

## REPORT

Name of Work: -	Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in state of Nagaland
State:-	Nagaland
Span Arrangement:-	1x81.5M
Carriage width:-	9.5 M
Total Length of Bridge:-	81.5 M
Estimated cost of Bridge & Approach:-	<b>265245246</b>

**PROJECT TITLE:-**

Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in state of Nagaland

**CLIENT:-** National Highways and Infrastructure Development Corporation Ltd.

**STATE**

Nagaland

**LENGTH OF BRIDGE**

81.5 M

**WIDTH OF BRIDGE**

12.5 M

**TYPE OF ABUTMENT**

WALL TYPE

**TYPE OF FOUNDATION**

OPEN

**TYPE OF SUPERSTRUCTURE**

Truss

**NO. OF SPAN**

1

**LENGTH OF SPAN**

81.5 M

	UNIT	
RTL	M	1080.000
AGL	M	1076.746
NBL	M	1076.346
HFL	M	1105.914
LWL	M	1104.914
OFL	M	1105.414
FL	M	1072.346
RTL-NBL	M	3.654
RTL-FL	M	7.654

MEMBER	FRL	GL	FDNL
A1	1080	1076.346	1072.346
P1			
P2			
A2	1080	1077.146	1073.146

## GENERAL ABSTRACT OF COST

S.I. No.	Description of work		ESTIMATED COST
1.0	ESTIMATE OF THE BRIDGE	Rs.	182807909
2.0	ESTIMATE OF THE RETAINING WALL	Rs.	81067958
		<b>Total</b>	263875867
3.0	Add for Contingency upto 1 crore (1%)	Rs.	100000
4.0	Add for Contingency above 1 crore (0.5%)	Rs.	1269379
	Grand Total	Rs.	<b>265245246</b>

**SUPERSTRUCTURE**

No. of Span	=	1			
Number of Girder in each span	=	4			
C/C of Expansion Joint	=	81.5	m		
		No.	Width	Total Width	unit
Width of Crash barrier	=	2	0.50	1	m
Width of Carriage way	=	1	9.5	9.5	m
Width of Footpath	=	1	1.50	1.5	m
Width of Railing	=	1	0.50	0.5	m
<b>Total Width</b>	=			<b>12.5</b>	m

**SUBSTRUCTURE**

<b>No. of Abutment</b>	=	2
Thickness of Abutment Shaft	=	1.00 m
Length of Shaft	=	12.50 m
Length of Abutment Cap	=	12.50 m
Width of Abutment Cap	=	1.57 m
Height of Abutment Cap (Rectangular Portion)	=	0.5 m
Height of Abutment Cap (Trapezoidal Portion)	=	0.5 m
Average Height of Abutment Shaft	=	2.25 m
<b>No. of Piers</b>	=	0
Thickness of Pier Shaft	=	1.00 m
Length of Shaft	=	5.00 m
Length of Pier Cap (At Top)	=	11.20 m
Length of Pier Cap (At Bottom)	=	6.00 m
Width of Pier Cap	=	2.00 m
Height of Pier Cap (Rectangular Portion)	=	0.5 m
Height of Pier Cap (Trapezoidal Portion)	=	0.75 m
Average Height of Pier Shaft	=	m

**FOUNDATION**

<b>For Abutment A1</b>	
Length	12.50 m
Breadth	11.0 m
Height of Rectangular Portion	1 m
Height of Trapezoidal Portion	1.5 m
Toe Length	5 m
Heel Length	5 m
Thickness of Return Wall	0.5 m
Thickness of Filter Media	0.6 m
Height of Filter Media(behind abutment)	4.64 m
Height of Return Wall	5.89 m
<b>For Abutment A2</b>	
Length	12.50 m
Breadth	11.0 m
Height of Rectangular Portion	1 m
Height of Trapezoidal Portion	1.5 m
Toe Length	5 m
Heel Length	5 m
Height of Filter Media(behind abutment)	3.84 m
Height of Return Wall	5.09 m

<b>For Pier P1</b>	
Length	0.00 m
Breadth	1.0 m
Height of Rectangular Portion	0 m
Height of Trapezoidal Portion	0 m
Toe Length	0 m
Heel Length	0 m

