

# TECHNICAL SPECIFICATIONS

Name of the Work:-

**“Design, Planning, Supply, installation,fixing,configuration, integration and commissioning of a secure, reliable, scalable, manageable and converged communication system for 230+ stations over SWR consisting of IP based communication network with an IP- MPLS (Internet Protocol-MultiProtocol label Switching) backbone interconnecting VoIP (Voice over Internet Protocol) based Train Control Communication System (TCCS), SIP(Session Initiation Protocol) based Exchange Communication and VSS (Video Surveillance System) and integrating with Existing SIP Exchanges, VoIP based TCCS and VSS , as per description and specifications enclosed.”**

## TABLE OF CONTENTS

	<b>Title</b>
CHAPTER- 1:	SCHEDULE OF ITEMS, QUANTITIES AND RATE (SOQ)
CHAPTER-2:	SCOPE OF WORK AND TECHNICAL REQUIREMENTS
CHAPTER- 3:	TECHNICAL SPECIFICATIONS OF SCHEDULE ITEMS
CHAPTER- 4:	TECHNICAL REQUIREMENTS & SUPPLEMENT

# **CHAPTER-1**

## **SCHEDULE OF ITEMS, QUANTITIES & RATES (SOQ)**

**Sub Work :A –**

**IP MPLS (Multi Protocol Label Switching)**

Sub-Work A - IP MPLS(Multi Protocol Label Switching)									
Schedule A1: SOR Items									
Sl. No	SOR Item No.	Description of Material	Item Code	Unit	UBL	SBC	MYS	Total Qty	Rate (in Rs.)
		Transportation.							
1	10_521(a)	Transportation of S&T materials by road as per the instruction of railway representatives at site. The work also include loading and unloading of the materials upto 100Km	Transportation <100 Km	Per Tonne Km	200	0	200	400	18.20
2	10_521(b)	Transportation of S&T materials by Road as per the instruction of railway representatives at site. The work also include loading and unloading of the materials more than 100Km	Transportation >100 Km	Per Tonne Km	400	280	400	1080	11.13

Schedule A2: IP MPLS Routers, Manageable Switches and Accessories								
Sl. No	Description of Material	Item Code	Unit	UBL	SBC	MYS	Total Qty	Rate
	<b>IP MPLS Routers and Accessories</b>							
1	Supply of Standard 19" Rack Mountable LER(Label Edge Router) , IP- MPLS Router with Redundant DC power feed -48V DC nominal, equipped with interfaces: 2 x 10G (optical) SFP+ Ports along with 2 Nos of 40 Kms 10G SFP+ LC Modules, 4 x 1GbE (Optical) interface along with 4 Nos of 1GbE Single Mode Bi-directional SFP (10KMs) Modules and 4 x 1GbE (Copper) interfaces & Modules and slot for 16 x E1 (G.703), {supply of 16 E1 card is not included in this item and is catered in item number A2 (4)}, Mounting kit with all necessary accessories & Software, Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest. Inspection : RDSO	LER Min	Nos	113	67	87	267	3,69,963

2	Supply of Standard 19" Rack Mountable Modular Chassis LSR (Label Switch Router) IP-MPLS Router with Redundant DC power feed -48V DC nominal Redundant Controller Card, equipped with interfaces: 8 x 10G (optical) SFP+ Ports along with 8 Nos of 40 Kms 10 G SFP+ Modules, Mounting Kit with all necessary accessories & Software, Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest. Inspection RDSO.	LSR	Nos	17	3	8	28	16,76,273
3	Installation, Commissioning & Testing of LER & LSR IP MPLS Routers including supply & Installation of all the accessories like Power cable, Earthing Cable, Optical Patch Cords of 3 mtr- 4 Nos for LER & 8 Nos for LSR s, Cat 6 Patch Cords of 1 mtr -4 Nos, one 6A MCB for each LSR and LSR, wiring etc. as required for Routers	MPLS Installation	Nos	143	73	103	319	12161
4	Supply and installation of 16 port E1 Card along with Patch panel/Krone Module and wiring for Routers with all accessories etc. Inspection RDSO.	16 E1 Card	Nos	126	70	95	291	101480
5	2 x 10G Adapter Interface without 10G SFP+ Modules for LER Routers. Inspection RDSO.	10 G Adapter	Nos	1	1	1	3	56640
6	8 x 1G Adapter Interface (any combination: one nos of 8 x 1G or two nos of 4 x 1G) without SFP for LER Routers. Inspection RDSO.	1G Adapter	Nos	2	2	2	6	59472
7	2 x STM 1 Adapter Interface with 2 Nos. of STM-1, 15 km, SFP modules for LER Routers. Inspection RDSO.	STM 1 Adapter	Nos	1	1	1	3	261550.54
8	10G SFP+ Module with 40 Km range for above Routers. Inspection RDSO.	10G SFP	Nos	1	1	1	3	97989.56
9	1G SFP Module with 10 Km range for above Routers. Inspection RDSO.	1G SFP	Nos	5	5	5	15	1180
10	Supply of STM-1 SFP Module with 15 Km range with all accessories for above Routers. Inspection RDSO.	STM-1 SFP 15 Km	Nos	1	1	1	3	8832.3
11	Supply of 10/100/1000 Base-T Copper Ethernet Transceiver SFP Module with all accessories. Inspection RDSO	Ethernet transceiver	Nos	1	1	1	3	5581.4
12	Supply of Standard 19" Rack Mountable LER (Label Edge Router), IP-MPLS Router with Redundant DC power feed -48V DC nominal, equipped with interfaces: 2 x 10G (optical) SFP+ Ports along with 2 Nos of 40 Kms 10G SFP+ LC Modules, 4 x 1GbE (Optical) interface Module along with 4 Nos of 1GbE Single Mode Bi-directional SFP (10KMs) Modules and 4 x 1GbE (Copper) based interfaces & Modules, 2x STM-1 (Channelised) interface along with 2 Nos of SFP(S.1.1) Modules Compatible with Existing STM-1 and slot for 16 x E1 (G.703),	LER Max II	Nos	13	3	8	24	3,69,963

	{supply of 16 E1 card is not included in this item and is catered in item number A2 (4)} . Mounting kit with all necessary accessories & Software, Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest. Inspection RDSO							
<b>Schedule A3: Servers, NMS and Workstations</b>								
1	Supply, installation, Testing and Commissioning of Network Management System (NMS) inclusive of Software, Hardware and Perpetual Licenses for Minimum 5400 Network Elements including IP MPLS Router, L3 Switches, L2 Switches, UPS, Gateways and other network elements with SNMP support [Detailed Specification in Technical Document] Inspection RDSO.	NMS Hardware & Software	Lot	1	0	0	1	35400000
2	Supply and Installation of Server Based Network Management System inclusive of Hardware and Software for Network Elements including Switches , Servers, etc. of Multiple makes at Data Centre(DC & DR). Inspection RDSO. This item shall be operated along with item No.1 above. Detailed Specification in Technical Document enclosed.	NMS	Lot	1	0	0	1	7088127.81
3	Supply & installation of PC Workstation/Maintenance Console as per specification detailed in Para no. G of RDSO Document No. STT/TAN/IP-MPLS/2020 Ver 1.0 or latest [Detailed Specification in Technical Document]Inspection RDSO	PC Workstation	Nos	1	1	1	3	69700
4	Supply and installation 55-inch UHD Monitor 4K . [Detailed Specification in Technical Document]Inspection: Consignee	55-inch TV	No	2	2	2	6	54579.2
<b>Schedule A4: Switches</b>								
	<b>Manageable Switches and Accessories</b>							
1	Supply and Installation of Standard 19-inch Rack Mountable Layer 3, 24 Port Managed Switch with 24 Nos of 10/100/1000 Ethernet Ports with POE + Support and Redundant AC Power Supply, Dedicated Stacking Module 4 x 10 GE SFP+ Ports for uplink including 4 Nos of 10 GE BX SM SFP+ Modules, as per para number 4.0 of RDSO SPECIFICATION NO. RDSO/SPN/TC/83/2020 Rev 2 or latest. Mounting Kit with all necessary accessories to be supplied. [Detailed Specification in Technical Document]Inspection RDSO.	24 Port Layer 3 Switch	No	126	45	95	266	109386
<b>Schedule A5: FDMS, Cables and U Rack</b>								
	<b>FDMS and accessories</b>							
1	Supply and Termination of 12 Fiber 12 SC Type Rack Mountable FDMS loaded with SC 'O' DB & Adaptor SC SM Pigtail 1.5 meters with all the accessories required for installation [Detailed Specification in Technical Document] Inspection: RITES	12 Fiber FDMS	Nos	302	180	210	692	9841.79

2	Supply of Single Mode Patch Cord length 3 meters (LC-SC/SC-SC/LC-LC/FC-LC) as per site requirement [Detailed Specification in Technical Document] Inspection: Consignee	OFC Patch Cord	Nos	620	295	320	1235	175.9
3	Splicing /Dropping/Termination of each Fiber /Pigtail in the LIU/FDMS/Termination Joints through fusion Splicing of the termination of OFC Cables.[Detailed Specification in Technical Document] .	Fiber Splicing	Core	3474	2130	2420	8024	45.44
	<b>Cables</b>							
4	Supply of STP CAT- 6 Cable compliant with latest EIA/TIA-568-C.2 Standard for CAT 6 Cable 305 Mtrs Roll /Bundle. [Detailed Specification in Technical document]Inspection: RITES	STP Cable	Mtr	6000	10000	6000	22000	33.2
5	Supply of 12 Core Metal Strengthened Outdoor Unarmoured Optic Fibre Cable (ITU-TG-652-D) and all the accessories required for installation,as per latest TEC/BSNL Specification. [Detailed Specification in Technical Document]Inspection: RITES.	12F OFC unarmoured	Mtrs	12000	0	6000	18000	12.98
6	Supply of PVC insulated 3 Core 6 Sqmm,12 AWG 12.1 KV Grade Outdoor Strengthen Copper Cable. [Detailed Specification in Technical Document]. Inspection Consignee.	Power Cable	Mtrs	100	100	100	300	203.33
7	Supply of CAT 6 UTP Patch Cord-2 Mtrs as defined in Detailed Technical Specification.Inspection: Consignee.	Cat-6 Patch Cord	Nos	150	0	150	300	75.99
8	Supply and installation/fixing of Wall Mountable RJ45 Socket and Faceplate with shutter and network module as defined in Detailed Technical Specification . Inspection Consignee	RJ 45 I/O Box	Nos	141	0	80	221	393.6
9	Supply of RJ 45 connector suitable for STP/UTP cable [Detailed Specification in Technical Document] Inspection: Consignee	RJ 45 Connect-ors	Nos	200	0	200	400	2.853
	<b>Rack</b>							
10	Supply & Installation of 19"42 U 1200mm Depth Telecom Rack with Standard Accessories (Closed type) with front door Glass type, all doors should be removable type [Detailed Specification in Technical Document] Inspection RITES.	42U Rack 1200 mm	Nos	2	3	1	6	43979.78
11	Supply and Installation of 19 inch 42U 600mm Depth Telecom Rack with Standard Accessories (Closed type Telecom Rack) Front Door Glass type, all doors should be removable type [Detailed Specification in Technical Document]Inspection RITES	42 U Rack 600mm	No	4	8	5	17	35231
<b>Schedule A6: Labour portion and Training</b>								
	<b>Labour portion</b>							
	<b>PVC, HDPE, DWC</b>							

