RAILTEL CORPORATION OF INDIA LIMITED (RCIL)

Invites open e-tender for and on behalf of

INDIAN RAILWAYS

ELECTRONIC TENDER DOCUMENT

FOR

"Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways"

OPEN TENDER

E-निविदा संख्या RailTel/Tender/OT/CO/P/2018-19/CCTV at Stations & in Coaches/472
E-Tender No. RailTel/Tender/OT/CO/P/2018-19/CCTV at Stations & in Coaches/472

निविदा दस्तावेज की कीमत: रु. 29,500/- (टैक्स सहित)
Cost of Tender Document: INR. 29,500/-(Including Taxes)

खुली निविदा सूचना

ई-निविदा संख्या रेलटेल/टेंडर/ओटी/सीओ/पी/2018-19/रेलवे स्टेशनों एवं कोच में सी. सी. टी. वी./472
दिनांक: 22.02.2019

रेलटेल कॉर्पोरेशन ऑफ इंडिया लिमिटेड (रेलटेल) द्वारा भारतीय रेल की ओर से भारतीय रेल के रेलवे स्टेशनों एवं कोच में आईपी आधारित क्लोज़ सर्किट टेलीविज़न (सी सी टीवी) की आपूर्ति, संस्थापन, जांच, कमिशनिग, प्रचालन एवं रखरखाव के लिए ई-निविदायें आमंत्रित की जाती हैं| इच्छुक निविदा कर्ता नीचे दिए गए कार्यक्रम के अनुसार निविदायें जमा करें:

a)	ऑनलाइन निविदा जमा करने की अंतिम तिथि व समय	10.06.2019 को 15:00 बजे तक
b)	ऑनलाइन निविदा खुलने की अंतिम तिथि व समय	10.06.2019 को 15:30 बजे तक
c)	धरोहर राशि (ई एम डी) #	पैकेज-I (उत्तरी): रु . 92 लाख * पैकेज-II(पश्चिमी): रु . 62 लाख* पैकेज-III(पूर्वी): रु . 100 लाख* पैकेज-IV(दक्षिणी): रु . 81 लाख* पैकेज-V (कोच): रु . 100 लाख*
d)	निविदा दस्तावेज की कीमत #	रु. 29,500/- (टैक्स सहित) *
* जानकारी के लिए Clause 4.A.22, Chapter-4 देखें |		

मान्यता प्राप्त सूक्ष्म तथा लघु उद्योगों को निविदा दस्तावेज का मूल्य एवं ईएमडी जमा कराने से छूट दी जाती है, अधिक जानकारी के लिए Clause 4.A.23, Chapter-4 देखें |

नोट 1: निविदा सूचना और निविदा दस्तावेज, वेबसाइट **www.railtelindia.com** तथा E-Tendering Portal https://www.ireps.gov.in पर उपलब्ध रहेंगे जिसे निविदाकर्ता डाउनलोड कर सकते हैं, लेकिन निविदा केवल E-टेंडरिंग द्वारा IREPS Portal https://www.ireps.gov.in पर ONLINE ही स्वीकार की जायेंगी | निविदाकर्ता को E-बिड जमा कराने के लिए IREPS Portal से एक अधिकृत E–दस्तावेज डाउनलोड करना आवश्यक है | Corrigendum/Addendum/Amendment सम्बंधित जानकारी केवल IREPS Portal पर ही उपलब्ध होंगी | निविदा दस्तावेज की छपी हुई प्रति बिक्री के लिए उपलब्ध नहीं होगी |

निविदाकर्ता को निविदा सम्बंधित खर्च, जैसे निविदा तैयार करवाने, निविदा जमा करवाने तथा निविदा में भाग लेने जैसे सभी खर्च स्वयं वहन करने होंगे | रेलटेल इन खर्चों के लिए किसी भी दशा में देनदार नहीं होगा, भले ही निविदा का परिणाम कुछ भी हो |

यह टेंडर रेलटेल के इंटिग्रिटी पैक्ट प्रोग्राम के अंतर्गत आता है और निविदाकर्ता को इंटिग्रिटी पैक्ट Sign करके निविदा से पहले या निविदा के साथ जमा करने की आवश्यकता है |

जो टेंडर इंटिग्रिटी पैक्ट दस्तावेज की Signed कॉपी के बिना प्राप्त होंगे वे अस्वीकार किये जा सकते हैं, जैसा कि Clause 4.B.24, Chapter-4B में निर्देशित है |

कार्यकारी निदेशक/परियोजना

OPEN TENDER NOTICE

E-Tender No. RailTel/Tender/OT/CO/P/2018-19/CCTV at Stations & in Coaches/472
Dated: 22.02.2019

RailTel Corporation of India Ltd. (RailTel) invites E-Tenders in Two Packet (Part I –Credential/ Techno commercial Bid and Part II - Price Bid) System for **"Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways"**.

The details are as under: -

a)	Closing date for Submission of E-Bids	Up to 15:00 hrs. of 10.06.2019 (online)
b)	Date of opening of E-Bids	Up to 15:30 hrs. of 10.06.2019 (online)
c)	Earnest Money Deposit (EMD) #	Package-I (Northern): Rs. 92 Lakhs* Package-II (Western) : Rs. 62 Lakhs* Package-III (Eastern) : Rs. 100 Lakhs* Package-IV (Southern) : Rs. 81 Lakhs* Package-V (Coach) : Rs. 100 Lakhs*
d)	Cost of Tender Document #	Rs. 29,500/-* (Including Taxes)
* Please refer clause 4.A.22, Chapter-4 for details.		

Eligible MSEs are exempted from cost of Tender Documents and EMD, more details are given in clause 4.A.23, chapter-4.

Note: Tender Notice and Tender Document are available on RailTel's website and can be downloaded from **www.railtelindia.com** or from the e-Tendering portalhttps://www.ireps.gov.in . For online bid submission the bidder will have to necessarily download an official online copy of the tender documents from IREPS e-portal. All future Information viz. corrigendum /addendum/ amendments etc. for this Tender shall be posted on the e-Tendering Portal only. Printed copy of Tender document will not be sold from RailTel office.

The bidder shall bear all costs associated with the preparation, submission/participation in the bid. Purchaser in no way will be responsible or liable for these costs regardless of the conduct or outcome of the bidding process.

This tender is covered under Integrity Pact Program of RailTel and bidders are required to sign the Integrity Pact and submit the same to RailTel before or along with the bids.

Tender received without signed copy of the Integrity Pact document as instructed in Clause 4.B.24, Chapter-4B shall be liable to be rejected.

For RailTel Corporation of India Ltd.

(Shaminder Singh)
Executive Director/Project

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CHAPTER-1

OFFER LETTER

RailTel Corporation of India Ltd.,
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003

1. I/We _____ have read the various conditions detailed in tender document attached here to and hereby agree to ABIDE BY THE SAID CONDITIONS. I/We also agree to keep this offer open for acceptance for a period of **180 days** from the date of submission and in default thereof. I/We will be liable for forfeiture of my/our Earnest Money. I/We offer to supply various equipment at the rates quoted in the attached schedules and hereby bind myself/ourselves to complete the work within delivery timelines (clause 4.A.4, Chapter-4) from the date of issue of Purchase Order/LOA. I/We also hereby agree to abide by the Various Conditions of Contract and to carry out the supplies according to the Specifications for materials and works laid down by the RailTel.

2. **Account Payee Demand Drafts in favour of RailTel Corporation of India Ltd. are herewith** herewith forwarded as "Earnest Money" against various packages as detailed below.

Package	Amount (in INR)	DD No.	Issued by (Name of Bank)	Date of Issue
I(Northern)	92 Lakhs			
II (Western)	62 Lakhs			
III (Eastern)	100 Lakhs			
IV (Southern)	81 Lakhs			
V (Coaches)	100 Lakhs			

Fill Details for chosen packages. Strike out against the package(s) and write NIL in DD No./Issued by/Date of Issue columns, if bidder is offering any package(s).

The full value of Earnest Money for concerned region package(s) shall stand forfeited without prejudice to any other rights or remedies if, I/We withdraw or modify the offer within validity period or do not deposit the security deposit (Performance Bank Guarantee) within **specified days as per tender** after issue of Purchase Order/LOA.

SIGNATURE OF SUPPLIER (S)

Date:

CONTRACTOR (S) ADDRESS

SIGNATURE OF WITNESS:

1.

2.

CHAPTER- 2
SCHEDULE OF REQUIREMENT

PACKAGE-I (NORTHERN)

SOR HEAD I: IP BASED VIDEO SURVEILLANCE/CCTV WORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SCHEDULE 'A'						
1.	Supply of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	354				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	17845				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	2185				

(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	450				
1.1	Installation, Testing, Commissioning and Integration of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	354				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	17845				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	2185				
(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	450				
2.	Supply of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	151				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	53				

(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	53				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	106				
(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	219				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	70				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fan tray, Patch Panel etc. required for installation of the equipment	No.	70				
(i)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	53				
2.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						

(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	151				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	53				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	53				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	106				
(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	219				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	70				

(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	70				
(i)	Fixing of furniture for each Work-station quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	53				
3.	Supply of IT infrastructure, applications and associated items at RailTel datacenter(s).						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad) as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				

3.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RailTel datacenter(s).						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad) as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
4.	Supply of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	151				

4.1	Installation, Testing and commissioning of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	151				
5.	Supply of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	53				
5.1	Installation, Testing and commissioning of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	53				
6.	Supply of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	4766				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1961				

(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	302				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	1961				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	4766				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	3508				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	421				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	902				

(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1803				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	3508				
6.1	Installation, Testing and Commissioning of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	4766				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1961				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	302				

(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	1961				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	4766				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installa-tion	No.	3508				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installa-tion	No.	421				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications de-fined in chapter 5 of Section-II (Nos. indicates the site of installa-tion)	No.	902				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1803				

(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	3508				
7.	Supply of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	601838				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	1466345				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	No.	1157318				
d.	32mm PVC conduit pipe (ISI mark)	Mtr.	3117320				
e.	32mm PVC flexible pipe	Mtr.	121100				
f.	40mm dia. HDPE pipe	Mtr.	90150				
g.	GI pipe	Mtr.	18030				
7.1	Blowing/Pulling/laying of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	601838				

b.	12 Core metal strengthened out-door unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	1466345				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strength-ened Copper Cable for UPS sup-ply distribution (as per BIS/ISI standards	No.	1157318				
d.	32mm PVC conduit pipe (ISI mark)	Mtr.	3117320				
e.	32mm PVC flexible pipe	Mtr.	121100				
f.	40mm dia. HDPE pipe	Mtr.	90150				
g.	GI pipe	Mtr.	18030				
8.	Supply of Media Convertor Pair as defined in clause 8.15 of chap-ter 8.	No.	76				
9.	Spares @ 8% of supply against item A.1 (a) to A.1(d), A.2 (f), A.6 (a) to A.6 (c) above as de-fined in clause 3.D.8.1 in chapter 3.	Lot.	1				
10.	Supply of bracket/fixture/Angle for fixing of camera at stations	No.	826				
10.1	Installation of brack-et/fixture/Angle for fixing of camera at stations	No.	826				
11.	Execution of Engineering works at RPF/GRP Thana/Post @ Rs. 50,000/-	No.	151				
	Total Cost of Schedule – 'A'						

SN	**Description of Item**	**Unit**	**Qty.**	**Incremental % Cost (In Fig.)**		**Incremental % Cost (In Words.)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	SCHEDULE –'B'						

1	Incremental AMC charges after warranty period as percentage of overall cost (excluding taxes and duties) of **Supply portion of** Schedule – 'A' over and above 3.5%. Only incremental INR cost in addition to 3.5 % mentioned in clause 4.A.3 of Chapter-4 required to fulfill Long Term Maintenance support clause. (E.g. if the annual AMC cost is proposed to be 4% the quoted amount should be calculated value @ 0.5% in INR per annum under column 5 & 6. For five years it should separately be shown as calculated value @ 2.5% in INR under column 7 & 8. For clarity, detailed scope of AMC be read in clause 4.A.3 of Chapter-4	No.	5				
	Total Cost of Schedule – 'B'						
	Total Value of Schedule – 'A' and Schedule – 'B'						
	Total Value of SOR in Words:						

SOR HEAD II: SUPPORT ENGINNERS, TRAININGS AND COMMAND AND CONTROL CENTER FOR SURVEILLANCE NETWORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Manpower Support during warranty period						
(a)	L1 support engineer in Field (@ defined per annum rate of Rs.3,00000/-)	No.	302*				
(b)	L2 support engineer in RailTel Datacenter (@ defined per annum rate of Rs. 6,00000/-)	No.	12*				

2.	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.	No.	1510				
3.	Supply of Command Control Center as per functional requirements and Video wall display as per specification defined in clause 8.26 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
3.1	Installation, Testing and Commissioning of Command Control Center as per functional requirements and Video wall displays per specification defined in clause 8.26 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
	Total Cost of Schedule						
	Total Value of SOR Head-I and SOR Head-II						
	Total Value of SOR in Words:						

PACKAGE-II (WESTERN)

SOR HEAD I: IP BASED VIDEO SURVEILLANCE/CCTV WORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SCHEDULE 'A'						
1.	Supply of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	566				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	12562				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	1635				

(d)	4K UHD Bullettype IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	770				
1.1	Installation, Testing, Commissioning and Integration of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	566				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	12562				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	1635				
(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	770				
2.	Supply of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	103				

(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	58				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	58				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	116				
(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	174				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	71				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	71				
(i)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	58				

2.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	103				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	58				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	58				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	116				
(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	174				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	71				

(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	71				
(i)	Fixing of furniture for each Work-station quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	58				
3.	Supply of IT infrastructure, applications and associated items at RailTel datacenter(s)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad) as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				

3.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RailTel datacenter(s)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad)as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
4.	Supply of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	103				

4.1	Installation, Testing and commissioning of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	103				
5.	Supply of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	58				
5.1	Installation, Testing and commissioning of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	58				
6.	Supply of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	3228				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1314				

(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.), as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	206				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	1314				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	3228				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	2160				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	297				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	557				

(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1114				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2160				
6.1	Installation, Testing and Commissioning of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	3228				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1314				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	206				

(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	1314				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	3228				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installa-tion	No.	2160				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installa-tion	No.	297				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications de-fined in chapter 5 of Section-II (Nos. indicates the site of installa-tion)	No.	557				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1114				

(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2160				
7.	Supply of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	420313				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	507165				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	No.	760748				
d	32mm PVC conduit pipe (ISI mark)	Mtr.	1621385				
e	32mm PVC flexible pipe	Mtr.	90500				
f	40mm dia. HDPE pipe	Mtr.	55700				
g	GI pipe	Mtr.	11140				
7.1	Blowing/Pulling/laying of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	420313				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	507165				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	No.	760748				

d	32mm PVC conduit pipe (ISI mark)	Mtr.	1621385				
e	32mm PVC flexible pipe	Mtr.	90500				
f	40mm dia. HDPE pipe	Mtr.	55700				
g	GI pipe	Mtr.	11140				
8.	Supply of Media Convertor Pair as defined in clause 8.15 of chapter 8.	No.	52				
9.	Spares @ 8% of supply against item A.1 (a) to A.1(d), A.2 (f), A.6 (a) to A.6 (c) above as defined in clause 3.D.8.1 in chapter 3.	Lot.	1				
10.	Supply of bracket/fixture/Angle for fixing of camera at stations	No.	460				
10.1	Installation of bracket/fixture/Angle for fixing of camera at stations	No.	460				
11.	Execution of Engineering works at RPF/GRP Thana/Post @ Rs. 50,000/-	No.	103				
	Total Cost of Schedule – 'A'						

SN	**Description of Item**	**Unit**	**Qty.**	**Incremental % Cost (In Fig.)**		**Incremental % Cost (In Words.)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	SCHEDULE –'B'						
1	Incremental AMC charges after warranty period as percentage of overall cost (excluding taxes and duties) of **Supply portion of** Schedule – 'A' over and above 3.5%. Only incremental INR cost in addition to 3.5 % mentioned in clause 4.A.3 of Chapter-4 required to fulfill Long Term Maintenance support clause. (E.g. if the annual AMC cost is proposed to be 4% the quoted amount should be calculated value @ 0.5% in INR per annum under column 5 & 6. For five years it should separately be shown as calculated value @ 2.5% in INR under column 7 & 8. For clarity, detailed scope of AMC be read in clause 4.A.3 of Chapter-4	No.	5				
	Total Cost of Schedule – 'B'						

	Total Value of Schedule – 'A' and Schedule – 'B'						
	Total Value of SOR in Words:						

SOR HEAD II: SUPPORT ENGINNERS, EMS SYSTEM AND TRAININGS FOR SURVEILLANCE NETWORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Manpower Support during warranty period						
(a)	L1 support engineer in Field (@ defined per annum rate of Rs.3,00000/-)	No.	206*				
(b)	L2 support engineer in RailTel Datacenter (@ defined per annum rate of Rs. 6,00000/-)	No.	12*				
2.	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.	No.	1030				
	Total Cost of Schedule						
	Total Value of SOR Head-I and SOR Head-II						
	Total Value of SOR in Words:						

PACKAGE-III (EASTERN)

SOR HEAD I: IP BASED VIDEO SURVEILLANCE WORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SCHEDULE 'A'						
1.	Supply of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	1011				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	21023				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	2807				
(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	1548				
1.1	Installation, Testing, Commissioning and Integration of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	1011				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	21023				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	2807				

(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	1548				
2.	Supply of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	77				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	77				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	154				
(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	256				

(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	107				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	107				
(i)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	77				
2.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	77				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	77				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	154				

(e)	Storage System at RPF/GRP Thana/Post sites for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	256				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	107				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	107				
(i)	Fixing of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	77				
3.	Supply of IT infrastructure, applications and associated items at RailTel datacenter(s)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				

(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot.	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad)as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
3.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RailTel datacenter(s)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot.	1				

(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters (Gurugram and Secunderabad)as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
4.	Supply of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
4.1	Installation, Testing and commissioning of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
5.	Supply of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	77				
5.1	Installation, Testing and commissioning of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	77				

6.	Supply of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	5340				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	2288				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.), as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	298				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	2288				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	5340				

(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	3664				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	334				
(h)	MFCE Earth complete with all accessories. (Less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	928				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1855				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2690				
6.1	Installation, Testing and Commissioning of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	5340				

(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	2288				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	298				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	2288				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	5340				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	3664				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	334				

(h)	MFCE Earth complete with all accessories. (Less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	928				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1855				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2690				
7.	Supply of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	702775				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	2424630				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	No.	1326945				
d	32mm PVC conduit pipe (ISI mark)	Mtr.	4343050				
e	32mm PVC flexible pipe	Mtr.	158500				
f	40mm dia. HDPE pipe	Mtr.	92750				
g	GI pipe	Mtr.	18550				

7.1	Blowing/Pulling/laying of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	702775				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	2424630				
c.	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	No.	1326945				
d	32mm PVC conduit pipe (ISI mark)	Mtr.	4343050				
e	32mm PVC flexible pipe	Mtr.	158500				
f	40mm dia. HDPE pipe	Mtr.	92750				
g	GI pipe	Mtr.	18550				
8.	Supply of Media Convertor Pair as defined in clause 8.15 of chapter 8.	No.	75				
9.	Spares @ 8% of supply against item A.1 (a) to A.1(d), A.2 (f), A.6 (a) to A.6 (c) above as defined in clause 3.D.8.1 in chapter 3.	Lot.	1				
10.	Supply of bracket/fixture/Angle for fixing of camera at stations	No.	730				
10.1	Installation of bracket/fixture/Angle for fixing of camera at stations	No.	730				
11.	Execution of Engineering works at RPF/GRP Thana/Post @ Rs. 50,000/-	No.	149				
	Total Cost of Schedule – 'A'						
SN	**Description of Item**	**Unit**	**Qty.**	**Incremental % Cost (In Fig.)**		**Incremental % Cost (In Words.)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**

	SCHEDULE –'B'						
1	Incremental AMC charges after warranty period as percentage of overall cost (excluding taxes and duties) of **Supply portion of** Schedule – 'A' over and above 3.5%. Only incremental INR cost in addition to 3.5 % mentioned in clause 4.A.3 of Chapter-4 required to fulfill Long Term Maintenance support clause. (E.g. if the annual AMC cost is proposed to be 4% the quoted amount should be calculated value @ 0.5% in INR per annum under column 5 & 6. For five years it should separately be shown as calculated value @ 2.5% in INR under column 7 & 8. For clarity, detailed scope of AMC be read in clause 4.A.3 of Chapter-4	No.	5				
	Total Cost of Schedule – 'B'						
	Total Value of Schedule – 'A' and Schedule – 'B'						
	Total Value of SOR in Words:						

SOR HEAD II: SUPPORT ENGINNERS, EMS SYSTEM AND TRAININGS FOR SURVEILLANCE NETWORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Manpower Support during warranty period						
(a)	L1 support engineer in Field (@ defined per annum rate of Rs.3,00000/-)	No.	298*				
(b)	L2 support engineer in RailTel Datacenter (@ defined per annum rate of Rs. 6,00000/-)	No.	12*				

2.	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.	No.	1490				
	Total Cost of Schedule						
	Total Value of SOR Head-I and SOR Head-II						
	Total Value of SOR in Words:						

PACKAGE-IV (SOUTHERN)

SOR HEAD I: IP BASED VIDEO SURVEILLANCE/CCTV WORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SCHEDULE 'A'						
1.	Supply of IP cameras at stations						
(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	758				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	15244				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	1997				
(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	930				
1.1	Installation, Testing, Commissioning and Integration of IP cameras at stations						

(a)	Full HD Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	758				
(b)	Full HD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	15244				
(c)	Full HD P/T/Z type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	1997				
(d)	4K UHD Bullet type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	930				
2.	Supply of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording, Video Analytic and Facial Recognition System as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	86				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	86				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	172				

(e)	Storage System at RPF/GRP Thana/Post for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	247				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	100				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	100				
(i)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	86				
2.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RPF/GRP Thana/Post						
(a)	VSS Hardware and all accessories required for installation purposes for Video Recording and Video Analytic as defined in clause 8.2 and 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				

(b)	PC Workstation as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	86				
(c)	Digital Key-Board (joystick) and all accessories compatible with P/T/Z cameras as defined in clause 8.5 of chapter 8.	No.	86				
(d)	Large Format Display Monitor (55" or Higher) as defined in clause 8.7 of chapter 8.	No.	172				
(e)	Storage System at RPF/GRP Thana/Post for recording of cameras from cluster of stations for 30 days as defined in clause 8.3, 8.4 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(f)	Type-III switches as defined in clause 8.10 of chapter 8 and all accessories required for their installation	No.	247				
(g)	UPS 2x10KVA connected in parallel redundant mode in separate chassis as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	Set	100				
(h)	19" 42U racks as per specification defined in clause 8.22 of chapter 8 and all accessories like electrical fitting (power strip, MCB etc.), Fantray, Patch Panel etc. required for installation of the equipment	No.	100				
(i)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	86				

3.	Supply of IT infrastructure, applications and associated items at RailTel datacenters (Gurugram and Secunderabad)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				
(b)	Type-III switches as Top of the Rack switch (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
3.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RailTel datacenters (Gurugram and Secunderabad)						
(a)	VSS Server Hardware for Video Management and Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	1				

(b)	Type-III switches as Top of the Rack switch (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(c)	Storage System of 240 TB capacity for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	1				
(d)	EMS in RailTel Datacenters as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Set	2				
ii.	Software	Set	2				
4.	Supply of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
4.1	Installation, Testing and commissioning of software (per camera basis) for Video Management, Video recording, Video Analytic and Facial Recognition System for the hardware quoted in Item no. A.2(a) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	149				
5.	Supply of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	86				

5.1	Installation, Testing and commissioning of Graphical User Interface based Client Software (per workstation basis) for workstation as quoted in Item no. A.2(b) along with as defined in clause 8.3 of chapter 8.	No.	86				
6.	Supply of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	4039				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1617				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	298				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	1617				

(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	4039				
(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	2631				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	379				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	676				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1352				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2631				
6.1	Installation, Testing and Commissioning of IT infrastructure and associated items at Railway Stations						

(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	4039				
(b)	Type-II switches as defined in clause 8.9 of chapter 8, optics (SFP-BX (10KM) Single Fiber, SFP+ (10KM) and SFP+ (40 KM) Single Fiber as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	1617				
(c)	Type-IV switches as defined in clause 8.11 of chapter 8, optics (SFP+ (10KM), SFP+ (40 KM) Single Fiber and SFP+ (350 mtr.) as defined in clause 8.13 of chapter-8 and quantity as per solution requirement) and all accessories required for their installation	No.	298				
(d)	24 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	1617				
(e)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fan-tray, Patch Panel, patch chord, pig-tails etc. required for their installation	No.	4039				

(f)	Online UPS system, single phase of rating 1KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	2631				
(g)	Online UPS system, single phase of rating 2KVA UPS along with Battery suitable for 1hr back-up as per specifications defined in clause 8.16 of chapter 8 and all accessories required for installation	No.	379				
(h)	MFCE Earth complete with all accessories. (less than 1 Ohm) as per technical specifications defined in chapter 5 of Section-II (Nos. indicates the site of installation)	No.	676				
(i)	ACDB for AC distribution Box with Lock and key arrangements and ISI mark MCBs of various ratings as per site requirements for installation at sites	No.	1352				
(j)	Panic Switch (IK10 and IP66 rated) with Mushroom Cap Push-Button in Red Color, DPDT contacts 2Amps 24 VDC, Stainless Steel Face Plate with GI Junction Box of suitable size and flasher cum strobe of min. 100dB including all accessories required for installation on platforms at stations	No.	2631				
7.	Supply of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	5221175				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	1721405				
c	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	Mtr.	941558				

d	32mm PVC conduit pipe (ISI mark)	Mtr.	3103018				
e	32mm PVC flexible pipe	Mtr.	111450				
f	40mm dia. HDPE pipe	Mtr.	67600				
g	GI pipe	Mtr.	13520				
7.1	Blowing/Pulling/laying of cables, PVC pipe and GI pipe for work at Stations (with accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)						
a.	STP CAT-6	No.	5221175				
b.	12 Core metal strengthened outdoor unarmored Optic Fiber Cable (ITU-T G.652.D)	No.	1721405				
c	PVC insulated 3 core 4 Sq. mm (1.1 KV grade) outdoor strengthened Copper Cable for UPS supply distribution (as per BIS/ISI standards	Mtr.	941558				
d	32mm PVC conduit pipe (ISI mark)	Mtr.	3103018				
e	32mm PVC flexible pipe	Mtr.	111450				
f	40mm dia. HDPE pipe	Mtr.	67600				
g	GI pipe	Mtr.	13520				
8.	Supply of Media Convertor Pair as defined in clause 8.15 of chapter 8.	No.	75				
9.	Spares @ 8% of supply against item A.1 (a) to A.1(d), A.2 (f), A.6 (a) to A.6 (c) above as defined in clause 3.D.8.1 in chapter 3.	Lot.	1				
10.	Supply of bracket/fixture/Angle for fixing of camera at stations	No.	555				

10.1	Installation of bracket/fixture/Angle for fixing of camera at stations	No.	555				
11.	Execution of Engineering works at RPF/GRP Thana/Post @ Rs. 50,000/-	No.	149				
	Total Cost of Schedule – 'A'						
SN	**Description of Item**	**Unit**	**Qty.**	**Incremental % Cost (In Fig.)**		**Incremental % Cost (In Words.)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	SCHEDULE –'B'						
1	Incremental AMC charges after warranty period as percentage of overall cost (excluding taxes and duties) of **Supply portion of** Schedule – 'A' over and above 3.5%. Only incremental INR cost in addition to 3.5 % mentioned in clause 4.A.3 of Chapter-4 required to fulfill Long Term Maintenance support clause. (E.g. if the annual AMC cost is proposed to be 4% the quoted amount should be calculated value @ 0.5% in INR per annum under column 5 & 6. For five years it should separately be shown as calculated value @ 2.5% in INR under column 7 & 8. For clarity, detailed scope of AMC be read in clause 4.A.3 of Chapter-4	No.	5				
	Total Cost of Schedule – 'B'						
	Total Value of Schedule – 'A' and Schedule – 'B'						
	Total Value of SOR in Words:						

SOR HEAD II: SUPPORT ENGINNERS, EMS SYSTEM AND TRAININGS FOR SURVEILLANCE NETWORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

1.	Manpower Support during warranty period						
(a)	L1 support engineer in Field (@ defined per annum rate of Rs.3,00000/-)	No.	298*				
(b)	L2 support engineer in RailTel Datacenter (@ defined per annum rate of Rs. 6,00000/-)	No.	12*				
2.	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.	No.	1490				
	Total Cost of Schedule						
	Total Value of SOR Head-I and SOR Head-II						
	Total Value of SOR in Words:						

PACKAGE-V (Coach)

SOR HEAD I: IP BASED CLOSED CIRCUIT TELEVISION (CCTV) SURVEILLANCE SYSTEM IN COACHES

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SCHEDULE 'A'						
1.	Supply of infrastructure, applications and associated items in train coaches						
(a)	Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No.	50456				

(b)	Items (Video Recorder Unit, Managed PoE Ethernet switch, Wi-Fi Access Point, Mobile Network Video Recorder) for train coaches and all accessories required for their installation as defined in clause 8.2, 8.12, 8.18, and 8.19 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	7020				
(c)	Software for Video Management, Video recording, Video Analytic and Facial Recognition system for Video Recorder Unit/Mobile NVR in Item no. A.1(b) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	7020				

(d)	Metal enclosure to house CCTV system and various data cables & electrical cables inside a coach	No.	7020				
1.1	Installation, Testing, Commissioning and Integration of infrastructure, applications and associated items in train coaches						
(a)	Fixed dome type IP colour camera along with housing and mount and all accessories required for installation purposes as defined in clause 8.1 of chapter 8.	No	50456				
(b)	Items (Video Recorder Unit, Managed PoE Ethernet switch, Wi-Fi Access Point, Mobile Network Video Recorder) for train coaches and all accessories required for their installation as defined in clause 8.2, 8.12, 8.18, and 8.19 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No	7020				
(c)	Software for Video Management, Video recording, Video Analytic and Facial Recognition system for Video Recorder Unit in Item no. A.1(b) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	7020				
(d)	Metal enclosure to house CCTV system and various data cables & electrical cables inside a coach	No.	7020				
2.	Supply of IT infrastructure, applications and associated items at RPF Thana/Post						
(a)	Graphical User Interface based Client Software of VMS System and all accessories required for installation purposes as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	390				

(b)	Client Desktop as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No.	390				
(c)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	390				
2.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RPF Thana/Post						
(a)	Graphical User Interface based Client Software of VMS System and all accessories required for installation purposes as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Set	390				
(b)	Client Desktop as defined in clause 8.6 of chapter 8 for viewing, monitoring and system management including 24" monitor, all required licensed software, spike buster 500VA UPS with backup for 30 minutes power failure without interruption, and all other required accessories	No	390				
(c)	Supply of furniture for each Workstation quoted under item no. A.2(b) i.e. one table (Model: Stylo Make: Godrej or superior), and two chairs (Model: PCH-7046A Make: Godrej or superior).	No.	390				
3.	Supply of IT infrastructure, applications and associated items at RailTel Secunderabad and Gurugram datacenter(s).						

(a)	VSS Server Hardware for Video Management and Recording system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(b)	VSS Server Hardware for Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(c)	VSS Server Hardware for Facial Recognition matching servers as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(d)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(e)	Storage System of 1000 TB for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	2				
(f)	EMS in RailTel Datacenters as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Lot	2				

ii.	Software	Lot	2				
(g)	Software for Video Management, Video recording and Facial Recognition system for the server hardware quoted in Item no. A.3.I(a), A.3.I(b) and A.3.I(c) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
3.1	Installation, Testing and Commissioning of IT infrastructure, applications and associated items at RailTel Gurugram and Secunderabad datacenter(s).						
(a)	VSS Server Hardware for Video Management and Recording system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(b)	VSS Server Hardware for Facial Recognition database system as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(c)	VSS Server Hardware for Facial Recognition matching servers as defined in clause 8.2, 8.3 of chapter 8 and all accessories required for installation purposes. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				

(d)	Type-III switches as Top of the Rack switch in (1+1) as defined in clause 8.10 of chapter 8 and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
(e)	Storage System of 1000 TB for recording of alerts, alarms of cameras of analytics and other applications requirement as defined in clause 8.3 and 8.4 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	2				
(f)	EMS in RailTel Datacenters as per specification defined in clause 8.23 of chapter 8						
i.	Hardware	Lot	2				
ii.	Software	Lot	2				
(g)	Software for Video Management, Video recording and Facial Recognition system for the server hardware quoted in Item no. A.3.I(a), A.3.I(b) and A.3.I(c) as defined in clause 8.3 of chapter 8. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	Lot	2				
4.	Supply of IT infrastructure and associated items at Railway Stations						

(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	663				
(b)	Wireless Access Point per specification defined in clause 8.19 of chapter 8	No.	1325				
(c)	STP CAT-6 for work at Stations along with all accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)	Mtr.	33125				
(d)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	663				
4.1	Installation, Testing and Commissioning of IT infrastructure and associated items at Railway Stations						
(a)	Type-I switches as defined in clause 8.8 of chapter 8, optics (SFP-BX as defined in clause 8.13 of chapter-8 and quantity as per solution requirement & network design defined in clause 3.B of Chapter-3) and all accessories required for their installation. Detailed Bill of Material (BoM) shall be prepared and submitted along with the Bid as per SOR Note-VII.	No.	663				
(b)	Wireless Access Point per specification defined in clause 8.19 of chapter 8	No.	1325				

(c)	Blowing/Pulling/laying of STP CAT-6 for work at Stations along with all accessories required for installation, laying, fixing, clamping and cutting as per specification as defined in chapter 8)	Mtr.	33125				
(d)	12 Fibre FMS (SC-APC Type) as per specifications defined in clause 8.20 of chapter 8, 19" 9U racks as per specification defined in clause 8.21 of chapter 8 and all accessories like power strip, MCB, Fantray, Patch Panel, patch chord, pigtails etc. required for their installation	No.	663				
5.	Spares @ 8% of supply against item A.1 (a), A.4(a) and A.4(b) above as defined in clause 3.D.8.1 in chapter 3.	Lot.	1				
	Total Cost of Schedule – 'A'						
SN	**Description of Item**	**Unit**	**Qty.**	**Incremental % Cost (In Fig.)**		**Incremental % Cost (In Words.)**	
(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
	SCHEDULE –'B'						
1	Incremental AMC charges after warranty period as percentage of overall cost (excluding taxes and duties) of **Supply portion of** Schedule – 'A' over and above 3.5%. Only incremental INR cost in addition to 3.5 % mentioned in clause 4.A.3 of Chapter-4 required to fulfill Long Term Maintenance support clause. (E.g. if the annual AMC cost is proposed to be 4% the quoted amount should be calculated value @ 0.5% in INR per annum under column 5 & 6. For five years it should separately be shown as calculated value @ 2.5% in INR under column 7 & 8. For clarity, detailed scope of AMC be read in clause 4.A.3 of Chapter-4	No.	5				
	Total Cost of Schedule – 'B'						

	Total Value of Schedule – 'A' and Schedule – 'B'						
	Total Value of SOR in Words:						

SOR HEAD II: SUPPORT ENGINNERS, TRAININGS AND COMMAND AND CONTROL CENTER FOR SURVEILLANCE NETWORK AT STATIONS

SN.	Description of Item	Unit	Qty.	Unit Rate in Fig (in Rs.)	Total Cost in Fig. (in Rs.)	Unit Rate in words (in Rs.)	Total Cost in words (in Rs)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	Manpower Support during warranty period						
(a)	L1 support engineer in Field (@ defined per annum rate of Rs.3,00000/-)	No.	140*				
(b)	L2 support engineer in RailTel Datacenter (@ defined per annum rate of Rs. 6,00000/-)	No.	24*				
2.	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.	No.	700				
	Total Cost of Schedule						
	Total Value of SOR Head-I and SOR Head-II						
	Total Value of SOR in Words:						

Note	
I	**a)** Before quoting please see relevant para of Chapter 8 Technical Specifications. **b)** Unit rate quoted against SOR above should be CIP destination inclusive of all duties, taxes, insurance and freight etc. (with break-up as per Performa attached as Annexure- A,B and C of this Chapter). The materials as per SOR are required to be delivered within the delivery period as indicated in Bid Data Sheet (BDS, Chapter 5) to the sites as decided by the respective Regional GM/EDs. **c)** It shall be the responsibility of Bidder to transport the equipment to site for the Installation & Commissioning. Charges for the same should be included in items under SOR Head-I and II of packages. Materials not installed / not to be installed need to be shipped to location as decided by RGM/Executive Director of the Region. SOR items against which Installation is not separately mentioned, installation shall be considered within the scope of supply itself. **d)** The Schedule of Requirement has been divided into two parts, viz. SOR Head-I and SOR Head-II of packages.

	e) The bidder must ensure that the capacity of storage system supplied at the RPF/GRP Thana/Post should be supplied with an additional 10% capacity over and above the capacity required for 30 days recording computed on the basis of cameras mentioned for RPF/GRP Thana/Post from day one (refer clause 8.3 and 8.4 of Chapter-8). The storage capacity should be calculated considering RAID 5/6 configuration. The additional capacity is required to meet the compliance requirement of keeping the flagged/marked images/video footage as a evidence required by the RPF/GRP/Appropriate authority for investigation purpose and also to cater the requirements of provision of any new cameras on the station. In case more storage capacity in addition to the above mentioned is required in the storage system then the cost towards the additional capacity in terms of Tera Byte (TB) would be calculated on pro-rata basis.
II	In item no. B **1** of Schedule –'B', of SOR Head-I of packages, if however the bidder feels that his AMC Cost is less than 3.5% per annum, he should give suitable discount in equipment/supply item pricing. For AMC he will be paid @ 3.5% per annum only. If the vendor quotes a higher base rate for AMC he will be paid at his quoted rate per annum and five year differential cost shall be added to equipment cost for evaluation.
III	For item no. 1 of SOR Head-II of packages, if the bidder feels that the Manpower support can be given at rates lower than the rates as defined, then he should adjust the differential amount in the equipment/supply pricing, and he will be paid according to the defined rates only. However, if the bidder quotes a higher base rate than the rates as defined then he will be paid at his quoted rate and the differential shall be taken for evaluation. The bidder is supposed to quote for the manpower requirement of 2-years period of warranty period post Maintenance Supervision period, as during this period the contractor shall be responsible for proper maintenance supervision of the system free of cost for a period of twelve months from the date of provisional acceptance (for more details please refer to section 4.A.2.5) * Quantities mentioned are the bare minimum requirement of the purchaser, however if bidder feels that larger manpower strength is required to maintain the installed network, then bidder is free to revisit the quantities mentioned. The bidder would also be required to deploy the same number of manpower resources during the 12 months period of maintenance supervision as quoted for the item no. 1 of SOR Head-II of packages of SOR for the commercial bid.
IV	Since, RailTel is also implementing Wi-Fi work at railway stations, therefore, the existing available infrastructure may be utilized by the purchaser for implementation of VSS system and such items used may not be considered as a part of Supply orders.
V	Bidder should submit the soft copy (Word/Excel/PDFs format) of offer in DVDs/USB's. Bill of Material (BOM) must be in PDF as well as Excel format (except price bid). Bidder is allowed to quote only for a single Make/Model of the quoted items along with the offer. The above stipulation of single OEM Make/Model applies to items viz. different types of cameras, servers, Video Recording Unit/Mobile NVR, workstation, storage, large format display monitors, VMS Software, switches (each Type separately), Wireless Access Point and EMS. **DIFFERENT OEM(S) ACROSS PACKAGES IS NOT PERMITTED. OFFERS WITHOUT PARTICULARS OF MAKE/MODEL OR MULTIPLE OEMS OF SAME ITEM SHALL BE LIABLE TO SUMMARILY REJECTED.**
VI	Bidder must validate all the quantities quoted in their technical solution proposed supported by calculations, datasheets and design documents duly vetted by respective OEM(s) as same would be required for the technical evaluation of the offer. Bidder would be responsible for ensuring the complete system is operational and meeting the requirements as mentioned in the RFP. However, if at any stage before the issuance of FAC for the system installed, it is found that the system performance is not compliant with the functional requirements and specifications given in the RFP document, the bidder shall be liable/obliged to supply additional hardware/systems at no additional cost to the purchaser, required to meet the functional requirements and specifications mentioned in the RFP document at no additional cost to the purchaser. Purchaser's engineer decision in this context will be final.

VII

The Bill of Material will be prepared for Schedule of Requirement against each item of SOR. This Bill of Material will be called "Bill of Material for Schedule of Requirement". And will be prepared according to Note (I) to (IV) above. The Unpriced copy of the same BOM should be submitted with the technical/credential Bid for evaluation. **The Bid (credential without the BOM will be summarily rejected). The Format of "Bill of Material for Schedule of Requirement" is as below:**

					SOR A 1 (a)	SOR A 1 (b)	SOR A 1 (c)	SOR A 2	----------	----------	----------	----------	----------	SOR A15	SOR B1(a)	SOR B1(b)	SOR B1(c)	SOR B2	----------	----------	----------	SOR B18
SN	Item	Unit	Unit	Qty																		
1	(to be provided by bidder)																					
2	(to be provided by bidder)																					

VIII

The offered solution for video management system, server, NVR and storage hardware sizing should be duly vetted and supported with certifications issued by OEM.

IX

The bidder should submit the Type approval certificate from DOT (TEC) or Technical Specification Evaluation Certificate (TSEC) given by BSNL QA wing for HDPE Duct of 40 mm. as per TEC specification numbered as TEC GR No. GR/TX/CDS-008/03/March 11 with all latest amendments for multiple colors including Orange, Red and Blue color.

X

The bidder is required to supply the EMS tool including all hardware and software in a centralized set-up in the RailTel Datacenters (Gurugram and Secunderabad) in DC and DR configuration. The monitoring services at all stations/RPF Chowki/Thana under the region and central command and control center will be provided from the centralized set-up through the clients installed at all the Stations/RPF Chowki/Thana.

XI

Along with the server, bidder is required to propose necessary hardware/software required for remote management of servers like IPMI Port with KVM over LAN or equivalent. Remote management functionalities includes remote OS/Software updation/installation, reboot, shutdown etc.

XII

Proof of Concept (PoC):

1.) Successful bidder has to successfully demonstrate the proposed solution within the 30 days from the date of LoI (letter of Intent). The Purchaser will not be liable to pay/reimburse any type of cost incurred by the successful bidder pertaining to the PoC.

2.) During the PoC, successful bidder is required to

a.) For CCTV at Stations: Deploy 10 nos. of CCTV cameras (6 nos. Fulll HD Bullet/Box, 2 nos. Full HD Dome, 1 no. Full HD P/T/Z and 1 no. 4K UHD Bullet/Box) at each stations in atleast 4 stations including RPF/GRP Thana/Post to demonstrate the functionalities of Video Management, Video Recording and Video Analytic System in compliance to the scope of the work, technical specification, functional requirements etc. as laid down in this RFP. Switch and cable etc. required for PoC will be under scope of Bidder only.

b.) Deploy CCTV cameras in at least four coaches of a Train (shall be arranged by purchaser) to demonstrate the functionalities of Video Management, Video Recording, Facial Recognition System and Video Analytic System in compliance to the scope of the work, technical specification, functional requirements etc. as laid down in this RFP.

3.) Offered make and model for the PoC must be the same which is proposed/quoted in the Technical and price bid by the bidder.

4.) Bidder has to submit detailed PoC document within 7 days from the date of LoI (letter of Intent) for approval of the Purchaser. The bidder will have to successfully qualify the POC. In case if the successful bidder fails to

	achieve the required benchmark as mentioned, then in such a case, the successful bidder will have to re-demonstrate the PoC (all component's or part of the system/component) within 15 days, and will have to successfully qualify the same. Please note that if the successful bidder fails to complete Proof of concept or perform as per the requirement of the tender even after the second attempt, then his PBG will be forfeited, contract terminated.
XVII	**Rack Space at Datacenters and associated charges:** RailTel will provide Racks at Gurugram and Hyderabad datacenter for hosting CCTV Cloud infrastructure as defined in the tender. Bidders are requested to optimize the number of racks requirement in the datacenters. Rack requirements is associated with cost and bidder will be charged INR 8 Lacks/annum/rack for 8 years (for evaluation purposes) in the tender for the proposed rack/racks requirements. The Bidder must provide rack space requirements (in terms of Nos. of racks, in new SOR item 3(g) under the column Qty.) in their technical offer keeping load available on each rack (<=5KVA) for the complete solution (for DC & DR) for all components like Server, Switching, Routers, Storage etc. In case later the actual requirement is found to be more than the quoted Nos. of racks, bidder will be deducted the actual amount on additional racks out of their payment for the entire period of the contract including AMC period. Otherwise this cost shall be borne by RailTel/Railways.
XVIII	The supply of items shall be done in phased manner strictly in line with the progress of the work. Successful bidder is required to discuss project progress and planning of supply material in consultation with the purchaser. Dumping of material shall not be permitted and no payment shall be released for such items.
XIX	Central Command control center has been provisioned in Package-I. Therefore, all successful bidder of other packages are required to share API of their quoted VMS to ensure integration with central command and control center to achieve desired functionality as mentioned in the tender document. Further, VMS Application should be based on the open software platform and industry standards, a system that can connect and integrate with other VMS Applications using software development kit (SDK) which offers easy to use Application Programming Interface (API) and support most commonly used programming languages. VMS application should have open standard architecture (no proprietary database) and interoperability with other VMS applications to meet the desired functional requirement of the project.

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Annexure-A

Price Schedule for Indigenous Items

SN	Description	Total Qty	HSN Code	EX-Factory Price (Basic Unit Price exclusive of all levies and charges)	Pkg & Forwarding Charges		GST/CGST/IGST		Frieght & Insurance Charges		Other Charges and Levies	Price Per Unit (all inclusive) for delivery at destination (4+6+8+10+12+13)
					%	Amt	%	Amt	%	Amt		
1	2	3		4	5	6	9	10	11	12	13	14

Annexure-B

Price Schedule for Imported Equipment

SN	Description	Total Qty	HSN Code	Ex-Factory Price (Basic Unit Price exclusive of all levies and charges)	Unit Price per Unit CIF	Custom Duty		GST/CGST/IGST		Pkg & Inland Frieght		Inland Insurance		Other Charges and Levies	Price Per Unit (all inclusive) for delivery at destination (4B+6+8+10+12+14+15)
						%	Amt	%	Amt	%	Amt	%	Amt		
1	2	3		4A	4B	5	6	9	10	11	12	13	14	15	16

Annexure-C

Price Schedule for Service Items

SN	Item Description	Total Qty	SAC Code	Basic Unit Price exclusive of all levies and charges	GST/CGST/IGST		Other Charges and Levies, if any	Unit price (all inclusive)
					%	Amt	Amt	(4+6+7)
1	2	3		4	5	6	7	8

*****

CHAPTER-3

A. TECHNICAL REQUIREMENTS, SCOPE AND ARCHITECTURE OF VIDEO SURVEILLANCE SYSTEM

3.A.1 INTRODUCTION

3.A.1.1 About RailTel

RailTel Corporation of India Limited (RailTel), an ISO-9001:2000 organization is a Government of India undertaking under the Ministry of Railways. The Corporation was formed in Sept 2000 with the objectives to create nationwide Broadband Telecom and Multimedia Network in all parts of the country, to modernize Train Control Operation and Safety System of Indian Railways and to contribute to realization of goals and objective of national telecom policy 1999. RailTel is a wholly owned subsidiary of Indian Railways.

RailTel with strong nationwide presence is committed to bring cutting edge technology and offer innovative services to the Indian Telecom market. RailTel is in the forefront in providing nationwide Broadband Telecom & Multimedia Network in all parts of the country. With its Pan India high capacity network, RailTel is working towards creating a knowledge society at various fronts.

In addition, RailTel with its rich experience in the domain of Telecom and ICT field have been selected for implementation of various mission-mode Govt. projects in the telecom field including National Optical Fibre Network (NOFN), National Knowledge Network (NKN) and NE-I & NE-II under USOF/DoT etc.

In line with its commitment to bring next generation telecommunication technologies and services to people across the length and breadth of the country, RailTel has recently partnered with Google to set-up a high speed Wi-Fi network at train stations across the country.

3.A.1.2 About REL

RailTel Enterprises Limited ('the Company') incorporated in India on 12th August 2014 is a public sector undertaking under 100% Holding of RailTel Corporation of India Limited. The company is promoted by and is in administrative control of Ministry of Railways. The Registered office of the Company is situated at 6th Floor, IIIrd Block Delhi Technology Park, Shastri Park, New Delhi-110053 and Corporate Office at Plot No 143 Sector 44, Institutional Area, Gurgaon Haryana.

Main objective of the company are:-

3.A.1.2.1 To undertake Information and Communication Technologies (ICT) infrastructure projects covering hardware & software applications and other associated sub systems in India and abroad.

3.A.1.2.2 To undertake design and development of Railway Signalling projects/systems and also for other works relating to railway electrification,

power distribution systems, transmission lines etc. concerned with running of Railways in India and abroad.

3.A.1.2.3 To carry out consultation services for various customers in the field of IT, Telecom, Signalling, critical infrastructure in India and abroad.

3.A.1.2.4. To undertake Data center, Network/security operation center related infrastructure projects in India and abroad.

3.A.1.3 Project Background

Indian Railways endeavors to set up high-tech surveillance systems at Railway stations and in Train Coaches for providing safe, secure and pleasant experience to railway passengers especially women & children. Indian railways is the lifeline of India and has an estimated daily ridership of approximately 2 crores. Approximately 6124 stations of A1, A, B, C, D and E category and 4620 coaches of Premium Trains and 2400 Suburban EMU coaches would be covered under surveillance in this project.

24x7 surveillance at RPF/GRP Thana/Post will help the daily commuters tremendously by reducing the incidents of pick pocketing, theft, damage to public property etc.

Indian Railways has appointed RCIL to invite interested & capable parties for providing round the clock IP based video surveillance across the stations and select the most competitive proposal for implementation.

3.A.1.4 SCOPE OF WORK

3.A.1.4.1 IP based CCTV surveillance system at Railway Stations

The scope of work includes Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based CCTV surveillance system at 6124 Railway Stations of A1, A, B, C, D and E category of Indian Railways.

The requirement mentioned in this RFP, BEING A TURN KEY BASIS PROJECT, calls for a complete working system and not components thereof. Therefore, the Bids must be complete with all equipment and required accessories along with necessary power systems including standard Un-Interrupted Power Supply for the entire equipment, video connectors, patch connectors, patch leads, mounting, reinforcement (cable/wire) and fitting hardware, plugs, sockets and any hardware/software, etc. as required for complete installation& commissioning of the System under this contract.

The detailed scope of work includes following:

3.A.1.4.1 Planning, Design, Supply, Installation, Testing, Commissioning, Operation and Maintenance of the IP based video surveillance system at various Railway Stations of A1, A, B, C, D and E category of Indian Railways under Northern, Western, Eastern and Southern Region of RailTel (as identified in SOR and Annexure 1 of Chapter 7 in this RFP). The system shall comply with RDSO Specification RDSO/SPN/TC/65/2019 Rev. 5.0 with latest Amendment.

However, in case of any conflict on the solution design parameters, system functional requirements and technical specification of a system/item between RDSO specification and the tender conditions, the tender conditions will prevail over RDSO specifications.

3.A.1.4.2 The bidder should prepare a site plan showing exact location of different type of cameras, switches etc. at various locations like parking areas, entrance/exit points, platforms, yards, waiting halls, ticket counters, offices, foot over bridges, circulating areas etc. as per site requirement in consultation with RailTel after the proper site survey. The proposed site plan should have an optimum number of cameras so as to cover Railway Station from security point of view.

3.A.1.4.3 Supply, laying and fixing of electrical wiring and network cabling including OFC.

3.A.1.4.4 Supply of complete hardware components for the proposed solution (cameras, servers, storage systems, PC workstations, LED displays, manageable switches etc.) including AMC and Warranty.

3.A.1.4.5 Supply of any other equipment/infrastructure or services required for the proper installation, testing, commissioning, operation, and maintenance of video surveillance solution as per the approved design.

3.A.1.4.6 Supply of all software/licenses for the solution including peripheral applications, middleware, environmental software or any other related software/licenses as required in the proposed solution (Including AMC and Warranty).

3.A.1.4.7 Seamless integration of the server(s), cameras, network devices, storage hardware and software.

3.A.1.4.8 Remote operation and monitoring of a cluster of stations from RPF/GRP Thana/Post through the RailTel/Railways TCP/IP network. Bidder is required to plan sufficient number of VMS/EMS licenses, IT equipments to facilitate the same. Bidder may also be required to extend fiber/network connectivity from the nearest station to the RPF/GRP Thana/Post.

3.A.1.4.9 RailTel shall provide the interconnection facility at their POP to integrate the station network. However, the bidder is expected to mention the bandwidth requirement at each station in their technical bid proposal.

3.A.1.4.10 To identify, develop and deliver the training to the Railways/RailTel staff for the VSS System to be installed and commissioned.

3.A.1.4.11 To demonstrate the functioning of all the modules of software and features of hardware component as and when required by Railways.

3.A.1.4.12 Maintenance supervision period of 12 months from the date of award of PAC of the RPF/GRP Thana/Post.

3.A.1.4.13 Warranty period of 24 months from the date of expiry of maintenance supervision period of installed system at no cost to Railways/RailTel.

3.A.1.4.14 AMC (including repair / replacement of all consumables) for 5 years after the completion of 24 months of warranty period.

3.A.1.4.15 After the completion of contract duration, the successful bidder shall hand over all the components of the video surveillance system in working condition to Railways/RailTel.

3.A.1.4.16 Provision of maintenance free earth with earth value less than 1 Ω.

3.A.1.4.2 IP based Closed Circuit Television (CCTV) surveillance system in Coaches of Indian Railways

The scope of work includes Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) surveillance system in 4620 coaches of Premium Trains and 2400 Suburban EMU coaches.

The detailed scope of work includes following:

3.A.1.4.2.1 Supply, Installation, Testing, Commissioning, Operation and Maintenance of the IP based Closed Circuit Television (CCTV) surveillance system in Coaches of Indian Railways (as identified in SOR and Annexure 1 of Chapter 7 in this RFP). The system shall comply with **RDSO Specification RDSO/SPN/TC/106/2019 Rev. 1.0 with latest Amendment**.

However, in case of any conflict on the solution design parameters, system functional requirements and technical specification of a system/item between RDSO specification and the tender conditions, the tender conditions will prevail over RDSO specifications.

3.A.1.4.2.2 The bidder should prepare a drawing as per the standard layout provided in the tender showing exact location of cameras, switch, video recorder unit(VRU)/Mobile Network Video Recorder (Mobile NVR), Wi-Fi Access Point, Switch etc. inside a AC, Non AC, EMU coaches in consultation with RailTel.

3.A.1.4.2.3 Supply, laying and fixing of metal enclosure to house CCTV system, electrical wiring and network cabling inside train coaches as per layout .

3.A.1.4.2.4 Supply of complete hardware components for the proposed solution (cameras, Video Recorder Unit/Mobile NVR, Wi-Fi access point, switch, server, storage etc.) including AMC and Warranty.

3.A.1.4.2.5 Supply of any other equipment/infrastructure or services required for the proper installation, testing, commissioning, operation, and maintenance of the IP based Closed Circuit Television (CCTV) surveillance system in Coaches as per the approved design.

3.A.1.4.2.6 Supply of all software/licenses for the solution including peripheral applications, middleware, environmental software or any other related software/licenses as required in the proposed solution (Including AMC and Warranty).

