

PROPOSED ESTIMATE FOR CONSTRUCTION OF STEEL FOOT BRIDGE

All Rates as per WBPWD Schedule of Rates 01.11.2017 & Its Corrigendums

Sl. No.	Page No. & It. No.	Description	Total Quantity	Unit	Rate (Rs.)	Amount (Rs.)							
1	P-278	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, removing, spreading or stacking of spoils within a lead of 150 m. as directed and including trimming the sides of the trenches, leveling, dressing and ramming the bottom, and backfilling with approved material complete as per direction of the Engineer-in-Charge .											
	It-12.01/ I/a/iv	In all sorts of soil excluding marshy soil & rocks (soft or hard) by manual means. upto 3 m depth - Without pumping out water and shoring											
		Footing	2	X	4.300	X	1.500	X	1.900	=	24.51		
			2	X	4.300	X	1.500	X	2.400	=	30.96		
		toe	2	X	8.500	X	1.000	X	1.400	=	23.80		
											79.27	cum	114.00
2	P-279	Earthwork in filling in foundation trenches with good earth in layers not exceeding 15cm. including watering and ramming layer by layer complete with earth obtained from excavation of foundation or from fresh excavation of land arranged by Department within a lead of 150 m.											
It-12.02	Earth work Qty.								=	79.27			
	Less PCC +RCC								=	-36.61			
	road	1		3.000		3.000		0.300	=	2.70			
										45.37			
										45.37	cum	92.00	4173.58
3	P-280	Sand filling in foundation trenches and at the back of abutments, wing-walls etc. with good local sand free from earth in layers not exceeding 15 cm. including inundating each layer by profuse water and poking and ramming layer by layer complete including supply of sand. Quality of sand is to be approved by the Engineer-in-charge.											
	It-12.04	footing	4	X	4.300	X	1.500	X	0.200	=	5.16		
		toe	2	X	8.500	X	1.000	X	0.200	=	3.40		
											8.56	cum	515.22
4		Plain / Reinforced Cement Concrete in Open foundation with or without reinforcements, in any part of foundation of bridges / culverts with graded stone chips of appropriate nominal sizes, including screening and cleaning of coarse aggregates, fine aggregate (sand) conforming to proper grading zone, both of approved quality and cement, as necessary, cost of curing with water, including cost and carriage of all materials and including preparation of design mix, approval of the same by the Engineer-in-Charge, cost for quality control, sampling, testing etc. including cost of formwork but excluding reinforcement complete as per drawing and technical specifications.											
A	P-280	PCC Grade M20											
	It-12.05/ A	footing	4	X	4.300	X	1.500	X	0.100	=	2.58		

Sl. No.	Page No. & It. No.	Description										Total Quantity	Unit	Rate (Rs.)	Amount (Rs.)	
A	analysis	toe	2	X	7.900	X	1.000	X	0.200	=	3.16					
		toe wall	2	X	½(0.3+0.6)X1.20	X	7.900	=	8.53							
		steel column	4	X	0.250	X	0.250	X	5.200	=	1.30					
		return wall	4	X	3.000	X	0.250	X	0.500	=	1.50					
		road	2	X	2.000	X	3.000	X	0.150	=	1.80					
												18.87				
											18.87	cum	6184.02	116704.88		
B	analysis	P-278	RCC Grade M20 Using concrete mixer													
		It-12.05/B/I	footing	2	X	4.300	X	1.500	X	0.200	=	2.58				
		pier footing	2	X	4.300	X	1.500	X	0.300	=	3.87					
		abutment	2	X	½(0.45+0.60)X1.50	X	3.600	=	5.67							
		pier	2	X	0.600	X	0.600	X	1.000	=	0.72					
		pier	2	X	0.450	X	0.450	X	0.600	=	0.24					
		slab	1	X	18.600	X	2.500	X	0.100	=	4.65					
										17.73						
											17.73	cum	6182.02	109625.81		
5	P-293	Supplying, fitting and placing un-coated HYSD bar reinforcement in Bridge Foundation including initial straightening, straightening of coils bars, removal of loose rust (if any), cutting to requisite length bending, binding with annealed wire not less than 1 mm in size and conforming to IS 280 at every intersection hooked and bent to correct shape and placed on forms etc. including cost of black annealed wire and cost of loading, unloading, carriage of all steel materials complete as per drawing and technical specifications and direction of Engineer-in-charge.														
	It-12.21	@ 1.2 % of RCC									1.67					
	Analysis										1.67	MT	46168.34	77101.13		
6	P-323	M.S. work in Rolled steel joists, channels, angles. Tees, plates etc. including hoisting, placing in position including providing staging and removing after completion of works and cutting to sizes as required.														
	It-18.11	As Per Steel Quantity Estimate									11.96					
	analysis										11.96	MT	71367.66	853271.80		
7	P-327	Painting with approved synthetic enamel paint Circular panel (upto 30cm dia.) or Rectangular panel (size 38cm to 30cm x 25cm to 20cm) including the Load classification number or the number of bridge or culvert painted thereon in a different colour, complete as directed by Engineer-in-charge.														
	It-18.35		2	X	15.600	X	0.750	X		=	23.40					
			2	X	15.600	X	2.625	X		=	81.90					
			2	X	4.000	X	2.750	X		=	22.00					
											127.30					
											127.30	Sqm	55.00	7001.50		
	P-308	Providing and laying Pitching 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.														

