drg,Base 4.5 / 3.5 mtrs. long to drg.No.SA-23153 (Adv.) Alt 1.= 1no (d) FRP CLS unit 3 aspect complete to drg.No SA – 23003 A/M to C/M (Adv.), without Lamps,transformer,Lamp holder & lenses =1no. (e) 4 nos of Anchor bolt complete with nut washer etc as per Drg no 116 A/H (f) Supply of Universal lock with key (hand cuff) & signal number plate.	Nos.	4	8	51,972.00	2,07,888.00	4,15,776.00	6,23,664.00
20	Supply of FRP CLS Unit 4 Aspect (without lenses and lamps) as per spec. no. RDSO/SPN/194/2006 Ver 2.0 or latest. This includes: (a) Signal post 140 mm dia 4.6 / 3.6 mtrs. long to IRS-S-6-81.=1no (b) Signal Base C I 140 mm dia. to drg. No.S-2011.=1no (c) CLS ladder complete with platform and Signal front staging as per Drg,Base 4.5 / 3.5 mtrs. long to drg.No.SA-23153 (Adv.) Alt 1.= 1no (d) FRP CLS unit 4 aspect complete to drg.No SA – 23003 A/M to C/M (Adv.), without Lamps,transformer,Lamp holder & lenses =1no. (e) 4 nos of Anchor bolt complete with nut washer etc as per Drg no 116 A/H (f) Supply of Universal lock with key (hand cuff) & signal number plate.	Nos.	0	4	51,972.00	-	2,07,888.00	2,07,888.00
21	Supply of FRP Route Indicator 1 way with OFF set bracket and Universal lock with key as per RDSO Spec. no. RDSO/SPN/194/2006 Ver 2.0 with latest amendments.	Nos.	0	4	32,642.00	-	1,30,568.00	1,30,568.00

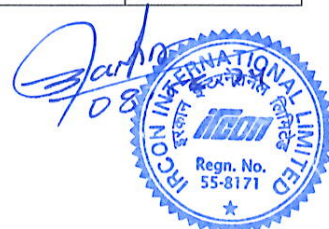



S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
22	Supply of FRP Route Indicator 2 way with OFF set bracket and Universal lock with key as per RDSO Spec. no. RDSO/SPN/194/2006 Ver 2.0 with latest amendments.	Nos.	0	1	38,081.00	-	38,081.00	38,081.00
23	Supply of FRP Route Indicator 3 way with OFF set bracket and Universal lock with key as per RDSO Spec. no. RDSO/SPN/194/2006 Ver 2.0 with latest amendments.	Nos.	0	2	43,521.00	-	87,042.00	87,042.00
24	Supply of FRP Calling-on Unit & fixing arrangement.	Nos.	2	5	4,316.00	8,632.00	21,580.00	30,212.00
25	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.	12	3	8,326.00	99,912.00	24,978.00	1,24,890.00
26	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.	12	2	13,896.00	1,66,752.00	27,792.00	1,94,544.00
27	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.	20	20	11,735.00	2,34,700.00	2,34,700.00	4,69,400.00
28	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.	22	25	11,735.00	2,58,170.00	2,93,375.00	5,51,545.00
29	Supply of LED Signal Lighting Unit (Green) for Main Signals as per specification No. RDSO/SPN/199/2010 (Rev 1.0) dated 11.04.14.	Nos.	10	15	11,735.00	1,17,350.00	1,76,025.00	2,93,375.00
30	Supply of LED Signal Lighting Unit for Route Indicator as per specification No. RDSO/SPN/153/2011 (Rev 4.1).	Nos.	50	30	7,644.00	3,82,200.00	2,29,320.00	6,11,520.00
31	Supply of LED Signal Lighting Unit for Calling On Signals as per specification No. RDSO/SPN/153/2011 (Rev 4.1)	Nos.	4	10	7,644.00	30,576.00	76,440.00	1,07,016.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
32	Supply of LED Signal Lighting Unit for Shunt Signals as per specification No. RDSO/SPN/153/2011 (Rev 4.1).	Nos.	60	10	7,644.00	4,58,640.00	76,440.00	5,35,080.00
33	Supply of Various types of markers as:-P/C/G/IB markers -23 cm. Dia circular disc made of 3mm thick MS Sheet. The disc shall be painted with approved colour scheme.	Nos.	10	15	816.00	8,160.00	12,240.00	20,400.00
34	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.	4	4	3,099.00	12,396.00	12,396.00	24,792.00
35	Supply of QNA1 AC immunised relay (for outdoor), 24V DC , 8F/8B along with plug-in board, retaining clip and connectors conforming to BRS:931A,IRS:S60,IRS:S 34 & IRS:S23 or latest.	Nos.	60	40	4,266.00	2,55,960.00	1,70,640.00	4,26,600.00
36	Supply of QNA1K AC immunised relay (for outdoor), 24V DC , 1000 ohm, 6F/6B along with plug-in board, retaining clip and connectors conforming to BRS:931A,IRS:S60,IRS:S 34/68 & IRS:S23/86.	Nos.	16	20	4,976.00	79,616.00	99,520.00	1,79,136.00
G	Point Machine				-			
37	Supply of Electrical point operating machine - IRS Type, 220 mm throw (AC immunity 160 V AC), non trailable to operate on 110 V DC with lock & detector slides, Cable terminal box and Clamp lock arrangement for thick web switches (Drg no. RDSO:S-3395 & S-3454) confirming to IRS:S-24/2002 or latest RDSO specification & Motor IRS: S37/82 with complete Ground connections (P Bracket type) for thick web switches with latest amendments.	Nos.	30	6	1,95,465.00	58,63,950.00	11,72,790.00	70,36,740.00

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
38	Supply of Electrical point operating machine - IRS Type, 143 mm throw (AC immunity 160 V AC), non trailable to operate on 110 V DC with lock & detector slides, Cable terminal box confirming to IRS: S-24/2002 or latest RDSO specification & for Motor IRS: S37/82, Assy Drg RDSO-S:10800 & S:10910 with complete Ground connection for 143 mm throw IRS type machine with latest amendments.	Nos.	0	2	90,840.00	-	1,81,680.00	1,81,680.00
39	Supply of Key Lock Relay AC immunized with different ward combinations (one extra set of ward plate for Point Machine to be supplied with each relay) of RDSO approved make working on 60/24V DC, Siemens type or equivalent.	Nos.	40	10	6,607.00	2,64,280.00	66,070.00	3,30,350.00
H	Location Boxes				-			
40	Supply of Apparatus Case full Case as per Drg Nos WS-8842/A with latest alteration along with miniature 'E' type locks with keys (1 key per 5 location boxes and handle) of ward Nos. 41 (E type lock & key as per spec. Nos IRS S 30 & RDSO Drg.Nos. SA 3376/M & 3377/M respectively with latest Amendment) on both the doors, duly painted with red oxide. This item also includes i) Supply of Hylam sheet (Bakelite industrial laminated paper based sheet), resin bonded 10 mm thick, grade P3 in standard size of 1.22 x 1.22 mtrs. as per specn. No. IS 2036 of 1974. -as per requirement for termination of cables and for shelf for fixing equipments.	Nos.	75	20	22,282.00	16,71,150.00	4,45,640.00	21,16,790.00

