

NAME OF WORK

Construction of Major Bridge on Damanganga River at Aslona Bilona
Mohapada Near Davleshwar Mahadev Temple

SPECIFICATIONS

Name of Work	Construction of Major Bridge on Damanganga River at Aslona Bilona Mohapada Near Davleshwar Mahadev Temple	
INDEX SPECIFICATIONS		
Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
1	Clearing and grubbing road land including uprooting rank vegetation grass bushes,shrubs,sapling and trees girth up to 300 mm removal of stumps of trees cut earlier and disposal of unserviceable materials(D) By mechanical means in area of thorny jungle	As per Separate Sheet attached.
2	Marking out the center line of the Bridge and various other component structures and complete lining out and leveling with theodolite, levels,including constructing necessary masonry pillars for lines and levels and establishing nesessary bench marks etc. complete as directed.	As per Separate Sheet attached.
3	Diversion of water course, providing cofferdam and bund or island as may be necessary for foundation and maintaining the same for the period as may be necessary. (V) Pier Nos., (F) Abutment Left (including returns/wing walls)	As per Separate Sheet attached.
4	Carry out Geo-technical investigation work including exploratory drilling of 150mm dia bore holes in all sorts of soil, ordinary rock and hard rock, upto maximum depth as mentioned, collecting undisturbed samples and conducting standard penetration tests alternate at an interval of 1.5m.depth, conducting necessary laboratory tests for all type of classification and determination of soil parameters like density, shear and consolidation parameters if required, including submission of report in three copies covering investigation data and recommendation for SBC and the pile capacity considering the design criteria, all as per specification. Including of submitting soil investigation report in three sets in hard copy as well soft copies and all materials with contractor's labour, tools & plants, machineries, as required, The Geotech bore locations shall be provided by consultant,The rate is including of all taxes. • For Water Portion	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
5	<p>Carry out Geo-technical investigation work including exploratory drilling of 150mm dia bore holes in all sorts of soil, ordinary rock and hard rock, upto maximum depth as mentioned, collecting undisturbed samples and conducting standard penetration tests alternate at an interval of 1.5m.depth, conducting necessary laboratory tests for all type of classification and determination of soil parameters like density, shear and consolidation parameters if required, including submission of report in three copies covering investigation data and recommendation for SBC and the pile capacity considering the design criteria, all as per specification. Including of submitting soil investigation report in three sets in hard copy as well soft copies and all materials with contractor's labour, tools & plants, machineries, as required, The Geotech bore locations shall be provided by consultant, The rate is including of all taxes.</p> <ul style="list-style-type: none"> • For Land Portion 	As per Separate Sheet attached.
6	Providing flood gauge marks on substructure as per design including painting complete.	As per Separate Sheet attached.
7	Excavation in large boulders and soft rock by welding including shoring, strutting and dewatering as necessary and disposing of the excavated stuff as directed.	As per Separate Sheet attached.
8	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.(A) General blasting	As per Separate Sheet attached.
9	Providing and filling in foundation with ordinary Cement concrete M-15 mix and providing necessary vertical pin headers including formwork, vibrating, ramming and curing complete. And Providing and filling trenches of Labour charges - Excavator in rocky strata with ordinary cement concrete M-15	As per Separate Sheet attached.
10	<p>Providing and casting in-situ Reinforced Cement Concrete M35 grade controlled cement concrete in pier, abutment & retaining walls foundations (piers, abutments and retaining wall shall be cast in single lift or as per direction of Engineer in charge) etc. using 6mm to 20mm machine crushed well graded stone aggregate, sand of approved quality, OPC53 grade cement with contractor's own concrete mix design, etc. complete. The rate is inclusive of all materials, including necessary mixing in fully automatic batch mix plant, transport, curing, vibrating, placing in position, scaffolding, staging, shuttering, formworks, deshuttering carefully, making good the damages, fixing embedment, inserts, pockets, wherever necessary, with all lead and lift with contractor's labour, tools & plants, machineries, as required, with F3 type exposed concrete finish and form mark. Any honeycombing / Undulation found shall be rectify to match F3 class finish.</p>	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
11	Providing and fixing mild steel dowel bars of minimum 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 Separate Sheet attached.
12	Providing and casting in situ controlled cement concrete M-35 for R.C.C. return as per drawings including centering shuttering, scaffolding where necessary, laying vibrating, curing and finishing complete. (1) Piers (2) Abutment (3) RCC return (A) Height from 0.0 M to 5.0 M.	As per Separate Sheet attached.
