

**Name of Work :- Resurfacing & Strengthening to Various Roads of  
BALASINOR Taluka under S.R. 2022-2023. Package No. 1 (Total 8 Roads of  
10.11 Km.) Dist.Mahisagar.**

**SPECIFICATION INDEX**

<b>It. No.</b>	<b>Description of Item</b>	<b>Applicable Separate Road Specification attached reference</b>
1	Clearing and grubbing road land including uprooting wild vegetation grass bushes, shrubs, sapling and trees of girth up to 300mm removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable materials as per Clause-201 (area of light density) by mechanical means in area of light jungle.	As per separte sheet attached.
2	Earthwork in cutting including preparing the slope and camber and stacking or utilizing the cutting stuff in spoil bank as directed upto 200 meters from the end of cutting with all lead and lift.	As per separte sheet attached.
3	Earthwork for embankment including breaking clods, dressing with all lead and lift including watering and consolidation from borrow area within all lead and lift.	As per separte sheet attached.
4	Rolling and watering of earthwork in layers with power roller including filling in depressions which occur during the process.	As per separte sheet attached.
5	Scarifying & removing bitumen macadam surface including completely removing out the entire existing bituminous surface, stacking useful materials on road side and disposing off remaining stuff complete as per instruction given by engineer-in-charge.	As per separte sheet attached.
6	Providing & laying compacted WBM Grading-II using MCBT metal of size 45mm to 63mm in required layers including using 16% stone screening, 13.2mm size and 8% stone dust as filler including spreading, watering and consolidation by vibratory roller as per MORTH specification etc complete as directed by engineer in charge.	As per separte sheet attached.
7	Providing and laying compacted of specified hard murrum in side shoulders including carraige of material and spreading on prepared base including compacting as per MORTH specification etc. complete.	As per separte sheet attached.
8	Providing and laying evenly tack coat using rapid setting emulsion (RS-1) materials at the rate of 4.00 Kg / 10 Sq.M. on Road surface using emulsion pressure sprayer including the cost of all labour, materials, heating, machinery & equipment etc complete.	As per separte sheet attached.
9	Providing and laying evenly tack coat using rapid setting emulsion (RS-1) materials at the rate of 2.50 Kg / 10 Sq.M. on Road surface using emulsion pressure sprayer including the cost of all labour, materials, heating, machinery & equipment etc complete	As per separte sheet attached.
10	Providing & laying Bituminous grout 37.50 mm thick with asphalt of grade of VG-30 at the rate of 1.99% by weight of mix using B.T. chips of required gradation including cleaning and heating asphalt premix materials by hot mix process in proper gradation and laying with paver finisher and consolidation by roller of 8 to 10 tonnes including cost of all materials, asphalt, aggregates, labour charges, royalty charges etc. completed as directed.	As per separte sheet attached.

<b>It. No.</b>	<b>Description of Item</b>	<b>Applicable Separate Road Specification attached reference</b>
11	Providing, laying and rolling 25 mm thick open graded premixed bituminous carpet with B.T. aggregate as specified and using bitumen grade VG-30 bitumen for mixing with aggregate at the rate of 3.36% i.e. 33.60 kg/M.T. of total mix including heating and mixing in drum mix plant and spreading the same with paver finisher and consolidation with power roller including necessary firewood, oil, lubricants, labour charges etc. using contractor's own drum mix plant and equipment, tool etc. completed in accordance with the requirement of specification.	As per separate sheet attached.
12	Providing and laying seal coat with B.T. aggregate as specified using aggregate at the rate of 0.18 cum/10 Sqmt and bitumen grade (VG-30) for mixing with aggregate at the rate of 4.50% i.e. 45.00 kg/M.T. of total mix including heating and mixing in drum mix plant, spreading the same with paver finisher and consolidation with vibratory roller including necessary firewood, oil, lubricants, labour charges etc. using contractor's own drum mix plant and equipment, tools etc. complete in accordance with the requirement of specification.	As per separate sheet attached.
13	Providing and filling in foundation with ordinary cement concrete M-100 mix and providing necessary vertical pin headers including formwork, vibrating, ramming and curing complete.	As per separate sheet attached.
14	Providing and casting in situ controlled cement concrete concrete M-250 for CC Road pavement including formwork curing and finishing complete.	As per separate sheet attached.
15	Providing Trimix Machine for levelling smooth, finishing including channel fixing electric supply etc and dewatering of excess water through vacuum pump including transporting for machine including expansion Joints filling asphalt filler etc. complete as directed.	As per separate sheet attached.
16	Providing and laying in position I.S.I. mark Fe-415 T.M.T. bar reinforcement including cutting, bending, hooking and tying complete as per detailed drawings for the following. (A) Piers (B) Abutments (C) R.C.C. Returns.	As per separate sheet attached.
17	Providing and fixing ordinary Kilometer stone of precast C.C. 1:2:4 including necessary reinforcement as per I.R.C. type design in C.C. 1:4:8 including painting, lettering etc. complete.	As per separate sheet attached.
18	Providing and fixing Hectometer stone as per I.R.C. type design including painting, lettering etc. complete (i) Fixing in earth.	As per separate sheet attached.
19	Providing and fixing Guard stone as per I.R.C. type design including white washing etc. complete (i) Fixing in earth.	As per separate sheet attached.