**Bearing and Bearing Pedestal**

		<b>L</b>	<b>B</b>	<b>H</b>	
On Abutment	=	0.80	0.80	0.250	
On Pier	=	0.80	0.80	0.250	
No. of Bearing on Abutment	=	4	no.		
No. of Bearing on Pier	=	8	no.		
			<b>Total=</b>	<b>8</b>	<b>no.</b>

**Seismic Arrestor**

		<b>L</b>	<b>B</b>	<b>H</b>	
Size	=	0.8	0.8	0.80	
No. of Trans. Seis. Arrestor on each Pier	=	0	no.		
No. of Trans. Seis. Arrestor on each Abutment	=	2	no.		
			<b>Total=</b>	<b>4</b>	<b>no.</b>

**Dirt wall**

Thickness of dirt wall	=	0.30 m
Height of dirt wall (Dirt wall)	=	1.44 m
Bracket (thickness)	=	0.20 m
Bracket (length I1)	=	0.18 m
Bracket (length I2)	=	0.12 m
Length of Dirt wall	=	12.5 m
Length of Bracket	=	12.5 m

**Approach Slab**

Width of Approach Slab	=	3.5 m
Length of Approach Slab	=	12.5 m
Thickness of Approach Slab	=	0.3 m
PCC below Approach Slab	=	0.15 m

No. of Span	1	2	3	4
Length of Span	81.5			
Name of Abutment/Pier	A1			A2
FRL	1080	0	0	1080
FL	1072.35	0	0	1073.15
Height of Superstructure (m)	1.085			1.085
Height of bearing +pedestal	0.35			0.35
Height of Abutment/Pier cap(m)	1.0			1.0
Height of Foundation (m)	2.5			2.5
Height of Shaft (m)	2.654			1.854
No. of Bearing	4			4

**BILL OF QUANTITY (BRIDGE)**

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
1	2.3	201	<b>SITE CLEARANCE</b> Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned, up to a lead of 1000 metres including removal and disposal of top organic soil not exceeding 150 mm in thickness.	hect.	1	92.5	16.5			0.15		
				hect.					<b>Total</b>	<b>0.15</b>	<b>48834.00</b>	<b>7453.29</b>
2	12.1(IB)	304	<b>EXCAVATION WORK</b> 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, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.									
			<b>UPTO 3M</b>									
			For Abutment A1 (Weathered rock)	cum.	1	12.7	11.2	2.00		284.48	79.3	22559.264
			For Abutment A1 (Hard rock)	cum.	1	12.7	11.2	1.00		142.24	79.3	11279.632
			For Abutment A2 (Weathered rock)	cum.	1	12.7	11.2	2.00		284.48	79.3	22559.264
			For Abutment A2 (Hard rock)	cum.	1	12.7	11.2	1.00		142.24	79.3	11279.632
			For Pier P1 (Weathered rock)	cum.	0	0.2	1.2	2.00		0.00	79.3	0.000
			For Pier P1 (Hard rock)		0	0.2	5.6	0.60		0.00	79.3	0.000
				cum.								
			<b>3M TO 6M</b>									
			For Abutment A1 (Hard rock)	cum.	1	12.7	11.2	1.10		156.46	79.3	12407.5952
			For Abutment A2 (Hard rock)	cum.	1	12.7	11.2	1.10		156.46	79.3	12407.60
			For Pier P1	cum.	0	0.2	1.2					
			For Pier P2	cum.		0.2	5.6					
