



राष्ट्रीय राजमार्ग एवं अवसंरचना विकास निगम लिमिटेड

NATIONAL HIGHWAYS & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.

FINAL DETAILED PROJECT REPORT

APRIL 2020

CONSULTANCY SERVICES FOR PREPERATION OF DETAILED PROJECT REPORT AND PROVIDING PRE-CONSTRUCTION ACTIVITIES IN RESPECT OF THE FOLLOWING STRETCH ON NH-244 (OLD NH-1B) IN THE STATE OF JAMMU AND KASHMIR.

- (1) SUDHMAHADEV- DRANGA TUNNEL OF APPROX. LENGTH 4.5 KM AND ITS APPROACH ROAD ON CHENANI - SUDHMAHADEV-GOHA ROAD PORTION.
- (2) VAILOO TUNNEL OF APPROX. LENGTH 10.0 KM UNDER SINTHAN PASS AND ITS APPROACH ROAD ON GOHA-KHELLANI- KHANABAL ROAD PORTION.
- (3) ROAD PORTION FROM 82.675 TO 82.925 AT KM 83 ON BATOTE-KISHTWAR ROAD SECTION OF NH-244.
- (4) EXTENDED ROAD SECTION FROM GOHA TO KHELLANI OF 30 KM LENGTH



GOHA - KHELLANI ROAD (LINK ROAD TO GOHA) PACKAGE-IA (KM 12.850 to KM 20.300) VOLUME - VII - COST ESTIMATE

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SUMMARY OF ESTIMATE

SUMMARY OF COST <u>Link Road to Goha (Km 0.000 - Km 2.016)</u> <u>Length - 2.016 Km</u>		
Item No.	Description	Total Amount (Rs. in Crores)
BILL NO. 1	SITE CLEARANCE	0.030
BILL NO. 2	EARTH WORKS	7.195
BILL NO. 3	SUB-BASES AND BASES COURSES	1.266
BILL NO. 4	BITUMINOUS COURSES	1.308
BILL NO. 5	CROSS DRAINAGE WORKS(CULVERTS)	2.804
BILL NO. 6.1	TRAFFIC SIGNS, MARKINGS	0.196
BILL NO. 6.2	PROTECTION WORK AND DRAINAGE (RRM Toe Wall, Breast Wall,Gabion Wall,Drains,Rock Bolts, Shotcreting & Drainage Holes)	23.78
BILL NO. 6.3	Other Works (Tree Plantation)	0.083
BILL NO. 7	JUNCTION	0.046
A	Civil Cost	36.707

BILL NO. 1

Bill No. 1
SITE CLEARANCE

Item No.	Description		Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
					In Figures	In Figures		
1.1	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 metres and earth filling in the depression / pit.							
	A	From 300 mm to 600 mm	Nos	67.00	164.00	10,988		
	B	From 600 mm to 900 mm	Nos	82.00	271.00	22,222		
	C	From 900 mm to 1800 mm	Nos	38.00	560.00	21,280		
	D	Above 1800 mm	Nos	21.00	1,089.35	22,876		
1.2	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.		Ha.	2.68	83,750.00	224,165	201	CHAPTER-SITE CLEARANCE, SR. NO.-2.3
TOTAL FOR BILL NO 1						301,532		

BILL NO. 2

Bill No. 2
EARTHWORKS

Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
2.1 (A)	Excavation for roadwork in soil with hydraulic excavator of 0.9 cum bucket capacity including cutting and loading in tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transporting to the embankment location within all lifts and lead upto 1000m (including royalty @ Rs. 15.00 per cum but excluding watering, rolling & compaction)	cu.m.	80400.62	510.00	41,004,316	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.3
2.1 (B)	E/W in Excavation in rock - not required blasting	cu.m.	17228.70	619.00	10,664,568	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.4
2.1 (C)	E/W in Excavation in hard rock required blasting	cu.m.	17228.70	718.00	12,370,210	301	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.5
2.2	Construction of embankment with approved materials deposited at site from Roadway cutting and excavation from drain and foundation of the structures, graded and compacted to meet requirement of Table 300-2, complete as per Technical Specifications Clause 305.	cu.m.	47281.485	148.00	6,997,660	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
2.3	Construction of sub-grade and earthen shoulders with approved material obtained from excavated earth, transporting to site, spreading, grading to required slope and compacted to meet requirement of table No. 300-2	cu.m.	6159.84	148.00	911,656	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
TOTAL FOR BILL NO 2					71,948,410		

