

SECTION VI

SCOPE & TECHNICAL SPECIFICATIONS

Name of the work: -

S&T works in connection with elimination of Level Crossing Nos. 102, 103 & 104 between SBHR-KBPR stations by construction of Low-Cost Road Over Bridges (LROBs).



SCOPE OF WORK

- a) Supply, installation, testing and commissioning of Telecom arrangements in connection with elimination of LC Nos. 102, 103 & 104 between SBHR–KBPR stations by construction of Low Cost Road Over Bridges (LROBs) including diversion, modification and restoration of existing Telecom circuits.
- b) Supply and laying of 24 Fibre Armoured Optical Fibre Cable (OFC) conforming to RDSO Specification RDSO/SPN/TC/110/2020 Rev. 0 with latest amendments, including excavation of cable trenches, laying through PLB HDPE duct/protective arrangements, blowing of OFC, termination, splicing, testing and commissioning.
- c) Provision of OFC jointing arrangements including supply and installation of mid-section/derivation OFC joint enclosures, splicing of 24F OFC, provision of FRP/RCC joint chambers, filling of dry sand and associated protection works.
- d) Supply and laying of 6 Quad 0.9 mm conductor diameter underground jelly filled Telecom cable conforming to RDSO Specification IRS:TC-30/2005 with latest amendments, including cable laying, jointing, termination and restoration of Telecom circuits.
- e) Supply and provision of Quad cable jointing arrangements including supply of joint kits as per RDSO Specification IRS:TC-77/2012 or latest, preparation of cable ends, heat shrinkable jointing, testing and commissioning.
- f) Supply and installation of PLB HDPE duct (40/33 mm dia) conforming to RDSO/SPN/TC/45/2013 Rev.2 with latest amendments, including laying of ducts in prepared trenches/HDD portions, pulling of nylon rope, coupling and associated protective arrangements.
- g) Provision of cable protection arrangements at bridge/road crossing locations including supply and fixing of GI pipes, Double Wall Corrugated (DWC) pipes, concreting of cable routes, masonry supports, end protection and other associated works as per site requirements.
- h) Provision of cable route identification arrangements including supply and fixing of RCC cable markers with suitable marking (“TELE/OFC”) along the cable route as per Railway drawings and instructions of Engineer-in-charge.
- i) Supply, installation and commissioning of Telecom equipment/accessories including 2T VF transformers suitable for way station control equipment and other associated materials required for restoration of existing communication facilities.
- j) Transportation of Telecom materials including loading, unloading and shifting of released/new materials between Railway stores and work locations as required for execution of the work.
- k) All works shall include necessary tools, plants, consumables, labour, safety precautions and coordination required for execution near Railway assets without affecting existing operational Telecom services.
- l) Preparation and submission of completion documents including cable route plan, joint location details, cable allocation details, test reports and other records as directed by Engineer-in-charge.

Technical Specifications & Guidelines

Sl. No	Explanation of Items
01	Current RDSO specifications are mentioned along with the items. However, procurement and inspection shall be as per the latest RDSO specifications prevailing at the time.
02	Materials shall be procured from the RDSO approved vendor list, prior approval of Railways shall be obtained before placing the order with vendors under Development orders.
03	Drawing number mentioned here are current and may be updated. Latest drawings are required to be followed while execution of work.
04	All products must comply with the Public Procurement Preference to 'Make in India' Order, 2017 and its latest amendments.
05	The quantities of sub items against each item are to be calculated/assessed and approval of Engineer to be taken before consolidated procurement of such items and for arranging inspection by RDSO/RITES, as indicated under Inspection Agency.
06	The explanation mentioned for the schedule items below is to clarify further on the technical details about the schedule item. The items available in the schedule of this NIT shall be executed as per the explanation & Technical specifications given below.
07	The works are to be done as per instructions of supervisor/officer in charge of the work and details mentioned in the schedule and all miscellaneous materials required for the work shall be supplied by the Contractor.
08	S&T works shall be carried out under proper disconnection or line block as applicable.
09	All the work shall be done as per technical specifications attached with the tender document as applicable and to be executed under direct supervision of Consignee or his authorized representative.
10	All materials required to execute the work are to be carried by the contractor from Consignee's Godown to work site at his own cost.
11	Released materials, if any are to be deposited to Consignee's Godown.
12	Period completion is eight months [08].
13	All supply items inspected by RDSO/Consignee as mentioned in inspection clause/schedule/technical specification.
14	The contractor shall provide a comprehensive warranty and maintenance support for a period of 1 year from the date of completion of work.
15	Clarification about the latest policies/ practices for execution of work can be received from the Office of Sr Divisional Signal and Telecommunication Engineer/Mysuru Division, 2nd floor, DRM Building, Irwin Road, South Western Railway, Mysuru-570001

