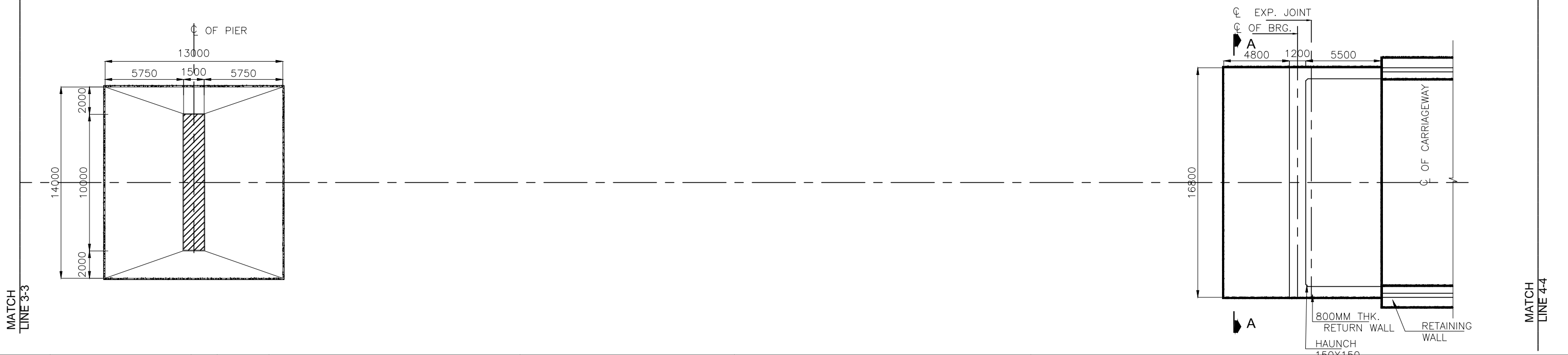
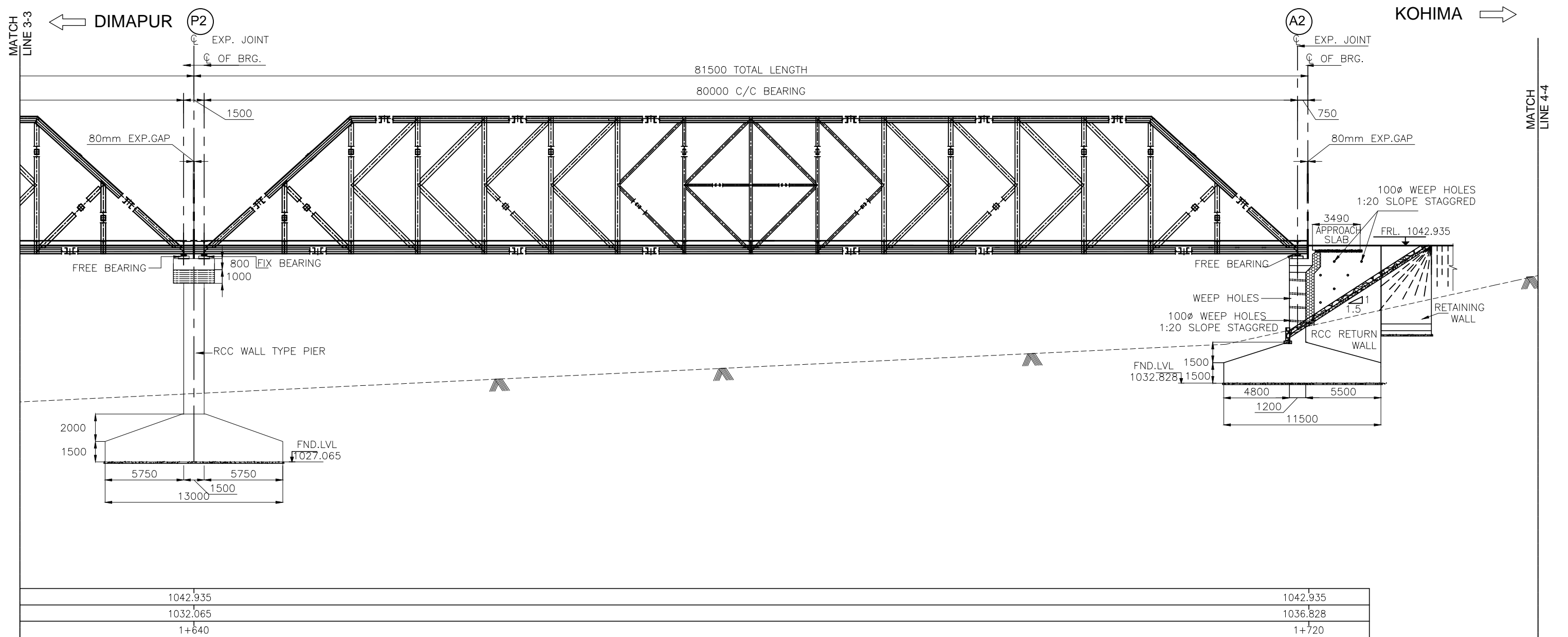


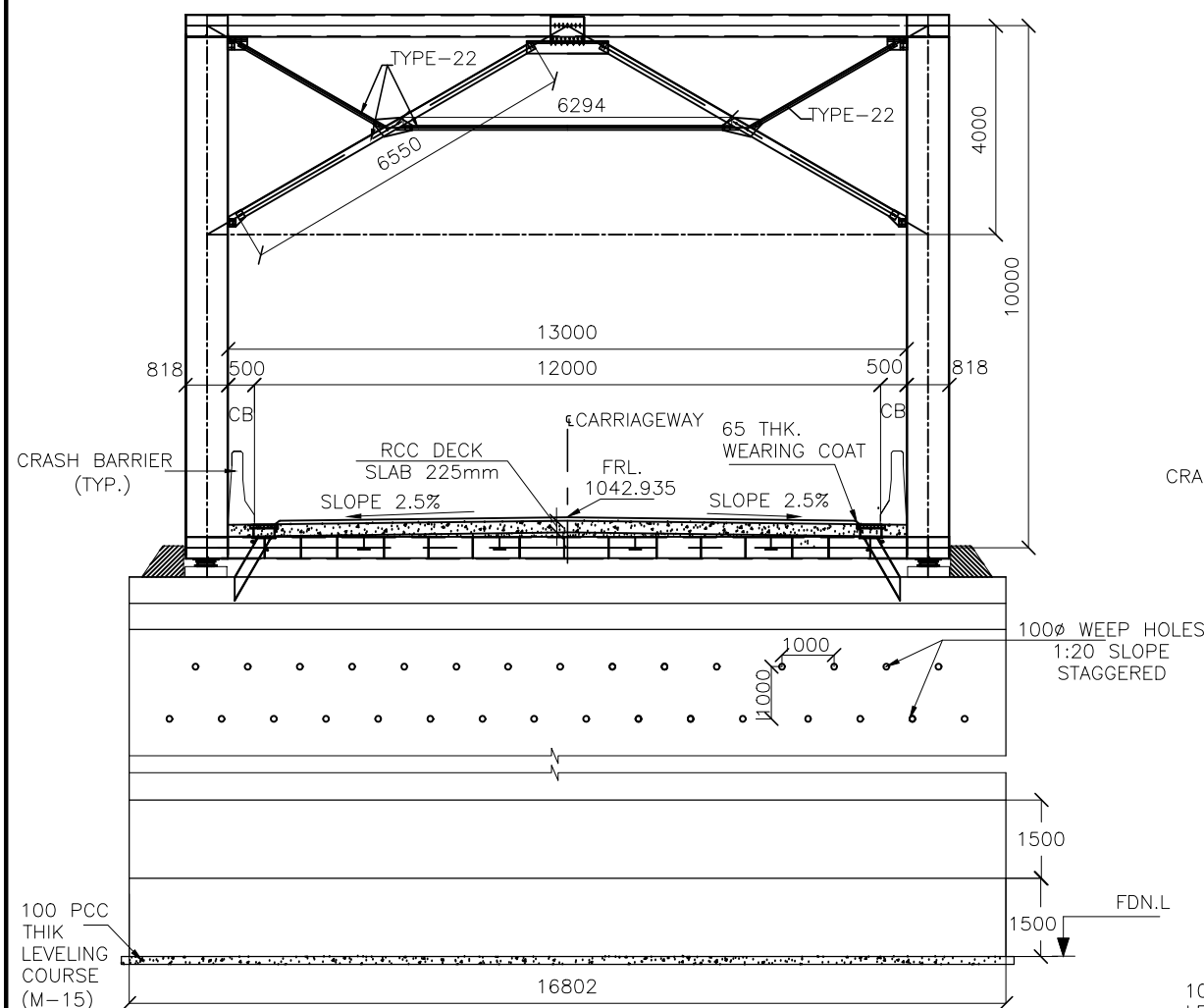


# DRAWING INDEX

BRIDGE AT DESIGN CH-1+600				
SL.No.	DRAWING TITLE	DRAWING No.	SHEET	Rev.
1.	GENERAL ARRANGEMENT DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH 1+600/S-101	04	R0
2.	DIMENSION & REINFORCEMENT DETAILS OF ABUTMENT& FOUNDATION	HEC-AIPPL/NHIDCL/KB/GAD/CH 1+600/S-201	02	R0
3.	DIMENSION & REINFORCEMENT DETAILS OF PIER "P1 & P2" FOUNDATION	HEC-AIPPL/NHIDCL/KB/GAD/CH 1+600/S-202	02	R0
4.	DIMENSION DETAILS OF CROSS SECTION	HEC-AIPPL/NHIDCL/KB/GAD/CH1+600 /S-301	01	R0
5.	REINFORCEMENT DETAILS OF DECK SLAB	HEC-AIPPL/NHIDCL/KB/GAD/CH1+600 /S-401	01	R0
6.	BEARING DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH1+600 /S-501	01	R0
7.	MISCELLANEOUS DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH1+600 /S-601	01	R0
8.	RETAINING WALL DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH1+600 /S-701	01	R0

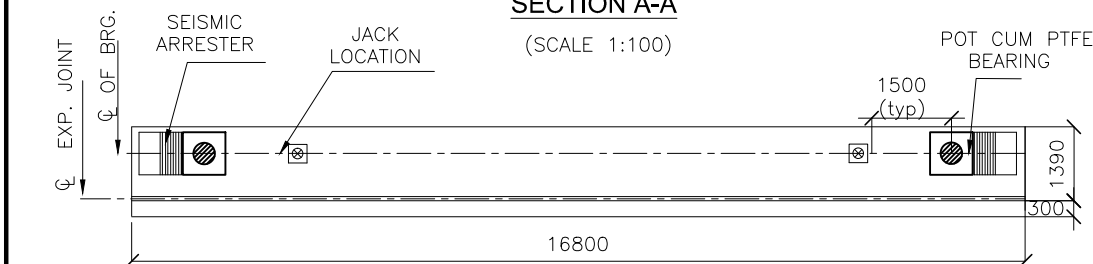


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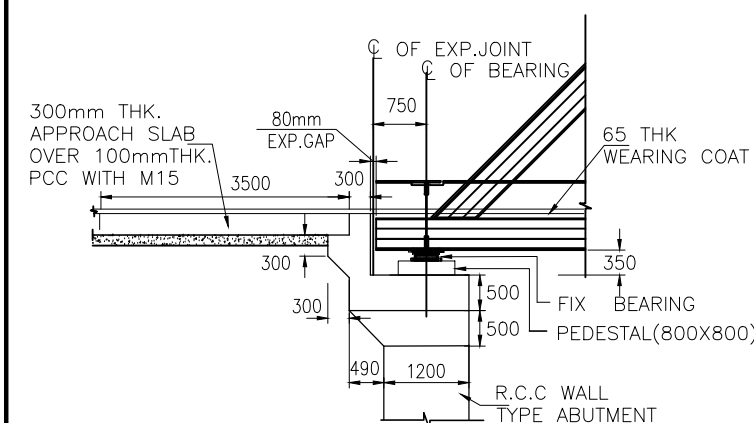
SECTION A-A

(SCALE 1:100)



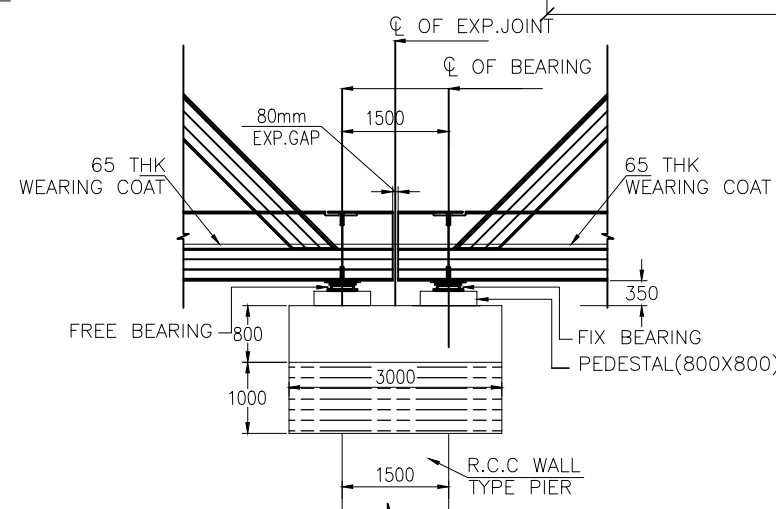
DETAIL OF ABUTMENT CAP PLAN

(SCALE:1:110)



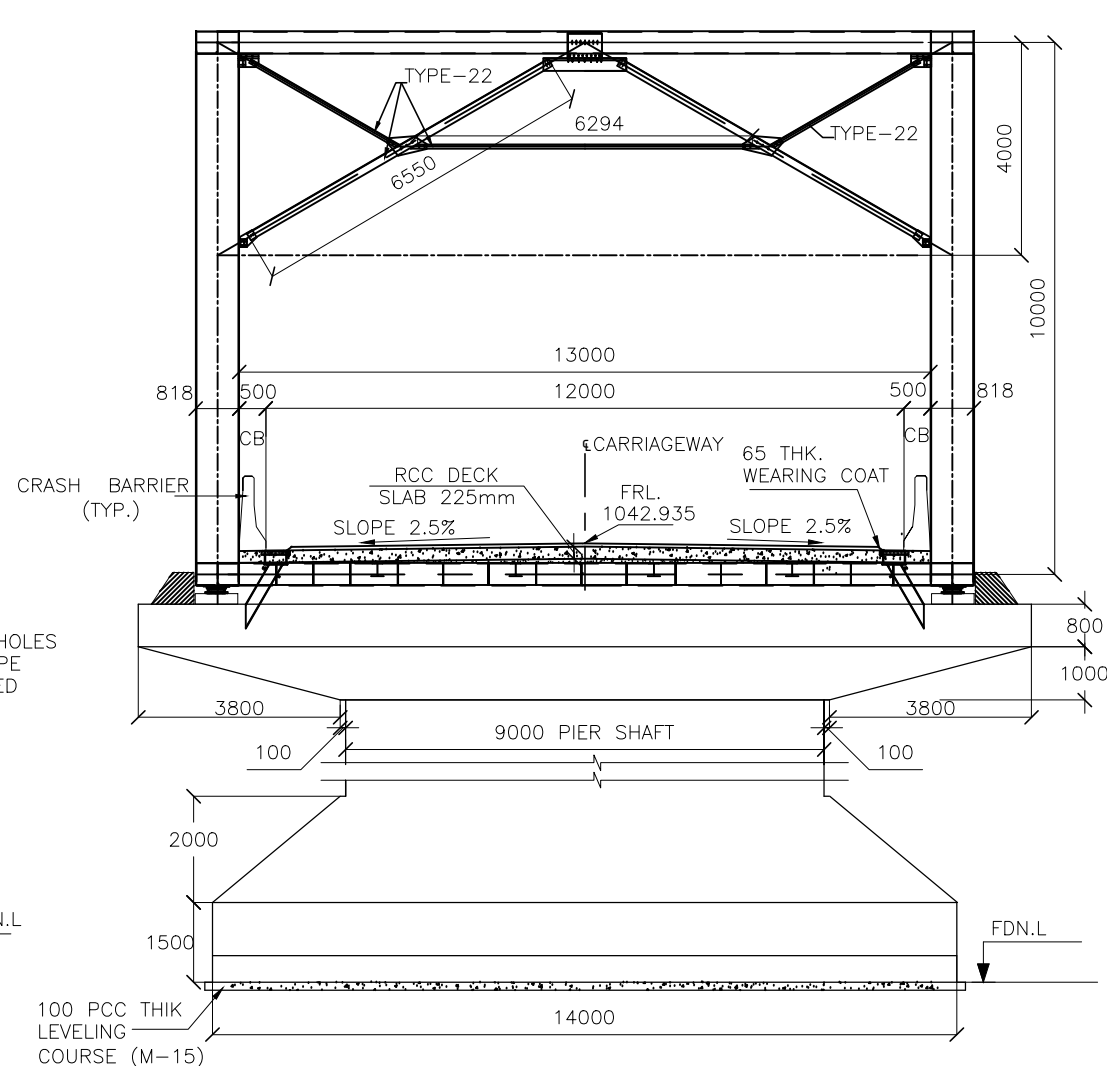
DETAIL 'X'

(SCALE: 1: 75)



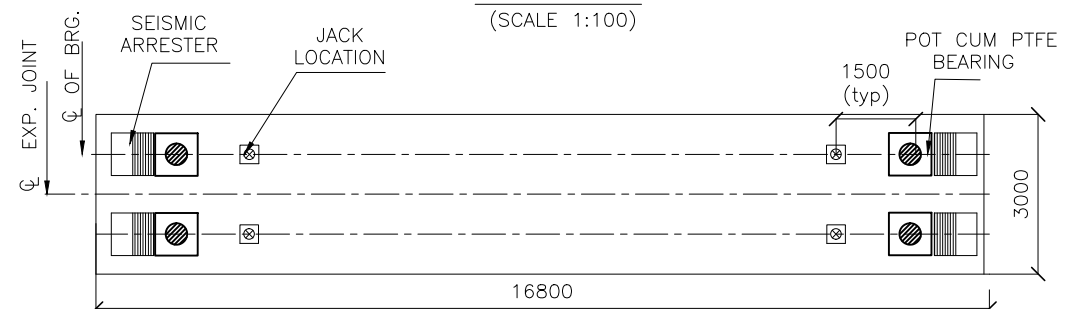
DETAIL 'Y'

(SCALE: 1: 75)



SECTION B-B

(SCALE 1:100)



DETAIL OF PIER CAP PLAN

(SCALE:1:110)

#### REFERENCE DRAWING :-

1. DIMENSION & REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-201-SHETT(01/02 OF 02)
2. DIMENSION & REINFORCEMENT DETAILS OF PIER & FOUNDATION  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-202-SHETT(01/02 OF 02)
3. DIMENSION DETAILS OF CROSS SECTION  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-301-SHETT(01 OF 01)
4. REINFORCEMENT DETAILS OF DECK SLAB DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-401-SHETT(01 OF 01)
5. BEARING LAYOUT DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-701-SHETT(01 OF 01)
6. MISCELLANEOUS DETAILS DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-801-SHETT(01/01 OF 01)
7. RETAINING WALL DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-901-SHETT(01 OF 01)

#### NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE BRIDGE IS DESIGNED FOR ONE LANE OF ONE LANE OF 70R WHEEL LOADING+ONE LANE OF CLASS A OR 2 LANE OF CLASS A LOADING WHICHEVER PRODUCES THE WORST EFFECT.
4. GRADE OF CONCRETE FOR VARIOUS COMPONENTS SHALL BE AS MENTIONED UNDER:-
  - a SUBSTRUCTURE ----- M35
  - b FOUNDATION ----- M35
  - c RCC CRASH BARRIER -----M40
  - d RCC DECK SLAB -----M35
  - e RCC RETAINING WALL -----M35
  - f PEDESTAL BELOW BEARING ---M40
  - g APPROACH SLAB -----M30
  - h SEISMIC ARRESTOR -----M35
  - i LEVELLING COURSE ----- M15
5. STEEL REINFORCEMENT SHALL CONFORM TO IS:1786 (GRADE DESIGNATION Fe-500D)
6. ALL STRUCTURAL ROLLED SECTIONS SHALL CONFORM TO IS: 2062 (GRADE E-410)
7. STRIP SEAL TYPE EXPANSION JOINTS OF PROVEN QUALITY SHALL BE PROVIDED.
8. BACK FILLING BEHIND ABUTMENTS SHALL CONSIST OF SELECTED EARTH CONFIRMING TO APPENDIX 6 OF IRC: 78-2000 HAVING PROPERTIES  $\phi=30^\circ$  (MINIMUM),  $\gamma=20^\circ$   $\approx 2.0 \text{ t/m}^3$
9. WEAP HOLES SPACED AT 1000 c/c BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN A STAGGERED MANNER IN ABUTMENTS AND RETURN WALLS FROM 150mm ABOVE GL TO ABUTMENT CAP BOTTOM.
10. ALL WELDING SHALL CONFORM TO IS:816-1969 AND IS:1323-1982.
11. ALL HIGH STRENGTH FRICTION GRIP BOLTS,NUTS & WASHERS SHALL CON TO IS:4000-1992, IS: 3757-1985,IS:6623-1985 & IS:6649-1985.
12. FABRICATION DRAWING SHOULD BE PREPARED & GET APPROVED FROM ENGINEER-IN-CHARGE BEFORE CONSTRUCTION.
13. HIGH STRENGTH ORDINARY PORTLAND CEMENT CONFORMING TO IS : 12269 AND IS : 8112 OR ORDINARY PORTLAND CEMENT CONFORMING TO IS:269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN STRENGTH SHALL ONLY BE USED.
14. 65mm TH. WEARING COURSE COMPRISING OF 40MM BITUMINOUS CONCRETE OVERLAID WITH 25MM THICK BITUMEN MASTIC LAYER SHALL BE PROVIDED IN CONFORMITY WITH MORTH SPECIFICATIONS.REV-5
15. MINIMUM 600 mm EMBEDMENT OF FOUNDATION IN HARD ROCK AND IN CASE OF ROCK OTHER THAN HARD ROCK MINIMUM 1500 mm EMBEDMENT OF FOUNDATION SHALL BE PROVIDED AS PER SECTION 700 OF IRC 78:2014
16. IN CASE OF FOUNDATION IN ROCK, TENCHES AROUND THE FOOTING SHALL BE FILLED UP WITH M15 GRADE CONCRETE UP TO THE TOP OF ROCK
17. THIS STRUCTURE IS ON SEISMIC ZONE V
18. ALL DIMENSIONS AND FOUNDATION DETAILS SHOWN IN DRAWING ARE TENTATIVE SUBJECT TO CHANGE DURING DETAIL DESIGN.
19. FOUNDATION DETAILS SHOWN IN THE DRAWING ARE INDICATIVE ONLY. THIS MAY UNDERGO CHANGE DURING DETAIL DESIGN.
20. SLOPE PROTECTION TO BE DONE AS PER SITE CONDITION WITH STONE IN GABION OVER 200 THK FILTER MATERIAL.
21. STONE PITCHING AND FILTER MATERIAL UNDER STONE PITCHING SHALL BE AS PER MORTH SPECIFICATION SECTION 2500 AND IRC: 89. WEIGHT OF SINGLE STONE SHOULD NOT BE LESS THAN 40KG

Revision no.	Details	Chk By	Date

Project Title
Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining 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 the state of Nagaland

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Original Size: A2
Path -
Plotting Scale:

Client
NHIDCL
National Highways & Infrastructure Development Corporation Ltd

Drawing Title: GENERAL ARRANGEMENT DRAWING BRIDGE AT DESIGN CH.Km. 1+600(3X81.5M)
Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/ S-101
Scale :- NTS
Drn D.N
Dgn. GAURAV SINGH
Appd R.K.JAIN
Date JAN.-2020

CONSULTANT
HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD

← DIMAPUR

A1

EXP. JOINT  
CL OF BRG.

