SECTION-7: BILL OF QUANTITIES

BILL OF QUANTITIES

Superintending Engineer
Project Implementation Unit R&BD
Ground Floor, Nirman Bhawan
Gandhinagar (Gujarat), India
PIN-382010

BILL OF QUANTITIES

A: PREAMBLE

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions, Technical Specifications, and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and `valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.

3. The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

5. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

6. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.

7. Day work included in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Sub-Clause 13.5 and Sub-Clause 13.6 of the General Conditions.

8. The method of measurement of completed work for payment shall be in accordance with the Technical Specifications (Section 6 of Volume I).

9. Payment of items under Bill No. 9 – “Safety in Road Construction” shall be made only after taking and maintaining safety measures in accordance with IRC:SP:55:2001 “Guidelines on safety in road construction zones” to the satisfaction of the Engineer on completion of each designated section on proportionate basis.

B: ABBREVIATIONS

Abbreviation	**For**
Rs	Indian Rupees
LS or SUM	Lump Sum
Nr or No.	Number
Lm or m	Linear metre
KM or km	Kilometre
Hct or ha	Hectare
m^2	Square metre
m^3 or Cum	Cubic metre
KG or kg	Kilogram
T or MT	Tonne or Metric Tonne
HP	Horse Power
PS	Provisional Sum
IRC	Indian Roads Congress
MORTH Specification	Specifications for Road and Bridge Works (4th revision) issued by the Ministry of Roads Transport & Highways, Government of India
BIS	Bureau of India Standards
Prov.	Provisional
Eqpt. Hrs	Equipment hours
P.O.L.	Petroleum, Oil and Lubricants
Veh. Day	Vehicle Day
Cu cm – cucm	Cubic Centimetres
Mtr	Metre

C: WORK ITEMS

1. The Bill of Quantities contains the following part Bills

   - GSHP/II /NCB/05

Bill	DETAILS	Amount in Rs. (Sec.1) Umreth-Vasad road	Amount in Rs. (Sec.2) Ladvel - Kapadvanj road	Total Rs.
Bill No. 1	GENERAL ITEMS			
Bill No. 2	SITE CLEARANCE AND DISMANTLING			
Bill No. 3	EARTH WORKS			
Bill No. 4	SUB-BASE, BASES AND SURFACE COURSES (NON BITUMINOUS) AND SHOULDERS			
Bill No. 5	BASE AND SURFACE COURSES (BITUMINOUS)			
Bill No. 6	STRUCTURES			
	A – CULVERTS			
	B – BRIDGES			
	C – REPAIRS AND REHABILITATION			
	D – RETAINING WALLS			
Bill No. 7	DRAINAGE AND PROTECTION WORKS			
Bill No. 8	TRAFFIC SIGNAGE AND ROAD APPURTENANCES			
Bill No. 9	SAFETY IN ROAD CONSTRUCTION ZONE			
Bill No. 10	IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT ACTION PLAN TO BE EXECUTED UNDER CIVIL WORKS CONTRAT			
Bill No. 11	DAY WORKS			
Bill No. 12	MAINTAINANCE COST			
GRAND TOTAL				

Rs. in Word_____

2 Bidders shall price the Bill of Quantities in Indian currency only.

BOQ : (SECTION-I) Umreth – Vasad Road Km-0+000 to 19+250 (SH No-83) and Km-0+000 to 9+250 (SH No-188)

