

# **ANNEXURE 5 –BOQ(LOT 2)**

**Bill of Quantities- INFRA 1 LOT 2 (3350.00 m road to Adit 3, 1640.00 m road connecting Tsamang-Banjar farm road, 4900.00 m improvement of Tsamang-Banjar Farm Road and 57.9 m Bailey bridge (excluding supply of bridge superstructure))**

Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
<b>A</b>	<b>ROAD WORK</b>					
1	<b>Site Clearance</b>					
1.1	Clearing jungle including uprooting of vegetation & trees of girth < 300mm & disposal within 50m of the site	sq.m	29,670.00			
1.2	Felling trees including cutting of trunks and branches, removal of roots, stacking of serviceable materials and disposal of rubbish within 50m lead					
a	Girth 300 to 600mm	each	480.00			
b	Girth 600 to 1200mm	each	60.00			
c	Girth 1200 to 2400	each	30.00			
d	Girth > 2400mm	each	30.00			
2	<b>Earth work in excavation,back filling and transportation</b>					
2.1	Excavation of road formation/trace/box cutting, with excavator including separate deposition of soil, rock sandstones within 50m for reuse.					
a	All types of soil	cu.m	242,170.86			
b	All types of rock (With or Without blasting)	cu.m	103,787.51			
3	<b>Back Filling</b>					



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
	Backfilling excavated earth for road, flood banks, guide banks & depressions, in layers <200mm depth, including watering, rolling & dressing up within 50m lead & 1.5m lift					
3.1	All types of excavated materials including soil, blasted rock and boulders	cu.m	14,954.51			
4	<b>Transportation of excavated materials</b>					
	Transport of loose spoil materials in designated locations including loading/unloading, dressing and compaction of dump site					
4.1	Beyond 50m and up to 1km lead.	cu.m	179,344.88			
4.2	Beyond 50m and up to 2km lead.	cu.m	20,517.93			
<b>B</b>	<b>DRAINAGE WORKS</b>					
1	Construction of V- shaped drain base width 1000x150mm in PCC M15; 300x300mm thick Plum Concrete M15 (60%) with 40% boulder (75mm down) on hillside. The rate should be inclusive of excavation,rolling, levelling, backfilling, necessary form works (12mm thick waterproof plywood,Sawn Timber(50mm x75mm) thick and disposal of surplus earth within 50m lead (complete) as per drawing.	m	9,890.00			
<b>C</b>	<b>RETAINING WALLS</b>					
	<b>RRM WALL</b>					
1	Earth work in Excavation in foundation trenches or drains including dressing of sides					



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
	and ramming of bottom, disposal of surplus excavated soil within 50m lead					
1.1	All types of soil	cu.m	170.10			
1.2	All types of rock with or without blasting	cu.m	72.90			
2	Providing and laying in position plain cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. upto floor five level, excluding the cost of centering and shuttering: 1:2:4 (1 cement : 2 sand : 4 graded crushed rock 20 mm nominal size)	cu.m	41.38			
3	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork in Foundation, plinth and all lifts and heights.	sq.m	57.89			
4	Providing and laying Hand packed stone filling or soling with stones	cu.m	38.25			
5	Providing & laying Random Rubble Masonry with hard stone in Retaining wall/Breast wall/ cross drainage works foundation, plinth,, all lifts and heights In cement mortar 1:4	cu.m	1,215.00			
6	Providing and laying filter material (600mm wide) in trenches, sides of foundations, walls etc. with 100 to 200 mm stones wherever applicable.	cu.m	879.00			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
7	Providing and laying in position plum concrete (concrete M15- 60% and boulder - 40%) excluding the cost of centering and shuttering in parapet wall	cu.m	43.73			
8	Providing & fixing P.V.C pipe for weep holes-90 mm dia	m	335.00			
9	Filling of trenches, sides of foundations etc. in layers <200mm using selected excavated earth, ramming etc. within lead 50 m & lift 1.5m	cu.m	428.25			
	<b>GABION WALL</b>					
10	Providing & filling hand-packed stone in G.I mesh of size 4mm (8swg) including supplying and weaving of mesh in boxes as specified in the drawing complete-Double-knotted mesh. Including excavation and back filling...100mmx100mm mesh opening size including all lifts and heights	cu.m	160.00			
<b>D</b>	<b>PAVEMENT WORKS</b>					
1	Preparation of base for sub grade with proper camber by excavating earth to depth equal to pavement thickness, consolidation with roller, disposal of surplus earth up to 50m: All kinds of soil	cu.m	20,769.00			
3	Providing and laying Granular sub-base course (GSB) to required degree of compaction with proper formation of cross fall using motor grader for laying and compacted to required	cu.m	11,868.00			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
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	density as per material gradation and aggregate quality specified-150mm thick.					
4	Providing & laying NP2 class R.C.C pipes, including collars, jointing in cement mortar 1:2 including testing of joints etc. complete	m				
4.1	600mm dia	m				
4.2	1050mm dia	m	110.00			
5	Providing & laying sand bedding, including watering, ramming, dressing	cu.m	5.50			
6	Providing and constructing boulder barriers with maximum inclination of 20 deg. to the road alignment within 50m lead	cu.m	200.00			
7	Providing & laying in position reinforced cement concrete excluding the cost of centering, shuttering and reinforcement - all work upto plinth level-1:1.5:3 (1 cement : 1.5 sand : 3 graded crushed rock 20 mm nominal size)	cu.m	10.50			
8	Providing & fixing Thermo-Mechanically Treated reinforcement bar (Yield Strength 500 MPa) for R.C.C work including cutting, bending, binding and placing in position complete-2% of concrete volume.	Kg	1,648.50			
9	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork in Foundation, plinth and all lifts and heights.	sq.m	7.00			
<b>E</b>	<b>SLAB CURVERT WORKS</b>					



