

Addendum-01
CMRL / PHASE – II / SYS / ASA07 / 2021
27-01-2022

SN	Part	Section	Clause	Original Bid condition	Revised bid condition
1	Part-1	Section – IV Bidding Forms	Clause 4.2 , Page No. 89	Allowable apportionment (Excl. Price Centre L & M)	Allowable apportionment (Excl. Price Centre K, L & M)
2	Part-1	Section – IV Bidding Forms	Clause 4.2 Sl.No 11, Page No. 89	<p>11. Price Centre J1 On-board Radio Equipments & Accessories – ARE02: Supply of on-board radio equipments, and Associated accessories; to Rolling stock Contractor, Installation supervision at the Rolling stock contractor’s factories, joint testing and certification on the test track as well as in main line and commissioning for Revenue service (For Trainsets corresponds to Rolling stock Package ARE02) :Allowable apportionment -11%</p> <p>13. Price Centre K: Training and Operation & Maintenance manuals: (To be carry forwarded from BOQ ‘K’) :Allowable apportionment -1%</p> <p>14.Price Centre Total (Telecommunication Radio System):Allowable apportionment -100%</p> <p>15.Discount (if any) – On ‘Price Centre Total (Telecommunication Radio System)’</p> <p>16.Price Centre Total (Telecommunication Radio System) after discount (if any)</p> <p>17.Price Centre L: Comprehensive Maintenance for 15 years (to be included for evaluation purpose only)</p> <p>18.Price Centre M: Emergency spares (to be included for evaluation purpose only)</p> <p>19.Total Bid Price - Price Centre Total (Telecommunication Radio System) after discount (if any) + Price Centre L + Price Centre M</p>	<p>11. Price Centre J1 On-board Radio Equipments & Accessories – ARE02: Supply of on-board radio equipments, and Associated accessories; to Rolling stock Contractor, Installation supervision at the Rolling stock contractor’s factories, joint testing and certification on the test track as well as in main line and commissioning for Revenue service (For Trainsets corresponds to Rolling stock Package ARE02) :Allowable apportionment -12%</p> <p>13.Price Centre Total (Telecommunication Radio System):Allowable apportionment -100%</p> <p>14.Discount (if any) – On ‘Price Centre Total (Telecommunication Radio System)’</p> <p>15.Price Centre Total (Telecommunication Radio System) after discount (if any)</p> <p>16. Price Centre K: Training and Operation & Maintenance manuals: (To be carry forwarded from BOQ ‘K’, to be included for evaluation purpose only) :Allowable apportionment -NA</p> <p>17.Price Centre L: Comprehensive Maintenance for 5 years (to be included for evaluation purpose only)</p> <p>18.Price Centre M: Emergency spares (to be included for evaluation purpose only)</p> <p>19.Total Bid Price - Price Centre Total (Telecommunication Radio System) after discount (if any)+ Price Centre K + Price Centre L + Price Centre M</p>
3	Part-1	Section – IV Bidding Forms	Clause 4.1.19, Page No. 88	<p>4.1.19 Price Centre ‘K’ – ‘Training and Operation & Maintenance manuals’, comprises of all those obligations and ongoing activities throughout the Contract including the following but not limited to:</p> <p>(i) The Deployment of the Experts under the Price Centre ‘Training’ (100 Manweeks) may not be continuous, and they may be required to supervise the maintenance /on the job training in short periods at a time as required by the Employer.</p> <p>(ii) The manweeks specified in Price Centre / BOQ for Training (100 Manweeks) are tentative and will be considered for bid evaluation. The Employer at their discretion may or may not operate this item either fully or partially at the quoted price by the bidder and the contractor has no claim on this account.</p>	<p>4.1.19 Price Centre ‘K’ – ‘Training and Operation & Maintenance manuals’, comprises of all those obligations and ongoing activities throughout the Contract including the following but not limited to:</p> <p>(i) The Deployment of the Experts under the Price Centre ‘Training’ (50 Manweeks) may not be continuous, and they may be required to supervise the maintenance /on the job training in short periods at a time as required by the Employer.</p> <p>(ii) The manweeks specified in Price Centre / BOQ for Training (50 Manweeks) are tentative and will be considered for bid evaluation. The Employer at their discretion may or may not operate this item (any number of training man weeks as desired by the employer) at the quoted price by the bidder and the contractor has no claim on this account.</p>

4	Part-1	Section – IV Bidding Forms	Clause 4.2.1, BoQ For Price Centre K, Page No. 91	<p>4.2.1 BOQ for Price Centre 'K' – Training and Operation & Maintenance Manual:</p> <table><tr><th rowspan="2">S. No</th><th rowspan="2">Description</th><th rowspan="2">Unit</th><th rowspan="2">Quantity</th><th colspan="2">Quoted Unit Rate</th><th colspan="2">Quoted Amount</th></tr><tr><th>Local Currency (INR)</th><th>Foreign Currency (FC)</th><th>Local Currency (INR)</th><th>Foreign Currency (FC)</th></tr><tr><td>1</td><td>Cost for instructor week for imparting training to Employer's Technical Personnel, in Chennai</td><td>Man-weeks</td><td>40</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Cost for instructor week for imparting training to Employer's Technical Personnel, in off-shore locations</td><td>Man-weeks</td><td>20</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Cost for instructor week for Imparting training to Employer's operating personnel, in Chennai</td><td>Man-weeks</td><td>40</td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td>Delivery & commissioning of Computer based training systems at Chennai, as stipulated in Part 2 – Employer's requirement.</td><td>LS</td><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>Operating & Maintenance Manuals (Draft as well as Final, in required copies)</td><td>LS</td><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Total Amount (To be carry forwarded to Pricing Summary – Price Centre 'K')</td><td></td><td></td><td></td><td></td></tr></table>	S. No	Description	Unit	Quantity	Quoted Unit Rate		Quoted Amount		Local Currency (INR)	Foreign Currency (FC)	Local Currency (INR)	Foreign Currency (FC)	1	Cost for instructor week for imparting training to Employer's Technical Personnel, in Chennai	Man-weeks	40					2	Cost for instructor week for imparting training to Employer's Technical Personnel, in off-shore locations	Man-weeks	20					3	Cost for instructor week for Imparting training to Employer's operating personnel, in Chennai	Man-weeks	40					4	Delivery & commissioning of Computer based training systems at Chennai, as stipulated in Part 2 – Employer's requirement.	LS	1					5	Operating & Maintenance Manuals (Draft as well as Final, in required copies)	LS	1					Total Amount (To be carry forwarded to Pricing Summary – Price Centre 'K')								<p>4.2.1 BOQ for Price Centre 'K' – Training and Operation & Maintenance Manual:</p> <table><tr><th rowspan="2">S. No</th><th rowspan="2">Description</th><th rowspan="2">Unit</th><th rowspan="2">Quantity</th><th colspan="2">Quoted Unit Rate</th><th colspan="2">Quoted Amount</th></tr><tr><th>Local Currency (INR)</th><th>Foreign Currency (FC)</th><th>Local Currency (INR)</th><th>Foreign Currency (FC)</th></tr><tr><td>1</td><td>Cost for instructor week for imparting training to Employer's Technical Personnel, in Chennai</td><td>Man-weeks</td><td>20</td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td>Cost for instructor week for imparting training to Employer's Technical Personnel, in off-shore locations</td><td>Man-weeks</td><td>10</td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td>Cost for instructor week for Imparting training to Employer's operating personnel, in Chennai</td><td>Man-weeks</td><td>20</td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td>Delivery & commissioning of Computer based training systems at Chennai, as stipulated in Part 2 – Employer's requirement.</td><td>LS</td><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td>5</td><td>Operating & Maintenance Manuals (Draft as well as Final, in required copies)</td><td>LS</td><td>1</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Total Amount (To be carry forwarded to Pricing Summary – Price Centre 'K')</td><td></td><td></td><td></td><td></td></tr></table>	S. No	Description	Unit	Quantity	Quoted Unit Rate		Quoted Amount		Local Currency (INR)	Foreign Currency (FC)	Local Currency (INR)	Foreign Currency (FC)	1	Cost for instructor week for imparting training to Employer's Technical Personnel, in Chennai	Man-weeks	20					2	Cost for instructor week for imparting training to Employer's Technical Personnel, in off-shore locations	Man-weeks	10					3	Cost for instructor week for Imparting training to Employer's operating personnel, in Chennai	Man-weeks	20					4	Delivery & commissioning of Computer based training systems at Chennai, as stipulated in Part 2 – Employer's requirement.	LS	1					5	Operating & Maintenance Manuals (Draft as well as Final, in required copies)	LS	1					Total Amount (To be carry forwarded to Pricing Summary – Price Centre 'K')							
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6	Part-1	Section – IV Bidding Forms	4.1.7	<p>(i) Comprehensive maintenance for 15 years from date of Taking over Certificate (TOC) covering the scope of works listed under Part 2 - Employer's Requirements shall be quoted by bidder against Price Centre L. The bidder has to quote unit rates of comprehensive maintenance charges per year under the 3 categories of: (1) Per OCC /BCC/ One Lineside locations (2) Per wayside stations. (3) Per on-board systems for a full train.</p> <p>(ii) The system will calculate for 15 years based on following quantities. (OCC/BCC/ One Lineside locations = 3; Wayside Stations = 116; On-board system trains = 138)</p> <p>(iii) The above figure for 15 years will be taken into account for bid evaluation. However before the completion of each stage, maintenance contract will be entered into for 5 years ahead based on the quantity of field assets commissioned and the unit rates quoted as part of the bid. This will be followed for each stage of commissioning. This procedure will be followed for the full design life of the system with applicable price adjustment as per conditions of contract.</p> <p>(iv) Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Contract Price, including Price Centre L & M, valid for the full design life of the system to cover the maintenance obligations. In such a situation, the Bank Guarantees submitted for various stages of AMCs will be returned to the Contractor. The execution of the supplementary Performance security will be one of the additional requirements for release of the Performance security of the Main contract as per Part 3 – Particular conditions of Contract</p>	<p>(i) Comprehensive maintenance for 15 years from date of Taking over Certificate (TOC) covering the scope of works listed under Part 2 - Employer's Requirements. The bidder has to quote unit rates of comprehensive maintenance charges per year under the 3 categories of: (1) Per OCC /BCC locations (2) Per wayside stations (all Radio infra including BTS,Repeaters & subscriber radio per station). (3) On-board systems per driver cab.</p> <p>(ii) The system will calculate for 5 years based on following quantities. (OCC/BCC = 2; Wayside Stations = 116; On-board system per driver cab = 276)</p> <p>(iii) The above figure for 5 years will be taken into account for bid evaluation. However before the completion of each stage, maintenance contract will be entered into for 5 years ahead based on the quantity of field assets commissioned and the unit rates quoted as part of the bid. Beyond the initial period of 5 years also, CMRL reserves the right to renew the CAMC on same terms & conditions, with price escalation as per main Contract conditions. This procedure will be followed for the full design life (15 years) of the system with applicable price adjustment as per conditions of contract.</p> <p>(iv) Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Contract Price, excluding Provisional Sum, Price Centre K,L & M, valid for the full design life of the system or balance period of the design life for which CAMC support is required by CMRL (which ever is earlier) to cover the maintenance obligations. The execution of the supplementary Performance security will be one of the additional requirement for release of the Performance security of the Main contract as per Part 3 – Particular conditions of Contract.</p>
7	Part-1	Section – IV Bidding Forms	4.1.18(i)	CMRL on their own discretion may or may not purchase emergency spares to cater contingency requirements if any. The table included in Part 2 - Employer's Requirements indicates such Emergency spares. CMRL reserves the right to procure these spares within five years from the end of DLP Period of the last stage at the prices quoted by the Contractor subject to the Price adjustment clause specified in Part 1 – Bidding Forms – ‘Instructions for completing the Pricing document’.	CMRL on their own discretion may or may not purchase emergency spares to cater contingency requirements if any. The table included in Part 2 - Employer's Requirements indicates such Emergency spares. CMRL reserves the right to procure desired quantities of these spares within five years from the end of DLP Period of the last stage at the prices quoted by the Contractor subject to the Price adjustment clause specified in Part 1 – Bidding Forms – ‘Instructions for completing the Pricing document’.
8	Part – 3	Section - VIII Particular Conditions (Part A: Contract Data)	Table 1: Summary of Key dates:	N/A	Refer the Revised Key dates
9	Part – 2	Section – VI B	Clause No: 1.1.3 Page No: 312 of 936	The Radio system shall have central or distributed control equipment installed in the OCC, BCC and Poonamalee depot for system control.	The Radio system shall have central or distributed control equipment installed in the OCC and BCC for system control.
10	Part – 2	Section – VI B	Clause No: 1.2.4 Page No: 312 of 936	<p>The Switching equipment and all the interfacing servers shall be provided in geo redundant configuration to ensure independent operation of the Tetra Radio system for Phase 2 from any one of the following location</p> <p>a) OCC at Koyambedu b) BCC at Nandanam c) Poonamalee depot</p>	<p>The Switching equipment and all the interfacing servers shall be provided in geo redundant configuration to ensure independent operation of the Tetra Radio system for Phase 2 from any one of the following location</p> <p>a) OCC at Koyambedu b) BCC at Nandanam</p>