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
1			**GENERAL ITEMS**					
1.02			Supply of master CD / DVD's of important site activities with four copies complete as per Technical Specifications clause 126	Set	16			
1.03			Construction of temporary diversion for passage of traffic, complete as per Technical Specifications Section Clause 112.3. (separate items are given for CD/ bridge work diversions)	Lm	2000			
			Total General Items carried to Grand Summary					
2			**SITE CLEARANCE AND DISMANTLING**					
2.01			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 complete as per technical specification clause 201 or as directed by the Engineer.	ha	22			
2.02			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, disposal of unserviceable as well serviceable material with all leads and lifts beyond the ROW complete as per technical specification clause 202.					
	a)		Plain cement concrete	Cum	20			
	b)		Reinforced cement concrete	Cum	20			
	c)		Stone / Brick masonry structures	Cum	20			
	d)		Guide/Hand rails / Fencing / kerb / NP3 Pipes / NP4 Pipes	Lm	100			
	e)		Kilometre stone	Nr	21			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	f)		5 km stone	Nr	6			
	g)		Hectometre / Boundary stones	Nr	110			
	h)		Utilities	Nr	15			
	i)		Bituminous Pavement	Cum	20085			
	j)		Non- Bituminous Pavement	Cum	58954			
2.03			Cutting of trees from 300mm and above girth size, the work shall consist of cutting of all such trees as per the direction of the Engineer and further as per duly approved plan by the Forest Department. This shall include duly approved stacking, transport and final handing over to Forest Department with all leads and lifts. Work to comply strictly in accordance with Technical Specifications Clause 201.					
	a)		above 300mm to 600mm girth	Nr	37			
	b)		above 600mm to 900mm girth	Nr	139			
	c)		above 900mm to 1800mm girth	Nr	277			
	d)		above 1800m	Nr	9			
2.04			Removal of tree stumps and roots, disposal and filling of pits complete as per Technical Specifications Clause 201. The work shall follow the directions of the Engineer and further approval of plan by the Forest Department, where necessary. This shall include all leads and lifts.					
	a)		above 300mm to 600mm girth	Nr	37			
	b)		above 600mm to 900mm girth	Nr	139			
	c)		above 900mm to 1800mm girth	Nr	277			
	d)		above 1800mm	Nr	9			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
			Total Site Clearance and Dismantling carried to Grand Summary					
3			**EARTH WORKS**					
3.01			Roadway excavation necessary for construction of roadway 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 leads and lifts upto 1000 m complete as per technical specification clause 301 and 305.					
	b)		Ordinary soil / Hard soil	Cum	140827			
	e)		Loosening and re-compacting the original ground/ sub-grade up to the required depths as directed by the Engineer and as per Technical Specifications Clause 301 & 305	Cum	5250			
3.02			Construction of embankment with approved material obtained from borrow area with all lifts and leads, transporting to site, spreading, grading to required slope and compacting complete as per drawings and technical specification clause 305.	Cum	5745			
3.03			Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted complete as per drawings and technical specification clause 305.	Cum	7268			
3.04			Construction of subgrade and Earthen shoulder with approved material obtained from borrow area with all lifts & leads, transporting to site, spreading, grading to required slope and compacted complete as per drawings and technical specification clause 305.	Cum	223011			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
3.05			Construction of subgrade and Earthen Shoulder with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted complete as per drawings and technical specification clause 305.	Cum	19225			
3.08			Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted complete as per drawings and technical specification clause 407.	Cum	4602			
			Total Earth Works carried to Grand Summary					
4			**SUB-BASE, BASE COURSES (NON-BITUMINOUS) AND SHOULDERS**					
4.01			Constructing Hard shoulder with Naturally obtained Granular sub-base (GSB) complete as per drawings and Technical Specification Clause 401 (Grading I, Table 400-1)	Cum	34163			
4.02			Construction of granular sub-base with crushed stone aggregated only, by mixing material 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 technical specification clause 401					
	a)		As per Table 400-1, Close-Graded Grading I	Cum	49964			
	b)		As per Table 400-2, Coarse- Graded Grading I	Cum	48693			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
4.03			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 complete as per drawing and technical specification clause 406.					
	a)		Mechanically laid base (Spread by motor grader) including profile corrective course and access roads if applicable	Cum	30378			
	b)		Mechanically laid base (laid by Electronic Sensor Paver)	Cum	54123			
			Total Sub-Base, Base Courses (Non-Bituminous) and Shoulders carried to Grand Summary					
5			**BASE AND SURFACE COURSES (BITUMINOUS)**					
5.01			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 complete as per drawings and technical specification clause 502.	Sqm	308574			
5.02			Providing surface dressing with aggregate using Bitumen over primed water bound macadam/ wet mix macadam complete as per Technical Specifications Clause 510					
	b)		Second Coat Surface Dressing	Sqm	14000			
5.03			Providing and applying tack coat with bitumen complete as per drawings and technical specification clause 503.					
	a)		@ 2.0 to 2.5 kg/10m2 on bituminous surface	Sqm	568815			
	b)		@ 2.5 to 3.0 kg/10m2 on granular surface treated with primer/hungry bituminous surface.	Sqm	310284			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
5.06			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 as per the approved mixed design, 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 complete as per drawings and technical specification clause 507.	Cum	37885			
5.07			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 as per approved mixed design, 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 complete as per drawings and technical specification clause 509.	Cum	13119			
5.09			Variation of quantity of VG 30 grade bitumen in bituminous courses as per Technical Specification Clause 507.9 and 509.9	MT	373			
5.10			Variation of quantity of rapid emulsion in Tack coat as per Technical Specification Clause 503.					
		a)	0.5 kg extra for normal bituminous surface	MT	28			
		b)	0.5 kg extra for Granular Surface	MT	16			
5.11			Variation of quantity of slow emulsion for prime coat as per Technical Specification clause 502.	MT	23			
			Total Base and Surface Courses (Bituminous) carried to Grand Summary					
6			**STRUCTURES**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A			**CULVERTS:**					
6A01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawings and Technical Specifications Clause 112.3,	Lm	700			
6A02			Excavation of foundation for culverts including preparation of foundation bed complete as per drawing and Technical Specifications Clause 304 in the following strata					
	a)		Ordinary soil / Hard soil	Cum	906			
	b)		Ordinary rock / Soft rock	Cum	323			
	c)		Hard Rock (Blasting Prohibited)	Cum	65			
6A03			Providing and laying granular material for pipe bedding of Hume Pipe culverts and replacement of soft and loose patches in the bearing area of the Box structure with layers not exceeding 300 mm as per drawing and Technical Specifications Clause 2904	Cum	152			
6A04			Plain cement concrete in levelling course in open foundation, concrete pipe bedding and apron complete as per drawing and Technical Specifications Section 1500 and 1700					
	a)		M15 grade	Cum	96			
6A05			Structural concrete, for foundation slab, walls, deck slab, wing walls (single/Multiple), complete as per drawings and Technical Specifications section 1500 and 1700					
	c)		M30 grade	Cum	253			
6A06			Plain cement concrete M20 grade in Wing wall complete as per drawing and Technical Specifications Section 1500 and 1700	Cum	163			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A08			Providing and laying concrete M-15 in levelling course below approach slab as per section 1700 of Technical specifications.	Cum	46			
6A09			Structural concrete M-30 in approach slab as per section 1700 and 2700 of Technical specifications	Cum	92			
6A10			Providing and fixing in position Thermo mechanically treated (TMT) Fe-500 grade reinforcement bars as per drawings and Technical Specification Section 1000 and 1600.					
	a)		Foundation	MT	9			
	b)		Substructure	MT	4			
	c)		Superstructure	MT	7			
6A13			Providing and fixing filler type expansion joint with 2mm thick copper plate, 20mm thick compressible fibre board, 20mm thick premoulded joint filler in expansion joint and filling joint sealant compound complete as per drawings and Technical specification section 2600.	Lm	58			
6A14			Back filling behind abutments, wing walls and return walls with selected granular material of approved quality complete as per drawing and Technical Specifications Clause 305	Cum	55			
6A15			Filter material behind abutment, wing walls and return walls complete as per drawing and Technical Specifications Clause 305	Cum	131			
6A16			Providing. laying and jointing RCC. NP-4 Hume Pipes for culverts or equivalent pipes under IS:458-1988, approved by the Engineer complete as per Technical Specifications section 2900					
	b)		Diameter 900mm	Lm	90			
	d)		Diameter 1200mm	Lm	101			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A17			Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	273			
6A18			Painting of culvert reference number complete as per Technical Specifications section 800 or as directed by the Engineer.	Sqm	16			
6A20			Providing 25 mm thick mastic asphalt over the top of the deck after applying prime coat underneath wearing course complete as per Technical Specifications Clause 2702, 503 and 515 (Cost of Prime Coat Included)	Sqm	518			
6A21			Providing 40 mm thick Bituminous concrete in one layer in wearing course complete as directed by the Engineer and as per Technical Specifications Clause 2702/509 (Cost of Tack Coat Included)	Cum	23			
6A23			Filter media beneath the pitching/revetment on slopes for protection of embankment as per drawings and Technical Specifications clause 2504 and as directed by the Engineer	Cum	34			
6A24			Pitching/revetment on slopes with Cement Concrete blocks in M15 grade conforming to Section 1700 complete as per drawings Technical Specifications 2504 and as directed by the Engineer.	Cum	68			
6A25			Providing weep holes in brick masonry / plain / reinforced concrete abutments, wing walls / return walls etc. with 100mm dia A.C. pipe, extending through the full width of structure with slope of IV:20H towards draining face including porous concrete blocks complete as per drawing and Technical Specifications clause 2706.	Nr	86			
6A27			750 thick flexible stone apron as per Clause No. 2503.1 of Technical Specification and as directed by the Engineer	Cum	236			
6A28			Curtain wall of M15 grade Plain Cement Concrete complete as per drawings and Technical Specifications section 1500 & 1700 or as directed by the Engineer	Cum	76			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A29			Construction and fixing of PCC Pillar with M15 grade of concrete of size 400 x 400 x 1000 mm for inscribing Structure Number as per drawing and Technical Specification section 1500, 1700 or as directed by the Engineer	Nr	29			
6A30			Providing cement concrete crash barrier in M-40 grade including safety kerb, reinforcement and G.I. pipe complete as per drawing and Technical Specifications sections 1500, 1600, 1700, 2200 & clause 809.	Lm	19			
			Total Culverts carried to Grand Summary					
6B			**BRIDGES**					
6B01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawing and Technical Specifications Clause 112.3, including temporary cross drainage	Lm	100			
			Foundation					
6B03			Earthwork in excavation of foundations for structures including all leads and lifts complete as per drawings and Technical specifications clause 304.					
	a)		In all types of soil	Cum	508			
	b)		In soft/ordinary rock	Cum	181			
	c)		In hard rock (Blasting Prohibited)	Cum	36			
6B04			Plain cement concrete garde M15 in foundation and fill around foundation to protect from erosion complete as per drawing and Technical Specifications Section 1500 and 1700	Cum	102			
6B05			Providing & laying Plain cement concrete levelling course in foundation and fill around foundation to protect from erosion including form work but excluding the cost of reinforcement complete as per drawing and Technical Specifications sections 1500, 1700 and 2100.					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	b)		M-20 grade	Cum	92			
