

Contract No.:

GOVERNMENT URBAN DEVELOPMENT COMPANY LIMITED

GANDHINAGAR

[A WHOLLY OWNED GOVERNMENT OF GUJARAT UNDERTAKING]



BIDDING DOCUMENT FOR

Amreli RoB LC No-19B under SJMMSVY

“Construction of R.O.B in Lieu of LC-19B at Rly. Ch. 16/2 To 16/3 Km. Between Khijadiya to Amreli Station on Amreli - Lathi State Highway” Under programme of SJMMSVY.

VOLUME – II

PART-I

“ITEM WISE SPECIFICATION”

GOVERNMENT OF GUJARAT

By

Vice President (Project)

Gujarat Urban Development Company Limited

Karmayogi Bhavan, Block-1, B-1 Wing,

Ground Floor, Sector-10/A

Gandhinagar, Gujarat -382 010.

(Through e- Procurement Portal only - <https://tender.nprocure.com/>)

SPECIFICATION INDEX		
ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
1	Excavation for foundation of structures including existing pavement surfaces including dewatering, shoring and strutting as necessary and backfilling the trenches with suitable excavated material in layers of 15 to 20 cms and disposing of remaining unsuitable material with all lifts and lead as directed and preparation of bed for concreting of foundations etc. complete as directed by Engineer and as per specification. Soils of all types From 0 to 3m depth including ordinary earth, sand dry / wet soil, marine clay, boulders, kankars, soft murrum, hard murrum, etc.	As per attached separate sheet
2	Excavation in hard rock by dry-wet blasting and chiselling including dewatering preparing foundation base by proper benching and stepping and disposing of the excavated stuff as directed.(B) prohibited Blasting. work.	As per attached separate sheet
3	Providing and fixing mild steel dowel bars of 32mm dia. for anchoring by drilling holes in foundation strata including necessary bending, hooking of dowel bars and grouting the holes complete as per detailed drawing and as directed.	As per attached separate sheet
4	Providing and laying in situ ordinary cement concrete M-15 grade bedding concrete in foundation / below pile cap including dewatering, shuttering, compacting, curing etc. complete true to level and position as directed by Engineer and as per specification.	As per attached separate sheet
5	Providing and laying controlled cement concrete M-40 and curing complete for Open Foundation including the cost of formwork but excluding the cost of reinforcement for reinforced concrete work in (A) Foundations, footings and Mass concrete.	As per attached separate sheet
6	Providing and filling in foundation trench with ordinary cement concrete M-15 mix and providing necessary vertical pin headers including formwork, vibrating, ramming and curing complete.	As per attached separate sheet
7	Providing and laying machine mixed M-40 grade ordinary cement concrete for cast-in-situ piers, abutments, side wall at any height or depth as per approved design and drawings, with necessary centering, shuttering, scaffolding, transporting, placing, compacting by mechanical vibrators, finishing, curing and casting as per drawing etc. complete excluding reinforcement as directed by Engineer and as per specification.	As per attached separate sheet
8	Providing and laying in situ machine mixed controlled M-40 grade cement concrete for Pier cap, Abutment cap, dirt wall etc. including M:45 pedestals over piers and abutments including necessary scaffolding formwork, centering, transporting, placing, compacting by mechanical vibrators, finishing and curing and casting, finishing at any height or depth as per drawing etc. complete excluding reinforcement, as directed by Engineer and as per specification. Pier Cap & Dirt Wall in M:40 & Pedestals & Seismic Restrainer in M:45	As per attached separate sheet
9	Providing & fixing in position (Thermo mechanically treated bars) TMT Fe550 D steel bars of various diameters for all RCC works in Open Foundation / Footing & Staircase and foundations as per detailed design & drawings and schedule including cutting, bending, hooking the bars, binding with 18 SWG GI wires or tack welding (only for piles) and supporting as required with all lifts and leads etc. complete including cost of all labour, materials, tools, plants, equipments etc. all complete as directed by Engineer and as per specification.	As per attached separate sheet

