

CHAPTER - 22 : BRIDGE WORKS - MISCELLANEOUS				
Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty. (qtl.)
221010	Providing and laying boulders apron on river bed for protection against scour with stone boulders weighing not less than 35 kg each with the voids filled with spalls complete as per drawing and Technical specification	cum	857.81	
221020	Laying of boulder apron laid in wire crates of approved size including overlaps at joints laid with stone boulders, all loose ends to be tied with 4 mm galvanised steel wire. Payment for boulders & wire crates to be	cum	262.29	
221030	Supplying galvanized wire net trungrs made from 4 mm galvanised steel wire @ 32 kg per 10 sqm having minimum tensile strength of 300 Mpa conforming to IS:280 and galvanizing coating conforming to IS:4826, woven into mesh with double twist, mesh size not exceeding 100 x 100 mm	Sqm	279.02	
221040	Providing and laying of apron with cement concrete blocks cast in-situ and made with nominal mix of 1:2:4 with a minimum cement content of 250 kg/cum. Payment to be made for blocks only. Cost of cement and shuttering to be paid extra	cum	1541.80	3.200
221050	Providing and laying Pitching with stone boulders weighing not less than 35 kg each with the voids filled with spalls 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 (Filter media to be paid separately under the relevant item)	cum	940.39	
221060	Providing and laying Pitching with stone boulders weighing not less than 35 kg each with the voids filled with cement sand mortar 1:4 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 (Filter media to be paid separately under the relevant item)	cum	1398.13	1.250
221070	Providing and laying Filter material As Per RDSO Specifications underneath pitching in slopes complete as per drawing and Technical specification	cum	1355.00	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
221080	Providing & Laying of a Permeable geotextile filter between pitching and embankment slopes on which pitching is laid to prevent escape of the embankment material through the voids of the stone pitching/cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching. as per RDSO guide lines			
221081	With GJT-Type 1 (For Harsh conditions)	Sqm	28.75	
221082	With GJT-Type 2 (For less severe conditions)	Sqm	34.76	
221083	With GJT-Type 3 (For moderate conditions)	Sqm	48.81	
221090	Laying boulder apron on river bed for protection against scour with stone boulders supplied by railways with the voids filled with spalls complete as per drawings and technical specifications. With maximum lead upto 150m	cum	84.21	
221100	Laying pitching with stone boulders supplied by the railways with the voids filled with spalls on slopes laid over prepared filter media including boulder apron laid dry in front of toe of embankment as per drawings and technical specifications. Max lead upto 150m (Filter media to be paid under the relevant item)	cum	127.33	
	Flooring in Bridges			
222010	Providing and laying Flooring with rubble stone , laid over 15 cm thick CC 1:2:4 and the voids filled with CC 1:2:4 complete with the joints pointed with 1:2 Cement sand mortar as per drawing and Technical specifications. Payment for cement to be done separately. Voids in the rubble stone to be taken as 35% of the gross volume of the stone layer. (Base concrete to be paid extra)	cum	1336.04	1.12 for rubble stone only
222020	300 mm thick (average) Dry stone flooring with boulders of not less than 35 kg each in weight , hand packed with surface levelled off to the correct section with hammer dressing as necessary on the ground including filling the gaps with quarry spalls and ordinary sand complete including the cost of supply of all materials, labour, lead, lift, tools, plants, crossing of tracks and the like as per drawing and technical specification as directed by Engineer	cum	875.84	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222030	Supply and laying of quarry dust including consolidation, supply of all materials, labour, lead, lift, tools, plants, crossing of tracks as per drawing and technical specification as directed by the Engineer incharge in case loose slush is encountered at site of foundation before casting the foundation or before laying the filtering media	cum	752.01	
222040	Supply and laying of coarse sand including consolidation, supply of all materials, labour, lead, lift, tools, plants, crossing of tracks as per drawing and technical specification as directed by the Engineer incharge in case loose slush is encountered at site of foundation before casting the foundation or before laying the filtering media	cum	699.51	
222050	Guniting concrete surface with cement mortar of average thickness 25mm, applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification in the ratio of 16 Kg of cement to 0.04 cum of sand, 50X50X3mm size wire mesh, with 0.67 Kg of epoxy and 0.64 Kg of accelerator compound for guniting per Sqm	Sqm	867.20	0.160
222060	Providing and inserting nipples with approved fixing compound after drilling holes for grouting as per Technical Specifications including subsequent cutting/removal and sealing of the hole as necessary after completion of grouting	Each	37.01	