BILL NO. 3

Bill no. 3 SUB-BASE AND BASE COURSES							
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
3.1	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	cu.m.	2979.35	1,711.00	5,097,669.56	401	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.1B
3.2	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.	cu.m.	3556.47	2,126.00	7,561,061.60	406	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.12
TOTAL FOR BILL NO 3					12,658,731.16		

BILL NO. 4

Bill No. 4
BITUMINOUS COURSES

Item No.	Description	Unit	Estimated Quantity	Unit Rate	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
4.1	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.	sq.m.	14083.04	11.00	154,913	502	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.1
4.2	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sq.m.	28166.08	6.00	168,996	503	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.2
4.3	Providing and laying dense graded 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 (VG-40) @ 4.0 to 4.5 per cent by weight of total 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.	cu.m.	971.01	8,016.00	7,783,640	507	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.6
4.4	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 per cent 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	cu.m.	554.40	8,971.00	4,973,522	509	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.8
TOTAL FOR BILL NO 4					13,081,073		

BILL NO. 5

BILL NO. 5

Sl. No.	Ref. to MoRTH Spec.	Item Description	Unit	Total Quantity	Rate	Cost
		FOUNDATION				
1	304	Excavation for Structures				
		Earthwork in excavation for structures as per drawing and technical specifications Clause 305.1 including setting out, construction of shoring and bracing, removal of stumps and other deleterious material and disposal upto a lead of 50 m, dressing of sides and bottom and backfilling in trenches with excavated suitable material.				
		All kind of soil	Cum	1631.65	111.00	181,112.95
		Ordinary rock (not required Blasting)	Cum	0.00		0.00
		Ordinary rock (required Blasting)	Cum	0.00		0.00
2	1500, 1700 & 2100	Providing and laying of PCC M15 levelling course below bottom Slab & Retaining wall & Curtain wall.	Cum	382.74	5314.00	2,033,886.74
		SUBSTRUCTURE				
3	1500, 1700 & 2200	R.C.C. grade M 20 in Sub Structure complete as per Dwg & Tech Specification.	Cum	1085.27	6101.00	6,621,225.25
4	1600 & 2200	Supplying, fitting and placing HYSD bar reinforcement (Fe-500) in substructure complete as per drawings and technical specification Clauses 1002, 1005, 1010 & 1202	t	97.67	68906.00	6,730,338.18
5	2706 & 2200	Providing weepholes in brick masonry/stone masonry, plain/reinforced concrete abutment, wing wall, return wall with 100 mm dia AC pipe extending through the full width of the structures with slope of 1(V):20(H) towards drawing face complete as per drawing and technical specification Clauses 614, 709, 1204.3.7	Nos	828.00	456	377,568.00
6	2200	Backfilling behind abutment, wing wall and retaining wall complete as per drawings & technical specification Clause 1204.3.8				
		I) Sandy Material	Cum	3147.28	1241.00	3,905,772.20
7	2200	Providing and laying filter media with granular crushed aggregates as per specification to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and providing over the entire surface behind abutment, wing wall, return wall to the full height, compacted to firm condition complete as per drawing and technical specification Clause 1204.3.8	Cum	692.33	1876.00	1,298,807.33
		SUPERSTRUCTURE				
8	1500 & 1600 1700	Providing and laying reinforced cement concrete in superstructure complete as per drawing and technical specifications Clauses 800, 1205.4 and 1205.5. RCC M-20				
		RCC M20 Grade	Cum	333.16	6587	2,194,498.57
9	1600	Supplying, fitting and placing HYSD bar reinforcement (Fe 500) in superstructure complete as per drawings and technical specification Clauses 1002, 1010 & 1202	t	29.98	70576.00	2,116,153.61

