



**NATIONAL HIGHWAYS AUTHORITY OF INDIA
(MINISTRY OF ROAD TRANSPORT & HIGHWAYS, GOVT. OF
INDIA)**

**Name of the work: Operation & Maintenance of Coimbatore
bypass stretch of Two Lane with Paved
Shoulder from Neelambur to Madukkarai (Km
144.680 to Km 170.880) section of NH 544 for a
length of 26.200 Km in the State of Tamil Nadu.**

**Tender No.: NHAI/PIU-CBE/O&M-NH-
544/2025-26/002**

VOLUME - II

Office of the DGM(T) & Project Director
Project Implementation Unit - Coimbatore
National Highways Authority of India
(Ministry of Road, Transport & Highways)
D.No.11/1, Kongu Nagar East, Ramanathapuram,
Coimbatore – 641 045.
Phone No: 0422-2324734, 2324735
E mail: nhaicoimbatore@gmail.com, coimb@nhai.org

SECTION: IX



BILL OF QUANTITIES

The Appendix forms part of Bid.

Bidders are required to fill up all the blanks in the form of Bid and Appendix thereto)

FINANCIAL BID FORM

To

Office of the DGM(T) & Project Director
Project Implementation Unit - Coimbatore
National Highways Authority of India
(Ministry of Road, Transport & Highways)
D.No.11/1, Kongu Nagar East, Ramanathapuram,
Coimbatore – 641 045.
Phone No: 0422-2324734, 2324735
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DESCRIPTION OF WORKS: “Operation & Maintenance of Coimbatore bypass stretch of Two Lane with Paved Shoulder from Neelambur to Madukkarai (Km 144.680 to Km 170.880) section of NH 544 for a length of 26.200 Km in the State of Tamil Nadu”.

Reference letter No.

Dear Sir,

Having examined the site of works and Bid Documents, comprising Instructions to Bidders, Scope of works, Conditions of Contract, Technical Specifications, Bill of Quantities and schedules for the execution of the above named works, we, the undersigned offer to execute and complete such works and remedy any defects therein in conformity with the said bid documents for the sum of Rs. _____ (Rupees_____) or such other sum as may be ascertained in accordance with the said Bid documents.

2. We undertake, if our Bid is accepted, to commence the work within fifteen (15) days of receipt of the order to commence, and to complete and deliver the sections and whole of the works comprised in the Contract within the period stated in the bid hereto.
3. If our Bid is accepted, we will furnish Performance Security (ies) in the form of a Bank Guarantee to be jointly and severally bound on us, in accordance with the Conditions of Contract.
4. We agree to abide by this Bid for the period of One Hundred & Twenty (120) days from the last date fixed for Bid Submission and it shall remain binding upon us and may be accepted at any time before the expiry of that period.

5. We confirm our agreement to treat the Bid documents and other records connected with the works as secret and confidential documents and shall not communicate information contained therein to any person other than the person authorized by the Employer or use such information in any manner prejudicial to the safety and integrity of the works.
6. Unless and until an agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us, but without prejudice to your right to withdraw such acceptance without assigning any reasons thereof.
7. We understand that you are not bound to accept the lowest or any bid you may receive.

Dated this _____ day of _____, 20---

Signature _____ in the capacity of _____ duly authorized

** To sign Bid for and on behalf of

(In block capital letters)

Address: _____

Signature of Witness _____

Name of witness _____

Address of witness _____

** Certified copy of Power of Attorney/authorization for signature shall be furnished by the bidder.

Bill of Quantities

9.0 Preamble

9.01 The Bill of quantities shall be read in conjunction with the Instructions to Bidders, Conditions of Contract, Scope of Work and Specifications.

9.02 The quantities given in the Bill of quantities are estimated quantities. The basis of payment will be actual quantities of work indented and carried out and valued at the rates and prices tendered in the priced Bills of quantities, where applicable and otherwise at such rates and prices as the Engineer may fix within the terms of Contract.

9.03 The rates and prices tendered in the priced Bill of Quantities shall include all equipment, plant, tools, spares, labour, supervision, overheads, consumables, materials, erection, maintenance, testing of input material delivered, profit, taxes and duties together with all general risks, liabilities and obligations set out and implied in the Contract and other incidentals to comply with the requirements of technical specifications and scope of work.

9.04 The rates and prices shall be quoted entirely in Indian Currency.

9.05 A rate or price shall be entered as a single rate as Tender Premium % above/below on the amount in General Abstract.