3.A.1.4.2.7 Seamless Integration of the video recorder unit/mobile NVR, cameras, server, storage hardware and application software.

3.A.1.4.2.8 Remote operation and monitoring through the RailTel/Railways TCP/IP network. Bidder is required to plan sufficient number of VMS/EMS licenses, IT equipment's to facilitate the same.

3.A.1.4.2.9 Bidder is required to mention the bandwidth requirement at each Coach in their technical bid proposal for remote operation and monitoring from RPF Thana/Chowki's locations.

3.A.1.4.2.10 To identify, develop and deliver the training to the Railways/RailTel staff for the IP based CCTV System to be installed and commissioned.

3.A.1.4.2.11 To demonstrate the functioning of all the modules of software and features of hardware component as and when required by Railways.

3.A.1.4.2.12 Maintenance supervision period of 12 months from the date of award of PAC of cluster of train coaches.

3.A.1.4.2.13 Warranty period of 24 months from the date of expiry of maintenance supervision period of installed system at no cost to Railways/RailTel.

3.A.1.4.2.14 AMC (including repair / replacement of all consumables) for 5 years after the completion of 24 months of warranty period.

3.A.1.4.2.15 After the completion of contract duration, the successful bidder shall hand over all the components of the video surveillance system in working condition to Railways/RailTel.

3.A.1.5. QUALITY ASSURANCE PROGRAMME AND IMPLEMENTION METHODOLOGY

The bidder with quality assurance should prepare Implementation Methodology covering:

a) Schedule of Type Test/Acceptance Test/Inspection, supply, installation, SAT (Site Acceptance Test), trial runs, commissioning etc.
b) Allocation of manpower for different activities.
c) Submission of PERT chart indicating completion of various activities within targeted time frame.

3.A.1.6 MANUFACTURING, SUPPLY AND STORAGE OF EQUIPMENT

The bidder will be fully responsible for Manufacturing, Inspection and Supply of Equipment/cards/interfaces and all related items for installation and commissioning of the network including the following:

a) Spares required for Commissioning, maintenance supervision & warranty period shall be maintained by the Contractor at his own cost.
b) All necessary cables and connectors required.
c) The bidder shall be responsible for transportation and storage of Equipment and all other items required for Installation and Commissioning of the network to RailTel's stores/sites as advised.

3.A.1.7 SITE PREPARATION

3.A.1.7.1 Support from Indian Railways / RailTel

For CCTV surveillance system at Railway Stations, The Executive Director/Regional General Manager of respective Region of RailTel would be the executing Officer Head of the project. The concerned RGM/ED shall nominate an officer as a SPOC for this project. The successful bidder would be taking all instructions/approvals etc. for the project from ED/RGM or their nominated SPOC.

For CCTV surveillance system in Train Coaches, the coaching depot officer/car shed in-charge/workshop Managers will arrange for fixing CCTV cameras in coaches in depots or in the workshops. The Executive Director/Regional General Manager of Region of RailTel would be the coordinating Officer Head of the project for the depots or workshops falling under their jurisdiction. The concerned RGM/ED shall nominate an officer as a SPOC for this project. The successful bidder would be taking all instructions/approvals etc. for the project from ED/RGM or their nominated SPOC.

3.A.1.7.1 Railways shall provide AC power supply at workspace for carrying out the awarded work. The successful bidder will have to pay the specified charges for the power supply as per the existing Railways Norms.

3.A.1.7.2 Railways shall provide for the space and power supply for the systems installed in the RPF/GRP Thana/Post, Control Rooms and other locations at stations.

3.A.1.7.3 Indian Railways shall give permission to install video Surveillance related infrastructure at stations and train coaches subject to non-interference with the existing devices and to the rail users.

3.A.1.7.4 Access to the Railway platform to be made available and any delay from Indian Railways in providing the same shall be factored in the implementation time calculation.

3.A.1.7.5 If required by special order, the successful bidder would be allowed to carry out the work even in night.

3.A.1.7.6 RailTel's decision in this regard in consultation with Indian Railways shall be binding on the successful bidder.

3.A.1.7.7 RailTel shall facilitate the availability of point of presence to the successful bidder to connect with the RailTel's Network at each Railway Station

3.A.1.7.8 Temporary depot for tools and equipment of any kind can only be opened within the Railway's premises after a prior permission has been granted by the authorized Railway personnel.

3.A.1.7.9 Any land required by the bidder may be made available by Railways, if available, at the lease cost as per the latest norms of Railways.

3.A.1.8 BIDDER's Responsibility

The bidder will be responsible for supply, Installation & Commissioning of complete work for this tender including the system design of network and integration with the existing network, wherever required. It shall be the responsibility of Supplier to transport the equipment to site for the Installation & Commissioning. List of sites/nodes will be shared by respective Regions with the successful bidder.

3.A.1.9 INSTALLATION, INTEGRATION, TESTING, TRIAL RUN AND COMMISSIONING OF NETWORK/SYSTEM

The bidder shall be fully responsible for Quality Assurance of equipment & other network elements and supervision of following:-

a) Installation and integration of the above said equipment/ items as per System design
b) Integration with existing network/system
c) Testing of the Network/System as specified in the document
d) Trial run of the network/sytem
e) Commissioning of Network/system

3.A.1.10 TRAINING OF PURCHASER'S PERSONNEL AND CHANGE MANAGEMENT

For successful implementation and monitoring of the video surveillance solution, the successful bidder will need to identify training needs for Indian Railways/ RailTel. To provide professional training and development services at each stage of the project viz. installation, testing, operation and maintenance

The successful bidder shall provide hands on training with detailed course material on the installed equipment and software covering at least the following:

- Configuration and their operation of Networking Equipment, Cameras and other equipment etc. supplied under the project.
- Introduction to computers, servers, and their configuration and operations
- Trouble shooting and preventive maintenance
- Training on operation of CCTV system.

These personnel shall work with the Bidder technical team staff to gain confidence and to get expertise right from the execution stage of the project. The training content to be designed and delivered by successful bidder at successful bidder's own cost. All equipment used for training shall be identical to those quoted and supplied for site installation in hardware and software versions.

Timelines for Training and Development are as follows:

S.No.	Deliverable	Timeline in Months (M) (D= Date of award of LoA)
1.	Preparation of training material, course etc. for IT awareness, role/function based training of CCTV monitoring room operators, system technicians and supervisors etc.	D + 2M
2.	Completion of IT awareness training	D + 3M
3.	Continuous training and retraining	As and when required by RailTel

Sets of training manual in two hard copies & two soft copies containing details of technical specification, installation & commissioning, troubleshooting & maintenance schedule etc. shall be supplied by the bidder.

The bidder shall update the course material of manuals in case there are any changes owing to revision/modifications in equipment/system specifications.

3.A.1.11 FINAL COMMISIONING

The VSS shall be considered to be commissioned only after successful completion of the SAT, trial Run, successful completion of 12 months of Maintenance Supervision after issue of PAC and after issue of Final Acceptance Certificate (FAC).

Any item of bidder's goods/services not specifically mentioned, but considered essential for completion/commissioning of the work in all respects shall be deemed to be included in the scope of work. The bidder may bring out any additional requirement and quote the price for the same as per the relevant SOR item, otherwise, it shall be required to be supplied by the bidder free of cost.

3.A.1.12 GENERAL SYSTEM GUIDELINES

a) Bidder shall be responsible for the successful completion of the project.

b) If during the course of execution of the work any discrepancy or inconsistency, error or omission in any of the provisions of the contract is discovered, the same shall be referred to the Purchaser/Engineer who shall give his decision in the matter and issue instructions directing the manner in which the work is to be carried out. The decision of the Purchaser/Engineer shall be final and conclusive and the bidder shall carry out the work in accordance thereof.

3.A.1.13 TECHNICAL RESPONSE

The technical response shall be fully comprehensive and detailed and will include detailed guaranteed specifications of the equipment and systems to be supplied. Marginal performance shall not be accepted.

3.A.1.14 FEATURES AND CAPABILITIES OF EQUIPMENT

The specifications defined under chapter-8 contain the necessary requirements of RailTel with regard to the features and capabilities of the equipment to be offered by the bidders. These will be carefully studied and commented upon by the bidder.

3.A.1.15 COMPLIANCE TO TECHNICAL REQUIREMENTS

3.A.1.15.1 CLAUSE BY CLAUSE COMPLIANCE

In the offer, the bidder shall include statement of clause by clause compliance of the tender document and sufficient documentation such that RailTel can validate the compliance statements. In the statement of compliance, the bidder shall state:

a) "FULLY COMPLIANT," if systems and functions offered fully meet the tender requirement.

b) "PARTIALLY COMPLIANT," if systems and functions offered meet the tender requirement partially. The bidder shall state the reason why the offer is partially compliant. However, if the bidder is able to fulfill the specified requirement later, the time schedule for this shall be stated. In such cases, the bidder shall clearly mention the extent to which other requirements or specifications are affected.

c) "NON COMPLIANT," if systems and functions cannot meet the requirements. The bidder shall also state the reasons for it.

d) In addition to the above mentioned compliance statements, wherever statement is given for some numerical parameter specified in tender, then bidder shall state the actual numerical value of specification as met by the offered systems/equipment.

3.A.1.15.2 NIL OR UNCLEAR RESPONSE STATEMENTS

In case of nil or unclear statements of compliance for any specified requirement, RailTel will interpret that particular requirement as being "NON COMPLIANT."

3.A.1.15.3 DELETED

3.A.1.15.4 DETAILED TECHNICAL INFORMATION

The bidder shall include in his proposal the detailed Technical information, drawings and functional descriptions of the offered equipment to support the Compliance to VSS Technical Specifications as in Chapter-8 of this tender document.

3.A.1.16 SUPPLY OF SOFTWARE

1. All OEMs of Servers, Storage, Cameras, Network equipments, Wi-Fi Access Points, Workstations, video recorder unit/mobile NVR etc. should give an undertaking that all licenses supplied by them would be registered in favor of M/s RCIL or its nominated organization.

2. All OEMs of VMS, FRS and Video Analytic system should give an undertaking that all licenses supplied by them would be issued in favor of M/s RCIL or its nominated organization.

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CHAPTER-3

B. PROPOSED ARCHITECTURE FOR VIDEO SURVEILLANCE SYSTEM

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3.B.1 Architecture Overview

To implement video surveillance solution, each station should have robust, secure and scalable network architecture implemented which will cover all platforms and other areas such as waiting halls, ticket counters, entry, exit, refreshment area, and foot over bridge, parking area etc. of a railway station.

In addition to robust, secure and scalable network architecture on railway stations, fully secure network architecture will be required at RPF/GRP Thana/Post and Datacenter(s). This network will work as a platform for implementation of Video Management, Video Recording and Video Analytics System etc., which are part of infrastructure for IP Video Surveillance Service. Same network architecture can be used for deployment of Wi-Fi, Information Display System and other such type of services.

To implement IP based CCTV system in train coaches, frequent video data and alarms are required to be sent from train coaches to command and control center (CCC) and Datacenter locations. Each train coach recorded video, alerts/alarms shall be offloaded from on board video recorder unit through available network i.e. Wi-Fi and 4G (LTE). RailTel Datacenters (Gurugram and Secunderabad) will have Central VMS, EMS, FRS and External Storage System.

As this is a highly visible project for Indian Government, Ministry of Railways and RailTel, therefore, the proposed architecture must be secure end to end so that misuse of recorded video or video clips can be prevented.

3.B.2 Power and Fiber Distribution Design for Railway Stations

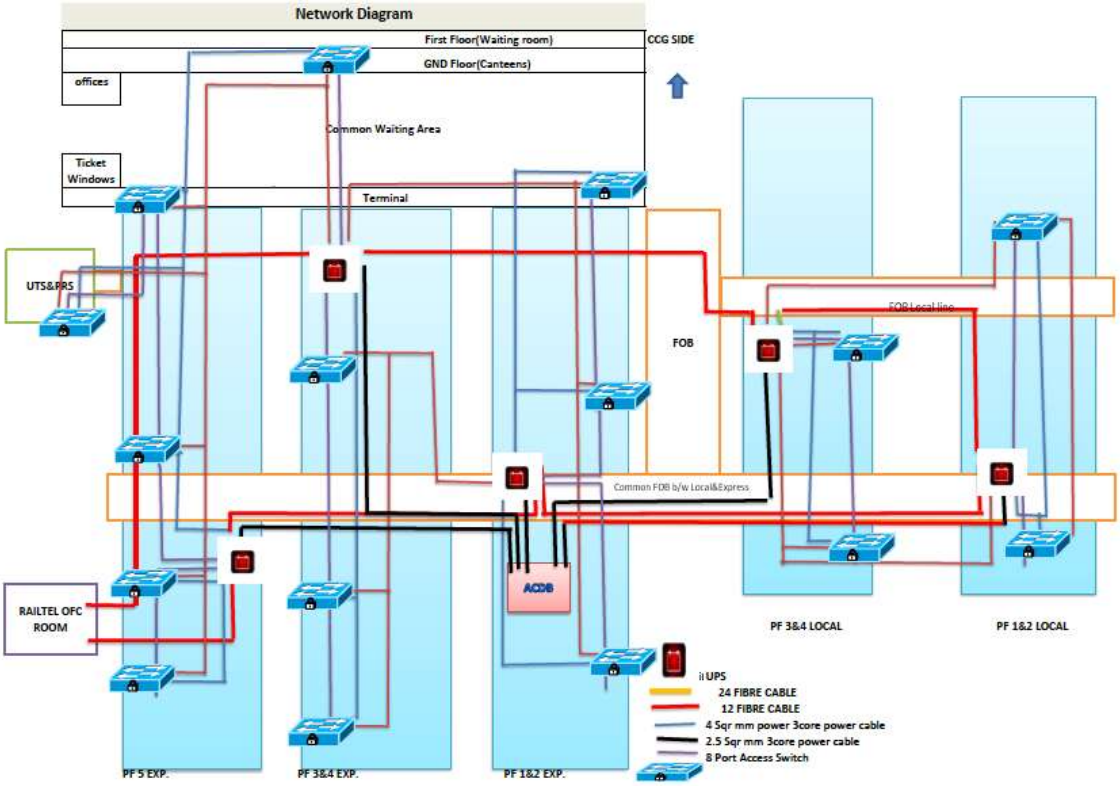
A 4 sq.mm 3 core power cable will terminated to UPS System at each platform from ACDB. 4 sq.mm 3 core power cables will also be drawn from this UPS systems to each access switch location.

A 12 core fiber cable will start from 24 port FDMS/LIU towards each platform and will terminate to same 24 port FDMS/LIU on same location after completing a physical ring of cable. First 2 cores of this 12 core fiber cable will be terminated at aggregation switch location at platform 1, another 2 core at aggregation switch location at platform 2/3 and so on.

A 12 core fiber cable will start from this termination point of 2 cores of 12 core cable at aggregation location and connect each access switch location on that platform in ring topology physically and star topology logically. 4 core of this 12 core fiber will be terminated on each access switch (Type-I Switch) location. All access switches on same platform will form a star topology with aggregation switch at each platform. Further, IP Cameras will connect on CAT-6 STP cables to these access switches to provide video service.

If there is a requirement to connect more access switches for platform extension, any other locations or any other services aggregation switch will have sufficient ports available. Also there will be sufficient fiber core available to make this connectivity possible from scalability point of view.

Typical diagram for fiber core distribution for one platform is shown below. Same topology will be followed other platforms and other station types.



3.B.3 Network Design for Different Type of Stations

Typical Network Architecture for different stations is given as:

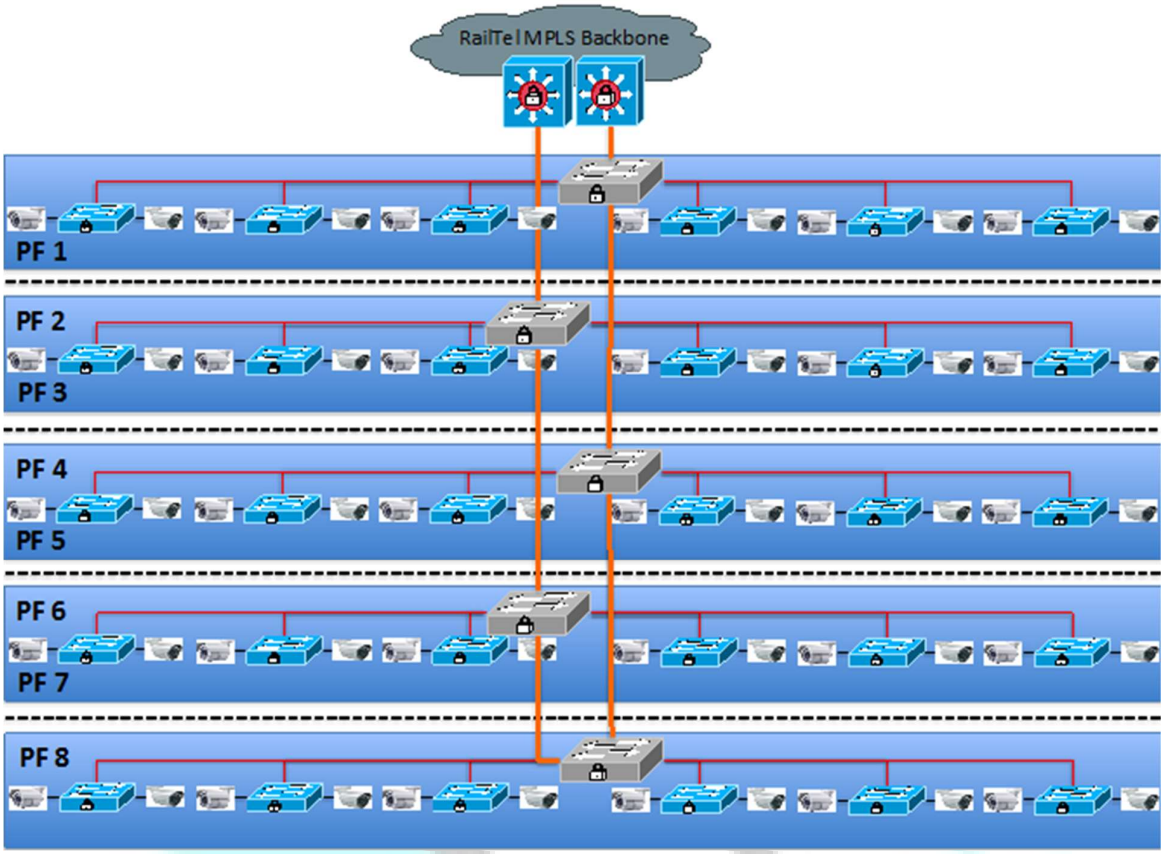
3.B.3.1 Network Design for A1 Type stations

Each A1 type station typically has 8 nos. of physical platforms. Each platform will be having a Type-II switch as an aggregation. These aggregation switches on each platform will connect to Type-IV switch available on stations in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to aggregation switches in case of fiber cut happens incidentally.

8 port PoE access switches will be deployed on each platform to cover required length of platform. These access switches will connect to aggregation switch on each platform on 12 core single mode fiber. 4 core will be terminated at each access switch location and remaining core will spliced and lead to another access location. All access switches will form a star topology with aggregation switch on each platform. Further IP Surveillance Cameras, Wi-Fi Access Points and Information Display Units will connect on Cat5e/Cat6 UTP cables to these access switches to provide various services.

If there is requirement to connect access switches for platform extension, any other locations or any other services aggregation switches will have sufficient ports available.

Tentative network diagram for A1 type station is given as:



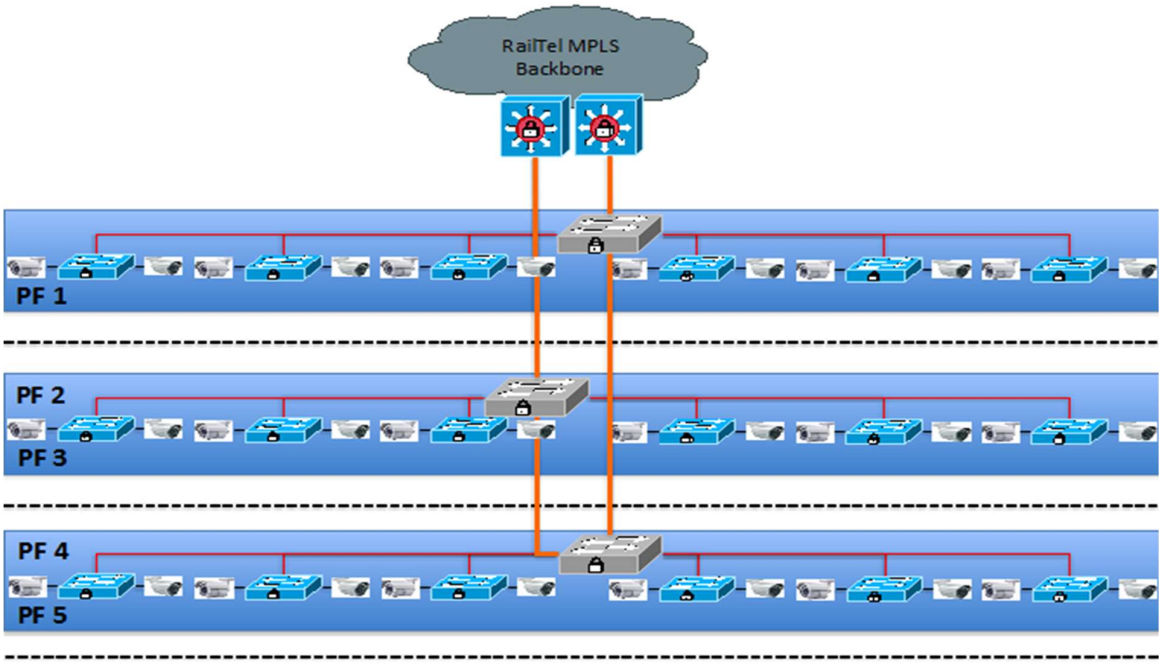
3.B.3.2 Network Design for A Type stations

Each A type station typically has 5 nos. of physical platforms. Each platform will be having a Type-II switch as an aggregation. These aggregation switches on each platform will connect to Type-IV switch available on stations in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to aggregation switches in case of fiber cut happens incidentally.

8 port PoE access switches will be deployed on each platform to cover required length of platform. These access switches will connect to aggregation switch on each platform on 12 core single mode fiber. 4 core will be terminated at each access switch location and remaining core will spliced and lead to another access location. All access switches will form a star topology with aggregation switch on each platform. Further IP Surveillance Cameras, Wi-Fi Access Points and Information Display Units will connect on Cat5e/Cat6 UTP cables to these access switches to provide various services.

If there is requirement to connect access switches for platform extension, any other locations or any other services aggregation switches will have sufficient ports available.

Tentative network diagram for A type station is given as:

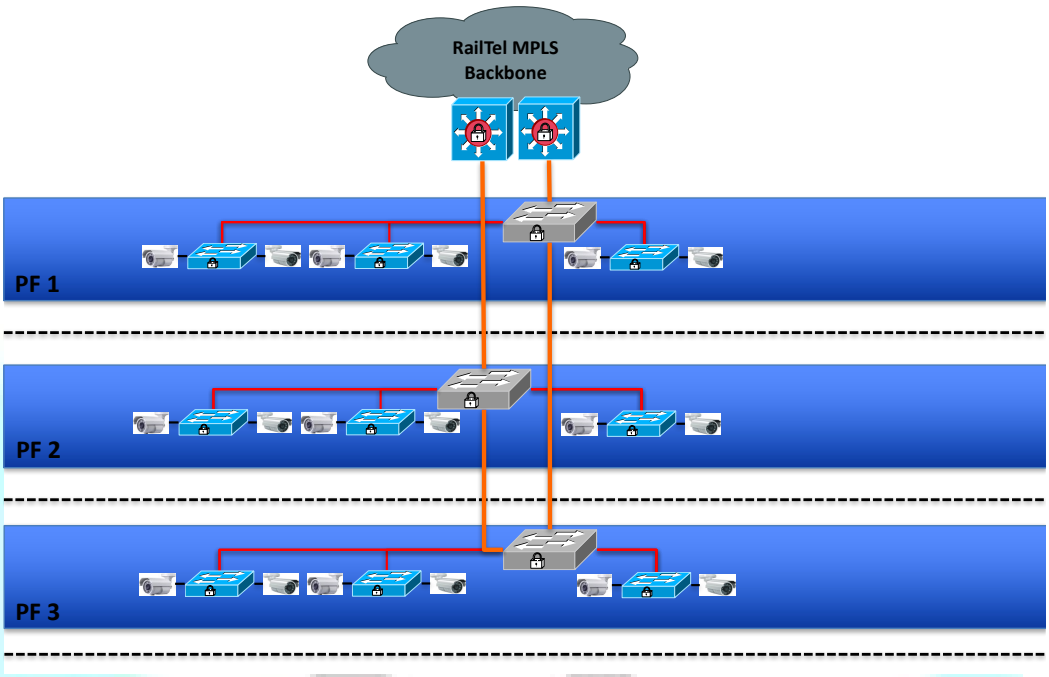


3.B.3.3 Network Design for B Type stations

Each B type station has typically 2 or 3 platforms. Each platform will be having 3 to 4 nos. of 8 port PoE access switches (Type-I Switch). Each platform will be having a Type-II switch as an aggregation. These aggregation switches on each platform will connect to Type-IV switch available on stations in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to aggregation switches in case of fiber cut happens incidentally.

8 port PoE access switches will be deployed on each platform to cover full length of platform. These access switches will connect to aggregation switch on each platform on 12 core single mode fiber. 4 core will be terminated at each access switch location and remaining core will spliced and lead to another access location. All access switches will form a star topology with aggregation switch on each platform. Further IP Surveillance Cameras, Wi-Fi Access Points and Information Display Units will connect on Cat5e/Cat6 UTP cables to these access switches to provide various services.

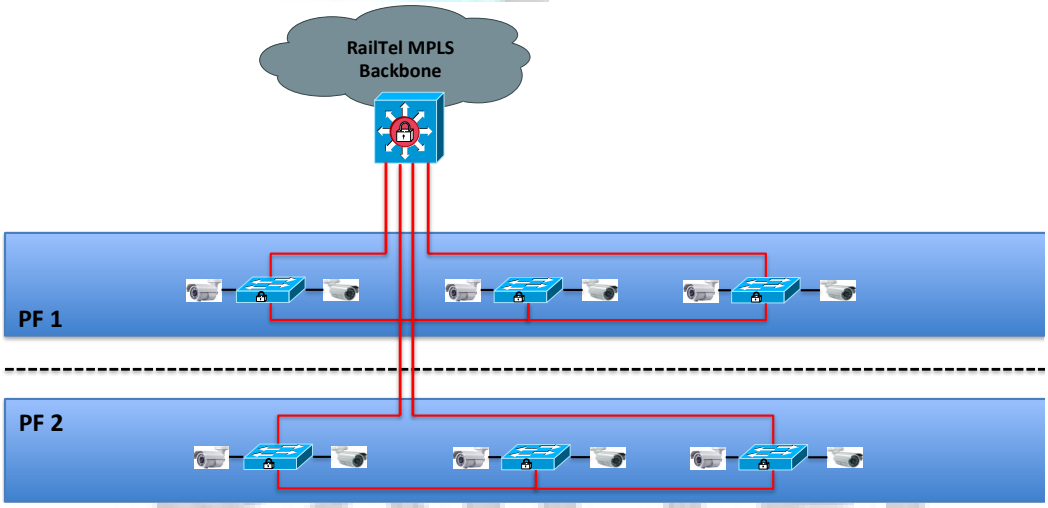
Tentative network diagram for B type station is given as:



3.B.3.4 Network Design for C type stations

Each C type station typically has 2 nos. of physical platforms. Each platform will be having 3 nos. of 8 port PoE access switches (Type-I Switch). These access switches on each platform will connect to MPLS backbone Fiber switch (Type-II Switch) available at these POPs in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to access switches in case of fiber cut happens incidentally.

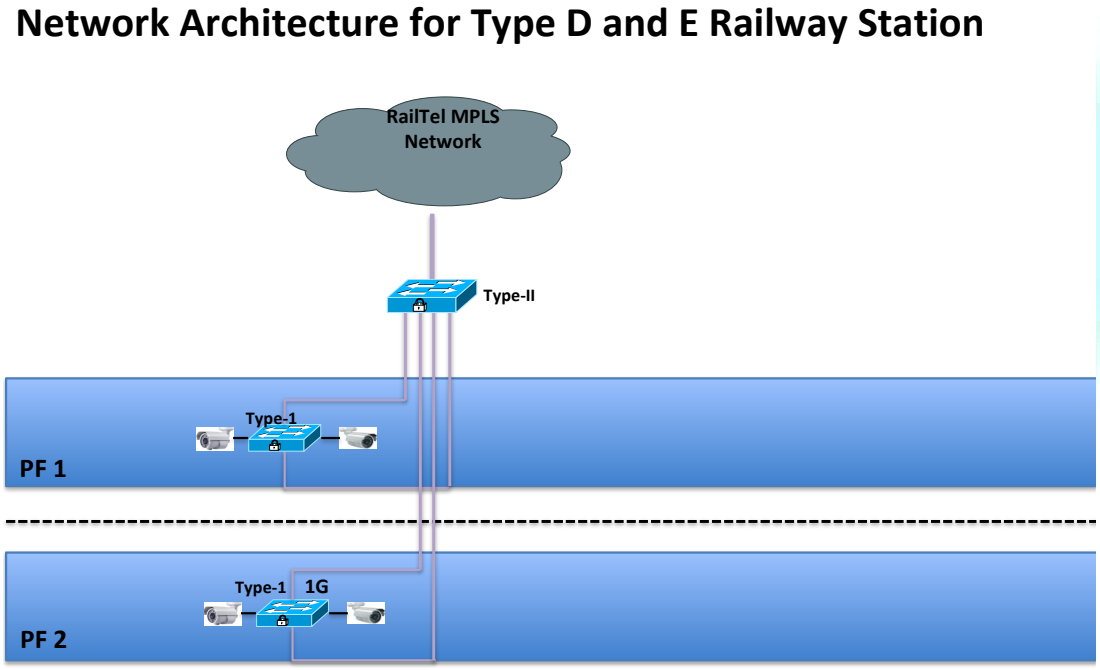
Tentative network diagram for C type station is given as:



3.B.3.5 Network Design for D and E Type stations

Each D and E type station typically has 2 nos. of physical platforms. Each platform will be having 1 no. of 8 port PoE access switches (Type-I Switch). These access switches on each platform will connect to MPLS backbone Fiber switch available at these POPs in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to access switches in case of fiber cut happens incidentally.

Tentative network diagram for D and E type stations are given as:



3.B.3.6 Surveillance VPN on RailTel Backbone

A separate VRF instance will be created on Type-IV Switch for different type of services (Surveillance, Wi-Fi etc). Access switches will separate these services in form of unique VLANs and maintain logical segregation between these services. This will maintain each service separately from traffic flow and QoS implementation perspective and improve network performance along with securing and isolating these services from each other.

A separate VRF instance may be created on Type-IV switch for Railway Police Force users in addition to mentioned services in B type station. Railway Police Force users will have a secure client for monitoring stations through IP surveillance cameras.

This network architecture must have features like port security, DHCP snooping, Dynamic ARP inspection, IP Source guard, BPDU Guard and Spanning tree root guard. These features will enable network to implement first level of network security at these switches as a protection from sniffing and reconnaissance attacks.

This network architecture must have loop avoiding feature like MSTP/RSTP to implement dual homing/redundancy successfully.

IP Video Surveillance is traffic hungry and delay sensitive service. To ensure proper functioning of this project, network architecture must have features like Multicast VLAN Registration, IP SLA, Auto-QoS, Auto Ports configuration to detect end device type connected to port and configuring QoS automatically on basis of device. Network should have IPv4 and IPv6 port and time based access list with time ranges.

3.B.4 IP surveillance solution for Different Type of Stations

The main objective of the project is to implement IP surveillance solution to monitor and manage multiple Railway Stations across various divisions at RPF/GRP Thana/Post, central locations as well as from any other locations.

The system implemented shall act as tool to respond to situations/incidents effectively, aiding faster decision making and act as a great learning for better preparedness to meet any incident and eventualities.

The system is expected to help in following area:

a. Centrally Monitor and Control Security Systems
b. Immediate Response and Management System
c. Integration with Video Management

IP based cameras could be Dome type, PTZ Type and Fixed Bullet and 4K UHD Cameras. Below are major listed areas, which will cover by various type of cameras:

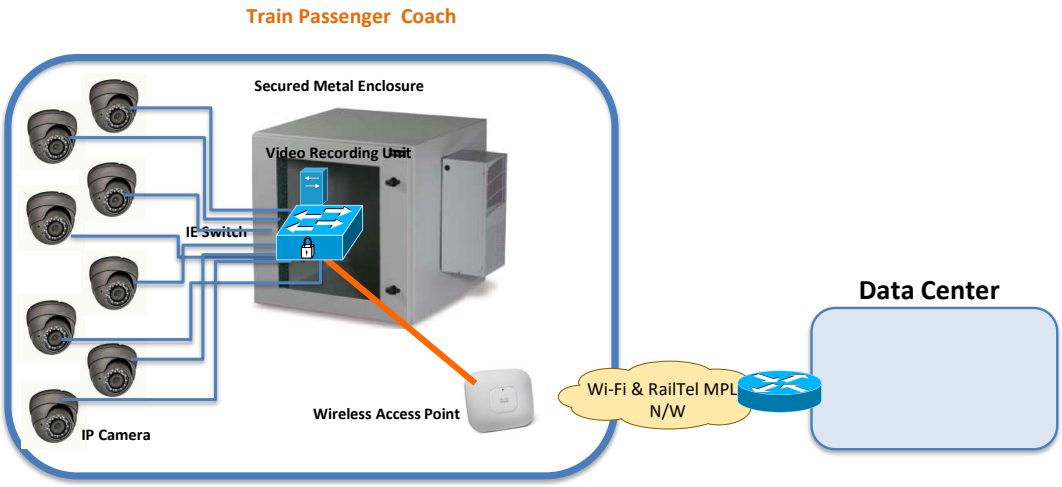
a) Platform, Foot over areas should be covered by Fixed Bullet cameras
b) Entry/Exit should be covered by 4K UHD Bullet cameras.
c) Ticketing Counter, Waiting, Food Plaza, Railway Refreshment Room, Low ceiling Entry /Exits should be covered by Dome cameras
d) PTZ should be mounted for bigger open areas, where Pan, Zoom & Tilt functionality will be used

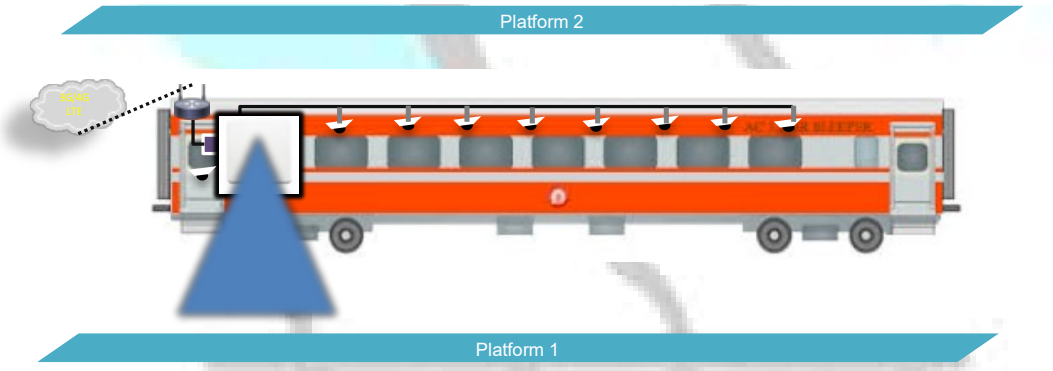
The above arrangement is only tentative in nature and bidder may be asked to commission a camera(s) on any other locations as decided by purchaser as per site requirement.

3.B.5 CCTV System in Train Coaches

Each Carriage (Coach) will have its independent setup as per diagram (tentative) mentioned below :

Each coach will have switch to connect cameras and Wi-Fi access point for backhaul connectivity and video recording system. All these equipment's will be placed inside a concealed, powder coated metal enclosure with suitable ingress Protection for dust and water by providing gasket & sealing of cable entry/exit along with lock and key.



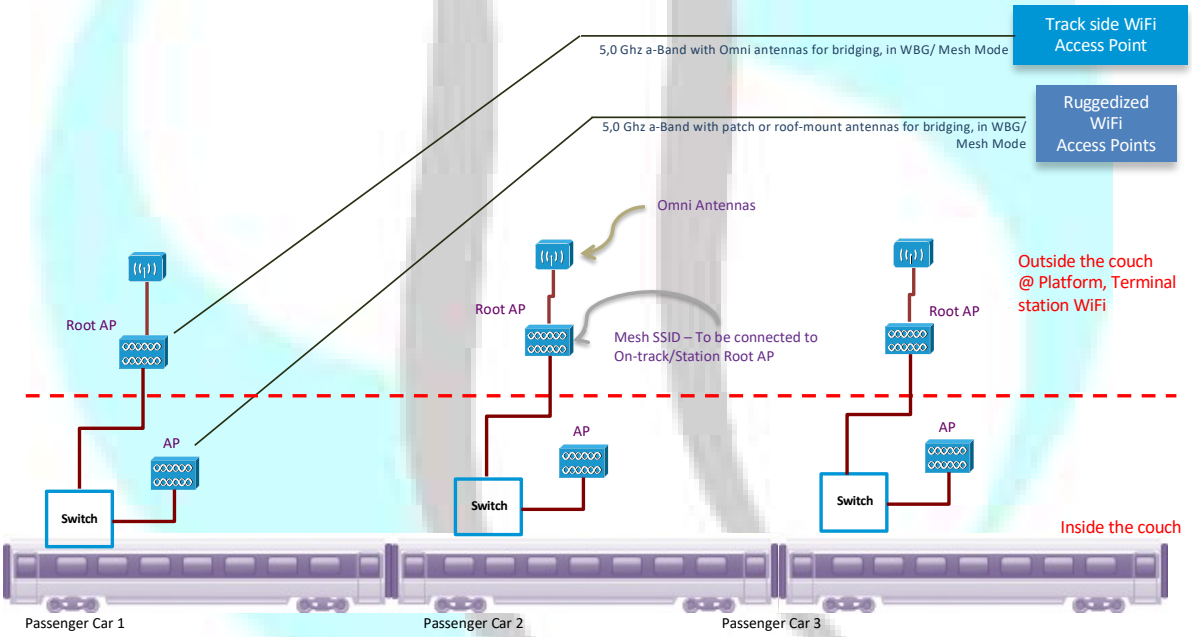


Each coach will be having access point to achieve proper connectivity to their root Access points. These Access points will transfer the data to the central location through Wi-Fi network available at stations.

3.B.5.1 Wi-Fi connectivity between Train Coaches and Stations

Each Access point installed inside the coach will connect to the root access point installed at the track side or at the platform over WGB or Mesh technology or any other methods. The connectivity between the access points will be a secure communication using dot 1x authentication or similar.

Tentative Coach AP to Station AP connectivity:

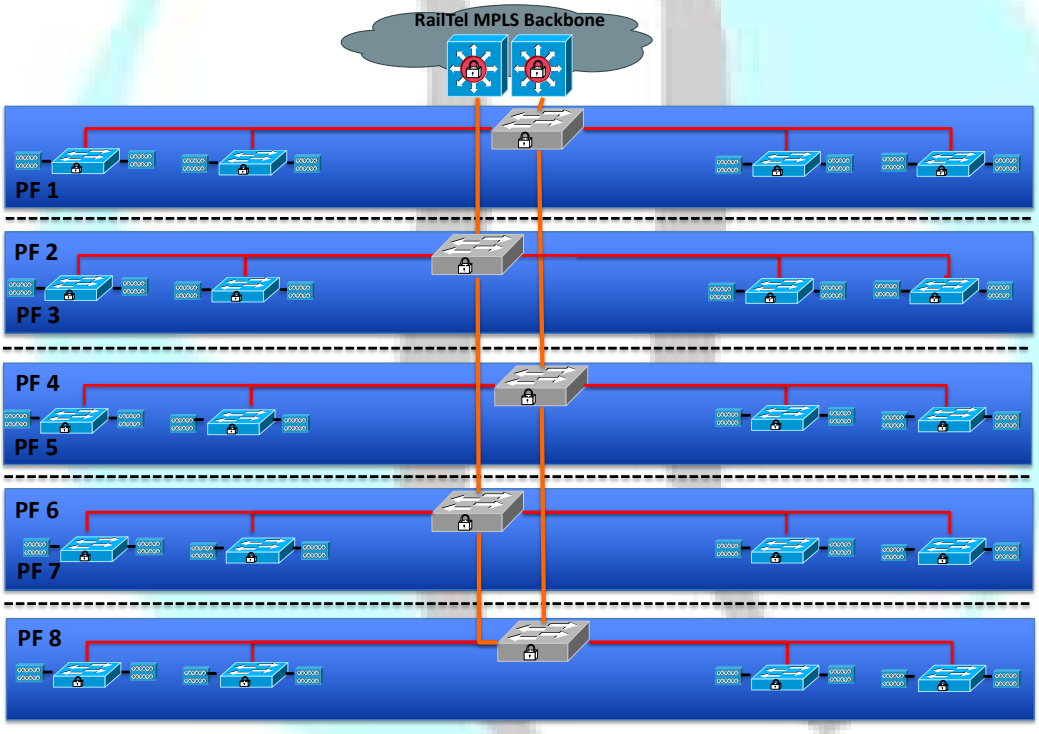


3.B.5.2 Terminal Station Wi-Fi to MPLS Backbone connectivity

Wi-Fi Access Point in coach will connect to Terminal Station AP at Platform for offloading data, whenever train coaches will enter to a stoppage station having Wi-Fi infrastructure or LTE (4G) wherever there is connectivity enroute.

8 port PoE access switches (Type-I) will be deployed on each platform to cover required length of platform. These access switches will connect to aggregation switch (Type-II) on each platform on 12 core single mode fiber. 4 core will be terminated at each access switch location and remaining core will spliced and lead to another access location. All access switches will form a star topology with aggregation switch on each platform. Further, Wi-Fi Access Points will connect on Cat5e/Cat6 UTP cables to these access switches.

These aggregation switches on each platform will connect to Type-IV switch available on stations in a ring topology with 12 core single mode fiber. This ring topology will provide redundant path to aggregation switches in case of fiber cut happens incidentally. Type IV Switch will send data to RailTel Datacenter through RailTel MPLS/IP network.



3.B.5.3 Wi-Fi Core network

WLC will be installed at each RailTel Datacenter

Local Switching overview

Management and data plane are splitted.

Data Plane can be:

- Centralized (SSID traffic sent all to WLC)
- Local (SSID traffic sent all to local VLAN)

Two Types of AP:

- Connected (when WLC is reachable) – WIRED CONNECTION WITH WLC
- Standalone (WBG) AP – INSIDE TRAIN

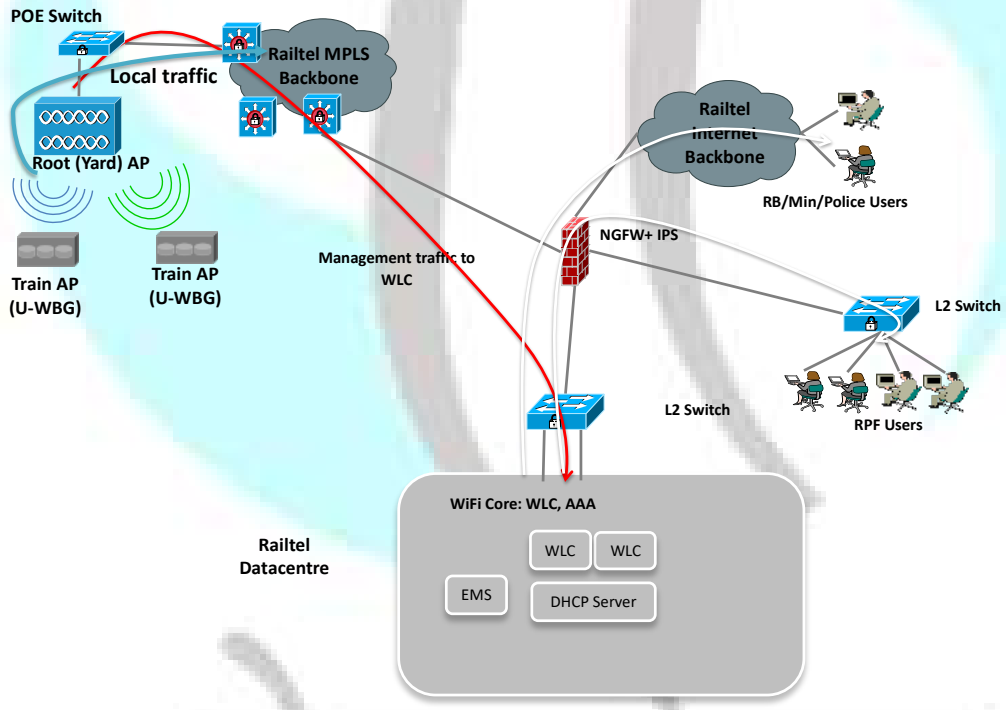
Universal WBG

The WGB AP at station will connect to the Root AP at Railway Station (Station network) and will get the IP from their respective backend DHCP server.

Station Side AP will act as Root AP to provide WLAN connectivity to UWGB AP on board in train.

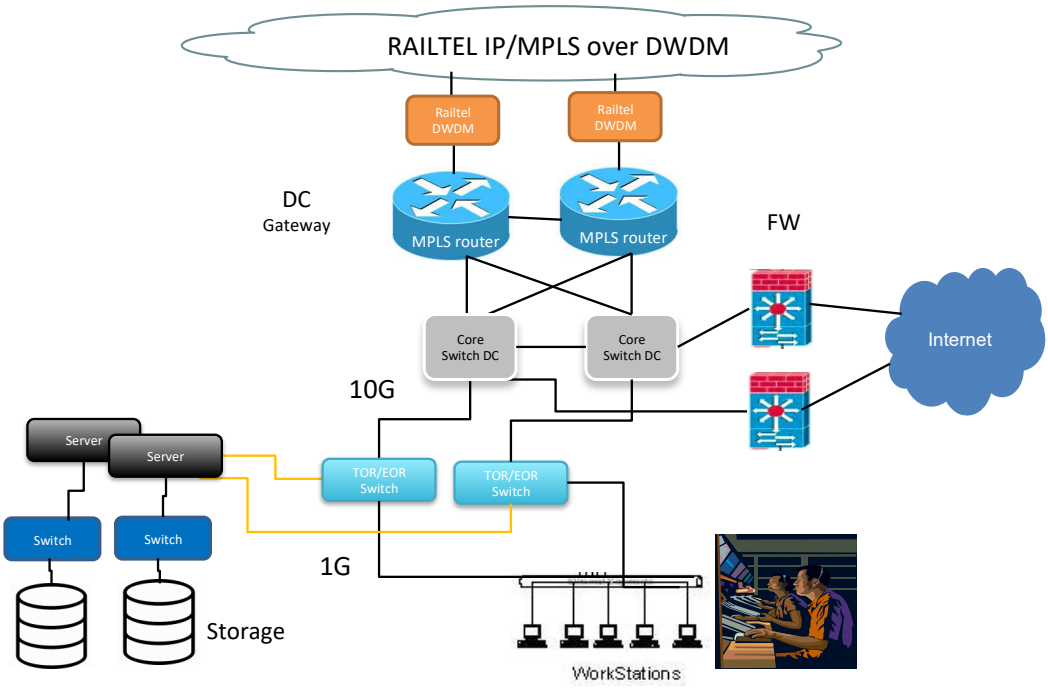
Pre-requisite for the Universal WBG

- SSID and Authentication method should be same at Station AP's.



3.B.6 Network layout at RailTel Datacenters and RPF/GRP Thana/Post

3.B.6.1 At RailTel Datacenters (Gurugram and Secunderabad)



Data Centre Architecture including networking, computing, storage, management, and security is planned as described below:

In each Data Centre, there will be two Core Routers interfacing towards the RailTel MPLS network thorough DWDM in physical layer.

The two Core router will work as a Gateway Router from the network towards RailTel Datacentre.

There will Two-tier Architecture Core/Aggregation and Access Switching Layer. This architecture accommodates a north-south traffic pattern where client data comes in from a WAN or the Internet to be processed by a server in the data center and is then pushed back out of the data center.

Data Centre Core and Aggregation layer—Provides the high-speed packet switching backplane for all flows going in and out of the data center. Provide important functions such as Layer 2 domain definitions, spanning tree processing, and default gateway redundancy. Serv-

er-to-server multi-tier traffic flows through the aggregation layer and can use services, such as firewall, to optimize and secure applications.

Data Centre Access layer—Where the servers physically attach to the network. The server components consist of 1RU rack servers, blade servers with integral switches, blade servers with pass-through cabling, clustered servers. The access layer network infrastructure consists fixed configuration 1 or 2RU stackable switches (TOR/EOR). Switches provide both Layer 2 and Layer 3 topologies.

Resiliency is achieved by load balancing the network traffic between the tiers
Security is achieved by placing firewalls between the tiers.

Segregation between the tiers can be achieved by deploying a separate infrastructure composed of Core/aggregation and access switches.

3.B.6.2 At RPF/GRP Thana/Post

Each RPF/GRP Thana/Post location will have architecture for connectivity of Server(s)/Network Video Recorders for Video Recording system etc for CCTV surveillance system at stations.

For CCTV surveillance in Train Coaches, each RPF Thana/Post location will have setup for connecting client workstation with CCTV network for monitoring purpose. Client will get access of video feeds through central VMS system hosted in RailTel Datacenter.

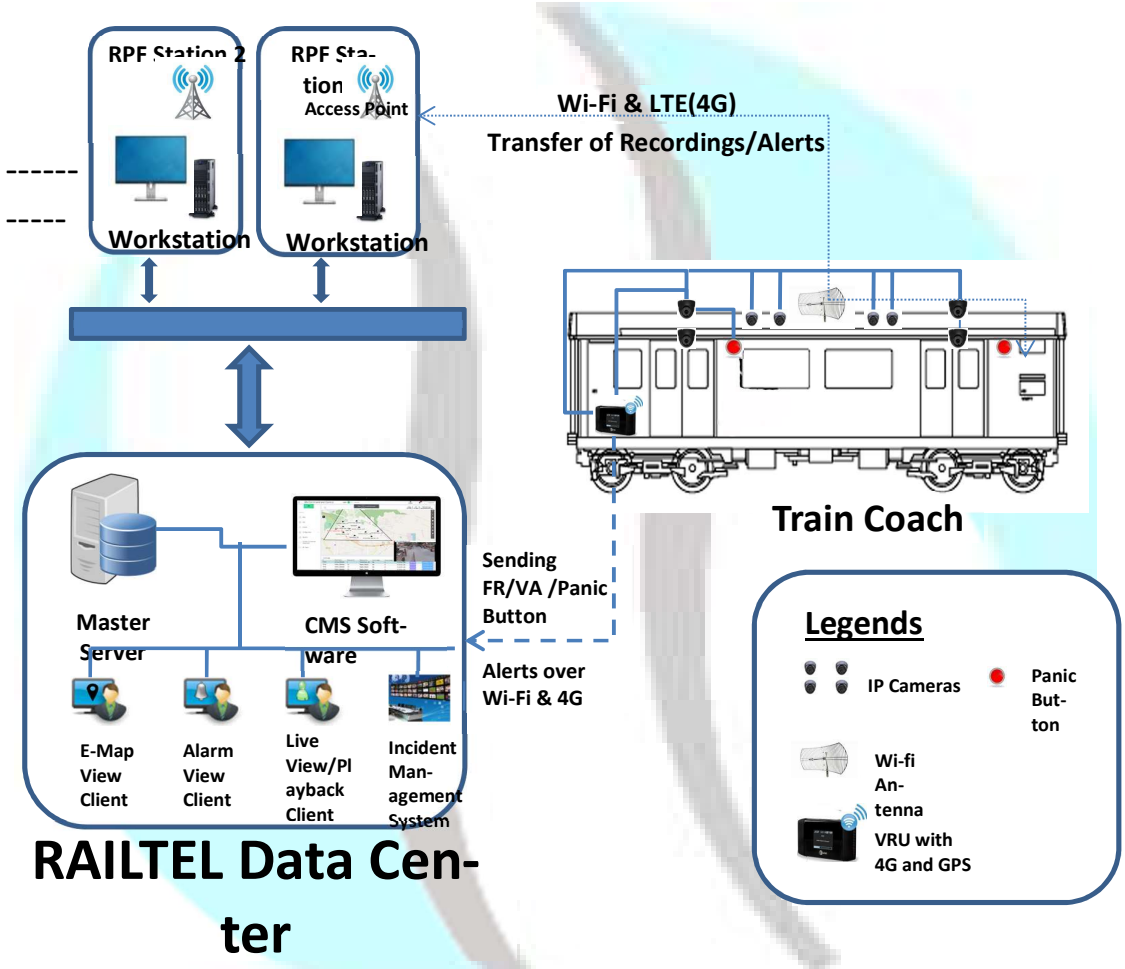
Network design at RPF/GRP Thana/Post will consist of a 24 ports Type-III switches. These switches will have redundant power supply.

3.B.7 Architecture of VSS/CCTV system for stations

The offered solution for video management system (video management software & recording software) server hardware should be duly vetted and supported with certifications issued by OEM.

Tentative architecture of VSS/CCTV system at stations will be as per schematic diagram-2: Tentative schematic diagram of Video Surveillance System for Cluster of Stations as mentioned in RDSO specification no. RDSO/SPN/TC/65/2019 Rev.5.0 or latest with all amendments.

Below is the tentative VSS architecture for system to be deployed in Train Coaches:



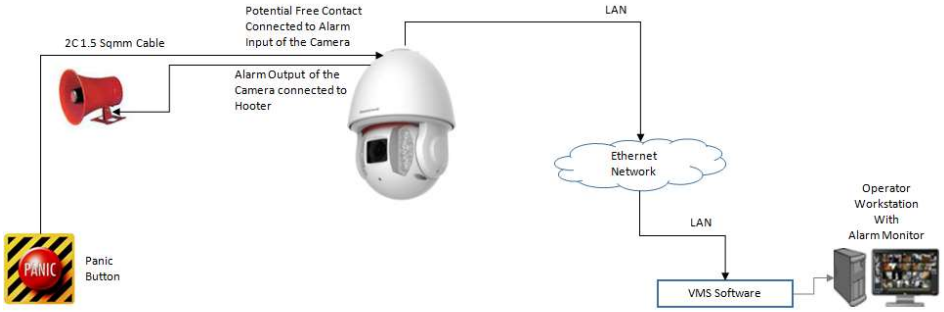
3.B.8 Installation of Panic Button and Associated VMS Requirements for Stations

3.B.8.1 The VMS software shall include required licenses to support Alarm Input monitoring and Output activation for the proposed IP Cameras.

3.B.8.2 The Panic Switches shall be installed at each Platform. The potential free contact of the Panic Switch shall be connected to the Alarm Input of the IP Fixed or PTZ Camera installed nearby wherein Panic Switch is in the Field of View of the Camera.

3.B.8.3 Once the Panic Switch is activated by any person in distress, an alarm shall appear on the VMS along with the pop-up of the associated camera on the operator work station. In case, associated camera is a PTZ type, the camera shall move and zoom on to the Panic Switch to see the person in distress.

3.B.8.4 Panic Button shall be installed at average person's height at the platform.

