

NOTES:-

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. : NIRTTP/NAG–MUG/SIKRE/GAD (SHEET 1 & 2)
2. CABLES CONSISTING OF 12NOS. AND 19 NOS. OF 12.7MM DIA 7–PLY CLASS 2 UNCOATED STRESS RELIEVED LOW RELAXATION STRANDS AS PER IS:14268 SHALL BE USED FOR PRESTRESSING.
3. 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 GUAGE) TO BE ATTACHED IN CONSULTATION WITH SYSTEM MANUFACTURER.
4. SHEATHING SHALL BE CORRUGATED HDPE TYPE 90mm DIA AND CONFORM TO CL:13.4.3 OF IRC:112–2011.
5. THE JACKING FORCE IN EACH CABLE TO BE IMPARTED AT LIVE END (JACKING END) BY USING MULTISTRAND JACKS SHALL BE AS GIVEN IN THE TABLE ON SHEET–1
6. THE FOLLOWING PROPERTIES HAVE BEEN CONSIDERED IN THE DESIGN:–

(I) AREA OF 1 STRAND = 98.7MM SQ.

(II) WOBBLE COEFFICIENT K = 0.0020/M M

(III) FRICTION COEFFICIENT = 0.17/RADIANS

(IV) MODULUS OF ELASTICITY OF STEEL IN STRAND = 1.95X10⁵ Mpa.

(V) AVERAGE SLIP = 6MM. (VI) ULTIMATE TENSILE FORCE PER STRAND = 183.7 KN.
7. GROUTING OF CABLES SHALL BE CARRIED OUT AS PER GUIDELINES IN CL:13.6 OF IRC:112–2011.
8. THE LENGTH OF CABLE INDICATED IN THE TABLE OF DRG.NO. : NIRTTP/NAG–MUG/SIKRE/PSC–G/35m/02 (SHEET 1 OF 2) ARE ALONG THEIR PROFILE AND BETWEEN END ANCHORAGES.THESE LENGTHS ARE TO BE SUITABLY INCREASED TO ENABLE GRIPPING OF CABLES. EXTRA LENGTH OF STRANDS BEYOND THE ANCHORAGE SHALL BE CUT AFTER THE STRESSING. THESE SHALL BE CUT ONLY WHEN INSTRUCTION FOR GROUTING ARE ISSUED BY ENGINEER–IN– CHARGE.
9. ANY SUITABLE MULTISTRAND JACK CAPABLE OF STRESSING TO AT LEAST 10% HIGHER THAN THE REQUIRED JACKING FORCE SHALL BE USED FOR STRESSING OF CABLES.
10. END FACES OF RECESSES IN THE PSC GIRDER TO BE COATED WITH TWO COATS OF EPOXY.
11. ANCHORAGE RECESSES TO BE SEALED WITH PREPACKED NON SHRINK EPOXY MORTAR.
12. THE SPECIFIED ELONGATION IN EACH TENDON SHALL BE MODIFIED AT SITE IN CASE THE ES VALUE OF THE TENDON STEEL ACTUALLY USED AT SITE IS FOUND TO BE DIFFERENT FROM THAT ASSUMED IN DESIGN CALCULATION OF THE SPECIFIED ELONGATION. (THIS IS DONE BY MULTIPLYING THE 'SPECIFIED ELONGATION' BY THE RATIO OF ES ASSUMED IN DESIGN TO ES ACTUAL AT SITE).
13. THE WORK OF PRESTRESSING SHALL BE CARRIED OUT BY FRESSINET SYSTEM OR ANY OTHER RECOGNIZED SYSTEM AFTER CARRYING OUT NECESSARY MODIFICATION IN THE DRAWING WITH THE APPROVAL OF ENGINEER–IN–CHARGE. ALL PRESTRESSING AND GROUTING WORK BE UNDERTAKEN BY TRAINED PERSONNEL ONLY. A REPRESENTATIVE OF THE SUPPLIER OF THE PRESTRESSING SYSTEM SHALL BE PRESENT DURING ALL TENSIONING AND GROUTING OPERATIONS AND SHALL ENSURE, MONITOR AND CERTIFY THEIR CORRECTNESS.
14. ALL CABLES SHALL BE LAID IN SMOOTH PROFILE THROUGH THE GIVEN COORDINATES. FIRM SUPPORTS SHALL BE INSTALLED AT EVERY METER.
15. INITIAL SLACK IN CABLES SHALL FIRST BE REMOVED BY APPLYING A SMALL INITIAL TENSION. THE INITIAL TENSION REQUIRED TO REMOVE SLACK SHALL BE TAKEN AS THE STARTING POINT OF MEASURING THE ELONGATION AND CORRECTION SHALL BE APPLIED AS PER CLAUSE 12.2.1.3 OF IS:1343–1980
16. ELONGATION OF CABLES SHALL BE RECHECKED AFTER 24 HOURS OF LOCKING OF WEDGES TO OBSERVE SLOW SLIPPAGE IF ANY AND THE MATTER SHALL BE REPORTED TO ENGINEER–IN– CHARGE
17. STRANDS SHALL NOT BE CUT WITH GAS FLAME.

SPECIAL NOTES FOR PRESTRESSING:-

- a. FOR A PROVEN AND EFFECTIVE PRESTRESSING SYSTEM THE REQUIRED EXTENSIONS SHOULD NORMALLY BE ACHIEVED AT THE SPECIFIED FORCES AT STRESSING ENDS. HOWEVER, IN CASE THE REQUIRED EXTENSIONS ARE NOT ACHIEVED AT THE SPECIFIED JACKING FORCES THEN THE FOLLOWING MEASURES MAY BE TAKEN:

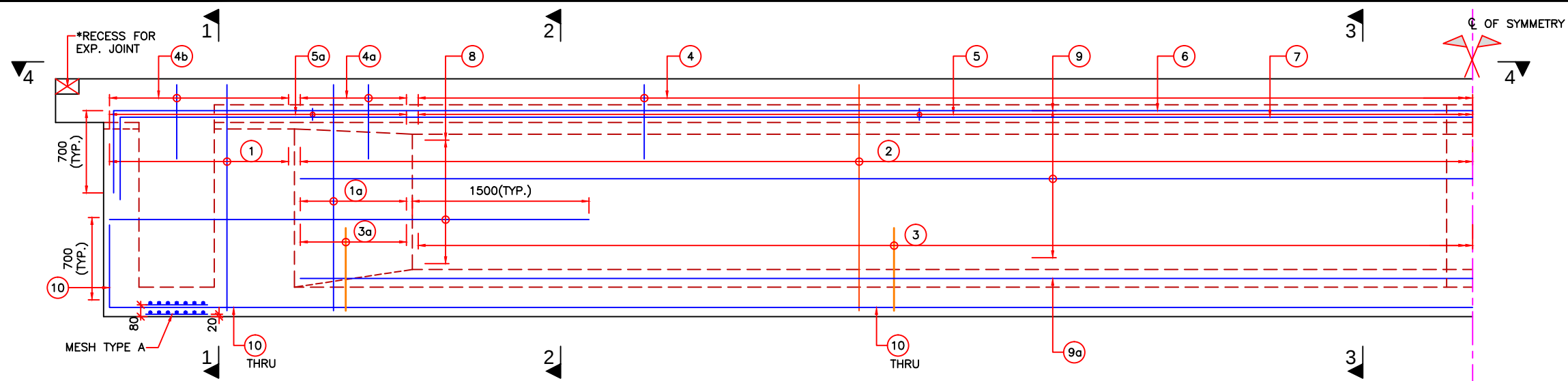
i) STRESSING SHOULD BE CONTINUED (WHERE POSSIBLE) TILL THE REQUIRED EXTENSIONS ARE OBTAINED SUBJECT TO THAT THE JACKING FORCES ARE NOT EXCEEDING 78.3% OF THE ULTIMATE TENSILE FORCE VALUES OF THE TENDONS.

ii) SHOULD THE REQUIRED EXTENSIONS ARE OBTAINED AT JACKING END FORCES LOWER THAN THE SPECIFIED VALUES THEN THE STRESSING SHOULD BE CONTINUED TILL THE SPECIFIED STRESSING–END FORCES ARE REACHED, PROVIDED THE ADDITIONAL EXTENSIONS ARE NOT MORE THAN ABOUT 5% OF THE SPECIFIED EXTENSIONS.

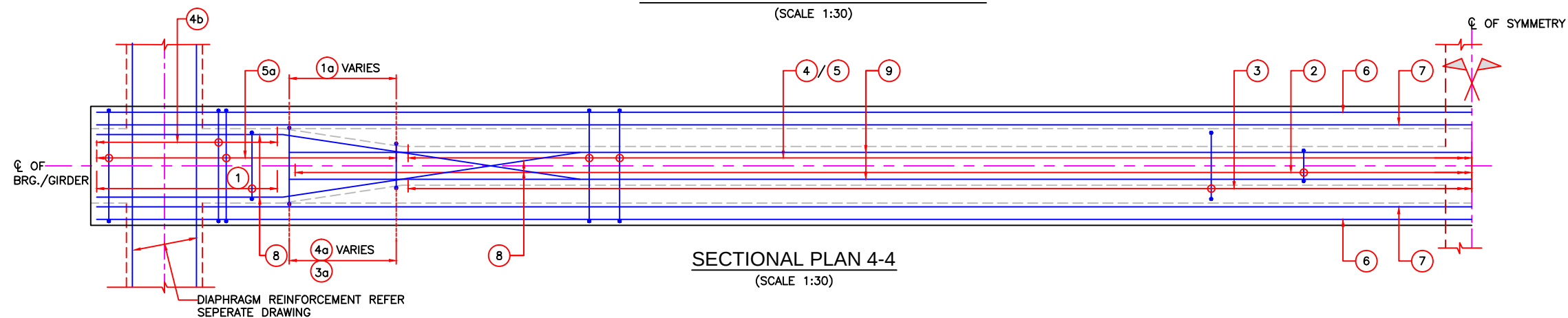
iii) TENDONS SATISFYING THESE PROVISIONS SHOULD BE LOCKED (I.E. ANCHORED).

iv) IF THE STRESSING END FORCES IN TENDONS ARE STILL LOWER THAN THE SPECIFIED VALUES DESPITE THE 5% INCREASE IN THE SPECIFIED EXTENSIONS, THEN THE PARTICULARS OF SUCH TENDONS SHOULD BE REPORTED TO THE DESIGNER FOR FURTHER INSTRUCTIONS ('LOCKING' BUT NOT 'GROUTING' THESE TENDONS TILL RECEIPT OF INSTRUCTIONS).
- b. ALL TENDONS WHICH SATISFY THE PROVISIONS OF ITEMS (A) (EXCEPT IV) ABOVE SHOULD BE GROUTED IMMEDIATELY, TAKING CARE THAT THE TENDONS NOT YET STRESSED ARE NOT ACCIDENTALLY BLOCKED DUE TO GROUT LEAK.
- c. THE PRESTRESSING JACKS AND THEIR GAUGES SHOULD BE REGULARLY CALIBRATED FOR CORRECTNESS AND REMOVAL OF ZERO–ERROR.
- d. 6MM SLIP AT ANCHORAGE IS CONSIDERED IN DESIGN.

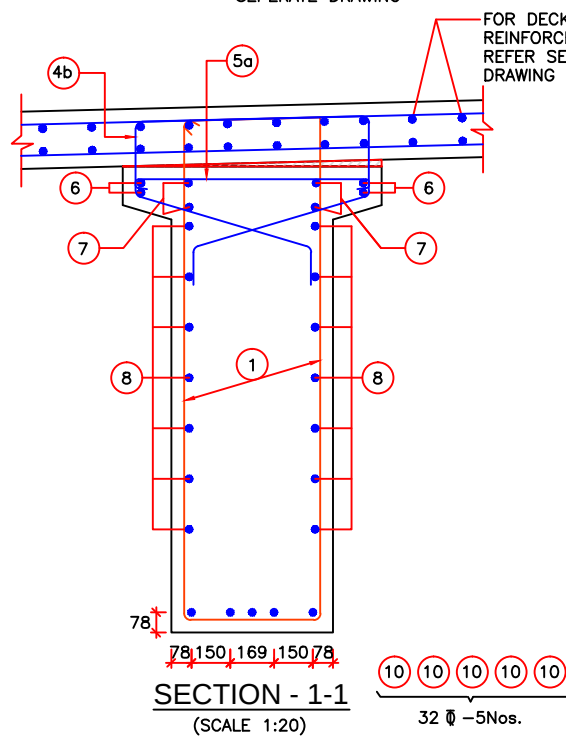
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DETAILS OF CABLE PROFILE PSC FOR PRECAST PSC GIRDER EFFECTIVE SPAN : 35.00m	Scale:	Date: Nov.2017
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal		Designed By	V.CHAUDHARY		As Shown	(SHEET 2 OF 2)
						Checked By	P.K.KHAN			
						Approved By	B.N.SINGH			



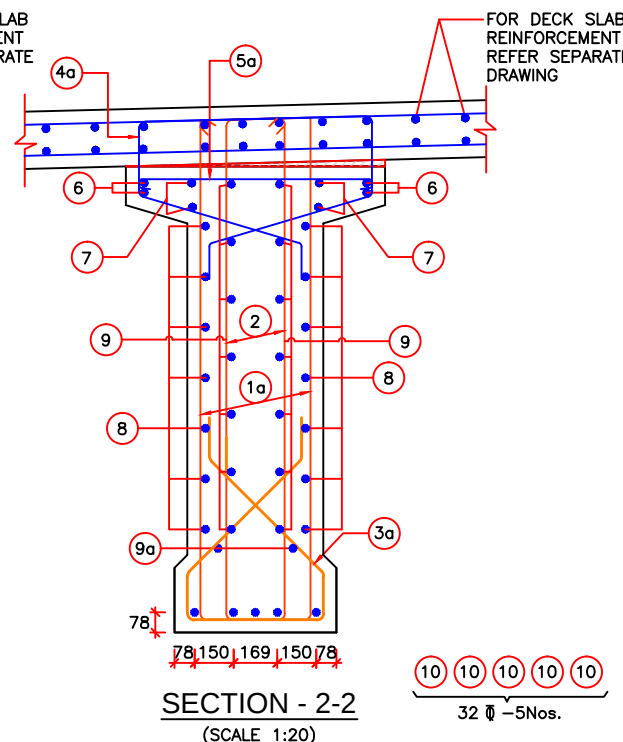
SECTIONAL ELEVATION OF GIRDER
(SCALE 1:30)



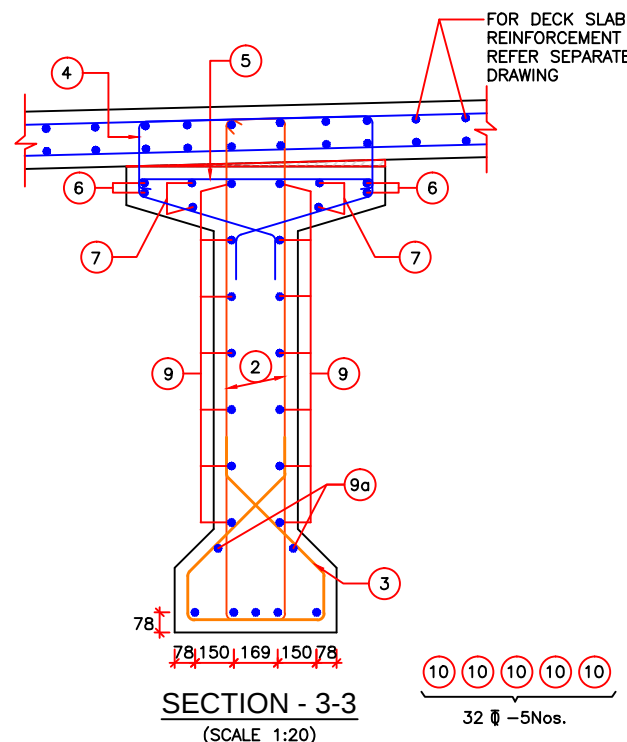
SECTIONAL PLAN 4-4
(SCALE 1:30)



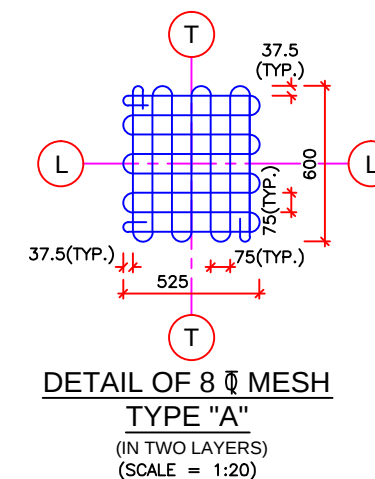
SECTION - 1-1
(SCALE 1:20)



SECTION - 2-2
(SCALE 1:20)



SECTION - 3-3
(SCALE 1:20)



DETAIL OF 8# MESH
TYPE "A"
(IN TWO LAYERS)
(SCALE = 1:20)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD. BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008. HAVING MINIMUM ELONGATION OF 16% AS PER TABLE:18.1 OF IRC:112-2011.
- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOWS WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)

$$LAP\ LENGTH\ l_s = \alpha \cdot l_{bnet}$$

$$\alpha = 1.0\ FOR\ p \leq 25\%$$

$$\alpha = 1.15\ FOR\ 25\% < p \leq 33\%$$

$$\alpha = 1.4\ FOR\ 33\% < p \leq 50\%$$
(IRC:112-2011) (CLAUSE:15.2.3.3)

$$DEVELOPMENT\ LENGTH\ (l_{bnet})$$

$$l_{bnet} = \alpha \cdot l_b\ (\alpha = 1.0)$$

$$l_b = k \phi$$

$$k = 40\ FOR\ M30\ (Fe500D)$$

$$k = 36\ FOR\ M35\ (Fe500D)$$

$$k = 34\ FOR\ M40\ (Fe500D)$$
FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.32)

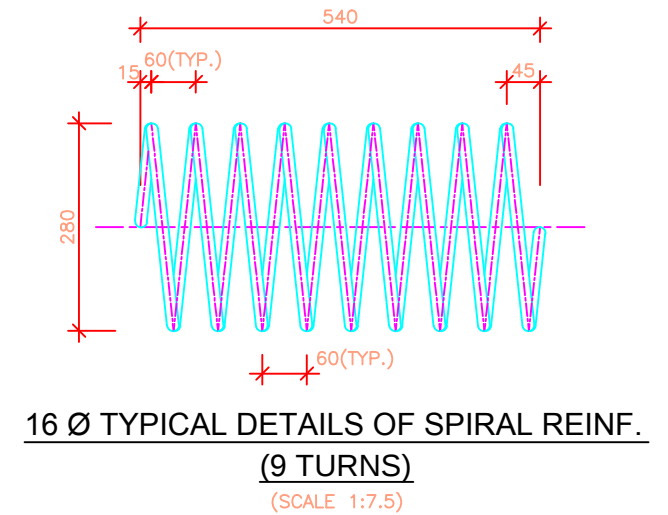
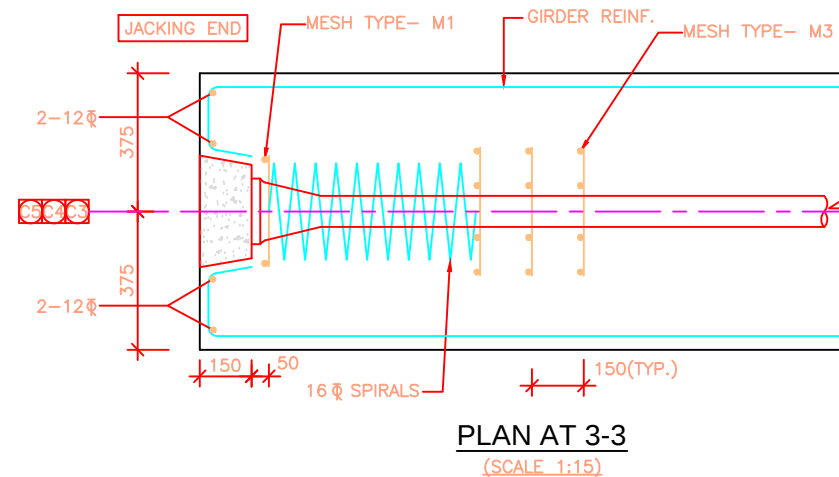
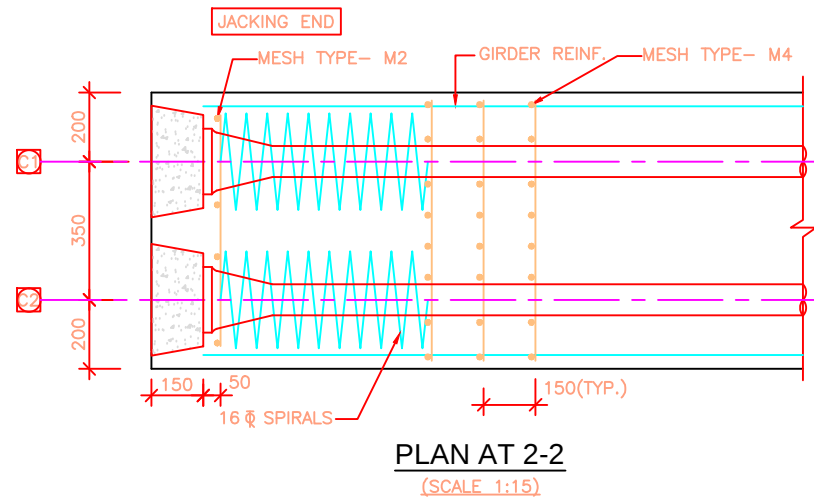
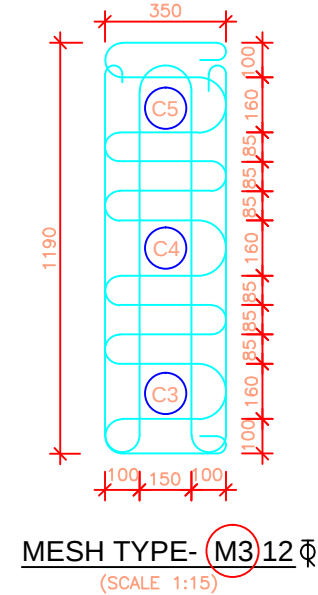
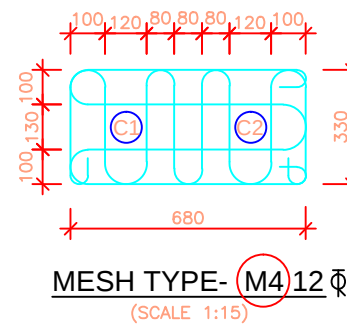
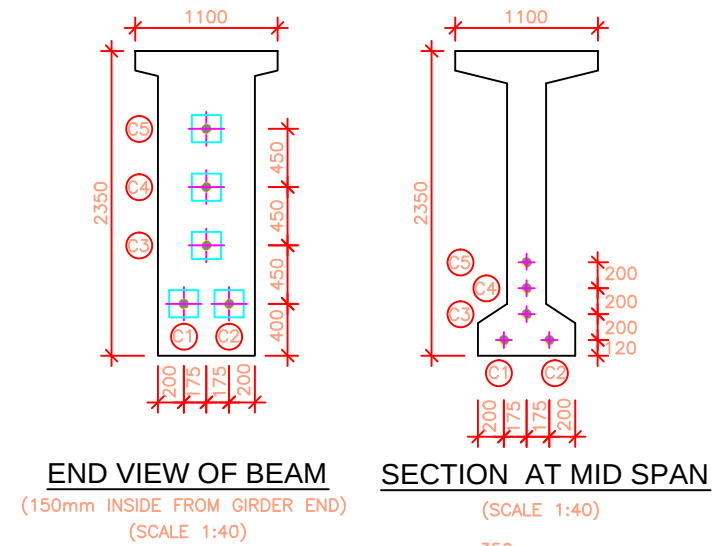
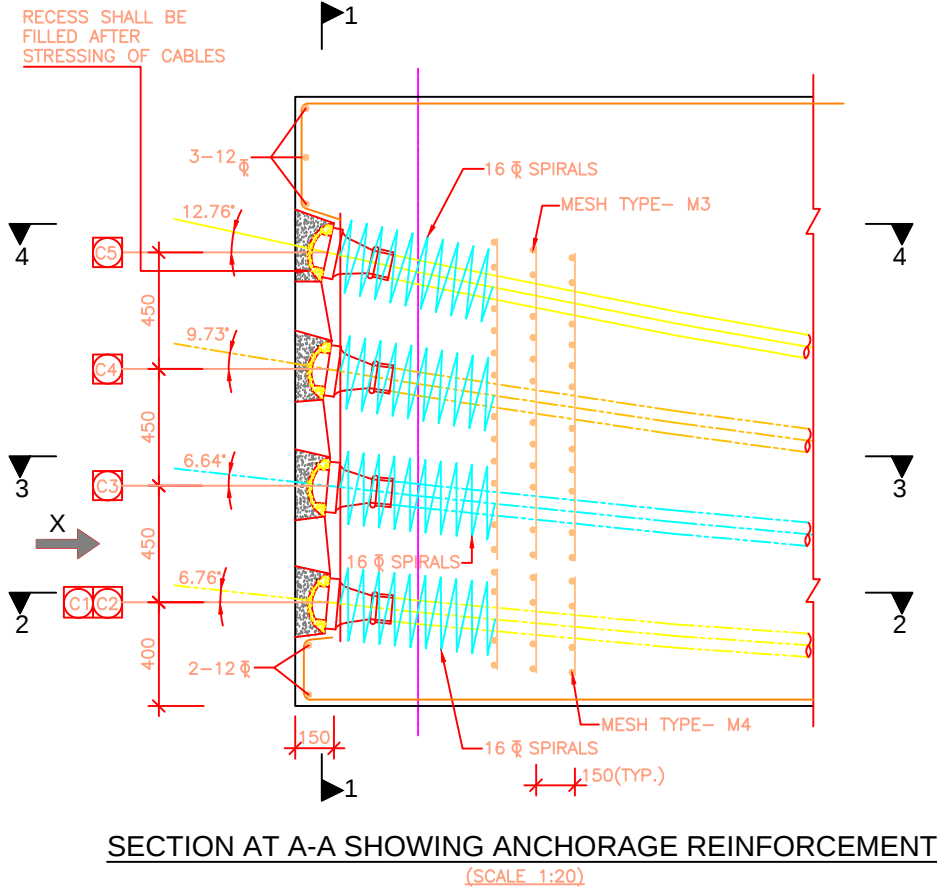
REFERENCE DRAWINGS:-

- DIMENSION DETAILS OF PRECAST PSC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/01 (SHEET-1 & 2)
- DETAIL OF CABLE PROFILE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/02 (SHEET-1 & 2)
- RCC DETAIL OF END BLOCK & ANCHORAGE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/04
- REINFORCEMENT DETAIL OF END CROSS GIRDER
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/05
- REINFORCEMENT DETAIL OF RCC DECK SLAB
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/06 (SHEET-1 & 2)
- DETAILS OF LOAD AND FORCES FOR POT/PTE BEARINGS
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/07

SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12# @125 C/C		STIRRUP
1a	2L-12# @125 C/C		STIRRUP (VARIES)
2	2L-12# @150 C/C		STIRRUP
3	10# @150 C/C		
3a	10# @125 C/C		(VARIES)
4	10# @150 C/C		
4a	10# @125 C/C		(VARIES)
4b	10# @125 C/C		
5	10# @150 C/C		LINKS
5a	10# @125 C/C		LINKS
6	12# -4 Nos.		
7	12# -4 Nos.		
8	12# -11 Nos.		ON EACH FACE
9	12# -11 Nos.		ON EACH FACE
9a	12# -1 Nos.		ON EACH FACE
10	12# -5 Nos.		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHR	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nabuse - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF LONGITUDINAL PRECAST PSC GIRDER (EFFECTIVE SPAN : 35.00m)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/HUGDI/PSC-G/35m/03		



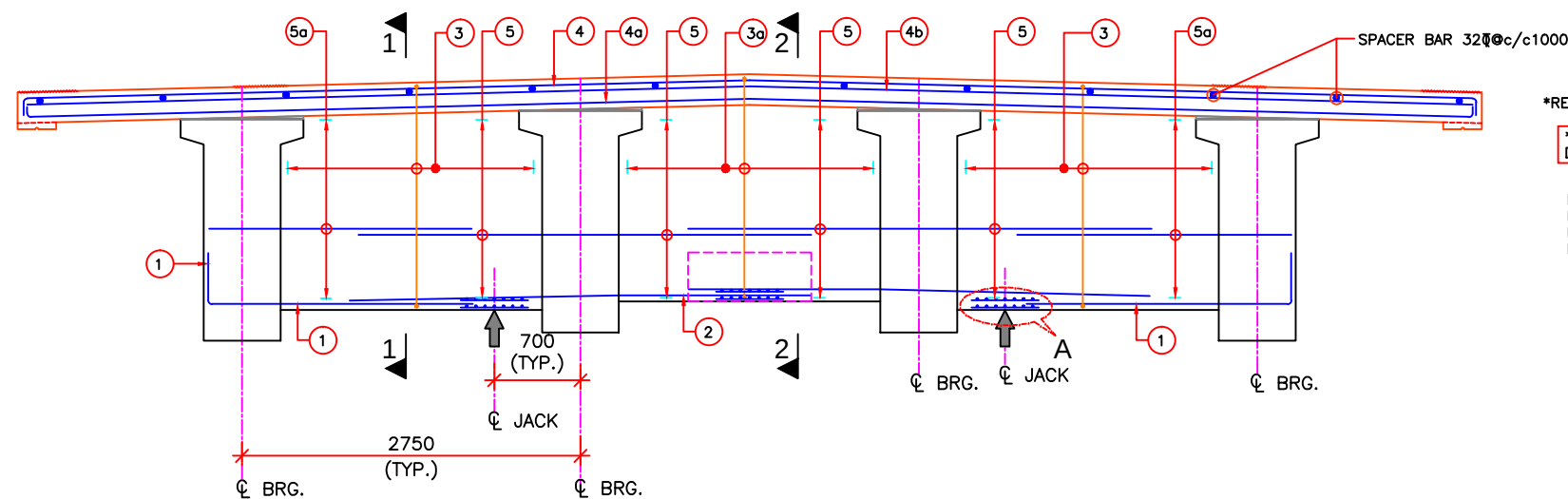
NOTES:-

1. ALL DIMENSIONS ARE IN mm, UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED NO DIMENSIONS SHALL BE SCALED
2. GRADE OF CONCRETE FOR GIRDER SHALL BE M50
3. CABLES CONSISTING OF 12.7mm. DIA. 7 PLY CLASS-II LOW RELAXATION STRESS RELIEVED STRANDS, CONFORMING TO IS:14268-1995. SHALL BE USED FOR PRESTRESSING.
4. UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
5. THE WORK OF PRESTRESSING SHALL BE CARRIED OUT BY ANY RECOGNIZED SYSTEM AFTER CARRYING OUT NECESSARY MODIFICATION IN THE DRAWING WITH THE APPROVAL OF ENGINEER-IN-CHARGE. ALL PRESTRESSING AND GROUTING WORK BE UNDERTAKEN BY TRAINED PERSONNEL ONLY. A REPRESENTATIVE OF THE SUPPLIER OF THE PRESTRESSING SYSTEM SHALL BE PRESENT DURING ALL TENSIONING AND GROUTING OPERATIONS AND SHALL ENSURE, MONITOR AND CERTIFY THEIR CORRECTNESS.
6. ANCHORAGE RECESSES TO BE SEALED WITH PREPACKAGED NON SHRINK MORTAR. END FACES OF GIRDER TO BE SEALED WITH TWO COATS OF EPOXY.
7. REINFORCEMENT DETAILS BEHIND THE ANCHORAGES ARE INDICATIVE ONLY. THIS WILL BE MODIFIED AND APPROVED BY SYSTEM SUPPLIER.

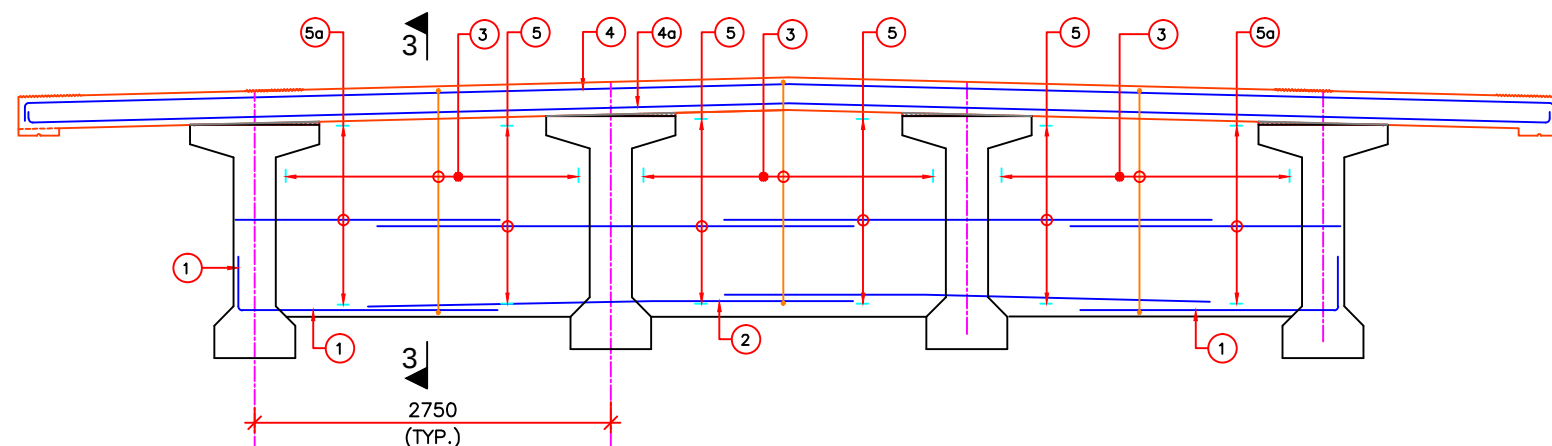
REFERENCE DRAWINGS:-

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-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/01 (SHEET-1 & 2)
2. DETAIL OF CABLE PROFILE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/02 (SHEET-1 & 2)
3. REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/03
4. REINFORCEMENT DETAIL OF END CROSS GIRDER
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/05
5. REINFORCEMENT DETAIL OF RCC DECK SLAB
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/06 (SHEET-1 & 2)
6. DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/07

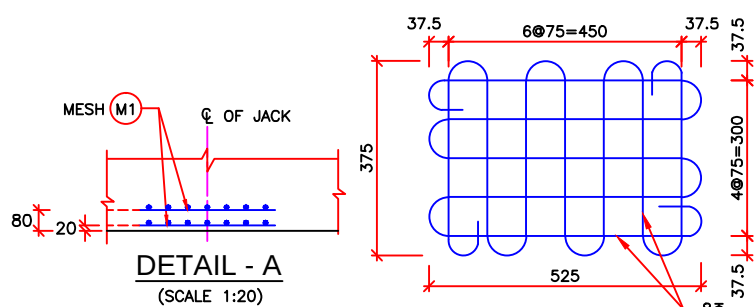
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHR	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	DETAILS OF END BLOCK AND ANCHORAGE FOR PRECAST PSC GIRDER (EFFECTIVE SPAN : 35.00m)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/HUGDI/PSC-G/35m/04		



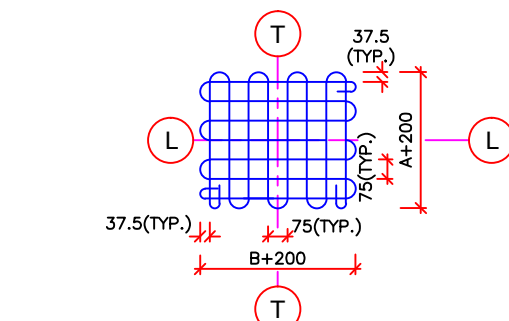
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



SECTIONAL ELEVATION OF INTERMEDIATE DIAPHRAGM
(SCALE 1:40)



DETAIL OF 8# MESH (M1)
REINF. FOR JACK LOCATION
(SCALE 1:10)



DETAIL OF 8# MESH (M2) REINF.
FOR PIN / METALLIC GUIDED BEARING
WHERE A & B ARE SIZE OF BEARING
(SCALE 1:20)

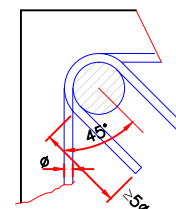
*RECESS FOR EXP. JOINT
*AS PER SUPPLIER
DETAILS

DECK SLAB
REINFORCEMENT
REFER SEPARATE
DRAWING

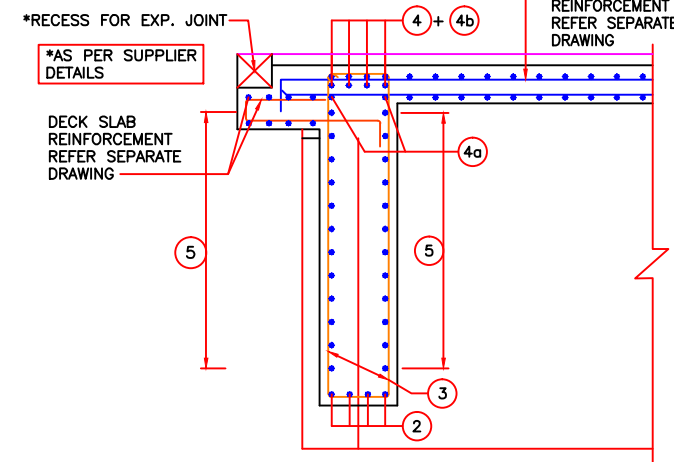
*RECESS FOR EXP. JOINT
*AS PER SUPPLIER
DETAILS

DECK SLAB
REINFORCEMENT
REFER SEPARATE
DRAWING

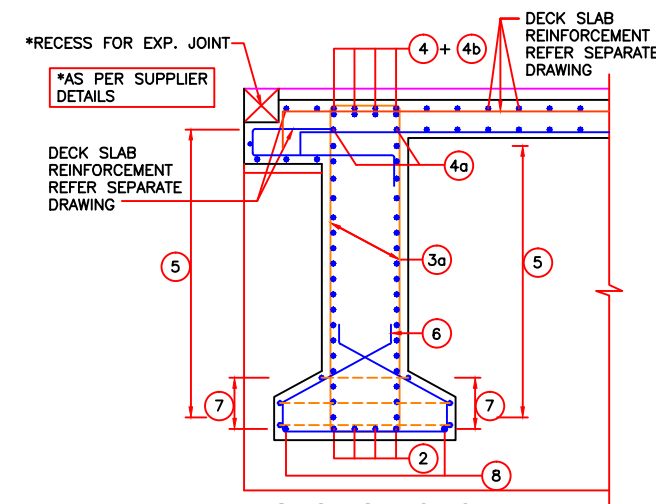
DECK SLAB REINFORCEMENT
REFER SEPARATE DRAWING



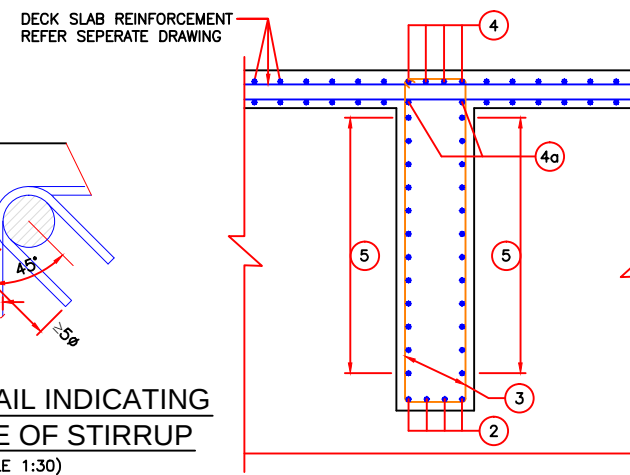
TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:30)



SECTION 1 - 1
(SCALE 1:30)



SECTION 2 - 2
(SCALE 1:30)



SECTION 3 - 3
(SCALE 1:30)

NOTES:-

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- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = \alpha \cdot l_{bnet}$
 $\alpha = 1.0$ FOR $p \leq 25\%$
 $\alpha = 1.15$ FOR $25\% \leq p \leq 33\%$
 $\alpha = 1.4$ FOR $33\% \leq p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha \cdot l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.33)

REFERENCE DRAWINGS:-

- DIMENSION DETAILS OF PRECAST PSC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/01 (SHEET-1 & 2)
- DETAIL OF CABLE PROFILE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/02 (SHEET-1 & 2)
- REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/03
- RCC DETAIL OF END BLOCK & ANCHORAGE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/04
- REINFORCEMENT DETAIL OF RCC DECK SLAB
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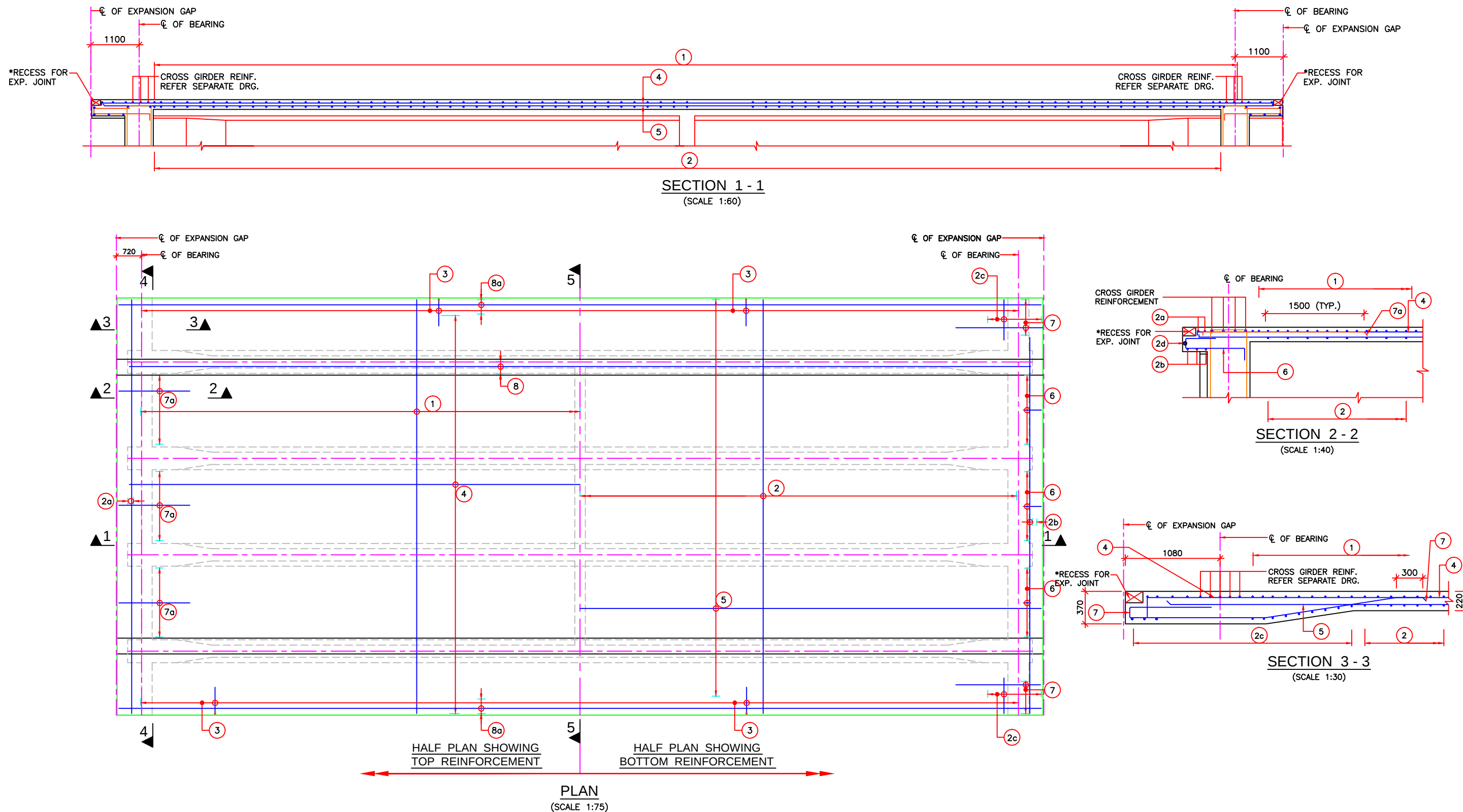
REINFORCEMENT SCHEDULE FOR END DIAPHRAGM

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	25# -4 Nos.		
2	25# -4 Nos.		
3	25# -2L @125 c/c		
3a	25# -2L @125 c/c		
4	25# -4 Nos.		
4a	16# -2 Nos.		
4b	25# -4 Nos.		
5	25# -14 Nos.		(ON EACH FACE)
5a	16# -14 Nos.		(ON EACH FACE)
6	12# -7 Nos.		
7	12# -3 Nos.		
8	10# -2 Nos.		