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
1	Earth work in Excavation in foundation trenches or drains including dressing of sides and ramming of bottom, disposal of surplus excavated soil within 50m lead	cu.m				
2	All types of soil	cu.m	80.80			
3	All types of rock with or without blasting	cu.m	24.24			
4	Providing and laying Hand packed stone filling or soling with stones	cu.m	11.54			
5	Providing & laying dry earth bedding, including consolidating each deposited layer by watering, ramming and dressing	cu.m	11.54			
6	Providing and laying in position plain cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. upto floor five level, excluding the cost of centering and shuttering: 1:2:4 (1 cement : 2 sand : 4 graded crushed rock 20 mm nominal size)	cu.m	7.98			
7	Providing & laying in position reinforced cement concrete work in walls (any thickness) including attached pilasters buttresses, piers, abutments etc. upto floor five level excluding the cost of centering, shuttering and reinforcement. 1:1:2 (1 cement : 1 sand : 2 graded crushed rock 20 mm nominal size)	cu.m	67.60			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
9	Providing & fixing Thermo-Mechanically Treated reinforcement bar (Yield Strength 500 MPa) for R.C.C work including cutting, bending, binding and placing in position complete	Kg	10,613.20			
10	Providing & fixing centering and shuttering (formwork), including strutting, propping etc. and removal of formwork in Foundation, plinth and all lifts and heights.	sq.m	136.96			
11	Providing & laying H.D.P.E pipes, 12.5 PN, including H.D.P.E fittings (excluding trenching, refilling & thrust block)-75mm	m	17.20			
12	Providing and laying in position plum concrete (concrete M15- 60% and boulder - 40%) excluding the cost of centering and shuttering in parapet wall	cu.m	20.00			
<b>F</b>	<b>BRIDGE 2 WORK</b>					
<b>1</b>	<b>Site Clearance and Earthworks</b>					
1.1	Clearing jungle including uprooting of vegetation & trees of girth < 300mm & disposal within 50m of the site	sq.m	500.00			
1.2	Excavation of soil and storing the useful materials close to the foundations. This materials shall be used as backfilling around and behind foundation on both sides. However, the top layer of the soil containing decomposable materials have to be disposed off to necessary leads. The excavation may be below or above water level, which the					



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
	contractor has to ascertain after studying the site condition and understanding the design drawings. The construction of cofferdam, guide bunds, sheet piles etc. and dewatering using water pumps including energy, loading, offloading and transportation shall be included in the rate. The excavation shall be measured and paid for as SOLID VOLUME. Solid volume is the volume of excavation computed directly by multiplying the foundation plan dimensions of the structure by the height of cut, without allowance for bulking, shrinkage, wastage, working space, slope cutting etc. The foundation levelling concrete base shall not be considered a part of the structure for the purpose of computing solid volume. The contractor shall take the above into consideration while setting rate for this item.					
a	Soil	cu.m	458.60			
b	Rock with or without blasting	cu.m	172.48			
1.3	Backfilling around and behind the foundations. The backfilling shall be measured and paid for as SOLID VOLUME and the height of fill to be considered for the purpose of calculating volume shall be taken upto the level of the finished ground level shown in the drawings. For the filling behind the abutment wall, only the fill within the confines of the abument stem	cu.m	827.93			