9.06 The whole cost of complying with the provisions of the contract shall be included in the items provided in the priced Bill of Quantities and where no rates are provided the cost shall be deemed to be distributed among the rates and prices entered for the related items of work.

9.07 The contractor shall keep the entire carriageway neat and clean throughout the contract period.

9.08 The contractor shall maintain guard rails, railings, crash barriers, road furniture etc. in good condition by cleaning them frequently as advised / required by using suitable detergents/chemicals.

- The staff of the contractor shall wear safety jackets, shoes, helmets etc. while on duty and any violation will attract a fine of Rs.5,000/-for each incident.
- Failure to erect safety signage or trying to carryout the works without proper precautions/safety measures as required will attract a fine of Rs.5,000/- for each incident.

9.09 The Tendered rate for incident Management shall include all equipment, labour, material, consumable, tools, spares and other incidentals to comply with the requirement of the scope of the work and technical specification.

9.10 General directions and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. Reference to the relevant sections of the bidding document shall be made before entering rates or prices against each item in the Bill of Quantities.

DESCRIPTION OF WORK: “Operation & Maintenance of Coimbatore bypass stretch of Two Lane with Paved Shoulder from Neelambur to Madukkarai (Km 144.680 to Km 170.880) section of NH 544 for a length of 26.200 Km in the State of Tamil Nadu.”

ABSTRACT OF COST

| S. No. | Description | Amount |
|--------|---|--|
| 1 | Grand Total of BOQ | Rs. 5,57,29,013 /- excluding GST (Rupees Five Crore Fifty Seven Lakh Twenty Nine Thousand Thirteen only) |
| | I/We agree to execute the above works on the tender premium ----- ---% above/below the Grand Total of the Project Cost as given above. | (In words) -----percent Above /Below |

Bill of Quantities

Operation & Maintenance of Coimbatore bypass stretch of Two Lane with Paved Shoulder from Neelambur to Madukkarai (Km 144.680 to Km 170.880) section of NH 544 for a length of 26.200 Km in the State of Tamil Nadu

STMC Estimate**Bill No. 1 : ROAD MAINTENANCE**

| Item No. | Description of Items | Unit | Quantity | Rate (in Rs.) | Amount (in Rs.) |
|-----------------|---|-------------|-----------------|----------------------|------------------------|
| 1.01 | Maintenance of Earthen Shoulder (filling with fresh soil) Making up loss of material/ irregularities on shoulder to the design level by adding fresh approved soil and compacting it with appropriate equipment, as per section 3003 of MoRT&H Specification. | Sqm. | 13100 | 66.00 | 864,600.00 |
| 1.02 | Maintenance of Earth Shoulder (stripping excess soil) Stripping excess soil from the shoulder surface to achieve the approved level and compacting with plate compactor, as per Section 3003 of MoRT&H Specification. Note: The Earth stripped from earthen shoulders to be dumped on the side slopes locally for disposal. | Sqm. | 2620 | 24.00 | 62,880.00 |
| 1.03 | Removal of Rank vegetation/weeds & undesirable vegetation from Earthen shoulder, slopes upto ROW, including Service Road shoulder and Median. It includes cleaning of dust/dirt from existing MBCB/Guard Rail etc. with water and detergent within ROW. It also includes routine maintenance such as cleaning/straightening of all types of road signs, road studs and delineators etc. and also removal of unauthorized boards within ROW including transportation to nearest suitable location and as directed by the Engineer-in-charge. (Frequency for every 3 months/as and when instructed by Engineer). | Sqm | 209600.00 | 7.00 | 1,467,200.00 |
| 1.04 | Cleaning slab/ box type culverts and pipe culverts including clearing, cleaning and reshaping of upstream and down stream faces of these culverts with in right of way. The job includes disposal of excess material recovered from site including vegetation outside ROW with all leads and lifts complete in all respect as per direction of Engineer In-Charge. (Frequency of cleaning will be one time in a year i.e before start of monsoon). | | | | |
| A) | Minor Bridge | No. | 4 | 21111.00 | 84,444.00 |
| B) | Culverts (Box & Pipe) | No. | 63 | 7171.00 | 451,773.00 |