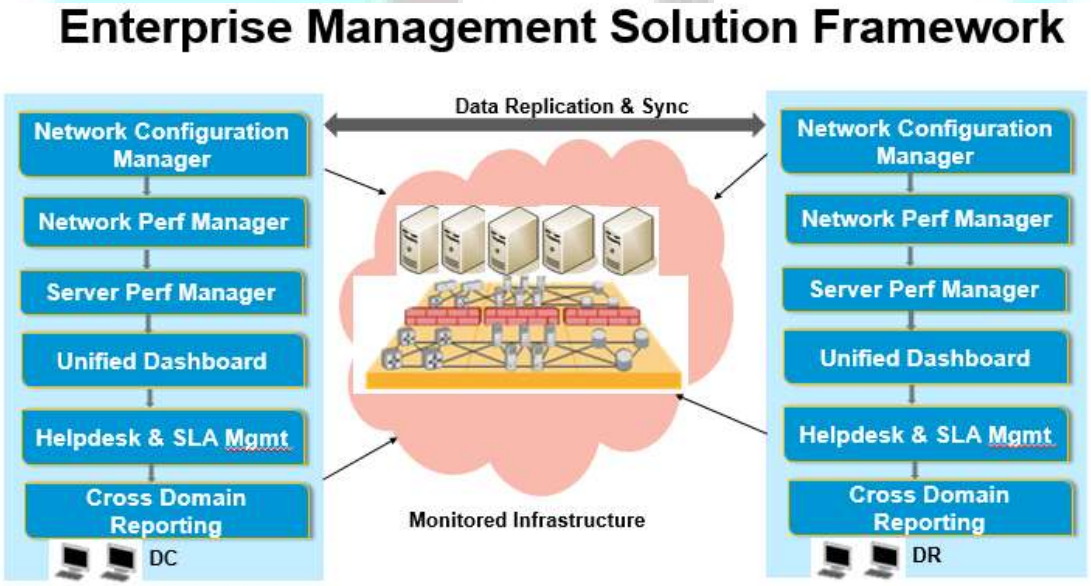

Potential Free Contact
Connected to Alarm
Input of the Camera
LAN
2C 1.5 Sqmm Cable
Alarm Output of the
Camera connected to
Hooter
Ethernet
Network
Operator
Workstation
With
Alarm Monitor
LAN
PANIC
Panic
Button
VMS Software

Chapter-3

C. Enterprise Management System for Network Switches, Servers, Storage and UPS along with ITSM tool

For effective operations and management of IT Operations, there is a need for an industry-standard Enterprise Management System (EMS). Given the expanse and scope of the project to operate, configure, monitor & maintain IP based Video Surveillance System (VSS) across 6124 Railway Station and 7020 coaches of Indian Railways, EMS becomes very critical for IT Operations and SLA Measurement. Some of the critical aspects that need to be considered for operations of IT setup are:

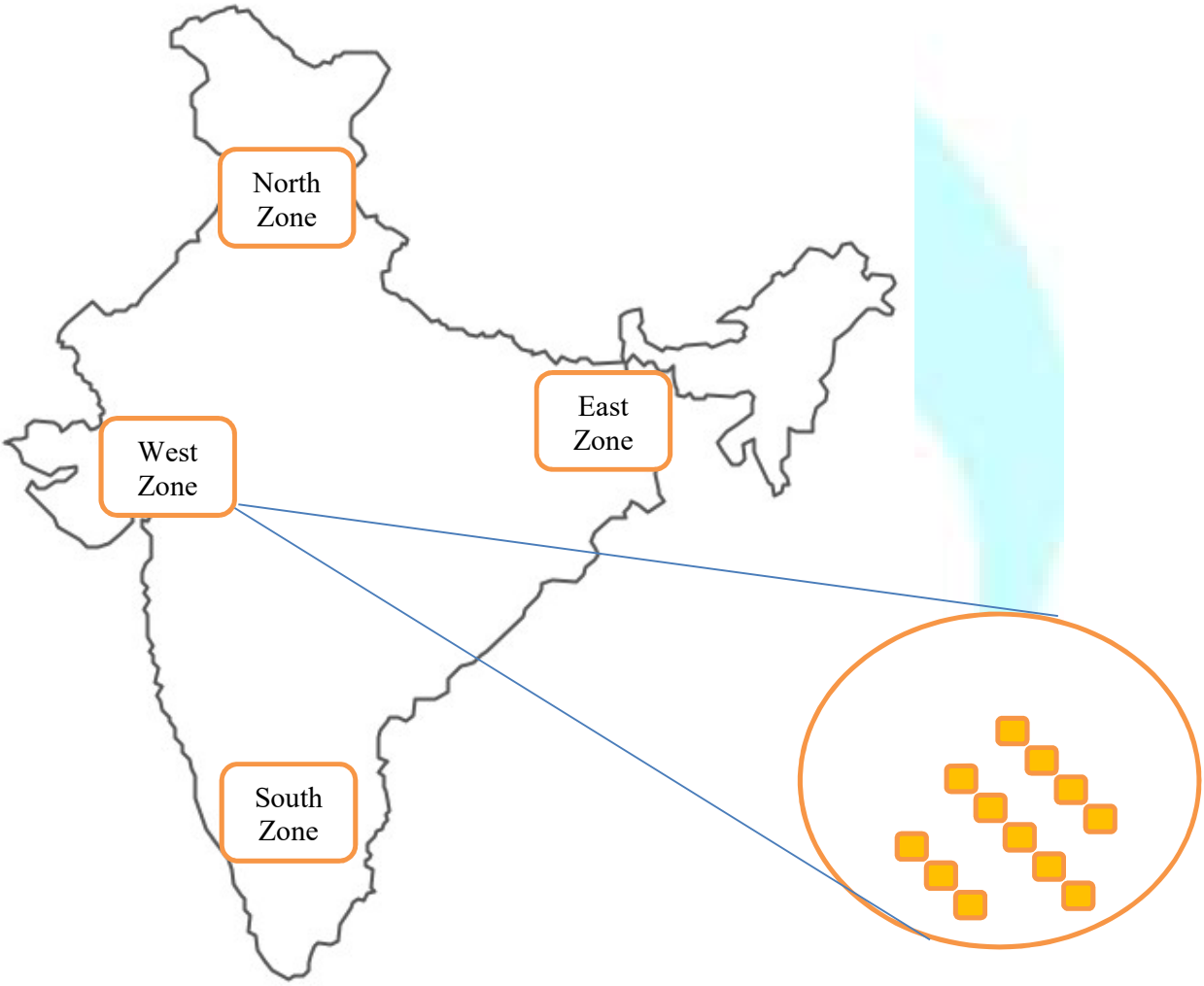
- Centralized and Integrated Dashboard View
- Centralized and Customizable Service Level Reporting
- Server Change, Provisioning & Configuration
- Network Automation
- Service Management (Helpdesk) & SLA Management
- Centralized IT Asset Inventory discovery & tracking
- Server Monitoring
- Network Fault & Performance Management



All the assets (pan-India) will be monitored through the central EMS deployed at one Data Center as a DC with the redundant infrastructure configured in other Data Center as a DR, in case of failover. There will be a continuous data replication & synchronization from DC to DR site on daily basis to prevent a loss of configuration changes in the event of losing the production instance.

The EMS solution deployed in DC will act as a manager of manager, where all the events from servers, networks and UPS solutions would be aggregated. It provides the advanced level of correlation like the event de-duplication, filtering, enrichment etc. to find out the most casual event in the network. The dashboard can be personalized by individual users based on their roles & thus can be extended to various RPF/GRP Thana/Post, Divisional

HQ's etc. for web based access, as per their role & responsibilities. The operators in various RPF/GRP Thana/Post, HQ's will have personalized views of topology, alarms & reports as per the business requirement.



Service desk Manager would be the central service desk solution, which would act as a single point of contact for logging incidents automatically from the monitoring solutions from event management console as well as manual incidents via mail and telephone from the end users. The solution would also provide Knowledge Management for the engineers to populate and search solutions. The knowledge management component would also be installed on the same server. The processes of Change Management will be carried out using the same solution. The incident, problem, change and request process can be tied to the Service Level Management process to send notifications, escalate etc. so that the response and availability SLAs are met. Email will be the primary notification method. There are a number of out-of-box reports available. Customized reports can be created, scheduled and published on a central portal.

Network Management component offers fault, availability, and performance monitoring, with real-time network monitoring and network incident management, for physical and virtualized network infrastructure. It will also provide historical performance reporting on all the managed nodes.

CHAPTER-3

D. INSPECTION AND SUPERVISION OF INSTALLATION, TESTING & COMMISSIONING

3.D.1. INSPECTION

(A) Inspection will be carried by RDSO for all the items for which RDSO specifications are referred. For other items the inspection will be carried out by RailTel or its authorized agency.

(B) TEST CATEGORIES (This should be for all the items to be inspected by RailTel)

i) The following tests shall be conducted for acceptance of the equipment and the system before final acceptance of the system. Waiver of Part or whole of type tests can be considered if proof of having done the tests by independent body or PTT authority is submitted.

a) Pre-Factory Acceptance Testing
b) Pre-commissioning test (after installation) for total integrated system.
c) Site Acceptance Testing (SAT)
d) Trial Run

ii) These tests shall be carried out on all equipment supplied by bidder including those supplied by sub-vendors, if any.

iii) Bidder shall arrange all necessary test instruments, manpower, test-gear, accessories etc.

iv) All technical personnel assigned by the bidder shall be fully conversant with the system specifications and requirements. They shall have the specific capability to make the system operative quickly and efficiently and shall not interfere or be interfered by other concurrent testing, construction and commissioning activities in progress. They shall also have the capability to incorporate any minor modifications/suggestions put forward by purchaser /Engineer.

v) Test Plan: The Contractor shall submit to Purchaser 'Test Plans' well in advance of commencement of actual testing in each of the above mentioned test categories.

The plans shall include:

1) System/Equipment functional and performance description (in short) and Tests to be conducted and purpose of test.

2) Test procedures (including time schedule for the tests) and identification of test inputs details and desired test results

3) **Test Report:**

The observations and test results obtained during various tests conducted shall be compiled and documented to produce Test Reports by bidder. The Test Reports shall be given for each equipment/item and system as a whole. The report shall contain the following information to a minimum:

i) Test results

ii) Comparison of test results and anticipated (as per specifications) test result as given in test plans and reasons for deviations, if any.

iii) The data furnished shall prove convincingly that

a. The system meets the Guaranteed Performance objectives
b. Mechanical and Electrical limits were not exceeded.
c. Failure profile of the equipment during the tests are well within the specified limits

vi) Failure of Equipment:

Till the system is accepted by the Purchaser, a log of each and every failure of equipment shall be maintained. It shall give the date and time of failure, description of failed equipment, circuit, module, equipment designation, effect of failure of equipment on the system/equipment, cause of failure, date and time of repair, mean time to repair etc. Repair/modification done at any point of time at one site, shall be carried out by bidder at all the sites. Detailed documentation for the same shall be submitted to Purchaser for future reference.

If the malfunction and/or failures of a unit/module/sub-system/equipment repeat during the test, the test shall be terminated and bidder shall replace the necessary equipment or module to correct the deficiency. Thereafter, the tests shall commence all over again from the start.

If after the replacement the equipment still fails to meet the specification, bidder shall replace the equipment with a new one and tests shall begin all over again. If a unit/ subsystem/module has failed during the test, the test shall be suspended and re-started all over again only after the bidder has placed the equipment back into acceptable operation. Purchaser's approval shall be obtained for any allowable logical time required to replace the failed equipment/unit/module/sub-system.

vii) **Readjustments**

No adjustments shall be made to any equipment during the acceptance tests. If satisfactory test results cannot be obtained unless readjustments are made, bidder shall carry out only those readjustment needed to ready the equipment/system for continuance of tests. A log of all such adjustments shall be kept giving date and time, equipment, module, circuit, adjustments, reasons, test result before and after adjustment etc. Fresh acceptance tests shall be conducted after the readjustments have been completed.

3.D.2. Pre Factory Acceptance Testing

The bidder on his own exactly in line with pre approved test plan shall conduct pre-factory acceptance testing and test reports for the same shall be forwarded to Purchaser/Engineer before inspection .

3.D.3. Inspection/Factory Acceptance Test

Testing Procedure for VSS equipment for which requisite testing facility is not available in India

Necessary type tests as well as acceptance tests on the equipments offered shall be conducted to ascertain conformance of the equipment to the requisite RDSO specification. These tests shall be got conducted by the OEM/Vendor at 3rd party test houses of international repute such as UL, TUV etc.

3.D.3.1 In case the requisite test facilities are available with OEM, the 3rd party test house may conduct these tests in the OEM premises if specifically requested by OEM to RDSO. **The details of 3rd party test house (proposed-to be entrusted with the testing) shall be submitted by the bidder along with the technical bid document.** The same shall be sent to to RDSO for prior clearance. These details shall include testing capability of the test house & shall confirm that the test house has undertaken testing of such equipment earlier. Only after the clearance of RDSO, testing shall be entrusted to proposed 3rd party test house. RDSO shall advise the test format and details regarding quantity of equipment on which type test and acceptance test is required to be conducted.

3.D.3.2 Third Party test house after conducting requisite type test & acceptance test shall submit the test report directly to RDSO. In case the equipment conforms to the RDSO specification, necessary clearance for supply of the equipment shall be given by RDSO to the OEM/vendor.

3.D.3.3 On arrival of such cleared equipment in India, sample tests covering only visual and functional parameters shall be undertaken by RDSO.

3.D.3.4 On successful visual and functional tests as above, the equipment may be considered to be in conformance with RDSO specification. However, the vendor shall submit special bank guarantee equivalent to 10% of the value of the equipments inspected by third party abroad & valid for a period of one year (in addition to Performance Guarantee) and undertaking to the purchaser that the equipment supplied shall meet all the requisite parameters of the specification and shall work satisfactorily failing which bank guarantee may be encashed. Firm shall also submit suitable undertaking regarding satisfactory repair /service support to the purchaser.

3.D.3.5 Once type test has been successfully completed on a equipment, only acceptance test shall be conducted subsequently, in case the same equipment (make, model & version) is offered again within a period of 2 years.

3.D.3.6 Any expenses against inspection by 3rd party shall be borne by the bidder.

3.D.4. Installation

After successful completion of inspection, equipment shall be sent to site for installation. Equipment without factory acceptance/inspection certificates shall not be acceptable at site.

Prior to installation, all equipment shall be checked for completeness as per the specifications of equipment required for a particular station. Installation shall be carried out in accordance with the installation manuals and approved installation drawings & site plan in the best workmanship.

Bidder shall indicate the number of teams and the list of equipment for each teams to be required for installation of the Video Surveillance System in order to complete the work within the stipulated time frame.

Bidder shall bring all installation tools, accessories, special tools, test gears, spare parts etc. at his own cost as required for the successful completion of the job.

If during installation and commissioning under the supervision of the bidder any repairs are undertaken, the maintenance spares supplied with equipment shall not be used for the repair. Bidder shall arrange his own spare parts for such activities till such time the system has been finally accepted by the Purchaser. A detailed report & log of all such repairs shall be made available by the bidder to Purchaser/Engineer and shall include cause of faults and repair details, within 2 weeks of fault occurrence.

A detailed time schedule for these activities shall be submitted by bidder to Purchaser/Engineer to enable their representatives to be associated with the job.

Bidder shall supply all installation materials required for proper installation of the equipment. These shall include but not be limited to, all connectors, interbay and inter equipment cables, power supply cables and connectors, power distribution boxes, anchoring bolts, nuts, screws, washers, main distribution frames, audio distribution frames, voice frequency cables, junction boxes etc.

The installation of equipment shall be supervised by the bidder in such a manner so as to ensure neat and clean appearance in accordance with approved installation document drawings. All inter bay, power supply and other cables shall be routed through wall mounted cable trays. No cable shall be visible. All through wall openings, trenches etc. shall be properly sealed to prevent the entry of rodents, insects and foreign materials. Installation of CCTV system in train coaches shall be done as per standard fixing protocols and layouts as enclosed in the tender document. Data cable and electrical cable inside train coaches should be laid in separate PVC conduit.

3.D.5. Pre-Commissioning

On completion of installation of CCTV system, the correctness and completeness of the installation as per Manufacturer's manual and approved installation documents shall be checked by the bidder on his own.

A list of Pre-Commissioning tests (same as approved by the Purchaser/Engineer for site acceptance testing) and activities shall be prepared by bidder and the test shall be carried out by the bidder on his own. After the tests have been conducted to the bidder's own satisfaction, the bidder shall provide the test results for review by Purchaser/Engineer and then offer the system for Site Acceptance Testing.

During pre-commissioning, if any fault occurs to any equipment or system, bidder shall identify the same and provide report/history of all faults to the Purchaser.

During installation and pre-commissioning of the Edge Infrastructure of VSS system, bidder shall have enough number of commissioning spares so that the installation is not held up because of non-availability of commissioning spares. Bidder shall ensure that the spares meant for operation and maintenance are not used during installation and commissioning.

3.D.6. Site Acceptance Testing (SAT)

On completion of Pre-commissioning, site acceptance testing shall be conducted on the system as per approved SAT procedures and its constituents by the bidder under the presence of Purchaser/Engineer.

The tests shall include, but not be limited the following:

a) Checks for proper installation as per the approved installation drawings for each equipment/item and system as a whole.
b) Guaranteed performance specifications of individual equipment/item.
c) Self diagnostics test on individual equipment
d) Tests on remote alarm transmission and reception
e) System tests on END TO END for the system, all complete.

3.D.7. PROVISIONAL ACCEPTANCE CERTIFICATE (PAC)

For CCTV work at Railway Stations, RailTel's respective Executive Directors or their authorized representatives of concerned region shall issue a Provisional Acceptance certificate (PAC) RPF Thana/Chowki wise for successful commissioning and testing covering all cameras and other IT infrastructure at a station clustered within the RPF Thana/Chowki and Fiber/Network connectivity, monitoring facilities extended so that trial run/field trials can be started for IP based Video Surveillance work at Stations.

For IT setup at RailTel Datacenters at Gurugram and Secunderabad Provisional Acceptance certificate (PAC) shall be issued after successful commissioning and testing of last RPF/GRP Thana/Post.

For CCTV work in Train Coaches, RailTel's respective Executive Directors or their authorized representatives of concerned region shall issue separate Provisional Acceptance certificate (PAC), Coaches cluster wise (<=100) for successful commissioning and testing covering of all cameras and other IT infrastructure in train coaches, and RPF Thana/Chowki wise for successful commissioning and testing of IT infrastructure at a station clustered within RPF Thana/Chowki and monitoring

facilities extended to RPF Thana/Chowki so that trial run/field trials can be started for IP based CCTV System in Train Coaches. Issue of PAC shall be subject to acceptance of commissioning of system by respective depots or car sheds in-charges.

For IT setup at RailTel Datacenters at Gurugram and Secunderabad Provisional Acceptance certificate (PAC) shall be issued after successful commissioning and testing of last coaches cluster.

PAC will not be held back for want of minor deficiencies not affecting the functioning of the overall system. Deficiencies, if any, pointed at the time of issuance of PAC, will be rectified by the contractor within one month. The Provisional Acceptance Certificate shall be signed by both the parties. PAC will also not be held back for the stations/coaches pending for Installation, Testing and Commissioning for the want of site readiness/approval or as per the decision of Purchaser.

3.D.8. MAINTENANCE SPARES

3.D.8.1 Unit rates for each spare required for operation and maintenance shall be provided. Bidder shall also provide the address, contact person, mail-id, fax, and telephone no. of the manufacturer of the spare parts, if different from the bidder itself. The bidder shall warrant that spare part for the system would be available for minimum of 5 years after system commissioning (taking over). After this period if the bidder discontinues the production of the spare parts, then he shall give at least 12 months notice prior to such discontinuation so that Purchaser may order the requirements of spares in one lot.

8% mandatory spares (for operation and maintenance) shall be provided against SOR items as mentioned (with round off at the higher side). Spares shall be provided from the same manufacturing facilities/location from where the respective equipment, subsystems are offered.

The list of the required spares being supplied with unit cost and total cost should be attached along with the bid.

3.D.8.2. Spare part management for spare other than quoted in the SOR during the maintenance support services, warranty and AMC phase in order to meet the SLAs shall be undertaken by the successful bidder.

3.D.8.3. The list of maintenance spares, required for providing maintenance support with Uptime being asked for, shall be worked out by the SI in consultation with the OEM and submitted for RailTel's approval. These spares shall be stocked at various locations proportionately and checked by RailTel at the time of acceptance of the network (to be defined by RailTel later).

3.D.8.4. RailTel shall hold successful bidder responsible for all SLAs mentioned in the RFP and subsequently in the contract document, however, for ensuring the same, Certificates from all OEMs and/or authorized vendors/representatives (as per Forms of Chapter 6) will be produced to confirm that the life time maintenance support (three years warranty & five years AMC) by provisioning of spares.

3.D.8.5. In case the equipment offered/supplied under the contract is out of production/support or not available due to any reason, the contractor shall supply equipment with prior approval of purchaser's engineer.

3.D.9. Commissioning spares

The commissioning spare shall be arranged by the bidder to cater to the requirement during installation, commissioning, site acceptance testing, trial run and warrantee period. These spares shall be readily available with the bidder, at specified locations.

These commissioning spares are different from maintenance spares and bidder shall not use maintenance spares as commissioning spares till expiry of warranty period.

3.D.10. TRIAL RUN/FIELD TRIALS

Upon conclusion of the site acceptance testing the bidder shall keep the facilities commissioned for one month for 'TRIAL RUN/FIELD TRIALS'. During this period bidder shall provide all Support engineers & Technicians to maintain the total log, incidents and failures. However, the normal operation and maintenance of the system shall be performed by the personnel of the Purchaser trained for the purpose.

If during 'Trial run' any defect is noted in the system, the bidder shall rectify, replace the same to the satisfaction of Purchaser's/Engineer. The decision to repeat the final test or restart the 'Trial' shall be of Purchaser/Engineer depending upon the severity of the defect.

During trial run, if any fault occurs to any equipment of system, bidder shall identity and rectify the same and provide report, history of all faults to the Purchaser.

Ideally, during the 'Trial run, no shutdown of the system due to failure of equipment, power supply etc. should happen. A record of all failures shall be kept for each station/coach and the availability of the system per station/coach basis shall be calculated, accordingly and results submitted to Purchaser/engineer.

If the system fails to come up to the guaranteed performance, the bidder, within a period of thirty (30) days shall take any and all corrective measures and resubmit the system for another 'Trial Run' of trial period. All modifications, changes, corrective measures, labour etc. shall be at the cost of the bidder. In case the date of completion for the second trial run exceeds the time schedule for the project, he shall be liable to pay liquidated damages. If the system fails to reach the guaranteed performance even after the second trial run, the Purchaser shall be free to take any action as he deems fit against the bidder and to bring the system to the guaranteed performance with the help of third party at the expense of the bidder.

3.D.11. FINAL ACCEPTANCE

The final acceptance of the works completed shall take effect from the date of successful completion of 12 months of Maintenance Supervision as per clause 4.A.2.5 of Chapter 4, provided in any case that the contractor has complied fully with his obligations in respect of each item under the contract. The Final Acceptance Certificate of respective RPF Thana/Chowki, cluster of train coaches shall be signed by authorized representative of RailTel nominated by the Executive Director of the concerned Region and the contractor and issued by Respective Region. Notwithstanding the issue of Final Acceptance Certificate the contractor and the purchaser shall remain liable for fulfillment of any obligation incurred under the provision of the contract prior to the issue of Final Acceptance Certificate which remains unperformed at the time such certificate is issued and for determining the nature and extent of such obligation the contract shall be deemed to remain in force between the parties hereto.

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CHAPTER-3

E. TRAINING, VENDOR DATA REQUIREMENT, DOCUMENTATION, AND DESIGN GUIDELINES

3.E.1 TRAINING

Bidder shall train personnel of Purchaser/engineer in all aspects of IP based Video Surveillance System at Stations and in Train Coaches.

The training course shall be conducted at the manufacturing facilities from where the respective equipment/subsystems are manufactured/ offered or in India if the firm can arrange full-fledged training facilities in case their manufacturing facilities are located outside India.

It shall be explicitly understood, that Purchaser's/Engineer's personnel shall be fully associated during Engineering, Installation, Testing and Commissioning activities and this opportunity shall be taken by bidder to impart on the job training in addition to the above training course.

Bidder offer excludes costs of transportation, lodging and boarding of the trainees which shall be arranged by the Purchaser.

The training course to be conducted at the manufacturing facilities shall be designed to train the trainees in all aspects of System engineering, equipment operation, installation and functional details, theory of operation of equipment, trouble shooting and familiarization with the equipment at card and component level. All equipment used for training shall be identical to those quoted and supplied for site installation in hardware and software versions.

Bidder shall provide comprehensive documentation, course material, manuals, literature etc. as required for proper training of personnel at his own cost. Consolidated and comprehensive documentation shall be available to each participant. After the completion of course, all such materials shall become the property of the PURCHASER. Bidder shall update the course material of manuals in case there are any changes owing to revision/modifications in equipment/system specifications.

Bidder shall, prior to start of training, send complete training program including details of each course, duration, subject matter etc. The Purchaser/Engineer reserves their right to suggest any additions/deletions in the program, which shall be incorporated by the bidder at no additional cost.

3.E.2 VENDOR DATA REQUIREMENT AND DOCUMENTATION

One set of Documentation with hard and soft copy shall be supplied for each station, each coach type/depot or car shed.

The following documents for the complete system shall be supplied and approved by Purchaser/Engineer in order to start Factory Acceptance Testing:

A) System description, System configuration diagram & Connectivity diagram

B) Detail technical manual of each type of equipment

Equipment interconnection diagram including details of various interfaces, signaling protocols used at each stage.

Layout of equipment and space requirements for each station.

Installation manual including installation procedure and commissioning.

Supervisory configuration, alarm list, operator interface etc.

C) Maintenance manual of each type of equipment containing:

i. Preventive maintenance procedures.

ii. Trouble shooting/repairs procedures including failure analysis shall provide exhaustive information about repairs including but not limited to removal, reinsertion of components and cards, repairs, adjustments, tuning, calibration, tools required for a particular operation, test points, including turn-around time for repair and the details of the maintenance support service centre to be furnished in the bid and all other maintenance related details.

iii. Expansion possibilities of the system without causing deterioration in the system performance.

iv. Any other data, document not specifically mentioned, but required for the satisfactory testing, installation and commissioning, operation and maintenance of the system shall be provided.

v. Documents to be supplied after trial runs but before System commissioning (Acceptance of the System by Purchaser/Engineer).

3.E.3 DESIGN GUIDELINES

i) Equipment shall conform to the similar housing standards and shall preferably be integrated in one 19" rack.

ii) All venting, cooling shall be natural. However, in case of equipment with internal forced cooling, suitable dust filters may be used, if required.

iii) All equipment shall be immune to EMI; RFI interference generated by any nearby source including traction overhead equipment & shall meet the latest international standards in this regard.

iv) The equipment shall be capable of functioning with minimum maintenance and shall be preferred to have no requirement of any preventive maintenance.

v) All the wiring work whether power cable, network cable or OFC cable should be wired and clamped properly on the channels and coding may be provided for the identification of the cables.

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CHAPTER 4

A. COMMERCIAL TERMS & CONDITIONS

4.A.1 Offer letter and Validity of offer

4.A.1.1 The bidder shall complete the offer letter (Chapter 1) and the Price Schedule (Chapter 2) furnished in the tender documents, indicating the goods to be supplied, description of the goods, associated technical literature, quantity and prices etc.

4.A.1.2 The offer should remain valid for a minimum period from the date of opening of tender including the date of opening as indicated in Bid Data Sheet (BDS) Chapter 5.

4.A.2 Warranty

4.A.2.1 The warranty would be valid for a period as indicated in Bid Data Sheet (BDS) Chapter 5. The supplier shall warrant that stores to be supplied shall be new and free from all defects and faults in material, workmanship and manufacture and shall be of the highest grade and consistent with the established and generally accepted standards of materials of the type ordered and shall perform in full conformity with the specifications and drawings. The supplier shall be responsible for any defects that may develop under the conditions provided by the contract and under proper use, arising from faulty materials, design or workmanship such as corrosion, inadequate quantity of material to meet equipment requirements, inadequate contact protection, deficiencies in design and/ or otherwise and shall remedy such defects at his own cost when called upon to do so by the Purchaser who shall state in writing in what respect the stores are faulty.

4.A.2.2 If it becomes necessary for the contractor to replace or renew any defective portion/portions of the supplies under this clause, the provisions of the clause shall apply to the portion/portions of the equipment so replaced or renewed or until the end of the above mentioned period or twelve months, whichever may be later. If any defect is not remedied within a reasonable time of 30 days, the Purchaser may proceed to do the work at the contractor's cost, but without prejudice to any other rights which the Purchaser may have against the contractor in respect of such defects.

4.A.2.3 Replacement under warranty clause shall be made by the contractor free of all charges at site including freight, insurance and other incidental charges.

4.A.2.4 Warranty Support

4.A.2.4.1 Material for repair during Warranty Period shall be handed over /taken over by contractors engineer at respective site or mutually agreed RailTel PoP location.

4.A.2.4.1.1 For CCTV work at Railway Stations, bidder shall keep L1 Support engineer in Field (one engineer/per RPF Chowki/Thana) and two L2 Support engineers (one each for Network and VMS, server & storage system) 24x7 in RailTel Data Center. The Field engineer will visit the total installation once in every month or earlier if the situation so warrants with the provision that monthly/quarterly reports of the failures and health of the equipment is generated

from the NMS and submitted to the Purchaser. Additional manpower, if considered necessary shall be provided by contractor to stabilize the network. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

4.A.2.4.1.2 For CCTV work in Train Coaches, bidder shall keep L1 Support engineer in Field (one engineer/per cluster of 100 coaches) and two L2 Support engineers (one each for Network and VMS, FRS, VA system, server & storage system) 24x7 in each RailTel Gurugram and Secunderabad Data Center.

Train system runs 24x7, accordingly train comes for maintenance in coaching depots or car sheds 24x7. After arrival at depots or in workshop, usually train stays 6 to 10 hrs. for routine maintenance etc. Distribution of L1 engineers in the field at depots or in workshop shall accordingly be 24x7 and as defined by purchaser.

The Field engineer will prepare monthly/quarterly reports of the failures and health of the equipment per coach wise from the EMS and submitted to the Purchaser. Additional manpower, if considered necessary shall be provided by contractor for the same. The field engineer may also be required to visit a station where a coach has been stationed for diagnostic/troubleshooting of CCTV system if the situation so warrants. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

4.A.2.4.1.3 The cost for Technical Engineering support etc. may be quoted as provided for in SOR. The Contractor's Engineer shall be responsible to identify the fault and advise corrective measures. During the warranty period, the contractor shall remain responsible to arrange replacement within 7 days and for setting right at his own cost any equipment installed by him which is of defective manufacture or design or becomes unworkable due to any cause whatsoever. The decision of the RailTel representative in this regard to direct the contractor to attend to any damage or defect in work shall be final and binding on the Contractor. In case contractor fails to replace any faulty part within 7 days period, penalties will be imposed as per clause 5.0 of Annexure-II.

4.A.2.4.2 During the warranty period, the contractor shall be responsible to the extent expressed in this clause for any defects that may develop under the conditions provided for by the contract and under proper use, arising from faulty materials, design or workmanship in the plant, or from faulty execution of the work by the contractor but not otherwise and shall remedy such defects at his own cost when called upon to do so by the Purchaser Engineer who shall state in writing in what respect the portion is faulty.

4.A.2.4.3 During the free warranty maintenance period, contractor should stabilize the working of the system. Purchaser has the right to extend the period of supervision of the maintenance free of cost till the system stabilizes and works satisfactorily for a reasonable period of time. If during the time any equipment etc. is to be

added or deficiencies are to be rectified to make the system work trouble free ,the same also will have to be done by the contractor at no cost to RailTel as to make good all the deficiencies.

4.A.2.5. Maintenance Supervision

4.A.2.5.1 After the proposed system is commissioned and placed in service and after provisional acceptance certificate is issued (including trial run period if any), the contractor shall be responsible for proper maintenance supervision of the system free of cost for a period of twelve months from the date of provisional acceptance. The Maintenance Supervision period would begin RPF Thana/Chowki wise after PAC has been issued against that RPF Thana/Chowki for IP based CCTVwork at stations and cluster of train coaches wise after PAC has been issued against cluster of train coaches wise after PAC has been issued for IP based CCTV work in train coaches. For this purpose he shall prepare a maintenance plan and make available the services of qualified maintenance engineer stationed at the location approved by Purchaser's Engineer who will guide and supervise the RailTel maintenance staff.

4.A.2.5.1.1For CCTV work at Railway Stations, bidder shall keep L1 Support engineer in Field (one engineer/per RPF/GRP Thana/Post) and two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in RailTel Data Center. The Field engineer will visit the total installation once in every month for checking system state of health and necessary maintenance or earlier if the situation so warrants with the provision that monthly/quarterly reports of the failures and health of the equipment shall be prepared and submitted to the Purchaser. Bidder may also require to engage additional manpower on case to case basis for proper operation & support of the system. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

4.A.2.5.1.2For CCTV work in Train Coaches, bidder shall keep L1 Support engineer in Field (one engineer/per cluster of 100 coaches) and two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in each RailTel Gurugram and Secunderabad Data Center.

Train system runs 24x7, accordingly train comes for maintenance in coaching depots or car sheds 24x7. After arrival at depots or in workshop, usually train stays 6 to 10 hrs. for routine maintenance etc. Distribution of L1 engineers in the field at depots or in workshop shall accordingly be 24x7 and as defined by purchaser.

The Field engineer will prepare monthly/quarterly reports of the failures and health of the equipment per coach wise from the EMS and submit to the Purchaser. Additional manpower, if considered necessary shall be provided by contractor for the same. The field engineer may also be required to visit a station where a coach has been stationed for diagnostic/troubleshooting of CCTV system if the situation so warrants. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

Additional manpower if considered necessary shall be provided by contractor to stabilize the network.

4.A.2.5.1.3 A penalty as per clause 4.A.8 of down time of network shall be imposed on the contractor for not meeting the down time prescribed. The Contractor's Engineer shall be responsible to identify the fault and advise corrective measures and ensure that defective cards are replenished.

4.A.2.5.2 During this period of maintenance supervision if any lacuna is noticed in the functioning, as a result of any deficiency in work, the contractor will rectify the same at no cost to RailTel. During such rectification if any faulty equipment/modules need replacement or repair, they shall be provided by the contractor from the set of equipment or modules that the contractor should bring to the site of installation in addition to all the materials to be supplied against this contract. Use of spare modules covered under the Schedule of material of this tender shall not be permitted to be used during installation, commissioning and period of maintenance supervision.

4.A.2.5.3 To summarize, the total period of warranty as per BDS in Chapter-5, will comprise of first 12 months of Maintenance Supervision (after issue of PAC) extendable by RailTel for reasons as explained, as per para 2.5 above, post which FAC will stand issued. Issue of FAC will be followed by 24 months of warranty as per para 2 & 2.4 above.

4.A.3. Long Term Maintenance Support (AMC)

4.A.3.1 Bidder/OEM shall provide maintenance support after successful completion of the warranty obligations for a minimum period of 5 years (SOR item no. C (1). The long term maintenance support shall be comprehensive and include all hardware and software of equipment, VMS, FRS, VA, EMS etc. supplied against this contract. RailTel should be extended the benefits of software update/up-grades made by Bidder/OEM on the system from time to time to improve performance. During this period the scope of work as mentioned in Clause 4.A.2 above & its sub clauses will be applicable.

4.A.3.2 Bidder/OEM (through its Indian subsidiary), shall be paid @ 3.5% of contract cost Schedule (A) per annum towards Long Term Maintenance Support after completion of warranty period, to undertake repairs/replacements of all type of equipment/module/ card/assembly/ subassembly and update/upgrade of software released during this period and /or which may fail in the system after the warranty. Only incremental cost in % over and above this, if perceived by the OEM and bidder, may be indicated in Schedule of Requirement and shall be added towards evaluation of tender. If however the bidder feels that his AMC Cost is less than 3.5% per annum, he should give suitable discount in equipment pricing. For AMC he will be paid @ 3.5% per annum only. If the bidder quotes a higher base rate for AMC, he will be paid at his quoted rate per annum and five year differential cost shall be added to offered cost for evaluation. AMC would have to be valid for minimum period of 5 years after the warranty.

In case a bidder quotes AMC rates lower than 3.5%, no advantage will be given to him/her for evaluation purposes. In case the bidder wins the contract his cost against supply items will be reduced by differential (w.r.t. 3.5%) of AMC rates & he will be

paid accordingly against the cost of supply. AMC charges to him, however, be paid only @ 3.5% per annum.

4.A.3.3 Separate agreement for AMC after warranty period shall be entered with OEM or Bidder specifically authorized by OEM by RailTel. A fresh Bank Guarantee for a value of 10% of the value of the AMC contract's 5 years value valid for a period of 64 months (4 months beyond the AMC period of 5 years) from the date of issue of LOA shall be required to be submitted by Bidder/OEM for due fulfillment of long term maintenance support obligation.

4.A.3.4

4.A.3.4.1 For CCTV work at stations, bidder shall keep sufficient numbers of L1 Support engineer in Field for proper operation and support of the system and to maintain the SLA defined in the tender document. Bidder may also require to engage additional manpower on case to case basis for proper operation & support of the system. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

Bidder shall also keep three number L2 Support engineer 24x7 in Data Center (Gurugram/Secunderabad).

4.A.3.4.2 For CCTV work in coaches, Bidder shall keep L1 Support engineer in Field (one engineer/per cluster of 100 coaches) and two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in each RailTel Gurugram and Secunderabad Data Center for proper operation and support of the system and to maintain the SLA defined in the tender document. Bidder may also require to engage additional manpower on case to case basis for proper operation & support of the system. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

Train system runs 24x7, accordingly train comes for maintenance in coaching depots or car sheds 24x7. After arrival at depots or in workshop, usually train stays 6 to 10 hrs. for routine maintenance etc. Distribution of L1 engineers in the field at depots or in workshop shall accordingly be 24x7 and as defined by purchaser.

Bidder shall also keep two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in each RailTel Gurugram and Secunderabad Data Center.

4.A.3.5 Quarterly payment for AMC Charges as per the Service Level Agreement (SLA) at the end of every quarter would be made by RailTel after successful completion of AMC Services of that quarter and on the certificate furnished by concerned RailTel representative of the Executive Director of the Region.

Note: The acceptance of the above clause is mandatory and specific acceptance from OEM is required to be enclosed as per Form no.3. Any deviation /non acceptance will lead to rejection of the bid summarily.

4.A.4 Delivery/Implementation timelines

Milestones for Design, Supply, Installation and Commissioning from the date of award of the Contract (LOA) are tabulated as under.

For CCTV work at Stations:

Phase.	Completion Target	Deliverable	Timeline in Months (M) (D= Date of Award of LOA)
I.	Category A1 & A Stations & associated RPF/GRP Thana/Post	Submission of Final Design Document for each stations after doing site surveys for approval and complete due diligence along with mobilization of equipment, materials etc. required	D + 2M
		Completion of Installation, Testing and Commissioning of VSS at all stations	D + 4M
II.	Category B & C Stations & associated RPF/GRP Thana/Post	Submission of Final Design Document for each stations after doing site surveys for approval and complete due diligence along with mobilization of equipment, materials etc. required	D + 6M
		Completion of Installation, Testing and Commissioning of VSS at all stations	D + 8M
III.	Category D & E Stations & associated RPF/GRP Thana/Post	Submission of Final Design Document for each stations after doing site surveys for approval and complete due diligence along with mobilization of equipment, materials etc. required	D + 10M
		Completion of Installation, Testing and Commissioning of VSS at all stations	D + 15M

For CCTV work in Train Coaches:

Phase.	Completion Target	Deliverable	Timeline in Months (M) (D= Award of LOA)
I.	EMU Trains & associated stations (originating, terminating and halt), RPF/GRP Thana/Post	Submission of Final Design Document for EMU Coaches after doing site surveys for approval and complete due diligence along with mobilization of equipment, materials etc. required	D + 2M
		Completion of Installation, Testing and Commissioning of CCTV and associated infrastructure	D + 6M
II.	Premium Trains & associated stations (origi-	Submission of Final Design Document for Premium train (Rajdhani, Shatabdi etc.) Coaches after doing site surveys for approval and complete due	D + 2M

	nating, terminating and halt), RPF/GRP Thana/Post	diligence along with mobilization of equipment, materials etc. required	
		Completion of Installation, Testing and Commissioning of CCTV and associated infrastructure	D + 12M

All timeline calculations are from the date of award of contract. Bidders need to share their detailed project plan as per the schedule mentioned above

4.A.4.1 The first phase of deliverable also includes a Pilot and only after approval from the Indian Railways/RailTel, bidder shall be allowed to implement the solution further.

4.A.4.2 In case the Pilot is declared unsuccessful, either on the basis of delay in implementation and/or on the basis on inability to adhere to the functional and operational requirements of the System as stated in this RFP, RailTel will be within its right to take measures as detailed in Terms and Conditions of the Contract.

4.A.4.3 Spares as mentioned in SOR shall be supplied after completion of the scope of the work.

4.A.4.4Bidder in all cases is required to adhere to the project timelines and the project plan shared. In case of delay in implementation and/or on the basis on inability to adhere to the functional and operational requirements of the System as stated in this RFP, RailTel will be within its right to take measures as detailed in Terms and Conditions of the Contract.

4.A.4.4 RailTel Region's Details:

SN	Region	Head Office	Address
1	Northern Region	New Delhi	Executive Director 6th Floor, IIIrd Block, Delhi Technology Park, Shastri Park,Delhi-110053 Fax: +91-11-22185978 Tel: +91-11-22185933 Email: suresh@railtelindia.com
2	Eastern Region	Kolkata	Regional General Manager 3rd floor, Chatterjee International Centre, 33A, Jawaharlal Nehru Road, Kolkata - 700071 Fax: +91-33-44041499, Tel: +91-33-44041499, Email: arun.michael@railtelindia.com
3	Secundrabad Region	Secunderabad	Regional General Manager 2nd Floor, B-Block, Rail Nilayam, Secunderabad-500071. Fax: +91-40-27820682, Tel: +91-40-27821134 Email: ck@railtelindia.com

SN	Region	Head Office	Address
4	Western Region	Mumbai	Regional General Manager Western Railway Microwave Complex, Senapati Bapat Marg, Mahalaxmi, Mumbai-400013 Fax: +91-22-24923913, Tel: +91-22-24923907, Email: shaileshgupta@railtelindia.com

4.A.4.5 Project Preparation

4.A.4.5.1 The successful bidder shall develop a project charter and submit it to RailTel in both hard and soft copies (2 copies of each) before the commencement of the project. The same shall be approved by RailTel.

4.A.4.5.2 The project charter must necessarily include the following components:

- Brief project description
- Approach and methodology for the optimum use of cameras and other equipments as per the scope of work.
- Detailed Project Plan with timelines
- Detailed activity description with resource requirement, roles and responsibilities of each resource
- Detailed Resource/Project Team Deployment plans
- Project milestones
- Project organization
- Risks and mitigation plans
- Dependencies

4.A.4.5.3 The Project team comprising key positions and number of people with their planned staffing on the project needs to be developed separately and the same shall be approved by RailTel.

4.A.4.5.4 The proposed Project Team shall not change any member of the Project Team during the implementation phase of the project ; any exceptions need to be approved by RailTel.

4.A.4.5.5 Successful bidder is expected to mobilize the team and set-up the PMO within 30 days from the date of award of contract.

4.A.4.5.6 Indicative profiles and minimum requisite work-experience of all key personnel also needs to be submitted to RailTel.

4.A.4.6 Design and approval phase

4.A.4.6.1 Submission of Design Document for proposed IP based CCTV system (video surveillance system) indicating all the components of the Edge infrastructure of VSS system including cameras, servers, video recorder unit/mobile network video recorder, Wi-Fi access points, switches, EMS etc. for RailTel's approval

4.A.6.2 The successful bidder shall ensure following during the design and approval phase

- Documentation of all required approvals and necessary documents
- Identification and concurrence on all support required from RailTel

- Documentation of to-be state in consultation with RailTel
- System requirement specification document

4.A.4.6.2 Successful bidder is expected to conduct workshops, give detailed presentations on the proposed solution which will include the way forward, detailed timelines and any other specific recommendation

4.A.4.7 Installation, Configuration and Customization

4.A.4.7.1 The successful bidder shall conduct a detailed study of functional and technical requirements of the Video Surveillance System work to make the required system configuration and design modifications to its solution if required in order to achieve the desired functionality. However the same must be tested, accepted and approved by RailTel/Railways

4.A.4.7.2 Installation and commissioning of software, hardware and equipment as per proposed solution

4.A.4.7.3 Carry out all the customization/configuration activities as identified during Design phase.

4.A.4.7.4 RailTel/Railways reserves the right to seek customization to meet its requirements.

4.A.5. Payment Terms

4.A.5.1 **Payment Terms for Supply portion of items supplied under Schedule – 'A' of SOR-Head-I of packages as per BOM and Price Schedule details (Chapter-2, SOR, Note-VII and Annexure-A & B) submitted along with price bid.**

4.A.5.1.1 For hardware items, payments will be made on the basis of stations covered under a RPF/GRP Thana/Post, cluster of 100 coaches each separately for the material supplied in stages for various items supplied. 75% payment of the items would be made on receipt of material by the consignee duly inspected and on submission of the following documents subject to any deductions or recovery which RailTel may be entitled to make under the contract:

- Tax Invoice
- Delivery Challan
- Packing list.
- Factory Test Report.
- Consignee receipt
- Warranty certificate of OEM
- Insurance certificate for transit insurance
- Contractor's All Risk Insurance Policy (refer clause 4.A.10)
- Inspection certificate (refer clause 3.D.1/3.D.3)

- A certificate duly signed by the firm certifying that equipment/ materials being delivered are new and conform to technical specification or RDSO inspection certificate wherever applicable.

4.A.5.1.2 In case payment is to be made in foreign currency, **75%** of the CIF value of imported equipment/materials would be paid through irrevocable Letter of Credit (LC) on submission of the following documents:

- Bill of Lading/ Air Way Bill.
- Invoice in triplicate & should also indicate CIF value.
- Packing list.
- Factory Test Report.
- Certificate of country of origin authenticated by the chamber of commerce.
- Insurance certificate for transit insurance.
- Contractor's All Risk Insurance Policy (refer clause 4.A.10)
- Inspection certificate (refer clause 3.D.3)
- Warranty certificate of OEM
- A certificate duly signed by the firm certifying that equipment/ materials being delivered are new and conform to technical specification or RDSO inspection certificate wherever applicable.
- A certificate duly signed by the firm certifying that the equipment/ materials being delivered are complete in all respect for the concerned items for which the payment is being released.

If the payment is required through LC, Bank charges in India will be borne by RailTel, while those outside India by the bidder. All Charges at both ends for LC modifications will be borne by the party requesting the changes.

4.A.5.1.3 15% payment of the value of items of Schedule – A shall be made by RailTel on installation & commissioning of stations/sites including at the concerned RPF/GRP Thana/Post of the cluster for CCTV at stations, cluster of 100 coaches for CCTV in Train Coaches each separately, 5% payment on issue of Provisional Acceptance Certificate (PAC) and the last 5% payment shall be made by RailTel on issue of Final Acceptance Certificate (FAC) which will be issued by respective Executive Director of the concerned region. In case of foreign currency, payment will be paid through TT/Wire Transfer (SWIFT) from Corporate Office.

(15% + 5%) payment of value % of items of Schedule – A which could not be installed for want of site readiness or as per the decision of Executive Director/Regional General Manager of the region, will be made on issue of PAC of the last RPF/GRP Thana/Post for CCTV at stations, cluster of 100 coaches for CCTV in Train Coaches each separately and remaining 5% on issue of FAC .

For spares 15% + 5% will be made after issue of PAC of the first RPF/GRP Thana/Post for CCTV at stations, cluster of 100 coaches for CCTV in Train Coaches each separately and remaining 5% on issue of FAC of the same.

4.A.5.1.4 For software items, payment will be made for the software/licenses supplied in

stages for various items supplied. 40% payment of the items would be made on receipt of software/licenses by the consignee duly inspected and on submission of the documents as mentioned in para 4.A.5.1.1 above.

25% payment of the value of items of Schedule – A shall be made by RailTel on installation & commissioning of stations/sites including at the concerned RPF/GRP Thana/Post of the cluster for CCTV at stations, cluster of 100 coaches for CCTV in Train Coaches each separately, 25% payment on issue of Provisional Acceptance Certificate (PAC) and the last 10% payment shall be made by RailTel on issue of Final Acceptance Certificate (FAC) which will be issued by respective Executive Director of the concerned region. In case of foreign currency, payment will be paid through TT/Wire Transfer (SWIFT) from Corporate Office.

(25% + 25%) payment of value % of items of Schedule – A which could not be installed for want of site readiness or as per the decision of Executive Director/Regional General Manager of the region, will be made on issue of PAC of the last RPF/GRP Thana/Post for CCTV at stations, cluster of 100 coaches for CCTV in Train Coaches each separately and remaining 10% on issue of FAC .

4.A.5.1.5 Accounting unit/bill passing unit for the supplies under SOR is respective Executive Director/RGM of the Region for Sites/Station/coaching depots/car sheds/workshop falling under their jurisdiction. Bills to be submitted to the Executive Director of the concerned Region for certifying receipt of material & services, for passing for payment.

4.A.5.1.6 The breakup of taxes has to be furnished and same should be reflected in the bills so that input GST credit can be availed by RailTel(RCIL).

4.A.5.16 All invoices will be raised by the contractor as under

Billed to, RailTel Corporation of India Limited,
143, Institutional Area, Sector-44,
Gurugram – 122003 (GSTIN:…….

C/O RailTel Corporation of India Limited
(Address of respective Region)….

4.A.5.2 Payment of Service Portion of Items supplied under Schedule – 'A' of SOR Head-I and item no. 2 of SOR Head-II of packages as per BOM and Price Schedule details (Chapter-2, SOR, Note-VII and Annexure-C) submitted along with price bid.

4.A.5.2.1 90% payment of items (except those mentioned in paras below) shall be made **by respective Executive Director/Regional General Manager of the Region** on successful Installation, Testing and Commissioning of the stations/sites including at the concerned RPF Thana/Chowki of the cluster , 5% on issue of PAC and final 5% on issue of Final Acceptance Certificate.

4.A.5.2.2 Payment of SOR item towards "Training of personnel over and above the on-site training during the installation, maintenance and supervision period as detailed in the tender document" shall be made **by respective Executive Director/ Regional General Manager of the Region** on successful completion of specified trainings.

4.A.5.2.3 Payment of SOR item towards "Technical manpower support during warranty period" would be made quarterly **by respective Executive Director/ Regional General Manager of the Region** after satisfactory performance of engineers and on certificate furnished by concerned RailTel's representative of the Region.

4.A.5.3 Payment of Services (Long Term Maintenance, AMC)

4.A.5.2.4 For CCTV work at stations, Payment of SOR item towards "AMC/Long term maintenance Support" would be paid quarterly by the concerned Region after satisfactory completion of AMC Services of that quarter and on certificate furnished by concerned RailTel(RCIL)'s representative of the Region.

For CCTV work in train coaches, AMC of the contract will be operated by the designated consignee of coaching depots/car sheds/workshop. Payment of SOR item towards "AMC/Long term maintenance Support" would be paid quarterly by the concerned Region subject to completion certificate signed by respective consignee after satisfactory completion of AMC Services of that quarter and on certificate furnished by concerned RailTel's (RCIL) representative of the Region.

4.A.5.4 All the invoices raised by the bidder will be raised in the name of M/s RailTel Corporation of India Limited and corresponding payments will be made by RailTel (RCIL).

4.A.6 Performance Bank Guarantee (Security Deposit)

4.A.6.1 The bidder is required to submit a Performance Bank Guarantee (PBG) within 15 days of the issue of LOA/LOI as per BDS (chapter-5) for the satisfactory performance of materials covered in SOR given in Chapter 2 valid for a period of 4 months beyond warranty period. The earnest money shall be released on submission of PBG. The Proforma for PBG is given in Chapter 6 Form No. 1. If the delivery period gets extended, the PBG should also be extended appropriately.

Extension of time for submission of PBG beyond 15(fifteen) days and up to 30 days from the date of issue of LOA/LOI may be given with the approval of contract signing authority. However, a penal interest of 15% per annum shall be charged for the delay beyond 15(fifteen) days, i.e. 16th day after the date of issue of LOA/LOI. In case the contractor fails to submit the requisite PBG even after 30 days from the date of issue of LOA/LOI, the contract shall be terminated duly forfeiting EMD and other dues, if any payable against that contract. The failed contractor shall be debarred from participating in re-tender of the work.

4.A.6.2 The Performance Bank Guarantee (security deposit) will bear no interest.

4.A.6.3 This PBG would be released after satisfactory completion of contract including warranty period and only after submission of 10 % PBG towards AMC as per clause 4.A.3.3 of Chapter 4.

4.A.6.4 The contractor is required to sign agreement with RailTel for the project along with the submission of PBG.

4.A.7. Taxes & Duties

The price quoted in the offer should be firm, fixed indicating the breakup and inclusive of all taxes & duties like import, custom, antidumping, CGST, SGST, IGST, UTGST etc. The Offer should be inclusive of packing, forwarding, freight upto destination, insurance charges.

4.A.7.1 Tenderer shall quote all inclusive rates, but there shall be break up of basic price and all type of applicable taxes such as SGST/CGST/IGST/UT GST along with respective HSN/SAC Code under GST Law (Including tax under reverse charges payable by the recipient).

4.A.7.2 Bidder shall issue valid tax invoice to RailTel for availing proper credit of CGST/SGST/IGST/UTGST incase of award of Contract. GST will not be reimbursed in the absence of valid tax invoice.

4.A.7.3 For all the taxable supplies made by the vendor, the vendor shall furnish all the details of such taxable supplies in the relevant returns to be filed under GST Act.

4.A.7.4 If the vendor fails to comply with any of the above, the vendor shall pay to purchaser any expense, interest, penalty as applicable under the GST Act.

4.A.7.5 In case of incorrect reporting of the supply made by the vendor in the relevant return, leading to disallowance of input credit to purchaser, the vendor shall be liable to pay applicable interest under the GST Act to the credit of purchaser. The same provisions shall be applicable in case of debit/credit notes.

4.A.7.6 Wherever the law makes it statutory for the Purchaser to deduct any amount towards GST at sources, the same will be deducted and remitted to the concerned authority.

4.A.7.7 In regards to works contract, the tenderer should have registration no. of GST in respective state where work is to be executed and shall furnish GST registration certificate on award of LoA.

4.A.7.8 The imposition of any new tax and/or increase/ in the aforesaid taxes, duties levies, after the last stipulated date for the receipt of tender including extensions if any and the bidder there upon necessarily and properly pays such taxes/levies/cess, the bidder shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of RailTel attributable to delay in execution of work within the control of bidder. The bidder shall, within a period of 30 days of the imposition of any such tax or levy or cess, give a written notice thereof to RailTel that the same is given pursuant to this condition, together with all necessary information including details of input credit relating thereto. In the event of non-payment/default in payment of any of the above taxes, RailTel reserves the right to with-hold the dues/payments of bidder and make payment to state/Central Government authorities as may be applicable. However, if the rates are reduced after the last stipulated date for receipt of tender, bidder has to pass on the benefits to RailTel.