Sl. No.	Page No. & It. No.	Description										Total Quantity	Unit	Rate (Rs.)	Amount (Rs.)	
8	It-15.03															
		2	X	7.900	X	6.500	X	0.300	=	30.81						
		Analysis														
		2	X	8.500	X	1.000	X	0.150	=	2.55						
		2	X	4.300	X	1.500	X	0.200	=	2.58						
		2	X	4.300	X	1.500	X	0.300	=	3.87						
										39.81						
											39.81	cum	1026.50	40864.97		
9	P-189	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar including rounding off or chamfering corners as directed and raking out joints including throating, nosing and drip course, scaffolding/staging where necessary (Ground floor). With 1:4 cement mortar 10 mm thick plaster														
	It-2(ii)C	2	X	3.450	X	3.500	X		=	24.15						
	Bldg. Sch	4	X	2.400	X	0.750	X		=	7.20						
		4	X	1.800	X	0.450	X		=	3.24						
											34.59					
											34.59	Sqm	122.00	4219.98		
10	P-192	Neat cement punning about 1.5mm thick in wall,dado,floor etc. NOTE:Cement 0.152 cu.m per100 sq.m.														
	It- 15															
	Bldg. Sch	Quantity same as item no - 09														
											34.590					
											34.59	Sqm	34.00	1176.06		
Total (A) = Rs.														1227586.74		
Add GST (6% CGST + 6% SGST) on SL. No. A (B) @12% Rs														147310.41		
Cost of Civil Works Excluding Labour Welfare Cess (C= A+B) Rs.														1374897.15		
Labour Welfare Cess (on SL.NO. C) @ 1% (D) Rs.														13748.97		
Cost of Civil Works including Labour Welfare Cess (E= C+D) Rs.														1388646.12		
Add Contingency (on Sl.no c) @3.0% Rs.														41246.91		
TOTAL ESTIMATED COST														1429893.03		

TOTAL ESTIMATED COST (IN WORDS) FOURTEEN LAKHS TWENTY-NINE THOUSAND EIGHT HUNDRED NINETY THREE ONLY.