| | | | | | |
|-----------------------------|---|-----|---------------------|----------|--------------|
| 1.05 | Carrying out cleaning of Expansion Joints, Drainage spouts, Vegetation growth removal from the Structure and similar operation each time over Bridges/Flyovers/Culverts as directed by the Engineer-in-charge. (Frequency of cleaning will be quarterly) | Rmt | 547.00 | 178.00 | 97,366.00 |
| 1.06 | Carrying out proper cleaning, and removing of dust /silt /thrash / plastic/ rubbish/ garbage/waste from the carriageway, footpaths, verges (excluding the verges of central median) by mechanical brooms established with vehicle tracking system and manually if required and as per the report of vehicle tracking system indicating the location and kilometers travelled and number of passes on that stretch covering the full kilometer. The frequency of cleaning will be quarterly once. Considering the full stretch as Rural section. | Km. | 105.00 | 10439.00 | 1,096,095.00 |
| 1.07 | Filling Pot-holes and Patch Repairs with Bituminous concrete, 40mm, as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2 using VG 40 (Grading-II) including Emulsion for Tackcoat rate of 0.20 to 0.30 kg per Sqm. | Sqm | 2592.00 | 475.00 | 1,231,200.00 |
| 1.08 | Providing treatment and repair to pot holes/patch repair of all types of bitumen pavement by using instant patch repair cold readymix material complete as per technical specification Clause 3004.2 and as per direction of Engineer-in-charge. (Grading-II) | Sqm | 648.00 | 443.00 | 287,064.00 |
| 1.09 | Providing and laying dense graded bituminous macadam (DBM) with higher capacity batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 505 complete in all respects.- Grading-II | Cum | 78.72 | 10999.00 | 865,841.28 |
| 1.10 | Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 to 0.30 kg per sqm on the prepared bituminous surface cleaned with mechanical broom. | Sqm | 1335.00 | 14.60 | 19,491.00 |
| 1.11 | Providing and laying bituminous concrete (BC) with higher capacity batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects - Grading-II | Cum | 100.00 | 12649.00 | 1,264,900.00 |
| TOTAL FOR BILL NO. 1 | | | 7,792,854.28 | | |

| Bill No. 2 : ROAD PROPERTY MAINTENANCE | | | | | |
|--|---|------|----------|---------------|-----------------|
| Item No. | Description of Items | Unit | Quantity | Rate (in Rs.) | Amount (in Rs.) |
| 2.01 | Painting with higloss synthetic enamel paint two coats to give an even and smooth surface for protection of exposed concrete portion of Bridges/CD works/parapet, kerb including RCC crash barrier painting and repairing wherever necessary, complete as per approval of Engineer. | Sqm. | 10375.0 | 176.00 | 1,826,000.00 |
| 2.02 | Painting all types of M.S/GI railing as when required with two coats of synthetic enamel paint of approved brand after cleaning the surface complete in all respect as directed by the Engineer. | Sqm. | 1000 | 112.00 | 112,000.00 |
| 2.03 | Painting two coats on old surface after minor repairs to give an even and smooth surface and printing letters and figures with 1st quality synthetic enamel paint of approved brand and manufacture complete in all respect conforming to respective IRC specification and as directed by Engineer-in-charge. | | | | |
| A) | Hectometre stones | No. | 79 | 43.00 | 3,397.00 |
| B) | Kilometre stones | No. | 21 | 263.00 | 5,523.00 |
| C) | 5 th Kilometre stones | No. | 5 | 589.00 | 2,945.00 |
| 2.04 | Supply and fixing of Kilometre stone of standard design and drawing as per IRC:8-1980 (second revision),including painting and numbering etc., and all other incidental charges etc., complete. | No. | 5 | 2,197.00 | 10,985.00 |
| 2.05 | Supply and fixing of HM stone of standard design and drawing as per IRC:26-1967, including painting and numbering etc., and all other incidental charges etc., complete. | No. | 26 | 576.45 | 14,987.70 |

