

**BILL OF SUMMARY for Pftusero Phek Road (Design Km 20.000 to Km 40.000)**

DESIGN ROAD LENGTH IN KM (20.000 Km to 40.000 Km)				20.00
Widening portion= 17490 m		Realignment portion= 2510 m		
Bill No	Weightage in percentage to the contract price	Description of Items	Amount (in Rs.)	Percentage weightage
<b>1</b>	<b>68.06%</b>	<b>WIDENING AND STRENGTHENING OF EXISTING ROAD</b>		
		A1.1 Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	30,04,21,918	17.12%
		A1.2 Sub-Base Course	7,87,52,656	4.49%
		A1.3 Non Bituminous Base Course	14,82,56,082	8.45%
		A1.4 Bituminous Base Course	8,71,01,871	4.96%
		A1.5 Wearing Coat	5,59,16,193	3.19%
		A1.6 Widening and repair of culverts	-	0.00%
		A1.7 Hard Shoulder	1,46,82,452	0.84%
<b>2</b>		<b>RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS(FLEXIBLE PAVEMENT)</b>		<b>0.00%</b>
		A2.1 Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	8,48,74,473	4.84%
		A2.2 Sub-Base Course	1,19,05,696	0.68%
		A2.3 Non Bituminous Base Course	2,16,96,216	1.24%
		A2.4 Bituminous Base Course	1,27,63,814	0.73%
		A2.5 Wearing Coat	82,29,626	0.47%
		A2.6 Hard Shoulder	21,29,798	0.12%
<b>3</b>		<b>RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS(RIGID PAVEMENT)</b>		<b>0.00%</b>
		A3.1 Earthwork up to top of the sub-grade including excavation in	-	0.00%
		A3.2 Sub-Base Course	-	0.00%
		A3.3 Dry Lean Concrete(DLC) Course	-	0.00%
		A3.4 Pavement Quality Control(PQC) Course	-	0.00%
<b>4</b>		<b>RECONSTRUCTION/NEW SERVICE ROAD (FLEXIBLE PAVEMENT)</b>		<b>0.00%</b>
		A4.1 Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning & grubbing with required site clearance etc.	-	0.00%
		A4.2 Sub-Base Course	-	0.00%
		A4.3 Non Bituminous Base Course	-	0.00%
		A4.4 Bituminous Base Course	-	0.00%
		A4.5 Wearing Coat	-	0.00%
<b>5</b>		<b>RECONSTRUCTION/NEW SERVICE ROAD (RIGID PAVEMENT)</b>		<b>0.00%</b>
		A5.1 Earthwork up to top of the sub-grade including excavation in	-	0.00%
		A5.2 Sub-Base Course	-	0.00%
		A5.3 Dry Lean Concrete(DLC) Course	-	0.00%
		A5.4 Pavement Quality Control(PQC) Course	-	0.00%
<b>6</b>		<b>RECONSTRUCTION AND NEW CULVERTS ON EXISTING ROAD, REALIGNMENTS, BYPASSES</b>		<b>0.00%</b>
		A6.1 Culverts and associated Protection Works (Length < 6m)	36,73,91,693	20.94%
<b>7</b>	<b>2.77%</b>	<b>WIDENING AND REPAIR OF MINOR BRIDGES (Length &gt; 6 m and &lt; 60 m )</b>		<b>0.00%</b>
		A7.1 Minor Bridges	-	0.00%
<b>8</b>		<b>NEW MINOR BRIDGES (Length &gt; 6 m and &lt; 60 m )</b>		<b>0.00%</b>
		A8.1 <b>Foundation + Sub Structures:</b> On completion of the foundation work including foundations for wing wall and return walls, abutments, piers upto the abutment/pier cap.	3,47,08,559	1.98%
		A8.2 <b>Super-structure:</b> On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect.	71,60,694	0.41%
		A8.3 <b>Approaches:</b> On completion of approaches including retaining wall, stone pitching, protection works complete in all respect and fit for use.	68,11,587	0.39%
		A8.4 <b>Guide Bunds and River Training Works:</b> On completion of Guide bunds and river training works complete in all respects.	-	0.00%
<b>9</b>		<b>WIDENING AND REPAIRS OF UNDERPASSES/ OVERPASSES</b>		<b>0.00%</b>

Bill No	Weightage in percentage to the contract price	Description of Items	Amount (in Rs.)	Percentage weightage
10		A9.1 Underpasses/ Overpasses	-	0.00%
		<b>NEW UNDERPASSES/ OVERPASSES</b>		0.00%
		A10.1 <b>Foundation + Sub Structures:</b> On completion of the foundation work including foundations for wing wall and return walls, abutments, piers upto the abutment/ pier cap.	-	0.00%
		A10.2 <b>Super-structure:</b> On completion of the super structure in all respect including wearing coat, bearings, expansion joints, hand rails, crash barriers, road signs & markings, tests on completion etc. complete in all respect. Wearing Coat (a) in case of overpass- wearing coat including expansion joint complete in all respects as specified and (b) in case of underpass- Rigid pavement including drainage facility complete in all respects as specified.	-	0.00%
		A10.3 <b>Approaches:</b> On completion of approaches including retaining walls/ Reinforced earth walls, stone pitching, protection works complete in all respect and fit for use.	-	0.00%
11	0.00%	<b>WIDENING AND REPAIRS OF MAJOR BRIDGES</b>		0.00%
		A11.1 Foundation	-	0.00%
		A11.2 Sub-structure	-	0.00%
		A11.3 Super-structure(including bearings)	-	0.00%
		A11.4 Wearing Coat including expansion joints	-	0.00%
		A11.5 Miscellaneous items like handrails, crash barriers, road markings etc.	-	0.00%
		A11.6 Wing walls/ Return walls	-	0.00%
		A11.7 Guide Bunds, River Training Works etc	-	0.00%
		A11.8 Approaches (including Retaining walls, stone pitching and protection works)	-	0.00%
12		<b>NEW MAJOR BRIDGES</b>		0.00%
		A12.1 Foundation	-	0.00%
		A12.2 Sub-structure	-	0.00%
		A12.3 Super-structure(including bearings)	-	0.00%
		A12.4 Wearing Coat including expansion joints	-	0.00%
		A12.5 Miscellaneous items like handrails, crash barriers, road markings etc.	-	0.00%
		A12.6 Wing walls/ Return walls	-	0.00%
		A12.7 Guide Bunds, River Training Works etc	-	0.00%
		A12.8 Approaches (including Retaining walls, stone pitching and protection works)	-	0.00%
13		<b>WIDENING AND REPAIR OF ROB/RUB</b>		0.00%
		A13.1 (a) <b>ROB</b>	-	0.00%
		(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat in case of ROB- wearing coat including expansion joint complete in all respects as specified.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.	-	0.00%
		(vi) Wing walls/ Return walls	-	0.00%
		(vii) Approaches (including Retaining walls, stone pitching and protection works)	-	0.00%
		A13.2 (b) <b>RUB</b>	-	0.00%
		(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat in case of RUB- Rigid pavement under RUB including drainage facility complete in all respects as specified.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.	-	0.00%