SPECIFICATION INDEX		
ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
10	Providing & fixing in position (Thermo mechanically treated bars) TMT Fe550 D steel bars of various diameters for all RCC works in Pier, Abutment wall, box wall, Piercap, Abt.cap, Dirt wall, sidewall, Retaining wall, Pedestals as per detailed design & drawings and schedule including cutting, bending, hooking the bars, binding with 18 SWG GI wires and supporting as required with all lifts and leads etc. complete including cost of all labour, materials, tools, plants, equipments etc. all complete as directed by Engineer and as per specifications. Piers, Pier Cap, Pedestals & Seismic Restrainer	As per attached separate sheet
11	Providing and applying Coal Tar Epoxy protective paint for Open Foundation in two coats of DFT 210 microns for foundations /concrete surfaces in contact with soil complete as per Specifications and as directed by the Engineer including all leads and lifts etc. complete.	As per attached separate sheet
12	Providing and Casting in situ controlled cement concrete M-45 for R.C.C. Deck Slab including centering, scaffolding , curing and finishing complete.	As per attached separate sheet
13	Providing, fabricating and fixing in position Deck sheet for the deck slab of Composite super structure and other Structural steel sections such as plate. The rate to be inclusive of all charges such as loading, unloading, transporting, cost of fabrication, erection, all accessories to be used for connection, anti corrosive primer and paint of approved make/ shade and cleaning works, inclusive of all taxes.	As per attached separate sheet
14	<p>Supplying, fabrication, assembling of all types of steel girders of specified spans with structural steel conforming to Quality "B0" Grade Designation E250 GR conforming to IS:2062-2011, erection / slewing / end launching of steel girders with cranes or any other approved launching methods as per site conditions (not requiring traffic block) on substructure including provision of trolley refuges etc., complete as per approved QAP and drawings conforming to IRS-B1-2001 and other relevant codes and specifications.</p> <p>Note:</p> <ol style="list-style-type: none"> 1. Detailed fabrication and erection drawings & launching methodology will be prepared by the contractor and got approved from Railway. 2. The rate is all inclusive including launching in position, complete in all respect except cost of (i) Painting / Metalising; (ii) Bearings & (iii) HSFG bolts which shall be paid extra under relevant item. 3. The payment shall be made on the theoretical weight of main components and gusset plates only. 4. Payment Schedule: <ol style="list-style-type: none"> (i) Receipt of material at site: 40% (ii) Fabrication of girders: 20% (iii) Erection/Launching: 20% (iv) Completion in all respects: 20% 	As per attached separate sheet
15	Extra for using steel conforming to Grade Designation E350 instead of Grade Designation E250 of Quality "B0" as per IS: 2062	As per attached separate sheet
16	Supplying and fixing HSFG bolts of any dia and any length with suitable nuts including DTI washers conforming to IRS-B1-2001 for bridges and steel structures with contractors labour, tools and plants and lead and lift etc., complete.	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
17	Metallizing of steel work of girders with sprayed aluminium after surface preparation by Sand/grit blasting, followed by one coat of etch primer (IS:5666) & one coat of Zinc Chrome primer (IS:104) and two coats of aluminium paint (IS:2339) with all labour, T&P and material as a complete job duly conforming to all relevant specifications and process given under Clause 39 of IRS-B1-2001. Note: Nominal Thickness of sprayed Aluminium coating shall be 150 microns. DFT of Zinc chrome primer shall be 25-30 microns and DFT of each coat of Aluminium paint shall be 12-14 microns. <u>On new girder during fabrication</u>	As per attached separate sheet
18	Providing & fixing in position (Thermo mechanically treated bars) TMT Fe550D steel bars of various diameters for all RCC works in super structure as per detailed design & drawings and schedule including cutting, bending, hooking the bars, binding with 18 SWG GI wires and supporting as required with all lifts and leads etc. complete including cost of all labour, materials, tools, plants, equipments etc. all complete as directed by Engineer and as per specifications. <u>For PSC Girder. Cross Girder. Deck Slab & Solid Slab</u>	As per attached separate sheet
19	Design, supply, fitting and fixing in position true to line and level POT-PTFE bearing of 300MT Capacity, consisting of a metal piston supported by a disc or un reinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel / fabricated structural steel, metal and elastomer elements complete as per IS:2062, IS:1030, AISI:304, AISI:316, IS:6911, BS:3784, IS:3400, IS:226, BS-5400, Bridge Code and as per approved drawing and Technical Specifications. The design of the bearings shall be submitted by the manufacturers / contractor and got approved from Railway <u>before fixing</u>	
(a)	POT-cum -PTFE Bearing (Free end)	As per attached separate sheet
(b)	POT Bearing-Fixed Type	As per attached separate sheet
(c)	POT-cum -PTFE Guided (L)Bearing	As per attached separate sheet
(d)	POT-cum -PTFE Guided (T)Bearing	As per attached separate sheet
20	Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation	As per attached separate sheet
21	Providing and casting RCC in M-40 controlled concrete Crash Barriers Crash Barriers and Friction slab as per detailed drawings including necessary scaffolding, centering, formwork, mixing in machine, transporting, placing, compacting, finishing, curing, etc. complete including providing and fixing of inserts if any with all leads and lifts as per drawing & specification and as directed by Engineer, excluding reinforcement.	As per attached separate sheet
22	Providing and laying precast RCC footpath slab in controlled cement concrete of M-25 grade (7 cm thickness including necessary reinf.) and providing and setting cement chequered tiles in C.M. 1:5 as per drawing including necessary formwork, cutting and finishing complete.	As per attached separate sheet
23	Providing and fixing in position (Thermo mechanically Treated bars) TMT Fe550 D reinforcing bars of various diameters for the above all RCC works as per detailed designs and drawings and schedule including cutting, bending, hooking the bars, binding with 18 SWG GI wires with cost of all labour, materials, tools, plants, equipments, supporting as required with all lifts and leads etc. all complete as per specification and as directed by Engineer. <u>For Approach Slab. Crash Barrier. Retaining wall. Parapet. Friction slab & Coping</u>	As per attached separate sheet

