Bill Summary for Changtongya Longleng Road (Design Length km 24+170 to km38+880)

Design Length (in km) = 14.71
Length in Widening & Strengthening (in km) = 9.26
Length in Realignment (in km) = 5.45

Bill No	Weightage in percentage to the contract price		Description of Items		Amount (in Rs.)	Percentage weightage
1		**WIDENING AND STRENGTHENING OF EXISTING ROAD**				
	62.71%	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.		144,818,936	9.60%
		A1.2	Sub-Base Course		86,586,880	5.74%
		A1.3	Non - Bituminous Base Course		75,284,364	4.99%
		A1.4	Bituminous Base Course		72,017,796	4.78%
		A1.5	Wearing Coat		37,044,576	2.46%
		A1.6	Widening and repair of culverts		-	0.00%
		A1.7	Hard Shoulder		15,201,216	1.01%
2		**RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS (FLEXIBLE PAVEMENT)**				
		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.		118,417,114	7.85%
		A2.2	Sub-Base Course		57,138,624	3.79%
		A2.3	Non - Bituminous Base Course		45,918,360	3.05%
		A2.4	Bituminous Base Course		44,169,768	2.93%
		A2.5	Wearing Coat		23,991,435	1.59%
		A2.6	Hard Shoulder		8,946,720	0.59%
3		**RECONSTRUCTION/NEW 2-LANE ALIGNMENT/BYPASS (RIGID PAVEMENT)**				
		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	Pavemennt Quality Control(PQC) Course		-	0.00%
4		**RECONSTRUCTION/NEW SERVICE ROAD (FLEXIBLE PAVEMENT)**				0.00%
		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%
5		**RECONSTRUCTION/NEW SERVICE ROAD (RIGID PAVEMENT)**				
		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	Pavemennt Quality Control(PQC) Course		-	0.00%
6		**RECONSTRUCTION AND NEW CULVERTS ON EXISTING ROAD, REALIGNMENTS, BYPASSES**				
		A6.1	Culverts and associated Protection Works (Length< 6m)		216,133,839	**14.33%**
7	**0.00%**	**WIDENING AND REPAIR OF MINOR BRIDGES (Length > 6 m and < 60 m)**				
		A7.1	Minor Bridges		-	0.00%
8		**NEW MINOR BRIDGES (Length > 6 m and < 60 m)**				
		A8.1	**Foundation + Sub Structures:** On completion of the foundation work including foundations for wing wall and return walls, abutments, piers upto the abutment/pier cap.		-	0.00%
		A8.2	**Super-structure:** 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.		-	0.00%
		A8.3	**Approaches:** On completion of approaches including retaining wall, stone pitching, protection works complete in all respect and fit for use.		-	0.00%
		A8.4	**Guide Bunds and River Training Works:** On completion of Guide bunds and river training works complete in all respects.		-	0.00%
9		**WIDENING AND REPAIRS OF UNDERPASSES/ OVERPASSES**				
		A9.1	Underpasses/ Overpasses		-	0.00%
10		**NEW UNDERPASSES/ OVERPASSES**				
		A10.1	**Foundation + Sub Structures:** 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	**Super-structure:** 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	**Approaches:** 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%**	**WIDENING AND REPAIRS OF MAJOR BRIDGES**				
		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		**NEW MAJOR BRIDGES**				
		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		**WIDENING AND REPAIR OF ROB/RUB**				
		A13.1	**(a)**	**ROB**	-	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)**	**RUB**	-	
			(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, stone pitching and protection works) -		0.00%
14		**NEW ROB/RUB**				
		A14.1	**(a)**	**ROB**	-	
			(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)**	**RUB**	-	
			(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		**WIDENING AND REPAIR OF ELEVATED SECTION/ FLYOVERS/**				
		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		**NEW ELEVATED SECTION/ FLYOVERS/ GRADE SEPARATORS**				
		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	**37.29%**	**OTHER WORKS**				
		A17.1	*Toll Plaza*		-	0.00%
		A17.2	*Road side drain*		57,486,330	3.81%
		A17.3	*Road signs, marking, Km stones, Safety devices etc.*			0.00%
			(a)	Pavement Marking	15,921,811	1.06%
			(b)	Crash barrier/W metal crash barrier	3,385,722	0.22%
			(c)	Traffic Sign	3,507,774	0.23%
			(d)	Road Boundary stone, km Stone,5th km stone and hectometer stone	907,802	0.06%
			(e)	Traffic blinker LED delineator, stud, reflective payment marker, tree reflector	44,931,402	2.98%
			(f)	Traffic impact Attenuators at Abutments and Piers traffic island	-	0.00%
			(g)	Road furniture (overhead signboard etc.)	1,154,765	0.08%
			(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	5,194,800	0.34%