222070	Sealing of cracks/porous concrete by injection process through nipples/Grouting complete as per Technical Specification			
222071	Neat Cement Grout with 20 % anti shrinkage compound w.r.t. cement	Kg	132.12	as per actual site consumption
222072	Cement sand Mortar (1:1) Grout with 20 % anti shrinkage compound w.r.t. cement	Kg	179.10	as per actual site consumption
222073	Epoxy Grout	Kg	883.24	
222080	Patching of damaged concrete surface with Pre packed polymer concrete with average thickness of 25mm. Curing compounds, initiator and promoter, available in the formulations, to be applied as per instructions of manufacturer and as approved by the Engineer	Sqm	452.14	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222090	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical Specification with average thickness of 10 MM including priming coat, mortar plaster and seal coat of epoxy	Sqm	1057.03	
222100	Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air, comprising of cement, sand, coarse aggregates, water and quick setting compound as approved, gunite strength not less than 25 Mpa with average thickness of 40mm in the ratio of 16 Kg of cement to 0.04 cum of sand, 50X50X3mm size wire mesh with 0.67 Kg of epoxy and 0.64 Kg of accelerator compound for guniting per Sqm	Sqm	937.17	0.160
222110	Applying pre-packed cement based polymer mortar of strength 45 Mpa (28 days) for replacement of spalled concrete with average thickness of 10mm	Sqm	317.78	
222120	Providing & applying Epoxy for bonding of new concrete to old concrete @ 0.80 Kg / sqm with pot life not less than 60-90 minutes and as per specifications including cleaning the surface	Sqm	600.88	
222130	Providing & Fixing 12 mm rabbit wire mesh at the junction of RCC where specifically ordered or as shown in the drawing	Sqm	90.74	
222140	Providing, cutting, fabricating, treating, fixing structural steel as per IS: 2062 in access ladders (top of girder/slab to pier cap), inserts, platforms, railing, trolley refuges, drain pipes etc. by drilling holes and grouting with C.C as per specifications including painting with two coats of approved paint over two coats of primer. (Cement for grouting shall be paid separately)	MT	62688.74	
222150	Providing/ fixing/ grouting various size HTS holding down bolt in concrete column or in other structural steel member incl. drilling holes of required size, bolts threaded at both ends shall be fixed with proper size nuts bolts, plates, washers complete including all labour and material	Kg	135.71	0.010
222160	Providing weep holes by making suitable opening or drilling in existing Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure complete	metre	283.54	0.020

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222170	Providing and fixing of Drainage Spouts of 100 mm UPVC complete as per drawing and Technical specification	metre	250.89	0.010
222180	Providing and laying of filter media consisting of granular materials of GW, GP, SW groups as per IS 1498-1970 in required profile behind boulder filling of abutments, wing walls / return walls etc above bed level with all labour and material complete job as per drawing and technical specification of RDSO Guidelines	cum	1652.90	
222190	Removing all loose concrete, cleaning rust with dusting compound & water jet, drying, replacing worn out reinforcements by welding new re-inforcement for making up lost steel section, applying approved anticorrosive polymer coating over the damaged area to proper profile, providing polymer mortar (upto 20 mm. thickness) or polymer concrete (more than 20 mm. thickness) consisting of cement, sand, 6 mm. down chips where required and polymer as per manufacturers' specification. The rate includes curing for 14 days, all materials, consumables, labours, tools and plants, scaffolding/staging with all lead and lift. Cost of cement & inforcement to be paid			
222191	20 mm. thick polymer mortar	Sqm	1311.15	0.122
222192	20-50 mm. thick polymer concrete	Sqm	1049.67	
222200	Supply, fabrication and erection of steel members to replace existing corroded members of built up section made up of MS plate, angles, channels of different thickness and sizes incl. painting with red lead priming to IS: 102 and one heavy coat of ready mix red oxide conforming to IS: 123. Structural steel should conform to IS:2062-Gr'B'. Fabrication and erection to be as per existing design initially by bolts and nuts and finally by rivetti'lg during the sanctioned traffic block. Payment for rivets and riveting to be made separately. Rate includes cutting of new steel work, drilling for riveting, dismantling of any existing members required for inserting fabricated members, fixing of new fabricated built up members with all tools, plants, labour, consumables, machinery and accessories etc. Work will be executed as per IRS:B 1-2001	MT	86435.02	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222210	Supplying and changing of corroded worn-out and loose rivets of any size at any location of the bridges with or without traffic blocks including all tools, plants, machinery complete in all respects. Cost of rivett to pay separate			