Bill No	Weightage in percentage to the contract price	Description of Items	Amount (in Rs.)	Percentage weightage
		(vi) Wing walls/ Return walls		0.00%
		(vii) Approaches (including Retaining walls, stone pitching and protection works)	-	0.00%
14		<b>NEW ROB/RUB</b>		0.00%
	A14.1	<b>(a) ROB</b>	-	0.00%
		(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat in case of ROB- wearing coat including expansion joint complete in all respects as specified.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.		0.00%
		(vi) Wing walls/ Return walls		0.00%
		(vii) Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)	-	0.00%
	A14.2	<b>(b) RUB</b>	-	0.00%
		(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat in case of RUB- Rigid pavement under RUB including drainage facility complete in all respects as specified.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.		0.00%
		(vi) Wing walls/ Return walls		0.00%
		(vii) Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)	-	0.00%
15		<b>WIDENING AND REPAIR OF ELEVATED SECTION/ FLYOVERS/ GRADE</b>		0.00%
	A.15.1	(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat including expansion joint.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.		0.00%
		(vi) Wing walls/ Return walls		0.00%
		(vii) Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)	-	0.00%
16		<b>NEW ELEVATED SECTION/ FLYOVERS/ GRADE SEPARATORS</b>		0.00%
	A.16.1	(i) Foundation	-	0.00%
		(ii) Sub-structure	-	0.00%
		(iii) Super-structure(including bearings)	-	0.00%
		(iv) Wearing Coat including expansion joint.	-	0.00%
		(v) Miscellaneous items like handrails, crash barriers, road markings etc.		0.00%
		(vi) Wing walls/ Return walls		0.00%
		(vii) Approaches (including Retaining walls/ Reinforced earth walls, stone pitching and protection works)	-	0.00%
17	29.17%	<b>OTHER WORKS</b>		0.00%
	A17.1	Toll Plaza	-	0.00%
	A17.2	Road side drain	2,90,78,152	1.66%
	A17.3	Road signs, marking, Km stones, Safety devices etc.		0.00%
		(a) Pavement Marking	2,38,35,465	1.36%
		(b) Crash barrier/W metal crash barrier	91,35,045	0.52%
		(c) Traffic Sign	54,43,396	0.31%

Bill No	Weightage in percentage to the contract price	Description of Items	Amount (in Rs.)	Percentage weightage
		(d) Road Boundary stone, km Stone, 5th km stone and hectometer stone	4,71,175	0.03%
		(e) Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	2,67,65,810	1.53%
		(f) Traffic impact Attenuators at Abutments and Piers traffic island	-	0.00%
		(g) Road furniture (overhead signboard etc.)	-	0.00%
		(h) Others including construction of median & median kerb with channel & paint and rumble strip	-	0.00%
	A17.4	Project facilities		0.00%
		(a) Truck lay-byes	-	0.00%
		(b) Bus bays and Bus Shelter	21,24,000	0.12%
		(c) Junctions (Major & Minor)	-	0.00%
		(d) Others including Cable duct & Lighting on Bridges, etc.	-	0.00%
		(e) Rest areas (viewpoint/recreational areas)	2,07,442	0.01%
	A17.5	Road Side Plantation, Median plantation & Turfing of the embankment slope		0.00%
	A17.6	Repair of protection works other than approaches to the bridges, elevated sections/ fly-overs/ grade separator and ROBs/ RUBs.	-	0.00%
	A17.7	Traffic diversion, Safety and traffic management during construction	-	0.00%
	A17.8	Slope Protection Works as special requirement for hill road		0.00%
		(a) Hydro Seeding of Cut Slopes in Soil	9,83,400	0.06%
		(b) Seeding and Mulching with Jute net all along the perpetual slide locations	9,45,01,862	5.39%
		(c) Catchwater Drain	15,02,940	0.09%
		(d) Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope	27,19,58,676	15.50%
		(e) Reinforced earth wall	-	0.00%
		(f) Breast wall	2,45,71,100	1.40%
		(g) Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking of pavement	82,83,050	0.47%
		(h) Parapet wall	1,28,72,310	0.73%
<b>Total Civil Cost (In Rs.)</b>			<b>1,75,45,37,152</b>	<b>100.00%</b>
<b>Civil Cost Per Km (In Cr.)</b>			<b>8.77</b>	

**BILL NO- 1: A1 - WIDENING AND STRENGTHENING OF EXISTING ROAD**

**P P Road**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A1.1</b>	-	<b>Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning &amp; grubbing with required site clearance etc.</b>				
A1.1.01	2.3 (ii) A	<b>Clearing and Grubbing Road Land</b> (Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.) by Mechanical Means in area of light Jungle.	ha	49	39,921	19,56,129
A1.1.02	2.4	<b>Dismantling of Structures</b> (Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead of 1000 metres)				
a	(iii) B	Rubble stone masonry in cement mortar	cum	2,583	493	12,73,419
b	(i) II A	Cement Concrete Grade M-15 & M-20	cum	224	945	2,11,680
c	(i) II B	Prestressed / Reinforced cement concrete grade M-20 & above	cum	38	1,628	61,864
e	2.10 B	Ordinary KM stone/Guard stone/Sign Post	Number	2	376	752
f	2.4 (ix) B	Removing all types of hume pipes and stacking serviceable material with all leads & lifts including earthwork and dismantling of masonry works.Above 600 mm to 900 mm dia.	m	709	468	3,31,812
A1.1.03	2.1	Cutting of Trees, including Cutting of Trunks, Branches and Removal (Cutting of trees,including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)				
a	(i)	Girth from 300mm to 600mm	Number	63	440	27,720
b	(ii)	Girth above 600mm to 900mm	Number	77	732	56,364
c	(iii)	Girth above 900mm to 1800mm	Number	95	1,505	1,42,975
d	(iv)	Girth above 1800mm	Number	77	2,923	2,25,071
A1.1.04	3.32	<b>Excavation in Hill Area in Soil by Mechanical Means</b> (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres)	cum	6,07,902	182	11,06,38,164
A1.1.05	3.33	<b>Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting</b> (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres )	cum	6,07,902	257	15,62,30,814
A1.1.06	3.34 - Credit of Rs 500/-	<b>Excavation in Hilly Areas in Hard Rock Requiring Blasting</b> (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	1,40,979	(89)	(1,25,47,131)
A1.1.07	3.9 - Credit of Rs 500/-	<b>Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres</b> (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking,trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres )	cum	-	(131)	-
A1.1.08	3.17	<b>Construction of Embankment with Material Deposited from Roadway Cutting</b> (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)- <b>for Embankment only</b>	cum	51,344	252	1,29,38,688

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A1.1.09	Rate Analysis	<b>Construction of Subgrade and Shoulder with Material Deposited from Roadway Cutting</b> (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	74,768	326	2,43,74,368
A1.1.10	3.19 Case-I	<b>Compacting original ground supporting subgrade</b> (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.) where Subgrade CBR is more than 8%,200 mm depth is taken for this item.	cum	16,683	83	13,84,689
A1.1.11	4.12' x 0.1	Preparation of Subgrade in Rocky Formation as per Technical Specification Clause 301 for grading-I Material	sqm	8,580	363	31,14,540
<b>Total for A1.1 (Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning &amp; grubbing with required site clearance etc.) : Carried Forward to Bill Summary</b>						<b>30,04,21,918</b>
<b>A1.2 Sub Base Course</b>						
A1.2.01	4.1 A (i)	<b>Granular Sub-base with Close Graded Material (Table:-400-1)Plant Mix Method</b> (Construction of granular sub-base by providing close graded Material,mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 ) for grading-I material	cum	21,683	3,632	7,87,52,656
<b>Total for A1.2 Sub Base Course : Carried Forward to Bill Summary</b>						<b>7,87,52,656</b>
<b>A1.3 Non Bituminous Base Course</b>						
A1.3.01	4.12	<b>Wet Mix Macadam</b> (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	cum	35,451	4,182	14,82,56,082
<b>Total for A1.3 Non Bituminous Base Course : Carried Forward to Bill Summary</b>						<b>14,82,56,082</b>
<b>A1.4 Bituminous Base Course</b>						
A1.4.01	5.6 (ii)	<b>Dense Graded Bituminous Macadam</b> (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler,transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.) For Grading-II (19 mm nominal size)	cum	6,824	12,020	8,20,24,480
A1.4.02	5.1	<b>Prime coat</b> (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 ka/sqm using mechanical means.)	sqm	1,36,489	37.2	50,77,391
<b>Total for A1.4 Bituminous Base Course : Carried Forward to Bill Summary</b>						<b>8,71,01,871</b>