13	Providing and casting in situ controlled cement concrete M-35 for R.C.C. return as per drawings including centering shuttering, scaffolding where necessary, laying vibrating, curing and finishing complete. (1) Piers (2) Abutment (3) RCC return (A) Height from 5.0 M to 10.0 M.	As per Separate Sheet attached.
14	Providing and casting in situ controlled cement concrete M-35 for R.C.C. return as per drawings including centering shuttering, scaffolding where necessary, laying vibrating, curing and finishing complete. (1) Piers (2) Abutment (3) RCC return (A) Height from 10.0 M and above	As per Separate Sheet attached.
15	Providing and casting in situ controlled cement concrete M-35 for R.C.C. work in pier cap, abutment cap and dirt wall of required size below bearings as per detailed drawings, centering, shuttering, scaffolding, wherever necessary, laying vibrating, curing and finishing complete. (A) Pier Cap, Abutment Cap & Dirt wall incl. Inspection Platform SLab	As per Separate Sheet attached.
16	Providing and casting in situ controlled cement concrete M-40 for pedestal and arresters of required size below bearings as per detailed drawings, centering, shuttering, scaffolding, wherever necessary, laying vibrating, curing and finishing complete. (A) Pedestals & Seismic Arresters in M-40	As per Separate Sheet attached.
17	Providing and placing in position CRS (Corrosion Resistance Steel) FE 550D bar reinforcement for All Structural Component including cutting bending hooking and tying complete as per detailed drawing.	As per Separate Sheet attached.
18	Providing and fixing in position fully moulded restrained elastometric Bearings as per detailed drawings.	As per Separate Sheet attached.
19	Providing and filling sand behind abutments and between returns in layers as directed	As per Separate Sheet attached.
20	Providing & laying weep hole in Abutments, and returns by using A.C. pipe of 100mm including laying in proper grade and jointing the completed as per detailed specification.	As per Separate Sheet attached.
21	Providing and laying - Fitter Media 600mm thick directed at the back of abutments, returns and wing walls as per detailed specifications.	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
22	Providing and laying Pitching on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment complete as per drawing and Technical specifications.Stone	As per Separate Sheet attached.
23	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification	As per Separate Sheet attached.
24	Providing and Casting in situ controlled Cement Concrete M-200 for R.C.C. Raft and cutt-off walls including necessary shuttering laying, vibrating, ramming and curing complete. (Toe Wall)	As per Separate Sheet attached.
25	Providing and casting in situ controlled cement concrete M-35 for R.C.C. work in superstructure including centering, shuttering scaffolding, ramming, vibrating curing and finishing complete.(A) T-Beam and Deck slab type of superstructure (II) Main and cross Girder	As per Separate Sheet attached.
26	Strip Seal Expansion Joint (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 Separate Sheet attached.
27	Providing and fixing the continuity arrangement in deck slab as per the detailed drawing with fixtures, componenets, filler etc. complete as directed by Engineer in charge.	As per Separate Sheet attached.
28	Providing and casting in situ controlled cement concrete M-40 for average 100 mm thick wearing coat laid as directed dincluding tamping, vibrating, finishing, curing and fillingin joints with bitumen complete	As per Separate Sheet attached.
29	Providing and fixing in postion premolded Asphalt filler joints as per drawing .	As per Separate Sheet attached.
30	Carrying out load test of super structure as directed including all necessary materials plant equipement, instruments, labour and arrangements for test directed.	As per Separate Sheet attached.
31	Providing and casting in situ controlled cement concrete M-40 for Crash Barriers & Friction slab including formwork curing and finishing, complete	As per Separate Sheet attached.
32	Providing and casting in situ controlled cement concrete concrete M-35 for approach slab including formwork curing and finishing complete.	As per Separate Sheet attached.
33	Providing and casting in situ controlled cement concrete M-25 for architectural pylons including necessary formwork, vibrating, curing and finishing complete. (a) Concrete.	As per Separate Sheet attached.
34	Providing G.I. 100mm diameter water spouts including necessary iron gratings as per drawings.	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
35	Providing & laying approved make Double walled corrugated pipes (DWC) of polyethylene (conforming to IS14930 II) with necessary connecting accessories of same material at required depth in existing trench for laying of cable. below ground/road surface for enclosing cable (A) 50 mm outer dia	As per Separate Sheet attached.
36	Providing and applying one coat Epoxy Phenolic primer of DFT 50 micron and two coats of Epoxy Phenolic 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 Separate Sheet attached.
37	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)	As per Separate Sheet attached.
38	Providing and fixing marble slab including engraving and painting complete.(i) Size 75cm x 60cm x 4cm.	As per Separate Sheet attached.