It. No.	Description of Item	Applicable Separate Road Specification attached reference
20	Direction sign (Junction board) :- Providing and fixing sign boards made out of 2mm aluminium sheet size 244 x 122cms. rectangle as per the design of IRC-67-1977 pre treated with phosphating process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. Specifications; Letters and numerals should be as per IRC- 30-1968, 3.1m long (2 nos) stand post and frame fabricated from suitable size iron angle of 50 x 50 x 5mm, 75 x 75 x 6mm as required; painted with best quality 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 block of size 45 x 45 x 60cms. for each leg. including excavation curing etc. complete under the supervision of engineer in charge.(A) Engineer Grade (VR)	As per separate sheet attached.
21	Regulatory / Mandatory signs : Providing and fixing sign boards made out of 2mm aluminium sheet size 60cms. diameter circle as per the design of IRC-67-1977 pre treated with phosphating process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. Specifications; 3.1m long stand post and frame fabricated from suitable size iron angle of 35 x 35 x 3mm, 75 x 75 x 6mm as required; painted with best quality epoxy coatings in black and white bends. 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 CC block of size 45 x 45 x 60cms. for each leg. including excavation curing etc. complete under the supervision of engineer in charge.(A) Engineer Grade (VR)	As per separate sheet attached.
22	Village name / Bump Ahead sign :-Providing and fixing sign boards made out of 2mm aluminium sheet size 90 x 60cms. rectangle as as per the design of IRC-67-1977 pre treated with phosphating process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. specifications; Letters and numerals should be as per IRC- 30-1968, 3.1m long (2 nos) stand post and frame fabricated from suitable size iron angle of 50 x 50 x 5mm painted with best quality 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 block of size 45 x 45 x 60cms. for each leg. including excavation curing etc. complete under the supervision of engineer in charge. (A) Engineer Grade (VR)	As per separate sheet attached.

<b>It. No.</b>	<b>Description of Item</b>	<b>Applicable Separate Road Specification attached reference</b>
23	<p>Citizen's information Board :- Providing and fixing of typical MMGSY information board as per instruction. Two MS plates of 1.6 mm thick, of 900 mm x 750mm size fixed at top &amp; bottom duly welded with MS angles of 25 x 25 x 5 mm thick M.S plate shall be welded by two vertical M.S flats &amp; four horizontal M.S flats 5 mm thick to 75 mm x 75 mm of 12 SWG square tubes posts duly embedded in cement concrete M-15 grade blocks of 600mm x 600mm x 75mm, below ground level. Painting New letters &amp; figure of any shade with ready mixed synthetic enamel paint of superior quality in required shade and colour, All sections of framed posts and steel tube will be painted with primer and two coats of epoxy paints as per drawing Clause 1701 and annexure 1700.1 (10.16) A warranty for 7 years for the Retro reflective sheeting from original manufacturer &amp; a certified copy of 3 year outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor.</p>	As per separate sheet attached.
24	<p>Hazard Marker Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet size 90 x 30cms. rectangle as per the design/drawing attached (IRC) pretreated with phosphating process &amp; acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. Specifications; 3.1m long stand post and frame fabricated from suitable size iron angle of 35 x 35 x 3mm &amp; 50 x 50 x 5mm painted with best quality epoxy coatings. The fixing at site shall be in 1:2:4 CC block of size 45 x 45 x 60cms. for each leg including excavation curing etc. complete under the supervision of engineer in charge. (A) Engineer Grade (VR)</p>	As per separate sheet attached.
25	<p>STOP Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet size 90 x 90cms. rectangle as per the design of IRC-67-1977 pre treated with phosphating process &amp; acid etching, coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. specifications; 3.1m long stand post and frame fabricated from suitable size iron angle of 35 x 35 x 3mm, 75 x 75 x 6mm as required; painted with best quality epoxy coatings in black and white bends. 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 CC block of size 45 x 45 x 60cms. for each leg. including excavation curing tec. complete under the supervision of engineer in charge. (A) Engineer Grade (VR)</p>	As per separate sheet attached.

