

SECTION-7: BILL OF QUANTITIES

BILL OF QUANTITIES

A: PREAMBLE

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions of Contract, 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 Project Manager 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 Project Manager 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 and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Project Manager in accordance with Clause 50 of the General Conditions of Contract.
8. The method of measurement of completed work for payment shall be in accordance with the Technical Specifications (Section 6 of Volume I).

9. Errors will be corrected by the Employer for any arithmetic errors in computation or summation in accordance with sub-clause 31.1 of Instruction to Bidders reproduced below:
 - (a) only for unit price contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
 - (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - (c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
10. Rock is defined as all materials which, in the opinion of the Project Manager, require blasting, or the use of the metal wedges and sledge hammers, or the use of compressed air drilling for their removal, and which cannot be extracted by ripping with a tractor of at least 150 brake hp with a single, rear-mounted, heavy-duty ripper.
11. 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

GSHP-II/NCB/1

1. The Bill of Quantities contains the following part Bills

Widening and Strengthening of Daboi-Bodeli Road km 29+681 to km 68+417 (SH-11) and Rehabilitation of Amod-Karjan –Dabhoi Road kn 00+000 to 28+815 (SH-161)

Bill No.	Description	Amount For (BoQ- A)	Amount For (BoQ- B)	Total Amount (BoQA+BoQ B)
Bill No. 1	GENERAL ITEMS			
Bill No. 2	SITE CLEARANCE			
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	CULVERTS AND BRIDGES (& RETAINING WALLS)			
Bill No. 7	DRAINAGE AND PROTECTION WORKS			
Bill No. 8	MISCELLANEOUS ITEMS			
Bill No. 9	SAFETY IN ROAD CONSTRUCTION ZONE			
Bill No. 10	EMP COST			

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Bill No. 11	DAY WORKS			
Bill No.12	MAINTENANCE			
	GRAND TOTAL			

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2. Bidders shall price the Bill of Quantities in local currency only and shall indicate in Contract Data the percentage of expected payment in foreign currency or currencies.

Bill of Quantities A.

NAME OF WORK : - DABHOI - BODELI

[For National Competitive Bidding (NCB) with Post-Qualification Requirements]

NAME OF WORK : Widening and Strengthening of Dabhoi-Bodeli Road Km 29+681 to Km 68+417 (SH-11)

[For National Competitive Bidding (NCB) with Post-Qualification Requirements]

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	12			
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	2500			
	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	41			
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			

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	d)	Guide/Hand rails / Fencing / kerb / NP3 Pipes / NP4 Pipes	Lm	50			
	e)	Kilometre stone	Nr	31			
	f)	5 km stone	Nr	8			
	g)	Hectometre / Boundary stones	Nr	155			
	h)	Utilities	Nr	10			
	i)	Bituminous Pavement	Cum	11102			
	j)	Non- Bituminous Pavement	Cum	22228			
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	63			
	b)	above 600mm to 900mm girth	Nr	379			
	c)	above 900mm to 1800mm girth	Nr	631			
	d)	above 1800m	Nr	189			
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	63			
	b)	above 600mm to 900mm girth	Nr	379			
	c)	above 900mm to 1800mm girth	Nr	631			
	d)	above 1800mm	Nr	189			

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			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	90649			
	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	6000			
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	11150			
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	28891			
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	222230			
3.09			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	4051			
			Total Earth Works carried to Grand Summary					

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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.	39395			
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	50919			
	b)		As per Table 400-2, Coarse- Graded Grading I	Cum	54013			
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	27034			
	b)		Mechanically laid base (laid by Electronic Sensor Paver)	Cum	53958			
			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	310075			

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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	12000			
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	899636			
	b)	@ 2.5 to 3.0 kg/10m2 on granular surface treated with primer/hungry bituminous surface.	Sqm	321835			
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 grade VG-40 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	62297			
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 grade VG 40 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	21430			
5.10		Variation of quantity of VG 40 grade bitumen in bituminous courses as per Technical Specification Clause 507.9 and 509.9	MT	993			
5.11		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	45			
	b)	0.5 kg extra for Granular Surface	MT	16			

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5.12		Variation of quantity of slow emulsion for prime coat as per Technical Specification clause 502.	MT	31			
5.13		Removal of all failed material, trimming of completed excavation to provide firm vertical faces, cleaning of surface, painting of tack coat on the sides and base of excavation as per clause 503, back filling the pot holes with hot bituminous material of grading I as per clause 504, compacting, trimming and finishing the surface to form a smooth continuous surface, all as per clause 3004.2	sqm	5868			
5.14		Providing and applying low viscosity bitumen emulsion for sealing cracks less than 3 mm wide or incipient fretting or disintegration in an existing bituminous surfacing.	sqm	11736			
5.15		Providing and laying slurry seal consisting of a mixture of fine aggregates, portland cement filler, bituminous emulsion and water on a road surface including cleaning of surface, mixing of slurry seal in a suitable mobile plant, laying and compacting to provide even riding surface	sqm	17604			
5.16		Full depth repair of section in case of poor pavement complete as per drawings or as directed by the engineer	sqm	3521			
		Total Base and Surface Courses (Bituminous) carried to Grand Summary					
6		STRUCTURES					
6A		CULVERTS:					
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	1839			
	b)	Ordinary rock / Soft rock	Cum	490			
	c)	Hard Rock (Blasting Prohibited)	Cum	123			
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	393			

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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	158			
6A05		Structural concrete, for foundation slab, walls, deck slab, wing walls (single/Multiple), complete as per drawings and Technical Specifications section 1500 and 1700					
	a)	M20 grade	Cum	127			
	c)	M30 grade	Cum	186			
6A08		Providing and laying concrete M-15 in levelling course below approach slab as per section 1700 of Technical specifications.	Cum	23			
6A09		Structural concrete M-30 in approach slab as per section 1700 and 2700 of Technical specifications	Cum	46			
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	7			
	b)	Substructure	MT	6			
	c)	Superstructure	MT	3			
6A12		Supplying and providing Tar paper bearing for slab including rubbing down as per Technical Specification	Sqm				
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	210			
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	86			

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6A15		Filter material behind abutment, wing walls and return walls complete as per drawing and Technical Specifications Clause 305	Cum	122			
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					
	c)	Diameter 900mm	Lm	20			
	e)	Diameter 1200mm	Lm	420			
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	780			
6A18		Painting of culvert reference number complete as per Technical Specifications section 800 or as directed by the Engineer.	sqm	27			
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	289			
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)	Cu m	12			
6A22		Geo textiles filter membrane underneath pitching complete as per drawings and technical specification clause 2504 and as directed by the Engineer.	Sqm	660			
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	99			
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	198			

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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	112			
6A27		750 thick flexible stone apron as per Clause No. 2503.1 of Technical Specification and as directed by the Engineer	Cum	464			
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	108			
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	52			
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	13			
		Total Culverts carried to Grand Summary					
6B		BRIDGES					
		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	1950			
	b)	In soft/ordinary rock	Cum	520			
	c)	In hard rock (Blasting Prohibited)	Cum	130			
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.					