39	Providing, Designing , Supplying and Installation of Extruded Bi-Axial Polypropylene 40kN Geogrid including all Labours & Etc. Complete as directed by Engineer-In-Charge	As per Separate Sheet attached.
40	Fabricating, supply and erecting in position Standard Structural steel sections conforming to IS 2062 for railing, gates of underspace 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, paint, with all contractor's materials, labour, tools & plants, in bolted / welded construction as directed by Engineer-in-Charge. Anticorrosive paint must be applied before applied any paint. The rate shall inclusive of providing and applying Epoxy Coating of approved shade, brand and manufacture on new structural steel work with one coat of 30 micron (DFT) of Epilux 4 Zinc Rich primer of Berger Paint India Ltd or equivalent as primer and Two coat each of 35 micron (DFT) of Epilux 84 High Gloss CR enamel of Berger Paint India Ltd or equivalent at all levels. (Total DFT is 30+35+35=100 microns) The waste cut pieces shall not be included in the paying quantity.	As per Separate Sheet attached.
41	Providing And lying 40mm thick bituminous concrete on existng bituminous surface and using specification graded machine crushed with 5.50 % bitumen VG-40 grade by Wt. of total mix as per specification MORT&H including mixing of asphalt with B.T. chips in continuous batch mix plant transporting same as by paver finisher and consolidation the same with pair of 8 tonnes to 10 tonnes vibratory roller to achive desire density and including VG-40 grade bitumen, cost of emulsion, cost of required tools, plants, all machineries, equipment fire wood, oil, kerosene, charges etc complete,	As per Separate Sheet attached.
42	Providing and applying primer coat with vg-10 and spraying emulsion with spray set fitted on mechanical bouzer using emulsion at the rate of 7.5 kg/ 10 Sqm. On wmm surface Incl. cleaning the surface etc. complete	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
43	Providing and lying 50mm D.B.M with B.T. Aggregate as per MORT&H specification with vg-10 For Tack coat @ 2.5 Kg. /10 Sqm. With mechanical sprayer & bitumen VG-40 grade for mixing @ 45 Kg./MT. i.e. 4.5% by total weight of mix heating and mixing the aggregate & asphalt in continuous batch mix plant and transporting to site and spreading the same by sensor paver finisher & consolidation with vibratory roller including providing all materials equipments, tools & plant, fire wood, oil, kerosene, labour charges etc. Complete using contractor's own machinery batch mix plant & sensor paver finisher etc. Complete.	As per Separate Sheet attached.
44	Providing and laying 50mm thick bituminous macadam B.T. aggregate as per MORT&H specification and VG-40 for tack coat @ 2.50 kg./10 smt. With mechanical sprayer & bitumen grade VG-40 for mixing @ 34kg/mt. i.e. 3.40% by weight of total mix including heating and mixing the aggregate & asphalt in continuous batch mix plant and spreading the same by sensor paver finisher & consolidation with vibratory roller including providing all materials equipments, tools & plant, fire wood, oil, kerosene, labour charges etc. complete using contractor's own machinery drum mix plant & paver finisher etc complete.	As per Separate Sheet attached.
45	Providing, laying, spreading and compacting stone aggregate for Wet Mix Macadam (as per table 400-12 and 400-13) specification including premixing the material with water to OMC in wet mix plant as per approved design mix, carriage of mixed material by Tipper to site, laying in uniform layers with motor grader/Front end Loader/paver finisher, in sub base/ base course on a well prepared under base and compacting with vibratory roller to achieve the desired density including lighting, guarding, barricading and maintenance of diversion etc. (MoRTH specification : Clause 406 & Clause 112) by mechanical means with all lead .	As per Separate Sheet attached.
46	Construction of granular sub-base by providing coarse graded material, spreading in uniform layers with motor grader on prepared surface, mixing by mix in place method with rotavator at OMC, and compacting with vibratory roller to achieve the desired density, complete as per clause 401.By mechanical means with all lead (Grade-I)	As per Separate Sheet attached.
47	Earthwork for embankment including breaking clods, dressing with all lead and lift (excluding watering and consolidation)(E) From Borrow area within 3.0 Km. lead (For Subgrade)	As per Separate Sheet attached.
48	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 Separate Sheet attached.
49	Providing and fixing ordinary Kilometer stone of approved hard stone as per I.R.C. type design in C.C. 1:4:8 including painting and lettering etc. complete (For N.H., S.H. and M.D.R.)	As per Separate Sheet attached.
50	Providing and fixing 5th Kilometer stone of approved hard stone as per I.R.C. type design in C.C. 1:4:8 including painting and lettering etc. complete (For N.H., S.H. and M.D.R.)	As per Separate Sheet attached.
51	Providing and fixing Hectometer as per I.R.C. type design including painting, lettering etc. complete.(ii) Fixing in C.C. 1:5:10	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
