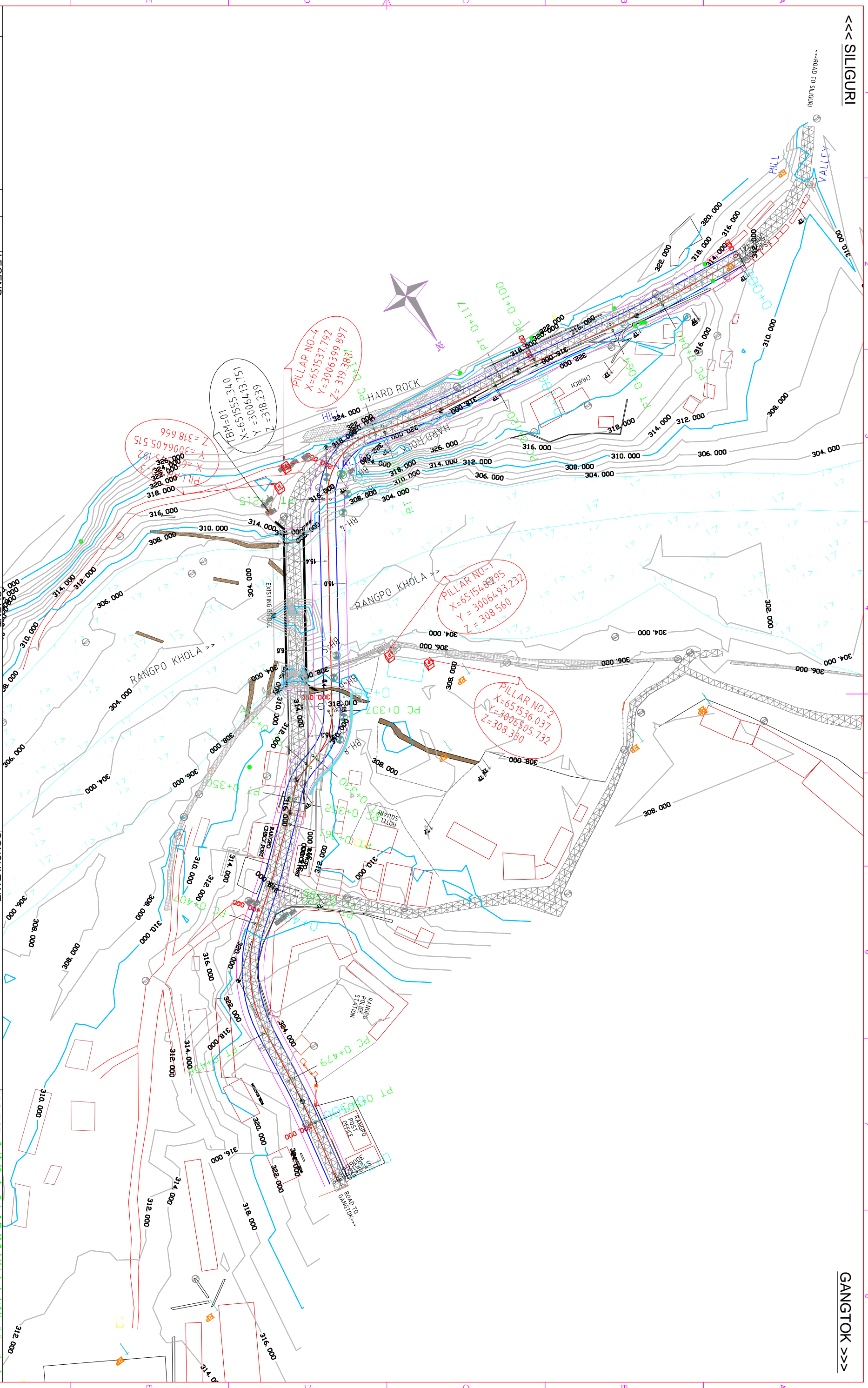




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EXISTING ROAD -----				NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.				CM ENGINEERING & SOLUTION				Specialized Consultancy Services for 'Good for Travel' design based on detailed investigations, costing and preparation of Technical Specifications of RPO documents of (i) Construction of Additional Bridge adjacent to the existing bridge at Km 32.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii)			
PROPOSED BRIDGE -----				3rd FLOOR PTH BUILDING, 4th PARLIAMENT STREET, NEW DELHI-110001				MARUTI VIHAR, HOUSE NO. 1473A, GURGAON, HARYANA -122002				Construction of Additional Bridge adjacent to the existing bridge at Km 32.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii)			
EXISTING BRIDGE -----				MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA				Email - cmesconsultancy@gmail.com				Construction of Chisapani Traffic Tunnel at Km 67.24 on NH-10 at Bait Dik, Sikkim			
RIVER -----				Manager (NHDDCL) Gangtok, Sikkim				Phone: 9811406386, 9911052286, 01244255138				ALIGNMENT PLAN ON TOPO SHEET RANGPO BRIDGE			
ISSUED AND/OR REFERENCES				General Manager (NHDDCL) Gangtok, Sikkim				SM				STATUS: CONCEPT DRAWING			
DEALT				DEALT				ASK				DATE 08.08.16			
CHECKED				CHECKED				DK				SCALE			
R E V I S I O N S				R E V I S I O N S				1:10000				REV. SHEET			
												CMES/NHDDCL/SCS/01			
												NO 1 of 1			

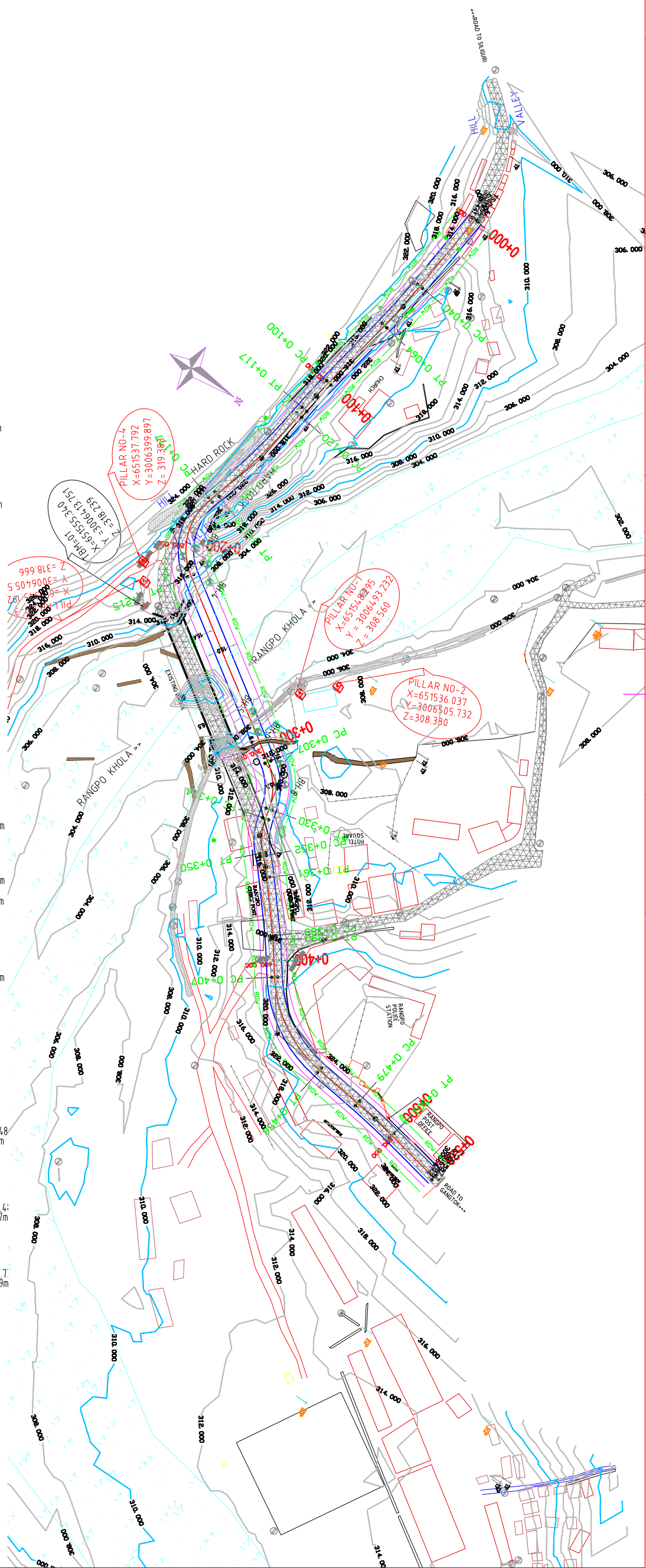


GANGTOK >>>



REVISIONS		DATE		ISSUED AND/OR REFERENCES		DEALT		CHECKED	
LEGEND									
CLIENT:									
 NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 3rd FLOOR PTM BUILDING, 4 PARLAMENT STREET, NEW DELHI-110001									
MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA									
CONSULTANT:									
 CM ENGINEERING & SOLUTION MARUTI VIHAR, HOUSE NO. 14/73A, GURGAON HARYANA -122002 Email - cmesconsultancy@gmail.com Phone: 9811406386, 9911052266, 01244255138									
PROJECT:									
Specialized Consulting, Supervise for Road for Tunnel design based on detailed investigations, costing and preparation of Technical Specification of RPO Construction of Additional Bridge adjacent to the existing bridge at Km 22.100 on NH-10 at Rangpo in the border of West Bengal and Sikkim State (ii) Construction of Rangpoop Trands Tunnel at Km 6.724 on NH-10 in West Dist, Sikkim									
RANGPO BRIDGE									
PROPOSED LOCATION PLAN									
TITLE									
S/STATUS: PROJECT DRAWING									
DATE 08.08.16									
SCALE 1:1500									
A3									
CMES/NHIDCL/RANGPO BR/PROP/01									
REV. SHEET									
R0 1 of 1									





DESIGN LEVELS	GRADIENT	EXISTING GR LEVELS	CUT/FILL	HORIZONTAL	VERTICAL	CHAINAGE
312.254	3.451	312.254	0.000	0.000	0.000	0.000
312.427	3.451	312.427	-0.060			5.000
312.599	3.451	312.727	-0.127			10.000
312.772	3.451	313.725	-0.503			15.000
312.944	3.451	314.567	-1.622			20.000
313.117	3.451	315.230	-2.114			25.000
313.289	3.451	314.049	-0.759			30.000
313.462	3.451	314.021	-0.559			35.000
313.634	3.451	315.284	-1.650			40.000
313.807	3.451	315.017	-1.211			45.000
313.979	3.451	314.373	-0.394			50.000
314.152	3.451	315.322	-1.169			55.000
314.325	3.451	314.651	-0.327			60.000
314.497	3.451	314.757	-0.260			65.000
314.670	3.451	314.880	-0.210			70.000
314.842	3.451	314.957	-0.114			75.000
315.015	3.451	315.364	-0.349			80.000
315.187	3.451	315.080	0.107			85.000
315.360	3.451	315.159	0.201			90.000
315.532	3.451	315.870	-0.338			95.000
315.705	3.451	315.827	-0.122			100.000
315.877	3.451	315.434	0.444			105.000
316.050	3.451	315.537	0.514			110.000
316.223	3.451	315.783	0.440			115.000
316.395	3.451	316.010	0.386			120.000
316.568	3.451	316.035	0.532			125.000
316.740	3.451	316.117	0.623			130.000
316.913	3.451	316.363	0.549			135.000
317.085	3.451	317.774	-0.689			140.000
317.247	3.234	316.793	0.455			145.000
317.384	2.742	317.008	0.377			150.000
317.497	2.249	317.193	0.303			155.000
317.584	1.756	317.372	0.212			160.000
317.648	1.263	317.541	0.107			165.000
317.686	0.770	317.604	0.082			170.000
317.700	0.277	317.649	0.050			175.000
317.700	0.001	317.696	0.005			180.000
317.700	0.000	317.770	-0.070			185.000
317.700	0.000	317.740	-0.039			190.000
317.700	0.000	317.789	-0.089			195.000
317.700	0.000	317.678	0.022			200.000
317.700	0.000	317.345	0.355			205.000
317.700	0.000	316.328	1.373			210.000
317.700	0.000	312.057	5.644			215.000
317.700	0.000	307.602	10.098			220.000
317.700	0.000	303.773	13.928			225.000
317.700	0.000	303.175	14.526			230.000
317.700	0.000	303.086	14.615			235.000
317.700	0.000	303.016	14.684			240.000
317.700	0.000	302.983	14.717			245.000
317.700	0.000	302.902	14.798			250.000
317.700	0.000	302.710	14.991			255.000
317.700	0.000	302.305	15.396			260.000
317.700	0.000	302.320	15.380			265.000
317.700	0.000	302.549	15.151			270.000
317.700	0.000	302.917	14.784			275.000
317.700	0.000	303.544	14.156			280.000
317.700	0.000	305.532	12.169			285.000
317.700	0.000	308.660	9.040			290.000
317.700	0.000	310.449	7.251			295.000
317.700	0.000	312.481	5.220			300.000
317.700	0.000	311.461	6.240			305.000
317.700	0.000	310.465	7.236			310.000
317.700	0.000	310.283	7.418			315.000
317.700	0.000	310.829	6.871			320.000
317.698	0.041	311.572	6.125			325.000
317.681	0.329	314.833	2.849			330.000
317.649	0.658	316.724	0.924			335.000
317.599	0.987	317.212	0.387			340.000
317.533	1.316	316.492	1.041			345.000
317.453	1.604	316.918	0.535			350.000
317.371	1.645	317.374	-0.004			355.000
317.301	1.426	317.058	0.242			360.000
317.284	0.316	316.036	1.247			365.000
317.328	0.890	316.802	0.526			370.000
317.433	2.096	317.569	-0.135			375.000
317.598	3.301	317.559	0.040			380.000
317.824	4.507	317.840	-0.016			385.000
318.109	5.713	318.158	-0.049			390.000
318.444	6.700	318.490	-0.046			395.000
318.784	6.795	318.918	-0.135			400.000
319.124	6.795	319.243	-0.119			405.000
319.463	6.795	319.823	-0.360			410.000
319.803	6.795	320.358	-0.555			415.000
320.143	6.795	320.823	-0.680			420.000
320.822	6.795	321.241	-0.759			425.000
321.162	6.795	321.619	-0.797			430.000
321.582	6.795	322.473	-1.311			435.000
321.842	6.795	323.375	-1.874			440.000
322.187	6.795	324.154	-2.312			445.000
322.521	6.795	324.018	-1.837			450.000
322.861	6.795	323.924	-1.402			455.000
323.196	6.705	323.572	-0.711			460.000
323.530	6.802	323.737	-0.540			465.000
323.769	6.886	323.896	-0.396			470.000
323.962	5.371	324.037	-0.269			475.000
324.009	4.661	324.309	-0.308			480.000
324.199	3.951	324.403	-0.204			485.000
324.361	3.241	324.472	-0.110			490.000
324.583	2.530	324.484	0.004			495.000
324.848	1.910	324.654	-0.071			500.000
324.764	1.823	324.731	-0.056			505.000
324.957	1.823	324.838	-0.073			510.000
324.857	1.823	324.926	-0.070			515.000
324.948	1.823	325.006	-0.058			520.000
325.039	1.823	325.073	-0.033			525.000