4.A.7.9 **Incase of imported equipment:-**

Anti-Dumping duty if applicable on the equipment proposed to be supplied by OEM/Tenderer as per extant instructions of Ministry of Commerce/Finance Government of India, has to be borne by the tenderer and shall be deducted from the

amount payable to the bidder at the time of making payment to the firm, if this duty amount is paid to Custom Authority by RailTel.

4.A.8 Service Level Agreement (SLA) and Penalties

4.A.8.1 The purpose of this Service Level Agreement (SLAs) is to define the level of service to be provided by the successful bidder to RailTel for the duration of this contract. The successful bidder has to comply with all SLAs defined below to ensure adherence to project timelines, quality and availability of services. Non-compliance of SLAs will lead to penalties as defined in subsequent section and the SLAs would remain valid for the entire duration of the contract.

4.A.8.2 Penalties shall not be levied on the successful bidder in the following cases:- a) Non-compliance of SLAs has been solely due to reasons (acceptable to RailTel) beyond the control of the successful bidder and b) There's a Force Majeure event affecting the SLA which is beyond the control of the successful bidder

4.A.8.3 The installed system at station as part of the solution is expected to remain operational for 24 hours per day. CCTV system inside train coach is expected to remain operational for the period coach system is "Powered ON".

4.A.8.4 The contractor must ensure the up-time off at least 98% for the installed system being offered as part of video surveillance solution, upto the end of the AMC period of 5 years. The up-time would be monitored and calculated on the monthly basis and no relaxation or consideration would be made for the non-availability of the back-up/stand-by system.

4.A.8.5 Down time is defined as the duration for which the system as a whole or any part of it is not available for the purpose it is installed . Down time will be reckoned from the time contractor or his representative has been informed for other item not being monitored/informed by EMS by the means of Telephone/mobile, fax, email or any other method at the address as specified by the contractor. The bidder shall specify the details of a) Telephone no. for calling, b) Fax no., c) Mobile no. for calling & SMS, d) e-mail id, e) postal address for correspondence. Non-availability of back-up/stand-by system shall also be counted for down-time calculation. However, for items being monitored/reported by EMS, downtime will be reckoned from the time failure has been reported by EMS.

4.A.8.5.1 Down time will not be considered for which prior approval of RailTel/Railways authorities are taken in writing for preventive maintenance

4.A.8.6 For CCTV at stations, for any specific camera location, the down time should not be more than 12 hours per day. In case the down time exceeds more than 12 hours then Rs.500 per day or part thereof would be deducted for each day for each camera until the failure is restored at the reported location.

For CCTV in train coaches, t*rain system runs 24x7, accordingly train comes for maintenance in coaching depots or car sheds 24x7. After arrival at depots or in workshop, usually train stays 6 to 10 hrs. for routine maintenance etc.* In case the down time exceeds more than 6 hours then Rs.500 per day or part thereof would be deducted for each day for each camera until the failure is restored

4.A.8.6.1 This camera location downtime shall include the service disruptions caused due to reasons including but not limited to camera failures, server failures, video recorder unit/Mobile NVR failures, software breakdowns, networking device failures,

UPS failures, electricity circuit breakdown (excluding AC Mains outage) or data network break down.

4.A.8.7 For any workstation unit at any monitoring center location, the down time should not be more than 12 hours per day. In case the down time exceeds more than 12 hours then Rs.500 per day or part thereof would be deducted for each day for each workstation until the failure is restored at the reported location.

4.A.8.7.1 This workstation unit location downtime shall include the service disruptions caused due to reasons including but not limited to screen failures, workstation failures, networking device failures, UPS failures or data network break down.

4.A.8.8Further in order to ensure smooth offloading of video data at train stoppage stations, the contractor must ensure that for any Wi-Fi access point failure at station down time for same should not be more than 12 hours per day. In case the down time exceeds 12 hours then Rs.500 per day or part thereof would be deducted until the report failure is not rectified at station.

4.A.8.9 For IT infrastructure & application at RailTel Datacenters (Gurugram and Secunderabad), the downtime of any hardware and application should be more than 1 hours per day. In case the down time exceeds more than 1 hours then Rs. 1000 per day or part thereof would be deducted for each day until the failure is restored.

4.A.8.10 Response to an incident call will include sending a notification to the person raising the call, either through email or on phone, acknowledging the call and informing him/her of the expected resolution time for the call. Response to call tickets is calculated on respective service window and should be lesser than 60 minutes. The contractor is expected to log and respond to 98% of all the incident calls registered within the stipulated time frame. If contractor fails to maintain the above mentioned compliance ratio, then for each non- compliant response to incident call exceeding 2% margin would lead to the deduction of Rs.100.

4.A.8.11

4.A.8.11.1 No payment for the month would be made for the station where the station down time observed would be more than 20%. Down time for station would be defined as follows:

a) For A-1 category station, the station would be considered as down for the time when more than 15 cameras are defective or out of service

b) For A category station, the station would be considered as down for the time when more than 12 cameras are defective or out of service

c) For B category station, the station would be considered as down for the time when more than 8 cameras are defective or out of service

d) For C category station, the station would be considered as down for the time when more than 5 cameras are defective or out of service

e) For D & E category station, the station would be considered as down for the time when more than 2 cameras are defective or out of service

4.A.8.11.2No payment for the month would be made for the coach where the coach-down time observed would be more than 20%.Coach would be considered as down for

the period when more than 2 cameras are defective or out of service for whatever reason.

4.A.8.12 Annual Maintenance Charges shall be paid on quarterly basis at the end of the quarter, subject to the deduction for the down time mentioned above.

4.A.8.12.1 SLAs will be monitored and reported on monthly basis to RailTel by the 5th working day of each month.

4.A.8.12.2 Penalties shall be calculated and is to be deducted from the Annual Maintenance Charges on quarterly basis

4.A.9 Manpower Support

For CCTV at stations, bidder shall keep L1 Support engineers in Field (one engineer/per RPF/GRP Thana/Post) and two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in RailTel Data Center (Gurugram/Secunderabad). The Field engineer will visit the total installation at least once in every month for checking system state of health and necessary maintenance or earlier if the situation so warrants with the provision that monthly/quarterly reports of the failures and health of the equipment is generated from the EMS and is made available jointly signed by contractor and RailTel Official. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

For CCTV in train coaches, bidder shall keep L1 Support engineer in Field (one engineer/per cluster of 100 coaches) and two L2 Support engineer (one each for Network and VMS, FRS, VA System, server & storage system) 24x7 in each RailTel Gurugram and Secunderabad Data Center.

Train system runs 24x7, accordingly train comes for maintenance in coaching depots/car sheds/workshops 24x7. After arrival at depots or in workshop, usually train stays 6 to 10 hrs. for routine maintenance etc. Distribution of L1 engineers in the field at depots or in workshop shall be 24x7 and as defined by purchaser.

The Field engineer will be stationed at Train Sheds/Depot/Workshop as per distribution defined by purchaser and prepare monthly/quarterly reports of the failures and health of the equipment per coach wise from the NMS and submitted to the Purchaser. Additional manpower, if considered necessary shall be provided by contractor for the same. The field engineer may also be required to visit a station where a coach has been stationed for diagnostic/troubleshooting of CCTV system if the situation so warrants. The bidder shall arrange the suitable replacement in case the assigned support engineer goes on leave or is unavailable due to any other reason to ensure uninterrupted support services.

4.A.9.1 Responsibility Matrix of appointed engineer:

4.A.9.1.1 L1 support engineer (Field): L1 engineers appointed in field shall perform following duties

1.	Providing hands and feet support in field for fixing reported incidents
2.	Provide Network Health surveillance and alarm reporting
3.	Coordinating with RPF Personnel, RailTel Engineers to ensure fault free network
4.	Ensuring completion of upgrade/change activities as required

5.	Monthly station visit with necessary tools and equipment to check all the hardware, software, peripheral instruments installed
6.	Logging incident calls and tickets from field with respective OEMs
7.	Follow up with the concerned OEM and engineer to resolve the incident
8.	Coordinate and liaise with OEM/Vendor engineers visiting site for issue rectification
9.	Monitoring installed IT infrastructure/application and alerting concerned person in case of any damage or misconduct
10.	Conducting day to day operations as per the procedures defined by RailTel

L2 support engineer (Datacenter): L2 engineers appointed at the Datacenter shall perform following tasks

4.A.9.1.2 General Responsibilities

1.	Alarm monitoring at the network management platform including hardware and software alarms
2.	Filtering of alarms based upon service affecting categories and/or predefined alarm reaction lists.
3.	Advising field support Engineers for corrective action to be taken.
4.	Network Management misbehaviors and malfunctions.
5.	Support from EMS for all planned activities.
6.	Generating a Service request to respective vendor for further Activity
7.	Follow up with vendor and field engineers to resolve the network issues
8.	Escalation to respective managers for long pending network issues and opened service request with vendor.
9.	Generation of weekly report for all service requests opened/closed with vendor
10.	Diagnose and work to correct system troubles identified at RailTel's site using the resources made available by RailTel, implement and restore if appropriate and feasible.
11.	Conduct day to day operation in accordance to RailTel recommended procedures.

4.A.9.1.3 Server Management:

1.	Performing management of Servers for in-scope application/system
2.	Setting of key monitoring parameters from availability point of view i.e. System performance monitoring, tuning, server utilization, scheduling and optimizing the services running on server etc.
3.	Managing physical system elements (servers, storage devices) including configuration and maintenance tasks
4.	Managing local systems components, such as operating systems and their configurations
5.	Managing asset register for all server equipment. Record information such as serial number, asset code, warranty, AMC details etc. for in-scope applications
6.	Planning for patch release and upgrades
7.	Any other activities pertaining to server management and maintain SLA's

4.A.9.1.4 Database Management

1	Performing database maintenance
2	Defining and installing the physical database design (log files, rollback segments, table-spaces, database descriptors)
3	Creating definitions of logical data structures, tables, views, indexes, program specification blocks, stored procedures and define their relationships
5	Setting data storage parameters for storage associated with the physical elements of the database
6	Estimating and recommending storage requirements and backup procedure's
7	Analyzing alerts
8	Any other activities pertaining to database management and maintain SLAs

4.A.9.1.5 Storage Management

1	Backup Administration - Manage and monitor activities for Production Envionment
2	Handling service requests to provide the Flagged/Marked Data (if any)
3	Generating daily/weekly/monthly report on the backup as per agreed policy
4	Any other activities pertaining to storage management and maintain SLAs
5	Preventive maintenance of the storage e.g: Firmware upgrade/Interoperability with OS/Server

4.A.9.1.6 Change and Release Management

1	Planning and scheduling change and release request as per defined SLA norms
2	Ensuring all changes made are approved and adhere to strict Request for Change (RFC) policies
3	Maintaining and updating trusted configurations to ensure a smooth release process
4	Performing post implementation review and documented closure for all changes and tracking all changes implemented
5	Performing virus pattern updation within agreed time period of new release at the vendor site and cleaning of end user systems
6	Implementing advisory/alerts from vendors, OEM, expert/special interest groups, across in-scope hardware and software, reported.
7	Documenting complete change management/release management process as defined by RailTel
8	Any other activities pertaining to change and release management and maintain SLAs

4.A.9.1.7 Security Management

1	Managing and monitoring of system to protect from -virus, phishing and malware for managed resources. Virus should be removed or system should be isolated from the network successfully within agreed time from the time of detection of virus at that designated target system.
2	Ensuring 100% antivirus coverage with patterns not old more than period agreed on in-scope system
3	Reporting security incidents to co-ordinate for resolution
4	Performing Virus pattern update within agreed time period of new release at the OEM

	site
5	Performing patch management for antivirus for in-scope system
6	Performing vulnerability scanning of all servers/devices (in-scope), which are IP Based. Vulnerability assessment report should be share with RailTel every Quarter.
7	Testing and implementation of patches and upgrades
8	Any other activities pertaining to security management and maintain SLAs

4.A.9.1.8 Application management

1	Performing vendor/OEM interaction for resolving application related issues
2	Performing performance tuning of applications
3	Performing Access Management
4	Performing periodic review of access
4	Performing patch updates and software updates for application
6	Any other activities pertaining to application management and maintain SLAs

4.A.9.1.9 Network Management

1	Ensuring availability of resource capacity by monitoring network elements
2	Correcting traffic problems in the network environment, such as traffic congestion or network corruption
3	Troubleshooting communication disruptions and working with vendors to resolve the issues
4	Reviewing logs daily of significance such as abnormal traffic, unauthorized penetration attempts, any sign of potential vulnerability, Security alerts and responses. Proactive measures in the event a problem is detected
5	Performing policy management (users, rules etc.)
6	Network /device hardening procedure
7	Troubleshooting network related issues and coordinating the replacement of hardware
8	Implementing and maintaining of security rules
9	Rapidly resolving every incident/problem and ensuring adherence to SLA
10	Ensuring availability of critical network spares
11	Performing backup of all network spares
12	Disabling/enabling service/ports
13	Performing any other day-to-day administration and support activities

4.A.9.1.10 General Terms and Conditions Applicable

i) The selection of the Engineer will be done by Contractor jointly with RailTel. RailTel will nominate their officer/s for interviewing the candidates.

ii) The Engineer must be equipped with all necessary facilities/equipments such as Laptop, mobile telephone, data card, Internet connection; conveyance accommodation etc.

iii) In case of requirements from contractor to log in to the system remotely, RailTel would provide adequate data communications facilities, remote access, telephone and modem connections, all in accordance with RailTel's Security policies and

procedures, as may be necessary for the proper performance of contractor's obligations.

iv) In case of unsatisfactory service, the Engineer will be withdrawn and replaced by a suitable one with a clear notice of 15 days.

4.A.10. Insurance

4.A.10.1 The Contractor shall take out and keep in force a policy or policies of insurance against all liabilities of the Contractor or the Purchaser at common law or under any statute in respect of accidents to persons who shall be employed by the contractor in or around the site for the purpose of carrying out the works on the site. The Contractor shall also take out and keep in force a policy or policies of Insurance against all recognized risks to their offices and depots. Such insurance shall in all respects be to the approval of the Purchaser and if he so requires, in his name.

4.A.10.1.1 The Contractor shall take out and keep in force a policy or policies of insurance from the date, the delivery of material starts (including the transit portion) against all liabilities of the Contractor or the Purchaser. The contractor shall take out and keep in force a Policy or policies of Insurance for all materials covered in schedule of requirement irrespective of whether used up in the portion of work already done or kept for the use in the balance portion of the work until such material are provisionally handed over to RailTel. The goods will be issued by purchaser to supplier and risk of goods shall remain with supplier until the issue of PAC by RailTel(RCIL). Insurance policy has to be kept valid by the contractor till issue of PAC by RailTel(RCIL).**4.A.10.2** The Contractor should also insure the stores brought to site, against risks in consequence of war and invasion, as required under the Emergency Risk (Goods) Insurance Act in force from time to time.

4.A.10.3 It may be noted that the beneficiary of the insurance policy should be RailTel(RCIL) or the policies should be pledged in favor of RailTel(RCIL). The contractor shall keep the policy/policies current till the equipment are installed and commissioned on the site. It may also be noted that in the event of contractor's failure to keep the policy current and alive, renewal of policy will be done by purchaser for which the cost of the premium plus 20% of premium shall be recovered from the contractor.

4.A.11. Liquidated Damages

The timely delivery is the essence of this tender. Liquidated damages will be applicable at the rate of half percent per week or part thereof for undelivered portion of SOR subject to a maximum of 10% of the cost of Purchase order/LOA for any reason whatsoever attributed to failure of bidder. RailTel will have the right to cancel the order, place order on alternative source besides levying the liquidated damages as above.

4.A.12. Transportation

The rates quoted should be CIP destination. The destination shall be defined POP / nominated office of RailTel in the proposed sections which shall be indicated by RailTel's representative.

4.A.13. Statutory Deduction

These will be made at source as per the rules prevalent in the area of work.

4.A.14. Qualification Criteria

Qualifying criteria under this clause lays down minimum acceptable qualifications in various areas to ensure that qualified bidder has necessary experience, technical expertise, equipment and financial and human resources to successfully complete the project. Bids from bidder not meeting these qualification criteria shall be summarily rejected. Bids from the consortia of tenderers and Joint Ventures meeting the below defined Qualification criteria would also be considered for award of work, for more details on the consortium bids please refer to Annexure-III of Chapter 7.

4.A.14.1 Eligibility Criteria Requirements for Bidders:

S. No	Basic Requirement	Eligibility Criteria Requirements	Supporting Document Required
1.	**Legal Entity**	The bidder should be Original Equipment Manufacturer (OEM) of Camera (as indicated in Bid Data Sheet (BDS) of Chapter 5) for at least past three years in the country from where the proposed equipment are planned to be manufactured for supply. The OEM should have proven facilities for Engineering, manufacture, assembly, integration and testing of VSS system and basic facilities with respect to space, Engineering, Personnel, Test equipment, Manufacture, Training, Logistic Supports for at least past three years in the country from where the proposed equipment are planned to manufacture for supply for this work. or The bidder should be a Company registered in India under the Companies Act (India) with their registered office in India should have been operating in the System Integration services for the last three years	• Certificate of Incorporation / Registration • Proof of supply of equipment or • Certificate of Incorporation / Registration • MoA and Purchase Orders for System Integration Services for last three years i.e. 2015-16, 2016-17 and 2017-18.
2.	**Satisfactory**	Each offered **model or its im-**	Supporting document of satis-

	Working of Model Offered	**mediate predecessor in the same series/family (an undertaking by the OEM has to be submitted in support in case of immediate predecessor)** of equipment for camera, server, storage, switches, video recorder unit/Mobile Network Video Recorder, Network Video Recorder (NVR) and Access Point should have been working for at least six months in India or Abroad.	factory working from the user for each offered model of equipment.
3.	**Financial Capability**	The bidder should have received a minimum cumulative contract amount from the operations in the last three financial years plus current year upto the date of opening of tender. For Package-I: Northern Region: Rs. 312.62 Crores For Package-II: Western Region: Rs. 208.82 Crores For Package-III: Eastern Region: Rs. 376.74 Crores For Package-IV: Southern Region: Rs. 273.14 Crores For Package-V: Coaches: Rs. 427.08 Crores Note:- In case of Consortium/JV, each member's relevant turnover combined together shall be considered against the above mentioned financial capability criteria.	• Audited Financial Statements for the financial year 2015-16, 2016-17, 2017-18. • Certificate issued by Chartered Accountant (CA) duly mentioning the cumulative contract amount received from the the Security/IT/Telecom business in the last three financial years plus current year upto the date of opening of tender. Provisional Balance Sheet /Turnover Certificate duly certified by CA may be provided for the year 2018-19.
4.	**Financial Capability**	The bidder should have a positive net worth	• Audited Financial Statements for the financial year 2017-18. (In case of photo copy of the fi-

		(Net Worth of the company would be computed as on 31st March 2018 as the summation of share capital, reserves and surpluses less accumulated losses held by the company) Note:- In case of Consortia/JV, Net worth of only the Lead Bidder shall be considered for evaluation purpose.	nancial statements, photo copy should be certified by the CA)
5.	**Technical capability**	The bidder should have completed I. Package-I : a.) At least one similar work# worth of INR 63.48 crores in last three financial years plus current year upto the date of opening of tender. II. Package-II : a.) At least one similar work# worth of INR 42.39 crores in last three financial years plus current year upto the date of opening of tender. III. Package-III: a.) At least one similar work# worth of INR 70.37 crores in last three financial years plus current year upto the date of opening of tender. V. Package-IV : a.) At least one similar work# worth of INR 55.56 crores in last three financial years plus current year upto the date of opening of tender.	• Completion certificates from the User Organizations is required to be submitted **AND** • Past Experience Form as per Form No.19 of Chapter 6. (The set of document(s) submitted should clearly certify elgibility criteria and should be verifiable from the user/customer)

		V. Package V : a.) At least one similar work[#] worth of INR 85.24 crores in last three financial years plus current year upto the date of opening of tender. Note:- In case of Consortium/JV, only Lead bidder experience shall be considered against the above mentioned criteria of similar work experience.	
6.	**No Black listing**	The bidder should not have been black-listed currently by Central Govt./State Govt./CPSU in India	• Self- Declaration by the Bidder on Company's letter head
7.	**Process Standardization**	The bidder should be a certified ISO 9000/9001 certified company	• Relevant Organizational Level Certificates to be provided
8.	**O&M Capabilities**	The bidder should give an undertaking for setting up a technical support centre within 3 months in every zone of respective Railways of the tender concern (Annexure-I of Chapter 7)	• An undertaking to this effect specifying the location, address and contact number of such technical support centre/Offices(s) must be submitted on bidder's letterhead within 3 months from award of tender.
9.	**Bidder Type**	The bidder should be a Camera OEM or a System Integrator authorized by OEMs for supply of licenses/commercial support and solution implementation and maintenance support under warranty/AMC/commercial support, for the products (Camera, Switches, LED displays, video recording unit/Mobile NVR, Access Point, EMS, Servers and Storages) required to implement the video surveillance solution. The OEM should provide an authorization	• Authorization Letter by OEM • OEM undertaking to sign MoU/Teaming Agreement with SI

		letter undertaking to abide by the warranty and AMC terms of the equipment supplied by the OEM. OEM should also give a certificate for giving the support for the products for this work for the entire period of contract including warranty and AMC period (8 years) in case the partner leaves the project or not in a position to give support.	

Similar Work: Works entailing completion of Supply, Installation, Testing and Commissioning of a a project in the field of Security/IT/ICT/Telecom for central government or any state government or semi/quasi-government entities or Public Sector Units or private enterprises having turnover of at least 500 crores.

4.A.14.1.1 Bidding for more than one packages

In case the tenderer wants to quote for multiple packages i.e. Northern, Western, Southern, Eastern and Coaches, then with the submitted financial capability (4.A.14.1(5)) and technical capability (4.A.14.1(5)) credentials, bidder is allowed to quote in all the packages separately meeting the eligibility criteria.

Below is the example of showing technical capability qualification status of various packages against separate and cumulative experience:

Case-I Single Work Experience of Rs. 40 Crore is submitted

Package	**Requisite single Work Experience**		**Qualifying Status**
Northern	**28**		**Q**
Western	**31.5**		**Q**
Eastern	**42**		**NQ**
Southern	**38.5**		**Q**

Case-II Single Work Experience of Rs. 60 Crore is submitted

Package	**Requisite single Work Experience**		**Qualifying Status**
Northern	**28**		**Q**
Western	**31.5**		**Q**
Eastern	**42**		**Q**
Southern	**38.5**		**Q**

Below is the example of showing Financial capability qualification status of various packages against cumulative contract amount received in last three financial year plus current year

Case-I Cumulative Turnover of Rs. 40 Crore

Package	Requisite Amount of turnover		
			Qualifying Status
Northern	28		Q
Western	31.5		Q
Eastern	42		NQ
Southern	38.5		Q

Case-II Cumulative Turnover of Rs. 60 Crore

Package	Requisite Amount of turnover		
			Qualifying Status
Northern	28		Q
Western	31.5		Q
Eastern	42		Q
Southern	38.5		Q

4.A.14.1.3 Eligibility Criteria Requirements for OEM's:

Further, the OEM's (of camera/server/storage/switches/VMS/VA/FRS) whose products are proposed to be used in this video surveillance system deployment should meet following criteria -

S.No.	Eligibility Criteria Requirements	Supporting Document Required
1.	OEM(s) should have either direct presence in India or through their authorized registered partner in India for last 3 years or OEM(s) should have been working for last 3 years in their country of origin. Further, they should have Indian Technical Support Centre, Repair and RMA centre in India either directly or through their authorized registered partner for last 3 years or should give an undertaking for setting up a Technical Support Center and an office in India within 3 months after award of contract.	• Certificate of Incorporation / Registration (for Indian TSC) • Copy of GST registration (for Indian TSC) • Copy of PAN Card (for Indian TSC) • Details of Address and support phone number for Indian Technical Support Centre, Repair and RMA Centre. •
2.	The OEM(s) whose products have been offered in the bid should have a minimum cumulative turnover of INR 375	• Audited Financial Statements for the financial year 2015-16-, 2016-17, and 2017-18. Provisional balance sheet/Turnover Certificate duly certified by CA

	crores for OEMs of cameras, INR 100 crores for OEMs of switches, INR 30 crores for OEMs of Video Management & Recording software, INR 5 crores for Video Analytic software, INR 50 crores for Facial Recognition System software and INR 125 crores for OEMs of IT hardware (server and storage) each in last 3 financial years (i.e. current year and three previous financial years) from the date of opening of tender.	may be provided for year 2018-19 in case audited balance sheet is not available. • In case of multinational OEMs, their turnover in last three financial years shall be considered as per practice of financial year ending followed by them.
3.	The OEM(s) should be a profit making company and should have a positive net worth (Net Worth of the company would be computed as on 31st March 2018 as the summation of share capital, reserves and surpluses less accumulated losses held by the company)	• Audited Financial Statements for the financial year 2017-18.
4.	The OEM for proposed IP cameras and VMS Software should have supplied for at least one project in a Mass Rapid Transport system e.g. Metro, Railways, Mono Rail, Airport etc. in India or abroad in last 3 financial years (i.e. current year and three previous financial years) from the date of opening of tender. The same should have been working satisfactorily for at least six (6) months.	• PO copies along with satisfactory completion certificates from the User Organizations is required to be submitted
5.	The OEM should not have been blacklisted currently by Central Govt./State Govt./CPSU in India.	• Self- Declaration by the OEM on Company's letter head.
6.	The Software OEM should have an CMMI Level-5 and ISO 9001:2008 and ISO 14001:2004 for its development & manufacturing process.	• Relevant Organizational Level Certificates to be provided

Note

i) The bidder is required to submit complete chain of credentials, e.g. pur-

chase order (prices blanked out), showing relevant value of the PO and satisfactory working/implementation certificate issued by the user/customer. Purchase orders without relevant organization's confirmation through a credential letter will not be considered as implementation certificate from the client.

ii) For client credentials where NDA has been signed, the bidder may submit the corresponding NDA document along with a self-declaration confirming the requirements of the eligibility criteria for which the NDA is being submitted

iii) If any financial statement is submitted by the bidder in order to substantiate the pre-qualification or the evaluation criteria mentioned in the RFP, for evaluation purpose, T.T. selling Exchange rate of State Bank of India of foreign currency applicable on the date technical bid opening will be considered to derive the corresponding figure in INR (Indian Rupee).

iv) RailTel reserves the right:-

a) To verify, if so desired, the correctness of documentary evidence furnished by the bidder.

b) To verify the successful operation and performance of qualifying projects and bidder shall arrange permission for the same.

c) To carry out capability assessment of the bidder(s) including referral to in-house information.

d) RailTel shall not be responsible for any delay in the receipt of tenders and reserves the right to accept/reject any or all tenders without assigning any reason.

v) In the event of Foreign Original Equipment Manufacturer (OEM) or System Integrator (SI), it's 100% owned Indian subsidiary fully authorized for bidding on behalf of OEM/SI is allowed to participate with the experience and financial credential of parent company with specific authorization for doing so from the OEM/SI. The specific authorization addressed to RailTel should be submitted by the bidder. However, the Holding company and/or the Principal manufacturer will have to counter guarantee the financials and/or bank guarantees as issued for the purpose of this tender.

vi) Legal Entity requirement under SN.1 of clause 4.A.14.1 of Chapter 4A shall be met by the lead bidder in case of consortium/JV bidder.

vii) The tenderers shall submit a notarized affidavit on a non-judicial stamp paper stating that they are not liable to be disqualified and all their statement/documents submitted alongwith bid are true and factual. Standard format of the affidavit to be submitted by the bidder is enclosed as **Annexure-IV**. Non submission of an affidavit by the bidder shall result in summary rejection of his/their bid. And it shall be mandatorily incumbent upon the tenderer to identify, state and submit the supporting documents duly self attested by which they/he is qualifying the Qualifying Criteria mentioned in the Tender Document. It will not be obligatory on the part of

Tender Committee to scrutinize beyond the submitted document of tenderer as far as his qualification for the tender is concerned.

The RailTel(RCIL) reserves the right to verify all statements, information and documents submitted by the bidder in his tender offer, and the bidder shall, when so required by the RailTel(RCIL), make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification by the RailTel(RCIL) shall not relieve the bidder of its obligations or liabilities hereunder nor will it affect any rights of the railway thereunder.

In case of any wrong information submitted by tenderer, the contract shall be terminated. Earnest Money Deposit (EMD), Performance Guarantee (PG) and Security Deposit (SD) of contract forfeited and agency barred for doing business on RailTel(RCIL) for 5 (five) years.

viii) For International project if the original client certificate and other documents are in language other than English than a translated copy duly confirmed by Indian embassy/ One of the board of directors of the lead bidder/ consortium member shall be submitted along with bid document.

4.A.15. Foreign Exchange & Custom Clearance

4.A.15.1 Foreign exchange and/or import license if required, will be released/ provided to the contractor in connection with this contract. Part of Schedule (for imported items) can be quoted in any of the major foreign currencies viz USD, British Pound, EURO or Japanese YEN etc. In such a case, bidder should clearly specify the components of Foreign exchange and Indian currency for each item.

4.A.15.2 For evaluation purposes, T. T. (Telegraphic Transfer) of foreign currency selling Exchange rate of State Bank of India of foreign currency applicable on the date of technical bid opening will be considered.

4.A.15.3 Release of payments in foreign exchange for imported items to foreign companies shall be made on request of bidder along with the bill and will be governed by payment clause.

4.A.15.4 Bidder while quoting the prices shall include all expenses like custom duty, anti dumping duty etc. leviable (will indicate the current prevalent rates), custom handling charges, storage, transportation, insurance, etc. in the quoted prices.

In case of bids submitted in foreign currency for imported items, Custom duty shall be paid by RailTel directly to custom authorities.. Bidder shall, however, have to undertake custom clearance on behalf of RailTel.

4.A.16. System Performance Guarantee

4.A.16.1. The bidder shall give unqualified and unconditional guarantee that when the equipment / material supplied by him is installed and commissioned at site, it shall achieve the desired objective and that in the event of performance of the system when installed not complying with the end objective or with the specifications, he shall provide further inputs to enable the RailTel to realize the end objectives with full compliance of the specifications contained in these documents. No additional payment will be made to the contractor for supply of any additional goods and service required in this regard.

4.A.16.2. This certificate in the Proforma given in Chapter 6 Form No. 2, shall accompany the final offer. Absence of this certificate which will form part of the agreement shall disqualify the bidder automatically.

4.A.17. Evaluation of Offer

4.A.17.1. In case bids are in Foreign currency, these will be converted to Indian rupees for evaluation purposes taking T. T. selling Exchange rate of State Bank of India of foreign currency applicable on the date of technical bid opening.

4.A.17.2. Additional features offered by the bidder, over and above the ones asked for in the tender documents, shall not be considered for evaluation of bids.

4.A.17.3. The bidder should make available the offered products, if desired during technical evaluation of offered equipment for testing and benchmarking at any testing facility approved by RailTel.

4.A.17.4. The bidders should quote for all items & the offer will be evaluated in totality (read with clause 4.A3.2). The bidders should indicate brand name, type/model number of the products offered. Optional items will not be considered for evaluation of offers. The equipment and software should be supplied as per Technical Specifications given in Chapter-8.

4.A.17.5 Evaluation of offer against each package i.e. I, II, III, IV and V shall be done seperately. Inter se position of the offers will be determined on total unit rate on CIP destination basis which will include basic rate, custom duty, CGST, SGST, IGST, GST, freight, insurance and any other charge or cost quoted by the tenderer, including GST payable, on reverse charge by RailTel, wherever applicable.

4.A.17.6 It may be noted that RailTel has floated package wise tender for carrying out the in scope work at 6124 stations PAN India and work in 7200 train coaches. Award of packages to L1-bidders shall be as under:

Award of Packages

The purchaser reserves the right to award any package or combination of packages not exceeding two packages to a technically eligible L1 bidder. The purchaser will evaluate and compare financial bids on the basis of each contract package in order to arrive at the **least cost combination for the purchaser**. The procedure for award is a given below.

Case-I

In case five different short-listed L-1 bidders emerge, the Contract Packages will be awarded to the respective L-1 bidders.

Case-II

In case a short-listed L-1 bidder emerges as lowest in two Contract Packages, these two Contract Packages will be awarded to the L-1 bidder. The other two Contract Packages out of balance three contract packages can be awarded to a single L-1 bidder if he emerges as the lowest in both. Else these contract packages shall be awarded to respective L-1 bidders of those Contract Packages. Award of more than one package will be subject to duly meeting financial and technical criterion given in clause 4.A.14.1 separately for each package and cumulatively for both packages being quoted combined together.

Case-III

In case a short-listed L-1 bidder emerges as lowest in more than two Contract Packages, then the purchaser reserves the right to award any package or combination of packages not exceeding two packages to a bidder. The employer will evaluate and compare financial bides on the basis of a contract package or a combination of contract packages, in order to arrive at the **least cost combination for the employer** as given below:-

a) The Contract Packages will be awarded to short-listed L-1 bidder subject to maximum of 2 packages as selected by the purchaser based on the **least cost combination** i.e. beneficial in favour of RailTel and subject to duly meeting financial and technical criterion given in clause 4.A.14.1 separately for each package and cumulatively for both packages being quoted combined together.

b) The remaining package(s) which could not be awarded to the L-1 bidder (due to limit in awarding maximum 2 packages to any bidder or due to not meeting of eligibility criteria), will be counter offered to the respective L-2 bidder at L-1 price. If L-2 bidder declines such counter offer, the counter-offer shall be made to L-3 bidder at L-1 price. If other technically qualified bidder do not accept the counter offer at L-1 price then the package shall be awarded to the L-1 bidder in such cases the above condition of awarding contract to maximum of 2 packages to any bidder shall not be applicable.

4.A.18. Security Considerations & Security Agreement

4.A.18.1 The system shall become integral part of RailTel's network, which already serving the requirement of NIC for National Knowledge Network and further requirement of defence and other strategic sectors of government. Accordingly, while evaluating the tender, regards would be paid to National Defence and Security considerations indicated by these key customers.

4.A.18.2 The directives issued from time to time by the Department of Telecommunications (DoT), Ministry of Communications and IT or any other Ministry of Govt. of India on security considerations shall be applicable to the present tender.

4.A.19. Purchaser's Right to Vary Quantities

The purchaser shall be at liberty to enhance or reduce the quantity mentioned in the LOA as indicated in Bid Data Sheet (BDS) Chapter 5 without assigning any reasons. The bidder shall comply with such modifications unconditionally provided these are made before completion of the deliveries under the purchase order/LOA. Any such change in quantity shall have no impact on the rates mentioned in the purchase order/LOA for any such item.

4.A.20. Purchaser's Right to accept any offer / Bid and to reject any or all offer/ Bid

4.A.20.1 The Purchaser reserves the right to accept or reject any offer / bid, and to annul the bidding process and reject all offers / bids, at any time prior to award of order without assigning any reason whatsoever and without thereby incurring any liability to the affected bidder or bidders on the grounds for the Purchaser's action.

4.A.21. Annulment of Award

Failure of the successful bidder to comply with the requirement of various clauses of tender document shall constitute sufficient ground for the annulment of the award and forfeiture of EMD in which event the Purchaser may make the award to any other bidder at the discretion of the Purchaser or call for new offers/ bids.

4.A.22. Earnest Money Deposit (EMD)/ Bid Security

4.A.22.1 All the bidders have to pay minimum amount of EMD (lowest among all the packages, as also given in IREPS tendering portal) online through IREPS tendering portal. After that, IREPS site will allow the bidder to bid in the said Tender.

4.A.22.2 Balance amount of EMD, if any, shall be submitted through DD along with bid submission.

For Example:

If a firm 'A' is bidding for 05 packages having EMD of Rs 50/-, Rs 20/-, Rs 30, Rs 40 and Rs 60/-. Total EMD to be paid by firm for 05 packages is Rs 200/-.

(i) EMD to be paid online through IREPS tendering portal (lowest among all the packages, as also given in IREPS tendering portal) is Rs 20/-

(ii) Balance EMD to be paid through DD along with bid is Rs 180/-.

4.A.22.3 The bidder shall furnish a sum as given in Bid Data Sheet (BDS) Chapter 5 as Earnest Money in the form of Demand Draft from any scheduled bank in India in favour of "RailTel Corporation of India Limited" payable at New Delhi which should remain valid for 45 days beyond the bid opening date.

4.A.22.4 The EMD may be forfeited if a bidder withdraws his offer or modifies the terms and conditions of the offer during validity period and in the case of a successful bidder, if the bidder fails to accept the Purchase order/LOA and fails to furnish performance bank guarantee (security deposit) in accordance with clause 6.

4.A.22.5 Offers not accompanied with Earnest Money shall be summarily rejected.

4.A.22.6 Earnest Money of the unsuccessful bidder will be discharged / returned as promptly as possible but not later than 30 days after the expiry of the period of offer / bid validity prescribed by the Purchaser.

4.A.22.7 The successful bidder's EMD will be discharged upon the bidder's acceptance of the purchase order/LOA satisfactorily and furnishing the performance bank guarantee in accordance with clause 4.A.6.

4.A.22.8 Earnest Money will bear no interest.

4.A.22.9 For multiple packages, the EMD amount will be as per the Tender notice for the respective packages which he intends to quote.

4.A.23. For Micro and Small Enterprises (MSEs)

4.A.23.1 Eligible MSEs are exempted from cost of tender document and EMD. However, MSEs are required to meet the turnover and prior experience criteria as specified in tender clause 4.A.14.1. Further, the subject work being a works contract having scope of integrating various IT products and applications, the purchase preference criteria for MSME and Startup will also be not applicable in the tender.

4.A.23.2 MSEs who are interested in availing themselves of above benefits will enclose with their offer the proof of their being MSE registered with any of the agencies mentioned in the notification of Ministry of MSME.

4.A.23.3 The MSEs must also indicate the terminal validity date of their registration.

4.A.23.4 Failing 4.A.23.1 and 4.A.23.2 above, such offers will not be liable for consideration of benefits detailed in the notification of Government of India.

4.A.24. RailTel would also enter into Rate Contract with the firm to whom the contract is awarded for catering to additional requirement of Cameras, Switches, Servers, Storages, Rack, UPS, FMS, VMS software & Other associated equipments of Schedule of requirements (SOR) as and when arise in future. Rate Contract on the successful tenderer would be placed separately and would be operative from the date of PAC of the first Station/RPF/GRP Chowki/Thana/Post, cluster of train coaches and would be valid for a period of 12 months. The validity of rate contract may be extended for further 12 months with mutual agreement. This Rate Contract would be at the same rates as finalized in main contract. During the validity of Rate Contract, RailTel will place Sub Purchase Orders for Cameras, Switches, Servers, Storages, Rack, UPS, FMS, VMS application & Other associated equipments detailed in SOR, as per requirement. The total value of all the Sub Purchase Orders under Rate Contract shall be restricted to 50% of the contract value for these SOR items, however, there is no guaranteed off take against this Rate Contract. A standing Performance Bank Guarantee of Rs. 10 lakh for due fulfillment of the rate contract with validity of four months beyond contract period will be sub-

mitted by the tenderer within 30 days of issue of LOA for Rate Contract. The supplier shall have to supply the equipments, VMS software etc. against these Sub Purchase Orders within 60 days from the date of issue of such Sub Purchase Orders and should submit a Performance Bank Guarantee (PBG) within 30 days of the issue of such Sub Purchase orders @ 10% of the value (rounded off to nearest Thousand of Rupees) of the Sub PO as per proforma given in Chapter 6, Form No.1. The PBG submitted against Sub P.O. is for the satisfactory performance of materials/software and should be valid for a period of 4 months beyond warranty period. Terms & conditions of this tender document will be applicable for the Sub POs issued against rate Contract, if any. If the delivery period gets extended, the PBG should also be extended appropriately. Terms and condition for submission of PBG shall be as per clause 4.A.6

The payment conditions against Rate Contract will be as under:

4.A.24.1 75% of the payment at the time of delivery;

4.A.24.2 Additional 15% of the payment at the time of delivery, if installation is not included in PO/LOA. In case installation is included, the terms will remain same as in clause 4.A.5 of Chapter-4.

4.A.24.3 Additional 5% of the payment at the time of delivery, if supervision of installation is not included in PO/LOA. In case installation is included, the terms will remain same as in clause 4.A.5 of Chapter-4.

4.A.24.4 5% of the payment after expiry of one year from the date of delivery, if installation is not included in PO/LOA. In case installation is included, the terms will remain same as in clause 5 of this Chapter-4.

4.A.25. Offer/ Bid Prices

4.A.25.1 The bidder shall give the prices indicating all levies and taxes, packing forwarding, freight and insurance etc. The basic unit price and all other components of the price need to be individually indicated against the goods it proposes to supply under the tender document as per schedule given in Chapter 2. The price shall be quoted in Indian Rupees or in any major foreign currency for the imported items (FOR/CIP destination).

4.A.25.2 The break-up of price of each item of SOR in terms of basic Unit price, GST/CGST/IGST, Freight, Custom Duty, Forwarding, Packing, Insurance and any other Levies/charges already paid or payable by the bidder shall be quoted in the SOR Chapter 2. Bidder has to quote all inclusive rates (with tax break-up).

4.A.25.3 All prices and other information like discounts etc. having a bearing on the price shall be written both in figures and in words in the prescribed offer form (SOR). In case of difference in words and figures, the amount written in words will be taken into consideration. In the event of any discrepancy between total unit cost and total cost, the value shown in total unit cost will be taken for evaluation purpose.

4.A.25.4 DELETED.

4.A.26 Clause wise Compliance

4.A.26.1 Clause wise compliance statement of complete Tender Document including Schedule of Requirement(Chapter-2), Technical Specifications (Chapter 3), Commercial Terms & Conditions (Chapter 4), Bid Data Sheet(Chapter-5) and Technical Specifications (Chapter 8) shall be enclosed with the offer along with the technical literature of the material and other documents in support of relevant clauses.

4.A.27 Inspection

4.A.27.1 RDSO specifications are to be followed for the items for which the specifications have been defined by RDSO in the latest version available on the RDSO Website. Any change in the specifications may be noted from website and will be followed. For the items which are not in the RDSO specifications shall be inspected by RailTel as under:

4.A.27.2 Pre-shipment / pre-dispatch inspection shall be carried out at manufacturer's / bidder's works by RailTel's authorized representative. At least part of the material should be offered for inspection within 30 days of issue of confirmed Purchase Order/LOA. Traveling, lodging & boarding expenses of RailTel's representative and charges for 3rd party inspection if within India shall be borne by RailTel but necessary facilities to carry out tests/witness inspection shall be provided by the manufacturer/ bidder, free of cost.

4.A.27.3 Along with inspection call, the bidder/manufacturer shall submit details of test procedures, test programme, test parameters together with permitted values, etc., and their Quality Assurance Plan.

4.A.27.4 In case material fails during inspection, the fresh lot of material shall be offered without any extra cost, by the manufacturer/bidder. In such a case, total cost of re-inspection including travel, lodging & boarding of the inspecting officials shall be to manufacturer's/ bidder's account.

4.A.28 Force Majeure

4.A.28.1 If during the Agreement, the performance in whole or in part, by either party, of any obligation under this is prevented or delayed, by reason beyond the control of the parties including war, hostility, acts of the public enemy, civic commotion, sabotage, Act of State or direction from Statutory Authority, explosion, epidemic, quarantine restriction, strikes and lockouts (as are not limited to the establishments and facilities of the parties), fire, floods, earthquakes, natural calamities or any act of GOD (hereinafter referred to as EVENTS), provided notice of happenings of any such EVENT is given by the affected party to the other, within twenty one (21) days from date of occurrence thereof, neither party shall have any such claims for damages against the other, in respect of such non-performance or delay in performance. Provided service under this Agreement shall be resumed as soon as practicable, after such EVENT comes to an end or ceases to exist.

4.A.28.2 In the event of a Force Majeure, the affected party will be excused from performance during the existence of the Force Majeure. When a Force Majeure occurs, the affected party after notifying the other party will attempt to mitigate the effect

of the Force Majeure as much as possible. If such delaying cause shall continue for more than sixty (60) days from the date of the notice stated above, the party injured by the inability of the other to perform shall have the right, upon written notice of thirty (30) days to the other party, to terminate this Agreement. Neither party shall be liable for any breach, claims, damages against the other, in respect of non-performance or delay in performance as a result of Force Majeure leading to such termination.

4.A.29 Settlement of Disputes

In case of any dispute concerning this order both the bidder and RailTel(RCIL) shall try to settle the same amicably through mutual discussion/negotiations. Any unsettled dispute shall be settled in terms of Indian Act of Arbitration and conciliation 1996 or any amendment thereof. Place of arbitration shall be New Delhi.

The arbitral tribunal shall consist of the sole Arbitrator if the value of claim is up to Rs. 10 lakhs. The arbitrator will be mutually appointed by the Chairman & Managing Director of RailTel Corporation of India Ltd and the bidder. If the value of claim or amount under dispute is more than Rs. 10 lakhs, the matter shall be referred to arbitral tribunal consisting of three arbitrators with each Party nominating its arbitrator and both the arbitrators appointing the third and presiding arbitrator.

4.A.30 Governing Laws:

The LOA shall be interpreted in accordance with the laws of India. The courts at New Delhi shall have exclusive jurisdiction to entertain and try all matters arising out of this contract.

4.A.30.1 **Indemnity by Contractors** – The Contract shall indemnify and save harmless the RailTel from and against all actions, suit proceedings, losses, costs, damages, charges, claims, and demands of every nature and description brought or recovered against the RailTel by reason of any act or omission of the Contractor, his agents or employees, in the execution of the works or in his guarding of the same. All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

4.A.31 Termination for Default

4.A.31.1 The purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default,sent to the bidder, terminate this contract in whole or in part.

a) If the bidder fails to deliver any or all of the goods within the time period(s) specified in the contract.
b) If the bidder fails to perform any other obligation(s) under the contract; and
c) If the bidder, in either of the above circumstance(s) does not remedy his failure within a period of 30 days (or such longer period as the Purchaser may authorize in writing) after receipt of the default notice from the Purchaser.

4.A.32 Risk & Cost

If the contractor fails to deliver the equipment or honour the contractual commitment within the period fixed for such delivery in the contract, the Purchaser may terminate the LOA/ contract in whole or in part, the Purchaser may proceed to purchase, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered at no risk and cost to contractor. However, the security deposit of bidder shall be forfeited/ Performance Bank Guarantee shall be encashed. The failed bidder shall not be permitted to take part in the tender for balance work.

The Maximum Liability of bidder to any Loss/Damages to RailTel including Liquidity Damages and Performance Guarantee shall be limited to 100% of Value of contract.

4.A.33 Termination for Insolvency

The purchaser may at any time terminate the LOA/Contract by giving written notice to the bidder, without compensation to the bidder, if the bidder becomes bankrupt or otherwise insolvent as declared by the competent court provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Purchaser.

4.A.34 Rates During Negotiation

The purchaser may call the successful bidder for the negotiation for reducing the rates. During negotiation the bidder/s shall not increase his/their quoted rates including payment terms in case the RailTel negotiates for reduction of rates. Such negotiations shall not amount to cancellation or withdrawal of the original offer and the rates originally quoted will be binding on the bidder/s.

4.A.35 Pre- Bid Conference & Clarification Requests

As per clause 4.B.22, chapter-4B of tender document.

4.A.36 Submission of Offers

4.A.36.1 All offers in the prescribed forms should be submitted before the time and date fixed for the receipt of the offers.

4.A.36.2 BIDDER HAS TO MANDATORY QUOTE FOR ALL THE ITEMS OF SOR HEAD-I OF QUOTED PAKCAGE(S).THE INCOMPLETE SOR WILL NOT BE ACCEPTED AND IF FOUND THE OFFER IS LIABLE TO BE REJECTED.

4.A.36.3 ATTESTATION OF ALTERATION: No scribbling is permissible in the tender documents. Bid containing erasures and alterations in the tender documents are liable to be rejected. Any correction made by the Bidder(s) in his/their entries must be signed (not initialed) by him/them.

4.A.36.4 Not Applicable.

4.A.36.5 The offer shall be submitted in two parts, Part-I - Credential Bid (Techno-Commercial Bid) & Part-II – Price Bid as per instructions given in chapter-4B.

(a) **Part-I "CREDENTIAL BID**"; -The bid shall consist of the following:-

1) Offer Letter complete.

2) Schedule of Requirements with quantities but with prices blanked out (this will be a replica of price bid with prices blanked out) and detailed Bill of Material

3) Earnest Money in prescribed form.

4) Audited balance sheet duly attested by Notary Public and certificate issued by CA duly mentioning the cumulative contract amount received from the Security/IT/Telecom business in the last three financial years plus current year upto the date of opening of the tender.

5) Constitution of Firm and Power of Attorney.

6) Clause wise compliance to tender conditions.

7) Copies of purchase orders and other documents in support of meeting qualifying criteria (Refer Clause 4.A.14.1 and 4.A.14.3 also).

8) Complete technical data and particulars of the equipment offered, as specified in the Tender papers together with descriptive literature, leaflets, Drawings, if any, complete with list etc.

9) Documentary proof of each offered model of equipment for camera, server, storage, switches, video recording unit/mobile network video recorder, NVR, Access Point and VMS software is proven and working for at least six months in India or abroad

10) Technical proposal of bidder in conformity with system requirement of the bidder, if any.

11) System Performance Guarantee as per Chapter 6 Form no. 2

12) Un-priced list of all possible interfaces/ modules/ cards/ etc which the offered equipment can support / required for optimization of the network including synchronization needs, if any, but not ordered by RailTel or not included in the above SOR.

13) Power of Attorney is to be submitted in original.

14) Any Other information desired to be submitted by the bidder.

Note: The Credential Bid Part-I under no circumstances should contain any rates offered. Otherwise the tender offer shall be summarily rejected.

(b) **Part-II "Price Bid"** Shall contain (i) the offer letter (ii) the price bid for "Schedule of requirements" as per part I of Chapter 2 along with "Bill of Material" for each item quoted exactly according to the proforma, as also submitted along with "Credential Bid" as in para 36.5 (a) 2 above, **separately for each package if submitted bids for more than one package**.

In case, the bidder has submitted bids for more than one bid and price bids for any two or more packages are found in one price bid, the bid shall be summarily rejected.

READ INSTRUCTIONS CAREFULLY GIVEN IN CHAPTER 4.B ALSO.

4.A.37. Constitution of Firm and power of Attorney

4.A.37.1. Any individual(s) signing the tender or other documents connected therewith should specify whether he is signing:-

(a) As sole proprietor of the concern or as attorney of the sole Proprietor.

(b) As a partner or partners of the firm.

(c) As a Director, Manager or Secretary in the case of Limited Company duly authorized by a resolution passed by the Board of Directors or in pursuance of the authority conferred by Memorandum of Association.

4.A.37.2. In the case of a firm not registered under the Indian Partnership Act, all the partners or the attorney duly authorized by all of them should sign the tender and all other connected documents. The original Power of Attorney or other documents empowering the individual or individuals to sign should be furnished to the Purchaser for verification, if required.

4.A.37.3 The RailTel will not be bound by Power of Attorney granted by the bidder or by the changes in the composition of the firm made subsequent to the execution of the contract agreement.

4.A.37.4 In case where the Power of Attorney partnership deed has not been executed in English, the true and authenticated copies of the translation of the same by Advocate, authorized translators of Courts and Licensed Petition Writers should be supplied by the Contractor(s) while tendering for the work.

4.A.37.5 The duly notarized Power of Attorney specific to this tender along with the complete chain shall be submitted in original or duly signed.

4.A.38 Opening of Tender

4.A.38.1 Bidder's Credential Bid (Part-I) will be opened on specified date & time as mentioned in BDS Chapter 5 of the tender in presence of such bidders/ Representatives who choose to be present.

4.A.38.2 After scrutinizing Credential Bid, "Price Bid (Part- II)" will be opened on a time and date to be informed separately in presence of those bidders who quali-

fy in "Credential Bid (Part-I)" as per qualifying criteria laid down in Clause 12 of this Chapter and who choose to be present.

4.A.38.3 Price Bid (part-II) envelopes of those bidders who are not found to meet tender conditions will not be opened.

4.A.39. Non-Transferability & Non-Refundability

The tender documents are not transferable. The cost of tender paper is not refundable.

4.A.40. Errors, Omissions & Discrepancies

The Contractor(s) shall not take any advantage of any mis-interpretation of the conditions due to typing or any other error and if in doubt, shall bring it to the notice of the purchaser without delay. In case of any contradiction only the printed rules, and books should be followed and no claim for the mis-interpretation shall be entertained.

4.A.41. Wrong Information by bidder

If the Bidder/s deliberately gives/give wrong information in his/their tender which creates/create circumstances for the acceptance of his/their tender the RailTel(RCIL) reserves the right to reject such bidder at any stage.

4.A.42 The envelope containing any offline documents shall be addressed to the Purchaser at the following address:

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003
Fax No.: +91-124-4236084

4.A.43 The envelope shall bear name of the tender, the tender no. and the words “DO NOT OPEN BEFORE” (due date).

4.A.44 In case the date of opening happens to be a holiday, the tender will be received and opened at the same time on the next working day.

4.A.45. Preference to Domestic Manufacturers

The provisions of the Public Procurement (Preference to Make in India) Order 2017 dated June 15, 2017 (and subsequent amendments, if any) by Department of Industrial Policy and Promotion, GoI shall apply to this tender to the extent feasible. The criteria for Capability (verifiable evidence that they have manufacturing capability to manufacture the specified quantity and supply the same with in stipulated time period), Equipment and Manufacturing facilities as well as net worth under the financial standing eligibility criteria shall be applicable to local suppliers also.

Bidders seeking Purchase preference for any particular SOR item shall submit the documents/ declarations etc. as per latest DIPP guidelines and as further stipulated in Rly. Bd letter No. 2015/RS(G)/779/5 dated 26.06.2018 & 03.08.2017 and DOT (Ministry of communications) Gazette dated 29Th August, 2018 or the applicable/associated latest letters if any as on date of opening of the bid. The necessary documentation for the individual items being declared to be Local shall be as per the stipulated guidelines as laid down in above mentioned policy letters and to be signed by the OEM as well as the bidder.

Purchase preference policy (linked with Local Content) notified vide letter no. P-45021/2/2017-B.E.-II dated 15.06.2017 of DIPP

1. Bidders seeking Purchase preference (linked with Local content) (PPP-MII) shall be required to meet/exceed the target of Local Content (LC) of _70%__%.

1.1 Such bidders shall furnish following certificates on its letter head along with their techno-commercial bid. The undertaking shall become a part of the contract.

"We M/s. _____ (Name of bidder) hereby certify that we meet the mandatory minimum Local Content requirements of the tender i.e. __70%__ quoted vide offer No.____ dated_____ against RailTel tender No._____ by us."

1.2 Above undertaking shall be supported by the following certificate form Statutory Auditor engaged by the bidder, on the letter head of such Statutory Auditor.

"We_____ the statutory auditor of M/s.__ (name of the bidder) hereby certify that M/s._____ (name of bidder) meet the mandatory Local Content requirements of the Project Work under this tender i.e. __70%___ (to be filled by the work center) quoted vide offer No._____ dated___ against RAILTEL tender No._____ by M/s. _____ (Name of the bidder).

Note:- In case of bidder(s) for whom Statutory Auditor is not required as per law, as per law required certificates shall be provided by a practicing Chartered Accountant.

1.3 At the bidder stage the bidder shall provide Break-up of "Local Component" and "Imported Component" in the prescribed format as enclosed Annexure – VII and shall be uploaded by the bidders along with their price bid in the e-procurement portal.