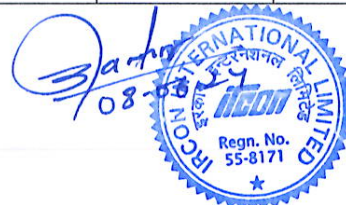



S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
41	Supply of Apparatus Case Half Case as per Drg Nos WS-8842/A with latest alteration along with miniature 'E' type locks with keys (1 key per 5 location boxes and handle) of ward Nos. 41 (E type lock & key as per spec. Nos IRS S 30 & RDSO Drg.Nos. SA 3376/M & 3377/M respectively with latest Amendment) on both the doors, duly painted with red oxide. This item also includes i) Supply of Hylam sheet (Bakelite industrial laminated paper based sheet), resin bonded 10 mm thick, grade P3 in standard size of 1.22 x 1.22 mtrs. as per specn. No. IS 2036 of 1974. -as per requirement for termination of cables and for shelf for fixing equipments.	Nos.	50	15	17,975.00	8,98,750.00	2,69,625.00	11,68,375.00
42	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.	110	50	267.00	29,370.00	13,350.00	42,720.00
43	Supply of 5 Amp switch, 3 pin socket, lamp holder along with 110Volt/15W LED lamp (Anchor make).	Nos.	125	35	488.00	61,000.00	17,080.00	78,080.00
44	Supply of ARA Terminal blocks with links, 6 Way, made of PBT Specn No. IRS/75/2006 (Amd - 2) or latest RDSO specification and RDSO Drg.No.SA-23756 Alt.3.	Nos.	250	100	290.00	72,500.00	29,000.00	1,01,500.00
I	Earthing				-			
45	Supply and intallation of normal Earth Electrode for earthing of S&T installations with all the associated materials as per extant practice of WCR	Nos.	150	50	3,434.00	5,15,100.00	1,71,700.00	6,86,800.00
46	Supply and installation of MAINTENANCE FREE EARTHING AND BONDING SYSTEM (Two Earth Pit) as per specification no: RDSO/SPN/197/2008 or latest RDSO specification consisting of (a) Earth electrodes made of high tensile low carbon steel circular rods,	Nos.	30	10	52,313.00	15,69,390.00	5,23,130.00	20,92,520.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	molecular bonded with copper on outer surface as per RDSO spn - 2 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 -(i) 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, (f) Earhpits x 150 mm to terminate on earth electrode, (g) Construction of earhpit and making of earth as per RDSO specification no.RDSO/SPN/197/2008 or latest RDSO specification.							
J	Supply of cables protection material				-			
47	Supply and fixing of RCC cable route marker engraving of Signal/Telecom cable one side and Zonal Rly on other side as per WCR Railway Practice and painting on both sides of marker with numbering with black paint . The markers should be fixed for a maximum of 50 mtrs to locate the Signaling/Telecom cable path and the marker should be visible about one feet above the ground for the clear visibility, the remaining portion of marker should be buried in the ground. Wherever track crossing are available, RCC markers are to be provided on both sides of the track for easy identification. All required	Nos.	200	20	1,228.00	2,45,600.00	24,560.00	2,70,160.00

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	materials (Supply, painting, transportation to site and fixing) are to be arranged by the Contractor.							
48	Supply of DWC pipe with one snap fit coupler and 'O' ring conforming to RDSO/SPN/204/2011 Ver. 1.1 or latest RDSO specification, Non metallic, corrugated, multiwalled, normal duty, pliable, without protection against chemical attack and Non flame propagating in 6 meter length of size 120 mm outer dia & 102 mm inner dia. (Permitted tolerance in dia = +/- 2 mm).	Mtrs	300	200	283.00	84,900.00	56,600.00	1,41,500.00
49	Supply of SPLIT DWC pipe conforming to RDSO/SPN/204/2011 Ver. 1.1 or latest RDSO specification, Non metallic, corrugated, multiwalled, normal duty, pliable, without protection against chemical attack and Non flame propagating in 2 meter length of size 200 mm outer dia & 175 mm inner dia. (Permitted tolerance in dia = +/-2 mm) (TWO half round pipe constitute one split pipe)	Mtrs	6000	200	353.00	21,18,000.00	70,600.00	21,88,600.00
50	Supply of Galvanized Iron pipe 100 mm dia medium grade with screw end both side and fitted with sockets as per specn. No.IS-1239, part 1 / 1990 or latest in length of approx 6 meters	Mtrs	200	300	1,224.00	2,44,800.00	3,67,200.00	6,12,000.00
51	Supply of RCC pipes 150mm dia, 2 Mtr long along with collars as per Specn. No. IS/458/1971 or latest for use near OHE Substation for cable protection.	Mtrs	100	100	177.00	17,700.00	17,700.00	35,400.00
K	Tools & Plants				-			
52	Supply of Signalling Maintenance tools & Plants as per Annexure-1.	Set	2	1	1,22,389.00	2,44,778.00	1,22,389.00	3,67,167.00
L	Signal & Telecom Cable				-			

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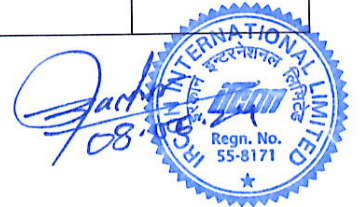


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
53	Supply of PVC insulated armoured, unscreened, underground Railway signalling cable 12 Core 1.5 sqmm (copper cable) as per Specification no. IRS-S-63/2014 (Rev 4.0) or latest. Drum no. and name of consignee to be painted on the cable drum.	Km	200	35	2,31,151.00	4,62,30,200.00	80,90,285.00	5,43,20,485.00
54	Supply of PVC insulated armoured, unscreened, underground Railway signalling cable 6 Core 1.5 sqmm (copper cable) as per Specification no. IRS-S-63/2014 (Rev 4.0) or latest. Drum no. and name of consignee to be painted on the cable drum.	Km	10	5	1,47,969.00	14,79,690.00	7,39,845.00	22,19,535.00
55	Supply of underground Jelly filled 6 Quad cable of size 0.9 sqmm dia for signalling and telecom installation as per specn no. IRS:TC-30/2005 (Ver-1) with ammendment no. 5 or latest.	Km	20	20	3,49,596.00	69,91,920.00	69,91,920.00	1,39,83,840.00
56	Supply of Polythene insulated Sheathed Jelly Filled Telephone cable 20 Pair of Size 0.63 mm with poly -Al moisture Barrier as per IRS TC 41/97.	Km	2	2	1,41,574.00	2,83,148.00	2,83,148.00	5,66,296.00
57	Supply of Polythene insulated Sheathed Jelly Filled Telephone cable 5 Pair of Size 0.63 mm with poly -Al moisture Barrier as per IRS TC 41/97.	km	2	2	67,965.00	1,35,930.00	1,35,930.00	2,71,860.00
M	Level Crossing Gate							
N	IOT							
58	Remote Diagnostic and Predictive Maintenance System (IOT)							