Analysis of Steel Quantity							
Item No	Description of Item				Total Quantity	Unit	
1	Structural Steel Quantity						
	ISMB 250	3	X	18.600 X	X	=	55.800 Mtr.
		2	X	3.500 X	X	=	7.000 Mtr.
							62.800
					@	37.300	Kg/Mtr =
							2342.44
							Kg
	ISMC 250						
	Column	8	x	5.600		=	44.800
	cleat	12	X	0.400		=	4.800 Mtr.
							49.600
					@	30.600	Kg/Mtr =
							1517.76
							Kg
	ISMB 100	6	X	2.500		=	15.000 Mtr.
					@	9.200	Kg/Mtr =
							138.00
						Kg	
Angle Cleat & Bracing							
ISA - 75X75X5	8		2.650		=	21.200	
	2		18.600		=	37.200 Mtr.	
						58.400	
				@	7.270	Kg/Mtr =	
						424.57	
						Kg	
Hollow Sq.bar -- 50X50X4.5							
post	26	X	0.900		=	23.400 Mtr.	
long brace	6		18.600		=	111.600	
bottom brace	13		3.500		=	45.500	
diagonal brace	26		1.175		=	30.550	
						211.050 Mtr.	
				@	5.950	Kg/Mtr =	
						1255.75	
						Kg	
Hollow Sq.bar 40X40X4							
	134	X	2.500		=	335.000 Mtr.	
				@	4.200	Kg/Mtr =	
						1407.00	
						Kg	
MS PLATE							
10 mm th Cover Plate							
		18.600 X	2.500		=	46.500 Sq.m	
				@	78.500	Kg/Sqm =	
						3650.25	
						Kg	
Flat 75 X 6	4		18.600		=	74.400	
	7		2.500		=	17.500 Mtr.	
						91.900	
				@	3.500	Kg/Mtr =	
						321.65	
						Kg	
Base Plate & Lugs							
12 mm plate 400x400 -- 10 nos with lugs & 8 mm plate 500x250--4nos						250.00	
						Kg	
Misc Work						300.00	
						Kg	
Add 3% on total Wt for gusset +cleat+ splicer+cover plate etc							
				Total Wt =	11607.416		
						348.22	
						11955.638	

Analysis of Sand				
Sl. No	Description	Calculation as per Schedule	Amount (Rs.)	Schedule Reference
1	Rate of Item 12.04	Rs.	177.00	Pgae 278; It -12.04
2	Cost of Fine Sand (Compaction factor=0.835)	1X1/0.835 X 320	383.23	Pgae 220; Sl No -3
Total = Rs			560.23	

Analysis of Boulder Pitching				
Sl. No	Description	Calculation as per Schedule	Amount (Rs.)	Schedule Reference
Providing and laying Pitching 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.				
1	Rate of ItemP-308,It no 15.03 ,11th Corrigendum	496.00	496.00	Pgae 308;It -15.03
2	Cost of Boulder	268.00 X 1	255.00	Pgae 219; It -6(11th Corrigendum,P-3)
3	Loading & Unloading	62 X.75	46.50	Pgae 224;It -1.03 (a)
4	Carriage			
	upto 5 Km	124.00 X1	124.00	Pgae 227;It -3
	5 - 10 km	5x10.90 X1	54.50	
	10 - 20 km (upto 15Km)	5x10.10 X1	50.50	
	20 - 50 km	30x9.50x1		
	50 - 100 km	50x5.60x1		
TOTAL =			1026.50	

Rate Analysis for Cement Concrete

Cost of Coarse Aggregates at Site						Cost of Cement at Site	
Gradation of Stone Metal	26.5 mm	22.4 mm	13.2 mm	11.2 mm	5.6 mm	Cement (PPC / PSC / OPC 33)	
Cost of material (Pakur Variety) at Chandrakona Road Stackyard	1876.00	1891.00	1915.00	1770.00	1504.00	Cost of material per MT	7364.00
Loading & Unloading	57.75	57.75	57.75	57.75	57.75		
Carriage							
Upto 5km	124.00	124.00					
5-10km	5 X 10.90	54.50					
10-20km	10 X 10.10	101.00					
20-50km	30 X 9.50						
50-100Km	50 X 8.40						
100-200Km	100 X 7.90						
Carriage Total =	279.50	279.50	279.50	279.50	279.50		
Cost of Aggregates at site =	2213.25	2228.25	2252.25	2107.25	1841.25	Cost of Cement per MT at site	7364.00
						Cost of Cement per Kg at site	7.36

Plain / Reinforced Cement Concrete in Open foundation with or without reinforcements, in any part of foundation of bridges / culverts with graded stone chips of appropriate nominal sizes, including screening and cleaning of coarse aggregates, fine aggregate (sand) conforming to proper grading zone, both of approved quality and cement, as necessary, cost of curing with water, including cost and carriage of all materials and including preparation of design mix, approval of the same by the Engineer-in-Charge, cost for quality control, sampling, testing etc. including cost of formwork but excluding reinforcement complete as per drawing and technical specifications.