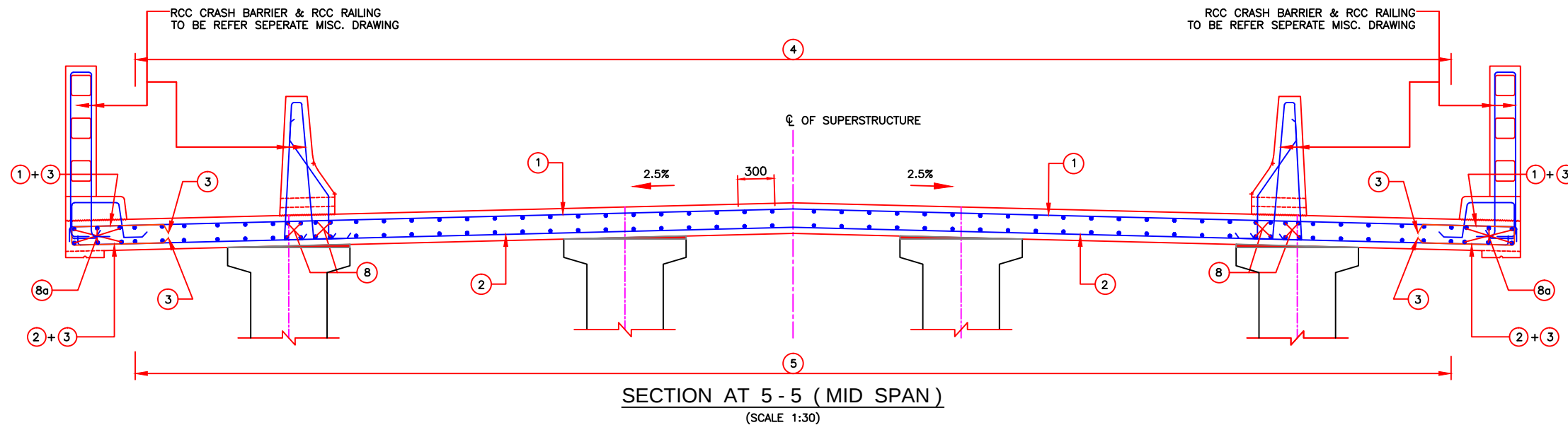
REINFORCEMENT SCHEDULE FOR INTERMEDIATE DIAPHRAGM

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	32# -4 Nos.		
2	32# -4 Nos.		
3	12# -2L @150 c/c		
4	16# -4 Nos.		
4a	12# -2 Nos.		
5	12# -12 Nos.		(ON EACH FACE)
5a	12# -12 Nos.		(ON EACH FACE)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nauaise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF END CROSS GIRDER (EFFECTIVE SPAN : 35.00m)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.: NIRTP/NAG-MUG/HUGDI/PSC-G/35m/05		



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M. JOHRI	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB (EFFECTIVE SPAN : 35.00m)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		(SHEET 1 OF 2)
			Approved By	B.N.SINGH	NIRTTP/NAG-MUG/HUGDI/PSC-G/35m/06		

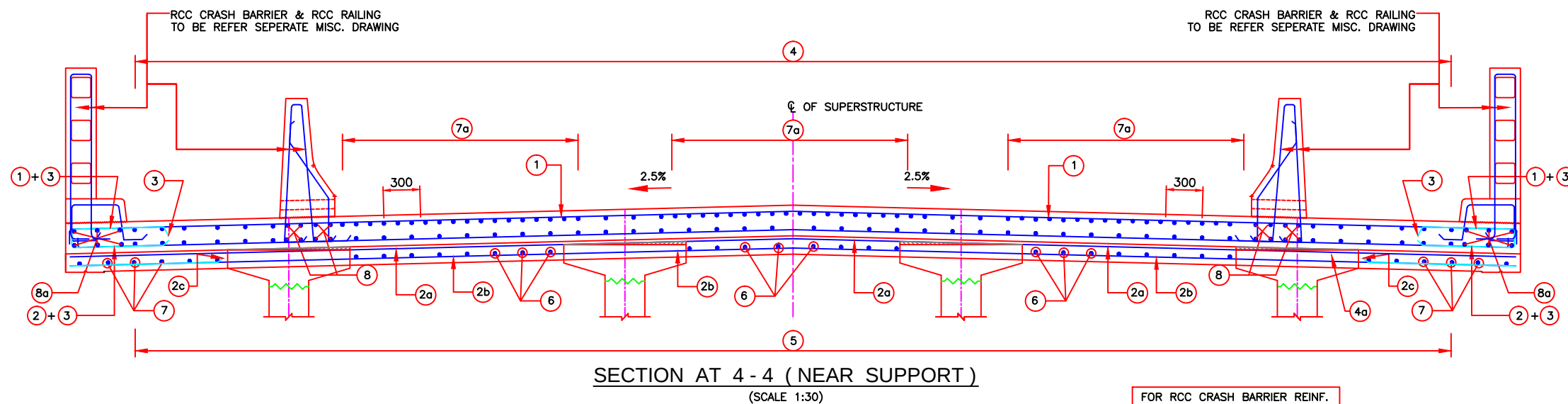


NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786. CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH (l_s) = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 DEVELOPMENT LENGTH (l_{bnet})
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.25)
 $(\frac{1.25}{1.25})$
- RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

- DIMENSION DETAILS OF PRECAST PSC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/01 (SHEET-1&2)
- DETAIL OF CABLE PROFILE
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/02 (SHEET-1&2)
- REINFORCEMENT DETAIL OF LONGITUDINAL GIRDER
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/03
- RCC DETAIL OF END BLOCK & ANCHORAGE
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/04
- REINFORCEMENT DETAIL OF END CROSS GIRDER
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/05
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS
 -NIRTP/NAG-MUG/HUGDI/PSC-G/35m/07



REINFORCEMENT SCHEDULE

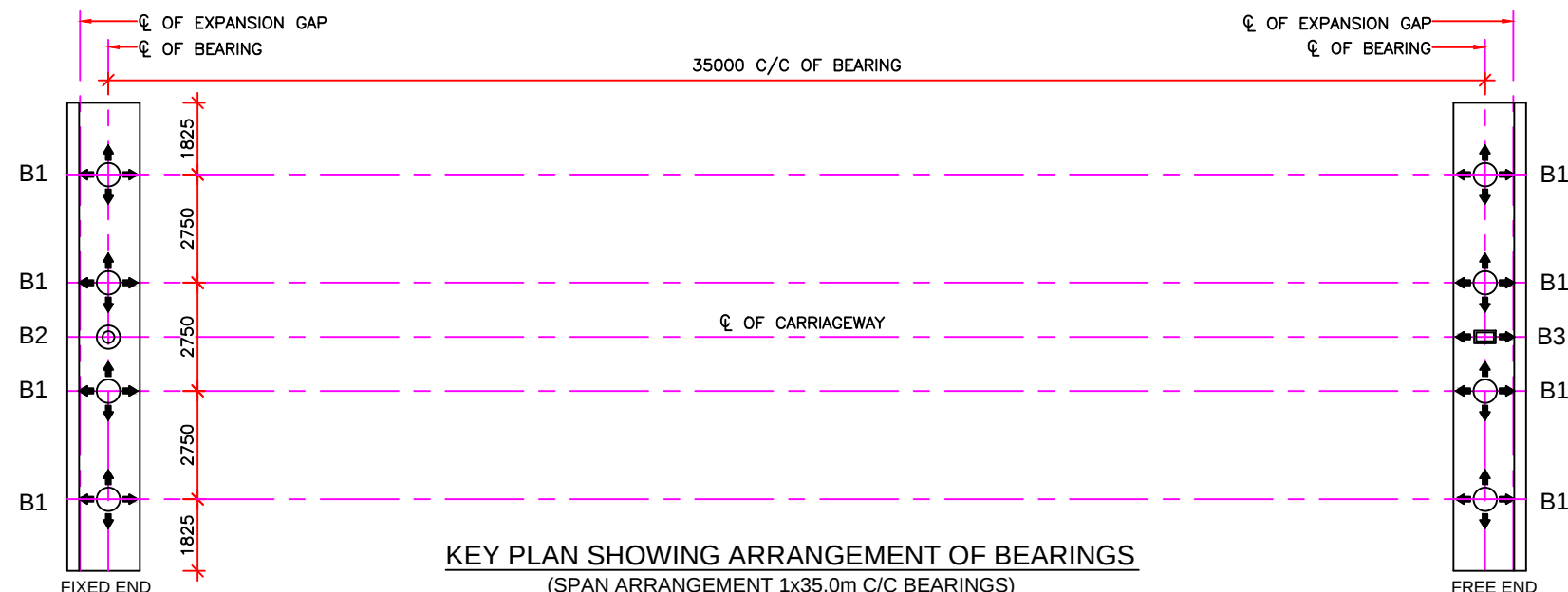
BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	12# @100 C/C		
2	12# @100 C/C		
2a	12# @100 C/C		
2b	12# @100 C/C		
2c	12# @100 C/C		
2d	12# -1 Nos.		
3	12# @100 C/C		
4	10# @200 C/C		
5	10# @200 C/C		
6	12# @200 C/C		
7	12# @200 C/C		
7a	12# @200 C/C		
8	16# -8 Nos.		(ON EACH SIDE)
8a	16# -6 Nos.		(ON EACH SIDE)

FOR RCC CRASH BARRIER REINF.
REFER MISCELLANEOUS DRG.

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB (EFFECTIVE SPAN : 35.00m)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		(SHEET 2 OF 2)
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/HUGDI/PSC-G/35m/06		

LEGEND:-

B1		FREE SLIDING POT-CUM-PTFE BEARING
B2		PIN BEARING
B3		METALLIC GUIDED BEARING



KEY PLAN SHOWING ARRANGEMENT OF BEARINGS
(SPAN ARRANGEMENT 1x35.0m C/C BEARINGS)

NOTES:-

1. MATERIAL SPECIFICATIONS, DESIGN OF BEARINGS, ACCEPTANCE CRITERIA AND INSTALLATION MORTH SHALL BE IN ACCORDANCE WITH IRC:83 (PART III)-2002 AND MOSRTH SPECIFICATIONS (FOURTH REVISION).
2. BEARINGS SHALL BE OBTAINED FROM MANUFACTURERS APPROVED BY MORTH.
3. INSTALLATION OF BEARINGS SHALL BE UNDER THE SUPERVISION OF REPRESENTATIVE OF THE MANUFACTURER.
4. FOR DESIGN LOADS AND ROTATIONS REFER TABLE IN THE DRAWING.
5. FOR BEARINGS, DETAILED SHOP DRAWINGS SHALL BE PREPARED BY THE SUPPLIER AND BE DULY APPROVED BEFORE MANUFACTURE AND INSTALLATION.
6. THE GROUT/BEDDING MORTAR SHALL BE HIGH STRENGTH FREE FLOWING NON SHRINK GROUT (80 MPa STRENGTH).
7. ALL BEARING SHALL BE PLACED IN TRULY HORIZONTAL PLANE ONLY.
8. FOR DESIGN OF POT BEARINGS, THE DESIGN HORIZONTAL FORCE SHALL, IN NO CASE BE LESS THAN 10% AND GREATER THAN 25% OF THE DESIGN VERTICAL LOAD.
9. THE CONTRACTOR AND SUPPLIER OF BEARINGS SHALL BE FURNISH A MINIMUM TROUBLE FREE WARRANTY OF 10 YEARS AFTER OPENING OF THE BRIDGE.
10. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH: DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
-NIRTP/NAG-MUG/HUGDI/PSC-G/35m/01 (SHEET-1 & 2)

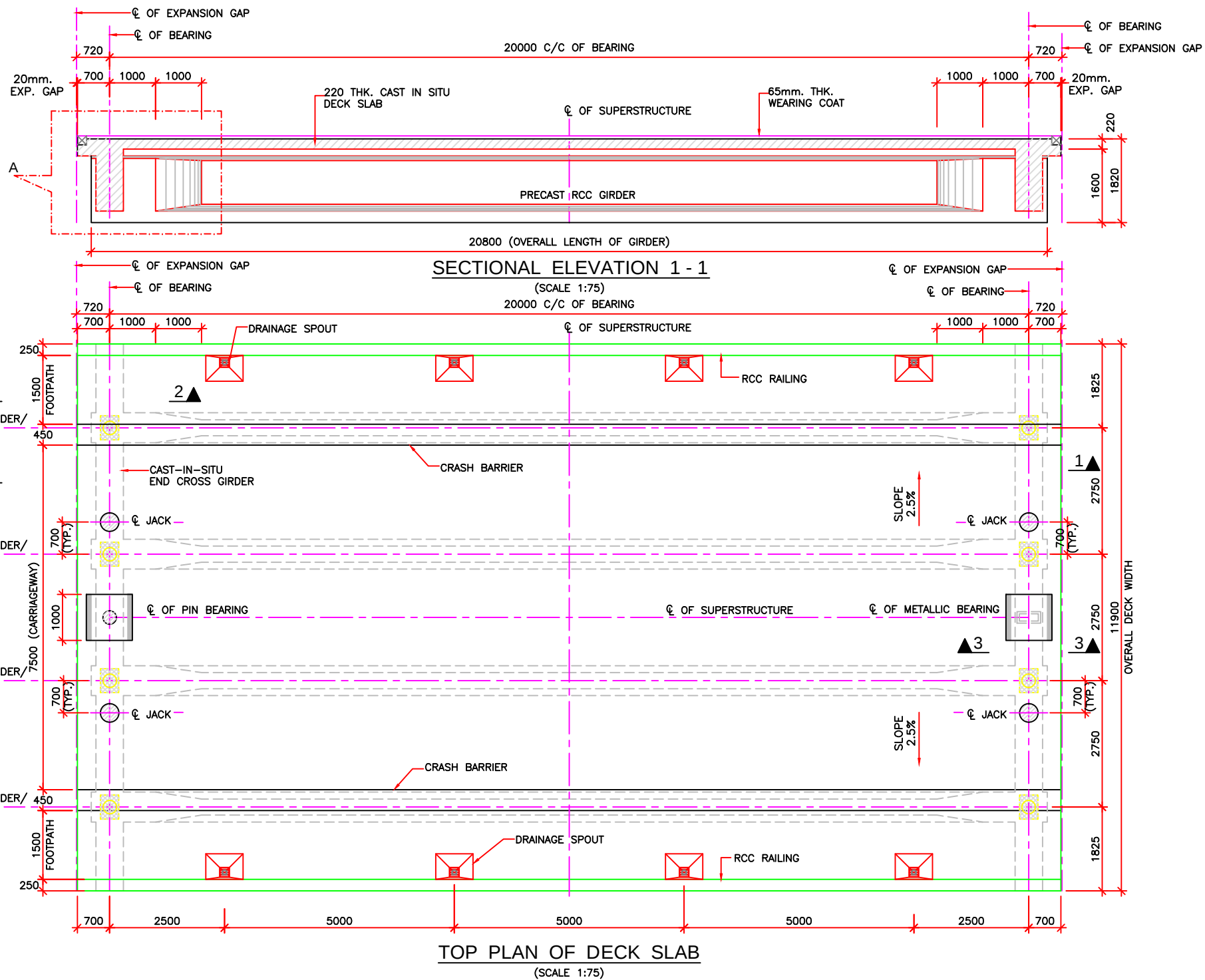
GENERAL DATA:

1. STRUCTURE IS LOCATED IN SEISMIC ZONE : V
2. GRADE OF CONCRETE
ABUTMENT CAP. M-30
PEDESTAL M-40

TABLE SHOWING DATA FOR DESIGN OF BEARINGS

SL. No.	BEARING TYPE	LOAD CONDITION	LOADS, FORCES, MOVEMENTS AND ROTATION DATA										BEARING (Nos.) PER SPAN
			VERTICAL LOAD (kN)		HORIZONTAL FORCE (kN)				ROTATION (RAD)		MOVEMENT (mm)		
			CASE	MAGNITUDE	LONGITUDINAL		TRANSVERSE		CASE	MAGNITUDE	LONGITUDINAL	TRANSVERSE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	 FREE POT -CUM PTFE	NORMAL	MAXIMUM (WITH LIVE LOAD)	2070	COEXISTING	207	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	8
			MINIMUM (WITH LIVE LOAD)	1025	COEXISTING	103	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	844	COEXISTING	84	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	1353	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
			MINIMUM (WITH LIVE LOAD)	980	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	935	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	1353	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
			MINIMUM (WITH LIVE LOAD)	980	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	935	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	4.70	
2.	 PIN BEARING	NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	390	COEXISTING	—	COEXISTING	0.004	—	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	292	COEXISTING	—	COEXISTING	0.004	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	285	COEXISTING	—	COEXISTING	0.004	—	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	4245	COEXISTING	678	COEXISTING	0.004	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	4245	COEXISTING	635	COEXISTING	0.004	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	4209	COEXISTING	631	COEXISTING	0.004	—	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	1299	COEXISTING	2260	COEXISTING	0.004	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	1299	COEXISTING	2118	COEXISTING	0.004	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	1299	COEXISTING	1413	COEXISTING	0.004	—	—	
3.	 METALLIC GUIDE BEARING	NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.004	−26.3/25.7	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	678	COEXISTING	0.004	−26.3/25.7	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	635	COEXISTING	0.004	−26.3/25.7	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	631	COEXISTING	0.004	−26.3/25.7	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	2260	COEXISTING	0.004	−26.3/25.7	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	2118	COEXISTING	0.004	−26.3/25.7	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	1413	COEXISTING	0.004	−26.3/25.7	—	

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHRI	DRAWING TITLE: DETAILS OF LOADS AND FORCES FOR POT/PTFE BEARINGS (EFFECTIVE SPAN : 35.00m)	Scale:	Date: Nov.2017
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	 In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By		V.CHAUDHARY		As Shown	
					Checked By		P.K.KHAN			
					Approved By		B.N.SINGH			
					Drawing No.: NIRTP/NAG-MUG/HUGDI/PSC-G/35m/07					



NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
- (i) THE BRIDGE IS TO BE DESIGNED FOR ONE LANE OF IRC CLASS 70R OR 2 LANES OF IRC CLASS A LOADING WITH FOOTPATH WHICHEVER GOVERNS.
(ii) THIS BRIDGE ALSO TO BE DESIGNED IRC CLASS SV LOADING: SPECIAL MULTI AXLE HYDRAULIC TRAILER VEHICLE (PRIME MOVER WITH 20 AXLE TRAILER-GVW=385 TONES)
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES AS FOLLOWS :-
PRECAST RCC GIRDER + RCC CAST IN SITU DECK SLAB-35 MPa
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786. CLEAR COVER TO OUTER MOST STEEL SHALL BE AS UNDER:-
FOR SUPER STRUCTURE-40mm.
- 65mm. THK. WEARING COURSE COMPRISING OF 40mm THK. ASPHALTIC CONCRETE OVER LAID WITH 25mm THK. MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORTH SPECIFICATIONS.
- FOR LIFTING OF THE SUPERSTRUCTURE 2Nos. OF FREYSSINET JACKS OF CAPACITY 135t EACH MAY BE REQUIRED AT EACH END. THE LOCATION OF JACKS FOR LIFTING OF THE SUPERSTRUCTURES TO REPLACE BEARINGS ETC. IS SHOWN THUS THIS SHALL BE DISTINCTLY ETCHED FOR EASY IDENTIFICATION ON THE ABUTMENT CAPS
- DURING THE LIFTING OPERATION OF SUPERSTRUCTURE ALL THE JACKS PLACED UNDER THE END DIAPHRAGM IN LINE WITH THE BEARINGS SHALL BE OPERATED SIMULTANEOUSLY USING SINGLE OPERATING CONSOLE, GROUPING THE PUMP AND CONTROL SYSTEM SO AS TO ENSURE THAT THE REACTIONS ON ALL THE JACKS ARE EQUAL AT ALL TIMES.
- PRECAST GIRDERS SHALL BE CAST IN ONE CONCRETING OPERATION IN CASTING YARD WITHOUT ANY CONSTRUCTION JOINT.
- EACH PRECAST GIRDER WILL BE LIFTED BY USING LIFTING STRANDS AT EITHER END. DURING LIFTING, GIRDER SHALL BE KEPT PLUMB AND UPRIGHT SELF WEIGHT OF GIRDER IS 485kN.

AGE OF GIRDER (IN DAYS)	ACTIVITY	STRENGTH OF CONC. (IN MPa)
0	CASTING OF LONGITUDINAL GIRDER AT CASTING YARD WITH PORTION OF DIAPHRAGM	-
14 to 28	POSITION OF LONGITUDINAL GIRDER ON TEMPORARY BRGS. AND HOLD THEM IN POSITION BY LATERAL BRACING. REINF. OF DECK SLAB & END DIAPHRAGM WILL BE FIXED IN POSITION	30
28	CASTING OF DECK SLAB ALONG WITH CROSS GIRDER	35
28 to 42	AVERAGE AGE OF GIRDER WHEN COMPOSITE ACTION TAKES PLACE	35
42 to 56	FIXING THE CRASH BARRIER AND LAYING OF WEARING COAT	35
56	AVERAGE AGE OF GIRDER WHEN SILD & CWLL ON IT	35

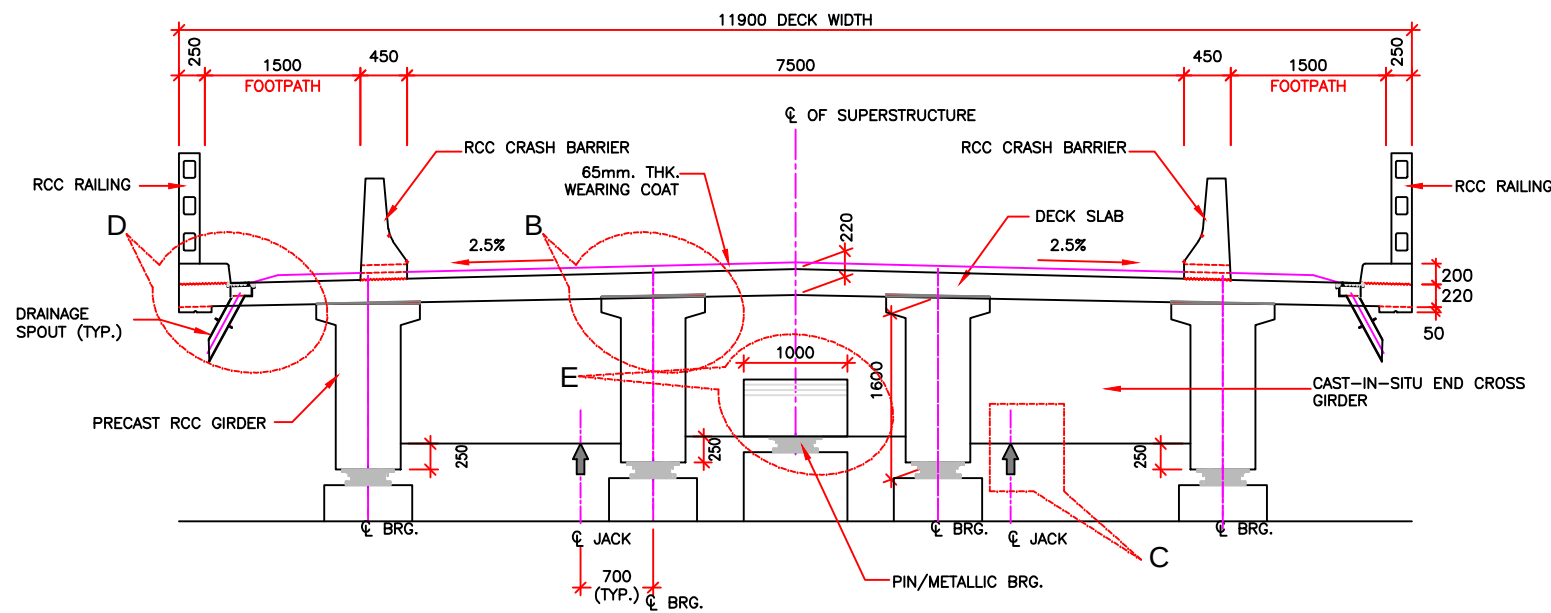
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/HUGDI/RCC-G/20m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/HUGDI/RCC-G/20m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/HUGDI/RCC-G/20m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/HUGDI/RCC-G/20m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTE BEARINGS:
-NIRTP/NAG-MUG/HUGDI/RCC-G/20m/05

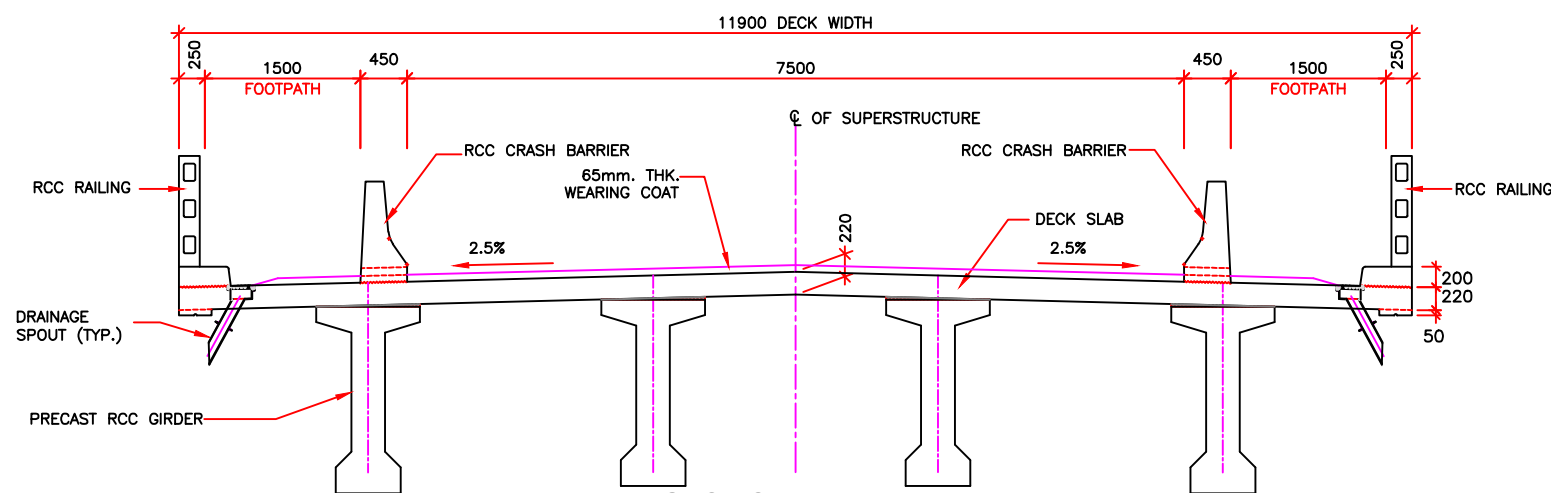
LEGEND:-

- CAST-IN-SITU PORTION
- JACK LOCATION IN PLAN
- JACK LOCATION IN ELEVATION
- BEARING LOCATION

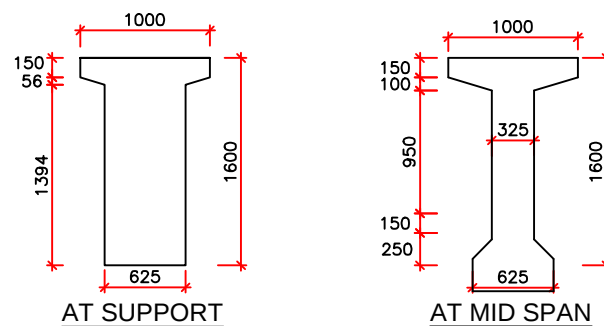
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date: Nov..2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Kempthor	V.CHAUDHARY	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 20.00m	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	P.K.KHAN	Drawing No.:		(SHEET 1 OF 2)
			Checked By	B.N.SINGH	NIRTP/NAG-MUG/HUGDI/RCC-G/20m/01		
			Approved By				



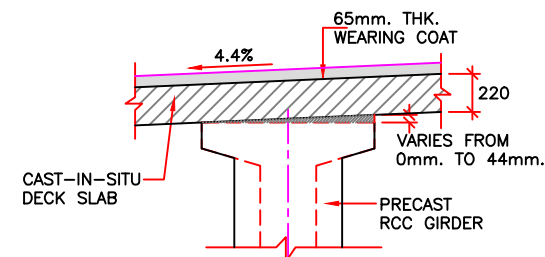
SECTION AT SUPPORT
(SCALE 1:50)



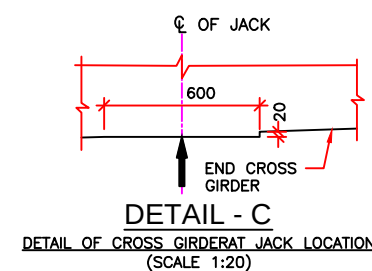
SECTION AT MID
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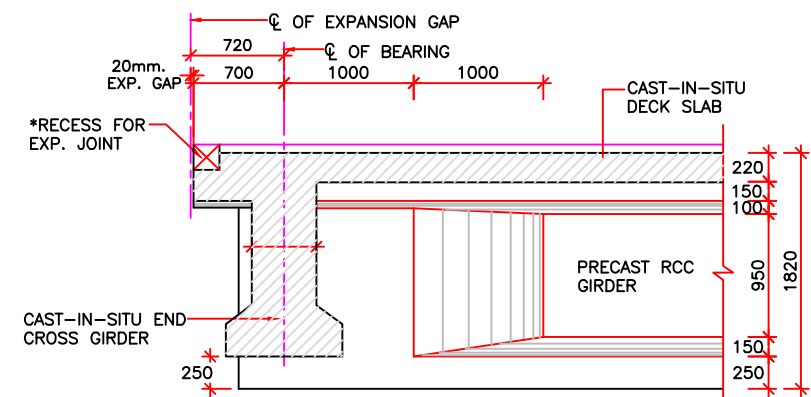
DETAILS OF PRECAST
RCC GIRDER
(SCALE 1:40)



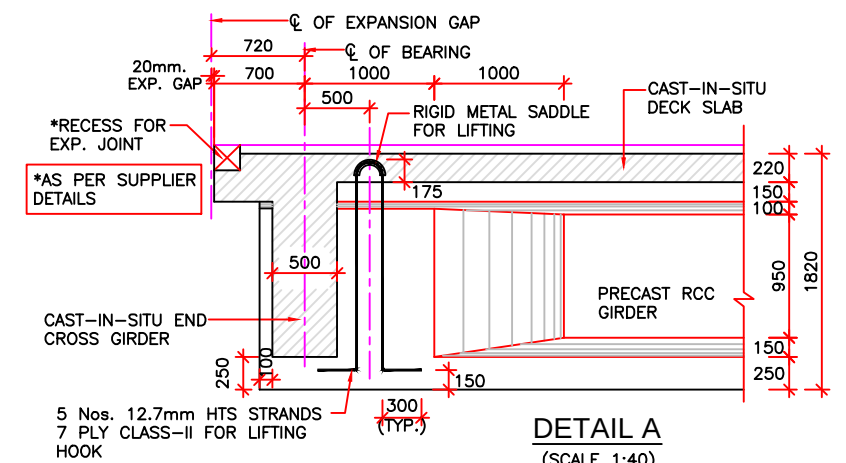
DETAIL - B
(SCALE 1:30)



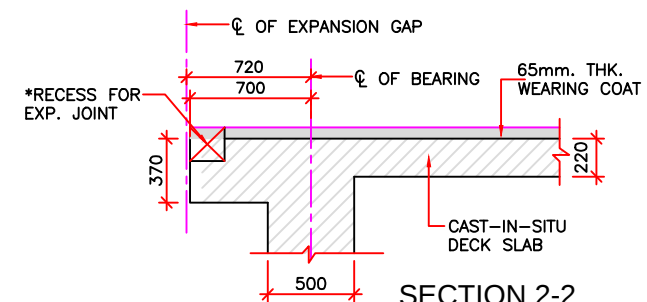
DETAIL - C
DETAIL OF CROSS GIRDER AT JACK LOCATION
(SCALE 1:20)



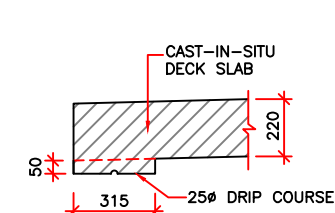
SECTION 3-3
(SCALE 1:40)



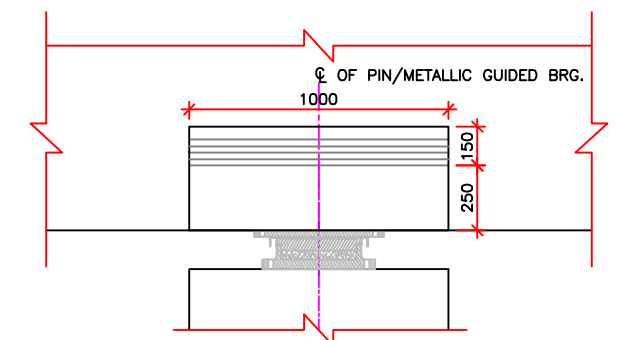
DETAIL A
(SCALE 1:40)



SECTION 2-2
(SCALE 1:30)

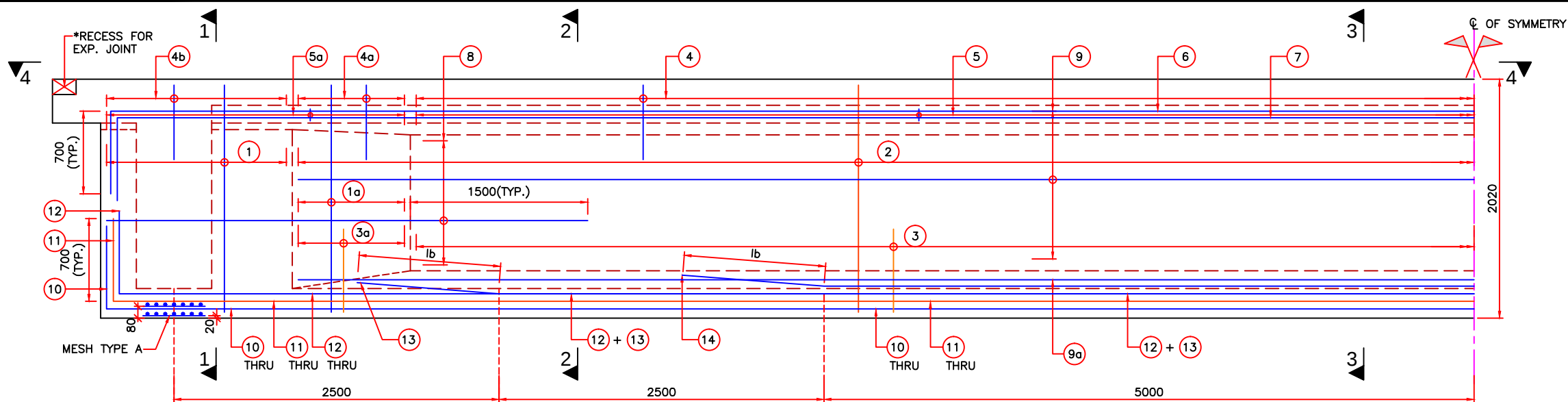


DETAIL - D
(SCALE 1:20)

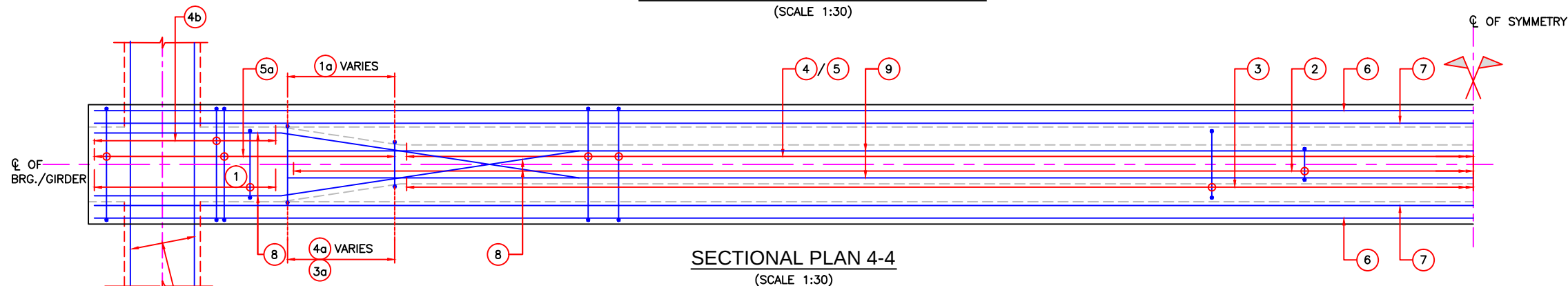


DETAIL - E
(SCALE 1:20)

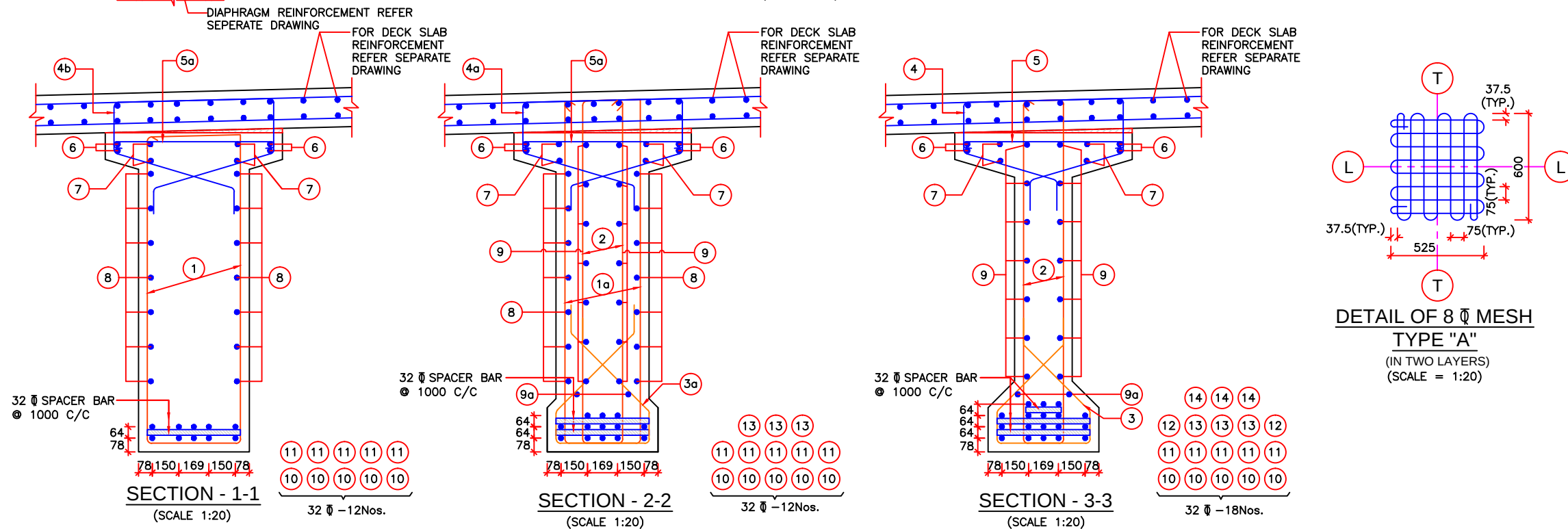
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 20.00m Drawing No.: NIRTP/NAG-MUG/HUGDI/RCC-G/20m/01	As Shown	Nov..2017



SECTIONAL ELEVATION OF GIRDER
(SCALE 1:30)



SECTIONAL PLAN 4-4
(SCALE 1:30)



DETAIL OF 8 Ø MESH
TYPE "A"
(IN TWO LAYERS)
(SCALE = 1:20)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% \leq p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% \leq p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.43)

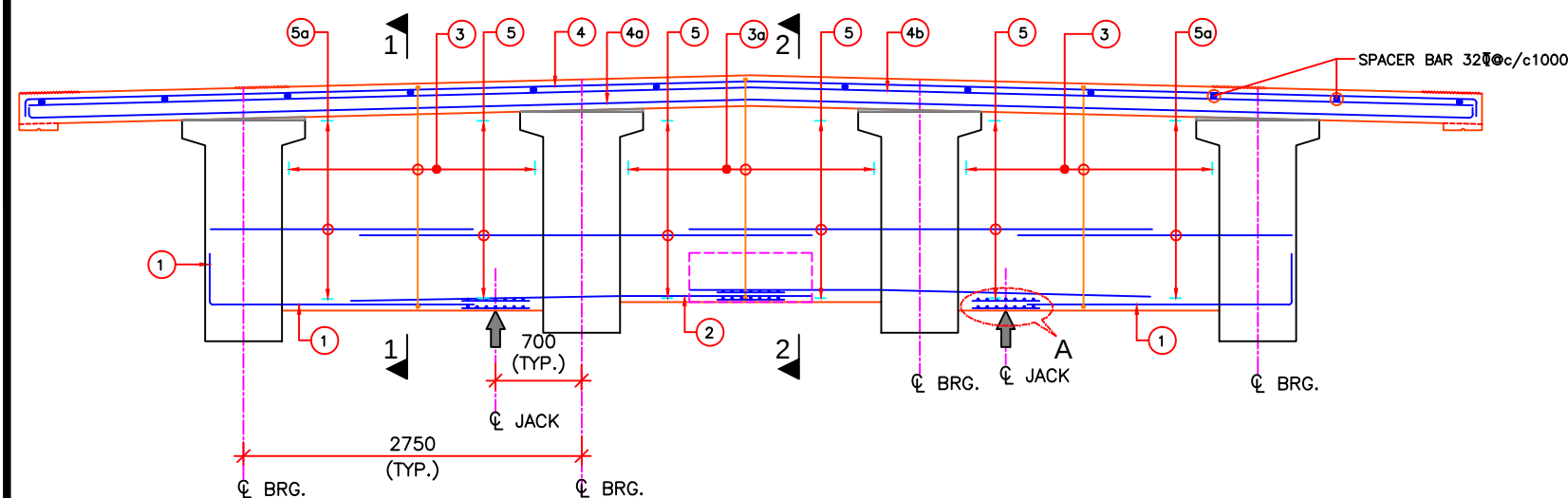
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF LONGITUDINAL GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/01/R0 (SHEET1&2)
- REINFORCEMENT DETAILS OF CROSS GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/03/R0
- REINFORCEMENT DETAILS OF RCC DECK SLAB
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/04/R0
- BEARING FORCE AND LAYOUT
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/05/R0

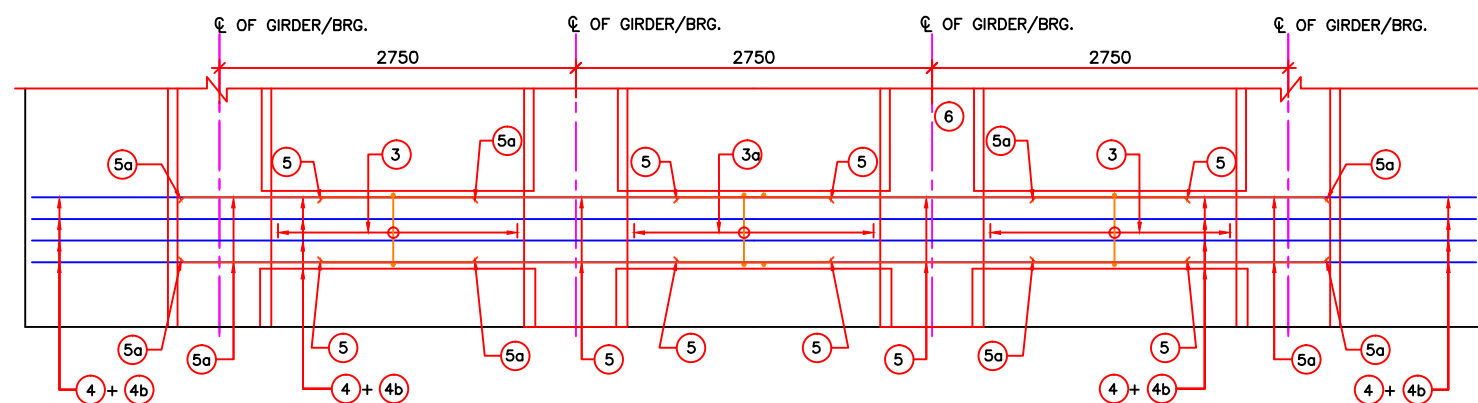
SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12 Ø125 C/C		STIRRUP
1a	2L-12 Ø125 C/C		STIRRUP (VARIES)
2	2L-12 Ø150 C/C		STIRRUP
3	10 Ø150 C/C		
3a	10 Ø125 C/C		(VARIES)
4	10 Ø150 C/C		
4a	10 Ø125 C/C		(VARIES)
4b	10 Ø125 C/C		
5	10 Ø150 C/C		LINKS
5a	10 Ø125 C/C		LINKS
6	12 Ø-4 Nos.		
7	12 Ø-4 Nos.		
8	10 Ø-7 Nos.		ON EACH FACE
9	10 Ø-7 Nos.		ON EACH FACE
9a	10 Ø-1 Nos.		ON EACH FACE
10	32 Ø-5 Nos.		
11	32 Ø-5 Nos.		
12	25 Ø-2 Nos.		
13	25 Ø-3 Nos.		
14	32 Ø-3 Nos.		