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
a	Provision of cloud based application alongwith OPC-UA/MQTT support for monitoring of signal and telecom assets with standard protocols and analysis health data. Application shall accommodate at least 19 stations data. Use ID and login credential shall be given to S&T inspector and officers. Vendor shall maintain the cloud application for the period of 2 years for free of cost. (Suitable for 22 stations). Application Software licenses shall be perpetual. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	2	0	93,750.00	1,87,500.00	-	1,87,500.00
b	Supply and installation of Failure Analysis System / Edge Computing System along with station Local server and Software. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest).	Nos.	2	0	2,49,955.00	4,99,910.00	-	4,99,910.00
c	Supply and installation of Microprocessor based Event Logger installed indoor to interface with EI and Data logger. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	2	0	2,32,768.00	4,65,536.00	-	4,65,536.00
d	Supply and installation of Microprocessor based Mini Logger installed outdoor to monitor point machine as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	15	0	89,643.00	13,44,645.00	-	13,44,645.00
e	Supply and installation of Microprocessor based interface for DAC to monitor upto 8 SSDAC in EI Room as Per specification. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	2	0	95,536.00	1,91,072.00	-	1,91,072.00

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
f	Supply and installation of Microprocessor based Mini Logger installed in existing Location box For Monitoring of SSDAC parameters, as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest).	Nos.	16	0	63,125.00	10,10,000.00	-	10,10,000.00
g	Supply and installation of Microprocessor based Mini Logger installed in Location Boxes FOR MONITORING OF Signals as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest).	Nos.	14	0	89,821.00	12,57,494.00	-	12,57,494.00
h	Supply and installation of Microprocessor based Mini Logger installed in Location Boxes FOR MONITORING OF LC Gate as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest).	Nos.	1	0	89,821.00	89,821.00	-	89,821.00
i	Supply and installation of Microprocessor based Mini Logger installed in Indoor FOR MONITORING OF IPS as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest).	Nos.	3	0	63,125.00	1,89,375.00	-	1,89,375.00
j	Supply and installation of MSDAC Monitoring unit with installation as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	5	0	63,304.00	3,16,520.00	-	3,16,520.00
k	Supply and installation of Microprocessor based Mini Logger installed in Location Boxes FOR MONITORING OF Track Circuits as per Specifications. (Complied with latest RDSO FRS - RDSO/RDPM/FRS/2021 date of Issue 6th May or latest)	Nos.	26	0	89,643.00	23,30,718.00	-	23,30,718.00
o	Miscellaneous				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	Supply of Fire Alarm system				-			
59	Supply, Installation, Testing and commissioning of Automatic Fire Detection & Alarm System (AFDAS) for Signalling installations as per specn no. RDSO/SPN/217/2016 Ver 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, 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.	No.	4	1	12,19,280.00	48,77,120.00	12,19,280.00	60,96,400.00




S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	a) The tenderer should indicate total cost of Automatic Fire Detection & Alarm System (AFDAS) along with break up of total cost indicating separately unit rates, quantities and total cost of each type of equipments, modules, sensors, detectors, Cables, assemblies/sub assemblies etc. as an 'Annexure 'E'. This list of material will be only indicative. Contractor has to supply the complete material for the commissioning of Automatic Fire Detection & Alarm System.				-			
60	Supply of Fuse Auto Changeover System (FACS) as per RDSO specification No RDSO/SPN/209/2012 Rev-1.0 or latest.	Module	24	6	23,659.00	5,67,816.00	1,41,954.00	7,09,770.00
61	Supply of Office furniture set for relay room consisting of chairs, office table, Airy revolving & tilting cushion chair, steel almirah, steel stool of Godrej make. This includes	No.	2	1	65,997.00	1,31,994.00	65,997.00	1,97,991.00
	a) Office chairs of model no CH-1007 of Godrej or equivalent model of same make. - 2 no				-			
	b) Office tables of model no T9 of Godrej or equivalent model of same make. with 3 drawers on left hand side & one locker on the right hand side. Olive brown/green with duplicate keys. -1 no				-			
	c) Airy revolving & tilting working cushion chair with arm rests of model no PCH 7002 of Godrej make or equivalent of same make. - 1 no				-			
	d) Supply of steel almirah - office storvel of Godrej make or equivalent model of same make. Size 1980 x 915 x 486 approx with 4 shelves making 5 compartments without locker having locking door. -1 no				-			
					-			
	e) Steel stool Godrej make or similar ST-2 or equivalent -4 no.				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
62	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.	Nos.	0	3	45,516.00	-	1,36,548.00	1,36,548.00
63	Supply and installation of inverter 1.2 KVA-Input 24V DC, Output 230 V AC (Pure sine wave). The power rating of inverter may vary as per site requirement and may be supplied after approval of engineer-in-charge. Make Microtek, Luminous or similar reputed brand.	Nos	4	2	11,800.00	47,200.00	23,600.00	70,800.00
64	Supply of USB to Opto converter along with ribbon cable	Nos	1	1	3,000.00	3,000.00	3,000.00	6,000.00
65	Supply & installation of data concentrator along with modem.(FEP)	Set	1		1,30,000.00	1,30,000.00		1,30,000.00
66	Supply of APC Euro 2000 pigtails 1.5 meter along with adapters as per latest TEC specification.	Nos.	0	16	750.00	-	12,000.00	12,000.00
67	Supply of Patch cord APC Euro 2000 to SC connectors 5 meter long as per latest TEC specification.	Nos.	0	16	2,850.00	-	45,600.00	45,600.00
68	Supply of 3-mtr SC-SC Duplex Fibre Patch Cord SM-9/125 microns, D-link or similar	Nos	0	16	950.00	-	15,200.00	15,200.00
69	Supply of Modem compatible with existing UFSBI system to work on backup media. The back media can either unframed 2 Mbps E1 channel from P-Mux or direct dark single mode optic Fiber cable upto 30 km.	Pair	0	2	68,827.00	-	1,37,654.00	1,37,654.00
Total of Schedule A (Supply-Signalling Materials) (without GST Rs.) =						18,75,65,645.00	4,37,54,843.00	23,13,20,488.00
SCHEDULE-B (SUPPLY-Telecom Materials)								
A	OFC Transmission System:							
1	Supply of 24 fibre Armoured Optic fibre Cable as per spec. IRS:TC:55/2006 Rev-1 Amd. 2 or with latest amendment.	KM	6	30	90,905.00	5,45,430.00	27,27,150.00	32,72,580.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
2	Supply of loose tube pigtail with FC-PC connector at one end each of minimum 10 mtrs. Length as per TEC Specification No. G/OFJ-01/03 JUN 99(with latest amendment) compatible with STM given above.	Nos	10	10	2,277.00	22,770.00	22,770.00	45,540.00
3	Supply and installation of rack mounted 24 fibre Fibre Distribution Management System part no FMS - 1U 24 FS 24 FP Raychem make including 24 Nos 0.2 db SC/PC adaptors and 24 Numbers. 900 micron 1.5 meter SCPC Pigtails RDSO Specification no. : RDSO/SPN/TC/037-2000(Rev.3) or latest.	Nos	0	3	31,379.00	-	94,137.00	94,137.00
4	Supply installation testing & commising including earthing of 42 u 19" covered racks for housing SDH and P- MUX equipments, DDF, FMS, MDF, using krone module etc. Complete with all fittings, wired and equipped with integrated protection modules for all channels and adequate numbers of cooling fans, AC/DC power supply distribution panels, U Link panels and other hardware like runway, ladders etc. It should be possible to lock all the equipments with only order wire telephone remaining outside the rack ..The rack should be of APW President/Rittal make . The components of the rack are specified below. Broad description of rack is detailed below .Rack size 2200(mm) H X 600(mm) W xX 600(mm) D .Fixed side panels 42 U X 600 (mm) D front glass door plain 42 U X 600 (mm) D rear MS door plain 42 U X 600 (mm) D leveling screws - 4 numbers .Fan directly mounted on top 48 V DC 90 CFM - 2 Nos. earth connectivity kit - 1 No. Cable manager with cable loops-2nos.	Nos	0	3	61,212.00	-	1,83,636.00	1,83,636.00
B	Ducts and Accessories for OFC				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
5	Supply of HDPE duct 40/33 mm permanently lubricated in lengths of 1000 Mtrs and accessories including end caps for every drum length as per spec. No. RDSO/SPN/TC/45/2013 Rev.-2.0 Amdt.-2.0 including latest amendment. This includes the loading, unloading and transportation at the site of work. This also includes supply of HDPE Duct Accessories like 2(two) END PLUG, 2 (two) Cable sealing plug and 2 (two)Plastic coupler-slip fit push type for every KM of HDPE supplied.	Km	6	30	75,151.00	4,50,906.00	22,54,530.00	27,05,436.00
6	Supply of OFC Joint Enclosure for straight through joint with modification for 24 fibre OFC as per TEC specification no. GR/OJC-02/02 SEP 2003 (with latest amendment) or latest. It includes splicing of optical fibre cables (24 Fibre) and testing.	Nos	4	10	14,798.00	59,192.00	1,47,980.00	2,07,172.00
7	Supply of Thermoshrink jointing kit for Jely filled Six quad cable conforming to RDSO Spec. IRS:TC-77/2006(Rev 1) with latest amendment.	Nos	4	20	6,071.00	24,284.00	1,21,420.00	1,45,704.00
8	Supply and fixing of VF Tapping Transormers (1120:470) as per the Spec. IRS TC 22-76 or latest RDSO specification.	Nos	8	15	896.00	7,168.00	13,440.00	20,608.00
9	Excavation for Jointing pit and provision of joint chamber of 1.2 mtr dia of 60 cm height with 2 piece cover on top and bottom cover with holes for drainage.This includes water cooling of chamber, backfilling and ramming of trench after laying and consolidated of soil as well as disposal of soil as per plan as advised by site engineer.	Nos	4	10	5,942.00	23,768.00	59,420.00	83,188.00