			(c)	Junctions (Major & Minor)	15,303,102	1.01%
			(d)	Others including Cable duct & Lighing on Bridges, etc.	114,910	0.01%
			(e)	Rest areas (viewpoint/recreational areas)		0.00%
		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	933,520	0.06%
			(b)	Seeding and Mulching with Jute net all along the perpetual slide locations	24,804,062	1.64%
			(c)	Catchwater Drain	1,178,820	0.08%
			(d)	Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope	270,902,468	17.97%
			(e)	Reinforced earth wall	33,941,176	2.25%
			(f)	Breast wall	70,000,160	4.64%
			(g)	Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking of pavement	734,800	0.05%
			(h)	Gabion Parapet Wall	11,832,640	0.78%
Total Civil Cost (In Rs.)					**1,507,905,692**	**100.00%**
WPI index as per 2018 (2.8%)					**42,221,359**	
GST 6%					**90,474,342**	
Total cost of tender					**1,640,601,393**	
Civil Cost Per Km (In Cr.)					**11.15**	

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
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.**				
A1.1.01	2.3 (ii) A	**Clearing and Grubbing Road Land** (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 Mechnical Means in area of light Jungle.	ha	20	39,921	798,420
A1.1.02	2.4	**Dismantling of Structures** (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	433	493	213,469
b	(i) II A	Cement Concrete Grade M-15 & M-20	cum	36	945	34,020
c	(i) II B	Prestressed / Reinforced cement concrete grade M-20 & above	cum	14	1,628	22,792
e	2.10 B	Ordinary KM stone/Guard stone/Sign Post	Number	27	376	10,152
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	40	468	18,720
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	100	440	44,000
b	(ii)	Girth above 600mm to 900mm	Number	125	732	91,500
c	(iii)	Girth above 900mm to1800mm	Number	150	1,505	225,750
d	(iv)	Girth above 1800mm	Number	125	2,923	365,375
A1.1.04	3.32	**Excavation in Hill Area in Soil by Mechanical Means** (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	262,030	182	47,689,460
A1.1.05	3.33	**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting** (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	262,030	257	67,341,710
A1.1.06	3.34 - Credit of Rs 500/-	**Excavation in Hilly Areas in Hard Rock Requiring Blasting** (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	39,649	(89)	(3,528,761)
A1.1.07	3.9 - Credit of Rs 500/-	**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres** (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	**Construction of Embankment with Material Deposited from Roadway Cutting** (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	38,324	252	9,657,648
A1.1.09	Rate Analysis	**Construction of Subgrade and Shoulders with Material Deposited from Roadway Cutting** (Construction of Subgrade 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)	cum	55,847	334	18,652,898
A1.1.10	3.19 Case-I	**Compacting original ground supporting subgrade** (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	2,981	83	247,423
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	7,020	418	2,934,360
		Total for 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.) : Carried Forward to Bill Summary				**144,818,936**
A1.2		**Sub Base Course**				
A1.2.01	4.1 A (i)	**Granular Sub-base with Close Graded Material (Table:-400-1)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 material	cum	23,840	3,632	86,586,880
		Total for A1.2 Sub Base Course : Carried Forward to Bill Summary				**86,586,880**
A1.3		**Non Bituminous Base Course**				
A1.3.01	4.12	**Wet Mix Macadam** (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	18,002	4,182	75,284,364
		Total for A1.3 Non Bituminous Base Course : Carried Forward to Bill Summary				**75,284,364**
A1.4		**Bituminous Base Course**				
A1.4.01	5.6 (ii)	**Dense Graded Bituminous Macadam** (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	5,894	11,796	69,525,624
A1.4.02	5.1	**Prime coat** (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	69,227	36.0	2,492,172
		Total for A1.4 Bituminous Base Course : Carried Forward to Bill Summary				**72,017,796**
A1.5		**Wearing Course**				
A1.5.01	5.2	**Tack Coat** (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	69,142	13.0	898,846
A1.5.02	5.8(i)	**Bituminous Concrete** (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	2,770	13,049	36,145,730
		Total for A1.5 (Wearing Coat) : Carried Forward to Bill Summary				**37,044,576**