81500 TOTAL LENGTH

80000 C/C BEARING

750

80mm EXP.GAP

300mm THK.  
APPROACH SLAB  
OVER 100MM.  
THK.PCC.WITH M15

3490

APPROACH  
SLAB

FIX BEARING

RCC RETURN  
WALL100 PCC THK  
LEVELING  
COURSE (M-15)

5500

4800

1200

11500

1500 FND.LVL  
1500 T036.184

P1

EXP. JOINT  
CL OF BRG.

1500

80mm EXP.GAP

FREE BEARING

FIX BEARING

RCC WALL TYPE PIER

2000

1500

5750

5750

1500

13000

KOHIMA

MATCH  
LINE 1-1EXP. JOINT  
CL OF BRG.

1500

80mm EXP.GAP

FREE BEARING

FIX BEARING

RCC WALL TYPE PIER

2000

1500

5750

5750

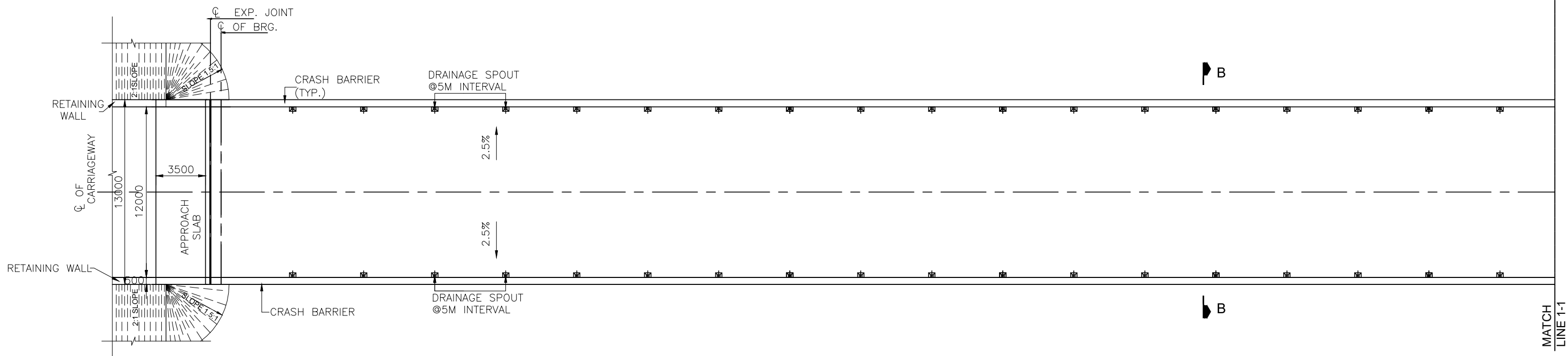
1500

13000

MATCH  
LINE 1-1

FRL. (m)	1042.935
GROUND LVL.(m)	1040.184
CH.(Km)	1+480

FRL. (m)	1042.935
GROUND LVL.(m)	1030.012
CH.(Km)	1+560



## Project Title

Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland

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Original Size: A2

Path -

Plotting Scale:

## Client



National Highways & Infrastructure Development Corporation Ltd

Drawing Title: GENERAL ARRANGEMENT DRAWING  
BRIDGE AT DESIGN CH.Km. 1+600(3X81.5M)

Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-101

Scale :- NTS

Drn

D.N

Dgn.

GAURAV SINGH

Appd

R.K.JAIN

Date

JAN.-2020

Sheet :

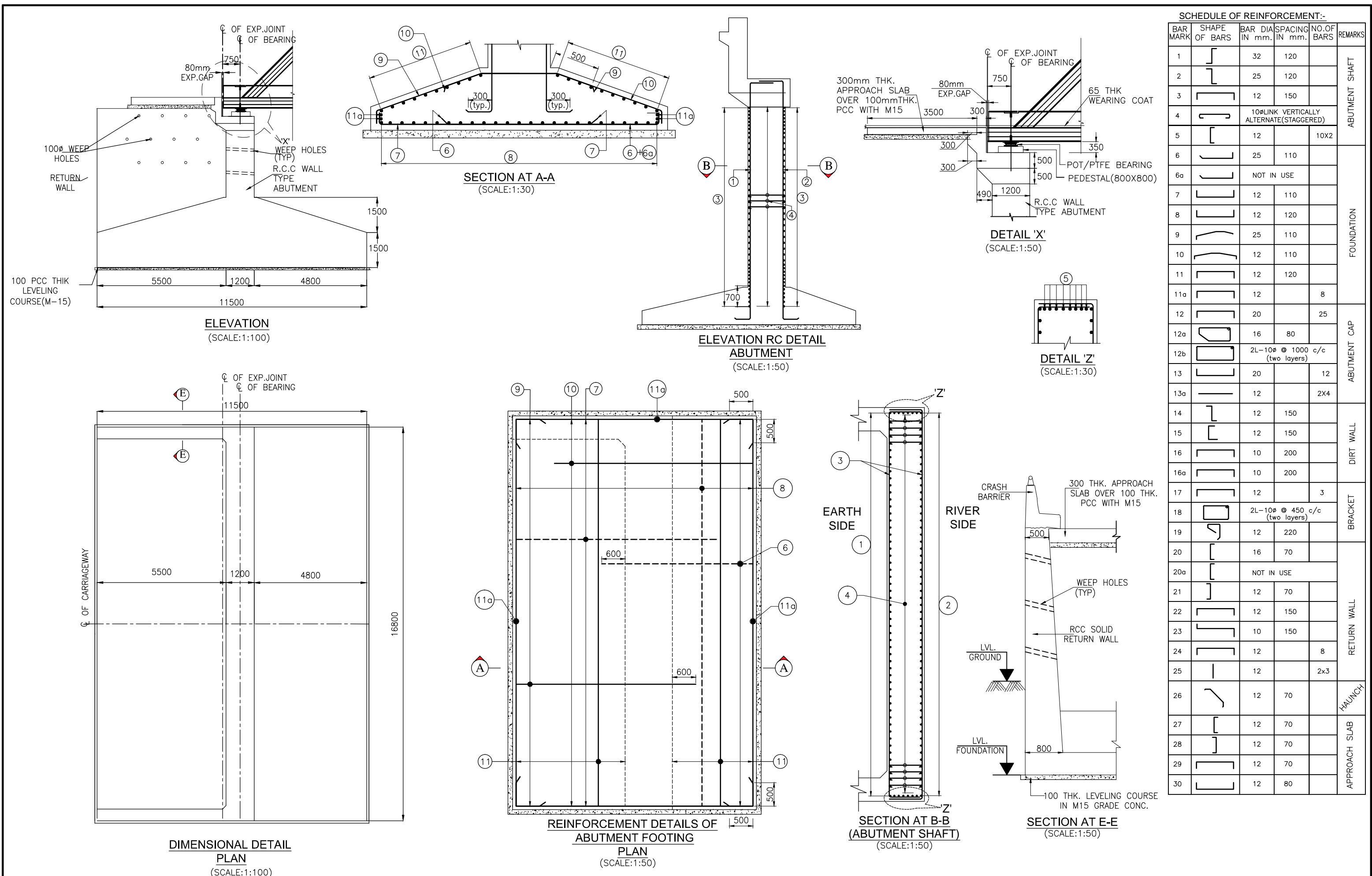
01 OF 04

## CONSULTANT

HIGHWAY ENGINEERING CONSULTANT  
IN ASSOCIATION WITH  
AGNITIO INFRASTRUCTURE PROJECTS PVT LTD

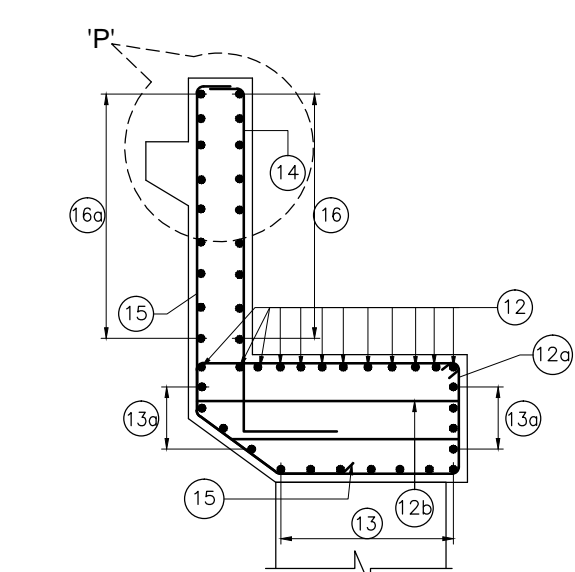
Revision no.	Details	Chk By	Date



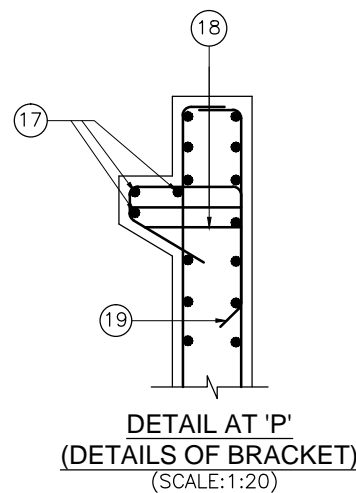


SCHEDULE OF REINFORCEMENT:-						
BAR MARK	SHAPE OF BARS	BAR DIA IN mm.	SPACING IN mm.	NO.OF BARS	REMARKS	
1		32	120		ABUTMENT SHAFT	
2		25	120			
3		12	150			
4		10Ø LINK VERTICALLY ALTERNATE(STAGGERED)				
5		12		10X2		
6		25	110		FOUNDATION	
6a		NOT IN USE				
7		12	110			
8		12	120			
9		25	110			
10		12	110			
11		12	120			
11a		12		8		
12		20		25		
12a		16	80			ABUTMENT CAP
12b		2L-10Ø @ 1000 c/c (two layers)				
13		20		12		
13a		12		2X4	DIRT WALL	
14		12	150			
15		12	150			
16		10	200			
16a		10	200			
17		12		3	BRACKET	
18		2L-10Ø @ 450 c/c (two layers)				
19		12	220			
20		16	70		RETURN WALL	
20a		NOT IN USE				
21		12	70			
22		12	150			
23		10	150			
24		12		8		
25		12		2x3		
26		12	70			HAUNCH
27		12	70			
28		12	70			
29		12	70			
30		12	80			
APPROACH SLAB						

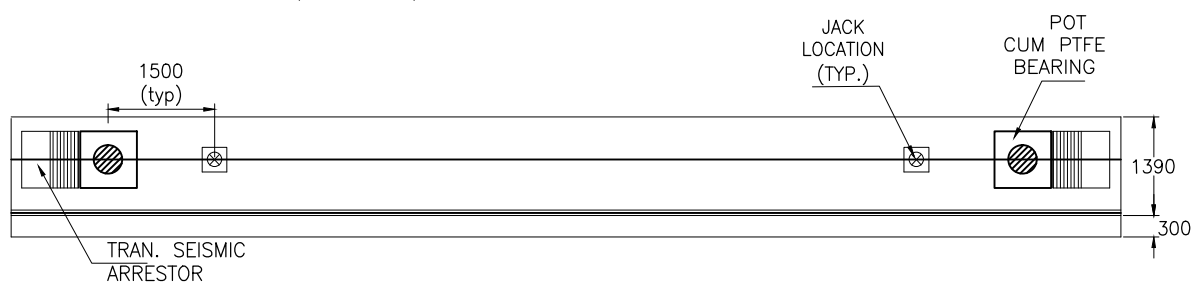
				Project Title		This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.		Client		Drawing Title: REINFORCEMENT DRAWING OF ABUTMENT BRIDGE AT DESIGN CH.Km. 1+600 (3X81.5M)		CONSULTANT	
				Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland		Original Size: A2		National Highways & Infrastructure Development Corporation Ltd		Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-201		Sheet : 01OF02	
						Path -				Scale :- NTS			
						Plotting Scale:				Drn D.N		Date JAN.-2020	
Revision no.				Details		Chk By				Dgn. GAURAV SINGH		Appd R.K.JAIN	
						Date							



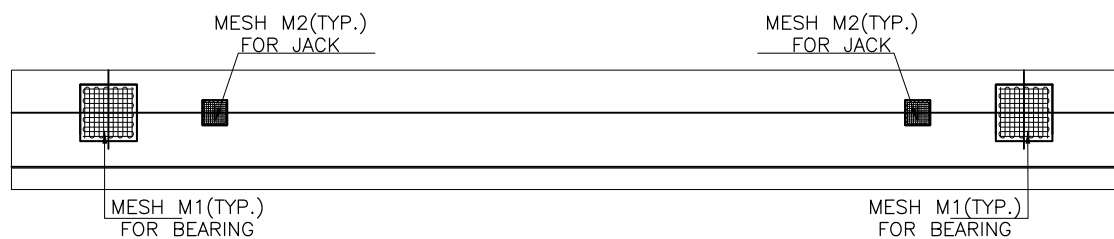
**RC DETAILS OF DIRT WALL  
& ABUTMENT CAP**  
(SCALE:1:25)



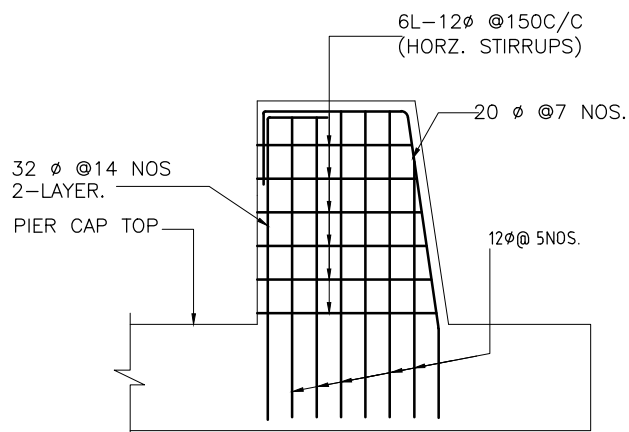
**DETAIL AT 'P'  
(DETAILS OF BRACKET)**  
(SCALE:1:20)



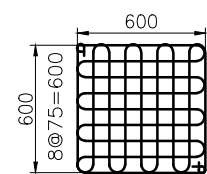
**DETAIL OF ABUTMENT CAP**  
(SCALE:1:75)



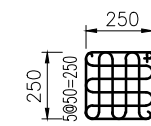
**DETAIL OF PEDESTAL AND MESH**  
(SCALE:1:75)



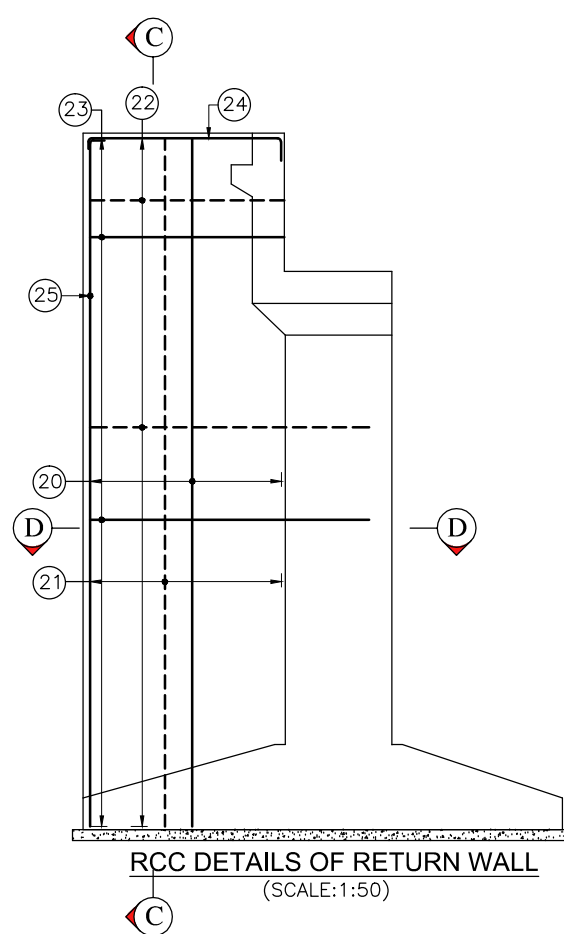
**R.C DETAIL OF SEISMIC  
ARRESTOR (TRANS)**  
(SCALE:1:25)



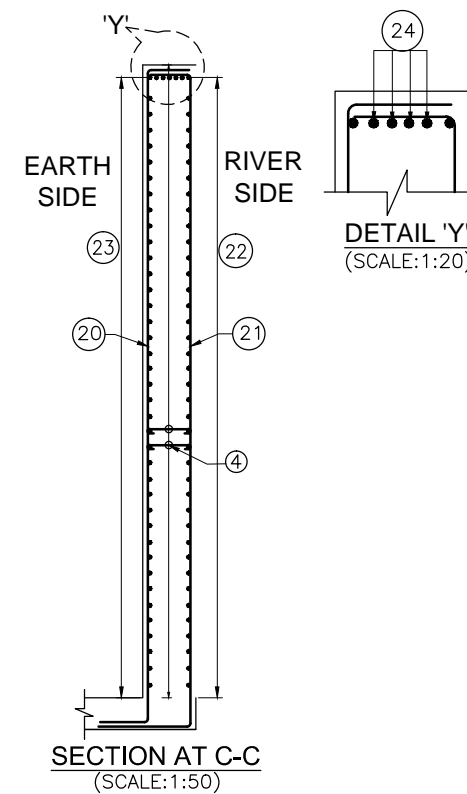
**MESH M - 1 8Ø MESH  
REINF. IN PEDESTAL**  
(SCALE:1:100)



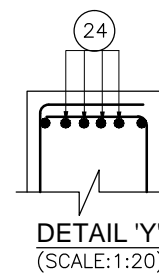
**MESH M - 2 8Ø MESH  
REINF. AT JACK LOCATION**  
(SCALE:1:100)



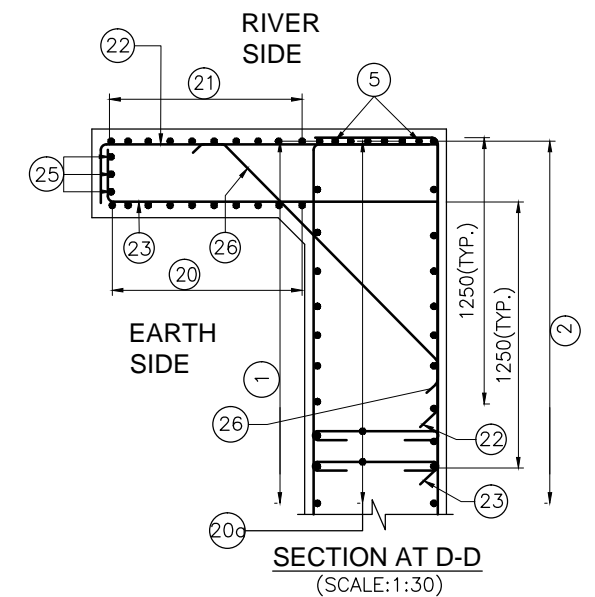
**RCC DETAILS OF RETURN WALL**  
(SCALE:1:50)



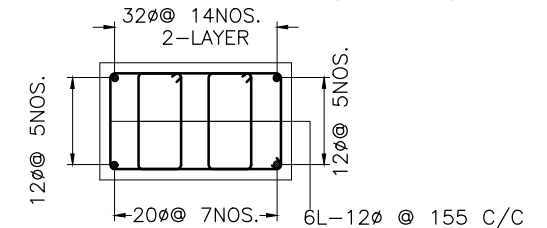
**SECTION AT C-C**  
(SCALE:1:50)



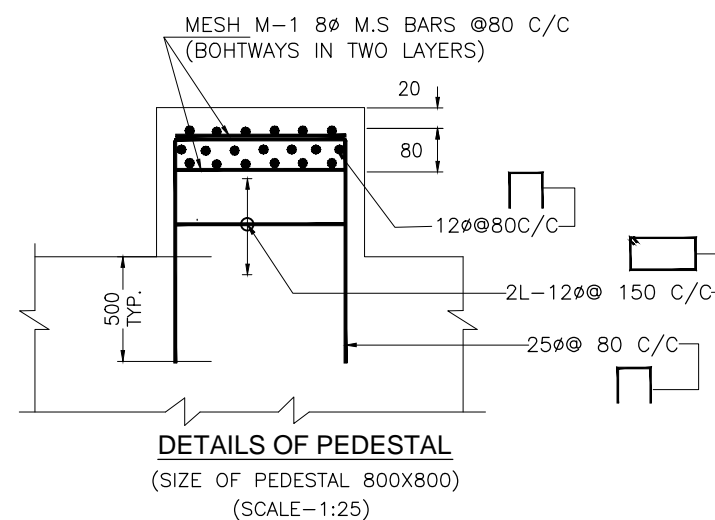
**DETAIL 'Y'**  
(SCALE:1:20)



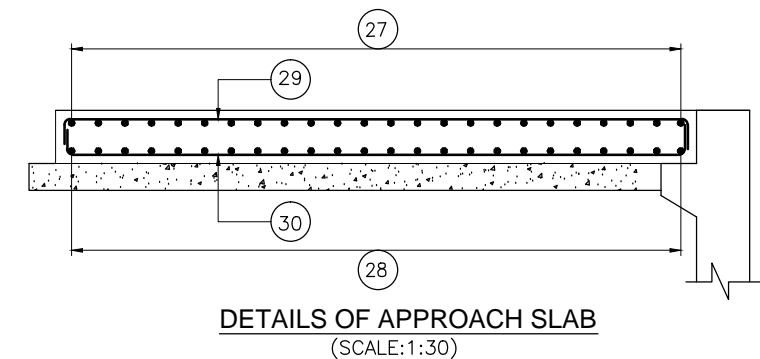
**SECTION AT D-D**  
(SCALE:1:30)



**R.C. DETAIL OF SEISMIC  
ARRESTOR (TRANS.)  
PLAN**  
(SCALE:1:25)



**DETAILS OF PEDESTAL**  
(SIZE OF PEDESTAL 800X800)  
(SCALE:1:25)



**DETAILS OF APPROACH SLAB**  
(SCALE:1:30)

#### NOTES:

1. ALL DIMENSIONS ARE IN mm, AND LEVELS IN METRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
2. CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES FOR ALL ELEMENTS OF SUBSTRUCTURE AND FOUNDATION M20
3. GRADE OF STEEL SHALL BE Fe-500 CONFORMING TO IS :1786.
4. BACK FILLING BEHIND ABUTMENTS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX:6 OF IRC:78-2000 HAVING PROPERTIES  $C=0$ ,  $\phi=30^\circ$ ,  $\gamma=20^\circ$  &  $\delta=18$  kN/m<sup>3</sup>.
5. WEEP HOLES, 100 DIA IN SLOPE 1:20 SPACED @1000mm C/C BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN STAGGERED MANNER IN ABUTMENTS, MEDIAN WALL & RETURN WALL ABOVE THE GROUND LEVEL.
6. THE FOUNDATION STRATA SHALL HAVE NET BEARING CAPACITY OF 350 kN/m<sup>2</sup>
7. IN CASE OF EXCAVATION IN ROCK THE ANNULAR SPACE AROUND THE FOUNDATION SHALL BE FILLED IN M 15 GRADE CONC.UPTO THE TOP OF ROCK
8. IT MAY BE ENSURED THAT MINIMUM EMBEDMENT OF FOUNDATION IS 1.5M IN SOFT ROCK OR 0.6M IN HARD ROCK AS PER PROVISION OF IRC - 78.