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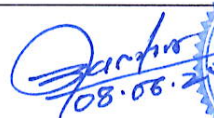


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
10	Supply and fixing of 20 pair CT Box and fixing on Hylam board on wall and termination of quad/ telecom cable at station/ SP/ SSP/ TSS/ LC gate/ Relay room/ office/ residences as per requirement and details given by engineer at site. The CT box after termination shall be sealed by pouring paraffin wax.	Nos	2	10	5,149.00	10,298.00	51,490.00	61,788.00
11	Supply of Switch board cable 5 pair for indoor wiring.	Km	2	1	18,531.00	37,062.00	18,531.00	55,593.00
12	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 post) 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 will be provided by the railways. It shall work on OFC or quad cable & it shall ensured by contractor before supply of the items. Telephone shall be ACES make or similar.	Set	0	2	28,901.00	-	57,802.00	57,802.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
13	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/ UFSBI/Contal 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/OFCIDC and module 2w/4w four port. Make : TEAM ENGG/FABIO or equivalent.	No	0	1	2,10,500.00	-	2,10,500.00	2,10,500.00
14	Supply of UPT CAT-6 Cable (4 pair) as per TIA/EIA 568.2-1 Cat-6 specification length of box not less than 1000 feet (305 mtr) make - Finolex/systimax/D-Link/Tyco. Accepted Make: D-Link. Standard IRS condition with latest amendment will be applicable.	Box	2	5	3,500.00	7,000.00	17,500.00	24,500.00
15	Supply and Installation of Desk type Electronic Magneto Telephone as per spec No IRS TC:36-97 or with latest Amendments.(Amndt.1)	Nos	4	2	3,585.00	14,340.00	7,170.00	21,510.00
16	Supply of 4/2 wire emergency light weight portable control telephone as per Spec. no. IRS-TC:78-2000 with amendment No. 3 including latest amendments with 6 pin flat plug to specn no. IRS-TC-42/87.	Nos	0	2	2,838.00	-	5,676.00	5,676.00
17	Supply of 50 pair Krone terminal complete with mounting arrangements.	Nos	0	6	2,579.00	-	15,474.00	15,474.00
Total of Schedule B (Supply-Telecom Materials) (without GST Rs.) =						12,02,218.00	60,08,626.00	72,10,844.00
SCHEDULE-C (Execution of Signalling Works)								


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	General Instructions: -							
	(1) For trenching, cable laying, provision of RCC/DWC/GI/RCC hume pipe/ HDD method for track/ road/ platform/ culvert/ bridge etc. to be followed as specified in tender documents.							
	(2) All the surfaces shall be repaired and brought back to its original condition, as the case may be.							
	(3) The standard ratio of cement, sand, 25mm stone chip shall be 1:3:6 respectively, wherever concreting and foundation of signal, location, etc. is involved.							
	(4) All the sundry materials will be provided by the contractor at site like: cement, sand, 25 mm or 1" stone chips for concreting, nuts, bolts, washers, sal wood shelves planks, S.W. strips, ferrules, anti corrosive/Red oxide/ Weather proof/Acid proof paint, MS plates/ angles/ flats, anchor (foundation) bolts, MS clamps, screws, eyelets, PVC bunching tape, buttons, condensor, resistance, varnish, fevicol, soldering/ welding material, copper lug, charcoal, salt, salmomiatic, 6 SWG GI- wire, MS pin, boss pin, 6mm rivet, split pin, angle cleats, 1" dia GI pipe, 6/8- SWG soft bond wire, flexible wire, channel pin, heat shrinkable tape, suitable compound for fixing lead wire, 1.5" GI/HDPE pipe for point machine/ axle counter, 3/4" thick sal wood boards, transparent sheet for box, lock for box make Godrej or similar, insulated strip, sulphuric acid, distilled water, cup board, sunmica, cable fixing clamps, power sockets, plugs, connectors etc. so as to complete the individual job as per schedule description.							
	(5) All the materials of Supply Schedule will be got issued by the contractor from stores and transported to the site as per the requirement. Rest all sundry materials will be supplied by contractor at site to complete the execution of work.							
	(6) The contractor has to conduct detailed site survey of the cable route, prepare a plan to get approval of the Railway, putting white lime powder marking before excavation of earth under supervision of railway/employer's authorized representative.							
	(7) GI-Pipes to be supplied by the contractor must be as per specification IS 1239, Pt-1, 1979 (grade medium).							
	(8) DAC, UFSBI/BI, IPS, Solar Panels, Data Logger, etc. shall be installed & commissioned by OEM with proper issue of Installation certificate by OEM.							
A	Electronic Interlocking System							
1	Installation, wiring, testing & commissioning of complete indoor EI system and other associated equipment as supplied in item no. 1 of Schedule -A (Station, End Goomty and IBS). 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							