A1.6		**Widening and repair of culverts**				
A1.6.01	-	-				-
		Total for A1.6 (Widening and repair of culverts) : Carried Forward to Bill Summary				**-**
A1.7		**Hard shoulder**				
A1.7.01	4.5	Cementitious base for hard shoulder (Total 3 metre wide including both sides having thickness 200 mm)	cum	11,112	1,368	15,201,216
		Total for A1.7 (Hard Shoulder) : Carried Forward to Bill Summary				**15,201,216**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
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.**				
A2.1.01	2.3 (ii) A	**Clearing and Grubbing Road Land** (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 Mechnical Means in area of light jungle	ha	12	39,921	479,052
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	621	440	273,240
b	(ii)	Girth above 600mm to 900mm	Number	777	732	568,764
c	(iii)	Girth above 900mm to1800mm	Number	932	1,505	1,402,660
d	(iv)	Girth above 1800mm	Number	777	2,923	2,271,171
A2.1.03	3.32	**Excavation in Hill Area in Soil by Mechanical Means** (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	213,614	182	38,877,748
A2.1.04	3.33	**Excavation in Hilly Area in Ordinary Rock by Mechanical Means not Requiring Blasting** (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	213,614	257	54,898,798
A2.1.05	3.34 - Credit of Rs 500/-	**Excavation in Hilly Areas in Hard Rock Requiring Blasting** (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	-	(89)	-
A2.1.06	3.9 - Credit of Rs 500/-	**Excavation in Hard Rock (controlled blasting) with disposal upto 1000 metres** (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	**Construction of Embankment with Material Deposited from Roadway Cutting** (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)-**for Embankment only**	cum	33,773	252	8,510,796
A2.1.08	Rate Analysis	**Construction of Subgrade and Shoulders with Material Deposited from Roadway Cutting** (Construction of subgrade 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)	cum	33,319	326	10,861,994
A2.1.09	3.19 Case-I	**Compacting original ground supporting subgrade** (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	1,777	83	147,491
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	300	418	125,400
		Total for 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.) : Carried Forward to Bill Summary				**118,417,114**
A2.2		**Granular work (Sub base, Base, Shoulders)**				
A2.2.01	4.1 A (i)	**Granular Sub-base with Close Graded Material (Table:-400-1)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 material	cum	15,732	3,632	57,138,624
		Total for A2.2 Sub Base Course : Carried Forward to Bill Summary				**57,138,624**
A2.3		**Non Bituminous Base Course**				
A2.3.01	4.12	**Wet Mix Macadam** (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	10,980	4,182	45,918,360
		Total for A2.3 Non Bituminous Base Course : Carried Forward to Bill Summary				**45,918,360**
A2.4		**Bituminous Base Course**				
A2.4.01	5.6 (ii)	**Dense Graded Bituminous Macadam** (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	3,615	11,796	42,642,540
A2.4.02	5.1	**Prime coat** (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	42,423	36	1,527,228
		Total for A2.4 Bituminous Base Course : Carried Forward to Bill Summary				**44,169,768**
A2.5		**Wearing Coat**				
A2.5.01	5.2	**Tack Coat** (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	44,733	13	581,529
A2.5.02	5.8(i)	**Bituminous Concrete** (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	1,794	13,049	23,409,906
		Total for A5.5 (Wearing Coat) : Carried Forward to Bill Summary				**23,991,435**
A2.6		**Hard shoulder**				
A2.6.01	4.5	Cementitious base for hard shoulder (Total 3 metre wide including both sides having thickness 200 mm)	cum	6,540	1,368	8,946,720
		Total for A2.6 (Hard Shoulder) : Carried Forward to Bill Summary				**8,946,720**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A6.1		**Culverts and associated Protection Works**				
A6.1.01	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)				
(a)		(i) Box Culverts & Retaining walls	cum	1,286	53	68,158
(b)		(ii) Protection Works & Catchpits	cum	1,332	53	70,596
A6.1.02	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)				
(c)		(i) Box Culverts & Retaining walls	cum	1,286	67	86,162
(d)		(ii) Protection Works & Catchpits	cum	1,332	67	89,244
A6.1.03	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.)				