| | | | | | |
|------|--|-----|------|----------|------------|
| 2.06 | Supply and fixing of Boundary stone of standard design and drawing as per IRC:25-1967, including painting and numbering etc., and all other incidental charges etc., complete. | No. | 100 | 1,107.00 | 110,700.00 |
| 2.07 | Metal Beam Crash Barrier (Single faced) Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fitments to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per Clause 810 (salvage material will be contractor's property) | Rm | 60.0 | 3,310.00 | 198,600.00 |
| 2.08 | Providing and erecting of Direction and Place Identification Retro-reflectorised Signs made out of Cube Corner Micro Prismatic Grade Sheeting conforming to Type-XI standards of IRC-67: 2022 and ASTM D 4956 -09, specification and fixed over 2mm thick Aluminium sheet fixed over a back supporting frame of 25mmx25mmx3mm Mild Steel angle and supported on a mild steel angle post 75X75X6mm with a clear height of not less than 2.10m from the ground level to the bottom of the sign board and 0.60m below ground level. The sign post should be painted as per IRC 67-2022 and firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45cmX45cmX60cm size including cost and conveyance of all materials, equipment, Machinery and labour with all leads and lifts, loading charges necessary for satisfactory completion of the work as directed by the engineer-in-charge. Micro Prismatic grade Retro - Reflectro sheet shall consist of minimum coefficient of Retro-reflection as per Table 6.9 of IRC 67-2022. The retro - reflective sheeting shall be covered under 10 year warranty issued for field performance and a certified copy of three years outdoor exposure report | | | | |

| | | | | | |
|------|---|-----------------------------|-------|-----------|---------------------|
| | shall be obtained as per IRC 67:2022. (as per MoRT&H Specification No.801) (For location of black spot, curve, sharp bend, junction, ghat roads and critical zone applications) | | | | |
| ii) | Rate per sqm (for sign having area more than 0.9 sqm) Type - XI | Sqm. | 120.0 | 14,529.00 | 1,743,480.00 |
| 2.09 | Providing and fixing retro-reflective stickers (Engineering grade) of size 10cm x 5cm on MBCBs and other structures as per Mo ST Cl.No.801 and as per approval of Engineer in charge. | Nos. | 2000 | 13.00 | 26,000.00 |
| 2.10 | Maintenance of Street Lights | | | | |
| A) | Replacement of 250 W street lights including fittings | | | | |
| i) | MCB- Four Pole 63A, 10KA | Nos. | 25 | 1,706.00 | 42,650.00 |
| ii) | Single Pole 40A, 10KA | Nos. | 25 | 376.00 | 9,400.00 |
| iii) | DB Box 4 ways 3 phase DB, No. of ways incomer MCB/ Isolator-4, No.of Ways incomer ELCB/RCD-4, No. of outgoing ways-12 | Nos. | 5 | 4,685.00 | 23,425.00 |
| v) | 63 Amps Porcelain Fuse Unit (500V) | Nos. | 10 | 198.00 | 1,980.00 |
| vi) | 100 Amps Porcelain Fuse Unit (500V) | Nos. | 10 | 359.00 | 3,590.00 |
| vii) | 10 Amps Fuse Wire | Kg | 3 | 642.60 | 1,927.80 |
| B) | Replacement of 250 W LED Street light including fittings | Nos. | 50 | 14,050.00 | 702,500.00 |
| C) | Replacement of 90 W LED Light including fittings | Nos. | 15 | 3,833.00 | 57,495.00 |
| | | TOTAL FOR BILL NO. 2 | | | 4,897,586.00 |

Bill No. 3 : INCIDENT MANAGEMENT AND MISCELLANEOUS

| Item No. | Description of Items | Unit | Quantity | Rate (in Rs.) | Amount (in Rs.) |
|----------|---|-----------|----------|---------------|-----------------|
| 3.01 | Tow way crane - Removing all types of broken down/vehicles which have met with accidents from the carriageway and toeing the same to proper locations i.e. nearest police stations or some suitable location by using 15 tonne or of more capacity pick and carry crane, as per clause 6.4 of Scope of Work and as per Clause 6.8 'Performance Standard' of scope of work. | Per Month | 12.00 | 200,000.00 | 2,400,000.00 |

