

**S.E.C. Railway**  
**TECHNICAL SPECIFICATION & SCOPE OF WORK APPEARING IN SCHEDULE OF MATERIALS**

**Name of Work:** Electrical (G) works in connection with, "Provision of IRS Platform Shelters at NSG-6 Railway stations over SECR/Nagpur Division"

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**ELECTRICAL (G) WORKS SCHEDULE 'A'**

**1. Supply of LT Aluminium XLPE cable**

The cost covers supply of LT Aluminium XLPE power cable (armoured) of stranded aluminium conductor, unearthed system, 1.1 KV grade, XLPE insulated, PVC outer sheathed, galvanized strip/round steel wire armoured cable, confirming to IS:7098 (Part 1):1988 or latest, ISI/BIS marked. (Make: Ultracab, Polycab, Havells, Gloster, Vishal Cables, Universal cables, Rotoplast, KEI, Avercab, SPM, Hyphen, Kenter Cables India Pvt. Ltd). Cables will be inspected by RITES or authorized representative of DEE/GSU/NAG at manufacturer's premises before supply. The charges of inspections shall be paid by the Railway.

- a) LT stranded aluminum conductor XLPE cable of size 4 x 16 sq. mm (armoured) of 1100 V grade.
- b) LT stranded aluminum conductor XLPE cable of size 4 x 35 sq. mm (armoured) of 1100 V grade.

**2. Supply of 40/45watt LED street light fitting**

The cost covers supply of 45 watts outdoor discrete LED street light fitting with all associated accessories, 230 V, 5500/5700 K, IP 65, powder coated finishing, LED life > 50,000 burning hours, Toughened glass, LED lumen 120 lm/w. The fitting should be supplied including driver having efficiency above 85% and Constant Current with short circuit Protection. The construction of housing to be Extruded Aluminium/CRCA/Pressure die cast aluminium. (Havells, Crompton, Orient, Philips, Bajaj, Jaquar, Surya, Wattera or Halonix make that confirms to respective IS with 5 years warranty).

**3. Supply of surface mounting LED 20 W 4' tube light & accessories.**

The cost covers supply of 20 W 4' LED tube light complete fitting with T8 tube & CRCA/polycarbonate box indoor type, IP >=20, 230 V AC with all associated accessories. (Havells, Crompton, Orient, Philips, Bajaj, Jaquar, Surya, Wattera or Halonix make that confirms to respective IS with 5 years warranty).

**4. Supply of electric fan with BLDC motor, 1200 mm sweep, 26–28 watt, 5-star rating with 2 years warranty**

The cost covers supply of electric fan with BLDC motor, 1200 mm sweep, 26–28 watt, 5-star rating along with electronic fan regulator/remote with 2 years warranty suitable to work on 230V AC supply. Fans with regulator or remote will be decided by Railways. It should have 3 blades, aluminum blade material and blade thickness not less than 1.1 mm, double ball bearing, 2 Nos. canopy, down rod length should not be less than 300mm and should be supplied with all fixing materials (nut, bolt, clamp, etc). BLDC fans will be inspected by RITES or authorized representative of DEE/GSU/NAG at manufacturer's premises before supply. The charges of inspections shall be paid by the Railways. (Crompton, Usha, Bajaj, Havells, Orient, Khaitan, Wipro, Surya, Standard, HPL, C&S, Luker, Atomberg or Anchor make that confirms to respective IS).

**5. Supply of 5 pin modular socket outlet with switch of 6/16 Amps capacity & 230V grade complete with accessories**

The cost covers supply of 5 pin modular socket outlet with modular switch of 6/16 Amps capacity & 230 V grade complete with accessories. (ABB, Anchor, Havells, Wipro, HPL, Standard, C&S, Wattcab or IndoAsian make that confirms to respective IS).

**6. Supply of modular switch board with modular switch 10 Ax 230 V capacity, mounting grid with cover & metal box for 6 Module**

The cost covers supply of modular switch board with modular switch 10 Ax 230 Volt capacity, for 6 Module along with mounting grid, matching cover frame, suitable size metal/surface box. (ABB, Anchor, Havells, Wipro, HPL, Standard, C&S, Wattcab or IndoAsian make that confirms to respective IS).