1	Supply of PVC Conduit Pipe minimum 35 mm Dia ISI Mark. Installation of PVC Pipe, clamping of the same on Wall, Pole etc. including with required clamps & and all the installation materials required. [Detailed Specification in Technical Document] Inspection: RITES	PVC Pipe	Mtrs	12000	0	6000	18000	32.38
2	Supply of PLB HDPE Duct of Size 40/33 mm Outer and with all Accessories, Installation on Wall or Structure HDD etc. along with all Accessories required for fixing, Clamping Cutting, as per RDSO Spec No RDSO/SPN/TC/45/2013 Rev 2 or latest. Inspection: RDSO.	HDPE Duct	Mtrs	12000	5000	6000	23000	89.49
3	Trenching and laying of HDPE Duct in Normal Soil and blowing of OFC Cable [Detailed Specification in Technical Document].	HDPE Duct laying	Mtrs	12000	5000	6000	23000	172
4	Supply and Laying of DWC Pipe 77/63 mm dia with couplers as per RDSO Spec No RDSO/SPN/204/2011 Version 1.1 and as per the direction of site Engineer. [Detailed Specification in Technical Document] Inspection RITES.	DWC Pipe	Mtrs	100	100	100	300	118
5	Supply and fixing of GI pipes - 50mm dia -3.65mm thick, along with clamps and all the accessories required for installations as per Specification given. Inspection RITES.	GI Pipes	Mtrs	100	100	100	300	269.28
6	Opening of existing Joint enclosure and Splicing 2/4 additional fiber Inside already prepared jointing pit and Providing anti termites/ant Powder. Closing of Existing Joint and Backfilling is included. This does not Include provision of joint chambers, top plates.	OFC Joint Opening	Nos	124	70	95	289	3000
7	Breaking of Pucca/Concrete Road, PF Cutting Laying of OFC/STP/Power cable etc in Trenches and through all types of protection Viz HDPE/GI/RCC Pipes as the case may be. This includes restoration of surface and stone pavement/Pavers.	Platform Cutting	Mtrs	1000	0	1000	2000	437.3
8	Boring & Trenching cabling along with supply and insertion of HDPE Pipe PE 80 PN of 40 mm dia with min 6.7 mm and Max 7.6 mm wall thickness as per IS 4984-95, in the bore for the laying of Telecom/Power cable under the Track /road/HDPE Pipe is to be supplied by the contractor.	Boring & Trench	Mtrs	100	100	100	300	148.2
9	Blowing / Drawing of OFC 24F/12F/6F Power Cable and CAT Cable (including crimping) through PVC Conduit/Duct/DWC/GI Pipe already installed.	Drawing Cable	Mtrs	24100	0	15600	39700	4.72
	<b>Training</b>							
10	Training of personnel over and above the on-site/ OEM/OEM authorized training partner premises training, during the installation, maintenance and supervision period as detailed in the tender document. Defined in Man-Week i.e. One week training for one personnel or as desired by the Railway.	Training	Man Weeks	6	6	6	18	23600



**Sub-Work B :**

**Video Surveillance System**

Sub work B : Video Surveillance System									
Schedule B1: SOR Items									
S.No	SOR Item No.	Description	Item Code	Unit	UBL	SBC	MYS	Total Qty	Rate
		<b>Transportation of S &amp; T Materials</b>							
1		Transportation of Signaling materials by road as per the instructions of the Railway representative at site. The work also includes loading and unloading of the materials.	Transportation						
1a	10_521(a)	<b>Transportation up to 100 kms</b>	Transportation	Per Ton Km	800	800	200	1800	18.20
1b	10_521(b)	<b>Transportation more than 100 kms</b>	Transportation	Per Ton Km	2700	2300	3100	8100	11.13

Schedule B2: IP Cameras									
S.No	Description		Item Code	Unit	UBL	SBC	MYS	Total Qty	Rate
	<b>IP Cameras</b>								
1	Supply, Installation, Testing and Commissioning of Full HD Fixed Dome type IP Colour Camera along with 128 GB or Higher SD Card, Housing & Mount and all accessories required for installation purposes as per RDSO Spec No RDSO/SPN/TC/65/2021,Rev 6.0 or latest. Inspection RDSO.		DOME	No	248	245	251	744	17464
2	Supply, Installation, Testing and Commissioning of Full HD Fixed Bullet type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount and all accessories required for installation purposes as per RDSO Spec No RDSO/SPN/TC/65/2021,Rev 6.0 or latest. Inspection: RDSO.		BULLET	No	582	570	556	1708	18408
3	Supply, Installation, Testing and Commissioning of Full HD PTZ type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount and all accessories required for installation purposes as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection: RDSO.		PTZ	No	93	91	90	274	68440
4	Supply, Installation, Testing and Commissioning of 4K UHD Bullet type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount and all accessories required for installation purposes as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0. Inspection: RDSO.		4K UHD	No	20	20	16	56	82600

5	Spares for cameras (@ 8% of quantity of main Cameras). Inspection: RDSO	Dome	No.S	20	20	19	59	17464
6		Bullet	No.S	47	45	44	136	18408
7		PTZ	No.S	7	7	7	21	68440
8		UHD	No.S	2	1	1	4	82600
Schedule B3: Server, Licenses and Workstation								
	VMS, VAS & FRS							
1	Supply, installation, Testing,Integration and Commissioning of Command & Control Center Software,Perpetual Licenses & Hardware and all accessories required for their installations. It includes Video Management, GUI Software and Video Analytics/FRS licences of cameras required for integration of existing VSS locations as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection: RDSO.	CCC	Lot	1	1	1	3	1780327.37
2	Supply Installation, Testing and Commissioning of Software for VMS and Video Recording software. (Per camera Licence means Video Management and Video Recording at multiple locations such as Station, RPF Post & DC Server room covered by the same license) as per technical spec and functional requirement as per RDSO Spec No RDSO/SPN/TC/65/2021 Rev.6 or latest. Inspection RDSO.	VMS Software	No	943	926	913	2782	2147.6
3	Supply, Installation, Testing and Commissioning of VMS Server with all the accessories required for the installation for VSS project, including one 17 inch FHD Monitor with Keyboard, Mouse, KVM Switch, As per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	VMS Server	No	8	10	7	25	437963.372
4	Supply, Installation, Testing & Commissioning of Video Analytic Hardware and all accessories required for installation purpose As per Clause No. 10.1.1.3 RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	VAS Server	No	9	9	9	27	437963.372
5	Supply Installation, Testing and Commissioning of Server Hardware for Face Recognition Complete with all accessories as per As per Clause No. 10.1.1.3 RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	FRS Server	No	8	8	6	22	437963.372
6	Supply of Video Analytic Server software complete with all accessories(License per camera means Video analytic at multiple locations such as Station, RPF Post & Security control by same license) as per RDSO Spec No RDSO/SPN/TC/65/2021 Rev.6 or latest. Inspection RDSO.	VAS Software	Per Unit	830	815	807	2452	2360

7	Supply, Installation, Testing and Commissioning of FRS software complete with all accessories ( License per camera basis) By same license, Face Recognition can be possible at multiple locations such as Station, RPF Thane and security control room)as per Clause No. 19.0 Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	FRS Software	Per Unit	20	22	16	58	118000
8	Installation, Testing and Commissioning of Graphical User Interface based Client Software per Workstation. Inspection RDSO.	GUI	No	20	19	15	54	6726
	<b>Storage Server</b>							
9	Supply, installation Testing & Commissioning of Storage System for 30 days recording at Station/ RPF/GRP Thane/ Post sites for recording of Cameras from clusters of stations along with all accessories required for installation purposes. Note: Bidders are required to quote price for complete storage as a LOT at each RPF Thana of Division for all types of Cameras mentioned in the Schedule. as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Detailed Specification in Technical Document. Inspection RDSO.	Storage Server	Lot	943	926	913	2782	5428
10	Supply, installation Testing & Commissioning of Storage System for 15 days recording at one Data Center each per Division for recording of Cameras from cluster of stations along with all accessories required for installation purposes. Note Bidders are required to quote price for complete storage as a LOT for all types of Cameras mentioned in the Schedule as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Detailed Specification in Technical Document. Inspection RDSO.	Storage Server Data Center	Lot	490	480	468	1438	5428
11	Panic Switch (IK10 and IP 66 Rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2 Amps , Stainless Steel FacePlate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including fixing arrangements and suitable protection and all accessories required for installation on each platform at stations or as per site requirement.[Detailed Specification in Technical Document]. Inspection RDSO.	Panic Button	Nos	93	91	90	274	4130
12	Supply , survey and installation of Wireless Transmitter and Receiver for Video Cameras along with all accessories. As per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	Wireless Transmitter	Nos	5	5	4	14	28040.9
	<b>Next Generation Firewall</b>							
13	Supply Installation Testing and Commissioning of Next Generation Firewall NGFW 1+1 (High Availability) along with Management software Hardware Perpetual licence and all accessories required their	Firewall	No	1	1	1	3	1355448.3

	installation in the Data Center. it includes Network Security appliance 4x10G SFP Ports and 4x1G SFP Ports loaded Rack Mountable UTM Firewall with features like Next Generation Firewall, Intrusion Prevention System, Gateway Anti-Spam Prevention ,Bandwidth Management ,Traffic Discovery, Application Visibility and Control Hardware etc should have 1 Console port ,2 USB Management Port for Explorer. The product should have a license for 5 years subscription with 3000 users, for above features including warranty for UTM Hardware and all accessories required for their installation in the Data Center.[Detailed Specification in Technical Document]. Inspection RITES							
	<b>WORKSTATION and LFD</b>							
14	Supply and Installation of Digital KeyBoard (Joystick) and all accessories compatible with PTZ cameras as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. Inspection RDSO.	Digital Keyboard	No	7	7	6	20	21240
15	Supply Installation Testing and Commissioning of PC WorkStation for Viewing ,Monitoring and System Management as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest. [Detailed Specification in Technical Document] Inspection RDSO.	Workstation	No	20	19	15	54	153400
16	Supply Installation of Full HD Large Format Display Monitor (55 inch)as per RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest with HDMI and DVI Ports complete with all accessories [Detailed Specification in Technical Document] Inspection by RITES	55 LFD	No	40	38	30	108	64531.25
17	Supply, Calibration, Testing and Installation of 4 no.s of 55" LED Display as per specification enclosed . It includes supply and installation of Matrix switch/Controller,Cables,Softwares etc and LED wall Mount/ stand and all accessories required for installation as per specification enclosed.Inspection: RITES	Video Wall	No	2	1	1	4	1976618
<b>Schedule B4: Switches and Accessories</b>								
	<b>SWITCHES and ACCESSORIES</b>							
1	Supply and installation of Layer 2 Switch as per RDSO/SPN/TC/65/2021, Rev.6.0 or latest. Minimum 8+2 Port Manageable with 8 Nos 10/100/1000 Mbps Ethernet port, POE+ & Single Fiber 2 Nos 1G SFP Port with BX SM SFP Optical Modules loaded with all accessories etc. As per RDSO/SPN/TC/65/2021, Rev.6.0 or latest. Inspection RDSO.	Field SWITCH 8 PORT POE	No	286	280	276	842	23922.14