S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	Rack/Equipment Rack/CT Rack. 6. Testing of earthing arrangement as per latest RDSO guideline/Technical advisory Note. 7. Contractor organising testing of wiring as per wiring diagram with Ircon/Railway. The testing includes -Functional testing, selection table testing with contractor's simulation panel. 8. Commissioning of Electronic Interlocking system after interfacing of indoor equipments with outdoor gears in association with Railway Personnel during Non Interlock working. Competent Engineer of manufacturer must be available during Pre NI, NI and Post NI. 9. EI system shall be design, Installation, wiring, testing & commissioning considering the complete requirement of Ph-1 and Ph-2 but not limited to:							
a	Bargawan (Distributed EI) with End Goomties.	Syst em	1		7,46,608.00	7,46,608.00	-	7,46,608.00
	Majhauri (Centralized EI)	Syst em	1		7,46,608.00	7,46,608.00	-	7,46,608.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
2	Design, Supply, Alteration/Modification, Installation, Tesing & Commissioning of Existing Electronic Interlocking of following stations as per attached sketch and site requirement. This includes (i) supply of all interface Relays, (ii) Equipment Racks, Relay Racks, Rack fixtures, mounting arrangements and accessories. (iii) Interconnecting cables and interfacing equipments required for interfacing the EI with outdoor gears, Data Logger system, Block Instruments, Axle counters, monitoring of Power Supply for IPS system etc. (iv) Optical cables along with interfacing equipment etc. (v) Painting & lettering of all indoor & outdoor newly installed gears. (vi) Design, Preparation and submission of as planned and as built all S&T indoor and outdoor documents based on approved SIP to suit RE of WC & SEC Rly and other associated work.				-			
a	New Katni Junction 'C' cabin (EI of Kyosan make)	LS		1	99,04,202.00	-	99,04,202.00	99,04,202.00
	NMWP (EI of Seimens make)	LS		1	35,11,320.00		35,11,320.00	35,11,320.00
3	Preventive and periodic maintenance/breakdown maintenance & supervision of SSI equipment within the period of maintenance for one year	LS	2	1	4,08,474.00	8,16,948.00	4,08,474.00	12,25,422.00
4	Training Consisting of training of Railway Personnel for EI system. This also includes supply of Hard and soft copies of course materials.	Man wees	1	1	26,091.00	26,091.00	26,091.00	52,182.00




S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
5	Preparation & Submission of 'as planned' and 'as made' documents for EI. It includes but not limited to: 1. Equivalent Circuit of Application logic 2. Interface circuits. 3. Selection table/Route Control Chart. 4. Video Display Diagram. 5. SWR & SWRD It should be done as per extent practice of WC Railway. The documents shall be supplied as per technical specification of tender document.	Set Per Station	2	2	2,76,306.00	5,52,612.00	5,52,612.00	11,05,224.00
6	Preparation & Submission of 'as planned' and 'as made' documents for complete indoor signalling work for IBS. It should be done as per extent practice of WC Railway. The documents shall be supplied as per technical specification of tender document.	IBS	0	2	76,904.00	-	1,53,808.00	1,53,808.00
7	Preparation & Submission of 'as planned' and 'as made' of all outdoor drawings for outdoor signalling work. It should be done as per extent practice of WC Railway. The documents shall be supplied as per technical specification of tender document.	Per Station	2	2	1,52,679.00	3,05,358.00	3,05,358.00	6,10,716.00
8	Preparation & Submission of 'as planned' and 'as made' of all outdoor drawings for outdoor signalling work for IBS. It should be done as per extent practice of WC Railway. The documents shall be supplied as per technical specification of tender document.	IBS	0	1	42,495.00	-	42,495.00	42,495.00
9	Installation, complete wiring Testing and commissioning of operating VDU including supply of station masters console for fixing telephones, Block instrument, Reset box & other equipments.	Per Station	2	2	43,826.00	87,652.00	87,652.00	1,75,304.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
10	Carrying out alteration to the existing Relay wiring at Relay rack/Location box as per the circuit Diagram. The work includes releasing the existing unused wires and wiring the relays using PVC 16/0.2 mm copper. (Wire PVC 16/0.2 mm copper for the work shall be supplied by the contractor)	Per Relay	0	40	563.00	-	22,520.00	22,520.00
11	Testing of point to point insulation / continuity test for all laid out cables, Measuring Parameters and preparing the records	Per Station	2	4	60,225.00	1,20,450.00	2,40,900.00	3,61,350.00
12	Patching of new CT Rack with existing CT Rack. This includes patching of cable cores from existing CT Rack from Relay Room to CT Rack of new Relay Room which includes Termination 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. The work shall be done as per instructions of engineer at site.	Nos.	0	3000	12.00	-	36,000.00	36,000.00
B	Datalogger				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
13	Installation, wiring, testing and commissioning of Data Logger/RTU 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. 4. Interlinking & Networking of Datalogger. 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 all 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.	Job	2	1	28,070.00	56,140.00	28,070.00	84,210.00
14	Modification / reconfiguration to dataloggers at stations and Control Centre to suite the SIPs.	No. of Stns	0	2	6,045.00	-	12,090.00	12,090.00
	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							

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	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 Contractor.							
C	Track Detection Equipment (MSDAC)				-			
15	Installation, wiring, Testing and commissioning of Multi-section Digital axle counter System including but not limited to: Fixing of Track Transducers on the rails, drilling of holes, installation of Electronic Junction Box in Location Box, termination of cables and wiring. Installation of Evaluator. Fixing of relays, bus bar & fuse. Installation, wiring, testing & commissioning of reset box/Line verification Box etc. RDSO check list for Installation are to be complied by Manufacturer's engineer. Note:- Installation to be done by OEM/Authorised Representative of OEM & precommissioning check list should be duly signed by OEM/ Representative of OEM & Railway/IRCON representative.				-			
a	Track side electronic Unit inclusive of evaluator & earthing if required.	Nos.	65	28	17,441.00	11,33,665.00	4,88,348.00	16,22,013.00
	Track Circuits				-			
16	Fixing and wiring of track circuit equipments in location box and testing including supply of wiring material. This includes:	Per Track Circuit	0.00	25	7,960.00	-	1,99,000.00	1,99,000.00
a	Complete work of fixing of hylam sheet supplied with location box, fixing of track circuit equipment like battery chargers, track feed resistance, choke, relays, fuses, terminals, batteries etc. as per approved wiring diagram in location box. As per WCR Railway practice, wire for wiring of these equipments of track circuits shall be supplied by contractor.				-			