| | | | | | |
|------|--|-----------|--------|------------|--------------|
| 3.02 | Providing and supply of Following manpower for misc, work as when required basis as per instruction of the Engineer. | | | | |
| A) | Mate / Supervisor | Per day | 36.00 | 756.00 | 27,216.00 |
| B) | Helper / Beldar / Coolie | Per day | 120.00 | 587.00 | 70,440.00 |
| 3.03 | Providing, running and maintaining route patrol vehicle 4x4 drive Patrol vehicles as stipulated Each vehicle shall accommodate including manpower (Highway serveillance inchage ,EMT,Driver) and to be removed Unauthorized access,Private hoardings ,dead animals etc. to be run (24x7)in the Highway .As Per NHAI Circular | per Month | 12.00 | 250,000.00 | 3,000,000.00 |
| 3.04 | Traffic Cone Provision of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene (LDPE) material with a square base of 390 x 390 x 35 mm and a height of 770 mm, 4 kg in weight, placed at 1.5 m interval, all as per BS 873 | No. | 100.00 | 562.00 | 56,200.00 |
| 3.05 | Water Filling Barricades work zone sheeting Providing water filled barricade made up of LDPE to segregate the vehicular movement and work zone as per | No. | 50.00 | 4,142.00 | 207,100.00 |
| 3.06 | Providing following equipments in running condition on hire basis including running and maintenance charges as per instructions of the Engineer including P.O.L complete as per T.S. | | | | |
| | (a) Tipper 6 Cum. Capacity | Per Hour | 100.00 | 2,104.59 | 210,459.00 |
| | (b) JCB | Per Hour | 200.00 | 3,209.85 | 641,970.00 |
| | (c) Excavator 1 cum | Per Hour | 100.00 | 1,835.29 | 183,529.00 |

| | | | | | |
|------|---|-----------------------------|--------|-------|------------------|
| 3.07 | Providing sand bags in the eroded berms including cost and conveyance of sand, supply of empty bags, loading & unloading, filling in bags with sand, shifting them and placing at eroded berms as directed by Engineer, etc., complete. | Nos. | 100.00 | 50.00 | 5,000.00 |
| | | TOTAL FOR BILL NO. 3 | | | 6,801,914 |

Bill No. 4 : Safety Improvement

| Item No. | Description of Items | Unit | Quantity | Rate (in Rs.) | Amount (in Rs.) |
|----------|--|------|----------|---------------|-----------------|
| 4.1 | Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per clause 801 of MORTH Specifications for Roads & Bridge Works and IRC: 67 (2022) made of class -C Micro Prismatic Grade Sheeting of Type XI retro reflective sheeting. The retro reflective sheeting shall have manufacturer logo, watermark and lot number on the sheet. A QR (Bar) code shall also be placed on the backside of the sign board with an indelible Ink. For signs above 600mm size, retro reflective sheet shall be fixed over 2 mm thick aluminium sheeting vide or 4mm thick Aluminium composite material sheet vide clause 801 of MORTH Specifications for Roads & Bridge Works. For signs above 600mm sizes, sign shall be fixed over back support frame of minimum 35 x 35x 3 mm angle Frame. For signs above 600mm size, Signs shall be supported on GI circular pipe 80 NB, 3.2 mm thickness conforming to IS 1239. Retro-Reflective sheet shall be fixed on Substrate with Pressure Sensitive Adhesive. The Substrate shall be firmly riveted on Angle Frame @200mm spacing with Aluminium Pop rivets using Pneumatic Guns. The Angle frame shall be firmly fixed with high strength bolts, washers nuts conforming to IS1364 and IS 1367 on Sign Support Pole. Sign Supports shall be firmly fixed to the ground by means of property designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60, 60 cm below ground level as per approved drawing. All Components of signs and supports including Angle Frame, Bolts, Nuts, Washers, etc. other than the reflective portion shall be galvanized by hot dip process (Zinc coated, 0.55 kg/sqm; minimum single spot) unless otherwise specified. All galvanizing shall be done after fabrication. Alternate white and yellow bands measuring 50 mm long retro-reflective sheeting shall be pasted around GI posts which help in ensuring the | | | | |