				cum.								0.00
			<b>6M TO 9M</b>									
			For Abutment A1	cum.	0	12.7	11.2	0.00		0.00		
			For Abutment A2	cum.	0	12.7	11.2	0.00		0.00		
			For Pier P1	cum.	0	0.2	1.2	0.00		0.00		
			For Pier P2	cum.	0	0.2	5.6	0.00		0.00		
				cum.					<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
3	12.8	1500, 1700 & 2100	<b>PCC GRADE M15 LEVELLING COURSE IN FOUNDATION</b> Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
			For Abutment A1	cum.	1	12.7	11.2	0.10		14.22		
			For Abutment A2	cum.	1	12.7	11.2	0.10		14.22		
			For Pier P1	cum.	0	0.2	1.2	0.10		0.00		
			For Pier P2	cum.		0.2	5.6	0.10		0.00		
				cum.					<b>Total</b>	<b>28.45</b>	<b>11678.00</b>	<b>332215.74</b>
4	13.9	710.1.4.of IRC:78 & 2200	<b>BACKFILLING</b> Back filling behind abutment, wing wall and return wall complete as per drawing and Technical Specification									
			Behind Abutment A1	cum.	1	10.3	4.40	5.89		266.89		
			Behind Abutment A2	cum.	1	10.3	4.40	5.09		230.63		
				cum.					<b>Total</b>	<b>497.52</b>	<b>3091.00</b>	<b>1537843.47</b>
5	14.10	2700	<b>PCC LEVELLING COURSE M15</b> PCC M15 Grade leveling course below approach slab complete as per drawing and Technical specification									
			Below Approach Slab	cum.	2	12.50	3.50	0.15		13.13		
				cum.					<b>Total</b>	<b>13.13</b>	<b>9611.00</b>	<b>126144.38</b>
6	13.10	710.1.4.of IRC:78 and 2200	<b>FILTER MEDIA</b> Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.									
			Behind Abutment A1	cum.	1	11.5	0.6	4.64		32.01		
			Behind Return wall	cum.	2	4.4	0.6	5.89		31.09		
			Behind Abutment A2	cum.	1	11.5	0.6	3.84		26.49		
			Behind Return wall	cum.	2	4.4	0.6	5.09		26.87		
				cum.					<b>Total</b>	<b>116.46</b>	<b>3787</b>	<b>441041.75</b>
7	12.8	1500, 1700 & 2100	<b>RCC GRADE M35 FOR FOUNDATION</b> Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
			<b>Abutment A1</b>									
			Rectangular Portion	cum.	1	12.50	11	1.00		137.50		
			Trapezoidal Portion	cum.	1	12.50			9.00	112.50		
			<b>Abutment A2</b>									
			Rectangular Portion	cum.	1	12.50	11	1.00		137.50		
			Trapezoidal Portion	cum.	1	12.50			9.00	112.50		
			<b>Pier P1</b>									
			Rectangular Portion	cum.	0	0.00	1	0.00		0.00		
			Trapezoidal Portion	cum.	0	0.00			0.00	0.00		
			<b>Pier P2</b>									
			Rectangular Portion	cum.	0	0.00	5.4	0.50		0.00		
			Trapezoidal Portion	cum.	0	0.00			2.24	0.00		
				cum.					<b>Total</b>	<b>500.00</b>	<b>12329.00</b>	<b>6164500.00</b>

