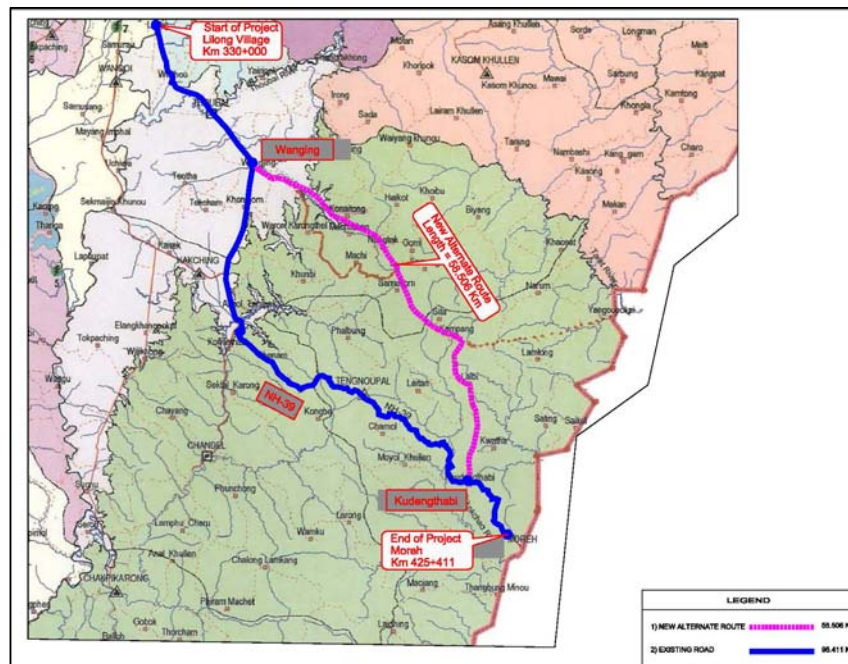
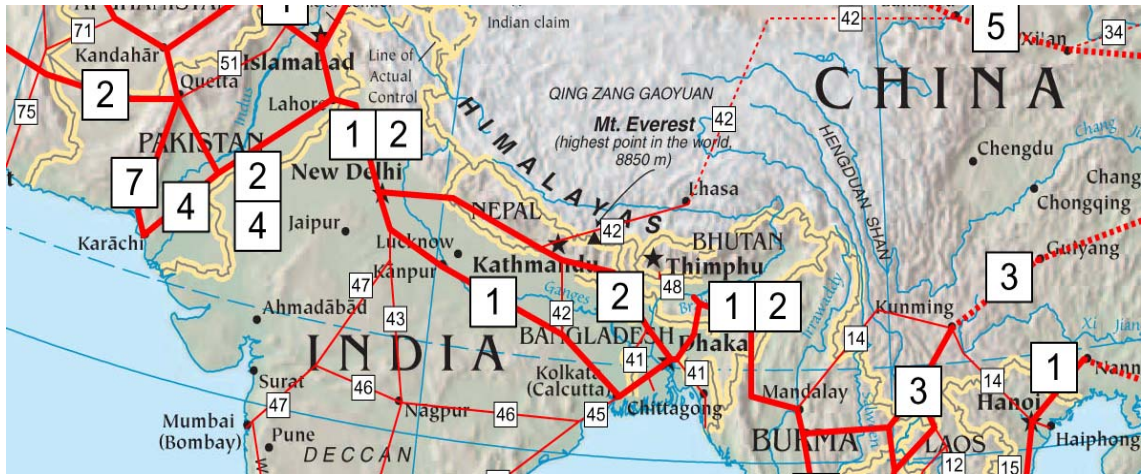


## INDO MYANMAR ROAD SECTION FROM IMPHAL TO MOREH ON NH-39



Funded by:

**Asian Development Bank**

Implementation Agency:

**MORT&H / PWD Govt of Manipur**

## Detailed Project Report

### Volume -VII BOQ Report

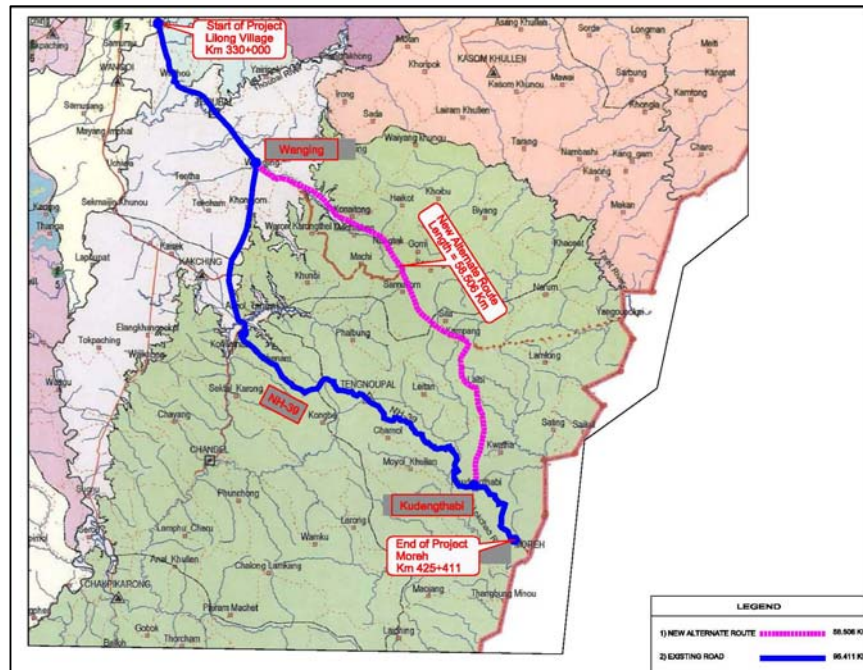
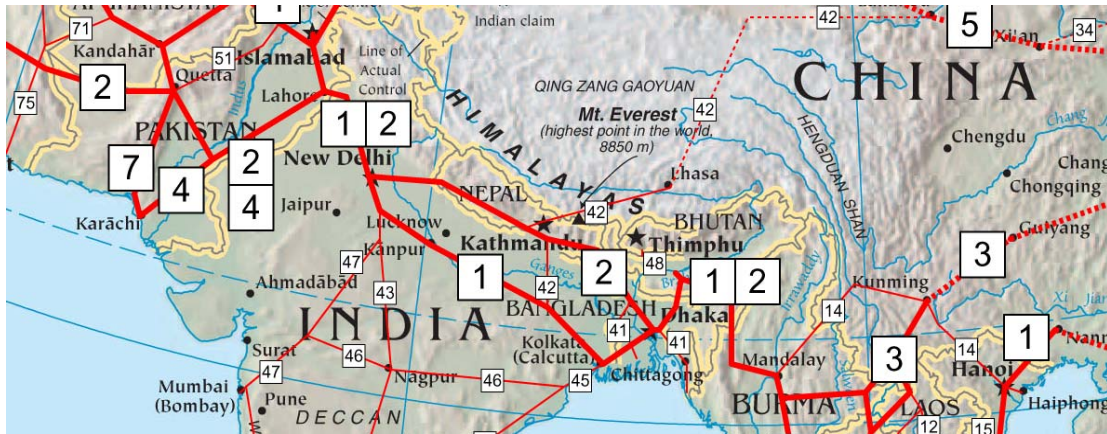


April, 2015

**SHELADIA Associates Inc. USA**



# INDO MYANMAR ROAD SECTION FROM IMPHAL TO MOREH ON NH-39



Funded by:

**Asian Development Bank**

Implementation Agency:

**MORT&H / PWD Govt of Manipur**

## Detailed Project Report

### Volume -VII BOQ Report for Existing Alignment



April, 2015

**SHELADIA Associates Inc. USA**

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>1.00</b>	<b>BILL NO: 1 SITE CLEARANCE</b>		
1.01	Clearing and grubbing for road land complete as per Technical Specification Clause 201.		
a)	For Road	Hect.	181.27
b)	Bridges & Culverts	Sqm	
1.02	Dismantling structures and pavement including disposal of resulting materials, stacking and/or salvaging useful materials with all leads and lifts complete as per Technical Specifications Clause 202.		
	Buildings		
	1) Kutcha structures (Hutments type)	Sqm	-
	2) Semi-Pucca structures (Tiled roof/AC sheet roof)	Sqm	-
	3) Pucca structures (RCC roof)	Sqm	-
1.03	Dismantling including disposal of resulting material and salvaging the useful materials complete as Technical specification Clause 202		
a)	Plain cement concrete	Cu m	7,520.00
b)	Reinforced concrete/prestressed concrete	Cu m	1,850.00
c)	Stone / brick structures	Cu m	2,000.00
d)	Guide Rails/Fencing/Kerb/Gutters/Pipes	Lm	775.00
e)	Km stone/5 km stone/Hectometer stone/Utility Services	Nr	110.00
1.04	Cutting of trees including cutting of trunks, branches and removal of stumps& roots including stacking of serviceable material with all leads & lifts and back filling with approved material in depression / pit and as per Technical Specifications Section 200.		
a)	Girth above 300mm to 600mm	Nr.	850.00
b)	Girth above 600mm to 900mm	Nr.	525.00
c)	Girth above 900mm to 1800mm	Nr.	325.00
d)	Girth above 1800 mm	Nr.	275.00
1.05	Back filling with approved sand flooded with water in the Deep wells as per Technical Specifications Clause 305 and as directed by the Engineer.	Cum	12,000.00
1.06	Providing and laying Cement Concrete slab on wells including centering and shuttering all complete as per Drawings and Technical Specifications Sections 1500,1700, 2100 and Technical Specifications Clause 304.	Cum	500.00
1.07	Construction of temporary diversion for passage of traffic, complete as per Technical Specifications Section Clause 112.3	Lm	1,375.00