222211	Rivetts size upto 25 mm dia.	Each	141.31	
222212	For Rivets more than 25 mm dia.	Each	239.68	
222220	Dismantling of existing bed plate from existing bed block by cutting & removal of HD bolts and nuts with all tools, plants, machinery scaffolding, labour and other materials and shiting it at one end of the bridge during traffic block.	Each Plate	4869.28	
222230	Painting the HFL and danger level marks, year of HFL on bridge abutments and piers with ready mixed paint as per standard in two coats over one coat of primer with all materials, labour, tools, scaffolding, all lead and lift etc including writing complete	Each Mark	103.39	
222240	Providing cast in situ bridge number plaques as per Railway drawing in cement concrete 1:2:4 mix using 20mm hard stone aggregate embedded in 30mm notch in Bridge parapet coping duly engraving the letter and figures and an arrow indicating the direction of flow and finishing the top exposed surface with cement mortar 1:3, painting letters and figures with two coats of black enamel paint on two coats of white back ground with all labour, tools, cement, paint etc.with all lead and lifts	Each	475.55	0.100
222250	Providing cast in situ plaques for bridge foundations details of size 45x45x5 cm in cement concrete 1:2:4 mix using 20mm hard stoneaggregate embedded in 30mm deep notch over abutment & piers, engraving the letters & figures with CM 1:3 and finished smoth including painting letters and figures with 2 coats of black enamel and plaque with white enamel with all labour, tools, cement, paint, curing, etc. as a complete job	Each	619.95	0.100
222260	Providing & laying non pressure NP-4 Class RCC pipe with collars, jointing with 1:2 Cement and ordinary sand mortar including testing of joints but excluding earth work with all labour and material as a complet job. Cement for mortar will be paid seperately			
222261	600 mm dia.	metre	1671.10	
222262	900 mm dia.	metre	2134.66	
222263	1000 mm dia.	metre	2705.66	
222264	1200 mm dia.	metre	3897.87	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222280	Supplying, spreading and filling coarse sand (No cohesive materials to be used) of approved quality including watering and ramming in foundation, plinth, behind the abutment, wing wall, retaining wall in layers not exceeding 150mm thick including its compaction as per direction of Engineer-in-charge. The rate includes all lead, lift, ascent, descent, crossing of Railway line, etc. complete with contractor's labour, materials, tools and plant	cum	631.72	
222290	Providing Boulder backing behind wing wall, return wall, retaining wall with hand packed boulders & cobbles with smaller size boulders toward the back including all lead, lift, labour & other incidental charges as complete work in all respect. Payment for boulder/cobbles will be done extra	cum	147.85	
222300	Dewatering of natural or accumulated water from any location. Payment to be done for Horse power of pump multiplied by pumping hours	HP Hour	20.67	
222310	Supplying & fixing Galvanised Steel wire ropenet, made of 9mm dia steel wire rope having aperture size of 45cm x 60cm with 6m long hangs for top anchoring and 5m wide alongwith chain-link mesh-netting of 80mm x 80mm mesh size made from 2.4mm dia galvanised wire, joining of chain-link mesh & steel wire ropenet and joining of adjacent nets with galvanised spiral lock springs of steel wire dia 2.2mm; inner dia of springs 18mm; total length 50mm \pm 0.5mm; pitch 4mm & open end length 60mm including cutting of tree/shrub etc. in rope-netting locationcontd.	Sqm	1027.67	
	... contd. - and also, excavation / filling-back of trenches in all types of soil after anchoring ropenet with RCC pre-cast beam of size 15cm x 15cm x 2m of M-15 concrete & 30cm thick M-10 PCC. This work also includes supply of 200mm x 200mm x 6mm epoxy coated washer plates with 12.5mm / 18mm dia hole at centre and supplying & fixing of anchor bolts/fastners of 10mm dia including drilling of holes upto a depth of 110mm in rock; cleaning of holes; fixing of fastners with nut & epoxy coated washer plates; -			

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
	... contd. - applying torque 65 to 70 N/mm for fixing of ropenet for intermediate anchoring on the surface of cutting, bottom anchoring upto 1m depth by using 16mm dia HYSD steel bolts, threaded upto 200mm on top and fixing epoxy coated washer plate, fabrication & fixing of U-pin on top of cutting for top anchoring and joining of adjacent nets with spiral spring and fixing at the ratio of 1 no. per 0.6m in longitudinal direction of net portion and additional locks for lacing chain link netting with ropenet with contractor's materials, machinery, tools & plants, cement, steel, labour, lead, lift, transportation, ascent, descent, taxes, royalty etc. complete as per directions of			