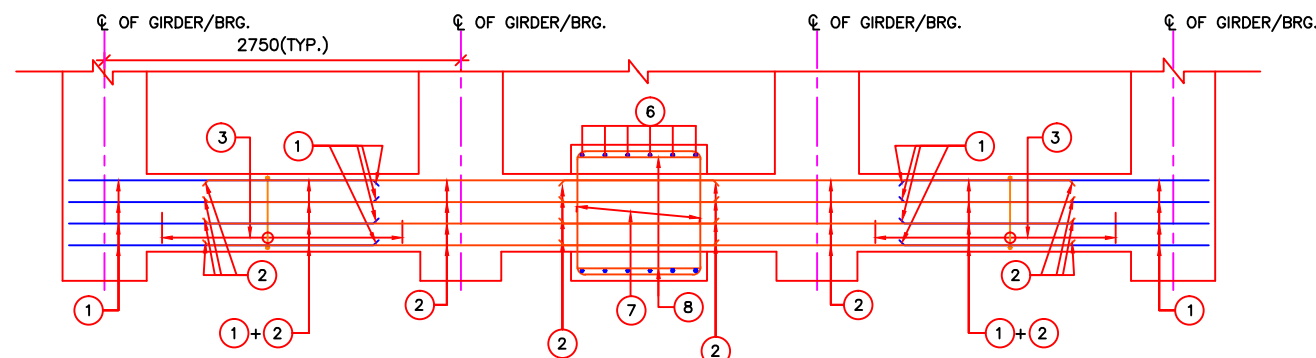
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 20.00m	As Shown	Nov. 2017 SEP.2017
		Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.: NIRTP/NAG-MUG/HUGDI/RCC-G/20m/02		



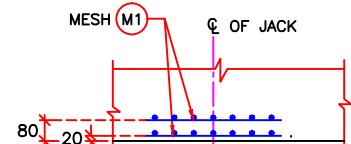
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



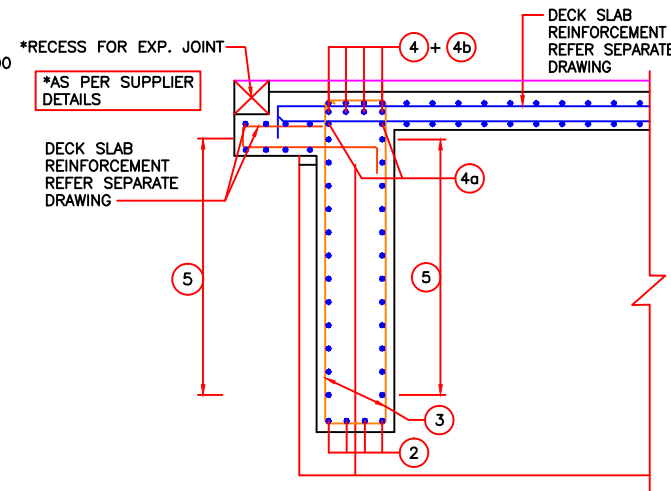
SECTIONAL PLAN OF END DIAPHRAGM (TOP REINFORCEMENT)
(SCALE 1:40)



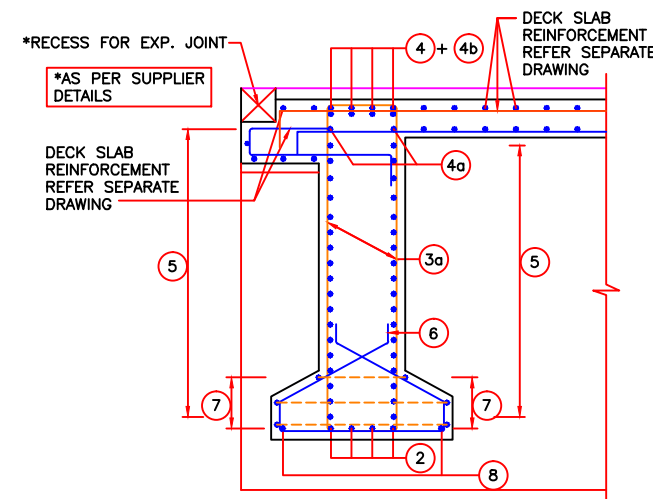
SECTIONAL PLAN OF END DIAPHRAGM (BOTTOM REINFORCEMENT)
(SCALE 1:40)



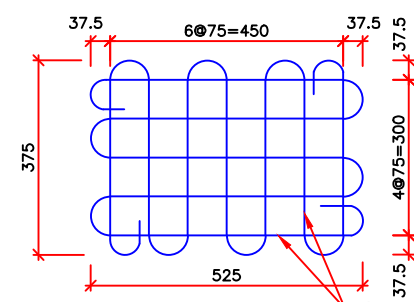
DETAIL - A
(SCALE 1:20)



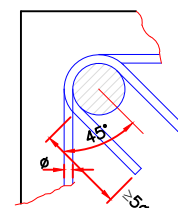
SECTION 1-1
(SCALE 1:30)



SECTION 2-2
(SCALE 1:30)



DETAIL OF 8# MESH (M1)
REINF. FOR JACK LOCATION
(SCALE 1:10)



TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:30)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
4. CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha l_b (\alpha = 1.0)$
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{f_{ck}})$

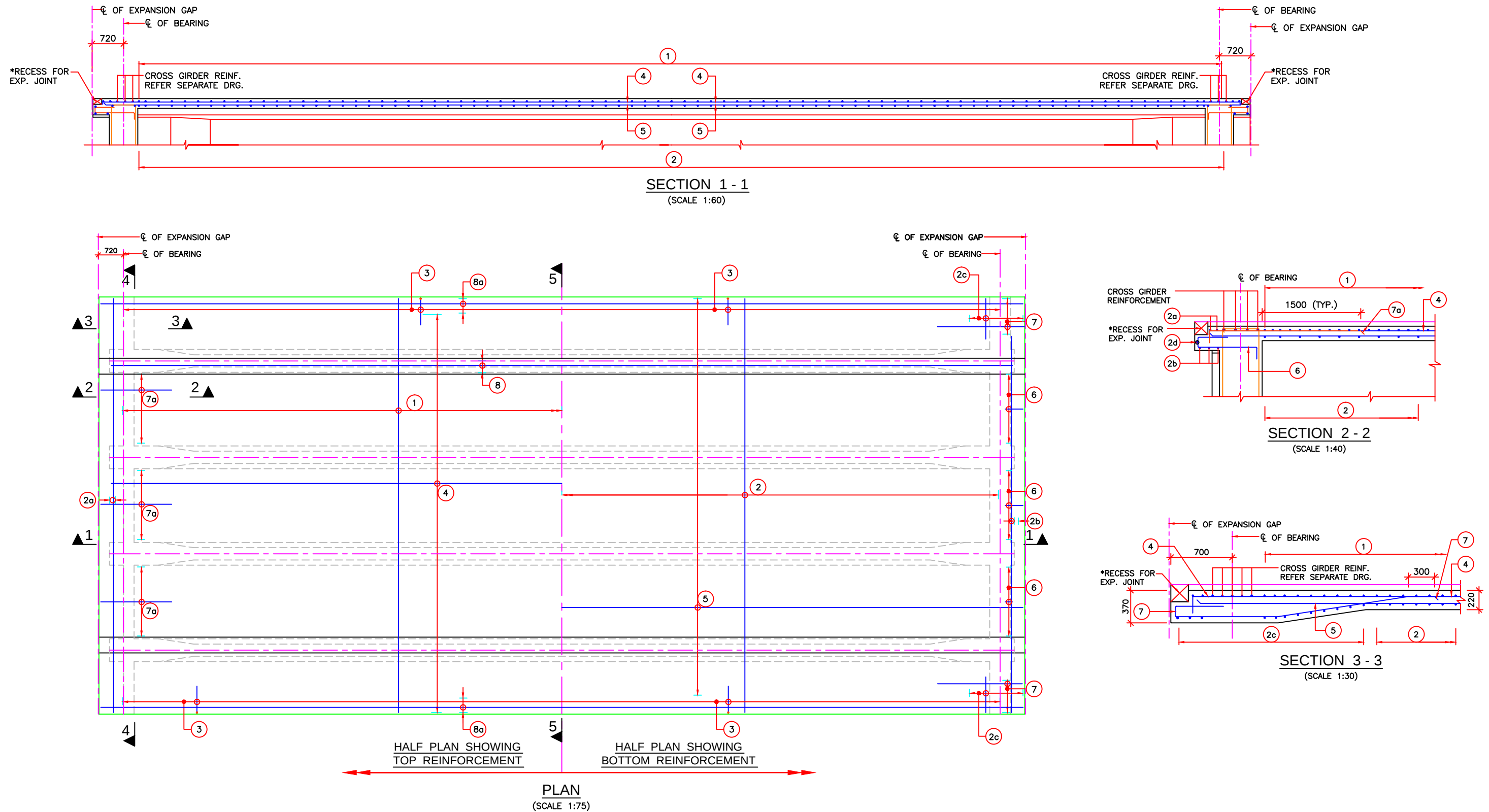
REFERENCE DRAWINGS:-

- i). DIMENSIONAL DETAILS OF LONGITUDINAL GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/01 (SHEET1&2)
- ii). REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/02
- iii). REINFORCEMENT DETAILS OF RCC DECK SLAB
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/04
- iv). BEARING FORCE AND LAYOUT
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/05

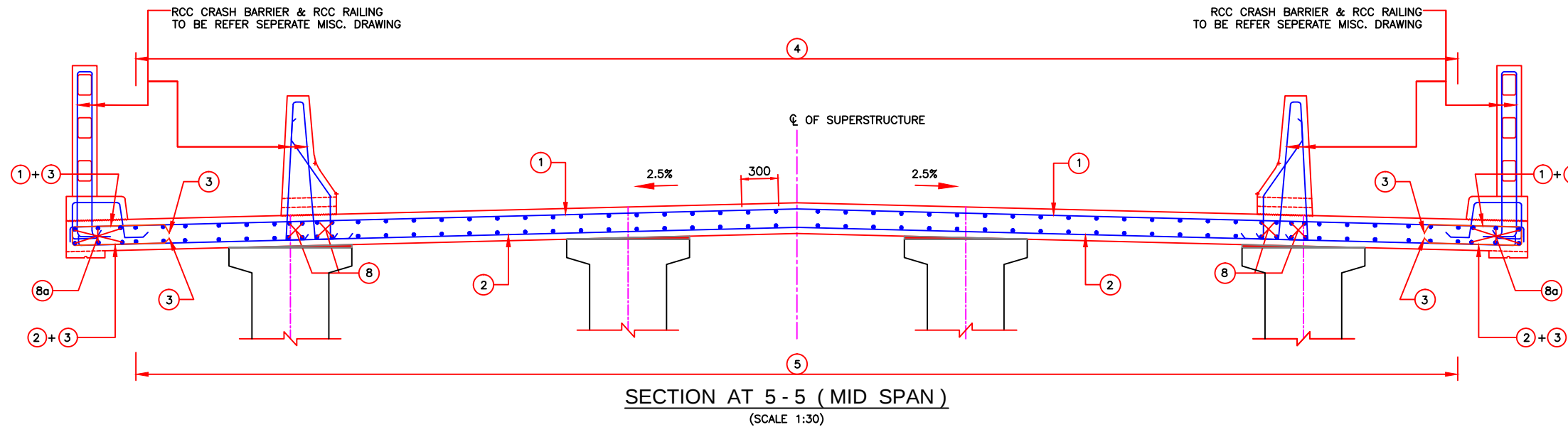
REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	25# -4 Nos.		
2	25# -4 Nos.		
3	25# -2L @125 C/C		
3a	25# -2L @125 C/C		
4	25# -4 Nos.		
4a	16# -2 Nos.		
4b	25# -4 Nos.		
5	25# -14 Nos.		ON EACH FACE
5a	16# -14 Nos.		ON EACH FACE
6	12# -6 Nos.		
7	12# -2L-3 No.		VARIES
8	10# -2 Nos.		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHR	DRAWING TITLE:	Scale:	Date: Nov..2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nabise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By Checked By Approved By	V.CHAUDHARY P.K.KHAN B.N.SINGH	REINFORCEMENT DETAILS OF END CROSS GIRDER EFFECTIVE SPAN : 20.00m Drawing No.: NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/03	As Shown



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M. JOHRI	DRAWING TITLE:	Scale:	Date: Nov..2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 20.00m	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		(SHEET 1 OF 2)
			Approved By	B.N.SINGH	NIRTTP/NAGMUG/HUGDI/RCC_G/20.00m/04		



NOTES:-

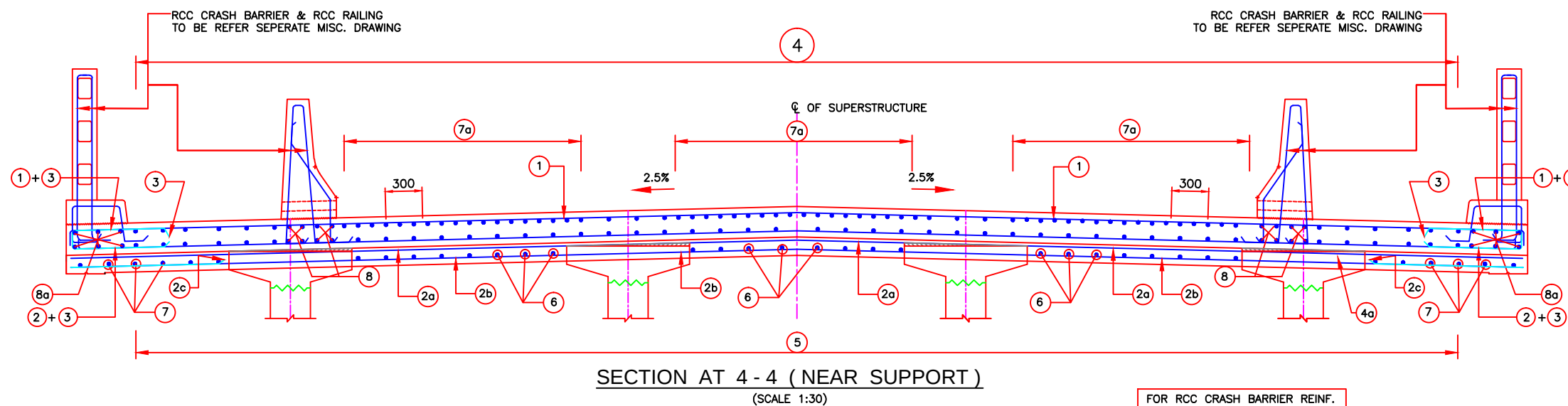
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- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
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 $LAP LENGTH l_s = \alpha_1 l_{bnet}$
 $\alpha_1 = 1.0$ FOR $p \leq 25\%$
 $\alpha_1 = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha_1 = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha \cdot l_b$ ($\alpha = 1.0$)
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 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{\phi})$.
 $RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.$
- RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF LONGITUDINAL GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/01 (SHEET1&2)
- REINFORCEMENT DETAILS OF CROSS GIRDER
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/04
- BEARING FORCE AND LAYOUT
NIRTP/NAG-MUG/HUGDI/RCC_G/20.00m/05

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	12 Φ 100 C/C		
2	12 Φ 100 C/C		
2a	12 Φ 100 C/C		
2b	12 Φ 100 C/C		
2c	12 Φ 100 C/C		
2d	12 Φ - 1 Nos.		
3	12 Φ 100 C/C		
4	10 Φ 200 C/C		
5	10 Φ 200 C/C		
6	12 Φ 200 C/C		
7	12 Φ 200 C/C		
7a	12 Φ 200 C/C		
8	16 Φ - 8 Nos.		(ON EACH SIDE)
8a	16 Φ - 6 Nos.		(ON EACH SIDE)

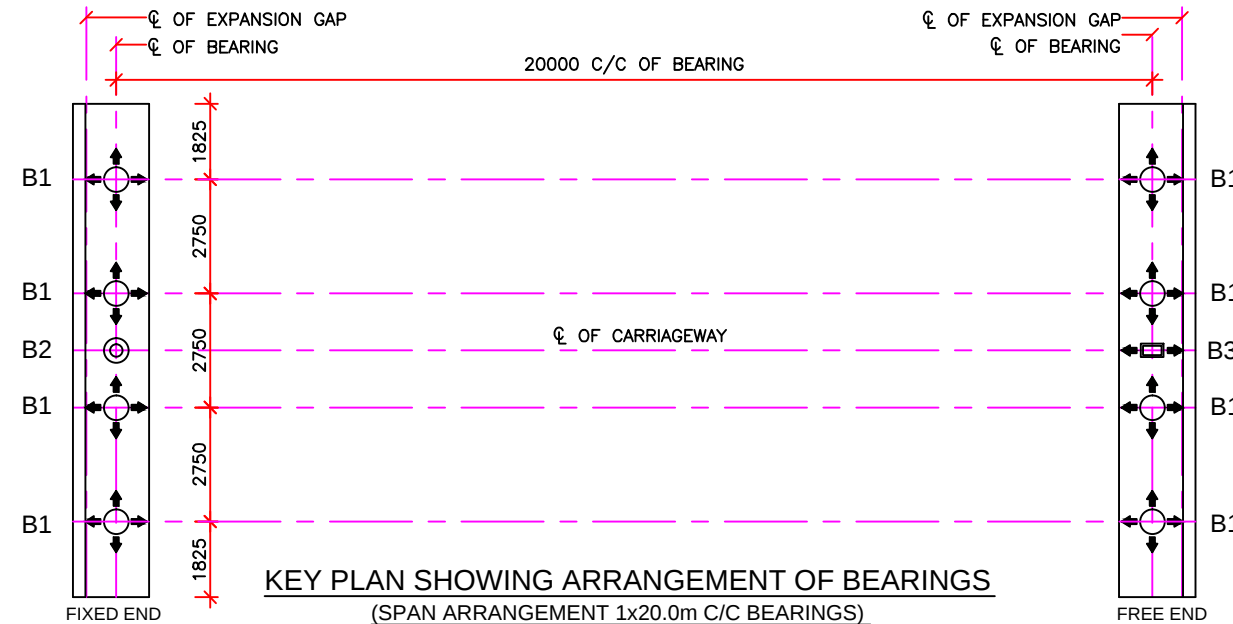


FOR RCC CRASH BARRIER REINF.
REFER MISCELLANEOUS DRG.

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov..2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHRI	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 20.00m Drawing No.: NIRTP/NAGMUG/HUGDI/RCC_G/20.00m/04	As Shown	(SHEET 2 OF 2)

LEGEND:-

B1		FREE SLIDING POT-CUM-PTFE BEARING
B2		PIN BEARING
B3		METALLIC GUIDED BEARING



NOTES:-

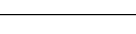
- MATERIAL SPECIFICATIONS, DESIGN OF BEARINGS, ACCEPTANCE CRITERIA AND INSTALLATION MORTH SHALL BE IN ACCORDANCE WITH IRC:83 (PART III)-2002 AND MOSRTH SPECIFICATIONS (FOURTH REVISION).
- BEARINGS SHALL BE OBTAINED FROM MANUFACTURERS APPROVED BY MORTH.
- INSTALLATION OF BEARINGS SHALL BE UNDER THE SUPERVISION OF REPRESENTATIVE OF THE MANUFACTURER.
- FOR DESIGN LOADS AND ROTATIONS REFER TABLE IN THE DRAWING.
- FOR BEARINGS, DETAILED SHOP DRAWINGS SHALL BE PREPARED BY THE SUPPLIER AND BE DULY APPROVED BEFORE MANUFACTURE AND INSTALLATION.
- THE GROUT/BEDDING MORTAR SHALL BE HIGH STRENGTH FREE FLOWING NON SHRINK GROUT (80 MPa STRENGTH).
- ALL BEARING SHALL BE PLACED IN TRULY HORIZONTAL PLANE ONLY.
- FOR DESIGN OF POT BEARINGS, THE DESIGN HORIZONTAL FORCE SHALL, IN NO CASE BE LESS THAN 10% AND GREATER THAN 25% OF THE DESIGN VERTICAL LOAD.
- THE CONTRACTOR AND SUPPLIER OF BEARINGS SHALL BE FURNISH A MINIMUM TROUBLE FREE WARRANTY OF 10 YEARS AFTER OPENING OF THE BRIDGE.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH: DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
NIRTP/NAG-MUG/HUGDI/RCC_G/20m/04

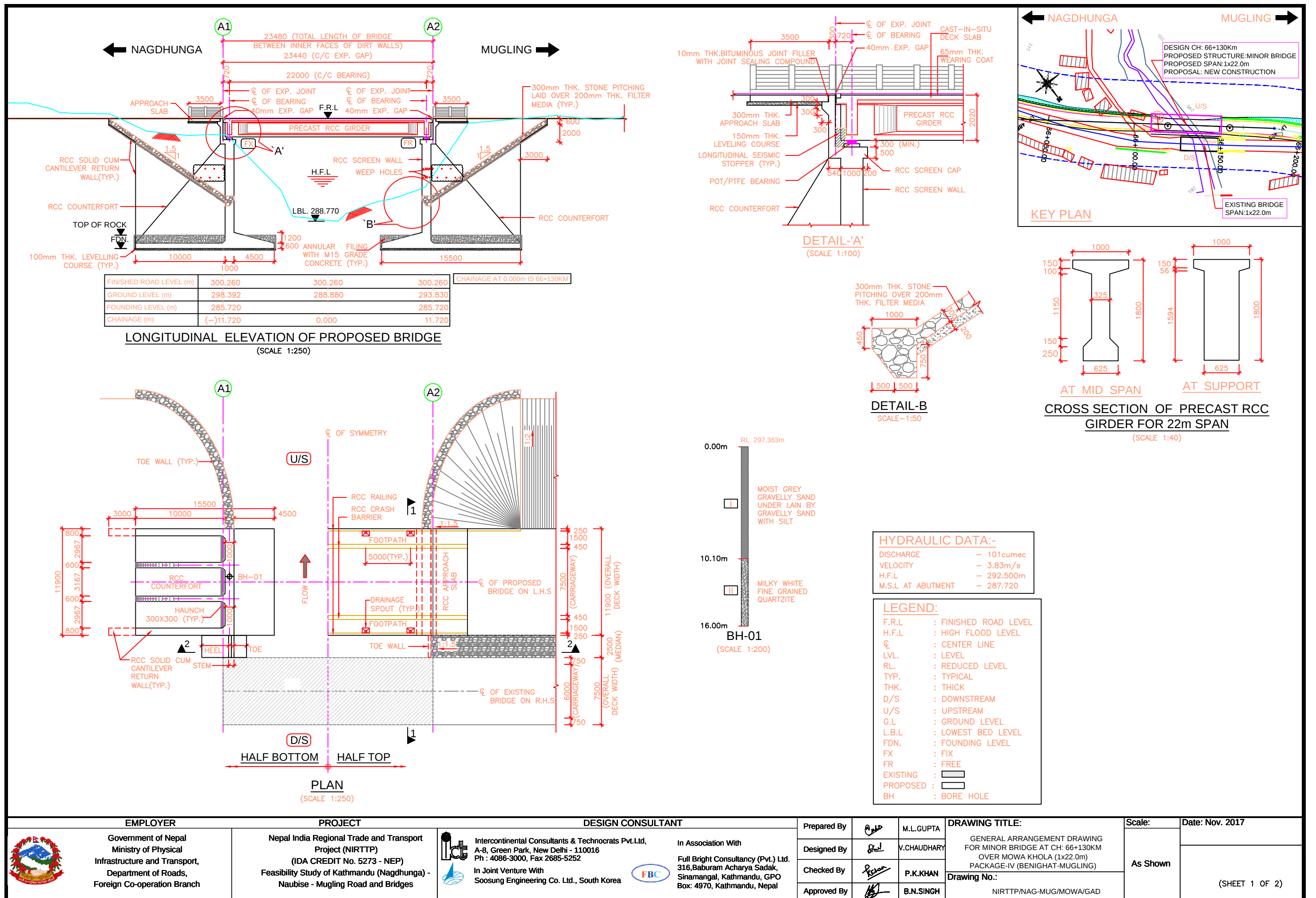
GENERAL DATA:

- STRUCTURE IS LOCATED IN SEISMIC ZONE : V
- GRADE OF CONCRETE
ABUTMENT CAP. M-30
PEDESTAL M-40

TABLE SHOWING DATA FOR DESIGN OF BEARINGS

SL. No.	BEARING TYPE	LOAD CONDITION	LOADS, FORCES, MOVEMENTS AND ROTATION DATA										BEARING (Nos.) PER SPAN
			VERTICAL LOAD (kN)		HORIZONTAL FORCE (kN)				ROTATION (RAD)		MOVEMENT (mm)		
			CASE	MAGNITUDE	LONGITUDINAL		TRANSVERSE		CASE	MAGNITUDE	LONGITUDINAL	TRANSVERSE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.		NORMAL	MAXIMUM (WITH LIVE LOAD)	1367	COEXISTING	137	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	8
			MINIMUM (WITH LIVE LOAD)	544	COEXISTING	54	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	382	COEXISTING	38	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	789	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
			MINIMUM (WITH LIVE LOAD)	461	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	423	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	789	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
			MINIMUM (WITH LIVE LOAD)	461	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	423	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	4.70	
2.		NORMAL	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	264	COEXISTING	–	COEXISTING	0.002	–	–	1
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	189	COEXISTING	–	COEXISTING	0.002	–	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	189	COEXISTING	–	COEXISTING	0.002	–	–	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	2179	COEXISTING	363	COEXISTING	0.002	–	–	
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	2179	COEXISTING	321	COEXISTING	0.002	–	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	2143	COEXISTING	321	COEXISTING	0.002	–	–	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	679	COEXISTING	1209	COEXISTING	0.002	–	–	
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	679	COEXISTING	1071	COEXISTING	0.002	–	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	679	COEXISTING	714	COEXISTING	0.002	–	–	
3.		NORMAL	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	–	1
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	–	COEXISTING	–	COEXISTING	0.002	–15/14.7	–	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	363	COEXISTING	0.002	–15/14.7	–	
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	321	COEXISTING	0.002	–15/14.7	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	–	COEXISTING	321	COEXISTING	0.002	–15/14.7	–	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	1209	COEXISTING	0.002	–15/14.7	–	
			MINIMUM (WITH LIVE LOAD)	–	COEXISTING	–	COEXISTING	1071	COEXISTING	0.002	–15/14.7	–	
			MINIMUM (WITHOUT LIVE LOAD)	–	COEXISTING	–	COEXISTING	714	COEXISTING	0.002	–15/14.7	–	

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHRRI	DRAWING TITLE: DETAILS OF LOADS AND FORCES FOR EFFECTIVE SPAN : 20.00m Drawing No.: NIRTPP/NAG-MUG/HUGDI/RCC_G/BRG./05	Scale: As Shown	Date: Nov..2017	
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252  In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With  Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By		V.CHAUDHARY				
					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				



EMPLOYER

Government of Nepal
Ministry of Physical Infrastructure and Transport,
Department of Roads,
Foreign Co-operation Branch

PROJECT

Nepal India Regional Trade and Transport Project (NIRTP)
(IDA CREDIT No. 5273 - NEP)
Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges

DESIGN CONSULTANT

Intercontinental Consultants & Technocrats Pvt.Ltd,
A-8, Green Park, New Delhi - 110016
Ph : 4086-3000, Fax 2685-5252
In Joint Venture With
Soosung Engineering Co. Ltd., South Korea

Prepared By M.L.GUPTA

Designed By V.CHAUDHARY

Checked By P.K.KHAN

Approved By B.N.SINGH

DRAWING TITLE:

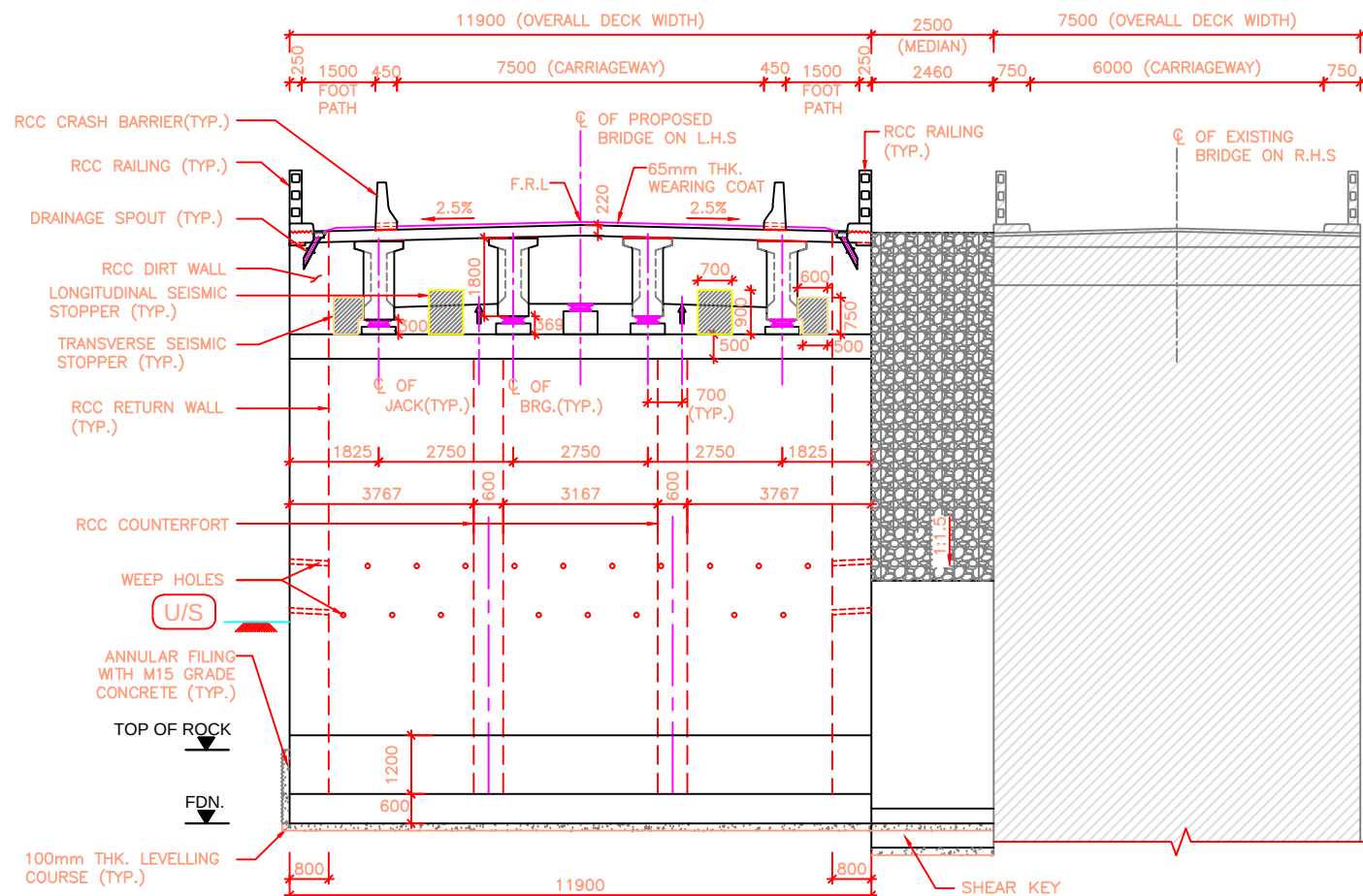
GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 66+130KM OVER MOWA KHOLA (1x22.0m) PACKAGE-IV (BENIGHAT-MUGLING)

Drawing No.: NIRTP/NAG-MUG/MOWA/GAD

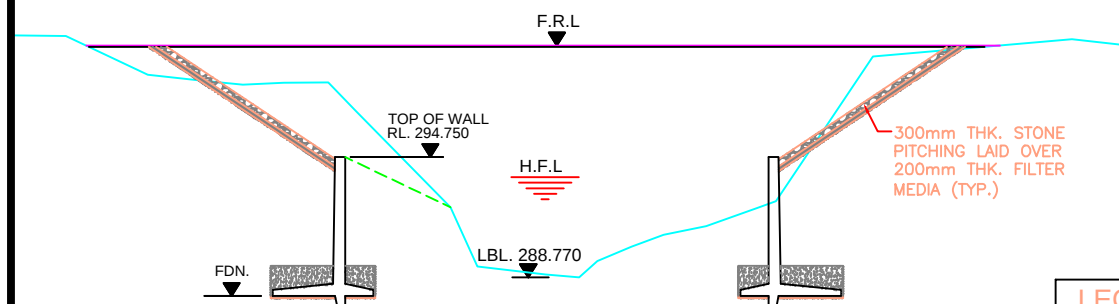
Scale: As Shown

Date: Nov. 2017

(SHEET 1 OF 2)



SECTION 1-1
(SCALE 1:100)



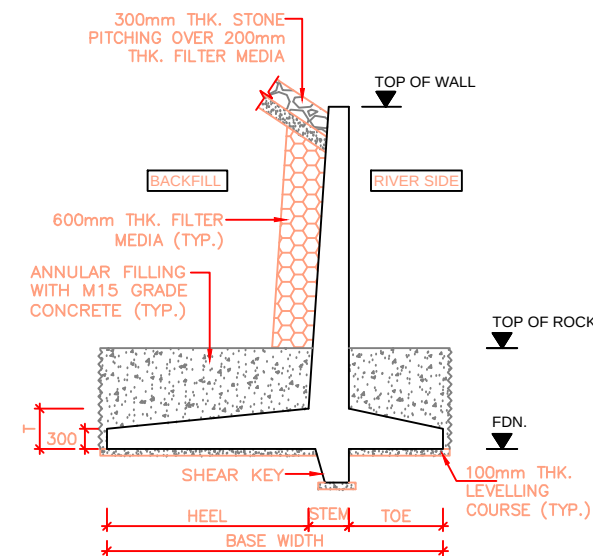
SECTION 2-2
(SCALE 1:250)

LEGEND:

F.R.L	: FINISHED ROAD LEVEL
H.F.L	: HIGH FLOOD LEVEL
CL	: CENTER LINE
LVL	: LEVEL
RL	: REDUCED LEVEL
TYP.	: TYPICAL
THK.	: THICK
D/S	: DOWNSTREAM
U/S	: UPSTREAM
G.L	: GROUND LEVEL
L.B.L	: LOWEST BED LEVEL
FDN.	: FOUNDING LEVEL
FX	: FIX
FR	: FREE
EXISTING	:
PROPOSED	:
BH	: BORE HOLE

FACE OF OLD ABUTMENT SHALL BE MATCHED WITH PROPOSED BRIDGE ABUTMENT. IN CASE OF BIGGER SPAN IN PROPOSED SPAN, TOE WALL SHALL BE PROVIDED IN FLARED SHAPE TO ALLOW SMOOTH PASSAGE OF RIVER WATER.

ABUTMENT CAP SHALL BE CAST ONLY AFTER COMPLETING THE BACK FILLING WORK UP TO ABUTMENT SHAFT TOP LEVEL.



DETAIL OF TOE WALL
(REFER SEPARATE DRAWING FOR DETAILS)
(SCALE 1:75)

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF COUNTERFORT ABUTMENT AND FOUNDATION:
-NIRTP/NAG-MUG/MOWA/SUB-01
- REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER.
-NIRTP/NAG-MUG/MOWA/SUB-02 (SHEET 1 TO 3)
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/04 (SHEET 1 & 2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/05

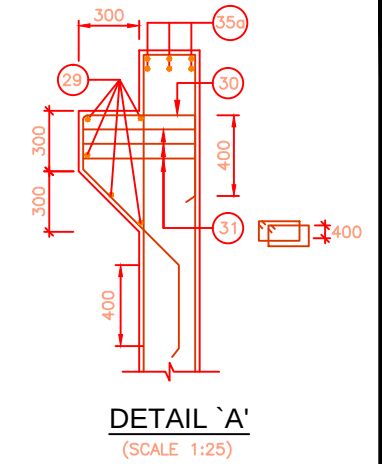
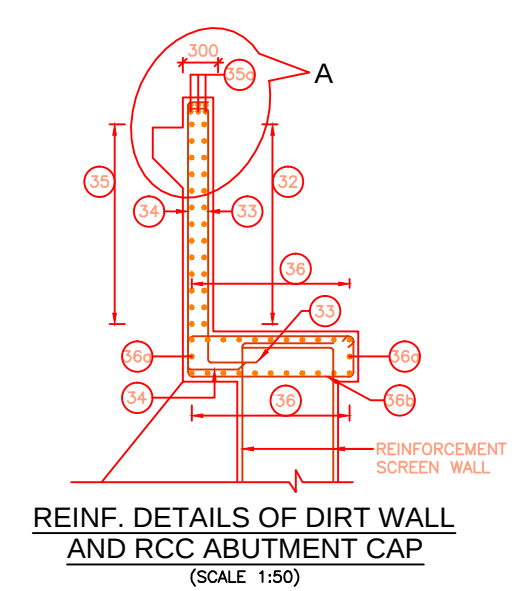
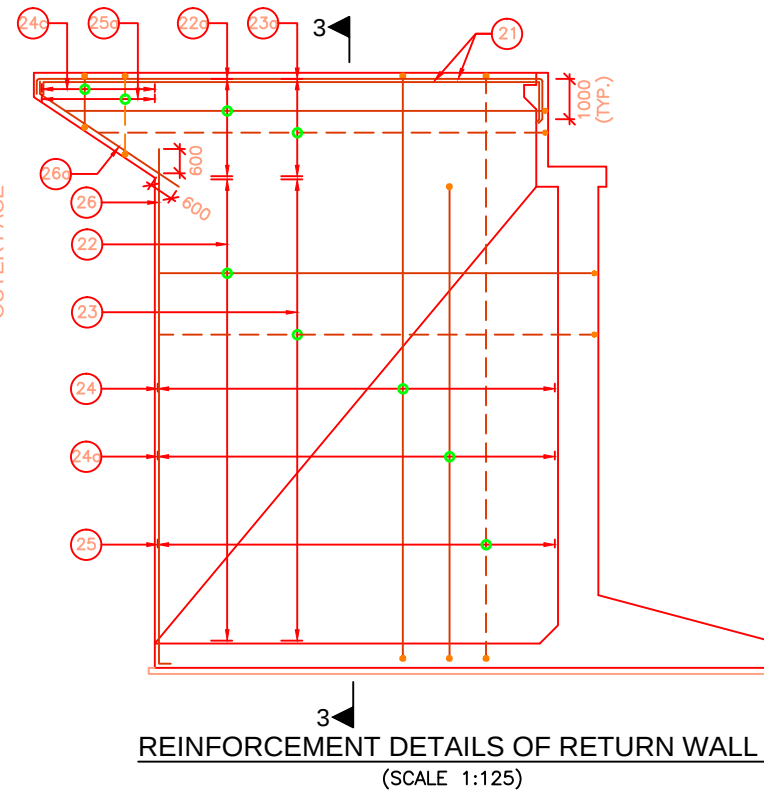
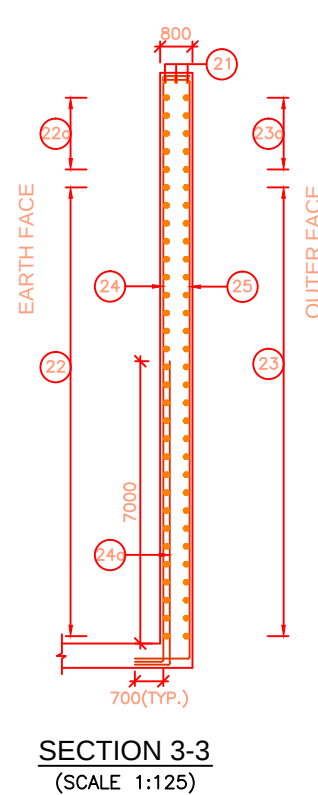
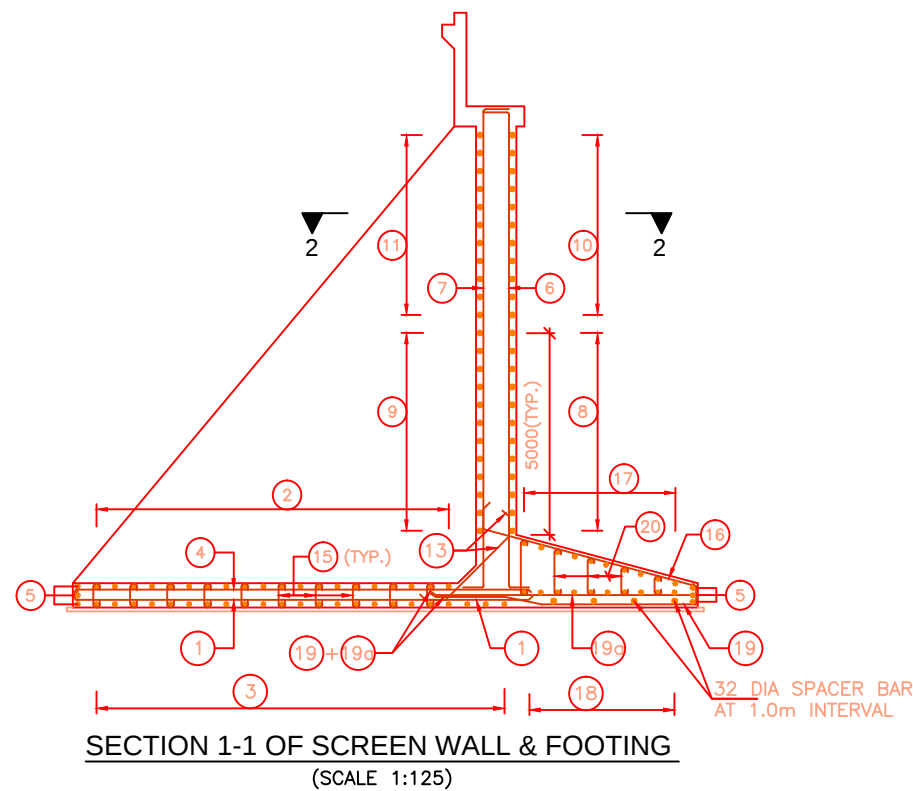
MISCELLANEOUS DRAWINGS:

- DETAILS OF APPROACH SLAB:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-01
- DETAILS OF DRAINAGE SPOUT & WEARING COAT:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-02
- DIMENSIONAL & REINF. DETAILS OF R.C.C CRASH BARRIER:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-03
- DIMENSIONAL & REINF. DETAILS OF R.C.C RAILING:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-04
- DIMENSIONAL AND REINFORCEMENT DETAILS OF RCC TOE WALL:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-06