**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>2.00</b>	<b>BILL NO: 2 - EARTHWORKS</b>		
2.01	Roadway excavation in all types of soils including ordinary rock necessary for construction of roadway and drainage includes dressing, trimming and compacting the cut formation in accordance with requirements of lines, grades and cross fall complete and disposal of all cut material including necessary stacking of suitable material with all lifts and leads as per Technical Specification section 301.		
	a) In Soils	Cum	5,022,435.85
	b) In marshy soils	Cum	-
	c) In ordinary Rock	Cum	2,484,880.23
2.02	Excavation for roadway in hard rock by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of all cut material including necessary stacking of suitable material with all lifts and leads complete as per Technical Specification Section 301, 302 and additional technical specification.		
	a) Hard rock excavation	Cum	-
	b) Hard rock excavation not requiring blastering	Cum	990,724.59
	c) Hard rock excavation requiring blastering	Cum	1,486,086.89
	d) Rebate towards the excavated useful hard rock available under item nos.2.02.	Cum	-
2.03	Construction of embankment with approved Soil material obtained from approved borrow areas complete with all leads and lifts as per Technical Specification Clause 305.	Cum	438,953.28
2.04	Construction of subgrade with approved material obtained from approved borrow areas complete with all leads and lifts, satisfying the soaked CBR value of Not less than 8% as per drawing and Technical Specification Clause 305.	Cum	190,182.91
2.05	Construction of earthen shoulder with approved granular material obtained from selected source with all leads and lifts etc., complete as per drawing and Technical Specifications Clause 407.	Cum	29,562.81
2.06 (a)	Construction of embankment with approved materials available from the roadway excavation or any other excavation including all leads and lifts etc., complete as per Technical Specification Clause 305.	Cum	150,673.08
2.06 (b)	Construction of subgrade/Shoulder with approved materials available from the roadway excavation or any other excavation including all leads and lifts etc., complete as per Technical Specification Clause 305..	Cum	251,121.79
2.07	Removal of existing pavement layers for reconstruction (all types of layers) complete as per Technical Specification Clause 301.	Cum	15,750.00
2.08	Removal of existing Granular layers for reconstruction (all types of layers) complete as per Technical Specification Clause 301.	Cum	31,500.00
2.09	Loosening and recompaction the original ground/ subgrade upto the required depths as directed by the Engineer and Technical Specifications Clause 301 & 305	Cum	28,000.00
2.10	Filling of median / island with approved material obtained from selected source as per Technical Specifications Clause 305 and 407.	Cum	5,486.10
2.11	Removal of Unserviceable soile as per drawings and Technical specifications with Disposal upto 1000mts	Cum	-

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>3.00</b>	<b>BILL NO: 3 - SUB-BASE AND BASE COURSES</b>		
3.01	Providing and Construction of Granular Sub-base complete as per drawing and Technical Specifications Clause 401		
	Grading of Table - 400 -1 Grading I	Cum	8,989.00
3.02	Constructing Cement Treated Sub Base (with 2% Cement by Wiegth) complete as per drawing and Technical specifications clause 403	Cum	108,606.88
3.03	Constructing Cement Treated Base (with 4% Cement by Wiegth) complete as per drawing and Technical specifications clause 403	Cum	245,566.35
3.04	Providing and Construction of wet mix macadam (WMM) base with approved material complete as per MORTH Technical Specification Clause No. 406 (laid by electronic sensor paver)	Cum	125,152.20

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>4.00</b>	<b>BILL NO: 4 - BITUMINOUS WORKS</b>		
4.01	Providing and applying bituminous Primer Coat over granular surface with bitumen emulsion complete as per Technical Specification Clause 502.		
	a) @ 7.5 kg/ 10 sqm	Sqm	940,040.00
4.02	Providing and applying bituminous Tack coat over prepared surface with bituminous emulsion all complete as per Technical Specification Clause 503		
	a) @ 2.75 kg / 10 sqm over granular surface treated with primer	Sqm	-
	b) @ 2.25 kg /10 sqm over bituminous surface	Sqm	1,174,565.00
4.03	Providing and laying Bituminous Macadam (BM, Grading-2) course in PCC using 60/70 grade of bitumen, all complete as per MORTH Technical Specification Clause No. 501 & 504	Cum	108,606.88
4.04	Providing and laying Dense Bituminous Macadam (DBM, grading-2) course using VG 30 grade of bitumen complete as per MORTH Technical Specification Clause No. 507.	Cum	3,147.25
4.05	Providing and laying Surface Dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller, as per the direction of the Engineer and Technical Specifications Clauses	Sqm	1,137,188.00
4.06	Providing and laying Bituminous Concrete wearing course using Modified Bitumen as per drawing and Technical Specification Clause No. 509 & 521.	Cum	57,046.70
4.07	Providing and laying Dry Lean Cement concrete (DLC) as per Table 600-1 of Technical Specification Clause 601 with a minimum cement content of 150kg/Cum.	Cum	-
4.08	Providing un-reinforced, dowel jointed, Pavement Quality Concrete (PQC) of M 40 grade concrete with minimum cement content of 400kg/Cum, including all costs of jointing, edge cutting, dowel bars etc., all complete as per drawing and Technical Specification Clause 602.	Cum	-

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>5.00</b>	<b>BILL NO: 5 - CULVERTS</b>		
5.01	Earthwork in excavation of foundation for structures complete with all leads and lifts as per drawing and Technical Specification Clause 304.		
	a) In Ordinary Soil	Cum	26,610.50
5.02	Providing and laying approved sand filling in Foundation Trenches as per Drawing & Technical Specification clause 1008 and conforming to the IS-383	Cum	3,500.00
5.03	Back filling behind abutments, wing walls/ retaining walls and return walls with selected granular material of approved quality complete as per drawing and Technical Specification Clause 304 and 305.	Cum	12,587.33
5.04	Providing and laying of Filter media of Stone aggregate conforming to Technical Specifications Clause 2504.2.2 behind abutment, wing wall, retaining wall and return walls, complete as per drawing and Technical Specifications Clause 305 & 2504	Cum	5,059.29
5.05	Providing and laying M15 grade Plain Cement Concrete with 20mm down graded crushed stone aggregate for Head Wall, Wing Wall, Cradle of structures including all labour, materials, machinery, transporting of concrete from batching plant by transit mixer, placing it in position, compacting with needle vibrator, moist curing, all leads and lifts, etc. complete as per drawing, Technical Specification Section 1500,1700 and as directed by the Engineer	Cum	3,067.93
5.06	Providing and laying Plain cement concrete in open foundation & substructure excluding cost of steel complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200		
	a) PCC Grade M 20	Cum	6,004.67
	b) PCC Grade M 25	Cum	
5.07	Providing and laying Reinforced cement concrete for foundations & substructure excluding cost of steel complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200		
	a) RCC M 25 grade	Cum	-
	a) RCC M 30 grade	Cum	-
5.08	Providing and laying Reinforced cement concrete for box / slab culverts in superstructure excluding cost of steel complete as per drawing and Technical Specifications Sections 1500, 1700 and 2300		
	a) RCC Grade M 25	Cum	254.38
	a) RCC Grade M 30	Cum	13,489.46
5.09	Providing, cutting, bending and fixing in position of TMT bar reinforcement of <b>grade Fe 500</b> in reinforced concrete structures complete as per drawing and Technical Specifications Section 1600		
(a)	Foundation	Tonne	1,086.79
(b)	Substructure	Tonne	-
(c)	Superstructure	Tonne	-
5.10	Providing, laying and jointing NP-4 (as per IS:458-2003) Pipes for culverts, complete as per drawing and Technical Specifications Section 2900 and IRC : SP No.13 - 1998.		
	a) H.P NP-4, 900 mm Dia	Lm	750.00
	b) H.P NP-4, 1000 mm Dia	Lm	-
	c) H.P NP-4, 1200 mm Dia	Lm	1,963.00
5.11	Providing and laying first class/ selected granular material in bedding for pipe culverts all complete as per drawing and Technical Specifications Section 2900.	Cum	1,341.20
5.12	Providing and laying filter material underneath stone pitching in slopes complete as per drawing and Technical Specification Section 2500.	Cum	5,562.14
5.13	Providing and laying stone pitching in slopes complete as per drawing and Technical Specifications Section 2500.	Cum	11,124.28
5.14	Providing and laying Dry Boulder apron complete as per Drawings and Technical Specifications Clause 2503.	Cum	976.86
5.15	Providing and fixing Weep holes in abutments, wing walls and return walls complete as per drawing and Technical Specification Clause 2706.	Nr.	5,665.00
5.16	Providing and fixing bearings complete as per Drawings and Technical Specifications Section 2000.		
	a) Tar Paper Bearing	Sqm	-
5.17	Providing Marker Post for buried culverts including synthetic enamel painting with necessary details as per IRC: 7-1971 and direction of Engineer.	Nr.	614.00
5.18	Providing and painting with Synthetic enamel paint of approved quality for Culvert numbering, Type of Culvert and Details of Span Arrangement as per IRC:7-1971 and as directed by Engineer.	Sqm	798.20



