

ABSTRACT OF COST

Name of the work - Mahoba-Khajuraho Section: Construction of ROB (End-to-End including approaches) in lieu of Level Crossing No. 2 at Km 1296/11-12.

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
SCHEDULE-A					
	Providing portable fencing along running track where work is to be done in close vicinity of track, maintaining during execution of work and removing after completion of the work as per direction of the Engineer. Fencing shall consist of self supporting steel angles of size 50mm x 50mm x 6mm, 1.5m long provided with hooks etc. and embedded in CC 1:2:4 block of size 0.23m x 0.23m x 0.23m placed at c/c distance of 2m along track. 12mm dia rods in three horizontal layers shall be tack welded with angle posts. Note : Released material will be property of the contractor after completion of work. Cost of cement required for CC blocks shall be paid separately.				
1	With provision of painting verticals & horizontals with red luminous paints / strips of 30cm each with a gap of 30 cm.	Metre	120.00	96.92	11,630.40
	Earthwork in excavation by mechanical means (Hydraulic Excavator)/Manual Means for foundations and floors of the bridges, retaining walls etc. including setting out, dressing of sides, ramming of bottom, getting out the excavated material, back filling in layers with approved material and consolidation of the layers by ramming and watering etc. including all lift, disposal of surplus soil up to a lead of 300m, all types of shoring and strutting with all labour and material complete as per drawing and technical specification as directed by Engineer in charge. Note: This item will be used for excavation work in connection with other miscellaneous works also like side drains, foundation for OHE masts and other miscellaneous structures in connection with Gauge Conversion, Doubling, New lines.				-
2	All kinds of soils	cum	4,400.03	170.13	7,48,577.10
3	Hard rock (blasting prohibited)	cum	6,000.00	964.08	57,84,480.00
	Providing and laying in position Plain cement concrete of specified Nominal Mix for miscellaneous works like side drains, foundation for OHE masts and other miscellaneous structures excluding the cost of Cement, centering and shuttering - All work up to plinth level :				-
4	1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size)	cum	2,400.00	3,082.11	73,97,064.00
5	1:3:6 (1 Cement : 3 coarse sand (zone-III) : 6 graded stone aggregate 20 mm nominal size)	cum	250.00	3,172.58	7,93,145.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
6	Providing and laying in position machine batched, machine mixed and machine vibrated Cement Concrete of specified grade as per approved Design Mix (mixed in Mobile Concrete Batching/Mixing Plant at site or RMC from approved plants) using 20mm graded crushed stone aggregate and coarse sand of approved quality in RCC raft foundation & Pile cap including finishing, using Plasticiser in approved proportions (as per IS:9103), to modify workability without impairing strength and durability complete as per specifications and direction of the Engineer in charge. Note: 1. Payment for cement, reinforcement and shuttering shall be made extra under relevant item. 2. Plasticiser shall invariably be used in approved proportion to increase workability with minimum possible quantity of cement for all grade of Design Mix Concrete unless it is specifically approved citing reasons for not using plasticiser at the stage of Mix Design and in that case deduction shall be made as per relevant item.	cum	4,088.00	3,153.80	1,28,92,734.40
	Providing and laying in position machine batched, machine mixed and machine vibrated Cement Concrete of specified grade as per approved Design Mix (mixed in Mobile Concrete Batching/Mixing Plant at site or RMC from approved plants) using 20mm graded crushed stone aggregate and coarse sand of approved quality for the following Reinforced cement concrete structural elements up to height of 9.0 m from foundation top level, including finishing, using Plasticiser in approved proportions (as per IS:9103), to modify workability without impairing strength and durability complete as per specifications and direction of the Engineer in charge. Note: 1. Payment for cement, reinforcement and shuttering shall be made extra under relevant item. 2. Plasticiser shall invariably be used in approved proportion to increase workability with minimum possible quantity of cement for all grade of Design Mix Concrete unless it is specifically approved citing reasons for not using plasticiser at the stage of Mix Design and in that case deduction shall be made as per relevant item.				-
7	Abutment & Pier	cum	9,367.34	3,222.72	3,01,88,313.96
8	Wing wall and Return wall	cum	700.00	3,222.72	22,55,904.00