S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
b	Supply of frame for fixing of relays - as per requirement				-			
17	Bonding of track circuits on track, track connections, installation, jumpering, charging of batteries, testing & commissioning of DC track circuits on track, including supply of Fibre glass track lead Junction boxes, etc.	Per Track Circuit	0.00	25	15,301.00	-	3,82,525.00	3,82,525.00
a	Supply of Channel bond pin (single groove, tinned or zinc coated 7mm dia), GI Bond wire soft (7 strand steel wire 8 SWG), PVC Jacketed wire rope (galvanized wire rope 6mm dia (6x19 standard wire with steel core sheathed with PVC 2 mm wall thickness, overall thickness 10 mm)				-			
b	Supply of Fibre glass track lead Junction boxes along with TLJB angle for termination of signaling cables - as per requirement				-			
c	Initial Charging of 3 nos. of batteries of 80AH capacity supplied along with supply schedule for track circuits.				-			
d	Installation, wiring, testing & commissioning of DC track circuits on track as per instruction of Site Engineer. This include all preparatory work of Glued joint bypass bonding, temporary negative bonding during NI and other physical adjustments before commissioning to enable existing Track circuit to continue and post commissioning bonding across old glued joint.				-			
D	Power Supply				-			
18	Installation, Wiring, Testing & commissioning of Integrated Power Supply system confirming to specn. no. RDSO/SPN/165/2012 (Ver. 3.0) or latest and to suit pre-commissioning Check List issued by RDSO. This includes charging, installation & commissioning of 55 Nos., 110V Low Maintenance Lead Acid (LMLA) Battery for S&T installations as per IRS: S-88/2004 and existant practice of WCR alongwith installation of	Nos.	4	1	2,45,774.00	9,83,096.00	2,45,774.00	12,28,870.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	Remote Indication Panel in SM/ASM's room. Any masonry work, if required, will be carried out by contractor's own material. The 25 sq mm wire shall be used for connecting Batteries from IPS, 16 sq. mm power cable is to be used for wiring of 110V DC, 110V AC & 60V DC (internal) and for balance power supply 10 sq. mm power cable is to be used. All connectors, wiring material, ladders, DWG pipes etc as per site requirement are to be arranged by contractor as per instructions of railway engineer at site. The contractor will provide supply & 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. This item includes transportation, loading & unloading of IPS system complete and batteries from Store to site of installation. 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 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 materials, fabrication and fixing of fuse and supply of distribution Board required for interconnection from IPS to Relay rack, CT Rack etc. as per RDSO guidelines/Railway practice. 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,							

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	tested and commissioned by approved vendor of RDSO, i.e by OEM.							
19	Augmentation of IPS 2X24V Converters or 24V/20A chargers for each station including wiring materials, Frame, 2 Numbers DC-DC converters, Fixing, testing and commissioning .	Nos.	2.00	4	78,571.00	1,57,142.00	3,14,284.00	4,71,426.00
E	Block Working				-			
20	Installation, wiring & testing of Double Line block instrumnets. 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	4	6	10,760.00	43,040.00	64,560.00	1,07,600.00
21	Installation, wiring & testing of axle counter based block panel for one complete block section along with other accessories. 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 work may be involved along with releasing of complete existing SL block instrument and its accessory and its transportation to new location for further use.	Set	0	6	65,100.00	-	3,90,600.00	3,90,600.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
22	Installation, wiring, testing & commissioning of new Digital axle counter system (HASDAC/SSDAC). Outdoor work includes: Fixing of track transducers on the rails. Drilling of holes in rails. supply and laing of HDPE pipe. Laying of track transducers cable from rail to HASDAC/SSDAC unit in HDPE pipe, digging/trenching as per instruction of Site Engineer. Installation of HASDAC/SSDAC unit in location box. Termination of cables & wiring of HASDAC/SSDAC unit. Indoor work includes: Installation of Reset Box, wiring and termination of quad cable. Laying & termination of cable from C.T.rack to Reset Box. Fixing of relays, bus bars & fuses. Installation, wiring, testing & commissioning of reset box & line verification box in SM room / cabin. This includes: Fixing of reset box/line verification box on Wooden/hylam sheet. Supply & fixing of MS angles. RDSO Check list for installation are to be complied by manufacturer's engineer.	Set	0	4	1,36,236.00	-	5,44,944.00	5,44,944.00
F	Signals				-			

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
23	a) Excavation of pit, fixing of foundation scaffolding, casting & plastering of concrete foundation, removal of scaffolding, water curing and earth filling for Colour Light Main Signal and Casting of cement concrete foundation for signal ladder as per WCR practice. This includes : Supply of cement, sand, stone chip & mixing in the ratio 1:3:6. b) Erection of Multi aspect colour light signals. This includes : Erection of surface base, signal post, signal unit, junction type route indicator, and shunt signal on OFF set bracket, calling on signal, ladder with guard & platform, fixing of P/C/G marker, supply & fixing of Heat enamelled signal number plate & blanking-off signals as per the requirement. Making of holes in CLS post, supply of other minor material like clamps, nuts & bolts, wiring material etc. Fixing of signal lamps/LED's with accessories on 2/3/4 aspect signal unit, shunt, route, calling on unit as per the requirement. Termination of the tail cable in the signal units, wiring of signal and testing, focusing of signal etc.	Signal	20	15	17,330.00	3,46,600.00	2,59,950.00	6,06,550.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
24	a) Excavation of pit, fixing of foundation scaffolding, casting & plastering of concrete foundation, removal of scaffolding, water curing and earth filling for Independent Shunt Signal as per WCR practice. This includes : Supply of cement, sand, stone chip & mixing in the ratio 1:3:6. b) Erection & wiring of shunt signal. This includes : Erection of surface base, shunt signal post, shunt signal unit. Supply & fixing of Heat enamelled signal number plate, Fixing of lenses, signal/LED lamp, supply and fixing of antitheft protection etc., where ever required. Termination of the tail cable, supply of wire & wiring of signal unit. Focusing and testing of shunt signal.	Signal	12	2	5,356.00	64,272.00	10,712.00	74,984.00
25	Supply and installation of Goods Warning Board/Caution Board/Stop Board/Block Section Limit Board(BSLB)/Shunting Limit Board/Calling on Board/Change of Signalling territory board etc as per WCR practice. 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 x 0.5 mtr with cement concrete in the ratio 1:3:6. All material will be supplied by the contractor.	Nos.	6	6	20,476.00	1,22,856.00	1,22,856.00	2,45,712.00
G	Point Equipment (Electrical Points)				-			
26	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 WCR & the instruction of Engineer. All materials related to wiring will be supplied by the contractor.	Per Point Machine	30	10	18,598.00	5,57,940.00	1,85,980.00	7,43,920.00





S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
27	Excavation & Pulling out the old cable from existing point machines, insertion of old & additional new cable through GI bend pipe, wiring, testing and commissioning of point machine.	Per Point Machine	5	4	7,019.00	35,095.00	28,076.00	63,171.00
28	Fixing of Key Lock Relay AC immunized with different ward combinations (Two extra set of ward plate for Point Machine to be supplied with each relay) of RDSO approved Make working on 60/24V DC or functional equivalent.	Nos.	40	10	1,597.00	63,880.00	15,970.00	79,850.00
29	Supply & Fixing of Pre-wired Crank Handle cum key lock relay box alongwith LEDs, push buttons, 8-way terminal strips, string rod, etc. suitable for 6 crank handle relay per box. It includes supply of any minor bracket, nuts, bolts, teakwood, sunmica, lock, drilling holes as directed by engineer at site.	Nos.	4	4	12,429.00	49,716.00	49,716.00	99,432.00
H	Location Boxes				-			
30	Excavation, casting, concreting, curing and plastering (above ground level) of Apparatus case foundation as per practice of WCR & 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.	75	25	11,517.00	8,63,775.00	2,87,925.00	11,51,700.00
b	Half Location Box as per Drg No JBP/S&T/C/085	Nos.	50	20	6,690.00	3,34,500.00	1,33,800.00	4,68,300.00