2. Eligible (techno-commercially qualified) LC bidder shall be granted a purchase preference to 20% i.e. where the evaluated price is within 20% of the evaluated lowest price of Non Local Content (NLC) bidder, other things being equal. Accordingly, purchase preference shall be granted to the eligible (techno-commercially qualified) LC bidder concerned, at the lowest valid i.e. NLC price bid.

3. Only those LC bidders, whose bids are within 20% of the NLC L1 bid, would be allowed an opportunity to match L1 bid. All the eligible LC bidders shall be asked to submit their confirmation to match their price in sealed envelopes. Envelopes of the bidders shall be opened and award for the prescribed quantity shall be made to the lowest evaluated TA/CA (Techno-Commercial Acceptable) bidder among the eligible

LC bidders. In case the lowest eligible LC bidder fails to match L1 price, the next eligible LC bidder will be awarded the prescribed quantity and so on. In case none of the eligible LC bidders matches the L1 bid, the actual bidder holding L1 price will secure the order.

3.1 Entire contract shall be awarded to the lowest techno-commercially qualified LC bidder subject to matching with valid NLC L1 rates. In case LC bidder fails to match rates with valid NLC L1 rates then entire contract shall be awarded to valid NLC L 1 bidder.

4. For the purpose of this policy, all terms used vide aforesaid policy shall be governed by the definitions specified in Para 2 of the policy document notified by DIPP vide letter No. P-45021/2/2017-B.E.-II dated 15.06.2017.

5. The successful bidder shall be obliged to fulfill the requirements of quality and delivery time in accordance with the provisions of the Purchase order/contract.

6. RailTel(RCIL) shall have the right to satisfy itself of the production capability and product quality of the manufacturer.

7. Determination of LC

7.1 LC of bid offer shall be the ratio of the whole cost of domestic component in the combination of goods and services to the whole combined cost of goods and services.

7.2 The whole combined cost of goods and services shall be the cost spent to produce the combination of goods and services, which is incurred on work site. LC of the combination of goods and services shall be counted in every activity of the combination work of goods and services.

7.3 The spent cost as mentioned in paragraph 8.2 shall include production cost in the calculation of LC of goods as at clause 7.3.1 and service cost in the calculation of LC of services as mentioned in clause 7.3.2.

7.3.1 Calculation of LC of goods : LC shall be computed on the basis of the cost of domestic components in goods, compared to the whole cost of product. The whole cost of product shall be constituted of the cost spent for the production of goods, covering direct component (material) cost, direct manpower cost, factory overhead cost and shall exclude profit, company overhead cost and taxes for the delivery of goods.

7.3.2 Calculation of LC of Services : LC of Service shall be calculated on the basis of the ratio of service cost of domestic component in service total cost of service.

7.3.2.1 The total cost of service shall be constituted of the cost spent for rendering service,

covering :

a) Cost of component (material), which is used.
b) Manpower and consultant cost, cost of working equipments/facility and

c) General service cost, excluding profit, company overhead cost, taxes and duties.

7.3.2.2 Determining of Local Content: The determination of local content of the working equipments/facility shall be based on the following provision:

Working equipment produced in the country is valued as 100% (one hundred per-cent) local content working equipment produced abroad is valued as much as nil (0% percent) local content.

8.0 Calculation of LC and Reporting

8.1 LC shall be calculated on the basis of verifiable date. In case of data used in the calculation of LC being not verifiable, the value of LC of the said component shall be treated as nil.

8.2 Formats for the calculation of LC of goods may be seen at Enclosure-IV of the policy document.

9.0 Certification and Verification

9.1 Bidder seeking Purchase Preference under the policy, shall be obliged to verify the LC of goods as follows:

9.1.2 At bidding stage :

a) Price Break-up
   (i) The bidder shall provide break-up of "Local Component" and "Imported Component" along with the price bid as per provisions under clause 1.3.
   (ii) Bidders must have LC in excess of the specified requirement.

b) Undertaking by the bidder
   iii. The bidder shall submit undertaking along with the techno-commercial bid as per clause No.1.1, such undertaking shall become a part of the contract.
   iv. Bidder shall also submit the list of items/services to be procured from Indian manufacturers/service providers.

9.1.3 After Contract Award

a) In the case of procurement cases with the value less than Rs. 10 crore (Rupees Ten Crore), the LC content may be calculated (self-assessment) by the contractor and certified by the Director/Authorized Representative of the Company.

b) The verification of the procurement cases with the value Rupees Ten Crore and above shall be carried out by a Statutory Auditor engaged by the bidder.

9.2 Each supplier shall provide the necessary local content documentation to the statutory auditor, which shall review and determine the local content requirements have been met and issue of local content in the good or service measured. The Auditor shall keep all necessary information obtained from supplier for measurement of Local Content confidential.

9.3 The Local Content certificate shall be submitted along with each invoice raised. However, the % of local content may vary with invoice while maintaining the overall % of Local Content for the total work/purchase of the pro-rata Local Content requirement. In case, it is not satisfied cumulatively in the invoices raised up to the stage , the supplier shall indicate how the local content requirement would be met in the subsequent stages.

9.4 Where currency quoted by the bidder is other than Indian Rupees, exchange rate prevailing on the date of notice inviting tender (NIT) shall be considered for the calculation of Local Content.

9.5 RAILTEL shall have the authority to audit as well as witness production processes to certify the achievement of the requisite local content.

10. Sanctions

10.1 RAILTEL shall impose sanction of bidder/successful bidder for not fulfilling LC in accordance with the value mentioned in certificate of LC.

10.2 The sanctions may be in the form of written warning, financial penalty and blacklisting.

10.3 If the bidder does not fulfill the obligation after the expiration of the period specified in such warning. RailTel shall initiate action for blacklisting such bidder/successful bidder.

4.A.46. The Network for customers

The VSS Network is being provided primarily to meet the requirements of Ministry of Women & Child Development. Accordingly, the VSS network shall take into consideration the National Security requirements and National Security aspects.

4.A.47. Deleted

4.A.48. Make in India:

Bidder may note that their acceptance of the "Make in India" Clause described below is a mandatory requirement for considering the bidder eligible. The bidder is free to choose all products from either Indian Manufacturer or from Foreign Manufacturer. The foreign manufacturer/OEM (Original Equipment Manufacturer)/OSSP (Original Software Service Provider), of the successful bidder, in case of each offered item, is required to set up the manufacturing/development facility in India within 2 years from

the date of signing of contract and increase the local content in planned manner from the third year as shown below:

Domestic value addition in terms of cost of the product/software offered shall be

Year 2 - > 15%
Year 3 - > 35%
Year 4 - > 40%
Year 5 - > 50%

The bidder shall provide the undertaking for acceptance of the above condition duly signed by each foreign manufacturer/OEM (Original Equipment Manufacturer)/OSSP (Original Software Service Provider) for each offered product/software. This will be part of qualifying criteria. Failure of the bidder to meet the above conditions after signing the agreement will result in penalty as stipulated in the Contract which includes termination of the contract.

The bidder may set up his manufacturing unit in India through a subsidiary or under license or through transfer of technology to any local manufacturer permitted by the purchaser. The bidder may indicate such tie ups for manufacturing in India if an arrangement is already in place.

The provisions of the Public Procurement (Preference to Make in India) Order 2017 dated June 15, 2017 (and subsequent amendments, if any) by Department of Industrial Policy and Promotion, GoI shall apply to this tender to the extent feasible. The criteria for Capability, Equipment and Manufacturing facilities as well as net worth under the financial standing eligibility criteria as mentioned in clause 4.A.14.1.3 shall be applicable to local suppliers also.

The bidder company may use the financial criteria of its own holding company or its Principal manufacturer in this case. However, the Holding company and/or the Principal manufacturer will have to counter guarantee the financials and/or bank guarantees as issued for the purpose of this tender.

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CHAPTER-4

B. INSTRUCTIONS TO THE BIDDERS

4.B.0. General

These are the Special Instructions to the Bidders for e-Tendering.

4.B. 1. Order of Priority of Contract Documents:

Where there is any conflict between the various documents in the contract, the following order of priority shall be followed i.e. a document appearing earlier shall override the document appearing subsequently:

1) Aggreemnet
2) Letter of Acceptance of Tender
3) Notice Inviting Tender
4) Bid Data Sheet
5) Schedule of Requirements
6) Instructions to the Bidders
7) Annexure/Appendix to Tender
8) Form of Bid
9) Commericial Terms and Conditions of the Contract
10) Technical Specifications
11) Relevant Codes and Standards
12) Drawings

4.B.2 Submission of Bids only through online process is mandatory for this Tender

E-Tendering is a new methodology for conducting Public Procurement in a transparent and secured manner. Now, the Government of India has made e-tendering mandatory. Suppliers/ Vendors will be the biggest beneficiaries of this new system of procurement. For conducting electronic tendering, RailTel has decided to use the portal https://www.ireps.gov.in **,** Indian Railways E-Procurement system (IREPS).

Benefits to Suppliers are outlined on the Home-page of the portal. Bidders are advised to visit the IREPS Portal for details related to E-Tender i.e. Registration, FAQ, Helpdesk, Learning Center etc.

4.B.3 Tender Bidding Methodology:

Sealed Bid System - 'Single Stage - Two Envelope': In this, bidder has to submit each the bid (Part I –Credential/ Techno commercial Bid and Part II - Price Bid) in separate envelope "ONLINE".

IREPS Helpdesk

Please visit Helpdesk section on IREPS Portal.

RailTel Contact-I (for general Information)

RailTel's Contact Person /Designation
Kumar Rahul Joshi, JGM/Project
Telephone/ Mobile: 9717644200
E-mail ID: rahul@railtelindia.com

RailTel Contact-II (for general Information)

RailTel's Contact Officer
Shaminder Singh, ED/Project
Telephone/ Mobile : 9717644410
E-mail ID: shaminder@railtelindia.com

4.B.7 Bid related Information for this Tender (Sealed Bid)

The entire bid-submission would be online on IREPS Portal.

Broad outline of submissions are as follows:

1. Submission of Bid Security/ Earnest Money Deposit (EMD)
2. Submission of digitally signed copy of Tender Documents/Addenda
3. Two Packet (Part I –Credential/ Techno commercial Bid and Part II - Price Bid)

4. Online response to Terms & Conditions of Tender.
5. (Optional) Online Submission of modification, substitution bids for technical or financial parts, or withdrawal bid.

NOTE: I. Bidder must ensure that the bid must be successfully submitted online as per instructions of IREPS Portal.

II. Bidders are requested to take a note that RailTel is inviting the subject tender as a composite tender for all five packages i.e. package-I, package-II, package-III,package-IV and package-V. Bidder may submit their offer for one or more packages depending upon meeting of the qualification criteria and other terms & conditions of the tender. However, Price bid of the bidder against any package shall only be opened once the bidder offer against that particular package is found meeting the qualification criteria and other terms & conditions of the tender.

Bidders are required to follow the below mentioned procedure, while uploading their price bid on IREPS Portal:

1. **Separate pdf file to be uploaded against each package.**
2. **Naming convention of price bid files for uploading on the IREPS Portal to be used is as under:**

   For Package I: package1.pdf
   For Package II :- package2.pdf
   For Package III :- package3.pdf
   For Package IV :- package4.pdf
   For Package V :- package5.pdf

3. **Each price bid file against a package should be suitably password protected by the bidder before uploading on the IREPS Portal. The bidder shall make sure that the Passwords to unlock different Price Bid files are distinct and that the password for one Price bid file should not open Price Bid File of any other package. FAILURE TO DO SO WILL LEAD TO SUMMARILY REJECTION OF ALL BIDS OF THE BIDDER. These passwords are required to be submitted to RailTel in separate sealed envelopes (one for each package quoted) before the start date and time of the Tender Opening along with other offline submissions.**

4.B.8 Offline Submissions:

The bidder is required to submit the following documents offline to RailTel Corporation of India Ltd, Institutional Area, Plot 143, Sector 44, Gurgaon, before due date & time of submission of bids specified in this tender document, in a Sealed Envelope. The envelope shall bear (the tender name), the tender number and the words 'DO NOT OPEN BEFORE' (due date & time).

a) **EMD-Bid Security through IREPS Portal.**

b) **Power of attorney** to be submitted in accordance with Clause-36.5, Chapter-4 of Tender Document.

c) **In case bidder happens to be an eligible MSME**, the documentary evidence for same shall be submitted (clause 4.A.23 of tender document).

d) Specific authorization addressed to RailTel from the OEM (Parent Company) for Indian Subsidiary (Clause 4.A.14 of Tender Document).

e) **System Performance Guarantee** (Form no. 2, chapter-6).

f) **Acceptance for Long Term Maintenance Support** (Form no. 3, chapter-6).

g) **Integrity Pact** (Form no. 6, chapter-6).

h) Declaration regarding acceptance of clarification issued from DoT (Clause 4.A.18.2, of Tender Document).

i) Complete technical data and particulars of the equipment offered, as specified in the Tender papers together with descriptive literature, leaflets, Drawings, if any, complete with list etc.

j) Passwords of Price Bid files in separate sealed envelopes for each package quoted. All the passwords for different packages should be distinct so that password of price bid for one package can not open price bid document of any other package, failing which BID FOR ALL PACKAGES WILL BE SUMMARILY REJECTED.

i) Format for Affidavit as per Annexure-IV failing which BID WILL BE SUMMARILY REJECTED.

NOTE: The Bidder has to upload the Scanned copy of all above original documents (item-j optional) as Bid-Annexures during Online Bid-Submission.

4.B.9 Submission of Eligibility Criteria related documents

Eligibility criteria related documents as applicable shall also be scanned and submitted ONLINE. Copy of these documents shall also be submitted in RailTel before Tender opening date & time. Bids without these off line submissions are liable to be rejected.

NOTE: In case of internet related problem at a bidder's end, especially during 'critical events' such as - a short period before bid-submission deadline, during online public tender opening event, during e-auction, it is the bidder's responsibility to have backup internet connections.

In case there is a problem at the e-procurement/ e-auction service provider's end (in the server, leased line, etc) due to which all the bidders face a problem during critical events, and this is brought to the notice of RailTel by the bidders in time, then RailTel will promptly reschedule the affected event(s).

4.B.17 Instructions for Tender Document TO THE BIDDERS

The RailTel Tenders are published on **www.railtelindia.com and on IREPS Portal https://www.ireps.gov.in/**. In addition to submitting the e Tender documents online, they should also submit a Demand Draft drawn in a scheduled bank in favour of "RailTel Corporation of India Ltd, payable at NEW-DELHI, towards the cost of the tender document.

NOTE: For online bid submission the bidder will have to necessarily download an official online copy of the tender documents from IREPS e- procurement portal, and this should be done well before the deadline for bid-submission.

4.B.18 Submission of Offers and Filling of Tender:

This e-tender should be duly submitted online using the e-Procurement Portal https://www.ireps.gov.in/**.** For detailed instructions please refer to IREPS Portal.

4.B.19 Fax Quotations & Late Tenders:

Fax Tender documents and Late/Delayed tenders would not be considered.

4.B.20 Attendance of Representatives for Tender Opening:

Representatives of bidders desirous to attend the tender opening can do so on production of a proper letter of authority from the respective firm, failing which they may not be allowed to attend the tender opening. Authorized representatives of those firms who have submitted the tender documents alone shall be allowed to attend the tender opening.

4.B.21 Addenda / Corrigenda:

Addenda / Corrigenda to the tender documents may be issued by RailTel prior to the date of opening of the tenders, to clarify or reflect modifications in the contract terms and conditions or in the design. Such addendum/corrigendum shall be available on IREPS e-Procurement Portal only. Bidders who are unable or unwilling to bring their tenders to conform to the requirements of the RailTel are liable to be rejected.

4.B.22 Ambiguity/ Pre- Bid Clarification Requests:

If there is any ambiguity or doubt as to the meaning of any of the tender clauses/ conditions or if any additional information required, the matter should immediately be referred to the RailTel in writing through emails to RailTel Contacts defined under Para 4.B.3. The format to be used for seeking clarification is mentioned as an Annexure in this RFP (As per Form No.13 of Chapter 6). To clarify all the queries/concerns received, a Pre-Bid Conference shall be conducted as per the schedule mentioned in Bid Data Sheet (Chapter 5). Bidders are required to submit the cost of tender document in the form of Demand Draft as explained in the clause 4.B.8 on or before the date of Pre-bid conference. Bidders, who have not submitted the same, shall not be allowed to participate in the pre-bid conference. Each bidder shall be allowed to accompany maximum two persons including those from OEMs.

4.B.23 Bid submission and Opening date

4.B.23.1 The bid should be submitted online along with Credential/Techno commercial & Price bid document (all documents).

4.B.23.2 EMD should be enclosed in an envelope and submitted physically to the tendering authority before the due date and time of submission of the e-Tender.

4.B.23.2.1 Power of attorney in favor of the signatory duly authorizing the signatory shall be submitted in a separate envelope to the tendering authority before the due date and time of submission of the e-Tender.

4.B.23.2.2 The bidder's bids will be opened at the time & date of opening of the tender given in the Bid Data Sheet (BDS) online simultaneous in presence of such Bidders/ Representatives who choose to be present online. The Tenders/Representatives can also choose to be physically present in the office of RailTel for the Online Public Tender Opening Event.

4.23.3 Bids received after due date and time shall be summarily rejected and shall not be opened.

4.B.24. Integrity Pact Program

a) RailTel(RCIL) has adopted Integrity Pact Program and for implementation thereof all tenders relating to procurement of OFC, quad cable, pre-fab shelters, electronic equipments and its installation and/or commissioning etc and other item(s) or activity/activities proposed to be carried out or required by the Company for the value exceeding Rs. 25 crores at a time including for repair and maintenance of cable/network and any other items required for special works assigned to RailTel(RCIL) will be covered under the Integrity Pact Program and the vendors are required to sign the IP document and submit the same to RailTel(RCIL) before or along with the bids.

b) Only those vendors who have purchased the tender document and signed the IP document can send their grievances, if any, to the Independent External Monitors (IEMNs) through the nodal officer, i.e. Chief Vigilance Officer (CVO), RailTel.
Name of IEMs and contact details:

a) Sh. Ashok Kumar Garg, New Delhi e-mail: akgarg1654@gmail.com
b) Sh. Jayanta Kumar Roy, Kolkata e-mail: jkroy.its@gmail.com

c) If the order, with total value equal to or more than the threshold value, is split to more than one vendor and even if the value of PO placed on any/each vendor(s) is less than the threshold value, IP document having been signed by the vendors at bid stage itself, the Pact shall continue to be applicable.

d) Bidder of Indian origin shall submit the Integrity Pact (in 2 copies) on a non judicial stamp paper of Rs. 100/- duly signed by the person signing the bid. If the bidder is a partnership or a consortium, the Integrity Pact shall be signed by all the partners or consortium members.

e) Bidder of foreign origin may submit the Integrity Pact on its company's letterhead, duly signed by the person signing the bid.

f) The 'Integrity Pact' shall be submitted by the Bidder duly signed in all pages along with the Bid in a separate envelope, duly superscripted with 'Integrity Pact'. Tender received without signed copy of the Integrity Pact document will be liable to be rejected. Proforma for signing the Integrity Pact is available in Chapter-6 of this tender document (Form No. 6).

g) One copy of the Integrity Pact shall be retained by RailTel(RCIL) and the 2nd copy will be issued to the representative of the bidders during bid opening. If the Bidders

representative is not present during the Bid opening, the 2nd copy shall be sent to the bidder by post/courier.

h) The Integrity Pact is applicable in this tender vide CVC circular no. 10/05/09 dt. 18.05.09 and revised guideline of CVC circular no. 015/VGL/091 dt. 13.01.17 or the latest updated from time to time shall be followed.

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CHAPTER- 5

BID DATA SHEET (BDS)

The section consists of provisions that are specific to various Clauses of the tender document COMMERCIAL TERMS & CONDITIONS **Chapter 4**.

Clause	Description
Clause **4.A.1**	**Validity of offer** 180 days.
Clause **4.A.2**	**Warranty** 36 months (comprising of 12 months of Maintenance Supervision vide clause 2.5, between issue of PAC and FAC, followed by 24 months of warranty support under clause 2 & 2.4) .
Clause **4.A.4**	**Delivery/Implementation Timelines** Refer Clause 4.A.4 of Chapter-4.
Clause **4.A.6**	**Performance Bank Guarantee (Security Deposit)** **Equivalent to 10% of the total value of the LoA issued. For more details please refer Clause 4.A.6 of Chapter-4.**
Clause **4.A.14**	**Qualification Criteria** Refer Clause 4.A.14 of Chapter-4.
Clause **4.A.19**	**Purchaser's Right to Vary Quantities** up to a maximum extent of +/- 30% of contract quantity.
Clause **4.A.22**	**Earnest Money Deposit (EMD)/ Bid Security** As per tender notice.
Clasue **4.A.14.1.1**	**Bidding for more than one packages**
Clause **4.B.7**	**Submission of passwords of Price Bid files in separate sealed envelopes for each package quoted**

Clause	Description
Clause **4.B.10**	**Submission of pass phrases for Part I –Credential/ Techno commercial Bid and Part II - Price Bid created by the bidder on IREPS Portal in a separate sealed envelope for each phrase**
Clause **4.B.22**	**Pre- Bid Conference & Clarification Requests (On Line)** Last date of Submission of Clarification Date: 24-05-2019 Pre- bid Conference date Date: 29-05-2019 Time: 11:00 hours Venue: Corporate Office RailTel
Clause **4.A.36**	**Last Date of Submission of Offer (Online)** Date: 10-06-2019 Time: 15:00 hours Venue: same as above
Clause **4.A.36**	**Date of Opening of Tender (Online)** Date: 10-06-2019 Time: 15:30 hours Venue: same as above

Note: 1. If the details given in BDS contradict with referred clause in the detailed tender document, the details in BDS will have overriding priority over the referred clause in the tender document.

2. In the tender document, RailTel, REL and Indian Railways have been used at various places. It can be interchangeably used wherever required for various purposes of contract management purposes, as may be decided / intimated by the contract managing authority, i.e. RailTel.

3. Any logo/name of purchaser shall be of "Indian Railways" on all material being procured. It shall stand corrected if mentioned otherwise.

4. Clause no. 7.10 to 7.18 of Annexure-II will also be applicable to the main tender document of this tender.

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CHAPTER- 6

Form No. 1

PROFORMA FOR PERFORMANCE BANK GUARANTEE BOND

(On Stamp Paper of Rs One Hundred)
(To be used by approved Scheduled Banks)

1. In consideration of the RailTel Corporation of India Limited, having its registered office at 6th Floor, IIIrd Block, Delhi Technology Park, Shastri Park, Delhi-110053 (Herein after called RailTel) having agreed to exempt ……(Hereinafter called "the said Contractor(s)") from the demand, under the terms and conditions of an Purchase Order/LOA No……dated…….made between……and…….. for (hereinafter called " the said Agreement") of security deposit for the due fulfillment by the said Contractor (s) of the terms and conditions contained in the said Agreement, on production of a Bank Guarantee for Rs. ……(Rs …….. only). We …… (indicate the name of the Bank) hereinafter referred to as "the Bank") at the request of ……. ……. Contractor(s) do hereby undertake to pay the RailTel an amount not exceeding Rs. ……. against any loss or damage caused to or suffered or would be caused to or suffered by the RailTel by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

2. We , ……. Bank do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on demand from the RailTel stating that the amount is claimed is due by way of loss or damage caused to or would be caused to or suffered by the RailTel by reason of breach by the said Contractor(s) of any of terms or conditions contained in the said Agreement or by reason of the Contractor(s) failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs . ……

3. We, …….. bank undertake to pay to the RailTel any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) / Bidder(s) in any suit or proceedings pending before any court or Tribunal relating thereto our liability under this present being, absolute and unequivocal. The payment so made by us under this Bond shall be a valid discharge of our liability for payment there under and the Contractor(s) / Bidder(s) shall have no claim against us for making such payment.

4. We, ……. Bank further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of the RailTel under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till RailTel certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this Guarantee. Un-

less a demand or claim under the Guarantee is made on us in writing on or before the ……. …… We shall be discharged from all liability under this Guarantee thereafter.

5. We,…… (indicate the name of Bank) further agree with the RailTel that the RailTel shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the Agreement or to extend time of to postpone for any time or from time to time any of the powers exercisable by the RailTel against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation, or extension to the said Contractor(s) or for any forbearance, act or omission on the part of RailTel or any indulgence by the RailTel to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have affect of so relieving us.

This Guarantee will not be discharged due to the change in the Constitution of the Bank or the Contractor(s) / Bidder(s).

(indicate the name of Bank) lastly undertake not to revoke this Guarantee during its currency except with the previous consent of the RailTel in writing.

Dated the day of 2019

for ……..
(indicate the name of the Bank)

Witness

1. Signature
   Name

2. Signature
   Name

Form No. 2

PROFORMA FOR THE SYSTEM PERFORMANCE GUARANTEE
(On Stamp Paper of Rs. One Hundred)

The Director,
RailTel Corporation of India Limited

I / We ……. hereby guarantee that the design on the basis of which we have submitted our tender no. …… has been carefully made to conform to the end objectives in the tender documents and to technical specification therein. We further guarantee that in the event of the performance of the system, when installed, not complying with the end objectives or with the specifications contained in the tender documents, we shall provide further inputs to enable the RailTel to realize the end objectives contained in these documents without any additional payment for any additional equipment which may be required in this regard. We further guarantee that all the expenses for providing the additional inputs under the System Guarantee will be borne by us. We further guarantee that these additional inputs will be provided by us to make the system workable within 1 month from the date on which this guarantee is invoked by the Purchaser. The guarantee is valid for a period of one year from the date of commissioning of the system.

(Signature of Firm's Authorized Officer)
Seal

Signature of witness:

1. …….

2. …….

Form No. 3

PROFORMA FOR THE LONG TERM MAINTENANCE SUPPORT
(To be signed by the O.E.M.)

To

The Director,
RailTel Corporation of India Limited

I / We …… hereby confirm and accept that against RailTel Tender No. ……., the requirement of Long Term Maintenance Support as per Clause 4.A.3 of Chapter-4 shall be met **by us directly or through our subsidiary in India** as per rates quoted in the Price Bid. I / We have gone through the requirement mentioned in the Tender document and shall provide services as per terms and conditions pertaining to Long Term Maintenance Support of tender document.

(Signature of Firm's Authorized Officer)
Seal

Signature of witness:

1. ……

2. …….

Form No. 4- DELETED

Form No. 5- DELETED

Form No. 6

PROFORMA FOR SIGNING THE INTEGRITY PACT

RailTel Corporation of India Limited, hereinafter referred to as "The Principal".

And

……., hereinafter referred to as "The Bidder/ Contractor"

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for ……The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its Bidder(s) and /or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

   a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

   b. The Principal will during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the process or the contract execution.

   c. The Principal will exclude from the process all known prejudiced persons.

2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section 2- Commitments of the Bidder(s) / Contractor(s)

1. The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

   a. The Bidder(s)/contractor(s) will not, directly or through any other persons or firm, offer promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage during tender process or during the execution of the contract.

   b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

   c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s) /Contractors will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

   d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any. Similarly, the bidder(s)/contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers' as annexed and marked as Annexure A.

   e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3: Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings". Copy of the "Guidelines on Banning of business dealings" is annexed and marked as Annex-"B".

Section 4: Compensation for Damages

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security.

2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to be terminated the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5: Previous Transgression

1. The Bidder declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the anti corruption approach or with any other public sector enterprise in India that could justify his exclusion from the tender process.

2. If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process for action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6: Equal treatment of all Bidders / Contractors/Subcontractors.

1. The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.

2. The Principal will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.

3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7: Criminal charges against violation by Bidder(s) / Contractor(s) / Sub contractor(s)

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8: Independent External Monitor / Monitors

1. The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

2. The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, RailTel.

3. The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s)/Subcontractor(s) with confidentiality.

4. The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

5. As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

6. The Monitor will submit a written report to the CMD, RailTel within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

7. Monitor shall be entitled to compensation on the same terms as being extended to provided to Independent Directors on the RailTel Board.

8. If the Monitor has reported to the CMD, RailTel, a substantiated suspicion of an offence under relevant IPC/PC Act, and the CMD, RailTel has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

9. The word 'Monitor' would include both singular and plural.

Section 9: Pact Duration

This pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded.

If any claim is made / lodged by either party during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by CMD of RailTel.

Section 10: Other Provisions

1. This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi.

2. Changes and supplements as well as termination notices need to be made in writing.

3. If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

(For & on behalf of the Principal)
(Office Seal)

Place _____

Date _____

Witness 1:
(Name & Address)

Witness 2:
(Name & Address)

(For & On behalf of Bidder/Contractor)
(Office Seal)

_____

_____

_____

_____

_____

_____

Form No.7

PROFORMA FOR NIL DEVIATION COMPONENT COMPLIANCE UNDERTAKING LETTER

To

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003
Date dd-mm-yyyy

Dear Sir,

Sub: NIL Deviation Compliance for RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

Over and above all our earlier conformations and submissions as per your requirements of the RFP, we confirm that,

1. All proposed in scope supplies (Cameras, Servers, Video Recording & Processing Unit Software etc.) are compliant to the technical specifications of the equipment as mentioned in the latest version of the specifications for IP-based video surveillance system issued by RDSO dated DD-Month-YYYY.

2. We hereby certify that the hardware and software mentioned in our technical solution and Bill of Material (BOM) are complete.

3. We confirm that there is no requirement of any other hardware and software to fulfill requirements as per scope against the RFP. If any additional hardware and software is required to meet in scope requirements, then it would be procured by us at no extra cost to RailTel.

4. We will also ensure our unconditional compliance of all the terms and conditions as mentioned in the Tender document and RDSO specifications

Place:
Date: Seal and signature of the bidder

(This letter should be on the letterhead of the bidder duly signed by an authorized signatory)

Form No.8

PROFORMA FOR NO MALICIOUS CODE UNDERTAKING LETTER BY OEM

To

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003
Date dd-mm-yyyy

Dear Sir,

Sub: Undertaking for No Malicious Code for RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

Over and above all our earlier conformations and submissions as per your requirements of the RFP, we confirm that,

1. All proposed hardware and software components in scope of supplies (Cameras, Servers, Video Recording & Processing Unit, Software etc.) when shipped by _____, does not contain embedded malicious code that would activate procedures to:-
    a. Inhibit the desired and designed function of the equipment.
    b. Cause physical damage to the user or equipment during the exploitation.
    c. Tap information resident or transient in the equipment/networks.

2. We, _____ will be considered to be in breach in case physical damage or malfunctioning is caused due to activation of any such malicious code in embedded software and thus be liable to repair, replace or refund the price of the infected software if reported (or, upon request, return) to the party supplying the software to Customer, if different than _____

Place:
Date: Seal and signature of the bidder

(This letter should be on the letterhead of the bidder duly signed by an authorized signatory)

Form No.9

PROFORMA FOR MANUFACTURER's AUTHORIZATION FORM

Note: This authorization letter should be printed on the letterhead of all the original equipment manufacturer (OEM) and should be signed by a competent person having the power of attorney to bind the manufacturer.

RFP Ref No. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in Coaches/472

Dated dd/mm/yy

To,

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003

Dear Sir,

Sub: Manufacturer's Authorization Form for RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

We who are established and reputable manufacturers/ producers of _____ having factories/ development facilities at _____ (address of factory/ facility) do hereby authorize M/s _____ (Name and address of the bidder) to submit a Bid, and sign the contract with you against the above Bid Invitation. We plan to manufacture the offered quantity for supply from our manufacturing facility(s) at …….(complete address).

We hereby extend our full guarantee and warranty for the Solution, Products and services offered by the above firm against this Bid Invitation.

We also undertake to provide any or all of the following materials, notifications, and information pertaining to the Products manufactured or distributed by the Bidder:

1 Such Products as RailTel may opt to purchase from the Bidder, provided, that this option shall not relieve the Bidder of any warranty obligations under the Contract; and

2 In the event of termination of production of such Products:

- Advance notification to RailTel of the pending termination, in sufficient time to permit RailTel to procure needed requirements; and

- Following such termination, furnishing at no cost to RailTel, the operations manuals, standards and specifications of the Products, if requested.

3 The OEM or authorized agency of the OEM has service and repair facility in India directly/ Software suppliers should have their Technical Assistance Centre (TAC) present in India.

4 Guarantee to provide long term technical, service and maintenance support to the bidder that may be required during installation and commissioning of the equipment up to the maintenance period.

5 Guarantee to supply spares for a minimum period of eight years from the date of commissioning to entire section / works / Guarantee to assure the continued support including all updates/bug-fixes/patches/upgrades on the supplied for a minimum period of eight years from the date of commissioning to entire section / works.

6 The OEM or authorized agency of the OEM should give Warranty for the minimum period of 3 years from the date of commissioning of individual stations.

7 The OEM or authorized agency of the OEM shall certify the installation of the equipment has been done correctly and installation fit for commissioning.

We duly authorize the said firm to act on our behalf in fulfilling all installations, technical support and maintenance obligations required by the contract.
We further certify that, in case the authorized distributor/ system integrator/ bidder is not able to meet its obligations as per contract during contract period, we, as the OEM, shall perform the said obligations with regard to their items through alternate & acceptable service provider.

Place:
Date: Seal and signature of the OEM

Form No.10

PROFORMA FOR UNDERTAKING TO SIGN TRIPARTITE AGREEMENT

RFP No: RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472Dated dd/mm/2019

To,

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003

Dear Sir,

Sub: Undertaking to sign tripartite agreement with reference to RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

We here by certify that in the event of award of contract to _____ (Lead Bidder), we would sign a tripartite agreement involving _____ (Lead Bidder), _____ (OEM) and RailTel as a part of the contract. The OEM support would be for their respective portion of work only. However in the event of any dispute or discrepancy, the scope of work mentioned in the tender document would prevail.

Place:
Date: Seal and signature of the bidder/OEM

(***Undertaking to sign Tripartite Agreement need to be submitted by both OEMs and the bidder on their respective company letterhead***)

Form No.11

PROFORMA FOR BID UNDERTAKING LETTER

To

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003
Date dd-mm-yyyy

Dear Sir,

Sub: RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

Over and above all our earlier conformations and submissions as per your requirements of the RFP, we confirm that,

1 We have quoted for all items as requested by RailTel Corporation of India Ltd. in the RFP and stand committed to deliver to the highest standards and quality as required by RailTel Corporation of India Ltd. to meet the timelines of the project. Our bid submission is in line with the requirements of RailTel Corporation of India Ltd. as stated in the RFP.
2 We confirm that we have factored in all costs and expenses for meeting the complete scope and deliverables of the RFP.
3 We are completely aware of the Service Level requirements and timelines specified by RailTel Corporation of India Ltd. and are committed to adhering to the same. We have also clearly taken note of the service level requirements of RailTel Corporation of India Ltd. and expectations from us and wish to confirm that we have taken care of every aspect to meet the same.
4 We have clearly understood RailTel Corporation of India Ltd.'s requirements and wish to confirm that we abide by the terms and conditions of the RFP issued thereafter.
5 We confirm and understand that all arithmetical totaling errors will be corrected for the purpose of evaluation only and the consideration of that error for payment would be completely according to RailTel Corporation of India Ltd.'s discretion. We also confirm and understand that for all other errors which we have made in the bid, RailTel Corporation of India Ltd. for the purpose of evaluation will take the corrected amount based on the price quoted by us in the price sheets but the payment to RailTel of such amounts would be completely according to RailTel Corporation of India Ltd.'s discretion.
6 We confirm that we will provide the best of our resources and the people proposed by us will be dedicated to RailTel Corporation of India Ltd. for the sake of resource continuity. Further, we also confirm that RailTel Corporation of India Ltd. may interview the key resources proposed by us and confirm their acceptability. In any event if a resource is found unfit by RailTel Corporation of India Ltd. we agree to change the same and provide Rail-

Tel Corporation of India Ltd. with a replacement within reasonable time so as to not affect the services/project timelines.

7 We confirm and understand that RailTel Corporation of India Ltd. has an aggressive rollout schedule and we will adhere to the rollout schedule at no additional cost/burden to RailTel Corporation of India Ltd.

8 We confirm that all the proposed solution components are compatible and interoperable with each other and the solution will meet the functional and technical requirements of RailTel Corporation of India Ltd.

9 We confirm that the prices and values quoted by us encompass the complete scope of the project and we will ensure that the quality of deliverables for the project is not affected due to any pricing pressures.

10 We wish to confirm that we have back-to-back arrangements from all the OEMs for the sizing, prices and service level commitments. We would be responsible and committed to ensure that the sizing is adequate and service levels as required by RailTel Corporation of India Ltd. are met and adhered. In case the hardware sizing is found to be inadequate and does not meet the SLA then the hardware upgrades, if any, will be provided without any further additional cost or burden to RailTel Corporation of India Ltd. than what has been specified by us in our commercial bid documents.

11 We will be the single point of contact/reference to RailTel Corporation of India Ltd. RailTel Corporation of India Ltd. will enter into agreement with us only.

Place:
Date: Seal and signature of the bidder

(This letter should be on the letterhead of the bidder duly signed by an authorized signatory)

Form No.12

PROFORMA FOR COMMERCIAL COMPLIANCE CERTIFICATE

To,

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003

Dear Sir,

Sub: Commercial Compliance Certificate for RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

Having examined the Bidding Documents the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and work as bidder as mentioned in the RFP document & in conformity with the said bidding documents for the same.

I / We undertake that the price offered are in conformity with the specifications prescribed.

I / We agree to abide by this bid for a period of 180 days (One hundred eighty Days) after the date fixed for bid opening and it shall remain binding upon us and may be accepted by RailTel, any time before the expiry of this period.

Until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and your notification of award shall constitute a binding Contract between us.

I / We agree to the terms & conditions mentioned in the Tender document.

Terms & Conditions:

1 We confirm that we will abide by all the terms and conditions mentioned in the Request for Proposal document.

Place:
Date: Seal & Signature of the Bidder
Note:

Form No.13

PROFORMA FOR PRE BID QUERY FORMAT

Note: Bidder's request for Clarification - to be submitted minimum of two days before pre-bid meeting

If, bidder, desiring to respond to RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** requires any clarifications on the points mentioned in the RFP, it may communicate with RailTel Corporation of India Ltd. using the following format.

All questions received at least two days before the pre-bid meeting will be formally responded to and questions/ points of clarification and the responses will be circulated to all participating bidder if required. The source (identity) of the bidder seeking points of clarification will not be revealed. Alternatively, RailTel may at its discretion, answer all such queries in the Pre-bid meeting.

RailTel Corporation of India Limited,
Corporate Office
Plot No. 143, Sector-44, Gurgaon, Haryana - 122003
Ref: RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

BIDDER'S REQUEST FOR CLARIFICATION

Name of Organization submitting request	Name & position of person submitting request	Full formal address of the Organization including phone, fax and
		Tel:
		Fax:
		Email:

S.No.	Section No.	Page No.	Point No.	Content of RFP requiring Clarification	Points of clarification required
1					
2					

Name and signature of authorized person issuing this request for clarification

Signature/Date Official designation

1 In case of multiple queries, the contact details need not be repeated and only last two rows of the above format (table) are to be furnished for the subsequent queries.
2 Please indicate the preferred method and address for reply.
3 Please use email or softcopy as a preference but forward hard copy confirmations.
4 The name of the organization and the date shall appear in each page of such a document/ email in the header or footer portion.

Form No.14

PROFORMA FOR REQUIREMENT FROM INDIAN RAILWAYS/RAILTEL

Additional Infrastructure/ any other requirements from Indian Railways / RailTel should be listed in the table below and submitted along with the bid.

	Item	Description/Specification
1		
2		
3		
4		
5		
6		
7		
....		
....		
....		

Form No.15

Submission Check List

Note: Bidder is required to submit offer as per following checklist by confirming submission of documents:

S.No.	Item/Clause of Tender Document	Details/Remarks
1.	**Offline (for bid amount submission)**	
1.1	DD for EMD	
1.2	DD for Tender Participation Fee	
1.3	Passwords for all the packages, bid submitted	
1.4	All other documents as per clause 4.B.8 of tender document	
2.	**Packet -1 – online (for confirmation of eligibility criteria)**	
2.1	Confirmation of eligibility criteria	
2.2	Documents supporting the response provided	
2.3	Any other documents deemed relevant by the bidder	
3.	**Packet -1 -online (Technical Bid)**	
3.1	Write up on the solution proposed by the bidder as a response to this RFP	
3.2	Certifications available with the bidder at organization level	
3.3	Functional and Technical Specifications	
3.4	Technical BOM	

3.5	Proposed Agency Profile	
3.6	Confirmation of Terms and Conditions	
3.7	Nil Deviation Components compliance undertaking	
3.8	Manufacturers Authorization Form	
3.9	Undertaking by OEM to sign Tripartite Agreement	
3.10	Tender offer Cover Letter	
3.11	Proposed Team Profile	
3.12	System Performance Guarantee	
3.13	Submission checklist	
3.14	Confirmation of Eligibility	
3.15	Bid Undertaking Letter	
3.16	Resource Deployment Plan during Implementation Phase	
3.17	Additional Requirements from Indian Railways / Rail-Tel	
3.18	Masked commercial bid	
3.19	Original JV Agreement on a stamp paper of appropri-ate value (if applicable)	
3.20	Past Experience Form	
3.21	OEM undertaking to provide support to quoted prod-ucts	
3.22	Power of Attorney (to be submitted offline)	

3.23	Parent Company Guarantee, in case of bidder is a subsidiary/ authorized agent/ branch office/ affiliate of a foreign company	
3.24	Affidavit for the Consortium/ JV Members (if applicable)	
3.25	Consortium Agreement (if applicable)	
3.26	JV Agreement (if applicable)	
3.27	Office location details from bidder(s)/members of JV	
3.28	Any other relevant document as per the requirement of the RFP	
3.29	Any other document deemed relevant by the bidder	
3.30	Submission of passwords of Price Bid files in separate sealed envelopes for each package quoted	
3.31	Undertaking for compliance to Make In India (4.A.48)	
4	**Packet-II – ONLINE (Commercial Bid)**	
4.1	Commercial Compliance Certificate	
4.2	Commercial Bid	

Point no. 3.8 (MAF) and 3.9 (OEM Undertaking to sign tripartite agreement) are applicable for the OEMs of items viz. different types of cameras, server, storage, *video recorder unit/Mobile NVR, NVR, workstation, large format display monitors, switches (Type-I, II, III and IV separately), EMS and UPS system.*

Form No.16

Proposed Agency Profile

Sub: Proposed Agency Profile for RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

S. No.	Particulars	Details to be furnished by the bidders
1	Names and designations of the persons authorized to make commitments to RailTel	
2	Previous organizations where the bidder was associated for similar type of services	
3	Duration of bidder association with that organization	
4	No. of years of experience	

We hereby acknowledge that the information provided by us is true and to the Best of our Knowledge

Place:
Date: Seal and signature of the bidder

Form No.17

Proposed Team Profile

(Please include resource for both Implementation Phase and Support Phase)

Sr. No.	**Name of Proposed Project Manager/ Team leaders /Proposed Team members**	**Position proposed for** (Project Manager/Team Leader/Team Member)	**Professional qualifications and Certifications/ Accreditations**	**Total years of experience**	**Areas of experience in similar projects** (Please provide details about the projects undertaken including project scope, client name, team member's role and responsibilities on the project etc.)	**Number of years of experience in projects pertaining to video Surveillance** (Please provide details about the projects undertaken including project scope, client name, team member's role and responsibilities on the project etc.)

Team Member	**Criteria**
Project Manager	More than 7 years of experience in similar implementations. Should have implemented at least 2 similar projects as project manager.
Solution Consultant	More than 5 years of experience in similar implementations. Should have implemented at least 1 similar project as team lead and should have implemented at least 2 similar projects overall.
Technical Resource	More than 2 years of experience in similar implementation. Should have implemented at least 1 similar project.

Please enclose documentary proofs to substantiate the claims made.
Place:
Date: Seal and signature of the bidder

Form No.18

Resource Deployment Plan during Implementation and support Phase

Bidder should provide the CV of Program Manager and indicative CV of proposed resources. The Bidder also needs to fill the below Resource Deployment which it plans to deploy during the implementation phase of the project.

Resource Name	**Role**	**M 1**	**M 2**	**…. .**	**….**	**…. .**	**M 24**	**…. .**	**….**	**…. .**	**….**	**….**	**….**	**M 120**
	Project Manager	F/ P												
	Team Leader													
	….													
	….													
	….													
	….													

Note:

- F – Full Time
- P – Part Time Resource Deployment Plan

Form No.19

Past Experience Form

S.No.	Item	Details
A. General Information		
1	Customer Name	
2	Details of Contact Person	
	Name	
	Designation	
	Email	
	Mailing Address	
	Phone	
	Fax	
B. General Information		
3	Name of the Project	
4	Government/Private/PSU/Others please specify	
5	Start Date and End Date	
6	Current Status (Completed/Work in Progress)	
7	Contract Tenure	
8	Geographical Coverage (No. of locations the project covers)	
9	Effort involved in person-months in each phase with average/peak number of resources deployed in each phase	
C. Size of the Project		
	Order Value of the project	
	Capital Expenditure involved	
	Cost of services provided by the bidder	
	Cost of services provided by the partners if involved	
	Approximate number of concurrent users	
	No of Video Cameras implemented (if applicable)	
	No of Network Devices managed (if applicable)	
	Please Provide customer certificate/Work order for executed Scope	
D. Brief description of scope of Project		
	Highlights of the Key Result Areas expected and achieved	
	List of modules and sub-modules implemented	
	Narrative description of Project including technology deployed	
	Description of actual services provided by your firm	

Certification: I, the undersigned, certify that these data correctly describe the Projects implemented by our Company.

(Signature)
(Name of Authorized Signatory)
(Designation)
(Date)
(Name and address of the bidder)
(Company Seal)

Form No. 20

Parent Company Guarantee

This GUARANTEE ("Guarantee") is issued on the _____ day of _____ , ___ by _____, a Company organized and existing under the laws of _____ having its Registered Office at _____ (hereinafter referred to as "Guarantor" and/or "_____"), at the request and/or behest of _____, a Company organized and existing under the laws of _____ having its Registered Office at _____ (hereinafter referred to as "Indian arm"), in favour of RailTel Corporation Of India Ltd, Corporate Office, Plot No. 143, Sector 44, Gurgaon, Haryana -122003 (Hereinafter called " the RailTel" or "Beneficiary")

The Beneficiary floated a tender dated _____ inviting offers from Vendors for_____ (purpose). The Indian arm are submitting their response dated _____ and advised the Beneficiary that the Indian arm is the subsidiary/ authorized agent/ branch office/ affiliate* of the Guarantor. The Guarantor wishes to inform the Beneficiary that its Indian arm_____, will quote and participate in the tender in their place and desire that the contract be placed by the Beneficiary on the Indian arm. For this reason, the Guarantor is ready and willing to give a Parent Company Guarantee (PCG) inter alia for the performance of their Indian arm to the terms and conditions of the tender and on failure to assume the said obligations.

IN WITNESS WHEREOF the Guarantor has duly executed this Guarantee as at the date first above written.

For and on behalf of Guarantor,

_____
(Signature) Signature :

Witness
Name :
Designation :
Date :

* Strike off that which is not applicable and retain the correct relationship between Guarantor and Indian arm

Form No.21

List of Office Locations

S.No	Office Name and Address	State in which office is located	No. of Staff employed at location

Place:
Date:

Signature and Seal of Bidder

Form No.22

Tripartite Agreement Format

Tri-partite Memorandum of Understanding

Between

Successful bidder & OEM

And

RailTel Corporation of India Limited

Tri-partite Memorandum of Understanding

THIS Tri-partite MOU ("Tri-partite MOU") is made on the last date of signature by both parties (hereinafter referred as the "Effective Date") by and between:

RAILTEL CORPORATION OF INDIA LIMITED (a Government of India Undertaking) (CIN: U64202DL2000GOI107305), a company incorporated under the Companies Act 1956, having its registered office at 6th Floor, IIIrd Block, Delhi Technology Park, Shastri Park, Delhi-110053 and Corporate Office at Plot no.- 143, Sector 44, Institutional Area, Gurgaon-122003, Haryana, India (hereinafter referred to as "RailTel" which expression unless repugnant to the context. Or meaning thereof, be deemed to mean and include its successors or permitted assign) – PARTY OF THE FIRST PART

AND

PARTY 2 (CIN:------) a company incorporated under the Companies Act, 1956/ Companies Act, 2013 having its registered office at ADDRESS_PARTY2 and having its corporate office at YYYY India (hereinafter referred to as "SI" which expression shall unless repugnant to the context hereof be deemed to include its successors and permitted assigns) – PARTY OF THE SECOND PART

AND

PARTY 3 (CIN:-----), a Company incorporated under the Indian Companies Act 1956/ Companies Act, 2013 and having its registered office at ADDRESS_PARTY3 (herein referred to as "OEM", which expression unless repugnant to the subject or context shall mean and include all its successors and permitted assigns) – PARTY OF THE THIRD PART.

RailTel, SI and OEM are hereinafter collectively referred to as the "Parties" and individually as a "Party".

1 Definitions

1.1 Customer: RailTel Corporation of India Limited
1.2 Definitive Agreement: Contract between RailTel, SI/successful bidder and OEM
1.3 Tri-partite MoU: Memorandum of Understanding between RailTel, SI and the OEM
1.4 Effective Date: The last date of signature of this Tri-partite MoU by all three parties' Authorized Signatories
1.5 MoU: Memorandum of Understanding between JV and RailTel
1.6 RFP: Request for Proposal ("RFP") for Supply, Installation, Testing, Commissioning, Operation, and Maintenance of the IP based CCTV surveillance system at various Railway Stations of A1, A, B and C category of Indian Railways
1.7 RFP Response: Proposal submitted to RailTel in response to RFP received

2 Term

This Tri-partite MoU shall be effective from the "Effective Date" and shall continue till the completion of the work unless there is mutual disagreement among all the parties. In case SI and OEM, do not enter the Tri-partite MoU with RailTel, EMD submitted by the successful bidder (in reference to the "MoU") shall be forfeited.

3 Cost

Each Party shall individually assume its own respective costs at the agreed upon rates associated with the activities undertaken pursuant to this Tri-partite MoU. No third party cost shall be committed and incurred until RailTel approves and agrees on such expenditure.

4 Entire Understanding

This Tri-partite MoU constitutes the entire understanding of the parties related to the subject matter hereof. The Tri-partite MoU may be amended only in writing when it is signed by RailTel, SI/successful bidder and OEM.

5 Responsibilities of the OEM

1 Scope of work allocated to respective OEM would be decided as per their respective portion of work only as decided between the OEM & the bidder. However in the event of any dispute or discrepancy, the scope of work mentioned in the tender document would prevail
2 OEM agrees to support successful bidder throughout the entire duration of this project, starting with bid preparation process up until project implementation and maintenance of the same. The project duration comprises of 90 days of implementation, 12 months of maintenance supervision period, 2 years for warranty and 5 years for AMC starting from date of issuance of LoA. However, if the implementation phase gets extended (for whatsoever reason), OEM shall extend their support on best effort basis for the same period.
3 OEM will provide its compliance to all the undertakings required as per the RFP.
4
5 In case the contract agreement between successful bidder and the OEM is terminated (for whatsoever reason), the OEM shall identify and suggest a suitable replacement in agreement with RailTel. However the OEM shall continue to support RailTel for this project and the compliances provided will remain valid for the entire duration of the project.

6 Termination

1 This Tri-partite MoU shall come into force on the Effective Date and shall continue (unless terminated earlier) until the completion of the work.

2 This Tri-partite MoU will be terminated by giving a notice of thirty days in the event of mutual agreement between the three Parties

3 This Tri-partite MoU stands automatically terminated on occurrence of any of the following events whichever shall occur first:

- On cancellation of RFP by RailTel.
-

7 General

1. Except to the extent otherwise provided herein, no liability shall result to any party from delay in performance or from non-performance caused by circumstances beyond the reasonable control of that party affected, including but not limited to act of God, file, flood, explosion, war, action or request of the Governmental authority, accident, labor trouble, but each of the hereto shall be diligent in attempting to remove such cause or causes.
2. No alterations or amendments to this Tri-partite MoU shall be effective unless in writing and signed by all the three parties.
3. In all matters relating to this Tri-partite MoU, each Party shall be acting as an independent contractor. Neither Party's employees are employees of the other party under the meaning or application of any laws or otherwise. Each Party assumes all liabilities or obligations imposed by any law with respect to its employees. Neither Party shall have any authority to assume or create any obligation, express or implied, on behalf of the other party without the prior written consent of that other Party. Neither Party shall have authority to represent itself as an agent, employee, or in any other capacity of the other Party.
4. All notices, under this Tri-partite MoU shall be given by the parties at the addresses mentioned in this Tri-partite MoU in writing by letter or by personal delivery.
5. Neither party shall be entitled to assign or sub-contract all or any of its rights, benefits and obligations under this Tri-partite MoU without the prior written consent of the other party, which consent shall not be unreasonably withheld or delayed.
6. Notwithstanding any other provisions of this Tri-partite MoU, the provisions of this Tri-partite MoU that are intended to survive shall so survive the term and termination of this Tri-partite MoU .
7. The waiver of any breach of any term, covenant, or condition, herein contained, shall not be deemed to be a waiver of such term, covenant or condition, or any subsequent breach of the same.
8. Parties shall not publicize any information pertaining to this Tri-partite MoU or to the other party without seeking the prior written consent of the other party.
9. Nothing contained in this Tri-partite MoU shall be construed as creating a consortium, partnership or employment relationship between the parties hereto, nor shall either party have the right, power or authority to create any obligation or duty, express or implied, on behalf of the other.
10. This Tri-partite MoU may be executed by the parties in separate counterparts each of which when so executed and delivered shall constitute an original, and all such counterparts together shall constitute one and the same instrument.
11. This Tri-partite MoU is signed by the authorized representatives of the Parties.

IN WITNESS WHEREOF the parties hereto have executed these presents the day and year first above written.

SIGNED AND DELIVERED BY (on behalf of RailTel)

Signature ……
Name……
Designation ……
Address……..…..
…….……

In the presence of

Signature ……..
Name…….
Designation……
Address ……..……

SIGNED AND DELIVERED BY (on behalf of SI/Party 2)

Signature ……
Name……
Designation ……
Address……..…..
…….……

In the presence of

Signature ……..
Name…….
Designation……
Address ……..……

SIGNED AND DELIVERED BY (on behalf of OEM/Party 3)

Signature ……
Name……
Designation ……
Address……..…..
…….……

In the presence of

Signature ……..
Name……
Designation……
Address ……

Form No.23

Undertaking for the compliance to AMC conditions

RFP No: RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472
Dated dd/mm/2019

To,

Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003

Dear Sir,

Sub: Undertaking for compliance to AMC conditions with reference to RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

I / We ……. hereby confirm and accept that against RailTel Tender No. …….., the requirement of Annual Maintenance Support as per Clause 4.A.3 shall be met by us directly or through our subsidiary in India as per rates quoted in the Price Bid. I / We have gone through the requirement mentioned in the Tender document and shall provide services as per terms and conditions pertaining to Long Term Maintenance Support of this RFP document.

Date: Seal and signature of the bidder

(This letter should be on the letterhead of the OEM duly signed by an authorized signatory)

Form No.24

Undertaking to provide for the support to quoted product

RFP No: RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472
Dated: dd/mm/2019

To,
Executive Director/Project
RailTel Corporation of India Ltd.
Plot No. 143, Institutional Area,
Opposite-Gold Souk,
Sector-44, Gurgaon-122003
Dear Sir,

Sub: Undertaking to provide for support to the proposed product with reference to RFP no. RailTel/Tender/OT/CO/P/2018-19/CCTV at stations & in coaches/472 for **Supply, Installation, Testing, Commissioning, Operation and Maintenance of IP based Closed Circuit Television (CCTV) Surveillance System at Stations and in Coaches of Indian Railways for and on behalf of Indian Railways** dated 22.02.2019.