#### LEGEND:-

TOP FACE REINF. ———  
BOTTOM FACE REINF. - - - -

Project Title  
Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland

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Original Size: A2  
Path -  
Plotting Scale:

Client



National Highways & Infrastructure Development Corporation Ltd

Drawing Title: REINFORCEMENT DRAWING OF ABUTMENT BRIDGE AT DESIGN CH.Km. 1+600 (3X81.5M)

Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-201

Scale :- NTS

Drn D.N

Dgn. GAURAV SINGH

Appd R.K.JAIN

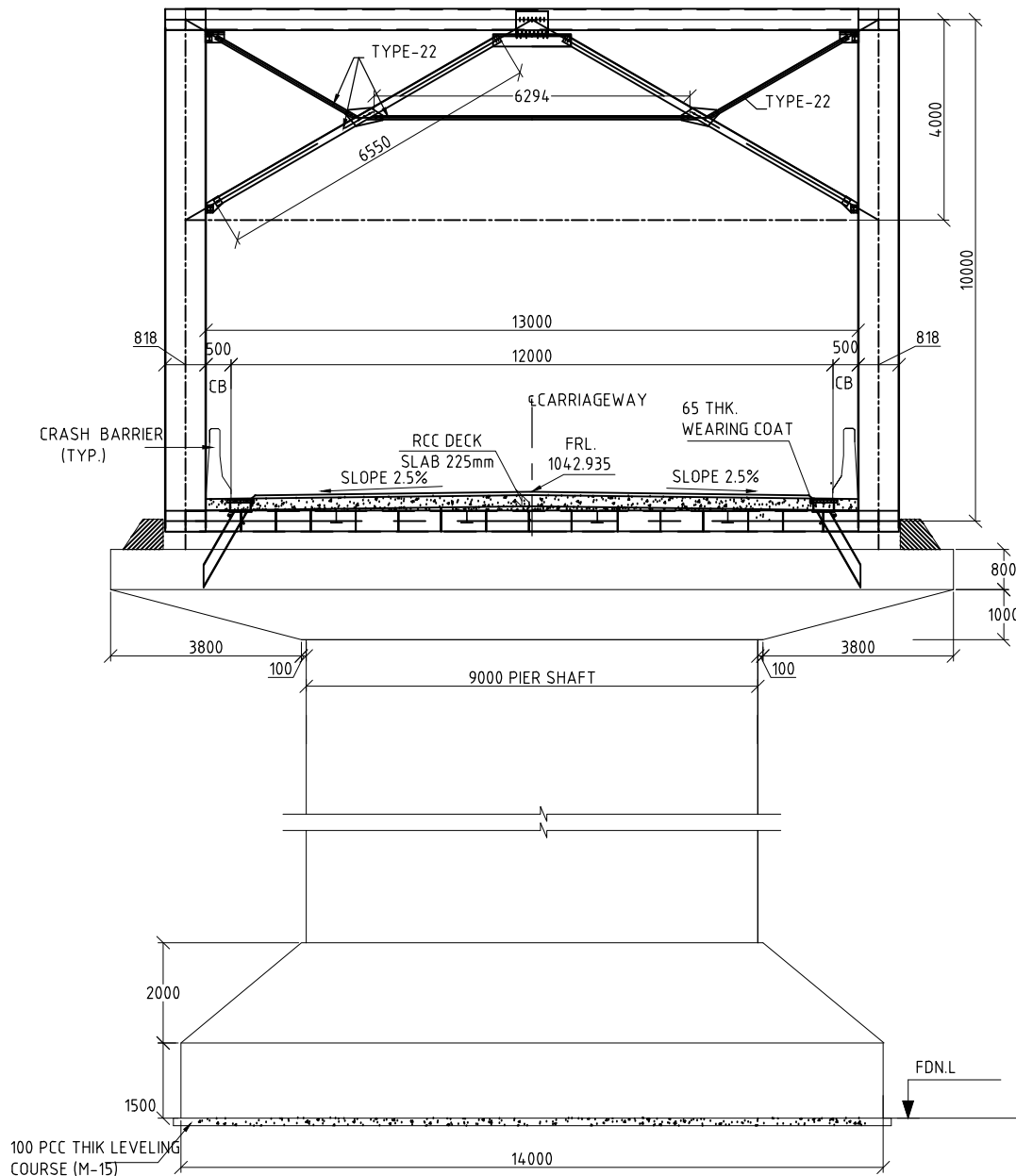
Date JAN.-2020

Sheet : 02 OF 02

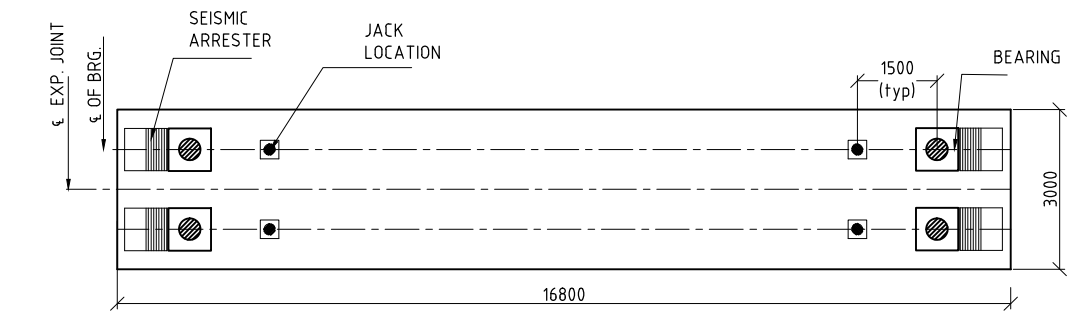
CONSULTANT

HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD

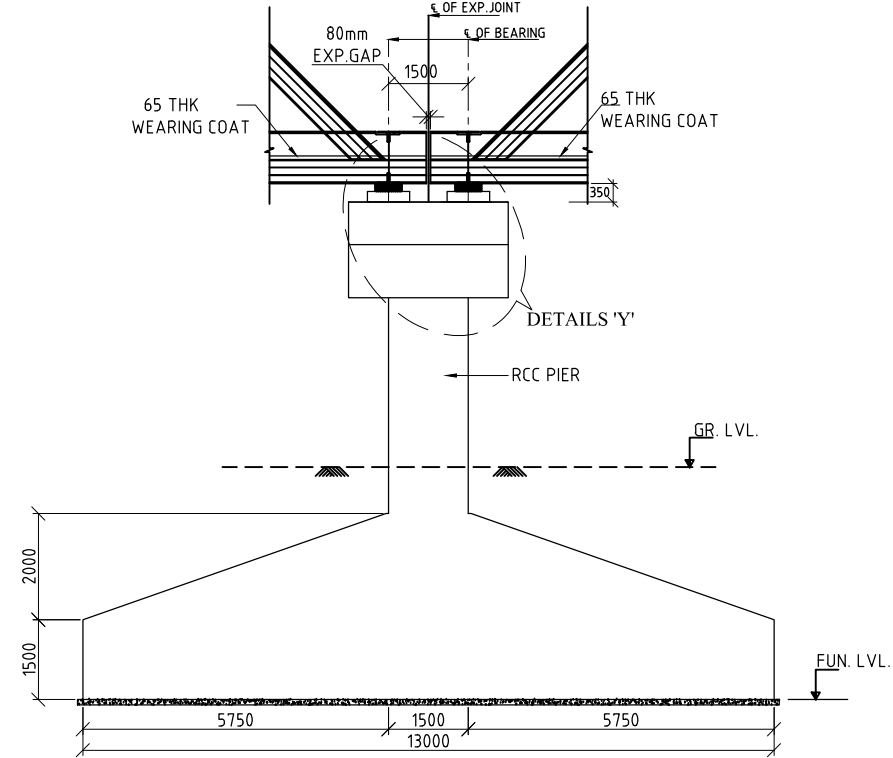
Revision no.	Details	Chk By	Date



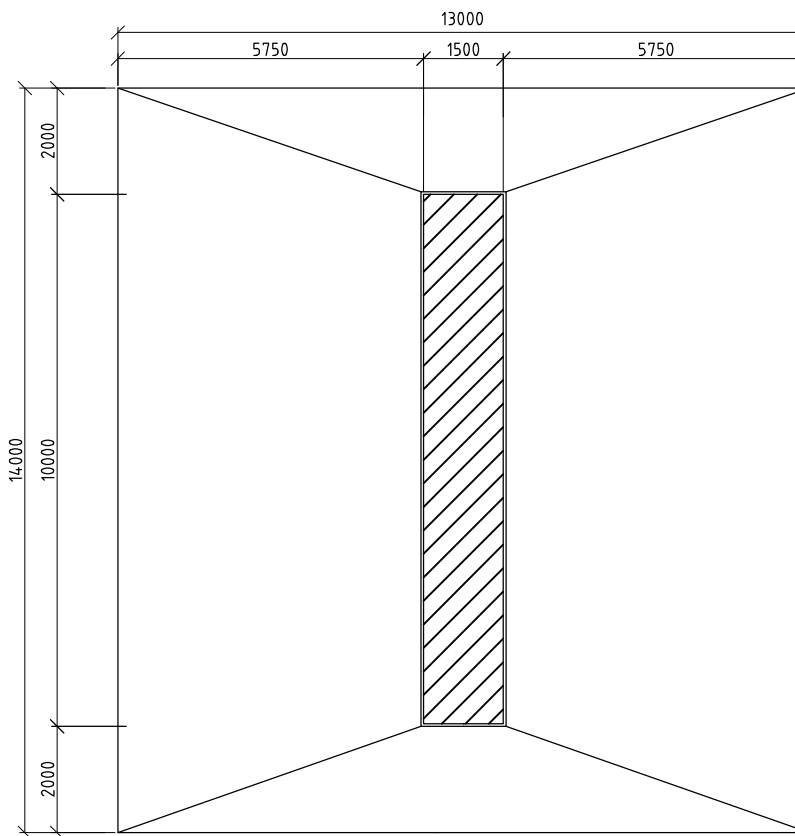
**SECTION AT PIER**  
(SCALE 1:100)



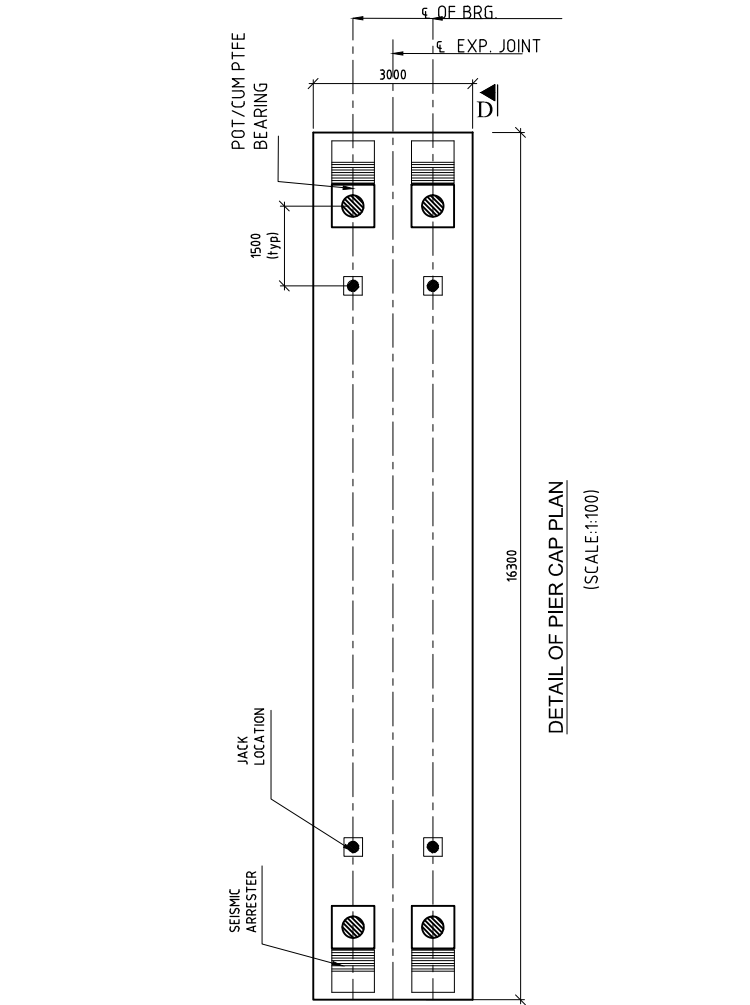
**DETAIL OF PIER CAP PLAN**  
(SCALE:1:110)



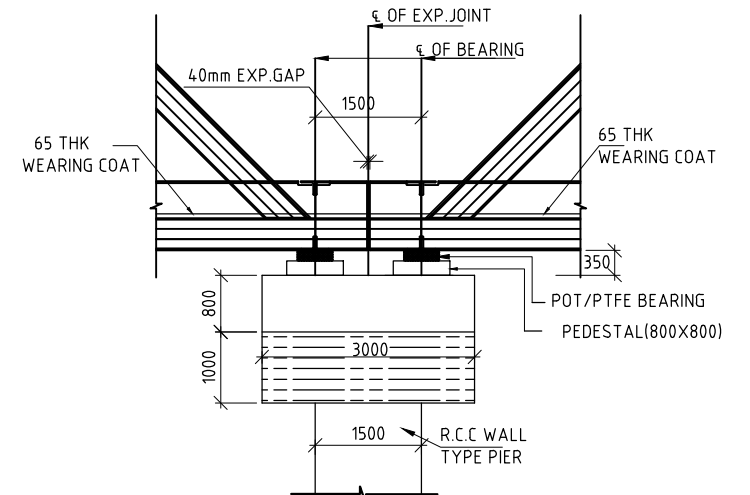
**SECTION B-B**  
(SCALE 1:100)



**PLAN AT PIER BOTTOM**  
(SCALE 1:100)



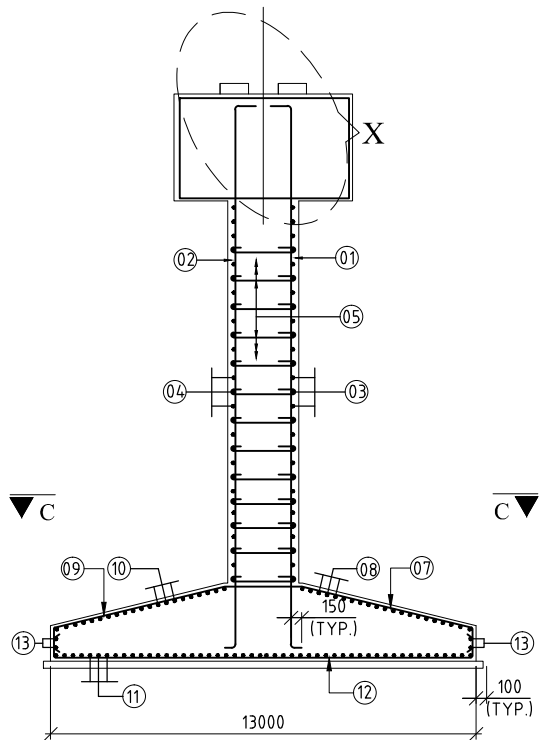
**DETAIL OF PIER CAP PLAN**  
(SCALE:1:100)



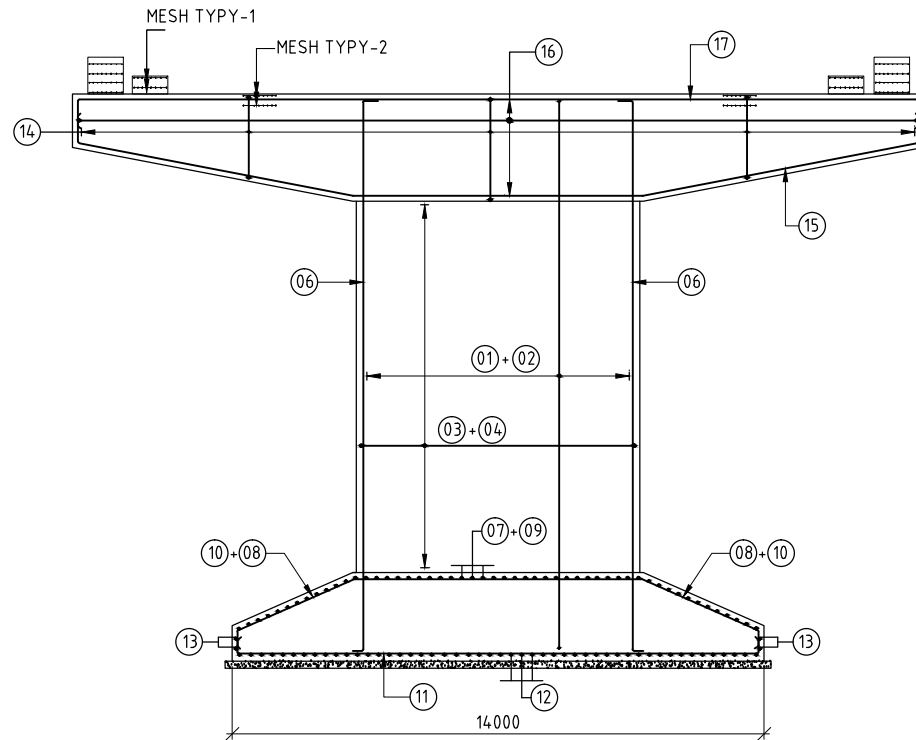
**DETAIL 'Y'**  
(SCALE:1:75)

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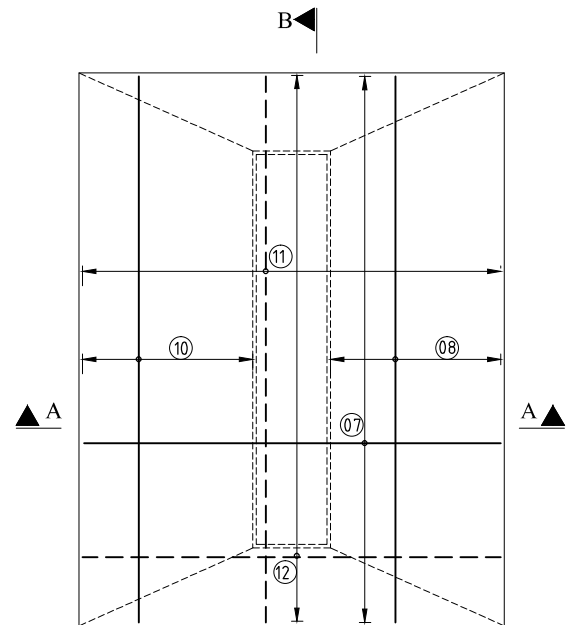




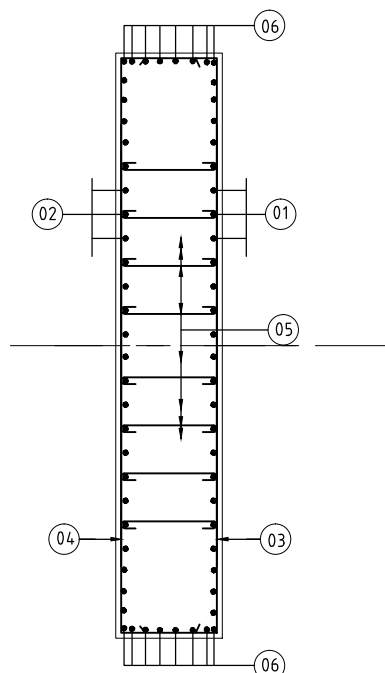
SECTION A-A  
(SCALE 1:75)



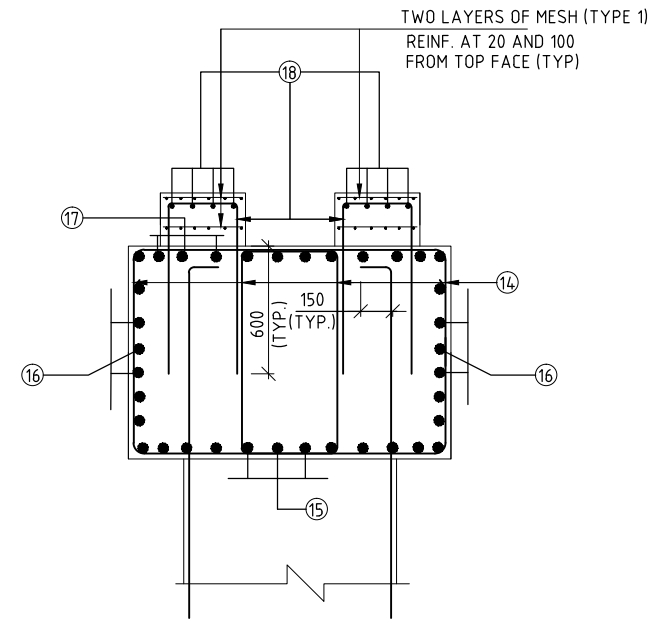
SECTION B-B  
(SCALE 1:75)



REINFORCEMENT PLAN OF FOUNDATION  
(SCALE 1:75)



SECTION C-C  
(SCALE 1:50)



DETAILS OF " X "  
(SCALE 1:25)

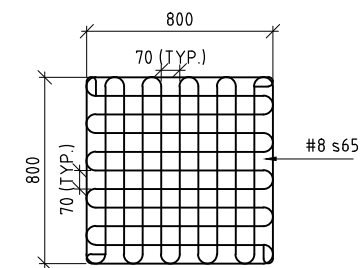
#### NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- ALL REINFORCEMENT SHOWN IN THIS DRAWING ARE OF HIGH YIELD STRENGTH DEFORMED BARS CONFORMING TO IS:1786 GRADE OF STEEL-500D (T.M.T BARS.) GRADE OF CONC. - M35.
- MINIMUM DEVELOPMENT LENGTH = 35D  
MINIMUM LAP LENGTH = 63D  
WHERE 'D' IS DIA OF BAR  
NOT MORE THAN 50% BARS TO BE LAPPED AT ONE LOCATION.
- MINIMUM BOND LENGTH SHALL BE 35 TIMES DIA OF BAR .
- CLEAR COVER  
FOOTING ---75mm.  
EARTH FACE ---75mm.  
FOR OTHERS---40mm.
- ADEQUATE LINKS / SPACER BARS SHALL BE PROVIDED FOR PROPER POSITIONING OF REINFORCEMENT.
- GRADE OF CONCRETE SHALL BE M35 FOR ALL MEMBERS.  
EXCEPT APPROACH SLAB WHERE IT IS M30.
- SAFE BEARING CAPACITY OF SOIL=35.0 TON

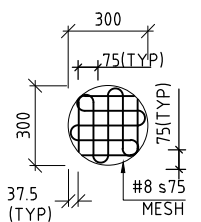
#### LEGEND:

TOP BARS / OUTER FACE  
BOTTOM BARS / EARTH FACE

SCHEDULE OF REINF.:-			
BAR MARK	SHAPE OF BARS (NOT TO SCALE)	BAR DIA. in mm. '#'	SPACING in mm. (s)
01		25	110 NOS.
02		25	110 NOS.
03		16	150
04		16	150
05		10	ALT.
06		12	10 NOS.
07		20	120
08		20	150
09		20	120
10		25	90
11		25	90
12		25	90
13		12	8 NOS.
14		16	150 4 LEGGED
15		12	50 NOS
16		12	150
17		25	45 NOS
18		12	4. NOS.

