

BOQ Summary Sheet

Name of the work - Supply, Fabrication, erection and Re-girdering of Br no.1554 middle (5X30.5m S.Th.Gr) (BGML standard) with RDSO 25T axle load between section VZM-VSKP-DVD Main line of Waltair Division in view of mission 3000 MT .

Sl. No.	Description of Item	Amount
		(Rs.)
1	Schedule -A	₹ 22,83,33,986.47
2	Schedule -B	₹ 1,84,26,539.62
3	Schedule -C	₹ 1,31,20,721.55
4	Schedule -D	₹ 1,95,86,276.96
5	Schedule -E	₹ 5,40,97,016.00
6	Schedule -F	₹ 36,89,400.79
7	Schedule -G	₹ 20,71,875.00
8	Schedule -H	₹ 9,08,437.50
	Total	₹ 34,02,34,253.89

Bill of Quantities

Name of the work -Supply, Fabrication, erection and Re-girdering of Br no.624UP, 655UP, 701 UP, 784DN, 836UP,929 UP of R-V line and Br.No.1205, 890 DN of KK -Line with RDSO/Approved drawings to suit 25T axle load in view of mission 3000 MT and other miscellaneous works such as fabrication and supply of CC cribs etc in WAT division.

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
Schedule -A					
	Execution of works Schedule- 'A' (Fabrication & launching of steel girders, Construction of Side walkways, Trolley refuges, Inspection arrangements, fabrication and supply of CC cribs) (NOTE : For Sch. A, Sl No. 1 & 2 - All the launching and de-launching works of Re-girdering works have to be under taken in the allotted traffic and power blocks though it is mentioned as "Not requiring traffic block" in the description of the item. The entire launching has to be done with in specified line/power block. No extra payment will be made over the accepted rates for working in traffic block				
	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 QAP 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 BBJ and 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%				
1	Plate Girder/Semi Through Girder/Composite Girder (Steel Work)	MT	1009.90	1,09,485.18	11,05,69,078.37
2	Open web Girder	MT	350.00	1,35,936.99	4,75,77,945.49
3	Supplying, Fabricating and fixing access ladders, inspection platforms, Trolley refuges etc., on bridges with structural steel conforming to IS:2062 including welding / bolting, priming painting with one coat of ready mixed paint of Zinc Chromate (IS:104) with DFT of 25-30 microns followed by one coat of Zinc Chrome Red Oxide (IS:2074) with DFT of 25 microns with all material, labour, T&P as a complete job. Note: Painting shall be paid separately under relevant item.	MT	205.00	77,721.13	1,59,32,832.38
4	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.	MT	605.00	89,676.25	5,42,54,130.23
Total of Schedule -A					22,83,33,986.47

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
Schedule -B					
	Execution of works Schedule- 'B' (Execution of Stainless Steel chequered plate, etc.)				
	Supplying and fixing of Anti-skid MS/Stainless steel chequered plates on un-ballasted deck bridge as per approved drawings, with matching grade stainless steel fasteners as directed by BBJ / Railway's Engineer-in-charge, on new bridge or replacement of existing chequered plates on old bridge including removal of old chequered plates and stacking near approaches of bridge, clear from all infringement. Note : Joints of chequered plates shall not fall in between sleepers.				
1	Anti-skid stainless steel chequered plate conforming to latest IS:6911, ISS Symbol 409M with flat bottom and top pattern conforming to IS:3502, 1A with bead height of minimum 0.8mm - on New bridges.	Kg	96,967.00	190.03	1,84,26,539.62
Total of Schedule -B					1,84,26,539.62
Schedule -C					
	Execution of works Schedule- 'C' (Execution of Painting and Metalizing works etc.)				
	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.				
1	On new girder during fabrication	Sqm	14,913.00	599.36	89,38,284.69
	Surface preparation of steel work of bridge plate/composite girders by cleaning with scrappers and/or wire brushes to remove all rust and loose or perished paint to prepare perfectly clean & dry bare metal surface free from all dirt/foreign material & ready for initial coat of paint for new or existing steel girders. Rate includes cost of labour, consumables, brushes, tools & plants, ladders, scaffoldings, jhoola, hanging scaffolding staging etc.				
2	New girders during fabrication	Sqm	20,539.00	29.97	6,15,618.01
	Surface preparation of steel work of bridge triangulated girders by cleaning with scrappers and/or wire brushes to remove all rust and loose or perished paint to prepare perfectly clean & dry bare metal surface free from all dirt/foreign material & ready for initial coat of paint. Rate includes cost of labour, consumables, brushes, misc. tools and plants, ladders, scaffoldings, jhoola, hanging scaffolding, staging etc.				
3	New girders during fabrication	Sqm	1,940.00	44.96	87,214.29
	Painting of cleaned plate/composite bridge girders including all scaffolding along with provision of Jhoola / hanging scaffolding ladders etc. where required.				
4	With one coat ready mix Zinc Chromate conforming to IS:104 with DFT of 25-30 Microns followed by one coat of Zinc Chromate red oxide conforming to IS:2074 DFT of 25 Microns	Sqm	20,539.00	71.94	14,77,642.10
5	With two coats of Aluminium paint in dual containers conforming to IS:2339 with DFT of 15 - 20 Microns for each coat.	Sqm	20,539.00	80.02	16,43,501.51
	Painting cleaned triangulated bridge girders including all scaffolding, along with provision of Jhoola / hanging scaffolding ladder where required.				