**7. Supply of GI pipe 50 mm diameter**

The cost covers supply of 50 mm diameter GI pipe. (TATA, Jindal, Bhushan, Hindustan, Bansal, Utkarsh, Shubhangi casting, Phoenix, Vakrangee, Sail, VSTP, Crompton, Surya, Apollo or PSST).

**8. Supply of 18 SWG MS terminal box of 400x400x250 mm size with hylam sheet of suitable size, din rail, connecting terminal and 3 Nos. 32 A DP MCBs**

The cost covers supply of 18 SWG MS terminal box of 400 x 400 x 250 mm size fabricated from 1.2 mm CRCA sheet steel, powder coated with IP 55 & 66 degree of protection, hinged doors & locking arrangement. Hylam sheet of suitable size, din rail, connecting terminal & 3 Nos. 32 A DP MCBs should be suitably fixed inside the box. (BCH, ABB, MDS, L&T, C&S, Siemens, HPL, Havells, Aadi Enterprises, HPL, Harshal electricals or Balaji industries make that confirms to respective IS).

**9. Supply of DWC pipe 50 mm SN4 pressure rating/PN class**

The cost covers supply of DWC pipe with collar size OD - 50 mm ID - 39 mm size of SN4. DWC pipe will be inspected by RITES or authorized representative of DEE/GSU/NAG at manufacturer's premises before supply. The charges of inspections shall be paid by the Railway. (Jain irrigation, Jindal, Astral, Delton, Ketron, Dutron, Hightech).

**10. Supply of GI perforated cable tray**

The cost covers supply of GI perforated type cable tray having width 150 mm, height of cable tray 50 mm, Galvanized thickness 86-micron, Cable Tray sheet Thickness 2.0 mm. GI perforated type cable tray will be inspected by RITES or authorized representative of DEE/GSU/NAG at manufacturer's premises before supply. The charges of inspections shall be paid by the Railway. (Make Phoenix cable trays, Daga Power, SVS, RR Ispat or as approved by DEE/GSU/NAG).

**11. Supply of LT jointing kit for 4 core 35/25 sq. mm cable**

The cost covers supply of jointing kit for 4 core 35/25 sq. mm XLPE with high mechanical strength, superior weather resistant. This includes transportation of material at site also. (Denson, M Seal, Cab Seal, Raychem or as approved by DEE/GSU/NAG).

**ELECTRICAL (G) WORKS SCHEDULE 'B'**

**1. Digging of cable trench, refilling of excavated earth along the road/track.**

The cost covers digging of cable trench 100 cm. deep in all sorts of soil & refilling of excavated earth along the road/track/platform.

**2. Laying of LT cable in the cable trench in inside DWC/HDPE pipe along the track/road.**

The cost covers laying of cable in inside DWC/HDPE pipe in trench along the road/track. After laying of the cable refilling of trench with excavated earth, ramming, compacting & levelling to original shape should be done. More than one cable can be laid in the same pipe if required. The path & type of cable to be laid on that path shall be decided by the railway supervisor at site. This also includes supply &

erection of Cable Route Marker at spacing of 25 m and on every turning point of cable trench. Necessary drawing can be obtained from DEE/GSU/NAG's office.

**3. Fixing of cable along the wall/support.**

The cost covers of fixing of per cable in open air on pole/along the wall/support. The cable shall be fixed with suitable size fixture to provide sufficient grip for holding the cable. All materials & labours required shall be supplied by the contractor.

**4. Excavation of cable trench & laying of cable in DWC pipe in cement concrete.**

The cost covers excavation of cable trench in cement concrete of minimum 30 cm depth, supply & laying of suitable size DWC/HDPE pipe for laying of cable in DWC/HDPE pipe. The surface of the pipe shall be of good finishing. Refilling of the excavated earth with cement concreting & properly dressing should be done by contractor.

**5. Fixing of GI pipe.**

The cost covers cutting of required length of GI pipe & its fixing along the wall/pole/support with necessary clamping arrangement of size 25x2mm. The cable shall be properly inserted in GI pipe and pipe should be fixed as cable should not be seen at downside of pole/wall. All materials & labours required for fixing shall be supplied by the contractor.

