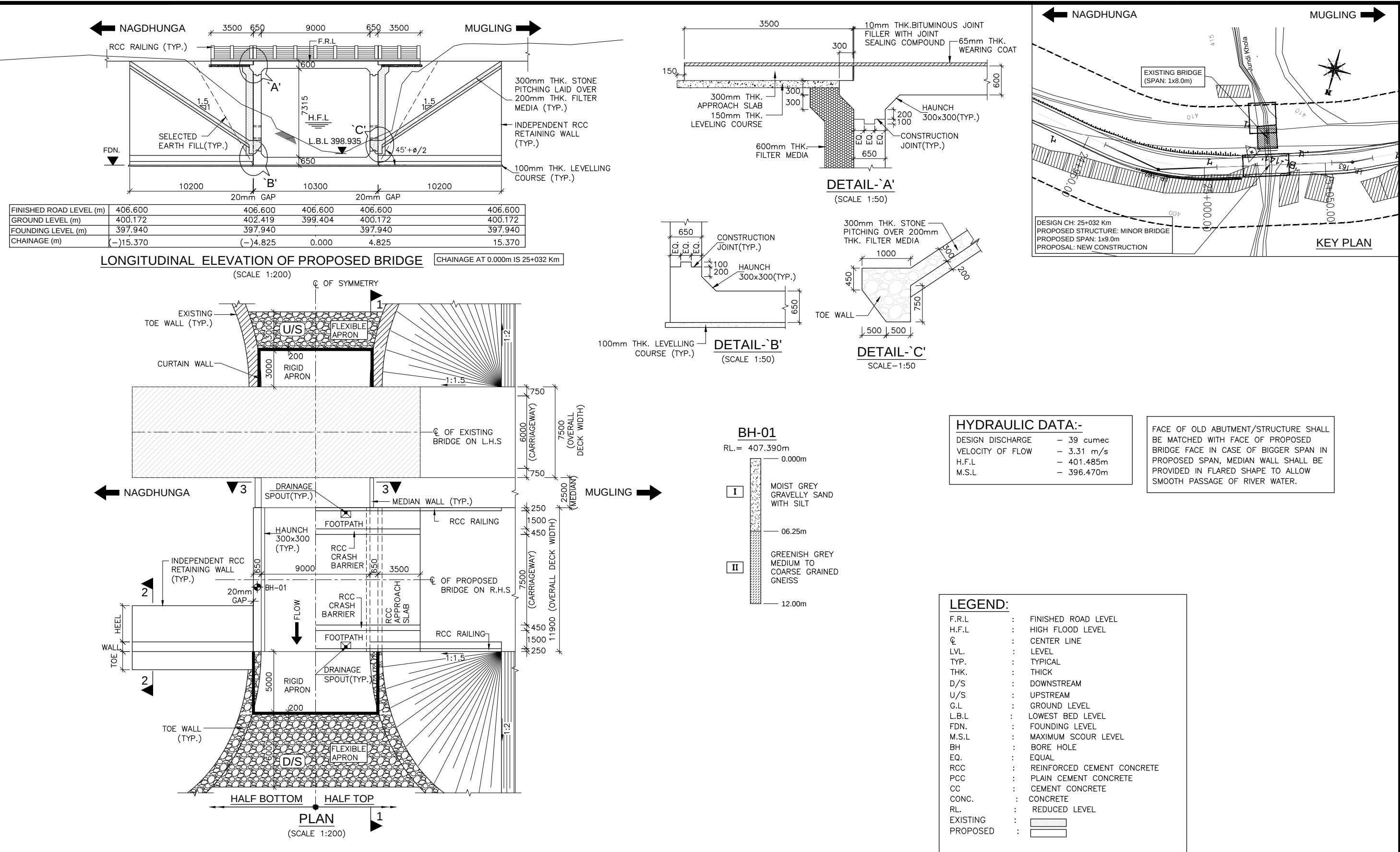
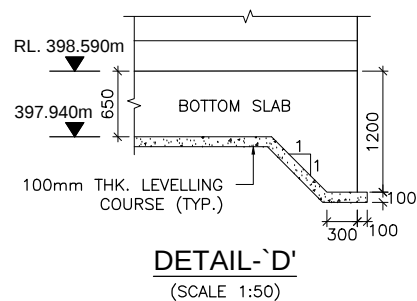
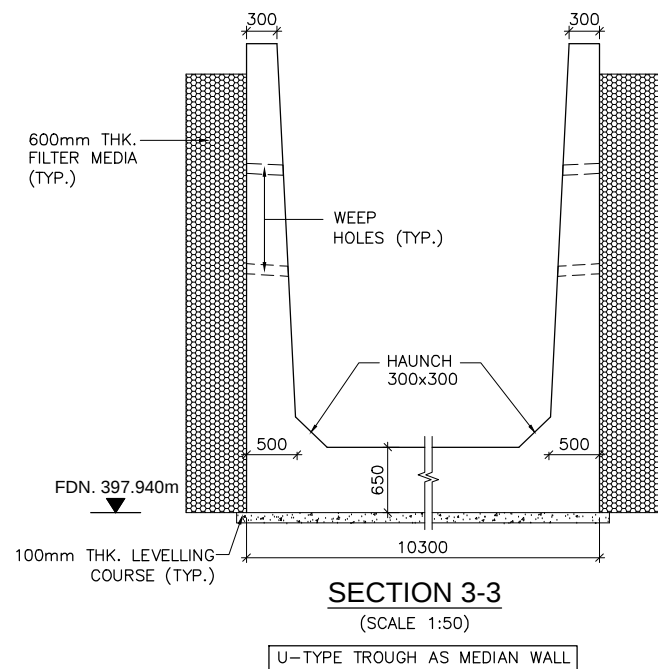
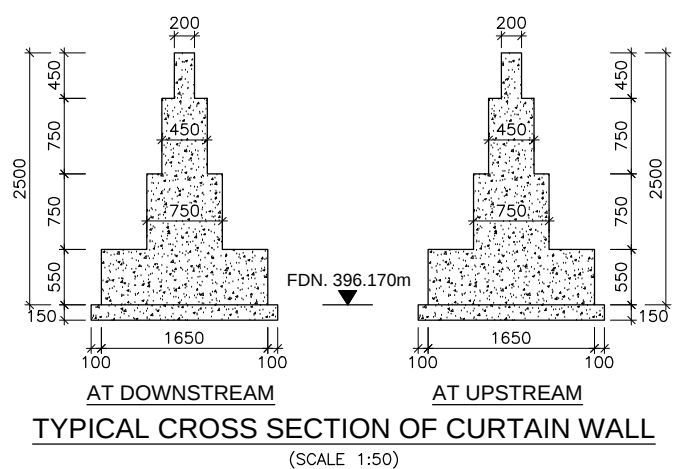
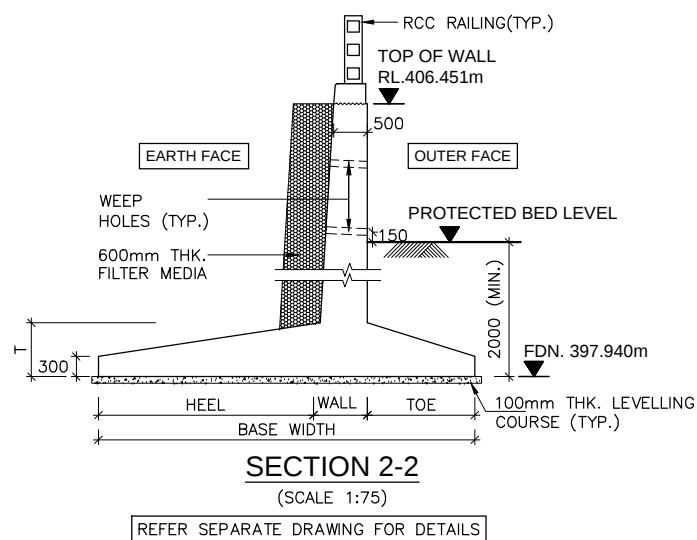
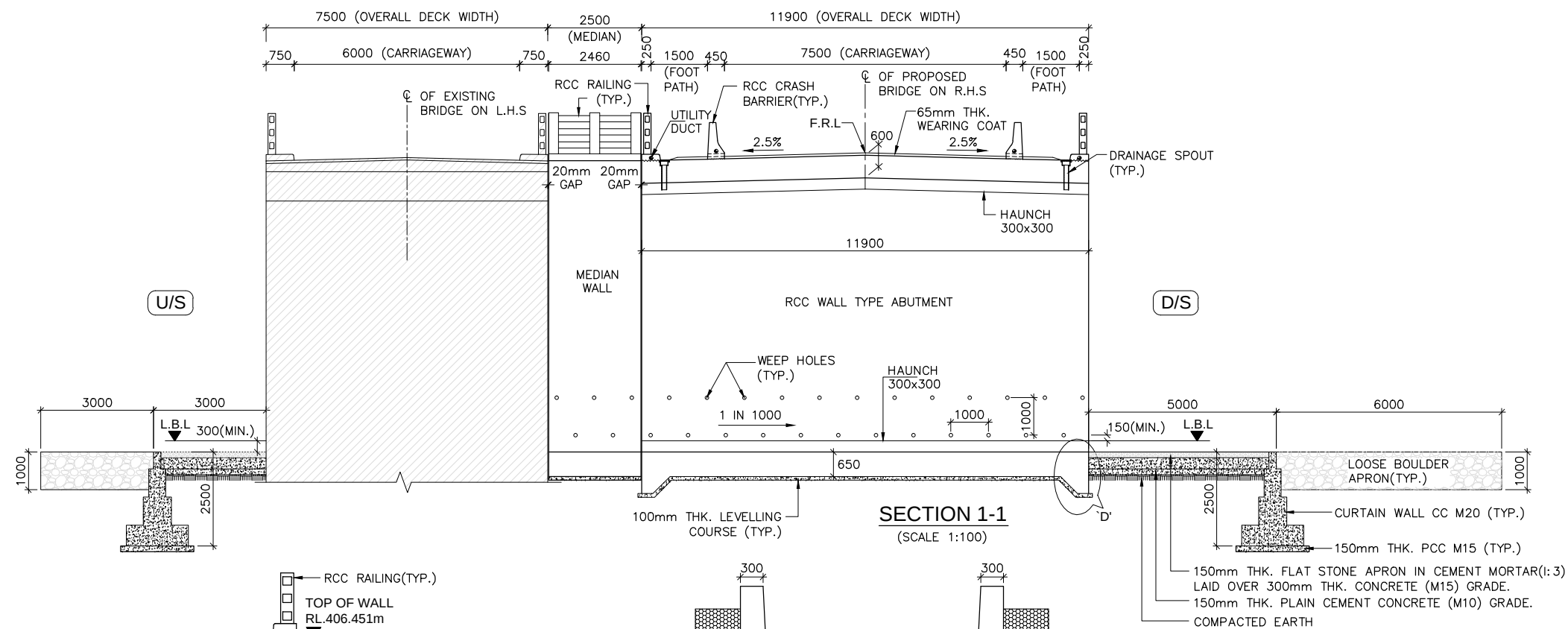


JUNDI KHOLA BRIDGE

CHAINAGE : 25+032



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	M.L.GUPTA	DRAWING TITLE:	Scale:	Date: JUNE-2018
 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) Detailed Design of Kathmandu (Nagdhunga) - Naulibe - 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  Checked By  Approved By 	NEELAM N. P.K.KHAN B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 25+032KM OVER JUNDI KHOLA (1/9.0mx7.315m) PACKAGE-III (GALCHI-BENIGHAT) Drawing No.: NIRTP/NAG-MUG/JUNDI/GAD	As Shown	(SHEET 1 OF 2)



NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS 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 CUBES AS FOLLOWS :-

a. LEVELING COURSE (UNDER FOUNDATION)	- M10
b. LEVELING COURSE (UNDER APPROACH SLAB)	- M15
c. BOX STRUCTURE	- M30
d. RETURN/RETAINING WALL	- M30
e. CRASH BARRIER	- M40
f. APPROACH SLAB	- M30
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED, (TMT) HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- 65mm THK. 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 BOX RETURN/RETAINING WALLS AT A SLOPE OF 1 VERTICAL TO 20 HORIZONTAL TOWARDS THE DRAINING FACE.
- WATER TO BE USED IN CONCRETING, & CURING SHALL CONFORM TO CLAUSE 18.4.5 OF IRC:112-2011.
- LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND BOX 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 STEEL SHALL BE AS UNDER:-
 - EARTH FACE - 75mm
 - NON EARTH FACE - 50mm
- 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.
- 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.
- WHERE FOUNDATION 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, G.L SHALL BE CONFIRMED AT SITE PRIOR TO EXECUTION.
- FOR APPROACH SLAB, DRAINAGE SPOUTS, CRASH BARRIER, PROTECTION WORK, RETAINING WALL DETAILS, REFER SEPARATE DRAWINGS.
- MINIMUM LONGITUDINAL GRADIENT OF 0.3% SHALL BE PROVIDED IS 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.

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAILS OF RCC BOX:
 - NIRTTP/NAG-MUG/JUNDI/REINF-01 (SHEET 1, 2 & 3)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 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) -Detailed Design of Kathmandu (Nagdhunga) -Naubise - Mugling Road and BridgesNaubise	 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	M.L.GUPTA	NEELAM N.	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 25+032KM OVER JUNDI KHOLA (1/9.0mx7.315m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 2 OF 2)
		In Association With Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.: NIRTTP/NAG-MUG/JUNDI/GAD		

REINFORCEMENT SCHEDULE

BAR MARK	BAR SHAPE	REINFORCEMENT
①		25 Φ @200 C/C
②		12 Φ @150 C/C
③		16 Φ @200 C/C
③a		20 Φ @200 C/C
④		12 Φ @150 C/C
⑤		12 Φ -4x6 Nos.
⑥		12 Φ @150 C/C
⑦		16 Φ @200 C/C
⑦a		16 Φ @200 C/C
⑧		12 Φ @150 C/C
⑨		16 Φ @200 C/C
⑩		20 Φ @ 200 C/C
⑪		12 Φ @150 C/C
⑪a		12 Φ @150 C/C
⑫		16 Φ @ 200 C/C
⑬		12 Φ @200 C/C
⑬a		12 Φ -2x4 Nos.
⑭		12 Φ -2x12 Nos.
⑮		12 Φ @ 100 C/C
⑯		12 Φ -2x2 Nos.
⑰		12 Φ -5x2 Nos.
⑱		12 Φ @ 100 C/C
⑲		3Nos. 2L-12 Φ STIRRUPS
⑳		7L-10 Φ LINKS@150 C/C
a = 0.3S OR lb WHICH EVER IS GREATER.		
b = 0.3H OR lb WHICH EVER IS GREATER.		
c = 0.15S		
S = CLEAR SPAN		
H = CLEAR HEIGHT		
LB = DEVELOPMENT LENGTH		

TOP BARS SHOWN THUS

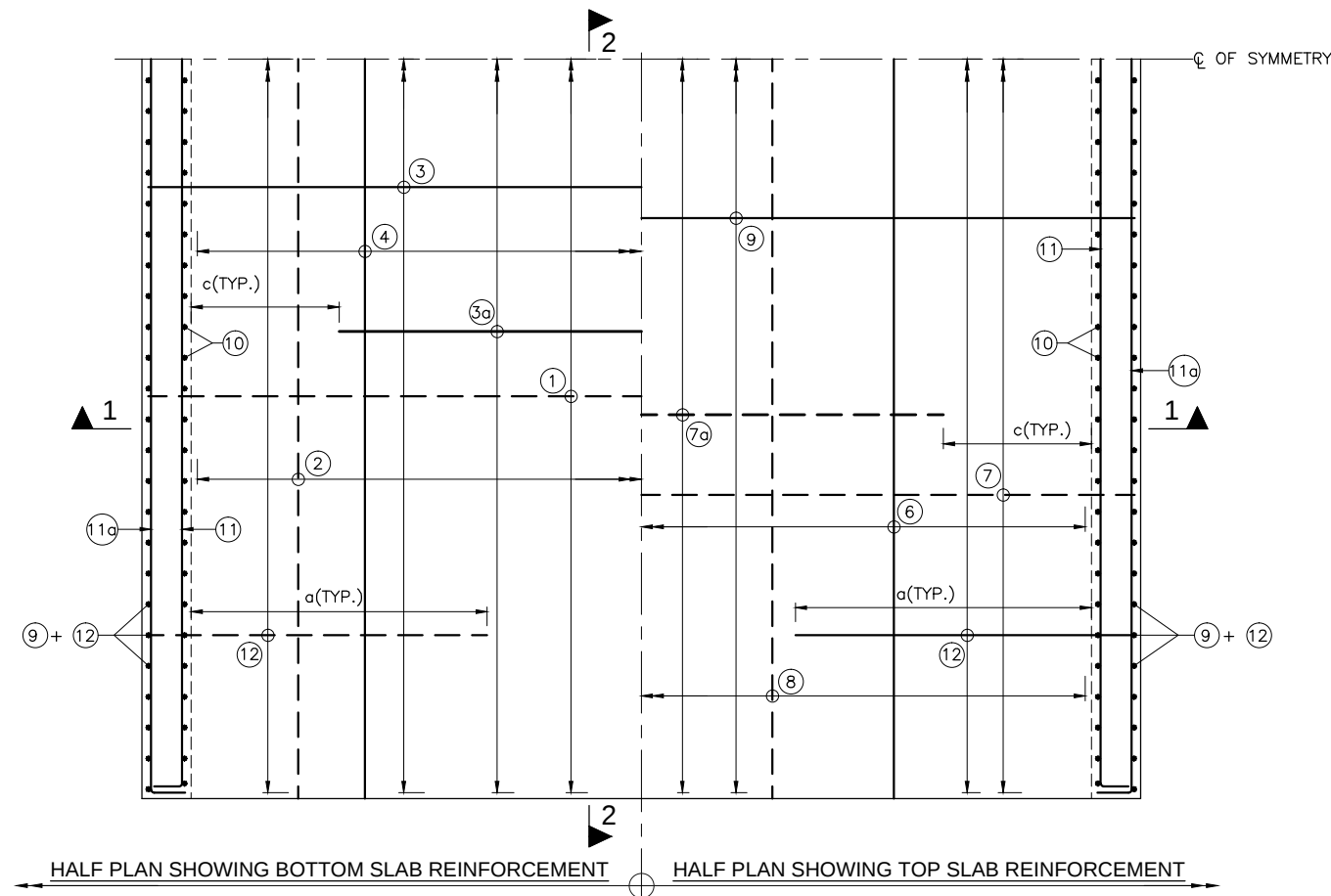
BOTTOM BARS SHOWN THUS

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSION SHALL BE SCALED.
- CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM CHARACTERISTIC STRENGTH OF 30MPa FOR RCC BOX STRUCTURE.
- CLEAR COVER TO OUTER MOST STEEL SHALL BE AS FOLLOWS:-
EARTH FACE - 75mm
OTHER FACE - 50mm
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED, (TMT) HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION FE-500D CONFORMING TO IS: 1786.
- 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 $(\frac{1.43}{1.32})$

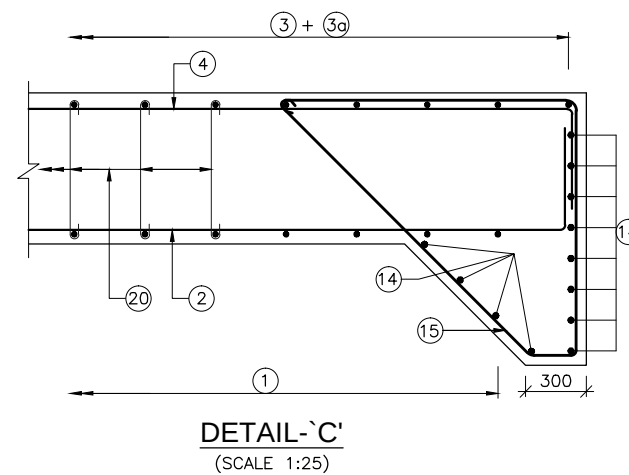
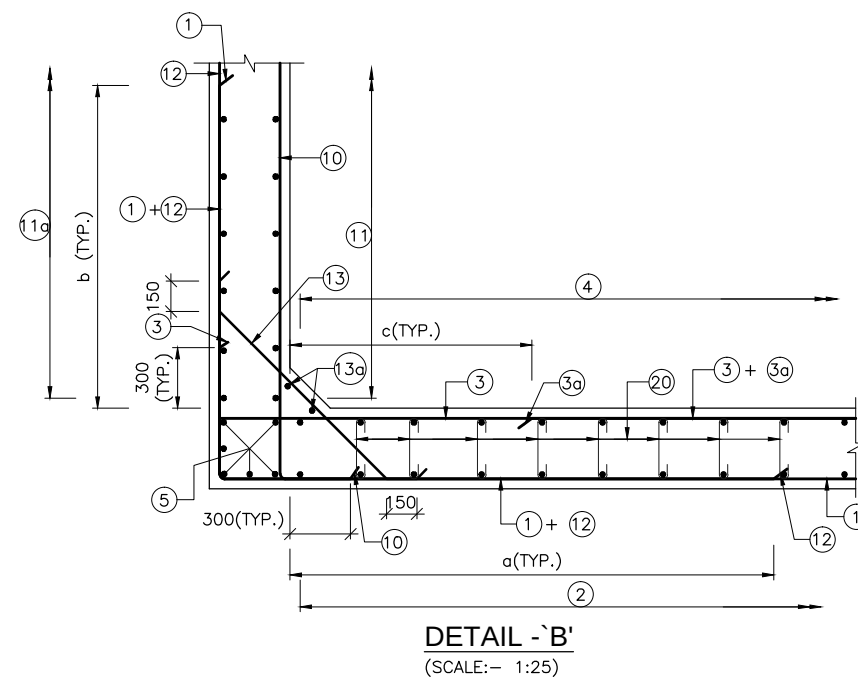
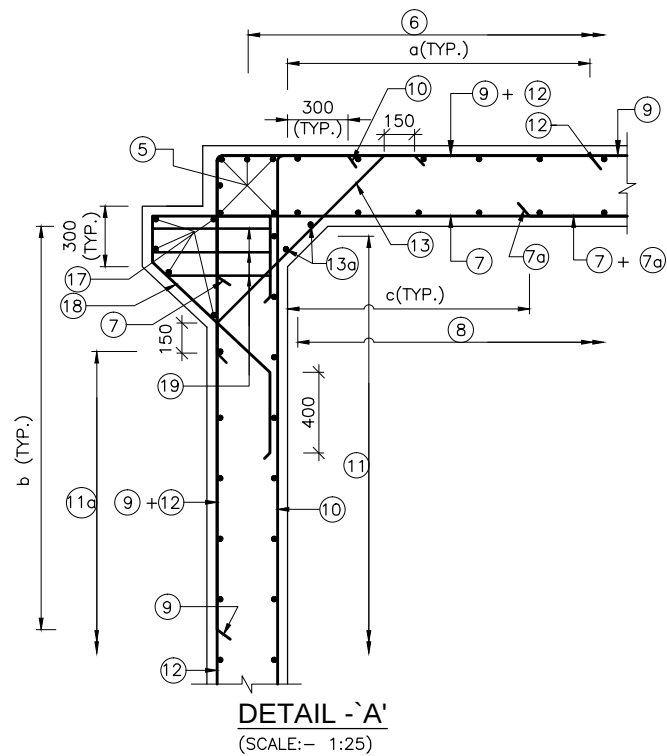
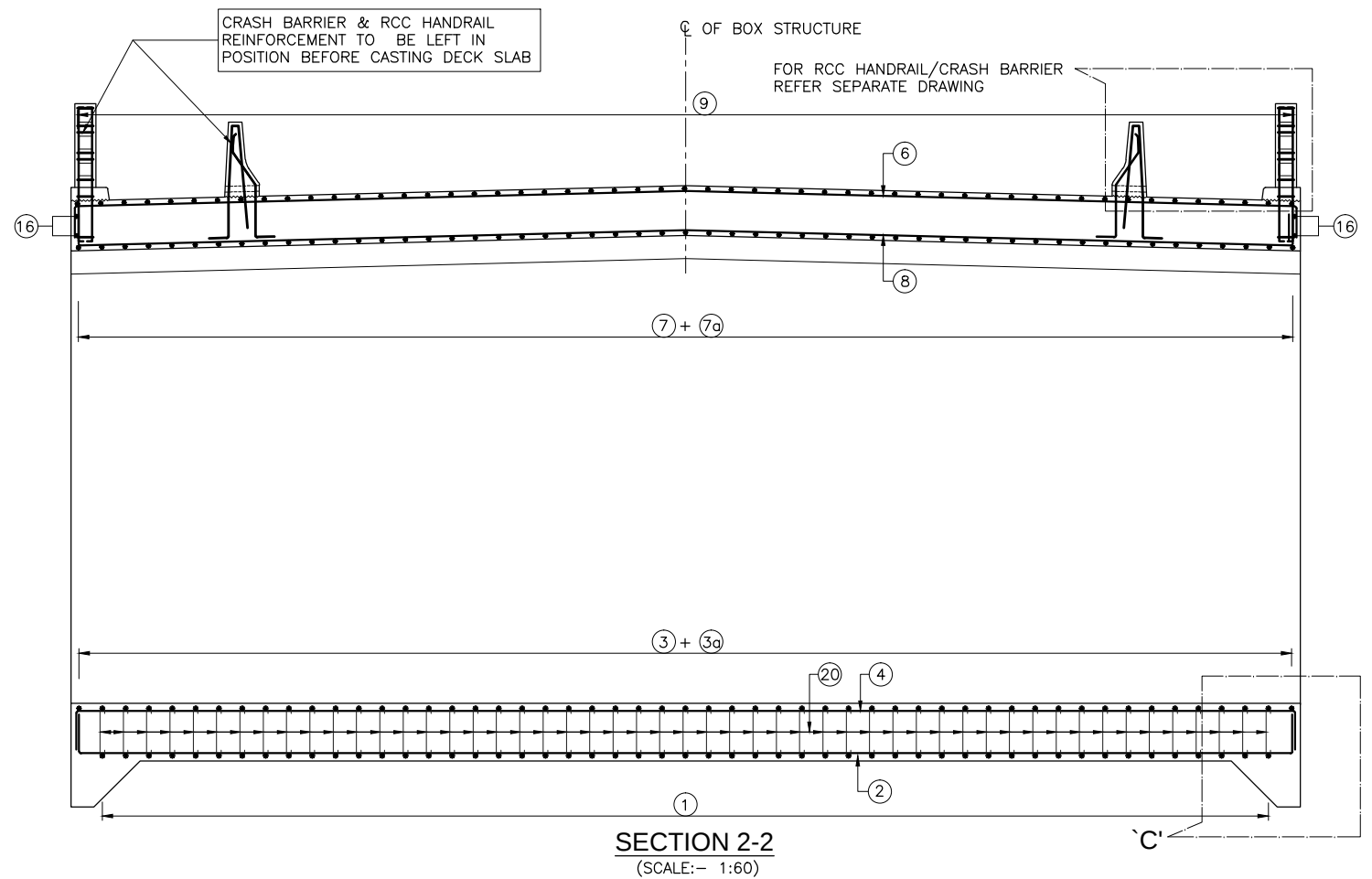
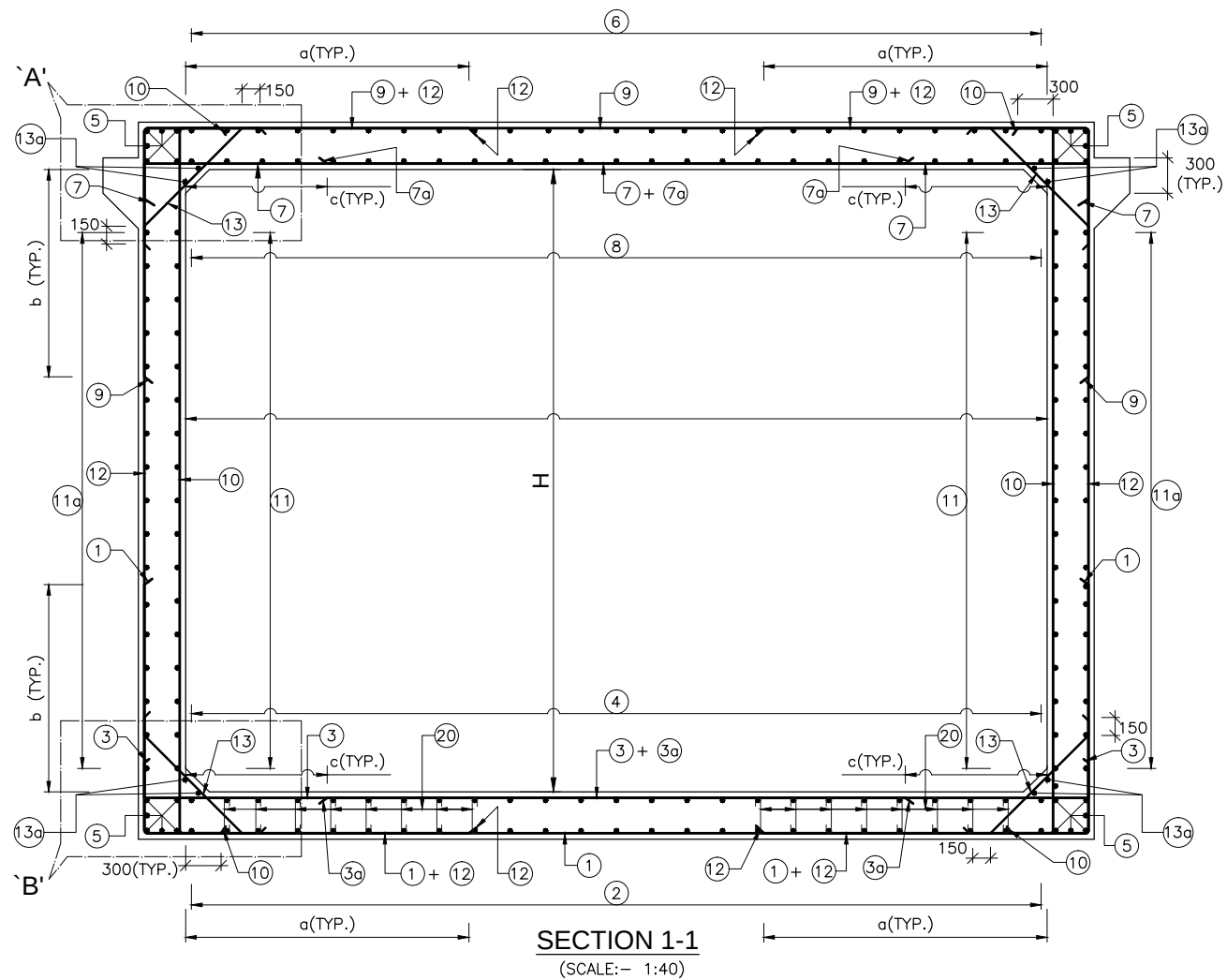
REFERENCE DRAWINGS:-