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
6	With one coat ready mix Zinc Chromate conforming to IS:104 with DFT of 25-30 Microns followed by one coat of Zinc Chrome red oxide conforming to IS:2074 with DFT of 25 Microns.	Sqm	1,940.00	85.40	1,65,680.14
7	With two cover coats of ready-mixed paint conforming to IS:13607 with colour/shades, as decided by Engineer-in charge. Note: DFT of each coat shall be 20-25 microns.	Sqm	1,940.00	99.37	1,92,780.80
Total of Schedule -C					1,31,20,721.55
Schedule -D					
Execution of works Schedule- 'D' (Execution of Bearings, HSFG bolts, HTS holding down bolts, Epoxy grouting etc .)					
1	Design, manufacturing, supplying and fixing in position elastomeric bearing true to line and level conforming to IS:3400, IS:226, BS-5400 under prestressed concrete girders/ Steel Girders, for Pre- cast as well as cast-in-situ girders as per approved drawing. The rate shall include cost of load test of one no. bearing from Railway approved firms and all fixing materials, equipments, machineries, labour, taxes, loading, unloading, leading, lifting etc. complete. Rates include getting the drawing approved from BBJ and Railway and cost of inspection during manufacturing from railway approved organization. Note : 1. The rate is for finished item complete and paid only after fixing in position below the girder. 2. The volume shall be as given in the drawing and no deduction shall be made for inserted steel plates etc.	Cubic Centimetre	5,83,034.47	1.37	7,98,477.37
2	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	23,453.00	178.10	41,76,995.01
	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.				
3	With epoxy concrete grouting.	Kg	3,079.40	118.18	3,63,908.59
4	Supplying, fitting and fixing in position true to line and level cast steel rocker/roller bearing of different load bearing capacity conforming to IS :7666, IS:9565, IS:1030, IS:919, IS:3073 and IRS Bridge Code including all accessories as per drawing and Technical Specifications with all material, labour, T&P as a complete job. The payment shall be made for the load bearing capacity in Metric Tonne as per approved drawing.	MT	1,540.00	616.48	9,49,382.62
5	Supplying, fitting and fixing in position true to line and level forged steel roller bearing of different load bearing capacity conforming to IS :7666, IS:9565, IS:1030, IS:919, IS:3073 and IRS Bridge Code including all accessories as per drawing and Technical Specifications with all material, labour, T&P as a complete job. The payment shall be made for the load bearing capacity in Metric Tonne as per approved drawing.	MT	2,032.00	796.31	16,18,107.63
	Removing of existing bed plate from existing bed block, supply, fabrication and erection of new bed plate of approved sizes in exact position over bed block of pier/abutments by giving full and even bearing, setting them on the layer of free flow non- shrinkable grouting compound, scrapping or chipping of bed block, if required, fabrication and fixing of holding down HTS bolts of suitable sizes along with nuts, washers etc., drilling holes of required size, grouting of holes by epoxy mortar after fixing holding down bolts. Total work to be done during traffic block. Cost of holding down HTS bolts shall be paid extra under relevant item for supply of HTS holding down bolts.				