| | | | | | |
|------|---|------|--------|----------|--------------|
| | visibility/Presence of poles during night time even if the sign boards are stolen or totally vandalized. Minimum four bands of such retro-reflective sheeting shall be pasted starting from a height of 0.5 m above the finish road level. The messages (legends, letters, numerals, etc.) and borders as per clause 6.8 of IRC 67 shall be digitally printed. Finished Signs shall have an Ultra Violet (UV) protective clear overlay applied to the entire face of the signs supplied by reflective sheet manufacturer. The agency shall submit 10 years warranty for satisfactory field performance for type XI retro reflective sheeting from the retro-reflective sheet manufacturer confirming to clause 6.7 & 6.9 of IRC 67. Agency shall submit a certified copy of test reports from an Government laboratory/ Institute conforming to clause 6.7 & 6.9 of IRC 67 including 3 years accelerated outdoor weathering for the retro reflective sheeting. The Agency shall submit the sign convertor (manufacturer) name with details of essential equipment available with convertor in his fabrication shop such as digital printer, cutter, plotter, laminator, Galvanizing plant, etc. The Agency shall submit road sign installation drawing in 'Kmz' file for approval before installation and after installation submit geo-tagging of all road signs with its installation photos and date of installation and other details as mentioned in IRC 67 annexure VII, complete in all respects. The sign supports and its foundation details are indicative. These may be increased for areas having higher wind velocities like in coastal areas. | | | | |
| i | 75 cm high octagon (9 listed Minor int.) | Nos. | 46.00 | 10020 | 460,920.00 |
| ii | Junction/Intersection board (90 cm equilateral triangle) | Nos. | 69.00 | 8904.00 | 614,376.00 |
| iii | Speed breaker (90 cm equilateral triangle) | Nos. | 46.00 | 8904.00 | 409,584.00 |
| iv | Pedestrian crossing (90 cm equilateral triangle) | Nos. | 29.00 | 8904.00 | 258,216.00 |
| v | Commercial area board (90 cm equilateral triangle) | Nos. | 2.00 | 8904.00 | 17,808.00 |
| vi | TBM - Rumble strips (90 cm equilateral triangle) | Nos. | 34.00 | 8904.00 | 302,736.00 |
| vii | School Zone Sign Board (90 cm equilateral triangle) | Nos. | 2.00 | 8904.00 | 17,808.00 |
| viii | Road merging - traffic ahead Sign Board (90 cm equilateral triangle) | Nos. | 32.00 | 8904.00 | 284,928.00 |
| ix | No Over taking Sign Board (90 cm circular board) | Nos. | 84.00 | 10620.00 | 892,080.00 |
| x | GO SLOW Sign Board - 90mm circular board | Nos. | 112.00 | 10620.00 | 1,189,440.00 |
| xi | Speed Limit Sign Board (90 cm circular board) | Nos. | 2.00 | 10620.00 | 21,240.00 |

| | | | | | |
|-----|---|--|--|--|--|
| | | | | | |
| 4.2 | <p>Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign as per clause 801 of MoRTH Specifications for Roads & Bridge Works (5th Revision) IRC: 67 (2022) made of class -C Micro Prismatic Grade Sheeting of Type XI retro reflective sheeting. The retro reflective sheeting shall have manufacturer logo, watermark and lot number on the sheet. A QR (Bar) code shall also be placed on the backside of the sign board with an indelible ink. For Signs up to 600mm size, retro reflective sheet shall be fixed over 1.5mm Thick aluminium sheeting vide or 3mm thick Aluminium composite material vide clause 801 of MoRTH Specifications for Roads & Bridge Works. For signs up to 600mm sizes, sign shall be fixed over back support frame of minimum 25x25x 3 mm Angle Frame. For signs up to 600mm size, Signs shall be supported on GI circular pipe 65 NB, 3.2 mm thickness conforming to IS 1239. Retro-Reflective sheet shall be fixed on Substrate with Pressure Sensitive Adhesive. The Substrate shall be firmly riveted on Angle Frame @ 200mm spacing with Aluminium Pop rivets using Pneumatic Guns. The Angle frame shall be firmly fixed with high strength nuts, washers & bolts conforming to IS1364 and IS 1367 on Sign Support Pole. Sign Supports shall be firmly fixed to the ground by means of properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60, 60 cm below ground level as per approved drawing. All Components of signs and supports including Angle Frame, Bolts, Nuts, Washers, etc. other than the reflective portion shall be galvanized by hot dip process (Zinc coated, 0.55 kg/sqm; minimum single spot) unless otherwise specified. All galvanizing shall be done after fabrication. Alternate white and yellow bands measuring 50 mm long retro-reflective sheeting shall be pasted around GI posts which help in ensuring the visibility/Presence of poles during night time even if the sign boards are stolen or totally vandalized. Minimum four bands of such retro-reflective sheeting shall be pasted starting from a height of 0.5 m above the finish road level. The messages (legends, letters, numerals, etc.) and borders as per clause 6.8 of IRC 67 shall be digitally printed. Finished Signs shall have an Ultra Violet (UV) protective clear overlay applied to the entire face of the signs supplied by reflective sheet manufacturer. The agency shall submit 10 years warranty for satisfactory field performance for type XI retro re-reflective sheeting from the retroreflective sheet manufacturer confirming to clause 6.7 & 6.9 of IRC 67. Agency shall submit a certified copy of test reports from a Government laboratory/Institute conforming to clause 6.7 & 6.9 of IRC 67 including 3 years accelerated outdoor weathering for the retro reflective sheeting.</p> | | | | |