11	Part – 2	Section – VI B	Clause No: 2.1.2.7 c) Page No: 314 of 936	2.1.2.7 c)To enable Public Cellular Operators to offer multi-media services to the travelling public in CMRL premises, CMRL may, in future, enter into a revenue-sharing arrangement with them, to permit them to utilise space inside CMRL premises for installing their active as well as passive equipments, to share band-width on CMRL's CBN Network and to draw power from CMRL's power supply system; the public operators shall be responsible for the operation and maintenance of all the equipments installed by them. In the sub-surface sections, as part of this contract, the contractor shall install additional cable hangers in every 0.5 mtr in each tunnel for supporting the radiating cables (One Leaky Cable per tunnel is envisaged for he Public Cellular Operator); these additional cable hangers (meant for use by Public Cellular Operators) shall be located sufficiently away from the leaky co-axial cable of the Tetra Radio System, in order to eliminate chances of interference between different radio systems and shall space the LCX no less than 100mm from the tunnel wall.	2.1.2.7 c)To enable Public Cellular Operators to offer multi-media services to the travelling public in CMRL premises, CMRL may, in future, enter into a revenue-sharing arrangement with them, to permit them to utilise space inside CMRL premises for installing their active as well as passive equipments, to share band-width on CMRL's CBN Network and to draw power from CMRL's power supply system; the public operators shall be responsible for the operation and maintenance of all the equipments installed by them. In the sub-surface sections, as part of this contract, the contractor shall install additional cable hangers in every 1 mtr in each tunnel for supporting the radiating cables (One Leaky Cable of size 1-5/8" per tunnel is envisaged for he Public Cellular Operator); these additional cable hangers (meant for use by Public Cellular Operators) shall be located sufficiently away from the leaky co-axial cable of the Tetra Radio System, in order to eliminate chances of interference between different radio systems and shall space the LCX no less than 80mm from the tunnel wall.
12	Part – 2	Section – VI B	Clause No: 2.1.2.13 Page No : 316 of 936	Incoming calls to the train radio shall be automatically routed to appropriate on-train users/devices such as train emergency driver / roving attendant, PA system, Data Systems. Outgoing calls initiated by on-train users/devices shall be automatically established.	Incoming calls to the train radio for announcements and ambient listening shall be automatically routed to appropriate on-train devices such as PA system and Data Systems. Outgoing calls initiated by on-train users/devices shall be automatically established.
13	Part – 2	Section – VI B	Clause No: 3.4.2 d) Page No: 320 of 936	d) Train Radio Control Panel (TRCP) shall be integrated into both train cabs and shall provide Train Emergency Drivers / Roving Attendants and Depot Special Machines Vehicles call functions via the radio control head.	d) Train Radio Control Panel (TRCP) shall be integrated into both train cabs and shall provide Train Emergency Drivers / Roving Attendants call functions .Depot Special Machines/Vehicles shall be provided with Vehicle mount radio with Fist mic and external speaker.
14	Part – 2	Section – VI B	Clause No: 3.4.3.4 b) Page No: 321 of 936	Packet connection-oriented data (Standard X.25 packet data),	Not used.
15	Part – 2	Section – VI B	Clause No: 3.4.8.1 Page No: 326 of 936	Complete Train Radio system shall be installed by the Rolling Stock Contractor, using the materials supplied by the Radio Contractor and under the supervision of the Radio Contractor, in such a way that the radios in the leading and trailing cabs operate in hot stand-by mode to each other, but fully independent of each other. The contractor shall use cable connections being installed by Rolling Stock Contractor between Front and Rear Cabs, for the Train Radio Hot standby features. The physical dimensions, positions, mounting holes, antenna type, cable routes, cable lengths, cable / pin connections to Rolling Stock PA/Train Information Management system (TIMS), interface hardware details, protocols, exact data rate to be exchanged, etc are to be co-ordinated with the Rolling Stock Contractor as spelt out in the applicable interface sheets forming part of interface management plan. The Train Radio shall also have its own Interface Unit to monitor the health of the radio transceivers and shall enable switching to the standby transceivers upon detection of communication failure. This interface shall communicate the events to the TIMS system. In case failure of Tetra Coverage or both radios, the Train interface units shall function using the network connectivity to OCC supplied by signaling vendor (Non CBTC Radio).	Complete Train Radio system shall be installed by the Rolling Stock Contractor, using the materials supplied by the Radio Contractor and under the supervision of the Radio Contractor, in such a way that the radios in the leading and trailing cabs operate in hot stand-by mode to each other, but fully independent of each other. The contractor shall use cable connections being installed by Rolling Stock Contractor between Front and Rear Cabs, for the Train Radio Hot standby features. The physical dimensions, positions, mounting holes, antenna type, cable routes, cable lengths, cable / pin connections to Rolling Stock PA/Train Information Management system (TIMS), interface hardware details, protocols, exact data rate to be exchanged, etc are to be co-ordinated with the Rolling Stock Contractor as spelt out in the applicable interface sheets forming part of interface management plan. The Train Radio shall also have its own Interface Unit to monitor the health of the radio transceivers and shall enable switching to the standby transceivers upon detection of communication failure. This interface shall communicate the events to the TIMS system. In case failure of Tetra Coverage or both radios as a Preferred Requirement (Possibility to be examined in the design phase and shall be implemented, if feasible), the Train interface units shall function using the network connectivity to OCC supplied by signaling vendor (Non CBTC Radio).

16	Part – 2	Section – VI B	Clause No: 3.4.8.4 p) iv) Page No: 333 of 936	iv) Failure of the radio equipment shall not interrupt the normal operation of the Train-borne Signalling equipment. The train operation commands are normally sent from the UTMS to the GOA4 trains through the Wi-Fi radio network of the CBTC System. In case of failure of Wi-Fi, as a standby, it should be possible for Central signaling system to send some vital commands to Onboard and receive on board alarms through the train radio system by suitable interfacing arrangement at the OCC and onboard. The list of such vital commands and alarms will be finalised in discussion with the Engineer of CMRL.In case of failure of Tetra Coverage, as a standby, it should be possible for on board Tetra Radio to ensure all Train borne functionalities via the Non CBTC link to OCC.	iv) Failure of the radio equipment shall not interrupt the normal operation of the Train-borne Signalling equipment. The train operation commands are normally sent from the UTMS to the GOA4 trains through the Wi-Fi radio network of the CBTC System. In case of failure of Wi-Fi, as a standby, it should be possible for Central signaling system to send some vital commands to Onboard and receive on board alarms through the train radio system by suitable interfacing arrangement at the OCC and onboard. The list of such vital commands and alarms will be finalised in discussion with the Engineer of CMRL.In case of failure of Tetra Coverage, as a Preferred Requirement (Possibility to be examined in the design phase and shall be implemented, if feasible), it should be possible for on board Tetra Radio to ensure all Train borne functionalities via the Non CBTC link to OCC.																																																																																																																																																																																																							
17	Part – 2	Section – VI B	Clause No: 3.4.11.1 Page No: 337 of 936	<p>The OCC and BCC shall have various control positions equipped with Radio- Access/control facilities, as listed in the table below:</p> <table><thead><tr><th>Control Position</th><th>Type of Radio Access / Control panel to be provided at the various locations for Corridor 3, 4 and 5</th></tr></thead><tbody><tr><td colspan="2">OCC</td></tr><tr><td>Traffic Controllers</td><td>RCW + RAU one for each</td></tr><tr><td>Chief Controllers</td><td>RCW + RAU one for each</td></tr><tr><td>Passenger Communication controllers</td><td>RCW + RAU one for each</td></tr><tr><td>Fault Management Controllers</td><td>RAU one for each</td></tr><tr><td>Traction Power Controllers</td><td>RAU one for each</td></tr><tr><td>Rolling Stock Controllers</td><td>RAU one for each</td></tr><tr><td>Auxiliary Controllers</td><td>RAU one for each</td></tr><tr><td>Security Controllers</td><td>RAU one for each</td></tr><tr><td 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18	Part – 2	Section – VI B	Clause No: 3.4.11.5 Page No: 338 of 936	The above shown list is indicative and the minimum quantity of RCW required is 25.	Not used.																																																																																																																																																																																																							

19	Part – 2	Section – VI B	Clause No: 3.4.12.2 a) Page No: 338 of 936	3.4.12.2. RCW Call Features a) Train PA Call: A sub-window shall be activated when the Train Public Address broadcast, (either live or recorded) is initiated - The display shall allow the Chief Controller/Traffic Controller to set up and make PA announcements to an individual train, to a selected group of trains or to all trains in the system. The display shall support Scheduling of Prerecorded Message play lists from RCW with zone selection (Saloon area, Exterior speaker). RCW shall permit dispatching of Prerecorded messages from RCW Library as well as from Onboard Library. RCW shall permit the administrator to upload prerecorded messages to RCW Library and edit the onboard library details in the RCW System as when required.	3.4.12.2. RCW Call Features a) Train PA Call: A sub-window shall be activated when the Train Public Address broadcast, (either live or recorded) is initiated - The display shall allow the Chief Controller/Traffic Controller to set up and make PA announcements to an individual train, to a selected group of trains or to all trains in the system. The display shall support Scheduling of Prerecorded Message play lists from RCW with zone selection (Saloon area, Exterior speaker). RCW shall permit dispatching of Prerecorded messages from RCW Library as well as from Onboard Library. RCW shall permit the administrator to upload prerecorded messages to RCW Library and edit the RCW Library details in the RCW System as when required.
20	Part – 2	Section – VI B	Clause No: 3.5.1.1 h) Page No: 343 of 936	h) The train radio shall be accessible from OCC via the Non CBTC network supplied by Signalling. In case of failure of Tetra Coverage, as a standby, it should be possible for on board Tetra Radio to ensure all Train borne functionalities via the Non CBTC link to OCC.	h) The train radio shall be accessible from OCC via the Non CBTC network supplied by Signalling. In case of failure of Tetra Coverage, as a Preferred Requirement (Possibility to be examined in the design phase and shall be implemented, if feasible), it should be possible for on board Tetra Radio to ensure all Train borne functionalities via the Non CBTC link to OCC.
21	Part – 2	Section – VI B	Clause No: 3.5.5.3 (vii) Page No: 348 of 936	Squelch level	Not used.
22	Part – 2	Section – VI B	Clause No: 3.5.8.2. Page No: 351 of 936	3.5.8.2) The antenna network for the Underground section shall be Leaky Co-axial Cable (LCX) in tunnels and a combination of LCX/LLC and low profile antenna if required at stations/Ramp Area.	3.5.8.2) The antenna network for the Underground section shall be Leaky Co-axial Cable (LCX) in tunnels and any combination of Leaky Co-axial,Low loss cable(LLC) and low profile antenna if required at stations/Ramp Area.
23	Part – 2	Section – VI B	Clause No: 4.3.1.1 page 354 of 936	In UTO train operation passenger emergency communication from and to OCC from the train is most important. To keep the communication reliability high overlapping coverage at any point on the track from either side of the base stations should be planned. The minimum signal level under the worst case from the relevant base station, received by the Train borne antenna shall be at least -86 dBm or 20 dB above the receiver sensitivity level for 98% of the worst case 50m of train run along the tracks. The audio quality level under such conditions also should be good.	In UTO train operation passenger emergency /Train Radio communication from train to OCC, RAU/RCP in SCR and vice-versa is most important. To keep the communication reliability high overlapping coverage at any point on the track from either side of the base stations should be planned. The minimum signal level shall have at least 10 dB margin (uplink as well as downlink of Hand Portable) above the receiver threshold duly factoring all the losses and gains. This value shall be ensured for the samples taken at every second in the section between any two adjacent stations of the Track with a maximum permitted deviation in two samples .
24		Section – VI B	4.3.1.8. Page No: 356 of 936	The system should be designed and commissioned with a margin of at least 3 dB signal level better than above mentioned worst case minimum signal levels.	The system should be designed and commissioned with a margin of at least 10 dB signal level better than above mentioned worst case minimum signal levels.
25	Part – 2	Section – VI B	Clause No: 4.3.1.2 Page No: 354 of 936	4.3.1.2. The minimum signal level from the relevant base station, received by a reference dipole at 1.5 m above ground level in all coverage areas including inside the Moving (80 km/h) train compartment shall be at least -86 dBm for 98% of the worst case 50m of run in stations and in train. Signal level of minimum -86 dBm for 98% Location shall be available inside all the equipment rooms, plant rooms & operation control rooms in stations, Depot and substations. The up-link and down link audio quality level under such conditions also should be good. For deciding the coverage criteria automated measurement set up with suitable software should be used. At least 50 samples of signal strength measurement should be taken for 50 meters of travel. The coverage measurement results should be put up to the engineer for his approval.	4.3.1.2. The minimum signal level from the relevant base station, received by a Hand portable in all coverage areas including inside the Moving train (40 Km/Hr)compartment shall have at least 10 dB margin (uplink as well as downlink) above the receiver threshold duly factoring all the losses and gains. This value shall be ensured for the samples taken at every second in the section between any two adjacent stations of the Track with a maximum permitted deviation in two samples .Signal level shall have at least 10 dB margin (uplink as well as downlink) above the receiver threshold duly factoring all the losses and gains for 98% of all Locations inside all the public areas,equipment rooms, plant rooms & operation control rooms in stations, Depot and substations. The up-link and down link audio quality level under such conditions also should be good. For deciding the coverage criteria automated measurement set up with suitable software should be used. The coverage measurement results should be put up to the engineer for his approval. ☐ ☐ ☐ ☐