PCC Grade M 20	Description	Amount (Rs)		Reference
	Rate of Item 12.05	2175.00	2175.00	Page - 280
	Cost of Coarse Aggregates i.e 0.90 m ³ per cum of concrete			
	22.4 mm stone chips 65%	0.9X0.65X	1303.5	
	13.2 mm stone chips 35%	0.9X0.35X	709.46	
	Cost of Cement	400 Kg X	2944.00	
	Total Rate per Cum = Rs.	7131.99		

RCC Grade M 20	Description	Amount(R)		Reference
	Rate of Item 12.05	2178.00	2178.00	Page - 280
	Cost of Coarse Aggregates i.e 0.90 m ³ per			
	22.4 mm stone chips 65%	0.9X0.65X	1303.5	
	13.2 mm stone chips 35%	0.9X0.35X	709.46	
	Cost of Cement	400 Kg X	2944.00	
	Total Rate per Cum = Rs.	7134.99		

Schedule Rate		77.00	
Loading	40%	30.80	57.75
Unloading	35%	26.95	
Stacking	25%	19.25	

Rate Analysis of Steel				
Format-E(P-218)				
1	Rate of Item as per relevent section (P-293/It-12.21)11th corrigendum			Rs 3175.00
2	Add: Cost of Steel = Quantity of Steel(1.05) x Basic Price of Steel (vide Item no. 2, Column –6, Table I – 1 of the Schedule of Rates). P-215,It no-2(ii) New,11th Corrigendum			Rs 36361.50
3	Add: Cost of Carriage including necessary loading - unloading from nearest Company Outlets /Stack yard/Godown to the site of execution (excluding Overhead Charges & Contractor's Profit) = (Cost of Carriage including loading – unloading charges) / 1.15			Rs 862.17
	Loading & Unloading 96 x @ 0.75	P-225,It-1.03(h)	72.00	
	Add cost of carriage 50 KM	P-227,It-5		
	0-5 KM	Rs	82.00	
	5-10KM (7.30x5)	Rs	36.50	
	10-20KM (6.70x10)		67.00	
	20-50KM (6.30x30)		189.00	
	50-100KM (5.60x50)		280.00	
	100-150KM (5.30x50)		265.00	
	TOTAL = Rs		991.50	
4	Add: Overhead Charges @ 5% /15% /20% of (2+3) as the case may be (vide Sl. 3 of PREMBLE).			Rs 1861.18
5	Add: Contractor's Profit @ 10% of (2+3+4)			Rs 3908.49
	TOTAL (RS)			Rs 46168.34
1	Rate of Item as per relevent section (P-323/It-18.13).			Rs 7300.00
2	Add: Cost of Steel = Quantity of Steel(1.05) x Basic Price of Steel (vide Item no. 2, Column –6, Table I – 1 of the Schedule of Rates). P-215,It no-2(ii) New,11th Corrigendum			Rs 39023.25
3	Add: Cost of Carriage including necessary loading - unloading from nearest Company Outlets /Stack yard/Godown to the site of execution (excluding Overhead Charges & Contractor's Profit) = (Cost of Carriage including loading – unloading charges) / 1.15			Rs 862.17
	Loading & Unloading 96 x @ 0.75	P-225,It-1.03(h)	72.00	
	Add cost of carriage 50 KM	P-227,It-5		
	0-5 KM	Rs	82.00	
	5-10KM (7.30x5)	Rs	36.50	
	10-20KM (6.70x10)		67.00	
	20-50KM (6.30x30)		189.00	
	50-100KM (5.60x50)		280.00	
	100-150KM (5.30x50)		265.00	
	TOTAL = Rs		991.50	
4	Add: Overhead Charges @ 5% /15% /20% of (2+3) as the case may be (vide Sl. 3 of PREMBLE).			Rs 1994.27
5	Add: Contractor's Profit @ 10% of (2+3+4)			Rs 4187.97
6	Add cost of Welding assuming 100 mtr length per Ton; so cost of welding = 100x100x1.80 =			Rs 18000.00
	TOTAL (RS)			Rs 71367.66