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				In figure	In words	
	and the return walls shall be computed and paid for as a part of this BoQ. The embankment/fill beyond the return walls shall be treated as a part of the road work. The contractor has to note that while the areas of excavation around the foundation due to inclined cutting, cutting done for creating working space etc. shall be compact filled, the payment being "Solid Volume", such backfilling works that are outside the plan area of the foundation are not payable. The contractor shall consider accordingly while setting the rate for this item.					
<b>2</b>	<b>Concrete works</b>					
2.1	Providing & laying lean concrete M10 for Abutment foundations. The soil or backfill below the lean concrete shall be well compacted and shall not allow any settlement. Additional concrete required to level inaccurate or over excavation shall not be paid extra. The lean concrete sides can be inclined up to 15 degrees and therefore formwork may not be necessary.	cu.m	11.94			
2.2	Providing & laying of Reinforced Cement Concrete grade M30, as per drawings and specifications. Formwork and reinforcement shall be paid separately.					
a	Footing Slabs of the Abutments	cu.m	173.52			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
b	Abutment Stem, Return Walls and Corbel	cu.m	352.13			
c	Back Wall	cu.m	5.22			
3	<b>Formworks</b>					
3.1	The formwork shall include all temporary or permanent forms required for forming the concrete to the shape, dimensions and surface finish as shown in the relevant drawings. The rate for the formwork shall include cost of design of the temporary support system the form work shall include providing all props, staging, centering, scaffolding and other temporary constructions required to support the formwork including the fees for design of the temporary support system. The form profile may be vertical, horizontal, inclined or curved. The removal of the form work after the time specified in the specifications or as directed by the Engineer shall also be included in the rates. The shuttering boards shall be of film faced water proof plyboard or steel plates, subject to approval by the Engineer. In any case, the shuttering has to impact a smooth finish to the concrete surface. The standard form work oil shall be used to prevent the fresh concrete from sticking to the shuttering board. The use of old/used mobil as formwork oil shall not be permitted.					
a	Footing Slab	sq.m	90.68			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
b	Abutment Stem, Return Wall & Corbel	sq.m	775.91			
c	Backwall	sq.m	24.63			
<b>4</b>	<b>Reinforcement works</b>					
4.1	Providing and laying Thermo Mechanically Treated (TMT) bars of Grade Fe 500. The rate quoted shall include providing, cutting, bending, hooking by machine/manual, tying in position including GI binding wire, spacers, laps, chairs, cover blocks, placing into formwork and fixation, all complete as per drawings and specification. The rebar quantities for laps, chairs, spacers etc. shown in the drawings and covered in the Bar Bending Schedule shall be measured and paid for. Wastages shall be not be paid and has therefore to be accounted for while setting the rates.					
a	Abutments A1 and A2	Kg	48,602.00			
<b>5</b>	<b>Miscellaneous work</b>					
5.1	Providing and laying coarse gravel (filter layer) behind abutments. Thickness d=60cm for both abutments.	cu.m	58.46			
5.2	Providing and laying stone boulder filling as scour protection as per drawing. The boulders shall be hard, durable and angular in shape. Each boulder shall weigh atleast 100 kgs. The boulders shall be so arranged that the blocks interlock with each other and that it results in a densely compacted unit with minimal gaps	cu.m	677.04			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
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	between the blocks. The material, shape and the arrangement of the boulders shall be subject to approval by the Engineer.					
5.3	Providing and laying stone boulder pitching works around the bridge autments as shown in the drawings. The boulders shall be hard, durable and angular & flat in in shape. The minimum thickness of the pitching shall be 1.00 m. Each boulder shall weigh atleast 100 kgs. The boulders shall be laid with the length side embedded into the slope for better stability against the force of river flow. The boulders shall be so arranged that the blocks interlock with eachother and that it results in a densely compacted unit with minimal gaps between the blocks. The material, shape and the arrangement of the boulders for the stone pitching works shall be subject to approval by the Engineer.	cu.m	242.28			
5.4	Providing and laying as shown in the drawing $\phi 110$ mm HDPE pipe, pressure class 6 kg/cm <sup>2</sup> as weep holes for the abutments.	m	30.00			
5.5	Carry out rock anchoring of the A1 side abutment foundation as per drawing. The drill holes shall be between 32mm and 45mm diameter. The holes shall be drilled vertically. The anchor rods shall be grouted in position using non-shrink grout with 28-day	m	50.40			



Item No.	Description of Items	Unit	Qty	Rates (BTN)		Amount (BTN)
				In figure	In words	
	compressive $\geq$ 35 MPa. The quoted rate shall be inclusive of all material, equipment and manpower required to complete the task in full.					
<b>6</b>	<b>Launching and Testing of Bailey Bridge Superstructure</b>					
6.1	Complete assembly, launching and load testing of the Bailey Bridge. The cost shall include all the activities as per the requirement of the Technical Specification.	LS	1.00			
<b>G</b>	<b>Occupational Health and Safety</b>					
1	Personal Protective Equipment (PPE)	LS	1.00			
2	Temporary Living Accommodation	LS	1.00			
<b>Total</b>						

**Total Amount in figure:**

**Total Amount in Words:**