(e)		(i) Box Culverts & Retaining walls	cum	6,002	584	3,505,168
(f)		(ii) Protection Works & Catchpits	cum	6,217	584	3,630,728
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	1,081	11,422	12,347,182
(b)		(ii) Protection Works & Catchpits	cum	363	11,422	4,146,186
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	4,924	14,540	71,594,960
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	193	87,719	16,929,767
(b)		(ii) Retaining walls	MT	102	87,719	8,947,338
(c)		(iii) Protection Works & Catchpits	MT	82	87,719	7,192,958
A6.1.07	14.11	Approach Slab (RCC M 30 Grade) including reinforcement complete as per drawings and Technical Specification Section 2700.	cum	1,488	17,949	26,708,112
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	1,450	3,787	5,491,150
A6.1.09	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	7,513	704	5,289,152
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	1,215	661	803,115
A6.1.11	14.9	Drainage Spouts complete as per drawing and Technical specification.	Number	228	4,444	1,013,232
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	2,827	5,391	15,240,357
A6.1.13	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	3,500	1	3,500
A6.1.14	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	642	273	175,266
A6.1.15	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 foce. Complete as per drawing and Technical specifications.	Number	2,800	680	1,904,000
A6.1.16	12.8 E case-II	RCC/PCC for rigid flooring,buffle pier,blocks,chutes etc.excluding reinforcement complete as per drawings and Technical Specification Section 1700 and 2200				
(a)		(i) Protection Works & Catchpits	cum	1,644	13,666	22,466,904
A6.1.17	((5.8*.040) for grading I)+5.14)	Bituminous (Type 2) Wearing Coat as per drawings and Technical Specification Section 2700.	sqm	5,681	1,484	8,430,604
		Total for A6.1 (Culverts and associated Protection Works) : Carried Forward to Bill Summary				***216,133,839***

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A17.3		**Road Side Drain**				
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	15,210	1,857	28,244,970
A17.3.02	0.88 X (12.8E Case I) + 0.16 x (14.10) + 60 x (12.40)'	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	1,530	19,112	29,241,360
		Total A17.3 Road Side Drain : Carried Forward to Bill Summary				**57,486,330**
A17.4		**Road signs, marking, Km stones, Safety devices etc.**				
A17.4a		**Pavement Marking**				
A17.4a.01	8.13	**Road Marking with Hot Applied Thermoplastic Compound with Reflectorising Glass Beads on Bituminous Surface** 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	4,929	3,219	15,866,451
b	8.13*0.86	b) Directional Arrows / Lettering	Number	20	2,768	55,360
		Total A17.4a Pavement Marking : Carried Forward to Bill Summary				**15,921,811**
A17.4b		**Crash barrier/W metal crash barrier**				
A17.4b.01	8.23.A	**Type - A, "W" : Metal Beam Crash Barrier** 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 fitments 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	906	3,737	3,385,722
		Total A17.4b Crash barrier / W Metal Crash Barrier : Carried Forward to Bill Summary				**3,385,722**
A17.4c		**Traffic Signs**				
A17.4c.01	8.4	**Retro- reflectorised Traffic signs** 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	142	4,310	612,020
	(iii)	60 cm circular	Number	40	5,332	213,280
	(iv)	80 mm x 60 mm rectangular	Number	-		-
	(v)	60 cm x 45 cm rectangular	Number	20	5,227	104,540
	(vi)	60 cm x 60 cm square	Number	-		-
	(vii)	90 cm high octagon	Number	-		-
		90 cm Circular	Number	-		-
	(vii)*2/3	60 cm high octagon	Number	14	5,641	78,974
	(v)*0.5/0.45	60 cm x 50 cm Chevron Sign	Number	388	5,808	2,253,504

A17.4c.02	8.5	**Direction and Place Identification signs upto 0.9 sqm size board.** Providing and erecting direction and place identification retro-reflectorised sign asper 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	18	11,411	205,398
A17.4c.02	8.6	**Direction and Place Identification signs with size more than 0.9 sqm size board.** Providing and erecting direction and place identification retro-reflectorised sign asper 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 concrete45 cm x 45 cm x 60 cm, 60 cm below ground level as per approved drawing	sqm	2	20,029	40,058