2	Supply Installation & Commissioning of Layer 2 Manageable, 24 Port POE, 24 GE 10/100/1000 BaseX Ethernet port with POE+ support and 4x1GE SFP Port for uplink with 4 no of 1GE BX SM SFP modules loaded, with all accessories per RDSO/SPN/TC/65/2021, Rev.6.0 or latest ( Inspection Clause- RDSO)	Field SWITCH 24 PORT Layer 2 POE	No	82	83	84	249	31486.88
3	Supply, installation and Commissioning of Layer 2 Core Aggregator Switch 24 Port Managed switch with 24 Nos GE(Optical) 1G SFP BX SM based Port and 4 Nos of 10 G SFP+ Port with SFP optical Modules loaded, including Mounting Kit with all accessories. As per RDSO/SPN/TC/65/2021, Rev.6.0 or latest. Inspection RDSO.	Aggregator SWITCH 24 PORT	Nos	16	14	11	41	156596.91
4	Supply of Single Mode 1 G SFP-BX (10 Kms) Single fiber for above Switches.[Detailed Specification in Technical Document] Inspection : RDSO	1G SFP	Nos	74	74	64	212	1180
5	Supply of Single Mode 10G SFP+ Fiber for above Switches. Inspection : RDSO	10G SFP	Nos	34	34	32	100	2984.22
6	Supply of Single Mode Single fiber Managed Media Converter (Ethernet/E1 to Optical and vice versa) Pair and all the accessories required for their installation. As per RDSO Spec No RDSO/SPN/TC/103/2013 Rev.2 or latest Inspection : RDSO	Media Converter	Pair	22	21	19	62	11210
	<b>Spares</b>							
7	Spares @ 8% for Supply of Switches Inspection: RDSO	Field SWITCH 8 PORT	Nos	13	12	12	37	23922.14
8		Field SWITCH 24 PORT	Nos	5	5	5	15	31486.88
9		Aggregator SWITCH 24 PORT	Nos	1	1	1	3	156596.91

#### Schedule B5: FDMS, U Rack and Cables

	<b>FDMS AND ACCESSORIES</b>							
1	Supply and Termination at Wall/Rack Mountable of 12 Fiber FDMS 12 SC Type FDMS loaded with SC 'O' DB & Adaptor SC SM Pigtail 1.5 meters all accessories required for installation suitable for splicing and front patching of 12 fibre cable with all accessories and terminating the optical fibre with splicing and front patching in the equipment room or places as required by the Railway representative (OFC patch cord for and all other materials required for the splicing are to be supplied by the contractor.  [Detailed Specification in Technical Document] Inspection : RITES	12 FIBER FDMS	Nos	446	436	440	1322	9841.79

2	Supply,fixing and termination of 24F FDMS 19" Rack Mount with Telescopic type loaded with SC 'O' DB & Adaptor SC SM Pigtail 1.5 meters all accessories required for installation[Detailed Specification in Technical Document] Inspection : RITES	24 FIBER FDMS	Nos	95	93	92	280	14280
3	Splicing/Dropping/Termination of each fiber /Pigtail in the LIU/FDMS/IO Box/Termination Joints through fusion Splicing of the termination of OFC Cables. The Fiber termination shall be tested and the test Report (Hard Copy & Soft Copy) shall be submitted to the site Engineer for records. Each fiber shall be properly marked with necessary ferrules/tags.	Splicing	Core	5352	5232	5280	15864	45.44
4	Supply/installation/Splicing/Termination of 24 Fiber OFC in FDMS/ mid section joint. This includes supply and installation of FDMS/ Jointing kit (Splicing of 2 nos. of 12 Fiber/4 nos of 6 Fiber)	Terminations	Nos	95	93	92	280	6088.88
5	Supply of Single Mode Patch Cord length 3 meters (LC-SC/SC-SC/LC-LC/FC-LC) as per site requirement .[Detailed Specification in Technical Document]. Inspection: Consignee.	Patch Cord 3m	No	495	485	490	1470	175.9
	<b>U Racks</b>							
6	Supply & Installation of 19"42 U 1200mm Depth Telecom Rack with Standard Accessories (Closed type) with front door Glass type, all doors should be removable type [Detailed Specification in Technical Document] Inspection RITES.	42 U Rack	No	14	15	11	40	43979.78
7	Supply and Installation of 19" 9U 600 mm depth Rack Wall/Pole Mount ,with all accessories Like Electrical fitting, Fan Tray, Patch Panel, Cable Manager, PDU . [Detailed Specification in Technical Document]Inspection : RITES	9U Rack	No	84	81	84	249	9255.23
8	Supply and Installation of 19", 6 U 600mm depth Rack Wall/Pole Mount with all accessories required for installation purpose of switches Like Electrical fitting, Fan Tray, Patch Panel, Cable Manager, PDU .[Detailed Specification in Technical Document] Inspection : RITES	6U Rack	No	284	278	274	836	7262.16
9	Supply and Installation of Server and Network Smart Rack (Server Rack-3 Nos) with accessories and 2 Nos PDU along with Cooling Unit (2 Nos) with Piping and Low Side works, Environment Monitoring system, cooling unit accessories, related electrical work and Rack based Fire detection, Extinguishing System, Rodent repellent system and other accessories as per specification enclosed.[Detailed Specification in Technical Document] Inspection: RITES	Smart Rack	No	1	1	1	3	3611154
	<b>Cables</b>							



10	Supply of STP CAT- 6 Cable compliant with latest EIA/TIA-568-C.2 Standard for CAT 6 Cable 305 Mtrs Roll /Bundle.[Detailed Specification in Technical Document]Inspection : RITES	CAT6 STP	Mtrs	52500	51300	51900	155700	33.20
11	Supply of 12 Core Metal Strengthened Outdoor Unarmoured Optic Fiber Cable (ITU-TG-652-D) and all the accessories required for installation.[Detailed Specification in Technical Document] Specification.Inspection : RITES	12F OFC Unarmoured	Mtrs	59000	57500	55000	171500	12.98
12	Supply of PVC insulated armored 3 Core 2.5 Sqmm, 14 AWG,1.1 KV Grade Outdoor Strengthen Copper for UPS Power Supply Distributions per BIS/ISI Standards and all accessories required for installation.[Detailed Specification in Technical Document]Confirming to IS:1554 Part-1.Inspection : RITES	3 Core Power cable	Mtrs	43300	42300	43000	128600	88.5
13	Supply of 6 Core Armoured Single Mode OFC cable as per latest TEC/BSNL Specification. [Detailed Specification in Technical Document]Inspection : Consignee	6F OFC Unarmoured	Mtrs	1000	1000	1000	3000	27.09
14	Supply of CAT 6 UTP Patch Cord-2 meters [Detailed Specification in Technical Document] Inspection : Consignee	UTP Patch Cord 2 Mtr	Nos	970	950	950	2870	75.99
15	Supply of CAT-6 Patch Cord-5mtrs length [Detailed Specification in Technical Document] Inspection : Consignee	UTP Patch Cord 5 Mtr	Nos	970	950	950	2870	333.822
16	Supply of RJ 45 connector suitable for STP/UTP Cable (D-Link) [Detailed Specification in Technical Document] Inspection : Consignee	RJ 45 Connectors	Nos	2150	2090	600	4840	2.853

#### Schedule B6: Power Supply

	Power Supply							
1	Supply, Installation and Commissioning of 2x10 KVA UPS at least 2 Hour Back up in full load condition ,connected in parallel redundant mode. Complete with all accessories as per specification attached This also includes supply of two set MF batteries of suitable AH capacity ,rack, one set compatible MCBs complete with cover & fixing materials, one earth leakage circuit breaker arrangement . [Detailed Specification in Technical Document] Inspection : RITES	10 KVA UPS	Nos	8	7	6	21	424682
2	Supply, Installation and Commissioning of 3 KVA Online UPS with 2 Hrs Battery Backup. This also includes supply of one set MF battery of suitable AH capacity,Rack and one set compatible MCBs complete with cover & fixing materials, one earth leakage circuit breaker arrangement [Detailed Specification in Technical Document]Inspection : RITES	3 KVA UPS	Nos	71	69	74	214	73626.33
3	Supply and installation 2 KVA online UPS (Single Phase) 19 inch Rack mountable type	2 KVA UPS	Nos	5	4	4	13	44840



	with 1 Hour Backup along with suitable AH capacity battery and all the accessories required for installations.[Detailed Specification in Technical Document] Inspection : RITES							
	<b>Surge Protector Devices</b>							
4	Supply, Installation, Testing and Commissioning of Surge Protection Device Class B (10/350 $\mu$ s) and Class C(8/20 $\mu$ s)type Metal and Capsulated Spark gap for Fire safe and fireproof operation based, single phase coordinated. It shall have mechanical failure indicators on L-N and N-E pluggable devices as per IEC 61643 test standards.latest. Supply of surge protection with Potential free contacts .All miscellaneous materials required for the work shall be supplied by the contractor. [Detailed Specification in Technical Document] Inspection: RITES	SPD	No	9	8	7	24	40140
5	Supply of Ethernet Surge Protector[Detailed Specification in Technical Document] Inspection : Consignee	Ethernet Surge Protector	Nos	13	16	12	41	2743.4
6	Supply of ACDB for AC Distribution Box with Lock and Key arrangement and ISI Mark MCBs of Various Rating as per site requirement. Inspection : RITES	ACDB	Nos	80	77	81	238	2337.58
<b>Schedule B7: Tools</b>								
	<b>TOOLS</b>							
1	Single Fiber Fusion Splicer similar to Fujikura 80C with standard accessories : AC Adapter /Battery Charger ADC-18 1PC, AC Power Cord ACC-XX: 1PC spare electrode Elect2-20:1 pair carrying case CC-30:1PC USB cable USB-01: 1PC Sleeve loader SL01:1 PC dispenser AP-01: 1 PC screwdriver SC-01 1PC, Instruction Manual: 1 PC Quick reference Guide 1PC warning & cautions: 1 PC ; BATTERY RACK BRT-09, Battery charger cord DCC-18: 1 PC High precision Fiber cleaver CT-06: 1 PC, 3 in-1 Stripper : 1PC & Protection sleeves: 25nos. ( A demo shall be arranged along with supply) as per TEC Specification g/osm/01-03 April2005 Model S-177A.Make FURUKAWA or Similar. [Detailed Specification in Technical Document]. Inspection: RITES	OFSM	No	2	2	2	6	300389.2
2	Supply of Optical Time Domain Reflectometer for 1310/1550nm fiber with resolution of 60 Cms,dynamic Range of 314/29 dB with all accessories confirming to TEC Specification No TEC Specification No G/OTD/02-03 March 2009.Make EXFO Model MAX 720C , AQ-7270+735022.Make Yokogawa or Similar . Inspection: RITES	OTDR	No	2	2	2	6	165200
3	Supply of Network Cable Tester Similar to Fluke Networks - MS2-100 - MICROSCANNER2 CABLE VERIFIER [Detailed Specification in Technical Document].	Lan Tester	No	2	2	2	6	33637