**BILL NO- 1: A1 - WIDENING AND STRENGTHENING OF EXISTING ROAD**

**P P Road**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A1.5</b>						
<b>Wearing Course</b>						
A1.5.01	5.2	<b>Tack Coat</b> (Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.)	sqm	1,35,421	13.6	18,41,726
A1.5.02	5.8(i)	<b>Bituminous Concrete</b> (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) For grading-I (13 mm nominal size)	cum	4,063	13,309	5,40,74,467
<b>Total for A1.5 (Wearing Coat) : Carried Forward to Bill Summary</b>						<b>5,59,16,193</b>
<b>A1.6</b>						
<b>Widening and repair of culverts</b>						
A1.6.01	-	-				-
<b>Total for A1.6 (Widening and repair of culverts) : Carried Forward to Bill Summary</b>						-
<b>A1.7</b>						
<b>Hard shoulder</b>						
A1.7.01	4.5	Cementitious base for hard shoulder (Total 3 metre wide including both sides having thickness 200 mm)	cum	9,934	1,478	1,46,82,452
<b>Total for A1.7 (Hard Shoulder) : Carried Forward to Bill Summary</b>						<b>1,46,82,452</b>

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A2.1</b>	-	<b>Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning &amp; grubbing with required site clearance etc.</b>				
A2.1.01	2.3 (ii) A	<b>Clearing and Grubbing Road Land</b> (Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.) by Mechanical Means in area of light jungle	ha	7	39,921	2,79,447
A2.1.02	2.1	Cutting of Trees, including Cutting of Trunks, Branches and Removal (Cutting of trees, including cutting of trunks, branches and removal of stumps, roots, stacking of serviceable material with all lifts and up to a lead of 1000 mtrs and earth filling in the depression/pit.)				
a	(i)	Girth from 300mm to 600mm	Number	7	440	3,080
b	(ii)	Girth above 600mm to 900mm	Number	9	732	6,588
c	(iii)	Girth above 900mm to 1800mm	Number	11	1,505	16,555
d	(iv)	Girth above 1800mm	Number	9	2,923	26,307
A2.1.03	3.32	<b>Excavation in Hill Area in Soil by Mechanical Means</b> (Excavation in soil in hilly area by mechanical means including cutting and trimming of side slopes and disposing of excavated earth with all lifts and lead upto 1000 metres)	cum	2,18,737	182	3,98,10,134
A2.1.04	3.33	<b>Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting</b> (Excavation in hilly area in ordinary rock not requiring ballasting by mechanical means including cutting and trimming of slopes and disposal of cut material with all lift and lead upto 1000 metres )	cum	2,18,737	257	5,62,15,409
A2.1.05	3.34 - Credit of Rs 500/-	<b>Excavation in Hilly Areas in Hard Rock Requiring Blasting</b> (Excavation in hilly areas in hard rock requiring blasting, by mechanical means including trimming of slopes and disposal of cut material with all lifts and lead upto 1000 metres.)	cum	1,98,088	(89)	(1,76,29,832)
A2.1.06	3.9 - Credit of Rs 500/-	<b>Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres</b> (Excavation for roadway in hard rock with controlled blasting by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of cut road with in all lifts and leads upto 1000 metres )	cum	-	(131)	-
A2.1.07	3.17	<b>Construction of Embankment with Material Deposited from Roadway Cutting</b> (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)- <b>for Embankment only</b>	cum	3,595	252	9,05,940
A2.1.08	Rate Analysis	<b>Construction of Subgrade and Shoulder with Material Deposited from Roadway Cutting</b> (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	9,821	326	32,01,646
A2.1.09	3.19 Case-I	<b>Compacting original ground supporting subgrade</b> (Loosening of the ground upto a level of 500 mm below the subgrade level, watered, graded and compacted in layers to meet requirement of table 300-2 for subgrade construction.) where Subgrade CBR is more than 8%, 200 mm depth is taken for this item.	cum	1,989	83	1,65,087
A2.1.10	4.12' x 0.1'	Preparation of Subgrade in Rocky Formation as per Technical Specification Clause 301 for grading-I Material	sqm	5,160	363	18,74,112
		<b>Total for A2.1 (Earthwork up to top of the sub-grade including excavation in soil, soft rock and hard rock including Cleaning &amp; grubbing with required site clearance etc.) : Carried Forward to Bill Summary</b>				<b>8,48,74,473</b>

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A2.2</b>		<b>Sub Base Course</b>				
A2.2.01	4.1 A (i)	<b>Granular Sub-base with Close Graded Material (Table:-400-1)Plant Mix Method</b> (Construction of granular sub-base by providing close graded Material,mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 ) for grading-I material	cum	3,278	3,632	1,19,05,696
		<b>Total for A2.2 Sub Base Course : Carried Forward to Bill Summary</b>				<b>1,19,05,696</b>
<b>A2.3</b>		<b>Non Bituminous Base Course</b>				
A2.3.01	4.12	<b>Wet Mix Macadam</b> (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	cum	5,188	4,182	2,16,96,216
		<b>Total for A2.3 Non Bituminous Base Course : Carried Forward to Bill Summary</b>				<b>2,16,96,216</b>
<b>A2.4</b>		<b>Bituminous Base Course</b>				
A2.4.01	5.6 (ii)	<b>Dense Graded Bituminous Macadam</b> (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler,transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.) For Grading-II (19 mm nominal size)	cum	1,000	12,020	1,20,20,000
A2.4.02	5.1	<b>Prime coat</b> (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	19,995	37	7,43,814
		<b>Total for A2.4 Bituminous Base Course : Carried Forward to Bill Summary</b>				<b>1,27,63,814</b>
<b>A2.5</b>		<b>Wearing Coat</b>				
A2.5.01	5.2	<b>Tack Coat</b> (Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.)	sqm	19,915	14	2,70,844
A2.5.02	5.8(i)	<b>Bituminous Concrete</b> (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) For grading-I (13 mm nominal size)	cum	598	13,309	79,58,782
		<b>Total for A2.5 (Wearing Coat) : Carried Forward to Bill Summary</b>				<b>82,29,626</b>
<b>A2.6</b>		<b>Hard shoulder</b>				
A2.6.01	4.5	Cementitious base for hard shoulder (Total 3 metre wide including both sides having thickness 200 mm)	cum	1,441	1,478	21,29,798
		<b>Total for A2.6 (Hard Shoulder) : Carried Forward to Bill Summary</b>				<b>21,29,798</b>

**BILL NO- 6: RECONSTRUCTION AND NEW CULVERTS ON EXISTING ROAD, REALIGNMENTS, BYPASSES**

**P P Road**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A6.1</b>		<b>Culverts and associated Protection Works</b>				
A6.1.01	3.13 (i)	<b>Excavation for structures</b> (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	<b>Ordinary Soil</b> (Mechanical means)				
(a)		(i) Box Culverts & Retaining walls	cum	2,797	53	1,48,241
(b)		(ii) Protection Works & Catchpits	cum	3,073	53	1,62,869
A6.1.02	3.13 (ii)	<b>Excavation for structures</b> (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	<b>Ordinary Rock</b> (Mechanical means)				
(c)		(i) Box Culverts & Retaining walls	cum	2,797	67	1,87,399
(d)		(ii) Protection Works & Catchpits	cum	3,073	67	2,05,891
A6.1.03	3.8 A	<b>Excavation in Hard Rock (blasting prohibited)</b> (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)				
(e)		(i) Box Culverts & Retaining walls	cum	13,051	577	75,30,427
(f)		(ii) Protection Works & Catchpits	cum	14,340	577	82,74,180
A6.1.04	12.8 A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications PCC grade M-15				
(a)		(i) Box Culverts & Retaining walls	cum	1,800	12,992	2,33,85,600
(b)		(ii) Protection Works & Catchpits	cum	588	12,992	76,39,296
A6.1.05	13.5	Plain/Reinforced cement concrete in sub-structure complete as per drawing and technical specifications.				
		(a) M 25 Grade	cum			0
	G(p) Case-II	(b) M 30 Grade				0
		(i) Box Culverts & Retaining walls	cum	9,251	12,971	11,99,94,721
A6.1.06	(12.40+13.6+14.2)/3	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation,Sub-structure and superstructure complete as per drawing and technical specifications.				
(a)		(i) Box Culverts	MT	380	90,691	3,44,62,580
(b)		(ii) Retaining walls	MT	175	90,691	1,58,70,925
(c)		(iii) Protection Works & Catchpits	MT	138	90,691	1,25,15,358
A6.1.07	14.11	Approach Slab (RCC M 30 Grade) including reinforcement complete as per drawings and Technical Specification Section 2700.	cum	2,381	16,643	3,96,26,983
A6.1.08	13.10	Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification.	cum	2,474	3,787	93,69,038
A6.1.09	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	13,305	704	93,66,720
A6.1.10	14.18 (ii)	Providing and fixing 20mm thick compressible fibre board in expansion joint complete as per drawing and technical specification	m	1,944	705	13,70,520
A6.1.11	14.9	Drainage Spouts complete as per drawing and Technical specification.	Number	356	4,716	16,78,896