Item-Wise Technical Specification



Combined SWR-SOR-2025 Items (LC-102 + LC-103 + LC-104)						
Sl No	Item No	Description of work	Unit Rate Rs. P	Qty & Unit	Amount	Inspection Agency
1	211100	Supply & Provision of Mid-Section/Derivation OFC Joint enclosure including Splicing (24 Fibre) inside already prepared jointing pit. This does not include provision of Joint chamber, top plate & back filling. The joint Enclosure shall be as recommended in the technical specification	14908.00	12 Nos.	1,78,896	Consignee
2	062200	Provision of GI pipes (50/100/150mm dia) for cable laying with offset at both ends and with couplings over RCC Bridges/ Drainage/ Culverts with concrete masonry supports of size 300mm x 300 mm x 300 mm at an interval of 2m. The ends of the pipes shall be closed with brick masonry abutments work so that no cable is exposed, the work shall be carried out as per the instructions of Railway representative at site. (Supply of GI pipes with couplings and laying of cables is not included in this item). [Stone jelly of size 20/25mm, bricks, sand, cement and all other miscellaneous materials required for the work shall be supplied by the Contractor].	384.00	90 Mtrs.	34,560	Consignee
3	061600	Supply of GI pipes - 50mm dia -3.65mm thick as per latest specification	693.00	90 Mtrs.	62,370	Consignee
4	064800	Supply of Double walled corrugated pipe - 103.5mm inner dia & 120mm outer dia conforming to specification No. IS 14930 (Part 2): 2001 with one coupler for every 6m of pipe as specified in the Tender document.	514.00	180 Mtrs.	92,520	Consignee
5	062500	Supply of Permanently Lubricated High Density Polyethylene Duct (PLB-HDPE), 40/33 mm Dia, along with End Cap, End Plug, Cable Sealing Plug and Couplers, as per RDSO/SPN/TC/45/2013 Rev. 2 with Amd 3.0 or latest. Technical Description & Standards: <i>Supply of PLB HDPE Duct of Size 40/33 mm dia along with all Accessories required for fixing, Clamping Cutting, on Wall or Structure/in Trench/HDD etc. as per RDSO Spec No RDSO/SPN/TC/45/2013 Rev. 2.0 with Amendment 3.0 or latest. Colour: Orange</i>	97538.00	3 Km	2,92,614	RDSO
6	062600	Laying of PLB HDPE Duct, 40/33 mm Dia, in the trenches and in the protective works already provided including in HDD portion and supply pulling of Nylon rope through it at different places as per direction of engineer incharge or site engineer	14607.00	3 Km	43,821	Consignee

Combined SWR-SOR-2025 Items (LC-102 + LC-103 + LC-104)						
Sl No	Item No	Description of work	Unit Rate Rs. P	Qty & Unit	Amount	Inspection Agency
7	062800	Blowing of OFC Cable in already laid PLB HDPE Duct, 40/33mm Dia, by using Blowing machine, providing the sufficient loops in loop/joint chambers and other associated works	17232.00	3.6 Km	62,035.20	Consignee
8	060100	<p>Excavation of cable trench in all kinds of soil except hard rocky areas including clearing of roots of trees, rocks, bushes etc. to a depth of 1.0 Mtrs and to a width of 0.3 Mtrs. (Laying of cables is not included in this item).</p> <p>Technical Description & Standards:</p> <p><i>Excavation of cable trench shall be made in all kinds of soils including clearing roots of trees, rocks etc., to a depth of 1.0 mtrs. and to a width of not less than 0.3 mtr. provide proper protection as required by Railways while crossing power cables, pipe lines etc. The bottom of the Trench shall be leveled and got rid of any sharp materials. Trenches shall be straight as far as possible and steep angles shall be avoided. Alignment of the main cable route as well as track/road crossings will be indicated by Railways. If the cable cannot be laid to a depth of 1.0 meters, for whatsoever reason, the same shall not be carried out without prior written permission from the Railways. It is desirable that the excavation of trenches is not done in long lengths and does not remain uncovered overnight. It is preferable that trenches are dug, and refilling done on the same day. During excavation of the trenches, the earth should not be thrown on the ballast. The earth should be thrown by the side of the trenches, away from the track. Complete excavated earth shall be backfilled in the trench after laying the cable and well rammed.</i></p>	76.00	3000 Mtrs.	2,28,000	Consignee
9	060400	Laying of Signaling/Power/Telecommunication cables as per cable plan in cable trenches, masonry ducts, RCC Pipes, DWC pipes, GI Pipes etc. (Supply of cables is not included in this item).	21.00	3600 Mtrs.	75,600	Consignee
10	060800	Refilling of cable trench 1m depth by 0.3m width throughout, with earth after laying of cables, and consolidating the trench by ramming and levelling.	18.00	3000 Mtrs.	54,000	Consignee
11	063400	<p>Supply of RCC Cable Markers as per DRG.No.SG/SWR/067 or latest guidelines. The lettering on the Cable marker shall be "SIG" / "TELE" / "OFC" as per the instructions of Railway representative at site.</p> <p>Technical Description & Standards:</p> <p><i>Supply, transportation and installation of RCC Route Markers including Painting. The lettering on the</i></p>	366.00	60 Nos.	21,960	Consignee