26	Part – 2	Section – VI B	Clause No: 6.4.3.1 Page No: 364 of 936	6.4.3.1. IP 67 for external train borne equipment	6.4.3.1. IP 65 for external train borne equipment
27	Part – 2	Section – VI B	Clause No: 6.4.3.4 Page No: 364 of 936	6.4.3.4. IP 54 for internal train borne equipment.	6.4.3.4. IP 20 for internal train borne equipment which are housed IP 54 Enclosures. IP 54 for all Tetra radio equipments accessed by the Train Driver/Roving attendant.
28	Part – 2	Section – VI B	Clause No: 6.4.3.5 Page No: 364 of 936	6.4.3.5. IP 52 for enclosures to be installed in equipment rooms.	6.4.3.5. IP 52 for all equipment enclosures to be installed in equipment rooms which includes active electronic equipments, Termination racks, Power supply equipments, distribution boxes etc. In case if the contractor propose a lower IP rating, the contractor shall ensure that the cabinets/enclosures shall have provision to protect water ingress from water dripping from above using suitable means as approved by the engineer..
29	Part – 2	Section – VI B	Clause No: 6.4.4.1.1 Page No: 364 of 936	6.4.4.1.1. Train borne equipment: 0°C to 70°C;	6.4.4.1.1. Train borne equipment: 0°C to 55°C;
30	Part – 2	Section – VI B	Clause No: 6.4.4.1.2 Page No: 364 of 936	6.4.4.1.2. Trackside/Outdoor equipment: 0°C to 70°C;	6.4.4.1.2. Trackside/Outdoor equipment: 0°C to 55°C;
31	Part – 2	Section – VI B	Clause No: 6.4.4.2.1 Page 364 of 936	6.4.4.2.1. Train borne equipment: 0 to 99 % relative (condensing)	6.4.4.2.1. Train borne equipment: 0 to 90 % relative (condensing)
32	Part – 2	Section – VI B GENERAL SPECIFICATIONS	APPENDIX-1 DRAWING LIST	NA	Refer the Revised Drawings
33	Part-1	Section – IV Bidding Forms	Clause 4 - Pricing Schedules 4.1.7, Page No. 83	Wherever the Bidder comprises a JV/Consortium and the Bidder desires separate payments to each Member of the Consortium, the Bidder shall clearly lay down the Milestones / Currencies allocated to the different Members of the JV/Consortium, which shall be in agreement with the intended percentage share of the Members as indicated in the Consortium agreement for this Contract.	In case of JV/Consortium, billing/Invoicing will be raised by only by the JV/Consortium and Payment of Amount due / Mobilization advance shall only be made directly into the specified bank account opened by the Contractor in the name of JV as notified by Contractor to Employer.
34	Part-1	Section – I Instruction to Bidders (ITB)	Clause 21 - Bid Security, Clause 21.7, Page No. 19	The Bid Security of a JV shall be in the name of the JV that submits the Bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the Bid Security shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.	The Bid Security of a JV shall be in the name of the JV that submits the Bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the Bid Security shall be in the name of any member of the JV as named in the letter of intent referred to in ITB 4.1 and ITB 11.2
35	Part – 2	Section – VI B	Clause No: 5.11.1 Page No: 359 of 936	Three, multichannel, rack-mounted, voice recorders shall be provided in the OCC Recording Room, one to serve the Corridor 3, 4 and 5.	Multichannel, rack-mounted, voice recorders with a mirrored hard disk shall be provided. One as Primary Recorder (at OCC) for Corridor 3, 4 and 5, and one as Redundant Recorder (at BCC) for Corridor 3, 4 and 5.
36	Part – 2	Section – VI B	Clause No: 5.11.2 Page No: 359 of 936	One voice recorder will be back up to the other two.	One voice recorder shall act as back up to the other.

37	Part – 2	Section – VI B	Clause No: 5.11.3 Page No: 359 of 936	The recorders shall, during normal operation, each mirror the others recorded data on a continuous basis, while working on load-sharing basis, to ensure that each recorder has an up to date record of all voice recordings and associated call logs	The recorders shall, during normal operation, each mirror the others recorded data on a continuous basis to ensure that each recorder has an up to date record of all voice recordings and associated call logs
38	Part – 2	Section – VI B	Clause No: 5.11.4 Page No: 359 of 936	The recorders shall additionally allow any of the following modes of operation to be Operator selectable: a) Load sharing where both recorders share the recording load;	Not used
39	Part – 2	Section – VI B	Clause No: 5.11.4 Page No: 359 of 936	b) Standby mode where the primary recorder is in operation with the secondary recorder working in auto-standby mode allowing the secondary recorder to operate on failure of the primary or when the recording capacity of the primary media has been reached.	Not used.
40	Part – 2	Section – VI B	Clause No: 5.23 Page No: 360 of 936	The audio recorder shall automatically and continuously record both analogue and digital speech channels providing high voice quality on playback of recordings.	The audio recorder shall automatically and continuously record digital speech channels providing high voice quality on playback of recordings.
41	Part – 2	Section – VI B	Clause No: 5.24.7 Page No: 360 of 936	5.24.7 The recordings and call logs for each of the two railway corridors (Corridor 1 and Corridor 2) shall be separate and contained within their own dedicated databases.	Not used.
42	Part – 2	Section – VI B	Clause No: 5.26 Page No: 360 of 936	5.26. Multiple options shall be provided for activation of recordings, which shall include, as a minimum, the following functions which shall be operator selectable: 5.26.1. Recording of all channels, or selected channels, on a continuous basis or for a variable, pre-set time; 5.26.2. Voice activated recording on detection of specific words or phrases (This facility shall be offered as an optional item).	Not used.
43	Part – 2	Section – VI B	Clause No: 5.31.2 Page No: 361 of 936	5.31.2. The voice recorder of each corridor shall also display the operational state of the HMR and that of the other two Corridor voice recorders	Not used.
44	Part – 2	Section – VI B	Clause No: 5.31 Page No: 362 of 936	5.33. Performance Requirements 5.33.1. The performance of the voice recording equipment shall meet the following requirements: a) Analogue input channel, in the range 300Hz to 3400Hz. b) Signal to Noise ratio >= 50dB. c) Crosstalk between channels >= 50dB. d) Distortion of Recorded channels< = 2% at 800 Hz.	Not used.
45	Part-1	Section - III Evaluation and Qualification Criteria (EQC)	2.2.2 Pending Litigation, Page No. - 61	Requirement: All pending litigation shall in total not represent more than seventy five percent (75%) of the Bidder's net worth and shall be treated as resolved against the Bidder.	Requirement: All pending litigation shall in total not represent more than seventy five percent (100%) of the Bidder's net worth and shall be treated as resolved against the Bidder.

46	Part-1	Section - III Evaluation and Qualification Criteria (EQC)	2.4.2 a) Specific Experience, Page No. - 64	<table><thead><tr><th colspan="3">Eligibility and Qualification Criteria</th><th colspan="3">Compliance Requirements</th><th>Documentation</th></tr><tr><th rowspan="2">No.</th><th rowspan="2">Factor /Sub-Factor</th><th rowspan="2">Requirement</th><th rowspan="2">Single Entity</th><th colspan="3">Joint Venture (Existing or Intended)</th><th rowspan="2">Submission Requirements</th></tr><tr><th>All Parties Combined</th><th>Each Member</th><th>Lead Member</th></tr></thead><tbody><tr><td>2.4.2 (a)</td><td>Specific Experience</td><td>Experience in "Manufacture, Supply, Installation, Testing and Commissioning of Telecommunication Radio Systems for Metro Rail /Mono Rail /Mainline Railways involving at least 5 base stations in single project. The commissioned project should have been in satisfactory revenue service at least for one year during the last 7 (seven) years (with required documentary evidence). Additionally, 30 base stations and 5 switching systems of similar make, in various projects put together, should have been in satisfactory Passenger operation for at least one year during the last 7 (Seven) years</td><td>Must meet requirement</td><td>Must meet requirement</td><td>N/A</td><td>Must be the OEM of Switching system and Base station (Hardware and software). Must meet requirement in respect of supply of Switching system and Base station (Hardware and software) for minimum 5 base stations in single</td><td>Form EXP - 2(a)</td></tr><tr><td></td><td></td><td>(with required documentary evidence). (i) As a Single Entity or JV member; (without engaging specialist sub-contractor¹⁰); OR (ii) In the capacity of specialist sub-contractor¹⁰; between 1st September 2014 and the bid submission deadline. (All documentary evidence shall be from the client in case of Single entity/JV; or from the Project integrator in case of Specialist Subcontractor)</td><td></td><td></td><td></td><td>project and minimum 30 base stations and 5 switching systems of similar make working satisfactory for one year in last 7 years, in various projects put together.</td><td></td></tr></tbody></table>	Eligibility and Qualification Criteria			Compliance Requirements			Documentation	No.	Factor /Sub-Factor	Requirement	Single Entity	Joint Venture (Existing or Intended)			Submission Requirements	All Parties Combined	Each Member	Lead Member	2.4.2 (a)	Specific Experience	Experience in "Manufacture, Supply, Installation, Testing and Commissioning of Telecommunication Radio Systems for Metro Rail /Mono Rail /Mainline Railways involving at least 5 base stations in single project. 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Additionally, 30 base stations and 5 switching systems of similar make, in various projects put together, should have been in satisfactory Passenger operation for at least one (with required documentary evidence).</p> <p>(i) As a Single Entity or JV member; OR (ii) In the capacity of specialist sub-contractor(i); between 1st September 2014 and the bid submission deadline.</p> <p>(All documentary evidence shall be from the client in case of Single entity/JV; or from the Project integrator in case of Specialist Subcontractor)</p> <p>Single Entity:</p> <p>Must meet requirement and should be OEM of Switching system and Base station (Hardware and software).</p> <p>All Parties Combined:</p> <p>Must meet requirement. At least one member of the JV should be OEM of Switching system and Base station (Hardware and software) and shall have a minimum financial share of 30% in the total bid price)</p> <p>Lead Member:</p> <p>OEM of Switching system and Base station (Hardware and software) and shall have a minimum financial share of 30% in the total bid price).</p> <p>or</p> <p>a member who fulfills the following in the capacity of system Integrator</p> <p>1. Installation, Testing and Commissioning of Tetra Systems for Metro Rail /Mono Rail /Mainline Railways involving at least 5 base stations in single project</p> <p>2. should have been in satisfactory revenue service at least for one year during the last 7 (seven) years</p> <p>3. Should have a minimum financial share of 30% in the total bid price.</p>
Eligibility and Qualification Criteria			Compliance Requirements			Documentation																																	
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47	Part-1	Section – IV Bidding Forms	Form EXP - 2(a): Specific Experience, Page No. - 142	<table><thead><tr><th>Similar Contract No. [insert number] of [insert number of similar Contracts required]</th><th>Information</th></tr></thead><tbody><tr><td>Contract Identification</td><td>[insert Contract name and reference identification number, if applicable]</td></tr><tr><td>Award date</td><td>[insert day, month, year, e.g., 15 June, 2015]</td></tr><tr><td>Completion date</td><td>[insert day, month, year, e.g., 03 October, 2017]</td></tr><tr><td>Role in Contract</td><td>Prime Contractor Only</td></tr></tbody></table>	Similar Contract No. [insert number] of [insert number of similar Contracts required]	Information	Contract Identification	[insert Contract name and reference identification number, if applicable]	Award date	[insert day, month, year, e.g., 15 June, 2015]	Completion date	[insert day, month, year, e.g., 03 October, 2017]	Role in Contract	Prime Contractor Only	<table><thead><tr><th>Similar Contract No. [insert number] of [insert number of similar Contracts required]</th><th>Information</th></tr></thead><tbody><tr><td>Contract Identification</td><td>[insert Contract name and reference identification number, if applicable]</td></tr><tr><td>Award date</td><td>[insert day, month, year, e.g., 15 June, 2015]</td></tr><tr><td>Completion date</td><td>[insert day, month, year, e.g., 03 October, 2017]</td></tr><tr><td>Role in Contract</td><td>[insert "Prime Contractor (single entity or JV member)" or "Subcontractor"]</td></tr></tbody></table>	Similar Contract No. [insert number] of [insert number of similar Contracts required]	Information	Contract Identification	[insert Contract name and reference identification number, if applicable]	Award date	[insert day, month, year, e.g., 15 June, 2015]	Completion date	[insert day, month, year, e.g., 03 October, 2017]	Role in Contract	[insert "Prime Contractor (single entity or JV member)" or "Subcontractor"]														
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48	Part – 2	Section – VI B Particular Specification	Clause 5.24.4 , Page 360	5.24.4. The compression type and rate, such as 32kbps ADPCM, of each channel shall be user selectable and configurable.	Not used.																																		
49	Part – 2	Section – VI A Employer’s Requirements- Appendices	Clause 20, Page 251	20. MOCK-UPS, PROTOTYPES AND SAMPLES 20.1 Requirements 20.1.1 The Contractor shall produce mock-ups, prototypes and samples as specified, if any, in the Technical Specification of Volume -2, Part 2.	20. MOCK-UPS, PROTOTYPES AND SAMPLES 20.1 Requirements 20.1.1 The Contractor shall produce mock-ups, prototypes and samples as specified, if any, in the Section - VI B Particular Specifications, Part 2																																		
50	Part 2	Section – VI B Particular Specification	10.14.1.	The contractor shall provide Failure report analysis and corrective action system (FRACAS) software for the failure reporting and analysis. The software shall be off the shelf product customised for metro application. The software shall be reputed in make and shall be already in use for similar application in other metros. The database for the FRACAS shall be stored locally	The Telecom contractor responsible for OCC/BOCC shall provide Failure report analysis and corrective action system (FRACAS) software for the failure reporting and analysis. The software shall be off the shelf product customised for metro application. Telecommunication radio contractor shall interface with this system seamlessly.																																		