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
8	12.40	1600	<b>STEEL FOR FOUNDATION</b>									
			Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical Specifications.									
				MT						25.22		
				MT					<b>Total</b>	<b>25.22</b>	<b>84675.00</b>	<b>2135865.75</b>
9	13.5	1500,1700 & 2200	<b>RCC GRADE M35 FOR SUB-STRUCTURE</b>									
			Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications									
			<b>For Abutment Shaft</b>									
			Abutment Shaft A1 ( <b>upto 5m</b> )	cum.	1	12.5	1.0	2.65		33.18	<b>13982.00</b>	<b>463852.85</b>
			Abutment Shaft A1 ( <b>above 5m</b> )	cum.	1	12.5	1.0	0.00		0.00	<b>14287.00</b>	<b>0.00</b>
			Abutment Shaft A2 ( <b>upto 5m</b> )	cum.	1	12.5	1.0	1.85		23.18	<b>13982.00</b>	<b>324032.85</b>
			Abutment Shaft A2 ( <b>above 5m</b> )	cum.	1	12.5	1.0	0.00		0.00	<b>14287.00</b>	<b>0.00</b>
			<b>For Abutment cap, A1 &amp; A2</b>									
			Rectangular Portion	cum.	2	12.5	1.57	0.50		19.63	<b>13982.00</b>	<b>274396.75</b>
			Trapezoidal Portion	cum.	2	12.5			0.64	16.06	<b>13982.00</b>	<b>224585.875</b>
			<b>For Dirt Wall</b>									
			Rectangular Portion	cum.	2	12.5	0.30	1.44		10.76	<b>13982.00</b>	<b>150481.275</b>
			Bracket Portion	cum.	2	12.5			0.048	1.20	<b>13982.00</b>	<b>16778.4</b>
			<b>For Pedestal</b>	cum.	8	0.8	0.8	0.25		1.28	<b>13982.00</b>	<b>17896.96</b>
			<b>For Seismic Arrester</b>	cum.	4	0.8	0.8	0.8		2.05	<b>13982.00</b>	<b>28635.136</b>
			<b>cum.</b>									
10	13.5	1500,1700 & 2200	<b>RCC GRADE M35 FOR RETURN WALL</b>									
			Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications									
			Return Wall (A1) ( <b>upto 5m</b> )	cum.	2	5.0	0.5	5		25.00	<b>13982.00</b>	<b>349550</b>
			Return Wall (A1) ( <b>above 5m</b> )	cum.	2	5.0	0.5	0.89		4.44	<b>14287.00</b>	<b>63505.715</b>
			Return Wall (A2) ( <b>upto 5m</b> )	cum.	2	5.0	0.5	5		25.00	<b>13982.00</b>	<b>349550</b>
			Return Wall (A2) ( <b>above 5m</b> )	cum.	2	5.0	0.5	0.09		0.45	<b>14287.00</b>	<b>6357.715</b>
11	13.6	1600 & 2200	<b>STEEL FOR SUB-STRUCTURE</b>									
			Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications									
				MT						23.48		
				MT								
12	14.1	1500, 1600 & 1700	<b>RCC GRADE M35 FOR SUPER-STRUCTURE</b>									
			Furnishing and Placing Reinforced/ Prestressed cement concrete in super-structure as per drawing and Technical Specification									
			Deck Slab	cum.	1	82	12.50	0.23		229.22		
			Longitudinal Girder									
			End Section	cum.	0	1			0.54	0.00		
			Mid Section	cum.	0	20.2			0.40	0.00		
			Tapered Section	cum.	0	0.9			0.47	0.00		
			Cross Girder									
			End Cross Girder	cum.	0	7.2	0.4	0.46		0.00		
			<b>cum.</b>						<b>Total</b>	<b>229.22</b>	<b>15330.00</b>	<b>3513923.44</b>
13	14.2	1600	<b>STEEL FOR SUPER-STRUCTURE</b>									
			Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications									
			Steel for Truss	MT						749.91	<b>87000.00</b>	<b>65242275.26</b>
				MT						44.26		
				MT					<b>Total</b>	<b>44.26</b>	<b>87230.00</b>	<b>3860761.44</b>
14	14.11	1500, 1600, 1700 & 2704	<b>RCC GRADE M30 FOR APPROACH SLAB</b>									
			Reinforced cement concrete Grade M30 in approach slab including reinforcement and formwork complete as per drawing and Technical specification									
				cum.	2	12.50	3.50	0.30		26.25		
15	14.2	1600	<b>STEEL FOR APPROACH SLAB</b>									
			Supplying, fitting and placing HYSD bar reinforcement in super-structure complete as per drawing and technical specifications									
				MT						0.00		
				MT					<b>Total</b>	<b>0.00</b>	<b>87230.00</b>	<b>0.00</b>

