

**Name of Work :- Widening and Strengthening of Koshindra Bhakha Road Km. 0/00 to 15/500 (O.D.R.) Ta. Bodeli Dist. Chhotaudepur**

**SPECIFICATION INDEX**

<b>It. No.</b>	<b>Description of Item</b>	<b>Applicable specification reference</b>
1	Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable material. (C) By mechanical means in area of light jungle.	As per Separate Sheet attached.
2	Earthwork in cutting in all sorts of soil and soft murrum including conveying and spreading the stuff, embankment as and where directed within 200meters from the end of the cutting with all required lead and lift.	As per Separate Sheet attached.
3	Rolling of earthwork in layers with power roller including filling in depressions which occurs during the process.	As per Separate Sheet attached.
4	Providing and filling in foundation with ordinary cement concrete M-100 mix and providing necessary vertical pin headers including form work, vibrating, ramming and curing complete.	As per Separate Sheet attached.
5	Earthwork for embankment including breaking clods, dressing with all lead and lift and including watering rolling and consolidation of subgrade in layers at O.M.C. to required dry density including filling the depression which occur during the process using power roller 8 T to 10T. (D) From borrow area within all lead and lift.	As per Separate Sheet attached.
6	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 all lead and lift.	As per Separate Sheet attached.
7	Scarifying existing bituminous surface to a depth of 50 mm by mechanical means Hydraulic excavator (Scarifying the existing bituminous road surface to a depth of 50 mm and disposal of scarified material with in all lifts and lead upto 1000 metres)	As per Separate Sheet attached.
8	Scarifying gravelled macadam or bitumen macadam surface 6 cm to 10 cm.depth including stacking useful materials on road side and disposing off remaining stuff.	As per Separate Sheet attached.
9	Laying and spreading available soil in the sub-grade on a prepared surface, pulverising, mixing the spread soil in place with soil stabilizer & binder spreader with 2 percent cement using binder spreader machine, grading with motor grader and compacting with the road roller at OMC to the desired density to form a layer of improved sub grade.	