6B06			Providing & laying Reinforced Cement Concrete in foundations including form work but excluding the cost of reinforcement complete as per drawing and Technical Specifications sections 1500, 1700 and 2100.					
	b)		M-30 grade	Cum	141			
6B17			Supplying, placing and fixing TMT Fe 500 bar reinforcement complete as per drg. and Technical specifications section 1600.					
	a)		For Foundation	MT	12			
	b)		For sub-structure	MT	12			
	c)		For super-structure	MT	5			
			Sub-Structure					
6B19			Providing & laying Reinforced Cement Concrete in sub-structure including form work but excluding the cost of reinforcement complete as per drg. and Technical specifications sections 1500, 1700 & 2200.					
	c)		M-30 grade	Cum	148			
			Bearing					
6B20			Supply & fixing of bearings complete as per drg. and Technical specifications section 2000.					
	a)		Tar paper bearing	Sqm	23			
6B22			Providing & fixing of expansion joints complete as per drg. and Technical specifications section 2600					
	a)		Providing and fixing filler type expansion joint with 2mm thick copper plate, 20mm thick compressible fiber board, 20mm thick premoulded joint filler in expansion joint and filling joint sealant compound complete as per drawings and Technical specification section 2600.	Lm	65			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
			Super Structure					
6B23			Providing & laying Reinforced Cement Concrete in super-structure including form work but excluding the cost of reinforcement complete as per drg. and Technical specifications sections 1500, 1700 & 2300.					
	a)		Solid slab					
		ii)	M-30 grade	Cum	67			
6B26			Providing 25 mm thick mastic asphalt over the top of the deck after applying prime coat underneath wearing course complete as per Technical Specifications Clause 2702, 503 and 515 (Cost of Prime Coat Included)	Sqm	451			
6B27			Providing 40 mm thick Bituminous concrete in one layer in wearing course complete as directed by the Engineer and as per Technical Specifications Clause 2702/509 (Cost of Tack Coat Included)	Cum	23			
6B29			Providing cement concrete crash barrier in M-40 grade including safety kerb, reinforcement and G.I. pipe complete as per drawing & Technical Specifications sections 1500, 1600, 1700, 2200 & clause 809.	Lm	56			
			Misc. Items					
6B30			Providing weep holes in brick masonry / plain / reinforced concrete abutments, wing walls / return walls etc. with 100mm dia A.C. pipe, extending through the full width of structure with slope of IV:20H towards draining face including porous concrete blocks complete as per drawing and Technical Specifications clause 2706.	Nr	56			
6B31			Providing & fixing drainage Spouts complete as per drawing and Technical Specifications Clause 2705.	Nr	6			
6B32			Back filling behind abutment with selected granular material of approved quality as per Technical Specifications Clause 305	Cum	108			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6B33			Filter media behind abutments, wing walls, & return walls, including all material, labour, equipment carriage etc. all complete as per drawing and Technical Specification Clauses 305, 309 & 2504.	Cum	76			
6B35			Providing & laying reinforced cement concrete M-30 grade in approach slab including form work and reinforcement complete as per drg. and Technical specifications sections 1500, 1600, 1700 & 2100 and clause 2704.	Cum	48			
6B40			Painting of Bridge No. and span arrangement as per drg., IRC:7-1971 and Technical specifications section 800.	Nr	2			
6B46			Plain cement concrete M-15 grade for curtain wall including centering and shuttering complete as per drawing and technical specification section 1500, 1700,.	Cum	76			
6B47			Flexible Stone boulder apron 750 mm thick complete as per drawing and Technical Specifications, Clause 2507.	Cum	141			
			Total Bridges carried to Grand Summary					
6C			**REPAIR & REHABILITATION**					
6C01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawings and Technical Specifications Section Clause 112.3, including temporary cross drainage	Lm	230			
6C02			Dismantle of various items of structures complete as per Technical specification clause 202 or as directed by the Engineer.					
			a) Reinforced Cement Concrete	Cum	1218			
			d) Existing Wearing coat	sqm	823			
			e) Stoen/Brick masonary	Cum	188			
			g) NP4 Pipe	Lm	103			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6C17			Replacement of drainage spout wherever broken including necessary gratings and drainage assembly complete as per drawing and Technical Specification clause 2705 as directed by the Engineer	Nr	24			
6C19			Cleaning and removal of vegetation growth from structures channel and protective works complete as per Techincal specification clause 202 or as directed by the Engineer.	Sqm	2473			
6C20			Replacement of RCC railing including reinforcement as per Technical Specifications Section 1500, 1600, 1700, 2200, 2815 and Clause 2703.					
	a)		Railing in M30 grade	Lm	71			
6C33			Repair of Railings of Existing Bridges by Cement Mortar1:3 Plastering all complete per Technical Specifications section 1300.	Sqm	6			
6C38			Providing & laying Brick masonry in cement mortar 1:3 (1 cement : 3 coarse sand) in floor protection, foundation, sub-structure complete as per drg. and Technical Specification Section 1300.	Cum	1			
6C39			Providing & laying random rubble stone masonry in cement mortar 1:3 (1 cement : 3 coarse sand) works complete as per drg. and Technical Specifications Section 1400.	Cum	2			
6C44			Repair of spalling and patches by PMC mortar 50 to 70mm thick at soffit of slab as per clause 2804 of specification and additional specification A-3 and as directed by the Engineer	Sqm	15			
6C45			Repair of Honey combing at RCC or PSC girder bottom as directed by the Engineer and as per Additional specification clause A-5	Cum	20			
6C57			Cement plaster 12mm thick in cement mortar 1:3 complete as per drawing and Technical Specifications Section 1000 and 1300 and as directed by the Engineer	Sqm	405			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6C58			Cement pointing with cement mortar 1:3 on brick/stone work complete as per drawings and Technical Specifications section 1000 and 1300	Sqm	590			
6C59			Removal of accumulated debris in Pipe Culverts complete as per Technical Specification clause 202.	Lm	140			
			Total Repair & Rehabilitation carried to Grand Summary					
7			**DRAINAGE AND PROTECTION WORK**					
7.01			Earthwork in excavation in all types of soil including rock complete as per Technical Specification Clauses 304 & 309.	Cum	1242			
7.02			Plain Cement concrete M-15 grade in levelling course in drain including centering and shuttering all complete as per drawing and Technical Specification Sections 309, 1500 & 1700.	Cum	53			
7.03			Construction of open unlined drains as per proper slope and dimension as shown in drawing and technical specification clause 309.	Lm	49842			
7.06			Construction of covered lined drains of concrete grade M 20 including cover slab and reinforcement as per proper slope and dimension as shown in drawing and technical specification clause 309.	Lm	4858			
7.07			Construction of chute drain in cement concrete M-15 with M-15 foundation concrete including construction of bell mouth at entry as per drawings and Technical Specification Sections 309, 1500 and 1700.	Lm	2426			
7.08			Construction of energy dissipation basin in M-15 as per drawing and Technical Specification Sections 309, 1500 & 1700.	Nr	909			
7.10			Providing. laying and jointing RCC. NP-4 hume pipes under IS:458-1988, Hume Pipes to discharge storm water from catch basins as per drawings and complete as per Technical Specifications section 2900					
		a)	450 mm diameter	Lm	150			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
		b)	900 mm diameter	Lm	426			
7.11			Providing and laying granular material for pipe bedding of Hume Pipe culverts and replacement of soft and loose patches in the bearing area of the Box structure with layers not exceeding 300 mm as per drawing and Technical Specifications Clause 2904	Cum	296			
7.12			Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	477			
7.13			Providing and laying interlocking paver blocks of high density 65 mm thick M-25 grade in pedestrian pathway and in Island of major intersections areas as shown in the drawing, close jointed over bed of 50mm thick river sand to a tight pattern, laid to proper line and level including bedding down the completed surface with a plate vibrator or by firmly topping level with mallet and a large flat piece of timber, finishing by brushing clean dry sand over the surface to fill all the joints thoroughly and as per Additional Technical Specification A 15 or as directed by the Engineer.	sqm	2160			
7.15			Providing and laying Grade M15 Concrete perforated erosion protection scour blocks laid on the slopes and bed of the river including the rebar, trimming of earth to required lines and levels, including capping with concrete on the tops of slopes as per drawings and Specifications	cum	169			
7.16			Providing and laying plain cement concrete in medians and in sidewalks, foundations complete as per respective drawings, Technical Specifications section 1500 and 1700 and as directed by the Engineer					
	b)		Construction of median kerb and island kerb Type B grade M20 (including base preparation, foundation and haunch concrete)	Lm	11283			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
7.18			Pitching/revetment on slopes with Cement Concrete blocks in M15 grade conforming to Section 1700 complete as per drawings, technical Specifications 2504 and as directed by the Engineer	Cum	5935			
7.21			Filter media beneath the pitching/revetment on slopes for protection of embankment as per drawings and Technical Specifications clause 2504 and as directed by the Engineer					
	b)		Granular Material	Cum	8798			
7.23			Providing and fixing of man hole including excavation, concrete, C.I. Cover, C.I. Steps complete as per drawing and Techinical Specifications sections 300, 1500, 1600, 1700 and manufacture specification approved by the Engineer.	Nr	7			
			Total Drainage and Protection Work rates carried to Grand Summary					
8			**TRAFFIC SIGNAGE AND ROAD APPURTENANCES**					
8.01			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	Lm	10024			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.02			Providing and fixing of retro-reflectorised cautionary, mandatory and informatory sign made of 1.5mm thick Aluminium Sheet/3mm Aluminium Composite Material , face to be fully covered with Class B Type-IV High Intensity Micro Prismatic Grade Sheeting as defined in IRC: 67-2010 having approved massages e.g. letter, numerals,symbols/legend/arrow etc. in Regional and/or Hindi and /or English as per drawing and TechicalSpecifications for Road and Bridge works (Fourth Revision). The sign plate will be fixed with minimum 6 mm dia aluminium rivets back supported on a mild steel angle iron frame 35x35x5 mm and one vertical Mild Steel post of NB65 Dia Pipe (height from crown level of the road and bottom of the sign board shall not be less than 2.10 m.) 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 including painting of vertical post as per specification.					
	a)		**Informatory Signs**					
		i)	Facility information 800 mm x 600 mm complete as per drawings and Technical Specifications Clause 801	Nr	82			
		ii)	Advance direction sign complete as per drawings and Technical Specifications Clause 801	Sq m	306			
		iii)	Route marker sign 450mm x 600 mm complete as per drawings and Technical Specifications Clause 801	Nr	119			
		iv)	Direction sign less than 0.9 sqm of area complete as per drawings and Techinical Specification clause 801.	Sq m	19			
	b)		**Cautionary Signs**					
		i)	Triangular 900 mm side complete as per drawings and Technical Specifications Clause 801	Nr	356			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
		ii)	Hazard marker 180 x 1200 mm complete as per drawings and Technical Specifications Clause 801	Nr	11			
		iii)	Hazard marker 300 x 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	11			
		iv)	900mm circular sign complete as per drawings and Technical Specification clause 801	Nr	6			
	c)		**Mandatory Signs**					
		i)	Triangular 900 mm side (for "GIVE WAY" sign) complete as per drawings and Technical Specifications Clause 801	Nr	25			
		ii)	Stop sign - Octagon of size 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	111			
		iii)	Speed limit compulsory keep left 600 mm dia meter complete as per drawings and Technical Specifications Clause 801	Nr	34			
8.03			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 complete as per drawings and technical specification clause 803.					
	a)		Lane/centerline/edge marking or any other marking	Sqm	12088			
	b)		Directional arrows, lettering etc					
		i)	Straight (nr) RM13	Nr	482			
		ii)	Left/right (nr) RM14 & 15	Nr	365			
		iii)	Comb (nr) RM 16& 17	Nr	81			
		iv	Lettering	Nr	36			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
		)						