Combined SWR-SOR-2025 Items (LC-102 + LC-103 + LC-104)

Sl No	Item No	Description of work	Unit Rate Rs. P	Qty & Unit	Amount	Inspection Agency
		<p>cable marker shall be as per the instructions of the Railway representative at site. The cable markers shall be provided at an interval of 20 Mtrs. within station limits and 50 Mtrs. outside station limits throughout the cable route, diversions and also at every track/road/crossing. Concrete Cable markers are projected above the surface level at least 300mm. As the concrete cable markers are visible from the long distance. They shall be of standard RCC with letter SWR/Tele. Engraved and suitable painted, with body in Orange, Letters Engraved: White. The letters shall be of about 75mmx 35 mm size. For Telecom the lettering shall be SWR OFC or SWR Quad or SWR OFC & Quad.</p> <p align="center">For SI No 11 (Item No. 063400) – Technical Drawing (DRG.No.SG/SWR/067)</p> <p>REINFORCEMENT DETAILS FOR RCC CABLE MARKER</p> <p>6mm DIA. M.S. ROD (1) No. OF LENGTH 1150mm APPROXIMATELY BENT AT THE TOP AS SHOWN IN THE SKETCH.</p> <p>4mm DIA. M.S. TIE ROD (2) Nos. OF LENGTH 250mm.</p> <p>6mm DIA. M.S. ROD (3) No. OF LENGTH 800mm APPROXIMATELY.</p> <p>6mm DIA. M.S. ROD OF LENGTH 450mm.</p> <p>CONCRETE SKIRTING FOR PLACING ON CABLE MARKER</p> <p>NOTE:-</p> <ol style="list-style-type: none"> ALL DIMENSIONS ARE IN MM. CABLE MARKER SHALL BE ENGRAVED WITH SWR SIG/SWR QUAD/SWR OFC AS THE CASE MAY BE OF 2.5' (762mm) HEIGHT. CABLE MARKERS SHALL BE PAINTED IN RED COLOR CEMENT PAINT FOR SIGNALLING CABLES AND IN ORANGE COLOR CEMENT PAINT FOR TELECOM CABLES. ENGRAVED LETTERS SHALL BE PAINTED IN WHITE COLOR CEMENT PAINT. AFTER PLACING PRECAST RCC SKIRTING ON THE PRECAST RCC MARKER AS SHOWN, GAP BETWEEN THE CABLE MARKER AND SKIRTING SHALL BE FILLED WITH RICH MORTAR. THE PROPORTION FOR CEMENT, SAND & JELLY SHALL BE 1:2:4 WITH 6mm TO 10mm GRANITE METAL. FOR MILD STEEL THE SPECIFICATION IS IS-432. CABLE MARKERS SHALL BE PLACED AT AN INTERVAL OF 20M WITHIN IN STATION SECTION AND 50M IN BLOCK SECTION. <p>TYPICAL DRAWING FOR RCC CABLE MARKER</p> <p>NOT TO SCALE</p> <p>DRG. No. SG/SWR/067</p>				
12	063500	Digging of pit & casting of concrete foundation for RCC cable markers including fixing of cable markers in position as per drawing. The work shall be carried out as per the instructions of Railway representative at site. (Supply of RCC cable marker is not included in this item).	267.00	60 Nos.	16,020	Consignee
13	061300	<p>Concreting of cable laid in trench/GI pipe/DWC/HDPE pipe, etc., including supply of cement, sand, stone jelly, bricks and all other miscellaneous materials required for the work.</p> <p>Technical Description & Standards:</p> <p>At locations where depth is not attained or any other critical locations where duct/cable damage prone areas as directed by railway representative a concrete 30cm x 30cm thick using 1:2:4 ratio & back</p>	624.00	180 RMT	1,12,320	Consignee