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	a)	M-15 grade	Cum	260			
	b)	M-20 grade	Cum	991			
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	263			
		Pile Foundation					
	b)	1000m dia piles (M-35 grade concrete)	Lm	360			
6B16		Providing & laying reinforced cement concrete in pile caps including form work but excluding the cost of reinforcement complete as per drg. and Technical specifications sections 1100, 1500 & 1700.					
		i) M-30 grade	Cum	94			
6B17		Supplying, placing and fixing TMT Fe 500 bar reinforcement complete as per drg. and Technical specifications section 1600.					
	a)	For Foundation	MT	107			
	b)	For sub-structure	MT	39			
	c)	For super-structure	MT	91			
		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.					
	a)	M-20 grade	Cum	832			
	c)	M-30 grade	Cum	323			
	e)	M-40 grade	Cu m	1			
		Bearing					
6B20		Supply & fixing of bearings complete as per drg. and Technical specifications section 2000.					

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	a)		Tar paper bearing	Sqm	56			
6B21			Supply & fixing of POT / PTFE bearings complete as per drg. and IRC:83 (Part-III)-2002.					
	a)		Sliding Bearing					
		vii)	Capacity 200 MT	Nr	8			
	b)		Fixed Bearing					
		vii)	Capacity 200 MT	Nr	1			
	c)		Free Bearing					
		vii)	Capacity 200 MT	Nr	1			
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	480			
	c)		Strip Seal Joint Type					
		ii)	40 mm wide	Lm	26			
			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	396			
		iv)	M-40 grade	Cum	317			

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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	3151			
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	126			
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	550			
6B30		Providing High containment concrete crash barrier in M-40 grade including safety kerb, reinforcement and G.I. pipe complete as per drawing & MORT&H Specifications sections 1500, 1600, 1700, 2200 & clause 809.	Lm	62			
		Misc. Items					
6B31		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	144			
6B32		Providing & fixing drainage Spouts complete as per drawing and Technical Specifications Clause 2705.	Nr	60			
6B33		Back filling behind abutment with selected granular material of approved quality as per Technical Specifications Clause 305	Cum	1042			
6B34		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	536			
6B35		Providing & laying plain cement concrete M-15 grade in levelling course under the approach slab complete as per drg. and Technical specifications sections 1700, 2100 and 2700.	Cum	119			

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6B36		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	252			
6B41		Painting of Bridge No. and span arrangement as per drg., IRC:7-1971 and Technical specifications section 800.	Nr	10			
6B47		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			
6B48		Flexible Stone boulder apron 750 mm thick complete as per drawing and Technical Specifications, Clause 2507.	Cum	141			
6B51		Providing, laying, and jointing complete Structural Steel in Superstructure complete as per drawings and Technical Specification sections 1900.	MT	127			
		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	807			
6C02		Dismantle of various items of structures complete as per Technical specification clause 202 or as directed by the Engineer.					
		a) RCC	Cum	71			
		b) PCC	Cum	100			
		c) Existing Wearing coat	sqm	2014			
		d) Stone/Brick masonry	Cum	560			
		f) NP4 Pipe	Lm	415			
		g) Spalling of Concrete	Sqm	824			
6C04		Replacement of corroded steel reinforcement complete as per additional specification A-3	MT	0.18			

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6C08		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	216			
6C09		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	60			
6C10		Cleaning of the Weep holes of Abutment and wing wall as per Technical specification section 200 or as directed by the Engineer.	Nr	18			
6C11		Cleaning and removal of vegetation growth from structures channel and protective works complete as per Technical specification clause 202 or as directed by the Engineer.	Sqm	3718			
6C12		Replacement of RCC railing including reinforcement as per Technical Specifications Section 1500, 1600, 1700,1900, 2200, 2800 and Clause 2703.					
	a)	Railing in M30 grade	Lm	29			
6C15		Providing Cement concrete M-15 grade as leveling course (Mat Concrete) below approach slab including centering and shuttering all complete job as per drawing and Technical Specifications Sections 1500 & 1700.	Cum	1			
6C16		Providing Reinforced cement concrete M-30 grade in approach slab including reinforcement for existing bridges complete as per drawing and Technical Specifications sections 1500, 1600, 1700 and clause 2704.	Cum	2			
6C22		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	2014			
6C23		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	81			

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6C30		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	3			
6C36		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	86			
6C45		Removal of defective concrete, cleaning the surface thoroughly, applying the shotcrete mixture mechanically with compressed air under pressure, comprising of cement, sand, coarse aggregates, water and quick setting compound in the proportion as per clause 2807.1., sand and coarse aggregates conforming to IS: 383 and table 1 of IS: 9012 respectively, water cement ratio ranging from 0.35 to 0.50, density of gunite not less than 2000 kg/cum, strength not less than 25 Mpa and workmanship conforming to clause 2807.6. Taking output = 10 sqm, 40 mm average thickness.	Sqm	824			
6C46		Epoxy bonding of new concrete to old concrete	Sqm	824			
6C47		Jacketing					
	a)	Providing and casting in situ controlled cement concrete 300 for RCC work with jacketing as directed with necessary formwork vibrating, curing, finishing complete as per Technical specification section 1700 or as directed by the Engineer with all lead & lift.	Cum	55			
	b)	Providing & placing in position TMT Fe-500 bar reinforcement incl. curing, bending, hooking and tying complete as per Technical Specification section 1600.	MT	4			
6C48		Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	248			
6C49		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	2205			
6C50		Cement pointing with cement mortar 1:3 on brick/stone work complete as per drawings and Technical Specifications section 1000	Sqm	84			