- GENERAL ARRANGEMENT DRAWING OVER JUNDI KHOLA
NIRTP/NAG-MUG/JUNDI/GAD (SHEET 1 & 2)

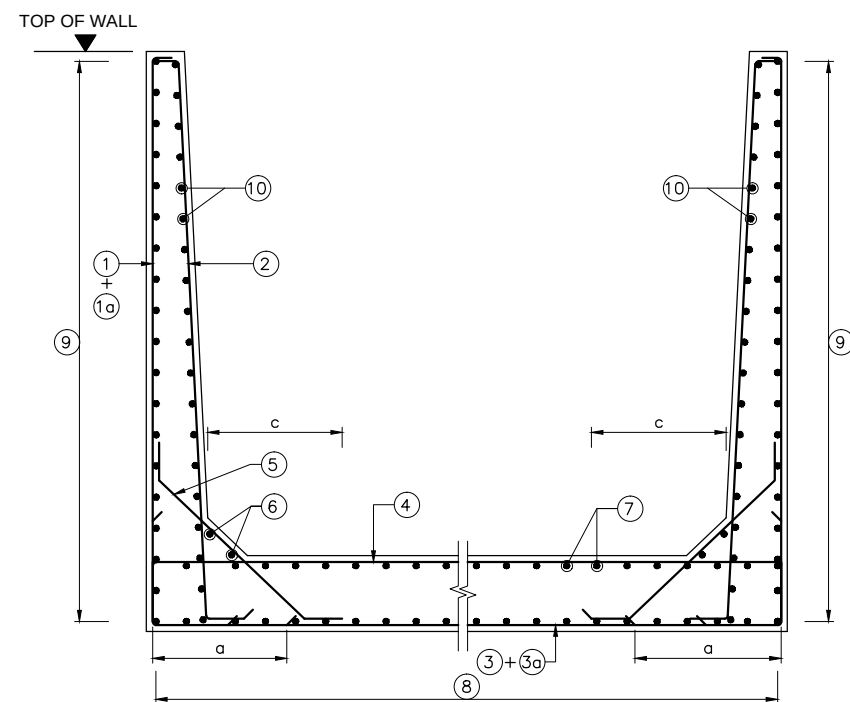


(HAUNCH LINES & BAR MARKS NOT SHOWN IN PLAN FOR CLARITY)

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF SINGLE CELL RCC BOX AT CH: 25+032KM PACKAGE-III GALCHI-BENIGHAT)	Scale:	Date: JUNE-2018
	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) Detailed Design 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		NEELAM N.		As Shown	(SHEET 1 OF 3)
					Checked By		P.K.KHAN			
					Approved By		B.N.SINGH			
						Drawing No.:		NIRTP/NAG-MUG/JUNDI/REINF-01		



EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		Designed By		Checked By		Approved By		Drawing Title:		Scale:		Date: JUNE-2018	
 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) Detailed Design 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	M.L.GUPTA	NEELAM N.	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF SINGLE CELL RCC BOX AT CH: 25+032KM PACKAGE-III GALCHI-BENIGHAT)	As Shown	(SHEET 2 OF 3)	Drawing No.: NIRTP/NAG-MUG/JUNDI/REINF-01								



**REINFORCEMENT DETAIL FOR U TYPE
TROUGH AS MEDIAN WALL**
(SCALE 1:40)

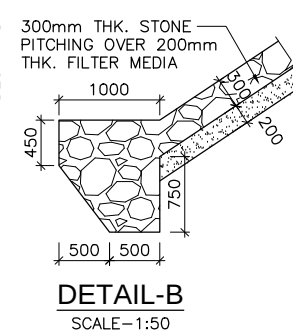
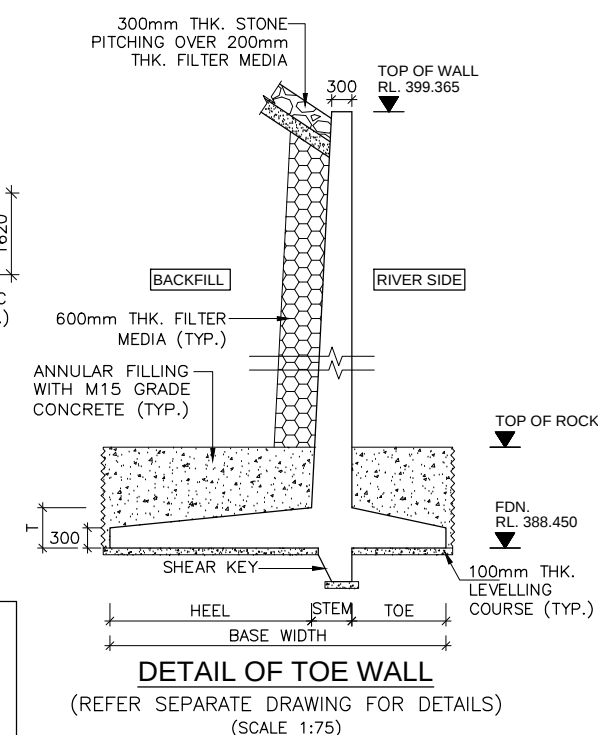
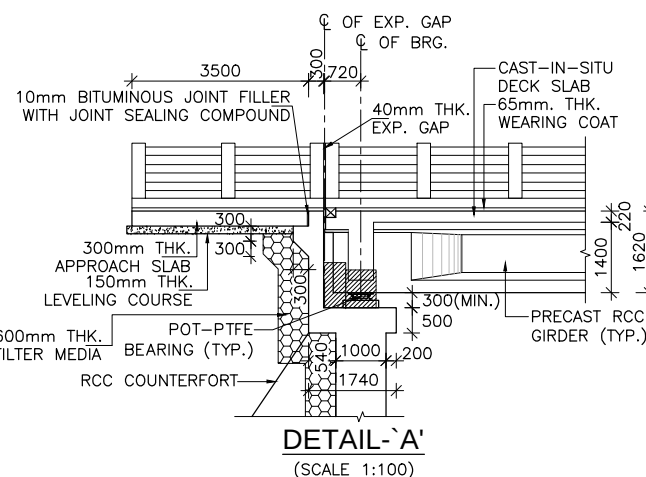
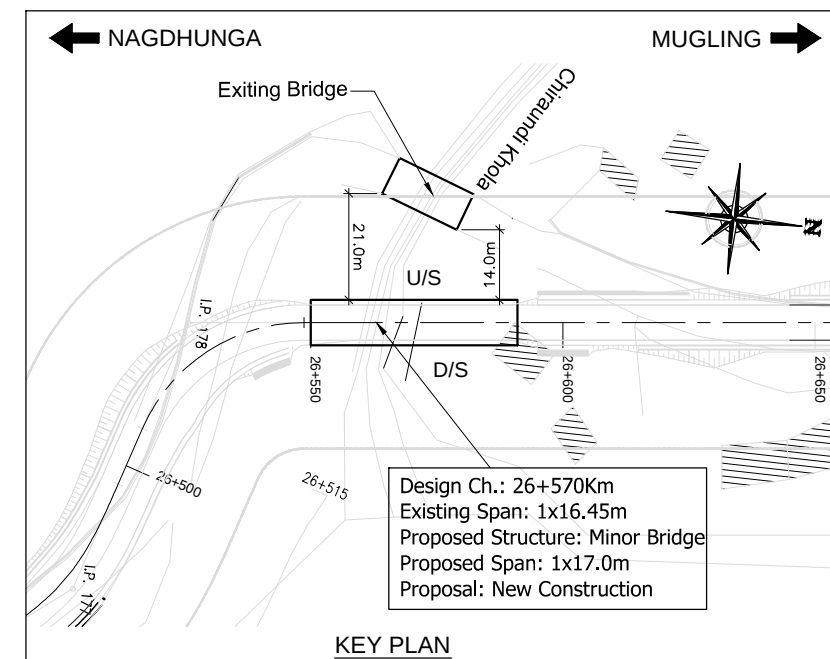
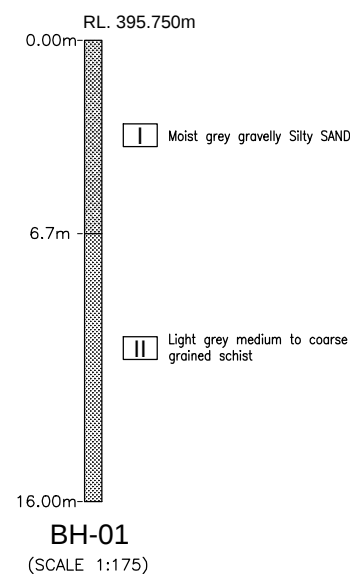
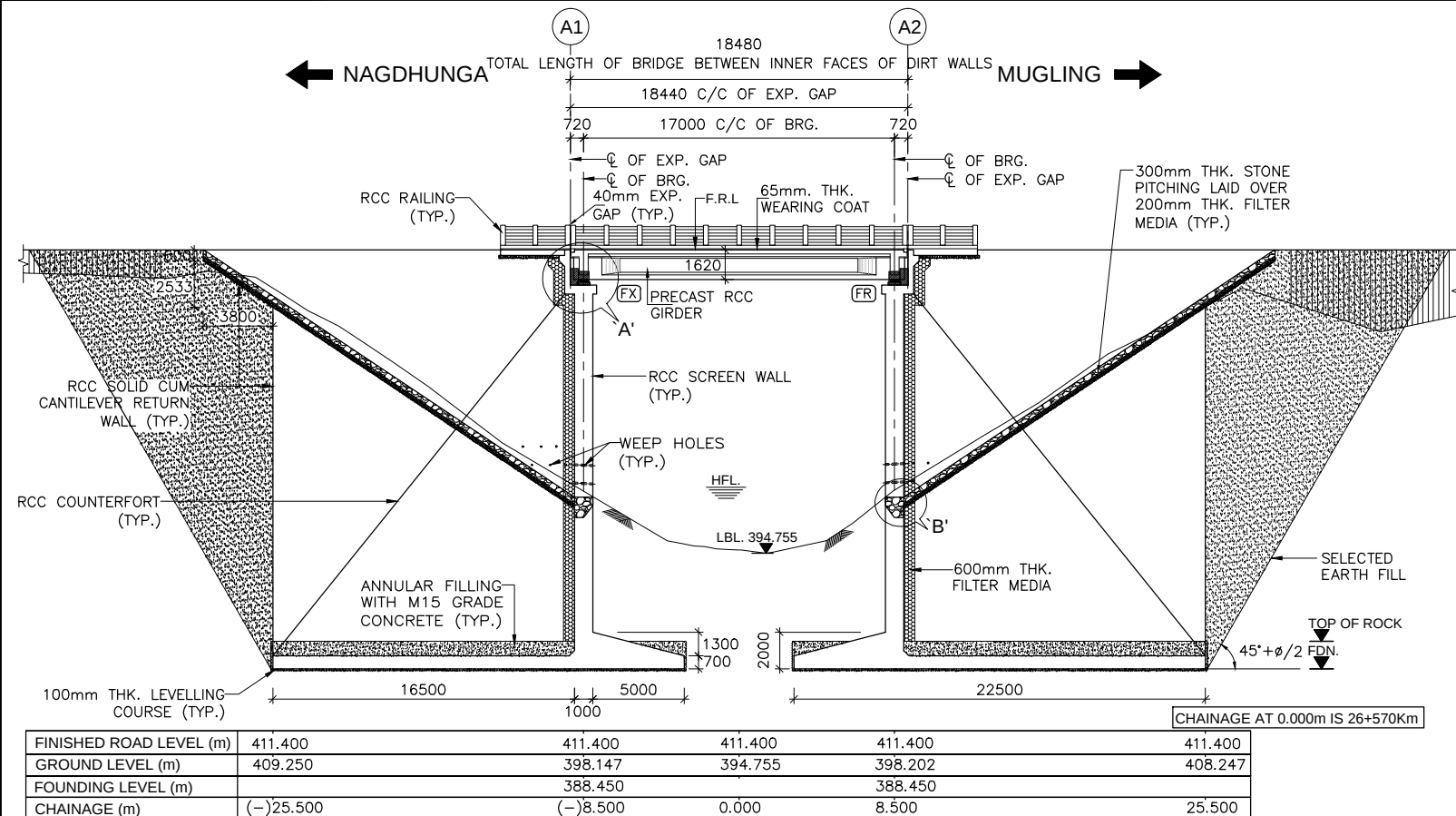
REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE
①	20 Φ @ 200 c/c	
①a	25 Φ @ 200 c/c	
②	20 Φ @ 200 c/c	
③	16 Φ @ 200 c/c	
③a	20 Φ @ 200 c/c	
④	12 Φ @ 100 c/c	
⑤	12 Φ @ 100 c/c	
⑥	12 Φ 2x2 NOS.	
⑦	12 Φ @ 150 c/c	
⑧	12 Φ @ 150 c/c	
⑨	12 Φ @ 150 c/c	
⑩	12 Φ @ 150 c/c	
$a = 0.3A$ OR $1b$, WHICHEVER IS GREATER $b = 0.3B$ OR $1b$, WHICHEVER IS GREATER $c = 0.15A$		
A = CLEAR SPAN B = CLEAR HEIGHT		

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF SINGLE CELL RCC BOX AT CH: 25+032KM PACKAGE-III GALCHI-BENIGHAT)	Scale:	Date: JUNE-2018
	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) Detailed Design 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	 NEELAM N.	As Shown		(SHEET 3 OF 3)	
					Checked By	 P.K.KHAN				
					Approved By	 B.N.SINGH				
					Drawing No.: NIRTTP/NAG-MUG/JUNDI/REINF-01					

CHIRAUNDI KHOLA BRIDGE

CHAINAGE : 26+570

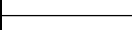


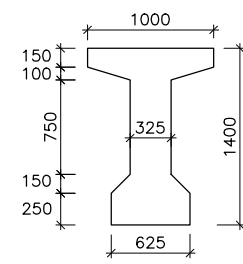
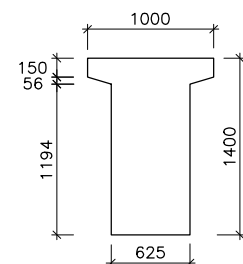
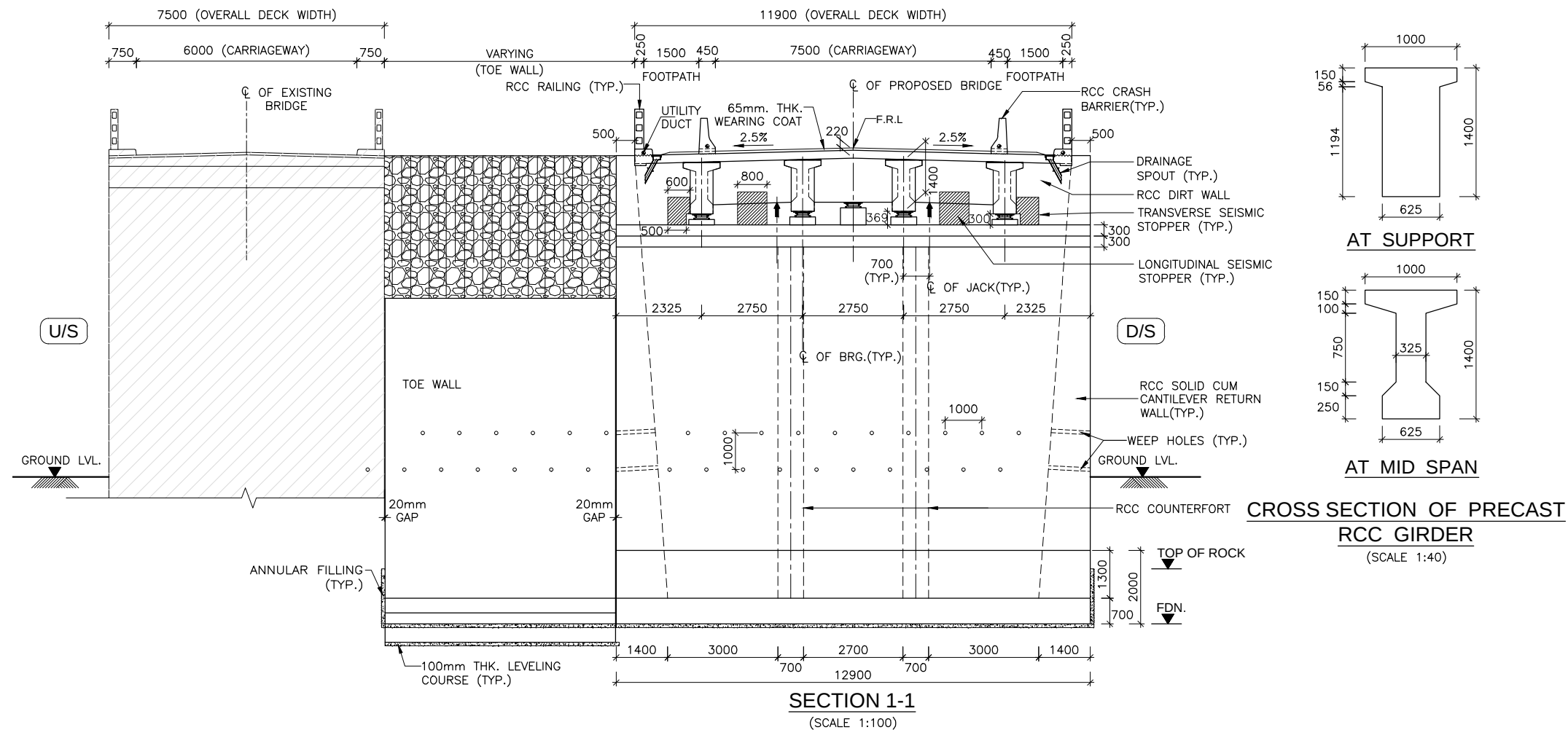
LEGEND:

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

HYDRAULIC DATA:-

DISCHARGE	- 100 cumec
VELOCITY	- 3.41m/s
H.F.L.	- 398.365m
ROCK TOP LEVEL	- 389.050m

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	PARDEEP	DRAWING TITLE: GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 26+570KM OVER CHIRAUNDI KHOLA (1x17.00m) PACKAGE-III (GALCHI-BENIGHAT)	Scale:	Date: JUNE-2018
	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) Detailed Design 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	AGNIMITA DAS	As Shown		(SHEET 1 OF 2)	
					Checked By	P.K.KHAN				
					Approved By	B.N.SINGH				



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

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF COUNTERFORT TYPE ABUTMENT & ITS COMPONENTS:
-NIRTP/NAG-MUG/CHIRAUNDI/SUB-01
- REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER:
-NIRTP/NAG-MUG/CHIRAUNDI/SUB-02(SHEET-1 TO 3)
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05

MISCELLANEOUS DRAWINGS:

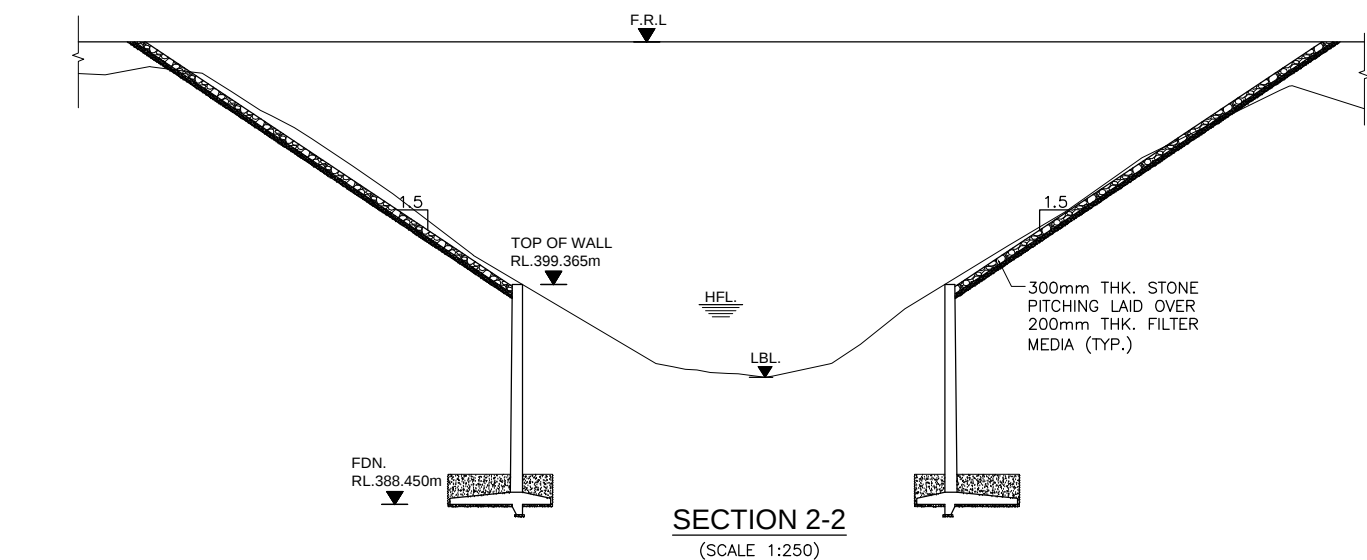
- DETAILS OF APPROACH SLAB:
-NIRTP/NAG-MUG/PACKAGE-III/MISC.-01
- DETAILS OF DRAINAGE SPOUT & WEARING COAT:
-NIRTP/NAG-MUG/PACKAGE-III/MISC.-02
- DIMENSIONAL & REINF. DETAILS OF R.C.C CRASH BARRIER:
-NIRTP/NAG-MUG/PACKAGE-III/MISC.-03
- DIMENSIONAL & REINF. DETAILS OF R.C.C RAILING:
-NIRTP/NAG-MUG/PACKAGE-III/MISC.-04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

NOTES:-

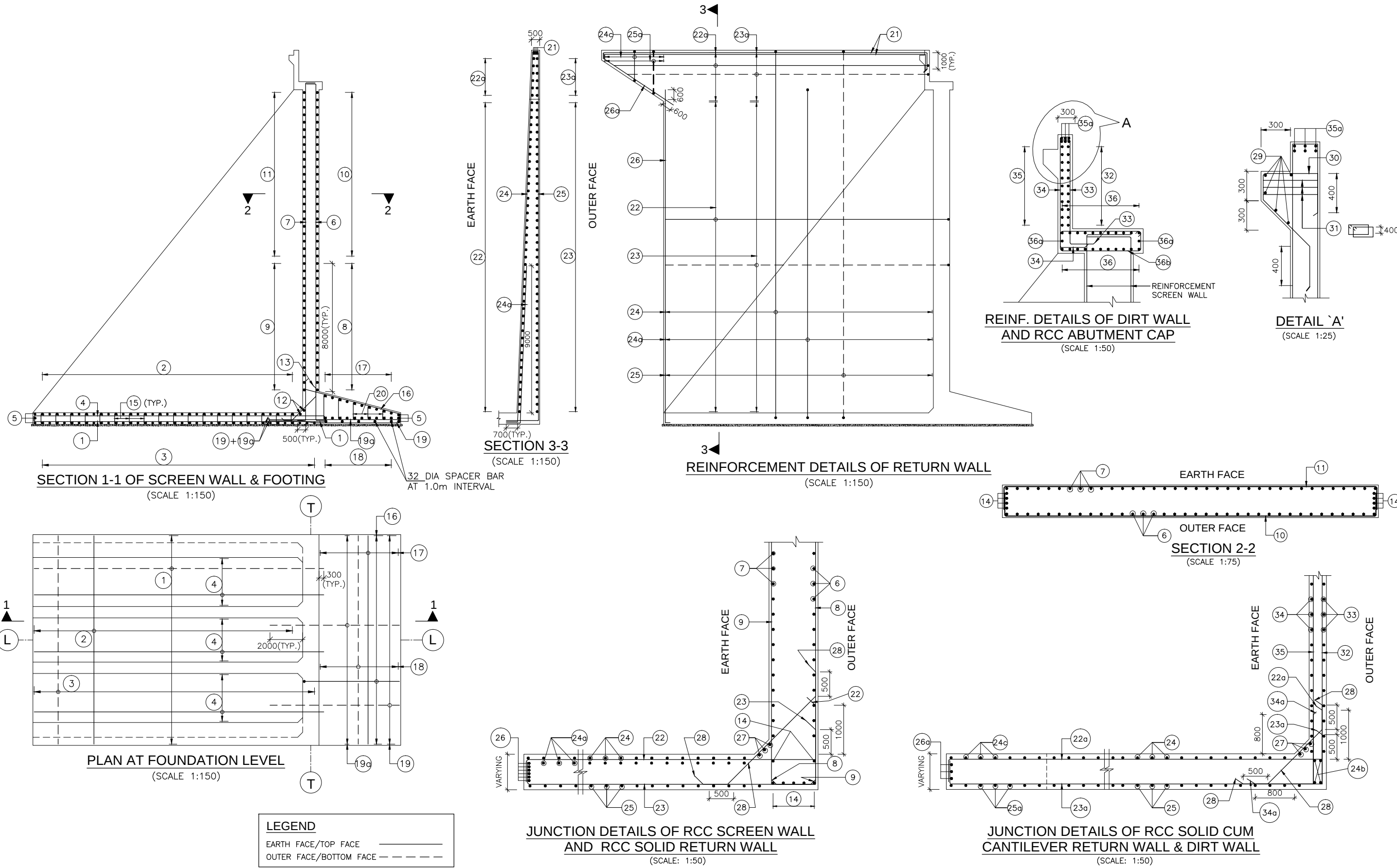
- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.
- DIMENSIONS ARE NOT TO BE SCALED ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
- THE BRIDGE HAS BEEN DESIGNED FOR MOST SEVERE OF:
(i) ONE LANE OF IRC CLASS 70R LOADING OR TWO LANES OF IRC CLASS A LOADING WHEN FOOTPATHS 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 - M30
f. SUBSTRUCTURE - M30
g. SUPERSTRUCTURE - M35
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 OVERLAID WITH 25MM THICK MASTIC ASPHALT SHALL BE PROVIDED AS PER SECTION 500 OF MORT&H SPEIFICATION.
- 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 $C=0$, $\phi=35^\circ$, $\delta=22.5^\circ$ & $y_d = 20 \text{ KN/M}^2$.
- 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 63 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, TOE WALL SHALL BE PROVIDED IN FLARED SHAPE TO ALLOW SMOOTH PASSAGE OF RIVER WATER.

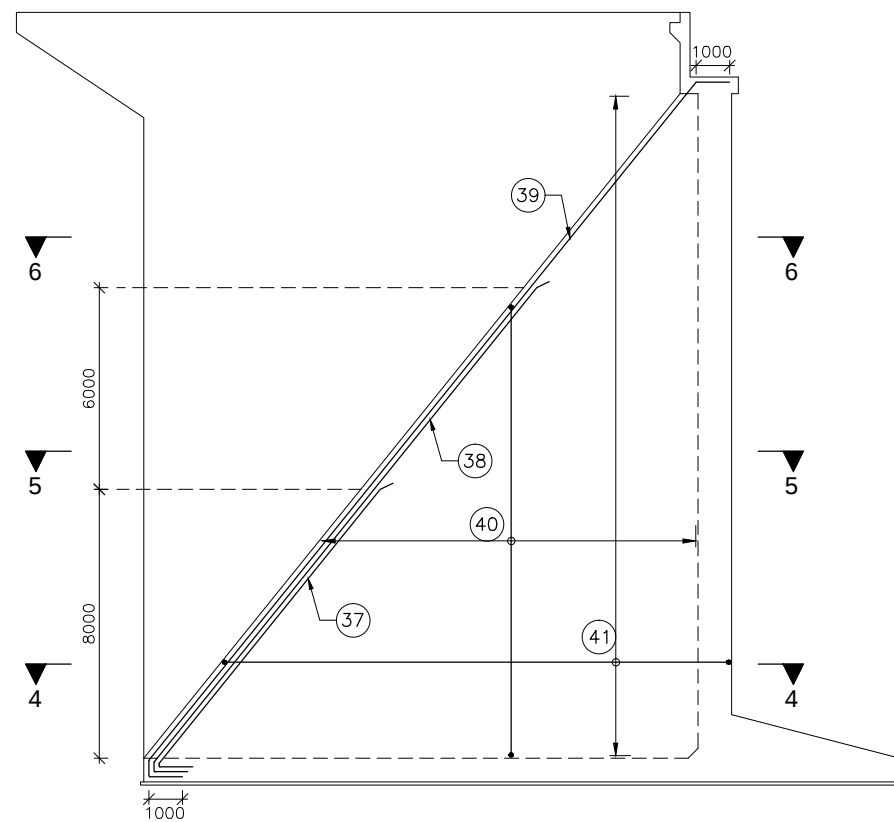
ABUTMENT CAP SHALL BE CAST ONLY AFTER COMPLETING THE BACK FILLING WORK UP TO ABUTMENT SHAFT TOP LEVEL.