S.I. NO	CLAUSE	MORTH SPECIFICATION	ITEM	UNIT	NOS	LENGTH	WIDTH	HEIGHT	AREA	QUANTITY	RATE	AMOUNT
16	14.4	2702	<b>WEARING COAT(65mm thick)</b>									
			Providing and laying 12 mm thick mastic asphalt wearing course on top of deck slab excluding prime coat with paving grade bitumen meeting the requirements given in table 500-29, prepared by using mastic cooker and laid to required level and slope after cleaning the surface, including providing antiskid surface with bitumen precoated fine grained hard stone chipping of 9.5 mm nominal size at the rate of 0.005cum per 10 sqm and at an approximate spacing of 10 cm center to center in both directions, pressed into surface when the temperature of surfaces not less than 100 deg. C, protruding 1 mm to 4 mm over mastic surface. all complete as per clause 515.									
				cum.	1	89	9.50			840.75		
				<b>cum.</b>					<b>Total</b>	<b>840.75</b>	<b>402.00</b>	<b>337981.50</b>
17	8.22	809	<b>CEMENT CONCRETE CRASH BARRIER</b>									
			Provision of an Reinforced cement concrete crash barrier at the edges of the road, approaches to bridge structures and medians, constructed with M-20 grade concrete with HYSD reinforcement conforming to IRC:21 and dowel bars 25 mm dia, 450 mm long at expansion joints filled with pre-moulded asphalt filler board, keyed to the structure on which it is built and installed as per design given in the enclosure to MOST circular No. RW/NH - 33022/1/94-DO III dated 24 June 1994 as per dimensions in the approved drawing and at locations directed by the Engineer, all as specified									
			For Crash Barrier	cum.	2	89			1.083	192		
				<b>cum.</b>					<b>Total</b>	<b>192</b>	<b>5876.00</b>	<b>1126376.316</b>
18	8.1	408	<b>CEMENT CONCRETE KERB</b>									
			Construction of cement concrete kerb with top and bottom width 115 and 165 mm respectively, 250 mm high in M 20 grade PCC on M-10 grade foundation 150 mm thick, foundation having 50 mm projection beyond kerb stone, kerb stone laid with kerb laying machine. foundation concrete laid manually. all complete as per clause 408									
				Rm	2	89				177		
				<b>Rm</b>					<b>Total</b>	<b>177</b>	<b>585.00</b>	<b>103545.00</b>
19	4.16	409	<b>FOOTPATH</b>									
			Construction of footpath/separator by providing 25 mm thick cement concrete grade M15, over laid with pre-cast concrete tiles in cement mortar 1:3 including provision of all drainage arrangements but excluding kerb channel.									
				sqm.	2	89	1.50			265.5		
				<b>sqm.</b>					<b>Total</b>	<b>266</b>	<b>2500.00</b>	<b>663750.00</b>
20	13.14	2000, 2200	<b>POT PTFE Bearing</b>									
			Supplying, fitting and fixing in position true to line and level POT-PTFE bearing consisting of a metal piston supported by a disc or unreinforced elastomer confined within a metal cylinder, sealing rings, dust seals, PTFE surface sliding against stainless steel mating surface, complete assembly to be of cast steel/fabricated structural steel, metal and elastomer elements to be as per IRC: 83 part-I & II respectively and other parts conforming to BS: 5400, section 9.1 & 9.2 and clause 2006 of MoRTH Specifications complete as per drawing and approved Technical Specifications.									
				MT	4					300		
				<b>MT</b>					<b>Total</b>	<b>1200.0</b>	<b>535.00</b>	<b>642000</b>
21	14.22	2607	<b>EXPANSION JOINTS</b>									
			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.									
				Rm	2	12.5				25		
				<b>Rm</b>					<b>Total</b>	<b>25.00</b>	<b>122.00</b>	<b>3050.00</b>
22	14.9	2705	<b>DRAINAGE SPOUTS</b>									
			Drainage Spouts complete as per drawing and Technical specification									
				nos.	34					34		
				<b>nos.</b>					<b>Total</b>	<b>34</b>	<b>4078.00</b>	<b>138652.00</b>
23	8.4	801	<b>NAME PLATE</b>									
			Providing and fixing retro-reflectorised cautionary,mandatory and informatory sign as per IRC-67 made of encapsulated lens type reflecting sheeting vide clause 801.3, fixed over alluminium sheeting, 1.5 m thick supported on a mild steel angle iron post 75mm x 75mm x 6mm firmly fixed to the ground by mean of properly designed foundation wiyh M15 grade cement concrete 45cm x 45cm x 60cm, 60cm below ground level as per approved drawing including painting of vertical post as per specification									
				nos.	2					2		
				<b>nos.</b>					<b>Total</b>	<b>2</b>	<b>7756.00</b>	<b>15512.00</b>
24	13.8	2200, 2706	<b>WEEPHOLES</b>									
			Providing weep holes in Brick masonry/Plain/ Reinforced concrete abutment, wing wall/ return wall with 100 mm dia AC pipe, extending through the full width of the structure with slope of 1V :20H towards drawing face. Complete as per drawing and Technical Specifications									
			In Abutment	nos.	153					153		
			In Return Wall	nos.	144					144		
				<b>nos.</b>					<b>Total</b>	<b>297.00</b>	<b>617</b>	<b>183249</b>
25			<b>CONFIRMATORY BORING</b>									
			Confirmatory boring at every pier and abutment location-Confirmatory Boring through Core drilling of BX (41mm to 59mm) size by rotary core drilling machine upto 10.0 m depth in all kinds of hard rock including finishing , maintenance of core (minimum 80% core recovery in hard rock is essential and sludge for foundation exploration complete as per spn. and direction of E/I									
				<b>RM</b>	2	10				<b>20.00</b>	<b>2000.00</b>	<b>40000</b>
											<b>TOTAL</b>	<b>91403954.54</b>