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		and 1300					
6C53		Providing and laying boulders apron without wire crates on river bed for protection against scour with stone boulders weighing not less than 40 kg each complete as per drawing and Technical specification section 2500	Cum	560			
		Total Repair & Rehabilitation carried to Grand Summary					
6D		RETAINING WALLS					
6D02		Excavation of foundation for structures including preparation of foundation bed complete as per drawing and Technical Specifications Clause 304 in the following strata					
	a)	Ordinary soil	Cum	143			
	b)	Ordinary rock / Soft rock	Cum	25			
6D03		Providing & laying Plain cement concrete grade M15 as levelling course including form work but excluding the cost of reinforcement complete as per drawings and Technical specifications sections 1500, 1700 and 2100.	Cum	19			
6D04		Providing & laying Reinforced Cement Concrete in foundations including form work but excluding the cost of reinforcement complete as per drawings and Technical Specifications sections 1500, 1700 and 2100.					
	b)	M-30 grade	Cum	27			
6D05		Providing & laying Reinforced Cement Concrete grade M30 in sub-structure (retaining walls) including form work but excluding the cost of reinforcement complete as per drawing and Technical Specifications sections 1500, 1700 & 2200.	Cum	80			
6D08		Supplying, placing and fixing TMT Fe 500 bar reinforcement complete as per drg. and Technical specifications section 1600.					
	a)	Foundation	MT	2			
	b)	Substructure	MT	6			

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6D09		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	150			
6D10		Filter material behind abutment, wing walls and return walls complete as per drawing and Technical Specifications Clause 305	Cum	104			
6D11		Construction of reinforced earth retaining structures together with construction of earth work in layers, assembling and erection of reinforcing elements and placing of facing panels and all associated components as per Technical specifications section 3100 and approved design and drg. of specialised firm.					
	a)	Providing and erecting precast reinforced concrete fascia panels of M-35 grade including reinforcement, soil reinforcing elements foundation pad, Filter media behind fascia pannel with all fixtures and accessories and drainage system including ground improvement complete as per drawings and technical specification section 3100 or as directed by the Engineer.	Sqm	9624			
	b)	Filling, grading and compaction with selected soil meeting approved design parameters in layers in soil reinforced zone complete	Cum	29850			
	c)	Providing & laying in position M40 grade RCC crash barrier with friction slab at RE wall location including form work and reinforcement complete as per drg. and Technical specifications sections 1500, 1700 & 2700.	Lm	1338			
		Total Retaining Walls 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	1624			
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	63			

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7.03		Construction of open unlined drains as per proper slope and dimension as shown in drawing and technical specification clause 309.	Lm	75564			
7.08		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	14			
7.09		Construction of energy dissipation basin in M-15 as per drawing and Technical Specification Sections 309, 1500 & 1700.	Nr	2			
7.11		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	Lm				
	a)	450 mm diameter	Lm	205			
	b)	900 mm diameter	Lm	665			
7.12		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	450			
7.13		Plain cement concrete grade M-20 in Headwall of Access Road Culverts complete as per drawing and Technical Specifications Clause 1500 and 1700	Cum	568			
7.14		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	5761			

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7.16		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	201			
7.17		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	3066			
7.19		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	147			
7.21		Geo textile filters membrane as per Technical Specifications Clause 2504 and as directed by the Engineer.	Sqm	635			
7.22		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	95			
7.24		Providing and fixing of man hole including excavation, concrete, C.I. Cover, C.I. Steps complete as per drawing and Technical Specifications sections 300, 1500, 1600, 1700 and manufacture specification approved by the Engineer.	Nr	5			
		Total Drainage and Protection Work rates carried to Grand Summary					
8		TRAFFIC SIGNAGE AND ROAD APPURTENANCES					

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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	31643			
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 messages e.g. letter, numerals,symbols/legend/arrow etc. in Regional and/or Hindi and /or English as per drawing and Technical Specifications 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	92			
	ii)	Advance direction sign complete as per drawings and Technical Specifications Clause 801	Sq m	479			
	iii)	Route marker sign 450mm x 600 mm complete as per drawings and Technical Specifications Clause 801	Nr	31			
	b)	Cautionary Signs					
	i)	Triangular 900 mm side complete as per drawings and Technical Specifications Clause 801	Nr	252			

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		ii)	Hazard marker 180 x 1200 mm complete as per drawings and Technical Specifications Clause 801	Nr	4			
		iii)	Hazard marker 300 x 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	11			
	c)		Mandatory Signs					
		i)	Triangular 900 mm side (for "GIVE WAY" sign) complete as per drawings and Technical Specifications Clause 801	Nr	61			
		ii)	Stop sign - Octagon of size 900 mm complete as per drawings and Technical Specifications Clause 801	Nr	67			
		iii)	Speed limit compulsory keep left 600 mm dia meter complete as per drawings and Technical Specifications Clause 801	Nr	57			
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	15304			
	b)		Directional arrows, lettering etc					
		i)	Straight (nr) RM13	Nr	351			
		ii)	Left/right (nr) RM14 & 15	Nr	85			
		iii)	Comb (nr) RM 16& 17	Nr	387			
		iv)	Lettering	Nr	122			
		v)	Chevron Marking	Sqm	1679			
		vii)	Pedestrian Crossing	Sqm	3934			
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.					

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	a)	Hectometer Stone	Nr	155			
	b)	Kilometer Stone	Nr	31			
	c)	5th kilometer stone	Nr	8			
8.05		Supplying and fixing of boundary stones of M15 grade concrete complete as per drawing and Technical Specifications clause 806	Nr	194			
8.06		Providing and fixing retro-reflectorised road delineators complete as per drawing and Technical Specification Clause 805.					
	a)	Cluster of Red Reflectors.	Nr	14			
	b)	Road way delineators.	Nr	694			
8.08		Supply and install single guide rails (crash barriers) as approved by the Engineer as per drawings and Additional Specifications A-12	Lm	3292			
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 pneumatic tyre. Size of 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	8991			
8.10		Solar Powered Traffic Blinkers LED based 300 mm/200 mm dia signal head with In built blinker unit having battery & battery charger unit with photo electric switch complete as per technical specification clause 112 and as directed by the Engineer.	Nr	22			

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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	22			
8.12		Repairing of existing Bus Shelter complete as per drawings and Technical Specifications section 800, 1300, 2500 or as directed by the Engineer.					
	a)	Paintitng	sqm	200			
	b)	Plastering	sqm	400			
8.13		Providing and fixing of liter bins complete as per Manufacturer drawing and specification and approved by the Engineer.	Nr	41			
8.24		Providing and installing Automatic Traffic counter and Classification (ATCC) system complete as per Manufacturer drawing and specification and approved by the Engineer.	Nr	2			
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	77			
8.26		Providing and construction of Raised Pedesterian Crossing of M25 grade across the road of 150mm height and width of 2m with slope in 1:15 at bus bay location with paver blocks ,BC and DBM in slopes and Paver blocks at center	sqm	715			
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 A18	sqm	855			
8.28		Providing and Construction of speed hump across the road of 100mm height with Bituminous concrete of 3.7m Length and raidus of 17m for the entire width of carriageway complete as per drawings and IRC: 99 or as directed by the Engineer.	Lin.m	35			
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	5734			