10	2703, 1500, 1600 & 1700	Construction of R.C.C. railing of M 30 grade in cast-in-situ with 20 mm nominal size aggregate, true to line and grade, tolerance of vertical railing post not to exceed 1 in 500, centre-to-centre spacing between vertical posts not to exceed 2000 mm as per drawing and technical specifications Clauses 800, 900 and 1208.3	m	204.00	1854.00	378,216.00
11	2705	Drainage Spouts complete as per drawing and technical specifications Clause 1209	No	18.00	2910.00	52,380.00
12	2700	P.C.C. M-15 ordinary grade (1:2.5:5) levelling course below approach slab complete as per drawing and technical specifications Clauses 800 & 1211.	cum	0.00		0.00
13	1500, 1600, 1700 & 2704	Reinforced Cement Concrete M-30 grade approach slab including reinforcement and formwork complete as per drawing and technical specifications Clauses 800 and 1211	cum	0.00		0.00
		PROTECTION WORK				
14	1500, 1700 & 2100	P.C.C. grade M-15 in Curtain Wall complete as per Dwg & Tech Specification.	cum	46.00	5314	244,444.00
15		Gabion Wall	cum	767.40	2261.00	1,735,091.40
16	2505	Providing and laying flooring laid over cement concrete bedding complete as per drawing and technical specification Clause 1303. Rubble Stone laid in Cement Mortar 1:3	Cum	28.80	5877.00	169,257.60
		Total Cost of Bill No-5				28,038,751.83
		Total Cost in cr.				2.804

BILL NO. 6.1

Bill No-6.1
TRAFFIC SIGNS, MARKINGS

Item No.	Description		Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Refrence to Rate Analysis
					In Figures	In Figures		
6.01	Providing and fixing of retro- reflectorised cautionary, mandatory and informatory sign as per IRC :67 made of high intensity grade 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							
	A	90 cm equilateral triangle	Nos.	8.00	5815	46,520	801	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.4
	B	60 cm x 50 cm rectangular	Nos.	49.76	22208.00	1,105,180	801	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.6
	C	60 cm x 45 cm rectangular	Nos.	8.00	4968.00	39,744	801	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.4
	D	90 cm high octagon	Nos.	1.00	9224.00	9,224	801	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.4
6.02	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.		Sqm	705.60	609.00	429,710	803	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.11
6.03	Reinforced cement concrete M15grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc							
	A	Ordinary kilometer stone (precast)	Nos.	3.00	2415.00	7,245	804	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.14(ii)
	B	Hectometer stone (precast)	Nos.	8.00	674.00	5,392	804	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.14(iii)
6.04	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		Nos.	16.13	782.00	12,612	806	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.16
6.05	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		Nos.	226.67	834.00	189,046	suggestive	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.35
6.06	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 strips, fitted with 80 x 100 mm rectangular or 75 mm dia circular reflectorised panels at the top, buried or pressed into the ground and conforming toIRC-79 and the drawings.		Nos.	110.21	1055.00	116,273	805	CHAPTER-TRAFFIC SIGNS, MARKINGS & OTHER ROAD APPURTENANCE S. SR. NO.-8.15
TOTAL FOR BILL NO 6.1						1,960,947		

BILL NO. 6.2

BILL NO. 6.2
PROTECTION AND DRAINAGE WORK

Toe Wall/RRM Retaining Wall					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for Foundation	cum	1132.17	111.00	125670.32
ii)	PCC M-15 (Levelling Course)	cum	324.00	5314.00	1721736.00
iii)	RRM in substructure of Toe/Retaining Wall	cum	2034.64	4653.00	9467175.27
iv)	Filter Media	cum	549.50	1876.00	1030862.00
v)	PCC Coping	cum	110.70	5314.00	588259.80
Sub Total Cost of Toe Wall/RRM Retaining Wall					12933703.38

"W" metal beam crash barrier					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i	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, ISMB150 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	Rm	60.00	3097.00	185820.00
Sub Total Cost of "W" metal beam crash barrier					185820.00

Rock Bolts, Shotcreting aand Drainage Holes					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Rock Bolt, 32mm dia (4 m and 10 m in length)	Rm	17600.00	1380.00	24288000.00
ii)	Rock Bolt, 25mm dia (4 m and 8 m in length)	Rm	26670.00	1204.00	32110680.00
iii)	Shotcrete	cum	991.18	11785.00	11681110.22
iv)	Drainage Holes including PVC Pipe	Rm	9911.85	2785.00	27604490.42
Sub Total Cost of Rock Bolts, Shotcreting aand Drainage Holes					95684280.65

RRM Breast Wall					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i	Excavation for Foundation	cum	4272.40	111.00	474236.03
ii	PCC M-15 (Levelling Course)	cum	939.58	5314.00	4992912.81
iii	RRM in substructure of BreastWall	cum	11679.86	4653.00	54346372.63
iv	Filter Media	cum	1974.00	1876.00	3703224.00
v	Weep holes	Nos.	293.00	456.00	133608.00
vi	PCC Coping	cum	35.70	5314.00	189709.80
vii	Back filling behind walls	cum	99.00	1241.00	122859.00
Sub Total Cost of RRM Breast Wall					63962922.28

