Sl. No.	Description	Rate	Unit

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Note:-

For Items to be taken for Bridge Works, Overheads to be changed according to Overheads provided in MORTH SOR for Bridge Works

Some items in This SOR is based on MORTH & MORD Standard Data book
Specification Clause nos must be checked as per Current Specifications

Sl. No.	Description	Rate	Unit
CHAPTER-1	**- General Items**		
1-1	Earthwork in Hill Road (Hill Side Cutting)		
1-1-1	Excavation in soil in Hilly Area by mechanical means		
1-1-1-A	Excavation in soil in Hilly Area by mechanical means Without useinng Dozer including cutting and trimming of side slopes and disposing of excavated earth with a lift upto 1.5 m and a lead upto 20 m as per Technical Specification Clause 1603.1	63.70	Cum
1-1-1-B	Extra for Every Additional Lift of 1.5 m or Part thereof	25.70	Cum
1-1-2	Excavation in Hilly Areas in Ordinary Rock by mechanical means not requiring blasting (With out Dozer)		
	Excavation in hilly area in ordinary rock not requiring blasting by mechanical means without using Dozer including cutting and trimming of slopes and disposal of cut material with a lift upto 1.5 m and lead upto 20 m as per Clause 1603.2.	102.40	Cum
1-1-3	Excavation in Hilly Areas in Hard Rock requiring blasting		
1-1-3-A	Excavation in hilly areas in hard rock requiring blasting, by mechanical means without using Dozer , lift upto 1.5 m and disposal of excavated rock upto a lead of 20 m as per Clause 1603.2.	260.60	Cum
1-1-3-B	Extra for Every Additional Lift of 1.5 m or Part thereof	50.40	Cum
1-2	Excavation in foundation for retaining, breast walls etc, in all types of soils and rocks including all lead, lift and disposal of surplus material as per direction of engineer - in - charge, as per drawing and technical specifications Clause 305.1 of MORD Specifiction	389.50	Cum
1-3	Random Rubble Stone Masonry laid Dry, in breast walls, retaining walls, etc. including supply of all material, labour, T&P and royaltiies etc. complete as per drawing and technical specifications Clauses 702, 704, 1202 & 1203 of MORD Specifiction	2,215.30	Cum
1-4	Random Rubble Stone Masonry laid in 1:6 cement and sand mortar, in breast walls, retaining walls, parapets, scuppers, etc. including supply of all material, labour, T&P and royaltiies etc. complete as per drawing and technical specifications Clauses 702, 704, 1202 & 1203 of MORD Specifiction	3,759.50	Cum
1-5	Hand Packed stone filling in back of wallls including cost of all materials, royality, T&P etc. complete as per direction of Engineer-in- charge. (As per PWD Uttarakhand specifications)	1,024.50	Cum
1-6	Construction of coolie walling including supply of all material, labour, T&P etc. required for proper completion of the work as per direction of Engineer-in- charge. (As per PWD Uttarakhand specifications)	1,468.80	Cum
1-7	Providing and laying of wire crates 3.00x1.50x1.50 in size with GI wire conforming to IS: 280 & IS:4826 in 150mm x 150mm mesh laid with stone boulders. as per direction of Engineer-in- charge. (As per PWD Uttarakhand specifications)		
1-7-1	GI wire 10 gauge BWG	1,692.70	Cum
1-7-2	GI wire 8 gauge BWG	1,889.70	Cum