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
6	Up to 12.2m clear span	Kg	11,368.00	248.87	28,29,099.71
7	More than 12.2m and up to 18.3m clear span	Kg	13,300.00	261.31	34,75,396.67
8	More than 18.3m and up to 30.5m clear span	Kg	2,100.00	273.75	5,74,876.74
	Delaunching of existing and Launching & fixing of new girder/slab in exact location of all type of steel/PSC girders/Slabs available at site, during block, complete job including lifting to any height as per site requirement, provision of approaches, and placing of released material away from bridge stream or roads as the case may be. Note: Payment under this item shall be made for the total weight of girder removed and newly launched girder.				
9	Delaunching of existing Structural steel plate girders / slabs and Launching New Structural steel plate girders	MT	2,175.75	982.89	21,38,527.03
	Grouting of masonry/concrete by injection process duly Sealing of cracks, through nipples complete as per Technical Specification and procedure given in IRBM Para No 209 including necessary admixture. Payment shall be as per use of cement by weight in case of neat cement/cement mortar grouting and weight of Epoxy in case of Epoxy Grouting. (Cement will be paid extra).				
10	Epoxy Grout	Kg	1,754.00	1,194.01	20,94,300.92
11	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical Specification with average thickness of 10mm including priming coat, mortar plaster and seal coat of epoxy.	Sqm	471.50	1,202.98	5,67,204.67
	Total of Schedule -D				1,95,86,276.96
	Schedule -E				
	Execution of works Schedule -E (Execution of Supply & fixing of H-beam sleepers, Dismantling & Linking of track and other allied works etc)				
	Providing and constructing Temporary Earthen Island/ coffer dam for construction of well foundations of dia. up to 10m (longest dimension) , including bailing and pumping out of water, provision of sand bags, wooden ballies, sheet piling, earth, sand or any other suitable material, as required with all labour and material complete job.				
1	Providing and constructing 10m wide service road to reach island location from one pier location to another pier location.	RM	725.00	5,387.87	39,06,204.83
	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.				
2	50mm dia. Drainage Spouts	Metre	396.00	577.82	2,28,817.52
3	Linking of track on Girder Bridge with Steel Channel/H-beam sleepers as per approved drawings including leading of running and guard rails, sleepers and fittings, bending of guard rails, notching, drilling of holes, cutting of rails etc. as per IRPWM with latest correction slips and making track structure fit for normal speed. Note: 1) Rails, Steel Channel/H-beam sleeper and all fittings will be supplied by BBJ. 2)Transportation of track material if supplied beyond 250m of bridge approaches, shall be paid separately under relevant item.	TRM	825.00	482.89	3,98,383.49