2

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8

DATUM 275.00m	
LEVELS IN METERS	
DISTANCE IN METERS	
0+000	301.667
10.00	301.861
20.000	302.094
30.000	302.326
40.000	302.419
50.000	302.424
60.000	302.510
70.000	302.317
80.000	302.161
90.000	302.142
100.000	302.158
110.000	302.119
120.000	302.079
130.000	302.020
140.000	302.116
150.000	302.180
160.000	302.311
170.000	302.525
180.000	302.739
190.000	302.783
200.000	302.434
210.000	301.425
220.000	301.622
230.000	301.879
240.000	302.341
250.000	301.631
260.000	302.216
270.000	302.751
280.000	302.590
290.000	302.690
300.000	302.581
310.000	302.301
320.000	303.110
330.000	303.595
340.000	303.385
350.000	303.175
360.000	303.061
370.000	303.131
380.000	303.290

LONGITUDINAL SECTION

DATUM 275.00	
LEVELS IN METERS	
DISTANCE IN METERS	
380.000	303.290
390.000	303.484
400.000	303.786
410.000	303.896
420.000	303.790
430.000	303.807
440.000	304.377
450.000	304.947
460.000	305.517
470.000	306.009
480.000	306.304
490.000	306.683
500.000	306.721
510.000	306.669
520.000	306.476
530.000	306.545
540.000	306.287
550.000	305.990
560.000	306.009
570.000	306.451
580.000	306.156
590.000	306.284
600.000	306.519
610.000	306.784
620.000	307.167
630.000	306.855
640.000	306.139
650.000	306.153
660.000	306.692
670.000	307.042
680.000	307.121
690.000	307.147
700.000	307.173
710.000	307.579
720.000	308.108
730.000	307.881
740.000	307.754
750.000	307.936

LONGITUDINAL SECTION

DATUM 275.00	
LEVELS IN METERS	
DISTANCE IN METERS	
730.000	307.881
740.000	307.754
750.000	307.936
760.000	308.071
770.000	307.981
780.000	307.986
790.000	308.186
800.000	308.221
810.000	307.689
820.000	306.914
830.000	307.445
840.000	307.977
850.000	308.508
860.000	309.013
870.000	309.514
880.000	309.407
890.000	309.220
900.000	310.318
910.000	310.576
920.000	310.573
930.000	310.602
940.000	310.650
950.000	310.699
960.000	310.747
970.000	310.835
980.000	310.953
990.000	311.071
1000.000	311.191
1010.000	311.303
1020.000	311.368
1030.000	311.624
1040.000	311.517
1047.210	311.388

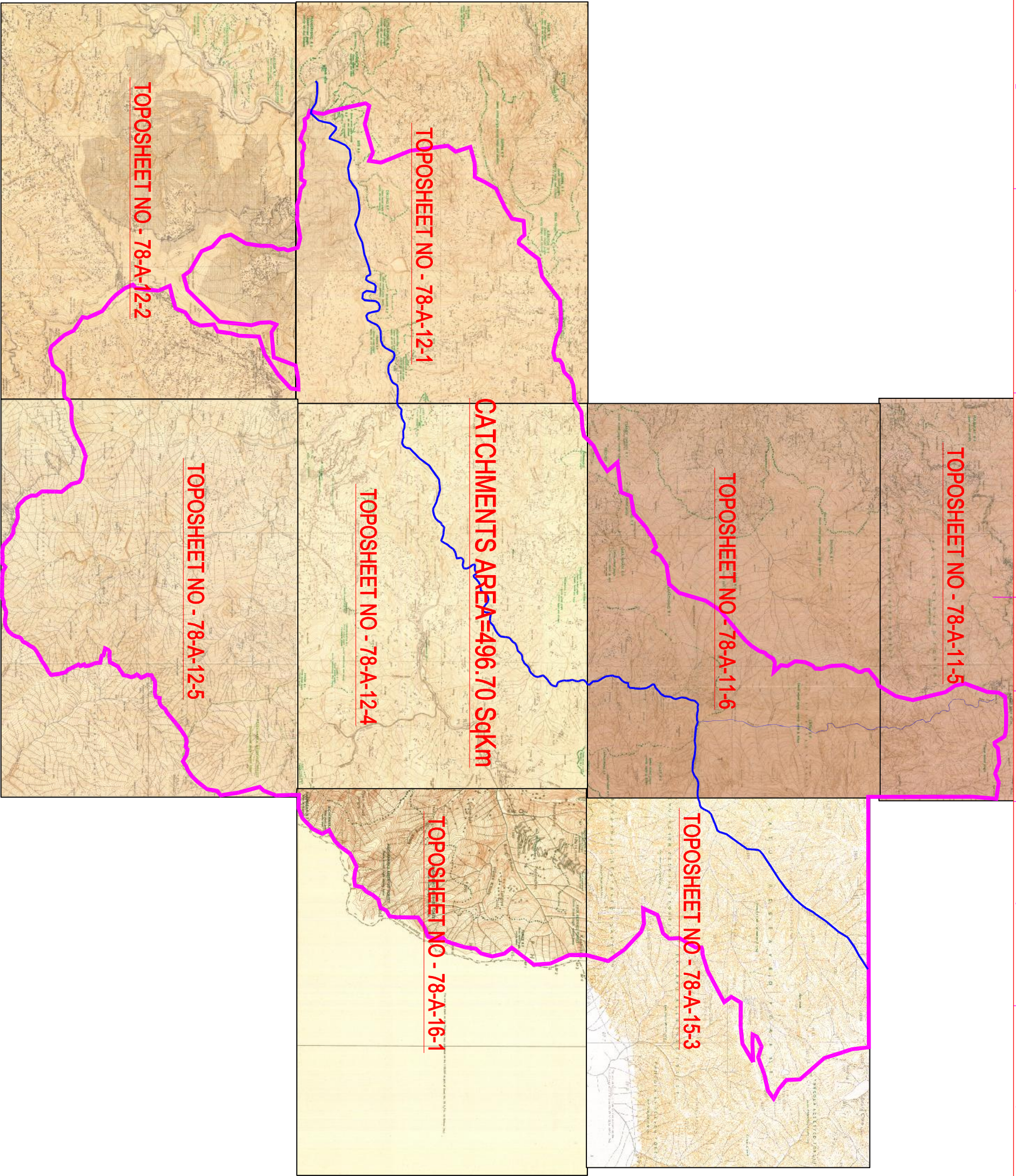
LONGITUDINAL SECTION

LEGEND		
DATE	ISSUED AND/OR REFERENCES	DEALT CHECKED
R E V I S I O N S		
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CLIENT:		
NATIONAL HIGHWAY & INFRASTRUCTURE DEVTA OPVENT CORPORATION LTD. 3rd FLOOR PTH BUILDING, 4 PARLIAMENT STREET, NEW DELHI-11001		
MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA		
CONSULTANT:		
CM ENGINEERING & SOLUTION		
MARUTI VIHAR, HOUSE NO. 1473A, GURGAON,HARYANA -122002 Email - cmesconsultancy@gmail.com Phone: 9811406386, 9911062266, 01244265138		
PROJECT:		
Specialized Consultancy Services for Road for Tender design based on detailed investigations, existing and preparation of Technical Specifications of BPC documents of (i) Construction of Additional Bridge subject to the existing bridge at Km 52.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii) Construction of Changua Traffic Tunnel at Km 67.24 on NH-10 in West Disa, Sikkim		
TITLE		
RANGPO BRIDGE		
LONGITUDINAL SECTION OF RIVER		
PROJECT DRAWING		
STATUS:	DATE	SCALE
PROJECT DRAWING	08.08.16	
REV.	1:1500	A3
R0	SHEET	1 of 1









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DATE	ISSUED AND/OR REFERENCES					DEALT	CHECKED				
CLIENT:											
NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 3rd FLOOR PTT BUILDING, 4 PARLAMENT STREET, NEW DELHI-110001											
MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA											
CONSULTANT:											
CM ENGINEERING & SOLUTION											
MARUTI VIHAR, HOUSE NO. 1473A, GURGAON, HARYANA -122002 Email - cmesconsultancy@gmail.com Phone: 9811406386, 9911052266, 01244255138											
PROJECT:											
Specialized Consultancy Services for Road for Tender design based on detailed investigations, costing and preparation of Technical Schedules of PRC documents of (i) Construction of Additional Bridge adjacent to the existing bridge at Km 22.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii) Construction of Chisapani Traffic Tunnel at Km 67.24 on NH-10 in East Dik, Sikkim											
TITLE											
RANGPO BRIDGE CATCHMENT AREA											
STATUS: PROJECT DRAWING											
DATE 08.08.16											
SCALE											
NTS											
A3											
CMES/NHIDCL/RANGPO BR/CA/01											
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(A) GENERAL

1. All dimensions are in millimeters and levels in meters unless otherwise mentioned. Only written dimensions shall be followed. No drawing shall be scaled.

2. The design is according to the following codes :

IRC : 5 – 2015

IRC : 6 – 2014

IRC : 18 – 2000

IRC : 112 – 2011

IRC : 78 – 2014

IRC : 83 – 2002 Part-III

3. The following live loads have been considered in the design

a. Three lanes of IRC Class "A" loading or Class 70R loading for first one lane and one lane class A loading for remaining lane which ever is severe

b. Footpath live load of 5 KN/m<sup>2</sup> for super structure having footpath.

c. Wearing coat load of 2 KN /m<sup>2</sup>

d. Temperature variation = ± 25° C

e. Seismic zone– IV

f. The designs are applicable for MODERATE conditions of exposure.

g. Provision of ELASTOMERIC bearing is being made.

h. Public utility services (except water supply and sewerage pipes) , if required, shall be carried over the Bridge through 150 mm dia ducts provided in the footpath. Total load of such services shall not be more than 1.0 KN / m on each footpath.

i. Wearing coat shall consist of the following:

a. A coat of mastic asphalt, 6 mm thick, with a prime coat over the top of the deck before the wearing coat is laid. The prime coat of mastic asphalt shall be 30% straight run 30/40 penetration grade bitumen and 50% light solvent (benzol) to be laid over the deck slab. The limestone dust filler and 25% of 30/40 penetration grade bitumen shall be laid at 375F with broom over the prime coat.

b. 50 mm thick asphaltic concrete wearing coat in two layers of 25 mm each as per Clause 512 of MOST's Specification for Road and Bridge Work.
- (B) MATERIALS SPECIFICATION  
CONCRETE
1. Concrete shall be design mix & shall have minimum 28 days characteristic strength on 150 mm cubes as Mentioned below.

a. Open Foundation & Pile Foundation

M-30 & M35

b. Substructure

M-30

c. Super structure (PSC Box Girder)

M-45

d. Footpath, kerb, Crash barrier & approach slab

M-30

2. Ordinary Portland cement conforming to IS : 269 or high strength ordinary Portland Cement conforming to IS-8112 capable of achieving the required design concrete strength shall only be used.