	Inspection: Consignee							
4	Tool Kit consisting of Optical power meter(Fibershot9990V),Multimeter(Fluke 101),Ethernet Crimping Tool(Standard Make)Console cable(Cisco=RJ45-DB9),Wrist ripper(Standard Make),Universal Spanner Set (Taparia), Screw Driver Set (Taparia-7Pieces set), Cutting plier(Taparia), Wire Stripper, Industrial grade USB to Serial cable with all accessories or Similar.[Detailed Specification in Technical Document]. Inspection: Consignee	Tool Kit	No	6	6	6	18	24207.2
<b>Schedule B8: Labour and Training</b>								
	<b>Fire Alarm &amp; Detection</b>							
1	Supply, Installation, testing and commissioning of UL/FM/VDS/LPCB approved Microprocessor based networkable analogue addressable and modular type of fire alarm control panel with display inbuilt charging facility and provision of GSM/VoLTE module suitable to send SMS to configured mobile numbers. The panel should be equipped with sufficient nos of loops and provision of expendability as per RDSO specification RDSO/SPN/217/2016 ver 2.0 or latest. The control panel shall be the central processing unit of the system receiving and analyzing signals from probe type bimetallic heat detectors, UV & IR flame detectors, Heat and smoke multi sensors, LHS interface and manual call points, providing audible and visual information to the user. The panel shall have provision of connectivity of TCP-IP suitable for programming and remote monitoring. The panel shall have a dedicated RS232 (or latest) serial port for direct PC or MODEM connection, for interfacing with existing data logger/NMS and optional remote printer (as per RDSO specification no. RDSO/SPN/217/2016/Ver.2.0 or latest. [Detailed Specification in Technical Document].Inspection RDSO.	Fire Alarm Control Panel	Nos	1	1	1	3	229530.73
2	Supply, Installation, testing and commissioning of Resettable, addressable Multi sensor ( ) Heat & Smoke) which is fully compatible with analogue addressable protocol Electronically addressed as per RDSO /Specification No. RDSO/SPN/217/2016 ver 2.0 or latest [Detailed Specification in Technical Document].Inspection RDSO.	Heat sensor	Nos	10	10	10	30	3294.36
3	Supply, Installation, testing and commissioning of addressable Resettable, manual Call Point having status LED for alarming and standby mode electronically addressed as per RDSO Specification No. RDSO/SPN/217/2016 ver 2.0 or latest [Detailed Specification in Technical Document].Inspection RDSO.	Call Point	Nos	1	1	1	3	4494.98
4	Supply, Installation, testing and commissioning of addressable loop powered	Sounder Beacon	Nos	1	1	1	3	7999.5

	wall sounder beacon/ alarm as per RDSO Specification No. RDSO/SPN/217/2016 ver 2.0 or latest [Detailed Specification in Technical Document].Inspection RDSO.							
5	Supply, Installation, testing and commissioning of FRLS/ Fire Survival circuit integrity cables i.e. armored cable with all accessories for connection of all fire alarm devices (as per RDSO Specification No. RDSO/SPN/217/2016 ver 2.0 or latest) (per station wiring)[Detailed Specification in Technical Document]. Inspection RDSO.	Integrity Cable	Nos	1	1	1	3	31702.09
6	Supply of Portable light weight CO2 type Fire Extinguisher Capacity 4.5 Kg ISI Mark 15683,Operating Temperature -30 to +50 for class 13 C for electrical Type of fire with 1 mtrs House Pipe with PVC been Horn complete in all respects. [Detailed Specification in Technical Document]. Inspection: Consignee	Fire Extinguisher - her	Nos	2	2	2	6	4425.45
	<b>Earthing</b>							
7	Supply & installation of Maintenance Free Single Earth as per RDSO Specification No RDSO/SPN/197/2014 with latest REVISION amendment.[Detailed Specification in Technical Document] Inspection RDSO.	Earthing	Nos	24	26	21	71	23156.63
8	Supply and installation of GI Pipe (50 mm dia 3.65mm thick) as per IS-1239, Pt, Medium Grade for laying of Cable to the Platform shelter from ground level and as per site requirement. Entry of cables will be advised by the site in charge of the Railway and extended by suitable dia HDPE/Flexible PVC Pipe on either side as required as per site requirement. Along with supply of all accessories.[Detailed Specification in Technical Document] Inspection : RITES	GI Pipe	Meters	1190	1110	1080	3380	742.352
	<b>Furniture</b>							
9	Supply of Computer Table (Model Stylo of Godrej Make or Similar of Featherlite make) & Chair (Godrej make Model Spyder PCH 5602 or Similar Model of Featherlite Make).[Detailed Specification in Technical Document] Inspection: Consignee	Furniture	Nos	16	19	15	50	13439.1
10	Supply and Fixing of 35 mm Flexible steel wire reinforced pvc Green Pipe (This includes all materials, clamps etc. required for laying, fixing and clamping). Inspection: Consignee	Flexi Pipe	Mtrs	1010	990	990	2990	23.99
11	Supply of PVC Conduit pipe minimum 35 mm dia ISI Mark. Installation of PVC Pipe, Clamping of the same on wall, Pole etc. including with required clamps & and all the installation materials required.[Detailed Specification in Technical Document] Inspection: RITES	PVC CONDUIT	Mtrs	99600	97600	96300	293500	32.38

12	Supply of PLB HDPE Duct of Size 40/33 mm Outer and with all Accessories .Installation on Wall or Structure/HDD etc. along with all Accessories required for fixing, Clamping Cutting, as per RDSO Spec No RDSO/SPN/TC/45/2013 Rev 2 or latest.[Detailed Specification in Technical Document] Inspection: RDSO	HDPE 40MM	Mtrs	7550	7550	7500	22600	89.49
13	Trenching and Laying of HDPE Duct in Normal Soil and blowing of OFC Cable.[Detailed Specification in Technical Document].	Laying of HDPE 40MM	Mtrs	7550	7550	7500	22600	172
14	Supply and installation of Bracket/Fixture/Angle for fixing of Cameras at Stations along with all accessories required.[Detailed Specification in Technical Document].Inspection: Consignee	Fixtures	No	943	926	913	2782	4720
	<b>Survey and planning</b>							
15	Cost of Design,survey & submission of drawings for permissions from Authorities(including hand made diagram of the network), Programing and configuring of a myriad of devices[Detailed Specification in Technical Document].	Documents	Lump Sum	76	74	78	228	15453
	<b>Cable Trenching &amp; Drawing.</b>							
16	Blowing/Drawing of OFC 24F/12F/6F Power Cable and CAT Cable (including crimping) through PVC Conduit already installed.[Detailed Specification in Technical Document].	Cable Laying	Mtrs	154200	150600	149900	454700	4.72
17	Supply of Non flammable,anti-rodent DWC Pipes(OD/ID 90/76 mm minimum)as specification IS 16205 with T Joints, sockets/couplers at both ends as per requirements. Supply of non-coupler for 6m of DWC pipe and couplers for 30mm of length free of cost. Inspection-Consignee	DWC	Mtrs	220	220	196	636	118
18	Supply and Fixing of PVC Trunk of 50X50 mm with cover of 2 mm thick 2m each.(This includes all materials, clamps, bends, coupler etc. required for laying, fixing and clamping).Inspection Consignee	PVC Trough	Mtrs	50	50	50	150	369.1
19	Supply of PVC Tray/PVC Casing Capping (2"x2" )with cover fixing /laying materials and all accessories as per requirement.(This includes all materials, clamps, couplers, bends etc. required for laying, fixing and clamping).)Inspection Consignee	PVC CASING CAPING	Mtrs	860	840	870	2570	22.8
20	Fixing of PVC Tray/Casing Capping (2 inch) with cover and all accessories. All fixing clamping materials to be supplied by the contractor.	Fixing of PVC	Mtrs	860	840	870	2570	2.44
21	Supply and installation of RCC Route Markers including Painting inspection Consignee.	RCC Markers	Nos	150	150	140	440	541.795

22	Breaking of Pucca/Concrete Road, PF Cutting Laying of OFC in Trenches and through all types of protection Viz HDPE/GI/RCC Pipes as the case may be .This includes restoration of surface and stone paved/pavers.	PF/Road Cutting	Mtrs	2600	2600	2300	7500	437.3
23	Boring & Trenching cabling along with supply and insertion of HDPE Pipe PE 80 PN of 90 mm dia with min 6.7 mm and Max 7.6 mm wall thickness as per IS 4984-95,in the bore for the laying of Signaling/Telecom/Power cable under the Track /road//HDPE Pipe is to be supplied by the contractor.	BORING	Mtrs	100	100	100	300	148.2
24	Supply and Erection of 15 Feet GI pipe of 100 mm dia 4.5m thickness of medium quality ISI no: 1230(Part 1) 1990. Having an iron base plate 10 mm thick x 30 cmx 30cm welded at the bottom of the pipe with four supports of iron bars of sizes 10 mm dia. The 3 feet pipe shall be buried in the ground and 12 feet shall be above the ground. The work includes digging of the pit on Platform, laying of cable in between poles in suitable underground GI pipes, erection of pole and filling the pit with 1:3:4 cement, concrete and sand. Final plastering should be done on the surface. The iron bracket on the top of the pole shall be provided to fix the CCTV camera and junction box. The work includes supply of all the materials required in this item.[Detailed Specification in Technical Document].Inspection RITES.	15 Feet GI Pipe	No	76	74	78	228	3192
25	Supply of Compact Aluminum Step Ladder of 12 Feet.[Detailed Specification in Technical Document].Inspection Consignee.	Ladder	No	9	9	8	26	10817
	<b>Training &amp; Man power</b>							
26	Training of personnel over and above the on-site/OEM/OEM authorised training partner training, during the installation, maintenance and supervision period as detailed in the tender document. Defined in Man-Week i.e. One week training for one personnel or as desired by the Railway.	Training	Man/ week	20	20	20	60	23600

**Sub-Work C:  
VOIP Based TCCS & SIP EXCHANGE**

Sub-Work C: VOIP Based TCCS & SIP EXCHANGE										
Schedule C1: SOR Items										
SI No	SOR Item No.	Description		Unit	HQ	UBL	SBC	MYS	Total Qty	Rate
1	10_107	Excavation of trench to a depth of 1 Mtr. for Road Crossing of Cables, laying of DWC/ RCC pipes with collar/ coupling, refilling of trench by ramming and consolidating it and resurfacing it to the original position. Laying of cables is not included in this schedule. (Supply of DWC/RCC pipes with couplers/ collars is not included in this schedule).	Road/Track Crossing	Mtr		400	560	300	1260	129.99
2		Transportation of Signalling Materials by Road as Per the Instructions of Railway Representative at Site. The Work also includes Loading and Unloading of the Materials.	Transportation							
2a	10_521(a)	Transportation up to 100 kms	Transportation	Per Ton Km		100	100	100	300	18.20
2b	10_521(b)	Transportation more than 100 kms	Transportation	Per Ton Km		900	900	900	2700	11.13

SI No	Description		Unit	HQ	UBL	SBC	MYS	Total Qty	Rate
Schedule C2: IP Phones and their wiring and termination									
	<b>IP Phones</b>								
1	Supply and Installation of Control IP Telephones with Hands Free and Gooseneck Operation for Way Side Station as Per Clause 11 of RDSO/SPN/TC/99/2012 Rev.2 or latest (Detailed Spec in Tender Document). Inspection RDSO	IP Phones	Nos		139	121	87	347	23500
2	Supply and installation of SIP Based Basic IP Phone with 128x64 Pixel Graphical LCD as per Specification. Inspection RITES	SIP auto phone	Nos		139	121	110	370	5500
	<b>SIP Phone for SIP EXCHANGE</b>								
3	Supply of SIP Based Medium IP Phone with 240X120 Pixel Graphical LCD with Backlight, Minimum 8 No of One Touch line key as per specification. Inspection RITES.	Medium IP Phone	Nos		170	270	180	620	13314
4	Supply of SIP Based Video Phones 7 " Capacitive Adjustable Touch Screen, LCD screen, 720p 30 HD video should run on	Video IP Phone	Nos		69	57	38	164	54460