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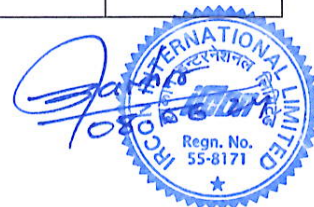
S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
	Note: The above item includes supply and installation of petty material for fixing, clamping & mounting arrangement, fabrication and fixing of Hylam sheet in location box, by providing all fixtures as per railway drawing including fixing of PVC coated string rods at the back side for cable support with contractor's own material. The work shall be done as per as per instructions of Engineer Incharge.				-			
K	Cable Laying				-			
31	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.	4	2	19,944.00	79,776.00	39,888.00	1,19,664.00
32	Excavation of trenches at the depth of 1.0 Mtr. deep and 300 mm wide at the bottom of the trench including clearing of roots, bushes, or other obstruction etc. for all types of soils including Murrum, soft rock, hard soil mixed with boulders etc. as per cable route plan. This also includes complete back filling the trench after laying required quantity of cable, protection pipes/bricks, route marker etc and ramming and consolidation of soil as well as disposal of extra soil .	Km	2	12	77,302.00	1,54,604.00	9,27,624.00	10,82,228.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
33	Excavation of trench as per cable route plan, 1.2 mtr deep, 300mm wide at the bottom along main line in normal soil. This work includes covering of cable laid in trenches by loose soil for a layer of 50 mm thickness approximately before covering by shahabad stone/bricks, clearing of route, bushes etc and refilling of the trench by excavated soil and ramming after laying of the required quantity of cables as per instructions of Engineer at site. If it is not possible to reach the required depth at any location, then the contractor shall obtain prior approval of Engineer-in-charge before commencement of cable laying process and only then shall the proportionate payment be made to the contractor.	Km	12	5	80,114.00	9,61,368.00	4,00,570.00	13,61,938.00
34	Excavation of cable trench of 1 m. depth & 300 mm. wide across the track crossing, road crossing, level crossing, platform & refilling after laying DWC pipe with collars. This does not include provision of Tiles etc in case of Platform.. The work shall be done as per existant practice of West Central Railway & Instruction of Engineer.	Km	2	1	79,409.00	1,58,818.00	79,409.00	2,38,227.00
35	Horizontal direction drilling/boring without damage of surface of road /Track formation. It includes supply, transportation and insertion of self lubricated HDPE pipe (Inner dia 103.5mm and outer dia 120mm). The depth of horizontal boring should be min. 1m from rail flange/road level.	Mtr	200	200	2,888.00	5,77,600.00	5,77,600.00	11,55,200.00

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		1	2	3	4	5=2*4	6=3*4	7=5+6
36	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 the ends at either side of the rocky portion using concrete mixture with contractor's own materials and excavated earth to its original condition.	Mtr	300	200	730.00	2,19,000.00	1,46,000.00	3,65,000.00
37	Laying & Installation of 100 mm B Class perforated GI pipe for Cable Protection at culverts/Bridges including cutting, suitably concreting at both ends, GI clamps, flats etc. All material to be supplied by Contractor.The work shall be done as per instruction of Engineer.	Mtr	300	300	57.00	17,100.00	17,100.00	34,200.00
38	Laying of Signalling/Power/Telecom Cables of various cores in trench and meggering of main and tail cables. This includes loading/unloading & transportation of cables to site. Whenever several cables are to be laid separation of cables should be as advised by site engineer. This also includes unwinding of cable drum using proper jigs without causing damage to cable.	km	350	60	6,375.00	22,31,250.00	3,82,500.00	26,13,750.00
39	Transportation & Laying of DWC/RCC pipes along with collars in trenches at required locations as per the instruction of engineer at site.	km	1.00	1.00	46,499.00	46,499.00	46,499.00	92,998.00
40	Placing of half round (Split DWVC) pipe over the laid cable in open trenches in yards between Home signal to Home signal and tying pipe with cable with loose armouring	km	6	10	4,135.00	24,810.00	41,350.00	66,160.00
41	Laying HDPE duct in already made trenches and through DWC/GI/RCC pipes wherever necessary	km	6	30	11,465.00	68,790.00	3,43,950.00	4,12,740.00
L	Level Crossing Gate				-			
42	Shifting of existing power operated lifting barrier	Per barrier		1	8,184.00	-	8,184.00	8,184.00

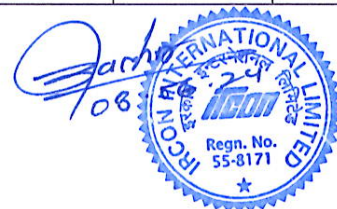



S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
M	Miscellaneous				-			
43	Filling earth around location boxes/signal posts	Per cum	10	4	129.00	1,290.00	516.00	1,806.00
N	Painting				-			
44	Cleaning, scraping, Painting & lettering of all indoor& outdoor newly installed and existing gears by the contractor including supply of all materials for the work by contractor.				-			
a)	Medium Station 4/5/6 lines	Station	2	2	47,390.00	94,780.00	94,780.00	1,89,560.00
a)	IBS	IBS	0	1	13,528.00	-	13,528.00	13,528.00
O	Dismantling Work				-			
45	Dismantling & Releasing of the following S&T gears. The work includes transportation of released material to the store of IRCON/Railway and properly stacking the same in the store.				-			
a	Dismantling and Release of complete INDOOR equipment from stations / IBH/LCgates and transportation of released material after commissioning from the station/IBH/LC to the S&T store depot or to other site for reusing with contractors own transport as per direction of site Engineer. Most of the indoor released material like - Relays, relay racks, Base plates, CT rack, Terminals, IPS, Tagblock, Datalogger, ELD, Block Instruments, Filter unit, Key lock box with relays etc are proposed to be reuse at the same station or at other stations, thus releasing to be done carefully with out damaging the equipments. The quantity of released material shall be jointly recorded by the contractor and Engineer's/railway representative before releasing from site.	Stn.	2		51,193.00	1,02,386.00	-	1,02,386.00

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S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
b	Dismantling and Release of complete OUTDOOR equipment from stations/ IBH /LCgates and transportation of released material after commissioning from the station/ IBH/LC to the S&T store depot or to other site for reusing with contractors own transport as per direction of site Engineer. Most of the released material like - Signal, Point machine with ground connection, Track relays, and track equipments, axle counter, EC socket and post, gate telephone etc are proposed to be reused at the same station or at other stations, thus releasing to be done carefully with out damaging the equipments. The quantity of released material shall be jointly recorded by the contractor and Engineer's/railway representative before releasing from site.	Stn.	2		51,193.00	1,02,386.00	-	1,02,386.00
46	Shifting/ lifting of existing location boxes/ signals/Track lead boxes, junction boxes etc along with foundation to adjacent place to facilitate earth work/ clearing infringement etc at stations including IBH, LC gates etc.	Stn	1		29,037.00	29,037.00	-	29,037.00
47	Loading, unloading and transportation of additional/balance Signal and telecom materials after completion of work or during execution of work, to and from Railway/Ircon other stores depot to and from the site of work. Note: This does not include transportation of material from nominated depot to site and back or from site to site, which is to be done by contractor free of cost.	Per 100 Ton Km	10		623.00	6,230.00	-	6,230.00
Total of Schedule C (Supply-Telecom Materials) (without GST Rs.) =						1,30,89,768.00	2,21,76,110.00	3,52,65,878.00
SCHEDULE-D (Execution of Telecom Works)								
A	OFC SYSTEM							