SPECIFICATION INDEX		
ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
24	Providing fusion bonded Epoxy coating not less than 175 micron thickness and up to 300 micron to reinforcement bars as per IS-13620- 1993/ASTM-775 M including testing of coating at plant and all taxes (A) 10mm to 16mm dia bar	As per attached separate sheet
25	Providing fusion bonded Epoxy coating not less than 175 micron thickness and up to 300 micron to reinforcement bars as per IS-13620- 1993/ASTM-775 M including testing of coating at plant and all taxes (B) 20mm to 32 mm dia bar	As per attached separate sheet
26	Providing and laying Double Walled corrugated Pipes (DWC) of Polyethylene (conforming to IS:14930-II) of 50mm O.D. / 38mm I.D. with fittings and necessary connecting accessories of same material at required depth for laying cable below footpath slab etc. complete as per specification and as directed by Engineer.	As per attached separate sheet
27	Providing and fixing 100 mm dia. G.I. Drainage spouts, as per MOST Drg. Nos SD/303 including grating with suitable clean out fixtures including all leads and lifts etc. complete as per specification, design & drawings and as directed by Engineer.	As per attached separate sheet
28	Providing, laying and jointing in true line and level 110 diameter U.P.V.C (Type B) conforming to IS 13592-1992 with one end plain and other end socketed with rubber ring, & fittings conforming to ISI 14735-1999 of approved make for drainage system pipe line, pipe shall be jointed with each other with rubber lubricant, pipe shall be fixed on wall using of PVC clamp of the size 110 mm diameter x 149 mm length x 145 mm height at every 2000 mm center to center or shall be concealed in walls as directed including necessary fittings such as bends, shoes etc. including testing of pipes and joints and jointed with adhesive solvent cement including cost of all materials	As per attached separate sheet
29	Fabricating, supply and erecting in position Standard Structural steel sections conforming to IS 2062 for railing or other works using ISMB, ISA, ISMC, MS plate, flat, square bars, pipe, square pipe, etc. including welding, cutting, wastage, etc. complete. The rate is inclusive of welding road, supply & fixing of correct size nut, bolts, washers, including one primer coat of red lead paint conforming IS:102 Zinc chromate paint conforming to IS:104 followed by two coat of aluminium paint as per IS:2339 with all contractor's materials, labour, tools & plants, in bolted/welded construction as directed by Engineer-in Charge. The waste cut pieces shall Nost be included in the paying quantity. The work shall be done as per drawing and specification. The work shall be carried out as per IS:800, IS:816. For Staircase and Inspection Platform	As per attached separate sheet
30	Providing and laying 50 mm thick Dense Graded Bituminous Macadam in two layer (single layer not more than 70 mm) using BT stone chips as per MoRTH gradation and specification with Bitumen Grade (VG 30) for mixing @ 45.00 Kg /MT of total Wt. of mix i.e (4.50 % of total weight mix)including tack coat @ 2.5 kg/10 smt with Bitumen Emulsion (Rapid setting) and mixing aggregate & asphalt by batch mix plant and spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet
31	Providing and laying 25 mm thick of compacted Bituminous concrete using BT aggregate as per MORTH gradation ,specification and asphalt Grade VG 30 mixing @52.00 Kg /MT of total Wt. of mix i.e. (5.20% of total weight mix) including heating and mixing aggregate & asphalt by batch mix plant spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller,Tandem Roller ,PTR & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
32	Providing and applying tack coat with Emulsion RS1 using bitumen pressure distributor at the rate of 0.30 kg/sqm on the existing bituminous surface cleaned with Air Compressor.	As per attached separate sheet
33	Road marking with Hot applied thermoplastic paint with refletririzing glass beads on bitumen surface. Providing and laying of Hot applied Thermoplastic compound 2.5 mm thick including Reflectorising Glass Beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC : 35 & finished surface to be level, uniform and free from streaks and holes. Zebra patta / Bump patta lane / center line / edge line /cut patta. The white colour marking should provide liminance cooficient on cement road shall be minimum 130 mcd/M2 / LUX and asphalt road shall be min. 100 mcd/M2/ LUX during the service life during the day time. The marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in the section 15 of IRC 35:2015 Warranties for retroreflective shall be 2 years	As per attached separate sheet
34	Supplying and fixing cat eye (Stimsonite) made out from Acrilo beaultile sterine injuction high compressed molding with reflector made of MMC (prismatic type of size 12cm x 6cm x 2.5cm) provided with bituminous adhesive 100g. with each unit for fixing. (High Intensity grade)	As per attached separate sheet
35	Providing and applying one coat Epoxy PheNoslic primer of DFT 50 micron and two coats of Epoxy PheNoslic coating of DFT 100 microns each or any other equivalent epoxy coating system to all concrete surfaces exposed to atmosphere in substructure and superstructure including cost of material, labour, transportation, scaffolding and preparing the surfaces by cleaning, washing, brushing, sand / grit blasting etc. complete and as directed by Engineer and as per specification. (Paint shall be got approved from Engineer and tested from approved laboratory).	As per attached separate sheet
36	Painting Two Coats on New Concrete Surfaces (Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces) - For inner face of crash barrier & Kerb of Protection to R.E. wall (Black & Yellow Strips)	As per attached separate sheet
37	Clearing and grubbing site/road/land including uprooting all vegetation, grass, bush shrubs, saplings and trees with girth, removal of stumps of trees of girth of all sizes including removing stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable materials as directed by Engineer with all leads and lifts etc. complete as per specification. before commencement and after completion of the work. (C) By mechanical means in area of light jungle	As per attached separate sheet
38	Demarkation of road alignment including marking out road line by providing and fixing wooden pegs or steel rod of required size at every 25 M to 50 M including excavating trenches ion both sides of 0.30 m x 0.30m including supplying of labours and all materials for every work etc complete.	As per attached separate sheet
39	Dismantaling of the existing road, Flexible Pavement / Asphaltic road, crust in approach portion including demolishing asphalt carpet with soling, metal etc. with stacking the same as directed by Engineer-in-charge.	As per attached separate sheet
40	Dismantaling the existing structure including removing and stacking the dismentelled materials as and where directed. (A) R.C.C. Work	As per attached separate sheet