**6. Fixing of modular switch board, modular switch, mounting grid, cover & metal box.**

The cost covers fixing of Modular switch boards with modular switches, covers, modular plates with support should be fitted on wall/column/structure in close vicinity. The box shall be fitted in the manner that it will not obstruct any person working. The work shall be done as per the directives of the representative of DEE/GSU/NAG at site. All materials & labours required for making groove in the wall & fixing of the boards shall be supplied by the contractor.

**7. Fixing & connecting of 6 Amps & 16-amp sockets & switches with 2.5 sq. mm single core flexible FRLS copper wire**

The cost covers fixing & connecting of 6, 16/6 Amps sockets & switches with 2.5 Sq. mm single core flexible copper wire and earth connection from sub-circuit wiring, which is to be terminated at suitable good quality connector fixed inside the switch board. Outgoing to be taken separately one for 6, 16/6 Amps socket with 2.5 sq.mm & one for light & fan wiring with 1.5 sq.mm single core flexible FRLS copper wire. An earth continuity conductor of copper wire of 4 sq. mm FRLS (Green colour) shall be run from the main board to the plug socket. (FRLS copper wire-Anchor, Standard, Finolex, Havells, Polycab, Vishal electricals, HPL or Johnson make that confirms to respective IS).

**8. Fixing of jointing kit 4 core 16/25/35/7/120/150 sq. mm cable**

The cost cover installation, testing & commissioning of LT jointing kit for 4 core 16/25/35/7/120/150 sq. mm LT XLPE cable. All materials required for installation of kit shall be supplied by the contractor. The work shall be carried out in close co-ordination with DEE/GSU/Nagpur's authorized representative at site.

**9. Fixing and wiring of LED light fitting and ceiling fan with PVC conduit pipe, copper wire**

The cost covers wiring for LED fittings and Ceiling fan with PVC conduit pipe and copper wire under FOB/PF shelters/shed at required places with suitable size clamps and fixture. The wiring shall be done with flexible PVC insulated; unsheathed multi stranded FRLS copper wire of size 2.5 sq.mm. with rigid PVC conduit pipe of 19 mm dia. 1.5 mm thick with necessary PVC bends. Fixing of conduit shall be with clamps of suitable size at intervals of 18". A 2.5 sq. mm FRLS (Green colour) wire for earth, having same material as the line conductor, shall be drawn along the conduit & it should be clamped on the conduit pipe at suitable intervals. Suitable size clamps & fixture, PVC conduit pipes, PVC bends and

copper wire of size 2.5 sq.mm and other items necessary for installation shall be supplied by the contractor. (FRLS copper wire- Anchor, Standard, Finolex, Vishal cables, Havells, HPL, Polycab or Johnson make that confirms to respective IS) (PVC conduit- Sarswati, Vasani, Polycab, Anchor, Cello or Preshtech make that confirms to respective IS).

#### **10. Supply and fixing of suitable size clamps and hooks for fixing of ceiling fans**

The cost covers supply and fixing of suitable size clamp and hook and fixing ceiling fan inside the Platform shelter with accessories and proper supports and fixtures with safety arrangements as per site requirements. All materials required for fixing of clamp and hook shall be supplied by the contractor.

#### **11. Fixing of 18 SWG MS terminal box of 400x400x250 mm**

The cost covers fixing of MS terminal box on pole or platform shelter. The work of commissioning include connection of incoming & out going cables/wires to the box with socketing of each cable/wire, earthing of the box with 8 SWG GI wire & charging. An earth continuity conductor of 4 sq.mm FRLS (Green colour) copper wire shall be connected to the plug socket. The work of fixing of box shall be done by the contractor with supply of labour, tools & shall be carried out in close co-ordination with DEE/GSU/NAG's authorized representative at site.

#### **12. Provision of earthing arrangement**

The cost covers supply & erection of earth cone with cover. Earth cone to be laid down shall be fabricated from Class 'B' G. I. Pipe conforming to relevant IS and as per drawing No: CEE/G/A 4/P-105. Erection of earth cones so fabricated shall be done as per drawing No: CEE/G/A1/P-124 including supply of all materials. The location of the earth cones will be decided by the Representative of DEE/GSU/NAG. The Earth pipe shall be fitted with clamp for proper connection of 8 SWG GI wire through nuts & bolts along with supply of suitable length of 8 SWG, GI wire to connect nearby electrical asset. Earth pit will be painted with yellow oil paint and earth value to be written with black oil paint. All materials shall be supplied by the contractor.