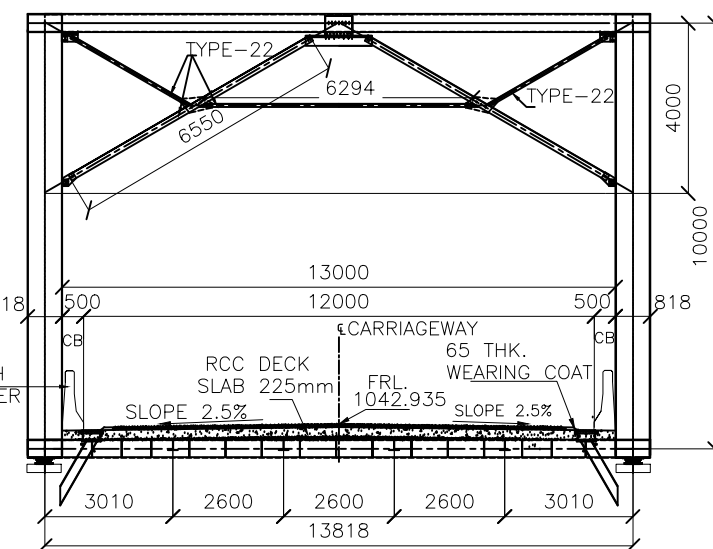
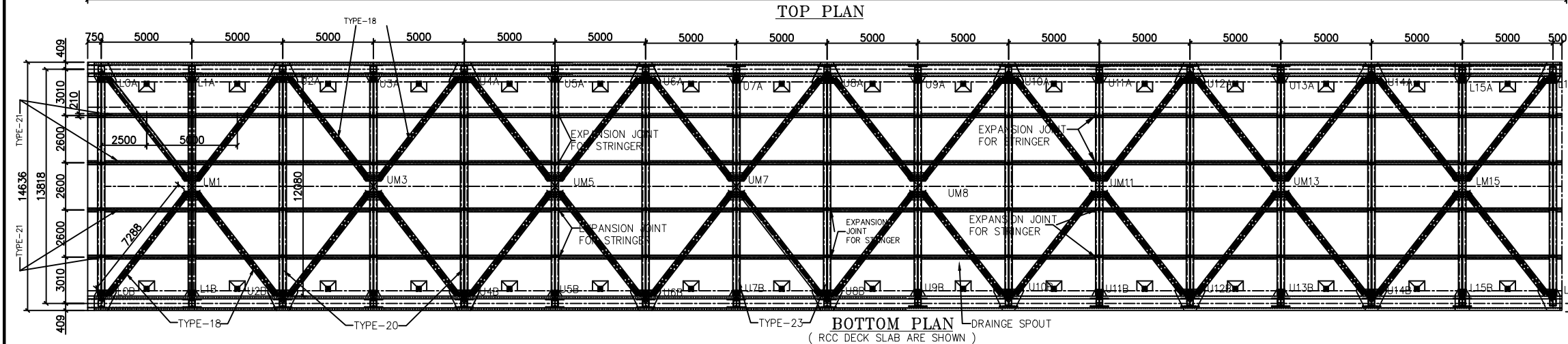
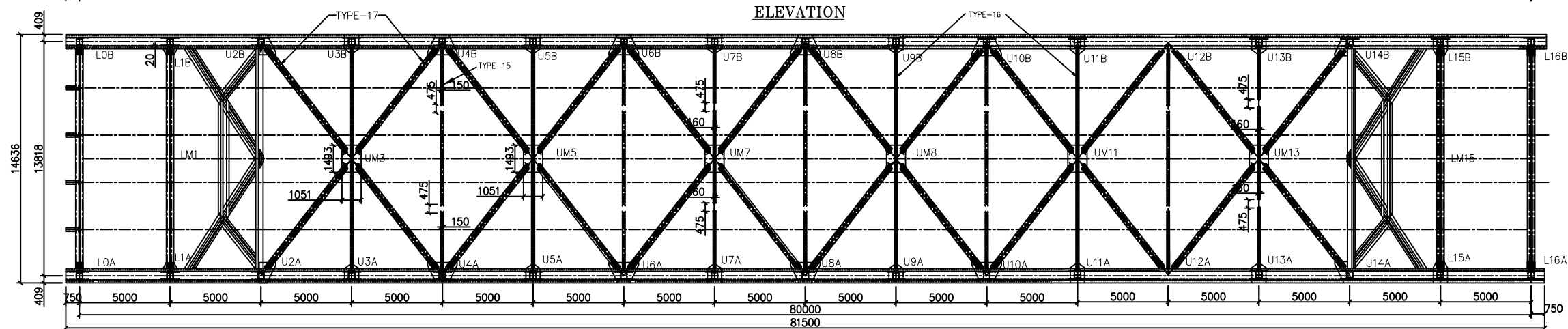
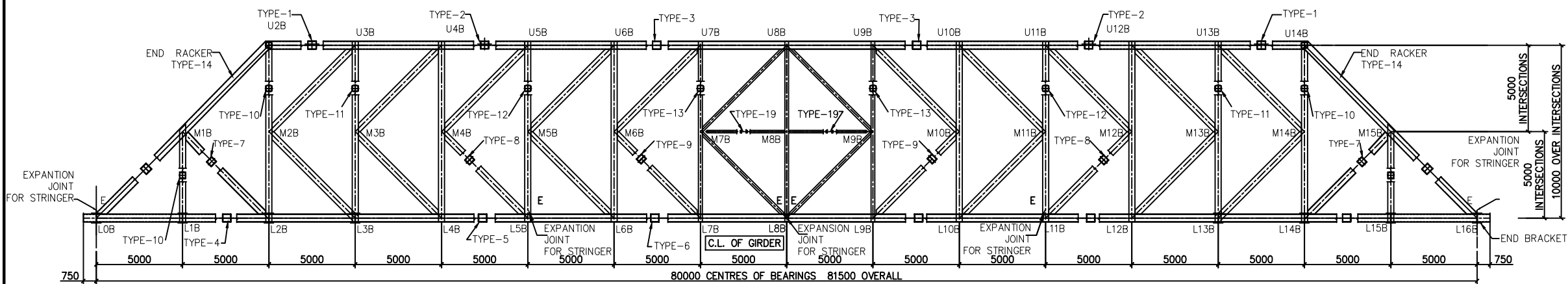


MESH TYPE 1  
(SCALE 1:20)



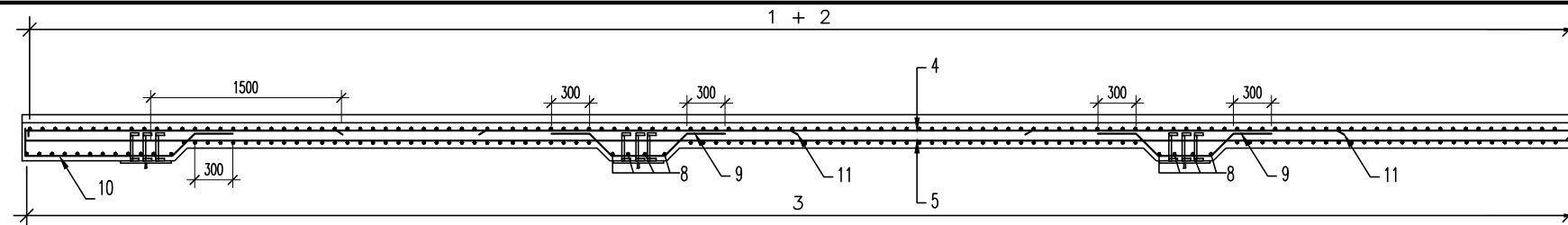
MESH TYPE 2  
SCALE 1:20

Project Title				This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.				Client				Drawing Title: REINFORCEMENT DETAIL OF PIER FOR "P1 & P2" BRIDGE AT CH.Km. 1+600 (3X81.5M)				CONSULTANT			
Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland				Original Size: A2				National Highways & Infrastructure Development Corporation Ltd				Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/ S-202				Sheet : 02 OF 02			
Revision no.				Path -				Scale :- NTS				Drn D.N				Dgn. GAURAV SINGH			
Details				Plotting Scale:				Appd R.K.JAIN				Date JAN.-2020				HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD			
Chk By																			
Date																			

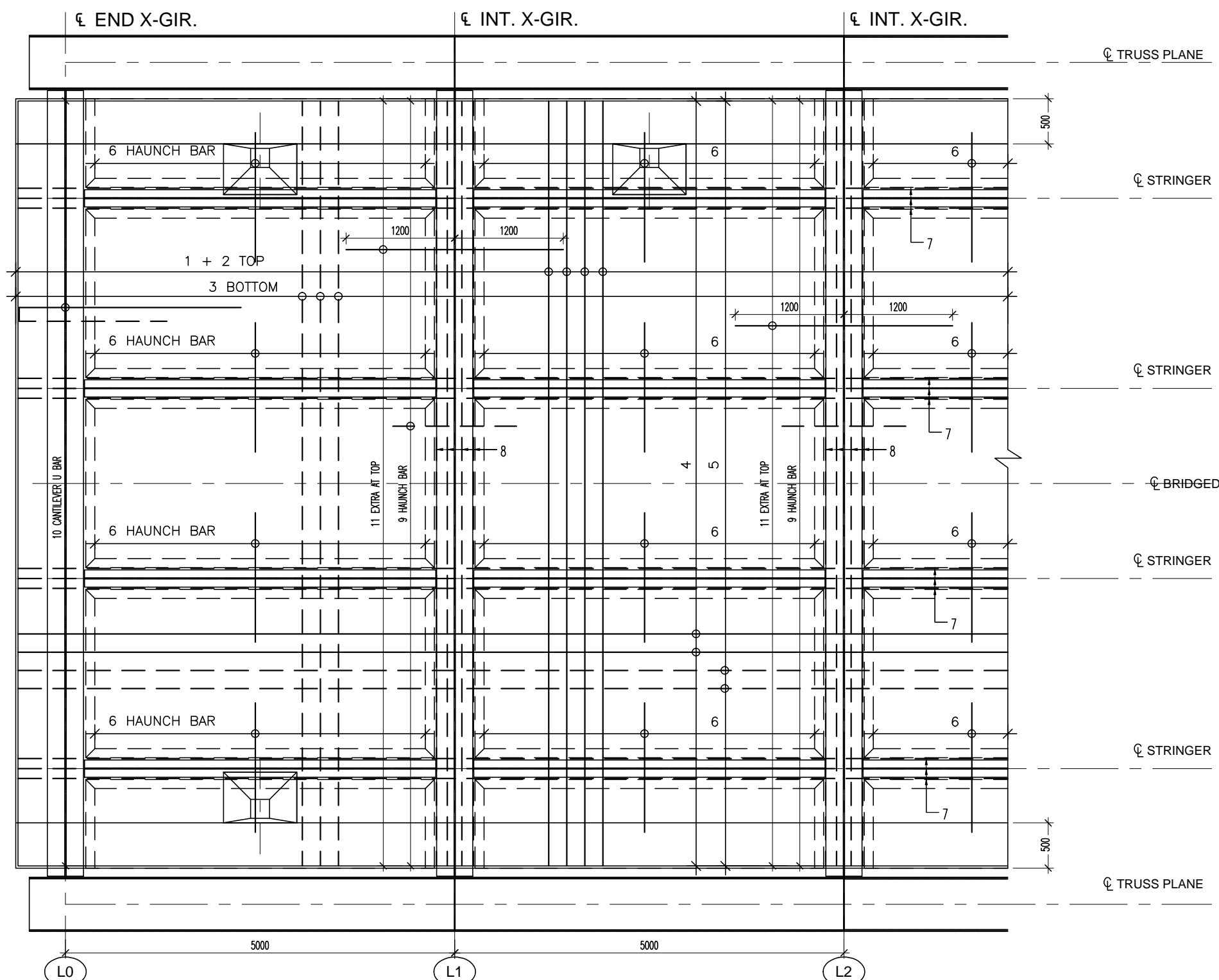


<p>① PL-850x25-2NOS ② PL-750x25-1NOS ③ PL-300x20-2NOS</p>	<p>① PL-30x850-2NOS ② PL-750x30-1NOS ③ PL-300x30-2NOS</p>	<p>① PL-36x850-2NOS ② PL-750x32-1NOS ③ PL-300x32-2NOS</p>	<p>① PL-850x32-2NOS ② PL-750x30-1NOS ③ PL-300x32-2NOS</p>	<p>① L-200x200x25-4NOS</p>	<p>① L-200x200x15-4NOS</p>	<p>① L-200x200x25-4NOS</p>		
<p>① L-200x200x15-4NOS</p>	<p>① PL-30x850-2NOS ② PL-750x25-1NOS ③ PL-300x20-2NOS</p>	<p>① L-100x100x10-4NOS</p>	<p>① L-100x100x10-4NOS</p>	<p>① L-150x150x15-4NOS</p>	<p>① L-100x100x12-4NOS</p>	<p>① PL-600x32-1NOS ② PL-32x786-1NOS ③ PL-600x32-1NOS</p>	<p>① PL-300x20-1NOS ② PL-12x460-1NOS ③ PL-250x20-1NOS</p>	<p>① L-100x100x10-4NOS</p>
TYPE-11,12,13	TYPE-14	TYPE-15,16	TYPE-17	TYPE-18	TYPE-19	TYPE-20	TYPE-21	TYPE-22

Revision no.		Details		Chk By	Date	Project Title Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining 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 the state of Nagaland	This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  National Highways & Infrastructure Development Corporation Ltd	Drawing Title: DIMENSION DETAILS OF CROSS SECTION BRIDGE AT DESIGN CH.Km.1+600 (3x81.5M) Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/S-301 Scale :- NTS Drn D.N. Dgn. GAURAV SINGH Appd R.K.JAIN Date JAN.-2020	Sheet : 01 OF 01 CONSULTANT HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD
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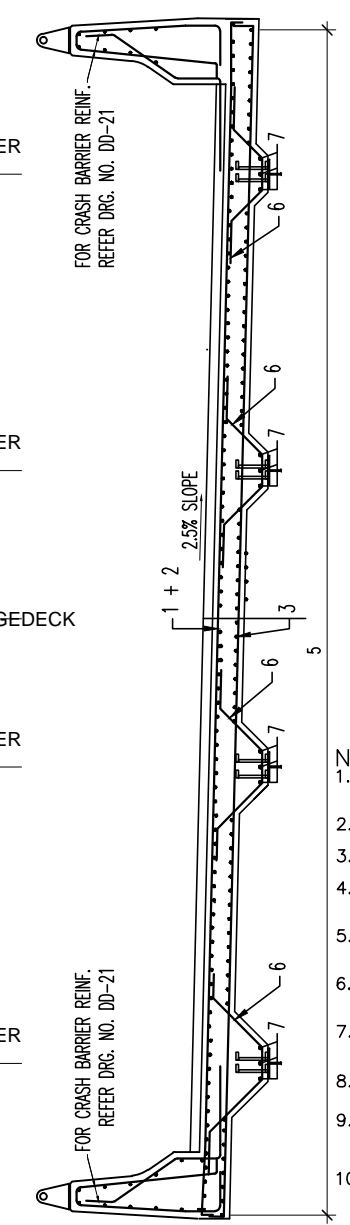


**SECTION A-A, 1:40**



**PART PLAN AT ROAD DECK (SHOWING REINFORCEMENT), 1:40**  
**(CRASH BARRIER REINFORCEMENT NOT SHOWN FOR CLARITY)**

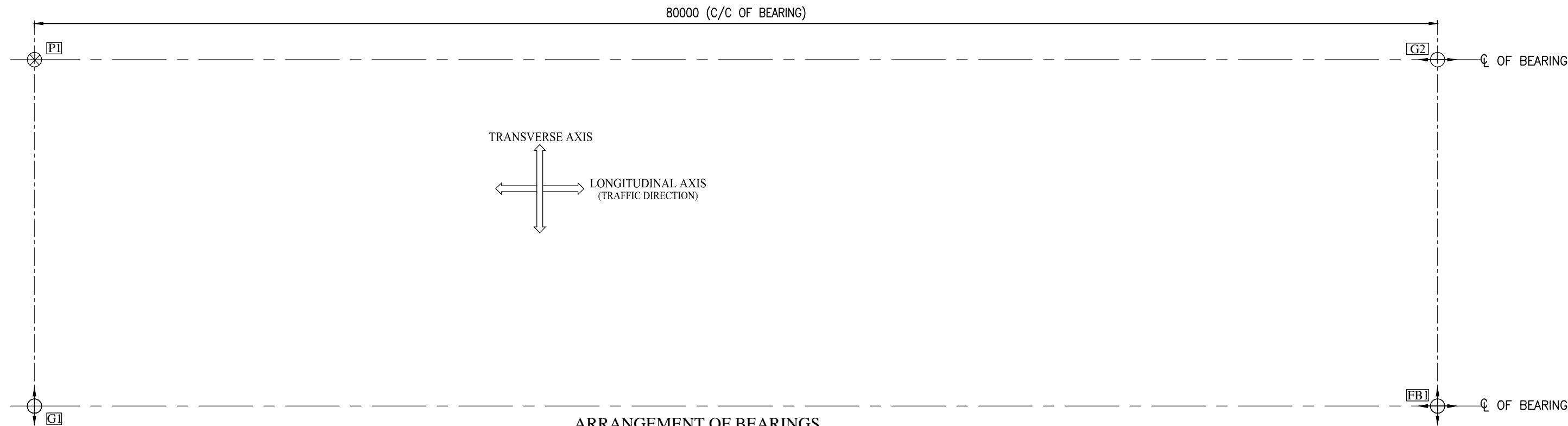
SCHEDULE OF REINFORCEMENT				
BAR MKD.	SHAPE	DIA	SPACING	REMARKS
1		16Ø	150 C/C	ALTERNATE WITH 2
2		16Ø	150 C/C	ALTERNATE WITH 1
3		16Ø	200 C/C	
4		12Ø	125 C/C	
5		12Ø	125 C/C	
6		12Ø	100 C/C	PER HAUNCH
7		10Ø	3 NOS.	
8		12Ø	4 NOS.	
9		10Ø	200 C/C	PER HAUNCH
10		12Ø	100 C/C	
11		10Ø	200 C/C	EXTRA AT TOP



**SECTION B-B, 1:40**

- NOTES:-
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS. UNLESS OTHERWISE SPECIFIED.
  - GRADE OF CONCRETE USED M 35
  - CLEAR COVER TO MAIN REINFORCEMENT 40mm.
  - TOP REINF. SHOWN AS BOTTOM REINF. SHOWN AS
  - ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, NEITHER THE BARS SHALL BE COUNTED, NOR THE DIMENSIONS SCALED FROM THE DRAWING.
  - ANY DISCREPANCY BETWEEN ARCHITECTURAL DRAWINGS AND THIS DRAWING SHALL BE GOT RECONCILED BEFORE EXECUTION.
  - HIGH YIELD STRENGTH TMT BARS OF GRADE Fe 500D CONFORMING TO I.S. 1786 SHALL BE USED AS REINFORCEMENT WITH A MINIMUM YIELD STRENGTH OF 500 N/Sq.mm.
  - MINIMUM LAP AND ANCHORAGE LENGTH OF REINFORCEMENT SHALL BE KEPT AS PER PROVISION MADE IN IRE:112-2011
  - SUITABLE CHAIRS SHALL BE PROVIDED TO HOLD THE TOP BARS OF SLAB REINFORCEMENT IN POSITION.
  - THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS

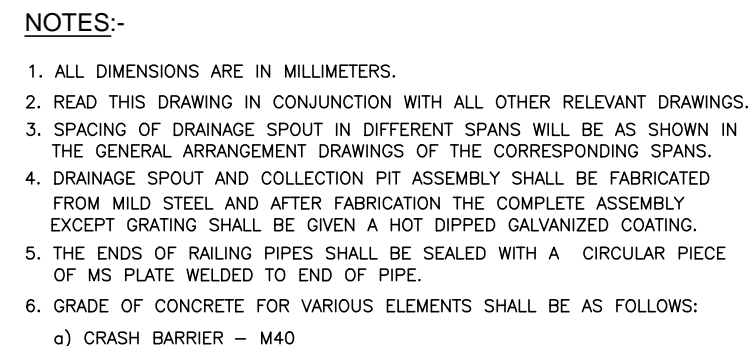
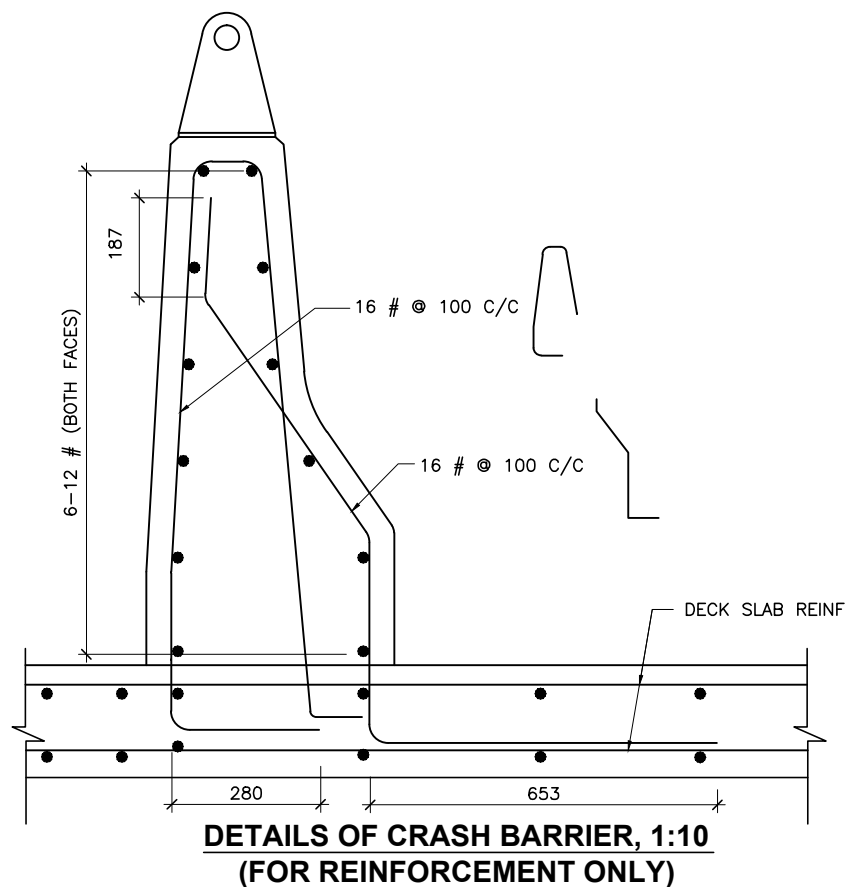
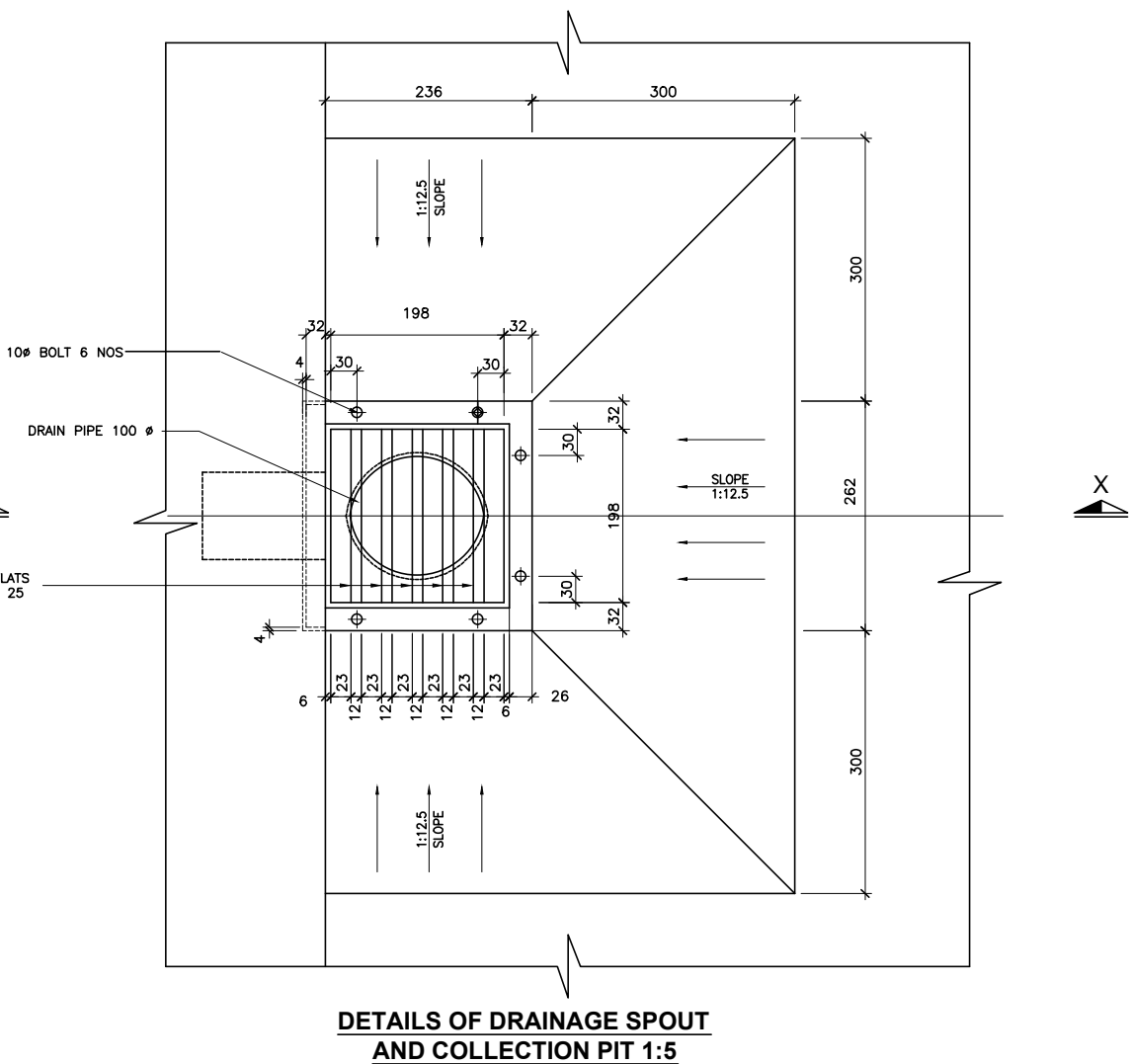
Revision no.		Details		Chk By	Date	Project Title Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining of Kohima Bypass connecting NH-39 (New NH-02), NH-150 (New NH-02), NH-61 (New NH-29) and NH-39 (New NH-02) on Engineering, Procurement and Construction (EPC) mode in the state of Nagaland	This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  National Highways & Infrastructure Development Corporation Ltd	Drawing Title: REINFORCEMENT DETAILS OF DECK SLAB BRIDGE AT DESIGN CH.Km. 1+600 (3x81.5M) Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-401 Scale :- NTS Drn D.N. Dgn. GAURAV SINGH Appd R.K.JAIN Date JAN.-2020	Sheet : 01 OF 01 CONSULTANT HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD
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Sl. No	Bearing Type	Load Condition	Coexisting Loads, Forces,Movement and Rotation Data										Qty . (Nos.)
			Vertical Load (kN)		Horizontal Force (kN)				Rotation (Rad)		Movement (mm)		
			Case	Magnitude	Longitudinal		Transverse		Case	Magnitude	Longitudinal	Transverse	
					Case	Magnitude	Case	Magnitude					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
P1	Pot fixed bearing	Normal	Maximum	7847	Coexisting	844	Coexisting	-	Coexisting	-	-	-	1
			Minimum	0	Coexisting	844	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	939	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	939	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	939	Coexisting	0	Coexisting				
		Seismic/Wind	Coexisting	0	Coexisting	939	Maximum	1062	Coexisting				
G1	Transversely guided pot - PTFE bearing	Normal	Maximum	7847	Coexisting	844	Coexisting	-	Coexisting	0.36	-	6	1
			Minimum	0	Coexisting	844	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	939	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	939	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	939	Coexisting	-	Coexisting				
G2	Longitudinally guided pot -PTFE bearing	Normal	Maximum	7847	Coexisting	-	Coexisting	-	Coexisting		82	-	1
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	-	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	-	Coexisting	0	Coexisting				
		Seismic/Wind	Coexisting	0	Coexisting	-	Maximum	1062	Coexisting				
FB1	Free Pot PTFE bearing	Normal	Maximum	7847	Coexisting	-	Coexisting	-	Coexisting		82	6	1
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	-	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				

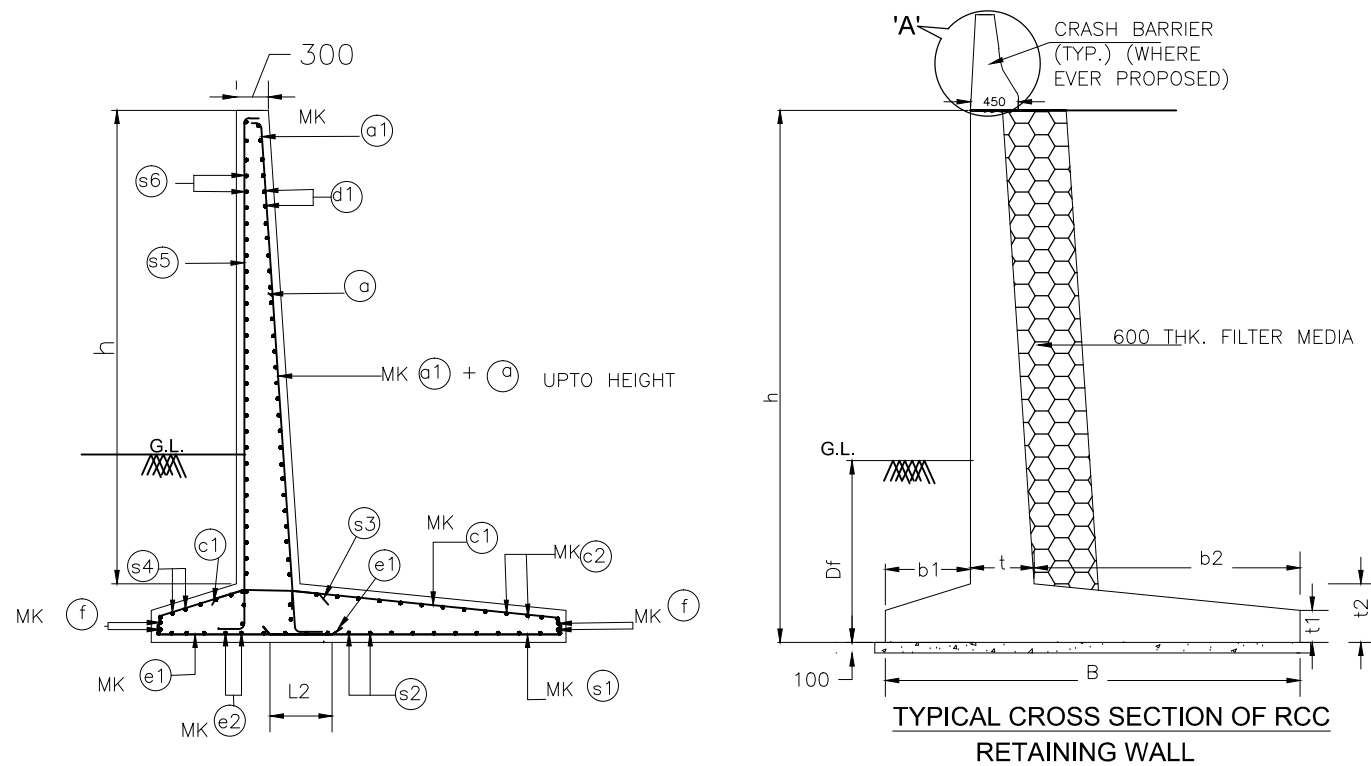
Revision no.	Details	Chk/By	Date	Project Title	This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  National Highways & Infrastructure Development Corporation Ltd	Drawing Title: BEARING LAYOUT DRAWING BRIDGE AT DESIGN CH.Km. 1+600 (3x81.5M)		CONSULTANT	
				Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland			Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/S-501		Sheet : 01 OF 01	
							Scale :- NTS			
							Drn D.N	Dgn. GAURAV SINGH	Appd R.K.JAIN	Date JAN.-2020





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**REINFORCEMENT DETAILS OF RCC RETAINING WALL**  
(SCALE 1:50)

**TYPICAL CROSS SECTION OF RCC RETAINING WALL**  
(SCALE 1:50)

#### NOTES :-

1. ALL DIMENTIONS IN MM (UNLESS OTHERWISE SPECIFIED) & CHANGES ARE IN METERS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO D IMENTION SHALL BE SCALED.
2. BACKFILL MATERIAL BEHIND ABUTMENT SHALL BE SELECTED SOIL HAVING PROPERTIES AS C= 0 KG/SQ.CM.  $\phi > 30$  DEGREE,  $r=1800$  TO  $2000$  KG/CUM.
3. GRADE OF CONCRETE= M 30  
GRADE OF STEEL FE-500.
4. MINIMUM COVER TO ANY REINFORCEMENT SHALL BE 75 MM.
5. LAP LENGTH FOR M-30 GRADE OF CONCRETE SHALL BE:  
a. 87 X BAR DIA.  
b. AT PARTICULAR LOCATION LAPPING OF BAR SHALL NOT BE GREATER THAN 50%.
6. CLEAR COVER -

#### SCHEDULE OF RETAINING/TCE WALL

SR.NO	TYPES OF BAR	SHAPE OF (NOT TO SCALE)	HEIGHT (H) 4M		HEIGHT (H) 5M		HEIGHT (H) 6M		HEIGHT (H) 7M		HEIGHT (H) 8M		HEIGHT (H) 9M	
			DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)
1	a		12	200	16	200	16	200	16	200	20	200	25	200
2	a1		12	200	16	200	16	200	16	200	20	200	20	200
3	c1		16	100	20	100	20	100	20	100	25	100	32	100
4	c2		8	300	8	300	10	300	8	300	8	300	8	200
5	d1		8	200	8	200	8	200	8	200	8	200	10	200
6	e1		10	100	16	100	16	100	16	100	20	100	20	100
7	e2		8	300	8	300	10	300	8	300	8	300	8	200
8	f		10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS
9	s1		10	300	10	300	10	300	10	300	10	300	10	300
10	s2		8	300	8	300	10	300	8	300	8	300	8	200
11	s3		10	300	10	300	10	300	10	300	10	300	10	300
12	s4		8	300	8	300	10	300	8	300	8	300	8	200
13	s5		12	200	12	200	12	200	12	200	12	200	12	200
14	s6		8	200	8	200	8	200	8	200	8	200	10	200

TABLE SHOWING VARIOUS PARAMETERS OF RCC RETAINING WALL							
SR.NO	PARAMETERS						
	HIGHT (mm)	3-4M	4-5M	5-6M	6-7M	8M	9M
1	B	3.4	4.2	5	5.9	6.8	8.1
2	b1	1.2	1.4	1.8	2.0	2.6	3.0
3	b2	1.6	2	2.2	2.6	2.9	3.6
4	t	0.6	0.8	1	1.3	1.3	1.5
5	t1	0.3	0.3	0.3	0.4	0.4	0.4
6	t2	0.6	0.8	1.1	1.1	1.3	1.4
7	L1	0.85	0.85	1.05	1.05	1.05	1.05
8	L2	0.85	0.85	0.85	0.85	1.05	1.05
9	L3	0.55	0.55	0.55	0.55	0.55	0.55
10	Df	1.5	1.5	1.5	2.0	2.0	2.0
11	maximum base pressure kN/m <sup>2</sup>	150.10	174.67	189.23	223.68	223.77	224.0

				<div>Project Title</div> <div>Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Laning of <b>Kohima Bypass</b> 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 the state of Nagaland</div>	<div>This drawing is the property of <b>AGNITIO INFRASTRUCTURE PROJECTS PVT LTD</b> and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.</div> <div>Original Size: A2</div> <div>Path -</div> <div>Plotting Scale:</div>	<div>Client</div> <div></div> <div>National Highways &amp; Infrastructure Development Corporation Ltd</div>	<div>Drawing Title: <div>DETAIL DRAWING OF RETAINING WALL BRIDGE AT DESIGN CH.Km. 1+600 (3x81.5M)</div></div> <div><div>Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/S-701</div><div>Sheet : 01 OF 01</div></div> <div><div>Scale :- NTS</div><div><div>Drn  D.N.</div><div><div>Dgn.  GAURAV SINGH</div><div>Appd.  R.K. JAIN</div></div><div>Date JAN.-2020</div></div></div> <div><div>CONSULTANT</div><div>HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD</div></div>
Revision no.	Details	Chk By	Date				

# DRAWING INDEX

## BRIDGE AT DESIGN CH-3+000

SL.No.	DRAWING TITLE	DRAWING No.	SHEET	Rev.
1.	GENERAL ARRANGEMENT DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH 3+000/S-101	02	R0
2.	DIMENSION & REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION	HEC-AIPPL/NHIDCL/KB/GAD/CH 3+000/S-201	02	R0
3.	DIMENSION DETAILS OF CROSS SECTION	HEC-AIPPL/NHIDCL/KB/GAD/CH3+000 /S-301	01	R0
4.	REINFORCEMENT DETAILS OF DECK SLAB	HEC-AIPPL/NHIDCL/KB/GAD/CH3+000 /S-401	01	R0
5.	BEARING DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH3+000 /S-501	01	R0
6.	MISCELLANEOUS DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH3+000 /S-601	01	R0
7.	RETAINING WALL DRAWING	HEC-AIPPL/NHIDCL/KB/GAD/CH3+000 /S-701	01	R0



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES UNLESS OTHERWISE SPECIFIED.

2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.

3. THE BRIDGE IS DESIGNED FOR ONE LANE OF ONE LANE OF 70R WHEEL LOADING+ONE LANE OF CLASS A OR 2 LANE OF CLASS A LOADING WHICHEVER PRODUCES THE WORST EFFECT.

4. GRADE OF CONCRETE FOR VARIOUS COMPONENTS SHALL BE AS MENTIONED UNDER:-

a SUBSTRUCTURE ----- M35

b FOUNDATION ----- M35

c RCC CRASH BARRIER -----M40

d RCC DECK SLAB -----M35

e RCC RETAINING WALL -----M35

f PEDESTAL BELOW BEARING ---M40

g APPROACH SLAB -----M30

h SEISMIC ARRESTOR -----M35

i LEVELLING COURSE ----- M15

5. STEEL REINFORCEMENT SHALL CONFORM TO IS:1786 (GRADE DESIGNATION Fe-500D)

6. ALL STRUCTURAL ROLLED SECTIONS SHALL CONFORM TO IS: 2062 (GRADE E-410)

7. STRIP SEAL TYPE EXPANSION JOINTS OF PROVEN QUALITY SHALL BE PROVIDED.

8. BACK FILLING BEHIND ABUTMENTS SHALL CONSIST OF SELECTED EARTH CONFIRMING TO APPENDIX 6 OF IRC: 78-2000 HAVING PROPERTIES  $\phi=30^{\circ}$  (MINIMUM), $\gamma=20^{\circ}$   $\geq 2.0$  t/m<sup>3</sup>

9. WEEP HOLES SPACED AT 1000 c/c BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN A STAGGERED MANNER IN ABUTMENTS AND RETURN WALLS FROM 150mm ABOVE GL TO ABUTMENT CAP BOTTOM.

10. ALL WELDING SHALL CONFORM TO IS:816-1969 AND IS:1323-1982.

11. ALL HIGH STRENGTH FRICTION GRIP BOLTS,NUTS & WASHERS SHALL CONFORM TO IS: 4000-1992, IS: 3757-1985,IS: 6623-1985 & IS: 6649-1985.
12. FABRICATION DRAWING SHOULD BE PREPARED & GET APPROVED FROM ENGINEER-IN-CHARGE BEFORE CONSTRUCTION.

13. HIGH STRENGTH ORDINARY PORTLAND CEMENT CONFORMING TO IS : 12269 AND IS : 8112 OR OORDINARY PORTLAND CEMENT CONFORMING TO IS:269 CAPABLE OF ACHIEVING THE REQUIRED DESIGN STRENGTH SHALL ONLY BE USED.

14. 65mm TH. WEARING COURSE COMPRISING OF 40MM BITUMINOUS CONCRETE OVERLAID WITH 25MM THICK BITUMEN MASTIC LAYER SHALL BE PROVIDED IN CONFORMITY WITH MORTH SPECIFICATIONS.REV-5

15. MINIMUM 600 mm EMBEDMENT OF FOUNDATION IN HARD ROCK AND IN CASE OF ROCK OTHER THAN HARD ROCK MINIMUM 1500 mm EMBEDMENT OF FOUNDATION SHALL BE PROVIDED AS PER SECTION 700 OF IRC 78:2014

16. IN CASE OF FOUNDATION IN ROCK, TENCHES AROUND THE FOOTING SHALL BE FILLED UP WITH M15 GRADE CONCRETE UP TO THE TOP OF ROCK

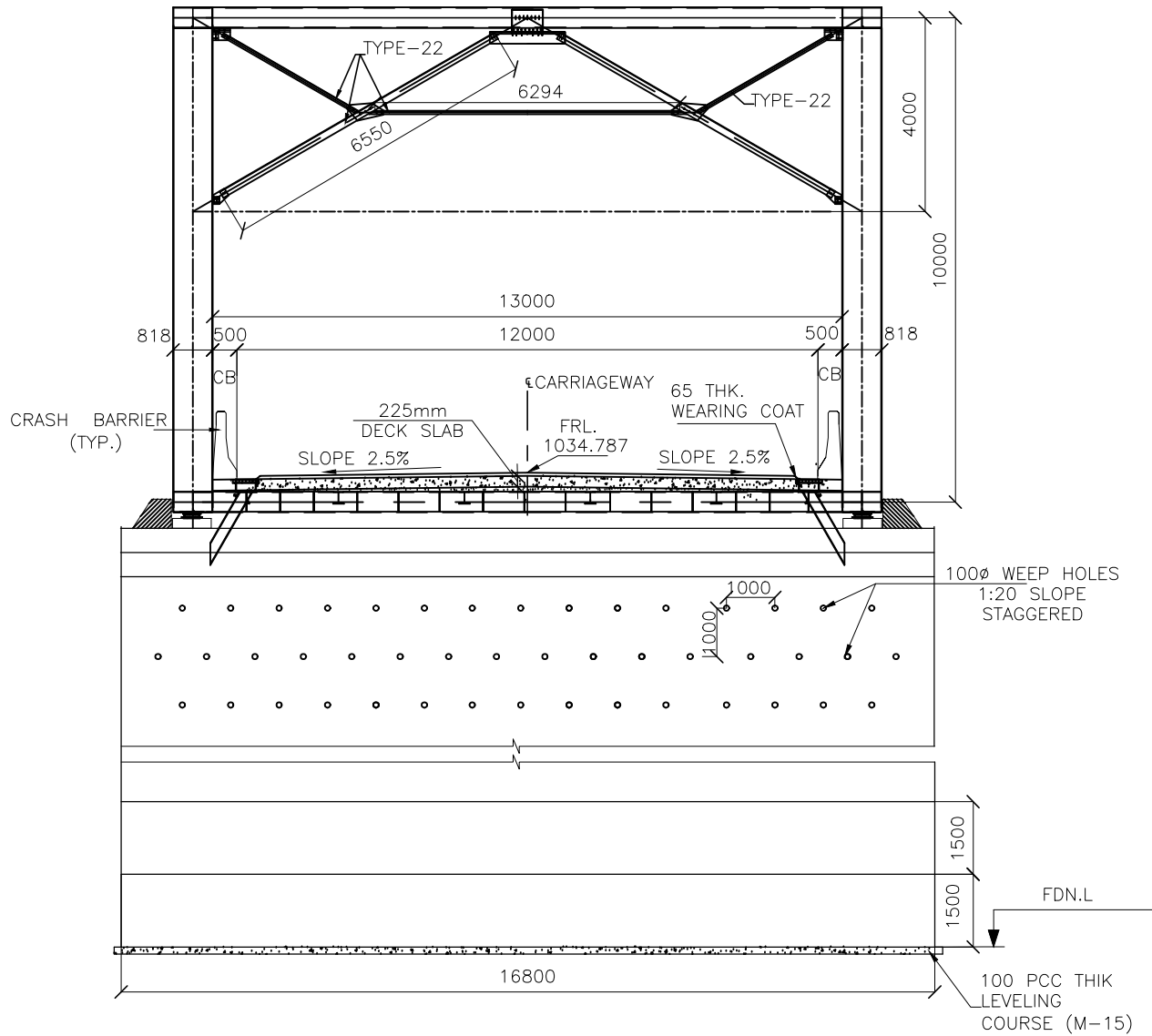
17. THIS STRUCTURE IS ON SEISMIC ZONE V

18. ALL DIMENSIONS AND FOUNDATION DETAILS SHOWN IN DRAWING ARE TENTATIVE SUBJECT TO CHANGE DURING DETAIL DESIGN.

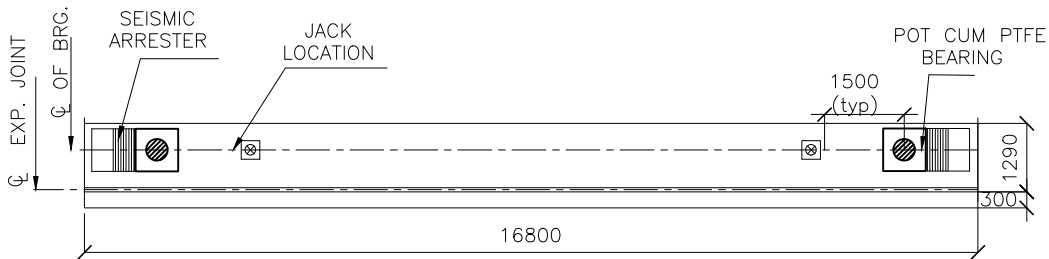
19. FOUNDATION DETAILS SHOWN IN THE DRAWING ARE INDICATIVE ONLY. THIS MAY UNDERGO CHANGE DURING DETAIL DESIGN.