**BILL NO- 6: RECONSTRUCTION AND NEW CULVERTS ON EXISTING ROAD, REALIGNMENTS, BYPASSES**

**P P Road**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A6.1.12	15.2	Boulder apron laid in wire crates (Providing and laying of boulder apron laid in wire crates made with 4mm dia GI wire conforming to IS: 280 & IS:4826 in 100mm x 100mm mesh (weaved diagonally) including 10% extra for laps and joints laid with stone boulders weighing not less than 40 kg each.)	cum	4,134	5,768	2,38,44,912
A6.1.14	8.3 (ii)	Printing new letter and figures of any shade (Printing new letter and figures of any shade with synthetic enamel paint black or any other approved colour to give an even shade). English and Roman	Number	5,600	1	5,600
A6.1.15	14.16	Painting on concrete surface (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease,efflorescence and applying paint @ of 1 litre for 2 Sq.m. )	sqm	1,143	288	3,29,184
63.1.16	13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. Complete as per drawing and Technical specifications.	Number	4,480	730	32,70,400
A6.1.17	12.8 E case-II	RCC/PCC for rigid flooring,buffe pier,blocks,chutes etc.excluding reinforcement complete as per drawings and Technical Specification Section 1700 and 2200				
(a)		(i) Protection Works & Catchpits	cum	2,781	12,178	3,38,67,018
A6.1.18	((5.8*.040) for grading I)+5.14)	Bituminous (Type 2) Wearing Coat as per drawings and Technical Specification Section 2700.	sqm	9,429	1,515	1,42,84,935
<b>Total for A6.1 (Culverts and associated Protection Works) : Carried Forward to Bill Summary</b>						<b>36,73,91,693</b>

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A8.01</b>		<b>FOUNDATION AND SUBSTRUCTURE</b>				
A8.01.01		Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.				
a	12.1 I B	In ordinary soil by Mechanical means upto 3m depth	cum	719	75	53,926
b	12.1 II B	In ordinary rock(not requiring blasting) by Mechanical means upto 3m depth	cum	719	91	65,430
c	12.1 IV A	<b>Excavation for Structure</b> (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material. <b>Hard rock (blasting prohibited)</b> Mechanical means	cum	616	1108	6,82,851
A8.01.02	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specifications	cum	80	12992	10,44,310
A8.01.03	12.8	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specifications				-
a	H case-II	M 35 Grade	cum	524	12380	64,88,853
A8.01.04	13.5	Plain/Reinforced cement concrete in sub-structure, complete as per drawing and technical specifications.				
a	F Case-II	M 25 Grade upto 10m height	cum	Nil		-
b	G Case-II	M 30 Grade upto 10m height	cum	Nil		-
c	H(q) Case-II	M 35 Grade upto 10m height	cum	495	14489	71,66,238
	H(r) Case-II	M 35 Grade above 10m height	cum	Nil		-
A8.01.05	(12.40+13.6+14.2)/3	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation, sub-structure and superstructure complete as per drawing and technical specifications	MT	133	90691	1,20,89,105
A8.01.06	12.43 of MORTH Data Book	Boulder Grouted with Cement Mortar (1 : 3) in annular space around footings complete as per drawings and Technical Specification 304 and 2100	cum	209	10532	22,02,347
A8.01.07	13.5 A(p)	PCC M-15 in annular space around footings complete as per drawings and Technical Specification 304,1700 and 2100	cum	76	13743	10,46,529
A8.01.08	16.4 + 16.5(b) + (16.1)/3 of MORTH Data Book	Preparation of rock foundation surface and filling/ sealing of seams with cement grout or mortar complete as per drawings and Technical Specifications Sections 304 and 2806.	sqm	476	354	1,68,341
A8.01.09	Market Rate	Carrying out sub soil investigation / confirmatory boreholes at specified foundation locations before commencement of construction complete as per drawings and Technical Specifications section 2400 or as directed by Engineer.				-
a		In Soil/Soft rock	Lm	20	6000	1,20,000
b		Hard Rock	Lm	64	8000	5,12,000
A8.01.10	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specifications	cum		9995	-

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A8.01.11	13.5	Plain/Reinforced cement concrete in sub-structure, complete as per drawing and technical specifications.				-
a	H(r)Case-II	M 35 Grade above 10m height	cum		14753	-
A8.01.12	(12.40+13.6+14.2)/3	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation, sub-structure and superstructure complete as per drawing and technical specifications.	MT		85638	-
A8.01.13	13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V:20H towards drawing face. Complete as per drawing and Technical specifications	Number	346	730	2,52,366
A8.01.14	Rate Analysis	Back filling behind abutment, wing wall and return wall with granular material, complete as per drawing and Technical specification. <b>Granular material</b>	cum	2613	704	18,39,519
A8.01.15	13.10	Providing and laying of Filter media with granular materials/stone crushed aggregate satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification	cum	258	3787	9,76,744
		<b>Total for A8.02 (Foundation+Sub Structure) : Carried Forward to Bill Summary</b>				<b>3,47,08,559</b>
<b>A8.02</b>		<b>SUPER STRUCTURE</b>				
A8.02.01		Furnishing and Placing Reinforced/Prestressed cement concrete in super-structure as per drawing and Technical Specification.				
a	14.1C Case-II (i) (q)	Solid Slab super-structure, RCC grade M30	cum	177	14755	26,18,275
A8.02.02	(12.40+13.6+14.2)/3	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation, sub-structure and superstructure complete as per drawing and technical specifications	MT	23	90691	21,07,931
A8.02.03	14.25(i) of MORTH DATA BOOK	Steel Girder for Steel Composite Superstructure including railing and fixing of girder with Bearing complete as per drawings and Technical Specification 1000 and 1900.	MT	0	158829	-
A8.02.04	((5.8*.040) for grading I)+5.14)	Bituminous (Type 2) Wearing Coat as per drawings and Technical Specification Section 2700.	sqm	272	1515	4,12,080
A8.02.05	13.5 F (p) Case-II of MORTH Data Book	40 thk. PCC (M25) finished with 15 thk plaster (1:3) complete as per drawings and Technical Specification.	cum	5	15881	72,671
A8.02.06		Bearings, of following Type, as per drawings and Technical Specification Section 2000				-
a		Tar Paper Bearings	sqm	57	200	11,318
A8.02.07		Expansion Joints, of following Type as per drawings and Technical Specification Section 2600				-