Item No.	Description	Unit	Quantity
5.19	Providing and Applying ordinary paints of approved quality on surface of parapet/Crash Barrier of culverts as per drawing and Technical Specifications Section 800.	Sqm	1,211.06
5.20	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	Lm	637.40
5.21	Reinforced Cement Concrete Crash Barrier Grade M 40 including reinforcement complete as per drawing and Technical Specifications Section 1500, 1600, 1700 , 2200 and Clause 809.	Lm	637.40
5.22	Providing and fixing galvanized Drainage Spouts along with drain pipes complete as per drawing and Technical Specifications Clause 2705.	Nr.	-
5.23	Providing and laying M15 grade Plain Cement Concrete with 20mm down graded crushed stone aggregate for Curtain Wall at upstream and downstream of structures including all labour, materials, machinery, transporting of concrete from batching plant by transit mixer, placing it in position, compacting with needle vibrator, moist curing, all leads and lifts, etc. complete as per drawing, Technical Specification Section 1500,1700 and as directed by the Engineer	Cum	3,693.19
5.24	Providing and laying flexible apron in the upstream and downstream of structure for protection against scour with stone boulders weighing not less than 40 kg each including all labour , materials, machinery, all leads and lifts, compacting to the satisfaction of the Engineer etc. complete as per drawing, Technical Specification Section 2500 and as directed by the Engineer .	Cum	3,132.00
5.25	Providing and laying Plain Cement concrete M-15 grade leveling course below approach slab as per drawings and Technical Specification Section 1500&1700	cum	1,232.00
5.26	Providing and laying Reinforced Cement Concrete M-30 grade for approach slabs including cost of reinforcement complete as per Drawings and Technical Specifications Section 1500, 1600, 1700 and Clause 2704.	cum	3,696.00
5.27	<b>Rehabilitation of Existing Culverts</b> Providing and applying 40 mm average thickness shootcrete mixture as per clause 2807.1, Density of gunite not less than 2800 Kg./ Cum. & workmanship conforming to clause 2807-6 including removal of defective concrete and cleaning the surface thoroughly as per technical specification and direction of Engineer.		
a)	Slab/ Pipe/ Box / Arch	Sqm	-
b)	Pipe Surface	Lm	-
c)	Head Wall	Sqm	-
5.28	Repairing of R.C.C Parapet with fresh cement concrete M-25 as per technical specification Section-2800 & direction of the Engineer.	Lm	-

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES \_Underpasses, Vaiduct, Minor Bridges & Major Bridges**

Item No.	Description	Unit	Quantity
<b>6.00</b>	<b>BILL NO: 6 - BRIDGES</b>		
6.01	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material etc. and as per relevant clauses of section 300 & 2100 in	Cum	19,341.27
6.02	Providing Back filling behind abutment, wing wall and return wall with Granular Material complete as per drawing and Technical specification and as per relevant clauses 305 of specifications	Cum	3,650.05
6.03	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification and as per relevant clauses of section 2500.	Cum	1,056.25
6.04	Providing and laying Plain cement concrete in open foundation including form work shuttering etc. complete as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2100 with .		
(i)	P.C.C. M-15 grade in leveling course	Cum	479.70
(ii)	Below Approach Slab (M15 Grade Concrete)	Cum	122.43
6.05(i)	Providing and laying Reinforced cement concrete in Foundation of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in RCC M - 30 grade Concrete	Cum	340.82
6.05(ii)	Providing and laying Reinforced cement concrete in Foundation of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in RCC M - 35 grade Concrete	Cum	3,698.80
6.06(i)	Providing and laying Reinforced cement concrete in sub-structure of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in M - 30 grade Concrete	Cum	150.31
6.06(ii)	Providing and laying Reinforced cement concrete in sub-structure of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in M - 35 grade Concrete	Cum	3,152.06
6.06(iii)	Providing and laying Reinforced cement concrete in sub-structure of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in M - 40 grade Concrete	Cum	826.43
6.07	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications and as per relevant clauses of sections 1600.	MT	1,464.38
6.08	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications and as per relevant clauses of sections 1600.	MT	587.53
6.09(i)	Supplying, fitting and fixing in position true to line and level elastomeric bearings confirming to IRC:83:(Pt.II) section IX complete including all accessories as per drawing and specifications as per section 2000.	Cu.Cm	-
6.09(ii)	Pot/PTFE Bearings	Nr.	170.00
6.10	Providing and laying Reinforced cement concrete in super-structure as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in RCC M 40 Grade Concrete		
a)	RCC Girder with M 40 Grade Concrete	Cum	227.14
b)	RCC Deck Slab with M 40 Grade Concrete	Cum	933.12
6.11	Providing and laying Prestressed cement concrete in super-structure as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in RCC M 45 Grade Concrete		
a)	PSCC Girder with M 45 Grade Concrete	Cum	2,357.93
b)	RCC Deck Slab with M 45 Grade Concrete	Cum	1,371.60
6.12	Providing and laying Reinforced cement concrete in Approach Slab as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in M- 30 Grade	Cum	244.86
6.13	Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications as per relevant clauses of section 1600 of specifications.	MT	636.37
6.14	Providing Drainage Spouts complete as per drawing and Technical specification and as per clause 2705 of specifications.	Nr.	158.00
6.15(i)	Reinforced cement concrete Crash Barrier (M-40 Grade) complete as per drawing and Technical Specification Sections 1500, 1600, 1700, 2700 and 809 and Clause 2703	RMT	1,497.02
6.15(ii)	Providing M 30 Grade RCC Concrete Railing	RMT	626.40

Item No.	Description	Unit	Quantity
<b>6.00</b>	<b>BILL NO: 6 - BRIDGES</b>		
6.16	Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/ supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and as per relevant clauses of section 2600.	RMT	369.00
6.17	Providing and laying 65 mm thick Wearing Course consisting of 40mm thick bituminous concrete over 25mm thick bitumen mastic layer complete as per drawing and Technical Specifications Clause 2702.	Sqm	8,501.85
6.18	Providing High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications and as per relevant clauses of section 1800.	MT	146.33
6.19(i)	Providing bored cast-in-situ M-35 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1000 mm) and as per specifications 1100, 1600 and 1700.	RMT	1,752.00
6.19(ii)	Providing bored cast-in-situ M-40 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1000 mm) and as per specifications 1100, 1600 and 1700.	RMT	1,280.00
6.19(ii)	Providing bored cast-in-situ M-45 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1000 mm) and as per specifications 1100, 1600 and 1700.	RMT	1,784.00
6.20(i)	Providing and laying Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification and as per relevant clauses of sections 1100, 1500 & 1700 with M 35 Grade Concrete	Cum	878.11
6.20(ii)	Providing and laying Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification and as per relevant clauses of sections 1100, 1500 & 1700 with M 40 Grade Concrete	Cum	977.85
6.20(iii)	Providing and laying Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification and as per relevant clauses of sections 1100, 1500 & 1700 with M 45 Grade Concrete	Cum	1,049.81
6.21	Providing and fixing Weep holes in abutments, wing walls and return walls complete as per drawing and Technical Specification Clause 2706.	Nr.	995.00
6.22	Providing and laying Dry Boulder apron complete as per Drawings and Technical Specifications Clause 2503.	Cum	276.84
6.23	Providing and laying M15 grade Plain Cement Concrete with 20mm down graded crushed stone aggregate for Curtain Wall at upstream and downstream of structures including all labour, materials, machinery, transporting of concrete from batching plant by transit mixer, placing it in position, compacting with needle vibrator, moist curing, all leads and lifts, etc. complete as per drawing, Technical Specification Section 1500,1700 and as directed by the Engineer	Cum	62.84
6.24	Providing and laying flexible apron in the upstream and downstream of structure for protection against scour with stone boulders weighing not less than 40 kg each including all labour , materials, machinery, all leads and lifts, compacting to the satisfaction of the Engineer etc. complete as per drawing, Technical Specification Section 2500 and as directed by the Engineer .	Cum	85.20
6.25	Widening of Existing Minor Bridges	LS	72.00

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>7.00</b>	<b>BILL NO: 7 - ROAD JUNCTIONS, TOLL PLAZA</b>		
7.01	Providing and Constructing footpath/paved separator platform/paved part of medians and islands including cost of providing and laying precast tiles of 25mm thick, preparation of base, drain pipes all complete as per drawing and Technical Specifications Clause 409.	Sqm	43,670.00
7.02	Providing and Laying NP-4 pipes of 1000 mm dia for utility culverts at junctions complete as per drawing and Technical Specifications Section 2900 and IRC: SP 13 – 1973.	Lm	900.00
7.03	Providing and Fixing MS railing for traffic islands/ horizontal curves on high embankments including foundation concrete and painting with approved paint etc., all complete as per drawing and Technical Specification Sections 300, 1500, 1700 and 1900.	Lm	10,780.00
7.04	Construction of Toll Plaza, Administrative Block & Toll booth buildings including arrangement of electric supply, All Electrical items like fans, Lights, Socket receptacles, and Complete wiring, with requisite earthing, providing fire alarm and fighting system like smoke detector, electric hooter with battery back-up cabling and CO2 hand extinguisher, providing water supply including all pipes, fittings, tanks, tube wells, pumps, valves etc. complete with septic tank, sewer lines, etc all complete as per drawing and Additional Technical Specifications inclusive of all	Nos	2.00