52	Cat Eye / Road Stud / RPM: Supplying Raised Pavement Markers made of polycarbonate and ABS moulded body and reflective panels with Micro prismatic lens (No Glass bead lens) capable of providing total internal reflection of the light entering the lens face and shall support a load of 13635 kgs. tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 D DO III Dt 11.06. 1997. The height, width and length shall not exceed 20 mm, 130 mm and 130 mm and with minimum reflective area of 13 Sqcm on each side and the slope to the base shall be 35 +/- 5 degree. The body of the marker should having finger grip for easy and accurate placement and application with epoxy / bituminous Adhesive as recommended by the manufacturer of the marker. The color of the marker should be as per the IRC 35-2015 and as directed by Engineer-in-charge.	As per Separate Sheet attached.
53	Road marking with hot applied thermoplastic paints with reflectorising glass beads on bitumin surface providing and laying a hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250gms per sqm area, thickness of 2.5mm is excluding of surface applied glass beds as per IRC:35- 2015. The 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 color marking should provide liminance coefficinet on cemend road shalll be min 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. Warranty for the Retro reflectivity should be two years.	As per Separate Sheet attached.
54	Cautionary Warning Sign :-Providing and fixing sign Providing and fixing sign boards made out of 2 mm aluminium sheet / 4 mm ACP (Aluminium Composite Panel); size 90 × 90 × 90 cms equilateral triangle as per design of IRC-67-2012, pre-treated with phosphating process and 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-XI as per ASTM D-4956 and latest MoRT&H specifications; 3.6 mtr long stand post of 75 × 75 × 6 mm / 65 NB circular MS pipe as required and frame fabricated from suitable size iron angle of 35 × 35 × 3 mm; painted with best quality epoxy coatings in black and white bands. The details of symbol for each board shall be as per the instructions of the Engineer-in-Charge. The fixing at site shall be in 1:2:4 cement concrete block of size 45 × 45 × 60 cms for each leg, including excavation, curing, etc., complete under the supervision of the Engineer-in-Charge. A warranty for 10 years for the retro-reflective sheeting from original manufacturer and a certified copy of 3-year outdoor exposure test report from third-party test laboratory for the product offered shall be submitted by the contractor. (A) Class-C Type-XI Retro-Reflective Sheeting	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
55	<p>Regulatory / Mandatory Sign :- Providing and fixing sign boards made out of 2 mm aluminium sheet / 4 mm ACP (Aluminium Composite Panel); size 60 cms dia circle as per design of IRC-67-2012, pre-treated with phosphating process and 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-XI as per ASTM D-4956 and latest MoRT&H specifications; 3.6 mtr long stand post of 75 × 75 × 6 mm / 65 NB circular MS pipe as required and frame fabricated from suitable size iron angle of 35 × 35 × 3 mm; painted with best quality epoxy coatings in black and white bands; the details of symbol for each board shall be as per the instruction of Engineer-in-Charge; the fixing at site shall be in 1:2:4 cement concrete block of size 45 × 45 × 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 and a certified copy of 3-year outdoor exposure test report from third-party test laboratory for the product offered shall be submitted by the contractor. (A) Class-C Type-XI Retro-Reflective Sheeting</p>	As per Separate Sheet attached.
56	<p>Providing and fixing STOP sign boards made out of 2 mm aluminium sheet / 4 mm ACP (Aluminium Composite Panel), of size 900 mm octagonal, as per the design and specifications of IRC-67:2012. The board shall be pre-treated with phosphating process and acid etching, coated with one coat of epoxy primer and two coats of best quality epoxy paint, and reflectorised with Micro-Prismatic Grade retro-reflective sheeting, Class-C, Type-XI, conforming to ASTM D-4956 and latest MoRT&H specifications. The sign shall be fixed on a 3.6 m long support post made of 75 × 75 × 6 mm square MS section / 65 NB circular MS pipe, as required. The frame shall be fabricated from 35 × 35 × 3 mm MS angle and painted with best quality epoxy coatings in black and white bands. The symbols and lettering on the sign board shall be as per the instructions of the Engineer-in-Charge. The sign shall be fixed at site in a 1:2:4 cement concrete foundation block of size 450 × 450 × 600 mm for each leg, including excavation, concreting, curing, and all incidental works, complete under the supervision of the Engineer-in-Charge. The contractor shall provide a 10-year warranty for the retro-reflective sheeting from the original manufacturer and submit a certified copy of a 3-year outdoor exposure test report from a third-party test laboratory for the product offered. (A) Class-C Type-XI Retro-Reflective Sheeting</p>	As per Separate Sheet attached.

Item no	Item of work	Specification Booklet Item no & Page no
1	2	3
57	<p>Facility Informatory Sign :-Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite Panel); size 80 x 60 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; 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</p>	As per Separate Sheet attached.
58	<p>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</p>	As per Separate Sheet attached.

Dy. Executive Engineer
Pan. (R & B) Sub Division
Kaprada

Executive Engineer
Pan (R & B) Division,
Valsad