	latest Android along with POE injector latest along with power adapter or better as per specification. Inspection RITES.								
5	Wiring and Termination for IP Phones up to last point (includes configuring, fixing of I/O box, Drawing of UTP/OF Cable, Fixing of PVC Pipe /Casing capping. All miscellaneous materials required for fixing to be supplied by Contractor as per site requirement)	Wiring and termination for IP phones	LS		2	1	1	4	50000
<b>Schedule C3: Servers, Consoles and Licences</b>									
	<b>Servers</b>								
1	Supply, Installation and Commissioning of Communication Server as per Clause 5 and 6 RDSO/SPN/TC/99/2012 Rev.2 or latest. Communication Server Block shall be provided 1+2 or 1:2 Redundancy. Total 3 servers, 2 numbers at main Data Centre location and one at remote data centre DR location. (Detailed Spec in Tender Document). Inspection RDSO	Communication server	Set		1	1	0	2	2615000
2	Supply, Installation and Commissioning of Communication Server as per Clause 5 and 6 RDSO/SPN/TC/99/2012 Rev.2 or latest.1 Number Communication Server for Remote Location. Redundancy Compatible with the existing server. (Detailed Spec in Tender Document). Inspection RDSO	Communication server	Nos		0	0	1	1	1260000
3	Supply, Installation and Commissioning of Network Management Server for TCCS as per Clause 5 and 8 RDSO/SPN/TC/99/2012 Rev.2 or latest (Detailed Spec in Tender Document) Inspection RDSO	TCCS NMS	Nos		2	2	1	5	490000
4	Supply, Installation and Commissioning of Voice Recording Server as per Clause 5 and 7 RDSO/SPN/TC/99/2012 Rev.2 or latest (Detailed Spec in Tender Document). Inspection RDSO.	Voice Logger	Nos		2	2	1	5	525000
5	Supply, Installation and Commissioning of Client PC for Voice Record Server as per Clause 8 RDSO/SPN/TC/99/2012 Rev.2 along with 600VA UPS. Inspection RDSO	Client PC Voice Logger	Nos		2	2	1	5	69700
6	Supply, Installation and Commissioning Event Notification Gateway as per Clause 12.3 of RDSO/SPN/TC/99/2012 Rev.2 or latest (Detailed Spec in Tender Document). Inspection RDSO	Event Notification Gateway	Nos		2	2	1	5	310000
7	Supply, Installation and Commissioning of Desktop Client PC As per clause 8.7 and 8.8 of RDSO/SPN/TC/99/2012 Rev.2 or latest along with 600VA UPS (Detailed Spec in Tender Document). Inspection RDSO	Client PC for NMS	Nos		2	2	1	5	69700
8	Supply of (Similar to Laptop) Portable Maintenance Terminal (Similar to Laptop) as Per Clause No 8.7 and 8.9 RDSO/SPN/TC/99/2012 Rev.2. (Detailed Spec in Tender Document). Inspection RDSO	Portable Maintenance	Nos		2	2	2	6	80900



9	Supply and installation 55-inch full HD Monitor (with 3 Years Warranty). [Detailed Specification in Technical Document] Inspection Consignee	55-inch TV	No		2	2	2	6	54579.2
	<b>Consoles</b>								
10	Supply, Installation and Commissioning of Controller Console as Per Clause 9 of RDSO/SPN/TC/99/2012 Rev.2 or latest. (Detailed Spec in Tender Document). Inspection RDSO	Controller Console	Nos		12	8	4	24	420906
11	Supply, Installation and Commissioning of Test Room Console as Per Clause 10 of RDSO/SPN/TC/99/2012 Rev.2 or latest. (Detailed Spec in Tender Document). Inspection RDSO	Test Room Console	Nos		2	2	1	5	469286
12	Supply, Installation and Commissioning for 4 Port Gateway to support 4 Port Concurrent Emergency Communication at HQ/Way station to support 4 wire ports/ 4 Port Gateway with built in 2 wires to 4 wire Hybrid convertor to support 4 wire output as Per Clause 13 of RDSO/SPN/TC/99/2012 Rev.2 or latest. (Detailed Spec in Tender Document). Inspection RDSO	EC Gateway	Nos		129	111	77	317	19470
13	Supply and Installation of Station License of TCCS Communication Server of 1+2 Configuration as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	Station License	No		134	116	82	332	18290
14	Supply and Installation of Port License of TCCS Communication Server in 1+2 Configuration as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	Port License	No		134	116	82	332	2360
15	Supply and Installation of Conference Room License of TCCS Cum Server of 1:4 Room in 1+2 Configuration as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	Conference Room License	No		6	4	2	12	41300
16	Supply and Installation of TCCS VoIP Voice Logger Board License as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	Voice Logger License	No		6	4	2	12	102660
17	Supply and Installation of NMS Device License of TCCS VoIP NMS Server 100 Device Pack as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	NMS Device License	No		4	4	3	11	116820
18	Supply and Installation of Event Notification Gateway License of TCCS VoIP NMS Server of 100 Device Pack as per RDSO/SPN/TC/99/2012 Rev.2. Inspection RDSO	Notification Gateway License	No		4	4	3	11	59000
19	Supply and Installation of Mobile Application for Event Notification Gateway and NMS as per scope of work as Per RDSO/SPN/TC/99/2012 Rev.2. (Detailed Spec in Tender Document). Inspection RDSO	Mobile App	Nos		10	10	5	25	13700.98

	<b>Servers for SIP</b>								
	<b>Main Server and Perpetual License</b>								
	Supply of Fully Non-Blocking 19"Rack Mountable IP Based Server Architecture Supporting Virtualization and Should be able to Integrate both Analog/ISDN Gateways.	Server Licenses							
	Unified Communication Server Solution in Active-Active Cluster Mode.								
20	Main Server License. Inspection RITES		Nos		0	1	0	1	55569.15
21	Stand by Server License.Inspection RITES.		Nos		0	1	0	1	48321
22	IP Endpoint Licenses (any SIP Phone). Inspection RITES.		Nos		0	370	250	620	5556.91
23	Gateway User Licenses (Analog Users). Inspection RITES.		Nos		0	2750	1000	3750	1932.84
24	SIP Trunk Licenses (for PRI Gateway & SIP Trunk).Inspection RITES.		Nos		0	180	90	270	1691.23
25	Supply of Mobility License. Inspection RITES.	Mobility License	Nos		0	168	86	254	2258.52
26	Softphone License, PC based and Android Based. Inspection RITES.	Soft phone License	Nos		0	40	20	60	1758
27	Supply of Call/Communication (SIP) Server dual DC power supply [Detailed Specification in Technical Document] Inspection RITES	Server Hardware	Nos		0	2	0	2	512356
	<b>Intercom Server and Perpetual License</b>								
	Supply of fully non-Blocking 19"Rack Mountable IP based Server Architecture Supporting Virtualization and should be able to Integrate both Analog/ISDN Gateways for GM, DRM UBL, DRM MYS Intercom.	Server Licenses							
	Unified Communication Server Solution in Active-Active Cluster Mode								
28	Main Server License. Inspection RITES.		No	1	1	0	1	3	55569.15
29	Stand by Server License. Inspection RITES.		No	1	1	0	1	3	48321
30	IP Endpoint Licenses (any SIP phone). Inspection RITES.		Nos	150	100	0	100	350	5557
31	Gateway User Licenses (Analog users). Inspection RITES.		Nos	10	0	0	0	10	1932.84

32	SIP Trunk Licenses. Inspection RITES.		Nos	30	10	0	30	70	1691.23
	Upgrading of Existing Aeonix Server/Integration of new server with old server at Bengaluru with Additional SIP Licenses-80, Sip Trunk License-30 for DRM Intercom to cater for Bengaluru Cant CAO Office.	Upgrading SBC Aeonix Server/ integration							
33	IP Endpoint Licenses to Existing Server/ new server including Technical Support Charges. Inspection Consignee.		Nos		0	80	0	80	5557
34	SIP Trunk Licenses. Inspection Consignee.		Nos		0	30	0	30	1691.23
35	Supply of call/Communication (SIP) Server For HQ, UBL and MYS. Inspection RITES.	Intercom Server H/w	Nos	2	2	0	2	6	206500
36	Installation and Commissioning Charges as per Site Requirement at HQ, UBL and MYS	Installation Intercom	Job	2	2	0	2	6	82600
37	Installation and Commissioning Charges as per Site requirement at Bengaluru and Bengaluru Cant( Upgrading the existing server/Integration with new one)	Installation Upgrading / Integration of Intercom	Job		0	2	0	2	59000

#### Schedule C4: Gateway and Switches

	<b>Gateways for SIP EXCHANGE</b>								
1	Supply of 96 Port Rack Mountable FXS Gateway Chassis or higher with 4*24 FXS Gateway cards or any combination along with patch panel/krone module for termination.(Redundant Dual DC power supply ) and Dual input ports(Fiber/Ethernet). [Detailed Specification in Technical Document] Inspection RITES.	96 Port FXS Gateway	Nos		23	25	10	58	236647
2	Supply, installation and Commissioning of Standard 19-inch Rack Mountable Layer 2 Core Aggregator Switch 24 Port Managed switch with 24 Nos GE(Optical) 1G SFP based Port and 4 Nos of 10 G SFP+ Port with SFP optical BX SM Modules loaded, including Mounting Kit. Make -Reputed Brand with all accessories. As per RDSO/SPN/TC/65/2021, Rev.6.0 or latest. Inspection RDSO.	Aggregator SWITCH 24 PORT	Nos		2	2	2	6	156596.91
3	Supply Installation & Commissioning of Standard 19-inch Rack Mountable 24 Port managed POE switch , 24 GE 10/100/1000 BaseX Ethernet port with POE+ support and 4x1GE SFP Port for uplink with 4 nos of 1GE SFP BX SM modules included as per Clause no 14.0(II) RDSO/SPN/TC/65/2021, Rev.6.0 or Latest. (Inspection Clause- RDSO)	24 Port POE Switch	Nos		32	13	2	47	31486.88

4	Supply of 96 Port Rack Mountable FXS Gateway Chassis or higher with 2*24 FXS Gateway cards or any combination along with patch panel/krone module for termination. (Redundant Dual DC power supply ) and Dual input ports(Fiber/Ethernet) [Detailed Specification in Technical Document] Inspection RITES.	48 Port FXS Gateway	Nos		13	16	10	39	178840
5	Supply of 24 Port FXS Gateway 19" Rack Mountable along with Patch Panel/krone module for termination (DC or AC based as per site requirement) and Dual input ports(Fiber/Ethernet). [Detailed Specification in Technical Document] Inspection RITES.	24 Port FXS Gateway	Nos		1	9	12	22	52455
6	Supply of 8 Port FXS Gateway (AC based). [Detailed Specification in Technical Document] Inspection RITES.	8 Port FXS Gateway	Nos		7	12	26	45	16392
7	Supply of 24 Port FXO Gateway 19" Rack mountable suitable for 96/48/24 port FXS Gateway chassis along with patch panel/krone module. (AC or DC based). [Detailed Specification in Technical Document] Inspection RITES.	24 Port FXO Gateway	Nos		3	3	2	8	42217
8	Supply of 2 port E1 Gateway (Dual DC based). Inspection RITES.	E1 Gateway	Nos		0	2	0	2	155490
9	Supply of Single Mode 1 G SFP-BX (10 Kms) Single Fiber for above Switches supplied in this schedule. [Detailed Specification in Technical Document] Inspection: RITES	1 Gbps SFP	Nos		30	30	30	90	1180
10	Supply, installation and commissioning of NMS(Network Monitoring Server) and Emergency Room Communication Console detail specification enclosed. Inspection RITES.	NMS	Nos		1	1	1	3	472000
11	Supply & installation of PC WorkStation/Maintenance Console 24-inch FHD Resolution LED for Viewing, Monitoring and System Management including all required Licenced Software, like, MS Client Software, OS MS-office, Anti-Virus 600 VA UPS etc at UBL HQ, UBL, SBC, MYS). Inspection Consignee.	PC Work station	Nos	1	1	1	1	4	69700
12	Programming of Servers, Switches, Installation of all Gateways (96,48,24,8 Port) as Per site requirement, installation of Soft Phones, Mobility Phones, Shifting of Materials to Site, with necessary Supply and Termination of 24 Port Jack Panel, Cat-6 Patch Cords, OFC Patch Cord, Extension of DC/AC Power Supply from Charger/UPS to Gateways and Extension of Earth to all Equipments, Termination of PVC Cable in Existing IDF. Testing of lines in all locations. And all the supply and installation of accessories required for installation.	Programm-ing	LOT		1	1	1	3	1162300
	<b>Switches and Accessories</b>								