Combined SWR-SOR-2025 Items (LC-102 + LC-103 + LC-104)

Sl No	Item No	Description of work	Unit Rate Rs. P	Qty & Unit	Amount	Inspection Agency
		<i>filling with excavated soil shall be carried out. (Cement, sand, metal are to be supplied by the contractor). This is also applicable for concrete platforms / metal/tar/cement roads.</i>				
14	210700	<p>Supply of Joint Kit for Quad cable as per RDSO specification IRS-TC 77/2012 or latest with all accessories required for jointing of 6 Quad cable.</p> <p>Technical Description & Standards:</p> <p><i>Heat Shrinkable Joint Kit suitable for underground telecom quad cable jointing. Suitable for jointing 6-Quad Telecom Cable. Suitable for jointing 6-Quad Telecom Cable conforming to RDSO Specification IRS:TC: 77-2012 Amdt. 3.</i></p>	4023.00	30 Nos.	1,20,690	RDSO
15	210800	Provision of normal joint of Heat Shrinkable type complete for 6 Quad cables including preparation of cable ends, jointing, testing etc. complete as per RDSO guidelines and instructions of Railway representative at site.	4013.00	30 Nos.	1,20,390	RDSO
16	210900	Excavation of jointing pit and provision of joint chamber including precast RCC top cover, brick masonry, plastering and back filling as per approved drawing and instructions of Railway representative at site.	4626.00	30 Nos.	1,38,780	Consignee
17	073700	<p>Supply of STP CAT 6 cable as per latest specification.</p> <p>Technical Description & Standards:</p> <p><i>Shielded Twisted Pair (STP) Strengthened outdoor CAT-6 cable. 4 twisted pairs, solid bare copper, diameter of 23 AWG, Ethernet speed of 1000Mbps, support PoE of all classes, maximum DC resistance 100 Ohms/Km. jacket should be PVC & lead free, Cable Compliant with EIA/TIA-568-C.2 standard for CAT6, cable of 305 Mtrs length in box or roll. Shield should be earthed. Make -D-Link/ Finolex or equivalent.</i></p>	38.00	1830 Mtrs.	69,540	Consignee
18	071200	<p>Supply of 24 Fibre Armoured Optic Fibre Cable as per RDSO Specification No. IRS:TC-55/2006 (Rev.1) with latest amendments.</p> <p>Technical Description & Standards:</p> <p><i>24 Fibre Armoured Optical Fibre Cable conforming to RDSO Specification No. RDSO/SPN/TC/110/2020 Rev. 0 with complete with testing, inspection, packing, transportation and delivery</i></p>	66520.00	9 Km	5,98,680	RDSO

Combined SWR-SOR-2025 Items (LC-102 + LC-103 + LC-104)						
Sl No	Item No	Description of work	Unit Rate Rs. P	Qty & Unit	Amount	Inspection Agency
19	071400	Supply of 6 Quad 0.9mm conductor diameter underground jelly filled Telecom cable as per RDSO Specification IRS:TC-30/2005 with latest amendments. <i>Technical Description & Standards:</i> <i>6 Quad 0.9 mm diameter underground Jelly Filled Telecom Cable conforming to RDSO Specification IRS:TC-30/2005 Amendment 5 with all standard accessories, packing, testing and delivery.</i>	374861.00	3 Km	11,24,583	RDSO
20	211300	Supply of 2T VF Transformers 470:1120 ohms suitable for way station control equipment as per IRS-TC-76 or latest specification. <i>Technical Description & Standards:</i> <i>2T Voice Frequency (VF) Transformer having impedance ratio 470:1120 Ohms, suitable for Way Station Control Equipment, conforming to IRS:TC: 76-2021 with complete accessories, testing and inspection.</i>	5893.00	36 Nos.	2,12,148	Consignee
21	190500	Supply of Digital Megger with range selection of 500V, 1000V along with accessories as per specification.	9624.00	1 Nos.	9,624	Consignee
22	220100	Transportation of Signalling materials by road vehicle including loading and unloading for lead up to 100 Kms.	24.00	1500 Per Ton-Km	36,000	Consignee
Total (SWR-SOR 2025 Items)			37,05,151.20			