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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	17			
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	6536			
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					
	xxix)	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.	725			
		c) 2 x 11 W CFL (Double Luminaire with One CFL each), PV Module : 120W Battery Capacity : 12V, 100 AH	Ea.	100			

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		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.	825			
			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	20			
	b)		Overtaking Prohibited (900 mm dia)	Nr	20			
	c)		Diversion Board (450mm x 600mm)	Nr	60			
	d)		Men at Work Sign (900mm triangular)	Nr	40			
	e)		Direction Sign (Right / Left) (600 mm Circular)	Nr	20			
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	3000			
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	3000			

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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.	80			
	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.	80			
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 of 45°, complete as per IRC:SP:55-2001	Nr.	10			
		Total of Safety in Road Construction Zone carried to Grand Summary					
10		Implementation of Environmental Management Action Plan to be executed under Civil Works Contract					
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, SO ₂ , NO _x 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 referred in the EMP)					

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	a)	Construction Phase	Nr	36			
	b)	Operation Phase	Nr	18			
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	36			
	b)	Operation Phase	Nr	18			
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	8			
10.12		Enhancement of Cultural Properties (bill no 10.18)					
	a)	Hanuman Temple (32+800)	Nr.	1			
10.13		HIV prevention / alleviation programme comprissing of conduction information, Education and comunication (IEC) campaigns at least every other month, providing condoms, providing STI and HIV / AIDS screening, diagnosis and referal to dedicated national STI and HIV / AIDS programme and programme management support throughout the contract period (including the defect notification period).					
	a)	IEC materials - printing, publishing	Nr	24			

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	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 Action 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		MAINTAINANCE					
12.01		Maintainance of project road for first year of maintainance period after construction as directed by the Engineers	per km	40			
12.02		Maintainance of project road for 2nd year of maintainance period after construction as directed by the Engineers	per km	40			
		Total for mainatenance cost					

Bill of Quantities B.

NAME OF WORK : - Rehabilitation of Amod-Karjan-Dabhoi Road Km 00+000 to 28+815 (SH-161)

[For National Competitive Bidding (NCB) with Post-Qualification Requirements]

Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
Bill No. 1 GENERAL ITEMS							
1.01		Supply of colour record photographs as per Technical Specifications Clause 125					
		a) Electronic copy and two colour prints thereof mounted in album	900.00	Nos			
		b) Additional prints of above coloured photographs	300.00	Nos			
1.02		Supply of master video cassetts of important site activities with four copies complete playing time not less than 60 minutes and up to 180 minutes as per Technical Specification clause 126.	5.00	Set			
Total General Items carried to Grand Summary							
Bill No. 2 SITE CLEARANCE AND DISMANTLING							
2.01		Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, sapling and trees up to 300mm. Removal of stumps of trees cut earlier and disposal of unserviceable materials complete as per Technical Specification Clause 201 or as directed by the Engineer.(by manual means and area of light jungle).	13.00	Ha			
2.02		Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, woodwork, steel work, including T & P and scaffolding wherever necessary, disposal of unserviceable as well serviceable material with all lead and lift and dismantled material will be property of contractor.					
	a)	a) Bituminous Pavement (by mechanical means)	4090.00	Cum			
	b)	b) Non-Bituminous Pavement(by manual means)	8160.00	Cum			
Total Site clearance and Dismantling carried to Grand Summary							

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Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
Bill No. 3 EARTH WORKS						
3.01	Roadway excavation necessary for construction of road way , FDR, berm and widening of shoulder including disposal of material with all leads and lifts complete in all type of soil as per Technical Specification clause 301.	27690.00	Cum			
3.02	Loosening and re-compacting the existing ground up to required depth or as directed by the engineer and as per Technical Specification Clause 305.	5440.00	Cum			
3.03	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 drawing and Technical Specification Clause 305.	6050.00	Cum			
3.04	Construction of road embankment with approved material available from the road way excavation or any other excavation under this contract complete as per Technical Specification Clause 305.	1385.00	Cum			
3.05	Construction of road subgrade with approved borrow material including all leads and lifts complete as per Technical Specification Clause 305.	8940.00	Cum			
Total Earthwork carried to Grand Summary						
Bill No. 4 SUB-BASEES, BASES (Non-Bituminous) and Shoulders						
4.01	Construction of Granular sub-base / hard shoulders by providing coarse graded materials spreading, in uniform layers with motor grader on prepared surface, mix in place method with rotevator at OMC and compacting with vibrator roller to achieved to desire density complete as per directed and satisfying MORT&H Specification Table 400-2 with all leads lifts complete as per Technical Specification Clause 401.					
	a) a) Coarse Graded Grading - I	24040.00	Cum			
	b) b) Coarse Graded Grading - II	13190.00	Cum			

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Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
4.02		Construction of Wet Mix Macadam (WMM) with crushed stone material premixed with water on a prepared sub base complete as per Technical Specification Clause 406.					
	a)	a) Mechanically laid	7500.00	Cum			
		Total Sub-bases, Bases (Non-Bituminous) and Shoulders carried to Grand Summary					
Bill No. 5 BASE AND SURFACE COURSE (Bituminous)							
5.01		Providing and applying Primer Coat with bitumen emulsion (SS1) 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 Technical Specification Clause 502.	27250.00	Sqm			
5.02		Providing bituminous (RS_2) Surface Dressing using 9.5mm nominal size of stone chipping and straight run bitumen penetration grade / cut back bitumen / emulsion complete as per Technical Specification Clause 510.					
	b)	b) Second coat of Surface Dressing	27245.00	Sqm			
5.03		Providing and spraying additional quantity of binder (emulsion-ss-2) over and above the quantity specified in Technical specification Clause 510 for first and second coat of surface dressing with straight run bitumen penetration grade / Cutback bitumen / emulsion.	8180.00	Kg			
5.04		Filling pot holes and patches repairs on existing bitumenous carriage way surface as per Technical Specification Clause 3004 and as per direction of the Engineer. A. Shallow Pot Holes	18550.00	Sqm			
5.05		Providing and laying 3mm thick slurry seal with Cationic Bitumen Emulsion (SS-2) confirming to I S 8887 complete as per Technical Specification Clause 516 and as directed by the Engineer.	30395.00	Sqm			
5.06		Providing fog spray using Bitumen Emulsion (Slow setting type-SS-2) confirming to IS 8887 complete as per Technical Specification Clause 3004.2 and as directed by the Engineer.	5365.00	Sqm			