| | | | | | |
|-----|---|------|----------|---------|---------------|
| | The Agency shall submit the sign convertor (manufacturer) name with details of essential equipment available with convertor in his fabrication shop such as digital printer, cutter, plotter, laminator, Galvanizing plant, etc. The Agency shall submit road sign installation drawing in 'Kmz' file for approval before installation and after installation submit geo-tagging of all road signs with its installation photos and date of installation and other details as mentioned in IRC 67-2022 annexure VII, complete in all respects. The sign supports and its foundation details are indicative. These may be increased for areas having higher wind velocities like in coastal areas. This is applicable to all road signs and directions boards. | | | | |
| | Object Hazard Marker - 300 mm x 900 mm rectangular | Nos. | 100.00 | 5970.00 | 597,000.00 |
| 4.3 | Providing and Laying hot applied thermoplastic road marking strip on Bituminous Surface of specified shade/ colour of 2.5 mm thick including Type 1 beads (Refer MORTH Specification Clause 803.4.2) which are a constituent of the basic thermoplastic compound vide Table 800-9 (MORTH Specification) and Type 2 beads are those which are to be sprayed on the surface vide Clause 803.6.4 (MORTH Specification). The glass beads shall have a minimum reflectivity index of 1.5. The glass bead shall be 250gm/sqm. The thermoplastic road marking material thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC 35. Pavement Marking Performance such as Day/Night visibility, Dry/Wet visibility and skid resistance shall be confirming to clause 15.5 of IRC 35. The finished surface to be level, uniform, and free from streaks and holes complete as per direction of Engineer-incharge and in accordance with applicable specifications. (Refer MORTH Clause 803 for technical Specification and Performance for IRC 35:2015). Recommended Use of specialized Road Marking Primer, based on surface conditions. | Sqm | 16000.00 | 589.25 | 9,428,000.00 |
| 4.4 | Providing and Laying of 15mm high Single Rib Pattern Transverse Bar Markings with 2 component cold plastic with specialised cold plastic Primer coating rolled on surfacing material solvent free, high build two pack seamless, tough, skid resistant, for material to reduce speed. Cold Plastic road marking material shall be applied in single monolithic application to create rumble strip raised section of 15 mm high, 300 mm wide confirming to clause 3.7 of IRC 99, across the entire carriageway. Each rumble marking shall be made complete with specialised high refractive index glass beads of minimum reflectivity index of 1.5. The glass bead shall be 250gm/sqm. Type 1 beads (Refer MORTH Specification Clause 803.4.2) which are a constituent of the basic cold plastic compound vide | Sqm | 1610.00 | 6254.00 | 10,068,940.00 |

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| | Table 800-9 (MoRTH Specification) and Type 2 beads are those which are to be sprayed on the surface vide Clause 803.6.4 (MoRTH Specification). Pavement Marking Performance such as Day/Night visibility, Dry/Wet visibility and skid resistance shall be confirming to clause 15.5 of IRC 35. The finished surface to be levelled, uniform and free from streaks and holes, to be applied on the edge lines, including surface cleaning and cost of all materials etc. complete. | | | | |
| 4.5 | Providing and fixing of Reflective Pavement Markers (RRPM), i.e. road studs shall be prismatic retro-reflective type conforming to ASTM D-4280. The Plastic body of RPM/road stud shall be moulded from ASA (Acrylic Styrene Acrylonitrile) or HIPS (Hi-impact Polystyrene) or Acrylonitrile Butadiene Styrene (ABS). The marker height shall not be less than 10mm and shall not exceed 20mm and its width shall not exceed 130mm. The markers shall support a load of 13,635 kg tested in accordance with ASTM D 4280. The Reflective panels shall consist of number of lenses containing single or dual prismatic cubes capable of providing total internal reflection of the light entering the lens face. Lenses shall be moulded of methyl methacrylate conforming to ASTM D 788 or equivalent. The optical performance of road studs shall be confirming to clause 804.4 of MoRTH specifications. | Nos. | 5632.00 | 232.00 | 1,306,624.00 |
| 4.6 | Solar Powered Road marker (Solar Stud): Supplying and installation of Solar Raised Pavement Markers made of polycarbonate moulded body with circular shape, solar powered, LED self-illumination in active mode, 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 20000 kg tested in accordance to ASTM D 4280. Its water resistance shall meet the requirements of IP 65 in accordance with IS:12063:1987 Category 2 for protection against water ingress. Colour of lighting could be provided in red or yellow (amber) or green or blue or combination as per requirement. It shall have super bright LEDs so as to provide long visibility from a distance of more than 800 m. Its flashing rate shall not be less than 1 Hz. It should be able to give the prescribed performance in the temperature range of -40°C to +55°C. Its life shall be not less than 3 years. The full charge should provide for a minimum autonomy of 50 hours operation. The height, width and length of the marker shall not be less than 10mm x 100mm x 100mm. Also the surface diameter of the marker shall not be less than 100mm respectively. The weight of marker shall not exceed 0.5 kilograms. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive and complete as directed by the Engineer | Nos. | 64.00 | 1980.20 | 126,732.80 |