		Total A17.4c Traffic Signs : Carried Forward to Bill Summary				**3,507,774**
A17.4d		**Road Boundary stone, km Stone,5th km stone and hectometer stone**				
A17.4d.01	8.14	**Kilo Metre Stone** Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc				
	(i)	5th kilometre stone (precast)	Number	7	6,758	47,306
	(ii)	Ordinary Kilometer stone (Precast)	Number	32	4,207	134,624
	(iii)	Hectometer stone (Precast)	Number	154	1,048	161,392
A17.4d.02	8.16	**Boundary pillar** 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	384	1,470	564,480
		Total A17.4d Road Boundary stone, km Stone,5th km stone and hectometer stone: Carried Forward to Bill Summary				**907,802**
A17.4e		**Traffic blinker LED delineator, stud, reflective payment marker, tree reflector**				
A17.4e.01	8.15	**Road Delineators** 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 toIRC-79 and the drawings.	Number	1,734	1,191	2,065,194
A17.4e.02	8.35	**Road Markers/Road Stud with Lense Reflector** 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	19,250	2,185	42,061,250
A17.4e.03	8.4 (v)	**Retro- reflectorised Traffic signs** (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)	Number	154	5,227	804,958
		Total A17.4e Traffic blinker LED delineator, stud, reflective payment marker, tree reflector: Carried Forward to Bill Summary				**44,931,402**
A17.4f		**Traffic impact Attenuators at Abutments and Piers traffic island**				
		-				-
		Total A17.4f Traffic impact Attenuators at Abutments and Piers traffic island: Carried Forward to Bill Summary				**-**
A17.4g		**Road furniture (overhead signboard etc.)**				
A17.4g.01		**Overhead Signs** 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	5	104,195	520,975
b	8.7 B	Aluminium alloy plate for over head sign	sqm	40	5,032	201,280
c	12.1 I B	**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.) **Ordinary Soil(Mechanical means) Depth upto 3 m**	cum	25	75	1,875
d	12.1 II B	**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.) **Ordinary rock(not required blasting**) **Depth upto 3 m** (Mechanical means)	cum	25	91	2,275
e	12.8 A	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications PCC grade M-15	cum	3	11,422	34,266
f	12.8 E case -II	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications RCC M-25	cum	16	13,666	218,656
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	2	87,719	175,438
		Total A17.4g Road furniture (overhead signboard etc.): Carried Forward to Bill Summary				**1,154,765**
A17.4h		**Others including construction of median & median kerb with channel & paint**				
A17.4h.01	8.2	**Cast in Situ Cement Concrete M 20 Kerb with Channel** 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	-	1,238	-
A17.4h.02	4.13	**Construction of Median and Island with soil taken from Roadway cutting (**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	-	129	-
		Total A17.4h: Others including construction of median & median kerb with channel & paint : Carried Forward to Summary				**-**
A17.5		Project Faciliites				
A17.5a		**Truck Laybye**				
		-				-
		Total A17.5a: Truck Laybye : Carried Forward to Bill Summary				-
A17.5b		**Bus Bye and Bus Shelter**				
A17.5b.01	Rate Analysis	Bus Bay Shelter (As per Drawing)	Number	12.00	432,900	5,194,800
		Total A17.5b: Bus Bye : Carried Forward to Bill Summary				**5,194,800**
A17.5c		**Junctions (Major & Minor)**				
A17.5c.01	Rate Analysis	**Construction of Subgrade and Shoulders with Material Deposited from Roadway Cutting** (Construction of Subgrade 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)	cum	3,250	334	1,085,500
A17.5c.02	4.2	**Granular Sub-base with Close Graded Material (Table:-400-1)** 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 material	cum	850	3,632	3,087,200
A17.5c.03	4.12	**Wet Mix Macadam** (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	1,063	4,182	4,445,466

A17.5c.04	5.1	**Prime coat** (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	4,250	36	153,000
A17.5c.05	5.2	**Tack Coat** (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	4,250	13	55,250