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>8.00</b>	<b>BILL NO: 8 - DRAINAGE AND PROTECTION WORKS</b>		
8.01	Providing and Laying of Turfing on embankment slopes and on median islands with green grass sods as per Technical Specification Clause No. 307	Sqm	101,025.55
8.02	Providing and Laying granular filter material underneath stone pitching on embankment slopes complete as per drawing and as per clause 2500 and Additional Technical Specifications.	Cum	15,153.83
8.03	Providing and Laying stone pitching on embankment slopes complete as per drawing and Technical Specifications Section 2500		
	a) Dry Stone pitching with 300mm thick	Cum	30,307.67
8.04	Supplying & Planting flowering plants and shrubs in the median as per additional technical specifications	Km	-
8.05	Providing and constructing lined surface drains to the required lines and grades as per drawing and Technical Specifications Clause 309 and Section 1700.		
	a) Covered drain with 100 mm thick M 25 grade RCC slab		
	(i) Excavation	Cum	46,278.00
	(ii) PCC M 15 Grade Levelling Course	Cum	2,313.90
	(iii) RCC M 25 Grade for Raft and Wall	Cum	8,998.50
	(iv) RCC M 25 Grade for Slab	Cum	2,571.00
	(v) HYSD	MT	578.48
	(vi) Grating	Nr.	2,856.67
	(vii) Weep Holes	Nr.	34,280.00
	b) Median Transverse chutes with M 15 grade concrete in superelevated portions with 750mm and 450mm wide openings.	Lm	-
	c) Unlined surface Toe drains to the required lines and grades as per drawing and technical specification clause 309	Lm	117,200.00
8.06	Providing and laying Plain Cement Concrete M 20 kerb as per drawing and Technical Specifications Clauses 408 and Section 1700.		
	a) M-20 Grade Median Kerb "I" Type Section	Lm	53,560.00
	b) M-20 Grade Median Kerb "L" Type Section	Lm	24,744.30
8.07	Providing and laying Plain cement Concrete Chutes with PCC M-20 at high embankment (more than 4m) and at superelavated portion with foundation in PCC M-15 including all labours, materials and machinery with all leads and lifts etc.,as per drawing and as directed by engineer	Lm	2,525.64
8.08	Providing energy dissipation basin at the toe of chutes on high embankment (more than 6 m height) in M-20 concrete including all labours, materials and machinery with all leads and lifts etc., complete as per drawing and as directed by engineer	Nr.	251.00
8.09	<b>Retaining wall</b>		
A	Earthwork in excavation for foundation complete as per Technical Specifications Clause 304 in all types of Soil.	Cum	18,234.24
B	Providing, laying and compacting filter material behind retaining walls complete as per drawing and Technical specifications Clauses 305 & 2504	Cum	4,377.88
C	Providing and laying Plain cement concrete of M 15 grade in open foundation & substructure complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200	Cum	1,367.57
D	Providing and laying M 30 grade Reinforced cement concrete complete as per drawing and Technical Specifications Section 1500, 1700, 2100 and 2200	Cum	10,209.16
E	Providing, Cutting, Bending and Fixing of TMT reinforcement (TMT bars) for foundation, Structure complete as per Drawings and Technical Specifications Section 1600	MT	816.73
F	Providing and fixing weep holes in retaining walls as per Drawings and Technical Specifications Section 2700.	Nr.	6,122.00
8.10	Providing and Laying of selected granular soil behind reinforced earth structure including compaction complete as per Additional Technical Specification.	Cum	37,236.00
8.11	Providing and Laying true to line, level and orientation Mechanically Stabilized Reinforced Earth Wall (measured on Face Area) of minimum 180mm thickness from MoRT&H accredited supplier including all labour, materials, machinery, all leads and lifts, but excluding backfilling with earth (to be separately paid as per BoQ item) etc. complete in the presence of supplier's representative as per drawing, Technical Specifications Section 3100 and as directed by the Engineer	Sqm	12,412.00
8.12	Construction of RCC M 40 grade crash barrier and friction slab including cost of reinforcement complete as per approved Drawings and Additional Technical Specifications.	Lm	2,520.00
8.13	Providing and laying of Stone Masonary Breast wall	Cum	55,000.00



**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>9.00</b>	<b>BILL NO: 9 - TRAFFIC SIGNS, MARKING AND ROAD APPURTENANCES</b>		
9.01	Providing and Laying Pavement marking with hot applied thermoplastic material complete as per drawing and Technical Specifications Clause 803.		
	a) Lane/ Centre line/ Edge marking/ Transverse marking and any other marking	Sqm	47,117.56
	b) Directional Arrows, Lettering etc. as per drawing No.61 of MORTH Type Designs for Intersections on National Highways	Nr.	445.00
	c) Pedestrian Crossing at junctions and median openings	Sqm	208.40
9.02	Providing and fixing PCC/RCC hectometre, kilometre and 5th kilometre stones including cost of reinforcement complete as per Technical Specifications Clause 804.		
	a) 200-metre stone	Nr.	382.00
	b) Kilometre stone	Nr.	76.00
	c) 5th km. stone	Nr.	19.00
9.03	Supplying and fixing sign boards and as directed by Engineer, including the cost of posts, fitting and fixing. Sheeting will be retro reflective sheeting confirming to Section 800 and messages/borders will be screen printed complete as per Technical Specifications Clause 801.		
A	Informatory signs		
	a) Facility information Signs	Nr.	48.00
	b) Direction / Place Identification signs	Sqm	20.25
	c) Advance Direction / Destination / Reassurance / Place Identification signs	Sqm	60.75
	d) Route marker signs(450mm x 600mm)	Nr.	57.00
B	Cautionary signs, size triangular 900mm side	Nr.	217.00
C	Mandatory signs, size		
	a) Circular 600 mm dia	Nr.	41.00
	b) Triangular 600 mm side	Nr.	50.00
	c) Triangular 900 mm side	Nr.	55.00
	d) Rectangle 800mm x 600 mm	Nr.	18.00
	e) Rectangle 600mm x 450 mm	Nr.	16.00
	f) Square 600mm x 600 mm	Nr.	12.00
	g) High Octagon 900mm Dia	Nr.	27.00
9.05	Supplying and fixing overhead signs including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective micro sheeting confirming to section 800 and message/borders will be screen-printed complete as per drawing and Technical Specifications Section 800.		
	a) Four lane overhead Tubular Gantry Signs with retro reflective sheeting of area 31.05 sqm	Nr.	5.00
	b) Cantilever overhead sign board	Nr.	16.00
9.06	Providing and Fixing road delineators, Raised pavement markers etc. complete as per drawing and Technical Specifications Clause 805, 812, 813 and as directed by Engineer.		
	a) Hazard Markers	Nr.	128.80
	b) Object Markers	Nr.	128.80
	c) Raised pavement markers (Road studs)	Nr.	6,713.00
	d) Crash barrier indicators	Nr.	652.00
9.07	Providing and fixing RCC Boundary Stone/Pillar complete as per Drawing and MORT&H Specification Clause 809 and Technical specification.	Nr.	1,696.00

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>10.00</b>	<b>BILL NO: 10 - MISCELLANEOUS</b>		
10.01	Supply of colour photographs (2 prints each) along with digital soft copy stored in CD and printed photos mounted in album as per Technical Specifications Clause 125	Nr.	720.00
10.02	Supplying additional prints (size 15cm x 10 cm) of colour record photographs as per Technical Specification Clause 125.	Nr.	360.00
10.03	Supplying colour VCD/DVD records before the construction, during construction stage & after construction, consisting of each set of edited master cassettes and VCDs/DVDs with 4 copies each complete as per Technical Specification Clause 126.	Sets	36.00
10.04	Providing and Maintaining the detour temporary diversion partial closure of existing carriage way, switch over of the traffic from widened and unwidened section and vice versa including additional safety boards and safety apparatus during construction as per drawing and Technical Specification Clause No. 112 and Additional Technical Specification and as per directions of the Engineer.		
A	Temporary barricading (Steel Type) with markings and arrows made of retro reflective sheeting as directed by Engineer	Lm - month	550.00
B	Temporary barricading using HDPE blocks in red and white colours	Lm - month	550.00
C	Retro reflective Cautionary / Warning signs	Nr.- month	48.00
D	Cones	Nr.- month	48.00
E	Solar Blinkers	Nr.- month	48.00
F	Red reflective tapes	Lm	4,500.00
10.06	Providing passenger shelters for Bus Bays as per drawing and Technical Specifications Section 1500, 1600 and 1700.	Nr.	24.00
10.07	Providing and fixing Galvanized Metallic "W" shape beam crash barrier complete as per drawing and Technical Specifications Clause 810.		
	a) Metal Beam Crash barrier	Lm	56,710.00
10.08	Supplying & fixing of Noise barriers as per the drawing & additional technical specification	Lm	-
10.09	Providing, Laying and Jointing NP-4 (as per IS:458-2000) casing/conduit pipes for Main carriageway and NP-2 (as per IS:458-2000) casing/conduit pipes for Service Roads for carrying the utility line (cables etc.) complete as per Additional Technical Specification.		
	a) Dia 600 mm -NP 4	Lm	1,400.40
	a) Dia 300 mm - NP 2	Lm	-
10.10	Construction of Utility chambers for Utility cables etc. complete as per drawings and as per the directions of the engineer.	Nos	210.00