9	Approach slab at formation level, Dirt wall/ ballast wall at formation level	cum	190.00	3,188.25	6,05,767.50
	Centering and shuttering including strutting, propping etc. and removal of form for :				-
10	All types of bridge super-structures, e.g. slabs, I- girders, T-girders, Box girders etc. up to 5m above ground level.	Sqm	10,000.00	744.60	74,46,000.00
11	Extra for additional height over item no. 10 wherever required with adequate bracing, propping etc. over initial height of 5 metres for every additional height of 1 metre or part thereof.	Sqm	6,900.00	91.83	6,33,627.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
12	Supply and using Cement at Worksite				
	Ordinary Portland Cement 43 grade approved brands/makes	MT	5,879.29	6,812.77	4,00,54,250.53
13	Reinforcement for R.C.C. work with Straightening, cutting, bending, placing in position and binding all complete. (Thermo-Mechanically Treated bars of grade Fe-500D or more of approved brands/makes). Note: 1. Reinforcement Bars to be supplied by BBJ	Kg	13,00,000.00	7.00	91,00,000.00
	Providing and laying in position machine batched, machine mixed and machine vibrated Cement Concrete of specified grade as per approved Design Mix (mixed in Mobile Concrete Batching/Mixing Plant at site or RMC from approved plants) using 20mm graded crushed stone aggregate and coarse sand of approved quality for cast in-situ Prestressed (Post-tensioned) concrete girder / Box girders/Slabs for different spans including finishing, using Plasticiser in approved proportions (as per IS:9103), to modify workability without impairing strength and durability complete as per drawings, specifications and direction of the Engineer in-charge. Note: 1. Payment for Staging, Shuttering, Cement, reinforcement, HTS cables, sheathing, anchorage cones, stressing of cables and grouting of the ducts shall be made extra under relevant items. 2. Plasticiser shall invariably be used in approved proportion to increase workability with minimum possible quantity of cement for all grade of Design Mix Concrete unless it is specifically approved citing reasons at the stage of Mix Design and in that case deduction shall be made as per relevant item.				-
14	With Soffit level up to 9m above Bed level	cum	5,000.00	3,257.80	1,62,89,000.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
15	Providing, fabricating & fixing in position to exact design profiles, H.T.S. cables of all classification made from Low Relaxation strands conforming to IS:14268- latest version in Prestressed (Post-tensioned) Concrete girders/slabs etc. including supplying, cutting, making into cables with necessary spacers, colour coding, protecting with water soluble oil at all time, anchoring of cables, supplying and placing spiral corrugated type galvanized metal steel ducts sheathing made up of Cold Rolled Cold Annealed (CRCA) mild steel conforming to IS:513 of required diameter/ thickness, vent pipe, placing, bending, routing, fixing, stressing & grouting of cable ducts with cement grout, Anchorage sets in required number with provision for future prestressing if any including all lead and lift with contractor's own materials, labour, equipments etc. complete as per drawings & specifications. Rate also includes covering anchorage pads with epoxy mortar of approved quality to avoid corrosion. Cement for grouting to be paid separately. Payment shall be made in terms of weight of HTS cables as per drawing.	MT	103.50	1,59,036.49	1,64,60,276.72
16	Extra for using HDPE sheathing in place of CRCA sheathing	Metre	7,130.00	142.21	10,13,957.30
17	Casting and installation of single/twin RCC box of all sizes with or without common web section including design of pushing scheme, thrust bed, casting of all RCC components, with specified grade of controlled concrete, pushing it in correct position and alignment below Railway track/Road following all measures of track safety by 'Box pushing technique" as per approved drawings/scheme, with or without surcharge in all types of soils with disposal of surplus earth away from vent up to 1 Km, fixing arrangement for all services & utilities including parapet walls on both sides, wearing course, foot paths, plaques, drainage arrangements etc. and all other incidental works to complete the ROB/RUB/Canal crossing in all respect as per specifications to the satisfaction of Engineer-in- Charge. Note : 1. The rate includes all items of work/supplies for complete job in all respects except "cost of Reinforced cement concrete, cement, reinforcement & shuttering" of (i) main RCC Box; (ii) Thrust Bed; (iii) Footpath (iv) Parapet wall and (v) wearing Course only, which shall be paid extra under relevant items of USSOR. 2. In case Drag Sheet and/or Rail Cluster are to be used as per approved scheme and design, the same shall be paid extra under relevant item. 3. The payment for this item shall be made for the clear inner cross section area of the parent RCC Box/Boxes and barrel length i.e. clear inner volume of parent RCC Box/Boxes.	cum	700.00	3,999.37	27,99,559.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