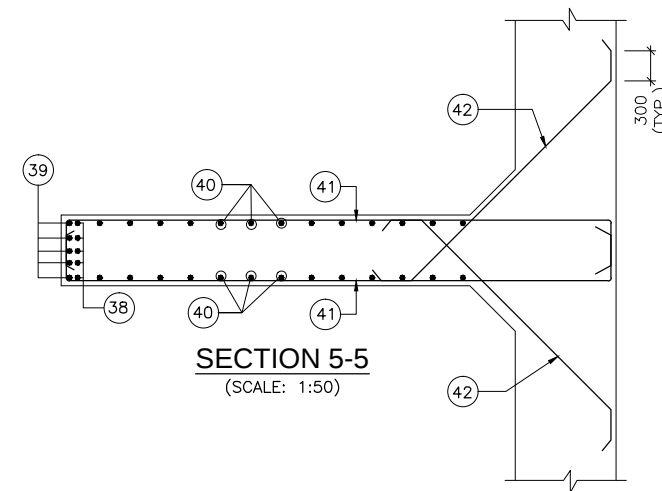
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 26+570KM OVER CHIRAUNDI KHOLA (1x17.00m) PACKAGE-III (GALCHI-BENIGHAT) Drawing No.: NIRTPP/NAG-MUG/CHIRAUNDI /GAD	As Shown	(SHEET 2 OF 2)



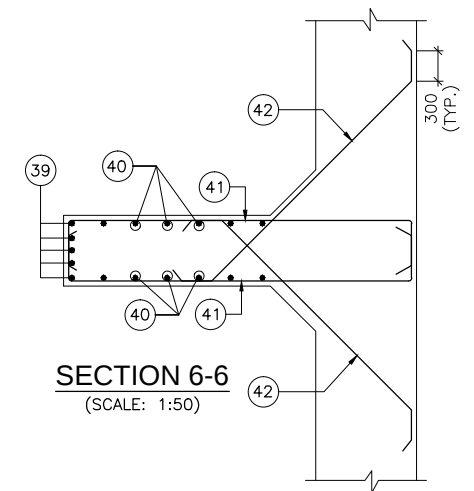
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	PARDEEP	DRAWING TITLE: REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS,DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH:- 26+570KM OVER CHIRAUNDI KHOLA (PACKAGE-III GALCHI-BENIGHAT)	Scale: As Shown	Date: JUNE-2018	
	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) Detailed Design 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	AGNIMITA DAS	Drawing No.: NIRTP/NAG-MUG/ CHIRAUNDI/SUB-02			(SHEET 1 OF 3)	
					Checked By	P.K.KHAN					
					Approved By	B.N.SINGH					



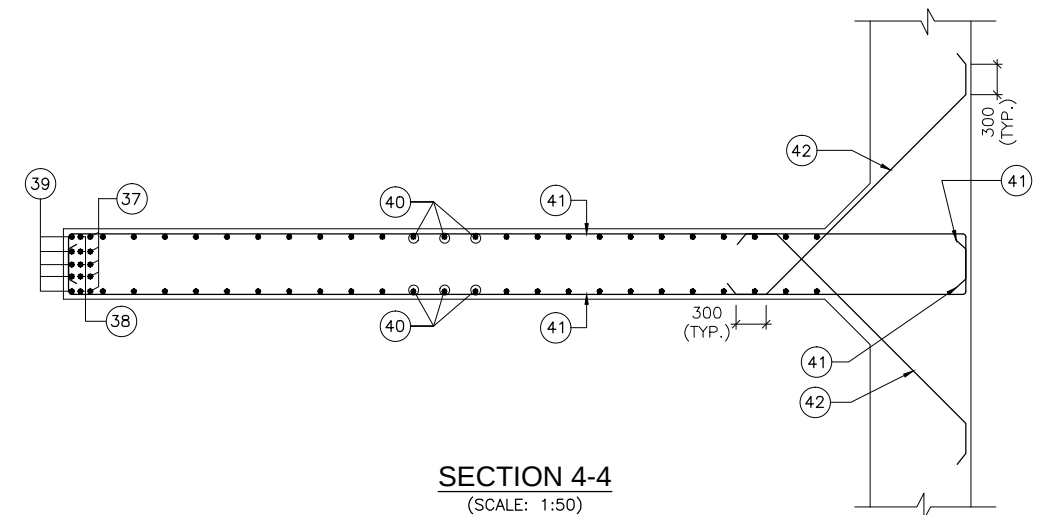
REINFORCEMENT DETAILS OF RCC COUNTERFORT
(SCALE: 1:150)



SECTION 5-5
(SCALE: 1:50)

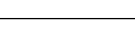


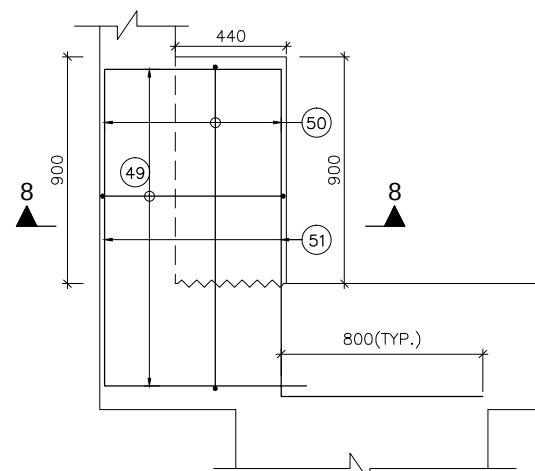
SECTION 6-6
(SCALE: 1:50)



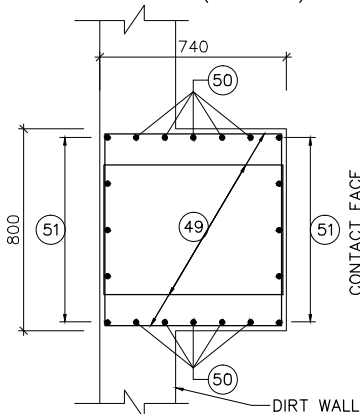
SECTION 4-4
(SCALE: 1:50)

LEGEND	
EARTH FACE/TOP FACE	—————
OUTER FACE/BOTTOM FACE	- - - - -

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	PARDEEP	DRAWING TITLE: REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH- 26+570KM OVER CHIRAUNDI KHOLA (PACKAGE-III GALCHI-BENIGHAT)	Scale:	Date: JUNE-2018
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					Checked By	P.K.KHAN				
					Approved By	B.N.SINGH				

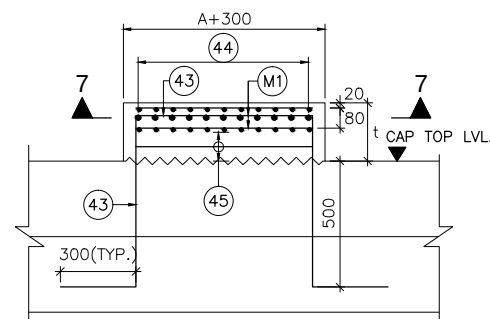


REINF. DETAILS OF LONGITUDINAL SEISMIC STOPPER
(DIRT WALL REINFORCEMENT NOT SHOWN FOR CLARITY)
(SCALE 1:20)



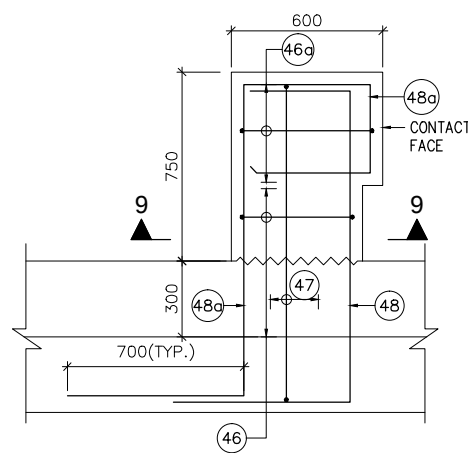
SECTION 8-8
(SCALE 1:20)

WHERE, A/B SIZE OF BEARING

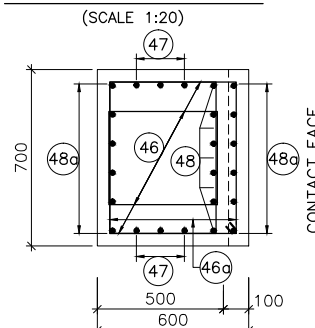


REINF. DETAILS OF PEDESTAL
(SCALE 1:20)

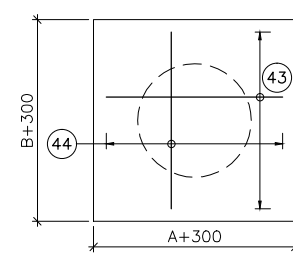
WHERE, A SIZE OF BEARING
AND t IS HEIGHT OF PEDESTAL



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

REINFORCEMENT SCHEDULE

MARKS	DESCRIPTION	SHAPE
FOOTING & SCREEN WALL	1 12 Φ @150 C/C	[]
	2 20 Φ @125 C/C	[]
	3 20 Φ @125 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 @100 C/C	[]
	9 16 Φ @100 C/C	[]
	10 16 Φ @150 C/C	[]
	11 16 Φ @150 C/C	[]
	12 10 Φ -2 Nos.	[]
	13 12 Φ @100 C/C	[]
	14 12 Φ -7 Nos.(ON EACH FACE)	[]
	15 12 Φ @250 C/C (ALONG & ACROSS TRAFFIC)	[]
FOOTING (TOE SIDE)	16 16 Φ @100 C/C	[]
	17 16 Φ @100 C/C	[]
	18 25 Φ @100 C/C	[]
	19 32 Φ @90 C/C	[]
	19a 32 Φ @90 C/C	[]
	20 12 Φ @250 C/C (ALONG & ACROSS TRAFFIC)	[]
RETURN WALL	21 32 Φ -4 Nos. (2 LAYERS)	[]
	22 32 Φ @100 C/C	[]
	22a 32 Φ @100 C/C	[]
	23 16 Φ @100 C/C	[]
	23a 16 Φ @100 C/C	[]
	24 32 Φ @100 C/C	[]
	24a 32 Φ @100 C/C	[]
	24b 12 Φ -4 Nos.	[]
	24c 20 Φ @100 C/C	[]
	25 16 Φ @100 C/C	[]
	25a 16 Φ @100 C/C	[]
	26 12 Φ @150 C/C	[]
	26a 12 Φ @150 C/C	[]
	27 12 Φ -3 Nos.	[]
	28 12 Φ @100 C/C	[]
BRACKET	29 12 Φ -5 Nos.	[]
	30 12 Φ @100 C/C	[]
	31 2L-10 Φ STIRRUPS @ 100 C/C (3 LAYERS)	[]

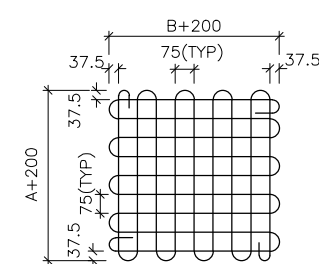
DIRT WALL	32 10 Φ @100 C/C	[]
	33 10 Φ @125 C/C	[]
	34 16 Φ @125 C/C	[]
	34a 32 Φ @125 C/C	[]
	35 10 Φ @100 C/C	[]
SCREEN CAP	35a 20 Φ -3 Nos. (2 LAYERS)	[]
	36 16 Φ @150 C/C	[]
	36a 12 Φ @150 C/C	[]
COUNTERFORT	36b 2L-16 Φ @150 C/C	[]
	37 32 Φ -5 Nos.	[]
	38 32 Φ -5 Nos.	[]
	39 32 Φ -5 Nos.	[]
	40 16 Φ @100 C/C	[]
	41 16 Φ @100 C/C	[]
	42 16 Φ @100 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 @ 150c/c STRPS.	[]
	46a 2L-12 Φ @ 150c/c STRPS.	[]
	47 16 Φ -3 Nos. BOTH FACES	[]
	48 32 Φ -6 Nos. BOTH FACES	[]
LONGITUDINAL SEISMIC STOPPER	48a 25 Φ -6 Nos. BOTH FACES	[]
	49 4L-12 Φ @ 150c/c STRPS.	[]
	50 16 Φ -5 Nos. BOTH FACES	[]
	51 32 Φ -5 Nos. BOTH FACES	[]

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/CHIRAUNDI/GAD
 - DIMENSIONAL DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS REFER DRG. NO. : NIRTTP/NAG-MUG/CHIRAUNDI/SUB-01

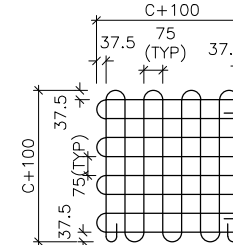
LEGEND

EARTH FACE/TOP FACE —————
OUTER FACE/BOTTOM FACE - - - - -



DETAIL OF MESH
TYPE "M1" 8 Φ

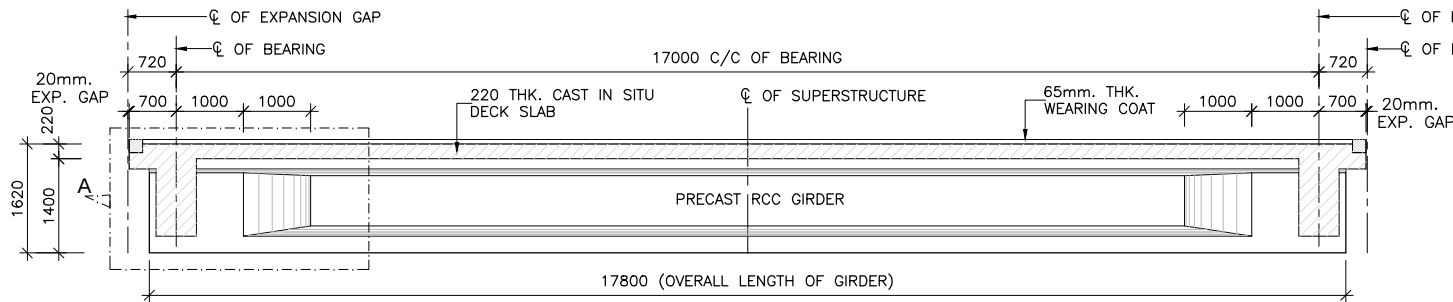
(IN PEDESTAL) (IN TWO LAYERS)
(SCALE 1:20)
(WHERE A & B SIZE OF BEARING)



DETAIL OF MESH
TYPE "M2" 8 Φ

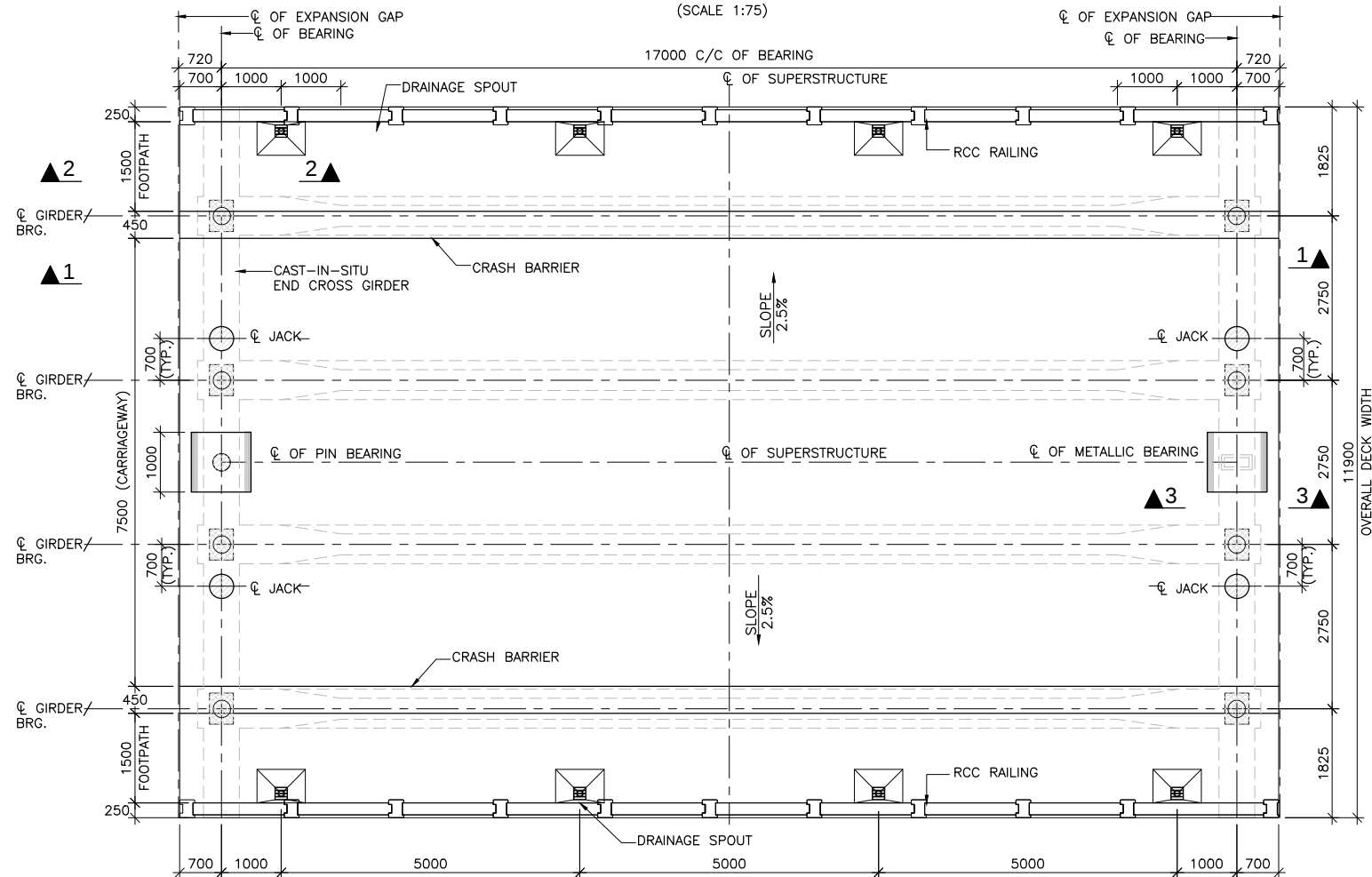
(UNDER JACK LOCATION)
(IN TWO LAYERS)
(SCALE 1:20)
(WHERE C = DIA OF JACK)

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) Detailed Design 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	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF COUNTER FORT TYPE ABUTMENT & ITS COMPONENTS,DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH- 26+570KM OVER CHIRAUNDI KHOLA (PACKAGE-III GALCHI-BENIGHAT)	As Shown	JUNE-2018
							Drawing No.: NIRTTP/NAG-MUG/ CHIRAUNDI/SUB-02		(SHEET 3 OF 3)



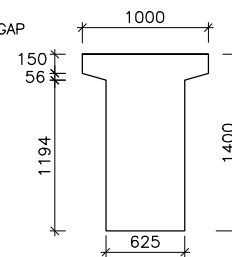
SECTIONAL ELEVATION 1 - 1

(SCALE 1:75)

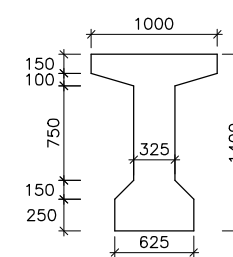


TOP PLAN OF DECK SLAB

(SCALE 1:75)



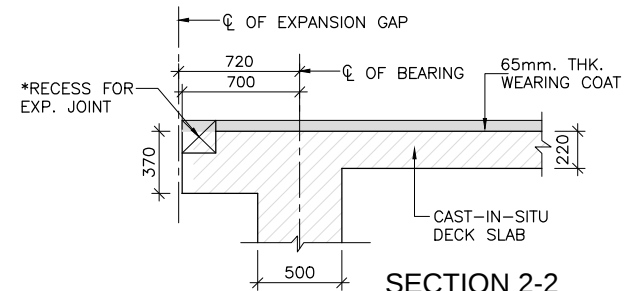
AT SUPPORT



AT MID SPAN

DETAILS OF PRECAST
RCC GIRDER

(SCALE 1:40)



SECTION 2-2

(SCALE 1:30)

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-CVW=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 110t EACH MAY BE REQUIRED AT EACH END. THE LOCATION OF JACKS FOR LIFTING OF THE SUPERSTRUCTURES TO REPLACE BEARINGS ETC. IS SHOWN. 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 385kN.

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

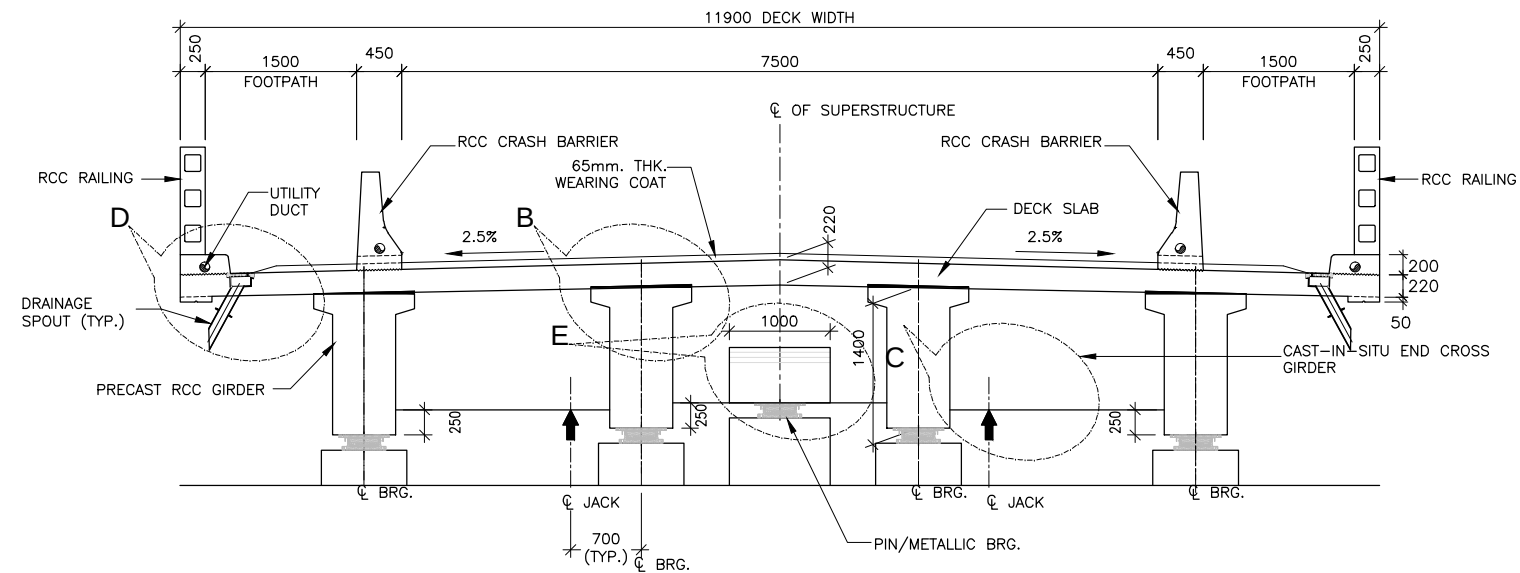
REFERENCE DRAWINGS:-

- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER: -NIRTTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER: -NIRTTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB: -NIRTTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS: -NIRTTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05

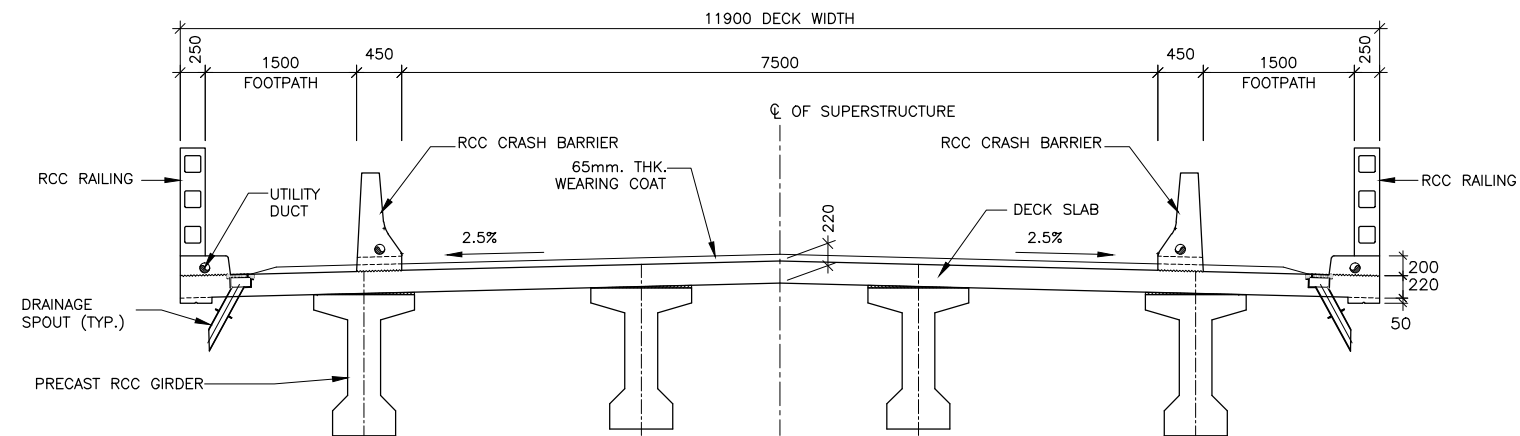
LEGEND:-

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

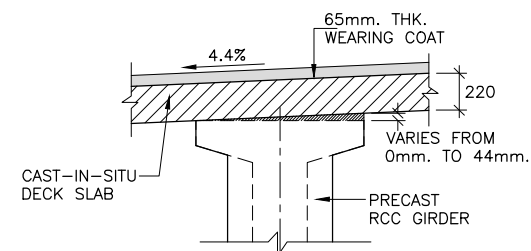
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 17.00m	As Shown	
							Drawing No.: NIRTTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/01		(SHEET 1 OF 2)



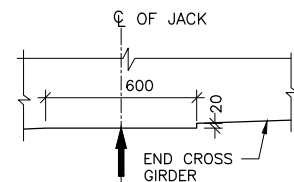
SECTION AT SUPPORT
(SCALE 1:50)



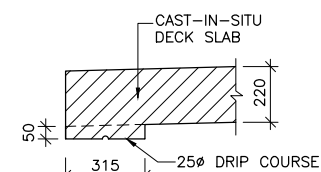
SECTION AT MID
(SCALE 1:50)



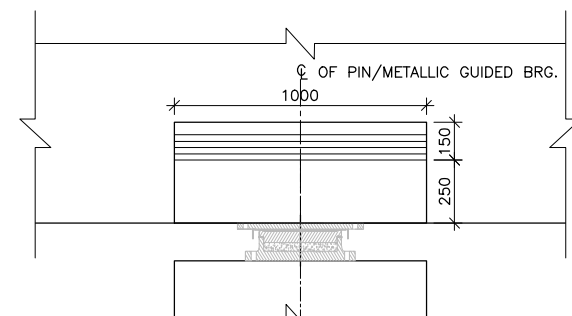
DETAIL - B
(SCALE 1:30)



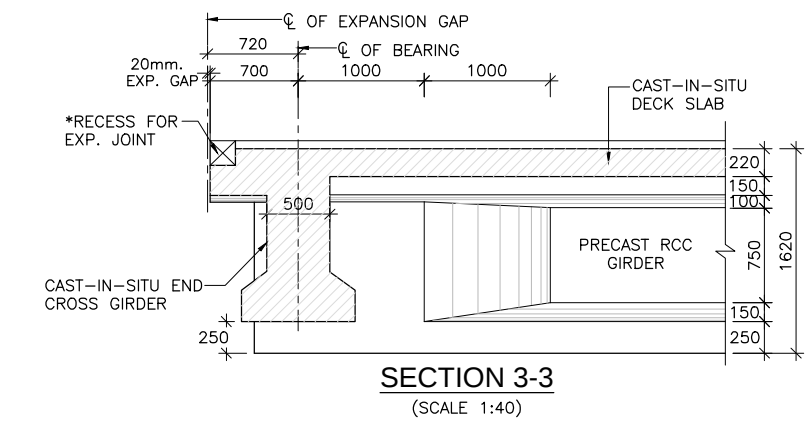
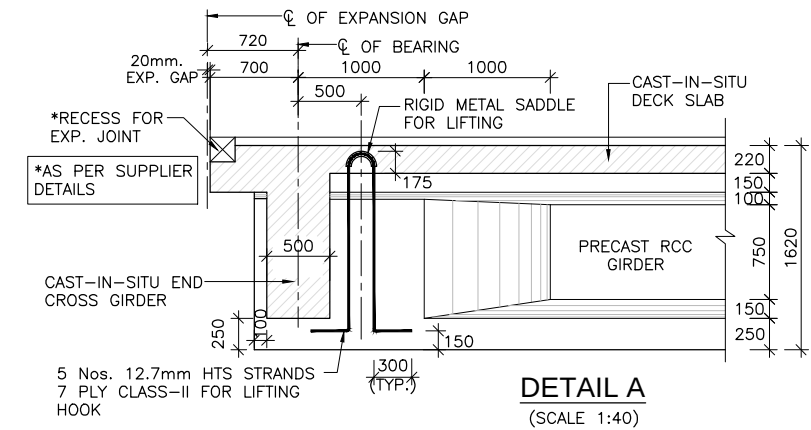
DETAIL - C
DETAIL OF CROSS GIRDER AT JACK LOCATION
(SCALE 1:20)



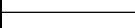
DETAIL - D
(SCALE 1:20)

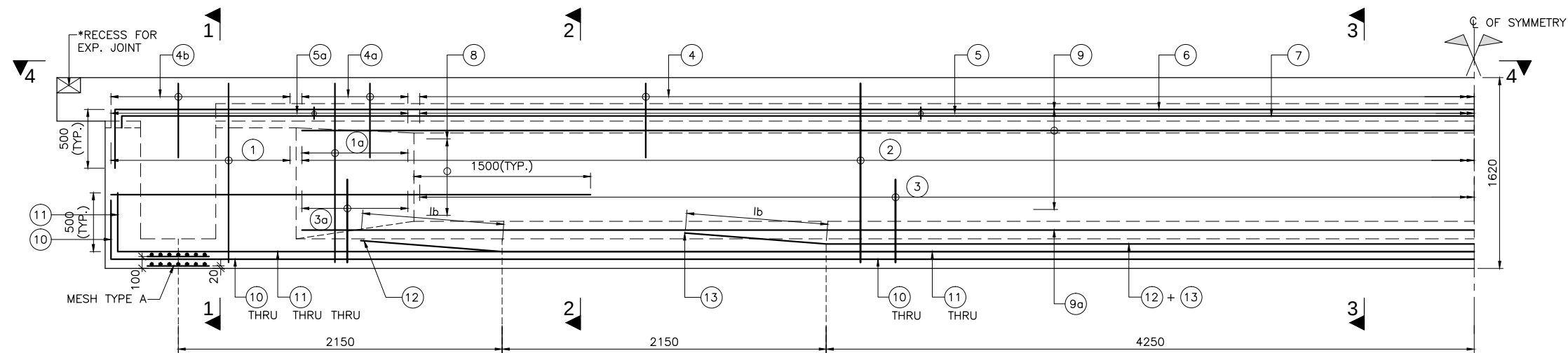


DETAIL - E
(SCALE 1:20)