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

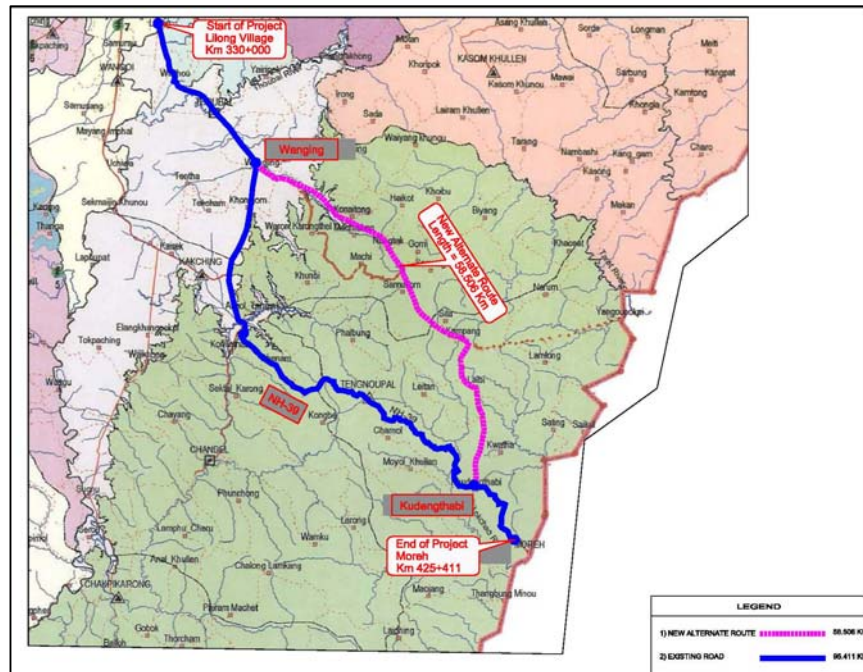
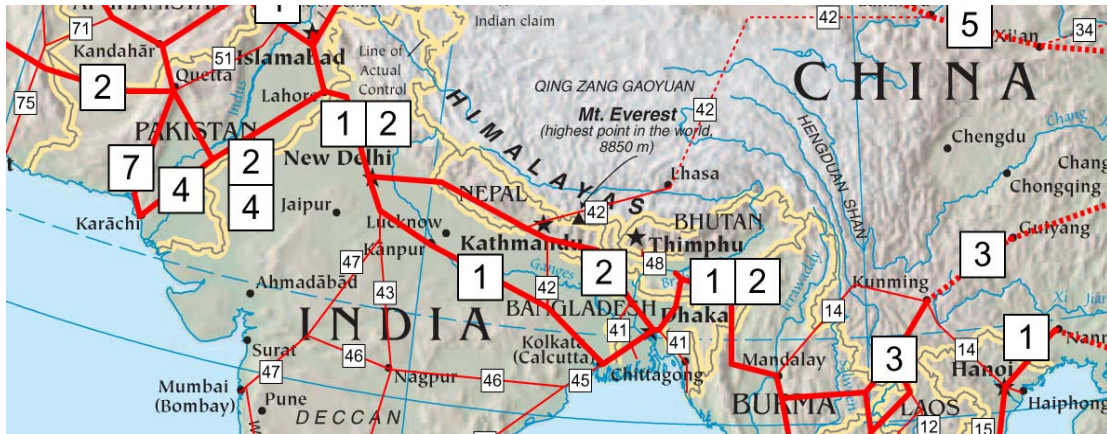
Item No.	Description	Unit	Quantity
<b>11.00</b>	<b>BILL NO: 11 - MAINTENANCE , REPAIRS &amp; REHABILITATION</b>		
11.01	Carrying out treatment and repairs to pot holes and any necessary patching to existing bituminous carriageway surfacing as per Technical Specifications Clause 3004 and as per the directions of the Engineer.		
	Shallow potholes (depth < 75 mm )	Sqm	
11.02	Injection epoxy grout for repairs of cracks including fixing of nipples complete as directed by the Engineer and Technical Specifications Clause 2803	Kg	
11.03	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	Sqm	
11.04	Providing 6mm thick mastic asphalt complete as directed by the Engineer and Technical specification Clause 2702	Sq m	
11.05	Providing 50mm thick asphaltic concrete complete as directed by the Engineer and and Technical Specifications Clause 2702/512	Cu m	
11.06	Providing and Constructing footpath including cost of providing and laying precast tiles of 25mm thick, preparation of base, drain pipes all complete as per drawing and Technical Specifications Clause 409.	Sqm	
11.07	Providing and laying filter material underneath Stone pitching on embankment slopes complete as per Drawings and Technical Specifications Section 2500.	Cu m	
11.08	Providing and laying Stone pitching in slopes complete as per Drawings and technical Specifications Section 2500	Cu m	
11.09	Providing and fixing the following types of expansion joints complete as per Drawings and Technical Specifications Section 2600.		
	a) Strip Seal Expansion Joint as per T.S. Clause 2607	Lm	
	b) Burried expansion Joint	Lm	
	c) Filler Joint	Lm	
11.11	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	Lm	

**Imphal - Moreh (NH 39)\_ADB PROJECT from Km 330+000 to Km 425+411**

**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>12</b>	<b>BIII No. 12 - ELECTRICAL ITEMS</b>		
12.1	Supply, erection and commissioning of individual stepped, swaged, welded, tubular heavy duty MS poles of 9.5M long confirming to IS 410 - SP 36 complete with base plate, MS cable terminal box with necessary MCB of adequate capacity/ Fuse (Single arm)	Nos.	643.00
12.2	Supply, erection and commissioning of individual stepped, swaged, welded, tubular heavy duty MS poles of 9.5M long confirming to IS 410 - SP 36 complete with base plate, MS cable terminal box with necessary MCB of adequate capacity/ Fuse (Double Arm)	Nos.	168.00
12.3	Supply, Installation and commissioning of 20 Meters Galvanised High Mast complete with 12 Nos 2x400W Metal Halide flood light luminaries, electrical connections and electrical cables, foundations with foundation accessories, lamp carriage with pulley and	Nos.	6.00
12.4	Supplying of Power tool for lowering or raising the lamp carriage the High Mast as at Sl.No.3 above, complete with movable packing and all tools and accessories including all costs of labour, material, transport and all other incidental charge, taxes etc.	Nos.	6.00
12.5	ImphalEB charges for 3 Phase supply service line	Nos.	6.00

## INDO MYANMAR ROAD SECTION FROM IMPHAL TO MOREH ON NH-39



Funded by:

**Asian Development Bank**

Implementation Agency:

**MORT&H / PWD Govt of Manipur**

## Detailed Project Report

### Volume -VII BOQ Report for Alternate Alignment



April, 2015

**SHELADIA Associates Inc. USA**



**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>1.00</b>	<b>BILL NO: 1 SITE CLEARANCE</b>		
1.01	Clearing and grubbing for road land complete as per Technical Specification Clause 201.		
a)	For Road	Hect.	93.51
b)	Bridges & Culverts	Sqm	
1.02	Dismantling structures and pavement including disposal of resulting materials, stacking and/or salvaging useful materials with all leads and lifts complete as per Technical Specifications Clause 202.		
	Buildings		
	1) Kutcha structures (Hutments type)	Sqm	-
	2) Semi-Pucca structures (Tiled roof/AC sheet roof)	Sqm	-
	3) Pucca structures (RCC roof)	Sqm	-
1.03	Dismantling including disposal of resulting material and salvaging the useful materials complete as Technical specification Clause 202		
a)	Plain cement concrete	Cu m	7,520.00
b)	Reinforced concrete/prestressed concrete	Cu m	1,850.00
c)	Stone / brick structures	Cu m	2,000.00
d)	Guide Rails/Fencing/Kerb/Gutters/Pipes	Lm	775.00
e)	Km stone/5 km stone/Hectometer stone/Utility Services	Nr	110.00
1.04	Cutting of trees including cutting of trunks, branches and removal of stumps& roots including stacking of serviceable material with all leads & lifts and back filling with approved material in depression / pit and as per Technical Specifications Section 200.		
a)	Girth above 300mm to 600mm	Nr.	850.00
b)	Girth above 600mm to 900mm	Nr.	525.00
c)	Girth above 900mm to 1800mm	Nr.	325.00
d)	Girth above 1800 mm	Nr.	275.00
1.05	Back filling with approved sand flooded with water in the Deep wells as per Technical Specifications Clause 305 and as directed by the Engineer.	Cum	7,000.00
1.06	Providing and laying Cement Concrete slab on wells including centering and shuttering all complete as per Drawings and Technical Specifications Sections 1500,1700, 2100 and Technical Specifications Clause 304.	Cum	200.00
1.07	Construction of temporary diversion for passage of traffic, complete as per Technical Specifications Section Clause 112.3	Lm	-

**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>2.00</b>	<b>BILL NO: 2 - EARTHWORKS</b>		
2.01	Roadway excavation in all types of soils including ordinary rock necessary for construction of roadway and drainage includes dressing, trimming and compacting the cut formation in accordance with requirements of lines, grades and cross fall complete and disposal of all cut material including necessary stacking of suitable material with all lifts and leads as per Technical Specification section 301.		
	a) In Soils	Cum	4,143,843.69
	b) In marshy soils	Cum	-
	c) In ordinary Rock	Cum	1,506,852.25
2.02	Excavation for roadway in hard rock by drilling, blasting and breaking, trimming of bottom and side slopes in accordance with requirements of lines, grades and cross sections, loading and disposal of all cut material including necessary stacking of suitable material with all lifts and leads complete as per Technical Specification Section 301, 302 and additional technical specification.		
	a) Hard rock excavation	Cum	-
	b) Hard rock excavation not requiring blastering	Cum	753,426.13
	c) Hard rock excavation requiring blastering	Cum	1,130,139.19
	d) Rebate towards the excavated useful hard rock available under item nos.2.02.	Cum	-
2.03	Construction of embankment with approved Soil material obtained from approved borrow areas complete with all leads and lifts as per Technical Specification Clause 305.	Cum	-
2.04	Construction of subgrade with approved material obtained from approved borrow areas complete with all leads and lifts, satisfying the soaked CBR value of Not less than 8% as per drawing and Technical Specification Clause 305.	Cum	65,385.87
2.05	Construction of earthen shoulder with approved granular material obtained from selected source with all leads and lifts etc., complete as per drawing and Technical Specifications Clause 407.	Cum	12,797.01
2.06 (a)	Construction of embankment with approved materials available from the roadway excavation or any other excavation including all leads and lifts etc., complete as per Technical Specification Clause 305.	Cum	302,615.53
2.06 (b)	Construction of subgrade/Shoulder with approved materials available from the roadway excavation or any other excavation including all leads and lifts etc., complete as per Technical Specification Clause 305..	Cum	275,983.46
2.07	Removal of existing pavement layers for reconstruction (all types of layers) complete as per Technical Specification Clause 301.	Cum	6,300.00
2.08	Removal of existing Granular layers for reconstruction (all types of layers) complete as per Technical Specification Clause 301.	Cum	12,600.00
2.09	Loosening and recompaction the original ground/ subgrade upto the required depths as directed by the Engineer and Technical Specifications Clause 301 & 305	Cum	28,000.00
2.10	Filling of median / island with approved material obtained from selected source as per Technical Specifications Clause 305 and 407.	Cum	7,000.00
2.11	Construction of roack fill embankment with broken hard rock fragments of size not exceeding 300mm laid in layers not exceeding 500mm thick including filling of surface voids with stone spalls, blinding top layer with granular material, rolled with vibratory road roller, all complete as per clause 313	Cum	124,100.00