13	Supply and Installation of Layer 3, 24 Port Managed Switch with 24 Nos of 10/100/1000 Ethernet Ports SFP + Support with Redundant AC Power Supply, Dedicated Stacking Module 4 x 10 GE SFP+ Ports for uplink including 4 Nos of 10 GE SFP+ BX SM Modules, as per para number 4.0 of RDSO SPECIFICATION NO. RDSO/SPN/TC/83/2020 Rev 2 or Latest.. Mounting Kit with all necessary accessories. [Detailed Specification in Technical Document] Inspection : RDSO	24 Port Layer 3 POE Switch	Nos		2	2	1	5	109386
14	Supply and installation of Layer 2 Switch Minimum 8+2 Port Manageable with 8 Nos 10/100/1000 Mbps Ethernet port, POE+ & Single Fiber 2 Nos 1G SFP Port with BX SM SFP Optical Modules loaded. with all accessories etc. as per RDSO/SPN/TC/65/2021, Rev.6.0 or latest. Inspection :RDSO.	8+2 Port Manageable Switch	Nos		129	111	77	317	23922.14
15	Supply of CAT-6 Patch Cord-5mtrs length [Detailed Specification in Technical Document] Inspection: Consignee	Cat 6 Patch Cord 5 Mtrs	Nos		250	220	150	620	333.82
16	Supply and Installation of Wall Mountable RJ 45 Socket with FacePlate. [Detailed Specification in Technical Document] Inspection: Consignee	RJ 45 Socket	No		588	512	444	1544	393.6
17	Supply of Crimping Tool for RJ 45 ( Cadyce CA-CT568 or better). Inspection Consignee	Crimping Tool	No		10	10	10	30	1174.1
18	Supply of RJ 45 connector suitable for STP cable [Detailed Specification in Technical Document] Inspection Consignee	RJ 45 Connectors	No		400	400	400	1200	2.85
19	Supply of Single Mode 1 G SFP-BX (10 Kms) Single fiber for above Switches.[Detailed Specification in Technical Document] Inspection Consignee	1G SFP	Nos		250	250	150	650	1180

#### Schedule C5: FDMS, U Rack and Cables

	<b>FDMS and Accessories</b>								
1	Supply and Termination at Wall/Rack Mountable of 12 Fiber FDMS 12 SC Type FDMS loaded with SC 'O' DB & Adaptor SC SM Pigtail 1.5 meters all accessories required for installation suitable for splicing and front patching of 12 fibre cable with all accessories and terminating the optical fibre with splicing and front patching in the equipment room or places as required by the Railway representative (OFC patch cord and all other materials required for the splicing are to be supplied by the contractor. [Detailed Specification in Technical Document] Inspection : RITES	12 Fiber FDMS	No		126	108	95	329	9841.79
2	Supply of Single Mode Patch Cord length 3 meters (LC-SC/SC-SC/LC-LC/FC-LC) as per site requirement. [Detailed Specification in Technical Document] Inspection Consignee	OFC Patch Cord	No		250	250	150	650	175.9
	<b>19" U Rack</b>								

3	Description:- Supply & Installation of 19"42 U 1200mm Depth Telecom Rack with Standard Accessories (Closed type) with front door Glass type, all doors should be removable type [Detailed Specification in Technical Document] Inspection RITES..	42 U Rack 1200mm	Nos		2	2	1	5	43979.78
4	Supply and installation of covered 19" 42 U racks of size 600mm depth Telecom Rack with Standard Accessories (Closed type Telecom Rack) with front door Glass type, all Doors [Detailed Specification in Technical Document] Inspection RITES.	42U Rack 600 mm	Nos		62	84	41	187	35231
5	Supply, installation of 19"27U 600 mm depth rack with standard accessories (closed type telecom rack) with front Door Glass Door Type, all Doors should be Removable Type, Two Exhaust Fans, One Horizontal Tray, One AC Multiple (6 Nos of 5 Amps Socket) Earthing Strip Copper, with Fastener -2PAC Rack Mountable DCDB Panel with one Copper Strip and 4 MCB 06 Amps +02 MCB 16 Amps. [Detailed Specification in Technical Document] Inspection: RITES	27U Rack	Nos		0	9	0	9	34220
6	Supply, installation of 19"12 U 600mm depth Rack Wall/Pole Mount, with front Door Glass Door Type, all Doors should be Removable Type with all accessories Like Electrical fitting, Fan Tray, Patch Panel, Cable Manager, Spike Buster/PDU. [Detailed Specification in Technical Document] Inspection: RITES	12U Rack	Nos		7	8	10	25	12600
7	Supply and Installation of 19" 9U 600mm depth Rack Wall/Pole Mount, with front Door Glass Door Type, all Doors should be Removable Type with all accessories Like Electrical fitting, Fan Tray, Patch Panel, Cable Manager, Spike Buster/PDU. [Detailed Specification in Technical Document] Inspection: RITES	9U Rack	No.		12	20	10	42	9255.23
8	Supply of Single Mode Single fiber Managed Media Converter (Ethernet & E1 to Optical vice versa) Pair and all the accessories required for their installation as per RDSO Spec No RDSO/SPN/TC/103/2013 Rev.2 or latest Inspection: RDSO	Media Converter	Pairs		26	36	21	83	11210
9	Supply of LAN Extender as per RDSO Specifications RDSO/SPN/TC/82/2020 Rev. 2.0. Make MROTEK or Equivalent. Inspection RDSO.	LAN Extender	Pairs		18	13	7	38	24860
	<b>Cables and Accessories</b>								
10	Supply of STP CAT- 6 Cable compliant with latest EIA/TIA-568-C.2 Standard for CAT 6 Cable 305 Mtrs Roll /Bundle. [Detailed Specification in Technical Document] Inspection RITES	CAT 6 STP Cable	Mtrs		16835	15150	11910	43895	33.2
11	Supply of 12 Core Metal Strengthened Outdoor Unarmoured Optic Fibre Cable (ITU-TG-652-D) and all the accessories required for installation. (Make Finolex, Fincabe or equivalent )as per latest	12 Fiber OFC	Mtrs		3500	4500	5000	13000	12.98



	TEC/BSNL [Detailed Specification in Technical Document] Inspection RITES								
12	Supply of PVC insulated 3 Core 6 Sqmm,12 AWG,12.1 KV Grade Outdoor Strengthen Copper Cable (Make Finolex, Fincabe or equivalent). [Detailed Specification in Technical Document] Inspection RITES	3 Core Power Cable	Mtrs		1200	1000	800	3000	203.33
13	Supply of 6 Fiber Armoured OFC Cable Single Mode OFC for laying over the Platform Shed (Make Finolex, Fincabe, ASKH, Sterlite or equivalent) as per latest TEC/BSNL Specification. Inspection Consignee	6 Fiber OFC	Mtrs		100	100	100	300	27.12
14	Blowing / drawing of OFC 24F/12F/6F Power Cable and CAT Cable (including crimping) through PVC Conduit/Duct/DWC/GI Pipe already installed.	Cable Laying	Mtrs		10000	8200	6600	24800	4.72
15	Surge Protection Device for 6 LAN Networks. Inspection: Consignee	Surge Protection	Nos		5	5	5	15	2743.4
16	Supply of CAT 6 UTP Patch Cord-2 Mtrs Inspection: Consignee	Cat 6 Patch Cord 2 Mtrs	Nos		260	260	260	780	75.99
17	Supply of 24 Fiber OFC Armoured (Metal free) for laying over the Platform shed as per latest RDSO/TEC/BSNL Specification. Inspection Consignee..	24 Fiber OFC	Mtrs		1000	1000	1000	3000	89.77
18	Supply of PVC insulated armored 3 Core 2.5 Sqmm, 14 AWG,1.1 KV Grade Outdoor Strengthen Copper for UPS Power Supply Distributions per BIS/ISI Standards and all accessories required for installation. [Detailed Specification in Technical Document]Confirming to IS:1554 Part-1.Inspection : RITES	3 CORE POWER CABLE	Mtrs		1000	600	300	1900	88.5
19	Supply of Switch Board Cable 50 Pair, 0.5mm annealed tinned copper as per specification. Inspection: Consignee	50 Pair SB Cable	Mtrs		0	600	800	1400	251.91
	Supply of Switch Board Cable 25 Pair as per Specification. Inspection Consignee.	25 Pair SB Cable	Mtrs		500	500	0	1000	118
	Supply of 10 Pair Annealed Tinned Copper Conductor PVC insulated Colour Coded Twisted Pair Switchboard Telephone Cable PVC Sheathed with Nylon Ripped Conductor dia of size 0.5mm (inspection clause RITES)	10 Pair SB Cable	Mtrs		1000	2000	200	3200	38.06
<b>Schedule C6: Power Supply</b>									
	<b>Power Supply</b>								
1	Supply and Installation Testing and Commissioning of on line 6 KVA UPS Inspection: RITES	6 KVA UPS	Nos		2	2	1	5	150218
2	Supply, Installation and Commissioning of 2x10 KVA UPS at least 1 Hour Back up in full load condition, connected in parallel redundant mode. Complete with all accessories as per specification attached	10 KVA UPS	Nos		1	1	1	3	424682

	[Detailed Specification in Technical Document] Inspection RITES								
3	Supply and Installation Testing and Commissioning of Isolated DC-AC Inverter dual DC input -48 V DC, Output:220V AC 1000VA or higher, with all required Protection Circuits. Inspection: RITES	48 DC/AC Inverter	Nos		129	111	39	279	23010
4	Supply and Installation 2 KVA online UPS (Single Phase) 19-inch Rack Mountable Type with 1 Hour Backup along with suitable AH capacity battery and all the accessories required for installations. [Detailed Specification in Technical Document] Inspection: RITES	2 KVA UPS	Nos		6	6	6	18	44840
5	Supply and installation 1 KVA/168VAH on line UPS (Single Phase) with 1 Hour Backup and all the accessories required for installations. [Detailed Specification in Technical Document] Inspection: RITES	1 KVA UPS	Nos		50	50	40	140	5560

#### Schedule C7: Tools

	<b>Toolkit</b>								
1	Supply of Ethernet Tester of Stanley Make NETCATPRO2 or Similar. [Detailed Specification in Technical Document] Inspection RITES	LAN cable tester	No		2	2	2	6	57088
2	Supply of OTDR Suitable for 1310/1550nm fibre with Resolution of 60 cm, Dynamic range of 314/29 dB as per tec specification no. g/otd/02-03 march -2009 with additional features and standard accessories as enclosed. firms offer: make: EXFO, model: max 720c [Detailed Specification in Technical Document] Inspection RITES	OTDR	No		2	2	2	6	165200
3	Single Fibre Fusion Splicer Similar to Fujikura 80C with Standard Accessories : AC ADAPTER /BATTERY Charger ADC-18 1PC, AC Power Cord ACC-XX: 1PC spare electrode Elect2-20:1 pair carrying case CC-30:1PC USB cable USB-01: 1PC Sleeve loader SL01:1 PC dispenser AP-01: 1 PC screwdriver SC-01 1PC, Instruction manual: 1 PC Quick reference Guide 1PC warning & cautions: 1 PC ; BATTERY RACK BRT-09, Battery charger cord DCC-18: 1 PC High precision Fibre cleaner CT-06: 1 PC, 3 in-1 Stripper : 1PC & Protection sleeves: 25nos. (A demo shall be arranged along with supply)[Detailed Specification in Technical Document] Inspection RITES	Splicing Machine	No		1	1	1	3	280840