Sl. No.	Description	Rate	Unit
1-8	Providing and Laying of Mechanically Woven Double Twisted Hexagonal shaped Gabions (Zinc plus PVC coated), of size 3mX1mX1m with two diaphragms at 1m interval, having mesh opening 100mmx120 mm, mesh wire diameter 2.7mm/3.7mm, edge/selvedge wire diameter 3.4/4.4 mm and lacing wire diameter 2.2/3.2 mm. (The work includes filling boulders in the gabions).	8,453.00	No.
1-9	Providing and Laying of Mechanically Woven Double Twisted Hexagonal shaped Gabions of galvanized steel, of size 3mX1mX1m with two diaphragms at 1m interval, having mesh opening 100mmx120 mm, mesh wire diameter 3 mm for gabions, edge/selvedge wire diameter 3.9 mm and lacing wire diameter 2.2 mm. (The work includes filling boulders in the gabions).	8,253.00	No.
1-10	Clearance of land slides (Slip Clearance)		
1-10-1	Clearance of land slides in soil and ordinary rock by a bull-dozer D 80 A-12, 180 HP and disposal of the same on the valley side complete as directed by the Engineer-in-charge.	52.50	Cum
1-10-2	Clearing of land slide in hard rock requiring blasting for 50 per cent of the boulders and disposal of the same on the valley side (Using bull-dozer) complete as directed by the Engineer-in-charge.	92.40	Cum
1-10-3	Slip clearance (by manual means) of loose earth and other small loose materials including disposal complete as directed by the Engineer-in-charge.	231.90	Cum
1-10-4	Slip clearance (by manual means) of earth and boulders including disposal complete as directed by the Engineer-in-charge.	232.40	Cum
1-10-5	Slip clearance (by manual means) of boulders only including disposal complete as directed by the Engineer-in-charge.	248.80	Cum
1-11	Setting Out (Construction of Reference Pillars, Back Pillars and Job Pillars)		
1-11-1	Construction of reference pillars with RR 1:6 stone masonary and Plastered with 1:4 Mortar, (totally under ground) of length 200mm, width 200mm and height 300mm) as per Fig. 1600.1 (b) and Technical Specification Clause 1602.1 of MORD specifications.	61.80	No.
1-11-2	Construction of back pillars of RR 1:6 stone masonary and Plastered with 1:4 Mortar, of length 300mm, width 300mm and height 400mm of which 100 mm shall be below ground level as per Fig. 1600.1 (b) and Technical Specification Clause 1602.3 of MORD specifications	252.70	No.
1-11-3	Construction of Job pillers of RR 1:6 stone masonary and Plastered with 1:4 Mortar, of length 400mm, width 400mm and height 600mm of which 100 mm shall be below ground level as per Fig. 1600.1 (d) and Technical Specification Clause 1602.4 of MORD specifications	613.50	No.
1-12	Providing edge stones of Size 450x350x100 mm on valley side of formation as per drawing and technical specification clause 1608.2.6	50.20	Nos

Sl. No.	Description	Rate	Unit
1-13	Cleaning of fully choked scupper and catchpit complete as directed by the Engineer-in-charge.	2,801.80	Nos
1-14	Cleaning of partially choked scupper and catchpit complete as directed by the Engineer-in-charge.	1,400.90	Nos

Sl. No.	Description	Rate	Unit
Chapter 2 - Concrete and Concrete Pavement			
2-1	Cement plum Masonry with 40% plum & 60% 1:3:6 cement concrete including supply of all material, labour, T&P etc. required for proper completion of the work. as per drawings and technical specifications Clause 802, 803, 1202 & 1203 of MORD Specifiction	4,050.70	Cum
2-2	Concrete with cement, coarse sand and 40 mm gauge stone ballast in proportion 1:4:8 in foundations and floors including supply of all material, labour and T&P etc. required for proper completion of the work. as per drawings and technical specifications Clause 802, 803, 1202 & 1203	4,830.20	Cum
2-3	Cement Concrete (PCC M-30) Pavement:- Construction of Un-reinforced, Cement concrete pavement, thickness as per design, over a prepeared sub base with 43 grade cement or any other type PCC Grade M-30, coarse and fine aggregates conforming to IS: 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a concrete mixer of not less then 0.2 cum capacity and appropriate weigh batcher using approved mix design, laid in approved fixed side formwork (Steel channel, laying and fixing of wedges, steel plates including levelling the formwork, as per drawing), spreading the concrete with shovels, rakes, compacted using needle, and plate vibrators, finished in continuous operation and curing of concrete slabs for 14 days, using curing compound where specified and water finishing to lines and grade as per drawings and technical specifications.	6,897.30	Cum
2-4	Brick on edge pavement with straight overburnt bricks laid on edge including preparation of subgrade to prescribed camber and including supply of bricks, filling joints with local sand and spreading blinding coat 1cm (3/8") depth of local sand over the entire surface and including supply of all materials, labour and T&P etc. required for proper completion of the work.	561.00	Sqm
2-5	Providing and laying of stone set pavement over 2.5 cm thick bedding layer of PCC 1:2:4 which shall further be placed over 10 cm thick dry stone kharanja or crushed stones base over a prepared subgrade as per drawings and technical specifications. The size of stones shall not be less than 20 cm x 20 cm and thickness of stones shall vary from 10 cm to 15 cm. The work includes filling of joints with PCC 1:2:4 as per the standard drawings and instructions of the Engineer-in-Charge.	745.20	Sqm
2-6	Providing and Laying of Interlocking Concrete Block Pavements of M-40 Grade having thickness 80 mm as per drawings and Technical Specification Clause 1504.	754.90	Sqm