		v)	Chevron Marking	Sqm	491			
		vi)	Diagonal Marking	Sqm	27			
		vii)	Pedestrian Crossing	Sqm	1698			
8.04			Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc complete as per drawings and technical specification clause 804.					
	a)		Hectometer Stone	Nr	128			
	b)		Kilometer Stone	Nr	24			
	c)		5th kilometer stone	Nr	7			
8.05			Supplying and fixing of boundary stones of M15 grade concrete complete as per drawing and Technical Specifications clause 806	Nr	230			
8.06			Providing and fixing retro-reflectorised road delineators complete as per drawing and Technical Specification Clause 805.					
	a)		Cluster of Red Reflectors.	Nr	57			
	b)		Road way delineators.	Nr	938			
8.08			Supply and install single guide rails (crash barriers) as approved by the Engineer as per drawings and Additional Specifications A-12	Lm	2480			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.09			Providing and fixing Raised Pavement Marker (Cats Eye, Road Stud), made of high strength engineering Plastic Body having at least 13 tons load bearing capacity of pnumatic tyre. Size or marker 9 cms x 10 cms x 1.6 cm having shape so that no water penetration or dust accumulation takes place on reflective surface, fitted with electronically welded tough polycarbonate micro prismatic reflective panels having 16 sq.cms surface area of each side having long distance visibility at night and in wet weather condition. The body of the marker having finger grip for easy and accurate placement fitted with two number polymer shanks to anchor the marker with the road for avoiding dislocation of the marker where the road is bleeding or made with softer grade of bitumen and application with adhesive on Bituminous road complete as per Additional Technical Specification Clause A-16	Nr	6135			
8.10			Solar Powered Traffic Blinkers LED based 300 mm/200 mm dia signal head with In built blinker unit haivng battery & battery charger unit with photo electric switch complete as per technical specification clause 112 and as directed by the Engineer.	Nr	37			
8.11			Construction of bus shelters for commuters including all building and furnishing works, etc. complete as per drawings and additional Technical Specifications A-17 or as directed by the Engineer.	Nr	14			
8.13			Providing and fixing of liter bins complete as per Manufacturer drawing and specification and approved by the Engineer.	Nr	12			
8.20			Plantation of shrubs in central median including planting with manure, gardening and maintenance complete as per Technical Specifications Clause 308.	Nr	25			
8.25			Providing and Construction of Rain water Harvesting complete as per drawings and Technical Specification section 300, 1300, 1500, 1700 or as directed by the Engineer.	Nr	54			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.26			Providing and construction of Raised Pedesterian Crossing across the road of 150 mm height and width of 2.5 m with M25 grade concrete considering side slope in 1:10. 100mm dia steel bollard to be fixed on sides. The surface to be painted with brick red colour complete as per drawings and Additional Technical Specification clause A15 or as directed by the Engineer.	sqm	703			
8.27			Providing and laying Tactile Block of yellow colour conforming to IS 13801:1993 (Reaffirmed 1998) of size 250 x 250 x 65 mm on pedestrian pathway as shown in drawing and directed by Eng in charge. The tile should be subjected to a pressure of not less than 14N/sqmm. Sample must be approved complete as per Additional Technical Specification A15	sqm	315			
8.28			Providing and Construction of speed hump across the road of 100mm height with width of 3.7m and raidus of 17m complete as per drawings and Additional Technical Specification clause A15 or as directed by the Engineer.	Lin. m	33			
8.29			Providing and Construction of raised Rumble strip complete as per drawings and technical specifications section 500 and 800 or as directed by the Engineer.	Lin. m	5294			
8.30			Providing and fixing Aluminum backed flexible prismatic sheeting , consisting of yellow/black colored flexible prismatic sheet with non-mettalic prismatic lens as retro reflective elements and confirming to ASTM D4946 Type VI specifications for reboundable retro reflective sheeting. The prismatic sheet shall be laminated at the back with 50micron aluminum Foil sensitive adhesive and liner with screen printed arrow/slant pattern in yellow/black color. The AFP shall be applied with adhesive , the edge of the sheeting shall be sealed all around with epoxy based structural adhesive and shall be extremely resistant to pill-off complete as per manufacturer drawings approved by the Engineer.	sqm	16			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.31			Providing and applying Geru paint of approved brand on Trees withing ROW complete as per drawings and Technical Specification section 800 or as directed by the Engineer	Nr.	667			
8.32			Providing and Constructing Welcome Sign at Start and End of Project corridor complete as drawings and Technical Specification 300, 800, 1500, 1600 and 1700 or as directed by the Engineer.	Nr.	2			
8.33			**Street Lighting in urban areas**					
	xx ix)		Solar Street Light					
		a)	Supplying and erecting MNES certified SOLAR STREET LIGHT fitting made from M.S. Body powder coated / painted with corrosion resistant paint with gasket & transparent cover with following CFL non retro lamp with choke, holder & accessories. Fitting shall be mounted on 75/80 mm B class G.I. pipe pole up to 5.5 mtr load complete erected with C.C. Foundation duly painted with two coats of red oxide and corrosive resistant paint. Complete with tubular battery, inverter, charge controller with photo sensor switch & necessary wiring complete erected connected & commissioned in approved manner.					
			b) 2 x 11 W CFL (Single luminaire with 2 CFL) PV Module:120 W Battery Capacity 12V, 100 AH	Ea.	68			
			c) 2 x 11 W CFL (Double Luminaire with One CFL each), PV Module : 120W Battery Capacity : 12V, 100 AH	Ea.	120			
		b)	Supplying & erecting Solar Home light system with structure as per MNES specification consisting of following non retrofit CFL fitting complete with following CFL lamps & battery capacity dully connected with built in inverter & commissioned as per directed with necessary wiring & fittings.					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
			(b) Two No CFL 11 watt non retrofit ceiling / wall mounting features with battery capacity 12 watt, 40 AH	Ea.	188			
			Total Traffic Signage and Road Appurtenances carried to Grand Summary					
9			SAFETY IN ROAD CONSTRUCTION ZONE					
9.01			Supplying and fixing sign boards including the cost of posts, fixtures, foundation, fitting and fixing. Sheeting will be made of encapsulated lens type of Retro-reflective type and messages/ borders will be screen printed complete as per Technical Specification clause 801 and as directed by Engineer.					
	a)		Speed Limit sign (600mm dia)	Nr	10			
	b)		Overtaking Prohibited (900 mm dia)	Nr	10			
	c)		Diversion Board (450mm x 600mm)	Nr	30			
	d)		Men at Work Sign (900mm triangular)	Nr	20			
	e)		Direction Sign (Right / Left) (600 mm Circular)	Nr	10			
9.02			Providing of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene(LDPE) material with a square base of 390x390x35mm and a height of 770mm, 4Kg in weight, placed at 1.5m interval, all as per BS 873 including cost of all materials, labour, loading, unloading, lead, lift, transporting etc complete Technical Specification section & IRC SP 55-2001.	Nr	1480			
9.03			Installation of a steel portable barricade with horizontal rail 300mm wide,2.5m in length fitted on a frame made with 45X45X5 mm angle iron section, 1.5m in height, horizontal rail painted(2coat) with yellow and white strips,150mm in width at angle of 45degree, A frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001 including cost of all materials, labour, loading, unloading, lead, lift, transporting etc complete as per drawings or as directed by the Engineer.	Nr	1480			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
9.04			Solar Street Light					
	i)		Supplying and erecting MNES certified SOLAR STREET LIGHT fitting made from M.S. Body powder coated / painted with corrosion resistant paint with gasket & transparent cover with following CFL non retro lamp with choke, holder & accessories. Fitting shall be mounted on 75/80 mm B class G.I. pipe pole up to 5.5 mtr load complete erected with C.C. Foundation duly painted with two coats of red oxide and corrosive resistant paint. Complete with tubular battery, inverter, charge controller with photo sensor switch & necessary wiring complete erected connected & commissioned in approved manner.					
			a) 1 x 11 w CFL PV Module : 74 W Battery Capacity : 12V, 75 AH	Ea.	40			
	ii)		Supplying & erecting Solar Home light system with structure as per MNES specification consisting of following non retrofit CFL fitting complete with following CFL lamps & battery capacity dully connected with built in inverter & commissioned as per directed with necessary wiring & fittings.					
			(a) One No CFL 11 watt non retrofit ceiling / wall mounting features with battery capacity 12 watt, 20 AH	Ea.	40			
9.05			Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of450, complete as per IRC:SP:55-2001	Nr.	6			
			Total of Safety in Road Construction Zone carried to Grand Summary					
10			**Implementation of Environmental Management Plan to be executed under Civil Works Contract**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
10.03			Periodic air quality monitoring during construction stage at construction camp sites, bitumen hot mix plants, crusher plants (if specifically established for Project), at major settlement areas along project road. The parameters to be monitored are SPM, RPM, SO2, NOx and CO, Lead. Each monitoring schedule shall be over a duration of 24 hours (in 8 hour shifts) for three seasons per year. (as per the Environmental monitoring plan refered in the EMP)					
		a)	Construction Phase	Nr	30			
		b)	Operation Phase	Nr	12			
10.04			Water quality monitoring during construction phase at locations . The sampling shall be carried out for three seasons per year and cover all parameters as per IS10500 including heavy metals . (as per the Environmental monitoring plan refered in the EMP).					
		a)	Construction Phase	Nr	24			
10.05			Noise quality monitoring at specified silent receptors along Project Road, at construction camp sites, bitumen hot mix plants, crusher plants(if specifically established for Project), and at major settlement areas along project road. – Each monitoring schedule shall be over a duration of 12hours (6Am to 6PM) for three seasons per year. (as per the Environmental monitoring plan refered in the EMP)The monitoring shall be carried out in accordance with CPCB norms at locations given .					
		a)	Construction Phase	Nr	30			
		b)	Operation Phase	Nr	12			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
10.06			Soil quality monitoring at construction camp sites, work shop areas, oil/lubricant handling areas, bitumen hot mix plants, at all parking lay byes, vehicle servicing stations along Project Road. Parameters shall include N, P, oil and grease, heavy metals, C/N ratio, pH, organic matter to be monitored for three seasons per year.(as per the Environmental monitoring plan refered in the EMP)					
		a)	Construction Phase	Nr	6			
10.09			Enhancement of Cultural Properties (bill no 10.18)					
		a)	Public Well @ 0+500	Nr	1			
		b)	Graveyard @ 14+800	Nr	1			
		c)	Methiolik Church @ 15+100	Nr	1			
10.12			HIV/ AIDS Prevention measures					
		a)	IEC materials - printing, publishing	Nr	24			
		b)	Healthcare clinic	Nr	8			
		c)	Condom vending machines	Nr	3			
		d)	condom supplies	Nr	24			
		e)	Testing	Nr	500			
		f)	Signages and hoardings	Nr	15			
			Total Implementation of Environmental Management Plan to be executed under Civil Works Contract carried to Grand Summary					
11			**DAY WORKS**					
11.01			Providing labour at site supplied with all necessary hand tools inclusive of all costs, overheads and profit margin complete as directed by the Engineer	As per details in Schedule "A"	1			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
11.02			Providing equipment at site with operators, P.O.L. etc. complete in good working condition including all types of maintenance during contract period	As per details in Schedule "B"	1			
11.03			Providing material at site inclusive of all costs, overheads and profit margin complete as directed by the Engineer	As per details in Schedule "C"	1			
			Total Day work rates carried to Grand Summary					
12			**MAINTENANCE**					
12.01			Maintenance of project road for first year of maintenance period after Defect Liability Period as directed by the Engineers	per km	28			
12.02			Maintenances of project road for 2nd year of maintenance period after Defect Liability Period as directed by the Engineers	per km	28			
			Total for maintenance cost					