41	Carting of excavated material such as murrum, earth, kapachi, gravel, brickbats, kankar, debris, sand, dismantled material, including loading, unloading, stacking etc. complete at non objectional place as directed by engineer in charge. (a) Lead up to 3 Km	
(b)	(b)Additional rate for lead above 3 and upto 5 km	As per attached separate sheet
(c)	(c)Additional rate for lead above 5 and upto 10 km	As per attached separate sheet
42	Providing and fixing in position fully moulded restrained elastomeric bearings as per detailed drawings.	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
43	Providing and casting in situ or precast controlled Cement Concrete M-50 for prestressed concrete work in Super structure including centering, shuttering, curing, scaffolding, ramming, vibrating, finishing, launching or shifting complete. (II) Deck Slab, (III) Main Girders. (IV) Diaphragm or Cross Girder	As per attached separate sheet
44	Providing and Casting in situ controlled cement concrete M-40 for R.C.C. Solid Slab including centering, scaffolding, curing and finishing complete.	As per attached separate sheet
45	Providing and fixing in position to exact profile high tensile steel wires of required ultimate strength including bending, cutting, tying providing necessary standard and anchorages, sheathing, stressing, grouting, ducts as per detailed drawing including necessary plant and machinery complete.	As per attached separate sheet
46	Providing and carrying out load test on bridge deck with simulated loading including provision, placing and removal of loading, supplying, fixing and removing deflection measuring instruments etc. complete with platforms for fixing the instruments etc. complete as per the details supplied and specification and as directed by Engineer and including submission of required results in triplicate after satisfactory completion of the load test.	As per attached separate sheet
47	Providing and casting insitu controlled cement concrete M-35 in RCC Gap Slab and Approach Slab including formwork, curing and finishing complete.	As per attached separate sheet
48	Providing and fixing RCC M:25 architectural pylons at end of approach structures including all materials, labour, ramming, curing etc. complete as per detailed working drawing. (a) Concrete	As per attached separate sheet
49	Providing and fixing the Continuity arrangement in deck slab as per the detailed drawing with fixtures, components, filler etc. complete as directed by Engineer in charge.	As per attached separate sheet
50	Providing and laying, Spreading & Compacting Coarse Clean Sharp Sand behind Abutments and returns and C.B.R. not less than 10% below sub base course, C=0 & $\phi=30^\circ$ including carriage of material, spreading in uniform layer on prepare base watering & compacting with vibratory roller at OMC incl. all labour etc. complete	As per attached separate sheet
51	Providing and casting in situ controlled cement concrete M-35 for R.C.C. Retaining wall as per drawings including centering, shuttering, scaffolding where necessary, laying, vibrating, curing and finishing complete.	As per attached separate sheet
52	Providing and laying weep holes in abutments and returns ny using A.C. pipe of 100mm including laying in proper grade and joint in complate as per detailed specification.	As per attached separate sheet
53	Providing and laying - 600mm thick Filter media directed at the back of abutments, returns and wing walls as per detailed specifications.	As per attached separate sheet
54	Box cutting the road surface to proper slope and camber for making a base for road work including removing the excavated stuff and depositing on the road side slope as directed upto 50m lead.	As per attached separate sheet
55	Construction of granular sub-base (Grade I) 200mm thick by providing coarse graded material BTMC 53 mm to 26.5 mm ,BTMC 26.5 mm to 4.75 mm & Coarse sand , spreading in uniform layers with motor grader on prepared surface, mixing by mechanical mix plant method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per MoRTH clause	As per attached separate sheet
56	Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam 250mm thick in layers as per specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
57	Providing and laying Prime coat Emulsion SS1 asphalt binder @ rate of 7.5 Kg./10 sq.m. of road surface using Emulsion pressure sprayer etc. complete including cost of Emulsion asphalt.	As per attached separate sheet
58	Providing and laying 75 mm thick Dense Graded Bituminous Macadam in two layer (single layer not more than 70 mm) using BT stone chips as per MoRTH gradation and specification with Bitumen Grade (VG 30) for mixing @ 45.00 Kg /MT of total Wt. of mix i.e (4.50 % of total weight mix)including tack coat @ 2.5 kg/10 smt with Bitumen Emulsion (Rapid setting) and mixing aggregate & asphalt by batch mix plant and spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet
59	Providing and laying 50 mm thick of compacted Bituminous concrete using BT aggregate as per MoRTH gradation ,specification and asphalt Grade VG 30 mixing @52.00 Kg /MT of total Wt. of mix i.e. (5.20% of total weight mix) including heating and mixing aggregate & asphalt by batch mix plant spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller,Tandem Roller ,PTR & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet
60	Providing and laying 60 mm thick Dense Graded Bituminous Macadam using BT stone chips as per MoRTH gradation and specification with Bitumen Grade (VG 30) for mixing @ 45.00 Kg /MT of total Wt. of mix i.e (4.50 % of total weight mix)including tack coat @ 2.5 kg/10 smt with Bitumen Emulsion (Rapid setting) and mixing aggregate & asphalt by batch mix plant and spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet
61	Providing and laying 40 mm thick of compacted Bituminous concrete using BT aggregate as per MoRTH gradation ,specification and asphalt Grade VG 30 mixing @52.00 Kg /MT of total Wt. of mix i.e. (5.20% of total weight mix) including heating and mixing aggregate & asphalt by batch mix plant spreading the same by sensor paver finisher including rolling & consolidation with 10-12 tonne vibratory roller,Tandem Roller ,PTR & providing all materials equipment's tools & plants, fire wood, oil , kerosene,labour charges , using contractor 's own machinery etc Complete as directed by engineer in charge as per MoRTH Specification	As per attached separate sheet
62	Providing and laying in position M-15 grade concrete for cement concrete work, using content as per approved Mix manufactured in fully automatic batching plant and transported to site of work in transit mixer for a lead upto 10 kms having continuous agitated mixer, manufactured as per mix design of specified grade, including the cost of centering shuttering finishing and reinforcement including cost of admixtures in recommended proportions as per IS:9103 to accelerate/retard setting of concrete, improve workability without impairing strength and durability as per direction of the engineer-in-charge Without flyash	As per attached separate sheet