Rate Analysis of Reinforcement

Format - E

(Format for Analysis of Rate of Items involving use of Steel supplied by Contractor)

Sl. No	Description		Calculation as per Schedule	Amount (Rs.)	Schedule Reference	
1	Rate of item as per relevant Section of the Schedule of Rates.	A	3237.00	3237.00	P-293;It-12.21	
2	Add: Cost of Steel = Quantity of Steel x Basic Price of Steel (vide Item no. 2, Column -5, Table I - 1 of the Schedule of Rates).	B	39200x1.05	41160.00	9th corrqn	
3	Add: Cost of Carriage including necessary loading - unloading from nearest Company Outlets /Stack yard/Godown to the site of execution (excluding Overhead Charges & Contractor's Profit) = (Cost of Carriage including loading - unloading charges) / 1.15	C				
a	Loading & Unloading		96 X1.05	100.80		P-225;It-1.03
b	Carriage from Chandrakona Stackyard 20Km					
	upto 5 Km		82x1.05	86.10		P-227;It-5
	5 - 10 km		5x7.30x1.05	38.33		
	10 - 20 km		10x6.70x1.05	70.35		
	20 - 50 km					
		Total	295.58	257.02	Total ÷ 1.15	
4	Add: Overhead Charges @ 5% /15% /20% of (B+C) as the case may be (vide Sl. 3 of PREMBLE).	D	(B+C)X5%	2070.85		
5	Add: Contractor's Profit @ 10% of (B+C+D)	E	(B+C+D)X10%	4348.79		
Final Rate of Item = (A) + (B) + (C) + (D) + (E) = Rs.				51073.66		

Structural Steel Work

Format - E

(Format for Analysis of Rate of Items involving use of Steel supplied by Contractor)

Sl. No	Description		Calculation as per Schedule	Amount (Rs.)	Schedule Reference	
1	Rate of item as per relevant Section of the Schedule of Rates.	A	7300.00	7300.00	P-323;It-18.13	
2	Add: Cost of Steel = Quantity of Steel x Basic Price of Steel (vide Item no. 2, Column -6, Table I - 1 of the Schedule of Rates).	B	43900x1.05	46095.00		
3	Add: Cost of Carriage including necessary loading - unloading from nearest Company Outlets /Stack yard/Godown to the site of execution (excluding Overhead Charges & Contractor's Profit) = (Cost of Carriage including loading - unloading charges) / 1.15	C				
a	Loading & Unloading		96 X1.05	100.80		P-225;It-1.03
b	Carriage from Chandrakona Stackyard 20Km					
	upto 5 Km		82x1.05	86.10		P-227;It-5
	5 - 10 km		5x7.30x1.05	38.33		
	10 - 20 km		10x6.70x1.05	70.35		
	20 - 50 km					
		Total	295.58	257.02	Total ÷ 1.15	
4	Add: Overhead Charges @ 5% /15% /20% of (B+C) as the case may be (vide Sl. 3 of PREMBLE).	D	(B+C)X5%	2317.60		
5	Add: Contractor's Profit @ 10% of (B+C+D)	E	(B+C+D)X10%	4866.96		
Final Rate of Structural steel work = (A) + (B) + (C) + (D) + (E) = Rs.				60836.59		
Add cost of Welding assuming 100 mtr length per Ton; so cost of welding = 100x100x1.80 =				18000.00	P-323;It-18.10	
Compact Rate of the Item =				78836.59		