51	Part 2	Section – VI B Particular Specification	11.1.6.	Interface with CCTV VMS System. i) The Radio system shall interface with the CCTV VMS system to initiate VMS to radio calls and vice versa without the intervention of OCC	Not Used.
52	Part 2	Section – VI B Particular Specification	2.1.2.3.	The Contractor shall prepare a “radio network traffic report” after completion of stage 3 elevated section and second report after completion of stage 7 of underground section. This is necessary to assess the adequacy of the design for the actual demands of voice and data traffic on the network. In case of rejection by the Employer’s representative, the Contractor shall be responsible where necessary for re-configuring the Train Radio System (TRS) and providing additional hardware at no extra cost to the Employer, to ensure that the specified normal and emergency grades of service levels are achieved. The Grade of Service to be provided is 3%.	The Contractor shall prepare a “radio network traffic report” after completion of stage 3 elevated section and second report after completion of stage 7 of underground section. This is necessary to assess the adequacy of the design for the actual demands of voice and data traffic on the network. In case of rejection by the Employer’s representative, the Contractor shall be responsible where necessary for re-configuring the Train Radio System (TRS) and providing additional hardware at no extra cost to the Employer, to ensure that the specified normal and emergency grades of service levels are achieved. The Grade of Service to be provided is 5% with maximum 7 voice channels. The contractor has to submit traffic analysis (Number users per BTS, call profile, Channel availability, GoS) with suitable justification of fulfillment of Employer's requirements for obtaining No No during design.
53	Part 2	VI-B Particular Specifications	1.2.7, b	Fixed station radio (116 no.s) will be located at each station of corridors 3, 4 and 5.	Fixed station radio (114 no.s) will be located at each station of corridors 3, 4 and 5.
54	Part 2	VI-B Particular Specifications	5.12	A single HMI Terminal for each recorder shall be provided within the OCC Recording Room to provide operator access to all relevant functions of the Corridor 3, 4 and 5 recorders for operation, playback, system and alarm management and archiving;	HMI Terminal shall be provided within the OCC and BOCC, one at each location, to provide operator access to all relevant functions of the Corridor 3, 4 and 5 recorders for operation, playback, system and alarm management and archiving;
55	Part 2	VI-B Particular Specifications	5.31.5	Detailed alarms shall be interfaced to the Telecommunications Management Work Station.	Detailed alarms shall be interfaced to the Telecommunications SCADA supplied by the Telecom Contractor for OCC.
56	Part 3	Section - VIII Particular Conditions (Part A: Contract Data)	12. Performance Security 4.2	The Performance Security shall be in the form of a Bank guarantee, in the amounts of 10% of the Accepted Contract Amount, Excluding Price Centre L & M, and in the same currency(ies) of the Accepted Contract Amount.	The Performance Security shall be in the form of a Bank guarantee, in the amounts of 10% of the Accepted Contract Amount, Excluding Provisional Sum, Price Centre K, L & M, and in the same currency(ies) of the Accepted Contract Amount.
57	Part 3	Section - VIII Particular Conditions (Part A: Contract Data)	18. Total advance payment 14.2	Interest bearing mobilization advance to a maximum of 10% of the Accepted Contract Amount (Excluding Provisional Sum), Excluding Price Centre L & M, Excluding Taxes & duties, is payable in INR. The rate of Interest shall be 13.5% per annum. Mobilization advance shall be paid in two equal instalments.	Interest bearing mobilization advance to a maximum of 10% of the Accepted Contract Amount (Excluding Provisional Sum), Excluding Price Centre K, L & M, Excluding Taxes & duties, is payable in INR. The rate of Interest shall be 13.5% per annum. Mobilization advance shall be paid in two equal instalments.
58	Part 3	Section - VIII Particular Conditions (Part A: Contract Data)	21. Limit of Retention Money 14.3(c)	5% of Accepted Contract Amount (Excluding Provisional Sum), Excluding Price Centre L & M, Excluding Taxes & duties	5% of Accepted Contract Amount (Excluding Provisional Sum), Excluding Price Centre K, L & M, Excluding Taxes & duties
59	Part 3	Particular Conditions (Part B: Specific Provisions)	PCC 54 GCC 14.9 page 128/146	Replace Sub-clause 14.9 with the following Retention money shall be deducted at the rate of 5% on each Interim payment certificates (IPCs) in respective currencies and up to the cumulative value equal to 5% of the Contract Price, Excluding Price Centre L & M, excluding taxes & duties.	Replace Sub-clause 14.9 with the following Retention money shall be deducted at the rate of 5% on each Interim payment certificates (IPCs) in respective currencies and up to the cumulative value equal to 5% of the Contract Price, Excluding Provisional Sum, Price Centre K, L & M, excluding taxes & duties.
60	Part 3	Particular Conditions (Part B: Specific Provisions)	PCC 19 GCC 4.2 page 116/146	Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Main Contract Price, including Price Centre L & M, valid for the full design life of the system to cover the maintenance obligations. In such a situation, the Bank Guarantees submitted for various stages of AMCs will be returned to the Contractor.	Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Main Contract Price, excluding Provisional Sum, Price Centre K, L & M, valid for the full design life of the system or balance period of the design life for which CAMC support is required by CMRL (which ever is earlier) to cover the maintenance obligations. In such a situation, the Bank Guarantees submitted for various stages of AMCs will be returned to the Contractor.

61	Part 3	Particular Conditions (Part B: Specific Provisions)	PCC 26 GCC 4.25 page 118/146	(i) Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Main Contract Price, including Price Centre L & M, valid for the full design life of the system to cover the maintenance obligations. The execution of the supplementary Performance security will be one of the additional requirement for release of the Performance security of the Main contract as per Part 3 – Particular conditions of Contract.	(i)Before the end of DNP of stage 7 (last stage), the contractor has to submit a separate Performance security amounting to 10% of Contract Price, excluding Provisional Sum, Price Centre K,L & M, valid for the full design life of the system or balance period of the design life for which CAMC support is required by CMRL (which ever is earlier) to cover the maintenance obligations. The execution of the supplementary Performance security will be one of the additional requirement for release of the Performance security of the Main contract as per Part 3 – Particular conditions of Contract.
62	Part 3	VIII, Particular Conditions of Contract, Part B, Specific Provisions	51 of PCC (SP14.2)	Replace first paragraph of Sub-Clause 14.2 with the following: The Employer shall make an interest free advance payment for mobilization when the Contractor submits a guarantee in accordance with this sub-clause. This guarantee shall be in the form of BG for an equivalent amount of the requested advance amount as per format given in the Annex to PCC from any Public sector bank (PSB) or Scheduled Commercial Bank in India. The total advance payment and the applicable currencies and proportions shall be as stated in Contract Data.	Replace first paragraph of Sub-Clause 14.2 with the following: The Employer shall make an interest bearing advance payment for mobilization when the Contractor submits a guarantee in accordance with this sub-clause.The Rate of Interest shall be 13.5% per annum. This guarantee shall be in the form of BG for an equivalent amount of the requested advance amount as per format given in the Annex to PCC from any Public sector bank (PSB) or Scheduled Commercial Bank in India. The total advance payment and the applicable currencies and proportions shall be as stated in Contract Data.
63	Part 2	Section VI-B Particular Specifications	16.1.7.4	RS Contractor shall be responsible for installing wiring and equipment and TETRA contractor shall conduct the confirmation testing on each car at the factory itself.	RS Contractor shall be responsible for installing wiring and equipment and TETRA contractor shall conduct the confirmation testing on Prototype car at the factory itself and remaining cars at Depot.
64	Part 2	Section VI-B Particular Specifications	16.1.9.1	Item On board radio equipment,Antennae for train radio including special cables etc. TETRA Contractor To supply the equipment, related cables (excluding trainlines and interface cables) to the RS Contractor Works as per manufacturing schedule of RS Contractor. RS Contractor To provide space in the vehicle design for fixing and installation at the manufacturer's facility, by RS Contractor, under the supervision of the TETRA Contractor.	Item On board radio equipment,Antennae for train radio including special cables etc. TETRA Contractor To supply the equipment, related cables (excluding trainlines and interface cables) to the RS Contractor Works as per manufacturing schedule of RS Contractor. RS Contractor To provide space in the vehicle design for fixing and installation at the manufacturer's facility by RS Contractor.
65	Part 2	Section VI-B Particular Specifications	6.1.1	The telecommunication radio system shall comply to the specifications as described further in this PS as minimum or better or equivalent.	The TETRA OEM Member shall lead the design of the telecommunication radio system and shall comply to the specifications as described further in this PS as minimum or better or equivalent.
66	Part 2	Section VI-B Particular Specifications	13.4.1	The comprehensive maintenance shall cover the taking in charge of the comprehensive maintenance for the level 0 to 4 (defined as per international standard) of all the sub-systems and equipment part of the contract's scope from the issuance of the Completion Certificate of relevant stages.	The comprehensive maintenance shall cover the taking in charge of the comprehensive maintenance for the level 0 to 4 (defined as per international standard) of all the sub-systems and equipment part of the contract's scope from the issuance of the Completion Certificate of relevant stages. The TETRA OEM Member shall take the lead role in Comprehensive maintenance.
67	Part 2	Section VI-B Particular Specifications	14.1.1.1	The Contractor shall maintain minimum stock of critical spares in Employer's premises for consuming in his emergency repair works in the life cycle period of the system. The list of this spares shall be submitted to the Engineer for obtaining NoNO	Not used.
68	Part 2	Section VI-B Particular Specifications	13.4.11	Contractor shall use genuine spare parts/components/cards for maintaining the above mentioned System.	The Contractor shall supply and maintain minimum stock of critical spares in Employer's premises for consuming in his emergency repair works in the life cycle period of the system. The list of this spares shall be submitted to the Engineer for obtaining NoNO and contractor shall ensure this spares are sufficient to meet the Service level requirements of Response & Resolution Time.Contractor shall use genuine spare parts/components/cards for maintaining the above mentioned System.
69	Part 2	Section VI-B Particular Specifications	3.4.14.2.	Control Panel	Control Panel (all features given below are applicable to RAU and RCP)

70	Part 2	Section VI-B Particular Specifications	3.5.2.1.g	The Hand-portable radio shall have “auto power off” feature to protect the battery from over discharging at low voltage. It shall not consume any power when the radio is switched off.	The Hand-portable radio shall operate at RF transmit power of 1.8 W (Power Class 3L).The Hand-portable radio shall have “auto power off” feature to protect the battery from over discharging at low voltage. It shall not consume any power when the radio is switched off.																																																																																																																												
71	Part 2	Section VI-B Particular Specifications	3.5.4.2	The battery when fully charged, shall supply power to the Hand-portable radio for a minimum of 10 hours of continuous operation at 5% transmit, 20% receive and 75% standby duty cycle.	The battery when fully charged, shall supply power to the Hand-portable radio for a minimum of 10 hours of continuous Class 3L operation at 5% transmit, 35% receive and 60% standby duty cycle.																																																																																																																												
72	Part-2	Section VI A Employer’s Requirements- Appendices Appendix-10 Site Accommodation for The Engineer	1	<table><tr><th>Type</th><th>No of Staff</th><th>Separate Room(s)</th><th>Area sq m</th><th>Total Area sq m</th></tr><tr><td>Resident Engineer</td><td>1</td><td>Yes</td><td>12</td><td>12</td></tr><tr><td>Deputy Resident Engineer</td><td>2</td><td>Yes</td><td>10</td><td>20</td></tr><tr><td>Radio Engineers</td><td>3</td><td></td><td>7.5</td><td>45</td></tr><tr><td>Testing & Commissioning Manager</td><td>1</td><td>Yes</td><td>10</td><td>10</td></tr><tr><td>Testing & Commissioning Engineers</td><td>1</td><td></td><td>7.5</td><td>30</td></tr><tr><td>Safety Expert</td><td>1</td><td>Yes</td><td>7.5</td><td>7.5</td></tr><tr><td>Quality Expert</td><td>1</td><td>Yes</td><td>7.5</td><td>7.5</td></tr><tr><td>General Office / Reception</td><td>1</td><td></td><td>5</td><td>20</td></tr><tr><td>Meeting Room</td><td>1 No</td><td>yes</td><td>20</td><td>40</td></tr><tr><td>Document storage Room with with storage cabinet</td><td>1 No</td><td>Yes</td><td>20</td><td>20</td></tr><tr><td>Rest Rooms – Male and Female</td><td>Male ; 4 cubicles , 3 urinals and 3 sinks Female; 2 cubicles And 2 sinks</td><td>yes</td><td>20 each</td><td>40</td></tr><tr><td>Kitchen</td><td>1 no</td><td>yes</td><td>10</td><td>10</td></tr></table>	Type	No of Staff	Separate Room(s)	Area sq m	Total Area sq m	Resident Engineer	1	Yes	12	12	Deputy Resident Engineer	2	Yes	10	20	Radio Engineers	3		7.5	45	Testing & Commissioning Manager	1	Yes	10	10	Testing & Commissioning Engineers	1		7.5	30	Safety Expert	1	Yes	7.5	7.5	Quality Expert	1	Yes	7.5	7.5	General Office / Reception	1		5	20	Meeting Room	1 No	yes	20	40	Document storage Room with with storage cabinet	1 No	Yes	20	20	Rest Rooms – Male and Female	Male ; 4 cubicles , 3 urinals and 3 sinks Female; 2 cubicles And 2 sinks	yes	20 each	40	Kitchen	1 no	yes	10	10	<table><tr><th>Type</th><th>No of Staff</th><th>Separate Room(s)</th><th>Area sq m</th><th>Total Area sq m</th></tr><tr><td>Resident Engineer</td><td>1</td><td>Yes</td><td>12</td><td>12</td></tr><tr><td>Deputy Resident Engineer</td><td>2</td><td>Yes</td><td>10</td><td>20</td></tr><tr><td>Radio Engineers</td><td>3</td><td>NO</td><td rowspan="4">20</td><td rowspan="4">20</td></tr><tr><td>Testing & Commissioning Manager</td><td>1</td><td>NO</td></tr><tr><td>Testing & Commissioning Engineers</td><td>1</td><td>NO</td></tr><tr><td>Safety Expert</td><td>1</td><td>NO</td></tr><tr><td>Quality Expert</td><td>1</td><td>NO</td><td></td><td></td></tr><tr><td>General Office / Reception</td><td>1</td><td>Yes</td><td>5</td><td>5</td></tr><tr><td>Meeting Room</td><td>1 No</td><td>yes</td><td>20</td><td>20</td></tr><tr><td>Document storage Room with with storage cabinet</td><td>1 No</td><td>Yes</td><td>10</td><td>10</td></tr><tr><td>Rest Rooms – Male and Female</td><td>Male : 2 cubicles , 2 urinals and 2 sinks Female; 1 cubicles And 1 sinks</td><td>yes</td><td>5 each</td><td>20</td></tr><tr><td>Kitchen</td><td>1 no</td><td>yes</td><td>10</td><td>10</td></tr></table>	Type	No of Staff	Separate Room(s)	Area sq m	Total Area sq m	Resident Engineer	1	Yes	12	12	Deputy Resident Engineer	2	Yes	10	20	Radio Engineers	3	NO	20	20	Testing & Commissioning Manager	1	NO	Testing & Commissioning Engineers	1	NO	Safety Expert	1	NO	Quality Expert	1	NO			General Office / Reception	1	Yes	5	5	Meeting Room	1 No	yes	20	20	Document storage Room with with storage cabinet	1 No	Yes	10	10	Rest Rooms – Male and Female	Male : 2 cubicles , 2 urinals and 2 sinks Female; 1 cubicles And 1 sinks	yes	5 each	20	Kitchen	1 no	yes	10	10
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73	Part-2	Section VI A Employer’s Requirements- Appendices	Appendix-10 Site Accommodation for The Engineer 21	Car Parking spaces to be provided , 5 No spaces at the Engineer’s main office. All spaces to be shaded.	Car Parking spaces to be provided , 2 No spaces at the Engineer’s main office. All spaces to be shaded.																																																																																																																												
74	Part-2	Section VI A Employer’s Requirements- Appendices	Appendix-10 Site Accommodation for The Engineer 8	Each Office shall have 2 No electrical sockets and internet connections	Each Office shall have sufficient number (as per the Table under Appendix 10 clause 1) of electrical sockets and internet connections (with WiFi Access) along with shared or dedicated Printing and scanning facility for A3 &A4 ,maintained in working use at all times.																																																																																																																												
75	Part 2	Section VI-B Particular Specifications	16.5	TT/PD04,09,13,14	Not used. New section added as part of the addendum																																																																																																																												