BOQ (SECTION 2) : LADVEL – KAPADVANJ ROAD SH.NO.151 KM.19+145 TO 32+600

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
1			**GENERAL ITEMS**					
1.02			Supply of CD / DVD's of important site activities with four copies complete as per Technical Specifications clause 126	Set	7			
1.03			Construction of temporary diversion for passage of traffic, complete as per Technical Specifications Section Clause 112.3. (separate items are given for CD/ bridge work diversions)	Lm	1000			
			Total General Items carried to Grand Summary					
2			**SITE CLEARANCE AND DISMANTLING**					
2.01			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 complete as per technical specification clause 201 or as directed by the Engineer.	ha	21			
2.02			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, disposal of unserviceable as well serviceable material with all leads and lifts beyond the ROW complete as per technical specification clause 202.					
	a)		Plain cement concrete	Cum	10			
	b)		Reinforced cement concrete	Cum	10			
	c)		Stone / Brick masonry structures	Cum	10			
	d)		Guide/Hand rails / Fencing / kerb / NP3 Pipes / NP4 Pipes	Lm	50			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	e)		Kilometre stone	Nr	10			
	f)		5 km stone	Nr	3			
	g)		Hectometre / Boundary stones	Nr	52			
	h)		Utilities	Nr	10			
	i)		Bituminous Pavement	Cum	13633			
	j)		Non- Bituminous Pavement	Cum	27267			
2.03			Cutting of trees from 300mm and above girth size, the work shall consist of cutting of all such trees as per the direction of the Engineer and further as per duly approved plan by the Forest Department. This shall include duly approved stacking, transport and final handing over to Forest Department with all leads and lifts. Work to comply strictly in accordance with Technical Specifications Clause 201.					
	a)		above 300mm to 600mm girth	Nr	25			
	b)		above 600mm to 900mm girth	Nr	94			
	c)		above 900mm to 1800mm girth	Nr	187			
	d)		above 1800m	Nr	6			
2.04			Removal of tree stumps and roots, disposal and filling of pits complete as per Technical Specifications Clause 201. The work shall follow the directions of the Engineer and further approval of plan by the Forest Department, where necessary. This shall include all leads and lifts.					
	a)		above 300mm to 600mm girth	Nr	25			
	b)		above 600mm to 900mm girth	Nr	94			
	c)		above 900mm to 1800mm girth	Nr	187			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	d)		above 1800mm	Nr	6			
			Total Site Clearance and Dismantling carried to Grand Summary					
3			**EARTH WORKS**					
3.01			Roadway excavation necessary for construction of roadway 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 leads and lifts upto 1000 m complete as per technical specification clause 301 and 305.					
	b)		Ordinary soil / Hard soil	Cum	137356			
	e)		Loosening and re-compacting the original ground/ sub-grade up to the required depths as directed by the Engineer and as per Technical Specifications Clause 301 & 305	Cum	1750			
3.02			Construction of embankment with approved material obtained from borrow area with all lifts and leads, transporting to site, spreading, grading to required slope and compacting complete as per drawings and technical specification clause 305.	Cum	7823			
3.03			Construction of embankment with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted complete as per drawings and technical specification clause 305.	Cum	13659			
3.04			Construction of subgrade and Earthen shoulder with approved material obtained from borrow area with all lifts & leads, transporting to site, spreading, grading to required slope and compacted complete as per drawings and technical specification clause 305.	Cum	89080			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
3.05			Construction of subgrade and Earthen Shoulder with approved materials deposited at site from roadway cutting and excavation from drain and foundation of other structures graded and compacted complete as per drawings and technical specification clause 305.	Cum	13518			
3.08			Construction of Median and Island above road level with approved material deposited at site from roadway cutting and excavation for drain and foundation of other structures, spread, graded and compacted complete as per drawings and technical specification clause 407.	Cum	384			
			Total Earth Works carried to Grand Summary					
4			**SUB-BASE, BASE COURSES (NON-BITUMINOUS) AND SHOULDERS**					
4.01			Constructing Hard shoulder with Naturally obtained Granular sub-base (GSB) complete as per drawings and Technical Specification Clause 401 (Grading I, Table 400-1)	Cu.m.	14043			
4.02			Construction of granular sub-base (crushed stone) by mixing material 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 technical specification clause 401					
	a)		As per Table 400-1, Close-Graded Grading I	Cum	18326			
	b)		As per Table 400-2, Coarse- Graded Grading I	Cum	24263			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
4.03			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 complete as per drawing and technical specification clause 406.					
	a)		Mechanically laid base (Spread by motor grader) including profile corrective course and access roads if applicable	Cum	13344			
	b)		Mechanically laid base (laid by Electronic Sensor Paver)	Cum	21730			
			Total Sub-Base, Base Courses (Non-Bituminous) and Shoulders carried to Grand Summary					
5			**BASE AND SURFACE COURSES (BITUMINOUS)**					
5.01			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 complete as per drawings and technical specification clause 502.	Sqm	135467			
5.02			Providing surface dressing with aggregate using Bitumen over primed water bound macadam/ wet mix macadam complete as per Technical Specifications Clause 510					
	b)		Second Coat Surface Dressing	Sqm	8000			
5.03			Providing and applying tack coat with bitumen complete as per drawings and technical specification clause 503.					
	a)		@ 2.0 to 2.5 kg/10m2 on bituminous surface	Sqm	147657			
	b)		@ 2.5 to 3.0 kg/10m2 on granular surface treated with primer/hungry bituminous surface.	Sqm	135895			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
5.06			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 as per the approved mixed design, 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 complete as per drawings and technical specification clause 507.	Cum	9254			
5.07			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 as per approved mixed design, 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 complete as per drawings and technical specification clause 509.	Cum	5419			
5.08			Variation of quantity of VG 30 grade bitumen in bituminous courses as per Technical Specification Clause 507.9 and 509.9	MT	117			
5.09			Variation of quantity of rapid emulsion in Tack coat as per Technical Specification Clause 503.					
		a)	0.5 kg extra for normal bituminous surface	MT	7			
		b)	0.5 kg extra for Granular Surface	MT	7			
5.10			Variation of quantity of slow emulsion for prime coat as per Technical Specification clause 502.	MT	14			
			Total Base and Surface Courses (Bituminous) carried to Grand Summary					
6			**STRUCTURES**					
6A			**CULVERTS:**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawings and Technical Specifications Clause 112.3,	Lm	200			
6A02			Excavation of foundation for culverts including preparation of foundation bed complete as per drawing and Technical Specifications Clause 304 in the following strata					
	a)		Ordinary soil / Hard soil	Cum	1186			
	b)		Ordinary rock / Soft rock	Cum	424			
	c)		Hard Rock (Blasting Prohibited)	Cum	85			
6A03			Providing and laying granular material for pipe bedding of Hume Pipe culverts and replacement of soft and loose patches in the bearing area of the Box structure with layers not exceeding 300 mm as per drawing and Technical Specifications Clause 2904	Cum	38			
6A04			Plain cement concrete in levelling course in open foundation, concrete pipe bedding and apron complete as per drawing and Technical Specifications Section 1500 and 1700					
	a)		M15 grade	Cum	117			
6A05			Structural concrete, for foundation slab, walls, deck slab, wing walls (single/Multiple), complete as per drawings and Technical Specifications section 1500 and 1700					
	c)		M30 grade	Cum	335			
6A06			Plain cement concrete M20 grade in Wing wall complete as per drawing and Technical Specifications Section 1500 and 1700	Cum	252			
6A08			Providing and laying concrete M-15 in levelling course below approach slab as per section 1700 of Technical specifications.	Cum	66			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A09			Structural concrete M-30 in approach slab as per section 1700 and 2700 of Technical specifications	Cum	132			
6A10			Providing and fixing in position Thermo mechanically treated (TMT) Fe-500 grade reinforcement bars as per drawings and Technical Specification Section 1000 and 1600.					
	a)		Foundation	MT	13			
	b)		Substructure	MT	9			
	c)		Superstructure	MT	5			
6A13			Providing and fixing filler type expansion joint with 2mm thick copper plate, 20mm thick compressible fiber board, 20mm thick premoulded joint filler in expansion joint and filling joint sealant compound complete as per drawings and Technical specification section 2600.	Lm	261			
6A14			Back filling behind abutments, wing walls and return walls with selected granular material of approved quality complete as per drawing and Technical Specifications Clause 305	Cum	144			
6A15			Filter material behind abutment, wing walls and return walls complete as per drawing and Technical Specifications Clause 305	Cum	183			
6A16			Providing. laying and jointing RCC. NP-4 Hume Pipes for culverts or equivalent pipes under IS:458-1988, approved by the Engineer complete as per Technical Specifications section 2900					
	d)		Diameter 1200mm	Lm	43			
6A17			Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	89			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A18			Painting of culvert reference number complete as per Technical Specifications section 800 or as directed by the Engineer.	Sqm	7			
6A20			Providing 25 mm thick mastic asphalt over the top of the deck after applying prime coat underneath wearing course complete as per Technical Specifications Clause 2702, 503 and 515 (Cost of Prime Coat Included)	Sqm	694			
6A21			Providing 40 mm thick asphaltic concrete in one layer in wearing course complete as directed by the Engineer and as per Technical Specifications Clause 2702/509 (Cost of Tack Coat Included)	Cu m	35			
6A23			Filter media beneath the pitching/revetment on slopes for protection of embankment as per drawings and Technical Specifications clause 2504 and as directed by the Engineer	cum	12			
6A24			Pitching/revetment on slopes with Cement Concrete blocks in M15 grade conforming to Section 1700 complete as per drawings Technical Specifications 2504 and as directed by the Engineer.	Cum	25			
6A25			Providing weep holes in brick masonry / plain / reinforced concrete abutments, wing walls / return walls etc. with 100mm dia A.C. pipe, extending through the full width of structure with slope of IV:20H towards draining face including porous concrete blocks complete as per drawing and Technical Specifications clause 2706.	Nr	136			
6A27			750 thick flexible stone apron as per Clause No. 2503.1 of Technical Specification and as directed by the Engineer	Cum	389			
6A28			Curtain wall of M15 grade Plain Cement Concrete complete as per drawings and Technical Specifications section 1500 & 1700 or as directed by the Engineer	Cum	193			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6A29			Construction and fixing of PCC Pillar with M15 grade of concrete of size 400 x 400 x 1000 mm for inscribing Structure Number as per drawing and Technical Specification section 1500, 1700 or as directed by the Engineer	Nr	10			
6A30			Providing cement concrete crash barrier in M-40 grade including safety kerb, reinforcement and G.I. pipe complete as per drawing and Technical Specifications sections 1500, 1600, 1700, 2200 & clause 809.	Lm	39			
			Total Culverts carried to Grand Summary					
6B			**BRIDGES**					
6B01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawing and Technical Specifications Clause 112.3, including temporary cross drainage	Lm	100			
			Foundation					
6B03			Earthwork in excavation of foundations for structures including all leads and lifts complete as per drawings and Technical specifications clause 304.					
	a)		In all types of soil	Cum	418			
	b)		In soft/ordinary rock	Cum	149			
	c)		In hard rock (Blasting Prohibited)	Cum	30			
6B04			Plain cement concrete garde M15 in foundation and fill around foundation to protect from erosion complete as per drawing and Technical Specifications Section 1500 and 1700	Cum	71			
6B05			Providing & laying Plain cement concrete levelling course in foundation and fill around foundation to protect from erosion including form work but excluding the cost of reinforcement complete as per drawing and Technical Specifications sections 1500, 1700 and 2100.					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	b)		M-20 grade	Cum	92			
6B06			Providing & laying Reinforced Cement Concrete in foundations including form work but excluding the cost of reinforcement complete as per drawing and Technical Specifications sections 1500, 1700 and 2100.					
	b)		M-30 grade	Cum	82			
6B17			Supplying, placing and fixing TMT Fe 500 bar reinforcement complete as per drg. and Technical specifications section 1600.					
	a)		For Foundation	MT	7			
	b)		For sub-structure	MT	5			
	c)		For super-structure	MT	2			
			Sub-Structure					
6B19			Providing & laying Reinforced Cement Concrete in sub-structure including form work but excluding the cost of reinforcement complete as per drg. and Technical specifications sections 1500, 1700 & 2200.					
	c)		M-30 grade	Cum	60			
			Bearing					
6B22			Providing & fixing of expansion joints complete as per drg. and Technical specifications section 2600					
	a)		Providing and fixing filler type expansion joint with 2mm thick copper plate, 20mm thick compressible fiber board, 20mm thick premoulded joint filler in expansion joint and filling joint sealant compound complete as per drawings and Technical specification section 2600.	Lm	48			
			Super Structure					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6B23			Providing & laying Reinforced Cement Concrete in super-structure including form work but excluding the cost of reinforcement complete as per drg. and Technical specifications sections 1500, 1700 & 2300.					
	a)		Solid slab					
		ii)	M-30 grade	Cum	22			
6B26			Providing 25 mm thick mastic asphalt over the top of the deck after applying prime coat underneath wearing course complete as per Technical Specifications Clause 2702, 503 and 515 (Cost of Prime Coat Included)	Sqm	194			
6B27			Providing 40 mm thick asphaltic concrete in one layer in wearing course complete as directed by the Engineer and as per Technical Specifications Clause 2702/509 (Cost of Tack Coat Included)	Cum	10			
6B29			Providing cement concrete crash barrier in M-40 grade including safety kerb, reinforcement and G.I. pipe complete as per drawing & Technical Specifications sections 1500, 1600, 1700, 2200 & clause 809.	Lm	9			
			Misc. Items					
6B30			Providing weep holes in brick masonry / plain / reinforced concrete abutments, wing walls / return walls etc. with 100mm dia A.C. pipe, extending through the full width of structure with slope of IV:20H towards draining face including porous concrete blocks complete as per drawing and Technical Specifications clause 2706.	Nr	48			
6B31			Providing & fixing drainage Spouts complete as per drawing and Technical Specifications Clause 2705.	Nr	2			
6B32			Back filling behind abutment with selected granular material of approved quality as per Technical Specifications Clause 305	Cum	61			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6B33			Filter media behind abutments, wing walls, & return walls, including all material, labour, equipment carriage etc. all complete as per drawing and Technical Specification Clauses 305, 309 & 2504.	Cum	43			
6B35			Providing & laying reinforced cement concrete M-30 grade in approach slab including form work and reinforcement complete as per drg. and Technical specifications sections 1500, 1600, 1700 & 2100 and clause 2704.	Cum	23			
6B40			Painting of Bridge No. and span arrangement as per drg., IRC:7-1971 and Technical specifications section 800.	Nr	2			
6B46			Plain cement concrete M-15 grade for curtain wall including centering and shuttering complete as per drawing and technical specification section 1500, 1700,.	Cum	76			
6B47			Flexible Stone boulder apron 750 mm thick complete as per drawing and Technical Specifications, Clause 2507.	Cum	141			
			Total Bridges carried to Grand Summary					
6C			**REPAIR & REHABILITATION**					
6C01			Construction of temporary diversion, including across waterway, for passage of traffic, complete as per drawings and Technical Specifications Section Clause 112.3, including temporary cross drainage	Lm	200			
6C02			Dismantle of various items of structures complete as per Technical specification clause 202 or as directed by the Engineer.					
			a) Reinforced Cement Concrete	Cum	1181			
			d) Existing Wearing coat	sqm	585			
			e) Stoen/Brick masonary	Cum	46			
			g) NP4 Pipe	Lm	83			
			h) Spalling of Concrete	Sqm	30			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
6C17			Replacement of drainage spout wherever broken including necessary gratings and drainage assembly complete as per drawing and Technical Specification clause 2705 as directed by the Engineer	Nr	4			