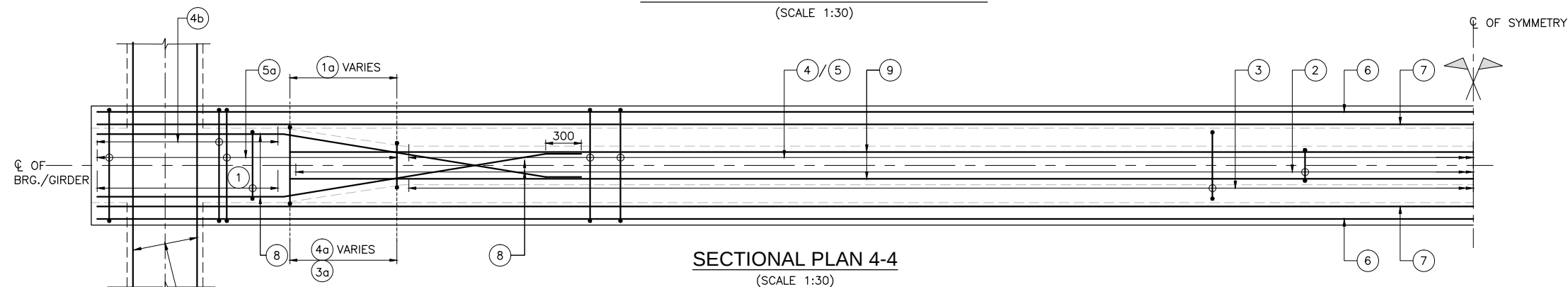


SECTION 3-3
(SCALE 1:40)

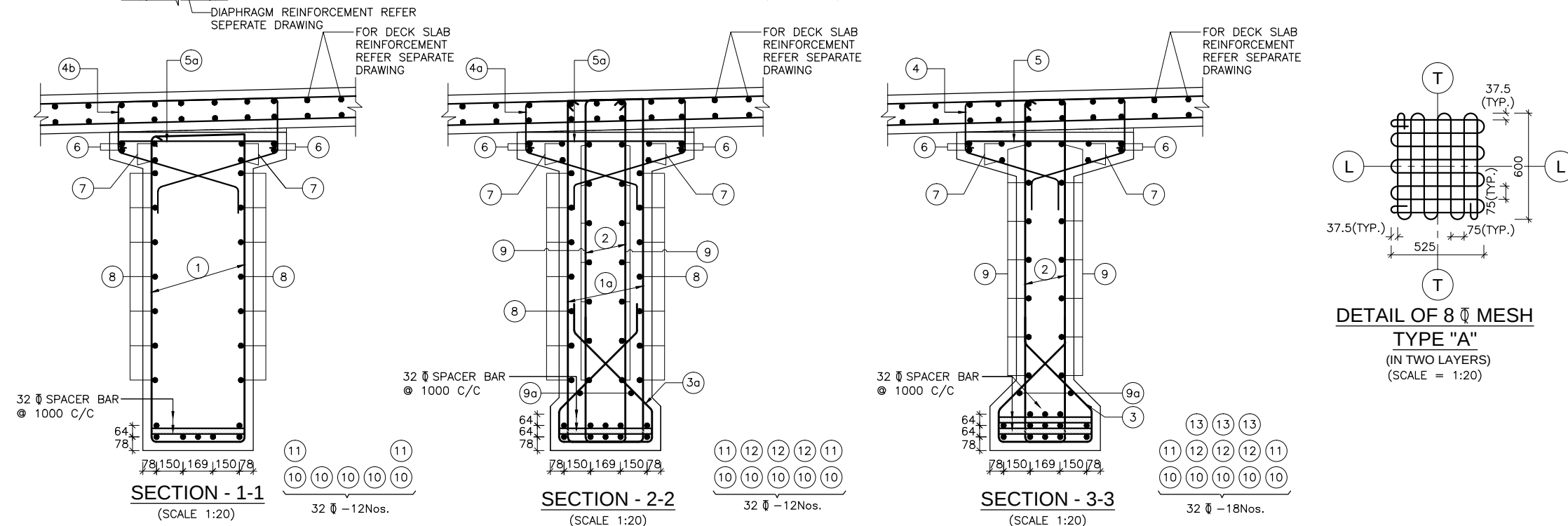
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 17.00m	Scale: As Shown	Date: JUNE-2018	
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/01	(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)



DETAIL OF 8 Φ 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 $(\frac{1.43}{1.25})$

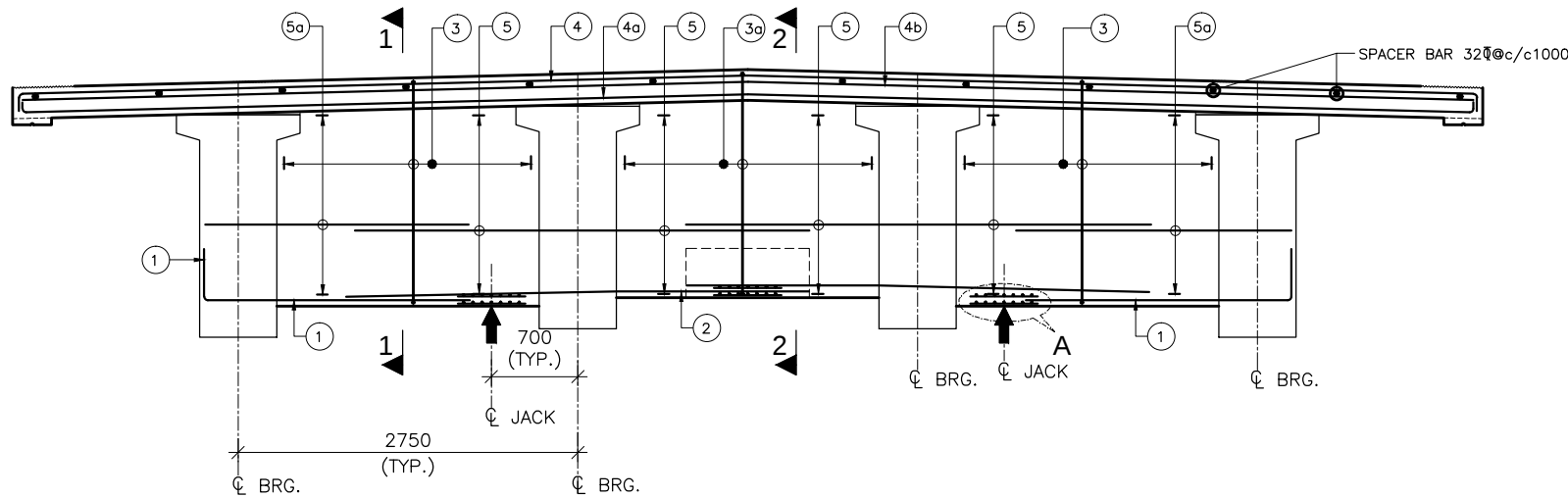
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/01(SHEET 1&2)
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05

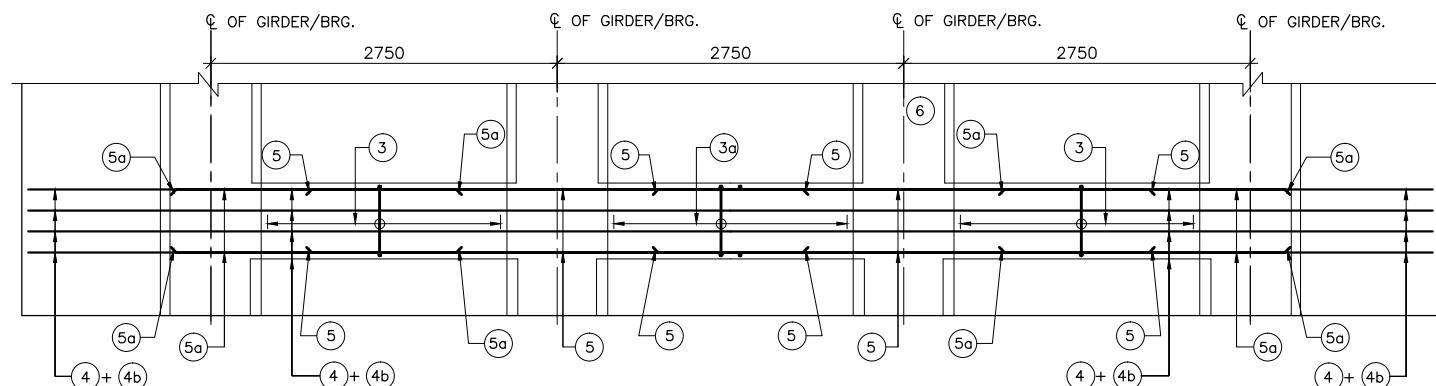
SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12 Φ 125 C/C		STIRRUP
1a	2L-12 Φ 125 C/C		STIRRUP (VARIES)
2	2L-12 Φ 150 C/C		STIRRUP
3	10 Φ 150 C/C		
3a	10 Φ 125 C/C		(VARIES)
4	10 Φ 150 C/C		
4a	10 Φ 125 C/C		(VARIES)
4b	10 Φ 125 C/C		
5	10 Φ 150 C/C		LINKS
5a	10 Φ 125 C/C		LINKS
6	12 Φ -4 Nos.		
7	12 Φ -4 Nos.		
8	10 Φ -7 Nos.		ON EACH FACE
9	10 Φ -7 Nos.		ON EACH FACE
9a	10 Φ -1 Nos.		ON EACH FACE
10	32 Φ -5 Nos.		
11	32 Φ -5 Nos.		
12	32 Φ -3 Nos.		
13	25 Φ -3 Nos.		

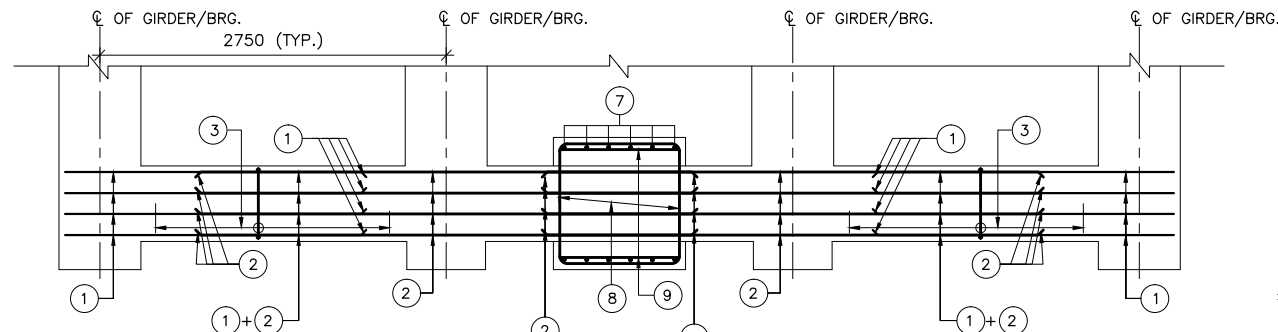
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/02	As Shown	JUNE-2018



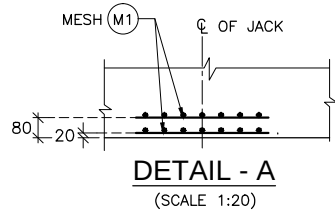
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



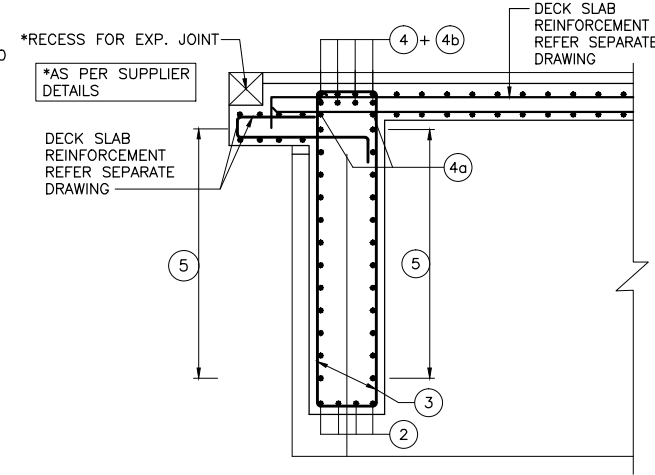
SECTIONAL PLAN OF END DIAPHRAGM (TOP REINFORCEMENT)
(SCALE 1:40)



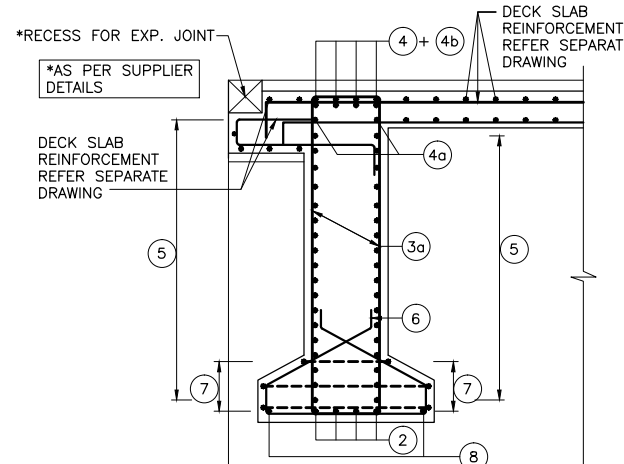
SECTIONAL PLAN OF END DIAPHRAGM (BOTTOM REINFORCEMENT)
(SCALE 1:40)



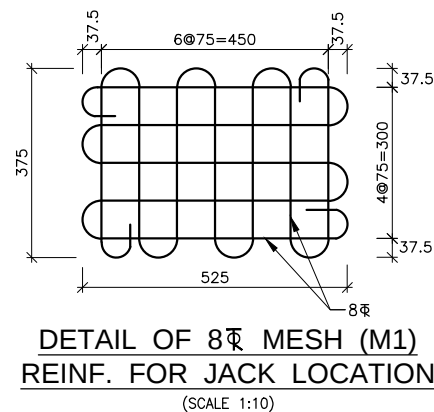
DETAIL - A
(SCALE 1:20)



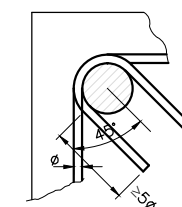
SECTION 1 - 1
(SCALE 1:30)



SECTION 2 - 2
(SCALE 1:30)



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



TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(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 $25\% < p \leq 33\%$
 $\alpha = 1.4$ 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 $(\frac{1300}{\phi})$

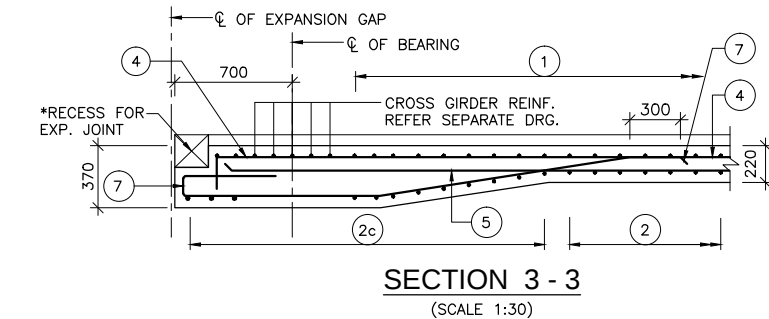
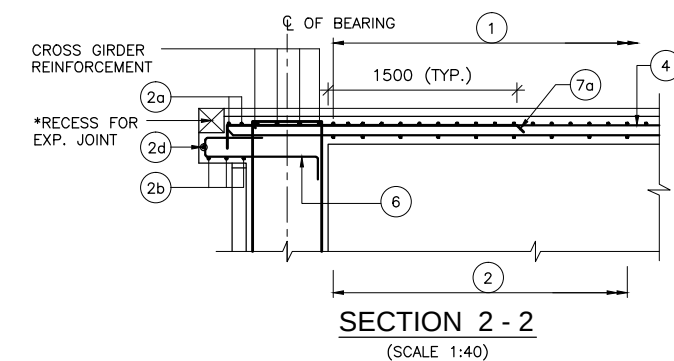
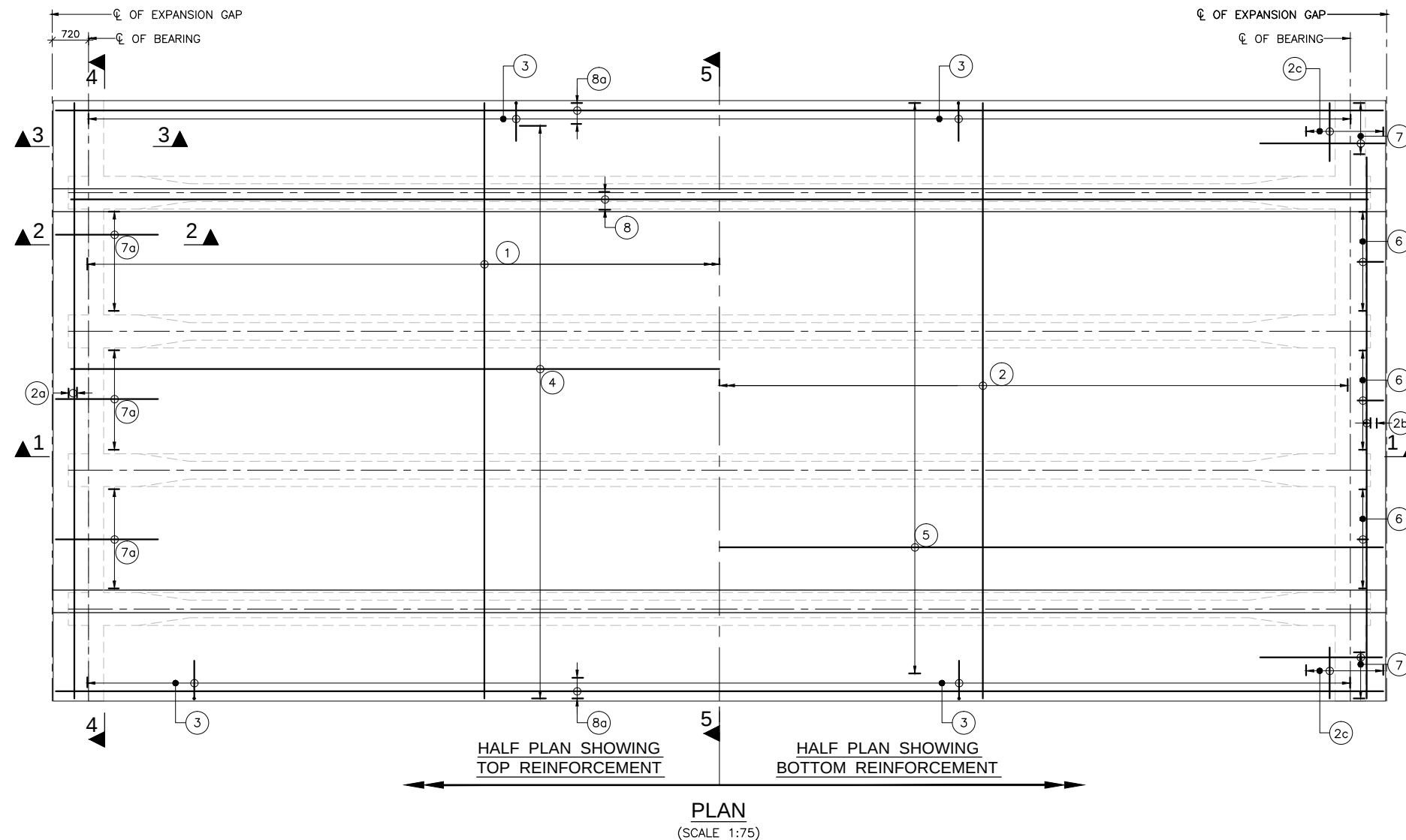
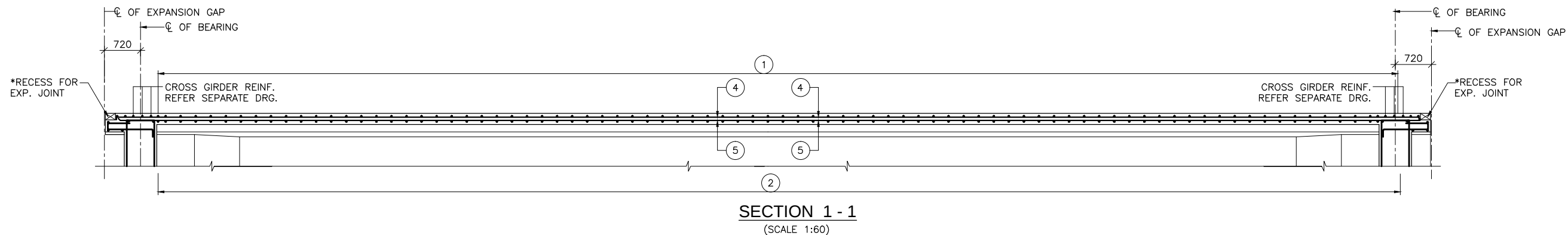
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/01(SHEET 1&2)
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/02
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
 -NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05

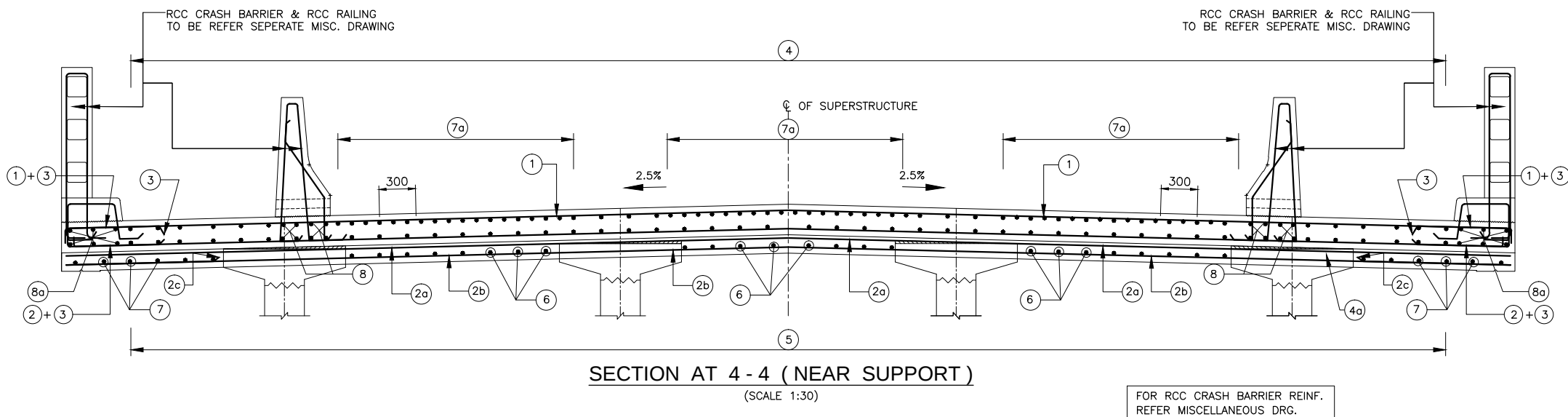
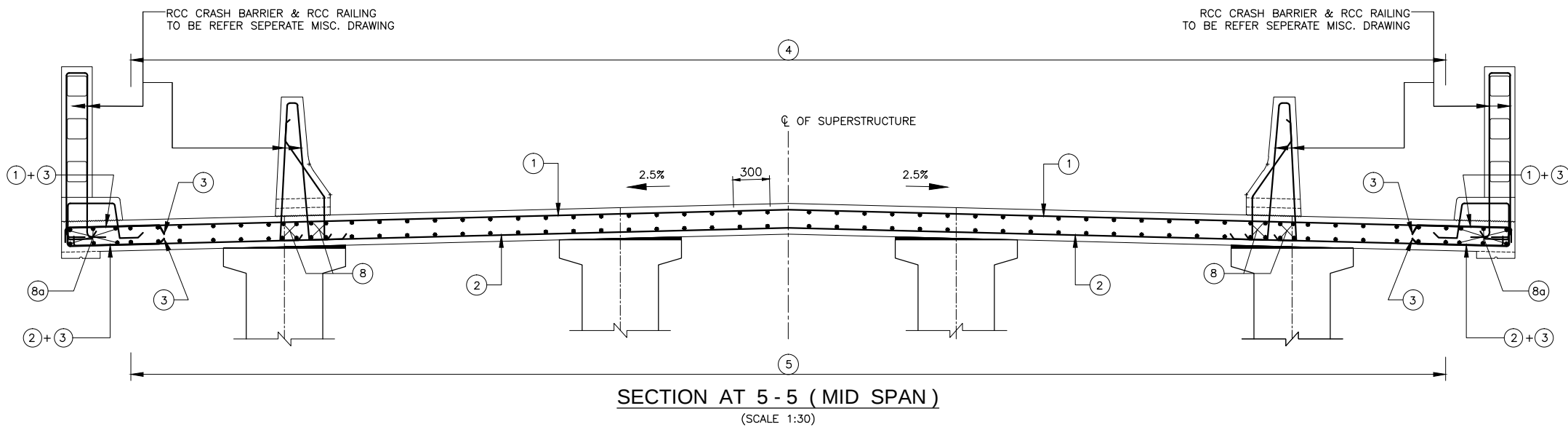
REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
①	25Φ -4 Nos.		
②	25Φ -4 Nos.		
③	25Φ -2L @125 C/C		
③a	25Φ -2L @125 C/C		
④	25Φ -4 Nos.		
④a	16Φ -2 Nos.		
④b	25Φ -4 Nos.		
⑤	25Φ -14 Nos.		ON EACH FACE
⑤a	16Φ -14 Nos.		ON EACH FACE
⑥	NOT USED		
⑦	12Φ -6 Nos.		
⑧	12Φ -2L-3 No.		VARIES
⑨	10Φ -2 Nos.		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
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) Detailed Design 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	K.M. JOHRI	V. CHAUDHARY	P.K. KHAN	B.N. SINGH	REINFORCEMENT DETAILS OF END CROSS GIRDER EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/03	As Shown	



EMPLOYER		PROJECT		DESIGN CONSULTANT		DRAWING TITLE:		Scale:	Date: JUNE-2018
 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) Detailed Design 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	Prepared By	K.M. JOHRI	REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/04		As Shown	(SHEET 1 OF 2)
				Designed By	V. CHAUDHARY				
				Checked By	P. K. KHAN				
				Approved By	B. N. SINGH				



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 $(\frac{100}{132})$
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/CHIRAUNDI/RCC-G/17m/01(SHEET 1&2)
2. REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/02
3. REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/03
4. DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05

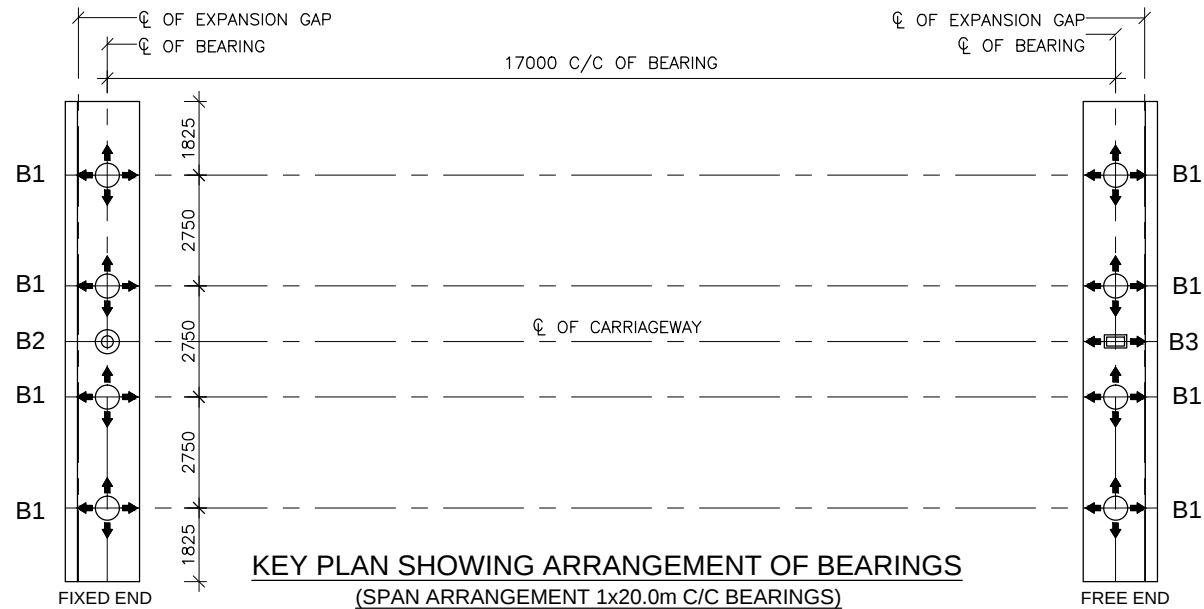
REINFORCEMENT SCHEDULE

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: JUNE-2018
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) Detailed Design 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 : 17.00m Drawing No.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/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/CHIRAUNDI/RCC-G/17m/01(SHEET 1&2)

GENERAL DATA:

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

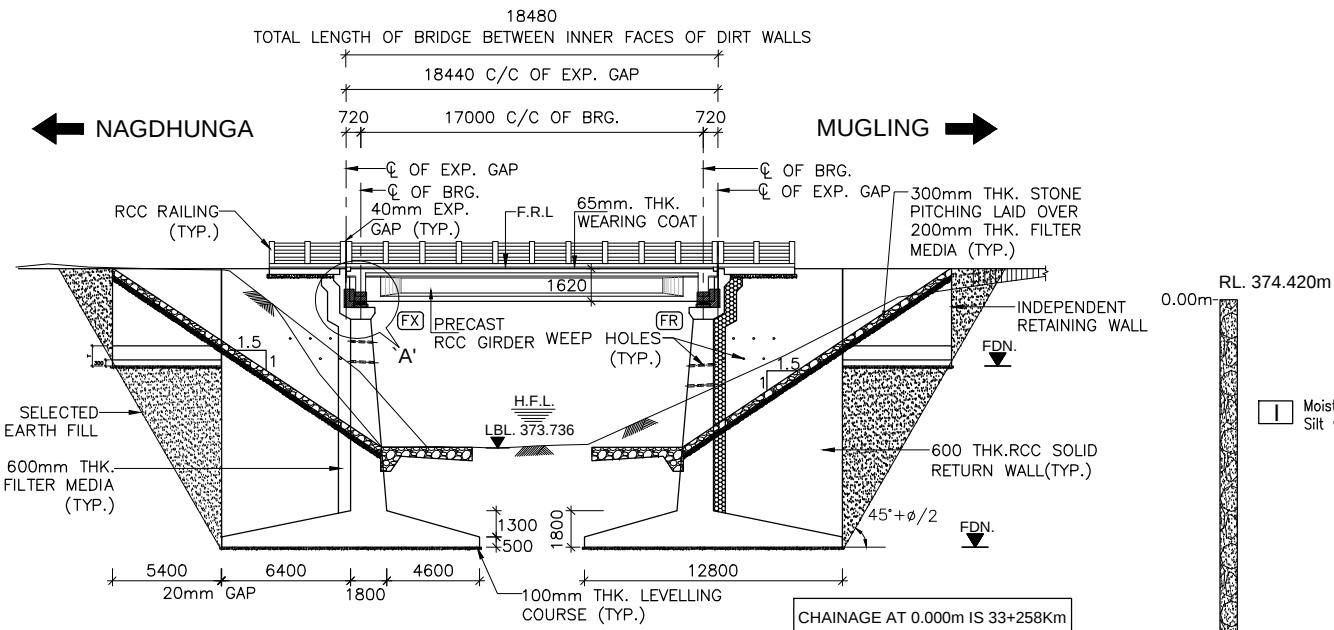
TABLE SHOWING DATA FOR DESIGN OF BEARINGS

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)	953	COEXISTING	95	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	8
			MINIMUM (WITH LIVE LOAD)	378	COEXISTING	38	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	310	COEXISTING	31	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	599	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITH LIVE LOAD)	359	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	343	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	599	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITH LIVE LOAD)	359	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	343	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
2.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	212	COEXISTING	—	COEXISTING	0.002	—	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	172	COEXISTING	—	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	172	COEXISTING	—	COEXISTING	0.002	—	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	1806	COEXISTING	280	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	1806	COEXISTING	265	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	1770	COEXISTING	266	COEXISTING	0.002	—	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	567	COEXISTING	932	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	567	COEXISTING	885	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	567	COEXISTING	590	COEXISTING	0.002	—	—	
3.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	280	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	265	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	266	COEXISTING	0.002	—12.7/12.6	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	932	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	885	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	590	COEXISTING	0.002	—12.7/12.6	—	

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		K.M. JOHRI		DRAWING TITLE:		Scale:		Date: JUNE-2018	
	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) -Detailed Design of Kathmandu (Nagdhunga) -Nauvise - Mugling Road and Bridges	Nauvise	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		DETAILS OF LOADS AND FORCES FOR POT/PTFE BEARINGS EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/CHIRAUNDI/RCC-G/17m/05	As Shown				
						Checked By		P.K. KHAN							
						Approved By		B.N. SINGH							

POKHARE KHOLA BRIDGE

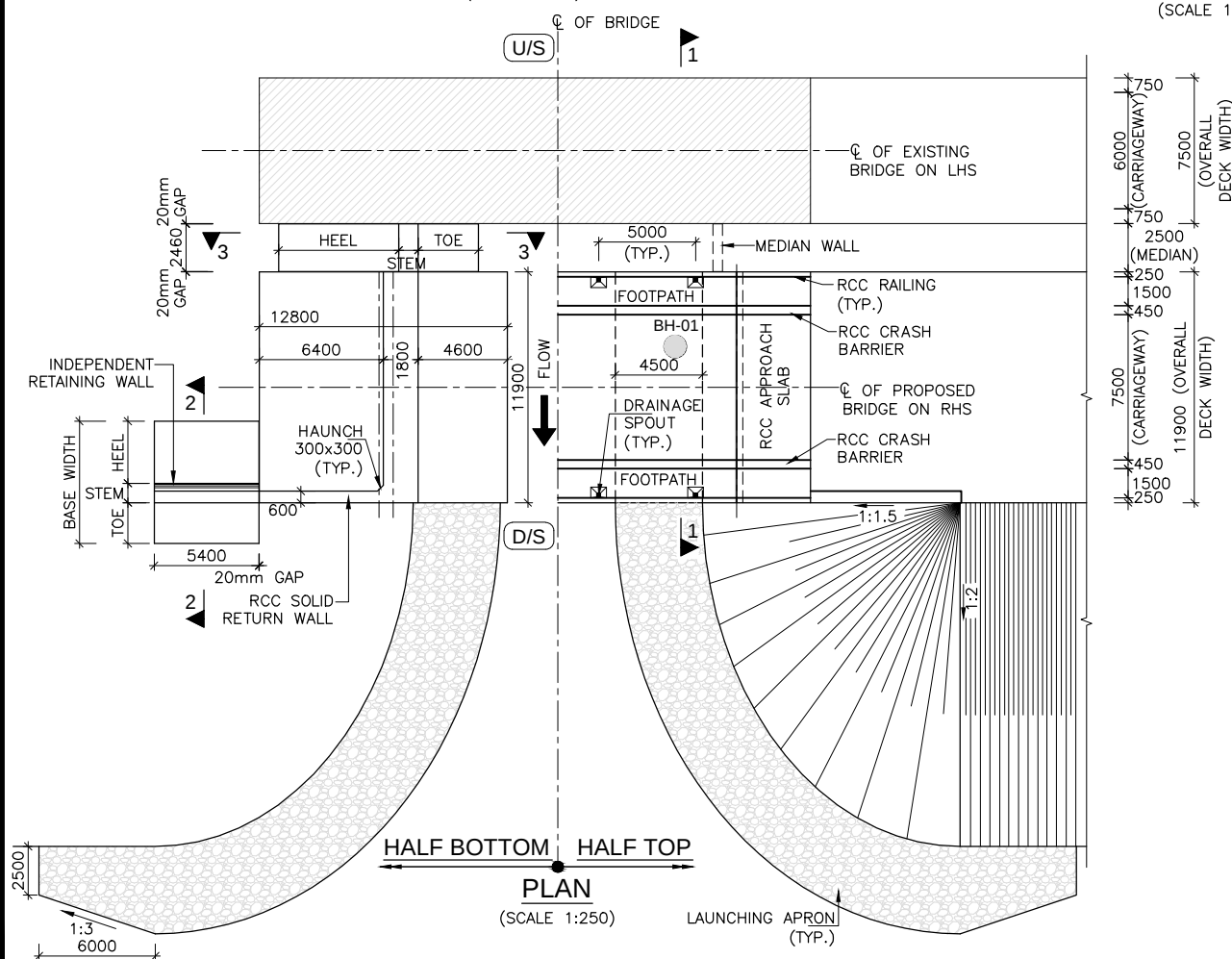
CHAINAGE : 33+285



FINISHED ROAD LEVEL (m)	382.700	382.700	382.700	382.700
GROUND LEVEL (m)	377.476	373.736	376.495	379.790
FOUNDING LEVEL (m)	368.820		368.820	
CHAINAGE (m)	(-)8.500	0.000	8.500	15.400

LONGITUDINAL ELEVATION OF PROPOSED BRIDGE

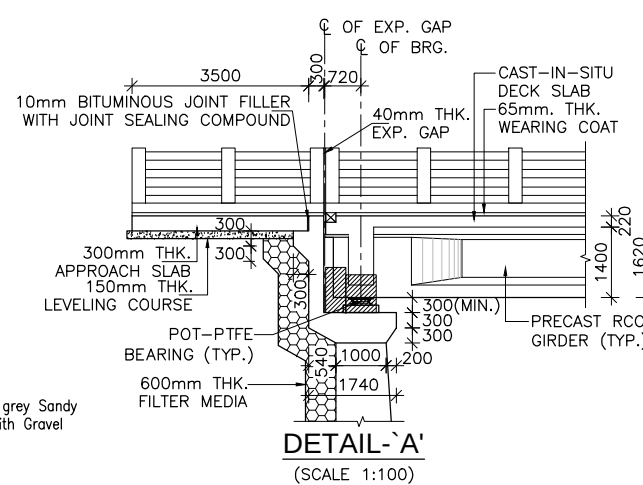
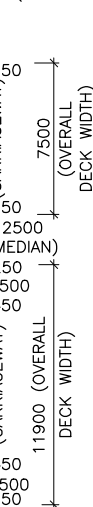
(SCALE 1:250)



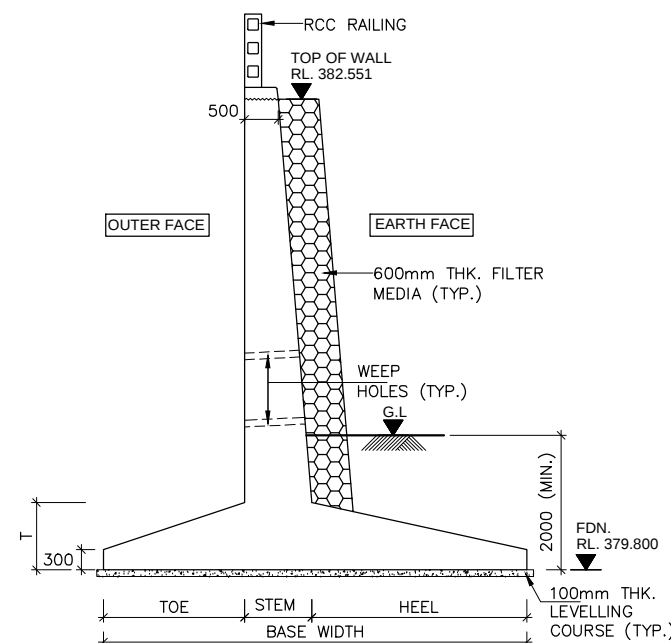
PLAN

(SCALE 1:250)

BH-01
(SCALE 1:175)

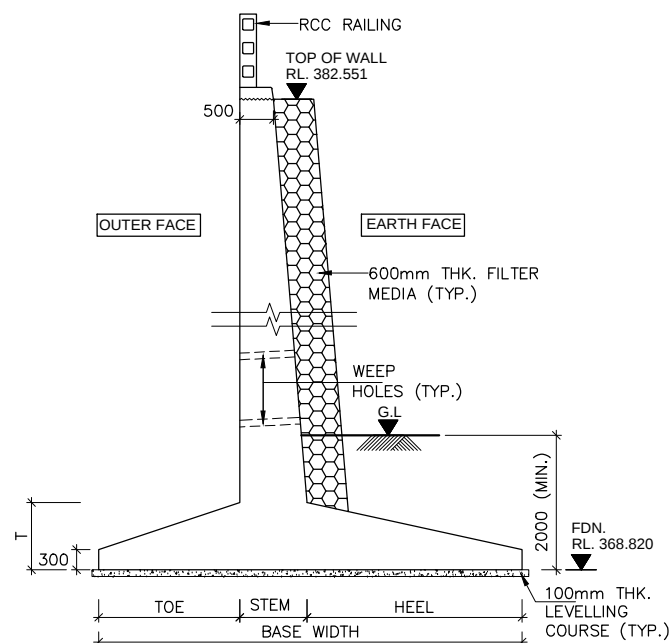


DETAIL-A'
(SCALE 1:100)



SECTION 2-2

(REFER SEPARATE DRAWING FOR DETAILS)
(SCALE 1:75)



SECTION 3-3

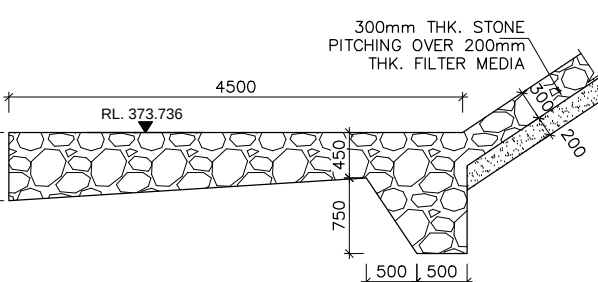
(REFER SEPARATE DRAWING FOR DETAILS)
(SCALE 1:75)

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	: [Symbol]
PROPOSED	: [Symbol]
BH	: BORE HOLE

HYDRAULIC DATA:-

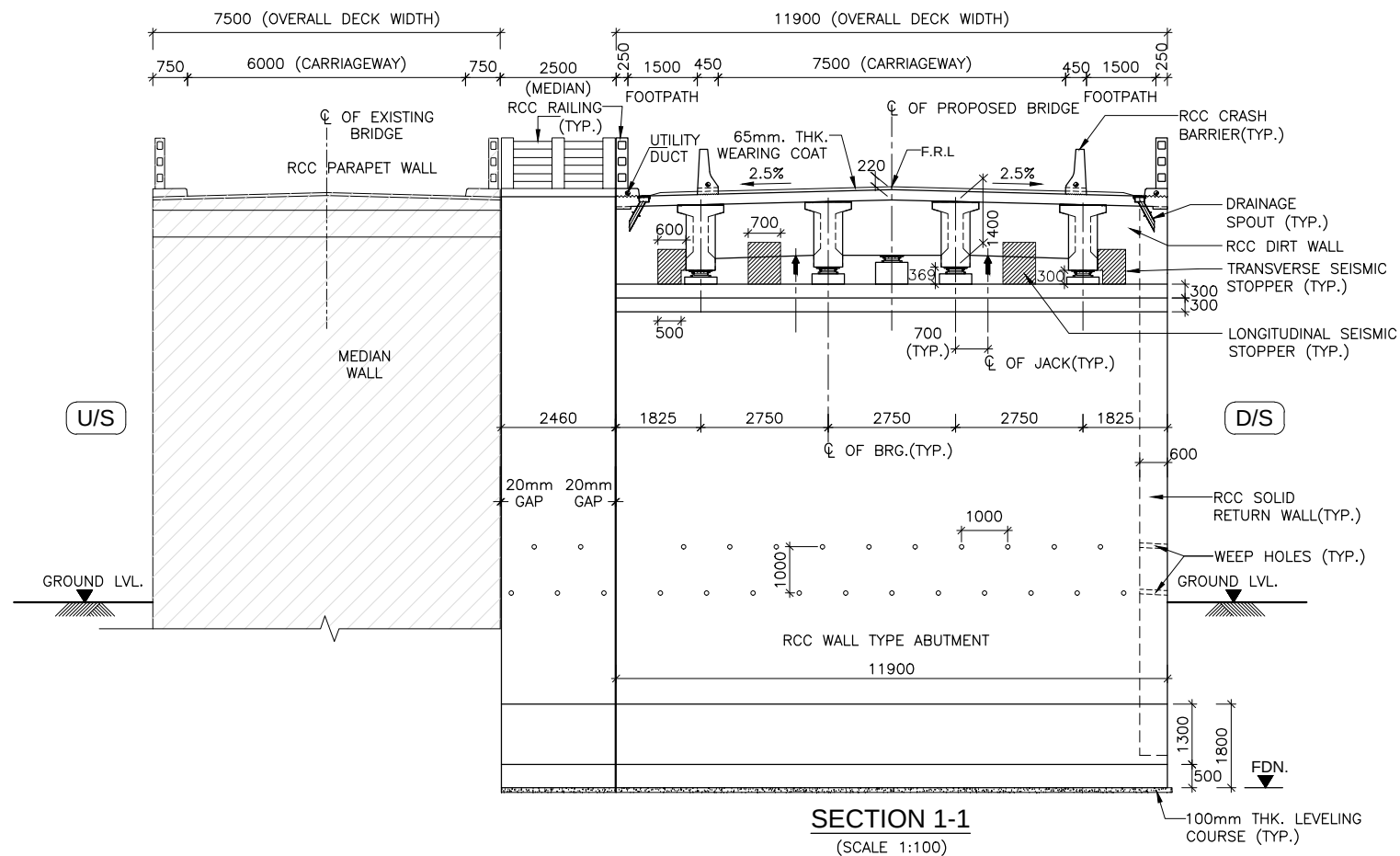
DISCHARGE	- 64.0 cumec
VELOCITY	- 4.7m/s
H.F.L.	- 375.656m
MSL AT ABUTMENT	- 370.820m



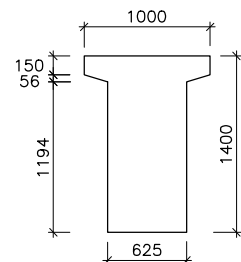
DETAIL OF LAUNCHING APRON

SCALE-1:50

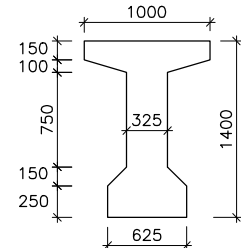
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 33+258KM OVER POKHARE KHOLA (1x17.00m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 1 OF 2)



SECTION 1-1
(SCALE 1:100)



AT SUPPORT



AT MID SPAN

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

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
 - SUPERSTRUCTURE - M35
 - RETURN/RETAINING WALL - M30
 - CRASH BARRIER - M40
 - 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 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 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, $\phi=35^\circ$, $\delta=22.5^\circ$ & $\gamma_d = 20 \text{ KN/M}^3$.
- 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.

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.

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF ABUTMENT AND FOUNDATION:
-NIRTP/NAG-MUG/POKHARE/SUB-01
- REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER:
-NIRTP/NAG-MUG/POKHARE/SUB-02(SHEET1&2)
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05

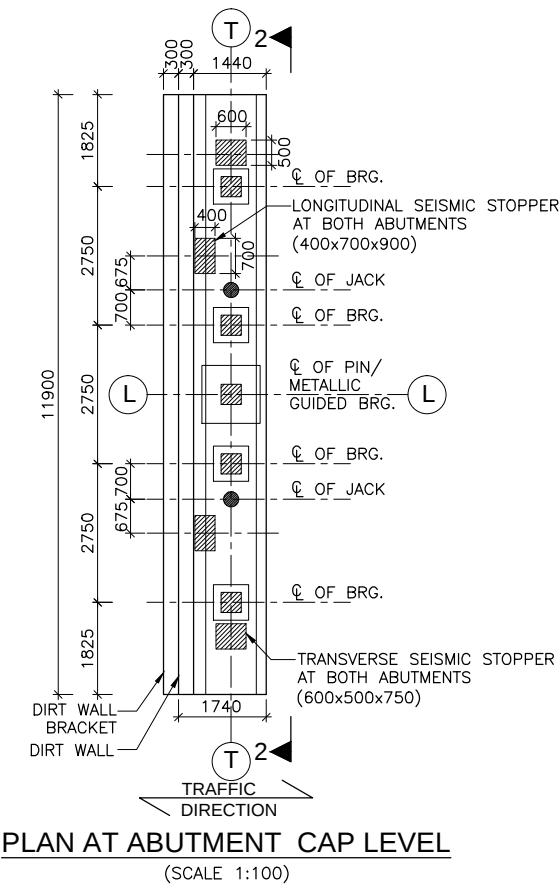
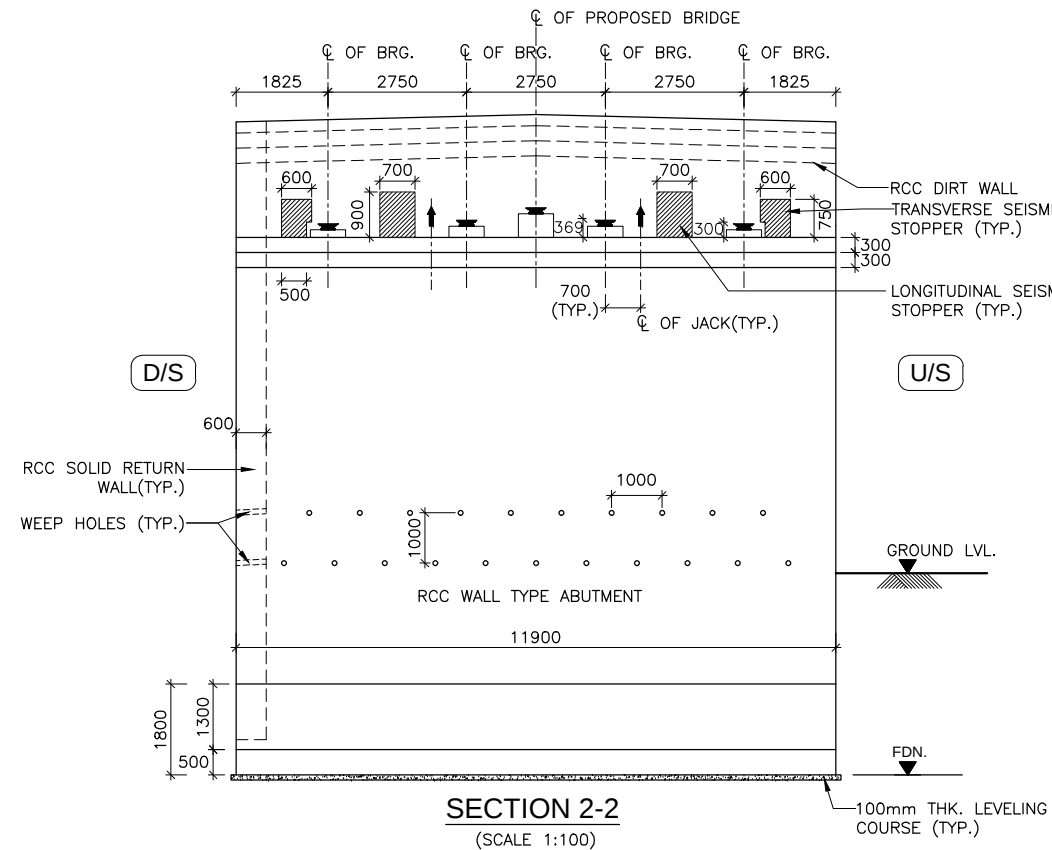
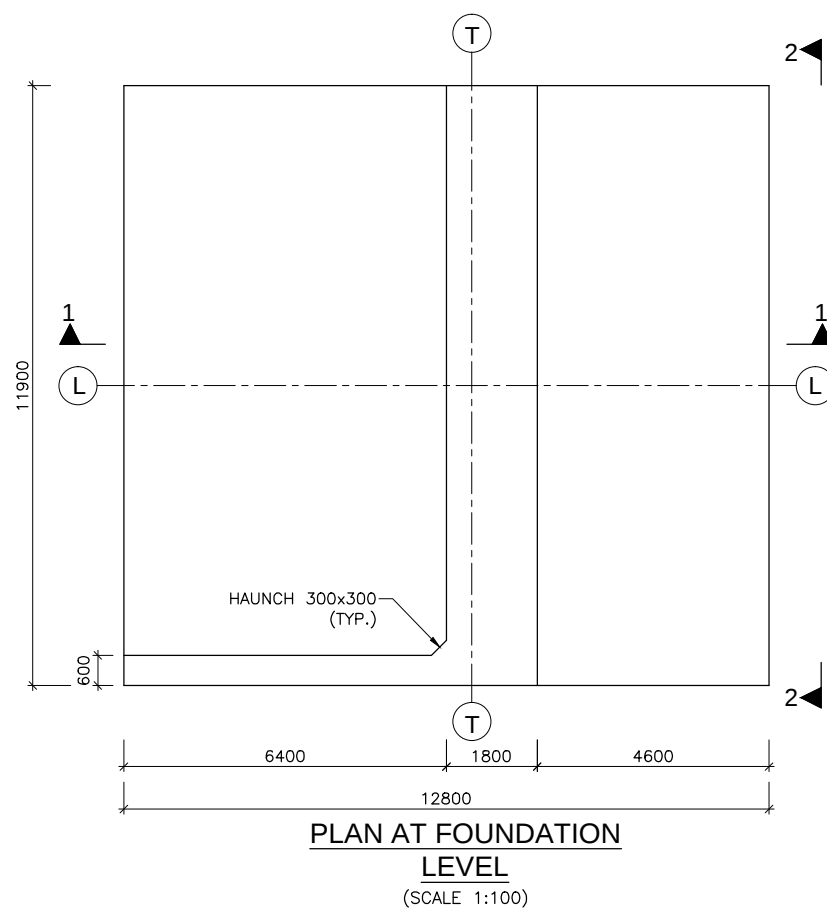
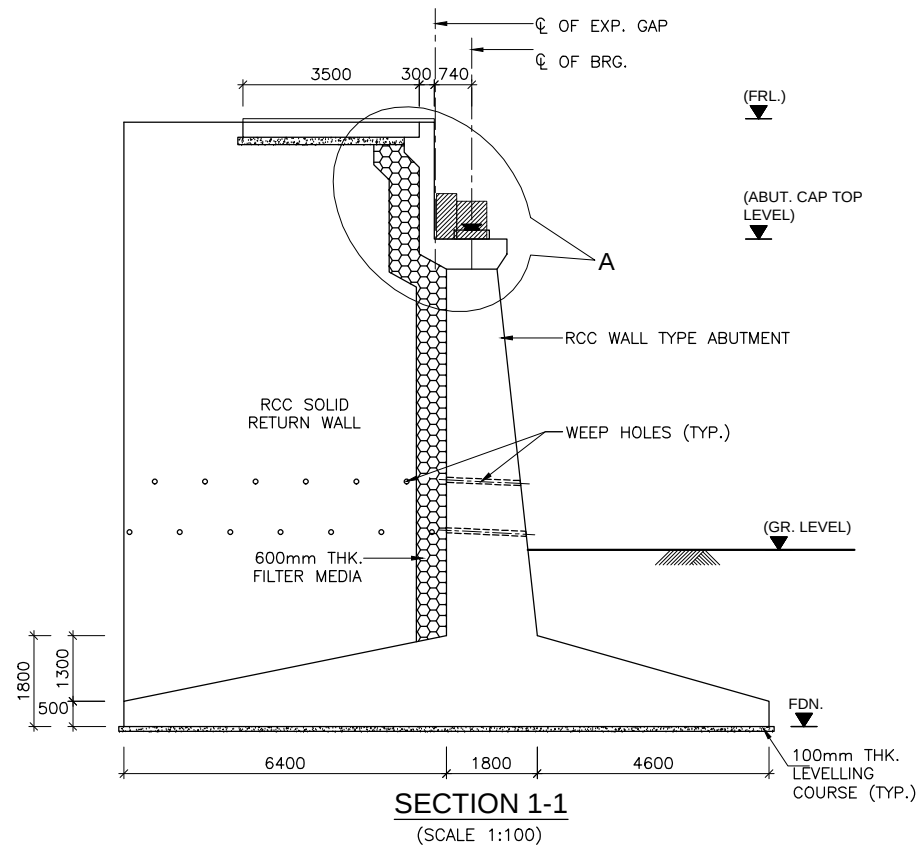
MISCELLANEOUS DRAWINGS:

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

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

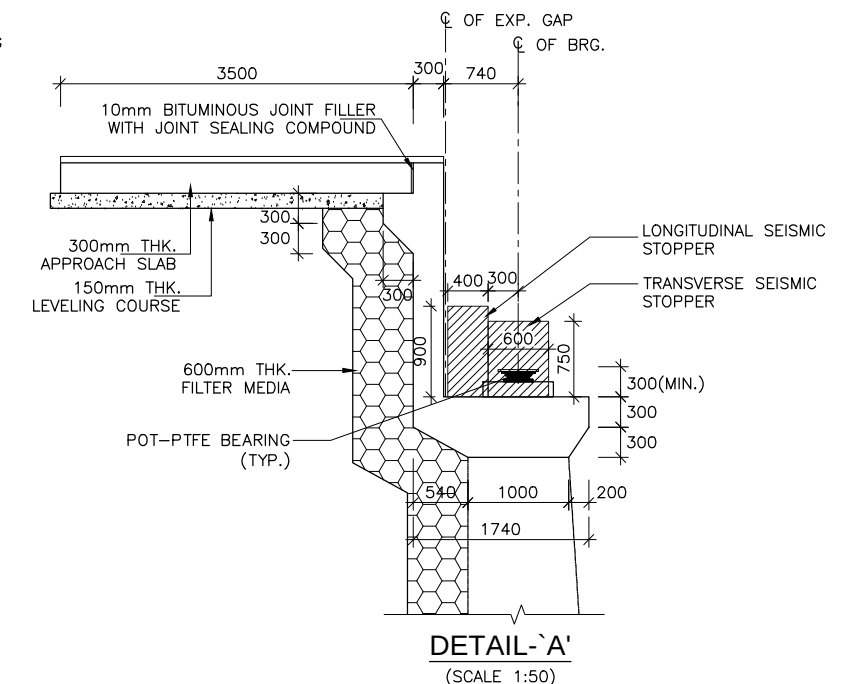
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	PARDEEP	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 33+258KM OVER POKHARE KHOLA (1x17.00m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 2 OF 2)
							Drawing No.: NIRTP/NAG-MUG/ POKHARE/GAD		