76	Part 2	Section VI-B Particular Specifications	13.8.1.1.	<p>A comprehensive maintenance plan is proposed wherein, the maintenance will be the total responsibility of the contractor including supply of spares, equipments and attending to software defects, compliance to cyber security Audits etc. The comprehensive maintenance will start from the day of taking over certificate and will run concurrently with the maintenance responsibility during Defects Liability Period (DLP). During DLP, the maintenance shall be the responsibility of the Radio Contractor including supply of stores, spares, test equipments etc. Cost arising out of the saving in DLP maintenance should be taken into consideration in the comprehensive maintenance cost. The Comprehensive Maintenance shall be initially for five years beyond which it will be applicable with price variation clause till end of system life.</p>	<p>A comprehensive maintenance plan is proposed wherein, the maintenance will be the total responsibility of the contractor including supply of spares, equipments and attending to software defects, compliance to cyber security Audits etc. The comprehensive maintenance will start from the day of taking over certificate and will run concurrently with the maintenance responsibility during Defects Liability Period (DLP). During DLP, the maintenance shall be the responsibility of the Radio Contractor including supply of stores, spares, test equipments etc. Cost arising out of the saving in DLP maintenance should be taken into consideration in the comprehensive maintenance cost. The Comprehensive Maintenance shall be initially for five years .Beyond the intial period of 5 years also, CMRL reserves the right to renew the CAMC on same terms & conditions, with price escalation as per main Contract conditions.This procedure will be followed for the full design life (15 years) of the system with applicable price adjustment as per conditions of contract.</p>
77	Part 2	Section VI-B Particular Specifications	3.5.9.18	A means of preventing unauthorised access onto the ladder shall be provided	<p>The access to tower shall be designed to enable maintainenance access during train operation. A means of preventing unauthorised access onto the ladder shall be provided</p>
78	Part 2	Section VI-B Particular Specifications	6.4.2.	<p>All Telecommunication radio System equipment shall operate correctly to the environmental conditions broadly as per IS: 9000 & other specifications herein.</p>	<p>All Telecommunication radio System equipment shall operate correctly to the environmental conditions broadly as per IS: 9000 & other specifications herein.All the statutory certifications, registrations, clearances for the products/spares, manufacturer, importer, seller for all the equipment and technology used in the execution of this work, as required by the Government of India and other statutory/Legal authorities (including the updated norms/rules as and when implemented). This includes BIS certification, TEC certification for telecom equipment etc</p>
79	Part 2	Section VI-B Particular Specifications	13	NA	<p>Add the following new points to clause 13.:</p> <p>13.9 Hardware support</p> <p>13.9.1 The contractor shall ensure that spare parts compatible is available for replacing any equipment till the end of design life of the system.</p> <p>13.9.2 The contractor shall furnish an undertaking that he has no objection whatsoever to and shall not in any way deter or obstruct the employer, its licensee or its representative from dealing directly with the contractor's vendors for the purchase of the spares or any hardware support for that equipment supplied by that vendor.</p> <p>13.9.3 Contractor shall obtain an undertaking from vendors, OEMs etc, at detail design submission stage that they are willing to deal directly with the employer for supply of spares, equipment or sub systems, if the employer desires so.</p> <p>13.9.4 The contractor shall provide the employer all documentation which includes by not limited to the ownership rights, licences etc in the name of the employer for the usage as per the contractors design.</p> <p>13.9.5 For commercially of the shelf items:</p> <p>13.9.5.1 The contractor shall obtain the license and ownership for all commercially off the shelf Hardware (e.g.: Network Switches, Servers, Data storage devices etc.) in the name of the Employer as the user.</p> <p>13.9.5.2 All the legal, IP related, copyright related, application related compliances shall be ensured by the contractor in the procurement, design and usage of these hardware for various sub systems.</p> <p>13.9.5.3 All the licenses, purchase agreements and legal documentation shall be handed over to the Employer.</p> <p>13.9.5.4 The purchase of these Hardware by the contractor for the employer shall be such a way that the Indian arm of the supplier shall be able to extend AMC support (applicable on expiry of main CAMC envisaged as part of ASA-07) for these equipments directly to the employer if employer desires to do so. The contractor shall facilitate the employer to obtain AMC from the supplier directly.</p>

Table 1: Summary of Key dates:

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
	Key dates Associated to Rolling stock - ARE03 Contract		
RIT-ARE 03-KD-001	Preliminary design for all Corridors, submission, and approval including: 1. Theoretical coverage study and traffic study 2. Basic System architecture 3. Tunnel Coverage schematics 4. Frequency plan to enable WPC application	150	Total of Price Centres – A2
RIT-ARE 03-KD-002	Detailed design Review GC/Employer approval for the ARE 03 Rolling stock in accordance with Specification: 1. Interface design with Rolling Stock and Telecom system along with cable routing diagrams and wiring diagrams 2. Antenna fixing design 3. Radio equipment mounting and fixing drawings	270	Total of Price Centres – A2.2.2, A2.3.1
RIT-ARE 03-KD-003	Delivery of Radio equipment including all cables and connectors for Proto Type Rolling Stock (3 cars) at the Car Builders factory.	470	Total of Price Centres – J2.1.1
RIT-ARE 03-KD-004	Joint installation and testing of Radio equipment for the proto type rake (3 cars) at the car builders factory	530	Total of Price Centres – J2.2.1
RIT-ARE 03-KD-005	Joint testing of Radio equipment for the proto type rake (3 cars) at Depot/Mainline	650	Total of Price Centres – J2.2.1
RIT-ARE 03-KD-006	Complete delivery of Radio equipment to the Rolling Stock Contractor's car building factory for ARE 03 (12 No's of Train) subject to approval of Proto Type installation and testing.	620	Total of Price Centres – J2.1.1
RIT-ARE 03-KD-007	Joint testing of Radio equipment for the 1st production rakes (6 Train sets) at Depot/Mainline	740	Total of Price Centres – J2.2.1
RIT-ARE 03-KD-008	Joint testing of Radio equipment for the 2nd production rakes (6 Train sets) at Depot/Mainline	800	Total of Price Centres – J2.2.1
RIT-ARE 03-KD-009	Complete delivery of Radio equipment to the Rolling Stock Contractor's car building factory for ARE 03 (13 No's of Train) subject to approval of Proto Type installation and testing.	680	Total of Price Centres – J2.1.1
RIT-ARE 03-KD-010	Joint testing of Radio equipment for the 3rd production rakes (6 Train sets) at Depot/Mainline	860	Total of Price Centres – J2.2.1
RIT-ARE 03-KD-011	Joint testing of Radio equipment for the 4th production rakes (7 Train sets) at Depot/Mainline	930	Total of Price Centres – J2.2.1
	Key dates Associated to Rolling stock - ARE04 Contract		
RIT-ARE 04-KD-001	Detailed design Review GC/Employer approval (including WPC clearance) for the ARE 04 Rolling stock in accordance with Specification: 1. Interface design with Rolling Stock and Telecom system along with cable routing diagrams and wiring diagrams 2. Antenna fixing design 3. Radio equipment mounting and fixing drawings	430	Total of Price Centres – A2.2.3, A2.3.2

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
RIT-ARE 04-KD-002	Delivery of Radio equipment including all cables and connectors for Proto Type Rolling Stock (3 cars) at the Car Builders factory.	630	Total of Price Centres – J2.1.2
RIT-ARE 04-KD-003	Joint installation and testing of Radio equipment for the proto type rake (3 cars) at the car builders factory	690	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-004	Joint testing of Radio equipment for the proto type rake (3 cars) at Depot/Mainline	810	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-005	Complete delivery of Radio equipment to the Rolling Stock Contractor's car building factory for ARE 04 (24 No's of Train) subject to approval of Proto Type installation and testing.	780	Total of Price Centres – J2.1.2
RIT-ARE 04-KD-006	Joint testing of Radio equipment for the 1st production rakes (6 Train sets) at Depot/Mainline	900	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-007	Joint testing of Radio equipment for the 2nd production rakes (6 Train sets) at Depot/Mainline	960	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-008	Complete delivery of balance Radio equipment to the Rolling Stock Contractor's car building factory for ARE 04 (17 No's of Train)	900	Total of Price Centres – J2.1.2 & J2.2.2
RIT-ARE 04-KD-009	Joint testing of Radio equipment for the 3rd production rakes (6 Train sets) at Depot/Mainline	1020	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-010	Joint testing of Radio equipment for the 4th production rakes (6 Train sets) at Depot/Mainline	1080	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-011	Joint testing of Radio equipment for the 5th production rakes (6 Train sets) at Depot/Mainline	1140	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-012	Joint testing of Radio equipment for the 6th production rakes (6 Train sets) at Depot/Mainline	1200	Total of Price Centres – J2.2.2
RIT-ARE 04-KD-013	Joint testing of Radio equipment for the 7th production rakes (5 Train sets) at Depot/Mainline	1260	Total of Price Centres – J2.2.2
Key dates Associated to Rolling stock - ARE02 Contract			
RIT-ARE 02-KD-001	Detailed design Review GC/Employer approval (including WPC clearance) for the ARE 02 Rolling stock in accordance with Specification: 1. Interface design with Rolling Stock and Telecom system along with cable routing diagrams and wiring diagrams 2. Antenna fixing design 3. Radio equipment mounting and fixing drawings	600	Total of Price Centres – A2.2.4,A2.3.3
RIT-ARE 02-KD-002	Delivery of Radio equipment including all cables and connectors for Proto Type Rolling Stock (3 cars) at the Car Builders factory	890	Total of Price Centres – J1.1
RIT-ARE 02-KD-003	Joint installation and testing of Radio equipment for the proto type rake (3 cars) at the car builders factory	950	Total of Price Centres – J1.2
RIT-ARE 02-KD-004	Joint installation and testing of Radio equipment for the proto type rake (3 cars) at Depot/Mainline	1070	Total of Price Centres – J1.2
RIT-ARE 02-KD-005	Complete delivery of Radio equipment to the Rolling Stock Contractor's car building factory for ARE 02 (35 No's of Train) subject to approval of Proto Type installation and testing.	1060	Total of Price Centres – J1.1
RIT-ARE 02-KD-006	Complete joint installation and testing of Radio equipment for the 1st production rakes (8 Train sets) at Depot/Mainline	1180	Total of Price Centres – J1.2