Sl. No.	Description	Rate	Unit
Chapter 3 - Bituminous Work			
3-1	Tack coat using VG-10 grade bitumen		
3-1-1	Over normal bituminous surfaces @0.35kg/sqm,	20.70	Sqm
3-1-2	Over dry and hungry bituminous surfaces @0.40 kg/sqm	23.50	Sqm
3-1-3	Over granular surfaces treated with primer @ 0.40 kg/sqm	23.50	Sqm
3-1-4	Over cement concrete pavement @0.45 kg/sqm	26.30	Sqm
3-2	Cleaning of the existing WBM surface surface and laying 2 cm thick premix carpet over a tack coat (including cost of Tack coat) with graded approved grit and bitumen including heating the bitumen to the required temperature and mixing either in mixer or in hand drums, including cartage of materials, maintenance of side patries, and watering them during operation for proper completion of the work including supply of all labour, material, machine, T&P etc, as per PWD Specification and as directed by the engineer-in-charge.		
3-2-1	With VG-30 grade Bitumen	-	-
3-2-2	With VG-10 grade Bitumen	-	-
3-3	Providing and laying Dense Bituminous Macadam with the use of batch type HMP using crushed aggregates of specified grading, premixed with bituminous binder @ 4.25% by weight of total mix of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.		
3-3-1	Grading I - 37.5mm nominal size	9,243.50	Cum
3-3-2	Grading II - 26.5mm nominal size	9,243.40	Cum
3-4	Providing and laying Bituminous Concrete with the use of batch type hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects		
3-4-1	for Grading-I (bituminous binder @ 5.2 % of mix)	10,506.60	Cum
3-4-2	for Grading-II (bituminous binder @ 5.4 % of mix)	10,729.50	Cum
3-5	Providing and laying Semi Dense Bituminous Concrete with the use of batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects		
3-5-1	Grading I - 13mm using Bitumen VG - 10 (bituminous binder @ 4.5 % of mix)	9,351.00	Cum
3-5-2	Grading II - 10mm using VG - 10 bitumen (bituminous binder @ 5 % of mix)	9,867.80	Cum

Sl. No.	Description	Rate	Unit
3-5-3	Grading I - 13mm using Bitumen VG - 30 (bituminous binder @ 4.5 % of mix)	9,622.40	Cum
3-5-4	Grading II - 10mm using VG - 30 bitumen (bituminous binder @ 5 % of mix)	10,169.30	Cum
3-6	Providing and laying Slurry Seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface as per MoRTH specification		
3-6-1	Slurry Seal 5 mm thickness	73.50	Sqm
3-6-2	Slurry Seal 3 mm thickness	46.10	Sqm
3-6-3	Slurry Seal 1.5 mm thickness	27.90	Sqm
3-7	Fog Spray - Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.		
3-7-1	By Mechinacal Means	36.00	Sqm
3-7-2	Fog Spray By Mechinacal Means including Blinding Material	45.40	Sqm
3-8	Providing and laying microsurfacing course, comprising of dry fine aggregates conforming to grading of specification as per IRC: SP-81-2008, polymer /latex modified cationic bitumen emulsion, Ordinary portland cement as filler, chemical additives and water, including proportioning, mixing and laying of microsurfacing coarse using mechanised machine and laying unit all complete as per IRC SP-81 and MORTH specifications and direction of Engineer in Charge.		
3-8-1	Grading -II (Fine aggregate Type II grading @ 9.6 kg/sqm, modified emulsion @ 8.5 % by weight of dry aggregates, Cement @ 1.25 % by weight of dry aggregate and Additive @ 1.25 % by weight of dry aggregate)	179.30	Sqm
3-8-2	Grading - III (Fine aggregate Type III grading @ 13.7 kg/sqm, modified emulsion @8 % by weight of dry aggregates, Cement @ 1.25 % by weight of dry aggregate and Additive @ 1.25 % by weight of dry aggregate)	210.10	Sqm
3-9	Mastic Asphalt Providing and laying 25 mm thick mastic asphalt wearing course with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated finegrained 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 directions, pressed into surface when the temperature of surfaces is not less than 100 degree centigrate, protruding 1 mm to 4 mm over mastic surface, all complete as per clause 515.	684.40	Sqm