3. To improve workability of concrete and cement grout, admixtures conforming to IS: 9103 could be permitted subject to satisfactory proven use. Admixtures generating hydrogen, nitrogen, chlorides etc. should not be used.

4. Cement content in concrete shall neither be less than 400 Kg/cum nor more than 540 Kg/cum of concrete.

5. Maximum water cement ratio shall be as follows: Deck slab 0.4 Precast Girder 0.4

REINFORCEMENT :-

6. All reinforcing steel shall be of High Yield Strength Deformed Bars (Grade Fe 500) conforming to IS: 1786 except for mesh reinforcement which shall be MS bars (Grade designation S 240) conforming to IS :432 part-I .

PRE-STRESSING STEEL AND ACCESSORIES :-

7. Cable shall consist of 19 nos.of 15.2 mm dia 7–ply class 2 uncoated stress relieved low relaxation strand conforming to IS: 14268 – 1995. Ultimate tensile strength of single strand to be not less than 260.70 KN.

8. The prestressing steel and accessories shall be subjected to an acceptance test prior to their actual use on the works (Guidance may be taken from BS: 4447). Only multistrand jacks shall be used for tensioning of cables. Direct and indirect force measurement device (e.g. Pressure Gauge) to be attached in consultation with system manufacturer shall be calibrated before use.

SHEATHING :-

9. Sheathing shall be of "Corrugated HDPE" type inner diameter 75 mmø for 12113 cables manufactured from minimum 0.4mm thick galvanised steel strip. It shall be tested as per IRC:18–2000.

WATER :-

10. Water to be used in concreting and curing shall conform to Clause 5.1(ii) of IRC : SP: 33–1989, except that the Permissible limit of sulphates shall be 400mg / lit instead of 500mg / lit as per IRC: 21–2000.

(C) SPECIFICATIONS :-

11. The work shall be executed according with MORT&H specifications for Road & Bridge Works (4th revision,2001) except where-ever otherwise mentioned.

(D) WORKMANSHIP / DETAILING :-

1. Minimum clear cover of reinforcement:-

a. Superstructure

50mm.

b. Substructure & Foundation

75mm.

2. For ensuring proper cover of concrete to reinforcement specially made polymer cover blocks shall only be used.

3. Construction joints :

i constructions joints shall be provided only at locations shown on the drawings.

ii. Concreting operation shall be carried out continuously up to the construction joints. The concrete surface of the joint shall be brushed with a stiff brush after casting while the concrete is still fresh and it has only slightly hardened.

iii. Before new concrete is poured, the surface of old concrete shall be prepared as under :

a. For hardened concrete,the surface shall be thoroughly cleaned to remove debris and laitance and made rough so that 1/4 of the size of aggregate is exposed but without dislodging the aggregate or structurally damaging the concrete.

b. For partially hardened concrete,the surface shall be treated by wire brush followed by an air jet. The old surface shall be soaked with water, without leaving puddles, immediately of water from new concrete.

iv New concrete shall be thoroughly compacted in the region of the joint.

4. Welding of reinforcement bars shall not be permitted.

5. Laps in reinforcement : Lap Length for bar shall be as per ci.304.6.6.3 IRC–21/2000.

<i>Concrete grade</i> <i>Percentage of laping</i>	M – 25	M – 30	M – 35 & Above
< 25%	65 dia	56 dia	49 dia
25% to < 40%	74 dia	64 dia	56 dia
40% to < 50%	83 dia	72 dia	63 dia

6. Bending of reinforcement bars shall be as per IS: 2502–1963 Supporting chairs of 12mm diameter shall be provided at suitable interval as per IS : 2502.

7. Concrete shall be produced in Automatic batching plant or ready mix concrete, should be used.

8. Proper compaction of concrete shall be ensured by use of form and / or needle vibrators.

9. Use of full width screed vibrators for compaction of concrete in deck slab shall be ensured.

10. Shuttering plates shall suitably be stiffened to enable the compaction by form vibrators.

11. Sharp edges of concrete shall be chamfered by providing 25 x 25 mm. fillets.

12. The location of jacks for lifting up the superstructure to replace bearings etc. is shown ↑ thus.

13. This shall be distinctly etched on end cross girders and pier/abutment caps.

(E) SPECIAL NOTES FOR PRESTRESSING :-

1. The length of cables indicated are measured along profile between mid span and end of anchorage only. Additional length required for attaching jock is to be added in consultation with manufacturer.

2. The extensions indicated are for portion of cable lying between mid span and end faces + grip length of 0.5m only. Any change in above shall be accommodated proportional.

3. The extensions are based on the following data :

i) Wobble coefficient k = 0.002/m

ii) Friction coefficient u = 0.17

iii) Area of strand = 140.0 sqmm

iv) Modulus of Elasticity of steel in strand Es=1.95x10<sup>5</sup> Mpa.

4. Average slip = 6mm

5. All cables are to have smooth profile (without kinks) passing through given co-ordinates and firmly supported.

6. If the calculated elongation is reached before the calculated gauge pressure is obtained, continue tensioning till attaining the calculated gauge pressure, provided the elongation does not exceed 1.05 times the calculated elongation. If this elongation is achieved before the calculated gauge pressure is attained, stop stressing and inform the engineer.

7. If the calculated elongation has not been reached continue tensioning by intervals of 5 kg/sq cm until the calculated elongation is reached provided the gauge pressure does not exceed 1.05 times the calculated gauge pressure.

8. If the elongation at 1.05 times the calculated gauge pressure is less than 0.95 times the calculated elongation, the following measures must be taken, in succession to define the cause of this lack of elongation.

\* Recalibrating the pressure gauge.

\* Check the correct functioning of the jock, pump and leads.

\* De-tension the cable. Slide it in its duct to check that it is not blocked by mortar which has entered through holes in the sheath.

\* Re-tension the cable, if free.

9. If the require elongation is not obtained, further finishing operations such as cutting or sealing, should not be undertaken without the approval of the engineer.

(F) CONSTRUCTION SEQUENCE :-

DAY ACTIVITY

14 (After casting of main girders)

21 Stressing of 1st stage cables



56 Casting of deck slab and cross girders.

56 Stressing of 2nd stage cables

After Installation of expansion joint and 56 casting / laying of footpath, kerb, wearing coat and rolling.

Stressing of 1st stage cables can be done earlier on achieving a Strength of 35 MPa. Subsequent activities can also be advanced keeping the same time intervals.

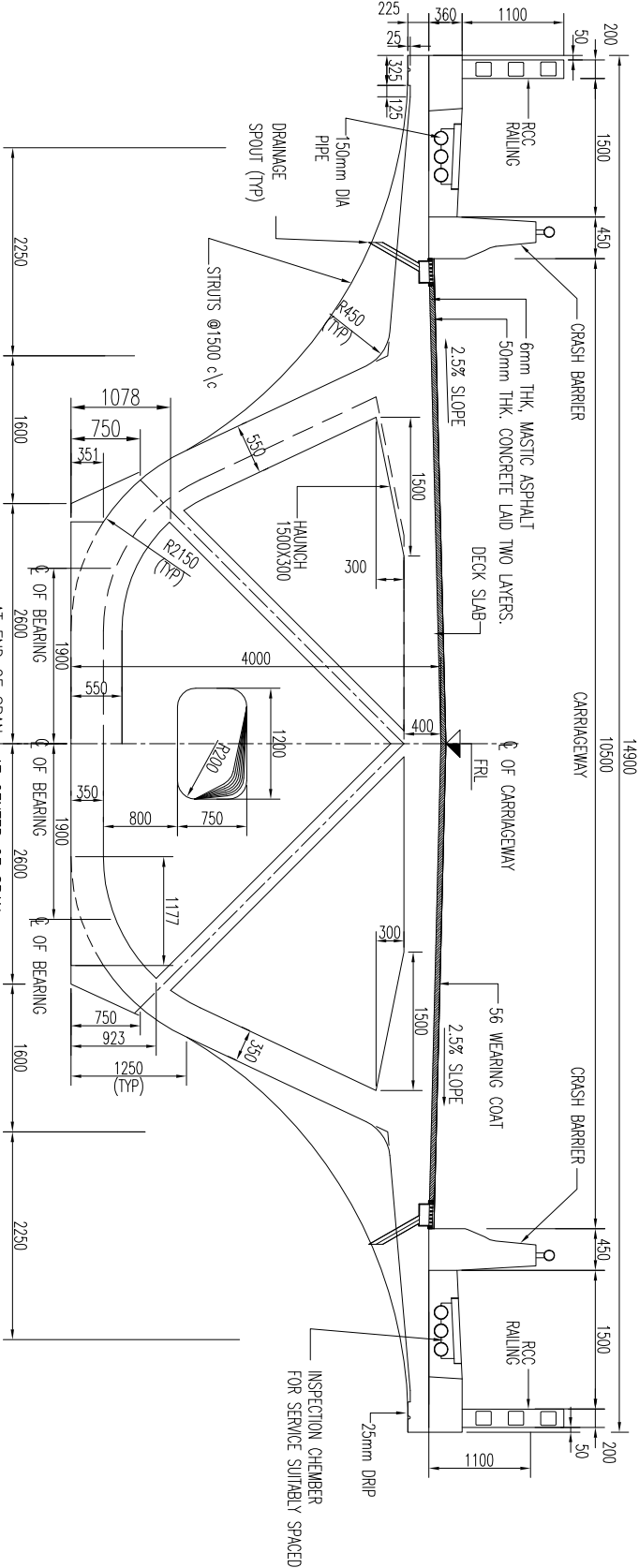
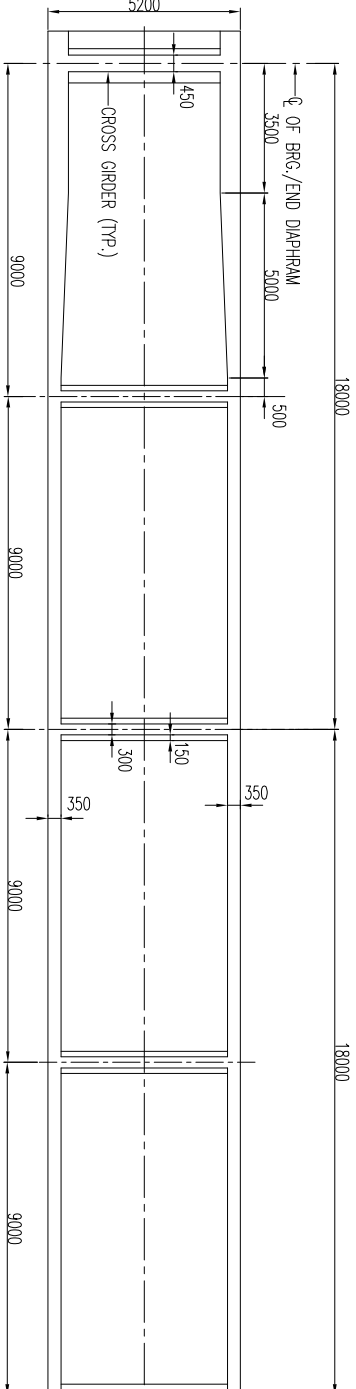
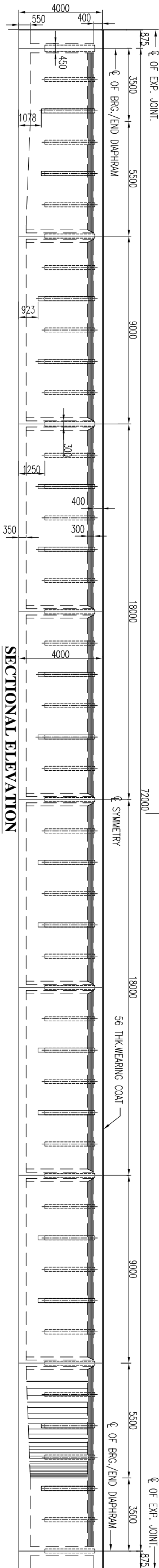
				1. ALL DIMENSIONS ARE IN "mm", ELEMENTS AND LEVELS IN "m" UNLESS SPECIFIED OTHERWISE
				2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING
				3. CLEAR COVER OF 75/50 MM SHALL BE PROVIDED TO CURRENENT BAR FOR SUBSTRUCTURE/SUPERSTRUCTURE
				4. ALL THE WORKS SHOULD BE CARRIED OUT AS PER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS
				OF MORTAR (5th REVISION).
				5. LAP LENGTH OF BARS SHALL NOT BE LESS THAN 50 ø OF LARGER DIA BARS TO BE LAPED.
				6. CHAIRS, SPACERS BARS ETC ARE NOT SHOWN. THESE MAY BE PROVIDED AS PER REQUIREMENT TO KEEP THE BARS IN CORRECT POSITION.
DATE	ISSUED AND/OR REFERENCES	DEALT	CHECKED	7. CONSTRUCTION JOINTS SHALL BE STAGGERED AND WELL TREATED TO MAKE PERFECT BOND BETWEEN OLD AND NEW CONCRETE.
R E V I S I O N S				