### Detail Estimate for the construction of 7.0 M High Retaining Wall in the Approach Road

Sl. No.	Clause	Morth Specification	Description	Units	Nos	Length(m)	Width(m)	Depth(m)	Area(m^2)	Quantity	Rate	Amount
1	12.1(IB)	304	<b>EARTHWORK EXCAVATION</b>									
			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, backfilling the excavation earth to the extent required and utilising the remaining earth locally for road work.									
				Cum	4	10	7	2.1		588	48834.00	28714392.00
												28714392.00
2	12.8	1500, 1700 & 2100	<b>PCC GRADE M15 LEVELLING COURSE IN FOUNDATION</b>									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
				Cum	4	10	7	0.1		28	11678.00	326984.00
												326984.00
3	13.10	710.1.4.of IRC:78 and 2200	<b>FILTER MEDIA</b>									
			Providing and laying of Filter media with granular materials/stone crushed aggregates satisfying the requirements laid down in clause 2504.2.2. of MoRTH specifications to a thickness of not less than 600 mm with smaller size towards the soil and bigger size towards the wall and provided over the entire surface behind abutment, wing wall and return wall to the full height compacted to a firm condition complete as per drawing and Technical Specification.									
				Cum	4	10	0.6	9		216	3787.00	817992.00
												817992.00
4	13.5	1500,1700 & 2200	<b>RCC GRADE M35 FOR SUB-STRUCTURE</b>									
			Plain/Reinforced cement concrete in sub-structure complete as per drawing and Technical Specifications									
			Stem	Cum	4	10			5.07	202.8	13982.00	2835549.60
												2835550.0
5	12.8	1500, 1700 & 2100	<b>RCC GRADE M35 FOR FOUNDATION</b>									
			Plain/Reinforced Cement Concrete in Open Foundation complete as per Drawing and Technical Specifications.									
			Footing	Cum	4	10			5.84	233.6	12329.00	2880054.40
												2880055.0
6	13.6	1600 & 2200	<b>STEEL FOR SUB-STRUCTURE</b>									
			Supplying, fitting and placing HYSD bar reinforcement in sub-structure complete as per drawing and Technical Specifications									
			Steel @150kg/cum	MT					202.8	30.42	84990.00	2585395.80
												2585396.00
7	12.40	1600	<b>STEEL FOR FOUNDATION</b>									
			Supplying, Fitting and Placing un-coated HYSD bar Reinforcement in Foundation complete as per Drawing and Technical									
			Steel @120kg/cum	MT					233.6	28.032	84675.00	2373609.60
												2373610.00
											Total	40533979.00

## Truss Bridge

No. of carriageway                      **2**

Sr. No.	Dsg.	PI Description	Area(mm^2)	Length(mm)	Nos.	Wt kg/m	Wt Kg
1	R1	Top Chord	73250	5000	8	575.01	23000.50
2	R2	Top Chord	91500	5000	8	718.28	28731.00
3	R3	Top Chord	104400	5000	8	819.54	32781.60
4	R4	Bottom Chord	96100	5000	16	754.39	60350.80
5	R5	Bottom Chord	96100	5000	8	754.39	30175.40
6	R6	Bottom Chord	96100	5000	8	754.39	30175.40
7	R7	Diagonal	37520	7072	20	294.53	41658.61
8	R8	Diagonal	23120	7072	16	181.49	20536.18
9	R9	Diagonal	23120	7072	16	181.49	20536.18
10	R10	Vertical	37520	10000	8	294.53	23562.56
11	R11	Vertical	23120	10000	8	181.49	14519.36
12	R12	Vertical	23120	10000	8	181.49	14519.36
13	R13	Vertical	23120		6	181.49	0.00
14	R14	End Racker	81750	14142.13	4	641.74	36302.14
15	R15	Int.Top Lateral	7612	12800	5	59.75	3824.27
16	R16	Top Lateral	7612	12800	6	59.75	4589.12
17	R17	Top Bracing	7612	8122	24	59.75	11647.77
18	R18	Bottom Bracing	13356	8122	32	104.84	27249.53
19	R19	Horz.member	9036	10000	2	70.93	1418.65
20	R20	End Girder	63552	12800	2	498.88	12771.41
21	R21	Int Girder	63552	12800	15	498.88	95785.57
22	R22	Stringer	16568	81500	4	130.06	42399.17
23	R23	Knee Bracing	27524	6000	14	216.06	18149.33