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
a	14.18 (iii)	Providing and fixing in position 20 mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10 m to cater for a horizontal movement upto 20 mm, covered with sealant complete as per drawing and technical specifications.	m	59	227	13,393
A8.02.08	14.9	Drainage Spouts complete as per drawing and Technical specification.	Number	25	4716	1,17,900
A8.02.09	14.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	72	16643	12,02,873
A8.02.10	(14.6+14.7)/2	Construction of precast RCC railing with cast-in-situ vertical post of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	Rm	64	2824	1,80,704
A8.02.11	8.22 (i) of MORTH Data Book	RCC Crash Barrier (M 40 Grade) excluding cost of reinforcement complete as per drawings and Technical Specification Section 1700 and 2700	cum	15	15609	2,39,130
A8.02.12	8.3 (ii)	Printing new letter and figures in English and Roman of any shade with synthetic enamel paint black or any other approved colour to give an even shade. English and Roman	Number	100	1	100
A8.02.13	14.16	Painting on concrete surface (Providing and applying 2 coats of water based cement paint to unplastered concrete surface after cleaning the surface of dirt, dust, oil, grease, efflorescence and applying paint @ of 1 litre for 2 Sq.m.)	sqm	640	288	1,84,320
<b>Total for A8.02 (Super Structure) : Carried Forward to Bill Summary</b>						<b>71,60,694</b>
<b>A8.03 APPROACHES (INCLUDING RETAINING WALL)</b>						
A7.08.01		Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.				
a	12.1 I B	In ordinary soil by Mechanical means upto 3m depth	cum	225	75	16,853
b	12.1 II B	In ordinary rock(not requiring blasting) by Mechanical means upto 3m depth	cum	225	91	20,448
e	12.1 IV A	Excavation for Structure(Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material. Hard rock (blasting prohibited) Mechanical means	cum	193	1108	2,13,401
A8.03.02	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specifications	cum	32	12992	4,09,248
A8.03.03	12.8	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specifications				-
a	H case-II	M 35 Grade	cum	105	12380	13,04,233
A8.03.04	13.5	Plain/Reinforced cement concrete in sub-structure, complete as per drawing and technical specifications				-
a	H(r) case-II	M 35 Grade above 10m height	cum	106	14489	15,35,110

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A8.03.05	(12.40+13 .6+14.2)/ 3	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation, sub-structure and superstructure complete as per drawing and technical specifications	MT	19	90691	17,48,250
A8.03.06	13.8	Providing weep holes in Brick masonry/Plain/Reinforced concrete abutment, wing wall/return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V:20H towards drawing face. Complete as per drawing and Technical specifications	Number	240	730	1,75,200
A8.03.07	Rate Analysis	Back filling behind abutment, wing wall and return wall with granular material, complete as per drawing and Technical specification. Granular material	cum	1253	704	8,82,145
A8.03.08	13.10	Providing and laying of Filter media with granular materials/stone crushed aggregate satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and technical specification	cum	134	3787	5,06,701
<b>Total for A8.03 (RETAINING WALL) : Carried Forward to Bill Summary</b>						<b>68,11,587</b>

4,86,80,841




**BILL NO- 17: A17 Other Works**

**P P Road**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
<b>A17.3</b>						
<b>Road Side Drain</b>						
A17.3.01	8.2 B' x 1.5	Road side drain (PCC M-20 grade concrete) of minimum opening area as 0.42 sqm	Rm	18,833	1,544	2,90,78,152
A17.3.02	0.88 X 12.8E Case I + 0.16 x 14.10 + 60 x (12.4+13.6+14 2)3'	Covered RCC Rectangular Drain including Reinforcement complete as per drawing and Technical Specification Sections: 300, 1000, 1400,1500,1600, 1700 and as directed by Engineer	Rm	-	21,117	-
<b>Total A17.3 Road Side Drain : Carried Forward to Bill Summary</b>						<b>2,90,78,152</b>
<b>A17.4</b>						
<b>Road signs, marking, Km stones, Safety devices etc.</b>						
<b>A17.4a</b>						
<b>Pavement Marking</b>						
A17.4a.01	8.13	<b>Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface</b> Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250 gms per sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 .The finished surface to be level, uniform and free from streaks and holes.				
a	8.13	a) Centre line / Edge / Lane / any other marking	sqm	6,939	3,435	2,38,35,465
b	8.13*0.86	b) Directional Arrows / Lettering	Number	-	2,954	-
<b>Total A17.4a Pavement Marking : Carried Forward to Bill Summary</b>						<b>2,38,35,465</b>
<b>A17.4b</b>						
<b>Crash barrier/W metal crash barrier</b>						
A17.4b.01	8.23.A	<b>Type - A, "W" : Metal Beam Crash Barrier</b> Providing and erecting a "W" metal beam crash barrier comprising of 3 mm thick corrugated sheet metal beam rail, 70 cm above road/ground level, fixed on ISMC series channel vertical post, 150 x 75 x 5 mm spaced 2 m centre to centre, 1.8 m high, 1.1 m below ground/road level, all steel parts and fittings to be galvanised by hot dip process, all fittings to conform to IS:1367 and IS:1364, metal beam rail to be fixed on the vertical post with a spacer of channel section 150 x 75 x 5 mm, 330 mm long complete as per clause 810	m	2,355	3,879	91,35,045
<b>Total A17.4b Crash barrier / W Metal Crash Barrier : Carried Forward to Bill Summary</b>						<b>91,35,045</b>
<b>A17.4c</b>						
<b>Traffic Signs</b>						
A17.4c.01	8.4	<b>Retro- reflectorised Traffic signs</b> Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing				
	(i)	90 cm equilateral triangle	Number	-		
	(ii)	60 cm equilateral triangle	Number	129	4,666	6,01,914
	(iii)	60 cm circular	Number	22	5,757	1,26,654
	(iv)	80 mm x 60 mm rectangular	Number	-		-
	(v)	60 cm x 45 cm rectangular	Number	4	5,645	22,580
	(vi)	60 cm x 60 cm square	Number	-		-
	(vii)	90 cm high octagon	Number	-		-
	Rate Analysis	90 cm Circular	Number	-		-
	(vii)*2/3	60 cm high octagon	Number	5	6,065	30,327
	(v)*0.5/0.45	60 cm x 50 cm Chevron Sign	Number	716	6,272	44,90,911

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A17.4c.02	8.5	<b>Direction and Place Identification signs upto 0.9 sqm size board.</b> Providing and erecting direction and place identification retro-reflectorised sign as per IRC:67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area not exceeding 0.9 sqm supported on a mild steel single angle iron post 75 x 75 x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 x 45 x 60 cm, 60 cm below ground level as per approved drawing	sqm	14	12,215	1,71,010
A17.4c.02	8.6	<b>Direction and Place Identification signs with size more than 0.9 sqm size board.</b> Providing and erecting direction and place identification retro-reflectorised sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 2 mm thick with area exceeding 0.9 sqm supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm, 2 Nos. firmly fixed to the ground by means of properly designed foundation with M 15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing	sqm	-	21,458	-
<b>Total A17.4c Traffic Signs : Carried Forward to Bill Summary</b>						<b>54,43,396</b>
<b>A17.4d</b>	<b>Road Boundary stone, km Stone,5th km stone and hectometer stone</b>					
A17.4d.01	8.14	<b>Kilo Metre Stone</b> Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc				
	(i)	5th kilometre stone (precast)	Number	3	7,400	22,200
	(ii)	Ordinary Kilometer stone (Precast)	Number	16	4,644	74,304
	(iii)	Hectometer stone (Precast)	Number	80	1,079	86,320
A17.4d.02	8.16	<b>Boundary pillar</b> Reinforced cement concrete M15 grade boundary pillars of standard design as per IRC:25-1967, fixed in position including finishing and lettering but excluding painting	Number	199	1,449	2,88,351
<b>Total A17.4d Road Boundary stone, km Stone,5th km stone and hectometer stone: Carried Forward to Bill Summary</b>						<b>4,71,175</b>
<b>A17.4e</b>	<b>Traffic blinker LED delineator, stud, reflective payment marker, tree reflector</b>					
A17.4e.01	8.15	<b>Road Delineators</b> Supplying and installation of delineators (road way indicators, hazard markers, object markers), 80-100 cm high above ground level, painted black and white in 15 cm wide stripes, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and confirming to IRC-79 and the drawings.	Number	1,601	1,270	20,33,270
A17.4e.02	8.35	<b>Road Markers/Road Stud with Lense Reflector</b> Providing and fixing of road stud 100x 100 mm, die cast in aluminium, resistant to corrosive effect of salt and grit, fitted with lense reflectors, installed in concrete or asphaltic surface by drilling hole 30 mm upto a depth of 60 mm and bedded in a suitable bituminous grout or epoxy mortar, all as per BS 873 part 4:1973	Number	10,000	2,331	2,33,10,000
A17.4e.03	8.4 (v)	<b>Retro- reflectorised Traffic signs</b> (Providing and fixing of retro- reflectorised cautionary, mandatory and informative sign as per IRC :67 made of encapsulated lens type reflective sheeting vide clause 801.3, fixed over aluminium sheeting, 1.5 mm thick supported on a mild steel angle iron post 75 mm x 75 mm x 6 mm firmly fixed to the ground by means of properly designed foundation with M15 grade cement concrete 45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing)	Number	252	5,645	14,22,540
<b>Total A17.4e Traffic blinker LED delineator, stud, reflective payment marker, tree reflector: Carried Forward to Bill Summary</b>						<b>2,67,65,810</b>
<b>A17.4f</b>	<b>Traffic impact Attenuators at Abutments and Piers traffic island</b>					