Sl. No.	Description	Rate	Unit
3-10	20mm Open graded PC (using shredded waste plastic material) Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates using VG-30 bitumen and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades as per Technical Specification Clause 508. Using Bitumen VG-30 @ 1.34 Kg/Sqm and shredded waste plastic material @ 0.120 Kg/Sqm as per direction of Engineer-in-Charge.	181.10	Sqm
3-11	Seal Coat (using shredded waste plastic material) Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type B as per Technical Specification Clause 510 Using Bitumen VG-30 @ 061 Kg/Sqm and shredded waste plastic material @ 0.07 Kg/Sqm as per direction of Engineer-in-Charge.	61.20	Sqm
3-12	Seal Coat with Emulsion Providing and laying seal coat sealing the voids in a bituminous surface laid to the specified levels, grade and cross fall using Type A, Type B and Type C as per Technical Specification Clause 510		
3-12-1	Type A	94.30	Sqm
3-12-2	Type B	73.50	Sqm
3-12-3	Type C	80.10	Sqm
3-13	Add Extra for Warm Mix additive (0.4% by weight of Bitumen or as prescribed by manufacture) complete as per direction of engineer-in-charge on Bitumenious Items	715.80	kg

Sl. No.	Description	Rate	Unit
Chapter 4 - Bridge Work			
4-1-A	Supply and fabrication of steel truss bridge as per detailed drawing attached including supply of all structural steel E-250 confirming IS 226 - 1969 required for proper completion of the bridge including ground errection of the bridge and one coat of approved quality anticirrosive (red oxide) paint of confirming IS 5660, all T&P, nuts and bolts, washers and also including supply and fixing of shop rivets required as per drawing, required equipment shall be arranged by the contractor at his own cost which shall be taken back by the contractor after satisfactory execution of the job, the rates shall include ground errection in the workshop and its dismentling after inspection, approval and removing defects, match marking of all parts, numbering and proper stacking in the premises of workshop before cartage to site of work. The work shall be executed in accordance to IS - 1915. The rates shall include cost of all material, its wastage, cutting, bending if required, welding, making holes, shop riveting, labour, T&P etc. required for proper completion of the work. including cost of cartage from workshop to Bridge Site including safe stacking of parts.	1,21,482.20	Tonne
4-1-B	Supply and fabrication of steel truss bridge as per detailed drawing attached including supply of all structural steel E-350 confirming IS 226 - 1969 required for proper completion of the bridge including ground errection of the bridge and one coat of approved quality anticirrosive (red oxide) paint of confirming IS 5660, all T&P, nuts and bolts, washers and also including supply and fixing of shop rivets required as per drawing, required equipment shall be arranged by the contractor at his own cost which shall be taken back by the contractor after satisfactory execution of the job, the rates shall include ground errection in the workshop and its dismentling after inspection, approval and removing defects, match marking of all parts, numbering and proper stacking in the premises of workshop before cartage to site of work. The work shall be executed in accordance to IS - 1915. The rates shall include cost of all material, its wastage, cutting, bending if required, welding, making holes, shop riveting, labour, T&P etc. required for proper completion of the work. including cost of cartage from workshop to Bridge Site including safe stacking of parts.	1,24,782.00	Tonne