Combined Non-SOR Schedule (LC-102 + LC-103 + LC-104)						
Sl No	Item No	Description of work	Unit Rate Rs. P	Qty	Amount	Inspection Agency
1	1	Supply of Pole Umbrella (Center Pole umbrella) suitable for outdoor use to protect cable jointing/splicing locations from rain, sunlight, and dust.	19994.8	2 Nos.	39,989.60	
2	2	Testing of Quad Cable to find the location of LOW insulation/break fault including temporary jointing the cable for testing. <i>Technical Description & Standards:</i> ❖ <i>Testing of 6-Quad Telecom cables for identification of low insulation, open circuit and break faults using suitable and approved testing instruments/meters, including carrying out temporary jointing of the cable as required to facilitate testing.</i> ❖ <i>The works are to be done as per instruction of supervisor/officer in charge of the work and details</i>	607.5	30 Nos.	18,225	Consignee

Combined Non-SOR Schedule (LC-102 + LC-103 + LC-104)						
Sl No	Item No	Description of work	Unit Rate Rs. P	Qty	Amount	Inspection Agency
		<i>mentioned in the schedule, all miscellaneous materials required for the work shall be supplied by the Contractor.</i>				
Total Non-SOR			58,214.60			

Combined RCIL-SOR Schedule (LC-102 + LC-103 + LC-104) - with 18% GST						
Sl No	Reference	Description of work	Unit Rate Rs. P	Qty	Amount	Inspection Agency
1	RCIL-SOR RailTel/e-Tender/OT/SR/H Q/2023 24/8-11	<p>Casting of circular FRP chamber, bottom plate and top covers (1:2:4 concrete mix) with reinforcement, two hooks in each half cover, provision of duct holes as shown in the drawing. Excavation of circular pit to a depth of 1300 mm, dia of 1500 mm, positioning of bottom plates, chamber and top covers (two halves). Chamber to be filled with river sand to the brim of the chamber after cable blowing and splicing, top covers placed, refilled with excavated soil and rammed etc., complete to the finished item of work as directed by the RailTel Engineer-in-Charge.</p> <p><i>Technical Description & Standards:</i></p> <p><i>The chambers to be installed in any of the following locations based on the instructions of supervisor in charge</i></p> <p><i>LC Gates: One chamber will be provided at all the LC Gates at least 10 mtrs. away from the centre point of the road, a coil of 15 mtrs of OFC will be kept as spare in this chamber.</i></p> <p><i>Bridges: For all bridges of length less than 25 mtrs, one chamber will be provided at a distance of 10 mtrs. from the edge of the bridge and two chambers will be provided for all bridges of length of more than 25 mtrs. A coil of 15 mtrs of OFC will be kept as spare in each chamber.</i></p> <p><i>Prefab: All prefabs will be provided with one chamber with a coil of 15 mtrs.</i></p> <p><i>At every on KM: One loop chamber will be provided with coil of 25 mtrs.</i></p> <p><i>Track Crossing: One loop chamber with 15 mtrs coil to be provided at every track crossing.</i></p> <p><i>At every OFC Joint, one joint chamber will be provided by providing a coil of 25 mtrs for each side of the cable.</i></p> <p><i>Stations: Every station will be provided with one number of joint chamber where 'T' joint is</i></p>	4279	12 Nos.	51,348	Consignee

Combined RCIL-SOR Schedule (LC-102 + LC-103 + LC-104) - with 18% GST						
Sl No	Reference	Description of work	Unit Rate Rs. P	Qty	Amount	Inspection Agency
		<i>made. Only those fibers which are required to be derived only are to be spliced with derivation cable with 'T' joint without disturbing the other fibers. For through cable 15 mtrs. to be left as coil and for derivation cable 15 mtrs. to be left as a coil in the chamber. As far as possible, it should be ensured that there will be at least one KM distance between loop chambers. If there is an LC gate or a bridge or a track crossing or prefab and then the next loop chamber will be at one KM distance.</i>				
2	RCIL-SOR RailTel/e- Tender/OT/SR/H Q/2023 24/8-11	Providing dry sand in FRP/RCC joint chambers up to 400mm height	750	12 Nos.	9,000	Consignee
Total					60,348.00	
GST 18%					10,862.64	
RCIL-SOR Total Amount					71,210.64	

Summary Rate of Schedules

Grand Total Amount	Rs. 38,34,576.44
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