**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>3.00</b>	<b>BILL NO: 3 - SUB-BASE AND BASE COURSES</b>		
3.01	Providing and Construction of Granular Sub-base complete as per drawing and Technical Specifications Clause 401		
	Grading of Table - 400 -1 Grading I	Cum	8,147
3.02	Constructing Cement Treated Sub Base (with 2% Cement by Wiegth) complete as per drawing and Technical specifications clause 403	Cum	172,490
3.03	Constructing Cement Treated Base (with 4% Cement by Wiegth) complete as per drawing and Technical specifications clause 403	Cum	48,714
3.04	Providing and Construction of wet mix macadam (WMM) base with approved material complete as per MORTH Technical Specification Clause No. 406 (laid by electronic sensor paver)	Cum	69,597

**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>4.00</b>	<b>BILL NO: 4 - BITUMINOUS WORKS</b>		
4.01	Providing and applying bituminous Primer Coat over granular surface with bitumen emulsion complete as per Technical Specification Clause 502.		
	a) @ 7.0 to 10 kg/ 10 sqm	Sqm	627,573.77
4.02	Providing and applying bituminous Tack coat over prepared surface with bituminous emulsion all complete as per Technical Specification Clause 503		
	a) @ 2.5 to 3.0kg / 10 sqm over granular surface treated with primer	Sqm	-
	b) @ 2.0 to 3.0 kg /10 sqm over bituminous surface	Sqm	585,065.55
4.03	Providing and laying Bituminous Macadam (BM, Grading-2) course in PCC using 60/70 grade of bitumen, all complete as per MORTH Technical Specification Clause No. 501 & 504	Cum	-
4.04	Providing and laying Dense Bituminous Macadam (DBM, grading-2) course using VG 30 grade of bitumen complete as per MORTH Technical Specification Clause No. 507.	Cum	2,642.13
4.05	Providing and laying Surface Dressing as wearing course in single coat using crushed stone aggregates of specified size on a layer of bituminous binder on prepared surface and rolling with 8-10 tonne smooth wheeled steel roller, as per the direction of the Engineer and Technical Specifications Clauses	Sqm	589,261.27
4.06	Providing and laying Bituminous Concrete wearing course using Modified Bitumen as per drawing and Technical Specification Clause No. 509 & 521.	Cum	24,997.12
4.07	Providing and laying Cement Treated Sub Base as per Technical Specification Clause with a minimum cement content of 3% by weight	Cum	-
4.08	Providing un-reinforced, dowel jointed, Pavement Quality Concrete (PQC) of M 40 grade concrete with minimum cement content of 400kg/Cum, including all costs of jointing, edge cutting, dowel bars etc., all complete as per drawing and Technical Specification Clause 602.	Cum	-

**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>5.00</b>	<b>BILL NO: 5 - CULVERTS</b>		
5.01	Earthwork in excavation of foundation for structures complete with all leads and lifts as per drawing and Technical Specification Clause 304.		
	a) In Ordinary Soil	Cum	13,680.83
5.02	Providing and laying approved sand filling in Foundation Trenches as per Drawing & Technical Specification clause 1008 and conforming to the IS-383	Cum	3,500.00
5.03	Back filling behind abutments, wing walls/ retaining walls and return walls with selected granular material of approved quality complete as per drawing and Technical Specification Clause 304 and 305.	Cum	2,460.64
5.04	Providing and laying of Filter media of Stone aggregate conforming to Technical Specifications Clause 2504.2.2 behind abutment, wing wall, retaining wall and return walls, complete as per drawing and Technical Specifications Clause 305 & 2504	Cum	949.13
5.05	Providing and laying M15 grade Plain Cement Concrete with 20mm down graded crushed stone aggregate for Head Wall, Wing Wall, Cradle of structures including all labour, materials, machinery, transporting of concrete from batching plant by transit mixer, placing it in position, compacting with needle vibrator, moist curing, all leads and lifts, etc. complete as per drawing, Technical Specification Section 1500,1700 and as directed by the Engineer	Cum	1,183.71
5.06	Providing and laying Plain cement concrete in open foundation & substructure excluding cost of steel complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200		
	a) PCC Grade M 20	Cum	4,454.28
	b) PCC Grade M 25	Cum	
5.07	Providing and laying Reinforced cement concrete for foundations & substructure excluding cost of steel complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200		
	a) RCC M 25 grade	Cum	-
	a) RCC M 30 grade	Cum	-
5.08	Providing and laying Reinforced cement concrete for box / slab culverts in superstructure excluding cost of steel complete as per drawing and Technical Specifications Sections 1500, 1700 and 2300		
	a) RCC Grade M 25	Cum	-
	a) RCC Grade M 30	Cum	3,949.63
5.09	Providing, cutting, bending and fixing in position of TMT bar reinforcement of <b>grade Fe 500</b> in reinforced concrete structures complete as per drawing and Technical Specifications Section 1600		
(a)	Foundation	Tonne	315.97
(b)	Substructure	Tonne	-
(c)	Superstructure	Tonne	-
5.10	Providing, laying and jointing NP-4 (as per IS:458-2003) Pipes for culverts, complete as per drawing and Technical Specifications Section 2900 and IRC : SP No.13 - 1998.		
	a) H.P NP-4, 900 mm Dia	Lm	-
	b) H.P NP-4, 1000 mm Dia	Lm	-
	c) H.P NP-4, 1200 mm Dia	Lm	1,816.32
5.11	Providing and laying first class/ selected granular material in bedding for pipe culverts all complete as per drawing and Technical Specifications Section 2900.	Cum	1,729.50
5.12	Providing and laying filter material underneath stone pitching in slopes complete as per drawing and Technical Specification Section 2500.	Cum	2,724.03
5.13	Providing and laying stone pitching in slopes complete as per drawing and Technical Specifications Section 2500.	Cum	5,448.06
5.14	Providing and laying Dry Boulder apron complete as per Drawings and Technical Specifications Clause 2503.	Cum	724.75
5.15	Providing and fixing Weep holes in abutments, wing walls and return walls complete as per drawing and Technical Specification Clause 2706.	Nr.	896.18
5.16	Providing and fixing bearings complete as per Drawings and Technical Specifications Section 2000.		
	a) Tar Paper Bearing	Sqm	-
5.17	Providing Marker Post for buried culverts including synthetic enamel painting with necessary details as per IRC: 7-1971 and direction of Engineer.	Nr.	133.00
5.18	Providing and painting with Synthetic enamel paint of approved quality for Culvert numbering, Type of Culvert and Details of Span Arrangement as per IRC:7-1971 and as directed by Engineer.	Sqm	172.90



Item No.	Description	Unit	Quantity
5.19	Providing and Applying ordinary paints of approved quality on surface of parapet/Crash Barrier of culverts as per drawing and Technical Specifications Section 800.	Sqm	422.94
5.20	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolerance of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	Lm	222.60
5.21	Reinforced Cement Concrete Crash Barrier Grade M 40 including reinforcement complete as per drawing and Technical Specifications Section 1500, 1600, 1700 , 2200 and Clause 809.	Lm	222.60
5.22	Providing and fixing galvanized Drainage Spouts along with drain pipes complete as per drawing and Technical Specifications Clause 2705.	Nr.	-
5.23	Providing and laying M15 grade Plain Cement Concrete with 20mm down graded crushed stone aggregate for Curtain Wall at upstream and downstream of structures including all labour, materials, machinery, transporting of concrete from batching plant by transit mixer, placing it in position, compacting with needle vibrator, moist curing, all leads and lifts, etc. complete as per drawing, Technical Specification Section 1500,1700 and as directed by the Engineer	Cum	977.78
5.24	Providing and laying flexible apron in the upstream and downstream of structure for protection against scour with stone boulders weighing not less than 40 kg each including all labour , materials, machinery, all leads and lifts, compacting to the satisfaction of the Engineer etc. complete as per drawing, Technical Specification Section 2500 and as directed by the Engineer .	Cum	1,219.05
5.25	Providing and laying Plain Cement concrete M-15 grade leveling course below approach slab as per drawings and Technical Specification Section 1500&1700	cum	1,018.71
5.26	Providing and laying Reinforced Cement Concrete M-30 grade for approach slabs including cost of reinforcement complete as per Drawings and Technical Specifications Section 1500, 1600, 1700 and Clause 2704.	cum	2,037.42
5.27	<b>Rehabilitation of Existing Culverts</b> Providing and applying 40 mm average thickness shootcrete mixture as per clause 2807.1, Density of gunite not less than 2800 Kg./ Cum. & workmanship conforming to clause 2807-6 including removal of defective concrete and cleaning the surface thoroughly as per technical specification and direction of Engineer.		
a)	Slab/ Pipe/ Box / Arch	Sqm	-
b)	Pipe Surface	Lm	-
c)	Head Wall	Sqm	-
5.28	Repairing of R.C.C Parapet with fresh cement concrete M-25 as per technical specification Section-2800 & direction of the Engineer.	Lm	-