6C19			Cleaning and removal of vegetation growth from structures channel and protective works complete as per Techincal specification clause 202 or as directed by the Engineer.	Sqm	1658			
6C20			Replacement of RCC railing including reinforcement as per Technical Specifications Section 1500, 1600, 1700, 2200, 2815 and Clause 2703.					
	a)		Railing in M30 grade	Lm	48			
6C38			Providing & laying Brick masonry in cement mortar 1:3 (1 cement : 3 coarse sand) in floor protection, foundation, sub-structure complete as per drg. and Technical Specification Section 1300.	Cum	1			
6C51			Guniting concrete surface with cement mortar applied with compressor after cleaning surface and spraying with epoxy complete as per Technical Specification clause 2807. [Assumed thickness 25mm]	Sqm	30			
6C57			Cement plaster 12mm thick in cement mortar 1:3 complete as per drawing and Technical Specifications Section 1000 and 1300 and as directed by the Engineer	Sqm	59			
			Total Repair & Rehabilitation carried to Grand Summary					
7			**DRAINAGE AND PROTECTION WORK**					
7.01			Earthwork in excavation in all types of soil including rock complete as per Technical Specification Clauses 304 & 309.	Cum	363			
7.02			Plain Cement concrete M-15 grade in levelling course in drain including centering and shuttering all complete as per drawing and Technical Specification Sections 309, 1500 & 1700.	Cum	15			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
7.03			Construction of open unlined drains as per proper slope and dimension as shown in drawing and technical specification clause 309.	Lm	24684			
7.07			Construction of chute drain in cement concrete M-15 with M-15 foundation concrete including construction of bell mouth at entry as per drawings and Technical Specification Sections 309, 1500 and 1700.	Lm	143			
7.08			Construction of energy dissipation basin in M-15 as per drawing and Technical Specification Sections 309, 1500 & 1700.	Nr	17			
7.10			Providing. laying and jointing RCC. NP-4 hume pipes under IS:458-1988, Hume Pipes to discharge storm water from catch basins as per drawings and complete as per Technical Specifications section 2900					
		a)	450 mm diameter	Lm	120			
		b)	900 mm diameter	Lm	133			
7.11			Providing and laying granular material for pipe bedding of Hume Pipe culverts and replacement of soft and loose patches in the bearing area of the Box structure with layers not exceeding 300 mm as per drawing and Technical Specifications Clause 2904	Cum	90			
7.12			Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	136			
7.13			Providing and laying interlocking paver blocks of high density 65 mm thick M-25 grade in pedestrian pathway and in Island of major intersections areas as shown in the drawing, close jointed over bed of 50mm thick river sand to a tight pattern, laid to proper line and level including bedding down the completed surface with a plate vibrator or by firmly topping level with mallet and a large flat piece of timber, finishing by brushing clean dry sand over the surface to fill all the joints thoroughly and as per Additional Technical Specification A 15 or as directed by the Engineer.	sqm	420			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
7.15			Providing and laying Grade M15 Concrete perforated erosion protection scour blocks laid on the slopes and bed of the river including the rebar, trimming of earth to required lines and levels, including capping with concrete on the tops of slopes as per drawings and Specifications	cum	48			
7.16			Providing and laying plain cement concrete in medians and in sidewalks, foundations complete as per respective drawings, Technical Specifications section 1500 and 1700 and as directed by the Engineer					
	b)		Construction of median kerb and island kerb Type B grade M20 (including base preparation, foundation and haunch concrete)	Lm	700			
7.18			Pitching/revetment on slopes with Cement Concrete blocks in M15 grade conforming to Section 1700 complete as per drawings, technical Specifications 2504 and as directed by the Engineer	Cum	269			
7.21			Filter media beneath the pitching/revetment on slopes for protection of embankment as per drawings and Technical Specifications clause 2504 and as directed by the Engineer					
	b)		Granular Material	Cum	374			
7.23			Providing and fixing of man hole including excavation, concrete, C.I. Cover, C.I. Steps complete as per drawing and Techinical Specifications sections 300, 1500, 1600, 1700 and manufacture specification approved by the Engineer.	Nr	2			
			Total Drainage and Protection Work rates carried to Grand Summary					
8			**TRAFFIC SIGNAGE AND ROAD APPURTENANCES**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.01			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	Lm	2400			
8.02			Supplying and fixing Retro-reflectorised sign boards complete as per drawing and Technical Specifications - Clause 801					
	a)		**Informatory Signs**					
		i)	Facility information 800 mm x 600 mm complete as per drawings and Technical Specifications Clause 801	Nr	16			
		ii)	Advance direction sign complete as per drawings and Technical Specifications Clause 801	Sq m	144			
		iii)	Route marker sign 450mm x 600 mm complete as per drawings and Technical Specifications Clause 801	Nr	33			
		iv)	Direction sign less than 0.9 sqm of area complete as per drawings and Techinical Specification clause 801.	Sq m	1			
	b)		**Cautionary Signs**					
		i)	Triangular 900 mm side complete as per drawings and Technical Specifications Clause 801	Nr	56			
		ii)	Hazard marker 180 x 1200 mm complete as per drawings and Technical Specifications Clause 801	Nr	3			
		iii)	Hazard marker 300 x 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	4			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
	c)		**Mandatory Signs**					
		i)	Triangular 900 mm side (for "GIVE WAY" sign) complete as per drawings and Technical Specifications Clause 801	Nr	12			
		ii)	Stop sign - Octagon of size 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	40			
		iii)	Speed limit compulsory keep left 600 mm dia meter complete as per drawings and Technical Specifications Clause 801	Nr	4			
8.03			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 complete as per drawings and technical specification clause 803.					
	a)		Lane/centerline/edge marking or any other marking	Sqm	4767			
	b)		Directional arrows, lettering etc					
		i)	Straight (nr) RM13	Nr	32			
		ii)	Left/right (nr) RM14 & 15	Nr	30			
		iii)	Comb (nr) RM 16& 17	Nr	155			
		iv)	Lettering	Nr	9			
		v)	Chevron Marking	Sqm	123			
		vi)	Diagonal Marking	Sqm	27			
		vii)	Pedestrian Crossing	Sqm	456			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.04			Reinforced cement concrete M15 grade kilometre stone of standard design as per IRC:8-1980, fixing in position including painting and printing etc complete as per drawings and technical specification clause 804.					
	a)		Hectometer Stone	Nr	52			
	b)		Kilometer Stone	Nr	10			
	c)		5th kilometer stone	Nr	3			
8.05			Supplying and fixing of boundary stones of M15 grade concrete complete as per drawing and Technical Specifications clause 806	Nr	65			
8.06			Providing and fixing retro-reflectorised road delineators complete as per drawing and Technical Specification Clause 805.					
	b)		Road way delineators.	Nr	243			
8.08			Supply and install single guide rails (crash barriers) as approved by the Engineer as per drawings and Additional Specifications A-12	Lm	640			
8.09			Providing and fixing Raised Pavement Marker (Cats Eye, Road Stud), made of high strength engineering Plastic Body having at least 13 tons load bearing capacity of pnumatic tyre. Size or marker 9 cms x 10 cms x 1.6 cm having shape so that no water penetration or dust accumulation takes place on reflective surface, fitted with electronically welded tough polycarbonate micro prismatic reflective panels having 16 sq.cms surface area of each side having long distance visibility at night and in wet weather condition. The body of the marker having finger grip for easy and accurate placement fitted with two number polymer shanks to anchor the marker with the road for avoiding dislocation of the marker where the road is bleeding or made with softer grade of bitumen and application with adhesive on Bituminous road complete as per Additional Technical Specification Clause A-16	Nr	1808			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.10			Solar Powered Traffic Blinkers LED based 300 mm/200 mm dia signal head with In built blinker unit haivng battery & battery charger unit with photo electric switch complete as per technical specification clause 112 and as directed by the Engineer.	Nr	8			
8.11			Construction of bus shelters for commuters including all building and furnishing works, etc. complete as per drawings and additional Technical Specifications A-17 or as directed by the Engineer.	Nr	3			
8.13			Providing and fixing of liter bins complete as per Manufacturer drawing and specification and approved by the Engineer.	Nr	3			
8.21			Plantation of trees as per MOEF guidelines in one/two rows depending upon space available on either side of road within ROW (including planting with manure, gardening and maintenance) complete as per Technical Specifications Clause 308.	Nr	19			
8.25			Providing and Construction of Rain water Harvesting complete as per drawings and Technical Specification section 300, 1300, 1500, 1700 or as directed by the Engineer.	Nr	26			
8.26			Providing and construction of Raised Pedesterian Crossing across the road of 150 mm height and width of 2.5 m with M25 grade concrete considering side slope in 1:10. 100mm dia steel bollard to be fixed on sides. The surface to be painted with brick red colour complete as per drawings and Additional Technical Specification clause A15 or as directed by the Engineer.	sqm	132			
8.27			Providing and laying Tactile Block of yellow colour conforming to IS 13801:1993 (Reaffirmed 1998) of size 250 x 250 x 65 mm on pedestrian pathway as shown in drawing and directed by Eng in charge. The tile should be subjected to a pressure of not less than 14N/sqmm. Sample must be approved complete as per Additional Technical Specification A15	sqm	66			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
8.28			Providing and Construction of speed hump across the road of 100mm height with width of 3.7m and raidus of 17m complete as per drawings and Additional Technical Specification clause A15 or as directed by the Engineer.	Lin.m	30			
8.29			Providing and Construction of raised Rumble strip complete as per drawings and technical specifications section 500 and 800 or as directed by the Engineer.	Lin.m	1800			
8.30			Providing and fixing Aluminum backed flexible prismatic sheeting , consisting of yellow/black colored flexible prismatic sheet with non-mettalic prismatic lens as retro reflective elements and confirming to ASTM D4946 Type VI specifications for reboundable retro reflective sheeting. The prismatic sheet shall be laminated at the back with 50micron aluminum Foil sensitive adhesive and liner with screen printed arrow/slant pattern in yellow/black color. The AFP shall be applied with adhesive , the edge of the sheeting shall be sealed all around with epoxy based structural adhesive and shall be extremely resistant to pill-off complete as per manufacturer drawings approved by the Engineer.	sqm	9			
8.31			Providing and applying Geru paint of approved brand on Trees withing ROW complete as per drawings and Technical Specification section 800 or as directed by the Engineer	Nr	140			
8.32			**Street Lighting in urban areas**					
	xxix)		Solar Street Light					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
		a)	Supplying and erecting MNES certified SOLAR STREET LIGHT fitting made from M.S. Body powder coated / painted with corrosion resistant paint with gasket & transparent cover with following CFL non retro lamp with choke, holder & accessories. Fitting shall be mounted on 75/80 mm B class G.I. pipe pole up to 5.5 mtr load complete erected with C.C. Foundation duly painted with two coats of red oxide and corrosive resistant paint. Complete with tubular battery, inverter, charge controller with photo sensor switch & necessary wiring complete erected connected & commissioned in approved manner.					
			b) 2 x 11 W CFL (Single luminaire with 2 CFL) PV Module:120 W Battery Capacity 12V, 100 AH	Ea.	2			
			c) 2 x 11 W CFL (Double Luminaire with One CFL each), PV Module : 120W Battery Capacity : 12V, 100 AH	Ea.	60			
		b)	Supplying & erecting Solar Home light system with structure as per MNES specification consisting of following non retrofit CFL fitting complete with following CFL lamps & battery capacity dully connected with built in inverter & commissioned as per directed with necessary wiring & fittings.					
			(b) Two No CFL 11 watt non retrofit ceiling / wall mounting features with battery capacity 12 watt, 40 AH	Ea.	62			
			Total Traffic Signage and Road Appurtenances carried to Grand Summary					
9			**SAFETY IN ROAD CONSTRUCTION ZONE**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
9.01			Supplying and fixing sign boards including the cost of posts, fixtures, foundation, fitting and fixing. Sheeting will be made of encapsulated lens type of Retro-reflective type and messages/ borders will be screen printed complete as per Technical Specification clause 801 and as directed by Engineer.					
	a)		Speed Limit sign (600mm dia)	Nr	4			
	b)		Overtaking Prohibited (900 mm dia)	Nr	4			
	c)		Diversion Board (450mm x 600mm)	Nr	12			
	d)		Men at Work Sign (900mm triangular)	Nr	8			
	e)		Direction Sign (Right / Left) (600 mm Circular)	Nr	4			
9.02			Providing of red fluorescent with white reflective sleeve traffic cone made of low density polyethylene(LDPE) material with a square base of 390x390x35mm and a height of 770mm, 4Kg in weight, placed at 1.5m interval, all as per BS 873 including cost of all materials, labour, loading, unloading, lead, lift, transporting etc complete Technical Specification section & IRC SP 55-2001.	Nr	592			
9.03			Installation of a steel portable barricade with horizontal rail 300mm wide,2.5m in length fitted on a frame made with 45X45X5 mm angle iron section, 1.5m in height, horizontal rail painted(2coat) with yellow and white strips,150mm in width at angle of 45degree, A frame painted with 2 coats of yellow paint, complete as per IRC:SP:55-2001 including cost of all materials, labour, loading, unloading, lead, lift, transporting etc complete as per drawings or as directed by the Engineer.	Nr	592			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
9.04			Construction of a permanent type barricade made of steel components, 1.5 m high from road level, fitted with 3 horizontal rails 200 mm wide and 4 m long on 50 x 50 x 5 mm angle iron vertical support, painted with yellow and white strips, 150 mm in width at an angle of450, complete as per IRC:SP:55-2001	Nr	6			
9.08			Solar Street Light					
	a)		Supplying and erecting MNES certified SOLAR STREET LIGHT fitting made from M.S. Body powder coated / painted with corrosion resistant paint with gasket & transparent cover with following CFL non retro lamp with choke, holder & accessories. Fitting shall be mounted on 75/80 mm B class G.I. pipe pole up to 5.5 mtr load complete erected with C.C. Foundation duly painted with two coats of red oxide and corrosive resistant paint. Complete with tubular battery, inverter, charge controller with photo sensor switch & necessary wiring complete erected connected & commissioned in approved manner.					
			a) 1 x 11 w CFL PV Module : 74 W Battery Capacity : 12V, 75 AH	Ea.	16			
	b)		Supplying & erecting Solar Home light system with structure as per MNES specification consisting of following non retrofit CFL fitting complete with following CFL lamps & battery capacity dully connected with built in inverter & commissioned as per directed with necessary wiring & fittings.					
			(a) One No CFL 11 watt non retrofit ceiling / wall mounting features with battery capacity 12 watt, 20 AH	Ea.	16			
			Total of Safety in Road Construction Zone carried to Grand Summary					
10			**Implementation of Environmental Management Plan to be executed under Civil Works Contract**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
10.03			Periodic air quality monitoring during construction stage at construction camp sites, bitumen hot mix plants, crusher plants (if specifically established for Project), at major settlement areas along project road. The parameters to be monitored are SPM, RPM, SO2, NOx and CO, Lead. Each monitoring schedule shall be over a duration of 24 hours (in 8 hour shifts) for three seasons per year. (as per the Environmental monitoring plan refered in the EMP)					
		a)	Construction Phase	Nr	6			
		b)	Operation Phase	Nr	6			
10.04			Water quality monitoring during construction phase at locations . The sampling shall be carried out for three seasons per year and cover all parameters as per IS10500 including heavy metals . (as per the Environmental monitoring plan refered in the EMP).					
		a)	Construction Phase	Nr	18			
10.05			Noise quality monitoring at specified silent receptors along Project Road, at construction camp sites, bitumen hot mix plants, crusher plants(if specifically established for Project), and at major settlement areas along project road. – Each monitoring schedule shall be over a duration of 12hours (6Am to 6PM) for three seasons per year. (as per the Environmental monitoring plan refered in the EMP)The monitoring shall be carried out in accordance with CPCB norms at locations given .					
		a)	Construction Phase	Nr	6			
		b)	Operation Phase	Nr	6			