#### Schedule C8 : Labour and Training

	<b>Labour Portion</b>								
1	Supply of PVC Conduit Pipe Minimum 35 mm dia ISI Mark with suitable couplers, bends. And fixing on the wall/pole, clamping with all required accessories. [Detailed Specification in Technical Document] Inspection RITES	35 MM PVC Pipe	Mtrs		12900	9700	4600	27200	32.38



2	Supply and fixing of PVC Trough/Trunk of 50X50 mm with cover of 2 mm thick 2m each. (This includes all materials, clamps etc required for laying, fixing and clamping). [Detailed Specification in Technical Document] Inspection RITES	Trough	Mtrs		2200	2200	600	5000	369.1
3	Supply of PLB HDPE Duct of Size 40/33 mm Outer and with all Accessories.Installation on Wall or Structure/HDD etc. along with all Accessories required for fixing, Clamping Cutting, as per RDSO Spec No RDSO/SPN/TC/45/2013 Rev 2 or latest. Inspection: RDSO	HDPE Duct 40MM	Mtrs		5200	5700	3700	14600	89.49
4	Trenching & laying of HDPE Duct in Normal Soil and Blowing of OFC Cable.[Detailed Specification in Technical Document]	HDPE Duct Trenching & laying	Mtrs		6350	6850	4600	17800	172.667
5	Breaking of Pucca/Concrete Road, PF Cutting Laying of OFC in Trenches and through all types of protection Viz HDPE/GI/RCC Pipes as the case may be. This includes restoration of the surface and stone paved.	PlatFrom Cutting	Mtr		1260	1100	500	2860	437.33
6	Supply of Desk /workstation furniture, 2 table & 4 Chairs [Detailed Specification in Technical Document] Inspection Consignee	Desk workstation	Sets		2	2	2	6	14760
7	Supply of Non-Flammable, Anti Rodent DWC Pipes (OD/ID 90/76 mm minimum) as specification IS 16205 with T Joints, sockets/couplers at both ends as per requirements. Supply of non-coupler for 6m of DWC pipe and couplers for 30mm of length free of cost.Inspection-RITES	DWC	Mtrs		50	50	50	150	118
8	Blowing / drawing of OFC 24F/12F/6F Power Cable and CAT Cable (including crimping) through Duct, DWC, PVC Conduit/Casing Caping, Trough already installed.	Cable Laying	Mtrs		12235	12950	11310	36495	4.72
9	Supply of 10 Way Krone Modules as per specification. Inspection Consignee	Krone Modules	No		50	30	20	100	147.5
	<b>Training for TCCS</b>								
10	Training of Staff as per RDSO/SPN/TC/99/2012 Rev.2 or Latest	Training	Man/Week		5	5	5	15	23600
	<b>Training for SIP EXCHANGE</b>								
11	Training of Personnel over and above the On-Site Training, During the Installation, Maintenance and Supervision period as Detailed in the tender document. Defined in Man-Week i.e. One week training for one personnel or as desired by Railways.	Training	Man/Weeks		2	5	5	12	23600

**Note:-The Engineer in-charge can change i.e add or delete or modify the location/ station/ Quantity/ Materials as per the Railway requirements during the execution of the work. Detailed Technical Specifications are given in Chapter 3**

## 1.2: General Instruction to Bidders during participation.

S.No	Note -1
1	The Terms used in this booklet i.e. South Western Railways/SWR, Hubballi/UBL, Bengaluru/SBC, Mysuru/MYS, IP/MPLS Multiprotocol Label Switching, SIP/Session Initiation Protocol, VoIP/ Voice over Internet protocol, VSS/ Video Surveillance System will be used interchangeably.
2	Interested parties are required to submit the Tenders online to be uploaded on the electronic platform (hereinafter referred to as “e-Tendering Portal”) - in accordance with terms stipulated in the Tender Document. E-Tendering Portal Link - <a href="http://www.ireps.gov.in">www.ireps.gov.in</a>
3	The tender document contains instructions to Tenderers for e-Tender, General Tender conditions, Special Tender Conditions, SOQ, Scope of work, Technical Specification etc which is available on the IREPS web site <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> .
4	<b><i>Tenderers are advised to study the Tender document carefully before participating in the Tender. Online Submission of Tenders shall be deemed to have been done after careful study and examination of the Tender document with a full understanding of its implications. Offers prepared in accordance with the procedures enumerated in General conditions and Special conditions should be submitted online through the IREPS web site <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> not later than the date and time specified in the Schedule for Invitation to Tender.</i></b>
5	Documents to be uploaded along with the Tender, if any, may be scanned with <b>100 dpi</b> with the black and white option which helps in reducing the size of the scanned document. <b><i>Various works supporting technical and financial credentials shall be uploaded as separate PDF files with relevant name of PDF file for ease in scrutinising/ evaluation.</i></b>
6	The Tenderer shall not tamper/modify the Tender form, including Tender price template in any manner. In case if the same is found to be tampered/ modified in any manner in the IREPS web site <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> , Tender shall be completely rejected. Tenderer is liable to be banned from doing business with Railways.
7	The Tender Document and all corrigendum/ addendum shall be uploaded on the e-Tendering Portal ( <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> ). Prospective Tenderers are advised to visit the IREPS web site <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> at least three days prior/regularly to the closing date of submission of Tender for any corrigendum/addendum/amendment.
8	The Estimated cost as per the NIT is inclusive of GST and Rates.
9	<b>Tender Forms shall be issued free of cost to all tenderers. Bid security Declaration as per the prescribed format is required to be submitted, without which, the offer will not be evaluated and summarily rejected.</b>
10	Manual offers shall NOT be accepted against e-Tenders, even if they are submitted on the Firm's letterhead/ any other form acquired or downloaded, and submitted before closing time. All such manual offers shall be considered as invalid offers and will be rejected summarily without any consideration.
11	Before quoting please see relevant Para Chapter 2, 3 & 4 .
12	Rate quoted against each Schedule in BoQ above should be inclusive of basic rate, including GST, freight insurance, all taxes and any other charges or cost quoted by the tenderer.
13	During maintenance, Bidder shall undertake maintenance, repairs and replacements of all types of equipment/ module/ card/ assembly/ subassembly and update/upgrade of software released during this period and /or which may fail in the system.

14	The rate for Comprehensive AMC shall be quoted as a percentage of the rate of Supply of that particular item. Rate shall be quoted for 1st, 2nd, 3rd, 4th and 5th year. Rate of Supply is defined as 100 percent in case of supply items and 90 percent in case of supply and installation items. <b>The value of Comprehensive AMC Schedule will not be taken into consideration for evaluation of tender and will not form part of the contract agreement for this work.</b> The Contract Agreement of Comprehensive AMC shall be executed separately after successful completion of Maintenance period to undertake maintenance, repairs and replacements of all type of equipment/ module/ card/ assembly/ sub-assembly and update/upgrade of software released during this period and /or which may fail in the system during AMC period. Security deposit shall be released to the contractor only after execution of Contract agreement for Comprehensive AMC or as decided by Dy. CSTE/Project/Hubballi. Final decision to take up AMC or not will be with Railways
15	Wherever, Railways has provided LAN infra at railway stations and the existing available infrastructure may be utilized by the bidder for implementation and such items used may not be considered as a part of Supply orders. Decision regarding utilization of LAN infra/existing infra taken by Railway will be final and binding.
16	Hardware such as Routers, Switches etc and all related accessories shall be of the same make. Bidder has to offer make, model and series for Routers, Switches, Cameras, servers, Gateways. The bidder shall offer only one make for the items while bidding and not more than one model. Offers without particulars of Make, Model and Series are liable to be REJECTED.
17	<b>DELETED</b>
18	The bidder is required to supply the NMS & EMS Server which should be compliant and work/support with all makes of Network Devices deployed with the use of protocols and latest tools including all hardware and software in a centralized setup in the Railway Data centers in DC and DR configuration. The NMS & EMS monitoring services for IP MPLS, VoIP based TCCS (including existing TCCS infra), SIP Based Exchange(including existing Exchange infra) & VSS (including existing VSS infra) and other existing infra under the region will be provided from the centralized setup through the clients installed at various locations.
19	Along with the server, the bidder is required to provide necessary hardware/software required for remote management of servers like IPMI Port with KVM over LAN or equivalent. Remote management functionalities include remote OS/Software updation/installation, reboot, shut down etc.
20	Railway will provide Rack space at datacenter and stations for hosting Telecom infrastructure as defined in the tender. Bidders are requested to optimize the number of racks required in the data centers and stations.
21	The supply of items at the project store of Senior Section Engineer at Hubballi/Bengaluru/Mysuru shall be done in a phased manner strictly in line with the progress of the work. Successful bidder is required to propose project progress and planning of supply of related material in consultation with the Railway. Bidders shall submit the Supply and Inspection plan along with destination(s) for delivery to the Railway after approval of Dy CSTE/Project. The bidder will arrange for supply and inspection of material as per approved plan and payment of items shall be released as per supply plan. Any material supplied more than required at the site will be paid as per the progress of the work.
22	Application should be based on the open software platform and industry standards, a system that can connect and integrate with other Applications using Software Development Kit (SDK) which offers ease to use Application Programming Interface (API) and support most commonly used programming languages. Applications should have open standard architecture (no proprietary database) and interoperability with other applications to meet the desired functional requirement of the project.
23	All Kinds of Software(SDK & API) along with licences shall be handed over to Railways after completion of the work.
24	Bidders to ensure that the proposed system is protected from malicious attacks, malware etc. during complete project duration and suitable measures have been taken in the system. The bidders are required to meet all eligibility criteria mentioned in this tender document and financial bids of eligible bidders will be opened.
25	Non conformities between Figures and Words. If there is a discrepancy between words and figures, the amount in words shall prevail.

26	After award of work, an agreement will be drawn, which shall be executed by the successful Tenderer and this agreement will be prepared based on the tender document available on the website and not based on the Tender document submitted by the Tenderer. No claim on this account will be entertained.
27	Bidders shall not be under declaration of an ineligibility for corruptor, fraudulent practices or blacklisted in any central / state government/ PSU during the last 5 years, at the time of submission of bids. Bidder to submit a declaration in this regard duly signed by authorized signatory of the bidder.- <b>Declaration of the same to be attached.</b>
28	OEM undertaking to be submitted for providing 3 years warranty/maintenance and 5 years AMC support- If during the course of the contract, if the ownership/ shareholder of the company changes , the present OEM shall give an undertaking to this effect to support the system under the present scope of the work.
29	The offered Model/Product family should have End of life and service Support of not less than 8 Years for Routers , Switches, Media Converters , Storage Servers, NMS, CCTV Cameras and 12 years for IP Exchange (Server Based), 10 Years for VOIP based TCCS. Required certificate for the same by OEM shall be submitted along with the bid.
30	Tenderer should submit the detailed configuration/technical details of each type of equipment/modules/card/licenses etc.
31	In the specification wherever support for a feature has been asked for, it will mean that the feature should be available without the Railway requiring any other hardware/ software/ licenses. Thus, all hardware/ software/ licenses required for enabling the support in future shall be included in the offer. Any license fee required to be paid for hardware and software , EMS during the life cycle of the equipment shall be included in the rate quoted by the tenderer. There shall be no post contractual liability of license fee on railways for hardware and software supplied by the tenderer.
32	The following declaration should be given by the Tenderer while submitting the tender: Declaration (a) I/We have e-filed the tender form on internet site <a href="http://www.ireps.gov.in">www.ireps.gov.in</a> and I/We have not tampered / modified the tender forms in any manner. In case, if the same is found to be tampered / modified I/We understand that my/our tender will be summarily rejected and full earnest money deposit will be forfeited and I/we am/are liable to be banned from doing business with Railways and/or prosecuted.
33	1. Bid specific Manufacturer Authorisation Form ( MAF ) has to be submitted along with the offer by the bidder for Routers, Switches, Servers, Cameras, TCCS console, workstation, Gateways, Firewall and Software. 2. BOQ has to be vetted from OEM on letterhead for Routers, Switches, Servers, Cameras, TCCS console, workstation, Gateways, Firewall and Software.