Sl. No.	Description	Rate	Unit
4-2	Erection of Steel Truss (Girder) Bridge (up to 60m span) as per drawing with required camber including cartage of fabricated parts from the place of stack near site including submission of launching plan by the contractor, (duly vetted by a recognised reputable institution/ consultant if required) and approved by the engineer-in-charge. Service bolts to used shall be of approved make. The rate including of cost of all labour, T&P, equipments, civil work and consumables, cost of arranging, fabricating, erecting and dismantling of erection scheme including the cost of its designing, revising, supervision by contractor's designeer at site during erection, also including cost of all safety measures and necessary insurances of bridge and labours for proper completion of the work as per MORTH specification no. 1905 with due regard of mansoon and as per directions of the engineer-in-charge.	27,261.90	Tonne
4-3	Supplying and fixing of rivets confirming to the latest IS Code including all labour, material, riveting gun, T&P etc. required for proper completion of the work.		
4-3-1	24 mm dia rivets	173.70	No.
4-3-2	22 mm dia rivets	166.40	No.
4-4	Providing and laying of Empty Cement Bags (Gunny Bags) filled with local sand and tightened using sutli and carriage upto site including preparing subgrade before placing in position, also including supply of all material, labour, T&P etc required for proper completion of the work.	17.60	Bag
4-5	Supply and Installing of High tensile steel wires / strands including all accessories for stressing, stressing operations and grouting complete as per drawings and technical specifications.	1,314.90	Rmt
4-6	Dewatering from foundation of abutments and wing walls (with pump capacity 4000 lit per Hr.) including wages of operator and fuel including supply of all material, labour and T&P etc. required for proper completion of the work.	225.50	Hrs
4-7	Dewatering of water caused due to seepage of ground water and surface water due to rain etc. excluding excavation of foundation but during execution of civil works including supply of all machine operator, khalashi, POL, T&P, accessories required for proper completion of the work.	59.40	HP/Hr.

Sl. No.	Description	Rate	Unit

Chapter 5- Road Furniture

5-1	Metal Beam Crash Barrier		
5-1-1	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 (if Concrete Required for Vertical post Fixing will be paid extra)	3,899.80	Rmt
5-1-2	Type - B, "THRIE" : Metal Beam Crash Barrier Providing and erecting a "Thrie" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 85 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 2 m 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 810 (if Concrete Required for Vertical post Fixing will be paid extra)	4,944.00	Rmt
5-2	Road Studs / Cat Eye: Providing and fixing of single mould twin shank reflective road studs of 'category A' Raised pavement markers made out of poly carbonate/ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face with retro reflectance and chromaticity values shall be as given in the detailed specifications and the product shall conform to ASTM D4280. The raised pavement marker shall also meet all the testing conditions of ASTM D4280 and fixed to the road surface using the adhesive recommended by the manufacturer. Two cylindrical Polymer Shanks of not less than 20 mm diameter and not less than 30 mm length shall be molded in the RPM body. The reflective raised pavement markers shall also confirm to the MORTH circular No RW / NH. 33023/10/ 97-DO.III and the length ,height and width of the body shall not be less than 100 mm, 15 mm and 90 mm and base of marker shall be flat within 1.3 mm and outermost faces of configuration of marker shall not deviate more than 1.3 mm from a flat surface. The marker shall support a load of 13635 Kg tested in accordance with ASTM D4280. The marker shall withstand flexural strength of 909 kgf force in accordance with ASTM D4280. Marker lenses shall be moulded of Polycarbonate or methyl methecrylate conforming to ASTM D788. The area of each retro reflectory surface shall not be less than 13.0 sq.cm. The slope or retro – reflectory surface shall be 35 + 5 degree to base. Each reflector shall have a CIL not less than values specified in table 1 of MORTH Section 800 page no. 353 and should accompany two year warranty for satisfactory field performance from the manufacturer.	357.90	No.