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
RIT-ARE 02-KD-007	Complete joint installation and testing of Radio equipment for the 2nd production rakes (7 Train sets) at Depot/Mainline	1240	Total of Price Centres – J1.2
RIT-ARE 02-KD-008	Complete joint installation and testing of Radio equipment for the 3rd production rakes (7 Train sets) at Depot/Mainline	1310	Total of Price Centres – J1.2
RIT-ARE 02-KD-009	Complete delivery of balance Radio equipment to the Rolling Stock Contractor's car building factory for ARE 02 (34 No's of Train)	1300	Total of Price Centres – J1.1 & J1.2
RIT-ARE 02-KD-010	Complete joint installation and testing of Radio equipment for the 4th production rakes (7 Train sets) at Depot/Mainline	1370	Total of Price Centres – J1.2
RIT-ARE 02-KD-011	Complete joint installation and testing of Radio equipment for the 5th production rakes (6 Train sets) at Depot/Mainline	1430	Total of Price Centres – J1.2
RIT-ARE 02-KD-012	Complete joint installation and testing of Radio equipment for the 6th production rakes (6 Train sets) at Depot/Mainline	1480	Total of Price Centres – J1.2
RIT-ARE 02-KD-013	Complete joint installation and testing of Radio equipment for the 7th production rakes (6 Train sets) at Depot/Mainline	1540	Total of Price Centres – J1.2
RIT-ARE 02-KD-014	Complete joint installation and testing of Radio equipment for the 8th production rakes (8 Train sets) at Depot/Mainline	1620	Total of Price Centres – J1.2
RIT-ARE 02-KD-015	Complete joint installation and testing of Radio equipment for the 9th production rakes (7 Train sets) at Depot/Mainline	1680	Total of Price Centres – J1.2
RIT-ARE 02-KD-016	Complete joint installation and testing of Radio equipment for the 10th production rakes (7 Train sets) at the Depot/Mainline	1740	Total of Price Centres – J1.2
	Stage 1 Revenue Service		
RIT-S1-KD-001	Detailed design for all Elevated Corridors, Review GC/Employer approval (including WPC clearance) for all the Elevated Stages in accordance with Specification 1. Detailed system architecture for all corridors 2. Traffic and coverage study for all corridors 3. Finalisation of tower location, design (including foundations) 4. Cable route plan 5. Radio equipment location in the telecom room 6. Interface design with all project contractors	420	Total of Price Centres – B.S1.1
RIT-S1-KD-002	Complete delivery of Radio equipment for C4 ECV 01, C4 ECV 02 including associated WPC Clearance for relevant stage	540	Total of Price Centres – B.S1.2
	Poonamallee Depot		
RIT-S1-KD-003	Complete installation and testing of Radio equipment at Poonamallee Depot.	680	Total of Price Centres – B.S1.3.4, B.S1.3.6
RIT-S1-KD-004	Testing (including interface testing with OCC) of the Radio system for Poonamallee Depot	690	Total of Price Centres – B.S1.3.4, B.S1.3.6.

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
RIT-S1-KD-005	Complete System Acceptance Test and Integrated Testing of the Radio system for Poonamalle Depot	780	Total of Price Centres – B.S1.4.1,B.S1.4.2,B.S1.4.3
	C4-ECV02		
RIT-S1-KD-006	Complete installation and static testing of Radio Equipment for Corridor 4 -ECV 02 Section for each station and Central Equipment at OCC (Koyembedu) (Including all associated WPC Clearances for relevant stages).	660	Total of Price Centres – B.S1.3.2,B.S1.3.5
RIT-S1-KD-007	Testing (including interface testing with OCC) of the Radio system (excluding part for Poonamalle Depot operation) for Corridor 4 ECV 02 Section for each station.	670	Total of Price Centres – B.S1.3.2,B.S1.3.5,B.S1.3.3
RIT-S1-KD-008	Complete System Acceptance Test and Integrated Testing of the Radio system (including part for Poonamalle Depot operation) for Corridor 4 ECV 02	760	Total of Price Centres – B.S1.4.1,B.S1.4.2,B.S1.4.3
	C4-ECV01		
RIT-S1-KD-009	Complete installation and static testing of Radio Equipment for Corridor 4 -ECV 01 Section for each station.	710	Total of Price Centres – B.S1.3.1,B.S1.3.5
RIT-S1-KD-010	Testing (including interface testing with OCC) of the Radio system for Corridor 4 ECV 01 for each station	720	Total of Price Centres – B.S1.3.1,B.S1.3.5,B.S1.3.3
RIT-S1-KD-011	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 4 ECV 01	810	Total of Price Centres – B.S1.4.1,B.S1.4.2,B.S1.4.3
RIT-S1-KD-012	Issue of Completion Certificate for Stage 1 Revenue Service	980	Total of Price Centres – B.S1.4.1 to B.S1.4.5
RIT-S1-KD-013	Achieve Operational Acceptance for Stage 1 Revenue Service	1520	Total of Price Centres – B.S1.4.6
	Stage 2 Revenue Service		
RIT-S2-KD-001	Complete delivery of Radio equipment for C5 ECV 02, C5 ECV 03	790	Total of Price Centres – C.S2.1,C.S2.2
	C5 -ECV 02		
RIT-S2-KD-002	Complete installation and static testing of Radio Equipment for Corridor 5 -ECV 02 Section for each station and associated equipment in BOCC.	910	Total of Price Centres – C.S2.3-ECV 02 part
RIT-S2-KD-003	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor 5 -ECV 02 for each station	920	Total of Price Centres – C.S2.3 (ECV-02 part) plus OCC testing part

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
RIT-S2-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 5 -ECV 02	1010	Total of Price Centres – C.S2.4.1 to C.S2.4.3
	C5 -ECV 03		
RIT-S2-KD-005	Complete installation and static testing of Radio Equipment for Corridor 5 -ECV 03 Section for each station.	880	Total of Price Centres – C.S2.3 (ECV 03 part)
RIT-S2-KD-006	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor 5 -ECV 03 for each station	890	Total of Price Centres – C.S2.3(ECV 03 Part) plus OCC testing part
RIT-S2-KD-007	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 5 -ECV 03	980	Total of Price Centres – C.S2.4.1 to C.S2.4.3
RIT-S2-KD-008	Issue of Completion Certificate for Stage 2 Revenue Service	1150	Total of Price Centres – C.S2.4.1 to C.S2.4.5
RIT-S2-KD-009	Achieve Operational Acceptance for Stage 2 Revenue Service	1690	Total of Price Centres – C.S2.4.6
	Stage 3 Revenue Service		
RIT-S3-KD-001	Complete delivery of Radio equipment for C3 ECV 01, C3 EV 01	780	Total of Price Centres – D.S3.1,D.S3.2
	C3 -ECV 01		
RIT-S3-KD-002	Complete installation and static testing of Radio Equipment for Corridor 3 -ECV 01 Section for each station.	900	Total of Price Centres – D.S3.3(ECV 01 part)
RIT-S3-KD-003	Testing (including interface testing with OCC / BOCC) of the Radio system for Corridor 3 -ECV 01 for each station	910	Total of Price Centres – D.S3.3 (ECV 01 part) plus OCC testing part
RIT-S3-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 3 -ECV 01	1000	Total of Price Centres – D.S3.4.1 to D.S3.4.3
	C3 -EV 01		
RIT-S3-KD-005	Complete installation and static testing of Radio Equipment for Corridor 3 -EV 01 Section for each station.	1030	Total of Price Centres – D.S3.3 (EV 01 part)
RIT-S3-KD-006	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor 3 -EV 01 for each station	1040	Total of Price Centres – D.S3.3 (EV 01 part) plus OCC testing part
RIT-S3-KD-007	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 3 -EV 01	1130	Total of Price Centres –

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
			D.S3.4.1 to D.S3.4..3
RIT-S3-KD-008	Issue of Completion Certificate for Stage 3 Revenue Service	1270	Total of Price Centres – D.S3.4.1 to D.S3.4.5
RIT-S3-KD-009	Achieve Operational Acceptance for Stage 3 Revenue Service	1810	Total of Price Centres – D.S3.4.6
	Stage 4A Revenue Service		
RIT-S4a-KD-001	Detailed design for all balance stages, Review GC/Employer approval (including WPC clearance) for all the Balance Stages in accordance with Specification 1. Detailed system architecture for all corridors 2. Traffic and coverage study for all corridors 3. Finalisation of tower location, design (including foundations) 4. Cable route plan 5. Radio equipment location in the telecom room 6. Interface design with all project contractors	650	Total of Price Centres – E1.S4A.1
RIT-S4a-KD-002	Complete delivery of Radio equipment for C4 UG 02	950	Total of Price Centres – E1.S4A.2
RIT-S4a-KD-003	Complete installation and static testing of Radio Equipment for Corridor 4 -UG 02 Section for each station.	1070	Total of Price Centres – E1.S4A.3 (UG-02 part)
RIT-S4a-KD-004	Testing (including interface testing with OCC / BOCC) of the Radio system for Corridor 4 -UG 02 Section for each station.	1080	Total of Price Centres – E1.S4A.3(UG-02 part) plus OCC testing part
RIT-S4a-KD-005	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor 4-UG 02	1170	Total of Price Centres – E1.S4A.4.1 to E1.S4A.4.3
RIT-S4a-KD-006	Issue of Completion Certificate for Stage 4A Revenue Service	1310	Total of Price Centres – E1.S4A.4.1 to E1.S4A.4.5
RIT-S4a-KD-007	Achieve Operational Acceptance for Stage 4A Revenue Service	1850	Total of Price Centres – E1.S4A.4.6
	Stage 4B Revenue Service		
RIT-S4b-KD-001	Complete delivery of Radio equipment for Madhavaram Depot, C5 EV 03, C5 UG 06	770	Total of Price Centres – E2.S4B.1,E2.S4 B.2
	Madhavaram Depot		
RIT-S4b-KD-002	Complete installation and testing of Radio equipment at Madhavaram Depot.	890	Total of Price Centres – E2.S4B.3 (Depot part)
RIT-S4b-KD-003	Testing (including interface testing with OCC / BOCC) of the Radio system for Madhavaram Depot	900	Total of Price Centres –

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
			E2.S4B.3 (Depot part)
RIT-S4b-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Madhavaram Depot	990	Total of Price Centres – E2.S4B.4.1 to E2.S4B.4.3
	C5 - EV 03		
RIT-S4b-KD-005	Complete installation and static testing of Radio Equipment for Corridor C5 - EV 03 Section for each station.	1070	Total of Price Centres – E2.S4B.3 (EV03 part)
RIT-S4b-KD-006	Testing (including interface testing with OCC / BOCC) of the Radio system for Corridor C5 - EV 03 for each station	1080	Total of Price Centres – E2.S4B.3 (EV 03 part) plus OCC testing part.
RIT-S4b-KD-007	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C5 - EV 03	1170	Total of Price Centres – E2.S4B.4.1 to E2.S4B.4.3
	C5 - UG 06		
RIT-S4b-KD-008	Complete installation and static testing of Radio Equipment for Corridor C5 - UG 06 Section for each station.	1150	Total of Price Centres – E2.S4B.3 (UG 06 part)
RIT-S4b-KD-009	Testing (including interface testing with OCC / BOCC) of the Radio system for Corridor C5 - UG 06 for each station	1160	Total of Price Centres – E2.S4B.3 (UG 06 part) plus OCC testing part.
RIT-S4b-KD-010	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C5 - UG 06	1250	Total of Price Centres – E2.S4B.4.1 to E2.S4B.4.3
RIT-S4b-KD-011	Issue of Completion Certificate for Stage 4B Revenue Service	1390	Total of Price Centres – E2.S4B.4.1 to E2.S4B.4.5
RIT-S4b-KD-012	Achieve Operational Acceptance for Stage 4B Revenue Service	1930	Total of Price Centres – E2.S4B.4.6
	Stage 5 Revenue Service		
RIT-S5-KD-001	Complete delivery of Radio equipment for Madhavaram Depot, C3 UG 01, C3 UG 02	1100	Total of Price Centres – F.S5.1, F.S5.2
	C3 - UG 01		
RIT-S5-KD-002	Complete installation and static testing of Radio Equipment for Corridor C3 - UG 01 Section for each station.	1220	Total of Price Centres – F.S5.3 (UG01 part)
RIT-S5-KD-003	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C3 - UG 01 for each station	1230	Total of Price Centres –

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
			F.S5.3 (UG01 part) plus OCC testing part.
RIT-S5-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C3 - UG 01	1320	Total of Price Centres – F.S5.4.1 to F.S5.4.3
	C3 - UG 02		
RIT-S5-KD-005	Complete installation and static testing of Radio Equipment for Corridor C3 - UG 02 Section for each station.	1290	Total of Price Centres – F.S5.3 (UG02 part)
RIT-S5-KD-006	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C3 - UG 02 for each station	1300	Total of Price Centres – F.S5.3(UG 02 part) plus OCC testing part.
RIT-S5-KD-007	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C3 - UG 02	1390	Total of Price Centres – F.S5.4.1 to F.S5.4.3
RIT-S5-KD-008	Issue of Completion Certificate for Stage 5 Revenue Service	1530	Total of Price Centres – F.S5.4.1 to F.S5.4.5
RIT-S5-KD-009	Achieve Operational Acceptance for Stage 5 Revenue Service	2070	Total of Cost Centres F.S5.4.6
	Stage 6 Revenue Service		
RIT-S6-KD-001	Complete delivery of Radio equipment for C3 UG 03	1330	Total of Price Centres – G.S6.1,G.S6.2
	C3 - UG 03		
RIT-S6-KD-002	Complete installation and static testing of Radio Equipment for Corridor C3 - UG 03 Section for each station.	1450	Total of Price Centres – G.S6.3
RIT-S6-KD-003	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C3 - UG 03 for each station	1460	Total of Price Centres – G.S6.3 plus OCC testing part
RIT-S6-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C3 - UG 03	1550	Total of Price Centres – G.S6.4.1 to G.S6.4.3
RIT-S6-KD-005	Issue of Completion Certificate for Stage 6 Revenue Service	1690	Total of Price Centres – G.S6.4.1 to G.S6.4.5
RIT-S6-KD-006	Achieve Operational Acceptance for Stage 6 Revenue Service	2230	Total of Price Centres – G.S6.4.6