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| 4.7 | Tubular Steel Railing on Medium Weight Steel Channel (ISMC series) 100 mm x 50 mm - Providing, fixing and erecting 50 mm dia steel pipe railing in 3 rows duly painted on medium weight steel channels (ISMC series) 100 mm x 50 mm, 1.2 metres high above ground, 2 m centre to centre, complete as per approved drawings | Rm. | 1345.00 | 2045.00 | 2,750,525.00 |
| 4.8 | Road Delineators: Supplying and Installation of delineators (road way indicators, hazard markers, object markers) confirming to IRC 79, 80 to 90 cm high above ground level with about 200 to 300mm base which can be anchored on to the ground. The delineator shall have an ellipsoidal or circular shape made of mild steel with pure polyester powder coating with minimum thickness of powder coating of not less than 40 micron. The delineator shall have minimum three reflective sheeting bands of 150mm height confirming to Type XI sheeting specifications as per IRC 67. | Nos. | 560.00 | 1270.00 | 711,200.00 |
| 4.9 | Provide and fixing Tubular markers 700 mm ht (mini.) and having minimum dia. of 75mm. Tubular Marker shall be made up of polyurethane and flexible in nature. The tubular marker shall be confirming to IRC SP 55, to divide opposing lanes traffic, or to divided vehicular traffic lanes when two or more lanes of moving vehicular traffic are kept operating in the same direction, and to delineate the edge of a pavement drop-off where space limitations do not allow the use of larger devices. A tubular marker shall be attached to the pavement such as to display the minimum 50mm width of 2 no. reflective bands to the approaching road users. The reflective bands shall be provided with white colour retro reflective sheeting Type XI as per IRC: 67 | Nos. | 3840.00 | 850.00 | 3,264,000.00 |
| 4.10 | Supplying and erecting red/yellow unbreakable polycarbonate body Solar Blinker 300mm dia. LED lamp confirming to IRC:93 and IS:7537. It shall have Light Emitting Diode (LED) Hi Bright technology (Compliant to EN12368 or equivalent BIS standard). The Signal Switching shall be Solid State, with Opto-isolation. The Automatic operation mode shall have functional flashing rate available at 50% Duty Cycle 50 or 60 Flashes/minutes. The Electrical Power Supply shall be solar based 12 VDC operating at Ambient Temperature 0 to 55°C. The solar power system shall have in-built charge Controller - Low/High cut out, Solar SPV Module 60 Watts, Maintenance Free Battery (60AH) (having back up for operating blinker for 72 Hrs in absence of Sun or during rainy or foggy days. The Solar System shall be housed in a weatherproof pole mounting cabinet with clamp and mounting accessories. The Solar Blinker shall be supported on GI circular pipe 80 NB, 3.2 mm thickness confirming to IS 1239, 3m above the Finish Road level. GI circular pipe shall be firmly fixed to the ground by means of | Nos. | 124.00 | 28342.75 | 3,514,501.00 |

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| | properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60, 60 cm below ground level as per approved drawing. Alternate white and yellow bands (Minimum four bands) of Type XI retro-reflective sheeting shall be pasted @ 0.5m c/c starting from a height of 0.5 m above the finish road level. | | | | |
| | | Total (Rs.) | | | 36,236,658.80 |
| | | Sub Total (Bill No.1 + 2 + 3+4 = 5) | | | 5,57,29,013.00 |
| (Rupees Five Crore Fifty Seven Lakh Twenty Nine Thousand Thirteen only) | | | | | |
| GST at 18% on above shall be paid as applicable on submission of required proof of GST paid documents | | | | | |