NOTES:-

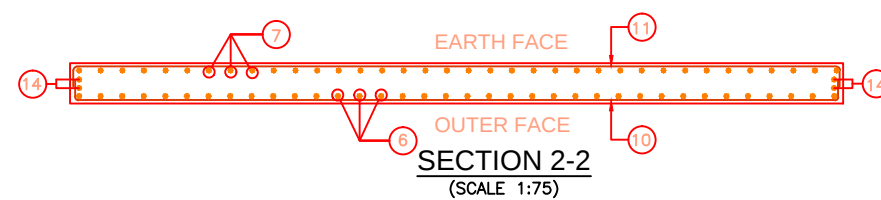
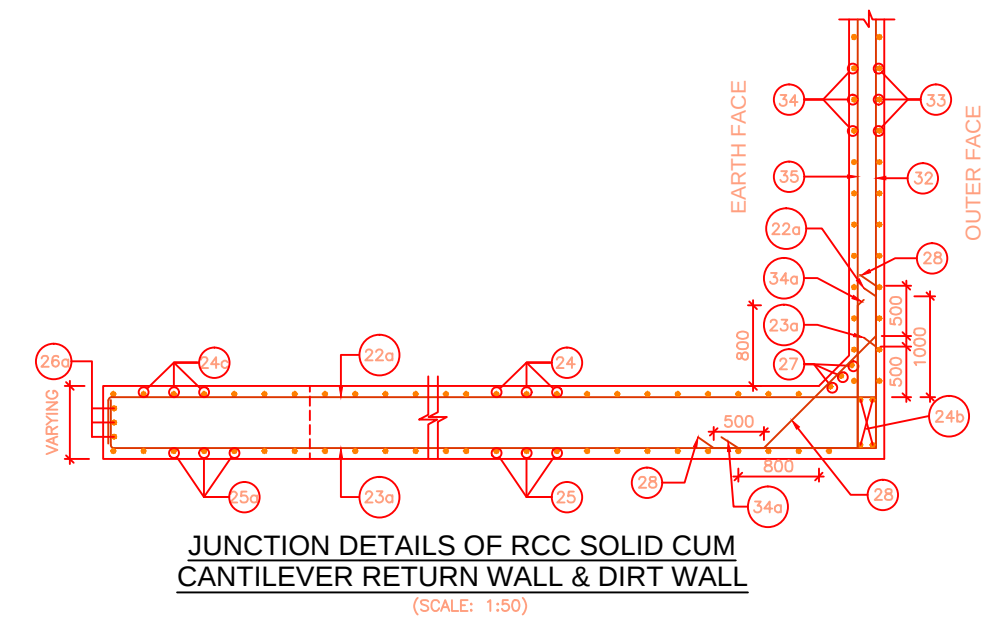
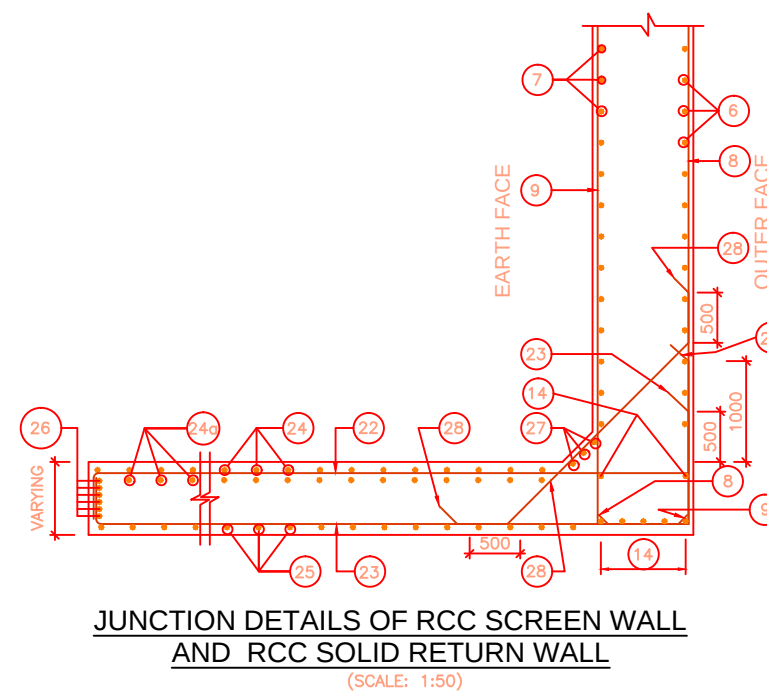
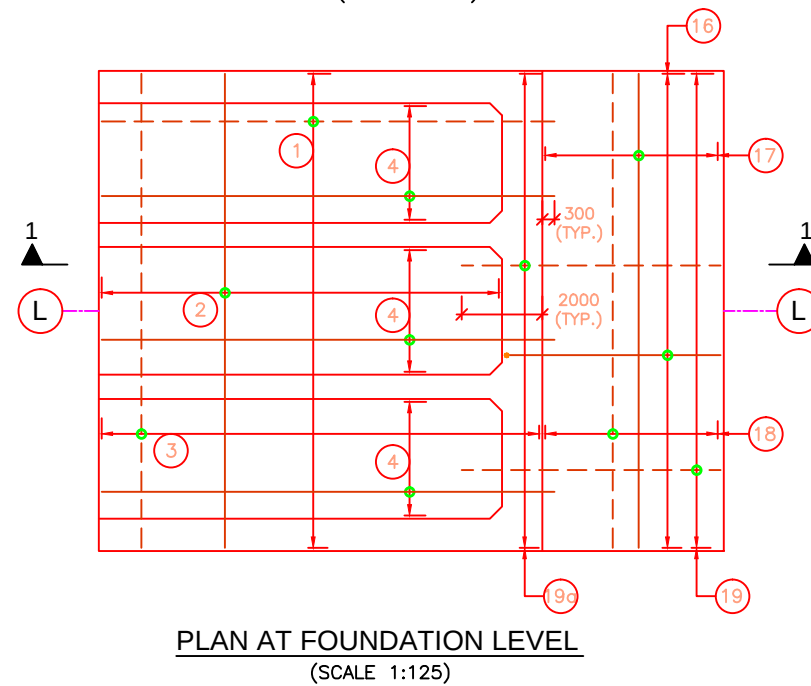
- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE BRIDGE HAS BEEN DESIGNED FOR MOST SEVERE OF:
 - ONE LANE OF IRC CLASS 70R LOADING OR TWO LANES OF IRC CLASS A LOADING WHEN FOOTPATHS ARE IN POSITION.
 - ONE LANE OF IRC CLASS 70R LOADING +ONE LANE OF IRC CLASS A LOADING OR 3 LANES OF IRC CLASS A LOADING WHEN FOOTPATHS ARE REMOVED.
 - ONE LANE OF SV LOADING IN ACCORDANCE WITH CLAUSE 204.5 OF IRC-6:2017.
- MINIMUM CONCRETE COVER, GRADE OF CONCRETE, MINIMUM CEMENT CONTENT & MAXIMUM W/C RATIO SHALL BE AS PER 'MODERATE' CONDITION OF EXPOSURE.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150MM CUBE AS FOLLOWS:
 - LEVELING COURSE (UNDER FOUNDATION) - M10
 - LEVELING COURSE (UNDER APPROACH SLAB) - M15
 - FOUNDATION - M30
 - PEDESTAL - M40
 - SEISMIC STOPPER - M40
 - SUBSTRUCTURE - M30
 - PRECAST RCC GIRDER - M35
 - RETURN/RETAINING WALL - M30
 - CRASH BARRIER - M40
 - APPROACH SLAB - M30
- UNREINFORCED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION FE-500D CONFORMING TO IS: 1786.
- POT/PTFE BEARINGS SHALL BE DESIGNED AS PER PROVISION OF IRC : 83 (PART-III 2002).
- STRIP SEAL TYPE EXPANSION JOINTS SHALL BE PROVIDED AS PER PROVISION OF IRC: SP-69-2011.
- 65MM THICK WEARING COURSE COMPRISING OF 40MM THICK ASPHALTIC CONCRETE OVERLAID WITH 25MM THICK MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORT&H SPECIFICATION.
- 100MM DIA WEEP HOLES AT 1000MM C/C STAGGERED HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN ONE OR TWO LAYERS ABOVE G.L IN VERTICAL WALLS OF ABUTMENT, RETURN/RETAINING WALLS AT A SLOPE OF 1 VERTICAL TO 20 HORIZONTAL TOWARDS THE DRAINING FACE.
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFIRM TO CLAUSE 18.4.5 OF IRC:112-2011.
- LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND ABUTMENTS AND RETURN/RETAINING WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX:6 OF IRC:78-2014 HAVING PROPERTIES $C=0$, $\phi=35^\circ$, $\Delta=22.5^\circ$ & $\gamma_D = 20 \text{ KN/M}^3$.
- MINIMUM CLEAR COVER TO OUTER MOST REINFORCEMENT SHALL BE AS UNDER:-
 - SUPERSTRUCTURE - 40MM
 - SUBSTRUCTURE (EARTH FACE) - 75MM
 - SUBSTRUCTURE (NON EARTH FACE) - 50MM
 - FOUNDATION - 75MM
- THE BRIDGE IS DESIGNED FOR PROVISION OF SEISMIC ZONE-V AS PER CLAUSE 219 OF IRC:6:2017.
- SAFE BEARING CAPACITY CONSIDERED IN DESIGN AT PROPOSED FOUNDING LEVEL IS 50 T/M^2 . THIS SHALL BE ASCERTAINED BEFORE EXECUTION AT SITE BY CONFIRMATORY GEOTECHNICAL INVESTIGATIONS.
- FILTER MEDIA SHALL BE PROVIDED AS PER APPENDIX-6 OF IRC-78:2014.
- MINIMUM ANCHORAGE OF FOUNDATION IN SOFT ROCK SHALL BE 1.5M AND 0.6M IN HARD ROCK ANY DEVIATION IN ROCK LEVEL FROM DESIGN SHALL BE REPORTED TO ENGINEER FOR REQUIRED CHANGES IN DESIGN NO CHANGES REQUIRED FOR INCREASE HEIGHT UP TO 50 CM.
- WHERE FOUNDATIONS ARE PLACED ON ROCK, TRENCHES AROUND THE FOOTING SHALL BE FILLED UP WITH CONCRETE OF M15 GRADE UP TO TOP OF ROCK.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY PLAN AND PROFILE DRAWINGS.
- ALL CHAINAGES, FRL, GL SHALL BE CONFIRMED AT SITE PRIOR TO EXECUTION.
- FOR APPROACH SLAB, DRAINAGE SPOUTS, CRASH BARRIER, PROTECTION WORK, RETAINING WALL AND MEDIAN WALL DETAILS REFER SEPARATE DRAWINGS.
- WHEREVER THE COMPONENTS OF EXISTING BRIDGE INTERFERES WITH THE PROPOSED BRIDGE, THAT SHALL BE DISMANTLED UPTO FOUNDATION TOP.
- MINIMUM LONGITUDINAL GRADIENT OF 0.3% SHALL BE PROVIDED IN PROPOSED BRIDGE TO FACILITATE DRAINAGE OF DECK AS PER CLAUSE 105.3.6 OF IRC-5.
- SIZE OF EACH INDIVIDUAL STONE PITCHING AND LAUNCHING APRON SHALL NOT BE LESS THAN 30CM IN DIAMETER AND 40KG IN WEIGHT OR AS PER TABLE 5.1 & 5.2 OF IRC:89-1997. WHERE THE REQUIRED SIZE STONES ARE NOT ECONOMICALLY AVAILABLE, STONES IN WIRE CRATES MAY BE USED IN PLACE OF ISOLATED STONES OF EQUIVALENT WEIGHT.

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	M.L.GUPTA	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	V.CHAUDHARY	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 66+130KM OVER MOWA KHOLA (1x22.0m) PACKAGE-IV (BENIGHAT-MUGLING)	As Shown	
			Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/MOWA/GAD		(SHEET 2 OF 2)

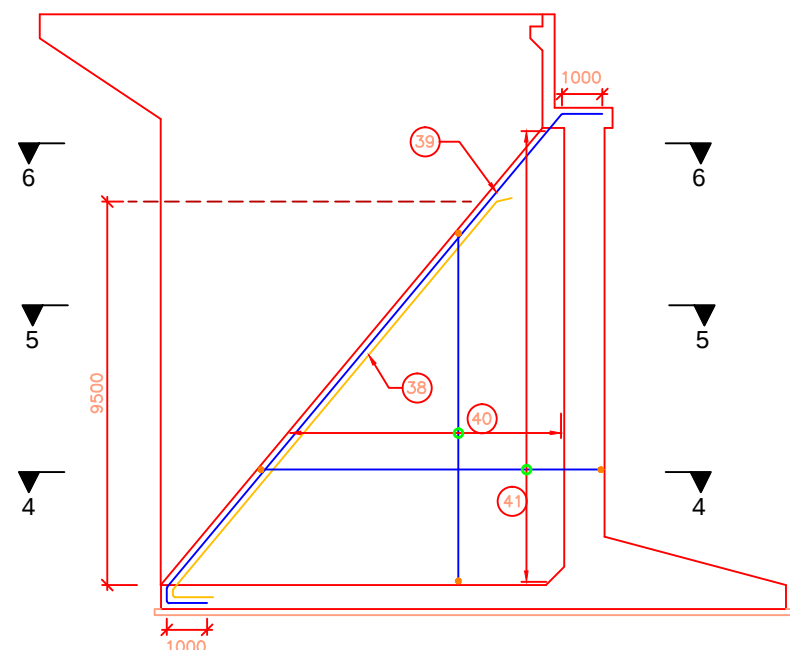


LEGEND

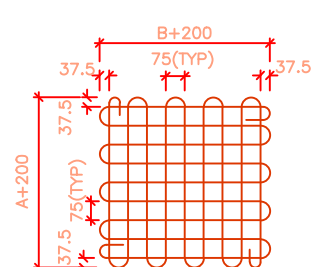
TOP REINFORCEMENT BARS ———
BOTTOM REINFORCEMENT BARS - - - - -



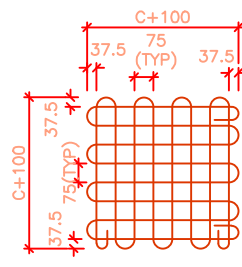
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH- 66+130 OVER MOWA KHOLA (1x22.00m) PACKAGE-IV (BENIGHAT-MUGLING) Drawing No.: NIRTP/NAG-MUG/MOWA/SUB-02	Scale:	Date: Nov. 2017
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					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				



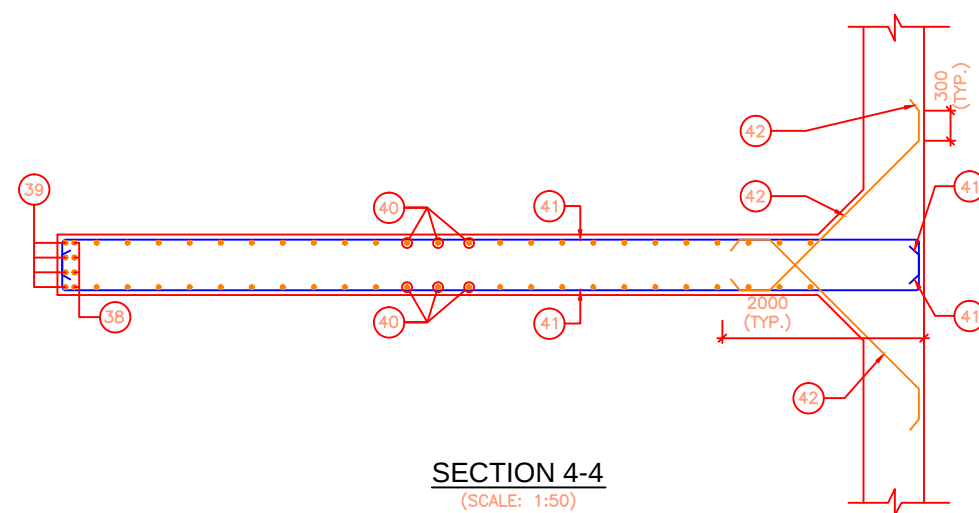
REINFORCEMENT DETAILS OF RCC COUNTERFORT
(SCALE 1:125)



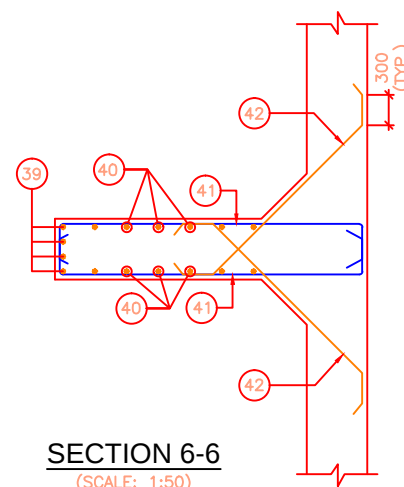
DETAIL OF MESH
TYPE "M1" 8 Φ
(IN PEDESTAL) (IN TWO LAYERS)
(SCALE 1:20)
(WHERE A & B SIZE OF BEARING)



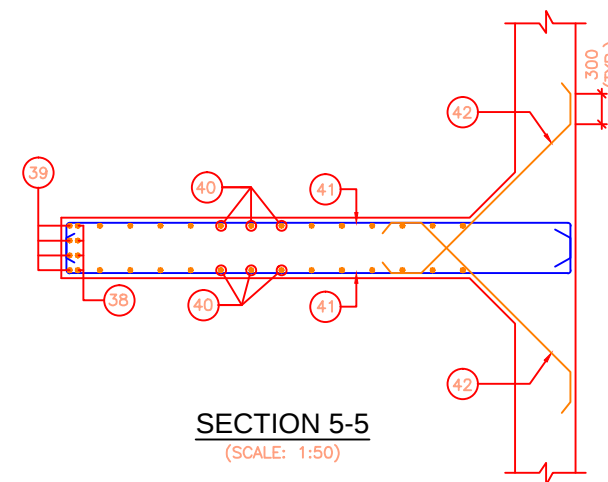
DETAIL OF MESH
TYPE "M2" 8 Φ
(UNDER JACK LOCATION) (IN TWO LAYERS)
(SCALE 1:20)
(WHERE C= DIA OF JACK)



SECTION 4-4
(SCALE: 1:50)

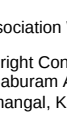
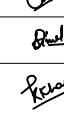


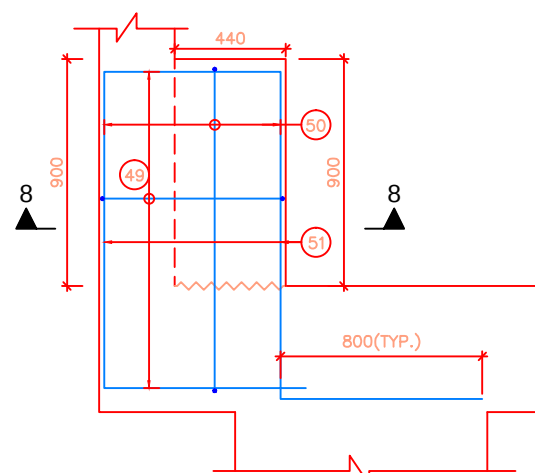
SECTION 6-6
(SCALE: 1:50)



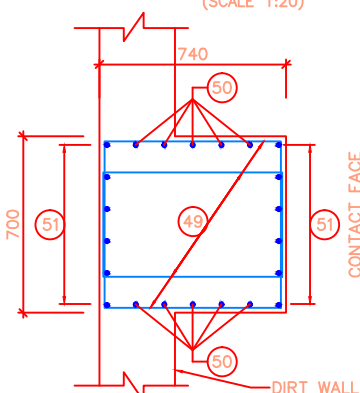
SECTION 5-5
(SCALE: 1:50)

LEGEND	
TOP REINFORCEMENT BARS	———
BOTTOM REINFORCEMENT BARS	---

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH- 66+130 OVER MOWA KHOLA (1x22.00m) PACKAGE-IV (BENIGHAT-MUGLING)	Scale:	Date: Nov. 2017
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					Checked By	 P.K.KHAN				
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Drawing No.: NIRTP/NAG-MUG/MOWA/SUB-02										

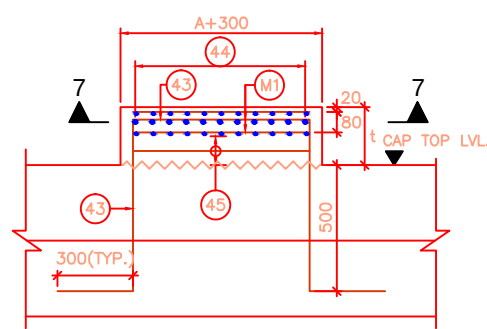


REINF. DETAILS OF LONGITUDINAL SEISMIC STOPPER
(DIRT WALL REINFORCEMENT NOT SHOWN FOR CLARITY)
(SCALE 1:20)



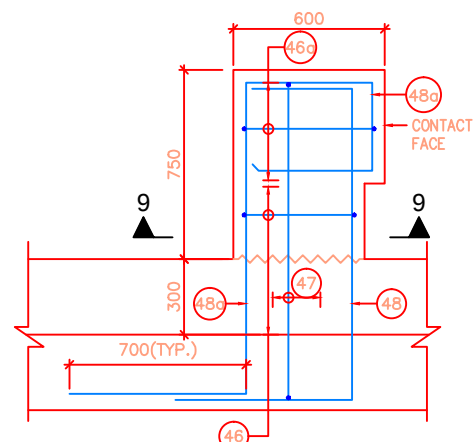
SECTION 8-8
(SCALE 1:20)

WHERE, A/B SIZE OF BEARING

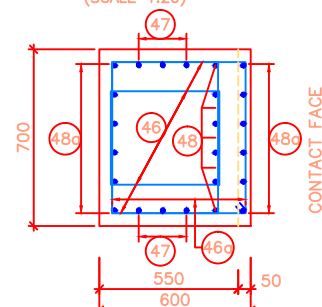


REINF. DETAILS OF PEDESTAL
(SCALE 1:20)

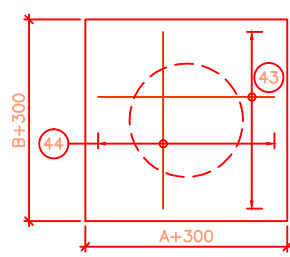
WHERE, A SIZE OF BEARING
AND t IS HEIGHT OF PEDESTAL



REINF. DETAILS OF TRANSVERSE SEISMIC STOPPER
(SCALE 1:20)



SECTION 9-9
(SCALE 1:20)



SECTION 7-7
(SCALE 1:20)

WHERE, A/B SIZE OF BEARING

BRACKET	29	12 Φ -5 Nos.	
	30	12 Φ @150 C/C	
	31	2L-10 Φ STIRRUPS @ 300 C/C (3 LAYERS)	
DIRT WALL	32	12 Φ @150 C/C	
	33	12 Φ @150 C/C	
	34	12 Φ @150 C/C	
	35	20 Φ @150 C/C	
	35a	20 Φ -3 Nos. (2 LAYERS)	
SCREEN CAP	36	16 Φ @150 C/C	
	36a	12 Φ @150 C/C	
	36b	16 Φ @150 C/C	
COUNTERFORT	37	NOT IN USED	
	38	32 Φ -4 Nos.	
	39	32 Φ -4 Nos.	
	40	16 Φ @150 C/C	
	41	16 Φ @150 C/C	
	42	16 Φ @150 C/C	
RCC PEDESTAL	43	12 Φ @ 75c/c	
	44	12 Φ @ 75c/c	
	45	2L-12 Φ @ 150c/c STRPS.	
TRANSVERSE SEISMIC STOPPER	46	4L-12 Φ @ 125c/c STRPS.	
	46a	2L-12 Φ @ 125c/c STRPS.	
	47	16 Φ -3 Nos. BOTH FACES	
LONG. SEISMIC STOPPER	48	32 Φ -6 Nos. BOTH FACES	
	48a	25 Φ -6 Nos. BOTH FACES	
	49	4L-12 Φ @ 150c/c STRPS.	
	50	16 Φ -5 Nos. BOTH FACES	
	51	32 Φ -6 Nos. BOTH FACES	

REINFORCEMENT SCHEDULE

MARKS	DESCRIPTION	SHAPE
FOOTING & SCREEN WALL	1 16 Φ @150 C/C	
	2 16 Φ @150 C/C	
	3 16 Φ @150 C/C	
	4 12 Φ @150 C/C	
	5 12 Φ @150 C/C	
	6 16 Φ @150 C/C	
	7 16 Φ @150 C/C	
	8 16 Φ @150 C/C	
	9 12 Φ @150 C/C	
	10 12 Φ @150 C/C	
	11 12 Φ @150 C/C	
	12 10 Φ -2 Nos.	
	13 12 Φ @150 C/C	
	14 12 Φ -5 Nos.(ON EACH FACE)	
	15 12 Φ @150 C/C (LINK BAR)	
FOOTING (TOE SIDE)	16 16 Φ @150 C/C	
	17 2L-16 Φ @150 C/C	
	18 25 Φ @150 C/C	
	19 32 Φ @150 C/C	
	19a 32 Φ @150 C/C	
RETURN WALL	20 5L12 Φ @300 C/C	
	21 25 Φ -3 Nos. (2 LAYERS)	
	22 32 Φ @150 C/C	
	22a 32 Φ @150 C/C	
	23 16 Φ @150 C/C	
	23a 16 Φ @150 C/C	
	24 32 Φ @175 C/C	
	24a 32 Φ @175 C/C	
	24b 12 Φ -4 Nos.	
	24c 20 Φ @150 C/C	
	25 16 Φ @175 C/C	
	25a 16 Φ @150 C/C	
	26 20 Φ -4 Nos.	
	26a 12 Φ @150 C/C	
	27 12 Φ -3 Nos.	
	28 12 Φ @150 C/C	

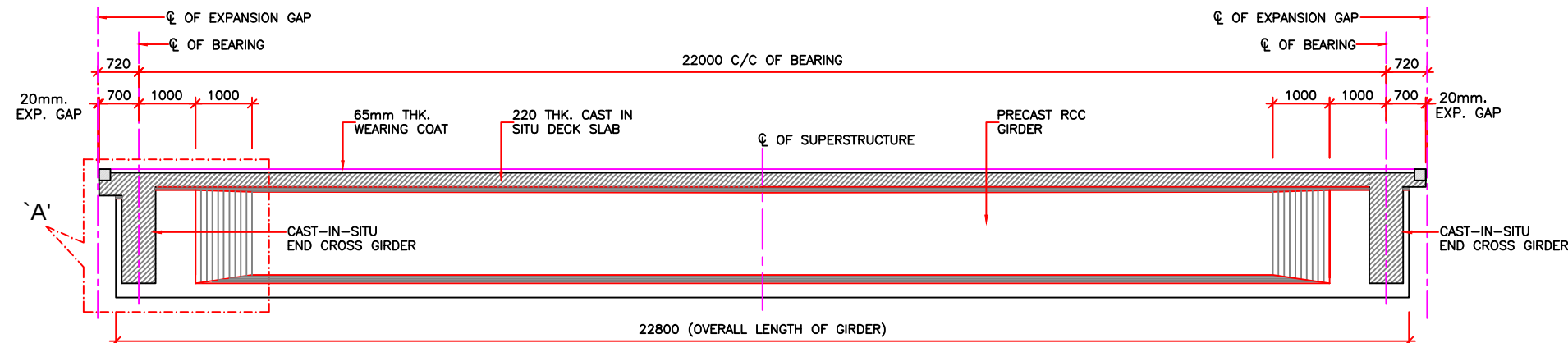
NOTES :-

- ALL DIMENSIONS ARE IN MM, UNLESS OTHERWISE MENTIONED.
- ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED AND NO DIMENSION SHALL BE SCALED.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150MM CUBE AS FOLLOWS:
 - LEVELING COURSE (UNDER FOUNDATION) - 10MPa
 - LEVELING COURSE (UNDER APPROACH SLAB) - 15MPa
 - FOUNDATION - 30MPa
 - SUBSTRUCTURE - 30MPa
 - APPROACH SLAB - 30MPa
 - PEDESTAL - 40MPa
 - SEISMIC STOPPER - 30MPa
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- MINIMUM CLEAR COVER TO OUTER MOST REINFORCEMENT SHALL BE AS UNDER:-
 - SUBSTRUCTURE (EARTH FACE) - 75MM
 - SUBSTRUCTURE (NON EARTH FACE) - 50MM
 - FOUNDATION - 75MM
- LL REPRESENTS LONGITUDINAL AXIS OF BRIDGE AND TT REPRESENTS TRANSVERSE AXIS OF ABUTMENT/FOUNDATION.
- MINIMUM ANCHORAGE LENGTH OF REINFORCEMENT FOR FAVOURABLE CONDITION SHALL BE AS UNDER:
 - CONCRETE GRADE - M-30 - 40 x DIA OF BAR
 - CONCRETE GRADE - M-40 - 34 x DIA OF BAR
 (WHERE DIA OF BAR <= 32MM.)
 FOR UNFAVOURABLE CONDITION THESE VALUES SHALL BE MULTIPLIED BY 1.43.
- MINIMUM LAP LENGTH OF REINFORCEMENT FOR FAVOURABLE CONDITION SHALL BE AS UNDER:
 - CONCRETE GRADE - M-30 - 56 x DIA OF BAR
 - CONCRETE GRADE - M-40 - 48 x DIA OF BAR
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DRGS.
 - GENERAL ARRANGEMENT DRAWING REFER DRG. NO. : NIRTTP/NAG-MUG/MOWA/GAD
 - DIMENSIONAL DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS REFER DRG. NO. : NIRTTP/NAG-MUG/MOWA/SUB-01

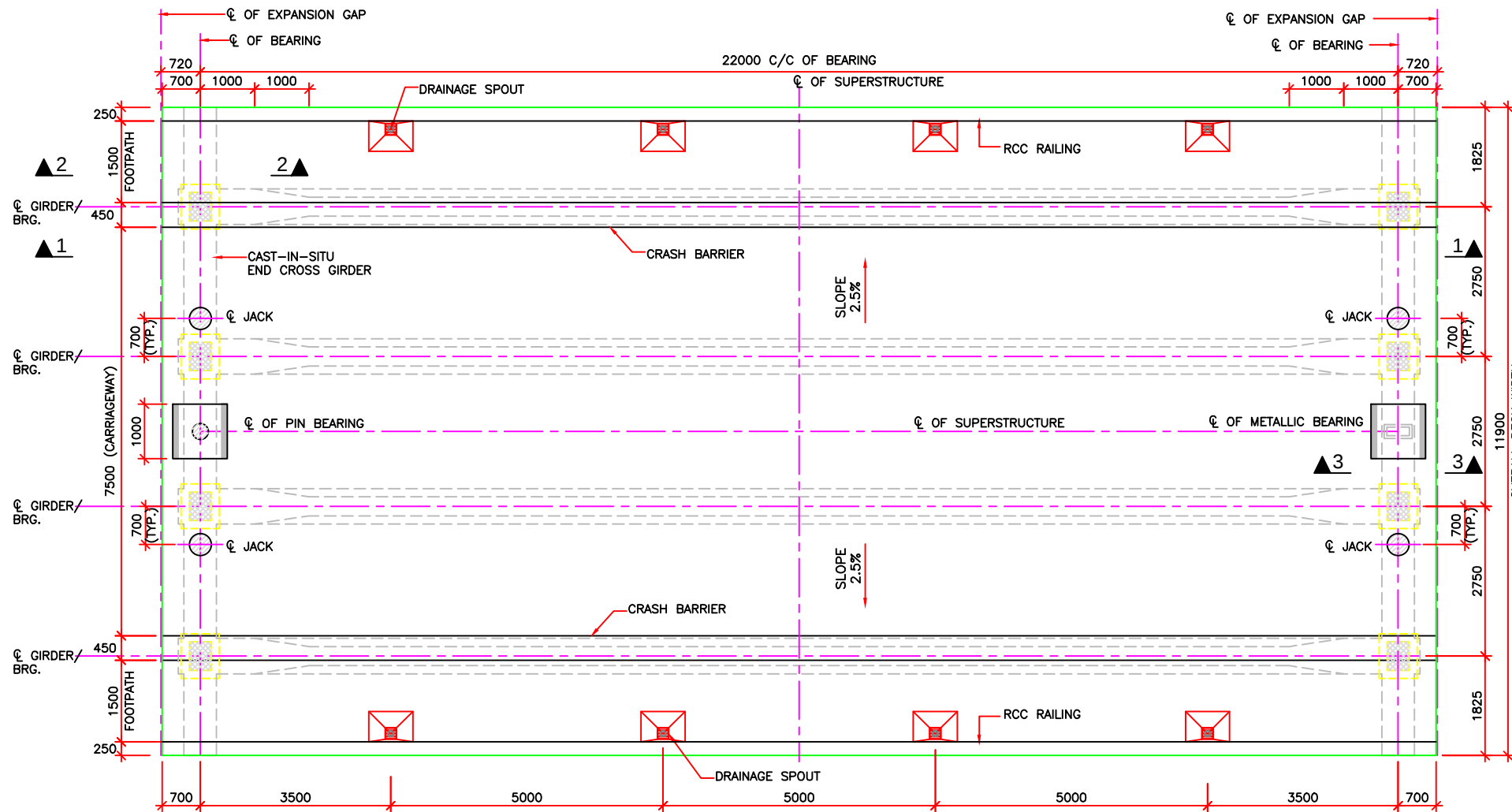
LEGEND

TOP REINFORCEMENT BARS ————
BOTTOM REINFORCEMENT BARS - - - - -

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	M.L.GUPTA	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH: 66+130 OVER MOWA KHOLA (1x22.00m) PACKAGE-IV (BENIGHAT-MUGLING) Drawing No.: NIRTTP/NAG-MUG/MOWA/SUB-02	As Shown	(SHEET 3 OF 3)
			Checked By	P.K.KHAN			
			Approved By	B.N.SINGH			



SECTIONAL ELEVATION 1 - 1
(SCALE 1:75)



TOP PLAN OF DECK SLAB
(SCALE 1:75)

LEGEND:-

- CAST-IN-SITU PORTION
- JACK LOCATION IN PLAN
- JACK LOCATION IN ELEVATION

NOTES:-

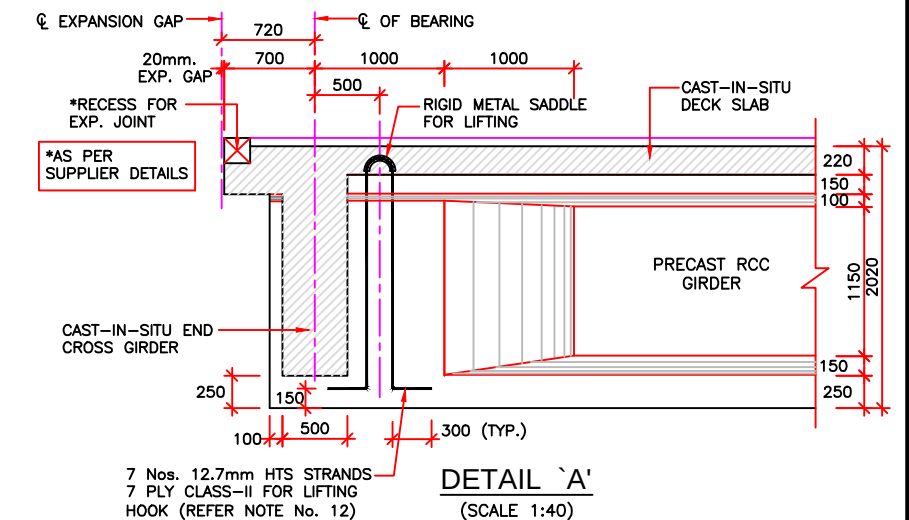
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
2. THE BRIDGE HAS BEEN DESIGNED FOR TWO LANE TRAFFIC FOR LIVE LOAD COMBINATIONS OF CLASS A AND 70R WITH FOOTPATH LIVE LOAD. OR IRC SV VEHICLE WITH FOOTPATH LIVE LOAD. OR THREE LANE TRAFFIC FOR LIVE LOAD COMBINATIONS OF CLASS A AND 70R WITHOUT FOOTPATH LIVE LOAD AS PER IRC:6-2017, WHICHEVER GOVERNS.
3. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES AS FOLLOWS :-
PRECAST RCC GIRDER + RCC CAST IN SITU DECK SLAB-35 MPa
4. THE REINFORCING BARS SHALL BE OF THERMO MECHANICALLY TREATED / CORROSION RESISTANT STEEL (TMT-CRS) (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786 STANDARDS.
5. CLEAR COVER TO OUTER MOST STEEL SHALL BE AS UNDER:-
FOR SUPER STRUCTURE-40mm.
6. 65mm. THK. WEARING COURSE COMPRISING OF 40mm THK. BITUMINOUS CONCRETE OVER LAID WITH 25mm THK. MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORTH SPECIFICATIONS.
7. FOR LIFTING OF THE SUPERSTRUCTURE 2Nos. OF FREYSSINET JACKS OF CAPACITY 135t EACH MAY BE REQUIRED AT EACH END. THE LOCATION OF JACKS FOR LIFTING OF THE SUPERSTRUCTURES TO REPLACE BEARINGS ETC. IS SHOWN ↑ THUS THIS SHALL BE DISTINCTLY ETCHED FOR EASY IDENTIFICATION ON THE ABUTMENT CAPS
8. DURING THE LIFTING OPERATION OF SUPERSTRUCTURE ALL THE JACKS PLACED UNDER THE END DIAPHRAGM IN LINE WITH THE BEARINGS SHALL BE OPERATED SIMULTANEOUSLY USING SINGLE OPERATING CONSOLE, GROUPING THE PUMP AND CONTROL SYSTEM SO AS TO ENSURE THAT THE REACTIONS ON ALL THE JACKS ARE EQUAL AT ALL TIMES.
9. PRECAST GIRDERS SHALL BE CAST IN ONE CONCRETING OPERATION IN CASTING YARD WITHOUT ANY CONSTRUCTION JOINT.
10. EACH PRECAST GIRDER WILL BE LIFTED BY USING LIFTING STRANDS AT EITHER END. DURING LIFTING, GIRDER SHALL BE KEPT PLUMB AND UPRIGHT SELF WEIGHT OF GIRDER IS 545kN.

SEQUENCE OF CONSTRUCTION:-

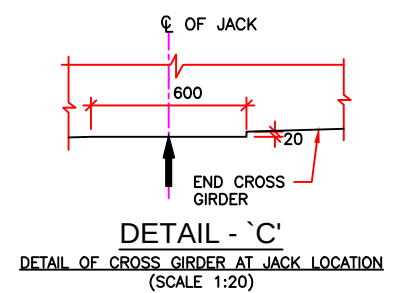
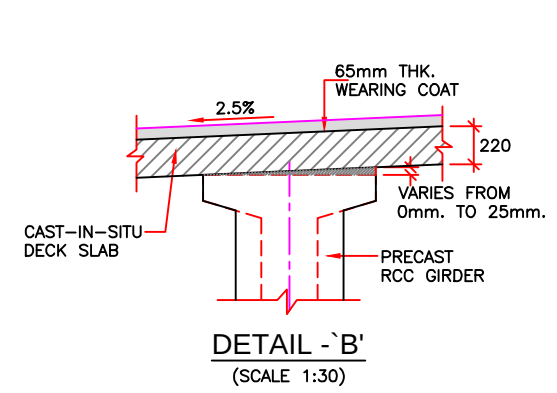
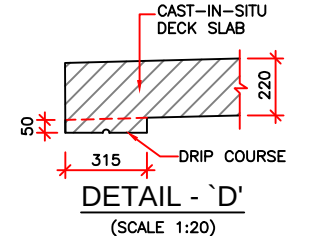
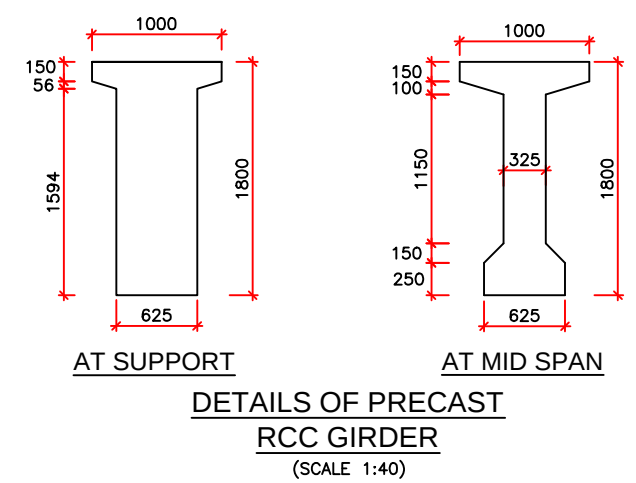
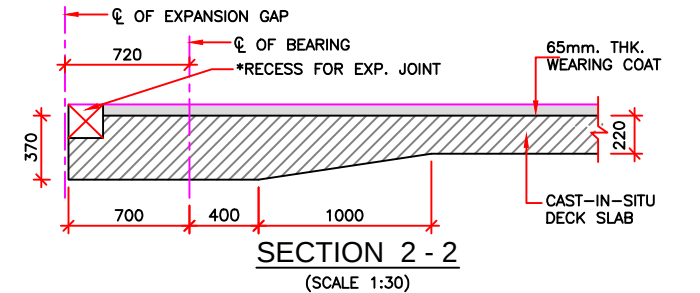
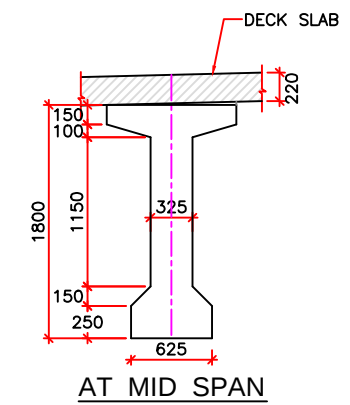
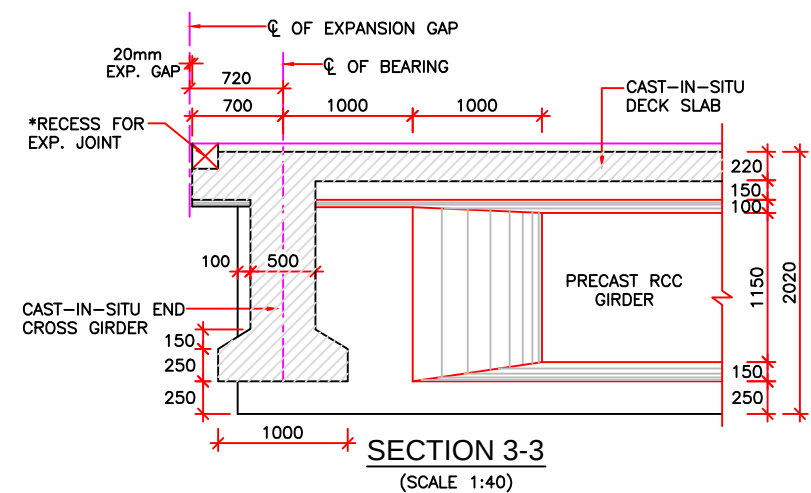
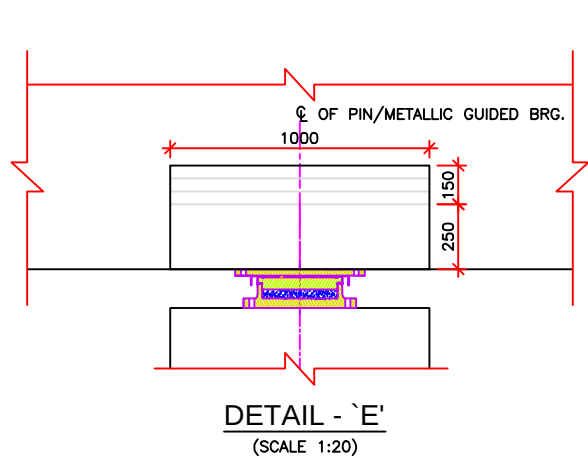
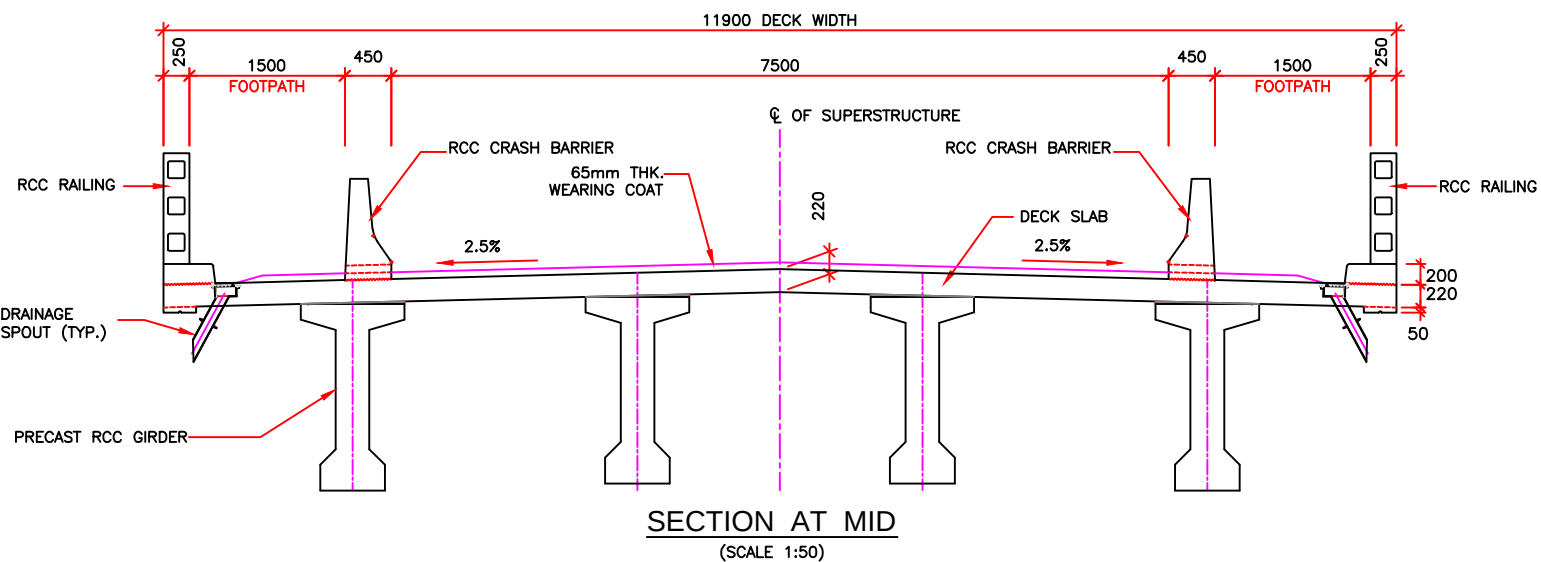
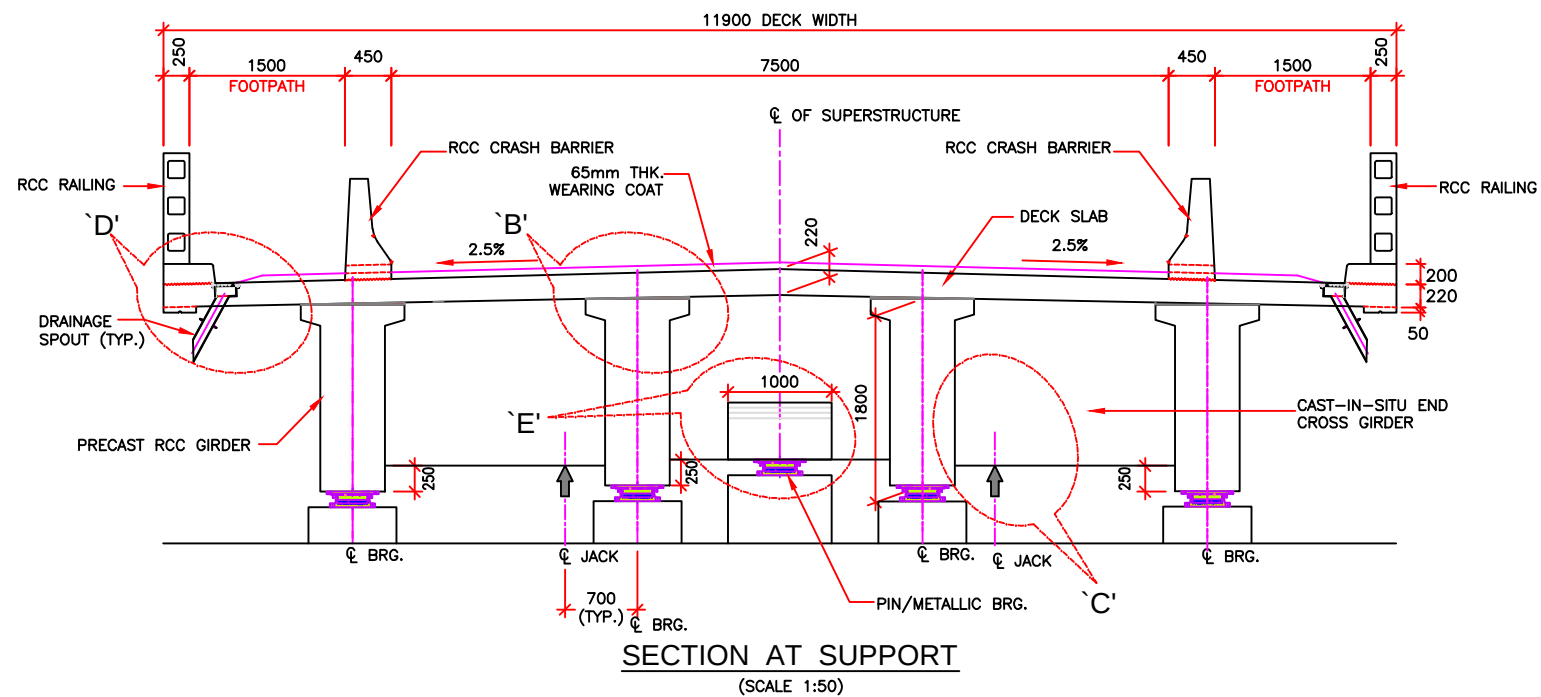
AGE OF GIRDER (IN DAYS)	ACTIVITY	STRENGTH OF CONC. (IN MPa)
0	CASTING OF LONGITUDINAL GIRDER AT CASTING YARD WITH PORTION OF DIAPHRAGM	-
14 to 28	POSITION OF LONGITUDINAL GIRDER ON TEMPORARY BRGS. AND HOLD THEM IN POSITION BY LATERAL BRACING. REINF. OF DECK SLAB & END DIAPHRAGM WILL BE FIXED IN POSITION	30
28	CASTING OF DECK SLAB ALONG WITH CROSS GIRDER	35
28 to 42	AVERAGE AGE OF GIRDER WHEN COMPOSITE ACTION TAKES PLACE	35
42 to 56	FIXING THE CRASH BARRIER AND LAYING OF WEARING COAT	35
56	AVERAGE AGE OF GIRDER WHEN SILD & CWLL ON IT	35