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Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
5.07		Providing and applying tack coat with bitumen emulsion (RS-1) (@ 2.0 to 2.5 kg / 10sqm complete as per Technical Specification Clause 503.					
	a)	a)2.00 to 2.50 Kg / 10 Sqm	511635.00	Sqm			
		b) 2.50 TO 3.00Kg/10 Sqm	18550.00	Sqm			
5.08		Variation of quantity of bitumenous emulsion (RS-1) over and above the quantity specified in clause 503.	26520.00	Kg			
5.09		Providing Profile Corrective Course of varying thickness necessary as per Technical Specification Clause 501.6 & 501.7 with Bituminous Macadam (grading-II) with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed stone aggregate of specified grading premixede with bituminous binder of approved grade, transported to site, laid over a previously prepared surface with sensor paver finisher to required grade, level and alignment and rolling complete as per Technical Specification Clause 504 as per drawing or as directed by the Engineer.	8350.00	Cum			
5.10		Providing and laying 50mm to 60mm Dense Bituminous Macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed stone aggregate of specified grading premixede with bituminous binder of approved grade as per approved mixed design, transporing the hot mix to work site, laiying with a hydraustatic paver finisher with sensor control to required grade, level and alignment, rolling with rollers specified in Technical specification complete to achive desired compaction complete as per Technical Specification Clause 507 as per drawing or as directed by the Engineer.(Grade-II)	9785.00	Cum			
5.11		Providing and laying 30mm thick Bituminous concrete wearing course in a single layer with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed stone aggregate of specified grading premixede with bituminous binder of approved grade as	5080.00	Cum			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	per approved mixed design, transporing the hot mix to work site, laiyng with a hydraustatic paver finisher with sensor control to required grade, level and alignment, rolling with rollers specified in Technical specification complete to achive desired compaction complete as per Technical Specification Clause 509 as per drawing or as directed by the Engineer.with (Grade-II)					
5.12	Variation of quantity of binder (VG-30 grade bitumen) over and above the quantity specified in Technical specification Clause 507 and 509.	120210.00	Kg			
	Total Base and Surface Course (Bituminous) carried to Grand Summary					
Bill No. 6 STRUCTURES (C D works / MNBR / MJBR)						
REPAIRS AND REHABILITATION						
6.01	Construction of temperory diversion including across waterway for passing of traffic complete as per Technical Specification clause 112.3 and as directed by the Engineer.	500.00	Rmt			
6.02	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, woodwork, steel work, including T & P and scaffolding wherever necessary, disposal of unserviceable as well serviceable material with all lead and lift and dismantled material will be property of contractor.					
	a) a) Plain cement concrete / R C C	32.00	Cum			
	b) b) Stone/ Brick masonry	529.00	Cum			
	c) c) Guide/Hand rails	40.00	Rmt			
	d) d) Footpath / Median Kerb	200.00	Rmt			
	e) e) NP 3 pipes / NP 4 pipes	7.50	Rmt			
	f) f) Spalling of Concrete	279.00	Sqm			
	g) g) Interlocking / Chequered tiles / tiles	200.00	Sqm			
6.03	Excavation of foundation for structures including preparation of foundation bed complete as per drawing					