20. SLOPE PROTECTION TO BE DONE AS PER SITE CONDITION WITH STONE IN GABION OVER 200 THK FILTER MATERIAL.

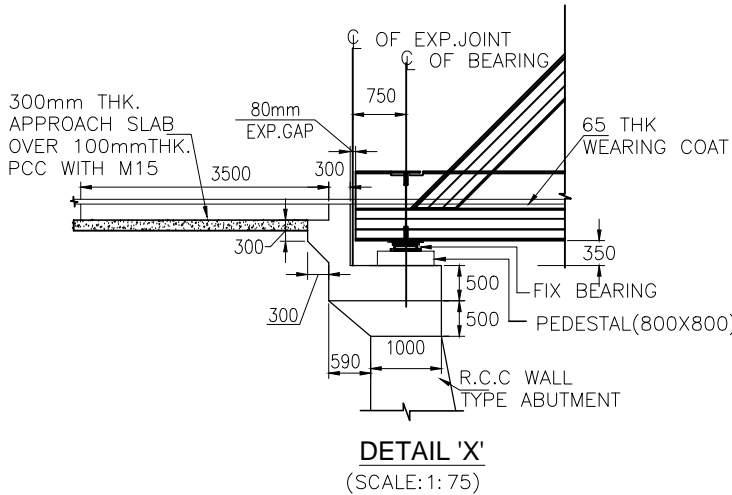
21. STONE PITCHING AND FILTER MATERIAL UNDER STONE PITCHING SHALL BE AS PER MORTH SPECIFUCATION SECTION 2500 AND IRC: 89. WEIGHT OF SINGLE STONE SHOULD NOT BE LESS THAN 40KG



SECTION A-A  
(SCALE 1:100)



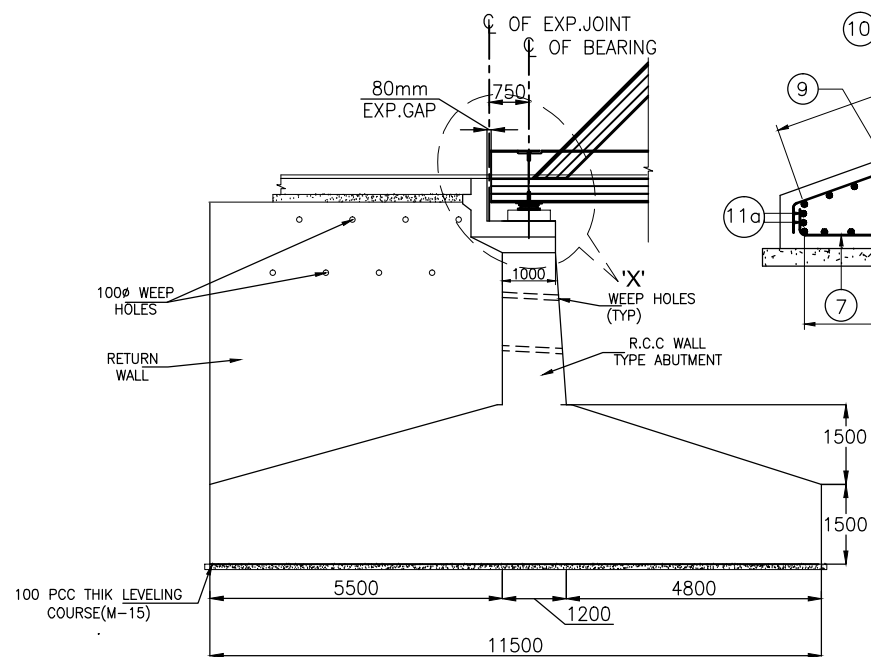
DETAIL OF ABUTMENT CAP PLAN  
(SCALE:1:100)



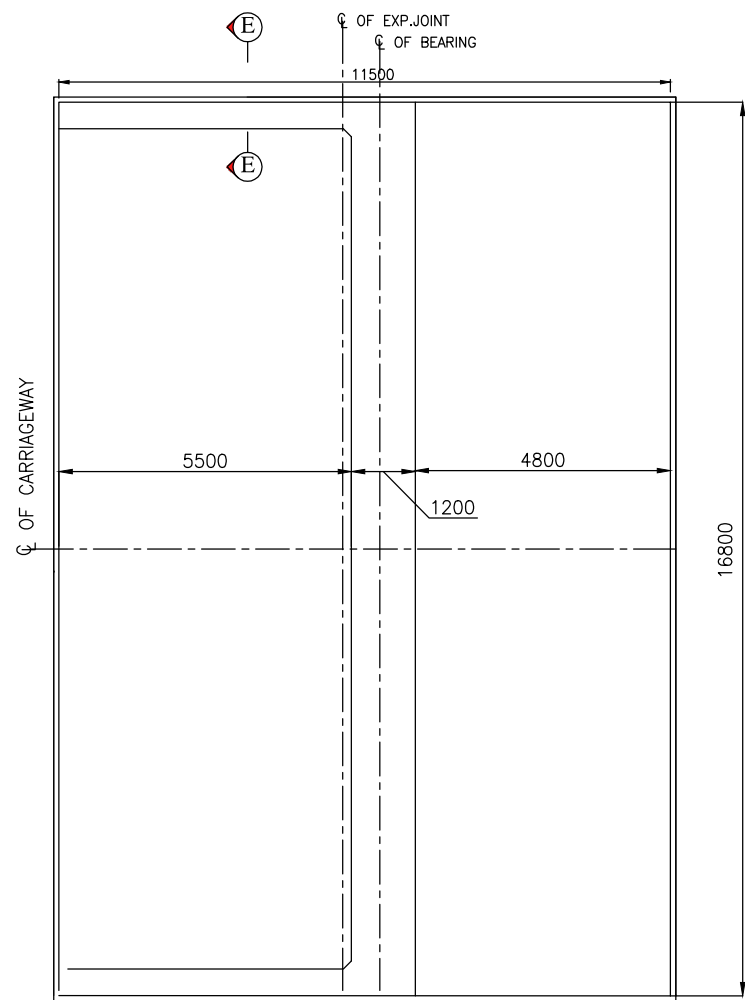
REFERENCE DRAWING:-

1. DIMENSION & REINFORCEMENT DETAILS OF ABUTMENT & FOUNDATION  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-201-SHETT(01/02 OF 02)
2. DIMENSION DETAILS OF CROSS SECTION  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-301-SHETT(01 OF 01)
3. REINFORCEMENT DETAILS OF DECK SLAB DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-401-SHETT(01 OF 01)
4. BEARING LAYOUT DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-701-SHETT(01 OF 01)
5. MISCELLANEOUS DETAILS DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-801-SHETT(01/01 OF 01)
6. RETAINING WALL DRAWING  
HEC-AIPPL/NHIDCL/KB/GAD/UP/S-901-SHETT(01 OF 01)

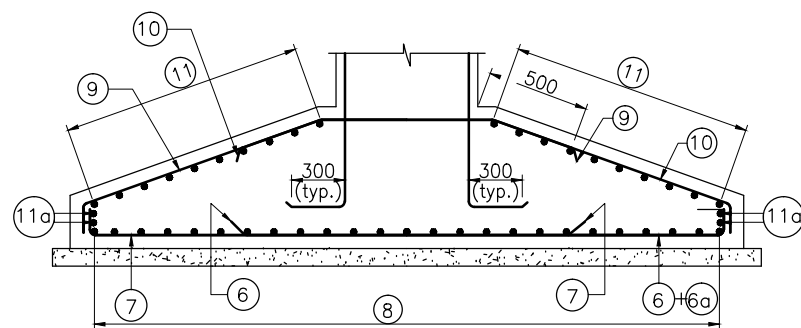
Project Title				This drawing is the property of		Client		Drawing Title: GENERAL ARRANGEMENT DRAWING		CONSULTANT	
Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Laning of Kohima Bypass connecting 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 the state of Nagaland				AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.		National Highways & Infrastructure Development Corporation Ltd		BRIDGE AT DESIGN CH.Km. 3+000 (1x81.5M)		HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD	
Original Size: A2				Path -		National Highways & Infrastructure Development Corporation Ltd		Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/ S-101		Sheet : 02 OF 02	
Plotting Scale:				Scale :- NTS		Drn D.N		Dgn. GAURAV SINGH		Date JAN.-2020	
Revision no.				Details		Appd R.K.JAIN		Date			
Chk By				Date							



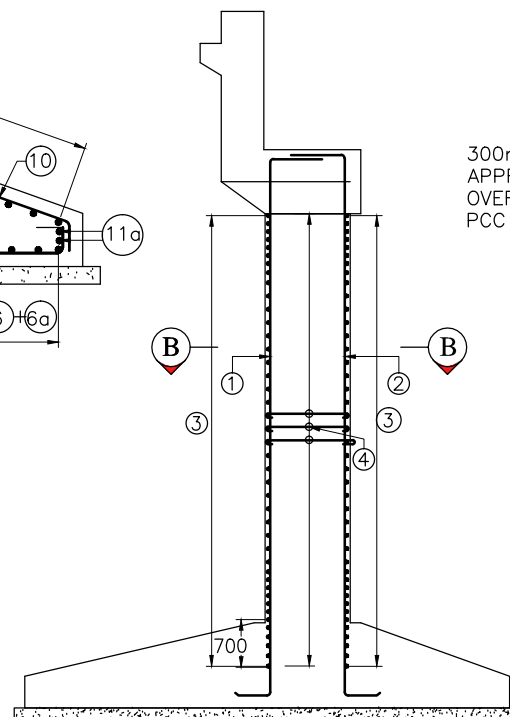
**ELEVATION**  
(SCALE:1:75)



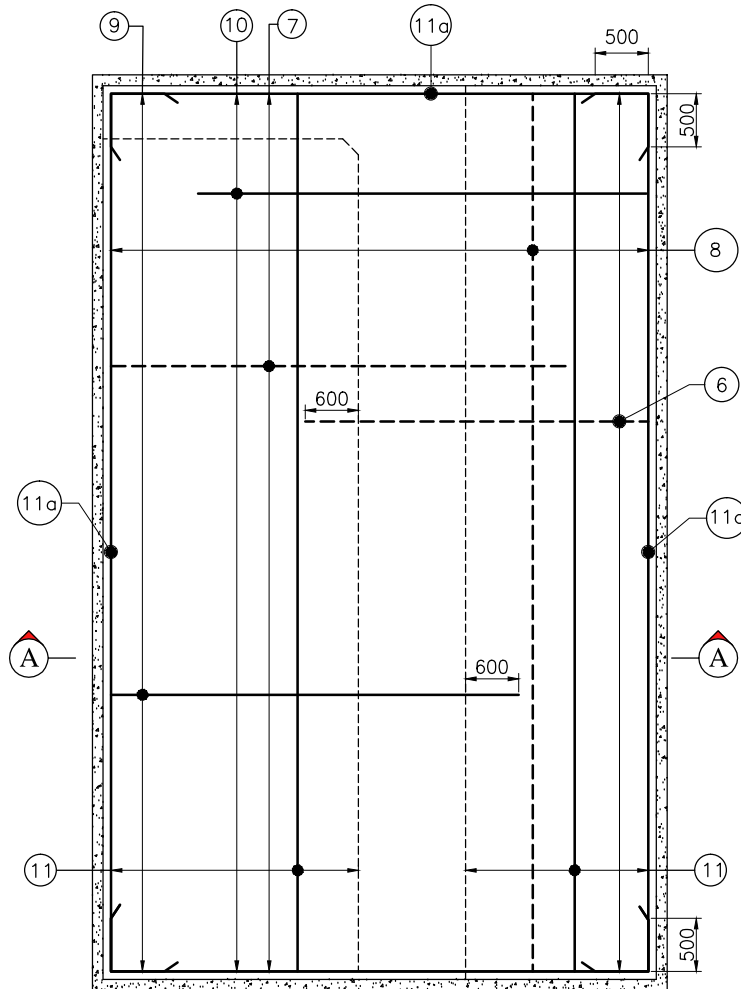
**DIMENSIONAL DETAIL PLAN**  
(SCALE:1:75)



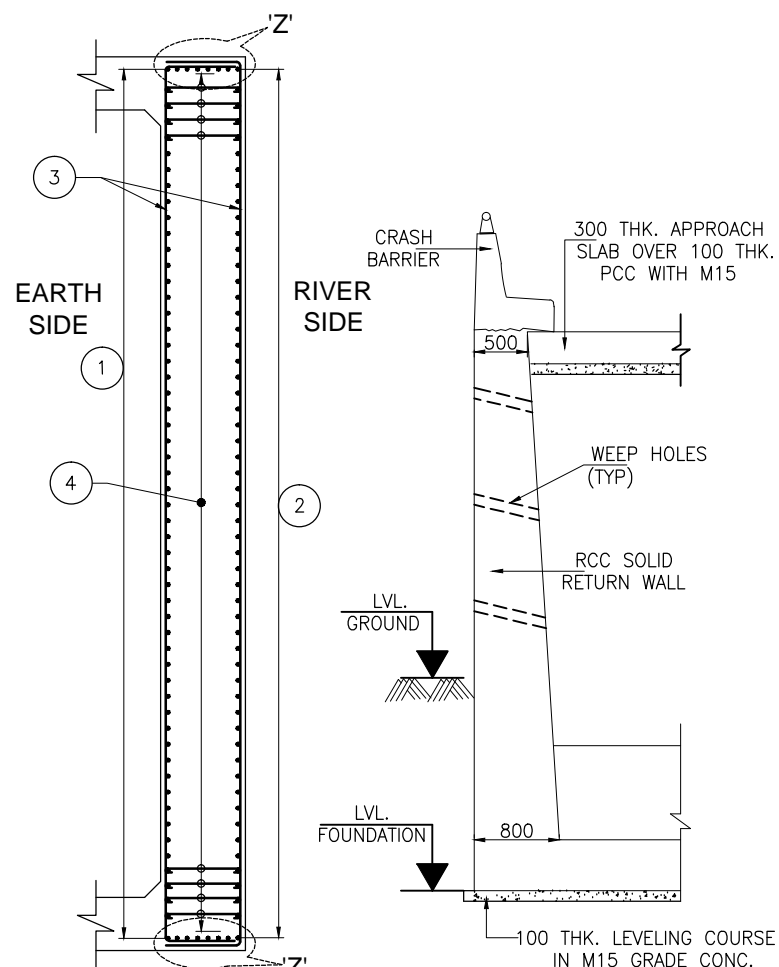
**SECTION AT A-A**  
(SCALE:1:30)



**ELEVATION RC DETAIL ABUTMENT**  
(SCALE:1:50)



**REINFORCEMENT DETAILS OF ABUTMENT FOOTING PLAN**  
(SCALE:1:50)



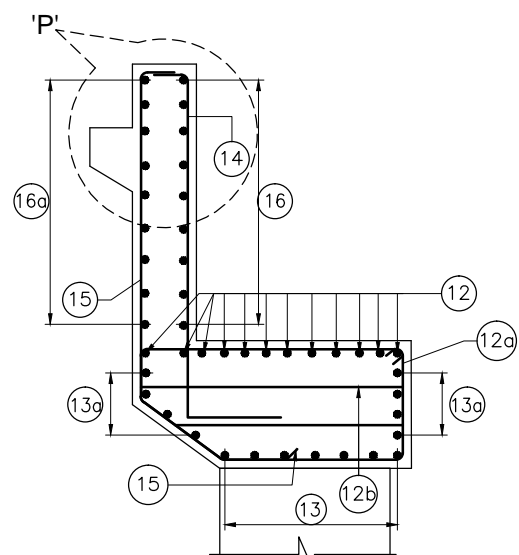
**SECTION AT B-B (ABUTMENT SHAFT)**  
(SCALE:1:50)

**SECTION AT E-E**  
(SCALE:1:50)

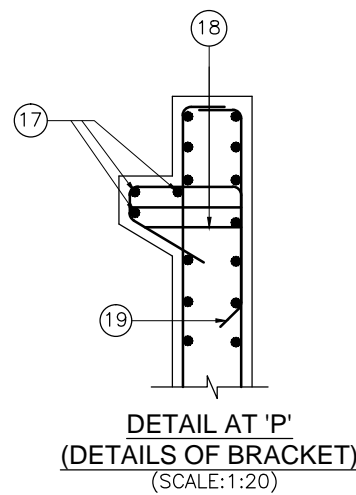
SCHEDULE OF REINFORCEMENT:-					
BAR MARK	SHAPE OF BARS	BAR DIA IN mm.	SPACING IN mm.	NO.OF BARS	REMARKS
1		32	120		ABUTMENT SHAFT
2		25	120		
3		12	150		
4		10ØLINK VERTICALLY ALTERNATE(STAGGERED)			
5		12		10X2	FOUNDATION
6		25	110		
6a		NOT IN USE			
7		12	110		
8		12	120		
9		25	110		
10		12	110		
11		12	120		
11a		12		8	
12		20		25	ABUTMENT CAP
12a		16	80		
12b		2L-10Ø @ 1000 c/c (two layers)			
13		20		12	
13a		12		2X4	DIRT WALL
14		12	150		
15		12	150		
16		10	200		
16a		10	200		BRACKET
17		12		3	
18		2L-10Ø @ 450 c/c (two layers)			RETURN WALL
19		12	220		
20		16	90		
20a		NOT IN USE			
21		12	90		HAUNCH
22		12	150		
23		10	150		
24		12		8	
25		12		2x3	APPROACH SLAB
26		12	70		
27		12	70		
28		12	70		
29		12	70		
30		12	80		

Revision no.		Details		Chk By	Date	Project Title Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining 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 the state of Nagaland	This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  National Highways & Infrastructure Development Corporation Ltd	Drawing Title: REINFORCEMENT DRAWING OF ABUTMENT BRIDGE AT DESIGN CH.Km. 3+000 (1x81.5M) Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-201 Scale :- NTS Drn D.N Dgn. GAURAV SINGH Appd R.K.JAIN Date JAN.-2020	Sheet : 01 OF 02 CONSULTANT HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD
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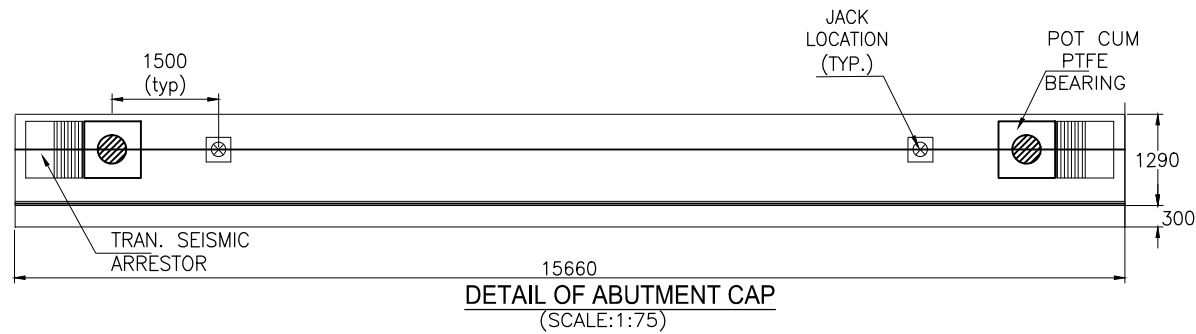




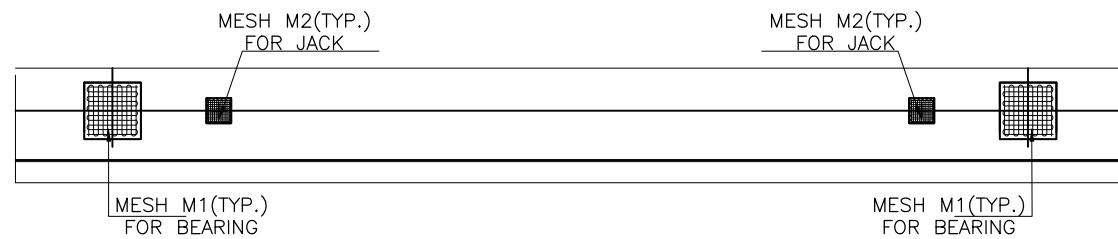
**RC DETAILS OF DIRT WALL  
& ABUTMENT CAP**  
(SCALE:1:25)



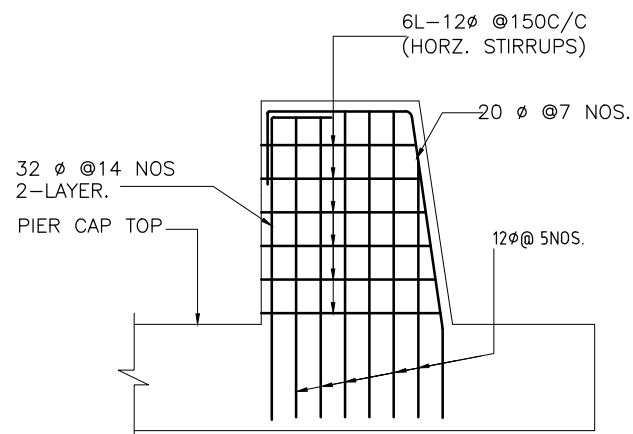
**DETAIL AT 'P'  
(DETAILS OF BRACKET)**  
(SCALE:1:20)



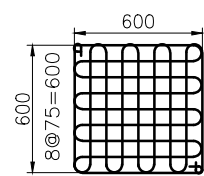
**DETAIL OF ABUTMENT CAP**  
(SCALE:1:75)



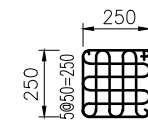
**DETAIL OF PEDESTAL AND MESH**  
(SCALE:1:75)