REFERENCE DRAWINGS:-

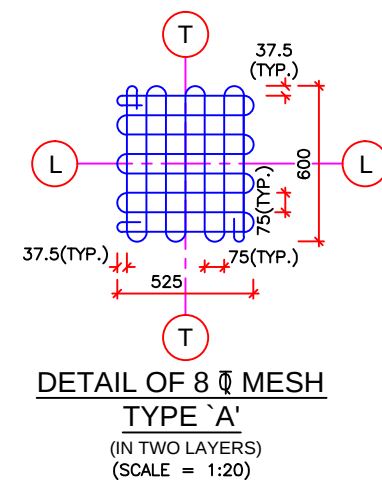
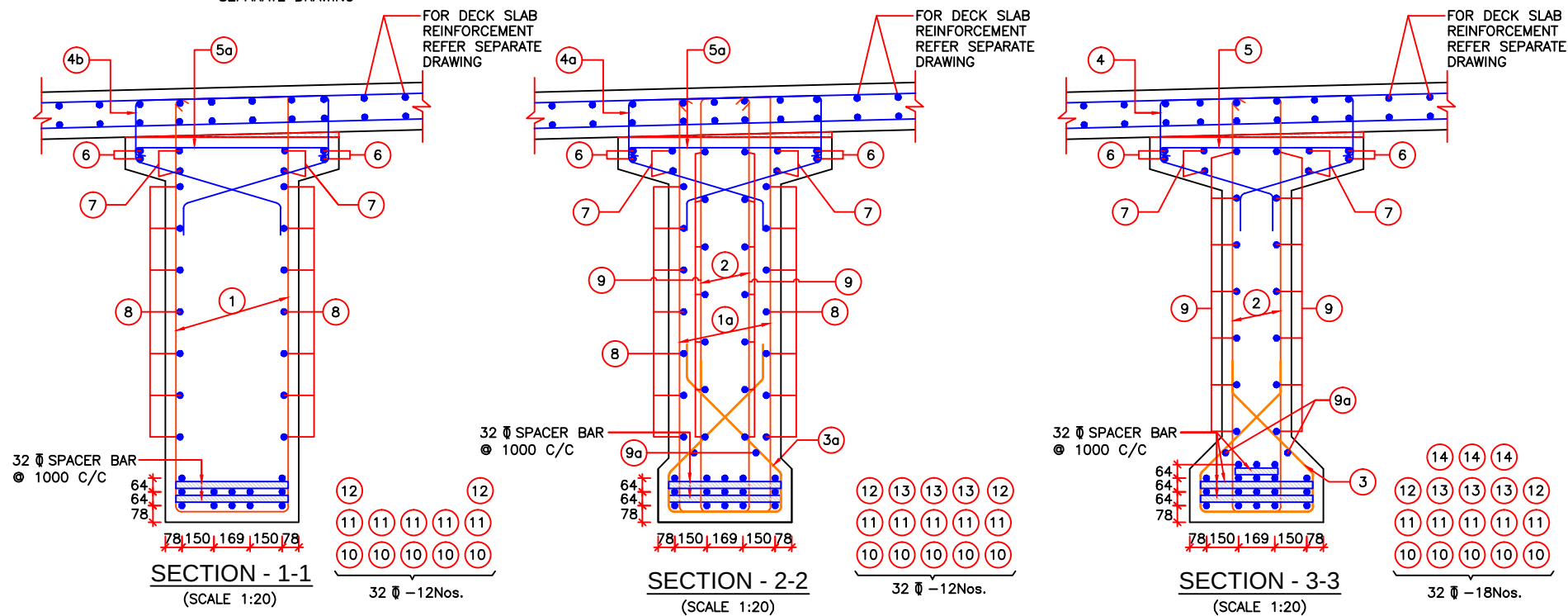
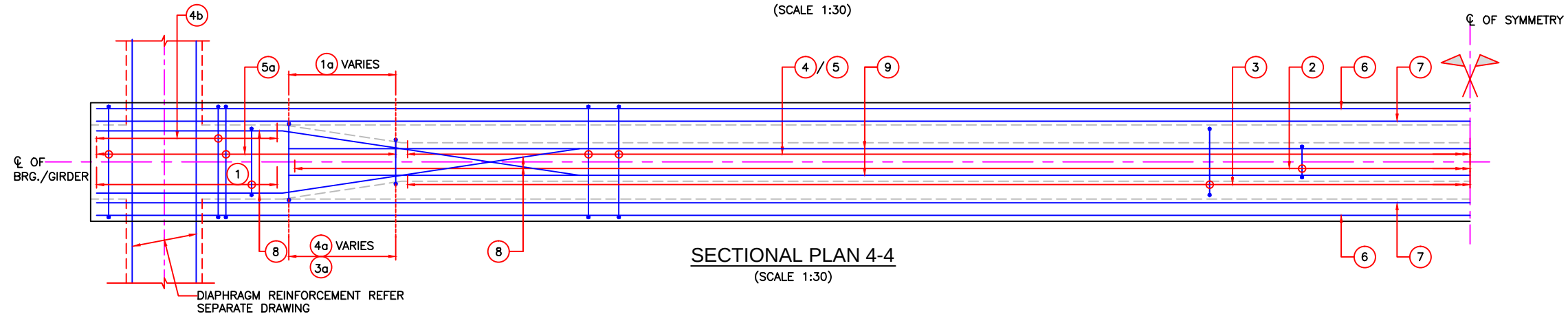
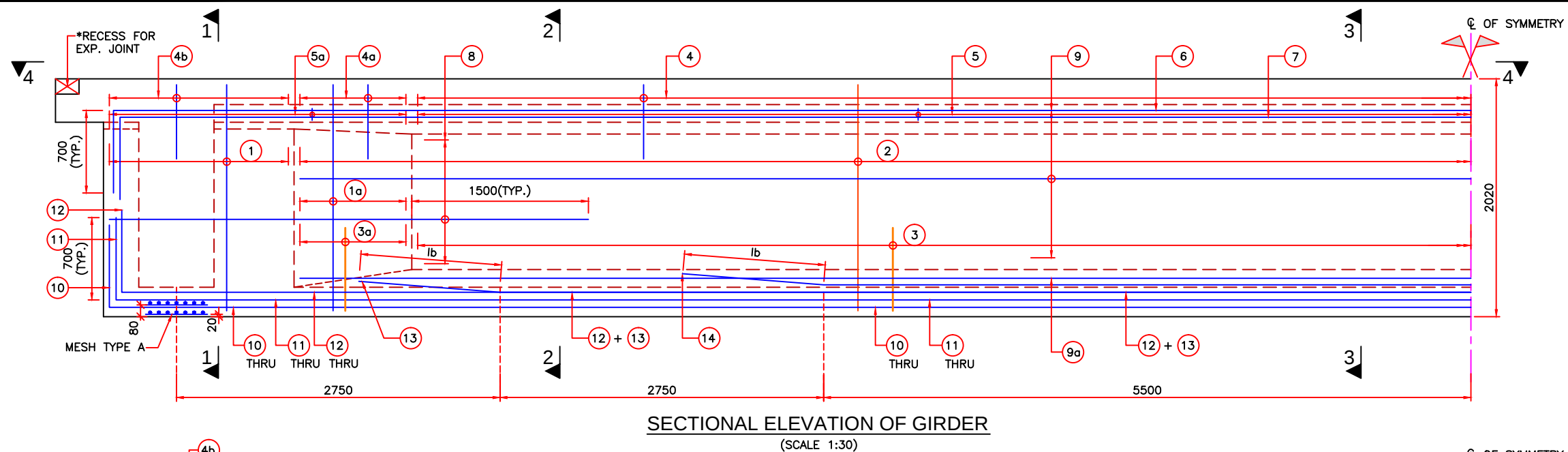
1. REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:-
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/02
2. REINFORCEMENT DETAILS OF END CROSS GIRDER:-
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/03
3. REINFORCEMENT DETAILS OF RCC DECK SLAB:-
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/04 (SHEET 1 & 2)
4. DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:-
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/05



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE: DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 22.00m	Scale:	Date: Nov. 2017
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	K.M. JOHRI	V. CHAUDHARY	P.K. KHAN	B.N. SINGH	NIRTP/NAG-MUG/MOWA/RCC-G/22m/01	As Shown	(SHEET 1 OF 2)



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHRI	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 22.00m Drawing No.: NIRTP/NAG-MUG/MOWA/RCC-G/22m/01	As Shown	
(SHEET 2 OF 2)									



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD. BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008. HAVING MINIMUM ELONGATION OF 16% AS PER TABLE:18.1 OF IRC:112-2011.
- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOWS WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.3.1)
 $LAP LENGTH (l_s) = \alpha \cdot l_{bnet}$
 $\alpha = 1.0$ FOR $p \leq 25\%$
 $\alpha = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha \cdot l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.43)

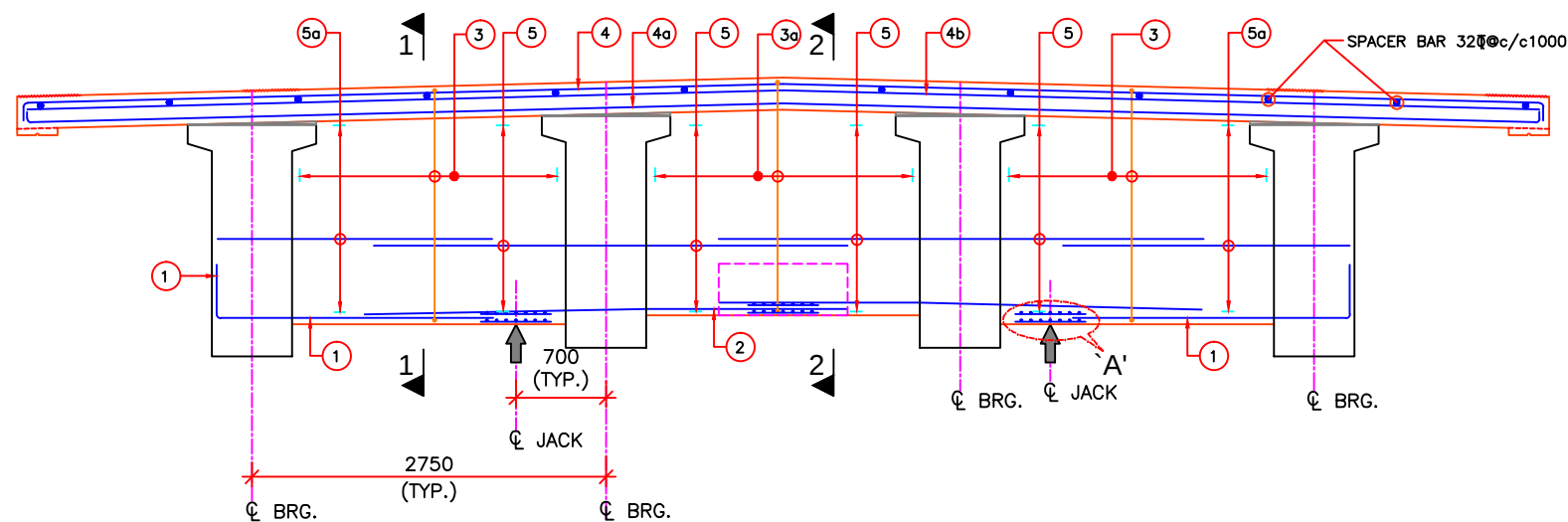
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTP/NAG-MUG/MOWA/RCC-G/22m/01
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
 -NIRTP/NAG-MUG/MOWA/RCC-G/22m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
 -NIRTP/NAG-MUG/MOWA/RCC-G/22m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTE BEARINGS:
 -NIRTP/NAG-MUG/MOWA/RCC-G/22m/05

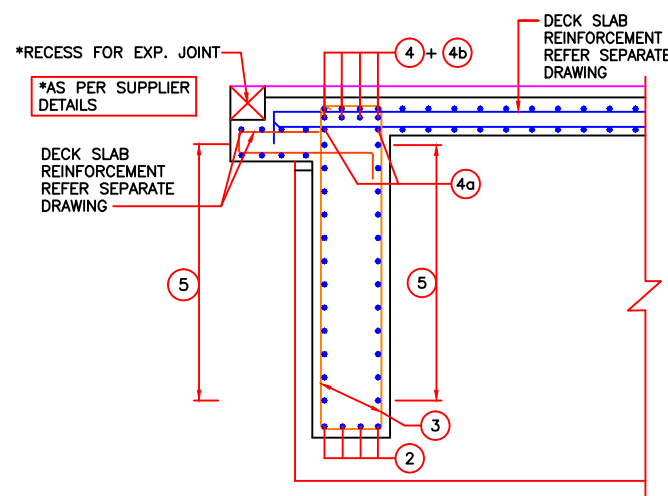
SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12 Ø125 C/C		STIRRUP
1a	2L-12 Ø125 C/C		STIRRUP (VARIES)
2	2L-12 Ø150 C/C		STIRRUP
3	10 Ø150 C/C		
3a	10 Ø125 C/C		(VARIES)
4	10 Ø150 C/C		
4a	10 Ø125 C/C		(VARIES)
4b	10 Ø125 C/C		
5	10 Ø150 C/C		LINKS
5a	10 Ø125 C/C		LINKS
6	12 Ø-4 Nos.		
7	12 Ø-4 Nos.		
8	10 Ø-7 Nos.		ON EACH FACE
9	10 Ø-7 Nos.		ON EACH FACE
9a	10 Ø-1 Nos.		ON EACH FACE
10	32 Ø-5 Nos.		
11	32 Ø-5 Nos.		
12	32 Ø-2 Nos.		
13	32 Ø-3 Nos.		
14	32 Ø-3 Nos.		

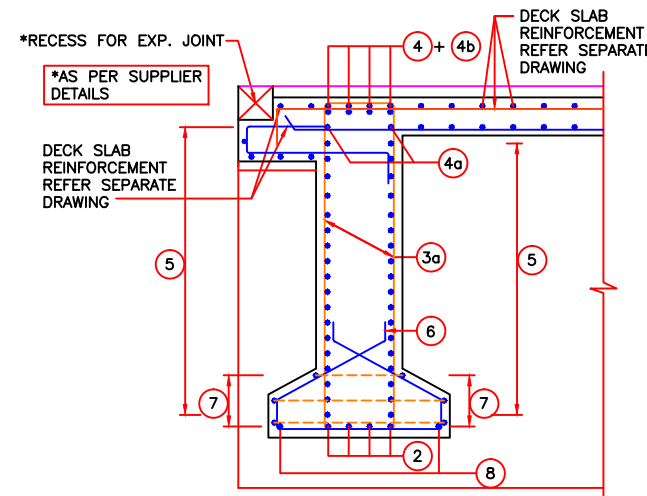
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 22.00m	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.: NIRTP/NAG-MUG/MOWA/RCC-G/22m/02		



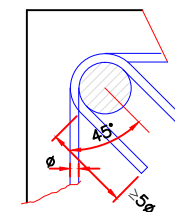
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



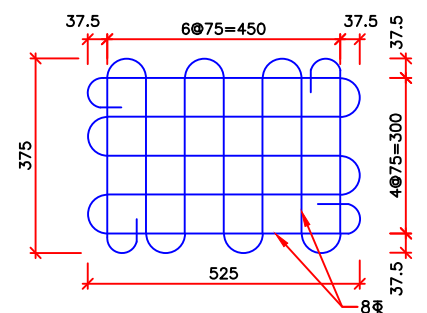
SECTION 1-1
(SCALE 1:30)



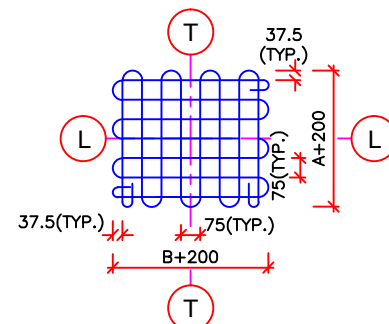
SECTION 2-2
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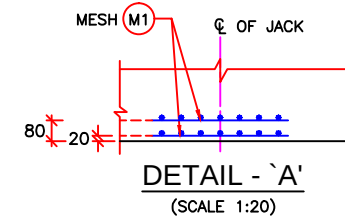
TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:30)



DETAIL OF 8mm MESH (M1)
REINF. FOR JACK LOCATION
(SCALE 1:10)



DETAIL OF 8mm MESH (M2) REINF.
FOR PIN / METALLIC GUIDED BEARING
WHERE A & B ARE SIZE OF BEARING
(SCALE 1:20)



DETAIL - 'A'
(SCALE 1:20)

NOTES:-

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- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD. BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008. HAVING MIN. ELONGATION OF 16% AS PER TABLE:18.1 OF IRC:112-2011
- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)

$$LAP LENGTH l_s = \alpha l_{bnet}$$

$$\alpha l = 1.0 \text{ FOR } p \leq 25\%$$

$$\alpha l = 1.15 \text{ FOR } 25\% \leq p \leq 33\%$$

$$\alpha l = 1.4 \text{ FOR } 33\% \leq p \leq 50\%$$
 (IRC:112-2011) (CLAUSE:15.2.3.3)

$$DEVELOPMENT LENGTH (l_{bnet})$$

$$l_{bnet} = \alpha l_b (\alpha = 1.0)$$

$$l_b = k \phi$$

$$k = 40 \text{ FOR M30 (Fe500D)}$$

$$k = 36 \text{ FOR M35 (Fe500D)}$$

$$k = 34 \text{ FOR M40 (Fe500D)}$$
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b , SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{f_{yk}})$

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/02
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/04 (SHEET 1 & 2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/05

REINFORCEMENT SCHEDULE FOR END DIAPHRAGM

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	25mm - 4 Nos.		
2	25mm - 4 Nos.		
3	25mm - 2L @125 c/c		
3a	25mm - 2L @125 c/c		
4	25mm - 4 Nos.		
4a	16mm - 2 Nos.		
4b	25mm - 4 Nos.		
5	25mm - 14 Nos.		(ON EACH FACE)
5a	16mm - 14 Nos.		(ON EACH FACE)
6	12mm - 7 Nos.		
7	12mm - 3 Nos.		
8	10mm - 2 Nos.		



EMPLOYER
Government of Nepal
Ministry of Physical
Infrastructure and Transport,
Department of Roads,
Foreign Co-operation Branch

PROJECT
Nepal India Regional Trade and Transport
Project (NIRTP)
(IDA CREDIT No. 5273 - NEP)
Feasibility Study of Kathmandu (Nagdhunga) -
Nauaise - Mugling Road and Bridges



DESIGN CONSULTANT
Intercontinental Consultants & Technocrats Pvt.Ltd,
A-8, Green Park, New Delhi - 110016
Ph : 4086-3000, Fax 2685-5252
In Joint Venture With
Soosung Engineering Co. Ltd., South Korea

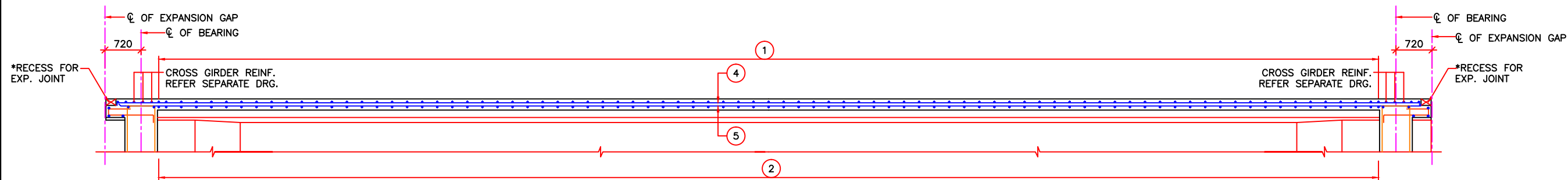


In Association With
Full Bright Consultancy (Pvt.) Ltd.
316, Baburam Acharya Sadak,
Sinamangal, Kathmandu, GPO
Box: 4970, Kathmandu, Nepal

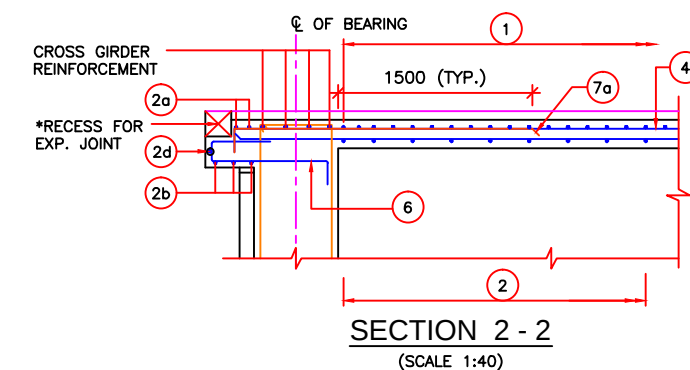
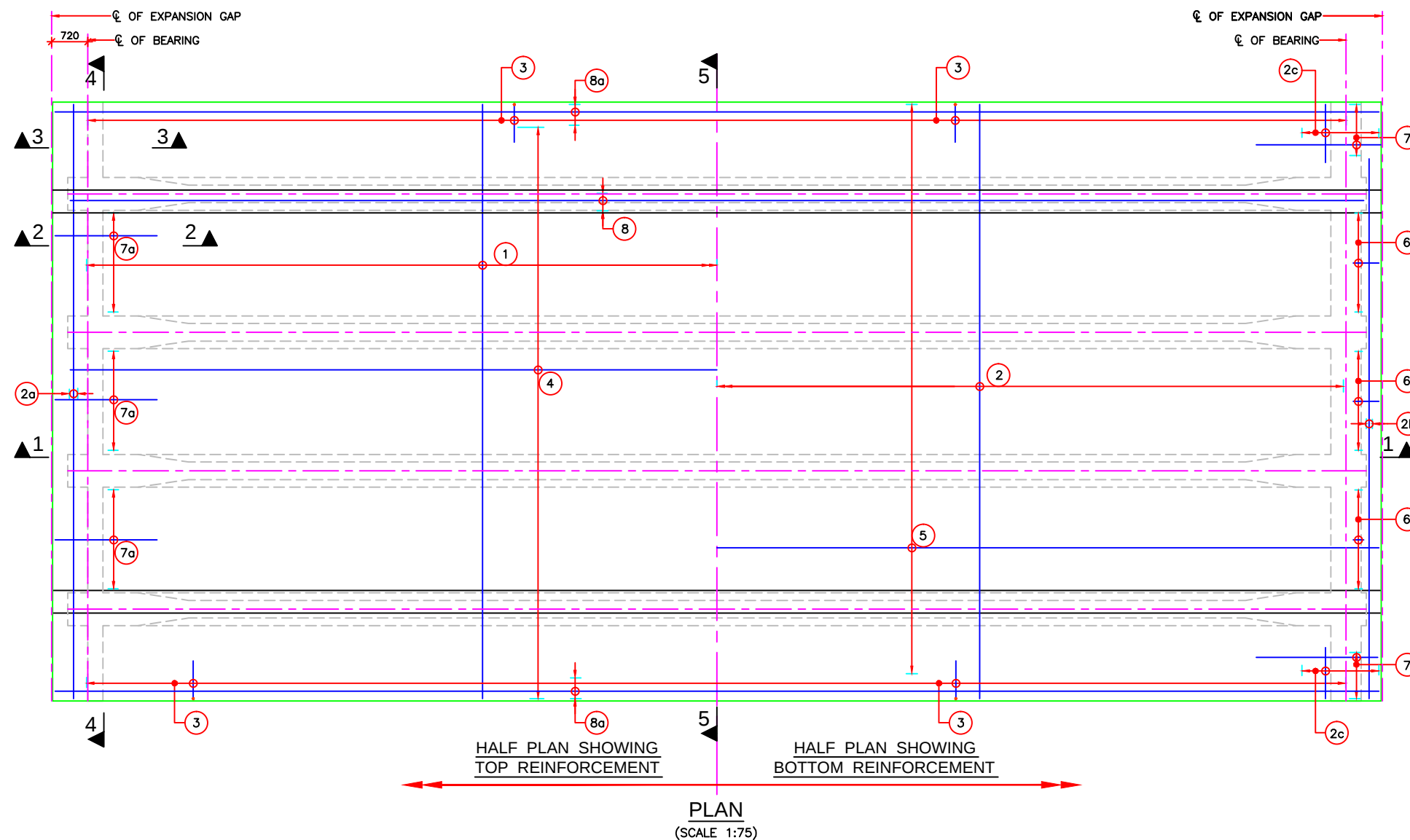
Prepared By *K.M. JOHRI* K.M. JOHRI
Designed By *V. CHAUDHARY* V. CHAUDHARY
Checked By *P.K. KHAN* P.K. KHAN
Approved By *B.N. SINGH* B.N. SINGH

DRAWING TITLE:
REINFORCEMENT DETAILS OF
END CROSS GIRDER
EFFECTIVE SPAN : 22.00m
Drawing No.:
NIRTP/NAG-MUG/MOWA/RCC-G/22m/03

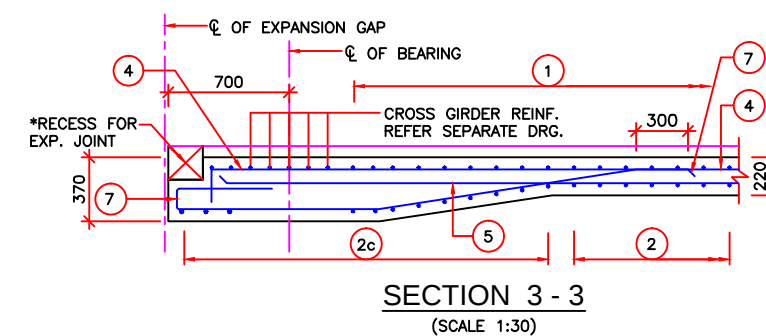
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As Shown
Date: Nov. 2017



SECTION 1 - 1
(SCALE 1:60)

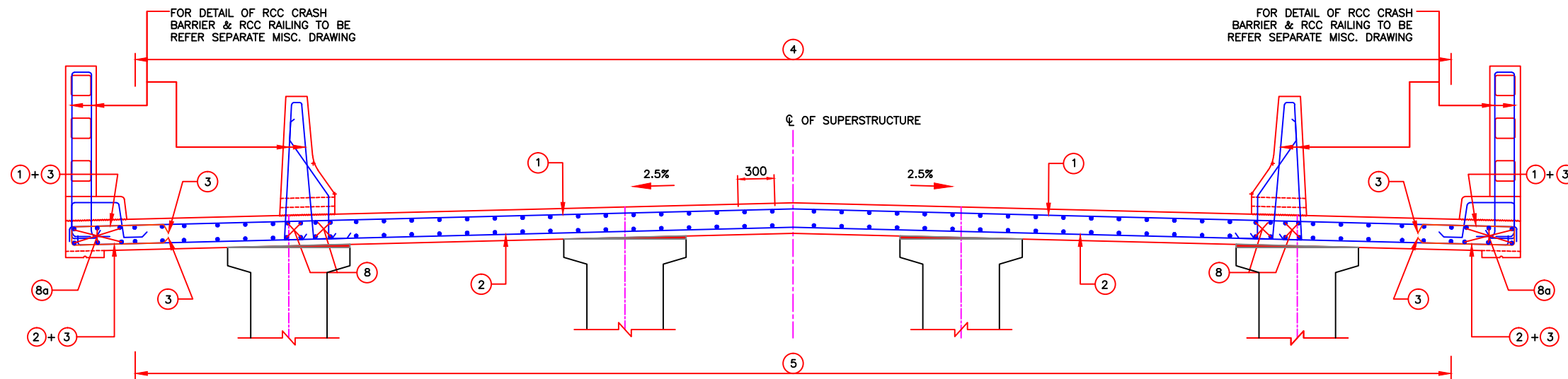


SECTION 2 - 2
(SCALE 1:40)

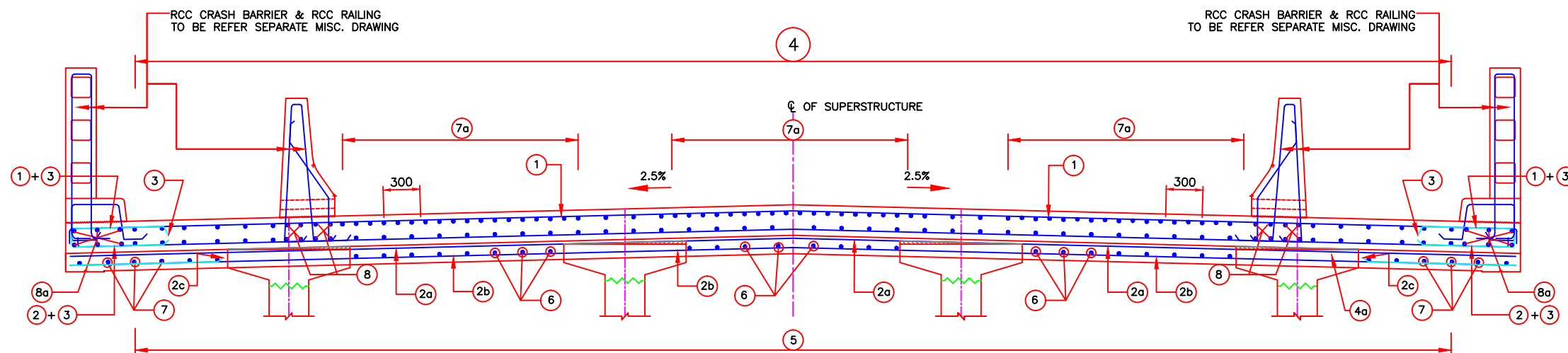


SECTION 3 - 3
(SCALE 1:30)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 22.00m	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		(SHEET 1 OF 2)
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/MOWA/RCC-G/22m/04		



SECTION AT 5-5 (MID SPAN)
(SCALE 1:30)



SECTION AT 4-4 (NEAR SUPPORT)
(SCALE 1:30)

FOR RCC CRASH BARRIER REINF.
REFER MISCELLANEOUS DRG.

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE REINFORCEMENT SHALL BE HYSD. BARS (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786-2008, HAVING MIN. ELONGATION OF 16% AS PER TABLE:18.1 OF IRC:112-2011
- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
- LAPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% \leq p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% \leq p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 DEVELOPMENT LENGTH (l_{bnet})
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{\phi})$
- RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/03
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/MOWA/RCC-G/22m/05

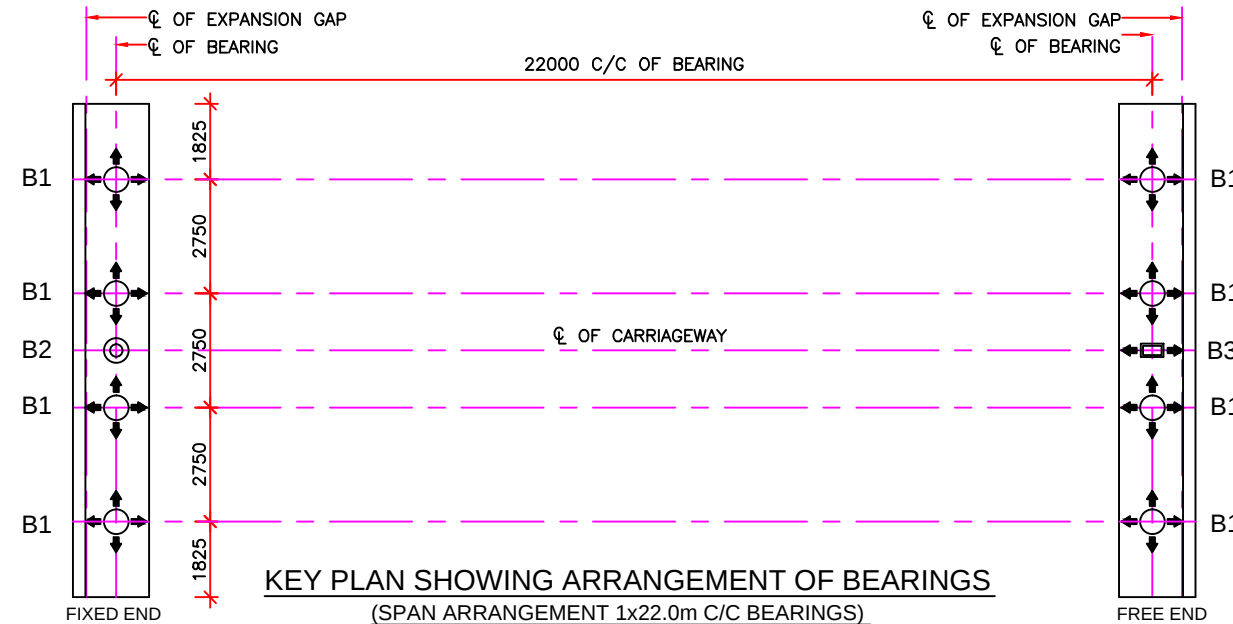
REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
①	12 Φ 100 C/C		
②	12 Φ 100 C/C		
2a	12 Φ 100 C/C		
2b	12 Φ 100 C/C		
2c	12 Φ 100 C/C		
2d	12 Φ - 1 Nos.		
③	12 Φ 100 C/C		
④	10 Φ 200 C/C		
⑤	10 Φ 200 C/C		
⑥	12 Φ 200 C/C		
⑦	12 Φ 200 C/C		
7a	12 Φ 200 C/C		
⑧	16 Φ - 8 Nos.		(ON EACH SIDE)
8a	16 Φ - 6 Nos.		(ON EACH SIDE)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov. 2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHRI	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 22.00m Drawing No.: NIRTP/NAG-MUG/MOWA/RCC-G/22m/04	As Shown	(SHEET 2 OF 2)

LEGEND:-

B1		FREE SLIDING POT-CUM-PTFE BEARING
B2		PIN BEARING
B3		METALLIC GUIDED BEARING



KEY PLAN SHOWING ARRANGEMENT OF BEARINGS
(SPAN ARRANGEMENT 1x22.0m C/C BEARINGS)

NOTES:-

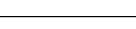
1. MATERIAL SPECIFICATIONS, DESIGN OF BEARINGS, ACCEPTANCE CRITERIA AND INSTALLATION MORTH SHALL BE IN ACCORDANCE WITH IRC:83 (PART III)-2002 AND MOSRTH SPECIFICATIONS (FOURTH REVISION).
2. BEARINGS SHALL BE OBTAINED FROM MANUFACTURERS APPROVED BY MORTH.
3. INSTALLATION OF BEARINGS SHALL BE UNDER THE SUPERVISION OF REPRESENTATIVE OF THE MANUFACTURER.
4. FOR DESIGN LOADS AND ROTATIONS REFER TABLE IN THE DRAWING.
5. FOR BEARINGS, DETAILED SHOP DRAWINGS SHALL BE PREPARED BY THE SUPPLIER AND BE DULY APPROVED BEFORE MANUFACTURE AND INSTALLATION.
6. THE GROUT/BEDDING MORTAR SHALL BE HIGH STRENGTH FREE FLOWING NON SHRINK GROUT (80 MPa STRENGTH).
7. ALL BEARING SHALL BE PLACED IN TRULY HORIZONTAL PLANE ONLY.
8. FOR DESIGN OF POT BEARINGS, THE DESIGN HORIZONTAL FORCE SHALL, IN NO CASE BE LESS THAN 10% AND GREATER THAN 25% OF THE DESIGN VERTICAL LOAD.
9. THE CONTRACTOR AND SUPPLIER OF BEARINGS SHALL BE FURNISH A MINIMUM TROUBLE FREE WARRANTY OF 10 YEARS AFTER OPENING OF THE BRIDGE.
10. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH:
DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
NIRTP/NAG-MUG/MOWA/RCC-G/22m/01 (SHEET 1 & 2)

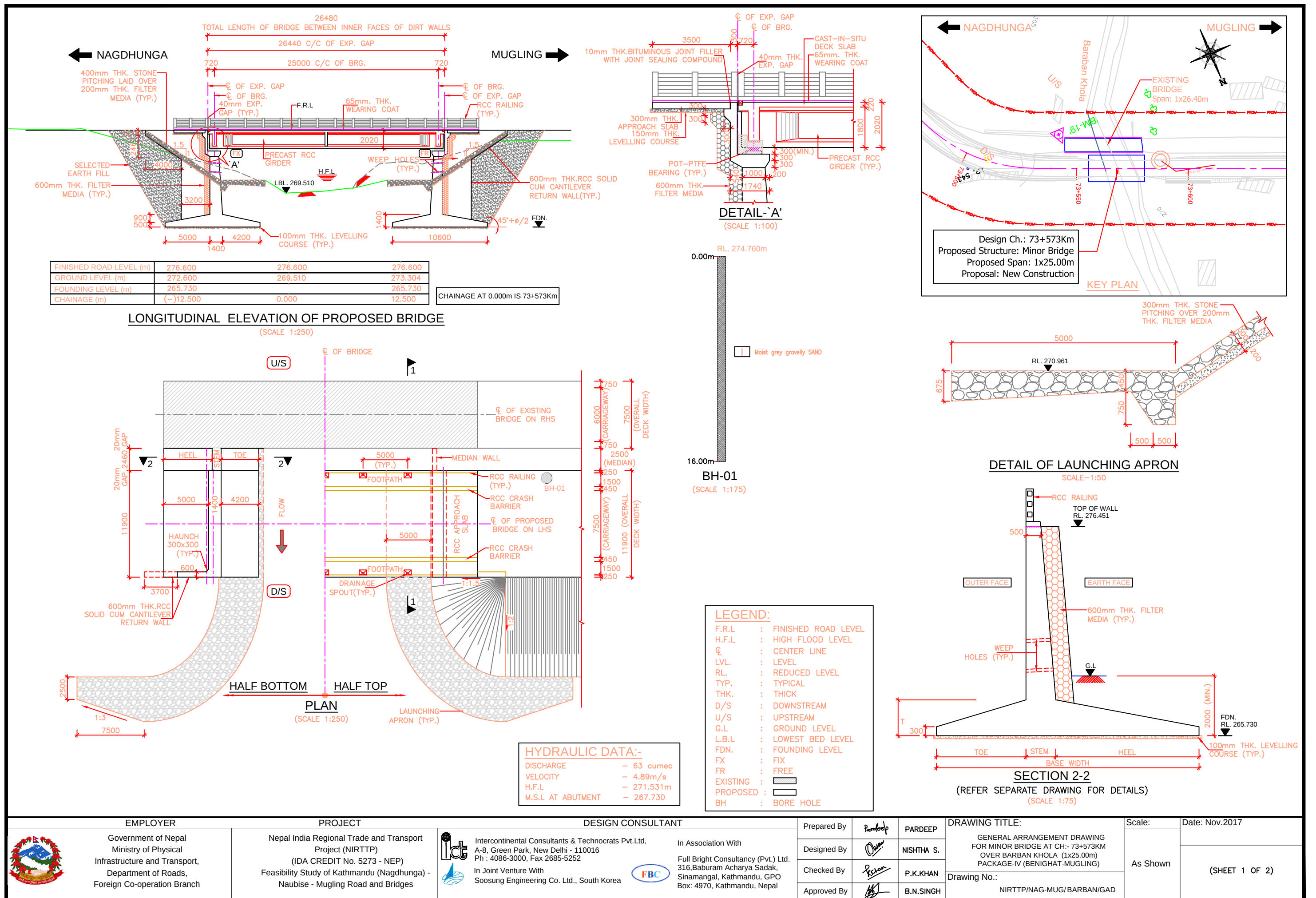
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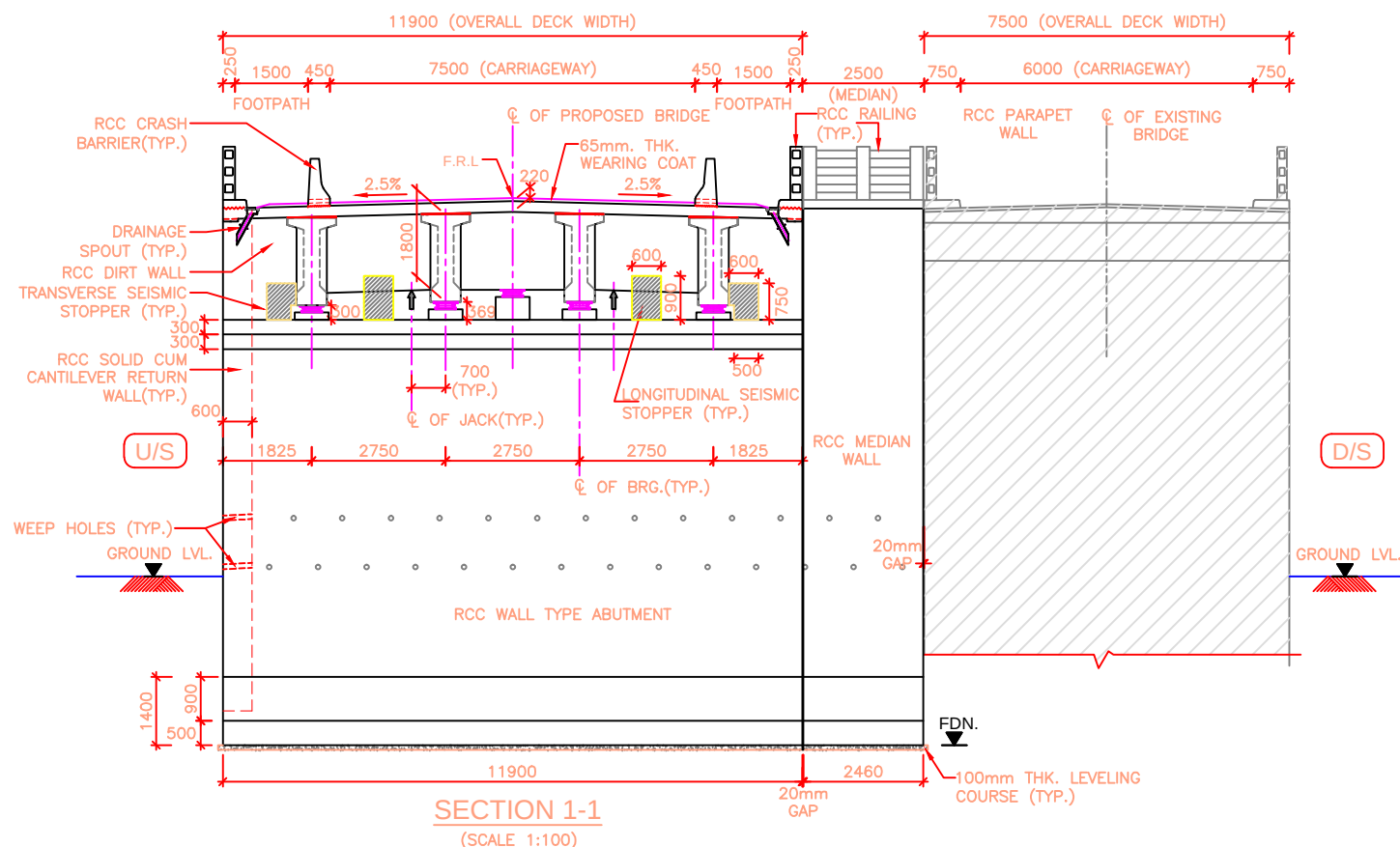
1. STRUCTURE IS LOCATED IN SEISMIC ZONE : V
2. GRADE OF CONCRETE
ABUTMENT CAP. M-30
PEDESTAL M-40