*Total Weight=*                      **594683.91**

### Lacing

*For Lacing Inc it by 10%*                      **59468.39**

### Gusset Plates

*For Gusset plates Inc it by 15%*                      **89202.59**

### Shear Connector

Sr.No.	-	Description	Area	Length	Nos.	Wt kg/m	Wt Kg
1	-	ISM 150	2088	200	2000	16.3908	6556.32

*Total Weight=*                      **6556.32**

2000

1 Truss (2Lane)

2 Truss (4Lane)

Bolts	Nuts	Washers
2000	2000	4000
4000	4000	8000

Total Weight (for 1 carriageway) except Bolts=

**749.91**

kgs

Total Weight (for 2 carriageway) except Bolts=

**1499.82**

kgs

## **STEEL QUANTITY**

**PROJECT TITLE:-** Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in state of Nagaland

**CLIENT:-** National Highways and Infrastructure Development Corporation Ltd.

**STATE** Nagaland

DESCRIPTION	UNIT	NOS	WEIGHT	TOTAL WT.
FOUNDATION BELOW ABUTMENT	MT	2	12.61	25.22
ABUT. SHAFT	MT	2	6.06	12.12
ABUT. CAP	MT	2	2.02	4.04
DIRT WALL	MT	2	0.71	1.42
BRACKET	MT	2	0.25	0.50
FOUNDATION BELOW PIER	MT	0	0.00	0.00
PIER SHAFT	MT	0	0.00	
PIER CAP	MT	0	0.00	0.00
PEDESTAL	MT	8	0.08	0.64
SEISMIC ARRESTER	MT	4		0.00
DECK SLAB	MT	1	44.26	44.26
CROSS GIRDER	MT	2	0.00	0.00
INTER CROSS GIRDER	MT	2	0.00	0.00
LONG GIRDER	MT	4	0.00	0.00
APPROACH SLAB	MT	2	0.00	0.00
RETURN WALL	MT	4	1.19	4.76
			<b>TOTAL</b>	<b>92.96</b>

DESCRIPTION	UNITS	STEEL	TOTAL STEEL
FOUNDATION	MT	25.22	25.22
SUB-STRUCTURE	MT	18.72	18.72
SUPER STRUCTURE	MT	44.26	44.26
RETURN WALL	MT	4.76	4.76
	<b>TOTAL</b>	<b>92.96</b>	<b>92.96</b>

ABUTMENT BBS

PROJECT TITLE:-

STATE

Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in state of Nagaland  
Nagaland

BAR MARK	LENGTH	SPACING LENGTH	BAR DIA.	SPACING	M1	M2	M3	LENGTH OF EACH BAR	NO. OF BAR	TOTAL LENGTH	WT. PER METER	TOTAL WT.	
			(mm)	(mm) c/c.	(m)	(m)	(m)	(m)		(m)	(kg/m)	(kg)	
1	5.77		25		5.77	0.3	0.3	6.37	120	763.98	3.853	2943.89	ABUT. SHAFT
2	5.77		20		5.77	0.3	0.3	6.37	120	763.98	2.466	1884.09	
3	12.35	3.92	12	150	12.35	0.3	0.3	12.95	54	699.30	0.888	620.85	
4	0.85		10	150	0.85	0.1	0.1	1.05	810	850.50	0.617	524.37	
5	5.77		12		5.77	0.3	0.3	6.37	16	101.86	0.888	90.44	6063.63
6	6.50	12.3	25	120	6.50	0.5		7.00	208	1456.00	3.853	5610.49	FOUNDATION
7	11.00	12.3	12	120	11.00	0.5	0.5	12.00	104	1248.00	0.888	1107.99	
8	12.30	11	12	150	12.30	0.5	0.5	13.30	74	984.20	0.888	873.79	
9	6.72	12.3	25	130	6.72	0.5		7.22	96	693.13	3.853	2670.90	
10	11.34	12.3	12	120	11.34	0.5	0.5	12.34	104	1283.39	0.888	1139.41	
11	12.30	5.22	12	150	12.30	0.5	0.5	13.30	72	957.60	0.888	850.17	
11a	46.60		12		46.60	2	2	50.60	8	404.80	0.888	359.39	12612.14
12	12.35		20		12.35	0.3	0.3	12.95	15	194.25	2.466	479.05	ABUT. CAP
12a	3.87	12.35	12	45	3.87	0.12	0.12	4.11	275	1129.76	0.888	1003.02	
12b	3.84	12.35	10	1000	3.84	0.1	0.1	4.04	26	105.04	0.617	64.76	
13	12.35		20		12.35	0.3	0.3	12.95	12	155.40	2.466	383.24	
13a	12.35		12		12.35			12.35	8	98.80	0.888	87.72	2017.78
14	2.04	12.35	12	110	2.04	0.15	0.5	2.69	113	303.41	0.888	269.37	DIRT WALL
15	3.04	12.35	12	110	3.04	0.15	0.12	3.31	113	374.39	0.888	332.39	
16	12.35	1.285	10	200	12.35	0.15	0.15	12.65	7	88.55	0.617	54.59	
16a	12.35	1.285	10	200	12.35	0.15	0.15	12.65	7	88.55	0.617	54.59	710.95
17	12.35		12		12.35	0.15	0.15	12.65	3	37.95	0.888	33.69	BRACKET
18	1.30	12.35	10	450	1.30	0.1	0.1	1.50	54	81.00	0.617	49.94	
19	1.41	12.35	12	100	1.41	0.12		1.53	125	191.25	0.888	169.79	253.43
TOTAL												21657.93	
TOTAL(1-30)												22850.34	