We hereby explicitly undertake to provide support for the quoted _____ (OEM) products in terms of provision of spares and repair/replacement of faulty equipment, software upgrade as per the terms and conditions of the support contract pre-purchased by _____(the Lead Bidder and System Integrator) for the requirements mentioned in RFP document during the entire duration of the project starting with bid preparation process up until project implementation and maintenance of the same. The project duration comprises of 90 days of implementation, 12 months of maintenance supervision period, 2 years for warranty (including period of extension as provided under clause 4.A.2) and 5 years for AMC. In case of unavailability of support/repair/replacement of proposed products during the currency of the project, we would provide an equivalent or better product at no cost to RailTel.

Place:
Date: Seal and signature of the OEM

(This letter should be on the letterhead of the OEM duly signed by an authorized signatory)

CHAPTER-7

Annexure-I

List of Divisional Control Offices

S. No	Railway zone	Headquar-ters	Divisions Control Office	Region
1.	Central Railway	Mumbai	Mumbai, Bhusawal, Pune, Solapur, Nagpur	Western
2.	East Central Railway	Hajipur	Danapur, Dhanbad, Mughalsarai, Samastipur, Sonpur	Eastern
3.	East Coast Railway	Bhubaneswar	Khurda Road, Sambalpur, Waltair	Eastern
4.	Eastern Railway	Kolkata	Howrah, Sealdah, Asansol, Malda	Eastern
5.	North Central Railway	Allahabad	Allahabad, Tundla, Agra, Jhansi	Northern
6.	North Eastern Railway	Gorakhpur	Izzatnagar, Lucknow, Varanasi	Northern
7.	North Western Railway	Jaipur	Jaipur, Ajmer, Bikaner, Jodhpur	Northern
8.	North-east Frontier Railway	Guwahati	Alipurduar, Katihar, Rangia, Lumding, Tinsukia	Eastern
9.	Northern Railway	Delhi	Delhi, Ambala, Firozpur, Lucknow, Moradabad	Northern

10.	South Central Railway	Secundera-bad	Secunderabad, Vijayawada, Hydera-bad, Guntakal, Guntur, Nanded	Southern
11.	South East Central Railway	Bilaspur	Bilaspur, Raipur, Nagpur	Southern
12.	South Eastern Railway	Kolkata	Adra, Chakradharpur, Kharagpur, Ranchi	Southern
13.	South Western Railway	Hubli	Hubli, Bangalore, Mysore	Southern
14.	Southern Railway	Chennai	Chennai, Tiruchirappalli, Madurai, Pa-lakkad, Salem, Thiruvananthapuram	Southern
15.	West Central Railway	Jabalpur	Jabalpur, Bhopal, Kota	Western
16.	Western Railway	Mumbai	Mumbai Central, Ratlam, Ahmeda-bad, Rajkot, Bhavnagar, Vadodara	Western

Break-up of these 6124 stations is as follows:-

Category wise total Stations	
A1	12
A	267
B	273
C	431
D	983
E	4158
Total	**6124**

Station category wise planned number of camera installations is as follows:-

Category	A1	A	B	C	D & E
Dome	7	6	5	2	0
PTZ	9	6	4	3	1
Fixed Bullet Type	68	42	25	17	9
4k UHD	8	6	4	4	0
Total	**92**	**60**	**38**	**26**	**10**

Note:- Bidders to take a note that these numbers are assumed to estimate the infrastructure requirement like cameras, servers, storage capacity etc. at each RPF/GRP Thana/Post, however the actual number of cameras deployed may vary as per the actual site requirements and design approved by Indian Railways and RailTel.

Stations	NR	WR	ER	SR
A1	2	4	3	3
A	81	53	62	71
B	68	46	84	75
C	0	91	246	94
D	331	149	291	212
E	1321	771	1169	897
6124	1803	1114	1855	1352

- Tentative list of stations for the work of CCTV at stations are enclosed with the tender document.
- Tentative list of trains for the work of CCTV is also enclosed with the tender document.

Annexure-II

Detailed standard conditions applicable for the Annual Maintenance Contract (Clause 4.A.3, Chapter-4A of Tender Document)

1.0 Introduction

This document contains the standard conditions applicable for the Annual Maintenance Contract between RailTel and the Contractor. Contractor is defined as the company whose products/equipment have been deployed over the RailTel Video Surveillance Network and the warranty of these equipment has expired or going to be expire shortly. All the equipment/ cards/ modules given in SOR will be covered under this contract. This Annual Maintenance Contract will cover up the provision of remote services to be provided by the contractor for proper working of Video Surveillance Network created through the contractor's equipment. This document will also cover up the Repair and Return services for the rectification of defective equipment/modules/cards/parts etc. which are the key components used tools in use for uninterrupted traffic. It also includes the Key performance parameter which will decide the outcome of the contractor within reasonable time frame along with the provision of penalties. This Annual Maintenance Contract will cover the following services:

- **Technical Support service.**
- **Repair and Return Service.**
- **Software Updates.**

2.0 Basic Definitions and terminology Used:-

RailTel: RailTel Corporation of India Limited having its registered office at 10th floor, BoB Building, 16 Sansad Marg, New Delhi and Corporate Office at Plot No. 143, Institutional Area, Opposite-Gold Souk, Sector-44, Gurgaon-122003.

Contractor: Contractor means firm/company whom equipment are deployed over the Telecommunication Network of RailTel.

TSC: Technical Support Center created by the Contractor for 2nd level support.

TEC: Telecom Excellence Center created by the contractor for 3rd level support.

WC: Welcome Center of contractor through which the RailTel may interact with contractor.

AR: Assistance Request created by WC of contractor for a specific request of RailTel which will be used for all references until its closure and also for future correspondence.

Maintained Products: Details of equipment with location wise deployment and serial identification numbers to be incorporated in a statement jointly signed by RailTel and Contractor, which will be covered under AMC contract.

Key Performance Indicators (KPIs):

The key performance indicators (KPI) established by contractor and RailTel, are dependent on the severity level of the request as reported by RailTel to the TSC through telephone. Contractor's KPIs extend to Maintained Products running on a currently supported software version release only. These are KPIs which will decide the penalties to be imposed on contractor if he fails to achieve the fixed parameter for both remote services and Repair & Return services.

"Response Time" (also known as Specialist Call-back) means the time period from when RailTel first notifies the Contractor's welcome center of a reported problem to when an contractor's expert attempts to contact RailTel via telephone or preferred contact method as defined when submitting the request.

"Restore Time" (also known as Remote Neutralization) means a measure of the length of time from when contractor is contacted and an event is determined to be loss of service and/or functionality affecting, to the time when contractor provides the means to return a system to operational status. This will be applicable only for services impacting cases. Travel time of field's engineers or TSC engineers and spare arrangement times will be excluded in this.

Resolve Time (Also known as Final Resolution Time) means a measure of the length of time from when RailTel first notifies the contractor's welcome center to the time when a solution to address the issue is made available to RailTel. This may or may not occur simultaneously with Restore Time.

Patch Releases/Maintenance Releases:-

"Patch Release" means a software release that contains minor modifications to address a specific problem and help restore a system. A Patch Release may also be known as "Craft Release".

"Maintenance Release" means a software release that contains modifications intended to resolve problems that prevent products from performing up to the manufacturer's technical specification. Typically they are comprised of a collection of Patch Releases. Maintenance Release may also be known as an "Update Release" or a "Point Release".

3.0 Technical Support Service:-

During this AMC period, whenever needed, RailTel may contact the Contractor's Support center (WC) through a dedicated phone no. or e-mail address or Web for every issue or request. The Welcome Center of the Contractor (WC) will be available 24 hours a day and 365 days of the year. Welcome Centre creates the Assistance Request (AR) in the database and this AR will be used for all future correspondence /references and it will route to either for Repair or Return services or to Technical support center (TSCs) for remote assistance. These level 2 services provided through Technical support center may escalate to Technical Experts centre or to OEM dedicated technical support centers (for OEM support for hardware and /or software portion of the products).

The Welcome centre of contractor (WC) keeps track of the assistance request (AR) or part request until closure.

3.1 Schedule of Activity for execution of AMC:

Contractor shall login VSS in support of product related questions troubleshooting assistance, diagnostic procedures, and Patch & Maintenance Releases, as are made available, to restore and resolve network troubles. The following services will be provided:

3.1.1 Bidder shall provide AMC of complete system including spares

3.1.2 Troubleshoot hardware/software problems of the system via phone, virtual private network, or modem connection down to Maintained product component level, or sufficiently to the maintained products as the root cause.

3.1.3 Provide technical advice and guidance via telephone or email by Contractor's product specialists located in their Technical Support Centers (TSC). Upon request from RailTel, RailTel will receive information, advice and assistance for the Maintained Products.

3.1.4 Provide Patch & Maintenance Releases for Maintained Products, as provided in accordance with the applicable product software support policy. For selected products noted on Maintained Products Contractor will remotely install software fixes, patches, and updates that may be made available.

3.1.5 During the period of AMC, the contractor shall remain responsible to arrange for the replacement and setting right at his own cost the equipment/sub-system in hardware or software or any other form supplied by him which is of defective design or defective material/component or becomes unworkable due to any cause whatsoever.

3.1.6 For Severity Level Critical (Severity 1) and Major (Severity 2) will restore Maintained Products to operational status by identifying defective hardware components or providing software and/or procedural workarounds, where feasible. All software workarounds will be licensed subject to the same terms, restrictions, and limitations as contained in the licenses under which the software was acquired.

3.1.7 Fault reporting to be registered by the service provider round the clock including the holidays and Sundays on telephone/mobile or otherwise

3.1.8 Maintain the requisite inventory/ spares.

3.1.9 The contractor engineer shall fill up the history sheet containing the statistics about the health of equipment installed at the concerned site and send a report on monthly basis. Based on this history sheet the supplier shall analyze the health report of each site and if something alarming or unusual is noticed, shall advise the field staff of RailTel to take necessary actions for preventive maintenance of such equipment. The Proforma for checking the status/history sheet shall be jointly decided by the contractor and RailTel.

3.1.10 Qualified engineer of the firm shall visit every month with necessary tools and equipment to check all the hardware, software and peripheral equipment covered under the scope of AMC.

3.1.11 The comprehensive maintenance should be carried out under the supervision of competent supervisor with good workmanship to the satisfaction of the RailTel/Railways

3.1.12 All sorts of safety precautions should be taken before starting the work. The RailTel/Railways would not be responsible for any accident caused to its labor during the execution of the maintenance works

3.1.13 All checks through servicing and maintenance carried out, shall be entered against each machine/equipment in asset register. Signature of the RailTel/Railway representative/superior during the check should be obtained by the contractor concerned

3.1.14 During the period visited any breakdown requiring repairing, the engineer of the firm will also check and clean all the system relevant components and this includes disinfections of any viruses detected

3.1.15 Supply of another alternative machine/equipment free of cost during the maintenance contract has to be ensured by the contractor when the machine/equipment is taken out for repairing or overhaul over and above the duplication already provided

3.1.16 When the machine/equipment or system component is taken out of the user premises, an indemnity bond has to be executed in proper format by the firm concerned of an equivalent as per accepted rate of LOA/CA of tender

3.1.17 No extra charge shall be paid for handling of machine/equipment or system component from site to Firm's premise and back in case of any requirement. No additional payment shall be made to the contractor for attending to the maintenance /failure requirements or any other visit to installation over and above what is included in AMC

3.1.18 The necessary documentary evidences/proofs should be obtained from the authorized representative of RailTel/Railways on the successful rectification of the fault

3.1.19 If required the contract can be terminated by RailTel by giving one month notice period. No extra payment will be made during the currency of the AMC contract

3.1.20 **Software Update:** RailTel will be extended the benefits of firmware/software updates made by OEM on the installed systems on existing release from time to time to improve performance. If required to restore or rectify severe problems all the software up-gradation, re-installation will be done by contractor during the period of AMC.

4.0 Repair and Return Services

4.1 Repair

4.1.1 Contractor's Responsibility:-

- The Contractor will take-over the defective equipment/component from station/site and hand-over the repaired equipment/component at the same location. The following activities will be performed by the contractor:
- After receiving a defective part request through Welcome Centre (dedicated phone line or e-mail), the defective equipment/component will be taken over by the contractor from each of the station. All the documentation including identification number (Serial number) will be provided by RailTel.
- There will be initial one time activity of all existing faulty equipment/component being repaired by Contractor before commencement of the AMC. AMC will cover only equipment which are in working condition.
- **Delivery Period:** The received defective part will be got repaired by the contractor within 30 days from the date of receiving and will be handed over to RailTel/Railway authorized representative at station/site. The contractor will also give probable reason for repeated failure of equipment/component/ modules.

Uninterrupted Network: For smooth and uninterrupted traffic during the repair being carried out by the contractor.

1. RailTel/Railways will provide its own spares in the first instance for the defective equipment where spares have been procured as per the SOR. For remaining items contractor shall make spares available at his own cost.
2. If contractor fails to return the repaired equipment/module/card/SFP/part within stipulated time of 30 days from the date of receipt then the OK (good conditioned) equipment/cards/SFPs/parts etc. will be provided by the contractor for the subsequent time period free of cost till replacement is made with the repaired equipment/module/card/SFP/part.
3. All transportation, freight and insurance charges will be borne by the contractor.
4. Contractor will keep the record of repair on each defective equipment/part/cards/SFP/components with serial numbers (unique identification) particulars.

4.1.2 RailTel/Railways Responsibility

RailTel/Railways will hand over the equipment/defective card/SFP/Parts/etc. to the contractor's authorized representative at each of the station/site along with the following relevant information & documentation.

- Identification/serial number and location of use.
- Fault report document duly filled-in in a format as per requirements of Contractor.
- All relevant documentation including failure description, diagnostic tests results.
- Adequate packing material to protect against reasonable risk of damages.
- Provide all necessary government authorization and documentation necessary to facilitate custom clearance processing.
- Perform a physical check test on the repaired parts.

4.2 Return

If any part goes beyond repair due to Contractor at the time of repair being carried out, this is to be communicated to RailTel/Railways and after agreed upon, it will be labeled as "unworkable". If it will be required to deploy a new equipment/part on that location that will be provided by the contractor free of cost. To achieve this, contractor is required to always keep adequate spares with it during the period of AMC. However this excludes damaged, spoiled, rusted or misused equipment/parts. Any such equipment/parts will be not-repairable and no replacements shall be provided by contractor. RailTel will have to purchase fresh spares in case the equipment/cards are non-repairable due to any of these above mentioned reasons.

4.3 If the contractor fails to return the equipment/accessories within 30 days, the following penalties will be imposed:

Equipment	Duration of repair	Deduction/Penalties
All Equipment/Module and accessories	More than 30 days and upto 40 days (from the date of receipt)	10% of the cost of affected equipment/module
All Equipment/Module and accessories	More than 40 days and upto 50 days (from the date of receipt)	25% of the cost of affected equipment/module
All Equipment/Module and accessories	More than 50 days and upto 60 days (from the date of receipt)	75% of the cost of affected equipment/module
All Equipment/Module and accessories	More than 60 days (from the date of receipt)	Full cost of affected equipment/module

5.0 Service Level Agreement (SLA) and Penalties

As per clause 4.A.8, chapter-4 of tender document.

6.0 Manpower Support

As per clause 4.A.3, chapter-4 of tender document.

6.1.1 Responsibility Matrix of appointed engineer:

As per clause 4.A.9.1, chapter-4 of tender document.

6.1.10 General Terms and Conditions Applicable

i) The selection of the Engineer will be done by Contractor jointly with RailTel. RailTel will nominate their officer/s for interviewing the candidates.
ii) The Engineer must be equipped with all necessary facilities/equipment such as Laptop, mobile telephone, data card, Internet connection; conveyance accommodation etc.
iii) The prices quoted in SOR do not include any travel/boarding & lodging expenses outside of the working headquarter (decided by RailTel).
iv) In case of requirements from contractor to log in to the system remotely, RailTel would provide adequate data communications facilities, remote access, telephone and modem connections, all in accordance with RailTel's Security policies and procedures, as may be necessary for the proper performance of contractor's obligations.
v) In case of unsatisfactory service, the Engineer will be withdrawn and replaced by a suitable one with a clear notice of 15 days.

7.0 General Conditions:

7.1 Period of AMC

This Annual Maintenance Contract will be valid for a period of 5 years from the date of issue of LOA for AMC. This period (i.e. 5 years) may be extended further with mutual consent of RailTel and Contractor.

7.2 Performance Bank Guarantee:-

The contractor is required to submit a Performance Bank Guarantee (PBG) to respective Executive Director/Regional General Manager within 15 days from the date of issue of LOA for AMC @ 10% of the value of the AMC contract's annual value valid for a period of 64 months (4 months beyond the AMC period of 5 years) from the date of issue of LOA. The Performa for PBG is given in Form No. 1 of Chapter 6 of this tender document. If the AMC period got extended, the PBG will also be extended accordingly.

The Performance Bank Guarantee will bear no interest.

7.3 Prices and Taxes:-

- The prices for the services shall be in INR which will be the currency of account invoicing and payment.
- Price will not include the cost of any financing (if any).

7.4 Payment Terms:-

AMC charges shall be paid on quarterly basis by the respective Executive Director of the concerned Region after successful completion of maintenance within 30 days from the date of invoicing accompanied with Invoice, Monthly trouble ticket report, Monthly repair report subject to any deductions or recovery (which the RailTel(RCIL) may be entitled to make under contract) through RTGS. Monthly reports will be shared with RailTel(RCIL) regularly. Format of the reports to be shared shall be mutually decided by RailTel(RCIL) and Contractor.

7.5 Execution of contract

For CCTV work at stations, the Executive Directors/Regional General Manager of respective region or any other representative nominated by them will be responsible for the execution of the contract under their respective jurisdiction. Certificate regarding proper execution of the AMC along with proposed deductions/penalties with reasons thereof shall be prepared for every billing cycle (quarterly) for arranging payment to the contractor.
For CCTV work in train coaches, designated consignee of coaching depots/car sheds/workshop will operate the AMC contract. The Executive Directors/Regional General Manager of respective region or any other representative nominated by them will be responsible for the coordination of the depot/workshop under their respective jurisdiction. Certificate regarding proper execution of the AMC along with proposed deductions/penalties with reasons thereof shall be prepared for every billing cycle (quarterly) for arranging payment to the contractor.

7.6 Not Used

7.7 Not Used

7.8 Bidder's Address

Bidder shall state in the tender his postal address fully and clearly. Any communication sent to the bidders by post at his said address shall be deemed to have reached the bidder duly & timely, notwithstanding the fact the communication could not reach the bidder at all or in time for whatever reason. Important documents shall be sent by Registered post.

7.9 Not Used

7.10 Law governing the contract.

The contract shall be governed by the law for the time being in force in the Republic of India. Compliance to regulations and bye-laws-The contractor shall conform to the provision of any statute relating to the works and regulations and bye-laws of any local authority and of any water and lighting companies or undertakings, with whose system the work is proposed to be connected and shall before making any variation from the drawings or the specifications that may be necessitated by so confirming give to the Engineer notice specifying the variation proposed to be made and the reason for making the variation and shall not carry out such variation until he has received instructions from the Engineer in respect thereof. The Contractor shall be bound to give all notices required by statute, regulation or bye-laws as aforesaid and to pay all fees and taxes payable to any authority in respect thereof.

7.11 Force Majeure clause:-

If at any time, during the continuance of this contract, the performance, in whole or part, by either party, of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, act of the public enemy, Civil Commotion, Sabotage, Fires, Floods, Earth quakes, explosions, strikes, epidemics, quarantine restrictions, lockouts, any statute, statutory rules/regulation, order of requisitions issued by any Government Department of Competent Authority or acts of God (here-in-after referred to as event) then provided notice of the happening of any such event is given by either party to the other within twenty one days from the date of occurrence thereof, neither party shall, by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damage against the other in respect of such non-performance or delay in performance, and the obligations under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, Provided further that if the performance in whole or part of any obligation under this contract of prevented or delayed by reason of any such event beyond a period as mutually agreed to by the RailTel and the Contractor after any event or 60 days in the absence of such an agreement whichever is more, either party may at its option to terminate the contract provided also that if the contract is so terminated under this clause the RailTel may at the time of such termination take over from the Contractor at prices as provided for in the contract, all works executed or works under execution.

7.12 Illegal Gratification

Any bribe, commission, gift or advantage given, promised or offered by or on behalf to the contractor or his partner, agent or servant or anyone on his behalf to any officer or employees of the RailTel, or to any person on his behalf in relation to obtaining or the execution of this or any other contract with the RailTel shall, in addition or any criminal liability which he may incur, subject the contractor to the rescission of the contract and all other contracts with the RailTel and to the payment of any loss or damage resulting from such decision and the RailTel shall be entitled to deduct the amounts so payable from any moneys due to the Contractor (s) under this contract or any other contracts with the RailTel.

The contractor shall not lend or borrow from or have or enter into any monitory dealings or transactions either directly or indirectly with any employee of the RailTel and

if he shall do so, the RailTel shall be entitled forthwith to rescind the contract and all other contracts with the RailTel. Any question or dispute as to the commission or any shall offence or compensation payable to the RailTel under this clause shall be settled by the Regional General Manager of RailTel, in such a manner as shall consider fit and sufficient and his decision shall be final and conclusive. In the event of rescission of the contract under this clause, the contractor will not be paid any compensation whatsoever except payment for the work done up to date of rescission.

7.13 LABOUR

Wages to Labour- The contractor shall be responsible to ensure compliance with the provisions of the Minimum Wages Act, 1948 (hereinafter referred to as the "said Act") and the Rules made there-under in respect of any employees directly or through petty contractors or sub contractors employed by him on road construction or in building operations or in stone breaking or stone crushing for the purpose of carrying out this contract. If in compliance with the terms of the contract, the contractor supplied any labour to be used wholly or partly under the direct orders and control of the RailTel whether in connection with any work being executed by the contractor or otherwise for the purpose of the RailTel such labour shall, for the purpose of the clause, still be deemed to be persons employed by the contractor. If any moneys shall as a result of any claim or application made under the said Act be directed to be paid by the RailTel, such moneys shall be deemed to be moneys payable to the RailTel by the Contractor and on failure by the contractor to repay any moneys paid by it as aforesaid with seven days after the same shall have been demanded, the RailTel shall be entitled to recover the same form any moneys due or accruing to the contractor under this or any other contractor with the RailTel.

7.13.1 Apprentices Act

The contractor shall be responsible to ensure compliance with the provisions of the Apprentices Act 1961 and the Rules and Orders issued the re-under from time to time in respect of apprentices directly through petty contractors or sub-contractors employed by him for purpose of carrying out the contract. If the Contractor directly or through petty contractor or sub-contractors fails to do so, his failure will be breach of the contract and the RailTel may, in its discretion, rescind the contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation of the provisions of the Act.

7.13.2 Provisions of Payments of Wages Act

The Contractor shall comply with the provisions of the payment of Wages Act, 1936 and the rules made there under in respect of all employees directly or through petty contractors or sub-contractors employed by him in the works. If in compliance with the terms of the contract, the contractor directly or through petty contractors or sub-contractors shall supply any labour to be used wholly or partly under the direct orders and control of the Engineer whether in connection with the works to be executed hereunder or otherwise for the purpose of the Engineer such labour shall nevertheless be deemed to comprise persons employed by the contractor, and any moneys which may be ordered to be paid by the Engineers shall be deemed to be moneys payable by the Engineer on moneys due to the contractor in terms of the contractor (whether under this contract or any other contract all moneys paid or payable by the RailTel by

way of compensation of aforesaid or for costs of expenses in connection with any claim thereto and the decision of the Engineer upon any question arising out of the effect or force of this clause shall be final and binding upon the contractor.

7.13.3 Provision of Contract Labour (Regulation and Abolition) Act 1970

1. The contractor shall comply with the provision of the Contract Labour (Regulation and Abolition) Act 1970 and the Contract Labour (Regulation and Abolition) Act, Central Rules 1971 as modified from time to time, whenever applicable and shall also indemnify the RailTel from and against any claims under the aforesaid Act and the Rules.

2. The contractor shall obtain a valid license under the aforesaid Act as modified from time to time before the commencement of the work and continue to have a valid license until the completion of the work. Any failure to fulfill this requirement shall attract the penal provision of the Contract arising out of the resultant non-execution of the work.

3. The contractor shall pay to the labour employed by him directly or through sub-contractors the wages as per provisions of the aforesaid Act and the Rules wherever applicable. The Contractor shall notwithstanding the provisions of the contract to the contrary, cause to be paid the wages to labour indirectly engaged on the work including any engaged by his sub contractors in connection with the said work, as if the labour had been immediately employed by him.

4. In respect of all labour directly or indirectly employed in the work for performance of the contractor's part of the contract the contractor shall comply with or cause to be complied with the provisions of the aforesaid Act and the Rules wherever applicable.

5. In every case in which, by virtue of the provisions of the aforesaid Act or the Rules, the RailTel is obliged to pay any amount of wages to a workmen employed by the contractor or his sub-contractor in execution of the work or to incur any expenditure in providing welfare and health amenities required to be provided under the aforesaid Act and the Rules or to incur any expenditure in providing welfare and health amenities required to be provided under the aforesaid Act the Rules or to incur any expenditure on account of the contingent liability of the RailTel due to contractor's failure to fulfill his statutory obligations under the aforesaid Act or the Rules the RailTel will recover from the contractor, the amount of wages so paid or the amount of expenditure so incurred, and without prejudice to the rights of the RailTel under section 20, sub section (2) and section 2 sub-section (4) of the aforesaid Act, the RailTel shall be at liberty to recover such amount or part thereof by deducting it from the security deposit and/or from any sum due by the RailTel to the contractor whether under the contract or otherwise. The RailTel shall not be bound to contest any claim made against it under sub section (1) of section 20 and sub section (4) of section 21 of

the aforesaid Act except on the written request of the contractor and upon his giving to the RailTel full security for all costs for which the RailTel might become liable in contesting such claim. The decision of the RailTel regarding the amount actually recoverable from the contractor as stated above shall be final and binding on the contractor.

7.13.4 Reporting of Accidents to Labor

The contractor shall be responsible for the safety of all employees directly or through petty contractors or sub-contractors employed by him on the works and shall report serious accidents to any of them however and wherever occurring on the works to the Engineer or the Engineer's representative and shall make every arrangement to render all possible assistance.

7.13.5 Provisions of Workmen's Compensation Act

In every case, in which by virtue of the provision of section 12 sub section (1) of the Workmen's Compensation Act, 1923, RailTel is obliged to pay compensation to workman directly or through the petty contractor employed by the contractor or sub-contractor, in executing the work, RailTel will recover from the contractor the amount of the compensation so paid, and without prejudice to the right of RailTel under section 12 sub section (2) of the said Act. RailTel shall be at liberty to recover such amount or any part thereof by deducting it from the security deposit or from any sum due by RailTel to the Contractor whether under these conditions or otherwise, RailTel shall not be bound to contest any claim made against it under Section 12, Sub Section (1) of the said Act except on the written request of the contractor and upon his giving to RailTel full security for the all costs for which RailTel might become liable in consequence of contesting such claim.

7.14 Determination of Contract

Right of RailTel to determine the contract: The RailTel shall be entitled to determine and terminate the contract at any time, should in the RailTel's opinion, the cessation of the work becomes necessary owing to paucity of funds or from any other cause whatever, in which case the value of approved materials at site and of work done to date by the Contractor will be paid for in full at the rate specified in the contract. Notice in writing from the RailTel of such determination and the reasons thereof shall be conclusive evidence thereof.

Payment on determination of contract: Should the contract be determined under sub clause (1) of this clause and the Contractor claims payment for expenditure incurred by him in the expectation of completing the whole of the work, the RailTel shall admit and consider such claims as are deemed reasonable and are supported by vouchers to the satisfactions of the Engineer. The RailTel's decision on the necessity and property of such expenditure shall be final and conclusive.

The contractor shall have no claim to any payment of compensation of otherwise, however on account of any profit or advantage which he might have derived from the execution of the work in full but which he did not derive in consequence of determination of contract.

Clause no. 7.14 of Chapter 7 relating to Determination of Contract will also be applicable on full scope of work as mentioned in tender.

7.15 TERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR:

As per clause 4.A.31, chapter-4 of tender document.

7.16 RIGHT OF RAILTEL AFTER TERMINATION OF CONTRACT OWING TO DEFAULT OF CONTRACTOR :

a) The contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any commitments or made any advances on account of or with a view to the execution of the works or the performance of the contract and contractor shall not be entitled to recover or be paid any sum for any works thereto not actually performed under the contract, unless or until the Engineer shall have certified the performance of such work and the value payable in respect thereof and the Contractor shall only be entitled to be paid the value so certified.

b) The Engineer or Engineer's Representative shall be entitled to take possession of any materials, tools, implements, machinery or buildings on the works or on the property on which these are being or ought to have been executed, and to retain the employ the same in further execution of the works without the contractor being entitled to any compensation for the use and employment thereof or for wear and tear or destruction thereof.

c) The Engineer shall, as soon as may be practicable after removal of the contractor fix and determine expert or by or after reference to the parties or after such investigation or enquiries as he may consider fit to make or institute and shall certify what amount (if any) has at the time of termination of the contract been reasonably earned by or would reasonably accrue to the Contractor in respect of the work then actually done by him under the contract what was the value of any unused or partially use materials, any constructional plants and any temporary works upon the site. The legitimate amount due to the contractor after making necessary deductions and certified by the Engineer should be released expeditiously.

7.17 SETTLEMENT OF DISPUTES:-

As per clause 4.A.29, chapter-4 of tender document.

7.18 **Indemnity by Contractors**

As per clause 4.A.30.1, chapter-4 of tender document.

Annexure – III

CONSORTIUM BIDS

1.1 In view of nature of work covered in the Bid documents, it is anticipated that some of the intending tenderers will pool their resources and experience to form consortia. Consortium bids are permitted with each consortia of tenderers allowed to have at maximum three members, the consortia of tenderers must clearly define the lead bidder of the consortia along with its roles and responsibilities.

1.2 The Lead bidder should have experience of execution of turnkey similar projects/Works (Definition of similar work is as per the clause 4.A.14 of Chapter 4). In their own interest the tenderers who form such a consortia are advised to investigate capabilities, availability of resources, experienced personnel, financial soundness, past experience and concurrent engagements of constituting partners.

1.3 Consortia of tenderers, if any, must clearly define role/scope of work of each partner/member. Further the legal agreement for a consortium must accompany the bid and should clearly define the leader of such a consortium who will be the contractor and will be responsible for timely completion of work as also during execution of work, if awarded, coordinate with Purchaser on behalf of the consortium, receive payments for the works executed and be liable for due performance of the contract in all respect.

1.4 Qualification documents, details etc. must however, be provided for each member firm complete in all respects strictly in requisite proforma.

1.5 A consortium formed will not be subject to alteration with regard to change in constituting firms and/or reorientation of roles. Any changes, if proposed by consortium to take advantage of certain developments during evaluation stage will render the bid liable to be rejected. As all details are required to be furnished along with the bids and will be critically examined during evaluation of bids, it is imperative that such details should have been thoroughly examined as a safeguard against a possible disqualification of bids on these grounds.

1.6 All partners of the consortium shall be jointly and severally liable to RailTel for the execution of the entire contract in accordance with its terms.

1.7 In case of consortium bids by Indian Company with foreign Company as one of the consortium partner, Part of Payment (for imported items) can be quoted in any of the major foreign currencies viz USD, British Pound, EURO or Japanese YEN. In such a case, bidder should clearly specify the components of Foreign exchange and Indian currency for each item.

1.7.1 For evaluation purposes, Exchange rate applicable on the date of technical bid opening (T.T. selling Exchange rate of State Bank of India applicable on the date technical bid opening) will be considered.

1.7.2 Release of payments in foreign exchange for imported items to foreign companies as a consortium partner, shall be on request of lead bidder along with bill and will be governed by payment clause (as per clause no. 4.A.5 of chapter-4 Section-I Commercial Terms & Conditions of Contract).

1.8 Consortium shall not have more than three members and each consortium member shall have minimum 20% contribution in the work. A Consortium must submit a Power of Attorney by the other member of the Consortium in favor of the Lead Member. This is also to be enshrined in Memorandum of Agreement signed by the Consortium Members and submitted along with the bid. Members of consortium should sign every sheet of price bid as a token of acceptance of all quoted prices by members, failing which the offer will stand summarily rejected.

1.9 An individual bidder or a member of Consortium cannot be a member of another Consortium or a JV partner and participate in this tender.

1.10 Firms should submit the affidavit (As per Form-A) & Consortium Agreement (As per Form-C) along with the bid/offer.

1.11 Each consortium member shall make equal contribution towards the total PBG amount to be submitted along with acceptance of LOA.

1.A CONDITIONS FOR PARTICIPATION OF JOINT VENTURE FIRMS

(i) Separate identity/name shall be given to the Joint Venture firm.

(ii) Number of members in JV firm shall not be more than 3.

(iii) Members of JV firm shall not be permitted to participate either in individual capacity or as a member of another JV firm **in the same tender.**

(iv) The tender form shall be purchased and submitted only in the name of the JV firm and not in the name of any constituent member.

(v) EMD shall be submitted only in the name of the JV and not in the name of constituent member. However, in exceptional cases EMD in the name of lead partner can be accepted subject to submission of specific request letter from lead partner stating the reasons for not submitting the EMD in the name of JV and giving written confirmation from the JV partners to the effect that the EMD submitted by the lead partner may be deemed as EMD submitted by JV firm.

(vi) One of the members of the JV firm shall be the lead member of the JV firm who shall have a majority (at least 51%) share of interest in the JV firm. The other members shall have a share of not less than 20% each in case of JV firms. In case of JV firm with foreign member(s), the lead member has to be an Indian firm with a minimum share of 51%.

(vii) A copy of Memorandum of Understanding (MoU) executed by the JV members shall be submitted by the JV firm along with the tender. The complete details of the members of the JV firm, their share and responsibility in the JV firm etc. particularly with reference to financial technical and other obligations shall be furnished in the MoU. (The MoU format for this purpose shall be finalized by the RailTel in consultation with their law branch and shall be enclosed along with the tender)

(viii) Once the tender is submitted, the MoU shall not be modified/altered/terminated during the validity of the tender. In case the tenderer fails to observe/comply with this

stipulation, the full Earnest Money Deposit (EMD) shall be forfeited. In case of successful tenderer, the validity of this MoU shall be extended till the currency of the contract expires.

(ix) Approval for change of constitution of JV firm shall be at the sole discretion of RailTel. The constitution of the JV firm shall not be allowed to be modified after submission of the tender bid by the JV firm except when modification becomes inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. In any case the Lead Member should continue to be the Lead Member of the JV firm. Failure to observe this requirement would render the offer invalid.

(x) Similarly, after the contract is awarded, the constitution of JV firm shall not be allowed to be altered during the currency of contract except when modification become inevitable due to succession laws etc. and in any case the minimum eligibility criteria should not get vitiated. Failure to observe this stipulation shall be deemed to be breach of contract with all consequential penal action as per contract conditions.

(xi) On award of contract to a JV firm, a single Performance Guarantee shall be required to be submitted by the JV firm as per tender conditions. All the Guarantee like Performance Guarantee, Bank Guarantee for Mobilization advance, machinery Advance etc. shall be accepted only in the name of the JV firm and no splitting of guarantees amongst the members of the JV firm shall be permitted.

(xii) On issue of LOA, an agreement among the members of the JV firm (to whom the work has been awarded) has to be executed and got registered before the Registrar of the Companies under Companies Act or before the Registrar/Sub-Registrar under the Registration Act, 1908. This agreement shall be submitted by the JV firm to the RailTel before signing the contract agreement for the work. (This agreement format should invariably be part of the tender condition). In case the tenderer fails to observe/comply with this stipulation, the full Earnest Money Deposit (EMD) shall be forfeited and other penal actions due shall be taken against partners of the JV and the JV.

This joint venture agreement shall have inter-alia following clauses:

a. **Joint and several liability** – The members of the JV firm to which the contract is awarded, shall be jointly and severally liable to RailTel for execution of the project in accordance with General and special conditions of the contract. The JV members shall also be liable jointly and severally for the loss, damages caused to the RailTel during the course of execution of the contract or due to non-execution of the contract or part thereof.

b. **Duration of the joint venture agreement** – It shall be valid during the entire currency of the contract including the period of extension if any and the maintenance period after the work is completed.
c. **Governing Laws** – The JV agreement shall in all respect be governed by and interpreted in accordance with Indian Laws.

d. **Authorised Member** – Joint Venture members shall authorize one of the members on behalf of the JV firm to deal with the tender, sign the agreement or enter into contract in respect of the said tender, to receive payment, to witness joint measurement of work done, to sign measurement books and similar such action in respect of the said

tender/contract. All notices/correspondences with respect to the contract would be sent only to this authorized member of the JV firm.

(xiii) Not used

(xiv) No member of the JV firm shall have the right to assign or transfer the interest right or liability in the contract without the written consent of the other members and that of the employer (RailTel) in respect of the said tender/contract.

(xv) Documents to be enclosed by the JV firm along with the tender:
A. In case one or more of the members of the JV firm is/are partnership firm(s), following documents shall be submitted: -
(a) Notary certified copy of the Partnership Deed.
(b) Consent of the all the partners to enter into the Joint Venture Agreement on a stamp paper of appropriate value (in original),
(c) Power of Attorney (duly registered as per prevailing law) in favour of one of the partners to sign the MOU and JV Agreement on behalf of the partners and create liability against the firm.

B. In case one or more members is/are Proprietary Firm or HUF, the following documents shall be enclosed.
Affidavit on Stamp Paper of appropriate value declaring that his Concern is a Proprietary Concern and he is sole proprietor of the Concern or he is in position of "KARTA" of Hindu Undivided Family and he has the authority, power and consent given by other partners to act on behalf of HUF.

C. In case one or more members is/are limited companies, the following documents shall be submitted:
(a) Notary certified copy of resolutions of the Directors of the Company, permitting the company to enter into a JV agreement, authorizing MD or one of the Directors or Managers of the Company to sign MOU, JV Agreement, such other documents required to be signed on behalf of the Company and enter into liability against the company and/or do any other act on behalf of the company.
(b) Copy of Memorandum and articles of Association of the Company.
(c) Power of Attorney (duly registered as per prevailing law) by the Company authorizing the person to do/act mentioned in the para (a) above.

D. All the members of the JV shall certify that they have not been black listed or debarred by Railways/RailTel or any other Ministry/Department of the Govt. of India/State Govt. from participation in tender/contract in the past either in their individual capacity or the JV firm or partnership firm in which they were members/partners.

(xvi) Firms should submit the affidavit (As per Form-A) & Joint Venture Agreement/ Memorandum of Agreement (As per Form-B) along with the bid/offer.

FORM-A

AFFIDAVIT

(To be given separately by each Consortium/Joint Venture member of the Bidder on Stamp Paper of Rs. 10)

I, _____ S/o _____, Resident of _____, _____, the _____ [insert designation] of the [insert name of single bidder / Consortium/Joint Venture member if Consortium/Joint Venture] do solemnly affirm and state as follows:

1. I say that I am the authorized signatory of _____ [insert name of company/Consortium/Joint Venture member] (hereinafter referred to as "Bidder/Consortium/Joint Venture Member") and I am duly authorized by the Board of Directors of the Bidder/Consortium/Joint Venture Member to swear and depose this Affidavit on behalf of the Bidder/Consortium/Joint Venture Member.

2. I say that I have submitted information with respect to our eligibility for RailTel Corporation of India Ltd. (hereinafter referred to as "RCIL") **(NAME OF WORK)** (hereinafter referred to as "Project") Request for Proposal ('RFP') document and I further state that all the said information submitted by us is accurate, true and correct and is based on our records available with us.

3. I say that, we hereby also authorize and request any bank, authority, person or firm to furnish any information, which may be requested by RCIL to verify our credentials / information provided by us under this tender and as may be deemed necessary by RCIL.

4. I say that if at any point of time including the extension period, in case RCIL requests any further/additional information regarding our financial and/or technical capabilities, or any other relevant information, we shall promptly and immediately make available such information accurately and correctly to the satisfaction of RCIL.

5. I say that, we fully acknowledge and understand that furnishing of any false or misleading information by us in our RFP shall entitle us to be disqualified from the tendering process for the said Project. The costs and risks for such disqualification shall be entirely borne by us.

6. I state that all the terms and conditions of the Request for Proposal (RFP) document has been duly complied with.

DEPONENT

VERIFICATION

I, the above-named deponent, do very that the contents of paragraphs 1 to 6 of this affidavit are true and correct to my own knowledge. No part of it is false and nothing material has been concealed. Verified at _____, on this ___ day of_____, 2016.

DEPONENT

FORM-B

JOINT VENTURE AGREEMENT/MEMORANDUM OF AGREEMENT

(On Stamp Paper of Rs fifty)

This Joint Venture Agreement/Memorandum of Agreement is executed at Gurgaon on this _____ day of _____, 2016.

BETWEEN

M/s. _____, a Company incorporated under the Companies Act, 1956 and having its Registered Office at _____ acting through its Managing Director, _____ duly authorized by a resolution of the Board of Directors dated ____ (hereinafter referred to as the 'LEAD MEMBER' which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the ONE Part;

AND

M/s. _____, a Company incorporated under the Companies Act, 1956 and having its Registered Office at _____ and Office at _____, acting through its Joint President, _____, duly authorized by a resolution of the Board of Directors dated _____ (hereinafter referred to as the ('Participant member') which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the 'OTHER PART'

AND

M/s. _____, a Company incorporated under the Companies Act, 1956 and having its Registered Office at _____ and Office at _____, acting through its Joint President, _____, duly authorized by a resolution of the Board of Directors dated _____ (hereinafter referred to as the ('Participant member') which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the 'OTHER PART'

Whereas RailTel Corporation of India Ltd. (hereinafter referred to as 'RCIL') has invited tenders for the **"(NAME OF WORK)**" in terms of the tender documents issued for the said purpose and the eligibility conditions required that the applicants bidding for the same should meet the conditions stipulated by RCIL for participating in the bid by the Joint Venture for handling the project for which the tender has been floated by RCIL.

AND WHEREAS in terms of the bid documents both the parties jointly satisfy the eligibility criteria laid down for a bidder for participating in the bid process by forming a Joint Venture between themselves.

AND WHEREAS both the parties hereto have discussed and agreed to form a Joint Venture for participating in the aforesaid bid and have decided to reduce the agreed terms to writing.

NOW THIS JOINT VENTURE AGREEMENT/Memorandum of Agreement hereby WITNESSES:

1. That in the premises contained herein the Lead Member and the Participant Member having decided to pool their technical know-how, working experiences and financial resources, have formed themselves into a Joint Venture to participate in the tender process for "**(NAME OF WORK)**" in terms of the tender invited by RailTel Corporation of India Ltd., (RCIL).

2. That the members of the Joint Venture have represented and assured each other that they shall abide by and be bound by the terms and conditions stipulated by RCIL for awarding the tender to the Joint Venture so that the Joint Venture may take up the aforesaid "**(NAME OF WORK)**" in case the Joint Venture turns out to be the successful bidder in the bid being invited by RCIL for the said purpose.

3. That the members of the Joint Venture have satisfied themselves that by pooling their technical know-how and technical and financial resources, the Joint Venture fulfills the prequalification/ eligibility criteria stipulated for a bidder, to participate in the bid for the said tender process for "**(NAME OF WORK)"**

4. That the Joint Venture have agreed to nominate any one of_____, _____ and _____ as the common representative who shall be authorized to represent the Joint Venture for all intents and purposes for dealing with the Government and for submitting the bid as well as doing all other acts and things necessary for submission of bid documents such as Tender Application Form etc., Mandatory Information, Financial Bid. Etc., and such other documents as may be necessary for this purpose.

5. That the share-holding of the members of the Joint Venture for this specified purpose shall be as follows:
(i) The Lead Member shall have _____ per cent (___ %) of share-holding/participation with reference to the Joint Venture for this specified project.
(ii) The Participant Member shall have _____ (___ %) of share-holding/participation with reference to the Joint Venture for this specified project.
(iii) The Participant Member shall have _____ (___ %) of share-holding/participation with reference to the Joint Venture for this specified project.

6. That in order to fulfill the requirement of the tender process and also keep an altogether separate legal entity of the Joint Venture, the Members of the Joint Venture undertake to provide their own nominees as share-holders to the extent of their respective share-holding for the purpose of formation of a Special Purpose Company (SPC) through which the Joint Venture proposes to undertake the _____ of RCIL.

7. That if any change in the membership of the Joint Venture be required to be made by the members of the Joint Venture, the same shall be done with the consent of RCIL subject to the conditions as may be stipulated by them in this regard.

8. That in case to meet the requirements of bid documents or any other stipulations of RCIL, it becomes necessary to execute and record any other documents amongst the members of the Joint Venture, they undertake to do the needful and to participate in the same for the purpose of the said project.

9. That it is clarified by and between the members of the Joint Venture that execution to this Joint Venture Agreement/Memorandum of Agreement by the members of the Joint Venture does not constitute any type of partnership for the purposes of provisions of the Indian Partnership Act and that the members of the Joint Venture shall otherwise be free to carry on their independent business or commercial activities for their own respective benefits under their own respective names and styles. This Joint Venture Agreement is limited in its operation to the specified project.

10 That the Members of the Joint Venture undertake to specify their respective roles and responsibilities for the purposes of implementation of this Joint Venture Agreement and the said project if awarded to the Joint Venture in the Memorandum & Articles of Association of the proposed Special Purpose Company to be got incorporated by the Joint Venture Members to meet the requirements and stipulations of RCIL.

IN FAITH AND TESTIMONY WHEREOF, THE PARTIES HERETO HAVE SIGNED THESE PRESENTS ON THE DATE, MONTHS AND YEAR FIRST ABOVE WRITTEN.

1. (_____)	2. (_____)	3. (_____)
Managing Director	Managing Director	Managing Director
(_____)	(_____)	(_____)
For (Name of company)	For (Name of company)	For (Name of company)

WITNESSES:
1. _____
2. _____

Enclosure:

Board resolution of each of the Joint Venture Members authorizing:
(i) Execution of the Joint Venture Agreement, and
(ii) Appointing the authorized signatory for such purpose.

FORM-C

CONSORTIUM AGREEMENT /MEMORANDUM OF AGREEMENT

(On Stamp Paper of Rs fifty)

This Consortium Agreement is executed at Gurgaon on this _____ day of _____, 2016.

BETWEEN

M/s. _____, a Company incorporated under the Companies Act, 1956 and having its Registered Office at _____ acting through its Managing Director, _____ duly authorized by a resolution of the Board of Directors dated ____ (hereinafter referred to as the 'LEAD MEMBER' which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the ONE Part;

AND

M/s. _____, a Company having its Office at _____ and Office at _____, acting through its Joint President/ MD/..,_____, duly authorized by a resolution of the Board of Directors dated_____ (hereinafter referred to as the ('Participant member') which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the OTHER PART'

AND

M/s. _____, a Company having its Office at _____ and Office at _____, acting through its Joint President/ MD/..,_____, duly authorized by a resolution of the Board of Directors dated_____ (hereinafter referred to as the ('Participant member') which expression unless excluded by or repugnant to the subject or context be deemed to mean and include its successors in interest, legal representatives, administrators, nominees and assigns) of the OTHER PART'

Whereas RailTel Corporation of India Ltd. (hereinafter referred to as 'RCIL') has invited tenders for the **"(NAME OF WORK)**" in terms of the tender documents issued for the said purpose and the eligibility conditions required that the applicants bidding for the same should meet the conditions stipulated by RCIL for participating in the bid by the Consortium for handling the project for which the tender has been floated by RCIL.

AND WHEREAS in terms of the bid documents the parties jointly satisfy the eligibility criteria laid down for a bidder for participating in the bid process by forming a Consortium between themselves.

AND WHEREAS the parties hereto have discussed and agreed to form a Consortium for participating in the aforesaid bid and have decided to reduce the agreed terms to writing.

NOW THIS CONSORTIUM Agreement hereby WITNESSES:

1. That in the premises contained herein the Lead Member and the Participant Member having decided to pool their technical know-how, working experiences and financial resources, have formed themselves into a Consortium to participate in the tender process for "**(NAME OF WORK)**" in terms of the tender invited by RailTel Corporation of India Ltd., (RCIL).

2. That the members of the Consortium have represented and assured each other that they shall abide by and be bound by the terms and conditions stipulated by RCIL for awarding the tender to the Consortium so that the Consortium may take up the aforesaid "**(NAME OF WORK)**" in case the Consortium turns out to be the successful bidder in the bid being invited by RCIL for the said purpose.

3. That the members of the Consortium have satisfied themselves that by pooling their technical know-how and technical and financial resources, the Consortium fulfills the prequalification/ eligibility criteria stipulated for a bidder, to participate in the bid for the said tender process for "**(NAME OF WORK)"**

4. That the Consortium have agreed to nominate any one of_____, _____ and_____ as the common representative who shall be authorized to represent the Consortium for all intents and purposes for dealing with the Government and for submitting the bid as well as doing all other acts and things necessary for submission of bid documents such as Tender Application Form etc., Mandatory Information, Financial Bid. Etc., and such other documents as may be necessary for this purpose.

5. That if any change in the membership of the Consortium be required to be made by the members of the Consortium, the same shall be done with the consent of RCIL subject to the conditions as may be stipulated by them in this regard.

6. That in case to meet the requirements of bid documents or any other stipulations of RCIL, it becomes necessary to execute and record any other documents amongst the members of the Consortium, they undertake to do the needful and to participate in the same for the purpose of the said project.

7. That it is clarified by and between the members of the Consortium that execution to this Consortium Agreement by the members of the Consortium does not constitute any type of partnership for the purposes of provisions of the Indian Partnership Act and that the members of the Consortium shall otherwise be free to carry on their independent business or commercial activities for their own respective benefits under their own respective names and styles. This Consortium Agreement is limited in its operation to the specified project.

8 That the Members of the Consortium undertake to specify their respective roles and responsibilities for the purposes of implementation of this Consortium Agreement and the said project, if awarded to the Consortium, to meet the requirements and stipulations of RCIL.

9. The consortium formed will not be subject to alteration with regard to change in constituting firms and/or reorientation of roles. Any changes, if proposed by Consortium to take advantage of certain developments during evaluation stage will render the bid liable to be rejected.

10. All partners of the consortium shall be jointly and severally liable to RailTel for the execution of the entire contract in accordance with its terms.

11. Each Consortium member has minimum 20% contribution in the work and role/scope of each member is enclosed.

12. Power of Attorney by all members of the Consortium in favor of the Lead Member is also enclosed.

IN FAITH AND TESTIMONY WHEREOF, THE PARTIES HERETO HAVE SIGNED THESE PRESENTS ON THE DATE, MONTHS AND YEAR FIRST ABOVE WRITTEN.

1. (_____)	2. (_____)	3. (_____)
Managing Director	Managing Director	Managing Director
(_____)	(_____)	(_____)
For (Name of company)	For (Name of company)	For (Name of company)

WITNESSES:

1. _____
2. _____

Enclosure:

Board resolution of each of the Consortium Members authorizing:
(i) Execution of the Consortium Agreement, and
(ii) Appointing the authorized signatory for such purpose.

*****

Annexure-IV

FORMAT FOR AFFIDAVIT TO BE UPLOADED BY TENDERER ALONGWITH THE TENDER DOCUMENTS

(To be executed in presence of Public notary on non-judicial stamp paper of the value of Rs.100/-. The stamp paper has to be in the name of the tenderer)**

I……..(Name and designation)** appointed as the attorney/authorized signatory of the tenderer (including its constituents),
M/s._____ (hereinafter called the tenderer) for the purpose of the Tender documents for the work of _____ as per the tender No._____ of (-------Railway), do hereby solemnly affirm and state on the behalf of the tenderer including its constituents as under:

1. I/We the tenderer (s), am/are signing this document after carefully reading the contents.

2. I/we the tenderer(s) also accept all the conditions of the tender and have signed all the pages in confirmation thereof.

3. I/We hereby declare that I/We have downloaded the tender documents from electronic-tender portal. I/We have verified the content of the document from the website and there is no addition, no deletion or no alteration to the content of the tender document. In case of any discrepancy noticed at any stage i.e. evaluation of tenderers, execution of work or final payment of the contract, the master copy available with the railway Administration shall be final and binding upon me/us.

4. I/We declare and certify that I/we have not made any misleading or false representation in the forms, statements and attachments in proof of the qualification requirements.

5. **I/We also understand that my/our offer will be evaluated based on the documents/credentials submitted alongwith the offer and same shall be binding upon me/us.**

6. **I/We declare that the information and documents submitted alongwith the tender by me/us are correct and I/we are fully responsible for the correctness of the information and documents submitted by us.**

7. I/We undersigned that if the certificates regarding eligibility criteria submitted by us are found to be forged/false or incorrect at any time during process for evaluation of tenders, it shall lead to forfeiture of the tender EMD besides banning of business for five year on entire IR. Further, I/we (*insert name of the tenderer*)** _____ and all my/our constituents understand that my/our offer shall be summarily rejected.

8. I/we also understand that if the certificates submitted by us are found to be false/forged or incorrect at any time after the award of the contract, it will lead to termination of the contract, alongwith forfeiture of EMD/SD and Performance Guarantee besides any other action provided in the contract including banning of business for five year on entire IR.

DEPONENT
SEAL AND SIGNATURE
OF THE TENDERER

VERIFICATION

I/We above named tenderer do hereby solemnly affirm and verify that the contents of my/our above affidavit are true and correct. Nothing has been concealed and no part of it is false.

DEPONENT
SEAL AND SIGNATURE
OF THE TENDERER

Place:
Dated:

** The contents in Italics are only for guidance purpose. Details as appropriate, are to be filled in suitably by tenderer. Attestation before Magistrate/Notary Public.

Annexure-V

Inspection Procedure pertaining to Clause nos. 3.D.1 and 3.D.3 of Chapter 3-D of the Tender Document:

2. (i) The tests shall be undertaken by RDSO/Railways/RailTel's officials with modified QA processes in place of 3rd party undertaking the entire test abroad.

3. (ii) In case OEM/Vendor has already got Type Tests and Acceptance Tests conducted on the lot offered for supply, by the 3rd party test house as per RDSO guidelines, OEM/Vendor can apply for the waiver of the repeat type test and/or acceptance test.

4. (iii) While submitting request for waiver of Type Test and/or Acceptance Test, the OEM/vendors shall submit documents regarding all quality acceptance tests conducted by a recognized third party on the equipments being offered for supply. If the tests are within the stipulated limits of RDSO, RDSO may waive off those Type Tests and/or Acceptance Tests.

5. (iv) In case OEM/vendor has not got Type Tests/Acceptance Tests conducted by a reputed Third party or only partial Type Tests/Acceptance Tests has been done, OEM/vendor shall apply to RDSO for arranging only the remaining Type Tests/Acceptance Tests along with the request letter and necessary certificates of tests already done. Tests may be carried out by the nominated officials from Railway/RailTel or from RDSO. These tests shall be got conducted by the OEM/vendor either at Factory premises if inspection facility exists or at 3rd party test house of International repute such as UL, TUV etc. as per request by OEM to RDSO (Telecom Directorate). In case, the test has to be done at a 3rd party test house, the details of such a test house shall be submitted by OEM/vendor to RDSO (Telecom Dte.) for prior clearance. These details shall show the testing capability of the test house and shall confirm that the test house has already undertaken the requisite testing of such equipments. RDSO (telecom Dte.) shall advise the test format and details regarding the sampling plan to the inspecting officials of Railways/RailTel for the equipments on which type test are required to be conducted. RDSO(Telecom Dte) shall also advise concerned RDSO(S&T-QA) Cell.