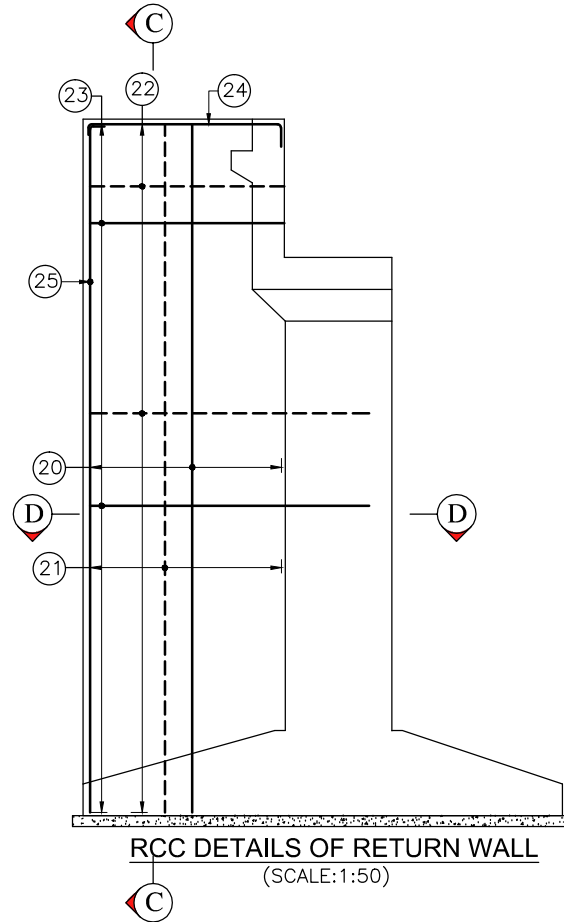
**R.C DETAIL OF SEISMIC  
ARRESTOR (TRANS)**  
(SCALE:1:25)



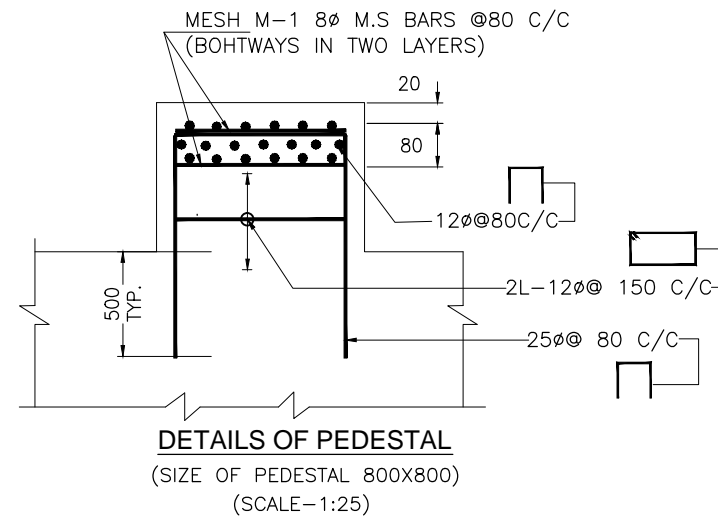
**MESH M - 1 8Ø MESH  
REINF. IN PEDESTAL**  
(SCALE:1:100)



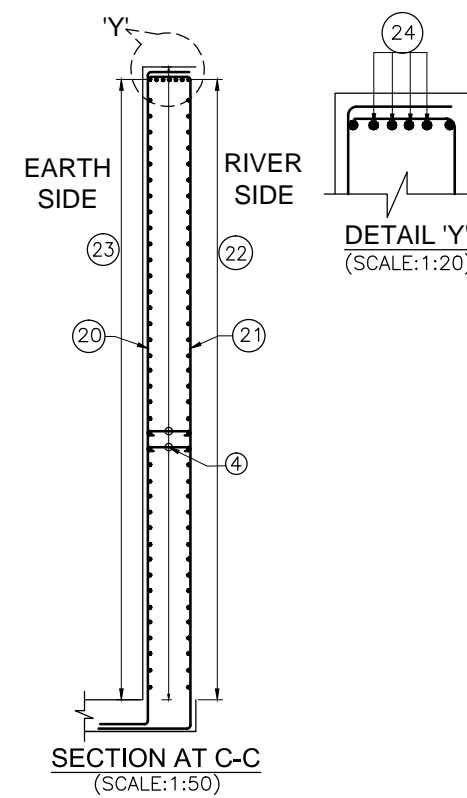
**MESH M - 2 8Ø MESH  
REINF. AT JACK LOCATION**  
(SCALE:1:100)



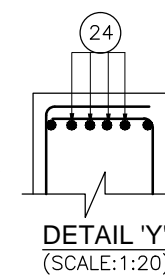
**RCC DETAILS OF RETURN WALL**  
(SCALE:1:50)



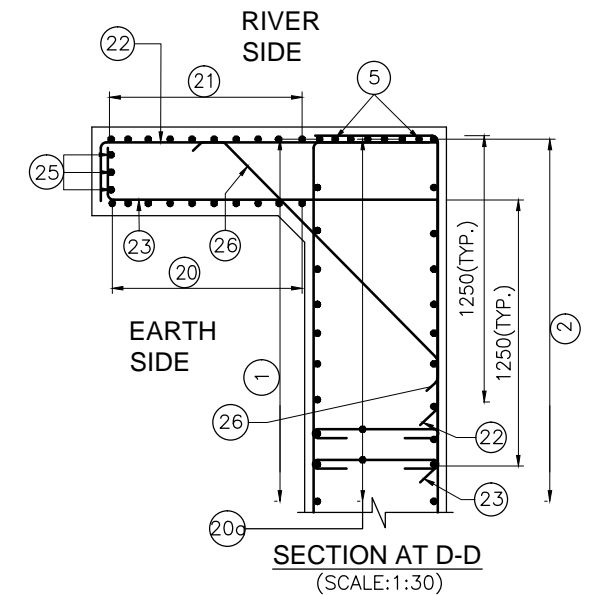
**DETAILS OF PEDESTAL**  
(SIZE OF PEDESTAL 800X800)  
(SCALE:1:25)



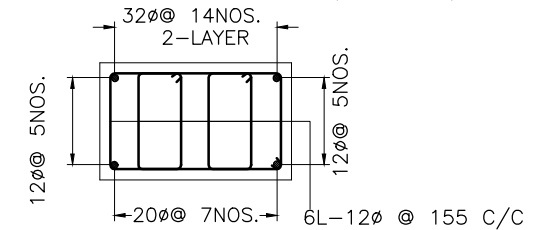
**SECTION AT C-C**  
(SCALE:1:50)



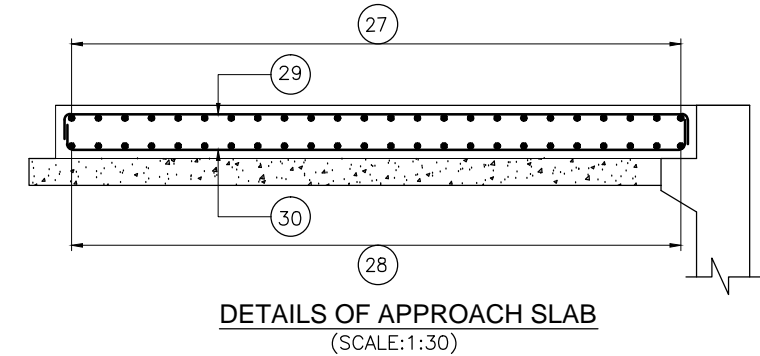
**DETAIL 'Y'**  
(SCALE:1:20)



**SECTION AT D-D**  
(SCALE:1:30)



**R.C. DETAIL OF SEISMIC  
ARRESTOR (TRANS)  
PLAN**  
(SCALE:1:25)



**DETAILS OF APPROACH SLAB**  
(SCALE:1:30)

#### NOTES:

- ALL DIMENSIONS ARE IN mm, AND LEVELS IN METRES UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED.
- CONCRETE SHALL BE DESIGN MIX AND SHALL HAVE MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES FOR ALL ELEMENTS OF SUBSTRUCTURE AND FOUNDATION M20
- GRADE OF STEEL SHALL BE Fe-500 CONFORMING TO IS :1786.
- BACK FILLING BEHIND ABUTMENTS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX:6 OF IRC:78-2000 HAVING PROPERTIES  $C=0$ ,  $\phi=30^\circ$ ,  $\gamma=20^\circ$  &  $\delta=18$  kN/m<sup>3</sup>.
- WEEP HOLES, 100 DIA IN SLOPE 1:20 SPACED @1000mm C/C BOTH HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN STAGGERED MANNER IN ABUTMENTS, MEDIAN WALL & RETURN WALL ABOVE THE GROUND LEVEL.
- THE FOUNDATION STRATA SHALL HAVE NET BEARING CAPACITY OF 350 kN/m<sup>2</sup>
- IN CASE OF EXCAVATION IN ROCK THE ANNULAR SPACE AROUND THE FOUNDATION SHALL BE FILLED IN M 15 GRADE CONC.UPTO THE TOP OF ROCK
- IT MAY BE ENSURED THAT MINIMUM EMBEDMENT OF FOUNDATION IS 1.5M IN SOFT ROCK OR 0.6M IN HARD ROCK AS PER PROVISION OF IRC - 78.

#### LEGEND:-

TOP FACE REINF. ———  
BOTTOM FACE REINF. - - - -

#### Project Title

Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining 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 the state of Nagaland

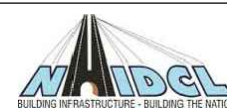
This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.

Original Size: A2

Path -

Plotting Scale:

#### Client



National Highways & Infrastructure Development Corporation Ltd

#### Drawing Title:

REINFORCEMENT DRAWING OF ABUTMENT BRIDGE AT DESIGN CH.Km. 3+000 (1x81.5M)

Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-201

Scale :- NTS

Drn D.N

Dgn. GAURAV SINGH

Appd R.K.JAIN

Date JAN.-2020

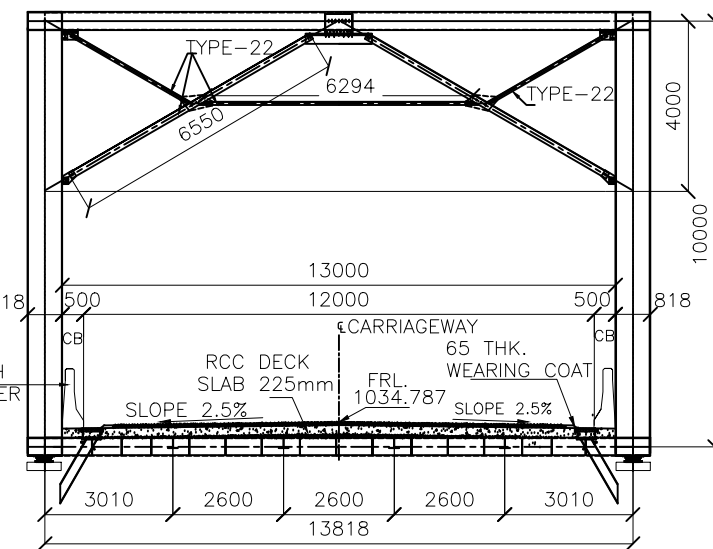
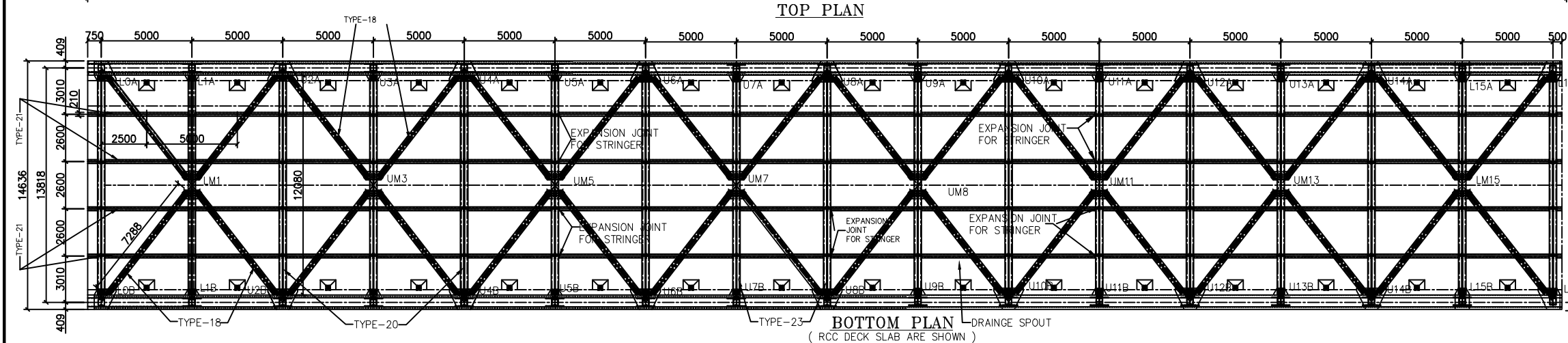
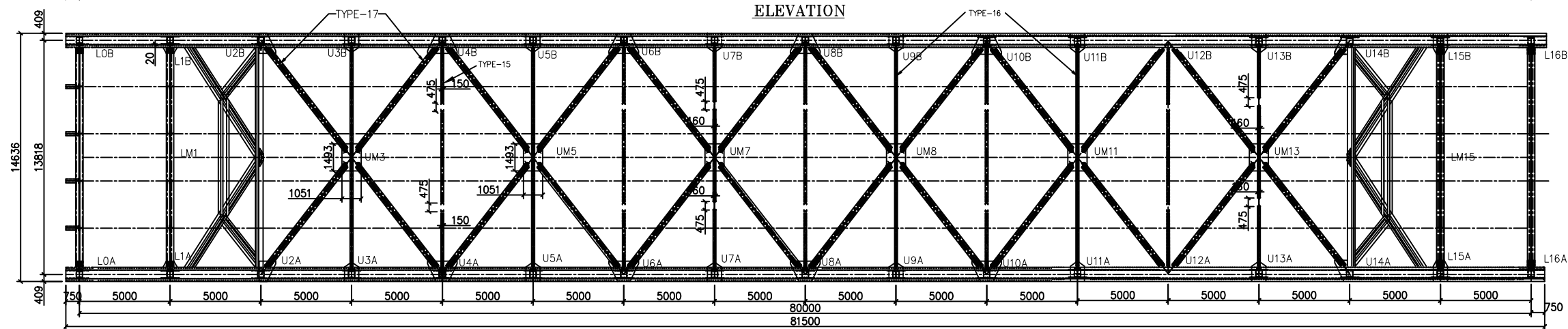
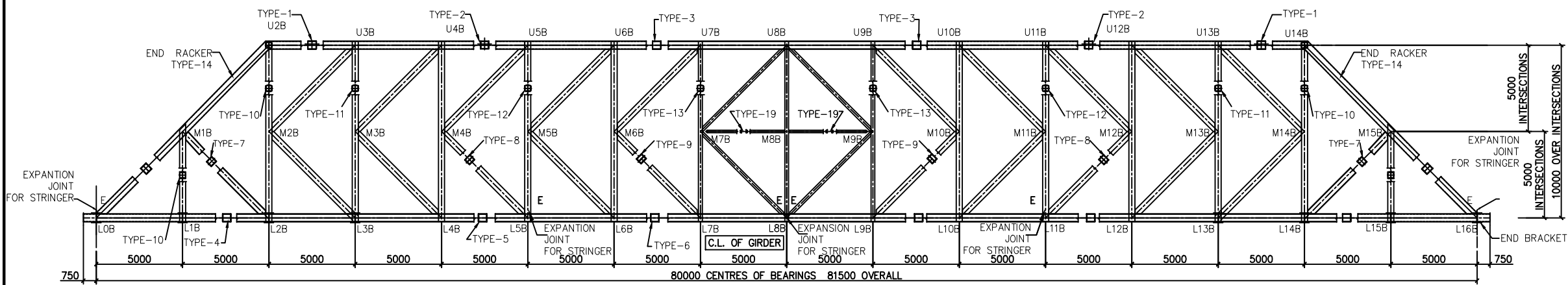
Sheet :

02 OF 02

#### CONSULTANT

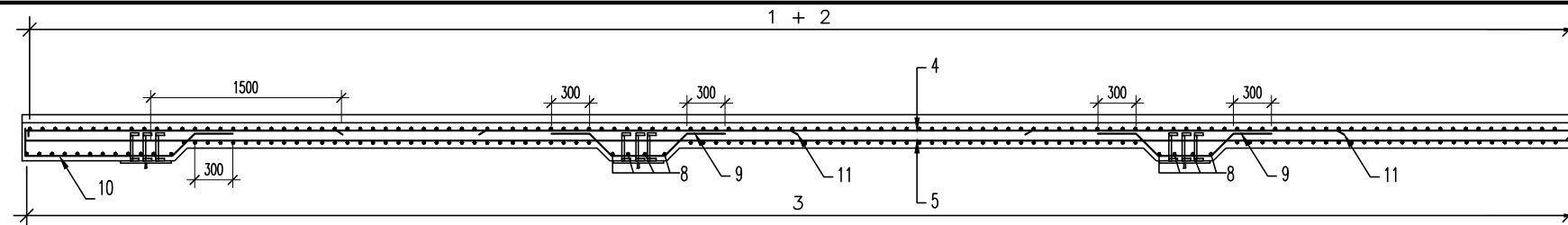
HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD

Revision no. Details Chk By Date

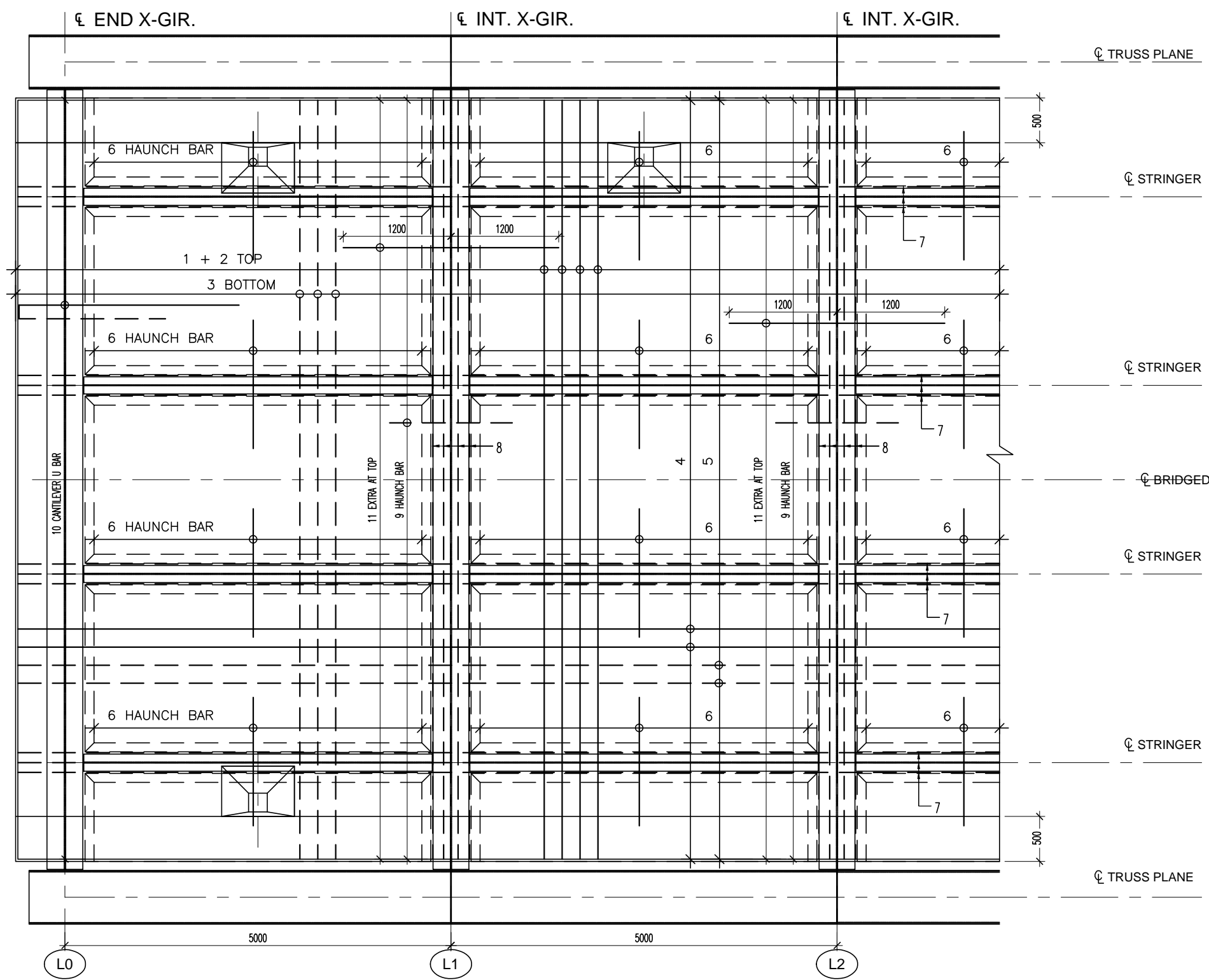


<p>TYPE-1</p> <p>① PL-850x25-2NOS ② PL-750x25-1NOS ③ PL-300x20-2NOS</p>	<p>TYPE-2</p> <p>① PL-30x850-2NOS ② PL-750x30-1NOS ③ PL-300x30-2NOS</p>	<p>TYPE-3</p> <p>① PL-36x850-2NOS ② PL-750x32-1NOS ③ PL-300x32-2NOS</p>	<p>TYPE-4,5,6</p> <p>① PL-850x32-2NOS ② PL-750x30-1NOS ③ PL-300x32-2NOS</p>	<p>TYPE-7</p> <p>① L-200x200x25-4NOS</p>	<p>TYPE-8,9</p> <p>① L-200x200x15-4NOS</p>	<p>TYPE-10</p> <p>① L-200x200x25-4NOS</p>	<p>TYPE-11,12,13</p> <p>① L-200x200x15-4NOS</p>	<p>TYPE-14</p> <p>① PL-30x850-2NOS ② PL-750x25-1NOS ③ PL-300x20-2NOS</p>	<p>TYPE-15,16</p> <p>① L-100x100x10-4NOS</p>	<p>TYPE-17</p> <p>① L-100x100x10-4NOS</p>	<p>TYPE-18</p> <p>① L-150x150x15-4NOS</p>	<p>TYPE-19</p> <p>① L-100x100x12-4NOS</p>	<p>TYPE-20</p> <p>① PL-600x32-1NOS ② PL-32x786-1NOS ③ PL-600x32-1NOS</p>	<p>TYPE-21</p> <p>① PL-300x20-1NOS ② PL-12x460-1NOS ③ PL-250x20-1NOS</p>	<p>TYPE-22</p> <p>① L-100x100x10-4NOS</p>
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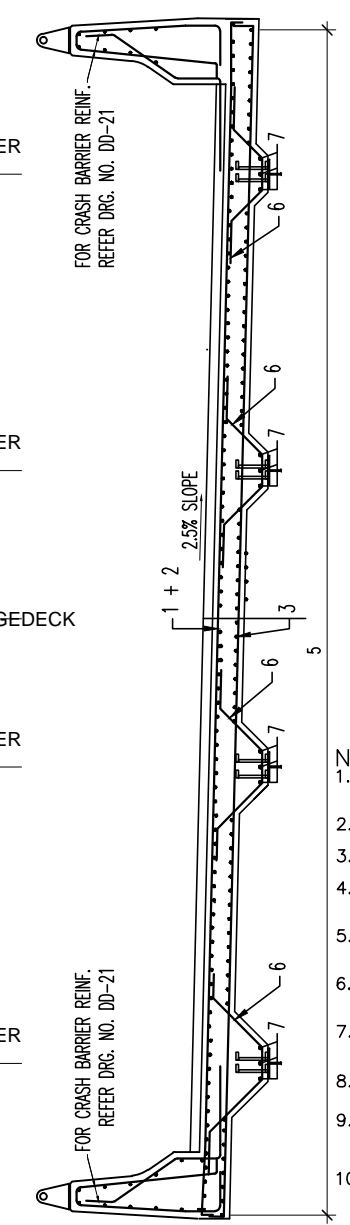