18	Fabrication, insertion and removal of rail cluster below the running track to ensure safety of track during box pushing in correct position and alignment with Railway rails and contractors MS flats, wooden blocks, and 12 mm dia bolts etc., as per approved drawing including removing and filling back of ballast below track under traffic conditions of Electrified/Non-Electrified section with all contractors, labour, tools, tackles, consumables plants, and 50MT capacity crane and any other material required for execution of work in all respect with all lead and lift, transportation and as directed by Engineer in-charge. Payment quantity shall be as per the weight of rail in rail cluster used at site or as per approved drawing, whichever is minimum.	MT	100.00	3,670.85	3,67,085.00
	Providing and fixing in position GI Drainage Spouts of required length with Grating in RCC slab and filling bitumen along kerb as shown in drawing with contractor's pipes, bitumen, tools, equipment, lead, lifts etc. complete as per specifications and as directed by Engineer in-charge.				-
19	100mm dia. Drainage Spouts	Metre	6.00	1,091.44	6,548.64
	Supplying, fabrication, assembling of all types of steel girders of specified spans with structural steel conforming to Quality "B0" Grade Designation E250 conforming to IS:2062, erection / slewing / end launching of steel girders with cranes or any other approved launching methods as per site conditions (not requiring traffic block) on sub-structure including provision of trolley refuges etc., complete as per approved Q AP and drawings conforming to IRS-B1- 2001 and other relevant codes and specifications. Note: 1. Detailed fabrication and erection drawings & launching methodology will be prepared by the contractor and got approved from Railway. 2. The rate is all inclusive including launching in position, complete in all respect except cost of (i) Painting / Metalising; (ii) Bearings & (iii) HSFG bolts which shall be paid extra under relevant item. 3. The payment shall be made on the theoretical weight of main components and gusset plates only. 4. Payment Schedule: (i) Receipt of material at site: 40% (ii) Fabrication of girders: 20% (iii) Erection/Launching: 20% (iv) Completion in all respects: 20%				-
20	Plate Girder/Semi Through Girder/Composite Girder (Steel Work)	MT	210.00	88,603.00	1,86,06,630.00
21	Extra for using steel conforming to Grade Designation E350 instead of Grade Designation E250 of Quality "B0" as per IS: 2062	MT	210.00	2,722.65	5,71,756.50
22	Deduct for using steel conforming to Quality "BR" instead of Quality "B0" of Grade designation E250 as per IS:2062.	MT	10.00	-2,722.65	-27,226.50

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
23	Supplying and fixing HSFG bolts of any dia and any length with suitable nuts including DTI washers conforming to IRS-B1-2001 for bridges and steel structures with contractors labour, tools and plants and lead and lift etc., complete.	Kg	7,000.00	150.02	10,50,140.00
	Metallizing of steel work of girders with sprayed aluminium after surface preparation by Sand/grit blasting, followed by one coat of etch primer (IS:5666) & one coat of Zinc Chrome primer (IS:104) and two coats of aluminium paint (IS:2339) with all labour, T&P and material as a complete job duly conforming to all relevant specifications and process given under Clause 39 of IRS-B1-2001. Note: Nominal Thickness of sprayed Aluminium coating shall be 150 microns. DFT of Zinc chrome primer shall be 25-30 microns and DFT of each coat of Aluminium paint shall be 12-14 microns.				-
24	On new girder during fabrication	Sqm	1,500.00	556.23	8,34,345.00
	Providing and fixing various size HTS holding down bolts conforming to relevant Codes/Specification in concrete column or in other structures with proper nuts, bolts, washers/plates, grouting of holes with cement or epoxy concrete with all material, labour, T&P as a complete job.				-
25	With Cement Grout. Cost of cement shall be paid extra.	Kg	1,900.00	110.30	2,09,570.00
	Design, supply, fitting and fixing in position true to line and level POT-PTFE bearing of 250 MT Capacity, consisting of a metal piston supported by a disc or un reinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel / fabricated structural steel, metal and elastomer elements complete as per IS:2062, IS:1030, AISI:304, AISI:316, IS:6911, BS:3784, IS:3400, IS:226, BS-5400, Bridge Code and as per approved drawing and Technical Specifications. The design of the bearings shall be submitted by the manufacturers / contractor and got approved from Railway before fixing. Test report after inspection of the bearings shall be submitted and got approved before the materials are lifted from the manufacturer premises.				-