Gabion wall					
Item No.	Description				Amount in Rs.
i)	Gabion wall				
Sub Total Cost of Gabion wall					42663378.24

Road side PCC Drain					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for drain work	cum	7820.05	111.00	868025.55
ii)	PCC for drain	cum	4029.24	5314.00	21411403.98
Sub Total Cost of Road side PCC Drain					22279429.53

Catch Drain					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
i)	Excavation for Catch Drain	cum	754.20	111.00	83716.20
Sub Total Cost of Catch Drain					83716.20

TOTAL FOR BILL NO 6.2					237793250.28
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BILL NO. 6.3

<u>BILL NO. 6.3</u>					
<u>MISCELLANEOUS</u>					
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.
				In Figures	In Figures
1	Planting of trees by the road side in 0.60 m dia holes, 1 m deep dug in the ground, mixing the soil with decayed farm yard/sludge manure, planting the saplings, backfilling the trench, watering, fixing the tree guard and maintaining the plants for one year.	NO	416.00	1136.00	472576.00
2	Making tree guard 53 cm dia. And 1.3 m high as per design from empty bitumen drums including providing and fixing 2 nos. M.S. sheet rings 50 X 0.5 mm with rivets, complete in all respects.	NO	416.00	479.00	199264.00
3	Turfing with Sods (Furnishing and laying of the live sods of perennial turf forming grass on embankment slope, verges or other locations shown on the drawing or as directed by the engineer including preparation of ground, fetching of rods and watering)	Cu.m	4860.00	33.00	160380.00
TOTAL FOR BILL NO 6.3					832220.00

BILL NO. 7

BILL NO.7							
Item No.	Description	Unit	Estimated Quantity	Unit Rate in Rs.	Amount in Rs.	Ref. to MoRTH Spec.	Reference to Rate Analysis
				In Figures	In Figures		
7.01	Clearing and grubbing road land complete as per Technical Specifications Clause 201.	Ha	0.03	83750.00	2093.75	201	CHAPTER-SITE CLEARANCE, SR. NO.-2.3
7.02	Construction of embankment with approved material from borrow areas with all leads and lifts, compacting to 95% of modified proctor density, all complete as per drawings and Technical Specifications Clause 305. As per Drawing or Directed by Engineer Incharge	Cum	125.00	148.00	18500.00	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
7.03	Construction of subgrade satisfying the requirements of minimum CBR value as indicated in the specification with approved material from borrow areas, with all leads & lifts, compacting to 97% of modified proctor density, all complete as per Technical Specifications Clause 305. As per Drawing or Directed by Engineer Incharge	Cum	125.00	148.00	18500.00	305	CHAPTER-EARTH WORK, EROSION CONTROL AND DRAINAGE, SR. NO.-3.17
7.04	Providing and laying Granular Sub-base of required thickness complete as per Technical Specifications Clause 401. Grading-II (Table -400-2). As per Drawing or Directed by Engineer Incharge	Cum	50.0	1711.00	85550.00	401	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.1B
7.05	Providing and laying dense graded 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 VG-30 grade of bitumen @ 4-4.25% by weight of total mixture	Cum	18.00	8016.00	144288.00	507	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.6
7.06	Providing, laying and compacting Wet Mix Macadam (WMM) base with approved material complete as per drawing & Technical Specifications Clause 406.	Cum	31.25	2126.00	66437.50	406	CHAPTER-SUB-BASES, BASES (NON-BITUMINOUS) AND SHOULDERS, SR. NO-4.12
7.07	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	250.00	11.00	2750.00	502	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.1
7.08	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.25 kg per sqm on the prepared granular surface cleaned with mechanical broom.	Sqm	250.0	6.00	1500.00	503	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.2
7.09	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 VG-30 Grade of bitumen @ 5.4-5.6% by weight of total mixture	Cum	10.00	8971.00	89710.00	509	CHAPTER-BASES AND SURFACE COURSES (BITUMINOUS), SR. NO.-5.8
7.10	Construction of island and rotary for the improvement of major junction						
	A CC Kerb	Cum	38.40	555.00	21312.00		
	B Earth Fill	Cum	19.95	240.00	4789.03		
	C Painting CC Kerb	Sqm	15.00	89.00	1335.00		
TOTAL FOR BILL NO 7					456765.28		