Sl. No.	Description	Rate	Unit
5-3	Solar Road Studs: Providing and fixing Solar Powered Road Studs (Rectangular) of size not less than 100mm x 100 mm x 10 mm or (Circular) of dia 130+/- 6mm and height 30 +/- 2mm (with 8 super bright LEDs for long visibility from distance greater than 800 m) having twin shank and body made of aluminium alloy and poly carbonate material which shall be absolutely weather resistant and strong enough to support a load of 13635 kg tested in accordance with ASTM D 4280 and water resistance as per IP 65 in accordance with IS 12063:1987, fixed to the road surface using adhesives and the procedure recommended by the manufacturer as per Clause No. 804.6 and 804.7 of MORTH specifications.	2,272.50	No.
5-4	Spring Posts (750 mm height) Supply and fixing of Plastic Spring Post 750 mm high and 100 mm in dia (having 2 strips of 75mm wide Type IV retroreflective tape fixed around the post) with base dia 400 mm fixed to the ground with adhesive and nuts and bolts.	805.10	No.
5-5	Spring Posts (900 mm height): Supply and fixing of Plastic Spring Post 900 mm high and 100 mm in dia (having 2 strips of 75 mm wide Type IV retroreflective tape fixed around the post) with base dia 400 mm fixed to the ground with adhesive and nut and bolts.	992.60	No.
5-6	Road Delineators / Vertical Guide Posts: Providing and fixing of Standard Metal Delineator consisting of minimum retro reflective unit exposed area of 330 sqcm, full cube corner micro prismatic non-metallic retro reflective sheeting on each side conforming with IRC 67 and meeting the coefficient of retro reflection values as per ASTM D 4956 Type XI table specification with pure polyester powder coating with the minimum thickness of powder coating of not less than 40 micron. The posts shall have ellipsoidal or circular design with the height of the pole shall be 800 to 900 mm above the ground with about 200 to 300 anchored with PCC M-15 onto the ground. The front and back faces of the delineator should be curved with a radius of not more than 200 mm and with delta angle (or central angle of curve) lying between 20o and 30 o, to increase the visibility of the delineator for vehicles moving in continuous curves. The delineator shall have sufficient arrangement to make the reflective sheets vandal-proof. Including all test report and warranties as per IRC 67 and IRC 79.	1,159.90	No.
5-7	PVC Traffic Cones (600 mm height): Supply of PVC Traffic Cones of 600 mm height and 3 kg weight with square base and 2 strips of 10 mm wide reflective sheets around the cone.	430.00	No.

Sl. No.	Description	Rate	Unit
5-8	PVC Traffic Cones (750 mm height): Supply of PVC Traffic Cones of 750 mm height and 3.5 kg weight with square base and 3 strips of 10 mm wide reflective sheets around the cone.	500.00	No.
5-9	PVC Traffic Cones (900 mm height): Supply of PVC Traffic Cones of 900 mm height and 4.0 kg weight with square base and 3 strips of 10 mm wide reflective sheets around the cone.	540.00	No.
5-10	Providing and laying of hot applied thermoplastic compound of ISI Mark Approved Quality of 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.	522.70	Sqm
5-11	Median Markers: Supply and fixing of Median markers made of tough high impact resistance injection moulded thermoplastic body having isosceles trapezoidal shape with dimensions not less than 120 mm X 100 mm X 100 mm and thickness not less than 18 mm. The marker must have fluoroscent yellow colour Type XI retroreflective sheeting (with a warranty of 10 years by the original sheeting manufacturer) fixed on both sides with size not less than 85 mm X 85 mm fixed with epoxy adhesive and grouting to the surface complete in all respect as per IRC accreditation and the direction of Engineer in Charge.	354.90	No.
5-12	AFP (Aluminum-backed flexible prismatic sheeting) Hazard Marker: Providing and fixing Aluminum-backed flexible prismatic sheeting consisting of Yellow colored flexible prismatic sheeting with non-metallic prismatic lens as retro reflective elements and conforming to ASTM D 4956-09 Type VI specification values for reboundable sheeting. AFP sheeting shall be of 1ft width and laminated at the back with a 50 micron thick Aluminum (Al) foil with pressure sensitive adhesive and liner. AFP sheeting shall have screen printed arrow/slant line pattern in black color on top & shall not crack when tested for flexibility as per section S2.2.2 of ASTM D 4956-09. The AFP sheeting shall be applied with a neoprene contact adhesive with Polychloroprene as base & the edges of the product shall be sealed all around with a two-part epoxy based structural adhesive and shall be extremely resistant to peel-off & product specification shall confirm to IRC Accreditation.	6,090.00	Sqm