CLIENT:		CONSULTANT:	
			
NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 3rd FLOOR PTT BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001		MARUTI VIHAR, HOUSE NO. 1473A, GURGAON,HARYANA -122002 Email - cmesconsultancy@gmail.com Phone: 9811406386, 9911062266, 01244265138	
MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA		PROJECT: Specialized Consultancy Services for Road for Traffic design based on detailed investigations, costing and preparation of Technical Schedules of IRC documents of (i) Construction of Additional Bridge subject to the existing Bridge at Km 52.100 on NH-10 at Bangaru at the border of West Bengal and Sikkim State (ii) Construction of Changuel Traffic Tunnel at Km 67.24 on NH-10 in West Doo, Sikkim	
Manager (NHDC) Gangtok,Sikkim		SM	
General Manager (NHDC) Gangtok,Sikkim		DEALT	
		ASK	
		CHECKED	
		DK	
		APPROVED	
		STATUS: PROJECT DRAWING	
		DATE: 06.08.16	
		SCALE	
		AS SHOWN	
		REV. SHEET	
		R0	
		1 of 1	









## CROSS SECTION OF BOX GIRDER

SCALE: 1:75

### NOTES:

- FOUNDATION = M25, SUBSTRUCTURE = M40 & SUPERSTRUCTURE = M45 CONCRETE AND FE 500 STEEL SHALL BE USED FOR THE STRUCTURE.
- DETAILING OF REINFORCEMENT SHALL BE DONE AS PER COOP. PROVISIONS AND STANDARD DESIGN PRACTICES.
- GROUND SHALL BE WELL PREPARED BEFORE CONCERNING BY COMPACTING, CEMENT SLURRY ETC AS PER SITE REQUIREMENT.
- THE DESIGN IS DEPENDENT ON THE FOUNDATION. IF GOOD QUALITY ROCK IMPERMEABLE IS AVAILABLE AT LOW DEPTH, THE DESIGN MAY BE CHANGED TO SUIT SITE CONDITION.
- MINIMUM VERTICAL CLEARANCE ABOVE HFL TO SOFTIT LEVEL OF SUPERSTRUCTURE IS 0.9M.
- THE BEARING WILL BE POT/POT CUM PTE BEARING AS PER IRC:83 (PART-III-2002)
- THE SBC UNDER VARIOUS COMPONENTS UNDER ABUTMENT WALL 25:00 1/5cm.
- PROPER GRADED FILTER MATERIAL OF 600mm THICKNESS SHALL BE PROVIDED BEHIND THE ABUTMENT AND WING WALLS AS PER IRC 78.
- SOR OR HR AS THE CASE MAY BE.
- THE FILLING OF RCC M-15 IN THE ANNULAR SPACES OVER TOE OF FOOTING UP TO TOP OF MINIMUM EXPOSURE OF PILE INTO ROCK SHALL BE 2.5 X DIAMETER OF PILE.
- DEPTH OF EXPOSURE OF PILE INTO ROCK SHALL BE CONSIDERED FROM BELOW WEATHERED ROCK LAYER.
- PILE CLOSING UP TO 5.0M DEPTH.

### REFERENCE DRAWING:

- LAYOUT DRAWING
- GENERAL NOTES
- GENERAL ARRANGEMENT DRAWING
- DIMENSION DETAILED FOR 72m SPAN SUPERSTRUCTURE
- DIMENSION DETAILED FOR ABUTMENT WALL A1
- DIMENSION DETAILED FOR ABUTMENT WALL A2
- TYPICAL DETAILED OF EXPANSION JOINTS
- TYPICAL DETAILED OF DRAINAGE SPOUT
- DETAIL OF CRASH BARRIER
- DETAIL OF RAILING

- |                          |
|--------------------------|
| CMES /NHIDCL /RANGPO /01 |
| CMES /NHIDCL /RANGPO /02 |
| CMES /NHIDCL /RANGPO /03 |
| CMES /NHIDCL /RANGPO /04 |
| CMES /NHIDCL /RANGPO /05 |
| CMES /NHIDCL /RANGPO /06 |
| CMES /NHIDCL /RANGPO /07 |
| CMES /NHIDCL /RANGPO /08 |
| CMES /NHIDCL /RANGPO /09 |
| CMES /NHIDCL /RANGPO /10 |

### CLIENT:



NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.  
3rd FLOOR PTT BUILDING, 4 PARLIAMENT STREET,  
NEW DELHI-110001

### CONSULTANT:



**CM ENGINEERING & SOLUTION**  
MARUTI VIHAR, HOUSE NO. 1473A,  
GURGAON, HARYANA - 122002  
Email - cmesconsultancy@gmail.com  
Phone: 9811406386, 9911062266, 01244265138

### PROJECT:

Specialized Consulting Services for Road for Tender design based on detailed investigations, existing and proposed of Technical Schedules of EPC documents of (i) Construction of Additional Bridge subject to the existing Bridge at Km 52.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii) Construction of Changua Tunnel at Km 67.24 on NH-10 in West Bengal, Sikkim

### TITLE

**DIMENSION DETAILS OF SUPERSTRUCTURE**  
RANGPO BRIDGE

### STATUS:

PROJECT DRAWING DATE: 08.08.16 SCALE: A3

### REVISIONS

ISSUED AND/OR REFERENCES DEALT CHECKED

### REVISIONS

1. ALL DIMENSIONS ARE IN "mm", ELEMENTS AND LEVELS IN "m" UNLESS SPECIFIED OTHERWISE

### REVISIONS

2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING

### REVISIONS

3. CLEAR COVER OF 75/50 MM SHALL BE PROVIDED TO OUTERMOST BAR FOR SUBSTRUCTURE/SUPERSTRUCTURE

### REVISIONS

4. ALL THE WORKS SHOULD BE CARRIED OUT AS PER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS

### REVISIONS

5. LAP LENGTH OF BARS SHALL NOT BE LESS THAN 50 Ø OF LARGER DIA BARS TO BE LAPPED.

### REVISIONS

6. CHAINS, SPACERS BARS ETC ARE NOT SHOWN, THESE MAY BE PROVIDED AS PER REQUIREMENT TO KEEP THE BARS IN CORRECT POSITION.

### REVISIONS

7. CONSTRUCTION JOINTS SHALL BE STAGGERED AND WELL TREATED TO MAKE PERFECT BOND BETWEEN OLD AND NEW CONCRETE.

### REVISIONS

8. CRASH BARRIER SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

9. RAILING SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

10. DRAINAGE SPOUT SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

11. 25mm THK. MASTIC ASPHALT DECK SLAB SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

12. 56mm THK. CONCRETE LAID TWO LAYERS SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

13. 2.5% SLOPE SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

14. 150mm DIA DRAINAGE PIPE SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

15. 1500X300 HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

16. 4000mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

17. 1200mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

18. 750mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

19. 350mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

20. 1177mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

21. 923mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

22. 750mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

23. 351mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

24. 1078mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

25. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

26. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

27. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

28. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

29. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

30. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

31. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

32. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

33. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

34. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

35. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

36. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

37. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

38. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

39. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

40. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

41. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

42. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

43. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

44. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

45. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

46. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

47. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

48. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

49. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

50. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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51. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

52. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

53. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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54. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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61. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

62. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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63. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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64. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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65. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

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### REVISIONS

67. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

68. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

69. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

70. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

71. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

72. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

73. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

74. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

75. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

76. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

77. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

78. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

79. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

80. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

81. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

82. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

83. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

84. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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85. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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86. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

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87. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

88. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

89. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

90. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

91. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

92. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

93. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

94. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

95. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

96. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

97. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

98. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

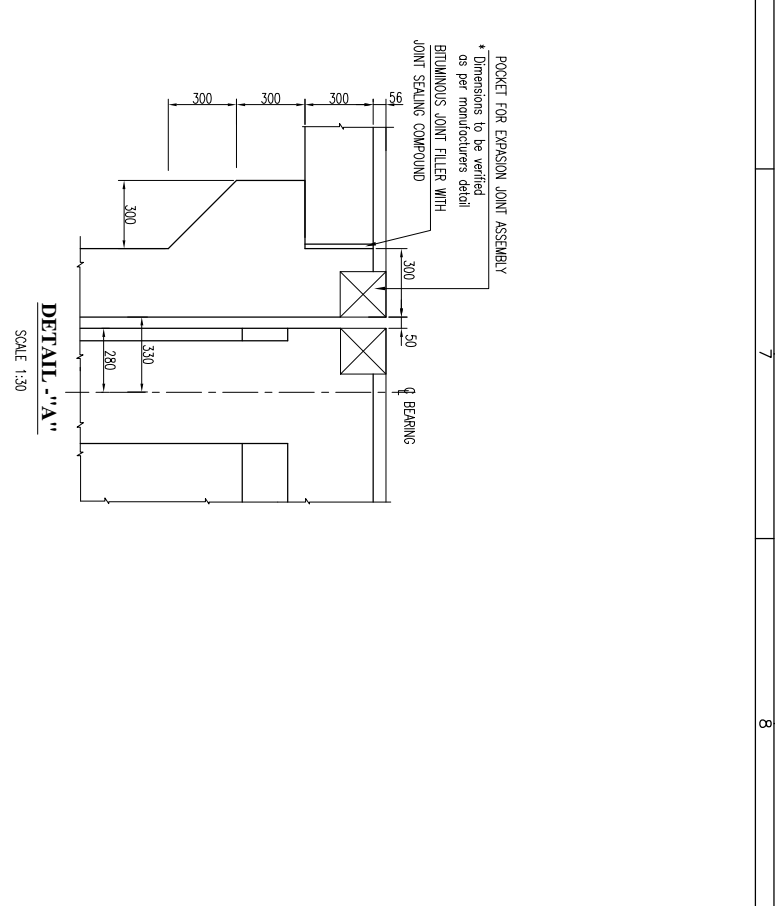
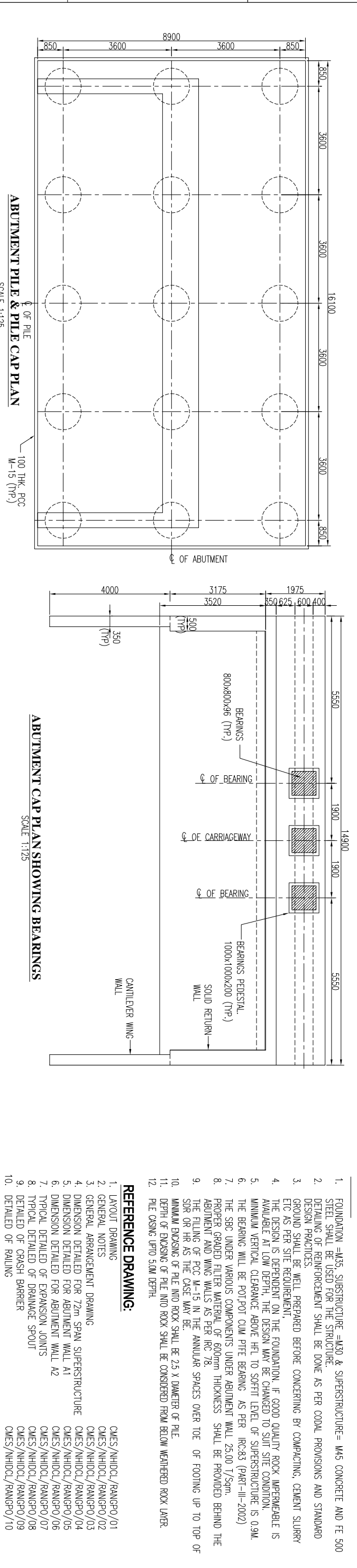
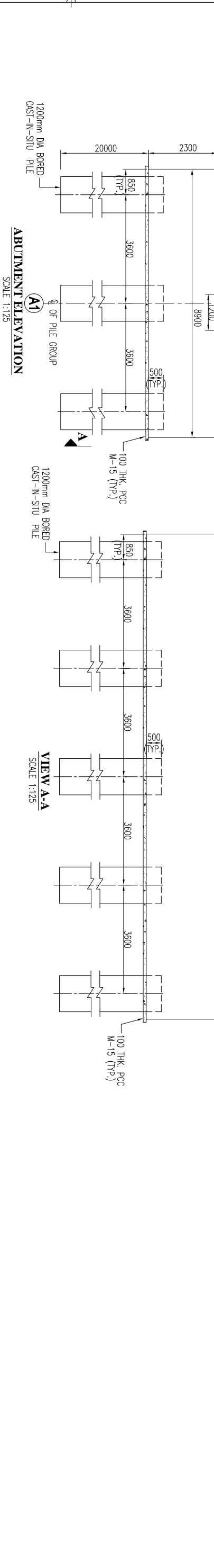
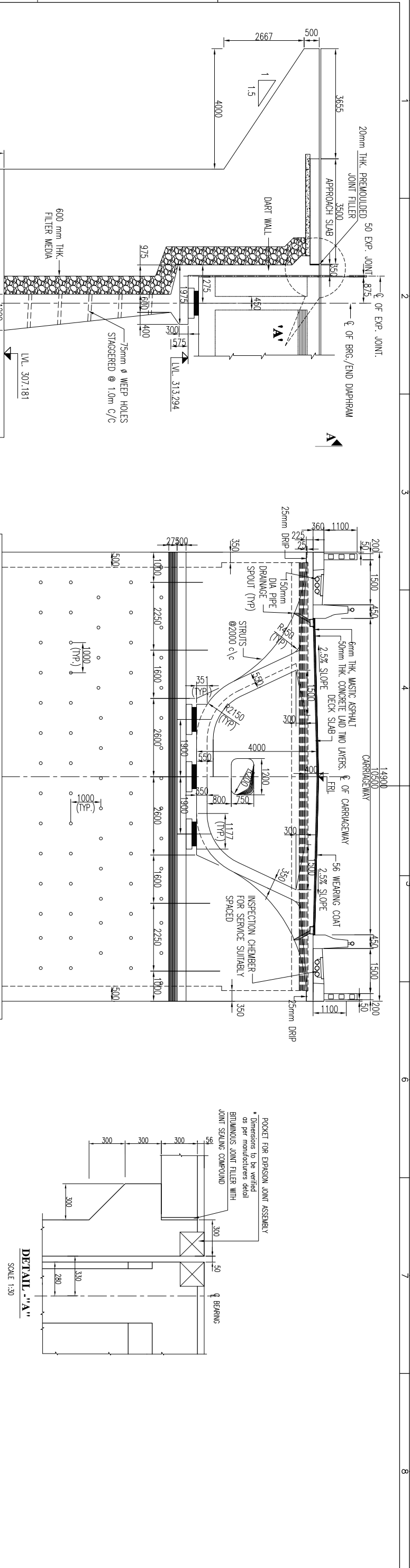
99. 2250mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS

100. 1600mm HAUNCH SHALL BE PROVIDED AS PER IRC:83 (PART-III-2002)

### REVISIONS





1. FOUNDATION - M35 SUBSTRUCTURE - M30 & SUPERSTRUCTURE - M45 CONCRETE AND FE 500 STEEL SHALL BE USED FOR THE STRUCTURE.
2. DETAILING OF REINFORCEMENT SHALL BE DONE AS PER CODAL PROVISIONS AND STANDARD DESIGN PRACTICES.
3. GROUND SHALL BE WELL PREPARED BEFORE CONCERNING BY COMPACTING, CEMENT SLURRY ETC AS PER SITE REQUIREMENT.
4. THE DESIGN IS DEPENDENT ON THE FOUNDATION. IF GOOD QUALITY ROCK IMPERMEABLE IS AVAILABLE AT LOW DEPTH, THE DESIGN MAY BE CHANGED TO SUIT SITE CONDITION.
5. MINIMUM VERTICAL CLEARANCE ABOVE H/L TO SOFTT LEVEL OF SUPERSTRUCTURE IS 0.9M.
6. THE BEARING WILL BE POT/POT CUM PTFE BEARING AS PER IRC:83 (PART-III-2002)
7. THE SBC UNDER VARIOUS COMPONENTS UNDER ABUTMENT WALL 25.00 T/Sqm.
8. PROPER GRADED FILTER MATERIAL OF 600mm THICKNESS SHALL BE PROVIDED BEHIND THE ABUTMENT AND WING WALLS AS PER IRC 78.
9. THE FILLING OF PCC M-15 IN THE ANNUAL SPACES OVER TOE OF FOOTING UP TO TOP OF SDR OR HR AS THE CASE MAY BE.
10. MINIMUM ENDSING OF PILE INTO ROCK SHALL BE 2.5 X DIAMETER OF PILE.
11. DEPTH OF ENDSING OF PILE INTO ROCK SHALL BE CONSIDERED FROM BELOW WEATHERED ROCK LAYER.
12. PILE Casing UP TO 5.0M DEPTH.

**REFERENCE DRAWING:**

1. LAYOUT DRAWING
2. GENERAL NOTES
3. GENERAL ARRANGEMENT DRAWING
4. DIMENSION DETAILED FOR 72m SPAN SUPERSTRUCTURE
5. DIMENSION DETAILED FOR ABUTMENT WALL A1
6. DIMENSION DETAILED FOR ABUTMENT WALL A2
7. TYPICAL DETAILED OF EXPANSION JOINTS
8. TYPICAL DETAILED OF DRAINAGE SPOUT
9. DETAILED OF CRASH BARRIER
10. DETAILED OF RAILING

CMES /NHIDCL/RANGPO/01
CMES /NHIDCL/RANGPO/02
CMES /NHIDCL/RANGPO/03
CMES /NHIDCL/RANGPO/04
CMES /NHIDCL/RANGPO/05
CMES /NHIDCL/RANGPO/06
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CMES /NHIDCL/RANGPO/08
CMES /NHIDCL/RANGPO/09
CMES /NHIDCL/RANGPO/10

**CLIENT:**

NATIONAL HIGHWAY & INFRASTRUCTURE  
DEVTA OPVENT CORPORATION LTD.  
3rd FLOOR PTH BUILDING, 4 PARLIAMENT STREET,  
NEW DELHI-110001

MINISTRY OF ROAD, TRANSPORT & HIGHWAYS,  
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**CONSULTANT:**

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MARUTI VIHAR, HOUSE NO. 1473A,  
GURGAON, HARYANA -122002  
Email - cmesconsultancy@gmail.com  
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**PROJECT:**

Specialized Consulting Services for Road for Tender design based on detailed investigations, costing and preparation of Technical Schedules of BPC documents of (i) Construction of Additional Bridge subject to the existing Bridge at Km 52.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii) Construction of Changua Tunnel at Km 67.24 on NH-10 in West Bengal, Sikkim