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
		<b>Total A17.4f Traffic impact Attenuators at Abutments and Piers traffic island: Carried Forward to Bill Summary</b>				-
<b>A17.4g</b>		<b>Road furniture (overhead signboard etc.)</b>				
A17.4g.01		<b>Overhead Signs</b> Providing and erecting overhead signs with a corrosion resistant aluminium alloy sheet reflectorised with high intensity retro-reflective sheeting of encapsulated lense type with vertical and lateral clearance given in clause 802.2 and 802.3 and installed as per clause 802.7 over a designed support system of aluminium alloy or galvanised steel trestles and trusses of sections and type as per structural design requirements and approved plans				
a	8.7 A	Truss and Vertical Support	MT	-	1,07,540	-
b	8.7 B	Aluminium alloy plate for over head sign	sqm	-	5,358	-
c	12.1 I B	<b>Excavation for Structure</b> (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing,removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.) <b>Ordinary Soil(Mechanical means) Depth upto 3 m</b>	cum	-	75	-
d	12.1 II B	<b>Excavation for Structure</b> (Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing,removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material.) <b>Ordinary rock(not required blasting) Depth upto 3 m</b> (Mechanical means)	cum	-	91	-
e	12.8 A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications PCC grade M-15	cum	-	12,992	-
f	12.8 E case -II	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications RCC M-25	cum	-	12,178	-
g	(12.40 +13.6+14.2)/3	Steel Reinforcement Fe 500D in Foundation, Substructures Superstructure etc. complete as per drawings and Technical Specification Section 1600	MT	-	90,691	-
		<b>Total A17.4g Road furniture (overhead signboard etc.): Carried Forward to Bill Summary</b>				-
<b>A17.4h</b>		<b>Others including construction of median &amp; median kerb with channel &amp; paint</b>				
A17.4h.01	8.2	<b>Cast in Situ Cement Concrete M 20 Kerb with Channel</b> Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408				
	B	Using Concrete Batching and Mixing Plant	metre	-	1,029	-
A17.4h.02	4.13	<b>Construction of Median and Island with soil taken from Roadway cutting</b> (Construction of median and island above road level with approved material deposited at site from roadway cutting and excavation from drain and foundation of other structures,spread,graded and compacted as per clause 407)	Cum	-	484	-
A17.4h.03	Rate analysis	Rumble Strips Compete as per Technical Specification Clause A.5	sqm	-	130	-
		<b>Total A17.4h: Others including construction of median &amp; median kerb with channel &amp; paint : Carried Forward to Summary</b>				-
A17.5		Project Facilites				
<b>A17.5a</b>		<b>Truck Laybye</b>				
		<b>Total A17.5a: Truck Laybye : Carried Forward to Bill Summary</b>				-
<b>A17.5b</b>		<b>Bus Bye and Bus Shelter</b>				

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A17.5b.01	Rate Analysis	Bus Bay Shelter ( As per Drawing)	Number	4.00	5,31,000	21,24,000
		<b>Total A17.5b: Bus Bye : Carried Forward to Bill Summary</b>				<b>21,24,000</b>
<b>A17.5c</b>		<b>Junctions (Major &amp; Minor)</b>				
A17.5c.01	Rate Analysis	<b>Construction of Embankment with Material Deposited from Roadway Cutting</b> (Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2)	cum	-	334	-
A17.5c.02	4.2	<b>Granular Sub-base with Close Graded Material (Table:- 400-1)</b> Plant Mix Method (Construction of granular sub-base by providing close graded Material,mixing in a mechanical mix plant at OMC, carriage of mixed Material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per clause 401 ) for grading-I.	cum	-	3,632	-
A17.5c.03	4.12	<b>Wet Mix Macadam</b> (Providing, laying, spreading and compacting graded stone aggregate to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver in sub- base / base course on well prepared surface and compacting with vibratory roller to achieve the desired density.)	cum	-	4,182	-
A17.5c.04	5.1	<b>Prime coat</b> (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	-	37	-
A17.5c.05	5.2	<b>Tack Coat</b> (Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.)	sqm	-	14	-
A17.5c.06	5.6 (ii)	<b>Dense Graded Bituminous Macadam</b> (Providing and laying dense bituminous macadam with 100-120 TPH batch type HMP producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 4.0 to 4.5% by weight of total mix of mix and filler,transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 507 complete in all respects.) For Grading-II(19 mm nominal size)	cum	-	12,020	-
A17.5c.07	5.8(i)	<b>Bituminous Concrete</b> (Providing and laying bituminous concrete with 100-120 TPH batch type hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading, premixed with bituminous binder @ 5.4 to 5.6 % of mix and filler, transporting the hot mix to work site, laying with a hydrostatic paver finisher with sensor control to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 509 complete in all respects) For grading-I (13 mm nominal size)	cum	-	13,309	-
A17.5c.08	8.2	<b>Cast in Situ Cement Concrete M 20 Kerb</b> Construction of cement concrete kerb with channel with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M10 grade foundation 150 mm thick, kerb channel 300 mm wide, 50 mm thick in PCC M20 grade, sloped towards the kerb, kerb stone with channel laid with kerb laying machine, foundation concrete laid manually, all complete as per clause 408				
	B	Using Concrete Batching and Mixing Plant	m	-	1,029	-
		<b>Total A17.5c: Junctions (Major &amp; Minor) : Carried Forward to Bill Summary</b>				-
<b>A17.5d</b>		<b>Others including Cable duct &amp; Lighing on Bridges, etc.</b>				
A17.5d.01		Others including Cable duct & Lighing on Bridges, etc.				-