SPECIFICATION INDEX		
ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
63	Construction of 300mm thick un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with concrete grade M35 and with OPC-53 grade cement @425kg/cum, coarse and fine aggregate confirming to IS:383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing etc. complete as per instruction on Engineer-in-charge	As per attached separate sheet
64	Providing and fixing pre-cast concrete kerb stone of gray cement based concrete block 30cm length,30cm height and 15cm thick of M250 grade concret as per approved design and including excavation for fixing in proper line and level,filling the joint with C:M 1:3 (1 cement : 3 fine sand) etc complete.	As per attached separate sheet
65	Providing and fixing pre-cast Rubber Dye / steel Dye inter locking concrete block 60mm thick with grade of concrete M300 pneumatic compressed / vibrated mechanically and as per approved design Confirming to IS 15658 : 2006 including 35 mm Sand layer for levelling and filling the joint with sand in proper line and level as per guidelines of IRC : SP 63-2018 etc. Complete.	As per attached separate sheet
66	Providing and fixing retro Reflective Prismatic grade Board using 2mm Aluminum / 4mm ACP, angle iron 75 x 75 x 6mm. Descaling and degreasing the board as per requirement using epoxyprimer epoxy paint and carrying retro reflective process by screen painting as directed etc. complete including transporting and fixing in C.C. 1:2:4 with necessary excavation curing etc. complete as per I.R.C 67-2012 design. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class -C Type- 11(NH/SH) retro reflective sheeting	As per attached separate sheet
67	Cautionary Warning Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 90 x 90 x 90 cms. equilateral triangle as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflective sheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T.Specifications; 3.6mtr long stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 35 x 35 x 3mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol foreach board shall be as per theinstruction of engineer in charge. The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting	As per attached separate sheet