S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
1	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	6	30	14,988.00	89,928.00	4,49,640.00	5,39,568.00
2	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 IRCON's representative. Only joint closure shall be issued by IRCON. 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 0.75 m) in all types of soils for keeping cable coils at the location of OFC joints, filling the pit with sand after jointing of cables, ramming and covering with RCC slab as per instructions of site incharge of IRCON.	Nos	8	10	21,786.00	1,74,288.00	2,17,860.00	3,92,148.00

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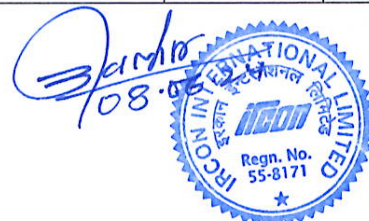


S N	Description of Item	Unit	Qty KSD	Qty KGS	Rate (Rs.)	Amount KSD (INR)	Amount KGS (INR)	Total Amount (INR)
		1	2	3	4	5=2*4	6=3*4	7=5+6
3	Transportation and execution of joints on Quad cable/PIJF cable using Themoshrink jointing kit (with installation of VF transformer wherever required and advised by Engineer in Charge). This also includes excavation of cable joint pit of size 1.2mx1.2mx1.0m in all types of soil for jointing of copper cables, backfilling and ramming after jointing.	Nos	6	10	2,124.00	12,744.00	21,240.00	33,984.00
B	VHF Tower and Shifting of Telecom Equipment:							
Total of Schedule D (Execution of Telecom Work) (without GST Rs.) =						2,76,960.00	6,88,740.00	9,65,700.00
SCHEDULE-E (Provision of Vehicle and Provision of Technical & Design Consultant)								
A	Provision of Vehicle							
1	Provisioning of dedicated 7-seater passenger SUV for movement of Ircon S&T Engineers on the project site. The above shall include cost of driver, fastag/toll tax, fuel, etc with availability as per Ircon Engineer's requirement.	Per KM	30000	50000	21.00	6,30,000.00	10,50,000.00	16,80,000.00
B	Provision of Technical & Design Consultant				-			
2	Technical and Design Consultant and Project Construction Manager to be provided by the Contractor as per the following plan:-				-			
i	S&T Expert/ Personnel	1 Man mon ths	6	12	83,016.00	4,98,096.00	9,96,192.00	14,94,288.00
ii	Supervisor/ Personnel	4 Man mon ths	12	24	62,723.00	7,52,676.00	15,05,352.00	22,58,028.00
iii	CAD operator/ Personnel	1 Man mon ths	12	0	62,723.00	7,52,676.00	-	7,52,676.00
Total of Schedule E (Provision of Vehicle and Provision of Technical & Design Consultant) (without GST Rs.) =						26,33,448.00	35,51,544.00	61,84,992.00
Total of Schedule A, B, C, D, E (Without GST) (Rs.) =						20,47,68,039.00	7,61,79,863.00	28,09,47,902.00
18% GST (Rs.) =						3,68,58,247.02	1,37,12,375.34	5,05,70,622.36
Grand Total of Schedule A, B, C, D, E (With GST) (Rs.) =						24,16,26,286.02	8,98,92,238.34	33,15,18,524.36

Note: -

KSD: - Katni – Singrauli Doubling

KGS: - Katni Grade Separator




ANNEXURE - I

LIST OF ITEMS REQUIRED IN TOOL KIT				
S.No.	DESCRIPTION	MAKE	SIZE	QTY
1	Non-insulated flat plier.	(Taparia /Jhalani)	200 mm.	1
2	Insulated flat plier.		125 mm.	1
3	Insulated side cutting plier.	-do-	6 inch.	6
4	Combination plier.		200 mm	2
5	Insulated striping plier.		150 mm	3
6	Insulated nuse plier.		150 mm	3
7	Monkey plier.		10 inch.	1
8	Screw Driver (Insulated).	-do-	150 x 3 mm	1
9	Screw Driverd (Insulated).	-do-	150 x 4 mm	1
10	Screw Driver (Insulated).	-do-	150 x 5 mm.	1
11	Screw Driver (Insulated).	-do-	150 x 6 mm	1
12	Screw Driver (Insulated).	-do-	150 x 8 mm	1
13	Screw Driver (Insulated).	-do-	250 x 8 mm	1
14	Screw Driver (Insulated).	-do-	250 x 10 mm	1
15	Flat coarse file with handle.		150 mm	1
16	Round fine file with handle.		150 mm	1
17	Hammer with handle.		500 Cms.	1
18	Brass Brush.			2
19	Spanner double ended.	(Taparia Jhalani)	6 x 7 mm	2
20	Spanner double ended.	-do-	8 x 9 mm	2
21	Spanner double ended.	-do-	10 x 11 mm	2
22	Spanner double ended.	-do-	12 x 13 mm	2
23	Spanner double ended.	-do-	14 x 15 mm	2
24	Spanner double ended.	-do-	16 x 17 mm	2
25	Spanner double ended.	-do-	18 x 19 mm	2
26	Spanner double ended.	-do-	20 x 22 mm	2
27	Spanner double ended.	-do-	21 x 23 mm	2
28	Spanner double ended.	-do-	24 x 26 mm	2
29	Spanner double ended.	-do-	25 x 28 mm	2
30	Spanner double ended.	-do-	27 x 32 mm	2
31	Spanner double ended.	-do-	30 x 32 mm	2
32	Hack saw frame.		6 inch.	2
33	Hack saw frame.		12 inch.	2
34	Hack saw blade.	(Miranda Make)	12 x 1/2 inch.	6
35	Hack saw blade.		6 x 1/4 inch.	6
36	Steel measuring tape.	(Frumen Make)	3 Mt.	2
37	Adjustable screw wrench.	-do-	6 inch.	2
38	Adjustable screw wrench.	-do-	12 inch.	2

Param
08.06.24



LIST OF ITEMS REQUIRED IN TOOL KIT

S.No.	DESCRIPTION	MAKE	SIZE	QTY
39	Adjustable screw wrench.	-do-	15 inch	2
40	Bench vice, size.			2
41	Level bottle.			2
42	Soldering Iron 230V, 100W.	(Keertone Make)		1
43	Soldering Iron 230V, 65 W.	-do-		4
44	Soldering Iron 230V, 25W.			2
45	Box spanner.		5m.	2
46	Box spanner.		6mm	2
47	Box spanner.		7mm	2
48	Box spanner.		8 mm	2
49	Box spanner.		9 mm	2
50	Box spanner.		10 mm	2
51	Box spanner for OBA Terminals with plastic handle			4
52	Tap set.		3 mm	1
53	Tap set.		4 mm	1
54	Handle for tap.			1
55	Multimeter 3 and half digit	Fluke 76 or latest		4
56	Megger 500 V. DC	MOTWANE MAKE		2
57	Tool box of GI sheet 185			1
	WC with Navtal Lock.			1
58	Crimping Tool .	3D make (CAT No. 3D-3) OR EQUIVALENT		1
59	Digital Tong meter.	MECHO MAKE 2727 OR EQUIVALENT		2
Note	If any make as mentioned above is not available in the market then the equivalent model of the item of available make may be supplied with the prior approval of Engineer-in-charge.			




Signature Not Verified

Digitally signed by GAURAV KUMAR
Date: 2024.06.12 16:49:11 IST
Location: eProcurement System for
Central PSUs