It. No.	Description of Item	Applicable specification reference
10	Construction of 150 mm thick compacted Granular Sub Base by providing GSB Grade-I coarse graded material BTMC using metal 53mm to 26.5 mm@ 35%, aggregate 26.5mm to 4.75 mm @ 45% and stone dust 2.36 mm below @ 20% including 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 401.2 Table 400.1.	As per Separate Sheet attached.
11	Providing and laying 200 mm thick Wet Mix Macadam (WMM) in two layer of 100mm using machine crushed black trap aggregate of 40 to 50 mm size in the material with water OMC in mechanically mix (pug mill) carriage of mix material by contractor's own tipper to site of work including laying, spreading and compacting in sub base, base course on well prepared under base of compacting as per MOST specification to achieve the desired density (Mechanically laid).	As per Separate Sheet attached.
12	Furnishing and installing of the Geocell for GSB / Subbase including fixing and anchoring of cells in the ground, preparation of the ground, filling of cells with specified materials, seeding, watering and all other incidentals, including all items necessary to complete the work as per the specifications, drawings, or as directed by the Engineer. (Size 150 x 356 mm)	As per Separate Sheet attached.
13	Providing and spraying of Priming Coat using slow setting asphalt emulsion (SS-1) on Water Bound macadam / Wet mix macadam at the rate of 7.50 kg per 10 sqm. complete including cleaning the surface with all cost of labour & material.	As per Separate Sheet attached.
14	Providing and spraying of Tack Coat using rapid setting asphalt emulsion (RS-1) on B.T. surface at the rate of 10 kg per 10 sqm. complete including cleaning the surface with all cost of labour & material.	As per Separate Sheet attached.
15	Providing and laying 50 mm thick Bituminous Macadam B.T. aggregate as per MORT & H specification and bitumen grade VG-30 for mixing @ 34 Kg./mt. i.e. 3.40% by weight of total mix including heating and mixing the aggregate & asphalt in continuous drum 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.
16	Recycling pavement by cold milling of existing bituminous layers, planning surface to proper slope and camber for making a base for work the surface after cold milling, reclaiming excavated material to the extent of 30 percent of the required quantity, hauling and stock piling the reclaimed material near the central recycling plant after carrying out necessary checks and evaluation, adding fresh material including rejuvenators as required, mixing in a hot mix plant, transporting and laying at site and compacting to the required grade, level and thickness, all as specified in clause 519. Using by Bituminous Macadam Grading-I.	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
17	Providing and laying of coated Glass Fiber Composite Geogrid bonded with Non-Woven Geotextile, indigenously manufactured for pavement reinforcement. Glass Fiber Geogrid having 50 kN/m tensile strength which conform to the requirements given in Table 4.14 of IRC:SP:59-2019. The Glass Fiber Composite Geogrid shall be installed immediately with Nonwoven facing down after uniform tack coat/emulsion spraying @ above 10 kg/10 sq.m. complete installation by rolling PTR on the product for maximum saturation, before laying final minimum 40 mm asphalt overlay. Minimum roll width 2.5 meter / 5 meter or full lane width as approved by Engineer in-charge only.	As per Separate Sheet attached.
18	Providing and laying 25 mm thick Semi Dense Bituminous Concrete with B.T. aggregate as per MORTH gradation and asphalt grade VG-30 for mixing @50.00 Kg. / M.T. i.e. 5.0% by weight of total mix including heating and mixing the aggregate and asphalt by continuous of drum mix plant and hot laid process laying with paver finisher and consolidation with roller as per MORTH specification to achieve desire density, including cost all materials equipments, tools and plants, oil, kerosene, firewood, labour charges etc. complete using contractor's own machineries drum mix plant and paver finisher etc. complete.	As per Separate Sheet attached.
19	Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirement given in table 500-39, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 13.2 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both direction, pressed into surface when the temperature of surfaces is not less than 1000c, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 516.	As per Separate Sheet attached.
20	Providing 150 mm thick compacted side shoulder of quarry spall on road site including collection of material spreading, rolling of watering etc. complete as directed.	As per Separate Sheet attached.
21	Construction of 150 mm thick compacted Granular Sub Base (Grade-IV, Crushed B.T. material of 26.5 mm to 9.5 mm @ 64%, 9.5 mm to 4.75 mm @ 11%, Below 4.75 mm @ 25%) by providing close graded material mixing in mechanical mix plant at OMC carriage of material to work site spreading in uniform layers with mortar grader on prepared surface and compacting with vibratory power roller to achieve desired density complete as per Clause 401 Morth.	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
22	Construction of M-15 Dry Lean Cement Concrete (150mm thick) Sub- base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a Concrete Sensor paver or conventional method, compacting with 8-10 tonnes vibratory roller, finishing and curing etc. complete.	As per Separate Sheet attached.
23	Construction of un-reinforced, dowel jointed, plain cement concrete pavement (200mm thick) M-40 over a prepared sub base with approve 53 grade cement @ 450 kg per cum, coarse and fine aggregate conforming 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, debonding strip, dowel bar, tie rod, admixtures, Ultrafine GGBS, PolyPropylene fiber as approved, curing compound, finishing to lines and grades as per drawing.	As per Separate Sheet attached.
24	Road Marking with hot thermoplastic paints with reflectorising glass beads on bitumen surface providing and laying a hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm 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/Centre line/ edge line/ Cut patta. The white color marking 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 during the day time. The marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in section-15 of IRC-2015.	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
25	<p>Cat Eye/ Road Stud/ RPM: Supplying of Molded Twin Shanks Raised Pavement Markers made of polycarbonate and ABS moulded body and reflective panels with micro prismatic 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 D4280 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 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 kgf. 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.</p>	As per Separate Sheet attached.
26	<p>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 &amp; 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-4 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 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 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 the product offered shall be submitted by contractor. (B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
27	<p>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 &amp; 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-4 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 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 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 product offered shall be submitted by contractor.</p> <p>(B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.
28	<p>STOP Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite panel) size 90 cms. Octagonal as per design of IRC-67-2012. Pre treated with phospheting process &amp; acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint reflectorised with High Intensity Prismatic Grade retro reflective sheeting of Type-4 as per ASTM D-4956 and latest M.O.S.T. specifications 3.6mtr long stand post of iron angle 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 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 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> <p>(B) Class-B Type-4 Retro Reflective sheeting.</p>	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
29	<p>Distance Informatory / Destination Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite panel) size 180 x 120 cms rectangular as per design of IRC-67-2012. Pre treated with phospheting process &amp; 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-4 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 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 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> <p>(B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.
30	<p>Chevron Sign :- Providing and fixing sign boards made out of 1.5mm aluminium sheet / 3 mm ACP (Aluminium composite panel) size 60 x 50 cm as per design of IRC-67-2012. Pre treated with phospheting process &amp; 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-4 as per ASTM D-4956 and latest M.O.S.T. specifications, 3.3 mtr. long stand post of 75 x 75 x 6mm / 65 NB Circular MS Pipe as required 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 symbol or inscription / numerals for each board shall be 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 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> <p>(B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
31	<p>Village name Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite panel) size 90 x 60 cms. rectangular as per design of IRC-67-2012. Pre treated with phospheting process &amp; acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint ; reflectorised with High Intensity Prismatic Grade retro reflective sheeting of Type-4 as per ASTM D-4956 and latest M.O.S.T. Specifications; 3.3mtr long stand post of Iron angle 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 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 60 cms. for each leg including excavation, curing etc. complete under the supervision of engineer in charge. A warranty for 7 years for the retro reflective sheeting from original manufacturer &amp; a certified copy of 3 year outdoor exposure test report for the product offered shall be submitted by contractor.</p> <p>(B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.
32	<p>Route Marker sign :- Providing and fixing sign boards made out of 1.5mm aluminium sheet / 3mm ACP (Aluminum composite panel) size 60 x 45 cm rectangular plus 30 x 25cm additional plate as per design of IRC-67-2012. Pre treated with phospheting process &amp; 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-4 as per ASTM D-4956 and latest M.O.S.T. Specifications; 3.6 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 35x 35 x 3mm; 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 60 cms. for each leg including excavation, curing etc. complete under the supervision of engineer in charge. 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> <p>(B) Class-B Type-4 Retro Reflective sheeting.</p>	As per Separate Sheet attached.