26	POT-cum -PTFE Bearing (Free end)	Each	1.00	70,003.65	70,003.65
27	POT Bearing-Fixed Type	Each	1.00	89,542.78	89,542.78
28	POT-cum -PTFE Guided (L)Bearing	Each	1.00	1,10,036.99	1,10,036.99
29	POT-cum -PTFE Guided (T)Bearing	Each	1.00	1,04,121.03	1,04,121.03

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
	Design, supply, fitting and fixing in position true to line and level POT-PTFE bearing of 150 MT Capacity, consisting of a metal piston supported by a disc or un reinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel / fabricated structural steel, metal and elastomer elements complete as per IS:2062, IS:1030, AISI:304, AISI:316, IS:6911, BS:3784, IS:3400, IS:226, BS-5400, Bridge Code and as per approved drawing and Technical Specifications. The design of the bearings shall be submitted by the manufacturers / contractor and got approved from Railway before fixing. Test report after inspection of the bearings shall be submitted and got approved before the materials are lifted from the manufacturer premises.				-
30	POT-cum -PTFE Bearing (Free end)	Each	46.00	39,319.40	18,08,692.40
31	POT Bearing-Fixed Type	Each	23.00	45,576.77	10,48,265.71
32	POT-cum -PTFE Guided (L)Bearing	Each	23.00	57,454.29	13,21,448.67
33	POT-cum -PTFE Guided (T)Bearing	Each	46.00	53,449.98	24,58,699.08
	Painting of cleaned plate/composite bridge girders including all scaffolding along with provision of Jhoola / hanging scaffolding ladders etc. where required.				-
34	With two coats of Aluminium paint in dual containers conforming to IS:2339 with DFT of 15 - 20 Microns for each coat.	Sqm	700.00	80.60	56,420.00
	Launching in position, by any approved method, pre- fabricated Steel Girders, precast PSC girders/slabs, casted at casting bed developed at site, to correct alignment and level over the bed block / pedestal with all required arrangements, complete in all respect.				-
35	PSC girders / slabs	MT	3,300.00	1,404.08	46,33,464.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
36	Supplying fabricating and erecting welded and/or bolted and/or riveted steel work in built up sections, trusses and framed work, staging, racks, Height Gauge etc. for Steel Structures other than bridge girders, using RSJ, tees, angles and channels/flats, plates, gussets, round or square bars, cleats, bolts etc., with contractors own steel including cutting, bending, straightening, drilling, riveting, hoisting, fixing, erecting, welding, bolting etc., with Providing stiffeners wherever required as per approved drawing including applying a priming coat of a approved steel primer with all contractor's materials, labour, tools & plants, lead & lift including crossing of tracks if required etc., complete as per specification and as directed by Engineer-in- charge. Note: The payment shall be made on the theoretical weight of main components and gusset plates only. Payment Schedule: (i) Receipt of material at site: 40% (ii) Fabrication of girders: 20% (iii) Erection/Launching: 20% (iv) Completion in all respects: 20%	MT	112.00	77,409.35	86,69,847.20
Total for the Schedule (A)-					19,64,63,677.07
Schedule B					
CONCRETE WORK					
CEMENT CONCRETE (CAST IN SITU)					
	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
1	1:1.5:3 (1 Cement: 1.5 coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)	cum	30.00	6,644.12	1,99,323.60
	REINFORCED CEMENT CONCRETE				-
	FORM WORK				-
	Centering and shuttering including strutting, propping etc. and removal of form for				-
2	Foundations, footings, bases of columns, etc. for mass concrete	Sqm	640.00	262.87	1,68,236.80
3	Suspended floors, roofs, landings, balconies and access platform	Sqm	200.00	654.33	1,30,866.00
	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).				-
4	Suspended floors, roofs, landing, beams and balconies (Plan area to be measured)	Sqm	400.00	272.51	1,09,004.00
	MASONRY WORK				-

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				-
5	Cement mortar 1:4 (1 cement : 4 coarse sand)	cum	20.00	5,874.88	1,17,497.60
	STEEL WORK				-
6	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	Kg	700.00	522.62	3,65,834.00
	FINISHING				-
	CEMENT PLASTER (IN FINE SAND)				-
	12 mm cement plaster of mix :				-
7	1:4 (1 cement: 4 fine sand)	Sqm	100.00	251.68	25,168.00
	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content.				-
	Distempering with 1st quality acrylic distemper (Ready mix) having VOC content less than 50 grams/ litre of approved brand and manufacture to give an even shade :				-