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
		<b>Total A17.5d: Others including Cable duct &amp; Lighting on Bridges, etc.: Carried Forward to Bill Summary</b>				-
<b>A17.5e</b>		<b>Rest Areas including View point/recreational areas</b>				
A17.5e.01	Rate Analysis	View Point / Recreational Areas as per Technical Specification Clause A-3.	Number	2	1,03,721	2,07,442
		<b>Total A17.5e:Rest Areas including view pont/recreational areas: Carried Forward to Bill Summary</b>				<b>2,07,442</b>
<b>A17.10</b>		<b>Slope Protection Works as special requirement for hill road</b>				
<b>A17.10a</b>		<b>Hydroseeding</b>				
A17.10a.01	Market rate	Hydro Seeding of Cut Slopes in Soil	sqm	49,170	20	9,83,400
		<b>Total A17.10a: Hydroseeding : Carried Forward to Bill Summary</b>				<b>9,83,400</b>
<b>A17.10b</b>		<b>Seeding and Mulching with Jute net all along the perpetual slide locations</b>				
A17.10b.01	3.23	<b>Seeding and Mulching</b> (Preparation of seed bed on previously laid top soil, furnishing and placing of seeds, fertilizer, mulching material, applying bituminous emulsion at the rate of 0.23 litres per sqm and laying and fixing jute netting, including watering for 3 months all as per clause 308)	sqm	2,54,722	371	9,45,01,862
		<b>Total A17.10a: Seeding and Mulching: Carried Forward to Bill Summary</b>				<b>9,45,01,862</b>
<b>A17.10c</b>		<b>Catch water drain</b>				
A17.10c.01	3.24 A	<b>Surface Drains in Soil : Catch Water Drain</b> Construction of unlined surface drains of average cross sectional area 0.40 sqm in soil to specified lines, grades, levels and dimensions to the requirement of clause 301 and 309. Excavated material to be used in embankment within a lead of 50 metres (average lead 25 metres)	m	20,310	74	15,02,940
		<b>Total A17.10c: Catchwater Drain : Carried Forward to Bill Summary</b>				<b>15,02,940</b>
<b>A17.10d</b>		<b>Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope</b>				
A17.10d.01		Excavation for Gabion wall as per drawings and Technical Specification				
a)	3.13 (i)	Excavation for structures (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	Ordinary Soil (Mechanical means)	cum	7,937	53	4,20,661
b)	3.13 (ii)	Excavation for structures (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	Ordinary Rock (Mechanical means)	cum	7,937	67	5,31,779
c)	3.8 A	Excavation in Hard Rock (blasting prohibited) (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tippers and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	37,039	577	2,13,71,503
A17.10d.02	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	25,342	704	1,78,40,768

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A17.10d.03	15.12	Gabion Structure for Retaining Earth (Providing and construction of a gabion structure for retaining earth with segments of wire crates of size 7 m x 3 m x 0.6 m each divided into 1.5 m compartments by cross netting, 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 x100 mm, filled with boulders with least dimension of 200 mm, all loose ends to be tied with 4 mm galvanised steel wire)	cum	37,635	6,159	23,17,93,965
A17.10d.04	16 x (7.5 (ii) A Type-5)+ 7.5(I) + 0.01x(12.8 B)	Facia panels as per Technical Specification Section 3105 including soil reinforcing element, foundation pad, coping beam, all accessories, consumables and components of drainage system (filter media, drainage layer, drain pipe, catch pit etc.), including ground improvement complete.	sqm	-	13,003	-
<b>Total A17.10d: Gabion wall : Carried Forward to Bill Summary</b>						<b>27,19,58,676</b>
<b>A17.10e</b>		<b>Reinforced earth wall</b>				
A17.10e.01		Excavation for RE wall as per drawings and Technical Specification				
a)	3.13 (i)	Excavation for structures (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	Ordinary Soil (Mechanical means)	cum	-	53	-
b)	3.13 (ii)	Excavation for structures (Earth Work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sites and bottom, backfilling the excavation earth to the extent required and utilizing the remaining earth locally for road work.)				
	Case B	Ordinary Rock (Mechanical means)	cum	-	67	-
c)	3.8 A	Excavation in Hard Rock (blasting prohibited) (Excavation for roadway in hard rock (blasting prohibited) with rock breakers including breaking rock, loading in tipper and disposal within all lifts and lead upto 1000 metres, trimming bottom and side slopes in accordance with requirements of lines, grades and cross sections.)	cum	-	577	-
A17.10e.02	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	-	704	-
<b>Total A17.10e: Reinforced earth Wall : Carried Forward to Bill Summary</b>						<b>-</b>
<b>A17.10f</b>		<b>Breast wall</b>				
A17.10f.01	12.8	Plain/ Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications. Including steel shuttering formwork PCC Grade M15	cum	310	12,992	40,27,520
A17.10f.02	13.4	Stone masonry work in cement mortar 1:3 for substructure complete as per drawing and Technical Specifications in Random Rubble Masonary 1:6	cum	1,830	11,226	2,05,43,580
<b>Total A17.10f: Breast Wall : Carried Forward to Bill Summary</b>						<b>2,45,71,100</b>
<b>A17.10g</b>		<b>Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking</b>				
A17.10g.01	3.27	<b>Sub Surface Drains with Perforated Pipe</b> (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC,	m	500	4,038	20,19,000
A17.10g.02	3.28	<b>Aggregate Sub- Surface Drains</b> (Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in	m	2,990	2,095	62,64,050

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
		<b>Total A17.10g: Subsurface drain : Carried Forward to Bill Summary</b>				<b>82,83,050</b>
<b>A17.10h</b>		<b>Parapet Wall</b>				
A17.10h.01	13.4	Gabion Parapet Wall as per drawing and technical specification	cum	2,090	6,159	1,28,72,310
		<b>Total A17.10h: Parapet Wall : Carried Forward to Bill Summary</b>				<b>1,28,72,310</b>

**Rate Analysis for Pfutsero Phek Road**

- 1 The Schedule of Rate published by Nagaland PWD In July 2016 has been adopted to arrive cost estimate as directed by NHIDCL
- 2 The Items where In SoR rates were not available have been analysed for rates based on RITES submitted Rate Analysis and normalizing the same to rates of SOR July 2016. The details are presented below.

Sr No	Ref. to MoRTH Spec.	Description	Unit	Quantity	Rate Rs	Cost Rs	Remarks/ Input ref.
A1.1.09 & A2.1.08	305	Construction of Subgrade and Shoulders with Material Deposited from Roadway Cutting. Analysis Based on Item 3.17 & 3.18 of Standard Data Book					
		Construction of Sub grade and Shoulders with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted to meet requirement of table 300-2.					
		Unit = cum					
		Taking output = 100 cum					
		a) Labour					
		Mate	day	0.04	440	17.6	L-12
		Mazdoor	day	1	302.5	302.5	L-13
		b) Machinery					
		Dozer 80 HP for spreading @ 200 cum per hour	hour	0.5	4313.1	2156.55	P&M-014
		Motor grader for grading @ 100 cum per hour	hour	2	2776.4	5552.8	P&M-032
		Water tanker 6 KL capacity	hour	4	748	2992	P&M-060
		Vibratory roller 8-10 tonnes @ 100 cum per hour	hour	1.25	1267.2	1584	P&M-059
		c) Material					
		Cost of water	KL	24	22	528	M-189
		d) Overhead charges @ 8 % on (a+b+c)				1050.676	
		e) Contractor's profit @ 15 % on (a+b+c+d)				2127.6189	
		Rate for 100 cum = a+b+c+d+e				16311.7449	
		Rate per cum = (a+b+c+d+e)/100				163.117449	
					say	163	
						Rate for Item 3.16 as per SoR	486
						Rate for Item 3.16 as per RITES Rate Analysis	243
						Normalization Factor	2
						Rate for Subgrade Preparation	<b>326</b>
A6.1.09, A8.01.14, A8.03.07, A17.10d.02, A17.10e.02	710.1.4.of IRC:78 & 2200	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification					
		Unit = cum					
		Taking output = 10 cum					
	<b>A</b>	<b>Granular material</b>					
		a) Labour					
		Mate	day	0.28	440	123.2	L-12
		Mazdoor	day	7	302.5	2117.5	L-13
		b) Material					
		Granular material	cum	12	301.4	3617	Cost of grading as per Item 1.6 & 1.7 Carriage of Materials in ratio of 60 & 40(refer details
		c) Machinery					
		Plate compactor/power rammer	hour	2.5	224.07	560	P&M-086
		Water Tanker	hour	0.05	748	37	P&M-060
		d) Overhead charges @ 20 % on (a+b+c)				1290.94	
		e) Contractor's profit @ 15 % on (a+b+c+d)				1161.846	
		Cost for 10 cum of granular backfill = a+b+c+d+e				8907.486	
		Rate per cum = (a+b+c+d+e)/10				890.7486	
					say	<b>891</b>	
						Rate of 13.9 A as per RITES Rate Analysis	3890
						Rate of 13.9 A as detailed in SoR of Nagaland PWD	3091
						Factor Normalization of Rate Analysis to SOR Rate	0.79
						Rate per cum	704
1.7		<b>Crushing of Stone Aggregates 20 mm Nominal Size</b>					
		Crushing of stone boulders of 150 mm size in an Integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 20 mm nominal size.					
		Unit = cum					
		Taking Output = 670 cum at crusher location.					
		a) Labour					
		Mate	day	0.76	440	334.4	L-12
		Mazdoor Skilled	day	2	330	660	L-14
		Mazdoor Including breaking of any size boulder.	day	17	302.5	5142.5	L-13
		b) Material					
		Stone Boulder of size 150 mm and below	cum	800	0	0	Hill Excavation Materials
		c) Machinery					
		Integrated stone crusher of 200 TPH including belt c	Hour	6	20126.7	120760.2	P&M-028
		Front end loader 1 cum bucket capacity	Hour	20	1114.3	22286	P&M-017
		Tipper 5.5 cum capacity	Hour	20	701.8	14036	P&M-048
		d) Overhead charges @ 8 % on (a+b+c)				13057.528	