Sl. No.	Description	Rate	Unit
Chapter 6- Traffic Signage			
6-1	Retro-Reflective Traffic Signs with Type IV retro- reflective Sheet		
6-1-1	Providing and fixing of retro reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of Class-B Type IV retro reflective sheeting fixed over 3mm/4mm thick Aluminium composite material sheet vide clause 801.3, depending on the size of the sign fixed over back support frame of min 25 x 25 x 3mm Angle mounted on a mild steel a mild steel circular pipe 65 NB, 3.2 mm thickness, firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.		
6-1-1-1	900 mm equilateral triangle	4,826.70	No.
6-1-1-2	600 mm equilateral triangle	3,745.10	No.
6-1-1-3	600 mm Circular	4,428.30	No.
6-1-1-4	800 x 600 mm Rectangle	5,566.80	No.
6-1-1-5	600 x 450 mm Rectangle	4,371.30	No.
6-1-1-6	600 x 600 mm Square	4,883.70	No.
6-1-1-7	900mm high Octagon	6,648.40	No.
6-1-2	Direction and Place Identification Signs upto 0.9 sqm Size Board. Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of Type IV retro- reflective sheeting, vide clause 801.3, fixed over Aluminium composite material sheet with overall thickness of 4mm with area not exceeding 0.9 sqm fixed over back support frame of min 35 x 35 x 3mm Angle mounted on a mild steel circular pipe 65 NB, firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing.	9,301.40	Sqm
6-1-3	Direction and Place Identification Signs with size more than 0.9 sqm size Board. Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of Type IV retro- reflective sheeting, vide clause 801.3, fixed over Aluminium composite material sheet with overall thickness of 4 mm with area exceeding 0.9 sqm fixed over back support frame of min 40 x 40 x 5 mm MS Angle mounted on two nos. of mild steel circular pipe 65 NB ,3.2 mm thickness and 4.5 meter total height firmly fixed to the ground by means of properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing	10,499.20	Sqm

Sl. No.	Description	Rate	Unit
6-1-4	Overhead Signs Providing and erecting overhead signs with a corrosion resistant type IV HIP retro-reflective sheeting fixed over Aluminium composite material sheet with overall thickness of 4 mm, with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans including nuts, bolts, washers & rivets etc for fixing & as per IRC :67.		
6-1-4-A	Truss and Vertical Support	94,605.80	Tonne
6-1-4-B	Type IV HIP retro- reflective sheeting for Over Head Sign	6,234.90	Sqm
6-2	Retro-Reflective Traffic Signs with Type XI retro- reflective Sheet-		
6-2-1	Providing and fixing of retro reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of Type XI retro reflective sheeting fixed over 3mm/4mm thick Aluminium composite material sheet vide clause 801.3, depending on the size of the sign fixed over back support frame of min 25 x 25 x 3mm Angle mounted on a mild steel circular pipe 65 NB, 3.2 mm thickness firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing. The sign shall be maintained as per section 12 of IRC 67.		
6-2-1-1	900 mm equilateral triangle	6,361.80	No.
6-2-1-2	600 mm equilateral triangle	4,446.90	No.
6-2-1-3	600 mm Circular	5,656.30	No.
6-2-1-4	800 x 600 mm Rectangle	7,672.00	No.
6-2-1-5	600 x 450 mm Rectangle	5,555.50	No.
6-2-1-6	600 x 600 mm Square	6,462.60	No.
6-2-1-7	900mm high Octagon	9,586.90	No.
6-2-2	Direction and Place Identification Signs upto 0.9 sqm Size Board. Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of Type XI retro- reflective sheeting, vide clause 801.3, fixed over Aluminium composite material sheet with overall thickness of 4mm with area not exceeding 0.9 sqm fixed over back support frame of min 35 x 35 x 3mm Angle mounted on a mild steel circular pipe 65 NB, firmly fixed to the ground by means of properly designed foundation with M25 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing.	13,435.10	Sqm