SPECIFICATION INDEX		
ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
68	Regulatory / Mandatory Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 60 cms Dia Circle as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T.Specifications; 3.6mtr long stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 35 x 35 x 3mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol foreach board shall be as per theinstruction of engineer in charge. The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting	As per attached separate sheet
69	Direction (Junction) Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 244x122 cms. rectangular as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T.Specifications; 4.0mtr long (2 Nos.) stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 50 x 50 x 5mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol foreach board shall be as per theinstruction of engineer in charge. The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting	As per attached separate sheet
70	Distance Informatory / Destination Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 180x120 cms. rectangular as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T.Specifications; 4.0mtr long (2 Nos.) stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 50 x 50 x 5mm; painted with bestquality epoxy coatings in black and white bends. The details of symbol foreach board shall be as per theinstruction of engineer in charge. The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class-C Type-11 Retro Reflective sheeting	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
71	Chevron sign :-Providing and fixing sign boards made out of 1.5mm aluminium sheet / 3mm ACP (Aluminum composite Panel); size 60x50 cm as per design of IRC-67-2012. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ;reflectorised with Micro Prismatic Grade retro reflectivesheeting of Type-11 as per ASTM D-4956 and latest M.O.S.T.Specifications; 3.3 mtr long stand post of 75 x 75 x 6mm / 65NB Circular MS Pipe as required and frame fabricated from suitable size iron angle of 50 x 50 x 5mm; painted with bestquality epoxy coatings in black and white bends. the details of symbol or inscription / numerals for each board shall be as per the instruction of engineer in charge.The fixing at site shall be in 1:2:4 CC blockof size 45 x 45 x 60 Cms. for each leg.including excavation, curing etc.complete under the supervision of engineer in charge. A warranty for 10 years for the Retro reflective sheeting from originaa manufacturer & a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor. (A) Class- C Type 11 Retro Reflective sheeting	As per attached separate sheet
72	Providing and fixing marbal slab including engraving and painting complete.(i) Size 75cm x 60cm x 4cm.	As per attached separate sheet
73	Art painting work over various components of new flyover and underpass with three coat water coat putty of approved brand after duly rubbing the surface to make the surface even end smooth. The work includes one coat of exterier primer coat of approved brand and three or more coat of exterier plastic emulsion paint of approved brand over the prepared surface. Over this art painting work to be done as per direction and design pattern approved by Engineer-incharge.The work encludes the cost of centring, suttering, scaffolding and clearing the site properly after completion of work. The work also encludes the cost of all material, manpower, stencils etc. required for art paintng	As per attached separate sheet
74	Planting of Trees and their Maintenance for one Year (Planting of trees by the road side (Avenue trees) in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge mannure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year)	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
75	<p>Supply and installation of Mono absorbent noise barrier. Noise barrier shall be standards for both acoustic and mechanical behaviours as per the provisions of IRC SP:130-2022 (Guidelines on design and installation of Noise barrier on roads) with valid EN Certifications as per EN 1793 & 1794 specifications. Noise barrier panels must be ARAI (Automotive Research Association of India) or government laboratory approved. Acoustic and non-Acoustic Characteristics panels must confirm to the requirements of Table 5.2 and 5.3 of IRC SP:130-2022. 70-80-micron galvanum powder coated of approved RAL shade 115mm to 120 mm thick mono absorptive sound insulated panels with tongue and grooves shall be formed with special cold forming corrugation on GI sheets on both front and back for additional mechanical strength. Panels are filled with water repellent FR grade 100mm thick 96kg/m3 density rockwool as per ARAI or other government laboratory test report absorber slabs and with glass veil protection layers. Panels should have drainage provision to avoid water logging inside. Total four numbers of panel shall be installed to cover 2.0 m height. Four number of panels should be of 3000x500x120mm shall be fitted within the H beams structure with EPDM gasket as per approved drawings, Panels self-life 15-20 years. Noise barrier height 2.0 Meter from top of crash barriers STC- 34-38/EN 1793— 2 NRC 0.9/EN 1793-1.</p> <p>(a) 70% of Item rate should be payable after supplying of material at site with the required test.</p> <p>(b) Remaining 30% of Item rate should be payable after installation and completion of the work.</p> <p>Built up H beam sections of size 152x152 welded at 16mm steel base plates with additional stiffeners, both complying with IS 2062 standards vertical post shall be fixed from back / Top of the concrete foundation / crash barrier with 6nos of 8.8 grade</p>	As per attached separate sheet
76	<p>providing and erecting Mains with ISI marked, 1.5KV grade electrolyte multi stranded, annealed copper conductor with heat resistant PVC insulated conforms to IS 694, IEC - 227 erected in existing pipe of following size (Specifically for control panel, relays, power switchgears, motor starters & control wiring) with required size of copper lugs, nuts and bolts if required.(g) One wire 16.00 sq. mm</p>	As per attached separate sheet
77	(i) One wire 35.00 sq. mm	As per attached separate sheet
78	<p>Supplying and erecting Flexible PVC insulated multi strand multi core 1.1 kv grade ISI marked copper wires of following size to be erected as directed.(e) 1.50 Sq.mm 3 core round PVC sheathed."Make-Havells, RR Kabel, Finolex or Polycab"</p>	As per attached separate sheet
79	<p>Supplying and erecting LED street light / Flood light fittings with High power White LEDs wattage of 3 Watt and above assembled on single MCPCB, efficiency more than 130 lm/w and corrosion free High pressure die cast aluminum housing with smooth finish powder coated and heat sink extruded aluminium with diffuser and Polycarbonate optics/ lenses, with toughened glass with company mark/name engraved or embossed 160 to 270 V,Power Factor more than 0.95, THD < 10 %, CCT 3000 K to 5700K,Uniformity ratio >0.45, Luminaire efficacy> 100 lumens/watt . LED driver efficiency > 85 %.(fittings required LM-79 & LM-80 certificates)(NOTE: Below description have shown ranges of Wattage capacity of LED fittings.The Engineer incharge may select any wattage capacity between the ranges shown.).</p> <p>(A) Street Light (IP-65), Surge protection -4KV integral and ,Light must have 440VAC line supply with over-voltage protection.</p> <p>(f) Above 60 watts to 90 watts Cat-III Make-Havells, Philips, Wipro or Crompton C 5" With 5 Year all inclusive maintenance warranty period</p>	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