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		and Technical Specification 304 in the following strata.					
	a)	a) Ordinary Soil / Hard Soil	1340.00	Cum			
	b)	b) Ordinary rock/soft rock (not require blasting)	135.00	Cum			
6.04		Providing Sand filling in foundation trenches as per drawing and Technical Specification and as directed by the Engineer	31.00	Cum			
6.05		Providing and laying granular material for pipe bedding of Hume Pipe culverts and replcement of soft ans loose patches in the bearing area of Box structure with layers not exceeding 300mm as per drawing and Technical Specification Clause 2904	24.00	Cum			
6.06		Providing Plain Cement Concrete M15 grade in foundation complete as per drawing and Technical Specification Clause 1700.	193.00	Cum			
6.07		Reinforced concrete / PCC Grade M20 in open foundation / sub structure complete as per drawing and Technical Specification Clause 1500 and 1700. Headwall,Abutment,Pierwall,Wingwall.	165.00	Cum			
6.08		Providing, laying and jointing RC NP-4 Hume pipe for culverts or equivalents pipes under IS 458 - 1988, approved by Engineer complete as per Technical Specification Clause 2900.					
	a)	a) Diameter 900 mm	85.00	Rmt			
	b)	b) Diameter 1200 mm	35.00	Rmt			
6.09		Providing and filling at the back of abutment / around pipe in layers including watering and compacting with all leads and lifts with good local sand free from earth / selected granular material as per Technical specification clause 2500.	140.00	Cum			
6.10		Epoxy bonding of new concrete to old concrete complete as per Technical Specification	307.00	Sqm			
6.11		Reinforced concrete / PCC Grade M25 in super structure complete as per drawing and Technical Specification Clause 1500 and 1700.	40.00	Cum			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	R C C slab, Approach slab, kerb etc.					
6.12	Providing and fixing in position Thermo Mechanically Treated (TMT) Fe-500 grade Reinforcement bars complete as per drawing and Technical Specification Clause 1000 and 1600.	9.20	MT			
6.13	Providing and fixing in position 20mm thick premoulded joint filler in expansion joint for fixed ends of simply supported spans not exceeding 10m to cater or horizontal movement up to 20mm, covered with sealent complete as per drawing and technical specification Clause 2605	10.00	Rmt			
6.14	Providing Drainage spout complete as per drawing and technical Specification. As per Clause MOST 2705	40.00	Nos			
6.15	Providing weep holes in Brick masonry, Stone masonry, Concrete abutment, wing wall/returnwall with 100mm dia A. C./P. V. C. pipe extending through the full width of the structure with slope 1V:20H towards drawing face including porous concrete blocks complete as per Drawing and Technical Specification Clause 2706.	88.00	Nos			
6.16	RR Stone Masonry work in Cement Mortar 1:4 for foundation, substructure, complete as per drawing and Technical Specification Clause 1400.	45.00	Cum			
6.17	Brick masonry work in cement mortar 1:3 sub structure complete excluding pointing and palstering as per Drawing and Technical Specification Clause 1300 & 2200.	465.00	Cum			
6.18	Filter media beneath the pitching/revetment on slopes for protection of embankment as per drawing and Technical Specification clause 2504 and as directed by the Engineer.	49.00	Cum			
6.19	Pitching/revetment on slopes with cement concrete block in M15 grade confirming to section 1700 complete as per drawing and Technical Specification Clause 2504 and as directed by the Engineer.	25.00	Cum			
6.20	Providing and laying flooring of cc block M15 complete as per drawing and Technical Specification laid overcement concrete bedding as per Specification MoST	125.00	Cum			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	clause-2505					
6.21	Repairs to spalling and patches by PMC mortar 25mm to 70mm thick at soffit of slab and vertical face of bridges and culvert as per Technical Specification clause 2804 and additional specification A-3 and as directed by the Engineer.	150.00	Sqm			
6.22	pointing with Cement Mortar 1:3 on brick work in substructure as per Technical Specification and as per MOST -1300 &2200.	20.00	Sqm			
6.23	plasteing with cement mortar (1:3) on brick work in substructure as per Technical Specification and as per MOST Clauses 1300 &2200.	1360.00	Sqm			
6.24	Providing, fixing and erecting 50mm dia Post and Pipe railing in three rows including replacing of damaged vertical steel post of 100mmx50mm, 1.2meters high above ground level, 2 m center to center with cement concrete M 20 foundation block of required compleete as per drawing and Technical Specification and as directed by the Engineer.	40.00	Rmt			
6.25	Providing and applying two coats of ready mix paint of approved brand on steel surface after through cleaning of surface to give an even shade as per Technical Specification and as directed by the Engineer complete.	75.00	Sqm			
6.26	Providing and erecting flood gauge post on low level bridges / causeway made out of M S section 50mmx50mmx6mm and 30mmx30mmx3mm with M S sheet of 16 guage as per drawing, pre-fabricated with phospheting process and coated with best quality epoxy primer and twow coats of epoxy paint. Reflectorised sheeting in front side with marking and fxed in C C M20 45cmsx45cmsx30cms foundation block complete as per Technical Specification and as directed by the Engineer complete.	5.00	Nos			
6.27	Construction of R C C railing of M30 grade (cast in situ) with 20mm nominal size aggregate, true to line and grade,	20.00	Rmt			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		center to center spacing between vertical post not to exceed 2000mm, leaving adequate space between vertical post for expansion, complete as per drawing and Technical Specification Clause No 1000,1500, 1700, 2200, 2815 and 2703					
6.28		Providing and casting in situ cement concrete M20 for jacketing work in pier, piercap, abutment, abutmentcap as per detailed drawing, including centering, shuttering, scaffolding wherever necessary, laying, vibrating, curing and finishing complete. The item also includes drilling holes in old structure and filling drilled holes with epoxy grout as per Technical Specification Clause 1500, 1700 and additional specification.	15.00	Cum			
6.29		Cleaning choked HP/Slab/Box culvert including grubbing, removal of vegetation using refuse in filling up of scoured portion and disposal of surplus material within the lead of 1000m including all leads and lifts complete as per Technical Specification Clause 312.	430.00	Rmt			
6.30		Levelling and dressing over area at inlet and outlet of CD works including cleaning, grubbing of grass, vegetation etc. and disposal of surplus material within the lead of 1000m including all leads and lifts complete as per Technical Specification Clause 314.	5130.00	Sqm			
6.31		Painting and lettering over Cross Drainage/Retaining structures complete as per Technical Specification Clause 804.	68.00	Nos			
		Total Structures carried to Grand Summary					
Bill No. 7	DRAINAGE AND PROTECTION WORKS						
7.01		Construction of median kerb, island kerb and footpath kerb of CC M20 including base preparation, foundation and haunch concrete complete as per drawing and Technical Specification and as directed by the Engineer.					
	a)	a) Kerb	50.00	Rmt			
	b)	b) Kerb Channel	50.00	Rmt			
7.02		Providing, laying and jointing RC NP-3 Hume pipe for					

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		culverts or equivalents pipes under IS 458 - 1988, approved by Engineer complete as per Technical Specification Clause 2900.					
	a)	a) Diameter 450 mm	10.00	Rmt			
	b)	b) Diameter 600 mm	10.00	Rmt			
7.03		Construction of Manhole including excavation, found concrete, wall cover with grating grill etc complete as per drawing and Technical Specification and as directed by the Engineer.	4.00	Nos			
7.04		Providing and fixing M S grill Manhole cover complete as per drawing and Technical Specification and as directed by the Engineer.	150.00	Kgs			
7.05		Providing and laying interlocking C C block flooring 60mm thick made out of CC M20 complete comprising of necessary strength including 25mm to 50mm thick sand bedding in required pattern, shape, colour complete as per drawing and Technical Specification and as directed by the Engineer.	111.00	Sqm			
7.06		Painting on concrete surface by ready mix paint of approved brand by applying two coats after cleaning the surface of dirt, dust, oil, grease, efflorence complete as per drawing and Technical Specification and as directed by the Engineer. On kerb of median, island and footpath with white & black or yellow & black	50.00	Sqm			
		Total Drainage and Protection works carried to Grand Summary					
Bill No. 8	TRAFFIC SIGNAGE AND ROAD APPURTENANCES						
8.01		Metal Beam Crash barrier Providing and erecting a "W" metal beam (single row) crash barrier comprising of 3mm thick corrugated sheet metal beam rail, 70cm above road/ground level, fixed on ISMC series channel vertical post 150 x 75 x 5 mm, spaced 2m center to center, total 1.8 m high, 1.1 m below ground/road level (in found c c M15), all steel parts and	1370.00	Rmt			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		fitments to be galvanised by hot dip process, all fitting to confirm IS:1364, metal beam rail to be fixed on the vertical postwith spacer of channel section 150 x 75 x 5 mm, 330 mm long cpmplete as per drawing and Technical Specification Clause 810.					
8.02		Providing and fixing Retro-reflectorised Sign boards complete as per drawing and Technical Spcification Clause 801.					
	a)	a) INFORMATORY SIGNS					
	i)	i) Facility information / Cheverone sign 800mm x 600mm complete as per Technical Specification clause 801.	8.00	Nos			
	ii)	ii) Advance direction sign 2240 mm x 1220 mm complete as per drawing and Technical Spcification Clause 801.	3.00	Nos			
	iii)	iii) Route marker sign 450 mm x 600 mm complete as per drawing and Technical Spcification Clause 801.	8.00	Nos			
	iv)	iv) Four / Two lane Ahead sign 1200mm x 1200mm complete as per drawing and Technical Spcification Clause 801.	3.00	Nos			
	v)	v) Village name board/Bump Ahead board 900mmx600mm side complete as per drawing and Technical Specification Clause 801.	52.00	Nos			
	b)	b) CAUTIONARY SIGNS					
	i)	i) Triangular 900 mm side complete as per drawing and Technical Specification Clause 801.	116.00	Nos			
	ii)	ii) Low level Hazard Marker 900mmx300mm side complete as per drawing and Technical Specification Clause 801.	8.00	Nos			
	iii)	Providing tree guard 300 mm diaom . As per drawing technical specification	200.00	Nos			
	c)	c) MANDATORY SIGNS					
	i)	i) Triangular 900mm side (for 'GIVE WAY sign) complete as per drawings and as per Technical Specification clause 801.	2.00	Nos			
	ii)	ii) Stop sign - Octagone of size 900mm complete as per	2.00	Nos			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		drawings and as per Technical Specification clause 801.					
	iii)	iii) Speed limit, compulsory keep left 600mm diameter side complete as per drawing and Technical Specification Clause 801.	52.00	Nos			
	d)	d) Kerb Guard Sign Board (Small)					
		Providing and fixing sign boards made out of 2mm alluminium sheet size 240x30cms in 'U' shape as per attached drawing. Pretreated with phosphating process and acid etching coated with epoxy primer and two coats of best quality epoxy paint reflectorised with retro sheeting as per Technical Specification stand post and frame fabricated from iron angle of 50x50x50mm and 10mm sq. bar as required painted with best quality epoxy coating. The fixing at site shall be in 1:2:4 CC block of size 45x45x60cms for each leg including excavation, curing etc. complete as directed by the Engineer.(high intensity grade)	2.00	Nos			
	e)	e) Jumbo bollard Sign					
		Supplying and fixing Jumbo bollard (High Intensity Grade) made out of 1.5mm crc sheet height 155/188 cms bottom diameter 30cms. Top diameter 18cms with direction plate of 45cms diameter fabricated as per drawing. Pretreated with phodphating process. Painted with epoxy coating reflectorised with retro reflective sheeting as per specification and as directed by the Engineer complete.	2.00	Nos			
8.03		Pavement marking with hot applied thermoplastic compound 2.5mm thick including reflectorising glass beads @ 250 gms per sqm area, including cleaning, labour, material, tools, equipment with incidental cost complete as per the Technical Specification Clause 803.3 as per drawing or as directed by Engineer-in-Charge.					
	a)	a) CENTER LINE / EDGE MRKING.	7615.00	Sqm			
	b)	b) DIRECTIONAL ARROES, LETTERING ETC.					
		i) Straight arrows	10.00	sqm			