Sl. No.	Description	Rate	Unit
6-2-3	Direction and Place Identification Signs with size more than 0.9 sqm size Board. Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of Type XI retro- reflective sheeting, vide clause 801.3, fixed over Aluminium composite material sheet with overall thickness of 4 mm with area exceeding 0.9 sqm fixed over back support frame of min 40 x 40 x 5 mm MS Angle mounted on two nos. of mild steel circular pipe 65 NB, 3.2 mm thickness and 4.5 meter total height firmly fixed to the ground by means of properly designed foundation with M 25 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing.	14,874.30	Sqm
6-2-4	Overhead Signs Providing and erecting overhead signs with a corrosion resistant Type XI retro-reflective sheeting fixed over Aluminium composite material sheet with overall thickness of 4 mm, with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans including nuts, bolts, washers & rivets etc for fixing & as per IRC :67.		
6-2-4-A	Truss and Vertical Support	94,605.80	Tonne
6-2-4-B	Type IV HIP retro- reflective sheeting for Over Head Sign	10,524.20	Sqm

Sl. No.	Description	Rate	Unit
Chapter 7 - Others			
7-1	Laying Cement Concrete Pipe NP3 (burried conduits) on first class bedding of granular material including fixing collar with cement sand mortar 1:2 but excluding excavation, protection works, backfilling, concrete and masonary work in head wall and parapets.		
7-1-1	500 mm dia	2,012.50	Rmt
7-1-2	300 mm dia	1,169.70	Rmt
7-2	Rumble Strips Provision of rumble strips of premix bituminous carpet, 25 mm high at centre, 300 mm wide placed at 1 m centre-to-centre at approved locations to control speed, marked with white strips of road marking paint.	109.80	Rmt

Sl. No.	Description	Rate	Unit
Chapter 8 - Warm Mix Technology			
8-1	Bituminous Macadam with Warm Mix Technology Providing and laying Bituminous macadam with the use of asphalt mixing plant using crushed aggregates of grading as per Table 500.4, premixed with bituminous binder and warm mix additive, transported to site upto a lead of 1000 m laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled to achieve the desired compaction as per Technical Specification Clause 504 using the Warm Mix (WMA) Asphalt Technlogy as per IRC:SP: 101-2009. (Bitumen VG-10 @ 3.3% of the weight of mix and warm mix additive @ 0.4% of the weight of bitimen have been used for analysis purpose. The choice of bitumen will depend upon the prevailing site conditions and shall be in accordance with Clause 504 of MORD		
8-1-1	with Bitumen VG-10	8749.3	Cum
8-1-2	with Bitumen VG-30	8938.6	Cum
8-2	Dense Bituminous Macadam with Warm Mix Technology Providing and laying Dense Bituminous Macadam with 100-120 TPH batch type Asphalt Mixing Plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.25% by weight of total mix of mix, warm mix additive @ 0.4% by weight of bitumen and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH		
8-2-1	Grading I - 37.5mm nominal size	9,497.70	Cum
8-2-2	Grading II - 26.5mm nominal size	9,497.50	Cum
8-3	Bituminous Concrete with Warm Mix Technology Providing and laying Bituminous Concrete with 60-90 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder and warm mix additive @ 0.4% by weight of bitumen, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects		
8-3-1	for Grading-I (bituminous binder @ 5.2 % of mix)	10,818.10	Cum
8-3-2	for Grading-II (bituminous binder @ 5.4 % of mix)	11,066.40	Cum
8-4	Semi Dense Bituminous Concrete with Warm Mix Technology Providing and laying Semi Dense Bituminous Concrete with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder, filler and warm mix additive @ 0.4% by weight of bitumen and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 508 complete in all respects		
8-4-1	Grading I - 13mm using Bitumen VG - 10 (bituminous binder @ 4.5 % of r	9,843.50	Cum

Sl. No.	Description	Rate	Unit
8-4-2	Grading II - 10mm using VG - 10 bitumen (bituminous binder @ 5 % of mi:	10,393.20	Cum
8-4-3	Grading I - 13mm using Bitumen VG - 30 (bituminous binder @ 4.5 % of	10,114.90	Cum
8-4-4	Grading II - 10mm using VG - 30 bitumen (bituminous binder @ 5 % of mi	10,694.70	Cum