#### **13. Fixing and wiring of outdoor fittings with short arm fixture**

The cost covers fixing of LED outdoor street light fittings/Flood light fittings on Rail/SST/Octagonal pole or on building/shelter with supply and fixing of short arm fixture. The cost also covers supply and fixing of flexible FRLS 1.5 Sq. mm copper wire and PVC conduit pipe of suitable size for fixing of LED outdoor fittings from junction box. The short arm fixture consists of bend pipes of suitable dia. made out of class-A GI pipe as per design of the fitting. Pipes shall be bent at 20 degrees above the horizontal, clamped to the pole with two sets of suitable clamps made out of 25 mm x 5mm MS flat painted properly with red oxide with suitable nuts and bolts etc. The connection to light fitting shall be done with PVC insulated flexible FRLS 1.5 Sq. mm copper wire through PVC conduit pipe of suitable size to be fixed with fixtures & kit-kat fuses in the junction box provided on pole. The work of fixing of light fitting shall be done in close co-ordination with DEE/GSU/NAG's authorized representative. All materials necessary for fixing and wiring shall be supplied by the contractor. (FRLS copper wire- Anchor, Standard, Finolex, Vishal cables, Havells, HPL, Polycab or Johnson make that confirms to respective IS) (PVC conduit- Sarswati, Vasani, Polycab, Anchor, Cello or Preshtech make that confirms to respective IS).

#### **14. Fixing of GI Perforated type cable tray**

The cost covers fixing of GI perforated type cable tray for fixing of cable in the shed/FOB or at required places as per the directives of DEE/GSU/NAG's authorized representative at site. There should be no gap visible between two trays. Cable should be covered properly in cable trays. All materials labours necessary for fixing of cable tray shall be supplied by the contractor.

### 15. Dismantling and transportation of existing Rail/SST/Octagonal poles from site to nearby depot.

The cost covers dismantling, safe loading, unloading and transportation of Rail/SST/Octagonal poles to from site to nearby PL depot. After dismantling of poles, it should be placed properly so that it will not obstruct for any movement. If pole required to be cut instead of dismantling, then no part of pole shall be above ground level/platform level and shall not obstruct to passengers. The equipment, material and manpower required for dismantling/cutting of Rail/SST poles, transportation of Rail/SST poles should be supplied by the contractor.

### 16. Supply and fixing of aluminium lugs.

The cost covers supply & fixing of aluminium lugs for cables. The lug should be fixed at the cable end & it should be crimped tightly with necessary ferrules duly marked. All materials necessary for fixing of lugs shall be supplied by the contractor. (Dowels, Gripwel, Jainson or any make that confirms to respective IS).

- a. Supply and fixing of aluminium lugs 35 sq.mm
- b. Supply and fixing of aluminium lugs. 16 sq.mm

#### Note:

- 1 All materials to be supplied should confirm to latest RDSO/IS/IEC specifications. Wherever these specifications do not exist the relevant BS specification shall be applicable.
- 2 If any minor item left in the scope of work & schedule, the contractor shall provide himself for completing the job.
- 3 All electrical items should be ISI marked wherever applicable.
- 4 Prior to the execution, sample approval of items should be taken.
- 5 Compliance with regulations: - The installation of electrical wiring on railway buildings shall be carried out in accordance with the specification and in addition, shall comply with the following regulations in all respects excepts where amended herein.
  - a. Indian standard code of practice for electrical wiring, installation (System voltage not exceeding 650 volts IS-732-89, 3rd Revision).
  - b. The Indian electricity act and all rules framed therein.
- 6 All LED light fittings will have sixty months warranty from date of commissioning or seventy-two months from date of supply whichever is earlier.
- 7 The contractor or his sub -contractor should have valid electrical contractors license for execution of electrical general portion of work.

*Shankar*  
22.5.26  
DEE/GSU/NAG

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