222320	Supplying & fixing of Erosion Control Geomat (for surfacial erosion control) consisting of 2 layers of polymeric netting, having aperture size of 20mm x 20mm and a middle layer of coir as per Specifications. Max. width of rolls/each composite mat shall be 5m. Work includes dressing of slopes to proper profile & removing loose rubbles, muck & leading to the point as directed by engineer-incharge; supply & spreading of good earth/soil material on slope/berm portion etc. to proper profile for laying of Geomat anchoring in top anchor trench; seaming of adjacent panels of Geomat with HDPE Twine; fabrication & fixing of U-pin on slope/berms including top of cutting for anchoring of Geomat as per approved scheme and providing of grass sods and placing over Geomat so as to completely cover it, including watering for 2 weeks with all labour, tools & materials alongwith lead & lift etc. complete	Sqm	233.46	

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
222330	Supplying & placing of Mechanically Woven Double Twisted Hexagonal Shaped Wire Mesh Gabion Boxes of required sizes, Mesh Type 10cm x 12cm, Zn and PVC coated Mesh Wire dia.2.7/3.7mm (ID/OD), edges of meshes mechanically edged / selvedged with heavy coating of galvanization as per EN 10223-3/ASTM A 975 with partitions at every 1m interval and properly packed with approx. 150mm size boulders including transportation and placing at indicated places as per direction of engineer-in-charge including contractor's tools, plants, labour, royalty charges etc. complete in all respect and stitching with lacing wire of dia. 2.2/3.2mm (ID/OD) @ 5% by weight of Gabion boxes, carrying the material by head lead from nearest approach with all safety precautions and all leads and lifts	cum	2294.30	
222340	Supplying & placing partly or fully underwater of Polypropylene Tarred Rope Gabion, fabricated from 9mm dia. rope, 100mm x 100mm Mesh with partitions at every 1m interval and properly packed with approximately 150mm size boulders including transportation and placing at indicated places as per direction of engineer-in-charge with contractor's tools, plants, labour etc. including royalty charges complete in all respect and stitching with polyprylene lacing rope of minimum dia. 4mm; carrying the material by head lead from nearest approach with all safety precautions and all leads and lifts	cum	2290.56	
	SURFACE PROTECTION OF BRIDGES			
222350	Surface protection of Piers, substructure, Box bridges and culverts in river bed by cleaning & preparing the surfaces by acid etching; treating surface with a two-layer plaster; first layer of 7 mm (5 mm in case of sidewalk) thick with cement (OPC or slag) admixed with an octadecanoic acid based cementitious waterproofing compound (Max. bulk density 0.5 gm/cc), in the weight ratio of 50:3 for cement and waterproofing compound; and second layer of 12 mm thick cement-sand (1:2.5) plaster, enriched with polyester fibre (to be paid seperately) and curing the plastered surface. Treatment shall be impermeable under a waterhead of 20.0 metres. -- Contd. ...			

Item No.	Description of Item	Unit	Rate (Rs.)	Cement Qty.(qtl.)
	.. Contd. -- (Note : In lieu of etching with acid the surface can be roughened or bond improved by other appropriate means.) complete as per specification			
222351	Piers, substructure, Box bridges and culverts in river bed	Sqm	376.09	
222352	Sidewalks	Sqm	324.09	
222360	Surface protection of Underside of Bridge Decks, Girders, Inside of Box Girders, Railings, etc. of Bridges and Piers and Substructures which are not in River Bed by cleaning and drying the surface; repairing local defects, e.g. honeycombs with a paste of cement admixed with 5% by weight of cement of Polymer bonding agent, applying (@ 0.30 litre per square metre) a coat (DFT of 100-150 micron) of a translucent brown coloured modified phenolic resin based single component high performance polymeric waterproofing compound (sp. gr. 0.87, rosin content nil and a solid content of minimum 0.47%), applying (@ 0.25 litre per square metre) a top coat of a modified phenolic resin based single component waterproofing compound of grey or other shades (sp. gr. 0.85) before the base coat becomes tack-free; permitting the coatings to cure and dry naturally; the 2-coat system shall be impermeable under a water head of 20.0 metres, complete as per specification	Sqm	240.85	
222370	Surface protection of Bridge Deck by cleaning and preparing the surface by acid etching; treating the surface with a two-layer plaster; first layer of 5 mm thick with cement (OPC or slag), admixed with an octadecanoic acid based cementitious waterproofing compound (bulk density not greater than 0.5 gm/cc) in the weight ratio of 50:3 for cement and waterproofing compound, further enriched with specially fabricated deformed galvanized steel fibre (@ 150 gm per square metre of treated surface and second layer of 12 mm thick cement-sand (1:2.5) plaster, enriched with polyester fibre (to be paid seperately) and curing the plastered surface. Treatment shall be impermeable under a waterhead of 20m complete as per specifications	Sqm	345.52	
	New Items To Be Added By Zonal Railways			
223010				
223020				
223030				
223040				