LEGEND:-

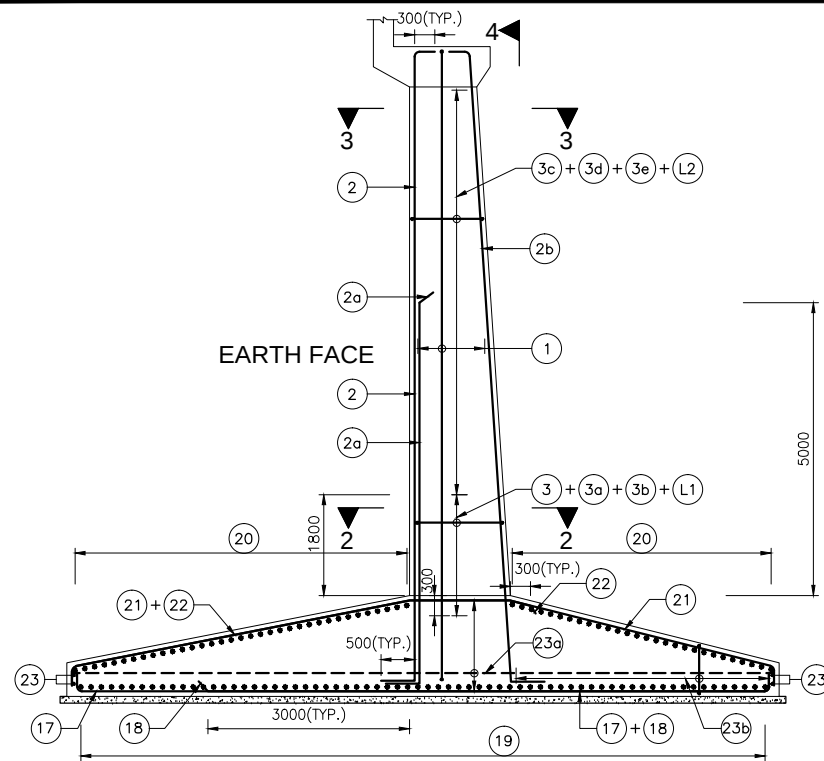
-  – BEARING LOCATION IN PLAN
-  – JACK LOCATION IN PLAN
-  – JACK LOCATION IN ELEVATION

- NOTES :-**
1. ALL DIMENSIONS ARE IN MM, UNLESS OTHERWISE MENTIONED.
 2. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED AND NO DIMENSION SHALL BE SCALED.
 3. 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 – 40MPa
 4. UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
 5. 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
 6. LL REPRESENTS LONGITUDINAL AXIS OF BRIDGE AND TT REPRESENTS TRANSVERSE AXIS OF ABUTMENT/FOUNDATION.
 7. SAFE BEARING CAPACITY AT THE PROPOSED FOUNDING LEVEL HAS BEEN CONSIDERED AS 50 T/M² ON THE BASIS OF SUB SURFACE EXPLORATION RESULTS. THIS SHALL GOT CONFIRMED BEFORE EXECUTION.
 8. THE LOCATION OF JACKS FOR LIFTING UP THE SUPERSTRUCTURE SHALL BE DISTINCTLY ETCHED ON SOFFIT OF SUPERSTRUCTURE AND ON TOP OF ABUTMENT CAP.
 9. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DRGS.
 - GENERAL ARRANGEMENT DRAWING REFER:
–NIRTP/NAG–MUG/POKHARE/GAD
 - REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER REFER:
–NIRTP/NAG–MUG/POKHARE/SUB–02(SHEET1&2)

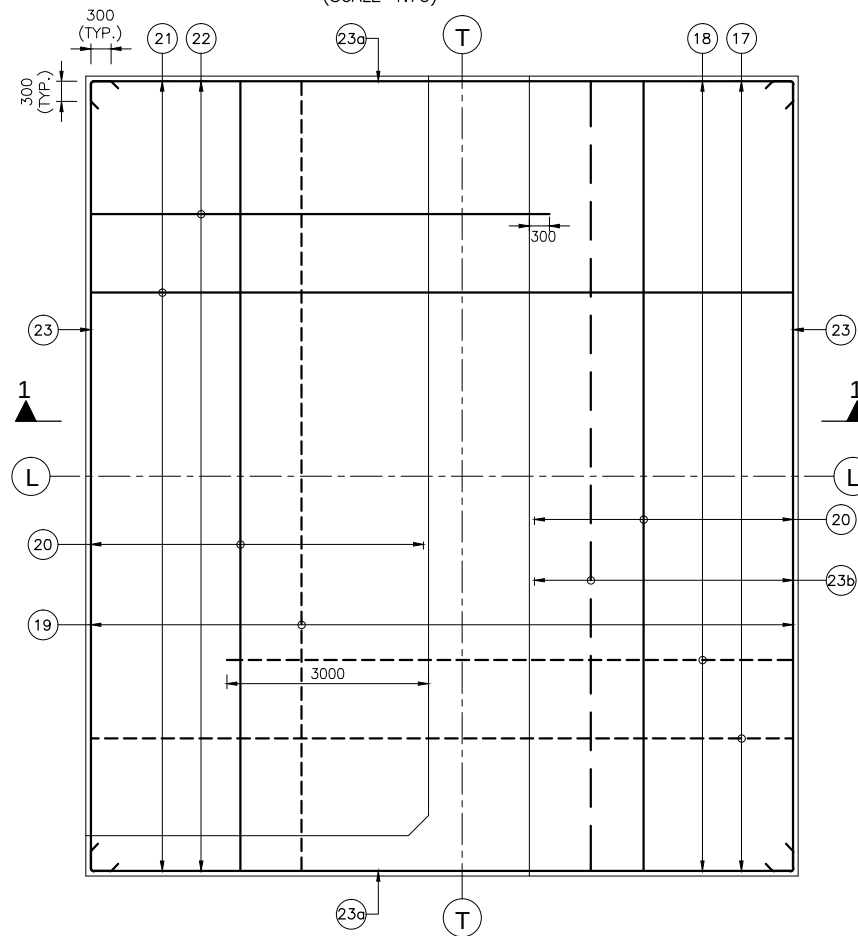


LEVEL SCHEDULE

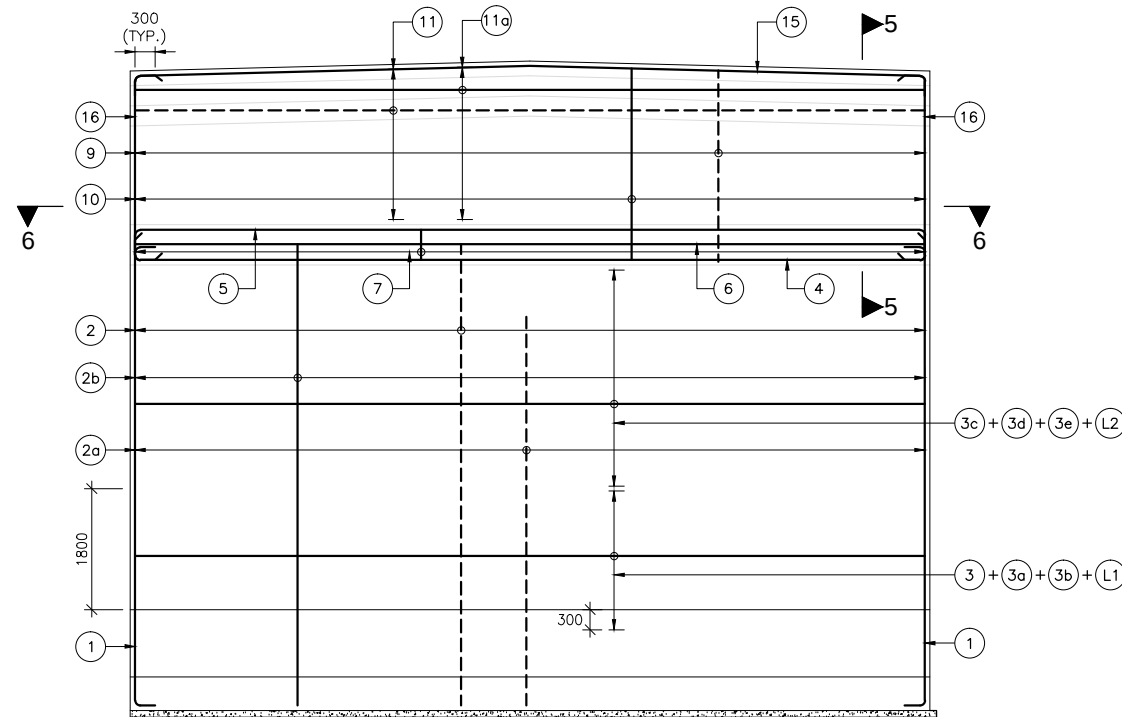
MARK	FRL (m)	ABUTMENT CAP TOP LVL. (m)	GR. LEVEL (m)	FDN. LEVEL (m)
ABUTMENT A1	382.700	380.599	377.476	368.820
ABUTMENT A2	382.700	380.599	376.495	368.820



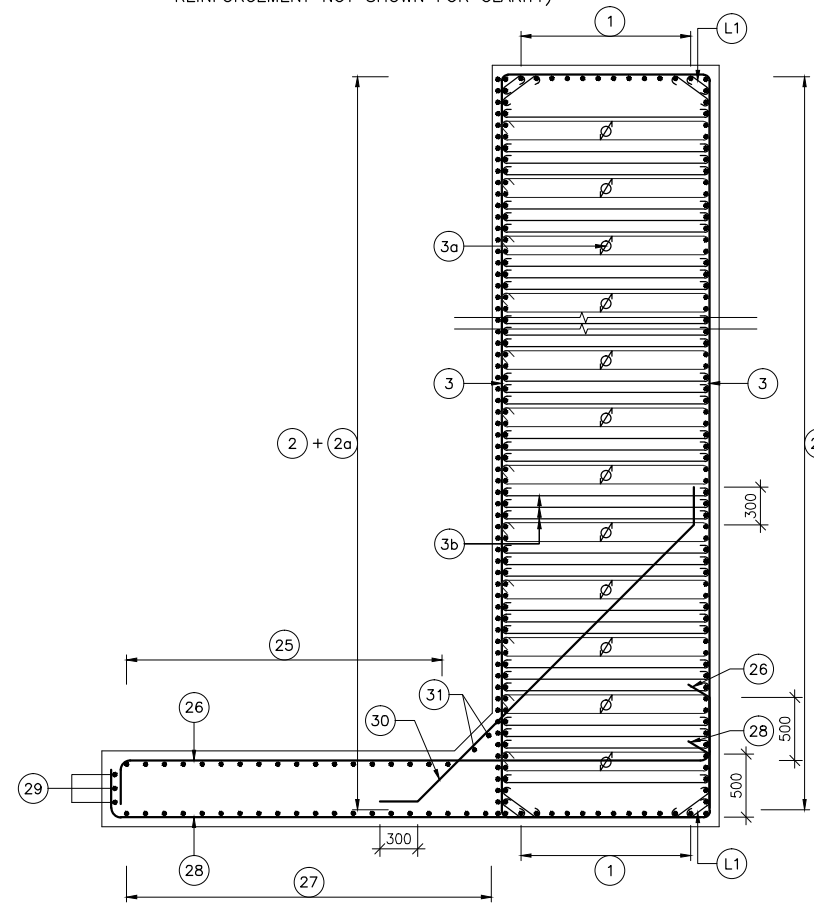
SECTION 1-1
(SCALE 1:75)



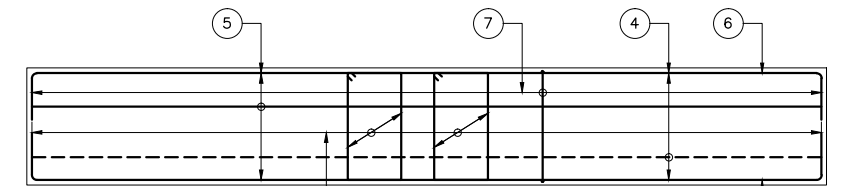
FOUNDATION PLAN
(SCALE 1:75)



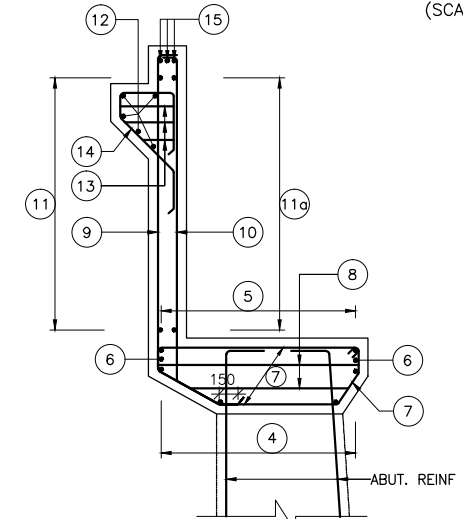
SECTION 4-4
(SCALE 1:75)
(FOUNDATION REINFORCEMENT & CORBEL
REINFORCEMENT NOT SHOWN FOR CLARITY)



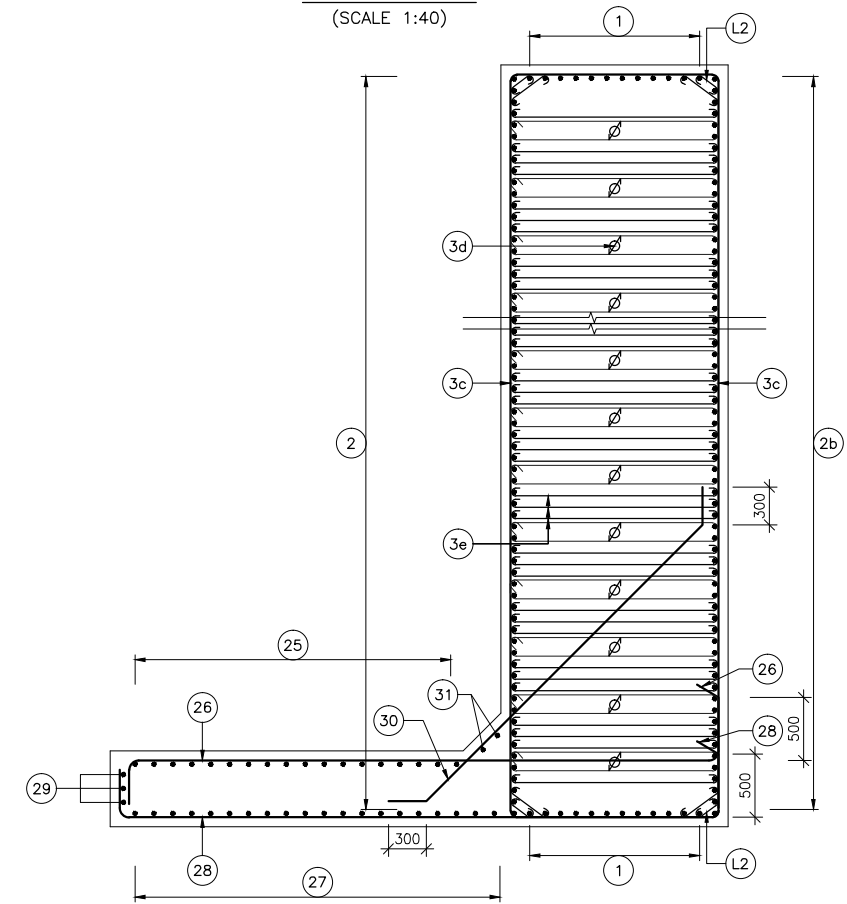
SECTION 2-2
(SCALE 1:40)



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



SECTION 5-5
(SCALE 1:40)



SECTION 3-3
(SCALE 1:40)



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)
Detailed Design 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



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

Prepared By
Designed By
Checked By
Approved By

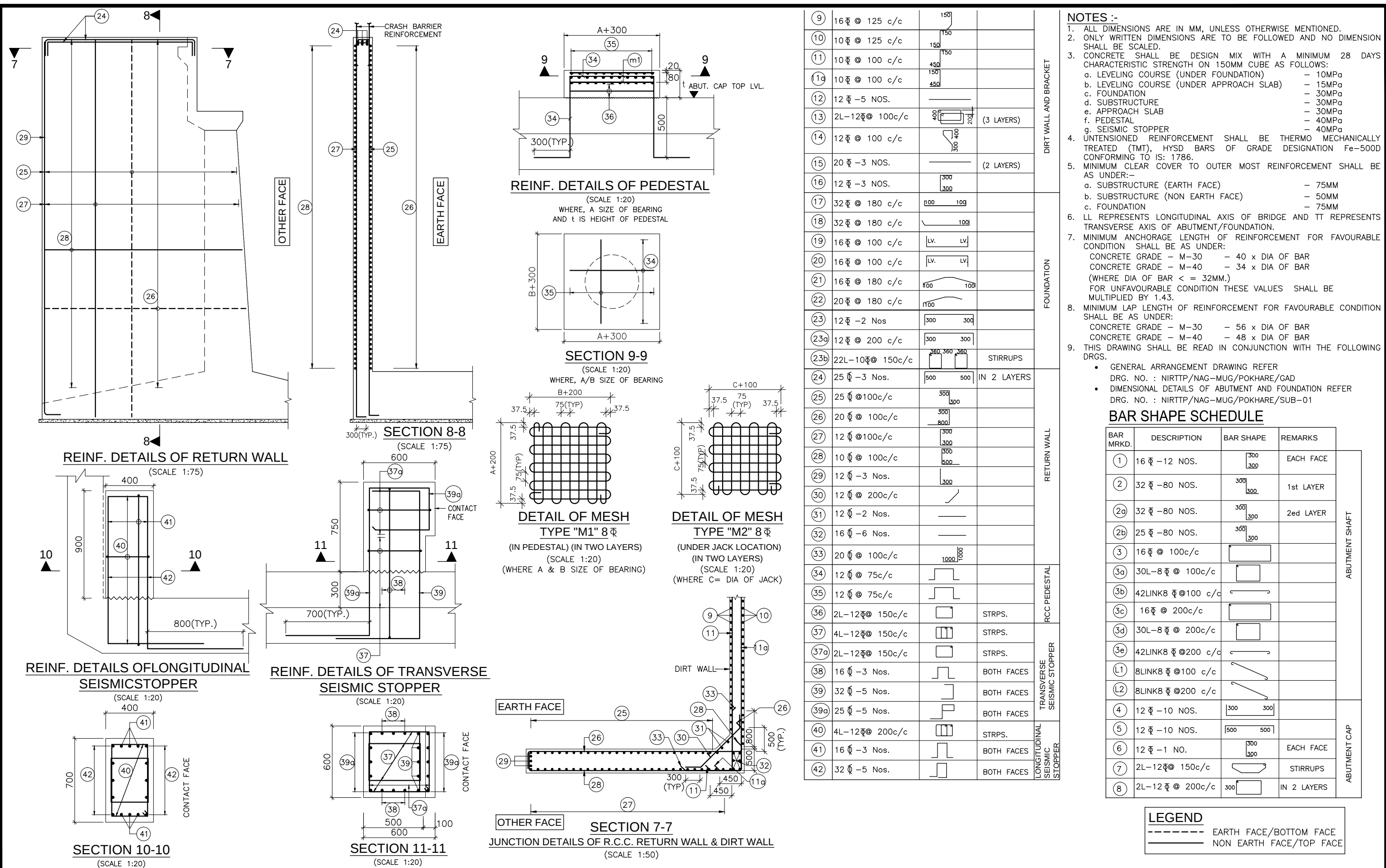
PARDEEP
AGNIMITA DAS
P.K.KHAN
B.N.SINGH

DRAWING TITLE:
REINFORCEMENT DETAILS OF ABUTMENT,
DIRT WALL, RETURN WALL, PEDESTAL
AND SEISMIC STOPPER FOR MINOR BRIDGE
AT CH:- 33+258KM OVER POKHARE KHOLA
PACKAGE-III (GALCHI-BENIGHAT)
Drawing No.:
NIRTP/NAG-MUG/POKHARE/SUB-02

Scale:
As Shown

Date: JUNE-2018

(SHEET 1 OF 2)



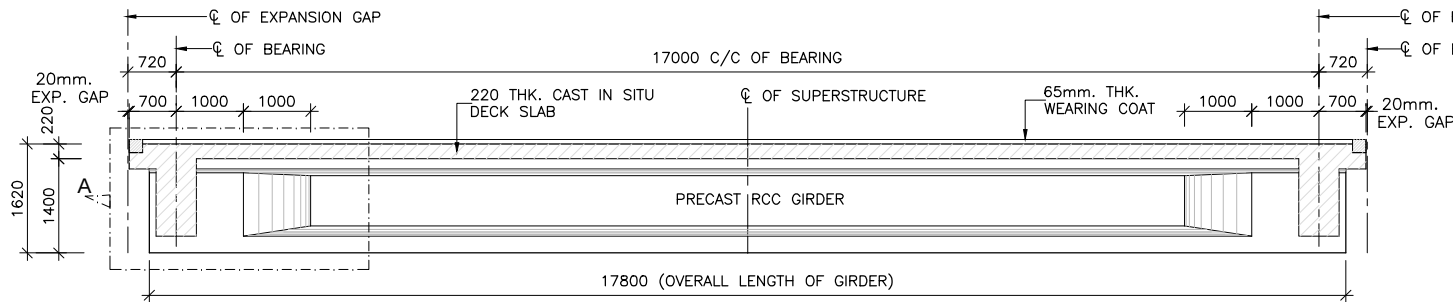
NOTES :-

- 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 - 40MPa
- 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:

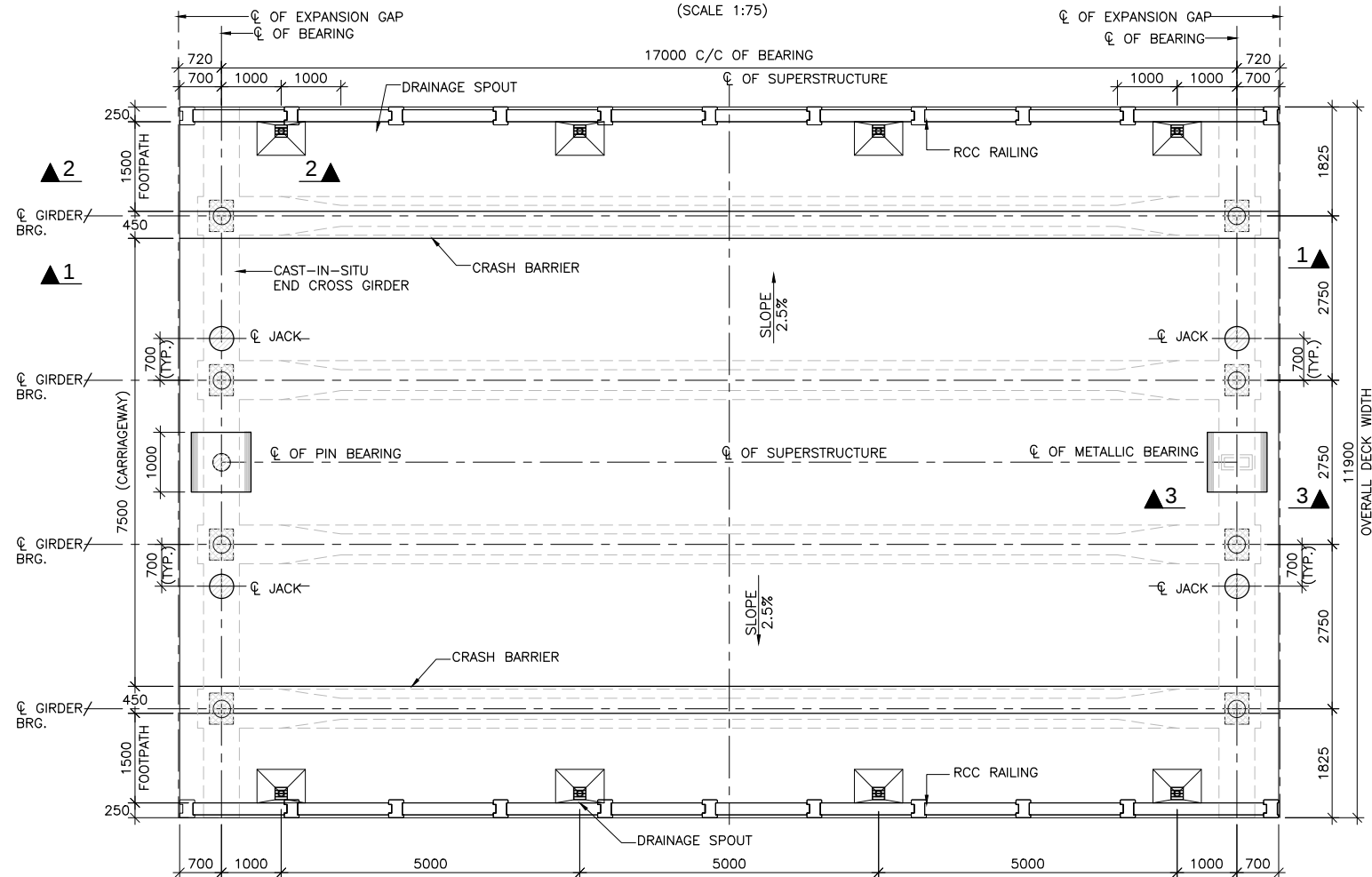
CONCRETE GRADE - M-30 - 56 x DIA OF BAR
CONCRETE GRADE - M-40 - 48 x DIA OF BAR
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING DRGS.
 - GENERAL ARRANGEMENT DRAWING REFER DRG. NO. : NIRTTP/NAG-MUG/POKHARE/GAD
 - DIMENSIONAL DETAILS OF ABUTMENT AND FOUNDATION REFER DRG. NO. : NIRTTP/NAG-MUG/POKHARE/SUB-01

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 (NIRTTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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 In Association With Full Bright Consultancy (Pvt.) Ltd. 316, Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal	Prepared By <i>Pardeep</i> PARDEEP Designed By <i>AGNIMITA</i> AGNIMITA DAS Checked By <i>P.K.KHAN</i> P.K.K.KHAN Approved By <i>B.N.SINGH</i> B.N.SINGH	DRAWING TITLE: REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH:- 33+258KM OVER POKHARE KHOLA PACKAGE-III (GALCHI-BENIGHAT) Drawing No.: NIRTTP/NAG-MUG/POKHARE/SUB-02	Scale: As Shown	Date: JUNE-2018 (SHEET 2 OF 2)
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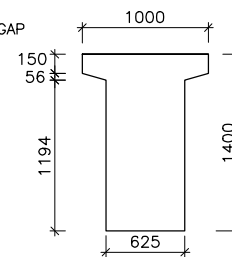
SECTIONAL ELEVATION 1 - 1

(SCALE 1:75)

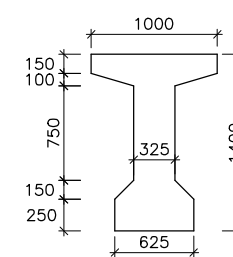


TOP PLAN OF DECK SLAB

(SCALE 1:75)



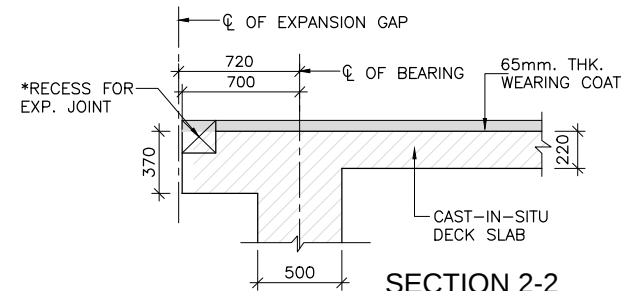
AT SUPPORT



AT MID SPAN

DETAILS OF PRECAST
RCC GIRDER

(SCALE 1:40)



SECTION 2-2

(SCALE 1:30)

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-CVW=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 110t EACH MAY BE REQUIRED AT EACH END. THE LOCATION OF JACKS FOR LIFTING OF THE SUPERSTRUCTURES TO REPLACE BEARINGS ETC. IS SHOWN. 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 385kN.