**SECTION A-A, 1:40**



**PART PLAN AT ROAD DECK (SHOWING REINFORCEMENT), 1:40**  
**(CRASH BARRIER REINFORCEMENT NOT SHOWN FOR CLARITY)**

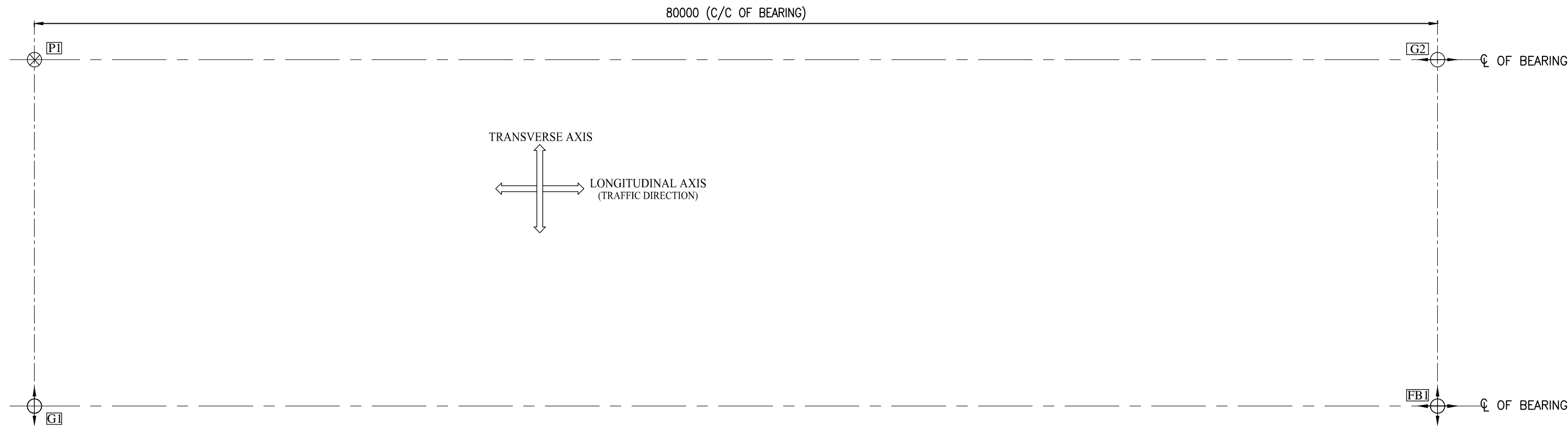
SCHEDULE OF REINFORCEMENT				
BAR MKD.	SHAPE	DIA	SPACING	REMARKS
1		16Ø	150 C/C	ALTERNATE WITH 2
2		16Ø	150 C/C	ALTERNATE WITH 1
3		16Ø	200 C/C	
4		12Ø	125 C/C	
5		12Ø	125 C/C	
6		12Ø	100 C/C	PER HAUNCH
7		10Ø	3 NOS.	
8		12Ø	4 NOS.	
9		10Ø	200 C/C	PER HAUNCH
10		12Ø	100 C/C	
11		10Ø	200 C/C	EXTRA AT TOP



**SECTION B-B, 1:40**

- NOTES:-
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS. UNLESS OTHERWISE SPECIFIED.
  - GRADE OF CONCRETE USED M 35
  - CLEAR COVER TO MAIN REINFORCEMENT 40mm.
  - TOP REINF. SHOWN AS BOTTOM REINF. SHOWN AS
  - ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED, NEITHER THE BARS SHALL BE COUNTED, NOR THE DIMENSIONS SCALED FROM THE DRAWING.
  - ANY DISCREPANCY BETWEEN ARCHITECTURAL DRAWINGS AND THIS DRAWING SHALL BE GOT RECONCILED BEFORE EXECUTION.
  - HIGH YIELD STRENGTH TMT BARS OF GRADE Fe 500D CONFORMING TO I.S. 1786 SHALL BE USED AS REINFORCEMENT WITH A MINIMUM YIELD STRENGTH OF 500 N/Sq.mm.
  - MINIMUM LAP AND ANCHORAGE LENGTH OF REINFORCEMENT SHALL BE KEPT AS PER PROVISION MADE IN IRE:112-2011
  - SUITABLE CHAIRS SHALL BE PROVIDED TO HOLD THE TOP BARS OF SLAB REINFORCEMENT IN POSITION.
  - THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS

Revision no.		Details		Chk By	Date	Project Title Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Lining 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 the state of Nagaland	This drawing is the property of AGNITIO INFRASTRUCTURE PROJECTS PVT LTD and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  National Highways & Infrastructure Development Corporation Ltd	Drawing Title: REINFORCEMENT DETAILS OF DECK SLAB BRIDGE AT DESIGN CH.Km. 3+000 (1x81.5M) Drawing No.: HEC-AIPPL/NHIDCL/KB/GAD/ S-401 Scale :- NTS Drn D.N Dgn. GAURAV SINGH Appd R.K.JAIN Date JAN.-2020	Sheet : 01 OF 01 CONSULTANT HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD
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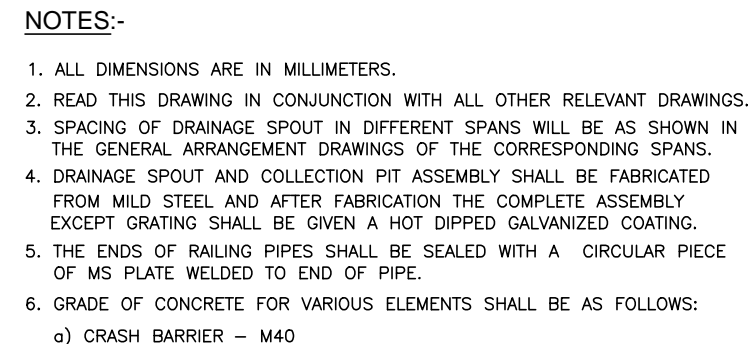
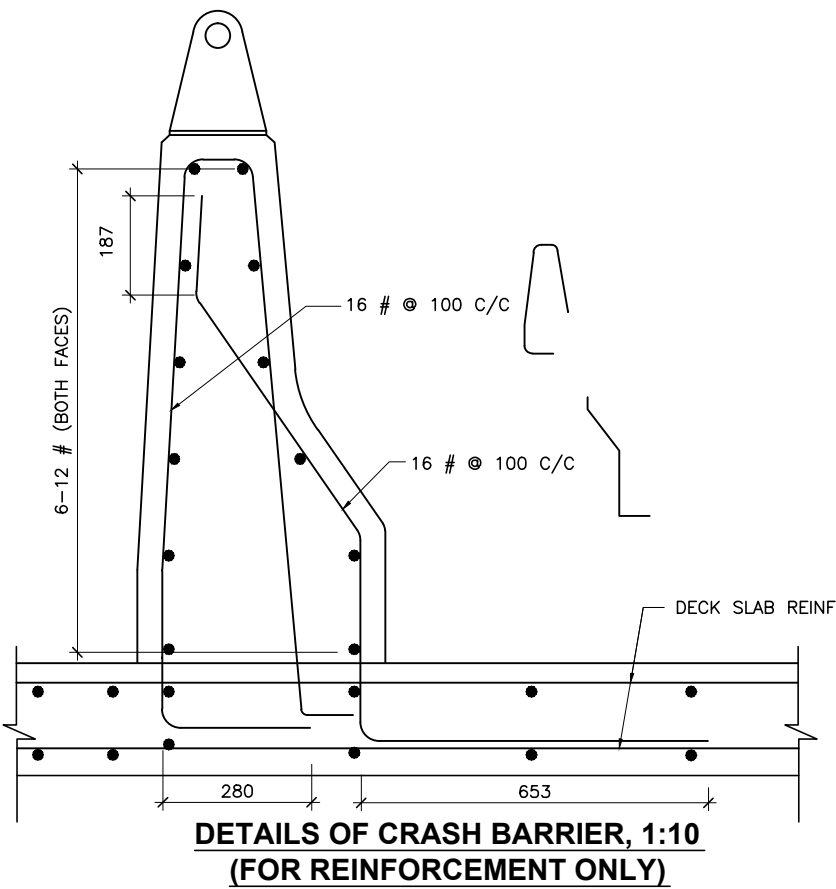
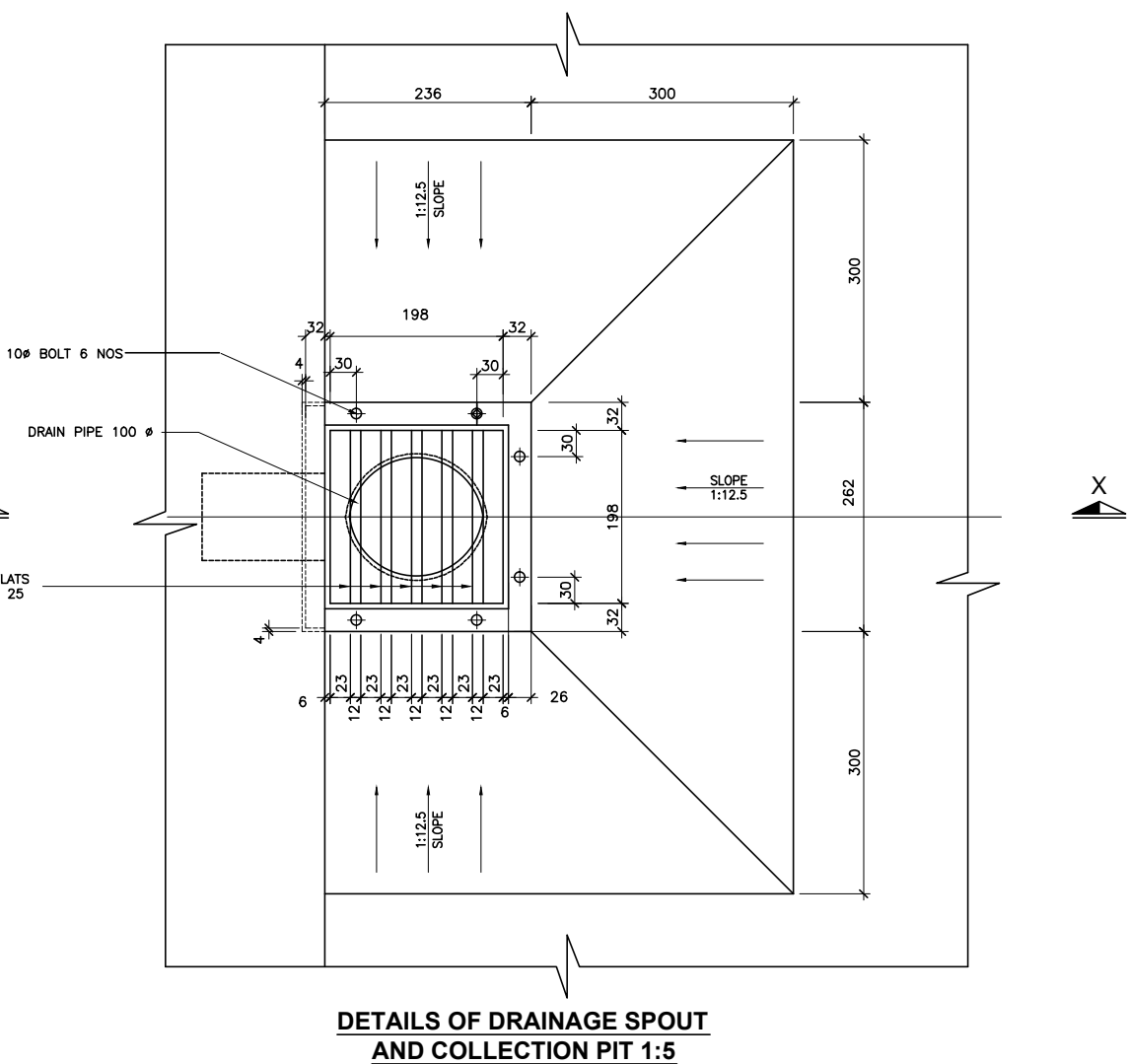



**ARRANGEMENT OF BEARINGS**

Sl. No	Bearing Type	Load Condition	Coexisting Loads, Forces,Movement and Rotation Data										Qty . (Nos.)
			Vertical Load (kN)		Horizontal Force (kN)				Rotation (Rad)		Movement (mm)		
			Case	Magnitude	Longitudinal		Transverse		Case	Magnitude	Longitudinal	Transverse	
					Case	Magnitude	Case	Magnitude					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
P1	Pot fixed bearing	Normal	Maximum	7847	Coexisting	844	Coexisting	-	Coexisting	-	-	-	1
			Minimum	0	Coexisting	844	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	939	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	939	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	939	Coexisting	0	Coexisting				
		Seismic/Wind	Coexisting	0	Coexisting	939	Maximum	1062	Coexisting				
G1	Transversely guided pot - PTFE bearing	Normal	Maximum	7847	Coexisting	844	Coexisting	-	Coexisting	0.36	-	6	1
			Minimum	0	Coexisting	844	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	939	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	939	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	939	Coexisting	-	Coexisting				
G2	Longitudinally guided pot -PTFE bearing	Normal	Maximum	7847	Coexisting	-	Coexisting	-	Coexisting		82	-	1
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	-	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Coexisting	5629	Maximum	-	Coexisting	0	Coexisting				
		Seismic/Wind	Coexisting	0	Coexisting	-	Maximum	1062	Coexisting				
FB1	Free Pot PTFE bearing	Normal	Maximum	7847	Coexisting	-	Coexisting	-	Coexisting		82	6	1
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				
		Seismic/Wind	Maximum	5629	Coexisting	-	Coexisting	-	Coexisting				
			Minimum	0	Coexisting	-	Coexisting	-	Coexisting				

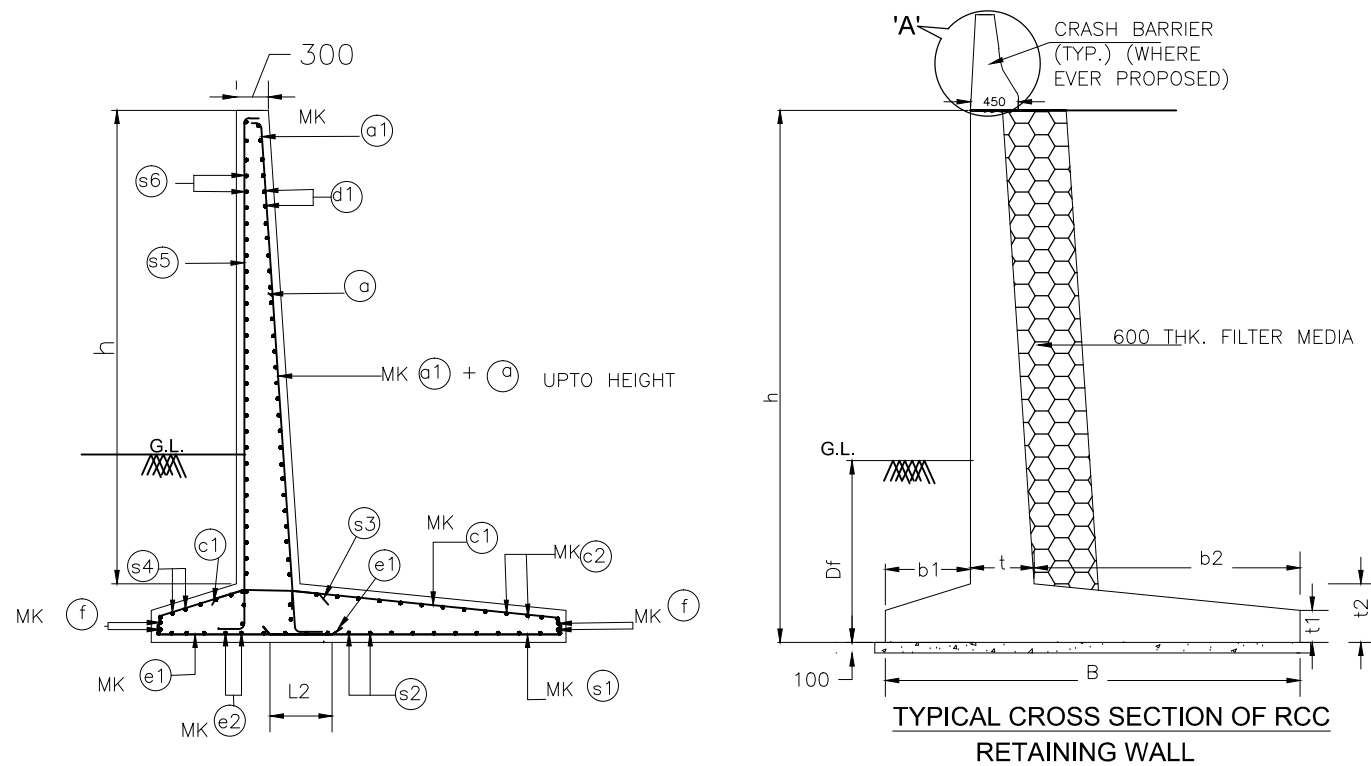
				Project Title  Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Laning of <b>Kohima Bypass</b> connecting NH-39 (New NH-02) ,NH-150 (New NH-02), NH-61 (New NH-29) and NH-39 (New NH-02) on Engineering, Procurement and Construction (EPC) mode in the state of Nagaland	This drawing is the property of <b>AGNITIO INFRASTRUCTURE PROJECTS PVT LTD</b> and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing. Original Size: A2 Path - Plotting Scale:	Client  <b>National Highways &amp; Infrastructure Development Corporation Ltd</b>	Drawing Title: BEARING LAYOUT DRAWING BRIDGE AT DESIGN CH.Km. 3+000 (1x81.5M)		<u><b>CONSULTANT</b></u>			
							Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/S-501		Sheet : 01 OF 01		HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD	
							Scale :- NTS					
Revision no.	Details	Chk By	Date				Drn D.N	Dgn. GAURAV SINGH	Appd R.K.JAIN	Date JAN.-2020		





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					Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 Laning of <b>Kohima Bypass</b> 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 the state of Nagaland	Original Size: A2	<b>National Highways &amp; Infrastructure Development Corporation Ltd</b>		Drawing No.: <b>HEC-AIPPL/NHIDCL/KB/GAD/S-601</b>		Sheet : <b>01 OF 01</b>	
Revision no.	Details	Chk By	Date		Path - Plotting Scale:				Scale :- NTS			
									Dnn D.N. 	Dgn.  <b>GAURAV SINGH</b>	Appd.  <b>R.K.JAIN</b>	Date JAN.-2020





#### NOTES :-

1. ALL DIMENTIONS IN MM (UNLESS OTHERWISE SPECIFIED) & CHANGES ARE IN METERS. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED. NO D IMENTION SHALL BE SCALED.
2. BACKFILL MATERIAL BEHIND ABUTMENT SHALL BE SELECTED SOIL HAVING PROPERTIES AS C= 0 KG/SQ.CM.  $\phi > 30$  DEGREE,  $r=1800$  TO  $2000$  KG/CUM.
3. GRADE OF CONCRETE= M 30  
GRADE OF STEEL FE-500.
4. MINIMUM COVER TO ANY REINFORCEMENT SHALL BE 75 MM.
5. LAP LENGTH FOR M-30 GRADE OF CONCRETE SHALL BE:  
a. 87 X BAR DIA.  
b. AT PARTICULAR LOCATION LAPPING OF BAR SHALL NOT BE GREATER THAN 50%.
6. CLEAR COVER -

#### SCHEDULE OF RETAINING/TCE WALL

SR.NO	TYPES OF BAR	SHAPE OF (NOT TO SCALE)	HEIGHT (H) 4M		HEIGHT (H) 5M		HEIGHT (H) 6M		HEIGHT (H) 7M		HEIGHT (H) 8M		HEIGHT (H) 9M	
			DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)	DIA OF BARS (mm)	SPACING/ NO OF BARS(mm)
1	a		12	200	16	200	16	200	16	200	20	200	25	200
2	a1		12	200	16	200	16	200	16	200	20	200	20	200
3	c1		16	100	20	100	20	100	20	100	25	100	32	100
4	c2		8	300	8	300	10	300	8	300	8	300	8	200
5	d1		8	200	8	200	8	200	8	200	8	200	10	200
6	e1		10	100	16	100	16	100	16	100	20	100	20	100
7	e2		8	300	8	300	10	300	8	300	8	300	8	200
8	f		10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS	10	4 NOS
9	s1		10	300	10	300	10	300	10	300	10	300	10	300
10	s2		8	300	8	300	10	300	8	300	8	300	8	200
11	s3		10	300	10	300	10	300	10	300	10	300	10	300
12	s4		8	300	8	300	10	300	8	300	8	300	8	200
13	s5		12	200	12	200	12	200	12	200	12	200	12	200
14	s6		8	200	8	200	8	200	8	200	8	200	10	200

TABLE SHOWING VARIOUS PARAMETERS OF RCC RETAINING WALL							
SR.NO	PARAMETERS						
	HIGHT (mm)	3-4M	4-5M	5-6M	6-7M	8M	9M
1	B	3.4	4.2	5	5.9	6.8	8.1
2	b1	1.2	1.4	1.8	2.0	2.6	3.0
3	b2	1.6	2	2.2	2.6	2.9	3.6
4	t	0.6	0.8	1	1.3	1.3	1.5
5	t1	0.3	0.3	0.3	0.4	0.4	0.4
6	t2	0.6	0.8	1.1	1.1	1.3	1.4
7	L1	0.85	0.85	1.05	1.05	1.05	1.05
8	L2	0.85	0.85	0.85	0.85	1.05	1.05
9	L3	0.55	0.55	0.55	0.55	0.55	0.55
10	Df	1.5	1.5	1.5	2.0	2.0	2.0
11	maximum base pressure kN/m <sup>2</sup>	150.10	174.67	189.23	223.68	223.77	224.0

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				Consultancy Services for carrying out Feasibility Study, Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 2 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 the state of Nagaland		Original Size: A2		National Highways & Infrastructure Development Corporation Ltd		Drawing No.:HEC-AIPPL/NHIDCL/KB/GAD/S-701		Sheet : 01 OF 01		HIGHWAY ENGINEERING CONSULTANT IN ASSOCIATION WITH AGNITIO INFRASTRUCTURE PROJECTS PVT LTD	
						Path -				Scale :- NTS					
Revision no.		Details		Chk By		Plotting Scale:				Drn		Dgn. GAURAV SINGH			
				Date											
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