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
	Quick cutting with abrasive rail cutter of all types of rail sections including wear resistant, head hardened rails up to 110 UTS, with contractors tools & plants, equipment, consumable with all lead & lift etc. complete as directed by Railway / BBJ's Engineer in-charge. Abrasive Rail Cutter will be as per RDSO Specification No. TM/SM/1 (Rev. 01 of 2012) with latest status of RDSO; Rail Cutting Wheel Abrasive Disc will be as per RDSO Specification No.TM/SM/2 (Rev. 01 of 2020)				
4	60 Kg - 110/90 UTS - Outside Track	Each	118.00	260.20	30,703.93
5	60 Kg - 110/90 UTS - On Running Line	Each	103.00	329.87	33,976.61
	Loading, unloading and hauling of 52Kg / 60Kg rail more than 13 metre and up to 39 metre length by Rail Dolly / Dip Lorry to the nominated location under traffic and line protection in case road carriage is not possible for different leads and lift up to 5 metre.				
6	For lead up to 500m	MT	95.50	344.58	32,907.84
7	For lead beyond 500 metre and up to 1 Km	MT	95.50	501.23	47,867.14
8	Extra to Schh-E, Sl. No. 7 for lead beyond 1 Km for every subsequent Km or part thereof and up to 10 Km	MT	168.00	62.55	10,508.45
9	Manufacture of flared portion of Guard Rail by cutting and bending to required shape & RDSO's approved drawings. Note: (1) Rails shall be supplied by BBJ after receiving from Railway. (2) One set consists of two rails i.e. both left and right.	Set	8.00	3,751.96	30,015.70
10	Providing and fixing of flared portion of guard rails of any rail section over PSC sleepers including fixing of with all fittings, including leading of rails and fittings, squaring and adjusting spacing of sleepers as required, providing nose blocks duly cutting wooden blocks supplied by railways and fixing it with bolts of 16mm dia as directed complete and finished as per RDSO's approved drawing. Note: 1.One set consists of LH & RH side rails of one end. 2.Required P.Way fittings will be supplied at SSE stores depot.	Set	8.00	2,942.77	23,542.13
11	Drilling holes 25mm to 40mm dia. with drill twist in the foot of guard rails for fixing guard rails on bridge as directed.	Each	2,018.00	56.33	1,13,683.57
12	Dismantling of existing flared portion of guard rails of any rail section over PSC sleepers duly removing rails & fastenings and leading and stacking released materials at nominated place within free lead, clear of infringements, complete and as directed. Note: One set consists of LH & RH side rails of one end.	Set	8.00	1,646.83	13,174.68
13	Fabrication & supply of Galvanized H-beam Sleepers made out of the materials confirming to IS 2062 of standard Rolled sections as per approved drawing Nos RDSO/B/1636/4/R,5&9 complete and as directed by Engineer-in charge. Note: Cost of steel fittings and GRSP shall be paid separately.	MT	328.00	1,09,721.45	3,59,88,635.93
14	Manufacture and supply of Hook Bolt 28mm dia. & 320mm long as per RDSO Drg. no. BA-1636/l/R2 from RDSO approved sources	Kg	10,768.00	122.71	13,21,291.80
15	Manufacture & supply of a set of 2 Nos of Elastomeric Pads 25mm / 30mm thick and 4 nos of Grooved rubber pads as per RDSO drawing No. B/1636/5 alt 2 to suit Insulated H Beam sleepers from RDSO approved sources with all contractor's material, lead, lift, labour, tools, plant and transportation etc. complete as per approved drawings and as instructed by Engineer in-charge. Note: One Set consists of 2 nos. Elastomeric Pad 25mm/30mm and 4 nos. Grooved Rubber Pad.	Set	1,238.00	1,743.78	21,58,795.45