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

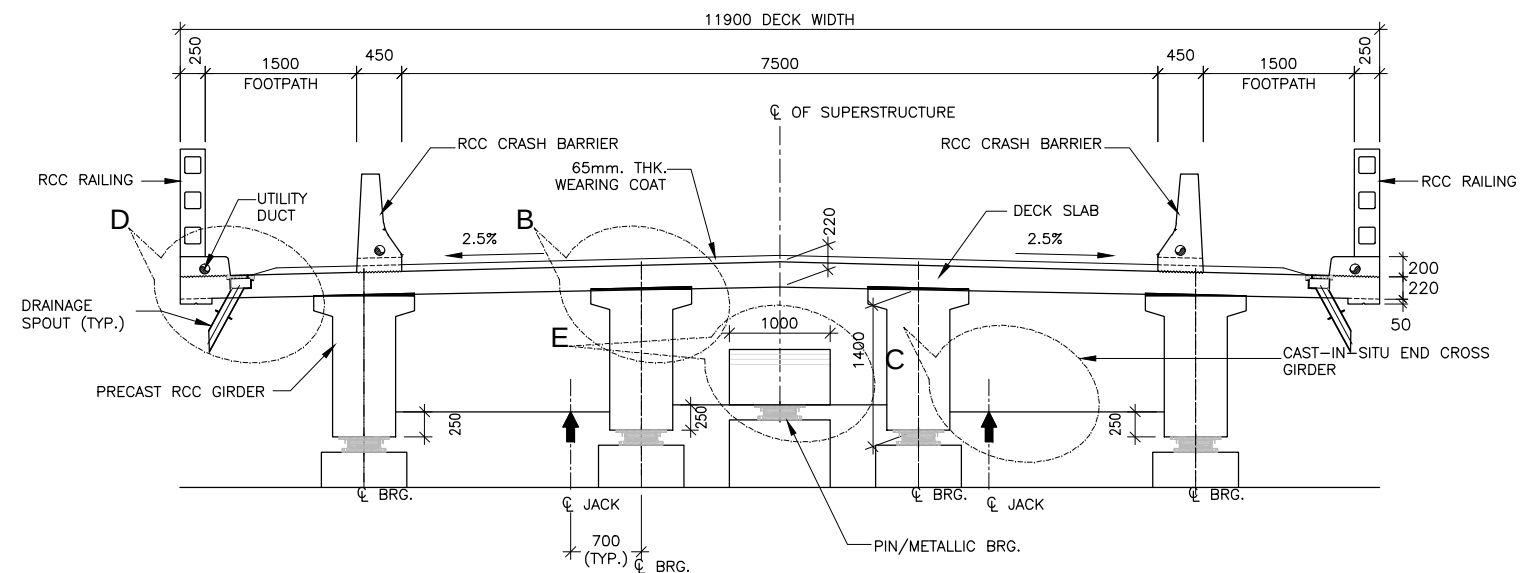
REFERENCE DRAWINGS:-

- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05

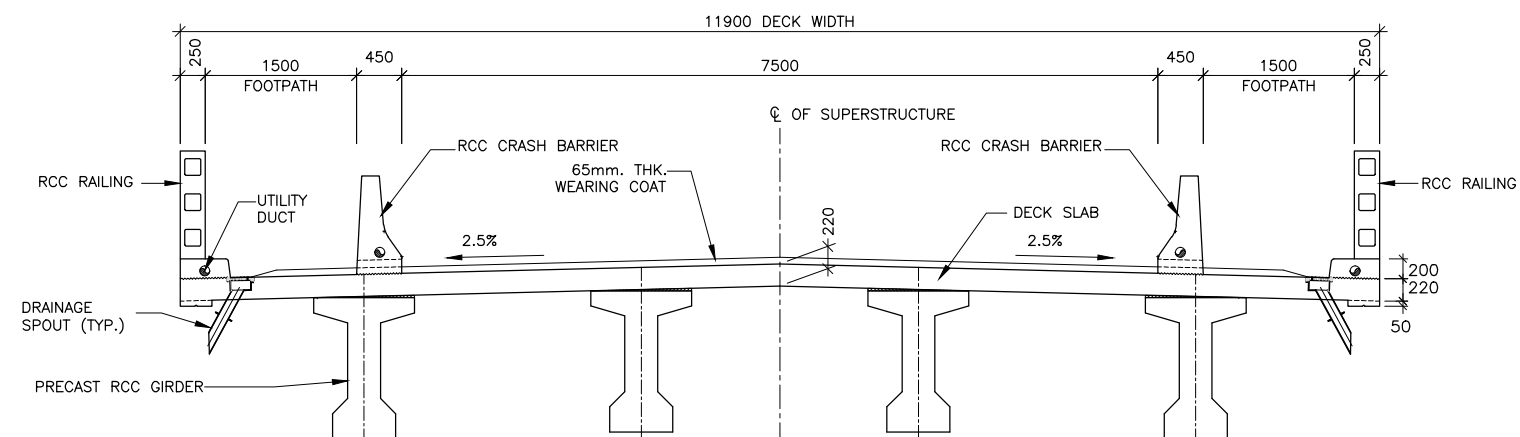
LEGEND:-

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

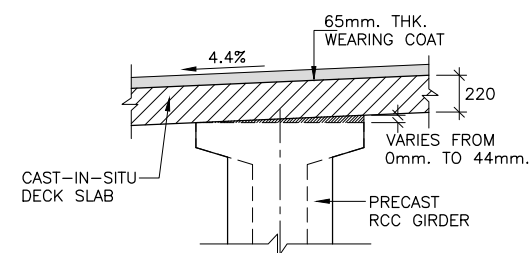
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE: DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 17.00m	Scale:	Date: JUNE-2018
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01	As Shown	(SHEET 1 OF 2)



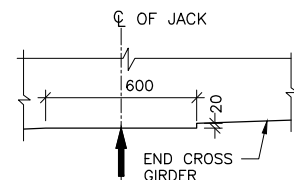
SECTION AT SUPPORT
(SCALE 1:50)



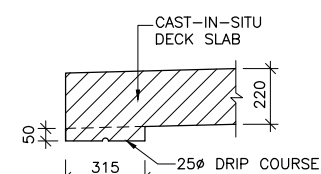
SECTION AT MID
(SCALE 1:50)



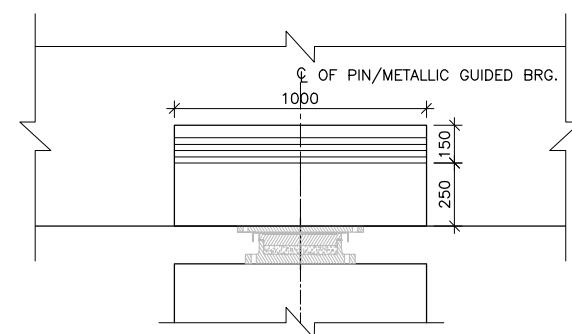
DETAIL - B
(SCALE 1:30)



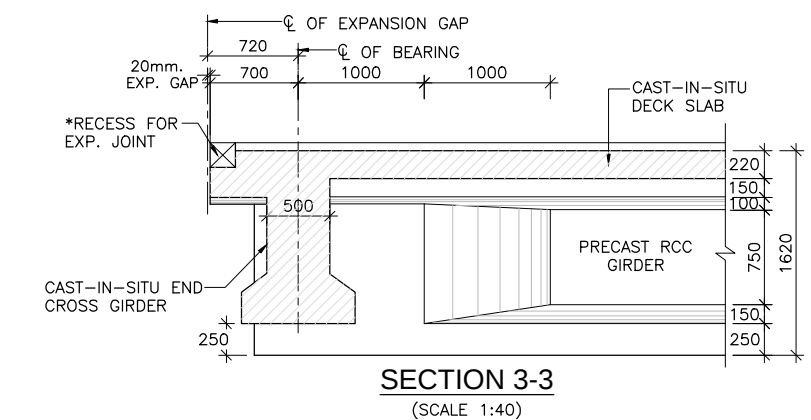
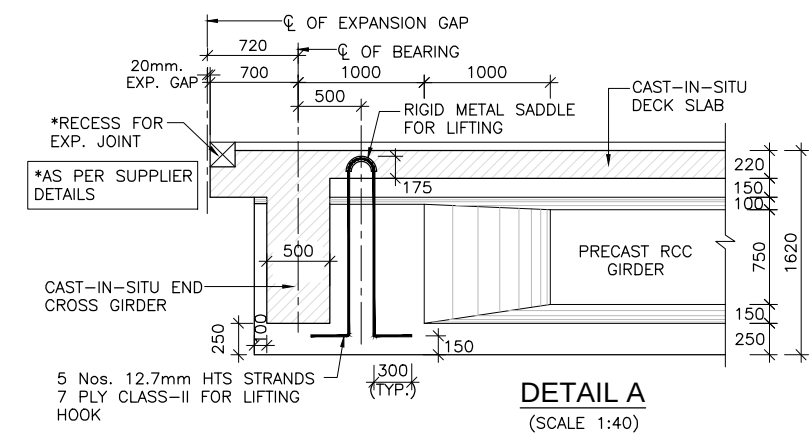
DETAIL - C
DETAIL OF CROSS GIRDER AT JACK LOCATION
(SCALE 1:20)



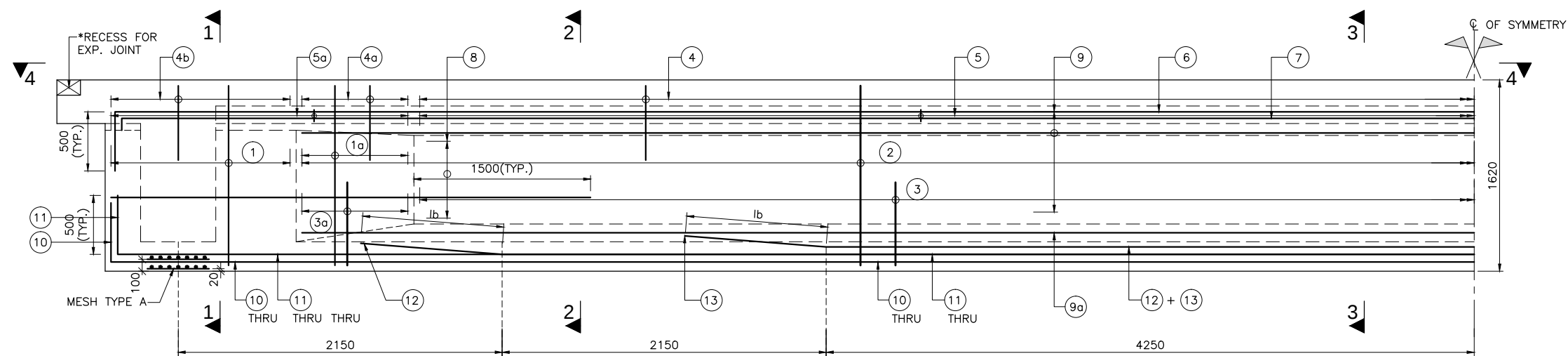
DETAIL - D
(SCALE 1:20)



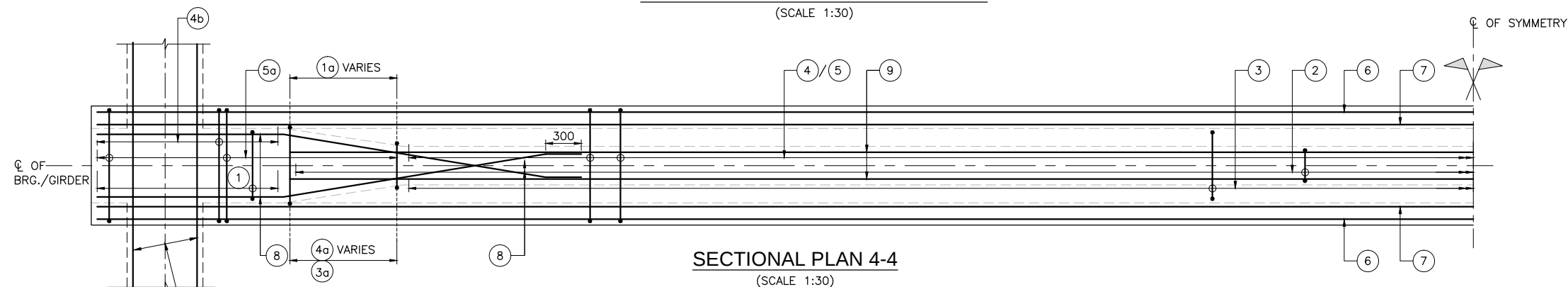
DETAIL - E
(SCALE 1:20)



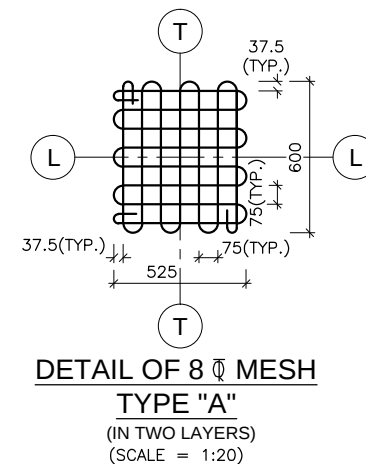
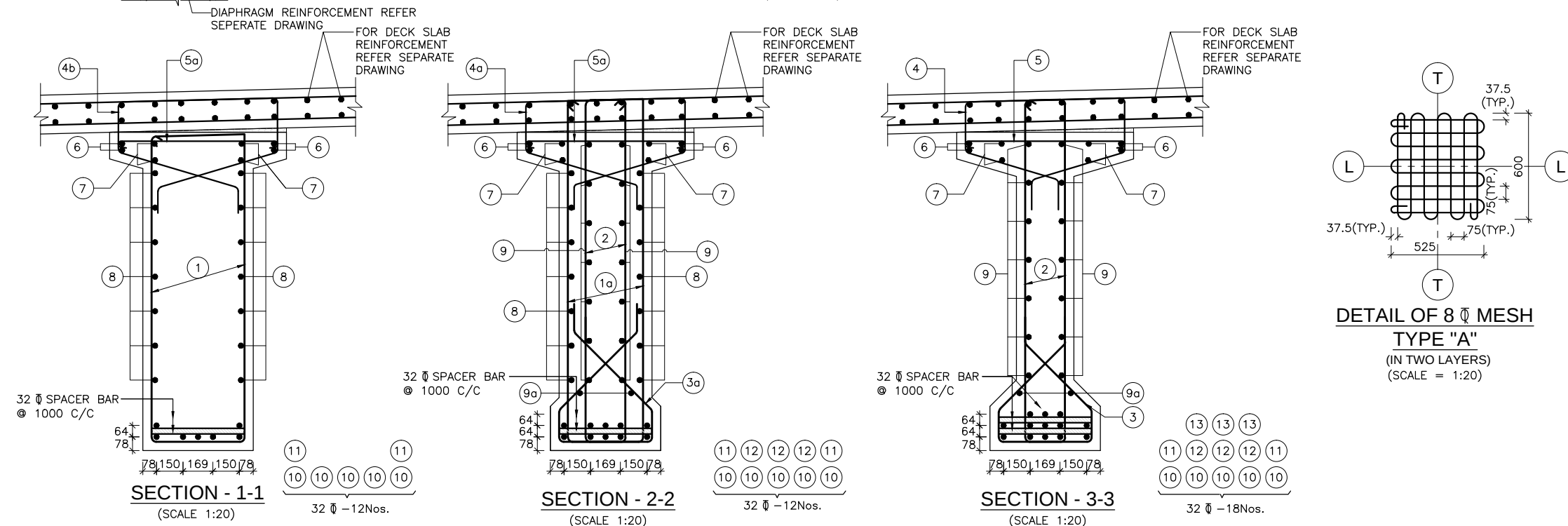
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	K.M. JOHRI	V. CHAUDHARY	P.K. KHAN	B.N. SINGH	DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01	As Shown	(SHEET 2 OF 2)



SECTIONAL ELEVATION OF GIRDER
(SCALE 1:30)



SECTIONAL PLAN 4-4
(SCALE 1:30)



NOTES:-

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- 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 $(\frac{1.43}{1.25})$

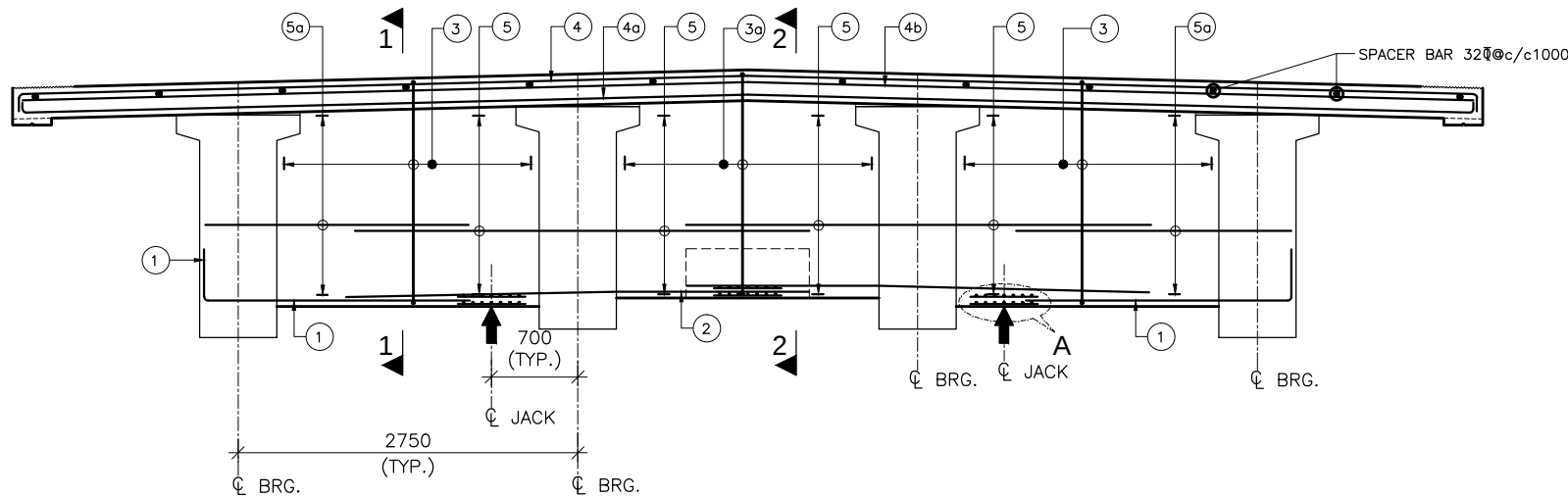
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01(SHEET 1&2)
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05

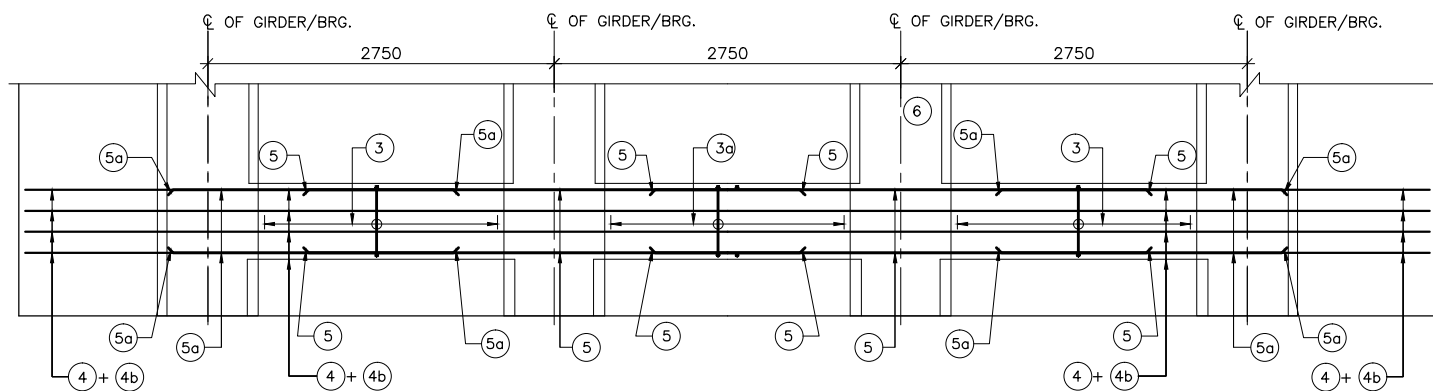
SCHEDULE OF REINFORCEMENT

BAR MKD.	DESCRIPTION	SHAPE	REMARKS
1	2L-12 Ø 125 C/C		STIRRUP
1a	2L-12 Ø 125 C/C		STIRRUP (VARIES)
2	2L-12 Ø 150 C/C		STIRRUP
3	10 Ø 150 C/C		
3a	10 Ø 125 C/C		(VARIES)
4	10 Ø 150 C/C		
4a	10 Ø 125 C/C		(VARIES)
4b	10 Ø 125 C/C		
5	10 Ø 150 C/C		LINKS
5a	10 Ø 125 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 -3 Nos.		
13	25 Ø -3 Nos.		

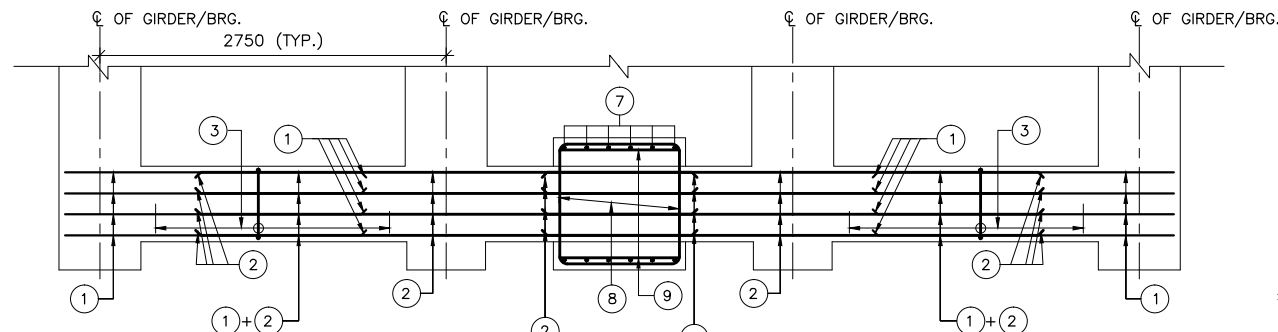
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	K.M.JOHR	V.CHAUDHARY	P.K.KHAN	B.N.SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/02	As Shown	



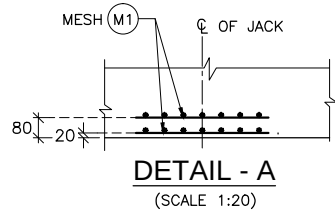
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



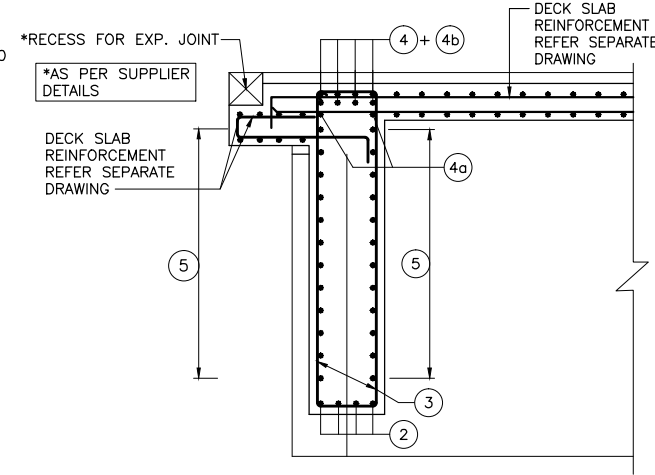
SECTIONAL PLAN OF END DIAPHRAGM (TOP REINFORCEMENT)
(SCALE 1:40)



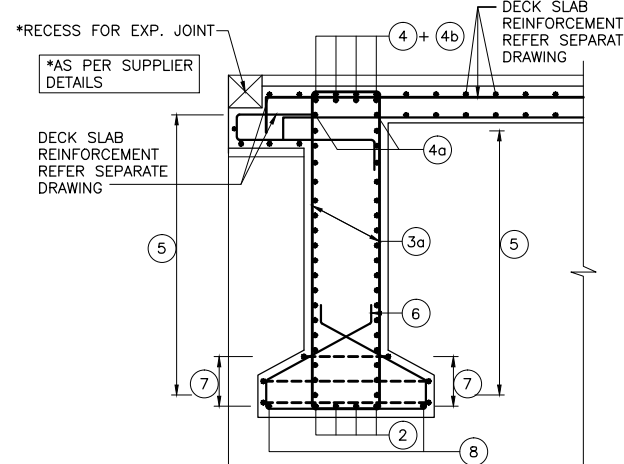
SECTIONAL PLAN OF END DIAPHRAGM (BOTTOM REINFORCEMENT)
(SCALE 1:40)



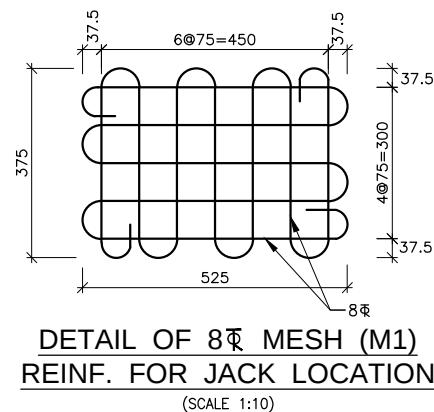
DETAIL - A
(SCALE 1:20)



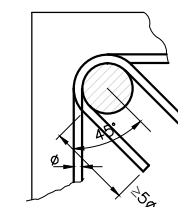
SECTION 1 - 1
(SCALE 1:30)



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:-

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- CLEAR COVER TO THE OUTERMOST STEEL SHALL BE 40mm UNLESS OTHERWISE SPECIFIED.
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 $LAP LENGTH l_s = \alpha \cdot l_{bnet}$
 $\alpha = 1.0$ 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 $(\frac{130}{100})$

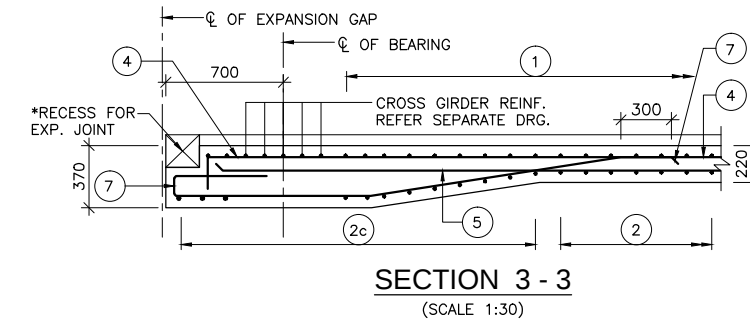
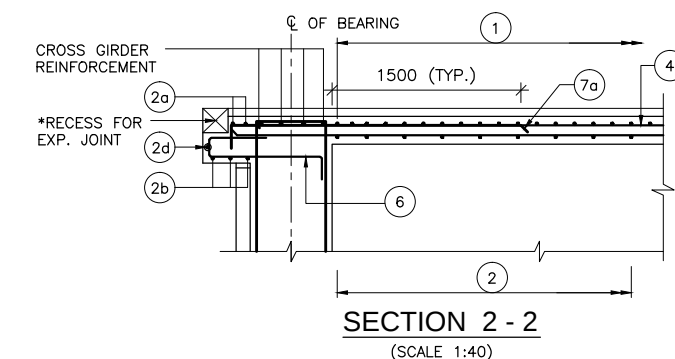
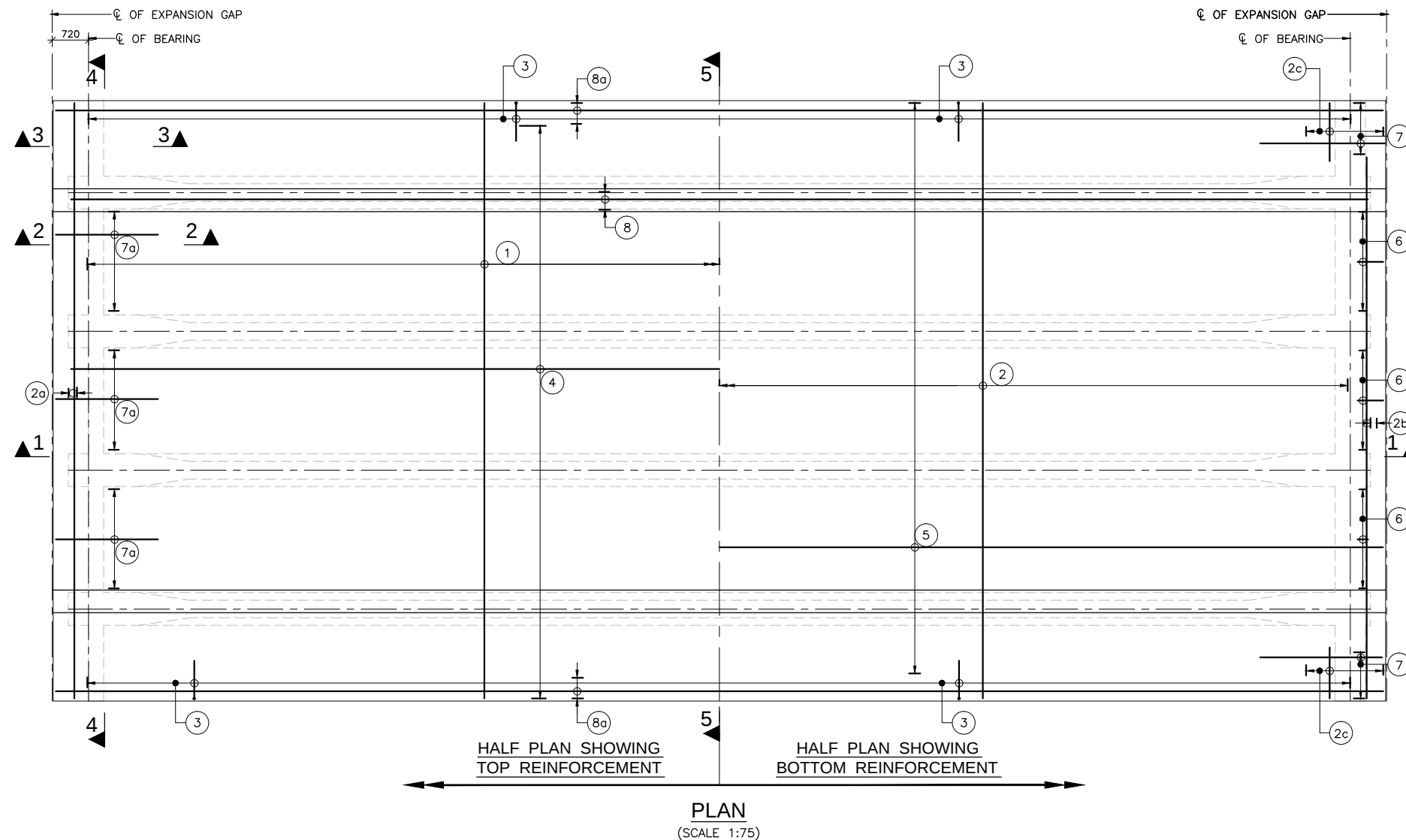
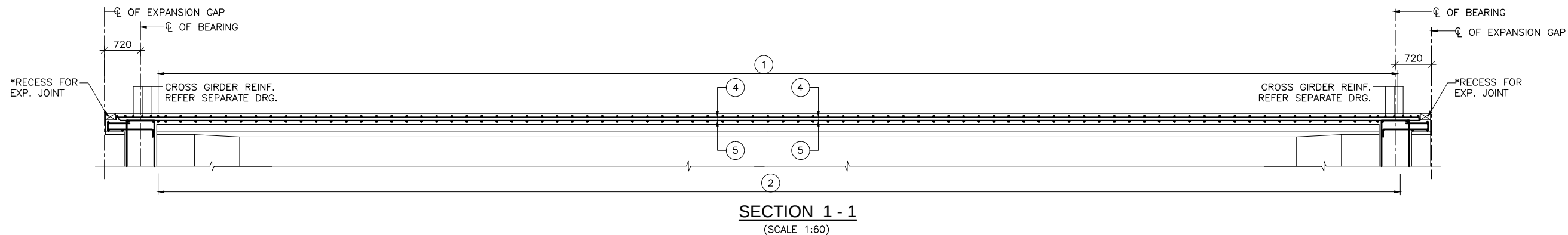
REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
 -NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01(SHEET 1&2)
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
 -NIRTP/NAG-MUG/POKHARE/RCC-G/17m/02
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
 -NIRTP/NAG-MUG/POKHARE/RCC-G/17m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
 -NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05

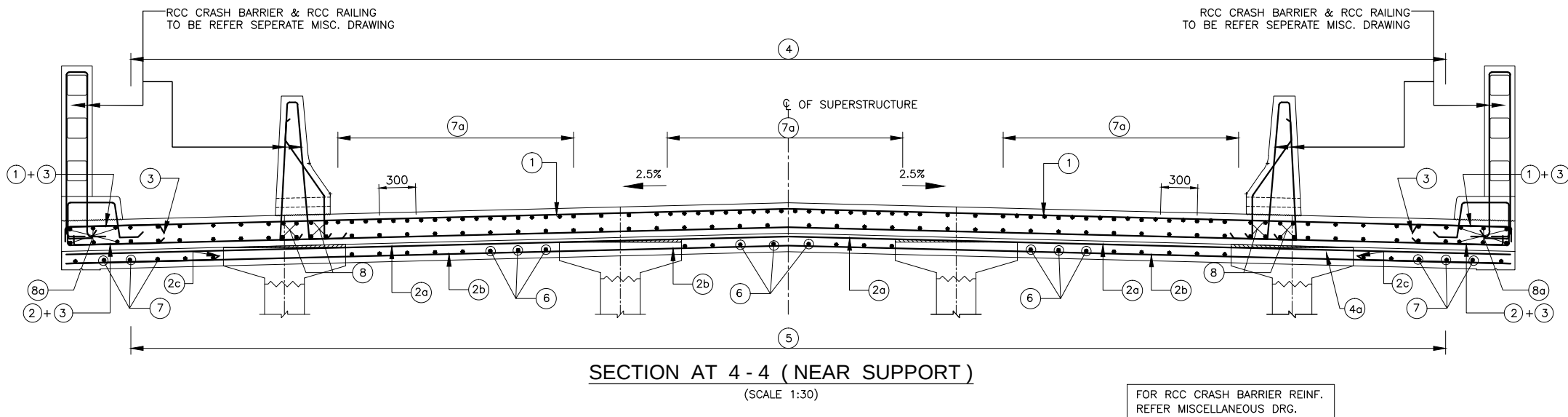
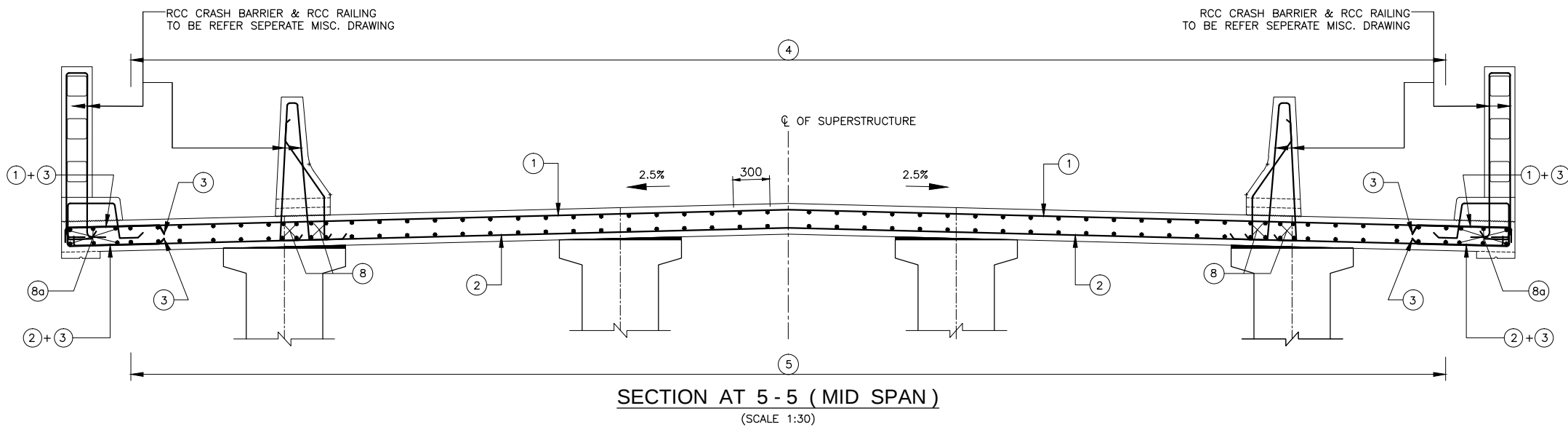
REINFORCEMENT SCHEDULE

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	NOT USED		
7	12# -6 Nos.		
8	12# -2L-3 No.		VARIES
9	10# -2 Nos.		