A17.5c.06	5.6 (ii)	**Dense Graded Bituminous Macadam** (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	361	11,796	4,258,356
A17.5c.07	5.8(i)	**Bituminous Concrete** (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	170	13,049	2,218,330
A17.5c.08	8.2	**Cast in Situ Cement Concrete M 20 Kerb** 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	-	1,238	-
		Total A17.5c: Junctions (Major & Minor) : Carried Forward to Bill Summary				**15,303,102**
A17.5d		**Others including Cable duct & Lighing on Bridges, etc.**				
A17.5d.01		Others including Cable duct & Lighing on Bridges, etc.				-
		Total A17.5d: Others including Cable duct & Lighing on Bridges, etc.: Carried Forward to Bill Summary				**-**
A17.5e		**Rest Areas including View point/recreational areas**				
A17.5e.01	Rate Analysis	View Point / Recreational Areas as per Technical Specification Clause A-3.	Number	1	114,910	114,910
		Total A17.5e:Rest Areas including view pont/recreational areas: Carried Forward to Bill Summary				**114,910**
A17.10		**Slope Protection Works as special requirement for hill road**				
A17.10a		**Hydroseeding**				
A17.10a.01	Market rate	Hydro Seeding of Cut Slopes in Soil	sqm	46,676	20	933,520
		Total A17.10a: Hydroseeding : Carried Forward to Bill Summary				**933,520**
A17.10b		**Seeding and Mulching with Jute net all along the perpetual slide locations**				
A17.10b.01	3.23	**Seeding and Mulching** (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	67,586	367	24,804,062
		Total A17.10a: Seeding and Mulching: Carried Forward to Bill Summary				**24,804,062**
A17.10c		**Catch water drain**				

A17.10c.01	3.24 A	**Surface Drains in Soil : Catch Water Drain** 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 of50 metres (average lead 25 metres)	m	15,930	74	1,178,820
		Total A17.10c: Catchwater Drain : Carried Forward to Bill Summary				**1,178,820**
A17.10d		**Gabion Structure on hill side/valley side of varying height between 1 to 6 metre depending upon the slope**				
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	16,278	53	862,734
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	16,728	67	1,120,776
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	13,953	584	8,148,552
A17.10d.02	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	27,014	704	19,017,856
A17.10d.03	15.12	Gabion Structure for Retaining Earth (Providing and construction of a gabain 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	30,435	5,744	174,818,640
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	5,359	12,490	66,933,910
		Total A17.10d: Gabion wall : Carried Forward to Bill Summary				**270,902,468**
A17.10e		**Reinforced Earth wall**				
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	2,708	53	143,524
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	2,708	67	181,436
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	12,635	584	7,378,840
A17.10e.02	Rate Analysis	Back filling behind abutment, wing wall and return wall complete as per drawing and Technical specification	cum	37,269	704	26,237,376

		Total A17.10e: Reinforced earth Wall : Carried Forward to Bill Summary				**33,941,176**
A17.10f		**Breast wall**				
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	890	11,422	10,165,580
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	5,330	11,226	59,834,580
		Total A17.10f: Breast Wall : Carried Forward to Bill Summary				**70,000,160**
A17.10g		**Sub Surface drain with perforated pipe for collection of seepage water to avoid sinking**				
A17.10g.01	3.27	**Sub Surface Drains with Perforated Pipe** (Construction of subsurface drain with perforated pipe of 100 mm internal diameter of metal/ asbestos cement/ cement concrete/PVC, closely jointed, perforations ranging from 3 mm to 6 mm depending upon size of material surrounding the pipe, with 150 mm bedding below the pipe and 300 mm cushion above the pipe, cross section of excavation 450 x 550 mm. Excavated material to be utilised in roadway at site)	m	400	1,019	407,600
A17.10g.02	3.28	**Aggregate Sub- Surface Drains** (Construction of aggregate sub surface drain 300 mm x 450 mm with aggregates conforming to table 300-4, excavated material to be utilised in roadway)	m	800	409	327,200