6. (v) The Railway/RailTel's officials after conducting requisite type test or/ and acceptance test shall submit the test report directly to RDSO. In case, they have found that equipment conforms to RDSO's specification, necessary clearance for dispatch of the equipment shall be given by them to the OEM/vendor under intimation to RDSO.

7. (vi) In case complete tests are done by RDSO/railways/RailTel, on arrival of such cleared equipment in India, sample tests covering only visual test shall be undertaken by

RDSO(S&T-QA) at the premises of OEM/Vendor in India.

. (vii) In case, where some or all type tests and acceptance tests were waived off based on 3rd party testing certificate, on arrival of such cleared equipment in India, sample test covering visual and functional tests shall be undertaken by RDSO (QA/S&T) at the premises of OEM/Vendor in India.

. (viii) On successful completion of visual tests as above, requisite inspection certificate shall be issued by RDSO after countersigning of test reports submitted by the inspecting team and keeping a record of the test reports.

. (ix) In case some tests have been waived off as per para (ii) of this policy, the vendor shall submit special bank guarantee (in addition to Performance Guarantee) equivalent to 10% of the value of the equipment inspected abroad and valid for a period of one year and undertaking to the purchaser that the equipment supplied shall meet all the requisite parameters of the specification and shall work satisfactorily failing which bank guarantee may be encashed. Firm shall also submit suitable undertaking regarding satisfactory repair/service support to the purchaser.

. (x) Once type test has been successfully completed on an equipment, only acceptance test shall be conducted subsequently, in case the same equipment (make, model & version) is offered again.

Annexure-VI

Proforma of Bank Guarantee towards Purchase Preference – Local Content

Ref No. _____ Bank Guarantee No. _____
Dated _____

To
RailTel Corporation of India Limited
_____
_____

Dear Sirs,

4. In consideration of _____ _____ (hereinafter referred to as RAILTEL, which expression shall, unless, repugnant to the context or meaning thereof, include all its successors, administrators, executors and assignees) having entered into a Contract No. _____ dated_____ (hereinafter called 'the said CONTRACT' which expression shall include all the amendments thereto) with M/s _____ having its registered/head office at _____ (hereinafter referred to as the 'CONTRACTOR') which expression shall, unless repugnant to the context or meaning thereof include all its successors, administrators, executors and assignees) and RAILTEL having agreed that the CONTRACTOR shall furnish to RAILTEL a Bank Guarantee for India Rupees/US$ _____ for the faithful fulfilment of conditions pertaining to Local Content in accordance with the value mentioned in the certificate of Local Content submitted by the contractor for claiming purchase preference under the Purchase Preference Policy (linked with Local Content).

5. We (name of the bank) _____ registered under the laws of ____having head/registered office at _____(hereinafter referred to as "the Bank", which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and permitted assignees) do hereby guarantee and undertake ti pay ro RAILTEL immediately on first demand in writing any / all money to the extent of Indian Rs./US$ (in fugures) _____ (India Rupees/US Dollars (in figures) _____ (India Rupees/US Dollars (in words) _____) without any demur, reservation, contest or protest and/or without any reference to the CONTRACTOR. Any such demand made by RAILTEL on the Bank by serving a written notice shall be conclusive and binding, without any proof, on the bank as regards the amount due and payable, notwithstanding any dispute(s) pending before any Court, Tribunal, Arbitrator or any other authority and/or any other matter or thin whatsoever, as liability under these presents being absolute and unequivocal. We agree that the guarantee herein contained shall be irrevocable and shall not be determined, discharged by RAILTEL in writing. This guarantee shall not be determined, discharged or affected by the liquidation, winding up, dissolution or insolvency of the CONTRACTOR and shall remain valid, binding and operating against the bank.

6. The Bank also agrees that RAILTEL at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance, without proceeding against the CONTRACTOR and notwithstanding any security or other guarantee that RAILTEL may have in relation to the CONTRACTOR's liabilities.

7. The Bank further agrees that RAILTEL shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said CONTRACT or to extend time of performance by the said CONTRACTOR(s) from time to time or to postpone for any time or from time to time exercise of any of the powers vested in IL against the said CONTRACTOR(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relived from our liability by reason of any such variation, or extension being granted to the said CONTRACTOR(s) or for any forbearance, act or any such matter of RAILTEL or any indulgence by RAILTEL to the said CONTRACTOR(s) or any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

8. The Bank further agrees that the Guarantee herein contained shall remain in full force during the period that is taken for the performance of the CONTRACT and all dues of RAILTEL under or by virtue of this CONTRACT have been fully paid and its claim satisfied or discharges or till RAILTEL discharges this guarantee in writing, whichever is earlier.

9. This Guarantee shall not be discharged by any change in our constitution, in the constitution of RAILTEL or that of the CONTRACTOR.

10. The Bank confirms that this guarantee has been issued with observance of appropriate laws of the country of issue.

11. The Bank also agrees that this guarantee shall be governed and construed in accordance with Indian Laws and subject to the exclusive jurisdiction of India Courts of the place from where the purchase CONTRACT has been placed.

12. Notwithstanding anything contained herein above, out liability under this Guarantee is limited to Indian Rs./US$ (in figures) _____ (Indian Rupees/US Dollars (in words) _____ and our guarantee shall remain in force until _____ (indicate the date of expiry of bank guarantee).

Any claim under this Guarantee must be received by us before the expiry of this Bank Guarantee. If no such claim has been received by us by the said date, the rights of RAILTEL under this Guarantee will cease. However, if such a claim has been received by us within the said date, all rights of RAILTEL under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

In witness whereof, the Bank through its authorized officer has set its hand and stamp on this _____ date of _____20__ at _____

WITNESS NO. 1

_____ _____

(Signature)
Full name and official address
(in legible letters)
Stamp

(Signature)
Full name, designation and address
(in legible letters)
With Bank

Attorney as per power of Attorney No. _____
Dated _____

WITNESS NO. 2

_____

(Signature)
Full name and official address
(in legible letters)
Stamp

Annexure - VII

CALCULATION OF LOCAL CONTENT

1. Under present DIPP PPP-MII policy issued vide their order No. P-45021/2/2017-PP (BE-II) dated 28-05-2018, Notification of DoT issued vide No. 18-10/2017-IP dated 29-08-2018 and PPO 2017 by MeitY issued vide Notification No. 33(1)/2017-IPHW dated 14.09.2017 and Notification No. 33(5)/2017-IPHW dated 01.08.2018), following products, covered under the RFP, are protected:
    a. Routers (PMI- 50%, LC - 60%)
    b. Ethernet Swtiches (PMI -50%, LC -60%)
    c. WiFi Access Points (PMI -100%, LC -50%)
    d. Security and Surveillance Communication Systems (video and sensors based) including Perimeter Security Systems (PMI -100%, LC -40%)
    e. Optical Fiber (PMI -50%, LC -50%)
    f. Optical Fiber Cable (PMI -75%, LC -55%)
    g. Telecom Power System (PMI -50%, LC -55%)
    h. Telecom Battery (PMI -50%, LC -55%)
    i. Servers – by MeitY (PMI -50%, LC-40%)

    PMI – Minimum preference in % (of total quantity being procured) for Make in India Telecom Products, Services or Works as indicated against each financial year
    LC – Minimum Local Content as a percentage of total Bill of Material (cost of production) to qualify as Make in India Telecom Products, Services or Works as indicated against each financial year

2. Item no. 24 of Table-A of DoT Notification dated 29-08-2018, i.e. Security and Surveillance Communication Systems (video and sensors based) including Perimeter Security Systems, has not been defined by DoT. The item shall include, for the purpose of this RFP, following sub-items,
    a. Cameras (of all types),
    b. Application software VMS
    c. Application software VA
    d. Application software FR.
    e. Any other Application software such as AI etc. offered as part of above sub-items to improve the performance of the system

3. Domestic manufacturers of items in para 1 above shall be protected if they meet minimum local content requirement. This RFP being a composite tender, where System Integrators (SIs) are supposed to bid with most economic cost to them. Under such circumstances, the SIs are free to choose various products depending upon the solution, convenience, economy or any other reason.

4. OEM for any product required for the work, covered under PPP-MII, has to submit a certificate against meeting the requirement of local content, as per PPP-MII guidelines, either as self declaration (if value of procurement is less than 10 crore) or as a

certificate issued by their statutory auditors or cost auditors (if value of procurement is more than 10 crore).

5. As item against "Security and Surveillance Communication Systems (video and sensors based) including Perimeter Security Systems" does not include products from one OEM, the Local Content shall be calculated as

Value of Local Content in %ge	=	(Total offered Value of all sub-items in the bid) – (Total value of Non-LC sub-items)
		Total offered Value of all sub-items in the bid

If the value of Local Content, calculated above, is more than 40% (for FY 2019-20), the total value of the combined product (to qualify against item no. 24 of Table-A of DoT Notification) shall be considered as Local Content.

6. If any product covered under protected list has not been offered as domestically manufactured product with requisite local content, total value of the offered product will not be considered as Local Content in the overall bid. Total value of all such protected domestically manufactured products, not offered with requisite Local Content, (say Non-LC items) along with other foreign items shall be deducted from the overall value of the bid to calculate the LC Value. The same is reproduced as under:

Value of Local Content in %ge	=	(Total Bid Value) – (Total value of all Non-LC items)
		Total Bid Value

Further, as per notification of DoT issued vide No. 18-10/2017-IP dated 29-08-2018, the proposed work is considered as Telecom Services/Works (S.No. 36 of Table-A). Therefore, if the value of Local Content, calculated above, is more than 70%, the bid shall be considered for preference under PPP-MII policy.

7. Bidder is also required to declare against each SOR item, whether, the offered product is falling under domestic/foregin category. If the offered product is a notified domestic item then bidder has to submit all documents as mentioned in the notifications/guidelines of GoI regarding domestic product/s along with the bid to qualify offered product/s as a domestic product/s and consideration in evaluation of domestic bid. In case of non-submission of required documents, offered product will not be treated as domestic product.

****

CHAPTER- 8

TECHNICAL, FUNCTIONAL REQUIREMENTS & SPECIFICATIONS

Note 1: The proposed solution must meet all technical and functional specifications mentioned in the latest Technical specification released by RDSO or else otherwise defined the tender document.

RDSO or TEC specification shall be the base specifications wherever available, where these are not available the equipment/software/application etc. shall conform to standard ITU/internationally accepted standards.

However, in case of any conflict on the solution design parameters, system functional requirements and technical specification of a system/item between RDSO specification and the tender conditions, the tender conditions will prevail over RDSO specifications.

Note 2: It may kindly be noted that in the specification wherever support for a feature has been asked for, it will mean that the feature should be available without RailTel requiring any other hardware/software/licenses. Thus all hardware/software/licenses required for enabling the support/feature shall be included in the offer.

Note 3: All the IP cameras as quoted by the bidder against SOR Chapter-2 for stations packages must be sourced from the same OEM. However, bidder may quote different camera OEM for CCTV work in train coaches.

Note 4: Deleted.

Note 5: The below mentioned technical specifications for the supply items are bare minimum requirements of the purchaser, the supply items quoted by bidder must comply with these technical specifications. However, the bidder can quote the items with higher technical specifications catering to the futuristic requirements of the proposed solution.

Note 6: The BOM submitted by the bidder as a part of the bid response must be vetted by respective OEMs.

8.1. IP Cameras

8.1.1. **IP cameras of Fixed Bullet type, Fixed Dome type, P/T/Z type and 4K UHD Bullet type IP colour camera at stations:**

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.1.2. Fixed Dome type IP colour camera for train coach:

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments.

8.2 Server and Network Video Recorder

8.2.1 Server for CCTV at Stations

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments and as specified in tender document.

8.2.2 Network Video Recorder

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments and as specified in tender document.

8.2.3 Server for CCTV in Train Coaches

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments.

NOTE:-

Bidder to provide a 1U foldable TFT colour monitor of 17" or higher with keyboard, mouse, KVM switch and all accessories required for installation along with each 42U rack to connect servers, NVR, switches, storage system etc. installed in the rack for troubleshooting etc.

8.3 Video Surveillance System (VSS)/CCTV System

8.3.1 VSS/CCTV System for Stations

The following para mentions Design parameters, Functional and Technical requirement for VSS system for Stations as per Architecture defined in tender clause 3.B.7.

This includes Video Management Software, Video Recording Software, Video Analytic Software, GUI Client Software, Facial Recognition System (FRS) etc. for IP based Video Surveillance at stations.

Broadly, the system functionality, technical requirement and hardware specifications shall be as per RDSO Specification of IP Based Video Surveillance

System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments for IP based CCTV at Stations.

HOWEVER, IN CASE OF ANY CONFLICT ON THE SOLUTION DESIGN PARAMETERS, SYSTEM FUNCTIONAL REQUIREMENTS AND TECHNICAL SPECIFICATION OF A SYSTEM/ITEM BETWEEN RDSO SPECIFICATION AND THE TENDER CONDITIONS, THE TENDER CONDITIONS WILL PREVAIL OVER RDSO SPECIFICATIONS.

Design parameters

Bidder to consider following design parameters while proposing VSS solution for stations.

8.3.1.1 **General Parameters**

8.3.1.1.1 Implementation scheme for Video Surveillance system will be RPF/GRP Thana/Post Clustered based architecture as mentioned in RDSO specification no. RDSO/SPN/TC/65/2019 Rev 5.0 or latest will all amendments. For implementation of the proposed system, it is assumed that there would be 552 Clusters constituting RPF/GRP Thana/Post receiving video feeds from group of stations based on jurisdiction of that respective RPF/GRP Thana/Post through MPLS/ IP network for Video Management (Viewing and Monitoring) and Video Recording. Therefore, bidder is required to propose a cluster based solution at RPF/GRP Thana/Post locations on the basis of following design parameters.

8.3.1.1.2 Bidder to propose server(s) as Video Management servers with 1:1 redundancy (HA mode) in RailTel Datacenter for centralized management of such multiple clusters.

8.3.1.1.3 Bidder to propose database server for Facial Recognition system in High Availability (HA) mode in RailTel Datacenter.

Face image database server at datacenter shall be in sync with each individual RPF/GRP Thana/Posts local FRS servers as and when any subject or alarm is generated/updated. Synchronization shall be done at least once daily.

8.3.1.1.4 The bidder to submit calculations done to reach the quoted servers, NVRs numbers, storage capacity duly vetted and supported with certifications issued by respective OEM(s). In case any additional server(s), NVRs, other hardware are required to meet the above requirement, same shall be provided by the bidder without any cost to the purchaser.

8.3.1.1.5 Bidder to calculate the storage requirement as per the solution requirement for recording of video feeds for 30 days at each RPF/GRP Thana/Post and quote accordingly in the SOR. In case, during implementation, if the bidder solution

requires additional storage capacity as per their solution requirement same shall be provided by the bidder without any extra cost.

Bidder to also propose storage solution at RailTel Datacenter for keeping flagged/marked video data by RPF/GRP personnel for longer retention, FRS & VA alerts across all stations within the jurisdiction of RailTel Region for 30 days, Audit trail logs, application data etc. as per solution requirement and sizing as per SOR.

8.3.1.1.6 Minimum UPS Sizing has been provided in the SOR, however, Bidder may provide higher capacity UPS (1+1) with 2 hrs. backup in each UPS at all RPF/GRP Thana/Post locations as per the solution requirement.

8.3.1. 2 **Video Surveillance System hardware sizing**

Approximate number of cameras considered across 6124 Railway Stations are 89844 units. Refer Chapter-7 Annexure-I for station category, Region wise camera breakup.

Video feed from cameras of group of stations (cluster) shall be stored for 30 days on H.265 at RPF/GRP Thana/Post.

At each such cluster i.e. RPF/GRP Thana/Post location, bidder to size VSS hardware (storage, server, NVR) requirement and propose solution considering recording of 200 FHD cameras, analytics on 40 cameras, FRS with local matching capability with the watchlist database on up to 8 cameras stream at each RPF/GRP Thana/Post locations without any impact on the performance of the system and overall solution requirement.

Bidder to also propose a redundant server/NVR in 1:1 per RPF/GRP Thana/Post location to ensure uninterrupted recording and playback functionality in case of failure of any Server/NVR. The recording and playback availability should not be affected in case of failure of any Server/NVR. The recording of last 30 days at any given point of time should be available through redundant Server/NVR in case of Server/NVR failure.

Bidder to submit the calculations done to reach the quoted video surveillance system hardware (server, storage and NVR) numbers, duly vetted and supported with certifications issued by OEM(s).

If any Software OEM/Vendor can accommodate more nos. of Full HD Cameras or 4K UHD Cameras or a mix of both on pro-rata basis for Video Management, Video Recording, Video Analytics and Face Recognition Software on a single Server without any compromise on system performance and functionality, the same may be acceptable as an equivalent solution with less number of Servers.

8.3.1.3 Video Analytic System software

As per RDSO Specification of IP Based Video Surveillance System Specification no.

RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.3.1.4 Facial Recognition System software

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

Also, the Face Recognition Algorithm quoted by the bidder must have participated in the in the NIST face Recognition Benchmarking for non-cooperative dataset type (walking at a travel concourse) in live CCTV video feed. The algorithm must have shown less than 50% FNIR at Less than 0.1% False positive rate for Rank 1 matching in a database size of 48,000 or more in the latest relevant NIST benchmarking.

8.3.1.5 Recording Parameters

8.3.1.5.1 **For Surveillance network at Station** : For Recording following parameter must be followed by the bidder and size their servers and storage capacity requirements:

8.3.1.5.2 Recording shall be stored for at least 30 days at 25 FPS alnd Ful HD resolution for Full HD cameras and 25 FPS Ultra HD resolution for 4K UHD Cameras with H.265 or higher video compression at RPF/GRP Thana/Posts.The approximate storage capacities per camera with H.265 video compression and 25 FPS shall be as under:-

Days	Full HD Camera	4K UHD Camera
30 Days	750 GB after RAID 5/6	3TB after RAID 5/6

8.3.1.6 In case of any failure or interruption of MPLS/IP network, the camera shall automatically start recording on Edge Storage Memory Card at resolution and frames per second as required and when the network recovers, the video data shall automatically be transferred to the Server/NVR installed at respective RPF/GRP Thana/Post without any impact on the system operations.

8.3.1.7 The FRS will get the UHD feed from Recording Server/NVR at RPF/GRP Thana/Post for running Face Recognition algorithm and send alarms to designated clients at RPF/Div. HQ (Control Room)/others.

8.3.2 CCTV System in Train Coaches

8.3.2.1 System description and General Requirement

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments)

8.3.2.2 System Software (Video Management and Video Recording Software)

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments)

8.3.2.3 Video Analytic Software and Facial Recognition System

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments)

8.4 Storage

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

The storage capacity shall be as per storage requirement of Full HD and 4K UHD camera as defined in tender clause 8.3 and other scalabilities requirements as mentioned in the tender document.

8.5 Digital Keyboard with joystick compatible with P/T/Z Cameras:

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.6 PC Workstation and Client Desktop:

8.6.1 PC Workstation for CCTV Work at Stations

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments

8.6.2 Client Desktop for CCTV Work in Train Coaches

The offered Desktop (Including OS, AV) solution/configuration to be supplied at Each RPF/Thana/Chowki duly vetted by VMS OEM.

8.7 Large Format Display Monitor:

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.8 Type-I Switch:

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.9 Type-II Switch

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.10 Switches Type-III

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.11 Switches Type-IV

SN	Description
1.	The switch shall be designed for continuous operations .The bidder shall furnish the MTBF (Mean Time between Failures) and MTRR (Mean Time to Restore) and predicted and observed values along with calculations by manufacturer.
2	In case of full system failure, Switches shall maintain a trace area in the NVRAM, which would be used for analysis /diagnosis of the problem.
3	Switch shall have built in power on diagnostics system to detect hardware failures.
4	Should have AC/DC power supply arrangement as given below without any external adaptors with redundant power supply: i) AC power supply 100 to 240 V AC with 50 to 60 Hz ii) -48 V DC supply RailTel will specify the requirement of power supply arrangement on the basis of site requirement as identified during the site survey by the contractor.
5	Switches shall have suitable Visual Indicators for diagnostics and healthy /unhealthy status of ports & modules.
6	Switch shall have 6 Nos. of Gigabit SFP ports and 4 Nos. 10/100/1000 Base – TX with 6 Nos. of 10 Gigabit SFP+ ports complying to IEEE 802.3, IEEE 802.3u and 802.3ab standard , supporting half duplex mode, full duplex mode and auto negotiation on each port of 1G to optimize bandwidth.
7	Switch shall have minimum of 70 Gbps (full duplex) forwarding bandwidth at layer 2 switching fabric.
8	Switch shall have minimum 70 million packets (64 Byte packets) per second forwarding rate.
9	Switches shall have a minimum of 16000 MAC address space.
10	**Bidder to propose switch having Operating and Storage Temperature as per environmental requirement. However, the switches should be capable of working at temperature 0 to 45 degree (minimum).**
11	It should be possible for the switches to be mounted on a 19-Inch rack. All accessories required for this mounting should be supplied.
12	Should support jumbo frame.
13	Router based solution is also acceptable.
14	Shall have the following MPLS features: i. Shall support Static IPv4 and Ipv6 routing. It shall also support OSPFv2 and OSPFv3. ii. Shall also support BGP and ISIS based routing. iii. Shall also support MPLS with RSVP and LDP signaling. It shall support MPLS FRR and L3VRF with upto 64 VRF/L2VPN/VPLS. iv. Shall support a scale of 250 VLAN and shall support Ethernet OAM features like BFD, 802.3ah, 802.1ag and Y.1731 v. Shall support at least 32K MPLS labels.

	vi. Shall support 32K for IPv4 routes and 3.2K for IPv6 routes. vii. It shall support LSP ping and trace. viii. It shall support 8 hardware queues per port and shall support ingress policing and egress shaping. ix. Shall support MPLS based L3, L2 VPN & VPLS services. x. It shall also support SYNC Ethernet and SNMPv3. xi. Shall support remote telnet and SSH capabilities and it shall be possible to integrate with NMS system xii. Shall conform to UL 60950 or IEC 60950 Standards for safety requirements of IT Equipment. xiii. Shall conform to EN55022 Class A/B or CISPR22 Class A/B or CE Class A/B for EMC for (Electro Magnetic Compatibility).
15	**Shall have the following features. All software's/hardware's/License required for this must be supplied along with the switch.** i. Link Aggregation Control (LCAP) as per IEEE 802.3ad. ii. Support for IEEE 802.1Q VLAN on all ports. iii. Support for minimum 256 VLANs. iv. Support for IEEE 802.1 D spanning tree protocol. v. Support for IEEE 802.1 s MSTP. vi. Support Dynamic Host Configuration Protocol (DHCP). vii. Support Auto –MDIX (Media Dependent Interface Cross over) viii. Support Inter VLAN IP routing for full layer -3 routing. ix. Support for IPv6. x. Support Strict Priority Queuing. xi. Support Network Time Protocol (NTP) / Simple Network Time Protocol (SNTP) based. xii. RFC 1305 / 2030 for synchronization of date & time from the Central NTP Server. xiii. Support RADIUS protocol for console access restriction and authentication as per RFC 2138. xiv. Support 4 group of embedded RMON (history, static's and alarms). xv. Support multiple privilege level to provide different level of access on console port and telnet sessions xvi. Support classification and scheduling as per IEEE 802.1P on all ports. xvii. Support Port Spanning functionally for measurements using a networks analyzer. xviii. Support all the standard MIBs (MIB-I&II). xix. Support for console port Interface for configuration and diagnostics purposes. xx. Support Port Spanning functionally for measurements using a networks analyzer. xxi. ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies xxii. Should support multiple Ring up to 8 ring (Main and Sub Ring) protection failover within 50 ms (up to 10 Switches in ring) or ITU-T G.8032 v2 (Confirmed roadmap within a year time is also acceptable for ITU-T G.8032 v2 with no additional cost to RailTel). xxiii. Should support Optical Transceiver Digital Diagnostic Monitoring. xxiv. Priority queues: Eight hardware-based queues per port for flexible QoS management xxv. Traffic prioritization: Flow-based QoS with internal and external (a.k.a.,

	remarking) prioritization xxvi. Bandwidth management: Flow-based bandwidth management, ingress rate limiting; egress rate shaping per port. xvii. Queue management: Configurable scheduling algorithms — Strict Priority Queuing (SPQ), Weighted Round Robin(WRR) and Deficit Round Robin (DRR) or better. Rack Mountable clamps for standard 19 inch Rack for each item. xviii. The following Metro Ethernet features should support: 1. IEEE 802.1ad Provider Bridge. 2. Transparent LAN Services with Service VLAN (SVLAN) and Customer VLAN (CVLAN) concept. 3. CVLAN to SVLAN translation and mapping 4. IEEE 802.1ag Ethernet OAM: Connectivity Fault Management (Support 32 MEPs). 5. Ethernet OAM compliant with IEEE 802.3ah. 6. ITU-T G.8032 Ethernet Ring Protection designed for loop protection and fast convergence times (sub 50 ms) in ring topologies. 7. Should support Optical Transceiver Digital Diagnostic Monitoring. 8. Switch should support minimum of 4000 Ethernet flow points (EFP) or equivalent functionality. 9. L2 Protocol Tunneling.
16	**Switch shall have support of following Standards:** I. IEEE 802.1D (STP) II. IEEE 802.1p (CoS) III. IEEE 802.1Q (VLANs) IV. IEEE 802.1ag (Connectivity Fault Management) V. IEEE 802.1s (MSTP) VI. IEEE 802.3x (Flow Control) VII. IEEE 802.3z (Gigabit Ethernet) VIII. IEEE 802.3ab (1000Base-T) IX. IEEE 802.3ac (VLAN Tagging) X. IEEE 802.3ad (Link Aggregation) XI. IEEE 802.3ae (10 Gigabit Ethernet) XII. IEEE 802.3ah XIII. ITU-T G.8032/Y.1344 2010: Ethernet Ring
17	**Switch shall have the following Certifications:** i. The model of the Switches series shall have MEF-(9 & 14)/CE2.0 or IEEE standards or higher certification from authorized agencies. ii. Deleted. iii. CE / FCC. iv. Shall conform to UL 60950 or IEC 60950 or EN 60950 Standards for safety requirements of IT Equipment. **v.** Shall Confirm relevant standards of EN/CE/FCC for EMC for (Electro Magnetic Compatibility). vi. Deleted.
18.	OEM should have a valid ISO 9001 & ISO 14001 certification on the date of

	opening of bid
19.	IPv6 feature should be ready from day 1.

8.12 Managed PoE Ethernet Switch

As per RDSO Specification of IP based Closed Circuit Television (CCTV) Surveillance System in Coaches of Indian Railways (RDSO Specification No. RDSO/SPN /TC/106/2019, Revision 1.0 or latest with all amendments.

8.13 SFPs

8.13.1 SFP-BX (10 KM) Single Fiber:

SN	Description
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment.
2	Should support 10 km optical distance on single fiber
3	Should have LC type connector.
4	Should provide the cost in Pair (BX U & D).
5	Should have 1 Gigabit Ethernet capacity on single mode fiber.
6	Should support DDMI/DOM feature. Option should be available for SFP+/XFP
7	OEM should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.
8	Should have CE and FCC regulatory compliances.
9	Operating Temperature of the SFP Should be mini 0 to 65 °C (23 to 149 °F)

8.13.2 SFP+ (10 Km) :

SN	Description
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment.
2	Should support 10 km optical distance (1550/1310 nm).
3	Should have LC type connector
4	Should have 10 Gigabit Ethernet capacities on single mode fiber.
5	Should support DDMI/DOM feature. Option should be available for SFP+/XFP
6	Should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.
7	Should have CE and FCC regulatory compliances.
8	Operating Temperature of the SFP Should be mini 0 to 65 °C (23 to 149 °F)

8.13.3 SFP+ (40 Km):

SN	Description

1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment.
2	Should support 40 km and 16dB link budget optical distance on single fiber.
3	Should have LC type connector
4	Should have 10 Gigabit Ethernet capacities on single mode fiber.
5	Should support DDMI/DOM feature. Option should be available for SFP+/XFP
6	Should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.
7	Should have CE and FCC regulatory compliances.
8	Operating Temperature of the SFP Should be mini 0 to 65 °C (23 to 149 °F)

8.13.4 SFP+ (350mtrs)

SN	Description
1	SFP modules should comply with multi-source agreement (MSA), enabling compatibility with other vendors equipment.
2	Should support 350m optical distance.
3	Should have LC type connector
4	Should have 10 Gigabit Ethernet capacities on single/multi-mode fiber.
5	Should support DDMI feature. Option should be available for both SFP+ and XFP
6	Should be having valid ISO 9000 & ISO 14000 certification on the date of opening of bid.
7	Should have CE and FCC regulatory compliances.
8	Operating Temperature of the SFP Should be mini 0 to 65 °C (23 to 149 °F)

Note :-

All SFPs must support DDMI feature.

8.14 Deleted.

8.15 Media Pair Convertors:

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2016 Revision 5.0 or latest with all amendments.

8.16 UPS

8.16.1 1KVA

SN.	Specification	
1	Capacity	1KVA/800 W, better as per actual requirement
2	Technology	IGBT

3	Wave form	Pure Sine wave
4	Display	LED/LCD
5	Input power factor correction	0.9
6	Input configuration	1Ph,L-N+PE
7	Output Power factor	0.8 or better
8	frequency (Input)	50Hz frequency
9	frequency (output)	50Hz +/- 0.5Hz frequency
10	Voltage Range (Bypass)	160VAC~270VAC
11	V threshold	3%max full linear load, 6% max on Nonlinear load
12	PF	>=0.9
13	Crest factor	3.0 or batter
14	AC-AC Efficiency	85% or batter
15	Transfer time Main-Battery	0
16	Transfer time Inverter-Bypass	4 msec
17	Emergency Power off function	Yes
18	Monitoring software for	Battery , health of UPS, any critical parameter change
19	Communication	SNMP V1/V2
20	-	-
21	Port	USB
22	Battery Type	SMF
23	Battery backup	1 Hrs. on full load (Single bank)
24	**Environmental Parameter**	
A	Operating Temperature Range	0-40 deg
B	Over Temperature, Load on Battery, Battery on Charge, Battery low, Mains on	Indication required
C	Input AC mains and output power supply surge protection	inbuilt
D	Humidity	0% to 95% non-condensing
E	Noise Level	50 dBA max
F	Size	not more than 2U rack mountable
25	**Protection**	IP20
A	Mechanical Parameter	EMI or equivalent BIS/IS standard
B	Safety	EN or equivalent BIS/IS/IEC standard
C	Performance	IEC/EN or equivalent BIS/IS standard

8.16.2 UPS 2KVA

SN.	Specification	
1	Capacity	2KVA/1600 W
2	Wave form	Pure Sine wave
3	Rectifier	IGBT based
4	Display	LED/LCD
5	Input power factor correction	0.9
6	input configuration	1Ph,L-N+PE
7	Output Power factor	0.8 or better
8	frequency (Input)	50Hz frequency
9	frequency (output)	50Hz+/- 0.5Hz
10	V threshold	3%max full linear load, 6% max on Nonlinear load
11	PF	>=0.9
12	Crest factor	3.0 or better
13	AC-AC Efficiency	85% or better
14	Transfer time Main-Battery	0
15	Transfer time Inverter-Bypass	4 msec
16	Emergency Power off function	Yes
17	Monitoring software for	Battery , health of UPS, any critical parameter change
18	Communication	SNMP V1/V2
19	-	-
20	Port	USB
21	Battery Type	SMF
22	Battery backup	1 Hrs. with full load
23	**Environmental Parameter**	
A	Operating Temperature range	0-40 deg
B	Over Temperature, Load on Battery, Battery on Charge, Battery low, Mains on	Indication required
C	EPO function	Yes
D	Input AC mains and output power supply surge protection	inbuilt
E	Humidity	0% to 95% non-condensing
F	Noise Level	50 dBA max
G	Size	not more than 2U rack mountable
24	**Protection**	IP20
A	Mechanical Parameter	EMI or equivalent BIS/IS standard
B	Safety	EN or equivalent BIS/IS/IEC standard

C	Performance	IEC/EN or equivalent BIS/IS standard

8.16.3 2X 10KVA connected in parallel redundant mode in separate chassis

SN.	Specifications	
1	Capacity	10000VA/9000 W
2	Phase	3 phase in / 1 phase out
3	**INPUT Characteristics**	
4	Power Factor	0.9 or better
5	Voltage Range	330-460 VAC (3-phase) @ 100% load
6	Wave form	Pure Sine wave
7	Nominal Voltage	3 x 400 VAC (3Ph+N)
8	**OUTPUT Characteristics**	
9	Output Voltage Rates	208/220/230/240V(L-N)
10	Voltage Accuracy	±1%
11	Voltage Adjustability	±5V
12	Transfer Time	0
13	DC Offset	±50 mV
14	Load Crest Ratio	3:1 max
15	AC Mode Efficiency	>90%
16	Output Frequency @ Line mode	50Hz +/-0.5Hz@50Hz system
17	Output Frequency@ Battery mode	50Hz +/-0.5Hz@50Hz system
18	Frequency Converter Mode (CVCF)	50Hz
19	UPS status, Load level, Battery level, Input /Output voltage, Discharge timer, and Fault conditions	Indication required
20	Over Load Memory	Default: Yes
21	Transient recovery	100 ms recover to 90% of nominal Voltage
22	Efficiency	>90% Battery Mode @100%R/RCD Load
	UPS Type	Tower
23	Monitoring software support	Battery , health of UPS, change in any critical parameter
25	Port	USB/RS-232,RJ45
26	Batter Type	SMF preferred
27	Generator Compatible	Yes
28	Battery backup	2 Hrs. on full load with each UPS System
29	Acoustic Noise	<60 db
30	Operating Temperature	0-40 deg C

31	Nominal Battery Input Voltage	Vendor to specify
32	Battery Low Warning	10.8V X nos. of batteries
33	Battery Shutdown Voltage	10.2V X nos. of batteries
34	Battery Type	VRLA ,12V
35	**Battery Charger**	
36	Nominal Recharging current	12A (1± 10%)
37	Maximum Charge Voltage	13.5V X nos. of batteries
38	**Regulatory Standards**	
39	ESD	IEC/EN61000-4-2 Level 4 or equivalent BIS/IS stand-ard
40	Safety	IEC/EN62040-1-1 or equivalent BIS/IS standard
41	Leakage Current	IEC/EN62040-1-1 or equivalent BIS/IS standard
42	Protection	IP20
43	Certification	CE or equivalent BIS/IS standard
44	Communication	SNMP V1/V2
45	Input AC mains and output power supply surge protection	Inbuilt

8.17 STP CAT-6 and Electrical Cable:

8.17.1 **STP CAT-6 Cable for CCTV work at stations:**

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

8.17.2 **STP CAT-6 Cable for CCTV work in train coaches:**

As per RDSO Specification of IP Based Closed Circuit Television (CCTV) Surveillance System in Coaches Specification no. RDSO/SPN/TC/106/2019 Revision 1.0 or latest with all amendments.

8.17.3 **Electrical Power Cable for CCTV work in train coaches:**

As per RDSO Specification of IP Based Closed Circuit Television (CCTV) Surveillance System in Coaches Specification no. RDSO/SPN/TC/106/2019 Revision 1.0 or latest with all amendments.

8.18 Video Recorder Unit and Mobile Network Video Recorder (Mobile NVR)

As per RDSO Specification of IP Based Closed Circuit Television (CCTV) Surveillance System in Coaches Specification no. RDSO/SPN/TC/106/2019 Revision 1.0 or latest with all amendments.

8.19 Wi-Fi Access Point and Wireless Controller

8.19.1 Wi-Fi Access Point inside Train Coach

As per RDSO Specification of IP Based Closed Circuit Television (CCTV) Surveillance System in Coaches Specification no. RDSO/SPN/TC/106/2019 Revision 1.0 or latest with all amendments.

8.19.2 Wi-Fi Access Point at Stations and Wireless Controller at Datacenter

WiFi Outdoor Access Points

Reference	Parameters	Technical specification
CT2HW1	Hardware	Access Points proposed must include radios for both 2.4 GHz and 5 GHz.
CT2HW2	Hardware	Must have a robust design for durability, without visible vents
CT2HW3	Hardware	Must include dual band antennas to support both the 2.4GHz and 5GHz operations simultaneously.
CT2HW4	Hardware	Proposed access point shall support MDO(Mobile Data offload)
CT2HW5	Hardware	Mounting kit should be standard which shall be used for mounting access point
CT2HW5	Hardware	Must support operating humidity of 10 to 90% (noncondensing)
CT2WS1	wireless Standard	Must support 2X2 multiple-input multiple-output (MIMO) with TWO spatial streams
CT2WS2	wireless Standard	Must support simultaneous 802.11n on both the 2.4 GHz and 5 GHz radios. And must support 802.11ac Wave 2 on 5 GHz .
CT2WS3	wireless Standard	Must support data rates unto 800 Mbps on 5Ghz radio and 140mbps on 2.4Ghz radio.
CT2WS4	wireless Standard	Must support 40 MHz and 80 MHz wide channels in 5 GHz.
CT2WS5	wireless Standard	Antenna Gain of Access Points must be +2dBm or better. Must support following minimum transmit power for both 2.4Ghz and 5Ghz radios.
		(i) 2.4-Ghz band : +21dBm
		(ii) 5.0-Ghz band: +24dBm
CT2WS6	wireless Standard	AP should support VLAN trunking (802.1q) and VLAN based SSID for user traffic.
CT2RF1	RF	The Wireless AP should have the technology to improve downlink performance.
CT2RF2	RF	The AP shall be able to load-balance between 2.4Ghz and 5Ghz band.
CT2RF3	RF	Must have -90dB to -100dB or better Receiver Sensitivity.

CT2RF4	RF	Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization
CT2RF6	RF	Should support configurable carrier sense threshold
CT2M1	Mesh	The Wireless Backhaul shall operate in 5Ghz
CT2M2	Mesh	Support Encrypted and authenticated connectivity between all back-haul components
CT2M3	Mesh	Access point shall have wired uplink interfaces i.e. 1X10/100/1000BASE-T Ethernet
CT2R1	Roaming	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.
CT2S1	Security	Must support Management Frame Protection.
CT2S2	Security	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI) or preinstalled certs on AP for authentication
CT2S3	Security	Provision of Wireless IPS to filter malicious traffic
CT2E1	Encryption	Access Points must support a distributed encryption/decryption model.
CT2E2	Encryption	Access Points must support hardware or software based encryption
CT2M1	Monitoring	Must support the ability to serve clients or monitor the RF environment.
CT2M2	Monitoring	AP model proposed must be able to be both a client-serving AP and Parallely monitor- Intrusion Prevention services.
CT2F1	Flexibility:	Should support mesh capabilities for temporary connectivity in areas with no Ethernet cabling.
CT2F2	Flexibility:	Should support QoS for voice over wireless.
CT2F3	Flexibility:	Must support Controller-based and standalone(autonomous) deployments
CT2F4	Flexibility:	Must support 16 WLANs per AP for SSID deployment flexibility.
CT2O1	Operational:	Must support telnet or SSH or console login to APs directly for troubleshooting flexibility.
CT2O2	Operational:	Must support automatic detection of dropped connection to controller,
CT2O3	Operational:	Must support automatic failover to secondary controller, upon detecting lost connection to controller
CT2O4	Operational:	Must support DHCP Option 82, defined in RFC 3046, including support for Sub-option 01 (Circuit-Id) and Sub-option 02 (Remote Id) fields.
CT2O5	Operational:	With Controller APs (from a data-plane plane perspective) must support:
		- Ethernet over GRE IPv6 tunnel

		- Automatic detection of failed tunnel termination, with configurable connection retry and timeout.
		- Automatic failover to secondary tunnel termination address.
CT2O6	Operational:	Support for basic AP monitoring statistics for each radio: Bytes Sent, Bytes Received, Packets Sent, Packets Received,
		Radio Channel Utilization, Noise.
CT2O7	Operational:	Must support data-plane split tunneling in which ACLs may be configured to enable a range of destination net blocks and/or IPs to bypass the data-plane tunnel and be bridged on the wired interface.
CT2O8	Operational:	AP should have capability to split tunnel for both IPv4 and IPv6 tunnel to segregate the management and data traffic.
CT2O9	Operational:	AP should have capability to split tunnel for specific destination IP/Subnet (For implementing policy based Caching solutions) using local NAT and forward user traffic.
CT2O10	Operational:	The AP shall support 200 concurrent Clients per AP
CT2O11	Operational:	APs shall support SNMP v1 Or higher (V2/V3)
CT2P1	Power:	Must support Power over Ethernet/PoE+/UPoE/Power Injector/AC/DC .
CT2Q1	Quality of Service:	shall have the support of 802.11e and WMM
CT2Q2	Quality of Service:	Should be Wi-Fi Alliance certified and WPC Approved and ETA Certified
CT2Q3	Quality of Service:	Must support QoS to prioritize video ,voice and Data traffic
CT2EES1	Environmental and Electrical Specifications	Must support QoS and Video Call Admission Control capabilities.
CT2EES2	Environmental and Electrical Specifications	Access point shall support powering from POE/PoE+/UPoE /Power Injector/AC/DC.
CT2EES3	Environmental and Electrical Specifications	Access point shall support pole, wall, and roof mounting options.
CT2EES4	Environmental and Electrical Specifications	Geographic orientation flexibility – tilt angle for pole, wall, and roof mounting units
CT2EES5	Environmental and Electrical Specifications	The equipment shall support up to 100 MPH sustained winds & 140 MPH wind gusts.
CT2EES6	Environmental and Electrical Specifications	The Access point shall be IP67 certified.

CT2EES7	Environmental and Electrical Specifications	The Access point shall be rated for operation over an ambient temperature range of 0C to +55 C
CT2EES8	Environmental and Electrical Specifications	Should Support Surge Protection on Ethernet Ports to meet the requirement at High Voltage Transmission Line running across the Railway Platform. If any OEM/Bidder can't provide inbuilt surge protection in AP, external surge protection must be proposed. Surge protection of ± 2 kV on copper Ethernet ports.

Specification of Cloud/Appliance based Wireless Controller

The below mentioned parameters are minimum specifications of the controller. Bidders has to propose Cloud/Appliance based Wireless Controller to meet the requirement as per the tender.

Reference	Parameters	Technical specification
WCHW1	Hardware and Standards	Must be compliant with IEEE CAPWAP or equivalent for controller-based WLANs.
WCHW2	Hardware and Standards	Controller should support 2U form factor and multiple stackable controllers must be proposed from Day One from single chassis of minimum 2000 Access Points. Proposed controller should support 1+1 or N+1 redundancy from the day one. The solution should be scalable to support 20,000 or more APs.
		Note: - Access Point Licensees on wireless controllers should be given as per SOR/PO/LOA(Access point total Qty) + 20% extra.
WCHW3	Hardware and Standards	Controller must have at least 4 x 10Gbps of uplink interfaces.
WCHW4	Hardware and Standards	Controller shall support 10,000 concurrent sessions from a single chassis
WCHW5	Hardware and Standards	WLAN controller shall support Mobile data offload as a feature or as a solution.
WCC1	Compatibility	Deleted
WCHA1	High Availability	Must support 1+1 or N+1 redundancy models.
WCHA2	High Availability	Must have feature for stateful recovery without re-authentication of the client in the event of LAN and WLAN infrastructure disruption to deliver a non-stop client session
WCHA3	High Availability	Must support internal 230 VAC redundant power supplies.
WCRF1	RF Management	Must support an ability to dynamically adjust channel and power settings based on the RF environment.
WCRF2	RF Management	Radio coverage algorithm must allow adjacent APs to operate on different channels, in order to maximize available bandwidth and avoid interference

WCRF3	RF Management	Must have Automatic 802.11 interference detection, identification, , and mitigation.
WCRF4	RF Management	Must support coverage whole detection and correction
WCRF5	RF Management	Must support RF Management with 20/40/80 MHz channels with 802.11a/b/g/n/ac
WCIP1	IPv6 features	WLC should support L2 and L3 roaming of IPv6 clients.
WCIP2	IPv6 features	WLC should support Guest-access functionality for IPv6 clients
WCP1	Performance:	Controller performance must remain the same if encryption is on or off for wireless SSIDs except the throughput processing of the controller.
WCS1	Security:	Should adhere to the strictest level of security standards, including 802.11i Wi-Fi Protected Access 2 (WPA2), WPA, Wired Equivalent Privacy (WEP), 802.1X with multiple Extensible Authentication Protocol (EAP) types, including Protected EAP (PEAP), EAP with Transport Layer Security (EAP-TLS), EAP with Tunnelled TLS (EAP-TTLS)
WCS2	Security:	Should support Management frame protection for the authentication of 802.11 management frames by the wireless network infrastructure.
WCS3	Security:	Deleted
WCS4	Security:	Controller should have rogue AP detection and automatic containment feature
WCS5	Security:	Controller should be able to detect attacks like Broadcast deauthentication, NULL probe, from day one for all access points
WCS6	Security:	Controller should have profiling of devices based on protocols like HTTP/DNS, DHCP and more to identify the end devices on the network
WCG1	Guest Wireless	Must support internal and external web authentication.
WCF1	Functionality	Must be able to set a maximum per-user bandwidth limit on a per-SSID basis.
WCF2	Functionality	Must support user load balancing across Access Points.
WCF3	Functionality	Controller must provide Mesh capability for Mesh supported AP.
WCM1	Monitoring	Deleted
WCR1	Roaming:	Deleted
WCR2	Roaming:	Solution proposed must support clients roaming across at least 500 APs.
WCO1	Operational:	Must support AP over-the-air packet capture for export to a tool such as Wire shark.
WCO2	Operational:	Should be able to classify and identify different types of interference

WCO3	Operational:	Should provide a snapshot of air quality in terms of the performance and impact of interference on the wireless network identifying the problem areas.
WCO4	Operational:	Should provide real-time charts showing interferers per access point, on a per-radio, per-channel basis.
WCO5	Operational:	Should support encrypted mechanism to securely upload/download software images to and from wireless controllers
WCO6	Operational:	Must support Ethernet over GRE IPv4 tunnel to northbound gateway
WCO7	Operational:	Must support Ethernet over GRE IPv6 tunnel to northbound gateway.
WCO8	Operational:	Must support automatic detection of failed tunnel termination, with configurable connection retry and timeout
WCO9	Operational:	Must support automatic failover to secondary tunnel termination address.
WCO10	Operational:	Must support controller-based configuration of Ethernet over GRE tunnel termination
WCO11	Operational:	must be wifipasspoint 2 complaint
WCO12	Operational:	System shall support various modes of operations like Tunnel Mode and local Breakout on the Same AP
WCO13	Operational:	Must support configuration of data-plane split tunneling by enabling specific destination IP addresses and net blocks to bypass the data-plane tunnel and be bridged on the wired interface
WCO14	Operational:	Deleted
WCO15	Operational:	shall support API's for NB and SNMP Integration with CNMS
WCO16	Operational:	System shall support Reporting functionality with or without external server
WCO17	Operational:	should support following Information through SNMP
		i) Interface utilization.
		ii) Interface errors and discards.
		iii) Connected APs (count) , Connected Clients (count),Access Point Failed Assoc. Count
		iv) Connected Stations (count), Admin Status (on/off) ,Broadcast SSID (on/off).
		v) CPU and Memory statistics.
		vi) AP name , AP IP address ,AP Model , AP uptime , AP admin status , operational status ,POE Status ,Ethernet speed , number of clients and AP mode .
		vii) Should also support snmp traps on failure conditions.
WCO18	Operational:	Reports type like number of clients, system resource utilization, Transmit and Receive bytes on AP/radio or set of AP or a particular site should be generated.
WCO19	Operational:	The controller should have a troubleshooting tool to detect user experience issues.
WCO20	Operational:	It should display health and traffic data for each AP to evaluate site performance.

WCQ1	QOS:	Must support 802.11e and WMM
WCQ2	QOS:	Shall able to prioritize all traffic such as (Data ,voice and video)
WCQ3	QOS:	Controller shall integrate with existing firewall
WCQ4	QOS:	Should have rate limiting per user and per SSID basis for encrypted tunnel mode
WCQ5	QOS:	To deliver optimal bandwidth usage, reliable multicast must use single session between AP and Wireless Controller.

8.20

(A) FMS (12/24 Fiber)

The FMS should be confirming to TEC NO.: **GR/FDM-01/02/APR-2007 (Type-I) with latest amendment No. TEC/T/OFC-FDMS/149/2012**. However the FMS should have the following:

i) It should be mountable in standard 19" rack and of slider type.

ii) DELETED.

iii) There should be arrangement of termination of 48/24/12/6 Nos. of fibers (as per SOR).

iv) It should be supplied with 48/24/12/6 Nos. of pigtails of respective type of connector (as per SOR) of minimum 3 meter length.

v) Color coded pigtails (900 µn tight jacket) shall be provided for easy identification.

vi) The FMS should be supplied with arrangement of required Nos. of adapters (as per SOR).

vii) The adaptors shall be fixed in such a way that these shall be easily accessible protecting the eye from direct exposure to laser.

viii) There should be minimum two nos. of trays for the provision of termination of the fibers & sufficient space for routing of the fibers in the trays.

viii) Trays shall be numbered bottom to top (tray no. 1 is lower most).

ix) Pigtails shall follow tray numbering.

x) Pigtails shall be labeled through colour coding/ferruling.

xi) Adaptors shall be numbered Bottom to Top or Left to Right in ascending order.

xii) All adaptors shall be provided with dust protection caps.

xiii) Important Do's and Don'ts about the operation of the FMS shall be clearly indicated at convenient place on the FMS.

xiv) Insertion Loss: ≤ 0.3 dB

xv) Return Loss: ≥ 45 dB

xvi) The FMS shall be manufactured as per latest state of art technology.

xvii) The FMS shall be protected against the entry of dust and insects, rodents etc.

xviii) Body should be of MS steel; powder coating painting (min. 70 micrometer thickness) shall be provided with rust resistance paint.

xix) **Marking:** The marking on the system shall be indelible and following minimum information shall be provided by way of engraving or Laser printing method:

a) "RAILTEL" should be written on each FMS to be visible from front.
b) Manufacturer's name & date/ year of production.
c) Model No./Batch No./ Serial No.
d) Capacity i.e. No. of cables and the fibers.
e) Identification details/ cables/ Fiber/ labeling facility.

xx.) Preferred type of connector is SC/APC for all connectors.

(B) Specifications of Patch Cords

The Patch cords should be confirming to TEC NO.: **TEC/GR/TX OFJ-01/05/NOV-09 with latest amendment No. TEC/T/OFC-OFJ/155/2013**. However the Patch cords should have the following:

i) Operating Temperature: -40ºC to +85ºC.
ii) Insertion Loss:
a) Insertion Loss of complete patch cord including adapter when tested from each direction in all conditions of operations: ≤ 0.3 dB
b) Insertion Loss of Adaptors: ≤ 0.1 dB

iii) Return Loss for each connector of patch cord:
a) Type-I FC-PC : ≥ 50 dB
b) Type-II SC-PC : ≥ 50 dB
c) Type-III SC-APC : ≥ 65 dB
d) Type-IV LC : ≥ 50 dB
e) E2K/APC : ≥ 60 dB

iv) The length and type of connector of each Patch Cord: As per SOR.

V) The connectors must be make of reputed OEMs 3M, Huber-Shuner, R&M, TE Connectivity/Raychem.

vi) Connector Body:
a) FC-PC : Ni plated brass body (Ni plating shall be as per BIS Standards)
b) SC-PC & SC-APC : Engineering thermoplastic (Glass filled PBT: Polybutylene Terephthalate)
c) LC : PEI (Polyetherimide)/ PPS (Polyphenylene Sulphide)

vii) Color of connector body:
a) FC-PC connector: Ni plated Brass
b) SC-PC connector: Blue
c) SC-APC connector: Green
d) LC connector: Blue

viii) Radius of curvature:
a) FC-PC : 10 to 25 mm
b) SC-PC : 10 to 25 mm
c) SC-APC : 5 to 12 mm
d) LC : 10 to 25 mm

ix) Minimum bending radius of the cable:
a) Loaded : 50 mm
b) Unloaded : 30 mm

xx.) Preferred type of connector is SC/APC for all connectors.

Note: The bidder/OEM has to give compliance for the TEC specifications for above mentioned items, offered in this bid.

8.21 Telecom Rack (9U, 19", Wall mounted)

No.	Item	Description
1	Type	Closed Telecom Rack wall mounted.
2	Dimension	500 mm (Height) X 600 mm (Width) X 600 mm
3	Mounting	Rack should have wall mounting provision with heavy wall brackets and fastners.
4	Front door	Rack should have front door tough and transparent glass fitted on MS/CRCA sheet on sides with Lock
		MS/CRCA door plain having ventilation holes bottom side with dust filters.
5	Top & Bottom	Rack top and bottom should be MS/CRCA steel made with cable entry provision with glands at both
6	Fan module	Compact fan module of 90 CFM working on 230V AC 2 nos. with each rack properly fitted at top of
7	Earthing Provision	Rack Should have earthing provisions.
8	Cable manager	1 no. horizontal and 1 no. vertical cable manager with cable loops to be provided with each rack.
9	Power Distribution Unit (PDU)	PDU is of 6 Sockets of branded make such as Havells or equivalent with 6 Amp with switch.
10	Material used	CRCA/MS with Thickness varying from 1.6 Mm to 2.0 mm
11.	The rack should be fitted with one modem tray 19”	
12.	The good quality powder coating light grey in colour shall be used for painting of the rack.	
13.	“INDIAN RAILWAYS LOGO along with Year” in bold and easily recognizable fonts should be written at the front top of the rack preferably in black or blue color.	
14.	OEM should have a valid ISO 9001 certification on the date of opening of bid.	
15.	Rack should be minimum IP54 certified. Rack should also comply with EIA 310/DIN 41494 standards.	

8.22 19” 42U Rack

19” 42U Racks shall be used at Station/RPF/GRP Thana/Chowki for housing servers, storage, switches, and NGFW

No.	Item	Description
1	Dimension	As per requirement
2	Side panels	To be provided across whole height of the rack should be openable with latching arrangement at top
3	Front door	Rack should have front door tough and transparent glass fitted on MS/CRCA sheet on sides with Lock
4	Rear side	Shall be perforated for appropriate level as per industry standard.

5	Top & Bottom	Rack top and bottom should be MS/CRCA steel made with cable entry provision with glands at both
6	Fan module	Compact fan module of 90 CFM working on AC power supply 4 Nos with each rack properly fitted
7	Earthing Provision	Rack Should have earthing provisions.
8	Cable manager	2 nos. horizontal and 2 nos. vertical cable manager with cable loops to be provided with each
9	Power Distribution Unit (PDU)	Adequate and Redundant power distribution units with electronically controlled circuits for surge and spike protection, isolated input to ground and output to ground.
10	Material used	CRCA/MS with Thickness varying from 1.6 Mm to 2.0 mm
11	The rack should be fitted with one modem tray 19”	
12	The earthing kit consisting of copper bus bar with dimensions 20 inch length, 1.0 inch breadth & 5mm thickness (min.) having appropriate number of M6 tapped holes and 3 brass nut bolts and washers for fixing of earthing cables shall be fixed near the bottom of the rack.	
13	The good quality powder coating light grey in colour shall be used for painting of the rack	
14	The rack should be fitted with dual source power supply distribution board.	
15	“INDIAN RAILWAYS Logo along with Year” in bold and easily recognizable fonts should be written at the front top of the rack preferably in black or blue color.	
16.	OEM should have a valid ISO 9001 certification on the date of opening of bid.	
17.	Rack should be minimum IP20 certified. Rack should also comply with EIA 310/DIN 41494 standards.	