80	providing and erecting Approved make Four pole moulded case circuit breaker having breaking capacity ICU of 25 KA. at 415 V, having normal current rating up to 25 A to 100A. with Fixed thermal & magnetic release suitable to work on A.C. supply 50 c/s. with all internal connections & complete erected in existing 16 G.M.S. housing. ICS=100% of ICU only ,With Housing or Encloser Add 10% Cat III	As per attached separate sheet
81	Providing and erecting busbar chamber confirming to IS-375 fabricated from 16 G.M.S. sheet, dust & vermin proof having hinged door with rubber gasket and necessary busbar supports with COPPER busbar having current density not more than 1.6 Amp. / sq.mm (Rated current / cross section area) duly wrapped with colour insulation tape for phase sequence, three phase & neutral each suitable for following current capacity with necessary painting mounted on wall or pedestal frame of required size with necessary connections.(A) Suitable for 63/100 Amp. capacity	As per attached separate sheet
82	providing and erecting Miniature circuit breaker single pole 0.5A to 2A system and having breaking capacity 10 KA to be erected in existing box. confirming to IS 8828/1996 with ISI Mark ,Cat-III	As per attached separate sheet
83	Plastic enclosure fitted with DIN rail suitable for incorporating Three /Four nos. MCB	As per attached separate sheet
84	providing and erecting Approved make ELCBs / RCCBs conforming to IS: 12640 and having sensitivity of 30 mA and Short Circuit withstand capacity of 10 KA and suitable for operation on 3 phase and neutral 415V,50Hz. having characteristic of quick action & tripping with all advance feature & do not incorporate any electronic component for following Max. rating erected as directed..(ii) 40Amps. FP Cat. III "Make-Schneider, L&T, ABB, Seimens,C&S"	As per attached separate sheet
85	Providing and erecting metallic vitrified danger notice board as per language suggested by engineer incharge for MEDIUM VOLTAGE installation to be erected as per IS-2551.	As per attached separate sheet
86	Providing and erecting Annealed bare Copper wire 8 to 16 SWG.	As per attached separate sheet
87	Supplying & erecting earth pit of minimum bore dia.150mm size approved make Earthing Electrode consisting Pipe-in-Pipe Technology as per IS 3043-1987 made of corrosion free hot dipped G.I.Pipes having Outer pipe dia of 50mm having 80-200 Micron galvanising, Inner pipe dia of 25 mm having 200-250 Micron galvanising, connection terminal dia of 12mm with constant ohmic value surrounded by highly conductive compound with high charge dissipation suitable for following type of applications with chamber and heavy duty cover.(approved make OEM has to submit test certificate) & having back filling compound of (B) Inner chemical (CCM Compound)- Resistivity:- 0.2 Ω / meter testing as per IEC 62561-2017, Voltage drop:- < 1 volt at no load & dry form, Sulphar content:- <2%(C) Back fill Compound :- Earthing compound should be capable to retain moisture for long time Necessary test report must be submitted.(a) For Electrical Installation up to 440V in normal soil Length of pipe - 1 Mtr Back filling compound - 1 Nos Bag of 15 Kg.	As per attached separate sheet
88	Providing , erecting , fabricating the M.S. structure as per requirement on site incorporating proper size of M.S. angles, flats, bars, channels, sections complete with cutting, welding, grinding & finishing duly painted with one coat of red oxide with erection on site as per direction of engineer in charge with necessary grouting, cementing, plastering & finishing complete.	As per attached separate sheet
89	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand / Solid Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables,(c) 4 core 10 Sq. mm	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
90	Providing and erecting XLPE (IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables,(C) 4 core 35 Sq. mm	As per attached separate sheet
91	Making trench in Hard Murrum / Tar Road of suitable width of 90 cms or required depth for laying any size of cable or locating the fault all over the run and back filling the same and making the surface as normal ground.	As per attached separate sheet
92	(B) If additional machineries like hammer driller or JCB use [Add]	As per attached separate sheet
93	Drilling the road without breaking the road surface (Asphalt) for laying of cable for feeding power supply by making up to following size of holes at both ends complete.(A) Up to 100 mm bore dia	As per attached separate sheet
94	Providing and, fixing heavy duty flange type brass cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables. (c) 2 to 4 core 10 Sq. mm	As per attached separate sheet
95	Providing and, fixing heavy duty flange type brass double compression type cable gland with rubber ring for PVC insulated armoured cable complete with out going tails, insulating tape etc for following size of cables.(a) 3 core 35/50 Sq. mm	As per attached separate sheet
96	Solderless crimping type Aluminium lugs conforming to IS suitable for cable of following size evenly crimped with high pressure tool & connected to switchgear terminals with brass/cadmium plated nut bolts in an approved manner.(B) 10 Sq.mm	As per attached separate sheet
97	(D) 35/50 Sq.mm.	As per attached separate sheet
98	Supplying and erecting approved make Octagonal pole made from HR sheet steel. The pole should be made as per IS. and shall be coated with hot dip galvanizing as per IS 2629/2633/4759, suitable suspend local wind speed with integral Junction box consist of terminal plate of min 6mm Hylam sheet, standard profile 35mmX7.5mm Din-Rail for MCB Mounting, stud type terminal and arrangement for cable termination to be erected on foundation(included) as per details given by manufacturer considering site requirement. (D) 6 Mtr. Long 70 mm Top X 135 mm bottom dia, 3 mm thickness with 200mmX200mmX12mm base plate, 4-M20 Bolts and 600mm long J-Bolt.Approx Pole weight 59 kg. " Make-Bajaj Transrail valmont Utkarsh Jetco "	As per attached separate sheet
99	(E) 7 Mtr. Long 70 mm Top X 135 mm bottom dia, 3 mm thickness with 225mmX225mmX16mm base plate, 4-M20 Bolts and 600mm long J-Bolt. Approx Pole weight 67 kg. " Make-Bajaj, Transrail, valmont, Utkarsh,Jetco ".	As per attached separate sheet
100	Providing and erecting street light pole bracket comprising main B Class MS pipe of 4.2 cm/require outside dia. complete with suitable B Class M.S. sleeve tubing of approx. 45cms.length and suitable for 76.5 mm / 80mm. / require size pole top having sufficient fasteners for fixing the brackets and having spread of 1 mtr. length with suitable rise as per site condition & suitable welded stiffener reducer and nipple with check nut complete painted with one coat of Red oxide / PU base primer and two coats of Aluminium / PU paint. paint with following nos of arms.[B] Double Arm Bracket 1 Mtr	As per attached separate sheet