### 1. Guidelines for e-Tenders

- (i) In the e-tendering process, it is mandatory that every tenderer/contractor/firm registered with [www.ireps.gov.in](http://www.ireps.gov.in) submit their bank details i.e. Name of the Bank along with Bank Branch Code, Account Number, IFSC Code, and PAN Number. As the entry into [www.ireps.gov.in](http://www.ireps.gov.in) is controlled by Digital Signature certificate, a separate signature in the tender document / attached document is not required.
- (ii) The Tenderer(s)/Contractor(s) intending to apply for this E-Tender, need to get enrolled in the aforesaid E-Tender portal and only online tenders will be accepted. It is the responsibility of the Tenderer(s)/Contractor(s) to obtain necessary Digital Signature Certificates for participating in the E-Tender.

## **Annual Maintenance Contract(AMC)**

### 1.3 Comprehensive Annual Maintenance Contract(AMC) -

The rate for Comprehensive AMC shall be quoted as a percentage of the rate of Supply of that particular item. Rate shall be quoted for 1st, 2nd, 3rd, 4th and 5th year. Rate of Supply is defined as 100 percent in case of supply items and 90 percent in case of supply and installation items. The value of Comprehensive AMC Schedule will not be taken into consideration for evaluation of tender and will not form part of the contract agreement for this work. The Contract Agreement of Comprehensive AMC shall be executed separately after successful completion of Maintenance period to undertake maintenance, repairs and replacements of all type of equipment/ module/ card/ assembly/ sub-assembly and update/upgrade of software released during this period and /or which may fail in the system during AMC period. Security deposit shall be released to the contractor only after execution of Contract agreement for Comprehensive AMC or as decided by Dy. CSTE/Project/Hubballi.

#### Annexure I - AMC for IP MPLS (Multi-Protocol Label Switching)

	IP MPLS Routers and Accessories	Item Code	Unit	UBL	SBC	MYS	Total Qty	1st Year	2nd Year	3rd Year	4th year	5th year
1	AMC for Standard sized 19" Rack Mountable LER(Label Edge Router) , IP- MPLS Router with Redundant DC power feed -48V DC nominal, equipped with interfaces: 2 x 10G (optical) SFP+ Ports along with 2 Nos of 40 Kms 10G SFP+ LC Modules, 4 x 1GbE (Optical) interface along with 4 Nos of 1GbE Single Mode Bi-directional SFP (10KMs) Modules and 4 x 1GbE (Copper) interfaces & Modules and slot for 16 x E1 (G.703), {supply of 16 E1 card is not included in this item and is catered in item number A2 (4)}, Mounting kit with all necessary accessories & Software,Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest.	LER Min	No	113	67	87	267					
1a	AMC for Standard sized 19" Rack Mountable LER(Label Edge Router) , IP- MPLS Router with Redundant DC power feed -48V DC nominal, equipped with interfaces: 2 x 10G (optical) SFP+ Ports along with 2 Nos of 40 Kms 10G SFP+ LC Modules, 4 x 1GbE (Optical) interface Module along with 4 Nos of 1GbE Single Mode Bi-directional	LER Max II	Nos	13	3	8	24					

	SFP (10KMs) Modules and 4 x 1GbE (Copper) based interfaces & Modules, 2x STM-1 (Channelised) interface along with 2 Nos of SFP(S.1.1) Modules Compatible with Existing STM-1 and slot for 16 x E1 (G.703), {supply of 16 E1 card is not included in this item and is catered in item number A2 (4)} . Mounting kit with all necessary accessories & Software, Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest. Inspection RDSO											
2	AMC for Standard 19" Rack Mountable Modular Chassis LSR (Label Switch Router) IP- MPLS Router with Redundant DC power feed -48V DC nominal Redundant Controller Card, equipped with interfaces: 8 x 10G (optical) SFP+ Ports along with 8 Nos of 40 Kms 10 G SFP+ Modules, Mounting Kit with all necessary accessories & Software,Perpetual Licenses. As Per RDSO Document No. STT/TAN/IP-MPLS/2020 Version 01 or latest.	IP MPLS Router LSR	No	17	3	8	28					
3	AMC for 16 port E1 Card along with Patch panel/Krone Module and wiring for Routers with all accessories etc.	16 E1 Card	No	126	70	95	291					
	<b>NMS</b>											
4	DELETED											
5	AMC for Network Management System (NMS) inclusive of Software, Hardware and Perpetual Licenses for Minimum 5400 Network Elements including IP MPLS Router, L3 Switches, L2 Switches, UPS, Gateways and other network elements with SNMP support.	NMS Hardw are & Softwa re	Lot	1	0	0	1					
5a	AMC for NMS System (Hardware and Software) installed in Data Centers, Active and standby server to be provisioned at 2 different locations for main location/ station and another as standby system in physically separated another location.	NMS										



	Work Station											
6	AMC for PC Workstation/Maintenance Console as per specification detailed in Para no. G of RDSO Document No. STT/TAN/IP-MPLS/2020 Ver 1.0 or latest	PC Workstation	No	1	1	1	3					

#### Annexure II - Annual Maintenance Contract(AMC) VSS for A,B & D,E Stations

S.N	Description	Item Code	Unit	UBL	SBC	MYS	Total Qty	1st Year	2nd Year	3rd Year	4th year	5th year
	<b>IP CAMERA</b>											
1	AMC for Full HD Fixed Dome type IP Colour Camera along with 128 GB or Higher SD Card, Housing & Mount	DOMES	No	248	245	251	744					
2	AMC for Full HD Fixed Bullet type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount	BULLET	No	582	570	556	1708					
3	AMC for Full HD PTZ type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount	PTZ	No	93	91	90	274					
4	AMC for 4K UHD Bullet type IP Colour Camera along with 128 GB or Higher SD Card, housing and mount	4K UHD	No	20	20	16	56					
	<b>WORKSTATION and LFD</b>											
5	AMC for Digital KeyBoard (Joystick) and all accessories compatible with PTZ cameras.	JOY STICK	No	7	7	6	20					
6	AMC for PC WorkStation for Viewing ,Monitoring and System Management including 24 inch 4K UHD LED Monitors	WORK STATION	No	20	19	15	54					
7	DELETED											
8	AMC for Server and Network Smart Rack (Server Rack-3 Nos) with accessories and PDU along with Zero U Cooling Unit (2 Nos) with Piping and Low Side works, Monitoring system, cooling unit accessories, related electrical work and Rack based Fire	Smart Rack	No.	1	1	1	3					



	detection, Extinguishing System, Rodent repellent system and other accessories											
9	AMC for 2x10 KVA UPS at least 1 Hour Back up in full load condition ,connected in parallel redundant Complete with all accessories as per specification attached two battery rack	10 KVA UPS	No	8	7	6	21					
10	AMC for Panic Switch (IK10 and IP 66 Rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2 Amps , Stainless Steel FacePlate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB	Panic Button	Nos	93	91	90	274					
11	AMC for VMS Server with all the accessories required for the installation for VSS project, including one 17 inch FHD Monitor with Keyboard, Mouse, KVM Switch, As per Clause No. 10.1.1.3 of RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest.	VMS SERVER	No	8	10	7	25					
12	AMC for Video Analytic Hardware and all accessories required for installation purpose. As per Clause No. 10.1.1.3 RDSO Spec No RDSO/SPN/TC/65/2021, Rev 6.0 or latest.	VAS SERVER	No	9	9	9	27					
13	AMC for Server Hardware for Face Recognition	FRS SERVER	No	8	8	6	22					
	<b>Storage Server</b>											
14	AMC for Storage System for 30 days recording at Station/ RPF/GRP Thane/ Post sites for recording of Cameras from cluster of station	Storage Server	Lot	6	8	5	19					
15	AMC for Storage System for 15 days recording at one Data Center each per Division for recording of Cameras from clusters of stations.	Storage Server Data Center	Lot	1	1	1	3					
16	<b>DELETED</b>											
	<b>Next Generation Firewall</b>											

17	AMC for NGFW along with Management software and Hardware and all accessories required their installation in the Data Center. it includes Network Security appliance 4x10G SFP Ports and 4x1G SFP Ports Rack Mountable UTM Firewall with features like Next Generation Firewall, Intrusion Prevention System ,Gateway Anti-Spam Prevention ,Ant,Bandwidth Management ,Traffic Discovery, Application Visibility and Control Hardware etc should have 1 Console port ,2 USB Management Port for Explorer.	FIRE WALL	Nos	1	1	1	3					
18	DELETED											
19	AMC for 4 no.s of 55" LED Display as per specification enclosed. It includes supply and installation of Matrix switch/Controller,Cables,Softwares etc and LED wall Mount/stand and all accessories required for installation as per specification enclosed.	Video Wall	No	2	1	1	4					

**Annexure III - Annual Maintenance Contract(AMC) - VOIP Based TCCS & SIP Exchange.**

SI No	Description		Unit	HQ	UBL	SBC	MYS	Total Qty	1st Year	2nd Year	3rd Year	4th year	5th year
	<b>Servers</b>												
1	AMC for Communication Server as per Clause 5 and 6 RDSO/SPN/TC/99/2012 Rev.2 or latest. Communication Server Block shall be provided 1+2 or 1:2 Redundancy. Total 3 servers, 2 numbers at main location and one at remote location.	Communication server	Set		1	1	0	2					
2	AMC for Server 1 Number Communication Server for Remote Location. Redundancy Compatible with the existing server.	Communication server	Nos		0	0	1	1					
3	AMC for Network Management Server	NMS	Nos		2	2	1	5					
4	AMC for Voice Recording Server	Voice Logger	Nos		2	2	1	5					
5	AMC for Event Notification Gateway	Event Notification Gateway	Nos		2	2	1	5					
	<b>Consoles</b>												

6	AMC for Controller Console	Controller Console	Nos		12	8	4	24					
7	AMC for Test Room Console	Test Room Console	Nos		2	2	1	5					
	<b>Servers for SIP</b>												
	<b>Main Server</b>												
8	AMC for Call/Communication (SIP) Server dual DC power supply	Server Hardware	No		0	2	0	2					
	<b>Intercom Server</b>												
9	AMC for Call Server	Server Hardware	No	2	2	0	2	6					
	<b>Servers/Devices(TCCS)</b>												
10	AMC for NMS(Network Monitoring Server) with OS Software	NMS	No		1	1	1	3					
11	AMC for PC WorkStation/Maintenance Console 24-inch FHD Resolution.	PC Workstation	No	1	1	1	1	4					

**NOTE: BIDDER HAS TO QUOTE AMC RATE FOR 5 YEAR PERIOD.**

**There may be increase/decrease in schedule Quantity based on actual deployment at site, based on requirement .**