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
10.06			Soil quality monitoring at construction camp sites, work shop areas, oil/lubricant handling areas, bitumen hot mix plants, at all parking lay byes, vehicle servicing stations along Project Road. Parameters shall include N, P, oil and grease, heavy metals, C/N ratio, pH, organic matter to be monitored for three seasons per year.(as per the Environmental monitoring plan refered in the EMP)					
		a)	Construction Phase	Nr	4			
10.12			Enhancement of Cultural Properties (bill no 10.18)					
		a)	Shiv Temple @ 31+000	Nr.	1			
			Total Implementation of Environmental Management Plan to be executed under Civil Works Contract carried to Grand Summary					
11			**DAY WORKS**					
11.01			Providing labour at site supplied with all necessary hand tools inclusive of all costs, overheads and profit margin complete as directed by the Engineer	As per details in Schedule "A"	1			
11.02			Providing equipment at site with operators, P.O.L. etc. complete in good working condition including all types of maintenance during contract period	As per details in Schedule "B"	1			
11.03			Providing material at site inclusive of all costs, overheads and profit margin complete as directed by the Engineer	As per details in Schedule "C"	1			
			Total Day work rates carried to Grand Summary					
12			**MAINTENANCE**					

Item No.			DESCRIPTION	Unit	Quantity	Unit Rate		Amount
						Figures	Words	
12.01			Maintenance of project road for first year of maintenance period after Defect Liability Period as directed by the Engineers	per km	13.00			
12.02			Maintenances of project road for 2nd year of maintenance period after Defect Liability Period as directed by the Engineers	per km	13.00			

(SECTION-1) UMRETH-VASAD ROAD SH.NO 83 KM.0+000 TO KM 19+250 SH.NO.188 KM 0+000 TO 9+200

BILL OF QUANTITIES CONTRACT PACKAGE–GSHP II/NCB/05

SUMMARY OF DAY WORKS

Sr.No.	Item	Amount Rs.
11.1	Schedule “A” of Day works, Labour	
112	Schedule “B” of Day works, Materials	
11.3	Schedule “C” of Day works, Construction Plant	
	Total Day work rates carried to Grand Summary	