Rate Analysis of Sandy Moorum						
Description of Item						
a)	Cost of Moorum at Quarry per cum (11th Corrigenda & Addenda to PWD (WB), SOR: 2015-16 Road & Bridge Works P-3, It-7)			117.00		
b)	Carring charge from quarry to work site = 10 km					
	0 -5 KM	Rs	124.00			
	5 - 10 KM	Rs	54.50	178.50		
	TOTAL = Rs			178.50		
c)	Loading & Unloading			46.50		
	62.00 x @ 0.75					
Total cost of moorum per cum				342.00		
Compaction by Moorum (70%) & Sand (30%)						
a)	Moorum (P-3, Sl No. - 7)		0.7	1	510.45	Rs 357.31
b)	Sand (P-3, Sl no-3)		0.3	1	342.22	Rs 102.66
c)	Labour and other cost (P-242, sl no - 4.04 & 4.05)					Rs 178.00
Total						Rs 637.98
Rate Analysis of Fine Sand						
	Cost at Site		305	rs/cum	L+U+S	77.00 L = 40%
	(11th Corrigenda & Addenda to PWD (WB), SOR: 2015-16 Road & Bridge Works P-3, It-3)				L+U	57.75 U = 35%
			-19.25	rs/cum	S	19.25 S = 25%
			285.75	rs/cum		
	Compacting Factor(280,12.04,Note 2)		0.835			
			342.22	rs/cum		
	Labour Charges		173.00	rs/cum		
	280,12.04 11th corrigendum					
	Total		515.22	rs/cum		
Rate Analysis of Boulder						
	Cost at Quarry		255			
	(45mm-150)					
	P-219,It no-6,11th Corrigendum,P-3,Table-II-1					
	L+U(P-224,It 1.03A(a))		46.50	L+U+S	62	L=40%
	P-227,It-3			L+U	46.5	U=35%
	Upto 5km		124.00			S=25%
	5-10.90X5		54.50			
	10-10.10X10		101.00			
	20-9.50X10		95.00			
	50-8.40X00					
	10-7.90X00					
	Labour and other cost		172.00			
	(P-242,sl no-4.04)					
	Upto 30km		848.00			

Rate Analysis of Concrete (Open)										
Gradation of Stone Metal		26.5	22.4	13.2	11.2	5.6				
Cost of material from Pakur(C.K road) P-222,11th corrigendum		1801.0	1816.0	1839.0	1700.0	1447.0				
L+U(P-224,1.03(c))	57.75	384.75	384.75	384.75	384.75	384.75	L+U+S	77.00	L=40%	
							L+U	57.75	U=35%	
P-227,It-3							S	19.25	S=25%	
Upto 5km	124.00									
5-10km	10.90X5						54.50			L = Loading
10-20km	10.10X10						101.00			U = Unloading
20-50km	9.50X05						47.50			S = Stacking
50-100	8.40X50									
100-150	7.90X50									
	384.75	2185.75	2200.75	2223.75	2084.75	1831.75				
Cement Concrete (RCC M20)										
Cost of 22.4 mm stone chips		0.9	cum	0.67	0.603	2200.75	1327.1			
Cost of 11.2 mm stone chips		0.9	cum	0.33	0.297	2084.75	619.2			
P-208,Table No-3.2										
Cost of Cement(PPC/PSC/OPC43) P-215 11th Corrigendum							2286.8			
Plain / Reinforced Cement Concrete in Open foundation with or without reinforcements, in any part of foundation of bridges / culverts with graded stone chips of appropriate nominal sizes, including screening and cleaning of coarse aggregates, fine aggregate (sand) conforming to proper grading zone, both of approved quality and cement, as necessary, cost of curing with water, including cost and carriage of all materials and including preparation of design mix, approval of the same by the Engineer-in-Charge, cost for quality control, sampling, testing etc. including cost of formwork but excluding reinforcement complete as per drawing and technical specifications..(P-280,It no-12.05B(i)i 11th Corrigendum							1949.0			
							Total	6182		
Gradation of Stone Metal										
Gradation of Stone Metal		26.5	22.4	13.2	11.2	5.6				
Cost of material from Pakur(C.K road) P-		1801	1816	1839	1700	1447				
L+U(P-224,1.03(c))	57.75	384.75	384.75	384.75	384.75	384.75	L+U+S	77.00	L=40%	
							L+U	57.75	U=35%	
P-227,It-3							S	19.25	S=25%	
Upto 5km	124.00									
5-10km	10.90X5						54.50			
10-20km	10.10X10						101.00			
20-50km	9.50X05						47.50			
50-100	8.40X50									
100-150	7.90X50									
	384.75	2185.75	2200.75	2223.75	2084.75	1831.75				