TABLE SHOWING DATA FOR DESIGN OF BEARINGS

SL. No.	BEARING TYPE	LOAD CONDITION	LOADS, FORCES, MOVEMENTS AND ROTATION DATA										BEARING (Nos.) PER SPAN
			VERTICAL LOAD (kN)		HORIZONTAL FORCE (kN)				ROTATION (RAD)		MOVEMENT (mm)		
			CASE	MAGNITUDE	LONGITUDINAL		TRANSVERSE		CASE	MAGNITUDE	LONGITUDINAL	TRANSVERSE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.		NORMAL	MAXIMUM (WITH LIVE LOAD)	1516	COEXISTING	152	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	8
			MINIMUM (WITH LIVE LOAD)	576	COEXISTING	58	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	440	COEXISTING	44	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	884	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
			MINIMUM (WITH LIVE LOAD)	522	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	487	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	884	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
			MINIMUM (WITH LIVE LOAD)	522	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	487	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	4.70	
2.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	278	COEXISTING	—	COEXISTING	0.002	—	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	203	COEXISTING	—	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	203	COEXISTING	—	COEXISTING	0.002	—	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	2469	COEXISTING	405	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	2469	COEXISTING	365	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	2433	COEXISTING	365	COEXISTING	0.002	—	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	766	COEXISTING	1349	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	766	COEXISTING	1216	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	766	COEXISTING	811	COEXISTING	0.002	—	—	
3.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—16.5/16.2	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	405	COEXISTING	0.002	—16.5/16.2	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	365	COEXISTING	0.002	—16.5/16.2	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	365	COEXISTING	0.002	—16.5/16.2	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	1349	COEXISTING	0.002	—16.5/16.2	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	1216	COEXISTING	0.002	—16.5/16.2	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	811	COEXISTING	0.002	—16.5/16.2	—	

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DETAILS OF LOADS AND FORCES FOR POT/PTFE BEARINGS EFFECTIVE SPAN : 22.00m	Scale: As Shown	Date: Nov. 2017	
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252  In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With  Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By		V.CHAUDHARY				Drawing No.: NIRTPP/NAG-MUG/MOWA/RCC-G/22m/05
					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				

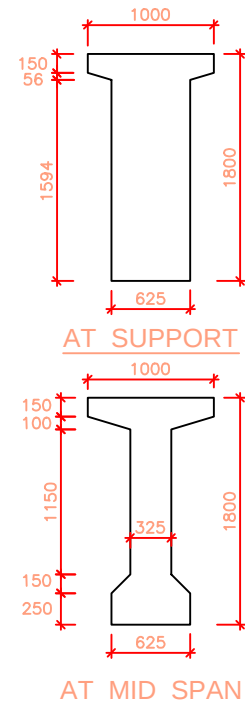




SECTION 1-1
(SCALE 1:100)

LEGEND:

F.R.L.	: FINISHED ROAD LEVEL
H.F.L.	: HIGH FLOOD LEVEL
CL	: CENTER LINE
LVL.	: LEVEL
RL.	: REDUCED LEVEL
TYP.	: TYPICAL
THK.	: THICK
D/S	: DOWNSTREAM
U/S	: UPSTREAM
G.L.	: GROUND LEVEL
L.B.L.	: LOWEST BED LEVEL
FDN.	: FOUNDING LEVEL
FX	: FIX
FR	: FREE
EXISTING	:
PROPOSED	:
BH	: BORE HOLE



CROSS SECTION OF PRECAST
RCC GIRDER
(SCALE 1:40)

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF ABUTMENT AND FOUNDATION:
-NIRTP/NAG-MUG/BARBAN/SUB-01
- REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER:
-NIRTP/NAG-MUG/BARBAN/SUB-02(SHEET1&2)
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/05

MISCELLANEOUS DRAWINGS:

- DETAILS OF APPROACH SLAB:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-01
- DETAILS OF DRAINAGE SPOUT & WEARING COAT:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-02
- DIMENSIONAL & REINF. DETAILS OF R.C.C CRASH BARRIER:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-03
- DIMENSIONAL & REINF. DETAILS OF R.C.C RAILING:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-04
- DIMENSIONAL AND REINFORCEMENT DETAILS OF RCC RETAINING WALL/MEDIAN WALL:
-NIRTP/NAG-MUG/PACKAGE-IV/MISC.-05

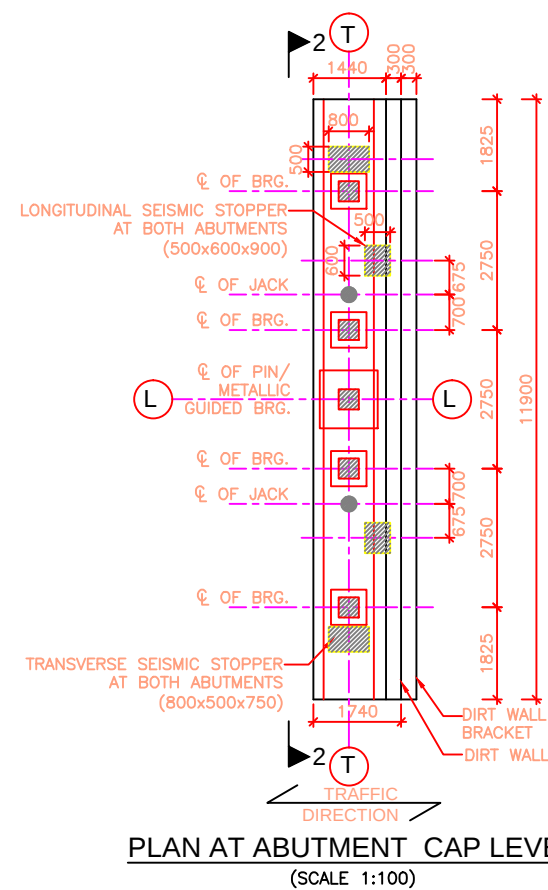
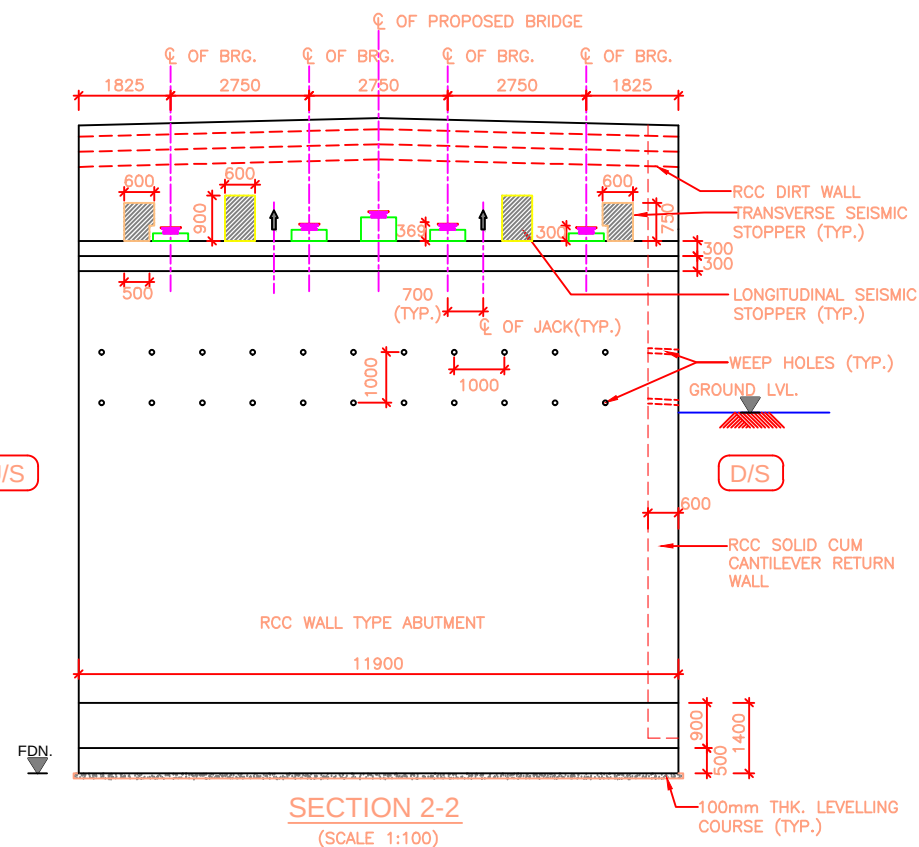
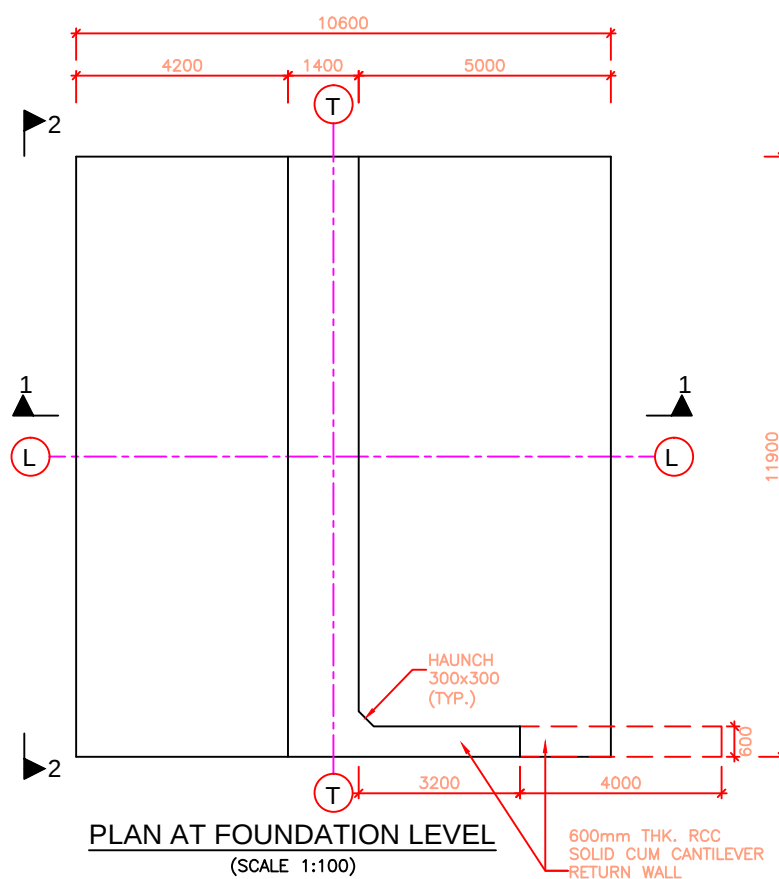
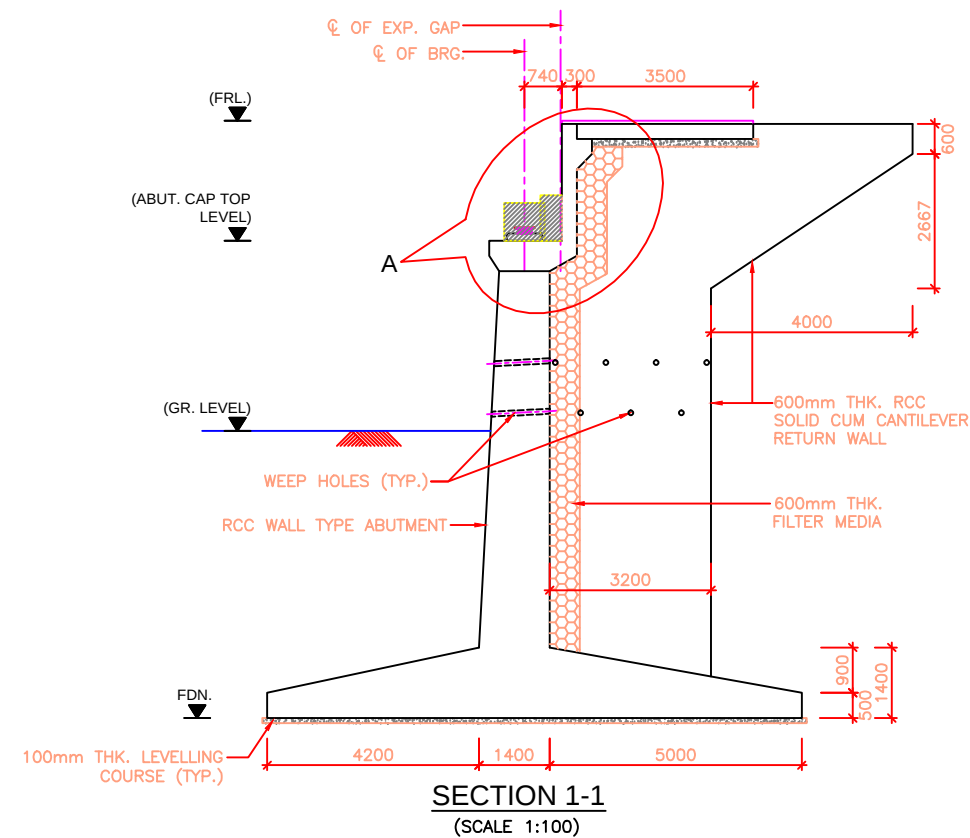
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE BRIDGE HAS BEEN DESIGNED FOR MOST SEVERE OF:
(i) ONE LANE OF IRC CLASS 70R LOADING OR TWO LANES OF IRC CLASS A LOADING WHEN FOOTPATHS ARE IN POSITION.
(ii) ONE LANE OF IRC CLASS 70R LOADING +ONE LANE OF IRC CLASS A LOADING OR 3 LANES OF IRC CLASS A LOADING WHEN FOOTPATHS ARE REMOVED.
(iii) ONE LANE OF SV LOADING IN ACCORDANCE WITH CLAUSE 204.5 OF IRC-6:2017.
- MINIMUM CONCRETE COVER, GRADE OF CONCRETE, MINIMUM CEMENT CONTENT & MAXIMUM W/C RATIO SHALL BE AS PER 'MODERATE' CONDITION OF EXPOSURE.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBE AS FOLLOWS:
a. LEVELING COURSE (UNDER FOUNDATION) - M10
b. LEVELING COURSE (UNDER APPROACH SLAB) - M15
c. FOUNDATION - M30
d. PEDESTAL - M40
e. SEISMIC STOPPER - M40
f. SUBSTRUCTURE - M30
g. SUPERSTRUCTURE - M40
h. RETURN/RETAINING WALL - M30
j. CRASH BARRIER - M40
k. APPROACH SLAB - M30
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- POT/PTFE BEARINGS SHALL BE DESIGNED AS PER PROVISION OF IRC : 83 (PART-III 2002).
- STRIP SEAL TYPE EXPANSION JOINTS SHALL BE PROVIDED AS PER PROVISION OF IRC: SP-69-2011.
- 65MM THICK WEARING COURSE COMPRISING OF 40MM THICK ASPHALTIC CONCRETE OVERLAD WITH 25MM THICK MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORT&H SPECIFICATION.
- 100MM DIA WEEP HOLES AT 1000MM C/C STAGGERED HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN ONE OR TWO LAYERS ABOVE G.L IN VERTICAL WALLS OF ABUTMENT, RETURN/RETAINING WALLS AT A SLOPE OF 1 VERTICAL TO 20 HORIZONTAL TOWARDS THE DRAINING FACE.
- WATER TO BE USED IN CONCRETING AND CURING SHALL CONFORM TO CLAUSE 18.4.5 OF IRC:112-2011.
- LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND ABUTMENTS AND RETURN/RETAINING WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX:6 OF IRC:78-2014 HAVING PROPERTIES C=0, $\phi=35^\circ$, $\delta=22.5^\circ$ & $y_d = 20 \text{ KN/M}^3$.
- MINIMUM CLEAR COVER TO OUTER MOST REINFORCEMENT SHALL BE AS UNDER:-
a. SUPERSTRUCTURE - 40MM
b. SUBSTRUCTURE (EARTH FACE) - 75MM
c. SUBSTRUCTURE (NON EARTH FACE) - 50MM
d. FOUNDATION - 75MM
- THE BRIDGE IS DESIGNED FOR PROVISION OF SEISMIC ZONE-V AS PER CLAUSE 219 OF IRC:6:2017.
- SAFE BEARING CAPACITY CONSIDERED IN DESIGN AT PROPOSED FOUNDING LEVEL IS 40 T/M^2 . THIS SHALL BE ASCERTAINED BEFORE EXECUTION AT SITE BY CONFIRMATORY GEOTECHNICAL INVESTIGATIONS.
- FILTER MEDIA SHALL BE PROVIDED AS PER APPENDIX-6 OF IRC-78:2014.
- MINIMUM ANCHORAGE OF FOUNDATION IN SOFT ROCK SHALL BE 1.5M AND 0.6M IN HARD ROCK. ANY DEVIATION IN ROCK LEVEL FROM DESIGN SHALL BE REPORTED TO ENGINEER FOR REQUIRED CHANGES IN DESIGN NO CHANGES REQUIRED FOR INCREASE HEIGHT UP TO 50 CM.
- WHERE FOUNDATIONS ARE PLACED ON ROCK, TRENCHES AROUND THE FOOTING SHALL BE FILLED UP WITH CONCRETE OF M15 GRADE UP TO TOP OF ROCK.
- THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH RELEVANT HIGHWAY PLAN AND PROFILE DRAWINGS.
- ALL CHAINAGES, FRL, GL SHALL BE CONFIRMED AT SITE PRIOR TO EXECUTION.
- FOR APPROACH SLAB, DRAINAGE SPOUTS, CRASH BARRIER, PROTECTION WORK, RETAINING WALL AND MEDIAN WALL DETAILS REFER SEPARATE DRAWINGS.
- WHEREVER THE COMPONENTS OF EXISTING BRIDGE INTERFERES WITH THE PROPOSED BRIDGE, THAT SHALL BE DISMANTLED UPTO FOUNDATION TOP.
- MINIMUM LONGITUDINAL GRADIENT OF 0.3% SHALL BE PROVIDED IN PROPOSED BRIDGE TO FACILITATE DRAINAGE OF DECK AS PER CLAUSE 105.3.6 OF IRC-5.
- SIZE OF EACH INDIVIDUAL STONE PITCHING AND LAUNCHING APRON SHALL NOT BE LESS THAN 30CM IN DIAMETER AND 40KG IN WEIGHT OR AS PER TABLE 5.1 & 5.2 OF IRC:89-1997. WHERE THE REQUIRED SIZE STONES ARE NOT ECONOMICALLY AVAILABLE, STONES IN WIRE CRATES MAY BE USED IN PLACE OF ISOLATED STONES OF EQUIVALENT WEIGHT.

FACE OF OLD ABUTMENT SHALL BE MATCHED WITH PROPOSED BRIDGE ABUTMENT. IN CASE OF BIGGER SPAN IN PROPOSED SPAN, MEDIAN WALL SHALL BE PROVIDED IN FLARED SHAPE TO ALLOW SMOOTH PASSAGE OF RIVER WATER.

ABUTMENT CAP SHALL BE CAST ONLY AFTER COMPLETING THE BACK FILLING WORK UP TO ABUTMENT SHAFT TOP LEVEL.

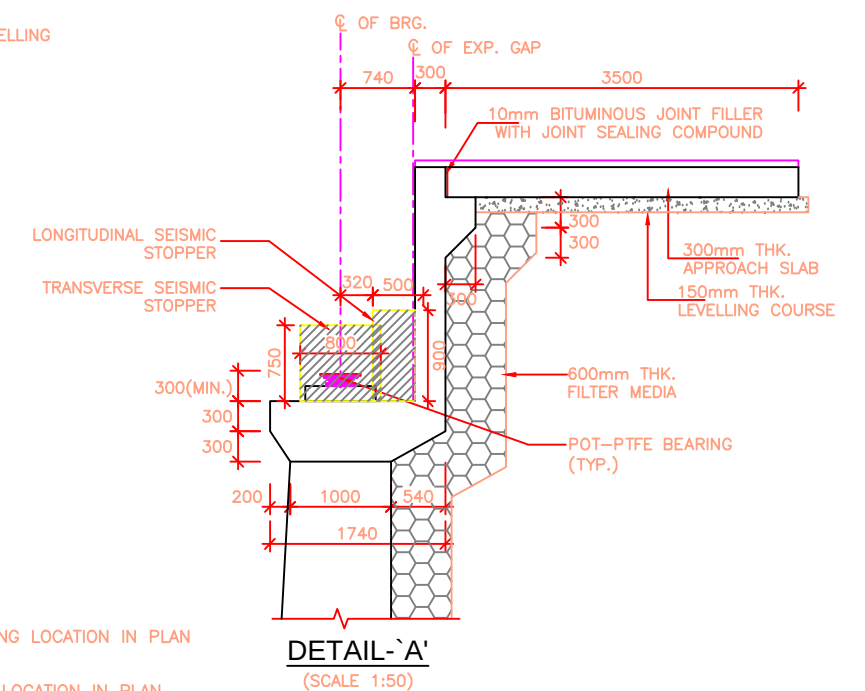
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	PARDEEP	NISHITHA S.	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 73+573KM OVER BARBAN KHOLA (1x25.00m) PACKAGE-II (NAUBISE-GALCHI)	As Shown	(SHEET 2 OF 2)
							Drawing No.: NIRTP/NAG-MUG/BARBAN/GAD		



- NOTES :-**
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
 - ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED AND NO DIMENSION SHALL BE SCALED.
 - CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150MM CUBE AS FOLLOWS:

a. LEVELING COURSE (UNDER FOUNDATION)	- 10MPa
b. LEVELING COURSE (UNDER APPROACH SLAB)	- 15MPa
c. FOUNDATION	- 30MPa
d. SUBSTRUCTURE	- 30MPa
e. APPROACH SLAB	- 30MPa
f. PEDESTAL	- 40MPa
g. SEISMIC STOPPER	- 30MPa
 - UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
 - MINIMUM CLEAR COVER TO OUTER MOST REINFORCEMENT SHALL BE AS UNDER

a. SUBSTRUCTURE (EARTH FACE)	- 75MM
b. SUBSTRUCTURE (NON EARTH FACE)	- 50MM
c. FOUNDATION	- 75MM
 - LL REPRESENTS LONGITUDINAL AXIS OF BRIDGE AND TT REPRESENTS TRANSVERSE AXIS OF ABUTMENT/FOUNDATION.
 - SAFE BEARING CAPACITY AT THE PROPOSED FOUNDING LEVEL HAS BEEN CONSIDERED AS 40 T/M² ON THE BASIS OF SUB SURFACE EXPLORATION RESULTS. THIS SHALL GOT CONFIRMED BEFORE EXECUTION.
 - THE LOCATION OF JACKS FOR LIFTING UP THE SUPERSTRUCTURE SHALL BE DISTINCTLY ETCHED ON SOFFIT OF SUPERSTRUCTURE AND ON TOP OF ABUTMENT CAP.
 - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DRGS.
 - GENERAL ARRANGEMENT DRAWING REFER:
 - NIRTP/NAG-MUG/BARBAN/GAD
 - REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER REFER:
 - NIRTP/NAG-MUG/BARBAN/SUB-02(SHEET1&2)



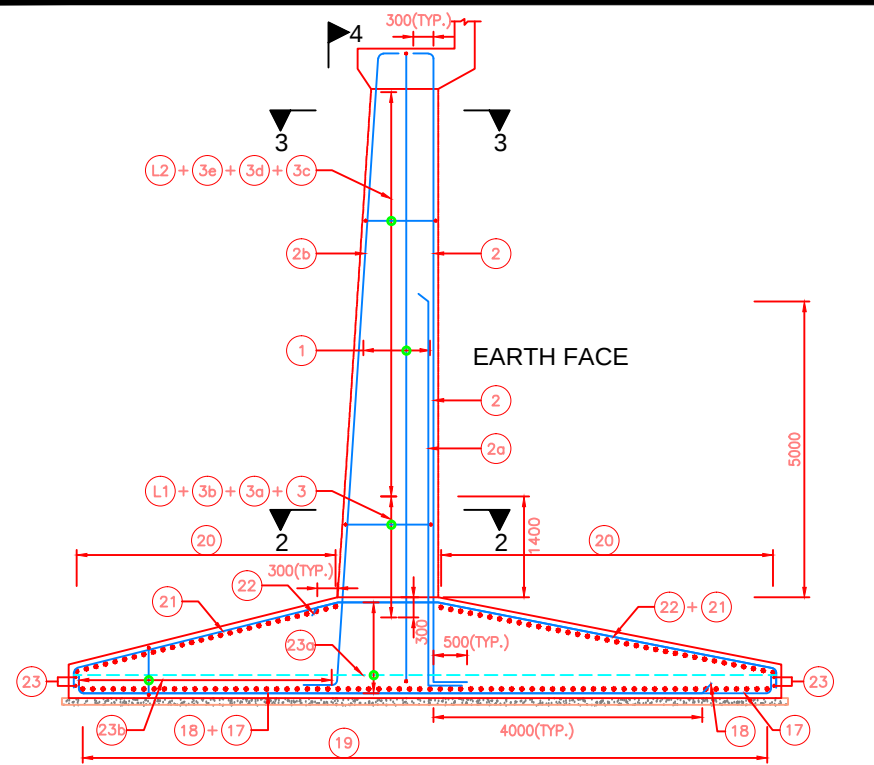
LEGEND:-

- BEARING LOCATION IN PLAN
- JACK LOCATION IN PLAN
- JACK LOCATION IN ELEVATION

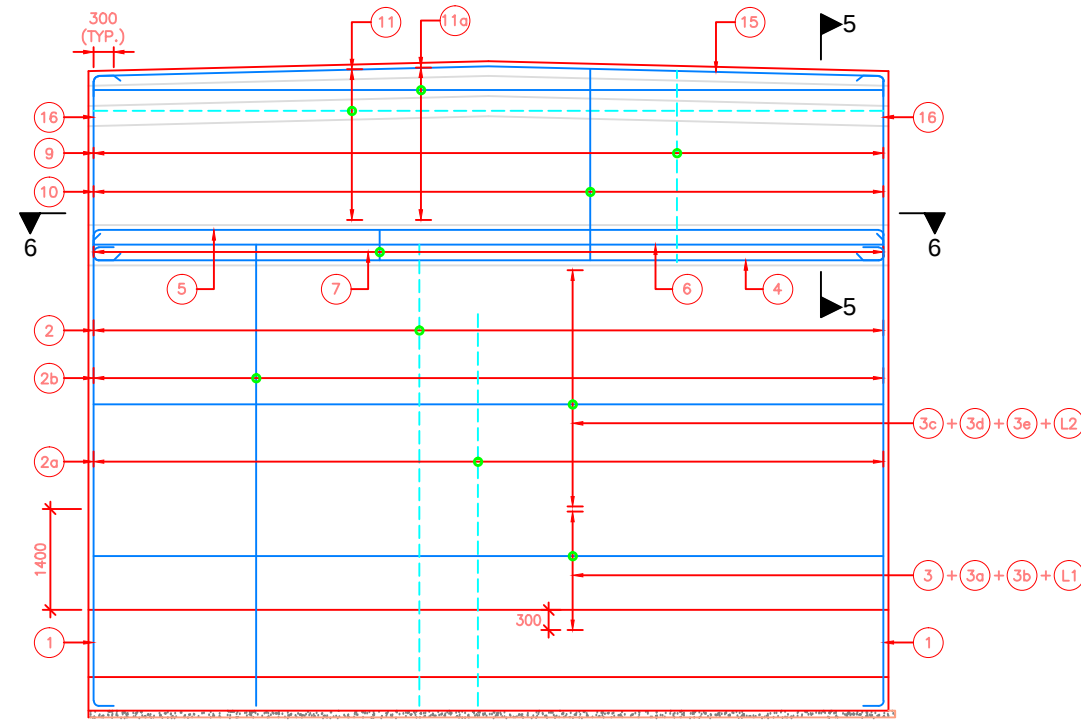
LEVEL SCHEDULE

MARK	FRL (m)	ABUTMENT CAP TOP LVL. (m)	GR. LEVEL (m)	FDN. LEVEL (m)
ABUTMENT A1	276.600	274.409	272.600	265.730
ABUTMENT A2	276.600	274.409	273.304	265.730

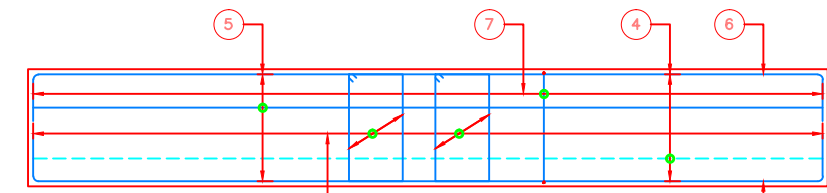
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	PARDEEP	NISHTHA S.	P.K.KHAN	B.N.SINGH	DIMENSIONAL DETAILS OF ABUTMENT AND FOUNDATION OF MINOR BRIDGE AT CH:- 73+573KM OVER BARBAN KHOLA PACKAGE-IV (BENIGHAT-MUGLING)	As Shown	Nov.2017
							Drawing No.: NIRTPP/NAG-MUG/BARBAN/ SUB-01		



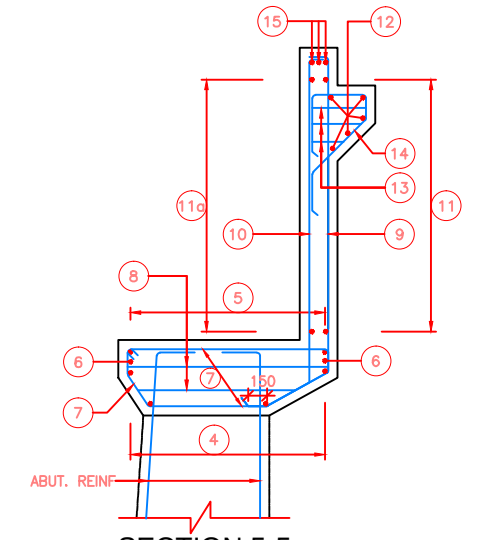
SECTION 1-1
(SCALE 1:75)



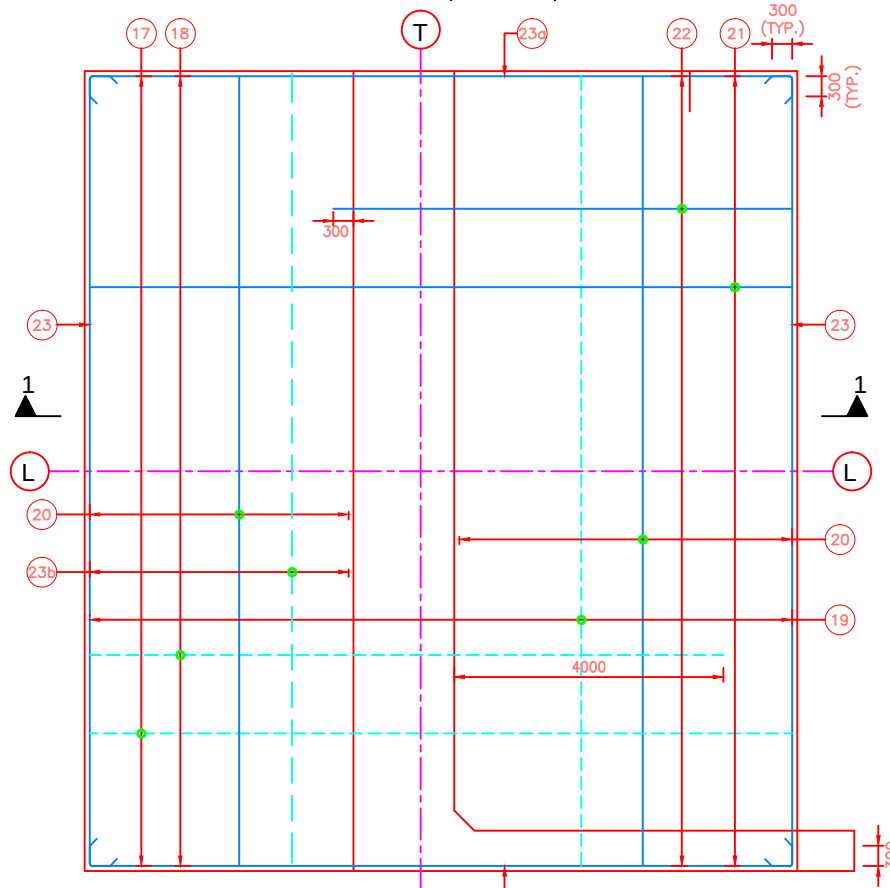
SECTION 4-4
(SCALE 1:75)
(FOUNDATION REINFORCEMENT & CORBEL REINFORCEMENT NOT SHOWN FOR CLARITY)



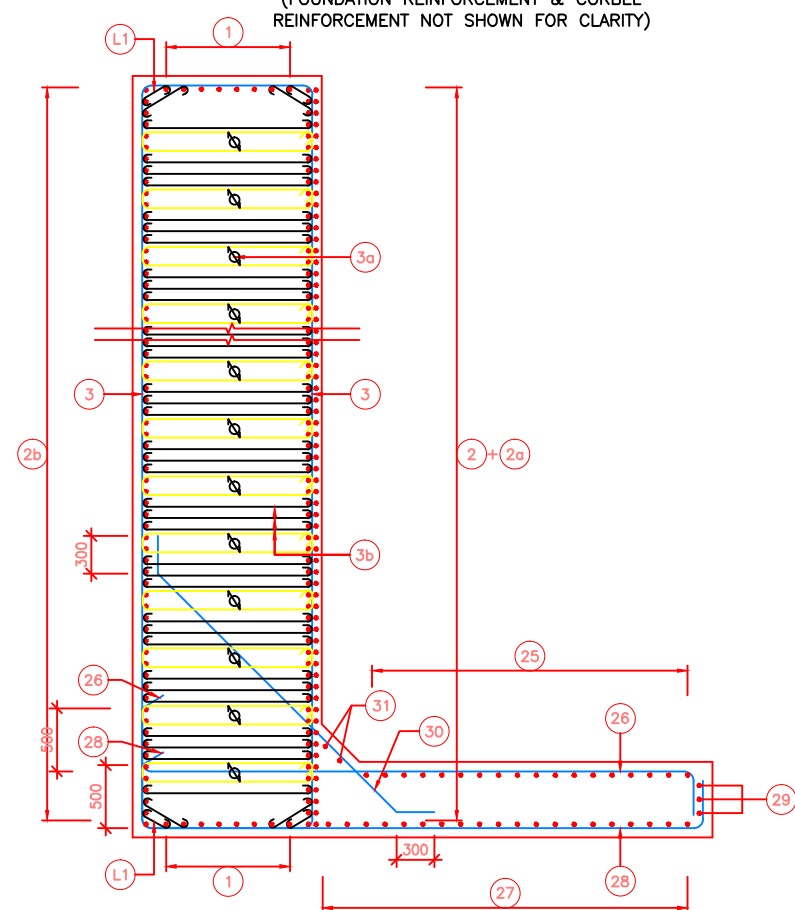
VIEW 6-6
SHOWING ABUTMENT CAP REINF.
(SCALE 1:75)



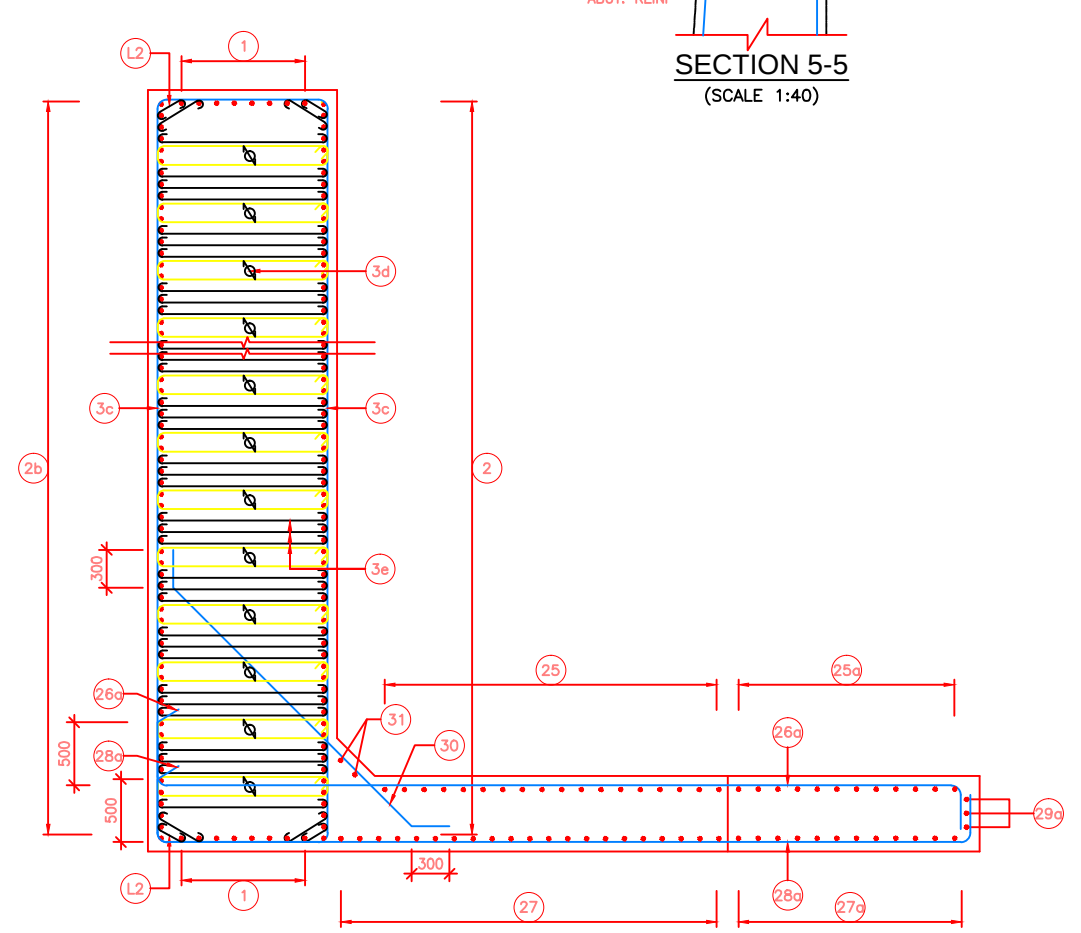
SECTION 5-5
(SCALE 1:40)



FOUNDATION PLAN
(SCALE 1:75)

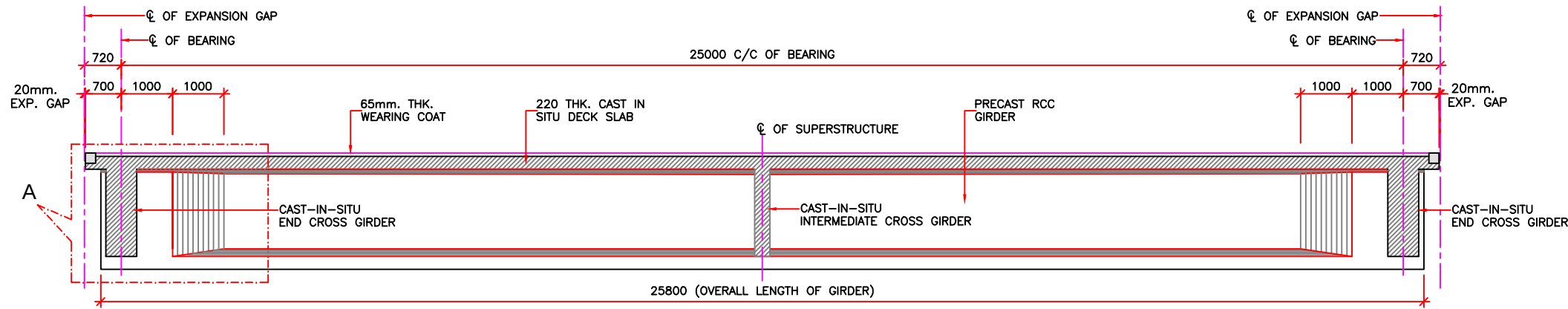


SECTION 2-2
(SCALE 1:40)

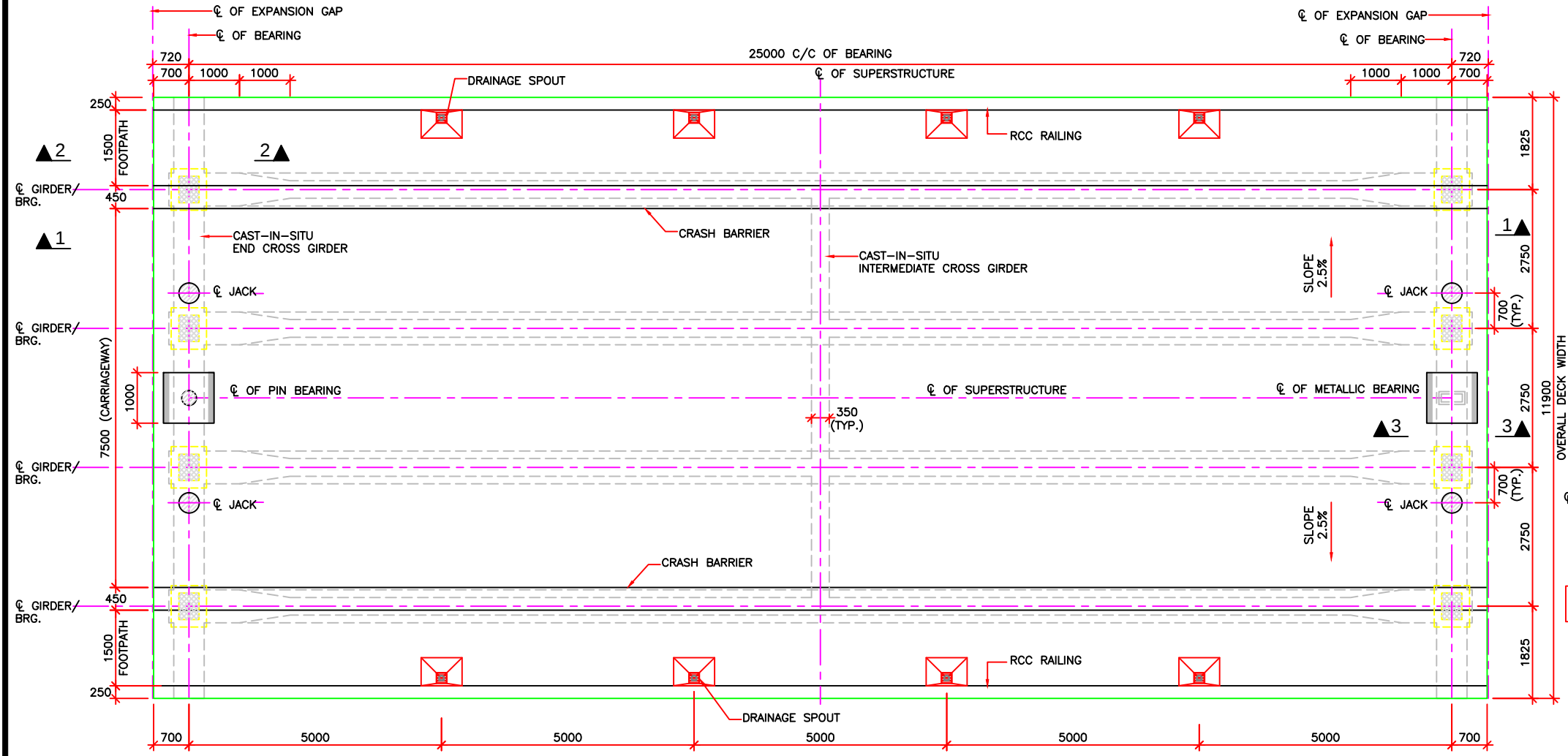


SECTION 3-3
(SCALE 1:40)

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		PARDEEP	DRAWING TITLE: REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH:- 73+573KM OVER BARBAN KHOLA PACKAGE-IV (BENIGHAT-MUGLING) Drawing No.: NIRTP/NAG-MUG/BARBAN/ SUB-02	Scale: As Shown	Date: Nov.2017
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252  In Joint Venture With Soosung Engineering Co. Ltd., South Korea	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal 	Designed By		NISHTHA S.					
				Checked By		P.K.KHAN					
				Approved By		B.N.SINGH					
(SHEET 1 OF 2)											



SECTIONAL ELEVATION 1 - 1
(SCALE 1:75)



TOP PLAN OF DECK SLAB
(SCALE 1:75)

- LEGEND:-**
- CAST-IN-SITU PORTION
 - JACK LOCATION IN PLAN
 - JACK LOCATION IN ELEVATION

NOTES:-

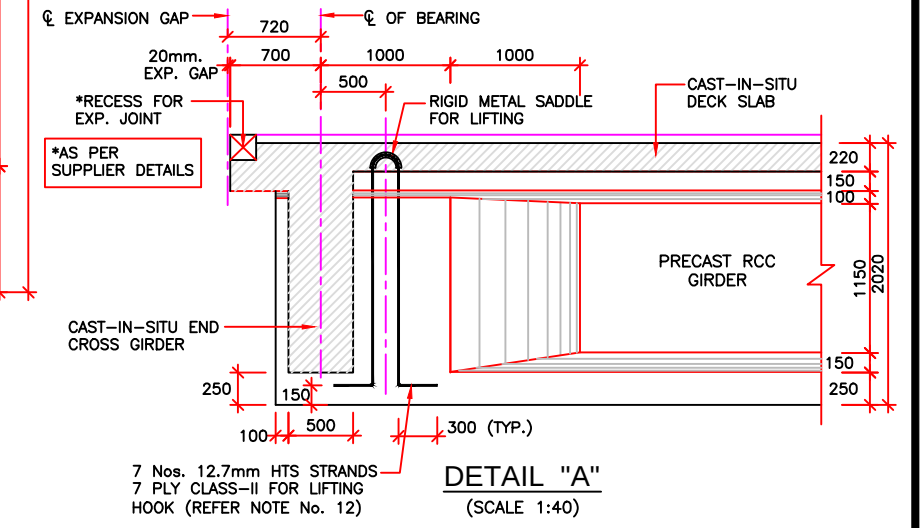
- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
- THE BRIDGE HAS BEEN DESIGNED FOR TWO LANE TRAFFIC FOR LIVE LOAD COMBINATIONS OF CLASS A AND 70R WITH FOOTPATH LIVE LOAD. OR IRC SV VEHICLE WITH FOOTPATH LIVE LOAD. OR THREE LANE TRAFFIC FOR LIVE LOAD COMBINATIONS OF CLASS A AND 70R WITHOUT FOOTPATH LIVE LOAD AS PER IRC:6-2017, WHICHEVER GOVERNS.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm CUBES AS FOLLOWS :-
PRECAST RCC GIRDER + RCC CAST IN SITU DECK SLAB-40 MPa
UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- CLEAR COVER TO OUTER MOST STEEL SHALL BE AS UNDER:-
FOR SUPER STRUCTURE-40mm.
- 65mm. THK. WEARING COURSE COMPRISING OF 40mm THK. BITUMINOUS CONCRETE OVER LAID WITH 25mm THK. MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORTH SPECIFICATIONS.
- FOR LIFTING OF THE SUPERSTRUCTURE 2Nos. OF FREYSSINET JACKS OF CAPACITY 165t EACH MAY BE REQUIRED AT EACH END. THE LOCATION OF JACKS FOR LIFTING OF THE SUPERSTRUCTURES TO REPLACE BEARINGS ETC. IS SHOWN ↑ THUS THIS SHALL BE DISTINCTLY ETCHED FOR EASY IDENTIFICATION ON THE ABUTMENT CAPS
- DURING THE LIFTING OPERATION OF SUPERSTRUCTURE ALL THE JACKS PLACED UNDER THE END DIAPHRAGM IN LINE WITH THE BEARINGS SHALL BE OPERATED SIMULTANEOUSLY USING SINGLE OPERATING CONSOLE, GROUPING THE PUMP AND CONTROL SYSTEM SO AS TO ENSURE THAT THE REACTIONS ON ALL THE JACKS ARE EQUAL AT ALL TIMES.
- PRECAST GIRDERS SHALL BE CAST IN ONE CONCRETING OPERATION IN CASTING YARD WITHOUT ANY CONSTRUCTION JOINT.
- EACH PRECAST GIRDER WILL BE LIFTED BY USING LIFTING STRANDS AT EITHER END. DURING LIFTING, GIRDER SHALL BE KEPT PLUMB AND UPRIGHT SELF WEIGHT OF GIRDER IS 545kN.