Section 7 -Bill of Quantities

Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	ii) Left / Right arrows	65.00	sqm			
8.04	Providing and fixing Reinforced C C M15 grade stones of standard design as per IRC: 8 - 1980, fixing in position including painting numbering etc. complete as per drawing and Technical Specification Clause 804. fixing in cc-m15					
	a) a) NEW STONES					
	i) i) HECTOMETER STONES	116.00	Nos			
	ii) ii) KILOMETER STONES	26.00	Nos			
	iii) iii) 5th KILOMETER STONES	4.00	Nos			
	iV) indicatopr& guard stone	4852.00	Nos			
8.05	b) b) REMOVING AND REFIXING OF EXISTING STONES					
	i) i) HECTOMETER STONES	6.00	Nos			
	ii) ii) KILOMETER STONES	2.00	Nos			
	iii) iii) 5th KILOMETER STONES	1.00	Nos			
8.06	Road Delineators Providing and fixing retro-reflectorised road delineators complete as per drawing and Technical Specification clause 805.					
	a) a) Long delineators at start & end of median gap)	12.00	Nos			
	b) b) Median Delineators (short on along median)	100.00	Nos			
	c) c) Supplying and fixing R C C M20 delineator (long) : made out R C C M20, 140 cms long, 10x10cms square / 10 cms diameter, including painting fitted with retro reflective sheeting on circular in 15 cms width at top and fixing in foundation in C C 1:3:6 complete as per the drawing, as per Technical Specification and as directed by the Engineer	257.00	Nos			
8.07	Providing and fixing Raised Pavement Marker (Cat Eye, Road Stud) complying ASTM D4280 type "H" specifications, made of high strength engineering Plastic	2828.00	Nos			

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Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	Body having at least 13 tons load bearing capacity of pneumatic tyre, size or marker 9cmsx10cmsx1.6cm having shape so that no water penetration or dust accumulation takes place on reflective surface, fitted with electronically welded					
	toughpolycarbonitate micro prismatic reflector having 16 sq-cms surface area of each side having long distance visibility at night and in wet weather condition. The body of 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 asphalt road,					
8.08	Providing and constructing raised Rumble strip complete as per drawing and Technical Specification and as directed by the Engineer.	195.00	Rmt			
8.09	Providing fitting and fixing mild steel railing 1.20m high having vertical post of channel 75mm x 50mm x 5mm spacing at 1.50m center to center and horizontal angle 50mmx50mmx5mm at bottom and at top with a vertical square bar of 10mm at 10cms center to center complete including bracing if required, painting with two coats of epoxy paint and fixing channel in CC M20 foundation concrete of 30cms x 30cms x 45cms as per drawing, technical specification and as directed by the Engineer.	370.00	Rmt			
8.10	Construction of raised pedestrain crossing with foundation CC M15 and raised cum slope with CC M25 as per drawing and as directed by the Engineer.	10.00	Rmt			
8.11	Supplying and erecting MNES certified SOLAR STREET LIGHT in village area, fitting made from MS body powder coated / painted with corrossion resistant 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	63.00	Nos			

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Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
		meter long 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. (c) 2x11 W CFL (Double Luminaire with One CFL each), PV module : 120W Battery Capacity : 12V, 100AH					
8.12		Providing and fixing Aluminium backed flexible prismatic sheeting, consisting of yellow / black colored flexible prismatic sheet with non metallic prismatic lens as retro reflective elements and conforming to ASTM D4946 Type VI specifications for reboundable retro reflective sheeting. The prismatic sheet shall be laminated at the back with 50micron aluminium 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.	68.00	Sqm			
8.13		White washing / color washing with lime, geru on tree stem surfaces (1.2 mt height, 0.3 mtlime and 0.9 mtgeru) two coats or more coat to give and even shading includin thoroughly brooming the surface to remove all dirt, dust, mortar drops and other foreign matters as per the direction of Engineer.					
	a)	a) For tree up to avg. girth 450 mm.	3150.00	Nos			
	b)	b) For tree above avg. girth 450 mm.	550.00	Nos			
		Total Traffic Signaage and Road Appurtanances carried to Grand Summary					
Bill No. 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					