8	Old work (one or more coats)	Sqm	100.00	48.48	4,848.00
	ROAD WORK				-
	ROADS				-
	Supplying and stacking at site.				-
9	90 mm to 45 mm size stone aggregate	cum	200.00	1,653.94	3,30,788.00
10	63 mm to 45 mm size stone aggregate	cum	320.00	1,386.67	4,43,734.40
11	53 mm to 22.4 mm size stone aggregate	cum	160.00	1,568.28	2,50,924.80
12	Stone screening 13.2 mm nominal size (Type A)	cum	68.75	1,591.96	1,09,447.25
13	Stone screening 11.2 mm nominal size (Type B)	cum	62.50	1,763.28	1,10,205.00
14	Moorum	cum	150.25	758.25	1,13,927.06
15	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required density .	cum	900.00	739.05	6,65,145.00
	PREMIX CARPET				-

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
	Providing and applying tack coat using hot straight run bitumen of grade VG - 10, including heating the bitumen, spraying the bitumen with mechanically operated spray unit fitted on bitumen boiler, cleaning and preparing the existing road surface as per specifications :				-
16	On bituminous surface @ 0.50 Kg / sqm	Sqm	1,400.01	31.24	43,736.31
	Providing and applying tack coat using bitumen emulsion conforming to IS:8887, using emulsion pressure distributor including preparing the surface & cleaning with mechanical broom.				-
	Providing and laying bitumen mastic wearing course (as per specifications) with industrial bitumen of grade 85/25 conforming to IS : 702, prepared by using mastic cooker and laid to required level and slope, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of approved size at the rate of 0.005 cum per 10 sqm and at approximate spacing of 10 cm centre to centre in both directions, pressed into surface protruding 1 mm to 4 mm over mastic surface, including cleaning the surface, removal of debris etc. all complete. (Considering bitumen using 10.2% as per MORTH specification).				-
17	40 mm thick	Sqm	1,400.00	992.82	13,89,948.00
	WATER SUPPLY				-
	C.P.V.C. PIPES				-
	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.-Internal work - Exposed on wall				-
18	40 mm dia nominal bore	Metre	170.00	618.99	1,05,228.30
	Total for the Schedule (B) -				46,83,862.12
	Schedule C				
1	Description:- Providing and laying Dense Bituminous concrete on prepared surface with specified graded stone aggregate for wearing course, mixing of bitumen, filler & stone aggregate in hot mix plant, transporting the mixed material and laying with mechanical paver finisher fitted with electronic sensing device to the required level and grade and rolling with road rollers, as per specification to achieve the desired density and compaction, but excluding cost of primer / tack coat 40 mm / 50mm compacted thickness with bitumen of grade CRMB (Crumb rubber Modified Bitumen) 60 @ 5.5% and lime @ 3% by weight of total mix	cum	250.00	9,984.82	24,96,205.00

SI No	Description	Unit	Quantity	Rate (Incl. GST)	Amount (incl. GST)
				(Rs)	(Rs)
2	Description:- Providing and laying M-35 grade (using 43/53 grade ordinary Portland Cement) precast concrete fascia wall (Area of each fascia panel shall not be less than 1.5 sqm. Height shall not be less than 900mm, min 180mm thick) including design and getting the approval ' liner finishes as per the design requirements. PVC drainage pipes, 200mm precast cover fascia for drainage pipes, joint filler, as per approved drawings, logo panels, geo-textile filter fabric for wrapping pipes etc. including filter media (500mm thick) behind the fascia wall, drain sleeve in lower panels as per drawings and design, supplying and laying in position the specified and approved Geo- Grid soil reinforcement including cutting in required length, placing in position and connecting with the precast fascia panels as per the design and drawings and direction of the Engineer-in- Charge all complete with all materials, labour, lead and lift ,plants, machinery, taxes royalty etc. complete. Item to include all incidental work required to complete the job as per drawing and specifications.	Sqm	1,400.00	5,431.92	76,04,688.00
3	Description:- Providing, placing and compacting approved backfill material in layers as per approved methodology for reinforced fill portion and random fill portion in the approaches between the Reinforced Soil (RS) Wall panels as per approved drawings and particular specifications. Item to include 500 mm thick sub-grade construction as per specifications with CBR under soaked conditions not less than 6%. All incidental work required to complete the job shall be included in the quoted rates. The item shall be measured and paid for the finished volume of backfill and subgrade placed in position excluding the volume of filter media at behind the RS walls.	cum	1,750.00	1,706.51	29,86,392.50
Total for the Schedule (C) -					1,30,87,285.50
Total of All the Schedules -					21,42,34,825.00