		Total A17.10g: Subsurface drain : Carried Forward to Bill Summary				**734,800**
A17.10h		**Parapet Wall**				
A17.10h.01	13.4	Gabion Parapet Wall as per drawing and technical specification	cum	2,060	5,744	11,832,640
		Total A17.10h: Parapet Wall : Carried Forward to Bill Summary				**11,832,640**

Item No	Ref : SOR 2016-17	Descriptions	Unit	Estimated Quantity	Rate (Rs.)	Amount (Rs.)
A8.01		**FOUNDATION AND SUBSTRUCTURE**				
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	**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	616	1108	682,851
A8.01.02	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specificatons	cum	80	12992	1,044,310
A8.01.03	12.8	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specificatons				-
a	H case-II	M 35 Grade	cum	524	12380	6,488,853
A8.01.04	13.5	Plain/Reinfcrced 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	7,166,238
	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 technital specifications	MT	133	90691	12,089,105
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	2,202,347
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	1,046,529
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	168,341
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	120,000
b		Hard Rock	Lm	64	8000	512,000
A8.01.10	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specificatons	cum		9995	-
A8.01.11	13.5	Plain/Reinfcrced 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 technital 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 foce. Complete as per drawing and Technical specifications	Number	346	730	252,366
A8.01.14	Rate Analysis	Back filling behind abutment, wing wall and return wall with granular material, complete as per drawing and Technical specification. **Granular material**	cum	2613	704	1,839,519
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 conditlon complete as per drawing and technical specification.	cum	258	3787	976,744
		Total for A8.02 (Foundation & Sub Structure) : Carried Forward to Bill Summary				***34,708,559***
A8.02		**SUPER STRUCTURE**				
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	2,618,275
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 technital specifications	MT	23	90691	2,107,931
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	412,080
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				-
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	117,900
A8.02.09	14.11	Reinforced cement concrete approach slab including reinforcement and formwork complete as per drawing and Technical specification	cum	72	16643	1,202,873
A8.02.10	(14.6+14.7)/2	Construction of precast RCC railing with casi-in-situ vertical post of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence 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	180,704
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	239,130
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	184,320
		Total for A8.02 (Super Structure) : Carried Forward to Bill Summary				***7,160,694***
A8.03		**APPROACHES (INCLUDING RETAINING WALL)**				
A8.03.01		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	213,401
A8.03.02	12.8 A	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specificatons	cum	32	12992	409,248
A8.03.03	12.8	Plain/Reinforced cement concrete in open foundation using concrete Mixer complete as per drawing and technical specificatons				-
a	H case-II	M 35 Grade	cum	105	12380	1,304,233
A8.03.04	13.5	Plain/Reinfcrced 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	1,535,110
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 technital specifications	MT	19	90691	1,748,250
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 foce. Complete as per drawing and Technical specifications	Number	240	730	175,200
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	882,145
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 conditlon complete as per drawing and technical specification.	cum	134	3787	506,701
		Total for A8.03 (RETAINING WALL) : Carried Forward to Bill Summary				***6,811,587***