**Imphal - Moreh (NH 39)\_Alternate Alignment  
ADB PROJECT from Km 0+000 to Km 58+506  
BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>6.00</b>	<b>BILL NO: 6 -BRIDGES</b>		
6.01	Earth work in excavation of foundation of structures as per drawing and technical specification, including setting out, construction of shoring and bracing, removal of stumps and other deleterious matter, dressing of sides and bottom and backfilling with approved material etc. and as per relevant clauses of section 300 & 2100 in	Cum	6,997.70
6.02	Providing Back filling behind abutment, wing wall and return wall with Granular Material complete as per drawing and Technical specification and as per relevant clauses 305 of specifications	Cum	4,456.63
6.03	Providing and laying Filter material underneath pitching in slopes complete as per drawing and Technical specification and as per relevant clauses of section 2500.	Cum	1,205.25
6.04	Providing and laying Plain cement concrete in open foundation including form work shuttering etc. complete as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2100 with .		
(i)	P.C.C. M-15 grade in leveling course	Cum	173.02
(ii)	Below Approach Slab (M15 Grade Concrete)	Cum	60.64
6.05	Providing and laying Reinforced cement concrete in Foundation of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in RCC M - 35 grade Concrete	Cum	1,164.53
6.06(i)	Providing and laying Reinforced cement concrete in sub-structure of complete section as per drawing and technical specifications and as per relevant clauses of sections 1500, 1700 & 2200 in M - 35 grade Concrete	Cum	2,063.30
6.06(ii)	Providing Sesmic Stoppers of M 45 Grade Concrete	Cum	52.76
6.07	Supplying, fitting and placing un-coated HYSD bar reinforcement in foundation complete as per drawing and technical specifications and as per relevant clauses of sections 1600.	MT	546.86
6.08	Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and technical specifications and as per relevant clauses of sections 1600.	MT	296.25
6.09(i)	Supplying, fitting and fixing in position true to line and level elastomeric bearings confirming to IRC:83:(Pt.II) section IX complete including all accessories as per drawing and specifications as per section 2000.	Cu.Cm	-
6.09(ii)	Pot/PTFE Bearings	Nr.	73.50
6.10	Providing and laying Reinforced cement concrete in super-structure as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in RCC M 40 Grade Concrete		
a)	RCC Girder with Deck Slab with M 30 Grade Concrete	Cum	-
b)	RCC Girder with Deck Slab with M 35 Grade Concrete	Cum	926.22
6.11	Providing and laying Prestressed cement concrete in super-structure as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in RCC M 45 Grade Concrete		
a)	PSCC Girder with M 45 Grade Concrete	Cum	110.52
b)	RCC Deck Slab with M 45 Grade Concrete	Cum	80.06
6.12	Providing and laying Reinforced cement concrete in Approach Slab as per drawing and Technical Specification and as per relevant clauses of sections 1500, 1700 and 2300 in M-30 Grade	Cum	121.28
6.13	Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications as per relevant clauses of section 1600 of specifications.	MT	167.57
6.14	Providing Drainage Spouts complete as per drawing and Technical specification and as per clause 2705 of specifications.	Nr.	27.30
6.15(i)	Reinforced cement concrete Crash Barrier (M-40 Grade) complete as per drawing and Technical Specification Sections 1500, 1600, 1700, 2700 and 809 and Clause 2703	RMT	285.60
6.15(ii)	Providing M 30 Grade RCC Concrete Railing	RMT	142.80
6.16	Providing and laying of a strip seal expansion joint catering to maximum horizontal movement upto 70 mm, complete as per approved drawings and standard specifications to be installed by the manufacturer/ supplier or their authorised representative ensuring compliance to the manufacturer's instructions for installation and as per relevant clauses of section 2600.	RMT	151.20
6.17	Providing and laying 65 mm thick Wearing Course consisting of 40mm thick bituminous concrete over 25mm thick bitumen mastic layer complete as per drawing and Technical Specifications Clause 2702.	Sqm	1,986.60
6.18	Providing High tensile steel wires/strands including all accessories for stressing, stressing operations and grouting complete as per drawing and Technical Specifications and as per relevant clauses of section 1800.	MT	7.08

Item No.	Description	Unit	Quantity
<b>6.00</b>	<b>BILL NO: 6 -BRIDGES</b>		
6.19	Providing bored cast-in-situ M-40 grade R.C.C. pile excluding reinforcement complete as per drawing and technical specifications and removal of excavated earth with all lifts and lead upto 1000 m. (Pile diameter-1200 mm) and as per specifications 1100, 1600 and 1700.	RMT	1,638.00
6.20	Providing and laying Cement concrete for reinforced concrete in pile cap complete as per drawing and Technical Specification and as per relevant clauses of sections 1100, 1500 & 1700 with M 35 Grade Concrete	Cum	1,486.45
6.21	Providing Weep Holes	Nr.	784.35

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Item No.	Description	Unit	Quantity
<b>7.00</b>	<b>BILL NO: 7 - ROAD JUNCTIONS, TOLL PLAZA</b>		
7.01	Providing and Constructing footpath/paved separator platform/paved part of medians and islands including cost of providing and laying precast tiles of 25mm thick, preparation of base, drain pipes all complete as per drawing and Technical Specifications Clause 409.	Sqm	39,567.50
7.02	Providing and Laying NP-4 pipes of 1000 mm dia for utility culverts at junctions complete as per drawing and Technical Specifications Section 2900 and IRC: SP 13 – 1973.	Lm	420.00
7.03	Providing and Fixing MS railing for traffic islands/ horizontal curves on high embankments including foundation concrete and painting with approved paint etc., all complete as per drawing and Technical Specification Sections 300, 1500, 1700 and 1900.	Lm	-
7.04	Construction of Toll Plaza, Administrative Block & Toll booth buildings including arrangement of electric supply, All Electrical items like fans, Lights, Socket receptacles, and Complete wiring, with requisite earthing, providing fire alarm and fighting system like smoke detector, electric hooter with battery back-up cabling and CO2 hand extinguisher, providing water supply including all pipes, fittings, tanks, tube wells, pumps, valves etc. complete with septic tank, sewer lines, etc all complete as per drawing and Additional Technical Specifications inclusive of all	Nos	1.00

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Item No.	Description	Unit	Quantity
<b>8.00</b>	<b>BILL NO: 8 - DRAINAGE AND PROTECTION WORKS</b>		
8.01	Providing and Laying of Turfing on embankment slopes and on median islands with green grass sods as per Technical Specification Clause No. 307	Sqm	67,417.45
8.02	Providing and Laying granular filter material underneath stone pitching on embankment slopes complete as per drawing and as per clause 2500 and Additional Technical Specifications.	Cum	10,112.62
8.03	Providing and Laying stone pitching on embankment slopes complete as per drawing and Technical Specifications Section 2500		
	a) Dry Stone pitching with 300mm thick	Cum	20,225.23
8.04	Supplying & Planting flowering plants and shrubs in the median as per additional technical specifications	Km	-
8.05	Providing and constructing lined surface drains to the required lines and grades as per drawing and Technical Specifications Clause 309 and Section 1700.		
	a) Covered drain with 100 mm thick M 25 grade RCC slab		
	(i) Excavation	Cum	21,600.00
	(ii) PCC M 15 Grade Levelling Course	Cum	1,080.00
	(iii) RCC M 25 Grade for Raft and Wall	Cum	4,200.00
	(iv) RCC M 25 Grade for Slab	Cum	1,200.00
	(v) HYSD	MT	270.00
	(vi) Grating	Nr.	1,333.33
	(vii) Weep Holes	Nr.	16,000.00
	b) Median Transverse chutes with M 15 grade concrete in superelevated portions with 750mm and 450mm wide openings.	Lm	-
	c) Unlined surface Toe drains to the required lines and grades as per drawing and technical specification clause 309	Lm	33,500.00
8.06	Providing and laying Plain Cement Concrete M 20 kerb as per drawing and Technical Specifications Clauses 408 and Section 1700.		
	a) M-20 Grade Median Kerb "I" Type Section	Lm	2,945.00
	b) M-20 Grade Median Kerb "L" Type Section	Lm	17,551.80
8.07	Proving and laying Plain cement Concrete Chutes with PCC M-20 at high embankment (more than 4m) and at superelavated portion with foundation in PCC M-15 including all labours, materials and machinery with all leads and lifts etc.,as per drawing and as directed by engineer	Lm	1,685.44
8.08	Providing energy dissipation basin at the toe of chutes on high embankment (more than 6 m height) in M-20 concrete including all labours, materials and machinery with all leads and lifts etc., complete as per drawing and as directed by engineer	Nr.	168.00
8.09	Providing, preparing and laying of geogrid crated apron 1m x 5m, 600mm thick including excavation and backfilling with baffles at 1m interval, made with geogrids having characteristics as per clause 704.2, joining sides with connectors/ring staples, top corners to be tie tensioned, placing of suitable cross interval ties in layers of 300mm connecting opposite side with lateral braces and tied with polymer briads to avoid bulging, constructed as per clause 704.3 filled with stone with minimum size of 200mm and specific gravity not less than 2.65, packed with stone spalls, keyed to the foundation recess in case of sloping fround and laid over a layer of geotextile to prevent migration of fines, all as per clause 704 and laid as per clause 2503.3 and approved design and drawings	Cum	195,135.00
8.10	<b>Breast Wall</b>		
A	Earthwork in excavation for foundation complete as per Technical Specifications Clause 304 in all types of Soil.	Cum	43,423.79
B	Providing and laying Plain cement concrete of M 15 grade in open foundation & substructure complete as per drawing and Technical Specifications Section 1500,1700, 2100 & 2200	Cum	10,855.95
C	Providing and laying RR Stone Masonary complete as per drawing and Technical Specifications	Cum	54,279.73