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ITEM NO.	ITEM DESCRIPTION	APPLICABLE SPECIFICATION REFERENCE
101	Supplying & erecting IP 55 grade following size section pillar fabricated from joint less M.S. Sheet with angle iron legs made from jointless M.S. Angle with cable clamps to be buried in ground to have appropriate erection to work uniform until erected with cement concrete foundation and 45 cm high bricks work finishing with plaster etc. hinged double door internally supported on both side, with internal and outside looking arrangement with lock and keys in duplicate 35 x 35 x 5 mm M.S. Angle of Two Nos. one is welded and other with nut and bolt for erecting bakelite sheet. Painting the Section Pillar inside and out side with three tank powder coated paint. section pillar roof should be without joint with water leakage proof & tested as per IP 55 test & followed by IS 2147 of 1962,(A) 150 X 90 X 75 cm section pillar fabricated from 14 Gauge MS Sheet with angle iron legs 95 cm long made from 40 X 40 X 6 mm thick MS angle	As per attached separate sheet
102	Supplying and erecting HYLAM sheet on existing angle iron frame.for following thickness,12 mm.	As per attached separate sheet
103	Supplying & erecting approved make Digital time switch having lithium cell 6 years operative and operate battery backup 1 channel day clock with 14 memory programme, suitable to operate on 240V + 5%, 16A with, floating contacts Minimum switching setup time 1 minimum & LCD display. Also comprised permanent ON/OFF switching. Programming switches & housed in fire proof thermoplastic enclosure & transparent cover erected as required with necessary connection erected as directed.	As per attached separate sheet
104	Supplying & erecting power contactor for time switch complete erected as per direction Cat III [D] 4 pole 440V 40 Amp.	As per attached separate sheet
105	Supplying and erecting approved make suitable indicator lamps of LED type lamp, lense cover, Bakelite holder complete erected with necessary connections.	As per attached separate sheet