	e) Contractor's profit @ 15 % on (a+b+c+d)				26441.49	
	Cost for 670 cum = a+b+c+d+e				202718.12	
	Rate per cum = (a+b+c+d+e)*0.90/670				272.31	
			say		272	
1.6	Crushing of Stone Aggregates 13.2 mm Nominal Size. Crushing of stone boulders of 150 mm size in an integrated stone crushing unit of 200 tonnes per hour capacity comprising of primary and secondary crushing units, belt conveyor and vibrating screens to obtain stone aggregates of 13.2 mm nominal size.					
	Unit = cum					
	Taking Output = 600 cum at crusher location.					
	a) Labour					
	Mate	day	0.76	440	334.4	L-12
	Mazdoor Skilled	day	2	330	660	L-14
	Mazdoor Including breaking of any oversize boulder.	day	17	302.5	5142.5	L-13
	b) Material					
	Stone Boulder of size 150 mm and below	cum	800	0	0	M-001
	c) Machinery					
	Integrated stone crusher of 200 TPH including belt conveyor	Hour	6	20126.7	120760.2	P&M-028
	Front end loader 1 cum bucket capacity	Hour	20	1114.3	22286	P&M-017
	Tipper 5.5 cum capacity	Hour	20	701.8	14036	P&M-048
	d) Overhead charges @ 8 % on (a+b+c)				13057.528	
	e) Contractor's profit @ 15 % on (a+b+c+d)				26441.4942	
	Cost for 600 cum = a+b+c+d+e				202718.1222	
	Rate per cum = (a+b+c+d+e)*0.95/600				320.9703602	
			say		321	
A17.4h.03	Suggestive Rumble Strips Provision of 15 nos rumble strips covered with premix bituminous carpet, 15-20 mm high at center, 250 mm wide placed at 1 m center to center at approved locations to control speed, marked with white strips of road marking paint.					
	Unit = sqm					
	Taking output = 142.50 sqm (including gaps 105 sqm)					
	Total area of one set of Rumble strips	sqm	37.5			Item 5.10 of SOR
	Cost of Premix Carpet	sqm	37.5	188	7050	Item 8.11 of SOR
	Cost of marking of Rumble strips with white paint	sqm	37.5	303	11362.5	
	Total Cost of 37.50 sqm Rumble strips				18412.5	
	Rate per square metre of Rumble Strips				129.2105263	
			say		130	

A17.5b.01 Quantity Calculation & Rate Analysis for Bus Shelter

S. No.	Description	No	Length (m)	Breadth (m)	Height / Depth (m)	Quantity	Unit	Rate	Amonut
1	Excavation for Foundation	1	11.47	0.75	0.90	7.74	cum		
		4	0.88	0.88	0.90	2.79	cum		
		2	0.12	0.38	0.90	0.08	cum		
					<b>Total</b>	<b>10.61</b>		<b>60</b>	<b>637</b>
3.13(1 & II)	Excavation for Structures								
2	PCC in M-15	1	11.47	0.75	0.20	1.72	cum		
		4	0.88	0.88	0.20	0.62	cum		
		2	0.12	0.38	0.20	0.02	cum		
	In steps	1	9.40	0.65	0.10	0.61	cum		
	Inside Bus Shelter	1	9.40	2.07	0.10	1.95	cum		
12.8A						<b>4.92</b>		<b>12992</b>	<b>63856</b>
3	Brick work in CM 1:3								
	Rear & side Walls	1	11.47	0.45	0.30	1.55	cum		
	1st step	1	11.47	0.35	0.80	3.21	cum		
	2nd step	1	11.47	0.23	2.50	6.60	cum		
	3rd step	1	11.47	0.23	2.50	6.60	cum		
	Front Pillars	4	0.58	0.58	0.30	0.40	cum		
	1st step	4	0.46	0.46	0.80	0.68	cum		
	2nd step	4	0.35	0.35	2.20	1.08	cum		
	3rd step	4	0.12	0.35	0.30	0.05	cum		
	Behind RCC Chajja	4	0.12	0.35	0.30	0.05	cum		
	Below RCC Seat	9	0.45	0.10	0.44	0.18	cum		
	In Parapet wall								
	Front Side	1	5	0.23	0.75	0.86	cum		
	Rear Side	2	2.2	0.23	0.30	0.30	cum		
	Side Walls	1	9.4	0.23	0.30	0.65	cum		
	Deduction for Voids	-5	1.2	0.90	0.23	-1.24	cum		
13.1					<b>Total</b>	<b>14.32</b>		<b>20477</b>	<b>293136</b>
4	RCC In M-25								
	RCC slab in M-25	1	9.40	2.65	0.10	2.49	cum		
	RCC Chajja								
	Front Side	1	9.40	0.45	0.08	0.32	cum		
	Rear Side	3	1.20	0.45	0.08	0.12	cum		
	Side Walls	3	0.23	1.20	0.30	0.25	cum		
	RCC Beam (230x300)	1	9.40	0.23	0.30	0.65	cum		
	RCC seat in M-25	1	8.94	0.45	0.10	0.40	cum		
		2	1.62	0.45	0.10	0.15	cum		
					<b>Total</b>	<b>5.02</b>		<b>17981</b>	<b>90327</b>
14.1 B Case 1									
6	Plaster in CM 1:6								
	Rear walls (Outside)	1	9.40	2.50		23.50	sqm		
	Rear walls (Inside)	1	8.94	2.50		22.35	sqm		
	Side Walls (Outside)	2	2.65	2.50		13.25	sqm		

	Side Walls (Inside)	2	2.07	2.50		10.35	sqm		
	Front Pillars	2	4.00	0.35	2.50	7.00	sqm		
		2	1.00	0.35	2.50	1.75	sqm		
	Chajja (Front)	2	9.40	0.45		8.46	sqm		
	Rear (Chajja)	2	3.00	1.20	0.45	3.24	sqm		
	Parapet walls (Rear)	2	9.40	0.30		5.64	sqm		
		1	9.40	0.23		2.16	sqm		
	Parapet walls (Front)	2	5.00	0.75		7.50	sqm		
		4	2.20	0.30		2.64	sqm		
		1	10.30	0.23		2.37	sqm		
	RCC seat	2	8.94	0.45		8.05	sqm		
		2	2.07	0.45		1.86	sqm		
13.3					<b>Total</b>	<b>120.12</b>		<b>347</b>	<b>41694</b>
7	40 mm thick Flooring In M-20	1	9.40	2.42	0.04	0.91	cum	15385	13999
13.5 B									
8	Reinforcement in slab, chajja, etc					0.30	cum	90691	27335
	<b>Cost of Bus Shelter</b>								<b>531000</b>

A8.01.09 Market Rate The Budgetary offer submitted by sub consultant for carrying out required works. The copy of budgetary offers attached here with. The lowest rate is adopted.

A17.10a.01 Market Rate Market Rate detailed by NHIDCL