Key Date Ref.	Description	Cal Days from Commencement date	Associated Price Centres for purposes of Liquidated Damages
	Stage 7 Revenue Service		
RIT-S7-KD-001	Complete delivery of Radio equipment for C3 UG 04 , C3 UG 05 , C4 UG 01	1340	Total of Price Centres – H.S7.1,H.S7.2
	C3 - UG 04		
RIT-S7-KD-002	Complete installation and static testing of Radio Equipment for Corridor C3 - UG 04 Section for each station.	1460	Total of Price Centres – H.S7.3 (UG04 part)
RIT-S7-KD-003	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C3 - UG 04 for each station	1470	Total of Price Centres – H.S7.3(UG 04 part) plus OCC testing part
RIT-S7-KD-004	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C3 - UG 04	1560	Total of Price Centres – H.S7.4.1 to H.S7.4.3
	C3 - UG 05		
RIT-S7-KD-005	Complete installation and static testing of Radio Equipment for Corridor C3 - UG 05 Section for each station.	1440	Total of Price Centres – H.S7.3(UG 05 part)
RIT-S7-KD-006	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C3 - UG 05 for each station	1450	Total of Price Centres – H.S7.3 (UG 05 part) plus OCC testing part
RIT-S7-KD-007	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C3 - UG 05	1540	Total of Price Centres – H.S7.4.1 to H.S7.4.3
	C4 - UG 01		
RIT-S7-KD-008	Complete installation and static testing of Radio Equipment for Corridor C4 - UG 01 Section for each station.	1340	Total of Price Centres – H.S7.3(UG 01 part)
RIT-S7-KD-009	Testing (including interface testing with OCC/ BOCC) of the Radio system for Corridor C4 - UG 01 for each station	1350	Total of Price Centres – H.S7.3 (UG 01 part) plus OCC testing part
RIT-S7-KD-010	Complete System Acceptance Test and Integrated Testing of the Radio system for Corridor C4 - UG 01	1440	Total of Price Centres – H.S7.4.1 to H.S7.4.3
RIT-S7-KD-011	Issue of Completion Certificate for Stage 7 Revenue Service	1700	Total of Price Centres – H.S7.4.1 to H.S7.4.5
RIT-S7-KD-012	Achieve Operational Acceptance for Stage 7 Revenue Service	2240	Total of Price Centres – H.S7.4.6

Table 2:**A. Site Access Dates**

- Track Completion in via-duct/tunnels including completion of respective data & power cable trays of S&TC system, as per interface requirements.(access to finished track including final welding and turn-outs hand-over as per jointly agreed check list, wherever applicable)
- Access to SER/SCR/CER in Degree-3 level of finish, complete with all interconnecting cable trays to via-duct/tunnel cable trays, concourse, platform, street level areas cable trays linking various equipment/control rooms as well as public areas
- Earthing terminals, UPS supplies in Equipment & Control rooms as also regular Air Con in equipment rooms

Access Date Ref.	Activity Name	Cal Days from Commencement date
RIT-S1-AD-001	Access Date for Station room at Poonamallee Depot to Telecommunication Radio System Contractor	590
RIT-S1-AD-002	Access Date for Viaduct Section/ Station rooms at Corridor 4 ECV 02 to Telecommunication Radio System Contractor	570
RIT-S1-AD-003	Access Date for Viaduct Section/ Station rooms at Corridor 4 ECV 01 to Telecommunication Radio System Contractor	620
RIT-S2-AD-001	Access Date for Viaduct Section/ Station rooms at Corridor 5 ECV 02 to Telecommunication Radio System Contractor	820
RIT-S2-AD-002	Access Date for Viaduct Section/ Station rooms at Corridor 5 ECV 03 to Telecommunication Radio System Contractor	790
RIT-S3-AD-001	Access Date for Viaduct Section/ Station rooms at Corridor 3 ECV 01 to Telecommunication Radio System Contractor	810
RIT-S3-AD-002	Access Date for Viaduct Section/ Station rooms at Corridor 3 EV 01 to Telecommunication Radio System Contractor	940
RIT-S4a-AD-001	Access Date for Tunnel Section/ Station rooms at Corridor 4 UG 02 to Telecommunication Radio System Contractor	980
RIT-S4b-AD-001	Access Date for Station room at Madhavaram Depot to Telecommunication Radio System Contractor	800
RIT-S4b-AD-002	Access Date for Viaduct Section/ Station rooms at Corridor 5 EV 03 to Telecommunication Radio System Contractor	980
RIT-S4b-AD-003	Access Date for Tunnel Section/ Station rooms at Corridor 5 UG 06 to Telecommunication Radio System Contractor	1060
RIT-S5-AD-001	Access Date for Tunnel Section/ Station rooms at Corridor 3 UG 01 to Telecommunication Radio System Contractor	1130
RIT-S5-AD-002	Access Date for Tunnel Section/ Station rooms at Corridor 3 UG 02 to Telecommunication Radio System Contractor	1200

RIT-S6-AD-001	Access Date for Tunnel Section/ Station rooms at Corridor 3 UG 03 to Telecommunication Radio System Contractor	1360
RIT-S7-AD-001	Access Date for Tunnel Section/ Station rooms at Corridor 3 UG 04 to Telecommunication Radio System Contractor	1370
RIT-S7-AD-002	Access Date for Tunnel Section/ Station rooms at Corridor 3 UG 05 to Telecommunication Radio System Contractor	1350
RIT-S7-AD-003	Access Date for Tunnel Section/ Station rooms at Corridor 4 UG 01 to Telecommunication Radio System Contractor	1250

Degree 3 Finishes Details:

- Complete Wall Plastering and painting
- Complete raised floor, and false flooring except for locations where panels have to be installed after completion of works by the Interfacing contractor
- Complete internal glazing
- Permanent doors and ironmongery installed
- Plumbing and Sanitary fittings complete and ready for testing

B. Access for Communication Backbone network from Telecom Contractor

Access Date Ref.	Activity Name	Cal Days from Commencement date
RIT-S1-AD-004	Access for Communication Backbone network from Telecom Contractor at Ponnammallee Depot	675
RIT-S1-AD-005	Access for Communication Backbone network from Telecom Contractor at Corridor 4 ECV 02	625
RIT-S1-AD-006	Access for Communication Backbone network from Telecom Contractor at Corridor 4 ECV 01	675
RIT-S2-AD-003	Access for Communication Backbone network from Telecom Contractor at Corridor 5 ECV 02	880
RIT-S2-AD-004	Access for Communication Backbone network from Telecom Contractor at Corridor 5 ECV 03	850
RIT-S3-AD-003	Access for Communication Backbone network from Telecom Contractor at Corridor 3 ECV 01	870
RIT-S3-AD-004	Access for Communication Backbone network from Telecom Contractor at Corridor 3 EV 01	1000
RIT-S4a-AD-002	Access for Communication Backbone network from Telecom Contractor at Corridor 4 UG 02	1035
RIT-S4b-AD-004	Access for Communication Backbone network from Telecom Contractor at Madhavaram Depot	865
RIT-S4b-AD-005	Access for Communication Backbone network from Telecom Contractor at Corridor 5 EV 03	1045

RIT-S4b-AD-006	Access for Communication Backbone network from Telecom Contractor at Corridor 5 UG 06	1120
RIT-S5-AD-003	Access for Communication Backbone network from Telecom Contractor at Corridor 3 UG 01	1190
RIT-S5-AD-004	Access for Communication Backbone network from Telecom Contractor at Corridor 3 UG 02	1260
RIT-S6-AD-002	Access for Communication Backbone network from Telecom Contractor at Corridor 3 UG 03	1420
RIT-S7-AD-004	Access for Communication Backbone network from Telecom Contractor at Corridor 3 UG 04	1425
RIT-S7-AD-005	Access for Communication Backbone network from Telecom Contractor at Corridor 3 UG 05	1405
RIT-S7-AD-006	Access for Communication Backbone network from Telecom Contractor at Corridor 4 UG 01	1305

16.9. Interface with Depot Vehicle Contract

Chennai Metro Interface Sheet	Contract A	ASA-07	Contract B	Depot Vehicle Contract Number	Sheet # : 1	Rev # : A1
	Telecommunication Contractor (Interface Lead)		Depot Vehicle Contractor (Interface Follower)			
<u>Brief description of interface scope:</u>						
1. Provision of Tetra Radio to Depot machines/Vehicle						
Contract A (Telecommunication Radio)		DESIGN STAGE		Contract B (Depot vehicle Contractor)		
TT/OV-01: Shall share the details of onboard radio, Speaker etc for Depot vehicles (space, power supply, Mounting etc)			TT/OV-01: Shall incorporate the Radio requirements (space, power supply, Mounting etc) to design of Depot vehicles.			
Contract A (Telecommunication Radio)		CONSTRUCTION / INSTALLATION STAGE		Contract B (Depot vehicle Contractor)		
TT/OV-02: Shall supply the radio equipment with all accessories and interconnecting cables on Depot vehicles			TT/OV-02: Shall install the Radio Equipment.			
Contract A (Telecommunication Radio)		TESTING & COMMISSIONING STAGE		Contract B (Depot vehicle Contractor)		
TT/OV-3: Shall conduct testing jointly for on board Radio in Depot vehicles			TT/OV-3: Shall attend the joint testing.			
Contract A (Telecommunication)		MAINTENANCE STAGE		Contract B (Depot vehicle Contractor)		
TT/OV4: Shall finalise the joint maintenance procedures involving Radio equipment			TT/OV4: Validate the joint maintenance procedures prepared by Contractor A.			

16.10. **Interface with Overhead Maintenance Vehicle Contractor**

Chennai Metro Interface Sheet	Contract A	ASA-07	Contract B	Depot Vehicle Contract Number	Sheet # : 1	Rev # : A1
	Telecommunication Contractor (Interface Lead)		Overhead Maintenance Vehicle (OMV) Contractor (Interface Follower)			
<u>Brief description of interface scope:</u>						
2. Provision of Tetra Radio to Depot machines/Vehicle						
Contract A (Telecommunication Radio)		DESIGN STAGE		Contract B (OMV Contractor)		
TT/OV-01: Shall share the details of onboard radio, Speaker etc for OMV(space, power supply, Mounting etc)			TT/OV-01: Shall incorporate the Radio requirements (space, power supply, Mounting etc) to design of OMV.			
Contract A (Telecommunication Radio)		CONSTRUCTION / INSTALLATION STAGE		Contract B (OMV Contractor)		
TT/OV-02: Shall supply the radio equipment with all accessories and interconnecting cables on OMV			TT/OV-02: Shall install the Radio Equipment.			
Contract A (Telecommunication Radio)		TESTING & COMMISSIONING STAGE		Contract B (OMV Contractor)		
TT/OV-3: Shall conduct testing jointly for on board Radio in OMV			TT/OV-3: Shall attend the joint testing.			
Contract A (Telecommunication)		MAINTENANCE STAGE		Contract B (OMV Contractor)		
TT/OV4: Shall finalise the joint maintenance procedures involving Radio equipment			TT/OV4: Validate the joint maintenance procedures prepared by Contractor A.			