8.23 Enterprise Management System (EMS)

General

- The EMS Solution (Hardware & Software) shall provide future scalability with the capacity to handle 20,000 devices from Day 1 without major architectural changes. Whenever required, the additional device licenses can be procured & added respectively.
- Solution shall be open, distributed, scalable, and multi-platform and open to third party integration
- Consolidate IT event management activities into a single operations bridge/dashboard that allows NOC operator quickly identify the cause of the IT incident, reduces duplication of effort and decreases the time it takes to rectify IT issues.

- Consolidated dashboard of the proposed EMS solution shall be the manager of managers window and capable of receiving events/alerts from multiple monitoring systems including system, network, storage, hardware, and application.

Consolidated Dashboard

- The tool should provide complete cross-domain visibility of IT infrastructure issues
    - Integrate events from ALL domain managers
    - Automatically relate events to impacted Configuration Items (CIs) like services, servers etc
    - Automated discovery of the infrastructure CIs and relationships
- The tool should Classify events based on business impact of Video Surveillance System service levels
- Offer relevant tools, run books, graphs in context of a selected event
- Instruction Text (knowledge base) integrated into events /alarms for which incident tickets were created with ability to define trouble shooting steps.
- Guided creation of correlation rules for administrators
- Tool should provide superior view of infrastructure health across system, networks, IT infrastructure and end-user into a consolidated, central console
- Tool should allow for customizable operator perspectives
- Powerful correlation capabilities to reduce number of actionable events. Topology based and event stream based correlation should be made available.
- Tool should provide support for maintenance windows and scheduled downtimes
- End-to-end visibility of infrastructure and alerts by showing relationships of events to CIs and business service SLAs that are impacted
- Tool should be able to highlight Priority of an event. Priority is based on both the event severity and the business impact. CI Business Impact is calculated based on Business Criticality of all affected business services, applications and business process CIs and eg. SLAs.
- The operator should be able to analyze priority, business impact and affected CIs by selecting each event and checking the automatically updated Health Top View, Business Impact View etc.
- Tool should allow to browse performance metrics by selecting CIs or events. Tool should allow to compare different performance matrix of a device/CI in GUI/ Model Explorer.
- Ability to launch in-context to performance graphs or reports.
- The adaptive threshold capability automatically calculates a baseline from the historic samples to identify previous trends in performance. Based on these trends the threshold values are automatically and dynamically calculated. Once the automatic threshold values are set, comparing the current performance data with the adaptive thresholds indicates if the current infrastructure resource utilization is normal or not. An alert is generated when abnormal behavior is detected. "
- The Event Correlation Engine shall use detailed, comprehensive, and automatically updated discovery and relationship information to analyse alerts and events and ultimately determine the event that is most likely the cause of an incident.

- When many a combination of many events occurs in the monitored environment, the system must be able to automatically categorize them into causes and symptoms. The system needs to provide a single interface to view multiple layers of cause and symptoms.
- The system must allow modification and enhancement events during event processing.

Service Level Reporter

- Should provide reporting templates for performance, availability, inventory, operation, virtualization and configuration
- Should provide reports that can prove IT service quality levels, such as application response times and server resource consumption
- Reports should be accessible via web browser
- Reports can be scheduled to publish automatically or they can be produced on demand
- Reports can be applied to all systems, to a group of systems, to a customer group of systems, or to a single system.
- Reports can be published in HTML, PDF, Microsoft Word, and Microsoft Excel formats.
- Should be possible to send reports via email from the Reporter GUI or from command line.
- Automated report generation and publishing
- Server reporting tool should be able to collect and collate specific information regarding the resource utilization, relationship of a business service with infrastructure elements and its SLA performance
- Tool should be able to report in the context of the business service SLAs that the infrastructure elements support—clearly showing how the infrastructure impacts business service levels
- Tool should be able to deliver comprehensive, long-term, and customizable cross-domain reporting.
- Tool should support long-term data retention and aggregation up to 24 months.
- Tool should provide a library of predefined reports that can be cross-launched in the context of business services.
- Tool should provide reports from both Network devices and Servers from the same console.
- Tool should provide development environment where more Content/Reports can be created and data sources such as — Generic .csv files, and, — Databases supporting JDBC. Should also be included to pull data and create reports from such data.
- Tool should allow to configure downtime for Configuration Items and view the configured downtime in the reports

Network Automation

- Should be able to generate a graphical representation of your network. Identify which devices are inactive or out of compliance. Detecting noncompliance, issuing alerts. The ability to compare configurations is invaluable; system changes must be logged.
- Manage network compliance by comparing devices to defined, best-practice standards. Speed audit processes with network compliance reports for ITIL and more. Validate device operating states in real time to stay in compliance.

- In real time, detect configuration and asset information changes made across a multi-vendor device network, regardless of how each change is made and also support configuration deployment/rollback and configuration templates.
- Recording every access to a device including not only scripted and automated access, but a full keystroke log. Who made what change, the reason for the change and associated ticket number must be captured.
- Manage dual-stack and pure IPv6 environments. Manage SNMPv3 configurations and communicate over SNMPv3.
- In real time, store a complete audit trail of configuration changes, (hardware, and software,) made to network devices, including critical change information.
- Configure granular, customizable user roles to control permissions on device views, device actions, and system actions. Support common authentication systems, such as TACACS+, Radius, SecurID, Active Directory and LDAP.
- Manage device access and authorization through a centralized control model that is integrated with your standard workflow and approval processes.
- Automate routine configuration tasks for updates, such as password or community string changes, configuration upload and download, compare configs, bulk configurations, config backup.
- Deploy and monitor operating system images from a centralized network management system. Create a repository, and synchronize all device software images across your enterprise network.
- Enforce change processes in real time. Model complex approval processes with flexible rules. Force approvals for changes, including changes made by a direct command line interface (CLI) session.
- The system must support heavily NAT environment and environments where network devices may have the same IP address.
- The system must provide an automated method to configure devices for real-time change detection via syslog (either direct syslog or syslog via a relay).
- Scalability – The network configuration management solution should be highly scalable with the largest tier capable of supporting upto 100K devices and carrying out upto 400K tasks per day.

Service Management (Help Desk) and SLA Management

- The proposed Helpdesk tool should be Axelos Gold level/Pink Elephant/Serview certified on on at least 2 ITIL 2011 processes and complying at least 11 (undertaking on OEM's letter head to be submitted) of all the ITIL processes that are the most mature way to demonstrate that at least three IT organizations : Incident management, Problem Management, Change Management, Knowledge Management, Service Level Management, Service Asset and Configuration management, Service Catalogue and Request Fulfilment, etc. The certification copy to be submitted.
- Should be able to control access rights to modules and information by user profiles.
- The CMDB should provide visualization (graphical view) as well as support federation (seamlessly federates information from other distributed data sources), reconciliation and synchronization.

- Should provide predefined categorization, as well as routing and escalation workflows that can be triggered based on criteria such as SLA, impact, urgency, CI, location or customer.
- The Change Management module should provide a rule-based workflow system for controlling changes throughout their lifecycle: from initial request to approval, to planning and implementation, and to monitoring and evaluation.
- Should include automated impact analysis, calculated risk analysis, collision detection, and unplanned change detection and validation.
- The tool should automatically alert the responsible persons when a maintenance task is due or a scheduling conflict arises.
- If multiple SLAs are triggered, the strictest one must drive the workflow
- The product must monitor SLAs against Service, Problem, and Change Management
- The solution should show immediate (real-time) status of tickets for eg:
- Should support KCS (Knowledge Centered Support) best practices.
- Provide out of box and customizable reporting and personalized dashboard

Network Fault Management

- The solution should allow for discovery to be run on a continuous basis which tracks dynamic changes near real-time; in order to keep the topology always up to date. This discovery should run at a low overhead, incrementally discovering devices and interfaces.
- The NMS must allow immediately determining the impact of a component failure and thus helping in prioritizing problem-solving efforts.
- The NMS should provide very powerful event correlation engine and thus must filter, correlate & process, the events that are created daily from network devices. It should assist in root cause determination and help prevent flooding of non-relevant console messages
- Polling intervals should be configurable on a need basis through a GUI tool, to ensure that key systems are monitored as frequently as necessary.
- The topology of the entire Network should be available in a single map along with a Network state poller with aggressive/customizable polling intervals
- The NMS application should provide a Unified Fault, Availability and Performance function from a single station only to reduce network and device loads with unified fault & performance polling.
- The NMS performance system must provide predefined and highly customizable reporting across the network domain.
- The Network performance operator console should provide operators with seamless transitions from fault data to performance reports and back. For example - select a node in NMS fault mgmt system and cross launch it for historical and near real time data.
- Should have MIB browsing, MIB loading, and MIB expression collection features.
- NMS should be cloud ready, should have dynamic Root Cause Analysis capability
- NMS should have Global Management capability, where in it can work in distributed environment.
- NMS should support application based failover over the WAN.
- NMS should have support for SNMPv3 & IPv6, including dual-stack IPv4 & IPv6 to provide flexibility in protocol strategy and implementation.

- It should be able to correlate multiple occurrences of a specific fault on a device within a specified time frame to enable detection of chronic problems. At any given point in time there may not exist a fault for a chronic issue, but we need to know that the condition continues to happen. For example: Circuit down 20 times in last 24 hour, bandwidth thresholds exceeded 30 times in last month, etc.
- The system should support a variety of discovery protocols. The system should take advantage of available information to aid in discovery of the network. Protocols should include ARP, DNS, SNMP, BGP, EIGRP, OSPF, CDP (Cisco), EDP (Extreme), NDP (SONMP-Nortel), FDP (Foundry), EnDP (Enterasys), and LLDP (link-level discovery protocol).
- Support for discovering and monitoring router redundancy groups using HSRP (Hot Standby Router Protocol) / VRRP (Virtual Router Redundancy Protocol) & recognizing situations that can result in multi-path conditions.
- Support for port aggregation protocols like LACP (Link Aggregation Control Protocol) including visual map-based views & automatic impact assessment based on the relationships between physical and virtual links.
- Scalability – Network Management Tool should be capable of managing upto 30K devices from a single instance , should be able to have 1 mil discovered interfaces

Network Performance Management

- Should establish the status of network devices and interfaces with unified status calculation and visualization of network fault & performance data.
- Should enable efficient workflows using contextual navigation between reports and rich interactive report configuration capabilities
- Network Performance reporting tool must provide the following capabilities:
- Data collection and thresholding of network device ports (any that support MIB2 including virtual interfaces): Bytes In, Bytes Out, Discards, Errors, Network Delay
- Data collection and threshold setting of network devices: , CPU, Memory, Buffers, Component statistics
- A variety of reports summarizing the data including: Home page summary/trend summary, Calendar, Heat chart, Headline, Dashboard, Managed inventory report, Top ten, Most changed/occurring events, Data explorer
- Should honours network fault management tools' secure grouping and multi-tenancy settings
    - Secure reports by group
    - Secure reports by tenant
- Should be able to schedule key reports for automated delivery
- Distribute reports by email in HTML, Excel or pdf formats.
- Single station scalability up to 2,00,000 performance polled interfaces
- Store as-polled data for up to 12 months

Server Monitoring

- Should offer service driven operations management of the IT environment to manage distributed, heterogeneous systems - Windows, LINUX from a single management station.
- Centralized view for Agent-based and agent-less monitoring managed from one central console
- Should provide a centralized point of control with predefined policy-based management intelligence for easy deployment for the servers, operating systems, applications and services for correlating and managing all the IT infrastructure components of a business service
- Should support Virtual platforms - Vmware and Microsoft Virtual Server, Citrix and provide capability to manage both Microsoft .NET and J2EE applications from the same platform
- Should provide in built correlation to reduce the number of messages presented to the operators and to determine the root cause.
- The system must be agent based for managing the nodes and have the capability of storing events / data locally if communication to the management server is not possible due to some problem. This capability will help to avoid losing critical events.
- Complex dependencies between managed elements must be captured, allowing IT management staff to interpret lower level data in terms of its importance to the higher-level service.
- Alarms with meaningful message text, instruction text, operator / automatic actions / linked graphs, duplicate message suppression
- Should be configurable to suppress events at the agent or managed node level itself and be configurable to suppress events for key systems/devices that are down for routine maintenance or planned outage.
- The system should allow for enriching of messages with incremental information and should allow for customization of message attributes.
- There should be a single agent on the managed node that provides the system performance data, and for event management it should be able to prioritize events, do correlation & duplicate suppression ability to buffer alarms and provide automatic actions with capability to add necessary annotations
- Should provide console and a web browser interface that can be accessed from anywhere using industry-standard web browsers.
- Each operator should be provided with user roles that should include operational service views enabling operators to quickly determine impact and root cause associated with events.
- Highly scalable, and can manage in excess of 1000 managed nodes from a single server.
- There should be secured communication between Management server and Managed nodes avoiding the need to open unsecure firewall ports.
- The system should integrate with Helpdesk / Service desk tool for automated incident logging and also notify alerts or events via e-mail or SMS.
- The system should have management polices to monitor and manage WMI, Performance, SNMP, Application, Log Files and Event logs and support automatic action in various forms like running a script to be taken on alerts from managed nodes

Asset Management

- Asset Manager enables IT organizations to manage the physical, financial and contractual aspects of all IT assets—from request and procurement to retirement and disposal—making it easy to optimize costs, mitigate security and compliance risks and drive business decisions. It should automatically discover and inventory enterprise IT assets which reduces compliance risks, enable software license optimization & chargeback & constantly track changing asset configurations
- AM should provide a built-in workflow to suggest to the software asset managers in user organization that they should request more licenses or remove installed software that is not in use or assign rights to others users rather than procuring more licenses
- AM will directly alert users whenever a software installation exceeds the purchased volume. AM will also automatically ensure that no additional users are able to subscribe to that software until additional licenses are made available.
- **Inventory Management**
    - Able to manage inventory as individual or bulk items, set re-order levels and amounts and keep a history of transactions
    - Able to provide ability to account for assets and components in inventory and facilitates maintaining appropriate levels of stock
- **Asset record detail:**
    - Provide a general tab that stores specific information about the device depending on the device type.
    - Provide a Components tab that stores sub-components information of the asset. E.g. ID, Serial Number, Licenses, Version, Status, Category, Type, Item.
    - Provide an Additional Details tab that stores various types of detail for the respective type of asset. E.g. how much memory the printer has which might assist in a Help Desk call.
    - Provide a Contracts tab that stores different types of contracts: Lease, Support, Warranty, Software, Maintenance
    - Provide a People tab that stores individuals or groups who are owners and users of the asset.
    - Provide a Financials tab that stores associated costs by cost center, budget code, project. Static and incident costs. Provide Straight line depreciation cost calculation.
    - Able to track the total cost of ownership for an asset
- **Software License Management**
    - Should manage all types of software license and hence software compliance.
    - Should be able to recover software licenses when hardware is retired, returned (for leases).
    - Should track version, status, and upgrade information for each installed software package.
    - The tool must be able to reconcile the number of installed copies of an application with the number of permitted licenses.
    - Should be able to track the end-user's right to utilize software or hardware assets.
    - Should be able to manage and count software entitlement separately from license counters as software is installed, removed and auto discovered.

- Software Asset Management should be capable of doing license compliance for vendors being offered in the subject work.

- **Auto-Discovery**
  - Proposed solution should have the auto-discovery tool, which should have tight Integration with the proposed ITAM (IT Asset Management) solution.
  - Should be able to collects information from routers, switches, load balancers, storage, servers, and firewalls.
  - Should have the ability to verify inventory data changes with current asset details before permanently updating the system of record.
  - Discovery should be automatic and continuous to detect real time changes in the IT infrastructure
  - Discovery should work without requiring agent installation (that is, agent-less discovery) while discovery Layers 2 through Layers 7 of OSI model
  - Should use Industry-standard protocols such as WMI, SNMP, JMX, SSH to perform discovery without requiring the installation of an agent
  - Discovery system should have ability to modify out-of-box discovery scripts, create customized discovery scripts
  - Discovery system should have the ability to capture configuration files for the purposes of comparison and change tracking

Discovery system should be capable of supporting role-based access to various aspects of CMDB administration

8.24 HDPE Duct

As per TEC GR No. GR/TX/CDS-008/03/March 11 with latest amendment8.25 Deleted.

8.26 Command Control Center

At central command center, it is desired to have an integrated centralized Video Management System solution that shall allow an operator to view live/recorded video from any camera installed on stations. Not all cameras would be simultaneously viewed at command center. It should have the capability to manage hundreds to thousands of cameras and connected devices for centralized or highly distributed video surveillance architectures. It should provide facility to capture critical information such as location, name, status, time of the incident and be modifiable in real time by multiple authors with role associated permissions (read, write).

The system shall provide integrated dashboard with an easy to navigate user interface for managing profiles, groups, message templates, communications, tracking receipts and compliance. It shall provide tools to assemble personalized dashboard views of information pertinent to incidents, emergencies & operations of command center. It shall also provide dashboard filtering capabilities that enable end-users to dynamically filter the data in their dashboard based upon criteria, such as region, dates, , etc. and capability to drill down to the details

It shall be able to generate historical reports, event data & activity log and covert these reports into "pdf" or "html" formats.

The proposed system should be able to leverage and integrate with existing & new CCTV cameras supporting ONVIF profile 'S' and video management systems either through camera level or VMS level, to provide an integrated video surveillance at the command center.

The proposed solution should have capability to integrated with GIS maps (-Railway will provide the GIS Maps.

The operator at the command center shall have following access to the video feeds:

- Viewing rights to all the live camera feeds
- Viewing rights to the stored feeds,
- Access to Alerts/Exceptions/Triggers raised
- Personalized Dashboard
- Accessibility to analytics on the recorded footages
- Provide search of recorded video. Advanced search should be possible based on various filters like alarm, event, area, camera etc.

Broad Level Bill of Material required at Central Command Center is as follows:

- Video Wall (As per clause 8.26 of chapter 8)
- PC Workstation as defined in clause 8.6 of chapter 8 (5 Nos)
- Adequate IT/LAN Components
- Chairs and Computer Tables (5 Nos)
- Adequate Electrical Work
- UPS (adequate capacity to cover all above IT Components with minimum 1 hour Backup).

8.26.1 **Video wall for Command and Control Center (CCC)**

Specifications of Display Wall

Video Wall Cubes for 24*7 Operations
Rear projection DLP Video Cubes for 24*7 Operations
Size : 70" diagonal **with +/- 5" variation**
Front/Rear Serviceable
Matrix : 2 sets of 2x2 placed Back to Back, driven by Video Display Processor
Depth of Video Cubes must be less than 1050mm
Backlit Type: LED, with 6x redundancy for each of 3 LED's or LASER with multiple LASER bank for redundancy
Declared Backlight Lifetime: 80,000 Hrs or more in Eco Mode
The minimum brightness level must be mentioned along with declared life of backlight of display panel
Screen Gap (Bezel to Bezel) : **2 mm** or lesser
Resolution: Full HD 1920 x 1080 or Higher

Luminance : 200cd/m2 (nits) or more / equal to 1000 Lumens or more
Viewing angle: 178^{o} (H), 178^{o} (V) or better
Video compatibility: NTSC, PAL, SECAM
Built in processing and scaling
Dual link DVI-D (or Better) Input – 2 inputs & Output - 1
Ethernet ports - 1 at least
Input through Video Processor
Control: Over LAN
Unified Control of Video Wall through Server for wall configurations
Unified Control of Video Wall through Server for switching the complete Wall ON/Standby

It should be possible to calibrate entire video wall for uniformity of brightness, contrast ratio manually , through control software from a desktop
Automatic color and brightness calibration of the Video Wall: Integrated color & brightness sensors in each screen along with calibration software to automatic maintain color and brightness uniformity among all screens without manual intervention or any trigger using external spectrometer. The mentioned calibration should be supported through time based scheduling so as to have touch-less calibration.
It shall be possible to time schedule brightness and contrast ratio for whole Video Walls based on Time of the Day, to optimise power consumption and ease of operations staff
Half Gain Angle (Horizontal / Vertical) : 33Deg/33Deg +/- 3 Deg
Redundant Control Design: to drive 2 Video walls of full 2x2 display, incase of failure of Video Wall Processor to avoid video wall going blank without modification in resolution of content
Aspect Ratio - 16:9
Contrast Ratio - 5,00,000:1 or Better (On Screen or Dynamic) / 1200:1 or Better (Static or Native)
Cooling - Low Noise Fans for heat dissipation efficiently
Operating temperature :10-40 degree centigrade or better
Custom Video wall (2x2) Floor mount kits (2 nos.) To be supplied by Video Wall OEM
Should be universal designed mount for video wall screens which can hold weight of 2*2 panels (to be supplied)
Should be landscape screen mounting
Should have adjustable height, extension and depth
Outer rim is required for two Video Walls of 2*2 matrix
Video wall Processor
Configurable videowall processor that shall support the real-time window display of multiple video, graphic, picture and streamed input sources on a single or tiled video display.
Video Wall Processor to drive 2 number of 2x2 matrix Videowalls
Redundant Design : Redundant Power supplies
Redundant Design : Redundant Fans
Raid1 redundant setup with either 1000 GB HDD or more Harddisk drive
1Gb/s LAN port
Outputs : DVI/HDMI suitable for driving 2 VW sets of 2x2 Panels

Inputs : 2 DVI/HDMI with Audio and 4K resolution. System should be able to simultaneously show multiple sources (available from LAN) on each Videowall. Processor should have Key board and Mouse Control for controlling the Video Wall Layouts .
Layout : It should be possible to create layouts comprising of screen scrapped content of Workstations, DVI inputs, Web sources, URLs configured as sources. Layouts can be pre configured or changed in real time

Scheduling : It should be possible to schedule specific Layout based on time range (from : to)
Zoning: It should be possible to create two zones.
Sharing & Collaboration : it should be possible to share layout over LAN/ WAN network with workstations connected to meeting room or other workstations connected to same LAN / WAN network
Soft KVM : The system shall include complete Soft KVM to permit operators to take mouse & keyboard control of Displays, Screen Scrapped applications and DVI source
Ticker: It should be possible to create two separate Tickers which run concurrently (One in each Video Wall Zone). These can be positioned at top or bottom and can run independently in respective zones
The Ticker can be picked from data source through screen scrapping or through typing specific incidence, manually
Security : The system shall support password based access control of Video Wall Lay-outs & Tickers
VW Processor should be able to display EMS views based on Windows OS
It shall be possible to load EMS clients on Video Wall Processor, requiring for opening UI for pulling data from EMS or from any other streaming data source
Rack mountable
Controlware : System Design should be Network based and uses Ethernet network infrastructure
Processor is to be mounted in Equipment room which is away from Videowalls. Bidder to visit the site and estimate cable requirements
Redundancy for Video Wall Processor - Functionalities must be offered to avoid Video Wall going blank in case of Video Wall Processor goes down, for redundancy. Video Wall should continue to display contents based on pre-configured layout, with-out downscaling of Display Content, even if Video Wall Processor goes down.

Specifications of Display Wall Management Software

SN	Minimum Performance Specifications
Layouts	The software should be able to pre configure various display lay-outs and access them at any time with a simple mouse click or schedule/timer based.
Sources	The software should be able display multiple sources anywhere on video wall in any size.

Remote Viewing	The video wall content will be able to show live on any remote display Mobile with IE, Chrome or safari
User management	Key features of Video Wall management Software
	• Central configuration database
	• Browser based user interface
	• Auto-detection of network sources
	• Online configuration of sources, displays and system variables
Software features	Video Wall Control Software shall allow commands on wall level or cube level or a selection of cubes :
	• Switching the entire display wall on or off.
	• Setting all projection modules to a common brightness target, which can be either static (fixed) or dynamic to always achieve maximum (or minimum) common brightness between projection modules.
	• Fine-tune colour of each cube
Client & Server based Architecture	Should support Multiple clients / Consoles to control the Wall layouts
Collaboration	The Software should be able to share layouts comprising of multiple sources with workstations / Displays over LAN for remote monitoring
Scaling	Software should enable the user to display multiple sources (both local & remote) up to any size and anywhere on the display walls (both local & remote).
Display	The software should be able to create layouts and launch them as and when desired
Remote Control	The Display Wall and sources (both local & remote) should be controlled from Remote PC through LAN without the use of KVM Hardware.
Support of Meta Data	Software should support display of Alarms
Authentication	The software should provide at least 2 layer of authentication
Scenarios	Software should able to Save and Load desktop layouts from Local or remote machines
Layout Scheduler	All the Layouts can be scheduled as per user convince.
Layout Scheduler	Software should support auto launch of Layouts according to specified time event by user
Layout Management	It should be possible to create layouts comprising of screen scrapped content of Workstations, DVI inputs, Web sources, URLs configured as sources. Layouts can be pre configured or changed in real time
Layouts Configuration	Can be pre configured or changed in real time
Scheduling	It should be possible to schedule specific Layout based on time range

Sharing & Collaboration	It should be possible to share the layouts over LAN/WAN Network with Display in Meeting room or on Remote Workstations connected on LAN/WAN Network
Soft KVM	The system shall include complete Soft KVM to permit operators to take mouse & keyboard control of Displays, Screen Scrapped applications and DVI source
Ticker	It should be possible to create two separate Tickers which run concurrently . These can be positioned at top or bottom and can run independently .The Ticker can be picked from data source through screen scrapping or through typing specific incidence, manually
OEM Certification	All features and functionality should be certified by the OEM.
	The Display Modules, Display Controller & Software should be from a single OEM.

8.26.2 Remote viewing on Web and Mobile App for CCTV system at Stations

As per RDSO Specification of IP Based Video Surveillance System Specification no. RDSO/SPN/TC/65/2019 Revision 5.0 or latest with all amendments.

SECTION – II

TECHNICAL REQUIREMENTS & SUPPLEMENT

INDEX

CHAPTER - 1

PRECAUTIONS TO BE TAKEN IN 25 KV A.C. TRACTION AREA:

II.1.1 GENERAL

Any Telecommunication circuits in the vicinity of AC Traction running parallel to 25 KV lines are liable to be affected by AC induced voltage. Therefore precautions should be taken to eliminate the possibility of induced voltage affecting equipment and humans.

Crossing of track, if any, should be negotiated by underground cables running at right angles to the track as far as practicable.

Special protective measures (viz. provision of G.D tubes, fuses and earthing etc) are required to be taken for telecommunication lines entering 25 KV sub-station /switching posts.

For the human safety considerations the safe working voltages should be 60 V under normal conditions and 150 V with special precautions and 430 V under fault conditions.

Instructions for protection of railway staff/working personals on signaling and telecommunications installations on 25 kV AC traction shall be strictly adhered to. Precautions are required to be taken on account of following,

i) Proximity of live conductor.
ii) Pressure of return current in Rails.
iii) Induction in all metallic bodies situated closed to over head equipment.

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SECTION - II

CHAPTER - 2

PREPARATION OF AS-BUILT ROUTE PLANS

II.2.0 SCOPE:

The scope of this is to prepare a final set of As-Built drawings of route plans, based on the actual cable route (which in turn shall be based on a preliminary & approved drawings of route plans, already supplied to the contractor).

II.2.1 Points to be taken care of for laying the OFC cable:

II.2.1.1 Avoid underground structures, signaling cable, power cables and pipe lines etc.

II.2.1.2 Avoid rodent/termite infested or infected side of the alignment.

II.2.1.3 Avoiding areas prone to water logging.

II.2.1.4 For the straight runs as far as possible a separation of 10 Meter should be kept from the nearest track. This is as per CCITT recommendation K.8.

As a rule a minimum distance of 5.75 M should be maintained between the OHE masts and the cable. In Yards etc. where observance of this rule may be difficult, a minimum distance of 3 Meter should be maintained. In exceptional cases where the cable trench depth is less than 0.5 M the lateral distance may be reduced to 1 M.
Make the route of OFC cable within 1 meter of Railway boundary normally.

II.2.2 As-Built Cable Route plan.

Based on above actual route, the as-built cable route plan should be prepared:

II.2.3 Preparation of Drawings

All the plans and drawings shall be neatly prepared using Computer Aided Design System & plotter etc. The drawings shall be in A3 size & suitably filed for ease of handling.
Further, a soft copy of Auto-CAD drawings in CD shall be submitted.

2.4 Information in Cable route plan:-

The cable route plan shall contain following information:-

II.2.4.1 Whether the cable route is on the **up** or **down** side of the Railway Tracks.

Exact locations and lengths where the cable is laid in RCC/DWC/G.I. pipes/ troughs and under the bed on culverts.

Location of track crossing and the number of tracks being crossed.
Location of road crossing and the no. of RCC/DWC/GI pipes provided.
Locations of Pull Chambers/Joint Pits.

II.2.7 Protective works for Cable/ Ducts:-

II.2.7.1 For building, masonry platforms, crossing of tracks and roads etc. special protection for the cables are required. Some of the methods adopted for different types of protective works are specified in the following drawings:-

For Girder bridges M.S. Troughing Drg. S&T/RE/78/2/76 Page 1 & 2 and RE/42/172. (P-160 & 163).
For cable entries to Cabins, ASM's Offices etc. through HDPE pipe Drg.No. RE/S&T/ALD/SK/161/81 (P-174).
For unconsolidated embankments Shoring for the cable trench as per Drg.No. RDSO/TC/35003. (P-168).
For laying cables over the culverts in DWC pipes Drg. No. RE/S&T/ALD/SK/160/81. (P-162).
For laying cables over arch bridges brick channeling Drg. No.RE/S&T/ALD/SK/162/81. (P-173).
For route over rocky area through chase Drg.No. RE/S&T/SK/303/85withAlteration 'A'. (P-167).
For routes under bed of culverts in DWC pipes Drg.No. RE/S&T/ALD/SK/184/81.(P-165).
For cable laying under railway track Drg. RE/S&T/ALD/SK/159/81 (P-169).
For cable laying under road drg. No. RE/S&T/ALD/SK/497/2000 (P-157)
For Stone/RCC cable route marker drg no. RCIL/NR/01 (P-172).

Note1: In non-RE area, wherever distances are reckoned with reference to overhead alignment, the distances from the nearest KM-post provided along the track, may also be mentioned.

Note 2: If any of the above-mentioned drawings are illegible or not clear, the clarifications may be sought from the office of Executive Director, RailTel.

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SECTION - II
CHAPTER - 3

TECHNICAL SPECIFICATION AND INSTRUCTIONS FOR TRENCHING AND LAYING OF OPTICAL FIBRE CABLE:

II.3.1 SCOPE:

This chapter deals with the specifications under which the various work for trenching & laying of optical fibre cable coming under the purview of the contract are to be executed by the contractor.

II.3.2 SUPPLY OF ROUTE PLAN:

Approved Cable Route plan and jointing schedule for mid section splicing of cable will be prepared and supplied by the RailTel This shall give a preliminary idea of the number & locations and the quantities and type of various equipment to be fixed, wired and commissioned.

II.3.3 LEADING OF CABLE IN MASONRY BUILDINGS

II.3.3.1 The cable will have to be led inside any masonry building such as Cable hut, ASM's room at a depth of 0.75 meters by cutting the masonry structure of the wall as per Drg.No. RE/S&T/ALD/SK/161/81 as given at Annexure- 3.12. After the cable has been led inside the masonry wall, the floor inside shall be duly repaired and plastered.

II.3.4 LAYING OF CABLE IN SPECIAL CASES:

II.3.4.1 Near Power Cable

When the proposed cable route comes across any other cable already laid, the contractor shall first report the fact to the Engineer. Should the cable be identified by the Engineer as a power cable (LT or HT), the trench shall be dug as far away from the route of the power cable as practicable.

II.3.4.2 Crossing of Optical Fibre Cable with another cable

Crossing of the Optical Fibre cable with another cable shall be avoided wherever possible. Where, however, this is not possible, the Optical Fibre cable shall be laid in cement or asbestos cement pipes. The length of the pipe to be provided on either side of the crossing shall be atleast one meter.

II.3.4.3 Laying other than optical fibre cables in the same Trench

No cable other than quad cable shall be laid in the trench made for the Optical Fibre cable. Even in such cases, both the cables are to be laid as per approved drawing. Where, however, exceptional circumstances exist, the optical fibre cable may be laid along with another cable in the same trench provided a specific permission of each such case is obtained in writing from Engineer. When optical fibre cable and L.T. power cable have to be laid in the same trench they shall be separated by placing a

layer of second class bricks between them vertically (approx. 16 bricks/meter) or laid in RCC pipe.

II.3.4.4 Laying of cable through RCC/GI/DWC pipes

The cable shall be laid through RCC/GI/DWC pipes at the locations marked on the route plan and as advised by the Engineer or his representative.

For laying the cable through pipes galvanised steel wires of a cross section not less than 10 SWG shall be used as a lead wire. Two such lengths of wires shall be laid through the pipes, so that after the cable is threaded through the pipe, one lead wire is permanently left in the pipe with a suitable overlay at two ends, to enable the cable to be pulled out at a later stage if required to do so.

On arch bridges and culvert bridges the cables will be threaded through DWC pipes etc. While threading the cable through these pipes the Contractor shall do the trenching to the required depth wherever necessary for which no extra charge will be paid.

II.3.4.5 Laying cable near feeding post:

In the vicinity of feeding posts, as far as possible the cable shall be laid on the side of the track opposite to the feeding post. Further the Optical fibre cable shall be at least one metre away from any metallic part of the O.H.E. and other equipment at the sub station which is fixed on the ground and at least one metre away from the sub - station earthing. In addition, the cable shall be laid in RCC pipes 150 mm dia (standard 2 metre length) complete or capable of being split into two half as per specn. No. ISS-458 latest for a length of 300 metres on either side of the feeding point.

II.3.4.6 Running of cables at foundations others than OHE Masts and from pipe outlets.

Damages to cable is likely to occur if care is not taken in laying cable where the bed changes from solid support such as a foundation pipe or bridge to soft support such as soft soil. The cable must not press against the edge of the solid support. The soft soil near the edge must be tamped and the cable raised slightly.

II.3.5 HANDLING OF CABLE DRUMS & PAYING OF CABLES:

II.3.5.1 While collecting OFC/HDPE from RailTel depot the contractor must ensure that the materials should be received in good condition. The drums shall be unloaded by the side of the Railway Track/Road from either a crane or any other suitable means very carefully so as not to cause any damage to the cable. The drums at site shall be protected until they are laid. The cable must be tested before and after laying.

II.3.5.2 On each drum there are two ends, A & B. The 'B' end of one cable length shall meet 'A' end of the next cable at a joint. The 'A' end shall be normally on the top unless indicated otherwise on a drum.

II.3.5.3 The drums shall always be kept upright, i.e. axle in parallel position to the base. The drums shall not be set by jerks but shall be handled slowly and with care. The walls of the drums should not be damaged while moving the drums if required for unrolling.

II.3.5.4 The drums shall normally be unrolled at the same place and the cable carried by workmen near the trench. The drums shall not be dragged in any case. But where drums of cable have to be moved, would always be rolled in the direction of the arrow, otherwise the coils tend to unwind and the cable may get battered. In case no direction arrow is marked on the drum, remove several battens and determine the direction in which the cable is coiled. The arrow should then be painted on the drum pointing in the opposite direction in which the upper cable end is coiled so that future handling of the cable drum is facilitated and then replace the battens carefully.

II.3.5.5 The drum should be properly mounted on jacks (or on a cable wheel) making sure that the spindle is large enough to carry the weight without bending and that it is laying horizontally in the bearings so as to prevent the drum creeping to one side or the other while it is rotating. Before attempting to pull off the cable, remove the end protection box attached to the flange of the drum and cut the security ropes so as to leave the cable free to move.

II.3.5.6 If a portion of the cable only is taken out from the cable drum, the battens should be immediately replaced to prevent damage to the balance of the cable. This is important.

II.3.5.7 The use of steel bars between the bolt heads to 'jump' or turn the drum around is dangerous to staff and likely to damage the drums. A better method is to use two steel plates with grease between them. By standing the drum on these greased plates, it can be easily elevated round to the desired position.

II.3.5.8 All care should be taken in handling cable drums with a view to ensure safety not only of the cables but also of the working party handling them. The man should not be allowed to brake the cable drum by standing in front but only from side.

II.3.5.9 Rewinding and Redrumming of cables.

(a) If for any reason it is found necessary to rewind a cable on a drum, cable drum with a proper barrel diameter not less than of the original drum should be chosen.

(b) The drums should be mounted on cable jacks during rewinding operations using proper size of spindles passed through the flange holes, which will not buckle under the lead. The cable should not be bent opposite to the set it is having already.

(c) In the re-drumming operations, drums should be so turned that the cable passes from the bottom of the original set with as little gap as possible.

(d) Replace all the lagging on the cable drum.

II.3.6 MINIMUM BENDING RADIUS:

Cables should always be bent (or straightened) slowly, they should never be bent to small radius while handling. The minimum safe bending radius for optical fibre ca-

bles should be 30 times the diameter of the cable but wherever possible larger radius should be used.

II.3.7 TOOLS REQUIRED FOR TRENCHING, CABLE LAYING AND FILLING.

TOOL'S NAME

Cable Jack
Cable Grip
Reopening Device
Free Hood Hook
Shackle free head hook
Grouling Hook
Pulling Bolt
Tension meter
Pulley
Anti Twist Device (swivel)
Roller
Flexible Cable
Pulling Rope
Brush
Mandrel
Chain
Measuring cord for strain gauge
Slip Winch
Wire rope
Portable VHF set
Measuring tape
Phowrah
Iron plate
Loader Backhoe for Drilling
Warning Tape
Caterpillar tractor
Fork Lifter
Vehicle Van type
Tacho- meter
Road measurer.

3.17 Blowing /Drawing of Optical Fibre Cable:

II.3.18.1 **OFC** should normally be **blown** through the ducts by standard blowing machines Only in exceptional cases drawing may be adopted in short lengths with the permission of the site engineer of RailTel.

SECTION - II

CHAPTER - 4

JOINTING AND TERMINATION OF FIBRE OPTIC CABLE

II.4.1 TECHNIQUE FOR JOINTING OF OPTICAL FIBRE CABLE

Fusion splicing shall be used for splicing fibres. This is accomplished by applying localized heating (i.e. by electric arc or flame) at the interface between two butted, pre-aligned fibre ends, causing them to soften and fuse together.

II.4.2 STRAIGHT JOINT FOR FIBRE OPTIC CABLE

II.4.2.1 There are various types of joint enclosures available in the market. The procedure for assembly of joint closure is described in the installation manual supplied with straight joint closure. This includes the following:

Material inside joint closure kit

Installation tools required

Detailed procedure for cable jointing

Procedure for re-opening the closure.

II.4.2.2 The Optic Fibre straight through joint closure shall be as per specn. TEC TO 910 G92 (latest) or a proven design approved by RCIL .The joint shall be protected in RCC Joint Pit as per drawing given in Annexure 2.14. (.The Optic Fibre straight through joint closure shall be of TVSE, R&M, Raychem, 3M make and shall be approved in advance by RailTel. The joint shall be protected in concrete chamber as approved by engineer- in-charge.)

II.4.2.3 Generally, the following steps are involved for jointing of the cable:

- Preparation of cable for jointing
- Stripping/cutting the cable
- Preparation of Cable and joint closure for splicing
- Stripping and Cleaving of Fibres
- Fibre splicing
- Organising fibres and Finishing joints
- Sealing of joint closure and
- Placing joint in the Jointing Chamber/Pit.

II.4.3 STRIPPING/CUTTING OF THE CABLE

The cables are stripped of their outer and inner sheath with each sheath staggered approximately 10mm from the one above it.

Proper care must be taken when removing the inner sheath to ensure the fibres are not scratched or cut with the stripping knife or tool. To prevent this, it is best to only score the inner sheath twice on opposite sides of the cable, rather than cut completely through it. The two scores marking on either side of the cable are then stripped of the inner sheath by hand quite easily.

The fibres are then removed from cable one by one and each fibre is cleaned individually using Kerosene to remove the jelly.

II.4.4 STRIPPING AND CLEAVING OF FIBRE

Prior to splicing each fibre must have approximately 50mm of its primary protective U.V. cured coating removed, using fibre stripper which are manufactured to fine tolerances and only score the coating without contacting the glass fibre.

The bare fibre is then wiped with a lint free tissue doused with ethyl alcohol. Cleaving of the fibre is then performed to obtain as close as possible to a perfect 90 degree face on the fibre.

II.4.5 SPLICING OF THE FIBRES

The fusion splicing shall be used for fibre splicing. Some of the basic steps for fusion splicing are as given in 4.8 below.

II.4.6 FUSION SPLICING OF FIBRE

Some of the general steps with full automatic micro processor control splicing machine are as under

Wash hands thoroughly prior to commencing this procedure.

Dip the clean bare fibre in the beaker of ethyl alcohol of the ultrasonic cleaver. Switch on ultrasonic cleaver for 5-10 seconds (Some of the manufacturers do not prescribe the above cleaning).

Place the bare fibre inside 'V' grove of the splicing machine by opening clamp handle such that the end of fibre is app. 1 mm. over the end of the "V" groove towards the electrodes.

Repeat the same procedure for other fibre, however, first insert heat shrink splice protector.

Press the start button on the splice controller.

The machine will pre fuse, set align both in 'X' and 'Y' direction and than finally fuse the fibre.

Inspect the splice on monitor if provided on the fusion splicing machine and assure no nicking, bulging is there and cores appear to be adequately aligned. If the splice does not visually look good repeat the above procedure.

Slide the heat shrink protector over the splice and place in tube heater. Heat is complete when soft inner layer is seen to be 'oozing' out of the ends of the outer layer of the protector.
Repeat for other fibres.

II.4.7 FUSION SPLICER AND OTDR

The fusion splicer and Optical Time Domain Reflecto meter (OTDR), to be used for splicing and measurements of parameters respectively, shall be of approved design and quality. The contractor shall submit
Specification of fusion splicer and OTDR
Certificate from the users, who have used the splicer and OTDR of the make, the contractor intends to use, regarding their satisfactory performance.

The RCIL reserves the right to direct the contractor to use the same or any other proven design of fusion splicer and OTDR if in the opinion of RCIL the specification of Fusion splicer and OTDR are not suitable

II.4.8 ORGANISING FIBRE AND FINISHING JOINTS

After each fibre is spliced, the heat shrink protection sleeve must be slipped over the bare fibre before any handling of fibre takes place, as uncoated fibres are very brittle and cannot withstand small radius bends without breaking.

The fibre is then organized into its tray by coiling the fibres on each side of the protection sleeve using the full tray side to ensure the maximum radius possible for fibre coils.

The tray are placed in the position.

OTDR reading taken for all splices in this organized state and recorded on the test sheet to confirm that all fibres attenuation are within specification. This OTDR test confirms fibres were not subjected to excessive stress during the organizing process.

After this the joint can be closed with necessary sealing etc. and ready for placement in the pit.

II.4.9 TERMINATION JOINT FOR FIBRE OPTIC CABLE.

II.4.9.1 This joint is provided in the cable hut for terminating the outdoor fibre optic cable of both the sides, splicing through fibres, connecting fibres to pigtails for connection to Optical Line Terminal Equipment etc.

II.4.9.2 The OFC Cables shall be dressed up on teak wood plank/Aluminum ladder inside cable hut. The armour of the OFC Cable shall be cut before taking the cable in the equipment rack. The cables shall be terminated on FDMS and derive required pigtails.

Two pairs of fibres shall be derived from either side cable at every OFC cable hut through pigtails with FC/PC connectors. The remaining fibres shall be looped through.

II.4.9.3 The procedure for installation of termination joint box depend upon the type of joint enclosure. The installation manual supplied gives the step-by-step procedure for installation. However, the general steps are as under:-

- Marking the cable
- Stripping/cutting the cable
- Gripping cable in sheath/clamp
- Treatment of tension member
- Fibre splicing
- Enclosing fibre
- Fixing strength member
- Closing the cover
- Fixing termination box
- Fixing the cable.

II.4.10 MARKING THE CABLE

Determine the cable length up to the proposed location of termination box. It is also to be ensured that at least 10 meters of cable is coiled in the cable pit.

Determine the cutting point and mark the cable

Determine the sheath peeling point and mark the cable

II.4.11 CUTTING / STRIPPING THE CABLE

Cut the cable as per the marking
Remove the sheath from cable ends. During sheath stripping care should be taken not to damage the fibres.

The length and the steps for various sheath cutting shall be as per the instruction given in the manual.

II.4.12 GRIPPING THE CABLE

Wind PVC tape around the cable core just beside edge of the sheath.

Insert the bushing inside sheath by cutting the cable sheath for about 25mm.

Place the sheath grip (lower half and upper half) and tighten it with the help of torque wrench.

II.4.13 FIXING OF TENSION MEMBER

a) Mark the tension member for the specified length and cut it.

b) Clean the tension member thoroughly by Alcohol and cotton cloth.

c) Fix tension member holder with the help of instant adhesive at the end of tension member.

II.4.14 FIBRE SPLICING

The procedure for splicing is same as described for straight joint closure in Clause 4.7 above.

II.4.15 ENCLOSING FIBRES

a) Set the fibre cassette on the base

b) Arrange excess length of fibre to make double figure of eight.

c) Enclose the spliced fibre and its excess length carefully.

d) Repeat the procedure for other fibres.

e) After this, the box can be closed. However, a packet of silica gel may be placed inside for protection from entry of moisture.

II.4.16 MOUNTING OF TERMINATION BOX.

Termination box can be fixed either on wall or on equipment rack. Mark the fixing holes on the walls/bracket/frame

a) Place the termination box and tightened the nuts inside the base box.
b) Put the covers.

II.4.17 FIXING THE CABLE

Secure the cable on wall/frame at two places within one meter from termination box keeping in view straight entry of cable in termination box.

II.4.18 ACCEPTANCE TEST FOR FIBRE OPTIC CABLE

The Procedure for Testing of Fibre Optic Cable shall be jointly finalized by Contractor with Engineer of the RCIL. The parameters in the concerned specification shall be taken as reference. The Test shall be conducted from cable hut to cable hut, after the Splicing & termination Joints are completed. The length of cable (as per marking in cable & as measured by OTDR), loss in cable, average loss per Km., No. of Splices, Splice loss, etc. shall be recorded and jointly signed as per pro-forma given in para 4.24 below.

II.4.19 TEST PROTOCOL FOR OPTICAL FIBRE CABLE

SYSTEM TEST PROTOCOL OPTICAL FIBRE CABLE FIELD TEST

Route: ---------- Date: ----------

Station: ---------- No. of mid-section splices: ----------

Section: ---------- Measured by: ----------

Length (by OTDR): ---------- Length as per meter marking on cable sheath----------

1)
2) Optical measurements (On Line):

Measurement	Fibre – number 1 2 3 4 ……22 23 24	Accepted Value
1.1 Total attenuation at 1300/1550 nm with OTDR		
1.2 Total attenuation per Km at 1300/1550 nm:		<0.40 dB/Km at 1300 nm &<0.25 at 1550 nm
1.3 Splice Loss in dB with OTDR Location		Average splice loss
OHE Mast No./ Overhead alignment post no. A. B. C. D. E.		
Average Splice Loss		0.15 db, no splice should have loss >0.2 db

NOTE : ALSO ATTACH OTDR RESULTS |----|

2) Visual Inspection (On Line):
2.1 No. of Cable drum used in the section: ----------
2.2 S.No. of cable and length of each drum:
S.No. LENGTH

1. ---------- ----------M

2. ---------- ----------M

3. ---------- ----------M

4. ---------- ----------M

5. ---------- ----------M
2.3 Location of Isolation Sleeves: 1. 2. 3.

Contractor's Representative RCIL's Representative

II.4.25 TOOLS AND EQUIPMENTS REQUIRED FOR JOINTING AND TERMINATION OF FIBRE OPTIC CABLE.

S.No. TOOL's Name

1. Branch Joint Closure
2. Termination Box
3. Rubber end Block
4. Sheath Clamp
5. Bushing
6. Strength Member holder
7. Heat Shrinkage tube
8. Arc fusion splicer machine.
9. Power cord AC/DC
10. Walkie-Talkie 12V DC source
11. Tube heater
12. Precision cleaver
13. Cable sheath stripper
14. Fibre stripper
15. Knife for HDPE cutting
16. Hexa for strength membrane
17. Isopropyl alcohol or methanol of high specific gravity
18. Johnson Buds
19. Tweezers
20. Gun heater Blower type
21. Sleeve for splice protection
22. O.T.D.R.
23. Stickers for numbering of splicers.
24. Portable k. oil generator
25. Umbrella's 2 Nos.
26. Dust protection for splicing machine

Note:- Wherever cable has to be coiled/looped , the diameter of the coil/loop shall be greater than 30 times the diameter of the cable.

SECTION-II
CHAPTER-5

Technical Specification and Drawing for provision of Earthing Arrangement.

CHAPTER – 5: TECHNICAL SPECIFICATION OF MAINTENANCE FREE EARTHING

II.5.1. PURPOSE

Today a number of installations with electronic equipments is exponentially increasing day by day in Indian Railways and there is a need to protect these system with proper earthing. This specification of maintenance free earthing describe in detail, the components to be used and the procedure for constructing the pit. The main purpose of using this new technique is to ensure that the resistance between the earth electro and the equipment is nearly zero, consistently throughout the year.

II.5.2. Scope

The earth pit shall be of permanent and maintenance free (PMF) type. The earth pit shall include the components, such as – earth rods, compression couplers, earth enhancement material and connecting wires, earth-bus bar and all accessories. It is meant to be used for earthing for equipments

II.5.3. Earth Resistance

Acceptable earth resistance value at earth bus bar shall be less than two ohms for electrical installations and less than one ohm for telecom installations

II.5.4. Location for Earth

Low laying closed to the building or the location box is good for locating earth electrodes. The location can be closed to any existing water bodies or water points. Earthing rod should not be fixed on high bank or made of soil

II.5.5. Earth Rod

The earth rod shall have the following characteristics/specifications:-

a) 6 feet long copper bonded steel rods, especially designed for electrical grounding and shall have a minimum dia of 17 mm.
b) Shall be corrosive resistant
c) Shall be molecularly bonded with copper to high strength steel cores
d) Shall have a minimum copper bonding thickness of 250 microns (10 Mil.).
e) Shall have a minimum life span of 20 years

II.5.6. Earth Enhancement Material

Earth enhancement material shall be electrically conductive and non-soluble. It shall:

a) Have high conductivity in the electronic ground contact area and it should improve earths absorbing power and humidity retention capability

b) Have a resistivity of less than 4.7 ohm/mtr
c) Be non corrosive in nature have low water solubility (0.2% max) but high hygroscopic and will not be eliminated by continuous treatments with water
d) Be stable between -600^{O} and 600^{O} C temperature
e) Be possible to increase earth conductivity from 3 to 20 times
f) Interact with homogeneous way when applied to earth
g) Be suitable for any kind of electrode and all kinds of grounds of different sensitivity through the simple spill of proper solution to ground, which surrounds the electrode
h) Higher doses may be necessary for optimum result in high resistance soil or rocky area

II.5.7. Construction of Unit Earth

a) A hole of 4 to 6 inch dia shall be augured to a depth of about 6 to 9 feets
b) Two electrodes of 6' each shall be joined together using a compression coupler.
c) The electrode of 12' (6+6) shall be inserted in augured hole
d) It will be penetrated into soil by gently driving on the top of the rod using a sledge hammer. Here natural soil is assumed to be available after about 10' so that 2' of the electrodes shall be inserted into the soil
e) RDSO approved earth enhancing compound 10 kg. shall be filled in augured hole in slurry form and the resistance is measured. This will further deepened by adding one more earth rod if the resistance is not coming less around 3 ohms
f) Remaining portion of the hole shall be covered by the soil which is taken out during auguring

II.5.8. Construction of Ring Earth

Since it is not possible to achieve a low resistance value of less than 1 ohms with one pit, it is required to install a ring earth consisting of 2 to 4 pits depending upon the soil resistivity. Following method shall be adopted to construct the ring earth:

a) The procedure mentioned above for one pit shall be repeated for installing 2 to 4 such earth pits. It will be ensured that the distance between the two earth pit shall be more than 8 to 10 feet for effective utilization of the soil contact area
b) The number of pits required shall be decided based on the resistance achieved for the earth pits already installed as the properties of the soil plays a major role
c) These earth pits shall then be interlinked using a electrolytic grade copper strip/wire of not less than 40 sq. mm to form a ring using exothermic welding technique. The inter-connecting cable/bus bar shall be buried not less than 1' below the ground level. This interconnecting bus bar shall also be covered with earthing enhancing compound. These connections shall be made sing exothermic welding.
d) A copper bus bar of 25mm X 6mm X 150mm shall be exothermically welded to master earth electrodes for taking the final connection to the equipment room.

II.5.9. Inspection Chamber

a) A 300 X 300 X 300 mm concrete box with smooth cement plaster finish shall be provided on the top of the pit. A steel plate of 4 to 6 mm thickness hinged cover with lockable management, painted black shall be provided to cover the earth pit.
b) One padlock of Godrej/Link make with three keys shall be supplied for locking.
c) The masonry work shall be white washed inside and outside.
d) Care shall be taken regarding level of the floor surrounding the earth so that the connector is not too deep in the masonry or projecting out of it.
e) On back side of the over the date of test and average resistance value will be written with yellow paint.

II.5.10. Earth Bus bar and connection to pit:

a) The earth electrode and the copper earth bus bar will be connected by cadmium bronze wire as per RDSO specification No,. RDSO/SPN/178/2003, exothermically welded to electrode at one end and the earth bus bar at the other end.
b) The copper earth bus bar will be 300 X 25 X 6 mm size with tin coating and holes for fixing it to the wall of the equipment room with insulation studs.
c) All connection to the earth bus bar will be through tinned copper lug of Dowell or similar make of suitable size.
d) All nut and bolts will be stainless steel type.

Note:- Bidder to ensure appropriate Surge Protection Device (SPD) arrangement to protect IT infrastructure i.e. switches, server, storage, NGFW etc. system being installed at platforms and RPG/GRP Thana/Post. Further, this proposed SPD arrangement should be connected with earthing system of the stations.

SECTION - II
CHAPTER – 6

List of Address for Specification

1. Address from where specification copy can be purchased :

The copy of IRS, RDSO, TEC and BIS specification used in the tender documents can be purchased from following sources.

2. IRS Specification : i) Manager Publications,
Government of India
Civil Lines, New Delhi- 110054

ii) Government of India Book Depot,
8 - S.K. Roy Road, Calcutta – 700001

3. RDSO Specification :

RDSO, Manak Nagar, Lucknow

4. DOT/TEC/ITD Specification :

Khurshid Lal Bhavan, Janpath,
New Delhi- 110001

5. B.I.S. Specification :

Directorate General,
Indian Standards Institution,
9- Bahadur Shah Zafar Marg,
New Delhi -110002
F- block, Unity Building,
Narsimhraja Square,
Bangalore- 560002
534- Sardar Vallabh Bhai Patel Raod , Mumbai.
5- Choweringhee Approach, PO Princep Street, Calcutta- 700072
Ahinsa Building (1st floor) , SCO 82-83, Sector 27-C, Chandigarh- 160017
5-8-56/57, L.N. Gupta Marg, Hyderabad- 208005.
117/418-B, Sarvoday Nagar, Kanpur – 208005
C.I.T. Campus, Adyar, Madras – 600020.

6. If any specifications and drawings referred but not enclosed in the tender documents may be seen in the RCIL's office on any working day.

…END of Tender Document…