**TITLE**

**DIMENSION DETAILS OF ABUTMENT WALL A1**  
RANGPO BRIDGE

**PROJECT DRAWING**

**CMES/NHIDCL/RANGPO BR/05**

**STATUS:**

**PROJECT DRAWING**

**DATE**

**08.08.16**

**SCALE**

**AS SHOWN**

**REV.**

**SHEET**

**A3**

**1 of 1**

**MANAGER (NHIDCL)**

Gangotri, Shimla

**General Manager (NHIDCL)**

Gangotri, Shimla

**SM**

**DEALT**

**ASK**

**CHECKED**

**DK**

**APPROVED**

**STATUS:**

**PROJECT DRAWING**

**DATE**

**08.08.16**

**SCALE**

**AS SHOWN**

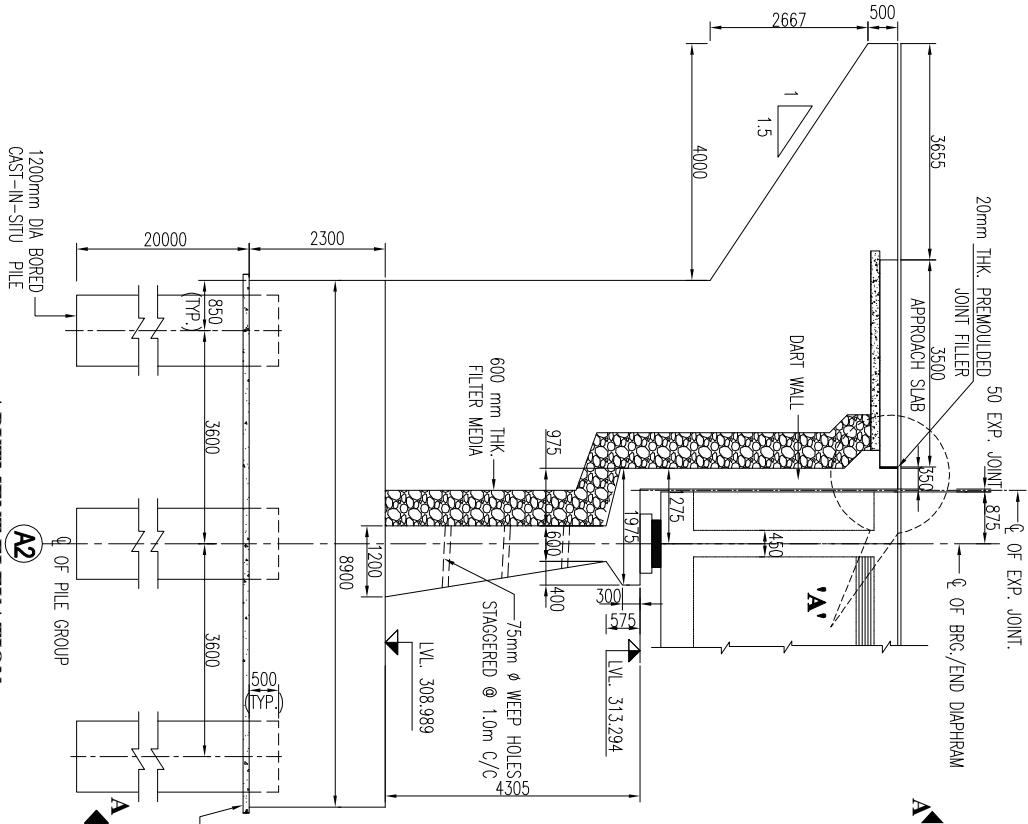
**REV.**

**SHEET**

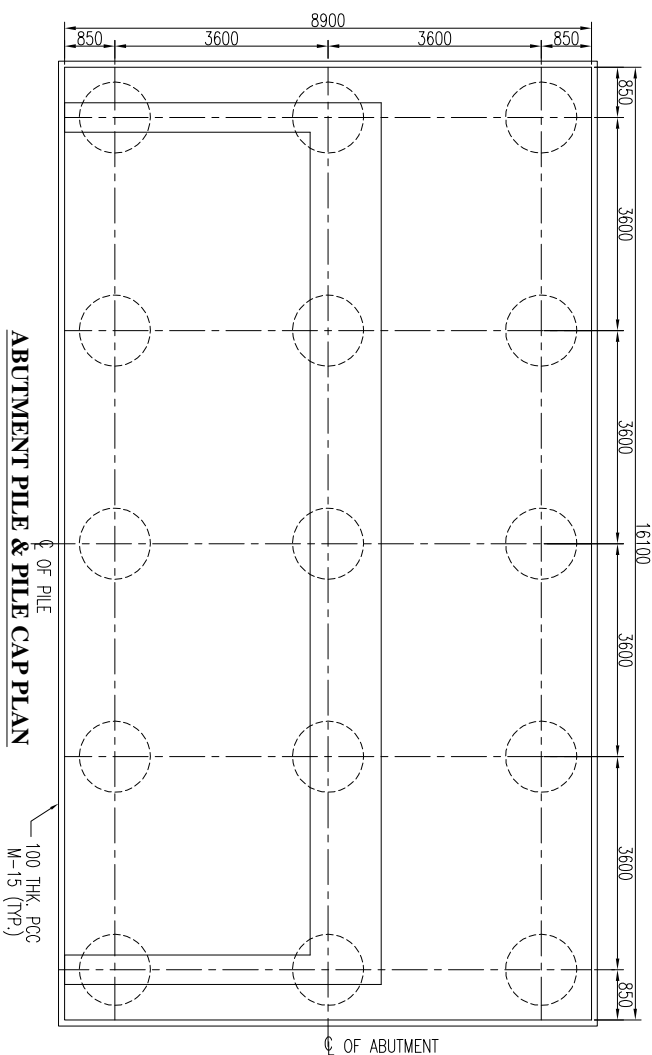
**A3**

**1 of 1**

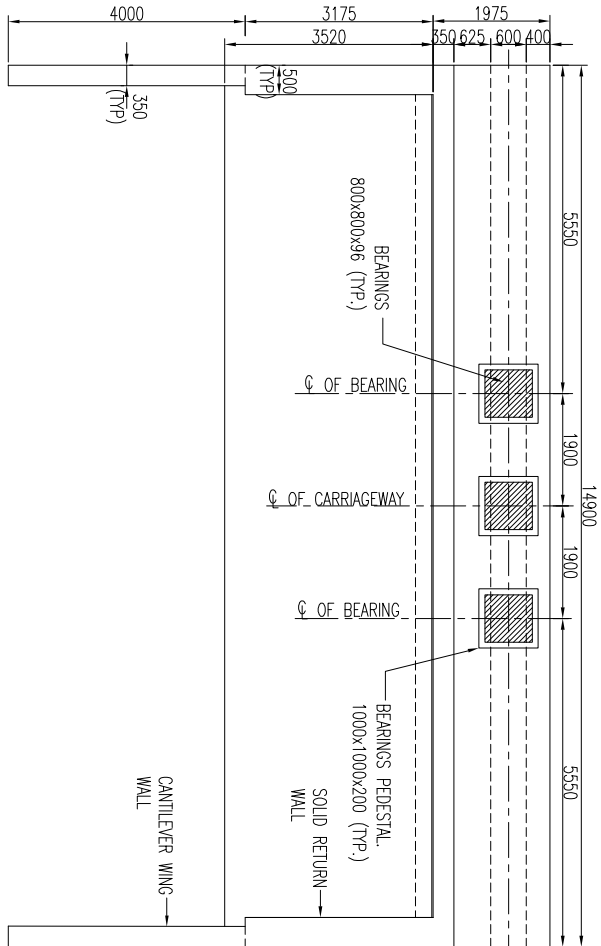




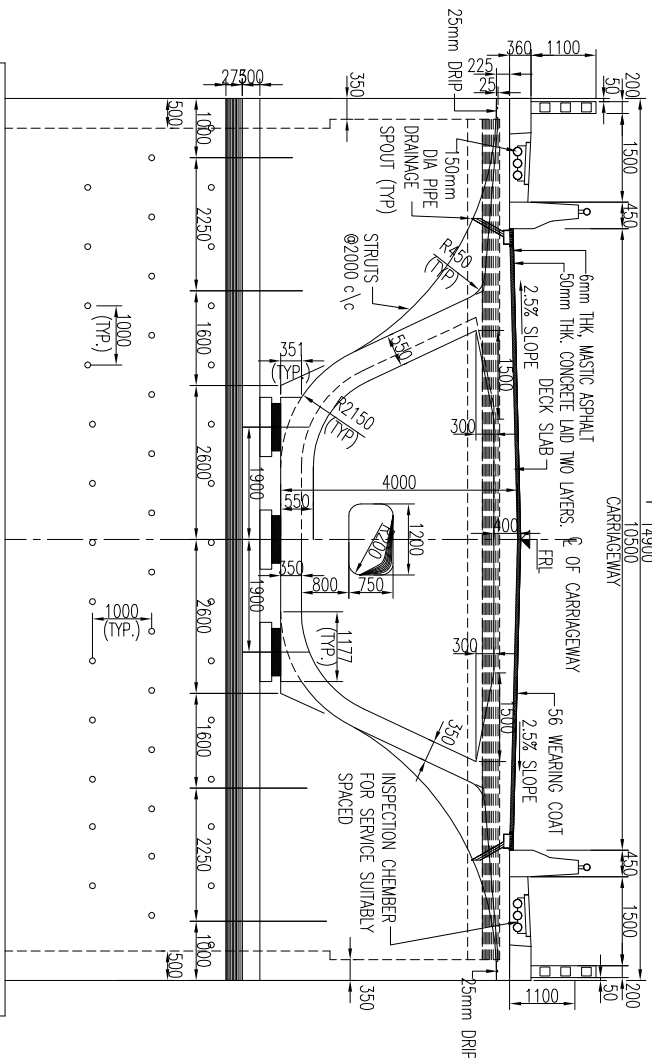
ABUTMENT ELEVATION  
SCALE 1:125



ABUTMENT PILE & PILE CAP PLAN  
SCALE 1:125



ABUTMENT CAP PLAN SHOWING BEARINGS  
SCALE 1:125



DETAIL "A"  
SCALE 1:30

NOTES:

- FOUNDATION =M35 SUBSTRUCTURE =M40 & SUPERSTRUCTURE= M45 CONCRETE AND FE 500 STEEL SHALL BE USED FOR THE STRUCTURE.
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  - GROUND SHALL BE WELL PREPARED BEFORE CONCERNING BY COMPACTING, CEMENT SLURRY ETC AS PER SITE REQUIREMENT.
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  - PILE CDSING UP TO 5.0M DEPTH.
- REFERENCE DRAWING:**
- |   |                        |
|---|------------------------|
| 1. LAYOUT DRAWING                                 | CMES /NHIDCL/RANGPO/01 |
| 2. GENERAL NOTES                                  | CMES /NHIDCL/RANGPO/02 |
| 3. GENERAL ARRANGEMENT DRAWING                    | CMES /NHIDCL/RANGPO/03 |
| 4. DIMENSION DETAILED FOR 50m SPAN SUPERSTRUCTURE | CMES /NHIDCL/RANGPO/04 |
| 5. DIMENSION DETAILED FOR ABUTMENT WALL A1        | CMES /NHIDCL/RANGPO/05 |
| 6. DIMENSION DETAILED FOR ABUTMENT WALL A2        | CMES /NHIDCL/RANGPO/06 |
| 7. TYPICAL DETAILED OF EXPANSION JOINTS           | CMES /NHIDCL/RANGPO/07 |
| 8. TYPICAL DETAILED OF DRAINAGE SPOUT             | CMES /NHIDCL/RANGPO/08 |
| 9. DETAILED OF CRASH BARRIER                      | CMES /NHIDCL/RANGPO/09 |
| 10. DETAILED OF RAILING                           | CMES /NHIDCL/RANGPO/10 |

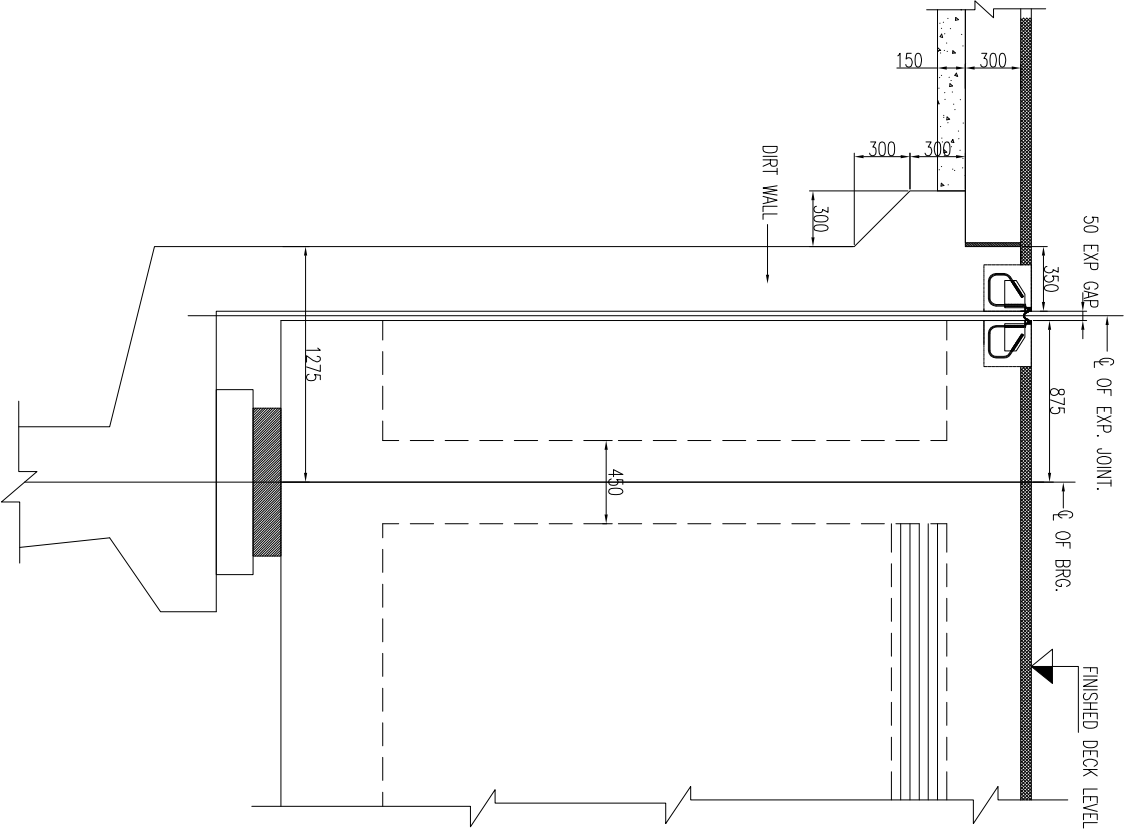
		1. ALL DIMENSIONS ARE IN "mm", ELEVATIONS AND LEVELS IN "m" UNLESS SPECIFIED OTHERWISE	
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		4. ALL THE WORKS SHOULD BE CARRIED OUT AS PER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS OF MORTH (5th EDITION).	
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		7. CONSTRUCTION JOINTS SHALL BE STAGGERED AND WELL TREATED TO MAKE PERFECT BOND BETWEEN OLD AND NEW CONCRETE.	
DATE	ISSUED AND/OR REFERENCES	DEALT	CHECKED
R E V I S I O N S			

CLIENT:	
NATIONAL HIGHWAY & INFRASTRUCTURE DEVELOPMENT CORPORATION LTD. 3rd FLOOR PTH BUILDING, 4 PARLIAMENT STREET, NEW DELHI-110001	
MINISTRY OF ROAD, TRANSPORT & HIGHWAYS, GOVERNMENT OF INDIA	
Manager (NHIOCL) Gangotri, Shimla	General Manager (NHIOCL) Gangotri, Shimla

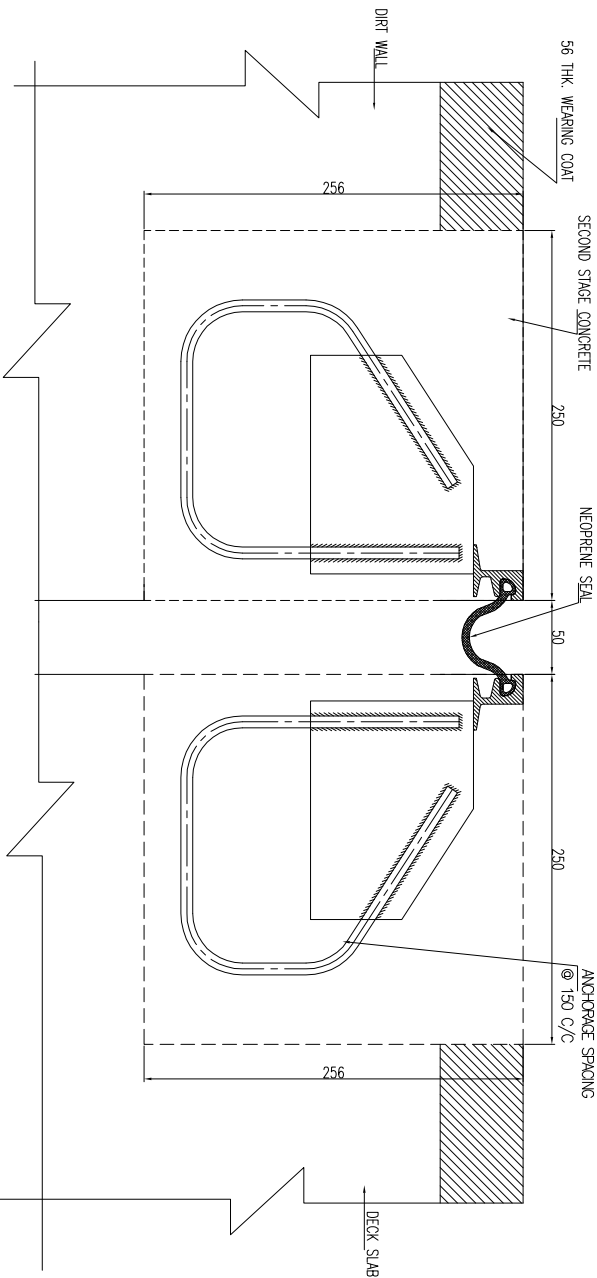
CONSULTANT:	
CM ENGINEERING & SOLUTION MARUTI VIHAR, HOUSE NO. 1473A, GURGAON, HARYANA -122002 Email - cmesconsultancy@gmail.com Phone: 9811406386, 9911062266, 01244265138	
SM	DEALT
ASK	CHECKED
DK	APPROVED

PROJECT:					Specialized Consultancy Services for Road for Tender design based on detailed investigations, costing and preparation of Technical Schedules of BPC documents of (i) Construction of Additional Bridge subject to the existing bridge at Km 52.100 on NH-10 at Rangpo at the border of West Bengal and Sikkim State (ii) Construction of Changuan Tunnel, Tunnel at Km 67.24 on NH-10 in West Bengal, Sikkim					
RANGPO BRIDGE										
TITLE					DIMENSION DETAILS OF ABUTMENT WALL A2					
PROJECT DRAWING					DATE		SCALE		AS SHOWN	
STATUS:					08.08.16				A3	
CMES/NHIDCL/RANGPO BR/06					REV.		SHEET		R0 1 of 1	





SECTIONAL ELEVATION OF EXPANSION  
JOINT AT ABUTMENT  
(SCALE 1:40)




TYPICAL DETAIL OF SINGLE STRIP SEAL TYPE EXPANSION JOINT  
(SCALE 1:5)