It. No.	Description of Item	Applicable Separate Road Specification attached reference
26	Road marking with hot applied thermo plastic paint with reflectorising glass bend on bitumen surface. Providing and laying of hot applied thermo plastic compound 2.5mm thick including reflectorising glass beads @ 250 gms. per Sqmt. area thickness of 2.5mm is exclusive of surface applied glass beads 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 line should provide luminance coefficient on cement road shall be min 130 mcd/m2/lux and asphalt road shall be min 100 mcd/m2/lux during the service life curing day time the marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in the section of IRC 15:2015. warranty for retro reflectivity shall be two years.	As per seperate sheet attached.
27	Cat Eye / Road Stud / RPM : Supplying of Moulded Twin Shanks 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 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 strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kgs. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and The color of the marker should be as per the IRC 35-2015 and as directed by Engineer-in-charge.	As per seperate sheet attached.
28	Cautionary Warning Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet size 90 x 90 x 90 cms. equilateral triangle as per design of IRC-67-1977. Pre treated with phospheting process & acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with retro reflective sheeting as per latest M.O.S.T. specifications; 3.1m long stand post and frame fabricated from suitable size iron angle of 35 x 35 x 3mm, 75 x 75 x 6mm as required; painted with best quality epoxy coatings in black and white bends. 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 CC block of size 45 x 45 x 60 cms. for each leg including excavation, curing etc. complete under the supervision of engineer in charge. (A) Engineer grade (VR)	As per seperate sheet attached.

It. No.	Description of Item	Applicable Separate Road Specification attached reference
29	Type - A, "W" : Metal Beam Crash Barrier :- 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 including necessary excavation of Post, providing Levelling course M-10 (Size 0.65 x 0.65 x 0.10 m) & foundation concrete in M-200 (Size 0.5 x 0.5 x 0.15 + 0.3 x 0.3 x 0.70) as per requirement and instruction from engineer in charge.	As per separate sheet attached.
30	Excavation for foundation up to 1.50 mt. depth including sorting out and stacking of useful material and disposing off the excavated stuff within all lead and lift.	As per separate sheet attached.
31	Providing and casting in situ ordinary cement concrete M-150 mix and providing necessary pin headers including shuttering, scaffolding, laying, vibrating, curing and finishing complete without V-grooves with all lead and lift.	As per separate sheet attached.
32	Supplying and fixing ISI reinforced concrete heavy duty non- pressure pipes with collars for culverts carrying heavy traffic as per IS 458-1991 specifications including setting the pipes in C.M. 1:2 watering and laying (to level or slopes) of class NP3 of following internal diameters.(v) 900 mm. dia.	As per separate sheet attached.
33	White washing with lime on wall surface (two coats) to give an even shade including thoroughly brooming the surface to removed all dirt, dust mortar drops and other foreign matter.	As per separate sheet attached.
34	Providing and fixing 20 cm. x 15 cm. x 2.5 cm. thick year plate of marble stone set in C.C. 1:4 including finishing and engraving letters etc. complete.	As per separate sheet attached.
35	Providing and maintaining a road diversion for traffic during the work in progress till completion of work including providing red lamps and necessary sign boards etc. complete. (For C.D.Works)	As per separate sheet attached.
36	Supplying and fixing reinforced concrete heavy duty non-pressure pipes with collars for culverts including setting and joining the pipes in C.M. 1:2 watering and laying (to level or slope) of I.S. class NP2 of following internal diameters. (i) 300mm dia.	As per separate sheet attached.
37	Filling around the pipes with murrum including dressing, tampering etc. complete.	As per separate sheet attached.
39	Dismantling the existing structure including removing and stacking the dismantled materials as and where directed. (B) Rubble Masonry	As per separate sheet attached.
40	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm. in depth consolidating each deposited layer by ramming and watering.	As per separate sheet attached.

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41	Providing and laying weep hole in abutment and returning by using A.C. pipes / PVC pipe of 100 mm. diameter including laying in proper grade and joining etc. comp as per detailed specifications.	As per seperate sheet attached.
42	Providing and laying filter media 600 mm thick as directed at the back of abutments and returns and wing walls as per detailed specifications.	As per seperate sheet attached.
43	Providing & laying 37.50 mm thick compacted bitumen Macadam using B.T. chips aggregate as specified and mixing binder asphalt grade of (VG-30) at the rate of 3.40 % by total weight of mix including heating and mixing in drum mix plant and spreading the same with sencer paver finisher and consolidation with vibratory roller including necessary firewood, oil, lubricants, labour charges etc. using contractor's own drum mix plant and equipment, tools etc. completed in accordance with the requirement of specification.	As per seperate sheet attached.
44	Providing and laying 20mm thick mix seal surfacing using B.T. chips as per required gradation and mixing asphalt grade VG-30 @ 5.10% by weight of total mix and mixing by contractor's own drum mix plant and laying by sencer paver finisher and consolidation with vibratory roller including necessary firewood, oil, lubricants, labour charges etc. using contractor's own drum mix plant and equipment, tool etc. completed in accordance with the requirement of specification.	As per seperate sheet attached.

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