SEQUENCE OF CONSTRUCTION:-

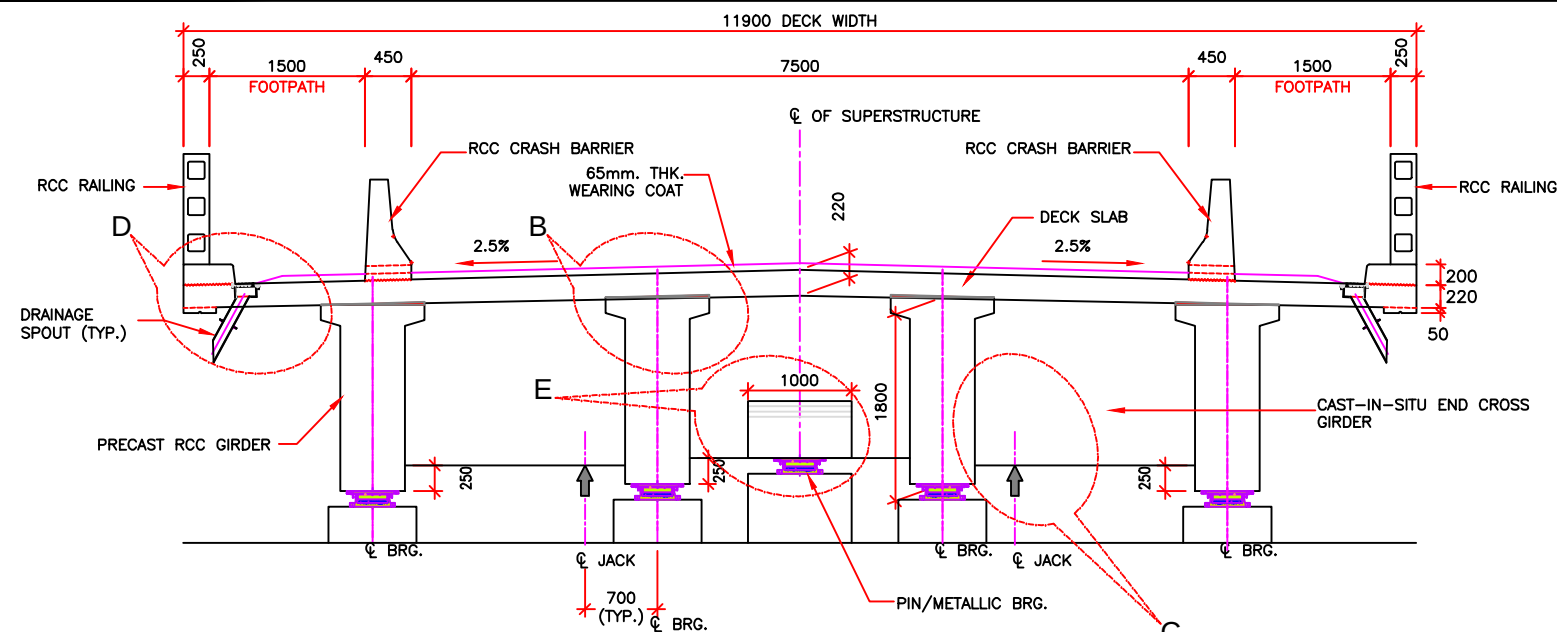
AGE OF GIRDER (IN DAYS)	ACTIVITY	STRENGTH OF CONC. (IN MPa)
0	CASTING OF LONGITUDINAL GIRDER AT CASTING YARD WITH PORTION OF DIAPHRAGM	-
14 to 28	POSITION OF LONGITUDINAL GIRDER ON TEMPORARY BRGS. AND HOLD THEM IN POSITION BY LATERAL BRACING. REINF. OF DECK SLAB & END DIAPHRAGM WILL BE FIXED IN POSITION	30
28	CASTING OF DECK SLAB ALONG WITH CROSS GIRDER	40
28 to 42	AVERAGE AGE OF GIRDER WHEN COMPOSITE ACTION TAKES PLACE	40
42 to 56	FIXING THE CRASH BARRIER AND LAYING OF WEARING COAT	40
56	AVERAGE AGE OF GIRDER WHEN SILD & CWLL ON IT	40

REFERENCE DRAWINGS:-

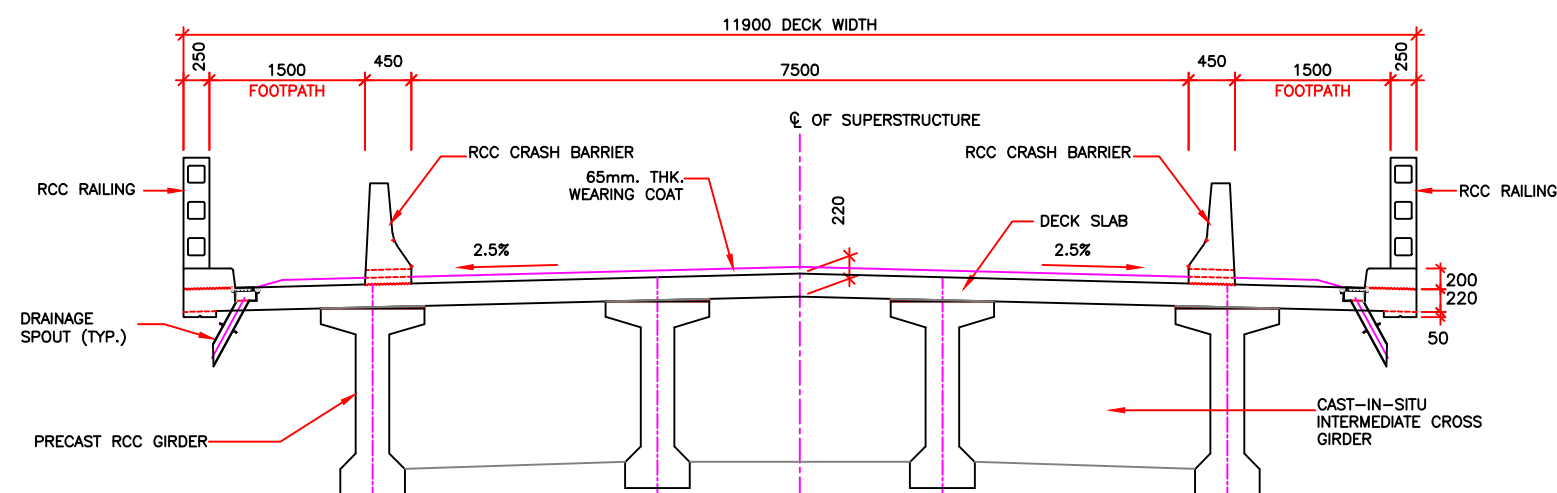
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/BARBAN/RCC-G/25m/05



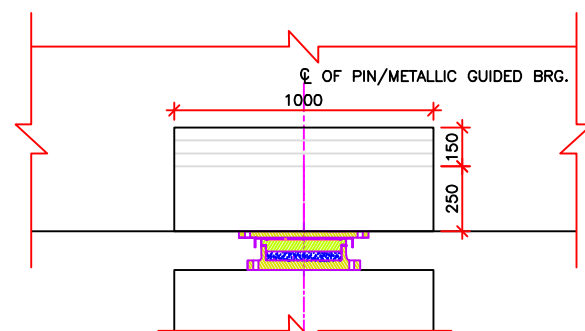
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 25.00m	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/BARBAN/RCC-G/25m/01		(SHEET 1 OF 2)



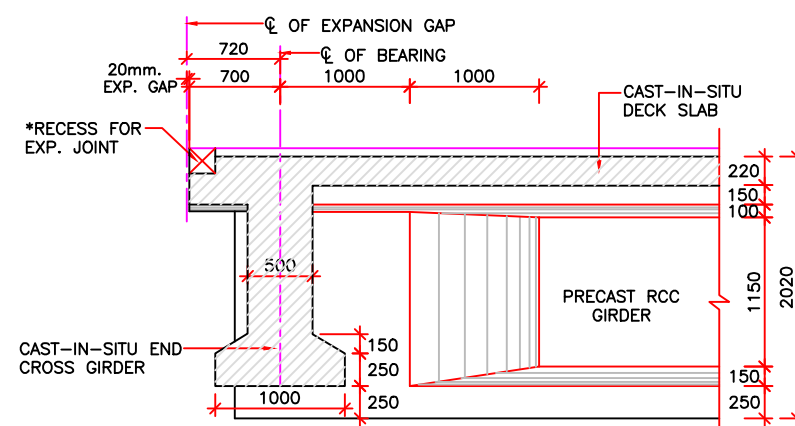
SECTION AT SUPPORT
(SCALE 1:50)



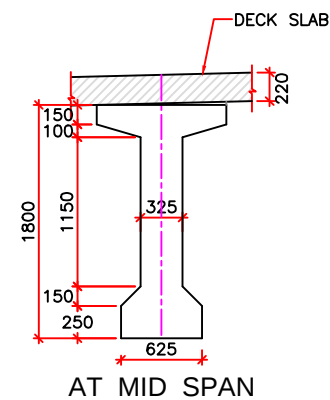
SECTION AT MID
(SCALE 1:50)



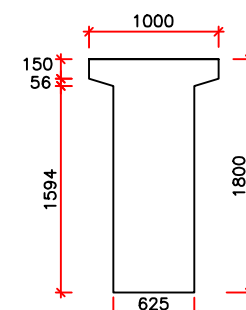
DETAIL - E
(SCALE 1:20)



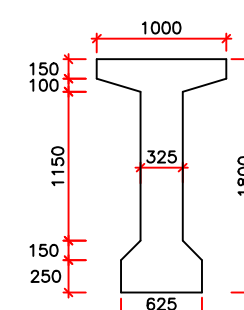
SECTION 3-3
(SCALE 1:40)



AT MID SPAN

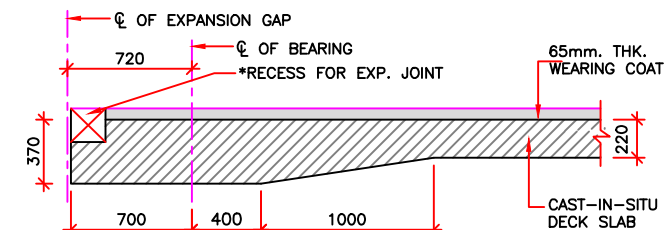


AT SUPPORT

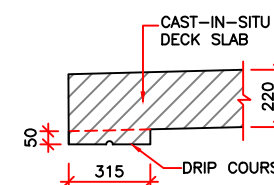


AT MID SPAN

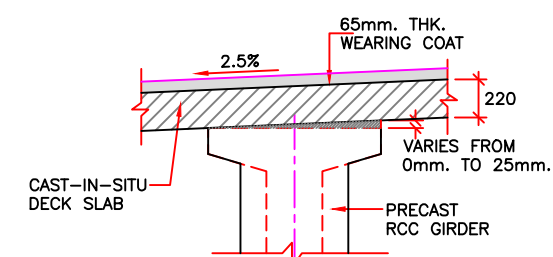
**DETAILS OF PRECAST
RCC GIRDER**
(SCALE 1:40)



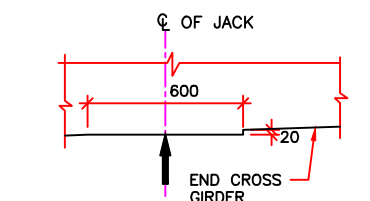
SECTION 2-2
(SCALE 1:30)



DETAIL - D
(SCALE 1:20)

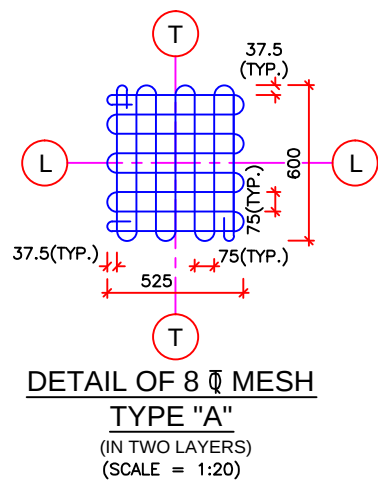
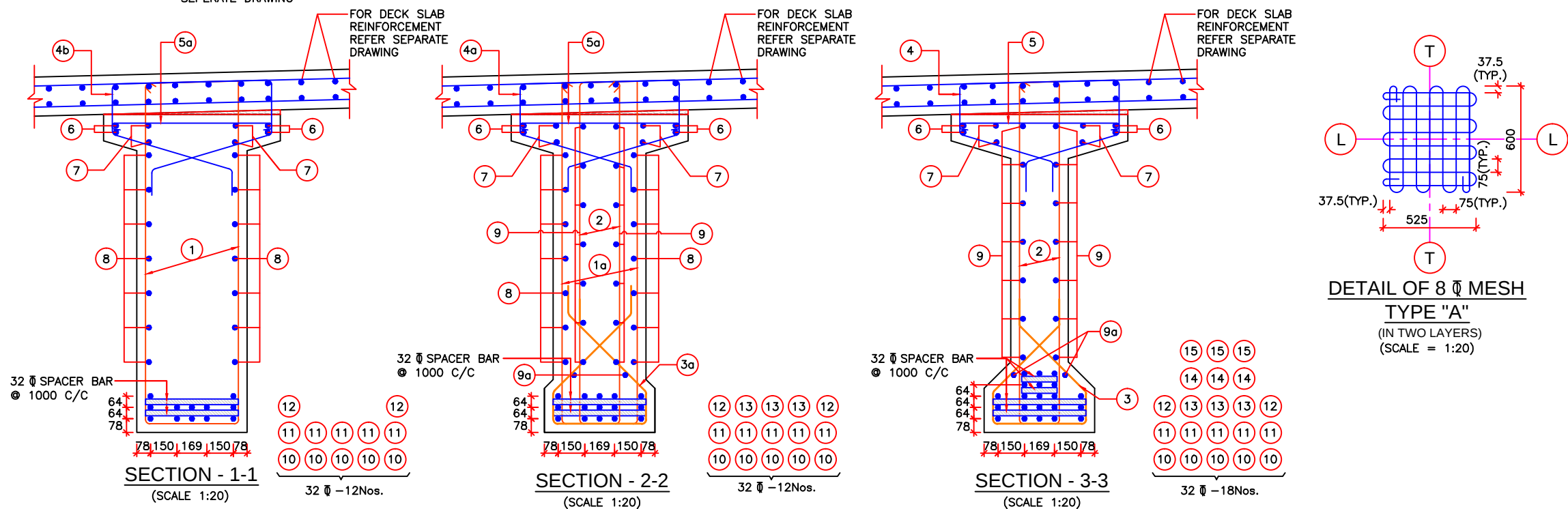
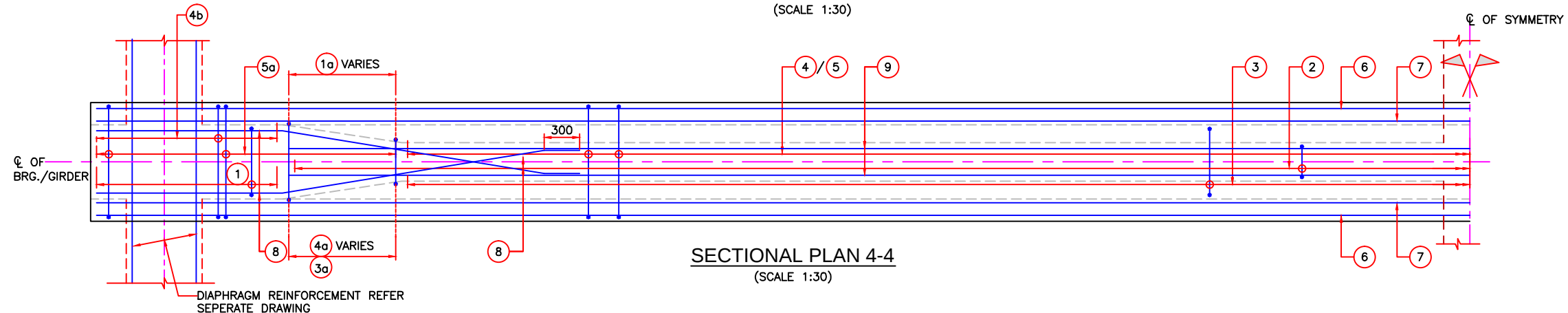
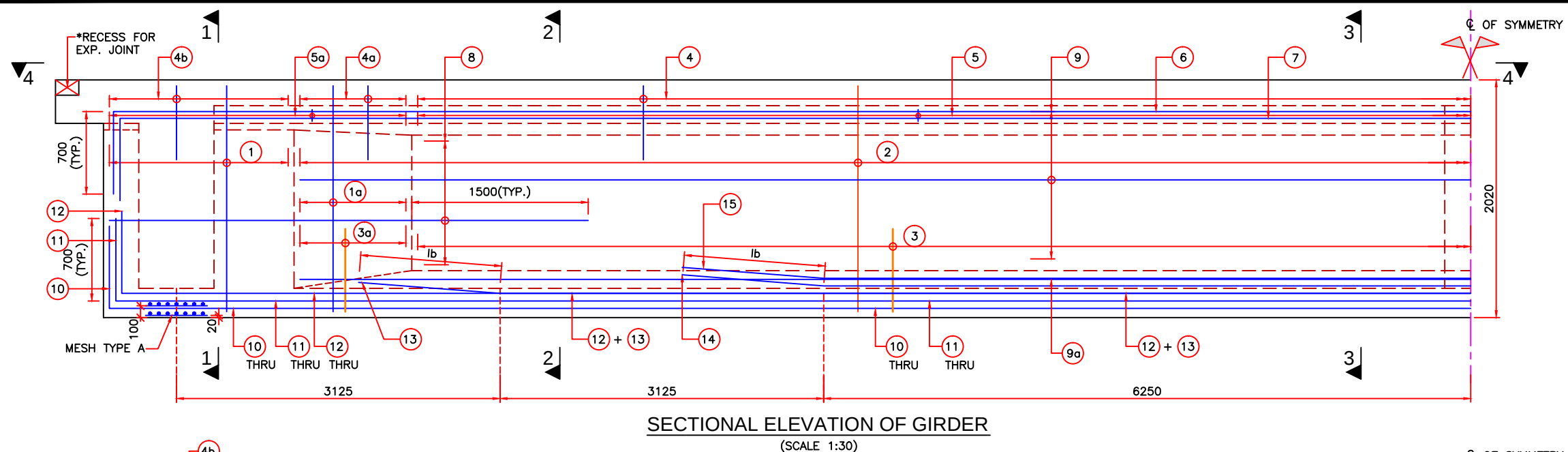


DETAIL - B
(SCALE 1:30)



DETAIL - C
DETAIL OF CROSS GIRDER AT JACK LOCATION
(SCALE 1:20)

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 25.00m Drawing No.: NIRTP/NAG-MUG/BARBAN/RCC-G/25m/01	Scale:	Date
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	 In Association With Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By		V.CHAUDHARY		As Shown	
					Checked By		P.K.KHAN			
					Approved By		B.N.SINGH			
(SHEET 2 OF 2)										



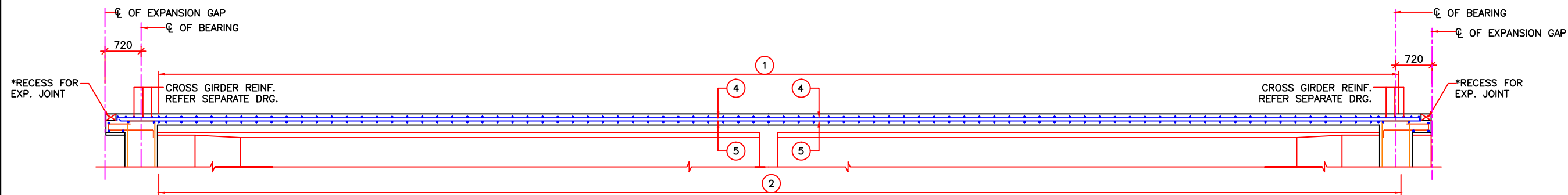
- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 - DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
 - UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
 - CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
 - LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = a_1 l_{bnet}$
 $a_1 = 1.0$ FOR $p \leq 25\%$
 $a_1 = 1.15$ FOR $25\% < p \leq 33\%$
 $a_1 = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 DEVELOPMENT LENGTH (l_{bnet})
 $l_{bnet} = a_1 l_b$ ($a = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR (1.32)

- REFERENCE DRAWINGS:-**
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/01
 - REINFORCEMENT DETAILS OF END CROSS GIRDER:
 -NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/03
 - REINFORCEMENT DETAILS OF RCC DECK SLAB:
 -NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/04(SHEET 1&2)
 - DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
 -NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/05

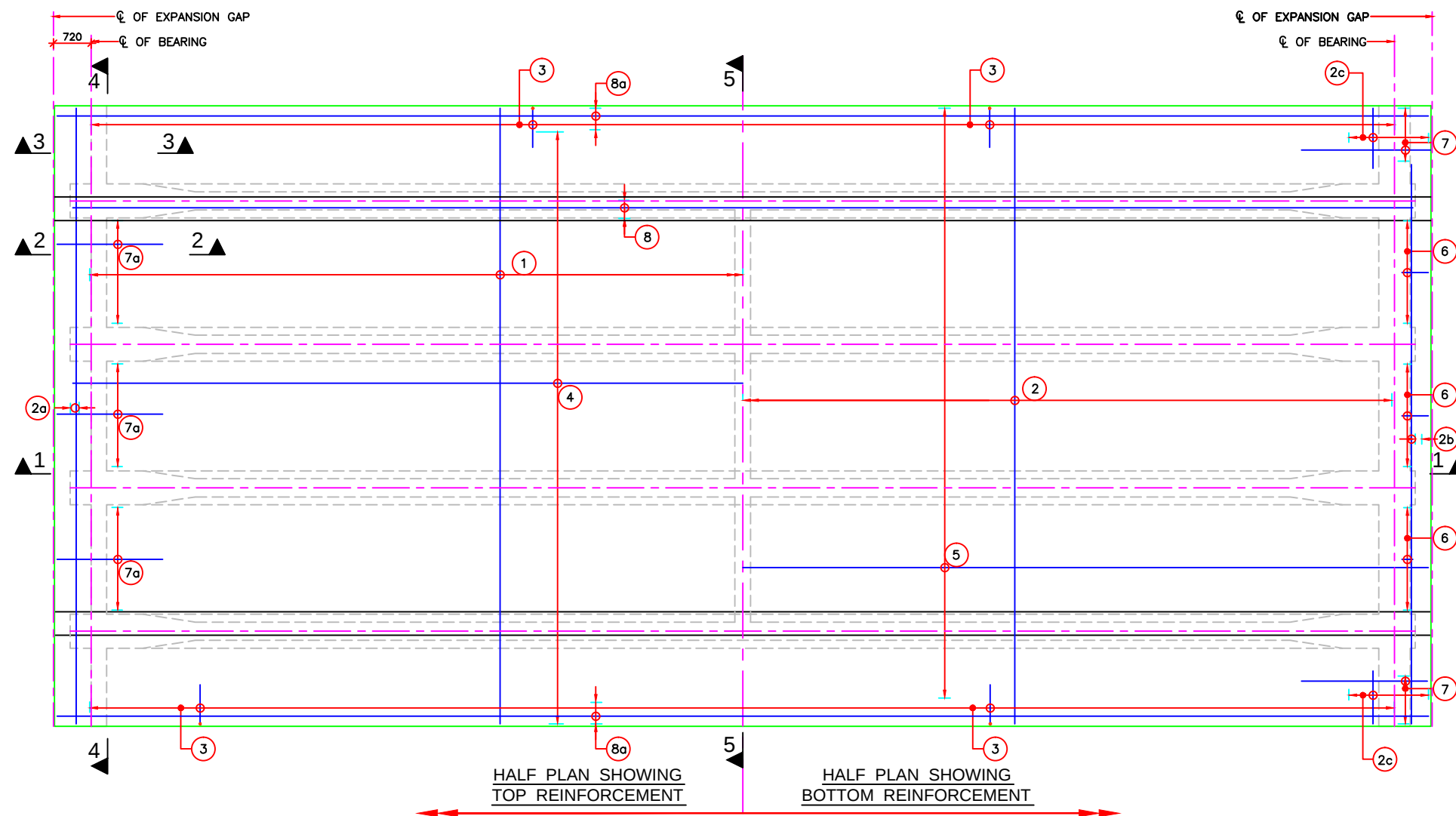
SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12 Ø125 C/C		STIRRUP
1a	2L-12 Ø125 C/C		STIRRUP (VARIES)
2	2L-12 Ø150 C/C		STIRRUP
3	10 Ø150 C/C		
3a	10 Ø125 C/C		(VARIES)
4	10 Ø150 C/C		
4a	10 Ø125 C/C		(VARIES)
4b	10 Ø125 C/C		
5	10 Ø150 C/C		LINKS
5a	10 Ø125 C/C		LINKS
6	12 Ø-4 Nos.		
7	12 Ø-4 Nos.		
8	10 Ø-7 Nos.		ON EACH FACE
9	10 Ø-7 Nos.		ON EACH FACE
9a	10 Ø-1 Nos.		ON EACH FACE
10	32 Ø-5 Nos.		
11	32 Ø-5 Nos.		
12	32 Ø-2 Nos.		
13	32 Ø-3 Nos.		
14	32 Ø-3 Nos.		
15	32 Ø-3 Nos.		

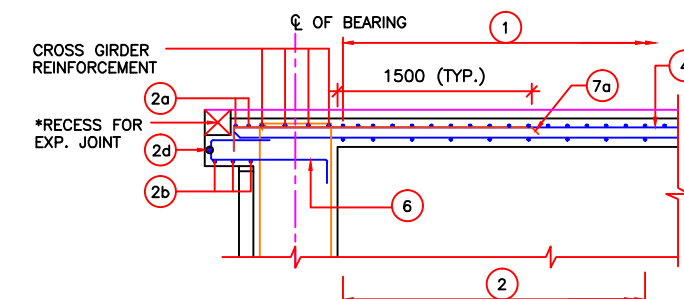
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 25.00m	As Shown	Nov.2017
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.:		
							NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/02		



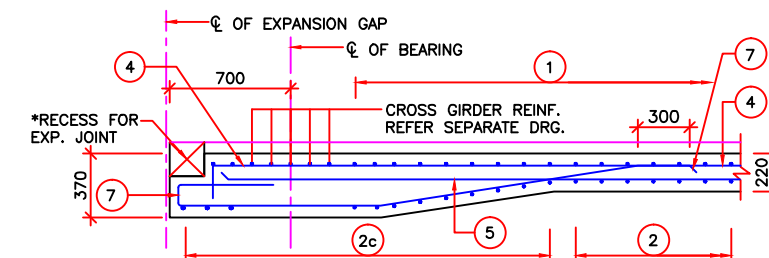
SECTION 1 - 1
(SCALE 1:60)



PLAN
(SCALE 1:75)

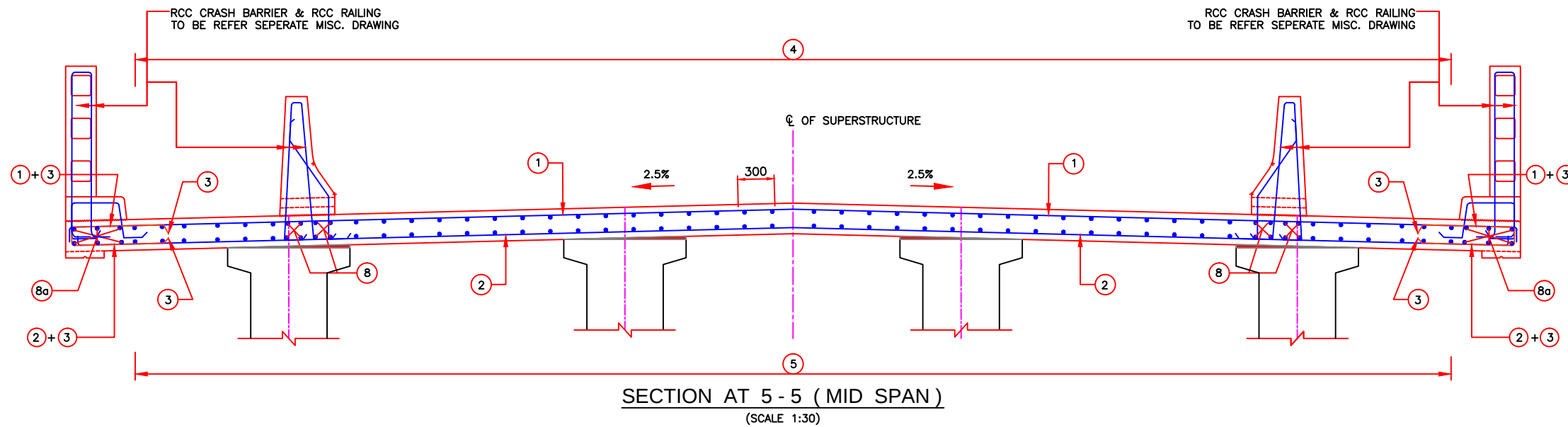


SECTION 2 - 2
(SCALE 1:40)



SECTION 3 - 3
(SCALE 1:30)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Kempth	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 25.00m	As Shown	Nov.2017
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Desai	P.K.KHAN	Drawing No.:		
			Checked By	B.N.SINGH	NIRTTP/NAG-MUG/BARBAN/RCC-G/25m/04		(SHEET 1 OF 2)
			Approved By				



NOTES:-

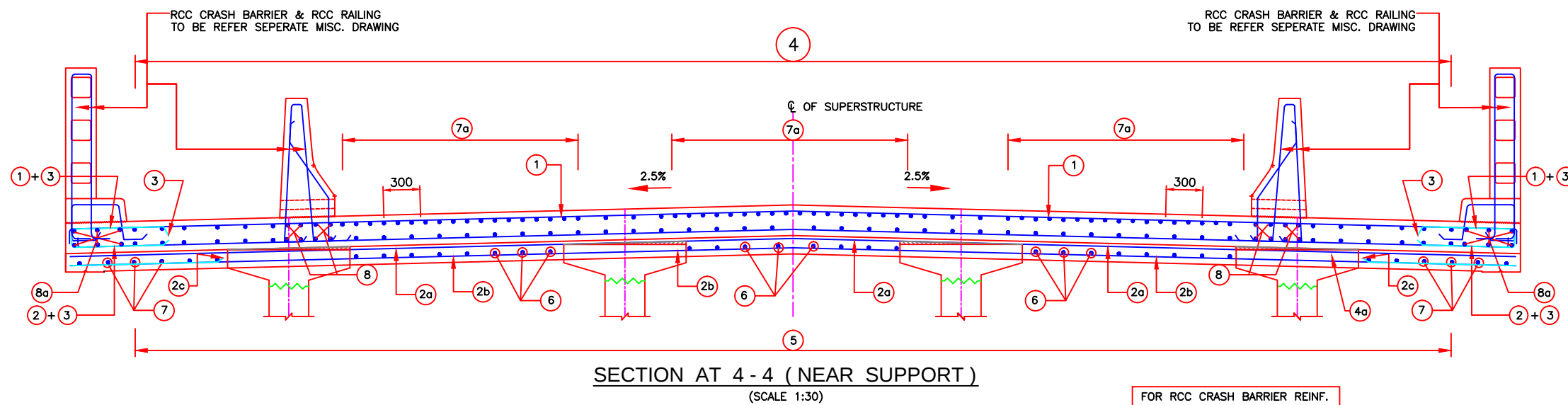
1. ALL DIMENSIONS ARE IN MILLIMETERS AND LEVELS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. DIMENSIONS ARE NOT TO BE SCALED. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786
4. CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
5. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY. (IRC:112-2011) (CLAUSE:15.2.5.1)
 $LAP LENGTH l_s = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% < p \leq 50\%$
 (IRC:112-2011) (CLAUSE:15.2.3.3)
 $DEVELOPMENT LENGTH (l_{bnet})$
 $l_{bnet} = \alpha l_b (\alpha = 1.0)$
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
 FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43. FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{1.43}{1.15})$
6. RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

1. DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTP/NAG-MUG/BARBAN/RCC-G/25m/01
2. REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
 -NIRTP/NAG-MUG/BARBAN/RCC-G/25m/02
3. REINFORCEMENT DETAILS OF END CROSS GIRDER:
 -NIRTP/NAG-MUG/BARBAN/RCC-G/25m/03
4. DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
 -NIRTP/NAG-MUG/BARBAN/RCC-G/25m/05

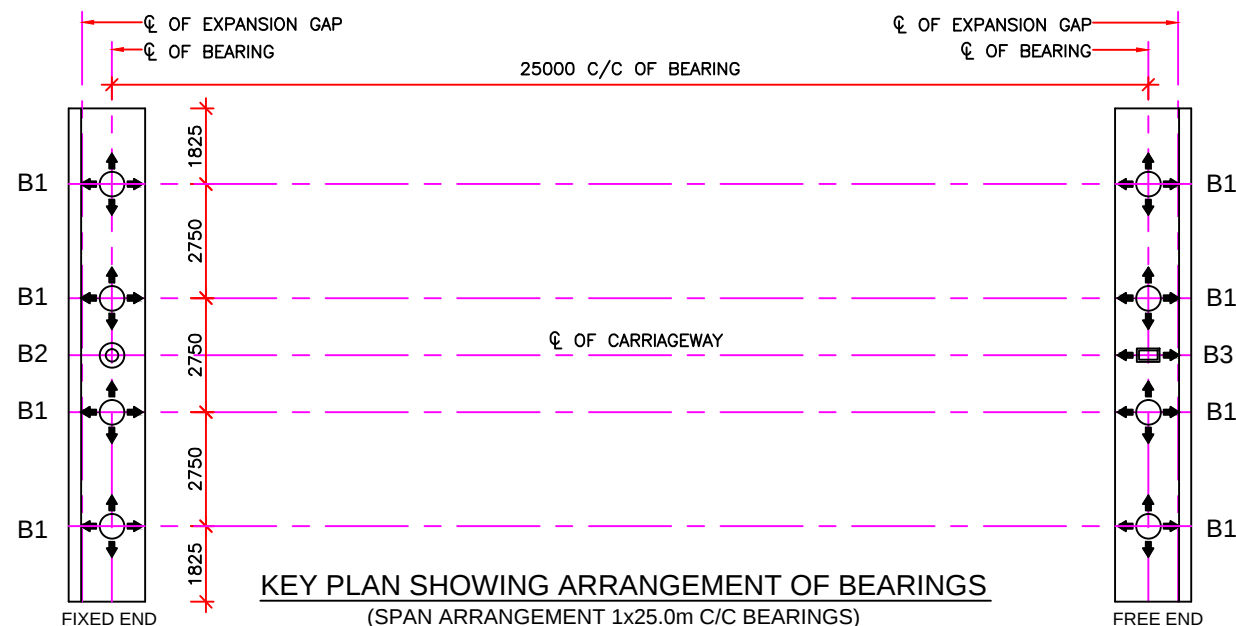
REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	12 Φ 100 c/c		
2	12 Φ 100 c/c		
2a	12 Φ 100 c/c		
2b	12 Φ 100 c/c		
2c	12 Φ 100 c/c		
2d	12 Φ - 1 Nos.		
3	12 Φ 100 c/c		
4	10 Φ 200 c/c		
5	10 Φ 200 c/c		
6	12 Φ 200 c/c		
7	12 Φ 200 c/c		
7a	12 Φ 200 c/c		
8	16 Φ - 8 Nos.		(ON EACH SIDE)
8a	16 Φ - 6 Nos.		(ON EACH SIDE)



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	V.CHAUDHARY	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 25.00m	As Shown	
		In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		(SHEET 2 OF 2)
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/BARBAN/RCC-G/25m/04		

B1		FREE SLIDING POT-CUM-PTFE BEARING
B2		PIN BEARING
B3		METALLIC GUIDED BEARING

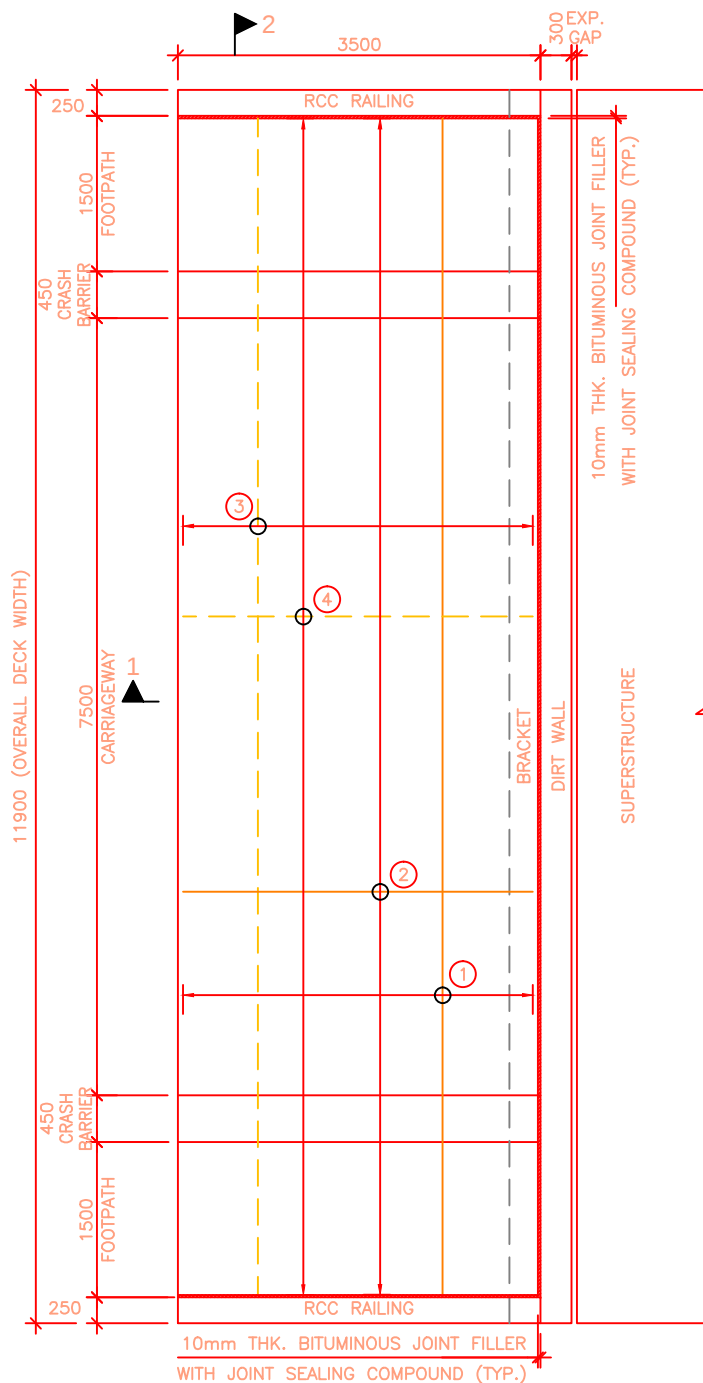


- ## NOTES:—
1. MATERIAL SPECIFICATIONS, DESIGN OF BEARINGS, ACCEPTANCE CRITERIA AND INSTALLATION MORTH SHALL BE IN ACCORDANCE WITH IRC:83 (PART III)—2002 AND MOSRTH SPECIFICATIONS (FOURTH REVISION).
 2. BEARINGS SHALL BE OBTAINED FROM MANUFACTURERS APPROVED BY MORTH.
 3. INSTALLATION OF BEARINGS SHALL BE UNDER THE SUPERVISION OF REPRESENTATIVE OF THE MANUFACTURER.
 4. FOR DESIGN LOADS AND ROTATIONS REFER TABLE IN THE DRAWING.
 5. FOR BEARINGS, DETAILED SHOP DRAWINGS SHALL BE PREPARED BY THE SUPPLIER AND BE DULY APPROVED BEFORE MANUFACTURE AND INSTALLATION.
 6. THE GROUT/BEDDING MORTAR SHALL BE HIGH STRENGTH FREE FLOWING NON SHRINK GROUT (80 MPa STRENGTH).
 7. ALL BEARING SHALL BE PLACED IN TRULY HORIZONTAL PLANE ONLY.
 8. FOR DESIGN OF POT BEARINGS, THE DESIGN HORIZONTAL FORCE SHALL, IN NO CASE BE LESS THAN 10% AND GREATER THAN 25% OF THE DESIGN VERTICAL LOAD.
 9. THE CONTRACTOR AND SUPPLIER OF BEARINGS SHALL BE FURNISH A MINIMUM TROUBLE FREE WARRANTY OF 10 YEARS AFTER OPENING OF THE BRIDGE.
 10. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH: DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE
- NIRTP/NAG—MUG/BARBAN/RCC—G/25m/01