- EXPANSION JOINT ARRANGEMENT SHOWN IN THIS DRAWING IS TYPICAL ARRANGEMENT FOR STRIP-SEAL TYPE EXPANSION JOINT. ACTUAL DETAILS SHALL BE AS PER MANUFACTURER'S DRAWINGS.
- DESIGN, SPECIFICATIONS, TESTING AND ACCEPTANCE STANDARDS AND INSTALLATION PROCEDURE OF EXPANSION JOINT SHALL CONFIRM TO THE REQUIREMENTS OF IRC: SP- 69-2005.
- A RECESS OF 250X250MM HAS BEEN PROVIDED IN EXPANSION JOINT SEGMENTS TO HOUSE THE JOINT ASSEMBLY. RECESS DIMENSIONS AND 150MM GAP PROPOSED BETWEEN DECK SLAB AT EXPANSION JOINT LOCATION TO BE RECONFIRMED BY CONTRACTOR FROM THE SELECTED EXPANSION JOINT SUPPLIER AND DIMENSIONS OF DECK SLAB TO BE RE-ADJUSTED IF REQUIRED.
- AT THE TIME OF INSTALLATION, EXPANSION JOINT OPENING SHALL BE SET AS PER MANUFACTURER'S RECOMMENDATION CONSIDERING DAILY MEAN TEMPERATURE AND AGE OF SUPER-STRUCTURE CONCRETE WITH DUE ALLOWANCE FOR CREEP AND SHRINKAGE. MANUFACTURER'S REPRESENTATIVE SHOULD PREFERABLY BE PRESENT DURING JOINT INSTALLATION.
- GRADE OF SECOND STAGE CONCRETE SHALL BE SAME AS DECK SLAB. BEFORE CONCRETING THE EXPANSION JOINT RECESS, EPOXY COATING SHALL BE APPLIED ON CONTACT SURFACES TO HAVE BONDING OF SECOND STAGE CONCRETE WITH DECK SEGMENT CONCRETE.
- SPECIFICATIONS INCLUDING PERMISSIBLE TOLERANCES FOR THE ELASTOMERIC BEARINGS, FABRICATION, TESTING AND ACCEPTANCE SHALL BE IN ACCORDANCE WITH IRC:83 (PART II) 1987: STANDARD SPECIFICATION AND CODE OF PRACTICE FOR ROAD BRIDGES SECTION IX (PART II) ELASTOMERIC BEARINGS.
- BEARINGS SHALL BE HANDLED CAREFULLY. THESE SHALL BE PROTECTED FROM BRIGHT SUNLIGHT AND EXTREME COLD. THESE SHALL BE STORED NEATLY UNDER COVER TILL INSTALLATION.
- BEARINGS SHALL BE PROCURED ONLY FROM PRE-QUALIFIED MANUFACTURERS.

REFERENCE DRAWINGS:

- LAYOUT DRAWING CMES /NHIDCL/RANGPO/01
- GENERAL NOTES CMES /NHIDCL/RANGPO/02
- GENERAL ARRANGEMENT DRAWING CMES /NHIDCL/RANGPO/03
- DIMENSION DETAILED FOR 72m SPAN SUPERSTRUCTURE CMES /NHIDCL/RANGPO/04
- DIMENSION DETAILED FOR ABUTMENT WALL A1 CMES /NHIDCL/RANGPO/05
- DIMENSION DETAILED FOR ABUTMENT WALL A2 CMES /NHIDCL/RANGPO/06
- TYPICAL DETAILED OF EXPANSION JOINTS CMES /NHIDCL/RANGPO/07
- TYPICAL DETAILED OF DRAINAGE SPOUT CMES /NHIDCL/RANGPO/08
- DETAILED OF CRASH BARRIER CMES /NHIDCL/RANGPO/09
- DETAILED OF RAILING CMES /NHIDCL/RANGPO/10

1. ALL DIMENSIONS ARE IN "mm", ELEMENTS AND LEVELS IN "m" UNLESS SPECIFIED OTHERWISE	
2. NO DIMENSION SHALL BE MEASURED FROM THE DRAWING	
3. CLEAR COVER OF 75/50 MM SHALL BE PROVIDED TO OUTERMOST BAR FOR SUBSTRUCTURE/SUPERSTRUCTURE	
4. ALL THE WORKS SHOULD BE CARRIED OUT AS PER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS OF MORTH (5th EDITION)	
5. LAP LENGTH OF BARS SHALL NOT BE LESS THAN 50 Ø OF LARGER DIA BARS TO BE LAPPED.	
6. CHAIRS, SPACERS BARS ETC ARE NOT SHOWN. THESE MAY BE PROVIDED AS PER REQUIREMENT TO KEEP THE BARS IN CORRECT POSITION.	
7. CONSTRUCTION JOINTS SHALL BE STAGGERED AND WELL TREATED TO MAKE PERFECT BOND BETWEEN OLD AND NEW CONCRETE.	

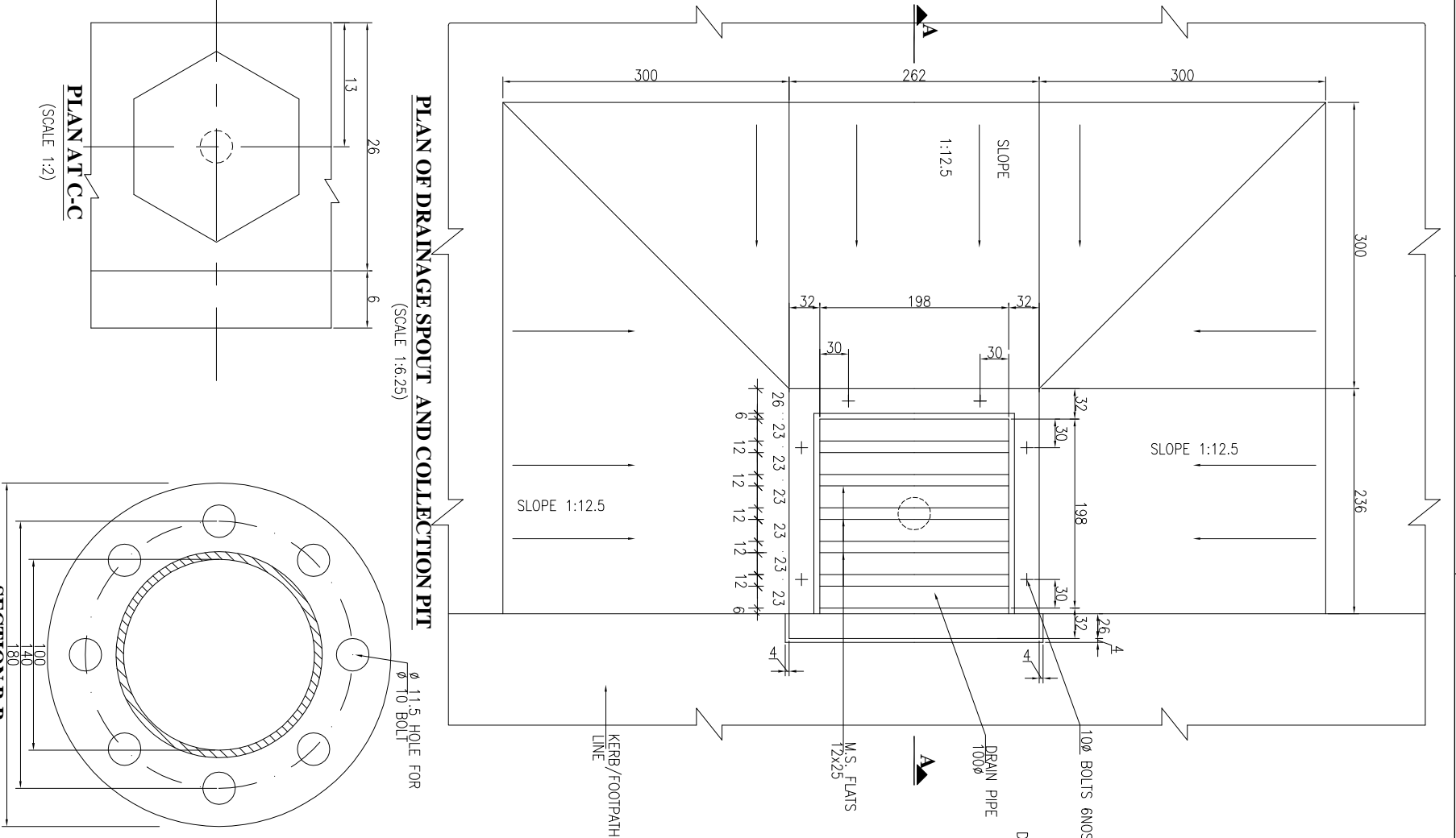
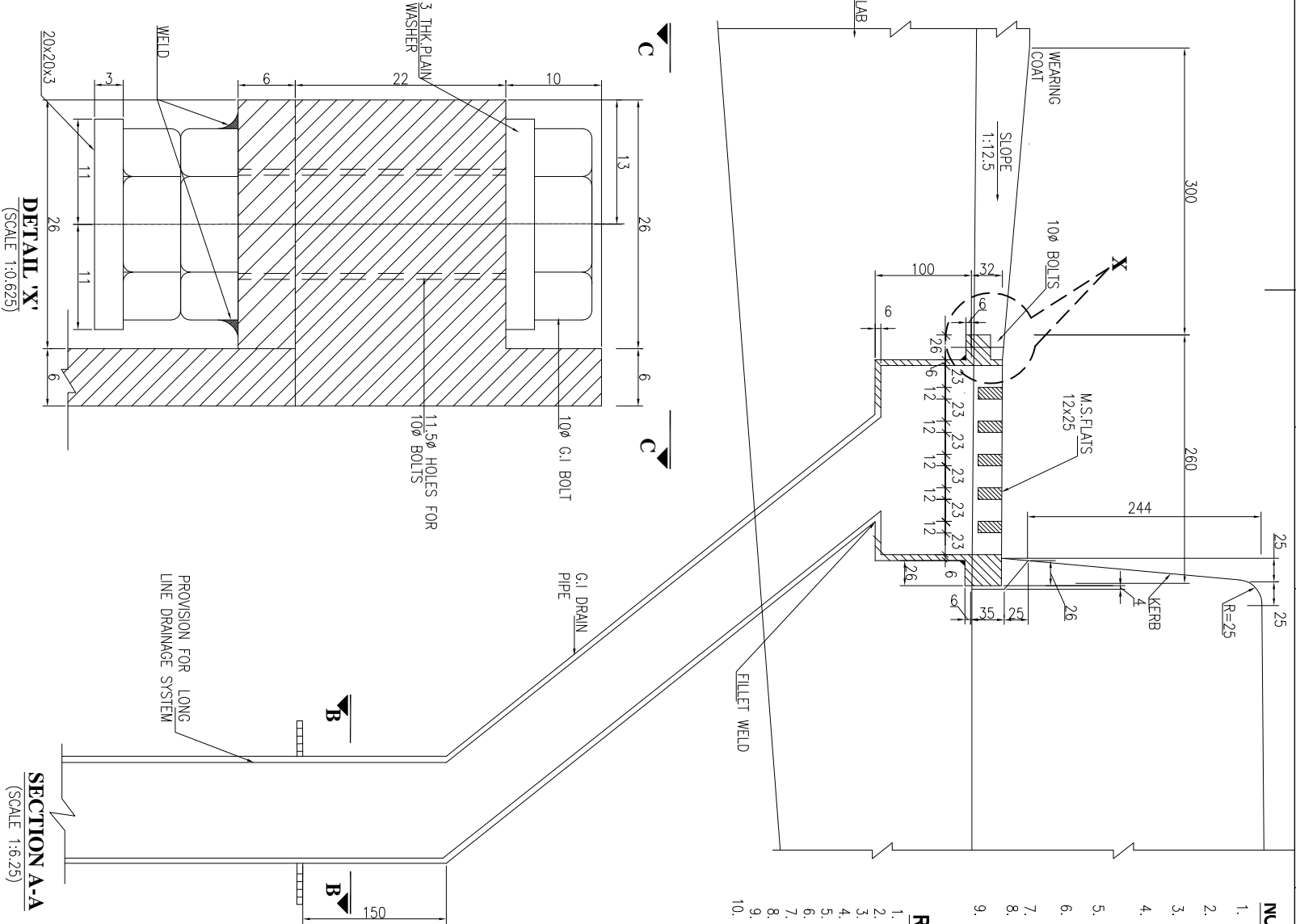
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DEALT	CHECKED
	APPROVED

PROJECT: Specialised Consultancy Services for 'Road for Trade' design based on detailed investigations, costing and preparation of Technical Schedules of BPC documents of (i) Construction of Additional Bridge subject to the existing Bridge at Km 52.100 on NH-10 at Bangpo at the border of West Bengal and Sikkim State (ii) Construction of Changua Trestle Tunnel at Km 67.24 on NH-10 in West Disa, Sikkim	
TITLE RANGPO BRIDGE TYPICAL DETAILED OF EXPANSION JOINTS	
STATUS: PROJECT DRAWING	DATE: 08.08.16
SCALE	AS SHOWN
REV. SHEET	A3
R0	1 of 1