It. No.	Description of Item	Applicable specification reference
33	<p>Hazard Marker Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite panel) size 90 x 30 cms. rectangular as per design of IRC-67-2012. Pre treated with phospheting process &amp; 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-4 as per ASTM D- 4956 and latest M.O.S.T. Specifications; 1.8mtr 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 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 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> <p>(B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.
34	<p>Tree Guard sign :- Providing &amp; fixing sign board made out of 2mm aluminium sheet / 3mm ACP (Aluminum composite panel) size 30cms diameter circle, pretreated with phospheting process and acid etching, painted 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. 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. (B) Class-B Type-4 Retro Reflective sheeting</p>	As per Separate Sheet attached.
35	<p>Flexible Median Marker : Providing and fixing of Flexible Median Marker that are made of tough, high impact resistant, injection-molded, thermoplastic body with property of flexibility to provide high durability. The dimension of Flexible Median Marker should not exceed 18.4 cm in height (including shank height), 12.5 cm in width, 0.65 cm in thickness and shank depth shall be 3.4 cm The body structure shall be rounded at all its corners and edges. The plastic used for molding the Flexible Median Marker should survive impact load of 5 kg continuously for 750 times at room temperature. The logo of the manufacturer shall be embossed on either side of the body in the injection molding process. The Median Marker shall have flame like shaped body with, fluorescent yellow color retro-reflective sheeting of size not less than 90 cm square, with fully reflective micro prismatic cube corners as its retro-reflective elements as per IRC 67 2012 and ASTM D4956-09 type XI specifications reflectivity values.</p>	As per Separate Sheet attached.
	<p>The retro-reflective sheeting shall be one or both sides of the Flexible Median Marker and shall be edge protected with no exposed edges which will prevent edge lifting, vandalism, sheeting damage, etc. The Flexible Median Marker shall be fixed by a combination of epoxy adhesive and grouting as recommended by manufacturer and Engineer in charge.</p>	