RETURN WALL, APPROACH SLAB BBS

PROJECT TITLE:-

Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in

CLIENT:-

National Highways and Infrastructure Development Corporation Ltd.

STATE

Nagaland

SI No.	BAR MARK	LENGTH	SPACING LENGTH	BAR DIA	SPACING	M1	M2	M3	LENGTH OF EACH BAR	NUMBER OF BARS	TOTAL LENGTH	UNIT WEIGHT	WEIGHT	
				( mm)	mm(c/c)	(m)	(m)	(m)				Per( kg)	(kg)	
1	20	5.85	4.7	12	80	5.85	0.30	0.30	6.45	60	387.0	0.89	344	RETURN WALL
2	21	5.85	4.7	12	150	5.85	0.30	0.30	6.45	32	206.4	0.89	183	
3	22	7.3	5.85	12	120	7.30	0.30	0.30	7.90	50	395.0	0.89	351	
4	23	7.3	5.85	12	150	7.30	0.30	0.30	7.90	40	316.0	0.89	281	
5	24	5		12		5.00	0.15	0.15	5.30	5	26.5	0.89	24	
6	25	5.85		10		5.85			5.85	3	17.6	0.62	11	
7	26			12	150	0.00			0.00	1	0.0	0.89	0	1192
														4770

RCC GIRDER AND DECK SLAB

PROJECT TITLE:-

CLIENT:-

STATE

DECK SLAB

Eff. Length-

Width-

C/C distance btw girders

Dist.of outer Girder from tip of cantilever

C.Co-

Consultancy services fo carrying out Feasibility study,Preperation of DPR and Providing preconstruction services in respect of 4 Laning of Kohima Bypass connecting NH-39(new NH-02),NH-150(New NH-02),NH-61(New NH-29) and NH-39(New NH-02)on Engineering, Procurement and Construction (EPC) mode in state of Nagaland

National Highways and Infrastructure Development Corporation Ltd.

Nagaland

81.5

12.5

3

1.75

0.04

SL. NO	BAR MARK	LENGTH	SPACING LENGTH	BAR DIA.	SPACING	M1	M2	M3	LENGTH OF BAR	NO. OF BAR	TOTAL LENGTH	WT. PER METER	TOTAL WT.	
				(mm)	(mm) c/c.	(m)	(m)	(m)	(m)		(m)	(kg/m)	(kg)	
1	1	12.42	81.42	16	150	12.42	0.15	0.15	12.72	544	6919.68	1.58	10921.58	Main top
2	2	81.42	12.42	12	125	81.42	0.15	0.15	81.72	100	8172.00	0.89	7255.22	Dist top
3	3	81.42	12.42	12	125	81.42	0.15	0.15	81.72	200	16344.00	0.89	14510.43	Dist bottom
4	4	12.42	81.42	16	200	12.42	0.15	0.15	12.72	408	5189.76	1.58	8191.19	Mainbot
5	5	81.42	-	16	150	81.42	0.15	0.15	81.72	4	326.88	1.58	515.93	Railing bot
6	6	1.10	81.46	16	125	1.10	0.15	0.14	1.39	1306	1815.34	1.58	2865.22	Haunch Bar
44259.56														