(SECTION-1) UMRETH-VASAD ROAD SH.NO 83 KM.0+000 TO KM 19+250 SH.NO.188 KM 0+000 TO 9+200

SCHEDULE "A" OF DAY WORKS RATES

11.1 – LABOUR

Sr. No.	Description	Unit	Nominal	RateRs.		Amount
			Quantity	Figures	Words	Rs.
1	Mazdoor	Day	30			
2	Mason	Day	15			
3	Carpenter	Day	6			
4	Fabricator/Blacksmith/Welder	Day	6			
5	Operator for Tractor	Day	6			
6	Electrician	Day	3			
7	Operator for Dozer	Day	3			
8	Operator for Roller	Day	3			
9	Driver LMV	Day	90			
10	Driver HMV	Day	3			
11	Operator for Excavator/Crane	Day	3			
12	Computer Operator	Day	480			
13	Watchman	Day	480			
	Sub total					
	Allow 25 % Contractor's Overhead and Profits etc.					
	Total For Day works: Labour					

(SECTION-1) UMRETH-VASAD ROAD SH.NO 83 KM.0+000 TO KM 19+250 SH.NO.188 KM 0+000 TO 9+200

SCHEDULE "B" OF DAY WORKS RATES

11.2 - MATERIALS

Sr. No.	Description	Unit	Nominal	Rate Rs		Amount Rs.
			Quantity	Figure	Words	
1	Bitumen VG 30 grade (bulk)	T	1			1
2	Cement	T	3			2
3	M 15 Concrete	Cu.m	7			3
4	M 20 Concrete	Cu.m	7			4
5	M 25 Concrete	Cu.m	3			5
6	TMT Bars	T	3			6
7	Sand	Cu.m	7			7
8	Aggregate 40 mm down size	Cu.m	7			8
9	Aggregate 20 mm down size	Cu.m	7			9
10	Aggregate 10 mm down size	Cu.m	7			10
11	Hume pipe (NP 4)1000 mm dia 2.5 m Long	Lm	30			11
12	Boulders	Cu.m	90			12
13	Selected Earth	Cu.m	230			13
	Sub total					
	Allow 25% Contracotor's Overhead and Profits etc.					
	Total For Day works: Materials					

(SECTION-1) UMRETH-VASAD ROAD SH.NO 83 KM.0+000 TO KM 19+250 SH.NO.188 KM 0+000 TO 9+200

SCHEDULE "C" OFDAYWORKSRATES

11.3 - CONSTRUCTIONPLANT

Sr. No.	Description	Unit	Nominal	RateRs.		Amount
			Quantity	Figure	Words	Rs.
1	Bull Dozer Size up to 200KW	Hour	30			
2	Front End Loader bach hoe	Hour	30			
3	Motor Grader	Hour	12			
4	Pneumatic Tyred Roller (20 tonne)	Hour	12			
5	Tractor with trailor	Hour	12			
6	Bull dozer (D7 or equivalent)	Hour	10			
7	Roller Static (8-10 tonne)	Hour	3			
8	Roller Vibratory (8-10 tonne static)	Hour	3			
9	Truck (10/12 tonne)	Hour	30			
10	Truck mounted water tanker (10 tonne)	Hour	15			
11	DG set (125 KVA)	Hour	15			
12	Concrete Mixer (mobile)	Hour	3			
13	Drilling equipment with compressor	Hour	3			
	Sub total					
	Allow 25 % Contractor's Overhead and Profits etc.					
	Total For Day works: Construction Plant					

(SECTION-2) LADVEL- KAPADVANJ ROAD SH.NO. 151 KM 19+145 TO KM 32+600

BILL OF QUANTITIES CONTRACT PACKAGE–GSHP II/NCB/05

SUMMARY OF DAY WORKS

Sr.No.	Item	Amount Rs.
11.1	Schedule “A” of Day works, Labour	
112	Schedule “B” of Day works, Materials	
11.3	Schedule “C” of Day works, Construction Plant	
	Total Day work rates carried to Grand Summary	

(SECTION-2) LADVEL- KAPADVANJ ROAD SH.NO. 151 KM 19+145 TO KM 32+600

SCHEDULE "A" OF DAY WORKS RATES

11.1 - LABOUR

Sr. No.	Description	Unit	Nominal	RateRs.		Amount
			Quantity	Figures	Words	Rs.
1	Mazdoor	Day	30			
2	Mason	Day	15			
3	Carpenter	Day	6			
4	Fabricator/Blacksmith/Welder	Day	6			
5	Operator for Tractor	Day	6			
6	Electrician	Day	3			
7	Operator for Dozer	Day	3			
8	Operator for Roller	Day	3			
9	Driver LMV	Day	90			
10	Driver HMV	Day	3			
11	Operator for Excavator/Crane	Day	3			
12	Computer Operator	Day	480			
13	Watchman	Day	480			
	Sub total					
	Allow 25 % Contractor's Overhead and Profits etc.					
	Total For Day works: Labour					

(SECTION-2) LADVEL- KAPADVANJ ROAD SH.NO. 151 KM 19+145 TO KM 32+600

SCHEDULE "B" OF DAY WORKS RATES

11.2 - MATERIALS

Sr. No.	Description	Unit	Nominal	Rate Rs		Amount Rs.
			Quantity	Figure	Words	
1	Bitumen VG 30 grade (bulk)	T	1			
2	Cement	T	3			
3	M 15 Concrete	Cu.m	7			
4	M 20 Concrete	Cu.m	7			
5	M 25 Concrete	Cu.m	3			
6	TMT Bars	T	3			
7	Sand	Cu.m	7			
8	Aggregate 40 mm down size	Cu.m	7			
9	Aggregate 20 mm down size	Cu.m	7			
10	Aggregate 10 mm down size	Cu.m	7			
11	Hume pipe (NP 4)1000 mm dia 2.5 m Long	Lm	30			
12	Boulders	Cu.m	90			
13	Selected Earth	Cu.m	230			
	Sub total					
	Allow 25% Contracotor's Overhead and Profits etc.					
	Total For Day works: Materials					

(SECTION-2) LADVEL- KAPADVANJ ROAD SH.NO. 151 KM 19+145 TO KM 32+600

SCHEDULE "C" OFDAYWORKSRATES

11.3 - CONSTRUCTIONPLANT

Sr. No.	Description	Unit	Nominal	RateRs.		Amount
			Quantity	Figure	Words	Rs.
1	Bull Dozer Size up to 200KW	Hour	30			
2	Front End Loader bach hoe	Hour	30			
3	Motor Grader	Hour	12			
4	Pneumatic Tyred Roller (20 tonne)	Hour	12			
5	Tractor with trailor	Hour	12			
6	Bull dozer (D7 or equivalent)	Hour	10			
7	Roller Static (8-10 tonne)	Hour	3			
8	Roller Vibratory (8-10 tonne static)	Hour	3			
9	Truck (10/12 tonne)	Hour	30			
10	Truck mounted water tanker (10 tonne)	Hour	15			
11	DG set (125 KVA)	Hour	15			
12	Concrete Mixer (mobile)	Hour	3			
13	Drilling equipment with compressor	Hour	3			
	Sub total					
	Allow 25 % Contractor's Overhead and Profits etc.					
	Total For Day works: Construction Plant					

BILL OF QUANTITIES

C .Day work Schedule

General

1. Reference should be made to Sub-Clause 13.6 of the General Conditions of Contract.

   Work shall not be executed on a Day work basis except by written order of the Engineer. Bidders shall enter basic rates for Day work items in the Schedules, which rates shall apply to any quantity of Day work ordered by the Engineer. Nominal quantities have been indicated against each item of Day work, and the extended total for Day work shall be carried forward as a Provisional sum to the Summary Total Bid Amount (for items priced competitively). Unless otherwise adjusted, payments for Day work shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

Day work Labour

2. In calculating payments due to the Contractor for the execution of Day work, the hours for labour will be reckoned from the time of arrival of the labour at the job site to execute the particular item of Day work to the time of return to the original place of departure, but excluding meal breaks and rest periods. Only the time of classes of labour directly doing work ordered by the Engineer and for which they are competent to perform will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.

3. The Contractor shall be entitled to payment in respect of the total time that labour is employed on Day work, calculated at the basic rates entered by him in the SCHEDULE OF DAY WORK RATES: LABOUR, together with an additional percentage payment on basic rates representing the Contractor's profit, overheads, etc., as described below:

(a) The basic rates for labour shall cover all direct costs to the Contractor, including (but not limited to) the amount of wages paid to such labour, transportation time, overtime, subsistence allowances, and any sums paid to or on behalf of such labour for social benefits in accordance with Indian law. The basic rates will be payable in Indian currency only;

(b) The additional percentage payment to be quoted by the Bidder and applied to costs incurred under(a) above shall be deemed to cover the Contractor's profit, over heads, superintendence, liabilities, and insurances and allowances to labour, time keeping, and clerical and office work, the use of consumable stores, water, lighting, and power; the use and repair of staging's, scaffolding, workshops and stores, portable power tools, manual plant, and tools; supervision by the Contractor's staff, foremen, and other supervisory personnel; and charges incidental to the foregoing.

Day work Materials

4. The Contractor shall be entitled to payment in respect of materials used for Day work (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the basic rates entered by him in the SAMPLE SCHEDULE OF DAYWORK RATES: MATERIALS, together with an additional percentage payment on the basic rates to cover overhead charges and profit, as follows:

(a)The basic rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store for stock piling at the Site. The basic rates and payment shall be in Indian currency.

(b)The cost of hauling materials for use on work ordered to be carried out as Day work from the store or stock pile on the Site to the place where it is to be used will be paid in accordance with the terms for Labour and Constructional Plant in this schedule.

Day work Constructional Plant

5. The Contractor shall be entitled to payments in respect of Constructional Plant already on Site and employed on Day work at the basic rental at as entered by him in the SAMPLESCHEDULEOFDAYWORKRATES:
CONSTRUCTIONALEQUIPMENT.
Saidratesshallbedeemedtoincludedueandcompleteallowancefordepreciation, interest, indemnity ,and insurance ,repairs, maintenance, supplies, fuel, lubricants ,and other consumables, and all overhead, profit, and administrative costs related to the use of such equipment, The cost of drivers, operators, and assistants will be paid for separately as described under the section on Day work Labour.

6. In calculating the payment due to the Contractor for Constructional Plant employed in Day work, only the actual number of working hours will be eligible for payment,

except that where applicable and agreed with the Engineer, the travelling time from the part of the Site where the Constructional Plant was located when ordered by the Engineer to be employed on Day work and the time for return journey there to shall be included for payment.