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**BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>9.00</b>	<b>BILL NO: 9 - TRAFFIC SIGNS, MARKING AND ROAD APPURTENANCES</b>		
9.01	Providing and Laying Pavement marking with hot applied thermoplastic material complete as per drawing and Technical Specifications Clause 803.		
	a) Lane/ Centre line/ Edge marking/ Transverse marking and any other marking	Sqm	27,400.37
	b) Directional Arrows, Lettering etc. as per drawing No.61 of MORTH Type Designs for Intersections on National Highways	Nr.	445.00
	c) Pedestrian Crossing at junctions and median openings	Sqm	163.50
9.02	Providing and fixing PCC/RCC hectometre, kilometre and 5th kilometre stones including cost of reinforcement complete as per Technical Specifications Clause 804.		
	a) 200-metre stone	Nr.	234.00
	b) Kilometre stone	Nr.	47.00
	c) 5th km. stone	Nr.	12.00
9.03	Supplying and fixing sign boards and as directed by Engineer, including the cost of posts, fitting and fixing. Sheeting will be retro reflective sheeting confirming to Section 800 and messages/borders will be screen printed complete as per Technical Specifications Clause 801.		
A	Informatory signs		
	a) Facility information Signs	Nr.	37.00
	b) Direction / Place Identification signs	Sqm	20.25
	c) Advance Direction / Destination / Reassurance / Place Identification signs	Sqm	68.85
	d) Route marker signs(450mm x 600mm)	Nr.	85.00
B	Cautionary signs, size triangular 900mm side	Nr.	236.00
C	Mandatory signs, size		
	a) Circular 600 mm dia	Nr.	45.00
	b) Triangular 600 mm side	Nr.	50.00
	c) Triangular 900 mm side	Nr.	55.00
	d) Rectangle 800mm x 600 mm	Nr.	18.00
	e) Rectangle 600mm x 450 mm	Nr.	16.00
	f) Square 600mm x 600 mm	Nr.	12.00
	g) High Octagon 900mm Dia	Nr.	40.00
9.05	Supplying and fixing overhead signs including cost of posts, truss, erection, fitting and foundations. Sheeting will be retro reflective micro sheeting confirming to section 800 and message/borders will be screen-printed complete as per drawing and Technical Specifications Section 800.		
	a) Four lane overhead Tubular Gantry Signs with retro reflective sheeting of area 31.05 sqm	Nr.	5.00
	b) Cantilever overhead sign board	Nr.	16.00
9.06	Providing and Fixing road delineators, Raised pavement markers etc. complete as per drawing and Technical Specifications Clause 805, 812, 813 and as directed by Engineer.		
	a) Hazard Markers	Nr.	134.00
	b) Object Markers	Nr.	134.00
	c) Raised pavement markers (Road studs)	Nr.	4,810.00
	d) Crash barrier indicators	Nr.	390.00
9.07	Providing and fixing RCC Boundary Stone/Pillar complete as per Drawing and MORT&H Specification Clause 809 and Technical specification.	Nr.	1,112.00

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Item No.	Description	Unit	Quantity
<b>10.00</b>	<b>BILL NO: 10 - MISCELLANEOUS</b>		
10.01	Supply of colour photographs (2 prints each) along with digital soft copy stored in CD and printed photos mounted in album as per Technical Specifications Clause 125	Nr.	720.00
10.02	Supplying additional prints (size 15cm x 10 cm) of colour record photographs as per Technical Specification Clause 125.	Nr.	360.00
10.03	Supplying colour VCD/DVD records before the construction, during construction stage & after construction, consisting of each set of edited master cassettes and VCDs/DVDs with 4 copies each complete as per Technical Specification Clause 126.	Sets	36.00
10.04	Providing and Maintaining the detour temporary diversion partial closure of existing carriage way, switch over of the traffic from widened and unwidened section and vice versa including additional safety boards and safety apparatus during construction as per drawing and Technical Specification Clause No. 112 and Additional Technical Specification and as per directions of the Engineer.		
A	Temporary barricading (Steel Type) with markings and arrows made of retro reflective sheeting as directed by Engineer	Lm - month	300.00
B	Temporary barricading using HDPE blocks in red and white colours	Lm - month	250.00
C	Retro reflective Cautionary / Warning signs	Nr.- month	48.00
D	Cones	Nr.- month	48.00
E	Solar Blinkers	Nr.- month	48.00
F	Red reflective tapes	Lm	4,500.00
10.06	Providing passenger shelters for Bus Bays as per drawing and Technical Specifications Section 1500, 1600 and 1700.	Nr.	13.00
10.07	Providing and fixing Galvanized Metallic "W" shape beam crash barrier complete as per drawing and Technical Specifications Clause 810.		
	a) Metal Beam Crash barrier	Lm	55,351.00
10.08	Supplying & fixing of Noise barriers as per the drawing & additional technical specification	Lm	-
10.09	Providing, Laying and Jointing NP-4 (as per IS:458-2000) casing/conduit pipes for Main carriageway and NP-2 (as per IS:458-2000) casing/conduit pipes for Service Roads for carrying the utility line (cables etc.) complete as per Additional Technical Specification.		
	a) Dia 600 mm -NP 4	Lm	670.00
	a) Dia 300 mm - NP 2	Lm	-
10.10	Construction of Utility chambers for Utility cables etc. complete as per drawings and as per the directions of the engineer.	Nos	67.00



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Item No.	Description	Unit	Quantity
<b>11.00</b>	<b>BILL NO: 11 - MAINTENANCE , REPAIRS &amp; REHABILITATION</b>		
11.01	Carrying out treatment and repairs to pot holes and any necessary patching to existing bituminous carriageway surfacing as per Technical Specifications Clause 3004 and as per the directions of the Engineer.		
	Shallow potholes (depth < 75 mm )	Sqm	
11.02	Injection epoxy grout for repairs of cracks including fixing of nipples complete as directed by the Engineer and Technical Specifications Clause 2803	Kg	
11.03	Applying epoxy mortar over leached, honey combed and spalled concrete surface and exposed steel reinforcement complete as per Technical specification	Sqm	
11.04	Providing 6mm thick mastic asphalt complete as directed by the Engineer and Technical specification Clause 2702	Sq m	
11.05	Providing 50mm thick asphaltic concrete complete as directed by the Engineer and and Technical Specifications Clause 2702/512	Cu m	
11.06	Providing and Constructing footpath including cost of providing and laying precast tiles of 25mm thick, preparation of base, drain pipes all complete as per drawing and Technical Specifications Clause 409.	Sqm	
11.07	Providing and laying filter material underneath Stone pitching on embankment slopes complete as per Drawings and Technical Specifications Section 2500.	Cu m	
11.08	Providing and laying Stone pitching in slopes complete as per Drawings and technical Specifications Section 2500	Cu m	
11.09	Providing and fixing the following types of expansion joints complete as per Drawings and Technical Specifications Section 2600.		
	a) Strip Seal Expansion Joint as per T.S. Clause 2607	Lm	
	b) Burried expansion Joint	Lm	
	c) Filler Joint	Lm	
11.11	Construction of precast RCC railing of M30 Grade, aggregate size not exceeding 12 mm, true to line and grade, tolurence of vertical RCC post not to exceed 1 in 500, centre to centre spacing between vertical post not to exceed 2000 mm, leaving adequate space between vertical post for expansion, complete as per approved drawings and technical specifications.	Lm	

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BILL OF QUANTITIES**

Item No.	Description	Unit	Quantity
<b>12</b>	<b>Bill No. 12 - ELECTRICAL ITEMS</b>		
12.1	Supply, erection and commissioning of individual stepped, swaged, welded, tubular heavy duty MS poles of 9.5M long confirming to IS 410 - SP 36 complete with base plate, MS cable terminal box with necessary MCB of adequate capacity/ Fuse (Single arm)	Nos.	438.00
12.2	Supply, erection and commissioning of individual stepped, swaged, welded, tubular heavy duty MS poles of 9.5M long confirming to IS 410 - SP 36 complete with base plate, MS cable terminal box with necessary MCB of adequate capacity/ Fuse (Double Arm)	Nos.	-
12.3	Supply, Installation and commissioning of 20 Meters Galvanised High Mast complete with 12 Nos 2x400W Metal Halide flood light luminaries, electrical connections and electrical cables, foundations with foundation accessories, lamp carriage with pulley and	Nos.	4.00
12.4	Supplying of Power tool for lowering or raising the lamp carriage the High Mast as at Sl.No.3 above, complete with movable packing and all tools and accessories including all costs of labour, material, transport and all other incidental charge, taxes etc.	Nos.	4.00
12.5	ImphalEB charges for 3 Phase supply service line	Nos.	4.00