- NOTES:**
- FOUNDATION =M35, SUBSTRUCTURE =M30 & SUPERSTRUCTURE= M45 CONCRETE AND FE 500 STEEL SHALL BE USED FOR THE STRUCTURE.
  - DETAILING OF REINFORCEMENT SHALL BE DONE AS PER CODAL PROVISIONS AND STANDARD DESIGN PRACTICES.
  - GROUND SHALL BE WELL PREPARED BEFORE CONCRETING BY COMPACTING, CEMENT SLURRY ETC AS PER SITE REQUIREMENT.
  - THE DESIGN IS DEPENDENT ON THE FOUNDATION. IF GOOD QUALITY ROCK IMPERFEABLE IS AVAILABLE AT LOW DEPTH, THE DESIGN MAY BE CHANGED TO SUIT SITE CONDITION.
  - MINIMUM VERTICAL CLEARANCE ABOVE HFL TO SOFFIT LEVEL OF SUPERSTRUCTURE IS 0.9M.
  - THE BEARING WILL BE POT,POT CUM PTFE BEARING AS PER IRC:83 (PART-III-2002)
  - THE SBC UNDER VARIOUS COMPONENTS UNDER ABUTMENT WALL 25.00 T/Sqm.
  - PROPER GRADED FILTER MATERIAL OF 600mm THICKNESS SHALL BE PROVIDED BEHIND THE ABUTMENT AND WING WALLS AS PER IRC 78.
  - THE FILLING OF PCC M-15 IN THE ANNULAR SPACES OVER TOE OF FOOTING UP TO TOP OF SDR OR HR AS THE CASE MAY BE.
- REFERENCE DRAWING:**
- |   |                          |
|---|--------------------------|
| 1. LAYOUT DRAWING                                 | CMES /NHIDCL /RANGPO /01 |
| 2. GENERAL NOTES                                  | CMES /NHIDCL /RANGPO /02 |
| 3. GENERAL ARRANGEMENT DRAWING                    | CMES /NHIDCL /RANGPO /03 |
| 4. DIMENSION DETAILED FOR 72m SPAN SUPERSTRUCTURE | CMES /NHIDCL /RANGPO /04 |
| 5. DIMENSION DETAILED FOR ABUTMENT WALL A1        | CMES /NHIDCL /RANGPO /05 |
| 6. DIMENSION DETAILED FOR ABUTMENT WALL A2        | CMES /NHIDCL /RANGPO /06 |
| 7. TYPICAL DETAILED OF EXPANSION JOINTS           | CMES /NHIDCL /RANGPO /07 |
| 8. TYPICAL DETAILED OF DRAINAGE SPOUT             | CMES /NHIDCL /RANGPO /08 |
| 9. DETAILED OF CRASH BARRIER                      | CMES /NHIDCL /RANGPO /09 |
| 10. DETAILED OF RAILING                           | CMES /NHIDCL /RANGPO /10 |



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3. CLEAR COVER OF 75/50 MM SHALL BE PROVIDED TO COUNTERWEIGHT BARS FOR SUBSTRUCTURE/SUPERSTRUCTURE
4. ALL THE WORKS SHOULD BE CARRIED OUT AS PER THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE WORKS OF MORTH (5th EDITION).
5. LAP LENGTH OF BARS SHALL NOT BE LESS THAN 30 Ø OF LARGER DIA BARS TO BE LAPPED.
6. CHAIRS, SPACERS BARS ETC ARE NOT SHOWN, THESE MAY BE PROVIDED AS PER REQUIREMENT TO KEEP THE BARS IN CORRECT POSITION.
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Email - cmesconsultancy@gmail.com  
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**TYPICAL DETAILED OF DRAINAGE SPOUT**

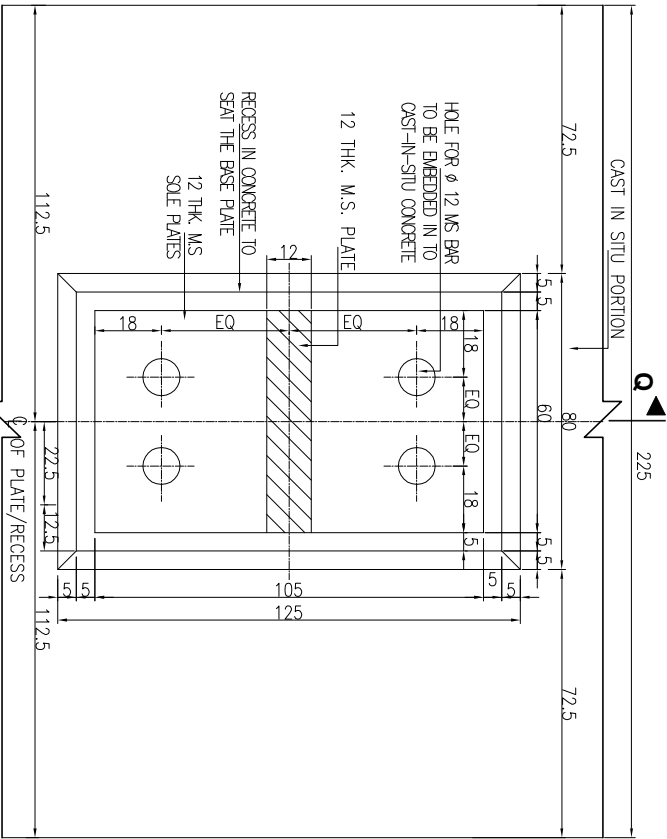
**RANGPO BRIDGE**

STATUS:	PROJECT DRAWING	DATE	08.08.16	SCALE	AS SHOWN	SHEET	A3
	CMES/NHIDCL/RANGPO BR/08				REV.	R0	1 of 1

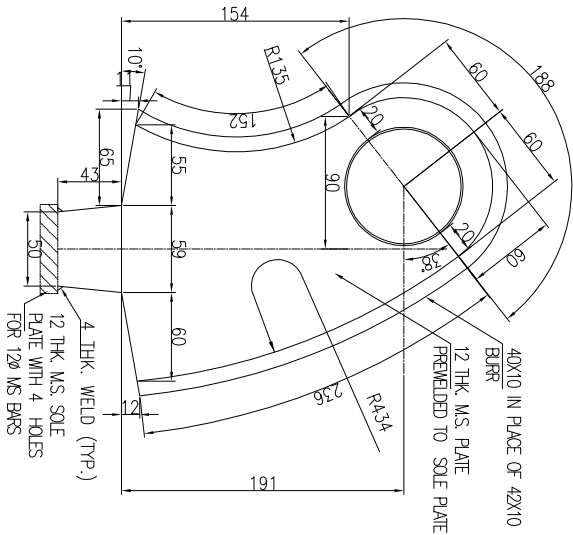


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  - THE FILLING OF PCC M-15 IN THE ANNULAR SPACES OVER TOE OF FOOTING UP TO TOP OF SDR OR HR AS THE CASE MAY BE.
- REFERENCE DRAWING:**
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| 1. LAYOUT DRAWING                                 | CMES/NHIDCL/RANGPO/01 |
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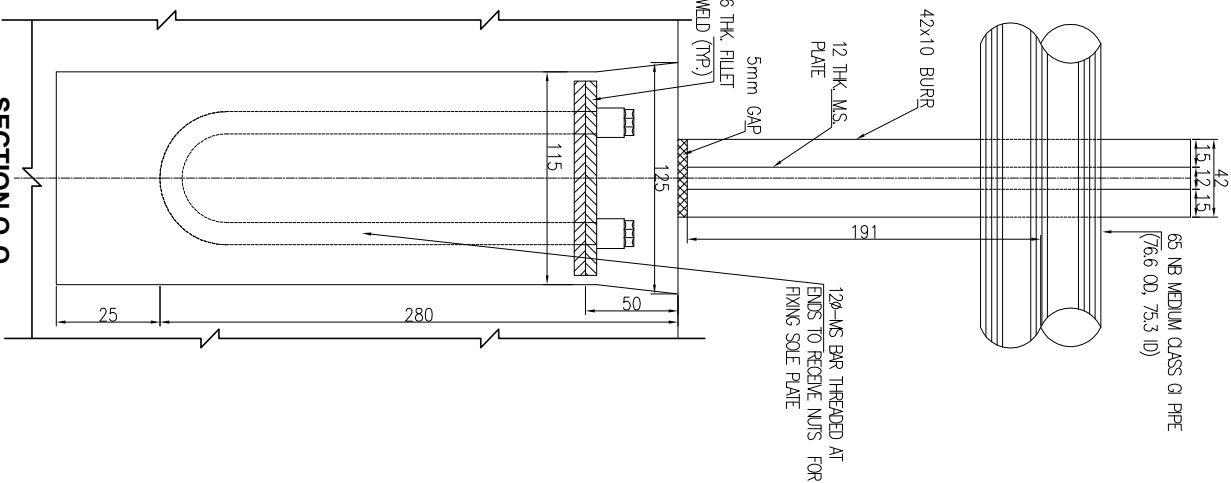
**PLAN F-F**  
(SCALE 1:2 )



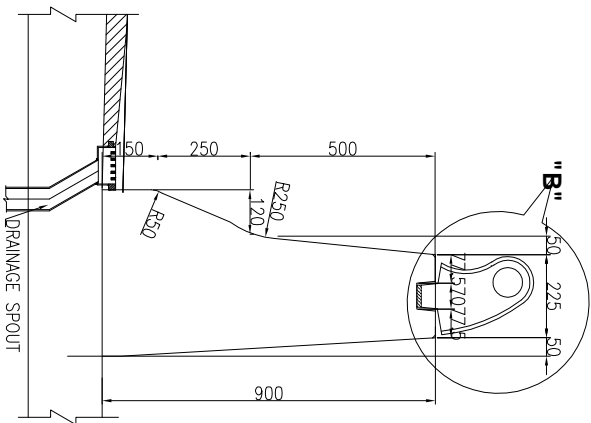
**DETAIL "C"**  
(SCALE 1:5)



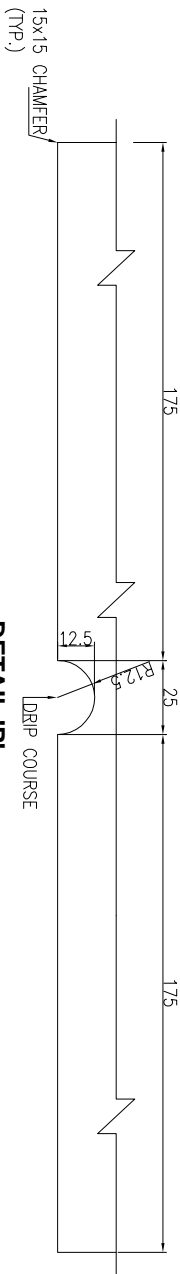
**SECTION Q-Q**  
(SCALE 1:4)



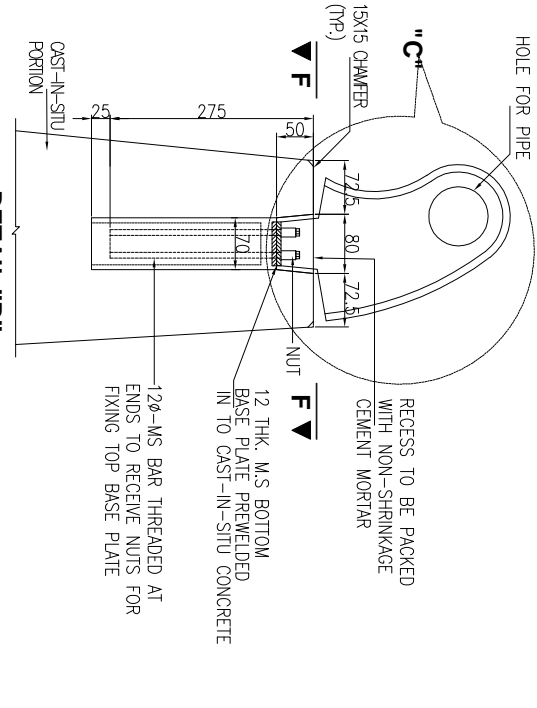
**SECTION D-D**  
(SCALE 1:20)



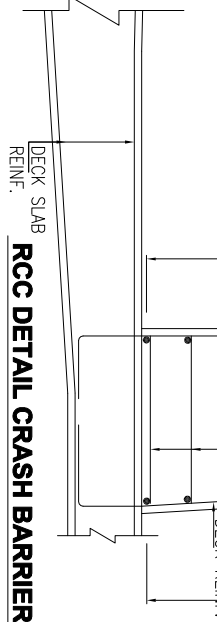
**DETAIL 'P'**  
(SHOWING DRIP COURSE DETAIL)  
(SCALE 1:2.5 )




**DETAIL "B"**  
(SCALE 1:10 )




**RCC DETAIL CRASH BARRIER**  
(SCALE 1:20)



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RANGPO BRIDGE	
<b>TITLE</b>	
TYPICAL DETAILED OF CRASH BARRIER	
<b>PROJECT DRAWING</b>	
STATUS:	DATE
CMES/NHIDCL/RANGPO BR/09	08.08.16
SCALE	AS SHOWN
REV.	SHEET
R0	1 of 1