LIST OF DRAWINGS FOR CONTRACT ASA-07 -TELECOMMUNICATION RADIO								
Please click the link to download: https://cmrlindia-my.sharepoint.com/:u:/g/personal/ajish_cl_cmrl_in/EaLIqOQpcs9MjZu5V-7JVnYBRyazBwthL4m8B3qGSvEDMg?e=hsSGjd								
SI.NO	DRAWING NUMBER	DRAWING TITLE	TOTAL NUMBER OF SHEETS	REVISION	TENDER	ADDENDUM-1	ADDENDUM-2	REMARKS
A	GENERAL DRAWINGS							
1	CMRL-GC1-00ASA-0C30C40C5 - 0001(0)	PHASE-II ROUTE MAP WITH STATION CODE SHEET 01 OF 02	1	B*	✓		✓	
2	CMRL-GC1-00ASA-0C30C40C5 - 0001(0)	PHASE-II CONTRACT PACKAGES SHEET 02 OF 02	1	B*	✓		✓	
3	CMRL-GC1-00ASA-MHQ-0003(0)	NANDANAM METRO BHAWAN -BCC LAYOUT	1	A	✓			
B	ALIGNMENT DRAWINGS							
	CORRIODR-3							
4	DDC-P2C3-TU01-ALN-DR-C30-50001-01	TU01-HORIZONTAL & VERTICAL ALIGNMENT DRAWING (UP LINE) COVER SHEET SHEET 1 OF 1	21	E	✓			
5	DDC-P2C3-TU01-ALN-DR-C30-50001-01	TU-01-HORIZONTAL & VERTICAL ALIGNMENT DRAWING (DOWN LINE) COVER SHEET SHEET 1 OF 1	21	E	✓			
6	DDC-P2C3-TU02-ALN-DR-C30-50001-01	TU-02-HORIZONTAL & VERTICAL ALIGNMENT DRAWING (UP LINE) DRAWING LIST SHEET 1 OF 1	26	F	✓			
7	DDC-P2C3-TU02-ALN-DR-C30-50101-01	TU-02-HORIZONTAL & VERTICAL ALIGNMENT DRAWING (DOWN LINE) DRAWING LIST SHEET 1 OF 1	26	F	✓			
8	DDC-P2C3-EV01-ALN-DR-C3E-50001-01	EV-01 HORIZONTAL AND VERTICAL ALIGNMENT (UP LINE) LIST OF DRAWINGS	21	A	✓		Deleted	
9	DDC-P2C3-EV01-ALN-DR-C3E-50401-01	EV-01-HORIZONTAL AND VERTICAL ALIGNMENT DRAWING (REDUCED RAIL LEVEL) UP LINE - LIST OF DRAWINGS	21	A			✓	
10	DDC-P2C3-EV01-ALN-DR-C3E-50101-01	EV-01 HORIZONTAL AND VERTICAL ALIGNMENT (DOWN LINE) LIST OF DRAWINGS	20	A	✓		Deleted	
11	DDC-P2C3-EV01-ALN-DR-C3E-50501-01	EV-01 HORIZONTAL AND VERTICAL ALIGNMENT (REDUCED RAIL LEVEL) DOWN LINE LIST OF DRAWINGS	19	A			✓	
12	DDC-P2C3-ECV01-ALN-DR-C3E-50201-01	ECV-01 HORIZONTAL AND VERTICAL ALIGNMENT DRAWING (UP LINE)LIST OF DRAWINGS	19	A	✓		Deleted	
13	DDC-P2C3-ECV01-ALN-DR-C3E-50601-01	ECV-01-HORIZONTAL AND VERTICAL ALIGNMENT DRAWING (UP LINE) LIST OF DRAWINGS	19	A			✓	
14	DDC-P2C3-ECV01-ALN-DR-C3E-50301-01	ECV-01 HORIZONTAL AND VERTICAL ALIGNMENT DRAWING (DOWN LINE) LIST OF DRAWINGS	19	A	✓		Deleted	
15	DDC-P2C3-ECV01-ALN-DR-C3E-50701-01	ECV-01-HORIZONTAL AND VERTICAL ALIGNMENT DRAWING (DOWN LINE) LIST OF DRAWINGS	19	A			✓	
	CORRIODR-4							
16	P2C4-MRW-TD-ZZZZ-ZZ-DWG-R-00001	UG-01-HORIZONTAL AND VERTICAL ALIGNMENT (UP LINE) LIST OF DRAWINGS	20	2	✓			
17	P2C4-MRW-TD-ZZZZ-ZZ-DWG-R-00006	UG-01-HORIZONTAL AND VERTICAL ALIGNMENT (DOWN LINE) LIST OF DRAWINGS	20	2	✓			
18	P2C4-MRW-TD-ZZZZ-ZZ-DWG-R-00016	UG-02-HORIZONTAL AND VERTICAL ALIGNMENT (UP LINE) LIST OF DRAWINGS	16	2	✓			
19	P2C4-MRW-TD-ZZZZ-ZZ-DWG-R-00011	UG-02-HORIZONTAL AND VERTICAL ALIGNMENT (DOWN LINE) LIST OF DRAWINGS	19	2	✓			
20	DDC-P2C4-05-ALN-DR-C4E-10001-01	ECV-01 & ECV-02 HORIZONTAL AND VERTICAL ALIGNMENT (UPLINE, DOWN LINE & POONAMALLEE DEPOT) LIST OF DRAWINGS	65	E	✓			
	CORRIODR-5							
21	DDC503-TD-GEN-GE-DW-03000	UG-06-LIST OF DRAWINGS-UP TRACK	11	A	✓			
22	DDC503-TD-GEN-GE-DW-03000	UG-06-LIST OF DRAWINGS-DOWN TRACK	11	A	✓			
23	DDC503-TD-AL-GE-DW-03003	EV-03-LIST OF DRAWINGS	61	A	✓			
24	DDC-P2C5-ECV02-ALN-02100-01	ECV-02 HORIZONTAL & VERTICAL ALIGNMENT INDEX LIST	35	A*	✓		✓	
25	DDC-P2C5-ECV03-ALN-03100-01	ECV-03 HORIZONTAL & VERTICAL ALIGNMENT INDEX LIST	30	A*	✓		✓	
	DEPOT							
26	DDC503-TD-AL-GE-DW-03300	TRACK WORK MADHAVARAM DEPOT LIST OF DRAWINGS	7	A0	✓		Deleted	
27	GFC503-DD-AL-GE-DW-03451	TRACK WORKS MADHAVARAM DEPOT	1	A*			✓	
28	DDC-P2C4-TRK01-TRK-DR-DEP-74117-01	POONAMALLEE DEPOT TRACK LAYOUT PLAN WITH PROPOSED STATION	2	A	✓			
C	TRACK WORK SCHEMATIC DRAWINGS							
	CORRIODR-3							
29	DDC-P2C3-01-ALN-DR-C30-50201-01	UG-01 TO ECV-01 - SCHEMATIC TRACK DIAGRAM FROM MADAVARAM MILK COLONY STATION TO SIPCOT-2 STATION	1	C	✓			
30	DDC-P2C3-02-TRK-DR-DE0-60001	SIPCOT DEPOT (MINOR) - ELEVATED TRACK LAYOUT PLAN (STABLING ON ROAD)	1	B	✓			
	CORRIODR-4							
31	P2C4 MRW DD ZZZZ ZZ DWG R 00003	UG-01 & 02 - SCHEMATIC DIAGRAM	1	3	✓		Deleted	
32	DDC-P2C4-05-ALN-DR-C4E-10002-01	ECV-01 & 02 - HORIZONTAL & VERTICAL ALIGNMENT CONSTRUCTION REFERENCE SCHEMATIC DIAGRAM	1	F*	✓		✓	
33	P2-0C4-0UG01-PRW-MMSO-ATRDWG-00005(C)	SCHEMATIC DIAGRAM	1	C*			✓	
34	P2-0C4-0UG01-PRW-MMSO-ATRDWG-00026(2)	SCHEMATIC DIAGRAM	1	C*			✓	
35	P2-0C4-0UG02-PRW-MMSO-ATRDWG-00005(2)	SCHEMATIC DIAGRAM	1	C*			✓	
36	P2-0C4-0UG02-PRW-MMSO-ATRDWG-00026(2)	SCHEMATIC DIAGRAM	1	C*			✓	
	CORRIODR-5							
37	DDC503-DD-AL-GE-DW-03141	UG-06 & EV-03 - TRACK SCHEMATIC ALIGNMENT DRAWING	1	0*	✓		✓	
38	DDC-P2C5-ECV02-ALN-02104-01	ECV-02-HORIZONTAL & VERTICAL ALIGNMENT SCHEMATIC LAYOUT	1	2*	✓		✓	
39	DDC-P2C5-ECV03-ALN-03104-01	ECV-03-HORIZONTAL & VERTICAL ALIGNMENT SCHEMATIC LAYOUT	1	2*	✓		✓	
40	DDC-Ref.Drawing	C5&C3 CONNECTION TRACK SCHEMATIC LAYOUT	1	8	✓			
D	SPACE PROOFING (TUNNEL & VIADUCT)							
41	CMRL-GC1-00ASA-0C5-VID-0001(0)	ELEVATED VIADUCT SPACE PROOFING	1	A	✓			

<div> <div>LIST OF DRAWINGS FOR CONTRACT ASA-07 -TELECOMMUNICATION RADIO</div> <div>Please click the link to download: https://cmrlindia-my.sharepoint.com/:u:/g/personal/ajish_cl_cmrl_in/EaLIqOQpcs9MjZu5V-7JVnYBRyazBwthL4m8B3qGSvEDMg?e=hsSGjd</div> </div>								
SI.NO	DRAWING NUMBER	DRAWING TITLE	TOTAL NUMBER OF SHEETS	REVISION	TENDER	ADDENDUM-1	ADDENDUM-2	REMARKS
42	CMRL-GC1-00ASA-0C5-TUN-0001(0)	UNDERGROUND TUNNEL SPACE PROOFING	1	A	✓			
E	TYPICAL S&T CABLE TRAY LAYOUT							
	ELEVATED							
43	CMRL-GC1-00ASA-C3-0EV01-0001	S&T CABLE TRAY INTERMEDIATE LEVEL KEY PLAN	1	A	✓			
44	CMRL-GC1-00ASA-C3-0EV01-0002	S&T CABLE TRAY PLATFORM LEVEL KEY PLAN	1	A	✓			
	UNDERGROUND							
45	CMRL-GC1-00ASA-C3-0UG01-0001	S&T CABLE TRAY CONCOURSE LEVEL KEY PLAN	1	A	✓			
46	CMRL-GC1-00ASA-C3-0UG01-0002	S&T CABLE TRAY CONCOURSE LEVEL KEY PLAN (PART-A)	1	A	✓			
47	CMRL-GC1-00ASA-C3-0UG01-0003	S&T CABLE TRAY CONCOURSE LEVEL KEY PLAN (PART-B)	1	A	✓			
48	CMRL-GC1-00ASA-C3-0UG01-0004	S&T CABLE TRAY CONCOURSE LEVEL KEY PLAN (PART-C)	1	A	✓			
49	CMRL-GC1-00ASA-C3-0UG01-0005	S&T CABLE TRAY PLATFORM LEVEL KEY PLAN	1	A	✓			
50	CMRL-GC1-00ASA-C3-0UG01-0006	S&T CABLE TRAY PLATFORM LEVEL KEY PLAN (PART-A)	1	A	✓			
51	CMRL-GC1-00ASA-C3-0UG01-0007	S&T CABLE TRAY PLATFORM LEVEL KEY PLAN (PART-B)	1	A	✓			
52	CMRL-GC1-00ASA-C3-0UG01-0008	S&T CABLE TRAY PLATFORM LEVEL KEY PLAN (PART-C)	1	A	✓			
53	CMRL-GC1-00ASA-C3-0UG01-0009	S&T CABLE TRAY UNDERCROFT LEVEL KEY PLAN	1	A	✓			
54	CMRL-GC1-00ASA-C3-0UG01-0010	S&T CABLE TRAYUNDERCROFT LEVEL KEY PLAN (PART-A)	1	A	✓			
55	CMRL-GC1-00ASA-C3-0UG01-0011	S&T CABLE TRAY UNDERCROFT LEVEL KEY PLAN (PART-B)	1	A	✓			
56	CMRL-GC1-00ASA-C3-0UG01-0012	S&T CABLE TRAY UNDERCROFT LEVEL KEY PLAN (PART-C)	1	A	✓			
F	ARCHITECTURAL DRAWINGS							
	CORRIODR-3							
57	DDC-P2C3-UG01-ARC-DR-SMM-10001-01	MADHAVARAM MILK COLONY STATION ARCHITECTURAL DRAWING LIST	41	B*	✓		✓	
58	DDC-P2C3-EV01-ARC-DR-SNN-10001-01	NEHRU NAGAR STATION ARCHITECTURAL DRAWING LIST	22	A1	✓		Deleted	
59	DDC-P2C3-EC01-ARC-DR-SMT-10100-01	METTUKUPPAM STATION STREET LEVEL PLAN	6	C1*			✓	
60	DDC-P2C3-UG02-ARC-DR-SPT-10001-01	PATTALAM STATION ARCHITECTURAL DRAWING LIST	53	B*			✓	
61	GFC-P2C3-UG04-ARC-DR-STO-10001-01	THIRUMAYILAI METRO STATION ARCHITECTURAL DRAWING LIST	86	A*			✓	
	CORRIODR-4							
62	P2C4-MRW-CR-ST05-AG-DWG-A-07100	ALWARPET STATION ARCHITECTURAL DRAWING LIST	42	2	✓		Deleted	
63	P20C40UG01AWP-MMSO-ARCFSHDWG-11101(1)	ALWARPET METRO	41	1*			✓	
64	DDC-P2C4-05-ARC-DR-SPH-20001-01	POWER HOUSE STATION ARCHITECTURAL DRAWING LIST	21	B	✓		Deleted	
65	GFC-P2C4-ECV01-ARC-DR-KPH-20001-01	KODAMBAKKAM POWER HOUSE DRAWING LIST	32	A*			✓	
	CORRIODR-5							
66	DDC503-TD-KLR-AR-DW-20901	KOLATHUR JUNCTION STATION ARCHITECTURAL DRAWING LIST	11	A	✓		Deleted	
67	GFC503-DD-KLR-AR-DW-20500	KOLATHUR JUNCTION STATION DRAWING LIST	23	A*			✓	
68	DDC503-DD-MBM-AR-DW-26500	MANJAMBAKKAM STATION ARCHITECTURAL DRAWING LIST	11	B0	✓		Deleted	
69	GFC503-DD-MBM-AR-DW-26500	MANJAMBAKKAM STATION DRAWING LIST	8	B*			✓	
70	DDC-P2C5-ECV03-SGH-ARC-20001-01	GLOBAL HOSPITAL ARCHITECTURAL DRAWING LIST	12	A*	✓		✓	
	DEPOT							
71	GFC503-DD-MMC-AR-DW-28001	MADHAVARAM MILK COLONY DEPOT SITE PLAN	1	A*			✓	
72	DDC-P2C4-05-ARC-DR-DEP-25005-01	POONAMALLEE DEPOT MASTER PLAN	1	A*			✓	

NOTE: THE DRAWING REVISED IN THE CURRENT ADDENDUM INDICATED AS * IN REVISION COLUMN.