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Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
	and messages/ borders will be screen printed complete as per Technical Specification clause 801 and as directed by Engineer.					
a)	a) Octagonal 900x 900 mm	4.00	Nos			
b)	b) Circular 600 dia	4.00	Nos			
c)	c) Informatory signs as per drawing	8.00	Sqm			
d)	d) Cautionary warning signs (Triangular 900 sides) Type III	12.00	Nos			
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.	30.00	Nos			
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.	12.00	Nos			
9.04	Providing Barricading/Caution Tapes of High quality PVC tape tube type to Enclose construction area as per Technical Specification or as directed by the Engineer.	3000.00	Rmt			
	Total Safety road construction zone carried to Grand Summary					
Bill No. 10						
Implementation of Environmental Management Action Plan to be executed under Civil Works Contract						
10.01	Construction of Recharge pits within the selected water bodies along the project road as per approved design and drawing as developed by Central Ground Water Board.	16.00	Nos			

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Item No	Description of Item (with brief specification and reference to Book of Specification)	Quantity	Unit	Unit Rate in Rs		Amount in Rs.
				Figure	Words	
10.02	Construction of silt traps at the discharge points of channels into to fresh water bodies across the project road as per the Standard Details provided.	500.00	Rmt			
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, SO ₂ , NO _x and CO, Lead. Each monitoring schedule shall be over a duration of 24 hours (in 8 hour shifts), once in a quarter and for 2 Years).	12.00	Nos			
10.04	Water quality monitoring during construction phase at locations . The sampling shall be carried out once in a quarter for 2 years and cover all parameters as per IS10500 including heavy metals .	16.00	Nos			
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), once in a quarter and for 2 Years). The monitoring shall be carried out in accordance with GPCB norms at locations given .	12.00	Nos			
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 and carried out once in a quarter at all locations for 2 years as per details.	16.00	Nos			
10.07	Providing Oil Interceptors at the fuel/oil storage camps or Construction camps.	6.00	Nos / perso n / annu m			
10.08	Redevelopment of Borrow Area	25000.00	Sqm			

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Item No	Description of Item (with brief specification and reference to Book of Specification)		Quantity	Unit	Unit Rate in Rs		Amount in Rs.
					Figure	Words	
10.09		HIV prevention / alleviation programme comprising of conduction Information, Education and communication (IEC) campaign at least every other month, providing condoms, providing STI and HIV / AIDS screening, diagnosis and referral to dedicated national STI and HIV / AIDS programme and programme management support throughout the contract perieoeed (including the defect notification period).					
	a)	a) IEC materials - printing, publishing	6.00	set			
	b)	b) Healthcare clinic	4.00	Nos			
	c)	c) Condom vending machines	1.00	Nos			
	d)	d) Condom supplies (Refillinig condom vending machine)	6.00	Refill ing			
	e)	e) Testing (All required test per person)	75.00	Per Perso n			
	f)	f) Signages and hoardings	5.00	set			
		Total Implementation of Environmental Management Plan carried to Grand Summary					
Bill No. 12 MAINTENANCE							
12.01		Maintenance of project road for first year after completion of Defect Liability Period as dirrected by the Engineer.	28.82	km			
12.02		Maintenance of project road for second year, years after completion of Defect Liability Period as dirrected by the Engineer.	28.82	km			
		Total Maintenance carried to Grand Summary					
						Total Cost of Corridor :	

Superintending Engineer
 Project Implementation Unit R&BD
 Ground Floor, NirmanBhawan
 Gandhinagar (Guj), India

PIN-382010

**BILLOFQUANTITIES CONTRACTPACKAGE–GSHPII/
SUMMARYOFDAYWORKS**

Sl.No.	Item	Amount Rs.
1	ScheduleofDay works,Labour	
2	ScheduleofDay works,Materials	
3	ScheduleofDay works, ConstructionPlant	
	TotalDay workratescarriedtoGrandSummary	

SCHEDULE OF DAY WORKS RATES

LABOUR

Sl.No.	Description	Unit	Nominal Quantity	Rate Rs.	Amount 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		
	Subtotal				
	Allow % Contractor's Overhead and Profit etc.				
	Total For Day works: Labour				

SCHEDULE OF DAYWORKS

ATES MATERIALS

Sl. No.	Description	Unit	Nominal	Rate	Amount
1	Bitumen 60/70 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	Granite Stone of size 15 to 20	No.	30		
	solid concrete block size 400 x				
	Hume pipe (NP 4) 900 mm dia				
14	Boulders	Cu.m	90		
15	Selected Earth	Cu.m	230		
	Sub total				
	Allow % Contracotor's Overhead and Profits etc.				
	Total For Day works: Materials				

SCHEDULE OF DAY WORKS RATES CONSTRUCTION PLANT

Sl.No.	Description	Unit	Nominal Quantity	Rate Rs.	Amount Rs.
1	Bull Dozer Size up to 200KW	Hour	30		
2	Front End Loader back hoe	Hour	30		
3	Motor Grader	Hour	12		
4	Pneumatic Tyred Roller (20 tonne)	Hour	12		
5	Tractor with trailer	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	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 % Contractor's Overhead and Profits etc.				
	Total For Day works: Construction Plant				

BILL OF QUANTITIES

D.Day workSchedule

General

1. References should be made to Sub-Clause 50 of the General Conditions of Contract.

Work shall not be executed on a Day work basis except by written order of the Project Manager. 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 Project Manager. Nominal quantities have been indicated against each item of Day work, and the extended total for Day work shall be carried forward 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 Project Manager 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 DAYWORK 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 sum paid to or on behalf of such labour for social benefits in accordance with Indian law. The basic rates will be payable in local 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, overheads, superintendence, liabilities, and insurances and allowance 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. Payments under this item shall be made in the following currency:

- (i) Local: _____ percent [to be stated by Bidder]

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 DAY WORK 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 stockpiling at the Site. The basic rates shall be stated in local currency, but payment will be made in the currency or currencies expended upon presentation of supporting documentation.

(b) The additional percentage payment shall be quoted by the Bidder and applied to the equivalent local currency payments made under (a) above. Payments under this item will be made in the following currency:

- (i) Local: _____ per cent [to be stated by Bidder]

(c) The cost of hauling materials for use on work ordered to be carried out as Day work from the store or stockpile 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 rates entered by him in the SAMPLE SCHEDULE OF DAY WORK RATES: CONSTRUCTIONAL EQUIPMENT. Said rates shall be deemed to include due and complete allowance for depreciation, 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 this 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 Project Manager to be employed on Day work and the time for return journey thereto shall be included for payment.

7. The basic rental rates for Constructional Plant employed on Day work shall be stated in local currency, but payments to the Contractor will be made in currency, as follows:

- (i) Local: ____ percent [to be stated by Bidder]