It. No.	Description of Item	Applicable specification reference
36	"THRIE" : Metal Beam Crash Barrier (Providing and erecting a "Thrie" metal beam crash barrier comprising of 3mm thick corrugated sheet metal beam rail, 85cm above road / ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5mm spaced 2m centre to centre, 2m high with 1.15 m below ground 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 space of channel section 150 x 75 x 5 mm, 546 mm long complete as per clause 811)	As per Separate Sheet attached.
37	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.
38	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.
39	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.
40	Excavation for foundation in sand, gravel, clay soft soils and murrum etc. including shoring, strutting dewatering as necessary and disposing of the excavated stuff as directed. (A) Depth upto 3.0 mt. and lead upto 100m for 10 Cum.	As per Separate Sheet attached.
41	Providing and laying controlled cement concrete M-200 exposed work with curing etc. complete including the cost of formwork but excluding the cost of reinforcement for R.C.C. work in (A) BEAMS (iii) Having cross sectional area more than 0.12Sq.M and upto 0.18 Sq.M	As per Separate Sheet attached.
42	Providing I.S.I. mark T.M.T. bar Fe-550D reinforcement for R.C.C. work including bending, binding and placing in position complete upto floor two level.	As per Separate Sheet attached.
43	Providing Rubble pitching of 250 mm. average thickness including pointing mortar with C.M. 1:3 (1 cement : 3 sand) etc. complete.	As per Separate Sheet attached.
44	Providing and casting in situ ordinary cement concrete M-150 for R.C.C. Raft and cut-off walls including necessary shuttering laying, vibrating, ramming and curing complete	As per Separate Sheet attached.
45	Supplying and fixing ISI reinforced concrete heavy duty non-pressure pipes 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 of slops of I.S. 458 / 1971 Class NP3 casted by vertically vibrated technology of following internal diameter. (v) 900 mm dia.	As per Separate Sheet attached.
46	Numbering the C.D.work with approved paint including all materials for paintings etc. complete.	As per Separate Sheet attached.
47	Providing and laying in position I.S.I. mark Fe-500D T.M.T. bar reinforcement including cutting, bending, hooking and tying complete as per detailed drawing for the following (A) Piers (B) Abutments (C) R.C.C. return.	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
48	Providing and laying weep hole in abutment and returns by using A.C. pipe of 100 mm. diameter including laying in proper grade and joining the completed as per detailed specification.	As per Separate Sheet attached.
49	Providing Yellow and Black Patta (three coat) including distempeing (three coats) with oil bound distemper of approved brand and manufacture and of required shade on wall surfaces to give an even shade, over and including a priming coat with distemper primer of approved brand and manufacture after thoroughly brushing the surface free from mortar dropping and other foreign matter and also including preparing the surface even and sand papered smooth as per instruction of Engineer Incharge.	As per Separate Sheet attached.
50	Providing and laying rubble for apron (each stone weighting not less than 40Kg.) including and packing and filing in the interestices with quarry-spalls.	As per Separate Sheet attached.
51	Excavation for foundation upto 1.5m depth including sorting out and stacking of useful materials and disposing off the excavated stuff upto 50 Meter lead. (B) Dense or Hard soil.	As per Separate Sheet attached.
52	Providing and casting in situ controlled cement concrete M-300 for R.C.C. solid slab including centering, scaffolding, curing and finishing complete.	As per Separate Sheet attached.
53	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 Separate Sheet attached.
54	Providing & laying 20mm thick premix seal surfacing using specified graded machine crushed aggregates with VG-30 grade bitumen at the rate of 5.09% i.e. 50.90 Kg/ M.T. by weight mix including heating & mixing in drum mix plant transporting the mix spreading the same by paver finisher and consolidation by vibratory roller as per MORT&H specification including cost of all materials fuel, labours, tools and plant etc. complete and flushing stone dust @ rate of 0.30 cmt / 100 smt.	As per Separate Sheet attached.
55	Men at work (Heavy) sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Aluminum composite panel) size 120cm x 90cm 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 High Intensity Prismatic Grade retro reflective sheeting of Type-4 as per ASTM D-4956 and latest M.O.S.T. Specifications; 3.6 mtr long stand post (2 nos.) of iron angle 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 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 60 cms. for each leg including excavation, curing etc. complete under the supervision of engineer in charge. A warranty for 7 years for the Retro reflective sheeting from original manufacturer & a certified copy of 3 year outdoor expo party test lab for the product offered shall be submitted by contractor (B) Class-B Type-4 Retro Reflective Sheeting.	As per Separate Sheet attached.

It. No.	Description of Item	Applicable specification reference
56	<p>Diversion Ahead Sign :- Providing and fixing sign boards made out of 2mm aluminium sheet / 4mm ACP (Alluminium composite panel) size 180 x 60cms. rectangle as per the design of IRC-67-2012 pre treated with phospheting process &amp; acid etching; coated with one coat of epoxy primer and two coats of best quality epoxy paint; reflectorised with Micro Grade retro reflective sheeting of Type-4 as per ASTM D-4956 and latest MOST specification; 3.1mtr. long stand post (2-Nos.) of Iron Angle 50 x 50 x 5mm / 50 NB circular MS pipe as required and frame fabricated from suitable size iron angle of 35 x 35 x 5mm; 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 warranty for 7 years for the Retro reflective sheeting from original manufacturer &amp; a certified copy of 3 years outdoor exposure test report from third party test lab for the product offered shall be submitted by contractor (B) Class-B Type-4 Retro Reflective Sheeting.</p>	As per Separate Sheet attached.
57	<p>Installation of a steel portable barricade with horizontal rail 300 mm wide, 2.5 m in length fitted on a 'A' frame made with 45 x 45 x 5 mm angle iron section, 1.5 m in height, horizontal rail painted (2 coats) with yellow and white stripes, 150 mm in width at an angle of 450, 'A' frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2014.</p>	As per Separate Sheet attached.
58	<p>Dismantling the existing structure including removing and stacking the dismantelled materials as and where directed. (A) R.C.C. work.</p>	As per Separate Sheet attached.

Deputy Executive Engineer  
Bodeli (R & B) Sub Division,  
Bodeli

Executive Engineer  
Chhotaudepur (R & B) Division  
Chhotaudepur