1. STRUCTURE IS LOCATED IN SEISMIC ZONE : V
2. GRADE OF CONCRETE
ABUTMENT CAP. M-30
PEDESTAL M-40

SL. No.	BEARING TYPE	LOAD CONDITION	LOADS, FORCES, MOVEMENTS AND ROTATION DATA										BEARING (Nos.) PER SPAN
			VERTICAL LOAD (kN)		HORIZONTAL FORCE (kN)				ROTATION (RAD)		MOVEMENT (mm)		
			CASE	MAGNITUDE	LONGITUDINAL		TRANSVERSE		CASE	MAGNITUDE	LONGITUDINAL	TRANSVERSE	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.		NORMAL	MAXIMUM (WITH LIVE LOAD)	1649	COEXISTING	165	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	8
			MINIMUM (WITH LIVE LOAD)	656	COEXISTING	66	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	499	COEXISTING	50	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	972	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
			MINIMUM (WITH LIVE LOAD)	593	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	553	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	972	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
			MINIMUM (WITH LIVE LOAD)	593	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	553	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	4.70	
2.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	300	COEXISTING	—	COEXISTING	0.003	—	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	216	COEXISTING	—	COEXISTING	0.003	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	217	COEXISTING	—	COEXISTING	0.003	—	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	2769	COEXISTING	452	COEXISTING	0.003	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	2769	COEXISTING	410	COEXISTING	0.003	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	2733	COEXISTING	410	COEXISTING	0.003	—	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	856	COEXISTING	1507	COEXISTING	0.003	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	856	COEXISTING	1367	COEXISTING	0.003	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	856	COEXISTING	911	COEXISTING	0.003	—	—	
3.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.003	—18.8/18.4	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	452	COEXISTING	0.003	—18.8/18.4	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	410	COEXISTING	0.003	—18.8/18.4	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	410	COEXISTING	0.003	—18.8/18.4	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	1507	COEXISTING	0.003	—18.8/18.4	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	1367	COEXISTING	0.003	—18.8/18.4	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	911	COEXISTING	0.003	—18.8/18.4	—	

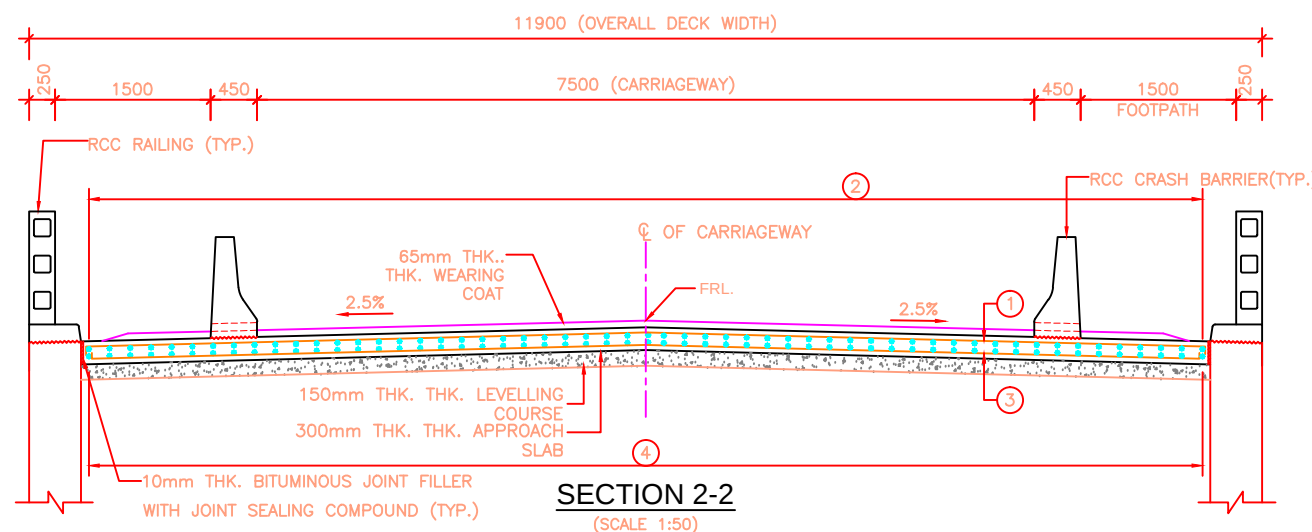
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DETAILS OF LOADS AND FORCES FOR POT/PTFE BEARINGS EFFECTIVE SPAN : 25.00m Drawing No.: NIRTPP/NAG-MUG/BARBAN/RCC-G/25m/05	Scale:	Date Nov.2017
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea 	In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Designed By		V.CHAUDHARY	As Shown			
				Checked By		P.K.KHAN				
				Approved By		B.N.SINGH				



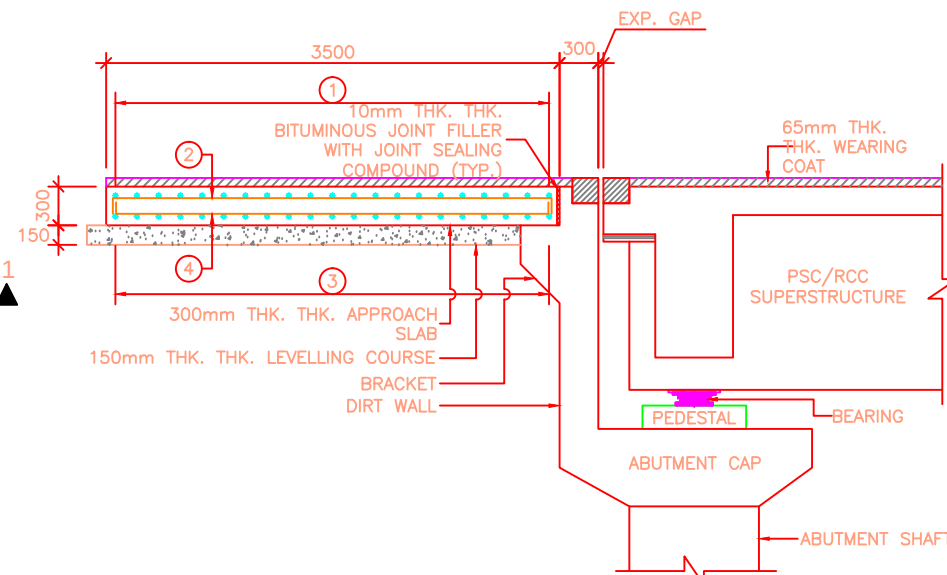
PLAN
(SCALE 1:50)

LEGEND:

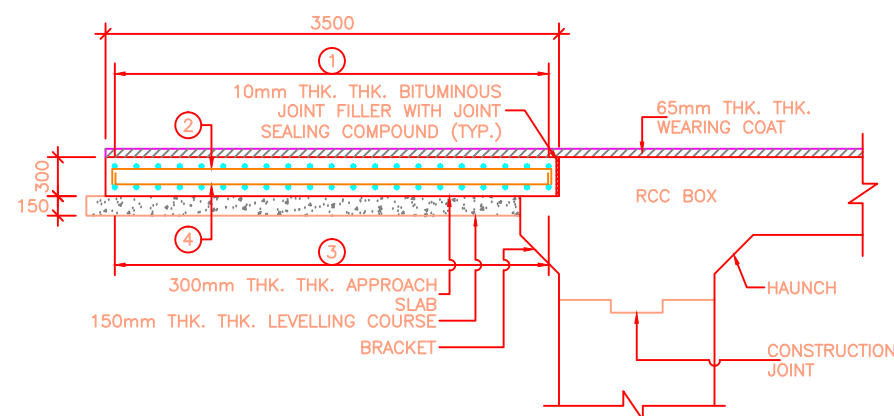
BOTTOM REINF. ---
TOP REINF. REINF. ---



SECTION 2-2
(SCALE 1:50)



SECTION 1-1
(FOR PSC/RCC SUPERSTRUCTURE)
(SCALE 1:40)



SECTION 1-1
(FOR RCC BOX TYPE STRUCTURE)
(SCALE 1:40)

NOTES:-

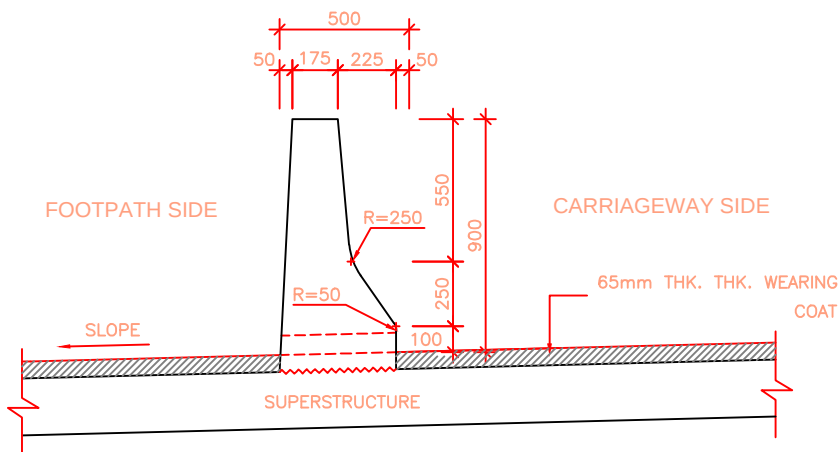
- ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
- CONCRETE GRADE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm THK. CUBES AS FOLLOWS :-
a. APPROACH SLAB - 30 MPa
b. LEVelling COURSE - 15 MPa
- THE REINFORCING BARS SHALL BE OF THERMO MECHANICALLY TREATED (TMT) HYSD BARS (GRADE DESIGNATION Fe-500D), CONFORMING TO IS:1786 STANDARDS.
- CLEAR COVER TO OUTER MOST STEEL SHALL BE AS 50mm THK..
- 65mm THK. THK. WEARING COAT COMPRISING OF 40mm THK. THK. ASPHALTIC CONCRETE OVER LAID WITH 25mm THK. THK. MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORTH SPECIFICATIONS.
- FILLING BEHIND THE ABUTMENT AND PROPER COMPACTION OF THE EMBANKMENT BELOW THE APPROACH SLAB SHOULD BE CARRIED OUT BY THE CONTRACTOR WITH SELECTED MATERIAL AS PER THE SPECIFICATIONS GIVEN IN APPENDIX:6 OF IRC:78 (2014), HAVING SOIL PARAMETERS AS MENTIONED IN RESPECTIVE GADS OF BRIDGES.
- FOR REINFORCEMENT DETAILS OF RCC BRACKET SUPPORTING APPROACH SLAB REFER SEPARATE ABUTMENT DRAWINGS.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE GENERAL ARRANGEMENT DRAWING OF THE RESPECTIVE BRIDGES.

S.NO.	TYPE OF STRUCTURE	CHAINAGE
1	MINOR BRIDGE	25+025
2	MINOR BRIDGE	26+563
3	MINOR BRIDGE	33+250
4	MINOR BRIDGE	36+449
5	MINOR BRIDGE	38+620
6	MINOR BRIDGE	50+165

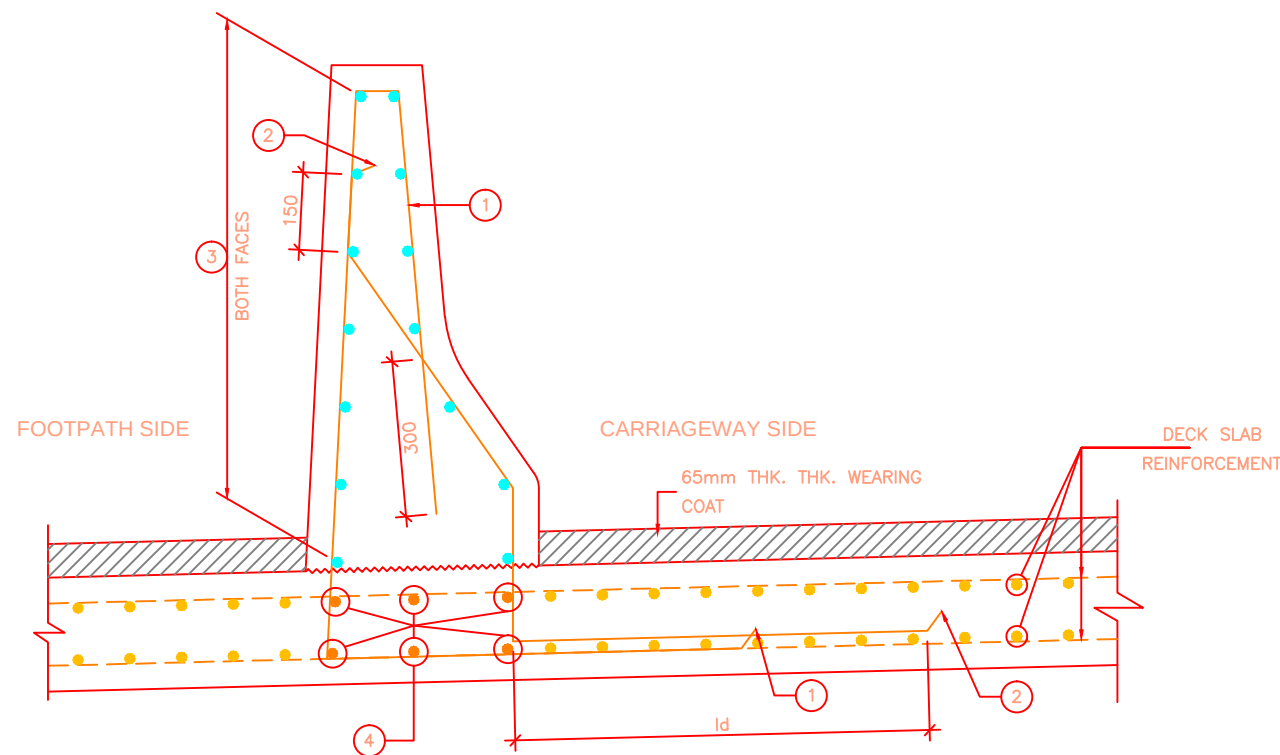
REINFORCEMENT SCHEDULE

BAR MARK	DESCRIPTION	SHAPE	REMARKS
①	12 Φ 150c/c		
②	12 Φ 150c/c		
③	12 Φ 150c/c		
④	12 Φ 150c/c		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M.JOHRI	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nabuse - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	AGNIMITA	DETAILS OF APPROACH SLAB PACKAGE-IV (BENIGHAT-MUGLING)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTTP/NAG-MUG/PACKAGE-IV/MISC.-01		



**DIMENSIONAL DETAILS OF
INTERMEDIATE CRASH BARRIER**
(SCALE 1:20)



REINFORCEMENT DETAILS OF INTERMEDIATE CRASH BARRIER
(SCALE 1:10)

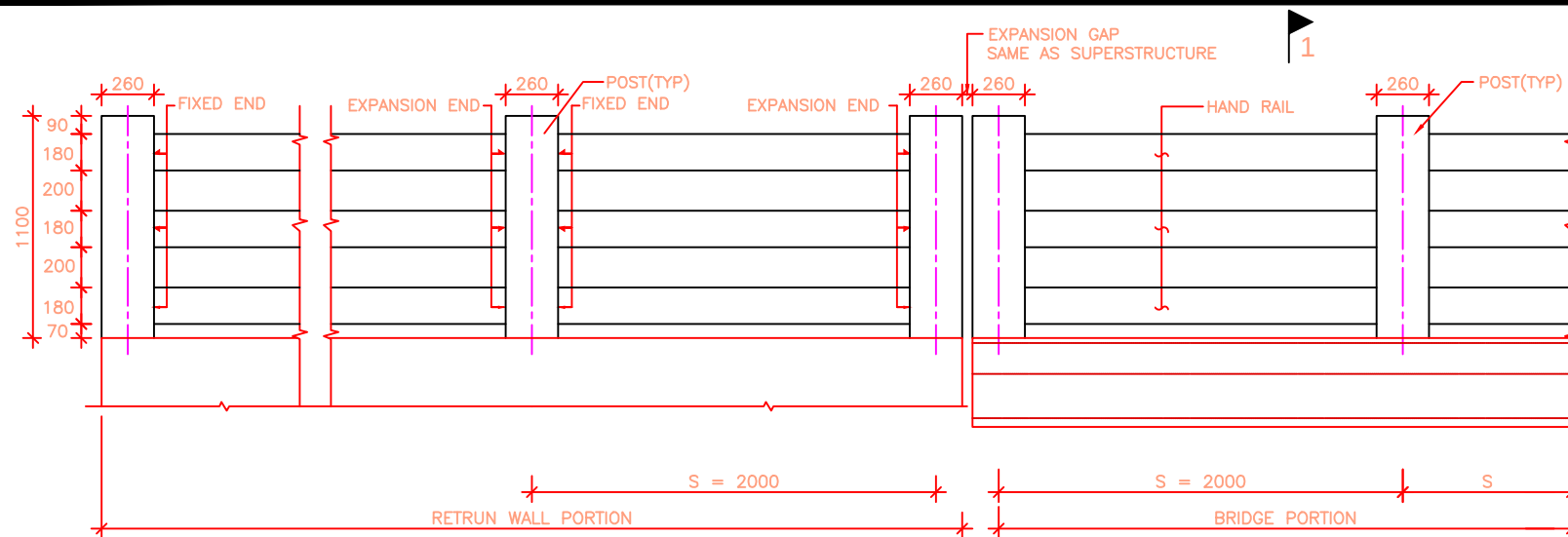
NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
- THE CRASH BARRIER DESIGN HAS BEEN ADOPTED AS PER CLAUSE 115.4.1 OF IRC:5-1998.
- THE CONCRETE GRADE SHALL BE M40.
- THE REINFORCING STEEL SHALL BE TMT DEFORMED BARS (GRADE DESIGNATION Fe:500D) CONFORMING TO IS:1786.
- CLEAR COVER TO OUTERMOST STEEL IS 50mm THK..
- DOWEL BARS OF THE CRASH BARRIER SHALL BE PROPERLY ANCHORED INTO THE DECK SLAB.
- SUITABLE REFLECTIVE (LUMINOUS) DEVICES SHALL BE PROVIDED ON THE TRAFFIC FACE OF THE BARRIER AT SUITABLE INTERVAL TO ENSURE ADEQUATE VISIBILITY DURING NIGHT AND FOGGY CONDITIONS.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY.
(IRC:112-2011) (CLAUSE:15.2.5.1)
LAP LENGTH $l_s = \alpha l_{bnet}$
 $\alpha = 1.0$ FOR $p \leq 25\%$
 $\alpha = 1.15$ FOR $25\% \leq p \leq 33\%$
 $\alpha = 1.4$ FOR $33\% \leq p \leq 50\%$
IN THE CASE OF BUNDLED BARS
LAP LENGTH $= 1.3 \times l_s$ (CLAUSE:15.2.7.3)
(IRC:112-2011) (CLAUSE:15.2.3.3)
DEVELOPMENT LENGTH (l_{bnet})
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
FOR $\phi > 32$ mm THK. l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $\left(\frac{100}{f_{yk} - 8}\right)$
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE GENERAL ARRANGEMENT DRAWING OF THE RESPECTIVE BRIDGES.

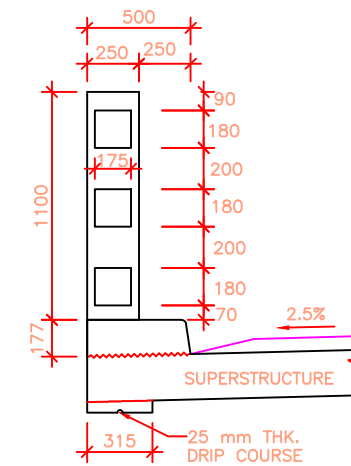
REINFORCEMENT SCHEDULE

BAR MARK	DESCRIPTION	SHAPE	REMARKS
①	16 $\varnothing$ 150c/c		
②	16 $\varnothing$ 150c/c		
③	12 $\varnothing$ 150c/c		
④	16 $\varnothing$ - 6 Nos.		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: Nov.2017
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nabuse - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	K.M.JOHR	AGNIMITA	P.K.KHAN	B.N.SINGH	DIMENSIONAL AND REINFORCEMENT DETAILS OF CRASH BARRIER PACKAGE-IV (BENIGHAT-MUGLING) Drawing No.: NIRTTP/NAG-MUG/PACKAGE-IV/MISC.-03	As Shown	



GENERAL ELEVATION
(SCALE 1:25)



SECTION 1-1
(SCALE 1:25)

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
2. THE CONCRETE GRADE SHALL BE M30.
3. THE REINFORCING STEEL SHALL BE TMT DEFORMED BARS (GRADE DESIGNATION Fe500D) CONFORMING TO IS:1786.
4. CLEAR COVER TO OUTERMOST STEEL IS 50mm THK..
5. CENTRE TO CENTRE SPACING 'S' BETWEEN SUCCESSIVE VERTICAL POSTS SHOWN IN THE ELEVATION SHALL BE ADJUSTED TO SUIT THE LENGTH OF THE BRIDGE SPAN FOR WHICH THE RAILING IS USED BUT IN NO CASE ITS SHALL EXCEED 2000mm THK..
6. CASTING OF THE POST SHALL BE DONE IN SINGLE POUR AFTER ACCURATELY POSITIONING THE PRECAST HANDRAILS.
7. LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS FOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY.

(IRC:112-2011) (CLAUSE:15.2.5.1)

LAP LENGTH $l_s = \alpha \cdot l_{bnet}$
 $\alpha = 1.0$ FOR $p \leq 25\%$
 $\alpha = 1.15$ FOR $25\% < p \leq 33\%$
 $\alpha = 1.4$ FOR $33\% < p \leq 50\%$

IN THE CASE OF BUNDLED BARS

LAP LENGTH $= 1.3 \times l_s$ (CLAUSE:15.2.7.3)

(IRC:112-2011) (CLAUSE:15.2.3.3)

DEVELOPMENT LENGTH (l_{bnet})

$l_{bnet} = \alpha \cdot l_b$ ($\alpha = 1.0$)

$l_b = k \phi$

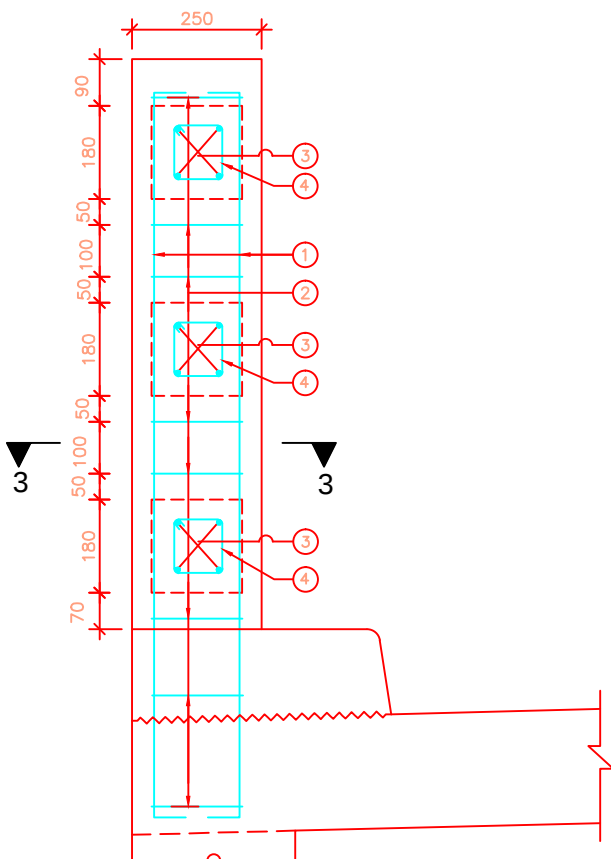
$k = 40$ FOR M30 (Fe500D)

$k = 36$ FOR M35 (Fe500D)

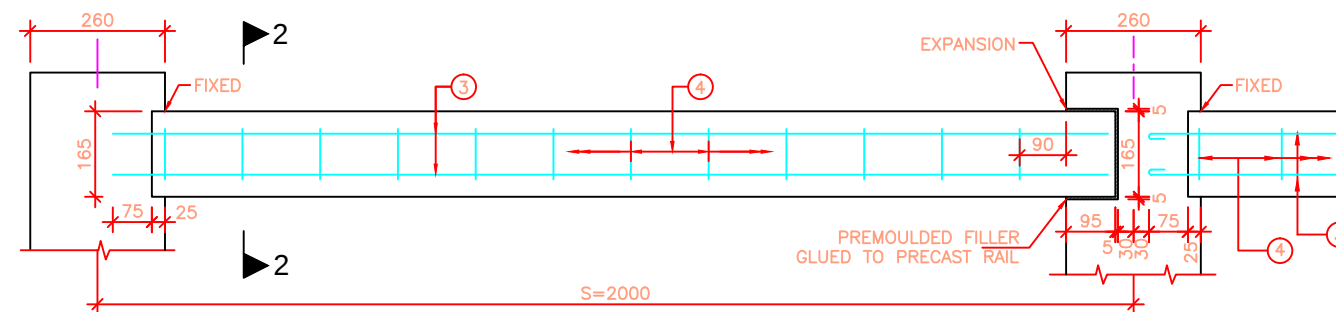
$k = 34$ FOR M40 (Fe500D)

FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
 FOR $\phi > 32$ mm THK. l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{\phi})$

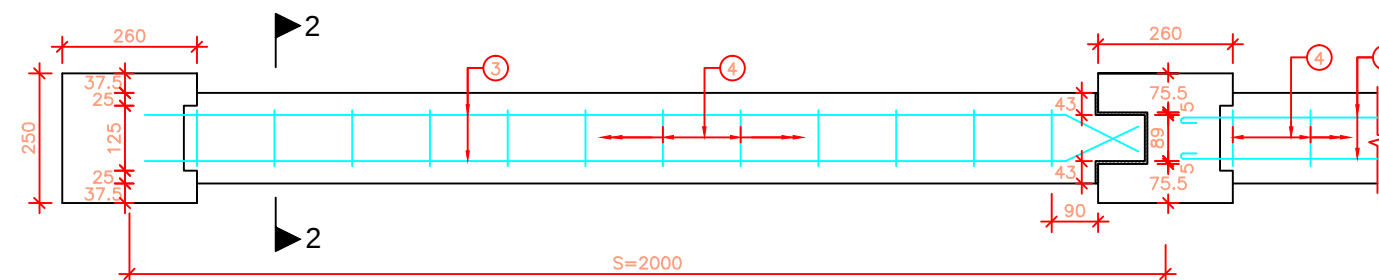
8. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE GENERAL ARRANGEMENT DRAWING OF THE RESPECTIVE BRIDGES.



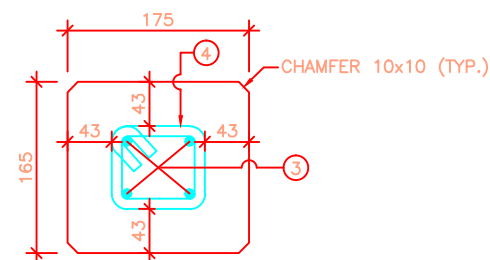
REINF. DETAILS OF RAILING POST
(SCALE 1:10)



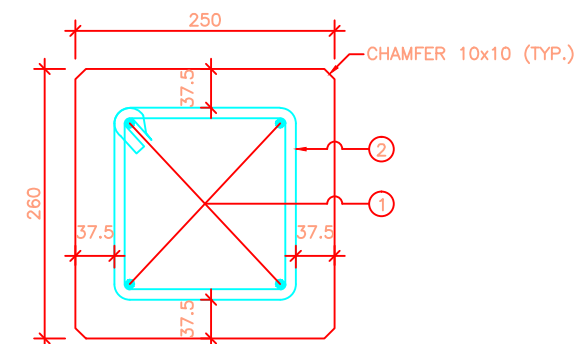
ELEVATION
(SCALE 1:10)



PLAN
REINF. DETAILS OF HANDRAIL (Precast)
(SCALE 1:10)



SECTION 2-2
(SCALE 1:5)



SECTION 3-3
(SCALE 1:5)

REINFORCEMENT SCHEDULE

BAR MARK	DESCRIPTION	SHAPE	REMARKS
①	12 ϕ -4 Nos.		
②	10 ϕ -8 Nos.		STIRRUPS
③	10 ϕ -4 Nos.		
④	8 ϕ @150 c/c		STIRRUPS

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Naubise - Mugling Road and Bridges	 Intercontinental Consultants & Technocrats Pvt. Ltd., A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	K.M. JOHRI	AGNIMITA	P.K. KHAN	B.N. SINGH	DIMENSIONAL AND REINFORCEMENT DETAILS OF RCC RAILING PACKAGE-IV (BENIGHAT-MUGLING) Drawing No.: NIRTP/NAG-MUG/PACKAGE-IV/MISC.-04	As Shown	Nov.2017



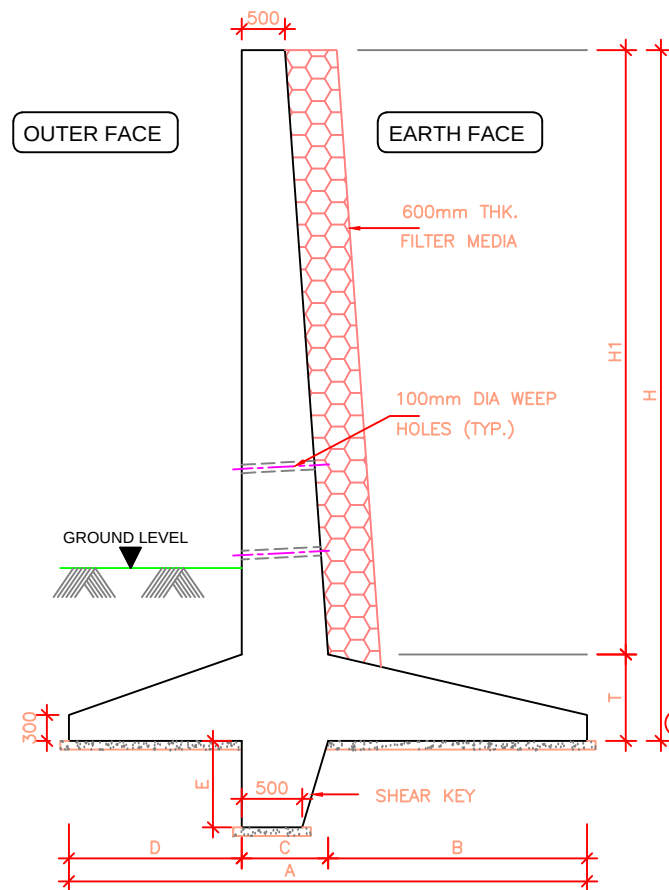
(SCALE 1:60)



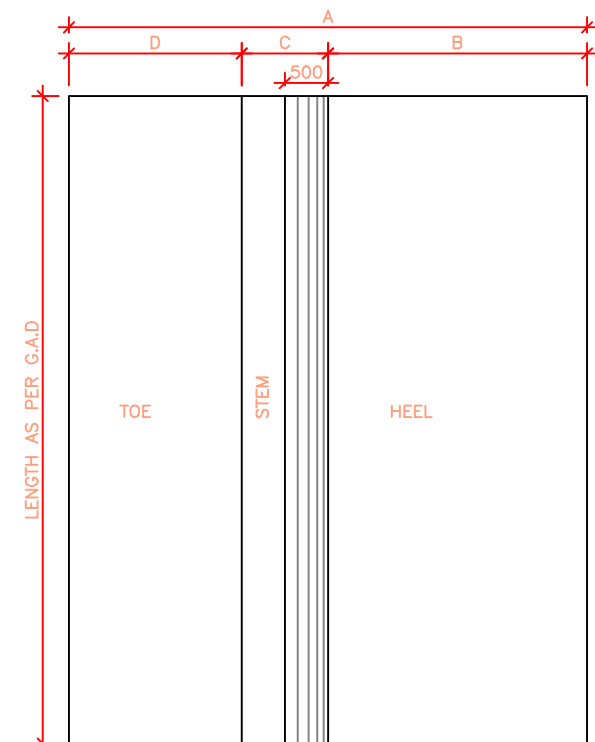
SECTION 2-2
(SCALE 1:60)

SURFACE BAR SHALL BE PROVIDED IN FOOTING
AT 12 Φ @150c/c WHEREVER REQUIRED

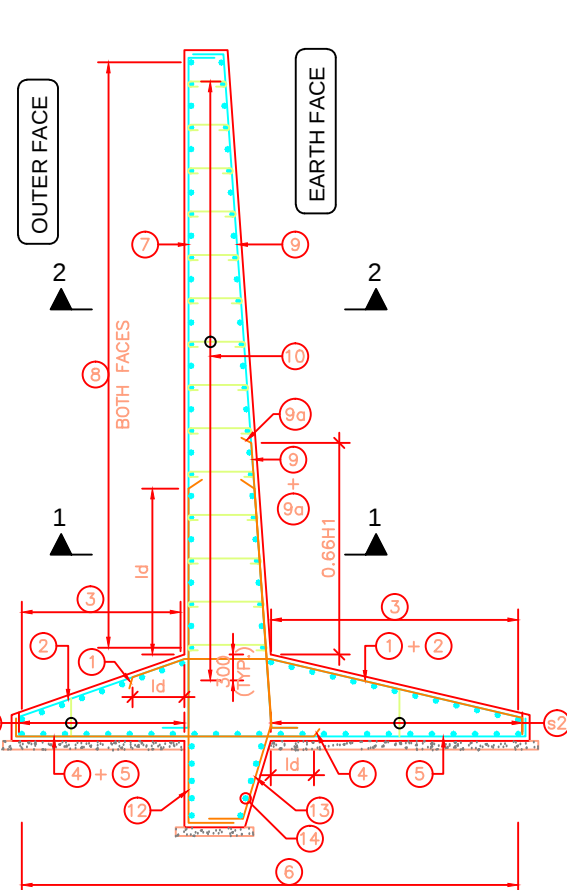
95



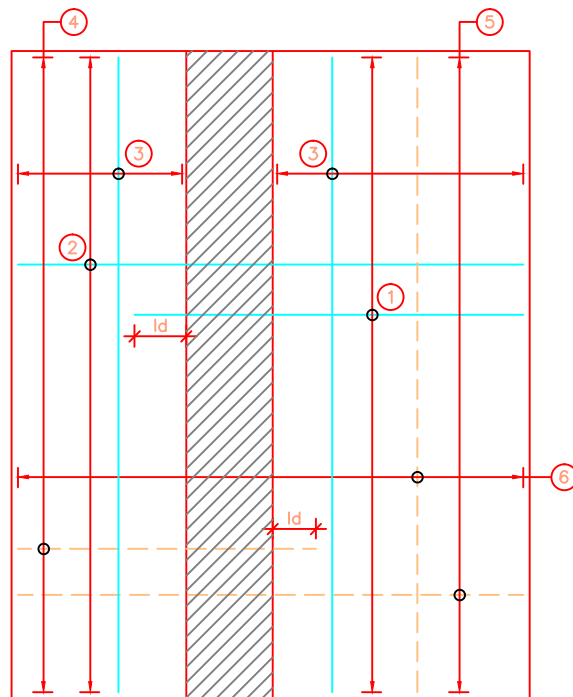
**TYPICAL SECTION OF TOE WALL
(DIMENSIONAL DETAILS)**
(SCALE 1:60)



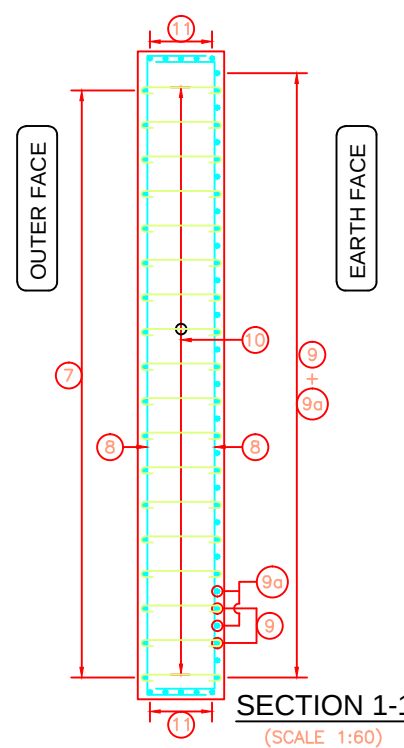
**TYPICAL PLAN OF TOE WALL
(DIMENSIONAL DETAILS)**
(SCALE 1:60)



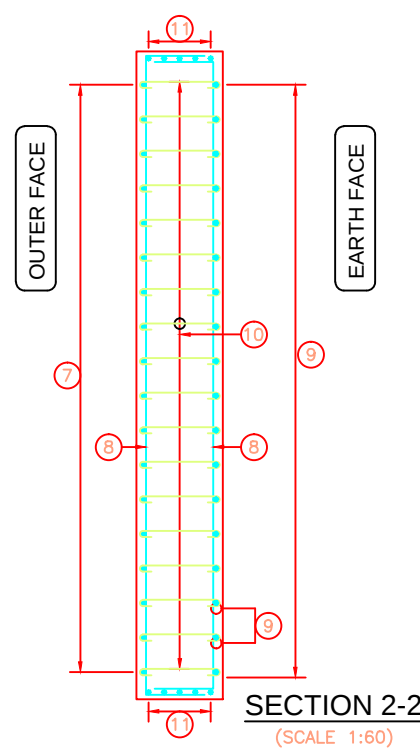
**TYPICAL SECTION OF TOE WALL
(REINFORCEMENT DETAILS)**
(SCALE 1:60)



**TYPICAL PLAN OF TOE WALL
(REINFORCEMENT DETAILS)**
(SCALE 1:60)



SECTION 1-1
(SCALE 1:60)



SECTION 2-2
(SCALE 1:60)

**SCHEDULE OF SECTIONAL DIMENSIONS OF
TOE WALLS OF DIFFERENT HEIGHTS**

SR. NO.	TOTAL HEIGHT (H)		6.0m	7.0m	8.0m	9.0m	10.0m	11.0m
1	BASE WIDTH	A	5.20	6.20	7.00	7.70	8.50	9.30
2	HEEL	B	3.00	3.60	3.80	4.00	4.30	4.40
3	STEM	C	1.00	1.00	1.10	1.20	1.20	1.40
4	TOE	D	1.20	1.60	2.10	2.50	3.00	3.50
5	KEY	E	0.60	0.70	1.00	1.00	1.20	1.40
6	BASE THK.	T	1.00	1.00	1.10	1.20	1.20	1.20
7	MAX. BASE PRESSURE (kN/m) AS PER DESIGN		240.19	261.87	260.62	295.24	310.18	316.57

(DIMENSIONS GIVEN IN THE TABLE ARE IN METRES)

REINFORCEMENT SCHEDULE TOE WALLS

BAR MRKD.	SHAPE	TOTAL 6.0m HEIGHT	TOTAL 7.0m HEIGHT	TOTAL 8.0m HEIGHT	TOTAL 9.0m HEIGHT	TOTAL 10.0m HEIGHT	TOTAL 11.0m HEIGHT
1		16 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c
2		12 Φ 200c/c	12 Φ 200c/c	12 Φ 200c/c	12 Φ 200c/c	12 Φ 200c/c	16 Φ 200c/c
3		10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	12 Φ 150c/c
4		12 Φ 200c/c	16 Φ 180c/c	12 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c	20 Φ 200c/c
5		12 Φ 200c/c	12 Φ 180c/c	12 Φ 200c/c	12 Φ 200c/c	12 Φ 200c/c	16 Φ 200c/c
6		10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	10 Φ 150c/c	12 Φ 150c/c
7		16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 90c/c
8		12 Φ 150c/c	12 Φ 150c/c	12 Φ 150c/c	12 Φ 125c/c	16 Φ 150c/c	16 Φ 125c/c
9		12 Φ 200c/c	16 Φ 200c/c	16 Φ 200c/c	25 Φ 200c/c	32 Φ 200c/c	32 Φ 180c/c
9a		16 Φ 200c/c	16 Φ 200c/c	25 Φ 200c/c	25 Φ 200c/c	32 Φ 200c/c	32 Φ 180c/c
10		8 Φ 300c/c	8 Φ 300c/c	8 Φ 300c/c	8 Φ 300c/c	8 Φ 300c/c	8 Φ 300c/c
11		16 Φ 150c/c	16 Φ 150c/c	16 Φ 150c/c	16 Φ 150c/c	16 Φ 150c/c	16 Φ 150c/c
12		16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 100c/c	16 Φ 90c/c
13		12 Φ 100c/c	16 Φ 200c/c	16 Φ 200c/c	25 Φ 200c/c	32 Φ 200c/c	32 Φ 180c/c
14		12 Φ 150c/c	12 Φ 150c/c	12 Φ 150c/c	12 Φ 125c/c	16 Φ 150c/c	16 Φ 125c/c
91		-	-	-	-	2L-12 Φ 150c/c	2L-12 Φ 150c/c

NOTES:-

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
- THE CONCRETE GRADE SHALL BE M30.
- THE REINFORCING BARS SHALL BE OF THERMO MECHANICALLY TREATED/CORROSION RESISTANT STEEL (TMT-CRS) (GRADE DESIGNATION Fe-500D) CONFORMING TO IS:1786 STANDARDS.
- CLEAR COVER TO OUTER MOST STEEL SHALL BE AS UNDER:-
i) EARTH FACE -75mm.
ii) NON EARTH FACE -50mm.
- 100mm DIA WEEP HOLES AT 1000mm C/C STAGGERED HORIZONTALLY AND VERTICALLY SHALL BE PROVIDED IN TWO LAYERS ABOVE G.L IN VERTICAL WALLS OF RETAINING WALLS.
- LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND TOE WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX:6 OF IRC:7B-2014 HAVING PROPERTIES $C=0$, $\phi \geq 30^\circ$ AND DENSITY= 20KN/m³.
- LAPPING OF REINFORCEMENT SHALL BE AVOIDED AS FAR AS POSSIBLE. IN CASE LAPPING OF BARS BECOMES UNAVOIDABLE, MINIMUM LAP LENGTH OF REINFORCEMENT BARS SHALL BE CALCULATED AS eFOLLOW WITH MAXIMUM ALLOWABLE LAPPING (p) OF 50% ONLY.
(IRC:112-2011) (CLAUSE:15.2.5.1)
LAP LENGTH $l_s = \alpha l_{bnet}$
 $\alpha l = 1.0$ FOR $p \leq 25\%$
 $\alpha l = 1.15$ FOR $25\% \leq p \leq 33\%$
 $\alpha l = 1.4$ FOR $33\% \leq p \leq 50\%$
IN THE CASE OF BUNDLED BARS
LAP LENGTH $= 1.3 \times l_s$ (CLAUSE:15.2.7.3)
(IRC:112-2011) (CLAUSE:15.2.3.3)
DEVELOPMENT LENGTH (l_{bnet} OR L_d)
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$
 $k = 40$ FOR M30 (Fe500D)
 $k = 36$ FOR M35 (Fe500D)
 $k = 34$ FOR M40 (Fe500D)
FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR $(\frac{100}{132-\phi})$
8. SAFE BEARING CAPACITY OF SOIL AT FOUNDATION LEVEL SHALL NOT BE LESS THAN 18T/m².
- TO COUNTER FOR THE DEFLECTION TOE WALL SHALL BE CONSTRUCTED TILTED BACK BY 1 IN 100.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE GENERAL ARRANGEMENT DRAWING OF THE RESPECTIVE BRIDGES.

**SURFACE BAR SHALL BE PROVIDED IN FOOTING
AT 12 Φ @150c/c WHEREVER REQUIRED**

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	M.L.GUPTA	DRAWING TITLE:	Scale:	Date: Nov.2017
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) - Nabise - Mugling Road and Bridges	Intercontinental Consultants & Technocrats Pvt.Ltd, A-8, Green Park, New Delhi - 110016 Ph : 4086-3000, Fax 2685-5252 In Joint Venture With Soosung Engineering Co. Ltd., South Korea	Designed By	NEELAM N.	DIMENSIONAL AND REINFORCEMENT DETAILS OF RCC TOE WALL PACKAGE-IV (BENIGHAT-MUGLING)	As Shown	
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Checked By	P.K.KHAN	Drawing No.:		
			Approved By	B.N.SINGH	NIRTP/NAG-MUG/PACKAGE-IV/MISC-06		