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
16	Supplying of Zero toe load fixtures for H Beam sleepers of 52/60Kg Rails procured from RDSO approved firms as per RDSO approved drawing with up-to-date correction slips and specifications with all contractor's lead, lift, labour, tools, plant, transportation etc. complete as per instructions of Engineer in-charge. Note: Complete fixture for 1 sleeper shall constitute 1 set.	Set	1,501.00	4,512.22	67,72,848.96
	Erection or removal of temporary Engineering Indicator Board or any other board at specified locations without causing infringement to track etc. complete and as directed.				
17	For erection	Each	24.00	204.05	4,897.16
18	For removal	Each	24.00	165.52	3,972.45
	Hiring of machinery for minor miscellaneous works for short duration including operator/driver, fuel, lubricants and consumable. The contractor shall arrange all statutory permits as required by rules and regulations prevailing in the area of work. Payment shall be made for actual working hours at site.				
19	JCB Backhoe Loaders 3DX Plus or similar with minimum 1.10 cum bucket capacity	Hour	4,321.00	688.91	29,76,788.36
Total of Schedule -E					5,40,97,016.00
Schedule -F					
	Execution of works covered by all items of works- FR Items shown in schedule-'F' (Preparation of GAD & Completion drawings, De-Launching etc)				
1	Major Bridges /ROB/RUB: Preparation of the General Arrangement Drawing for all Major Bridge / ROB / RUBs for Railway line Corridor through MX Rail/Auto CAD for Railway standards/ formats as directed by Engineer-in-Charge based on finalized L- section for the proposed alignment ,hydrological investigation & detailed geotechnical investigation carried out by the consultant at present bridge locations, on good quality tracing paper and submitting the same to BBJ administration for approval and carrying out the corrections as instructed by BBJ with all consultants own men, material, tools & plants, Computer system etc. as directed by Engineer in- Charge. Notes: (1) Preparation of the General Arrangement Drawings for the Major/important Railway Bridges for the proposed Re-girdering works by collecting the existing bridge details with the Total station/latest survey instrument showing details 100m on either sides with AutoCAD for railway standards / formats as directed by Engineer-in-Charge, on good quality tracing paper and submitting the same to BBJ administration for approval and carrying out the corrections as instructed by BBJ with all consultants own men, material, tools & plants, survey instruments, Computer systems etc., as directed by Engineer in charge. (2) The GAD should incorporate (a) Sub structure details, Super structure details, Details of bearings, Track structure, RLs of all important bridge components like BL, HFL, RL etc(b) Existing Girder and New girder details (c) Details of adjacent bridges/Lines (d) locations of OHE masts	Each	8.00	14,901.84	1,19,214.74
2	Preparation and supply of Computerized tracing for Bridges and RCC details, GADs, along with CD's for completion drawings with all contractors materials as per the directives of Engineer in charge of the work. A-1 size (594x841 to 1500) and other sizes of drawing as decided by Engineer -In-charge.	Each	8.00	8,317.08	66,536.63
3	Drilling of holes 32-50mm dia & 310mm length in bed block by core cutting machine for fixing anchor bolts with epoxy resin with contractor's men and materials.	Each Hole	100.00	3,386.50	3,38,649.92

Sl. No.	Description of Item	Unit	Qty	Rate (Rs.)	Amount (Rs.)
4	Delaunching the existing open web through/semi through/under slung steel girders on Bridge with all contractors falls/temporary arrangements & labour, T&P etc. Complete & stacking released material/Girder at the nominated place as directed by BBJ's Engineer-in- Charge under safe custody of railway's SSE/Br in office campus of SSE/Br.. The delaunching will include the following operations a) De linking of track, jacking the girders on piers/abutments, providing supporting rolling arrangement, securing the same by providing guide strips as per approved drawing. (the work of delaunching existing girder and inserting new girders will be done simultaneously). b) Preparing temporary staging for receiving the released girder, provide side slewing arrangement under the old girders & over temporary staging for side slewing the girder out of alignment during the some traffic block. c) Lowering old girders to the bed level one by one and dismantling the girders and removing out from the river bed, transporting and stacking the under safe custody of Railway's SSE/Bridges as per the instructions of BBJ's Engineer in- Charge. Note-Payment on pro rata basis span wise.	MT	361.00	6,745.91	24,35,274.49
5	Designing and developing Detailed structural and working Drawings for following railway non standard Plate girders/ under slung girders/ through girders for 25 T axle loading based on Railway's approved GADs, duly collecting necessary data from the field / Railways/BBJ .The designing of girders to be proof- checked by Govt Universities/IITs as suggested and approved by BBJ before submitting for Railway's verification and approval, making corrections duly incorporating suggestions in drawings/designs, further submission of original in transparent film paper and soft copy (CD) for BBJ's approval etc. with contractor's technical expertise and instruments,labour, consumables, repeatedly attending till final approval etc., complete as directed by Engineer in-charge.(3 copies of approved hard copies to be submitted)	Job	1.00	7,29,725.00	7,29,725.00
Total of Schedule -F					36,89,400.79
Schedule -G -					
	Description :- Unforeseen items which are not covered and above schedules .	LUM SUM	1	20,71,875.00	20,71,875.00
Total of Schedule -G					20,71,875.00
Schedule H - Lumpsum Unforeseen items					
	Description :- Execution of Unforeseen items which are not covered and above schedules .	LUM SUM	1	9,08,437.50	9,08,437.50
Total of Schedule -H					9,08,437.50
Total of Schedule -A+B+C+D+E+F+G+H					34,02,34,253.89