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
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) Detailed Design 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	K.M. JOHRI	V. CHAUDHARY	P.K. KHAN	B.N. SINGH	REINFORCEMENT DETAILS OF END CROSS GIRDER EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/03	As Shown	



EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	K.M. JOHRI	DRAWING TITLE:	Scale:	Date: JUNE-2018
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) Detailed Design 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 : 17.00m	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/POKHARE/RCC-G/17m/04		



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 $(\frac{100}{132})$
- RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/01(SHEET 1&2)
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/03
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05

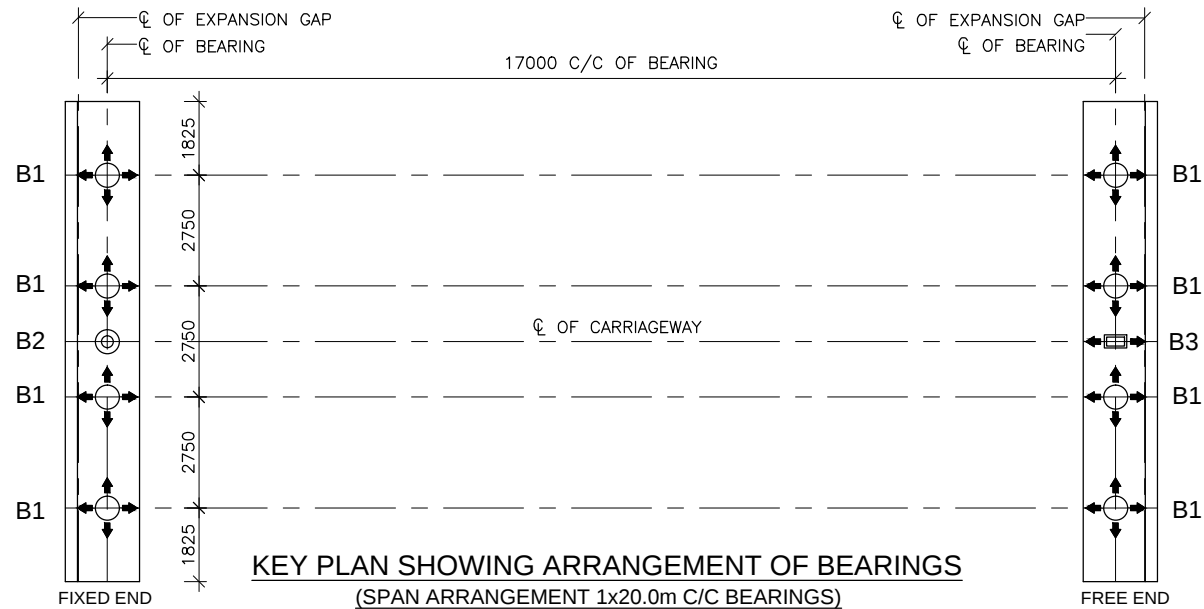
REINFORCEMENT SCHEDULE

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: JUNE-2018
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) Detailed Design 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 : 17.00m Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/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/POKHARE/RCC-G/17m/01(SHEET 1&2)

GENERAL DATA:

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

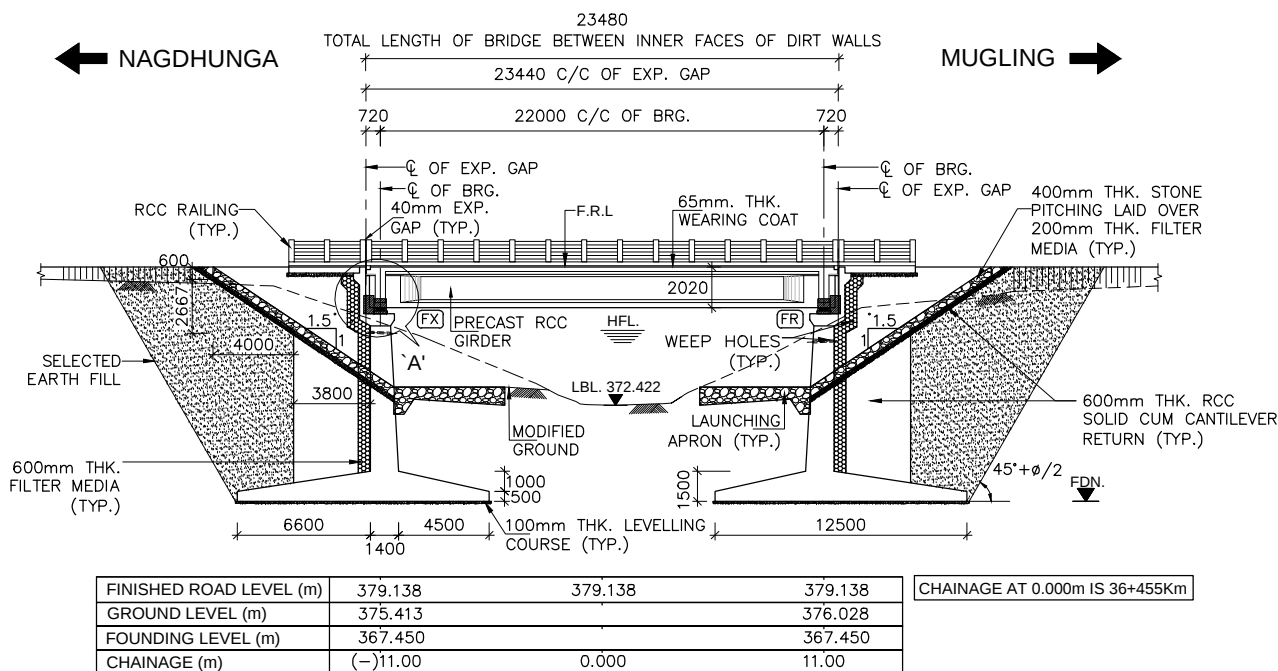
TABLE SHOWING DATA FOR DESIGN OF BEARINGS

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)	953	COEXISTING	95	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	8
			MINIMUM (WITH LIVE LOAD)	378	COEXISTING	38	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	310	COEXISTING	31	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	599	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITH LIVE LOAD)	359	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	343	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	599	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITH LIVE LOAD)	359	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
			MINIMUM (WITHOUT LIVE LOAD)	343	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	4.70	
2.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	212	COEXISTING	—	COEXISTING	0.002	—	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	172	COEXISTING	—	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	172	COEXISTING	—	COEXISTING	0.002	—	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	1806	COEXISTING	280	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	1806	COEXISTING	265	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	1770	COEXISTING	266	COEXISTING	0.002	—	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	567	COEXISTING	932	COEXISTING	0.002	—	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	567	COEXISTING	885	COEXISTING	0.002	—	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	567	COEXISTING	590	COEXISTING	0.002	—	—	
3.		NORMAL	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	1
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	—	COEXISTING	0.002	—12.7/12.6	—	
		SEISMIC (LONGITUDINAL)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	280	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	265	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	266	COEXISTING	0.002	—12.7/12.6	—	
		SEISMIC (TRANSVERSE)	MAXIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	932	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITH LIVE LOAD)	—	COEXISTING	—	COEXISTING	885	COEXISTING	0.002	—12.7/12.6	—	
			MINIMUM (WITHOUT LIVE LOAD)	—	COEXISTING	—	COEXISTING	590	COEXISTING	0.002	—12.7/12.6	—	

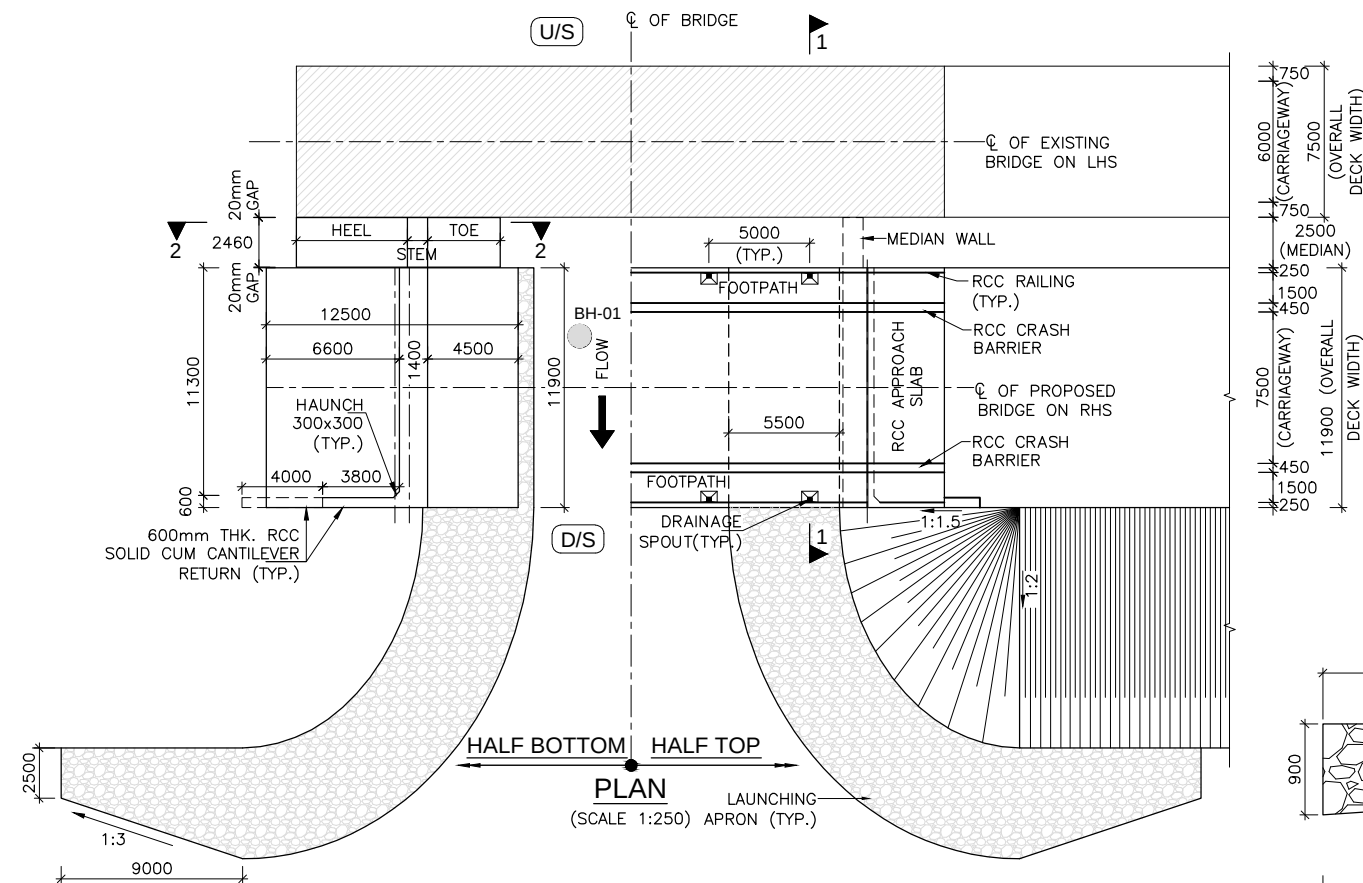
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		K.M. JOHRI		DRAWING TITLE:		Scale:		Date: JUNE-2018	
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Feasibility Study of Kathmandu (Nagdhunga) -Detailed Design of Kathmandu (Nagdhunga) -Nauvise - Mugling Road and Bridges	Nauvise	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		DETAILS OF LOADS AND FORCES FOR POT/PTFE BEARINGS EFFECTIVE SPAN : 17.00m Drawing No.: NIRTP/NAG-MUG/POKHARE/RCC-G/17m/05	As Shown				
						Checked By		P.K. KHAN							
						Approved By		B.N. SINGH							

GALAUDI KHOLA BRIDGE

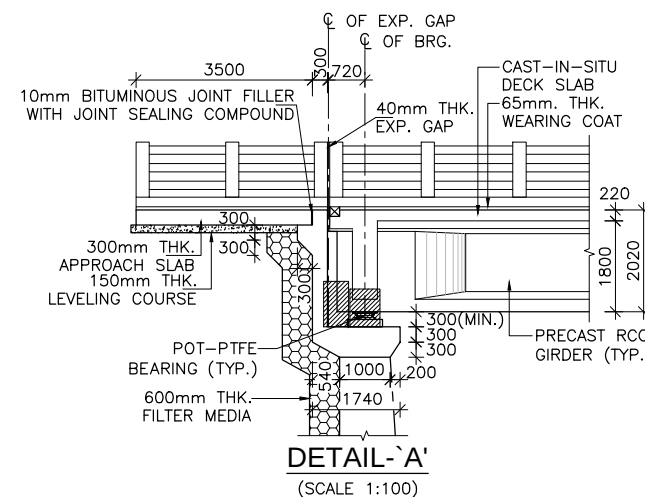
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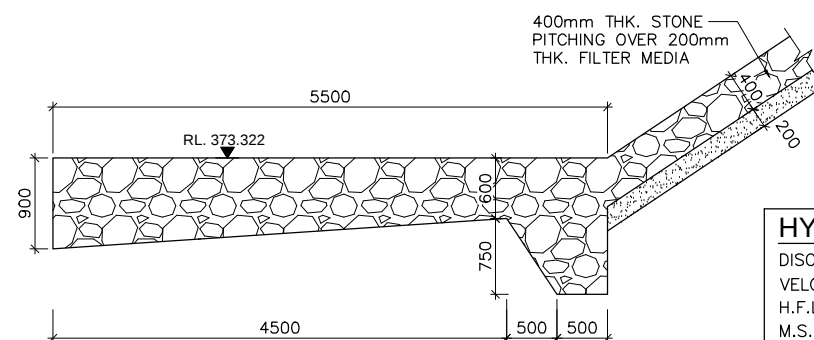
LONGITUDINAL ELEVATION OF PROPOSED BRIDGE
(SCALE 1:250)



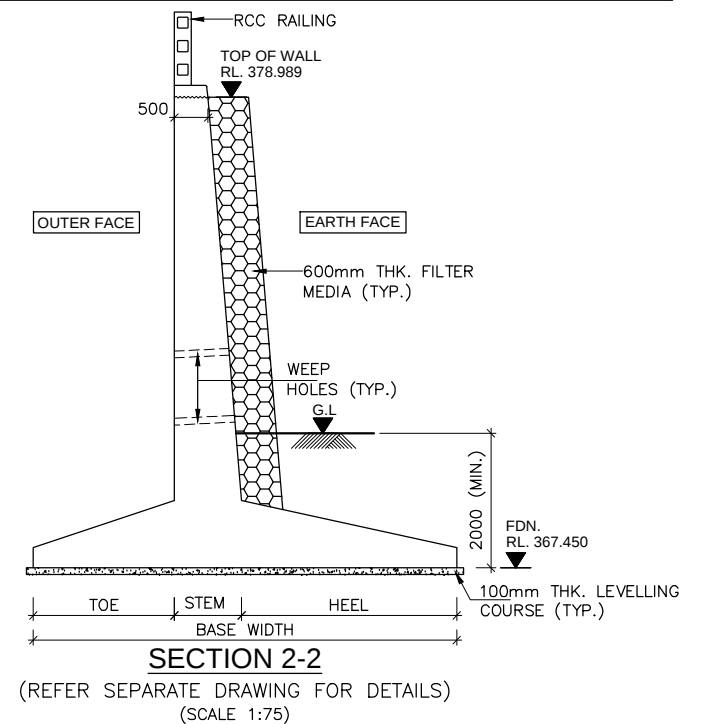
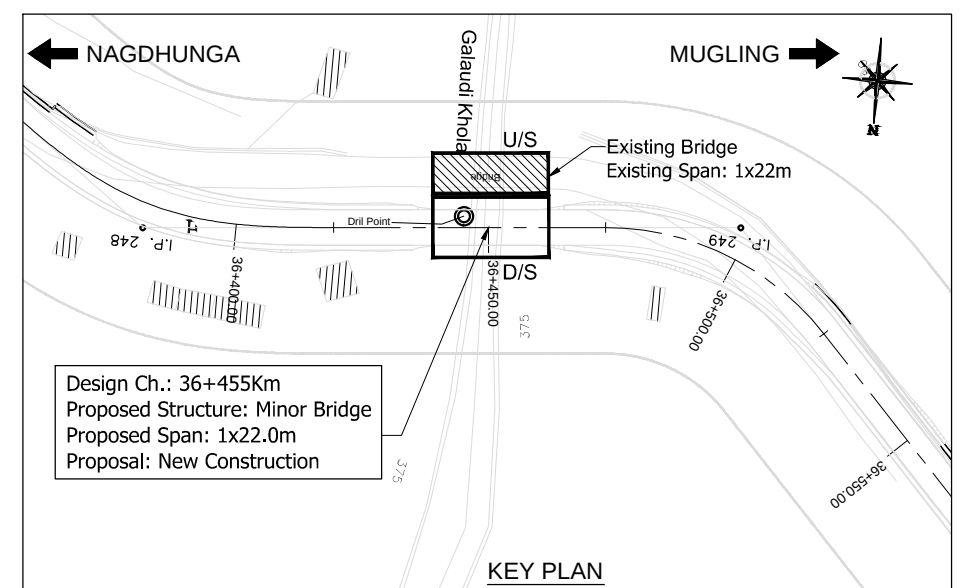
PLAN
(SCALE 1:250)



DETAIL-A'
(SCALE 1:100)



DETAIL OF LAUNCHING APRON
SCALE-1:50

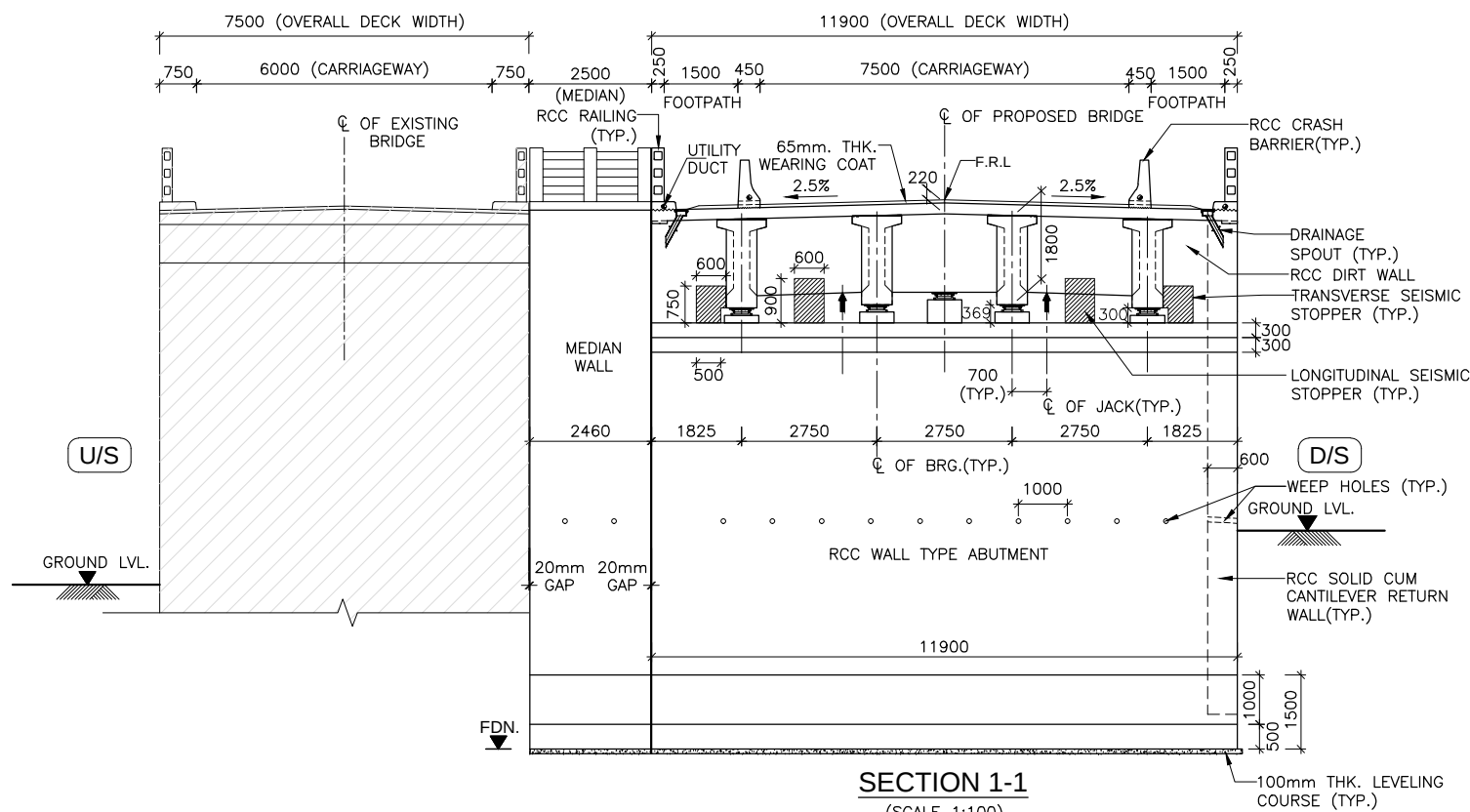


SECTION 2-2
(REFER SEPARATE DRAWING FOR DETAILS)
(SCALE 1:75)

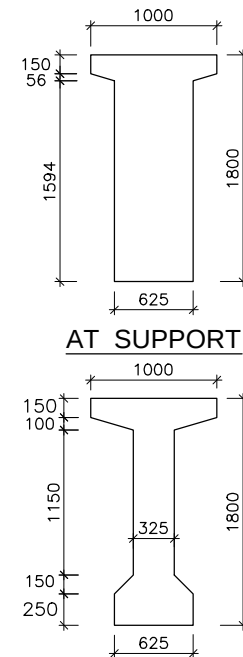
LEGEND:	
F.R.L	: FINISHED ROAD LEVEL
H.F.L	: HIGH FLOOD LEVEL
CL	: CENTER LINE
LVL	: LEVEL
RL	: REDUCED LEVEL
TYP.	: TYPICAL
THK.	: THICK
D/S	: DOWNSTREAM
U/S	: UPSTREAM
G.L	: GROUND LEVEL
L.B.L	: LOWEST BED LEVEL
FDN.	: FOUNDING LEVEL
FX	: FIX
FR	: FREE
EXISTING	:
PROPOSED	:
BH	: BORE HOLE

HYDRAULIC DATA:-	
DISCHARGE	- 150 cumec
VELOCITY	- 3.79m/s
H.F.L	- 375.972m
M.S.L AT ABUTMENT	- 369.45m

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
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) Detailed Design 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	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 36+455KM OVER GALAUDI KHOLA (1x22.00m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 1 OF 2)



SECTION 1-1
(SCALE 1:100)



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

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

REFERENCE DRAWINGS:-

- DIMENSIONAL DETAILS OF ABUTMENT AND FOUNDATION:
-NIRTP/NAG-MUG/GALAUDI/SUB-01
- REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER:
-NIRTP/NAG-MUG/GALAUDI/SUB-02(SHEET1&2)
- DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/01
- REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/02
- REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/03
- REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/04(SHEET 1&2)
- DETAILS OF LOAD AND FORCES FOR POT/PTFE BEARINGS:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/05

MISCELLANEOUS DRAWINGS:

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

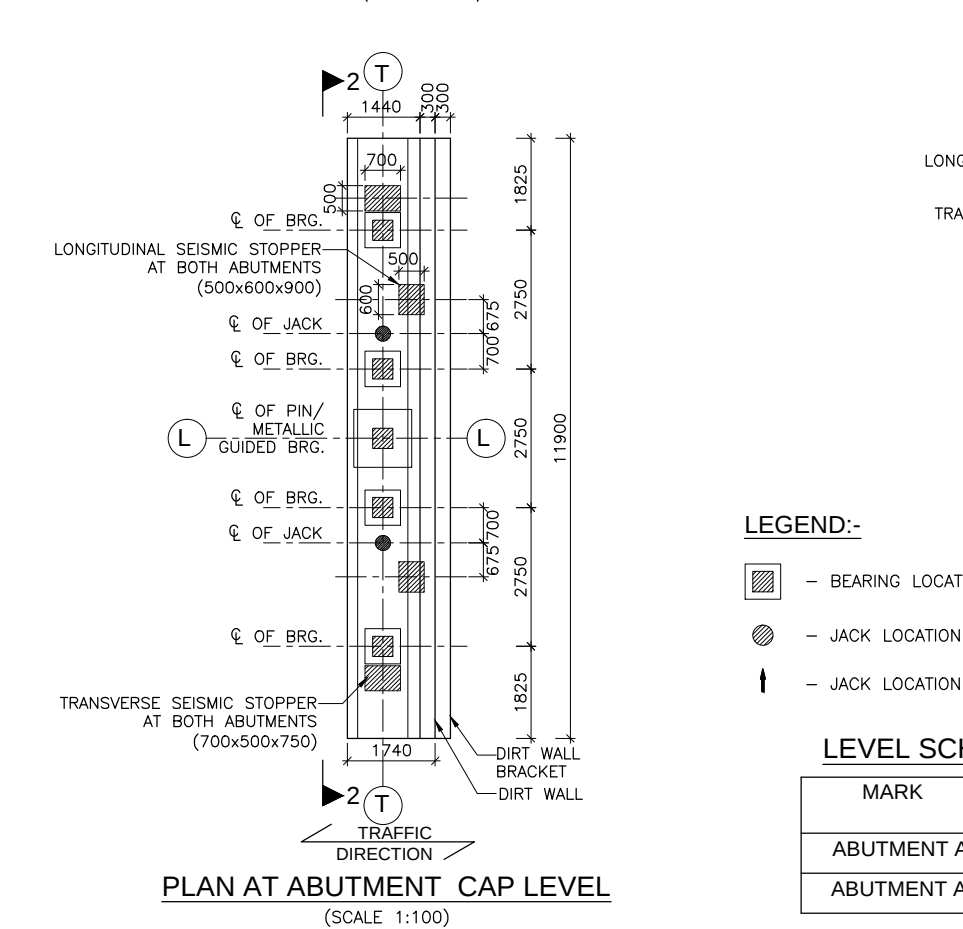
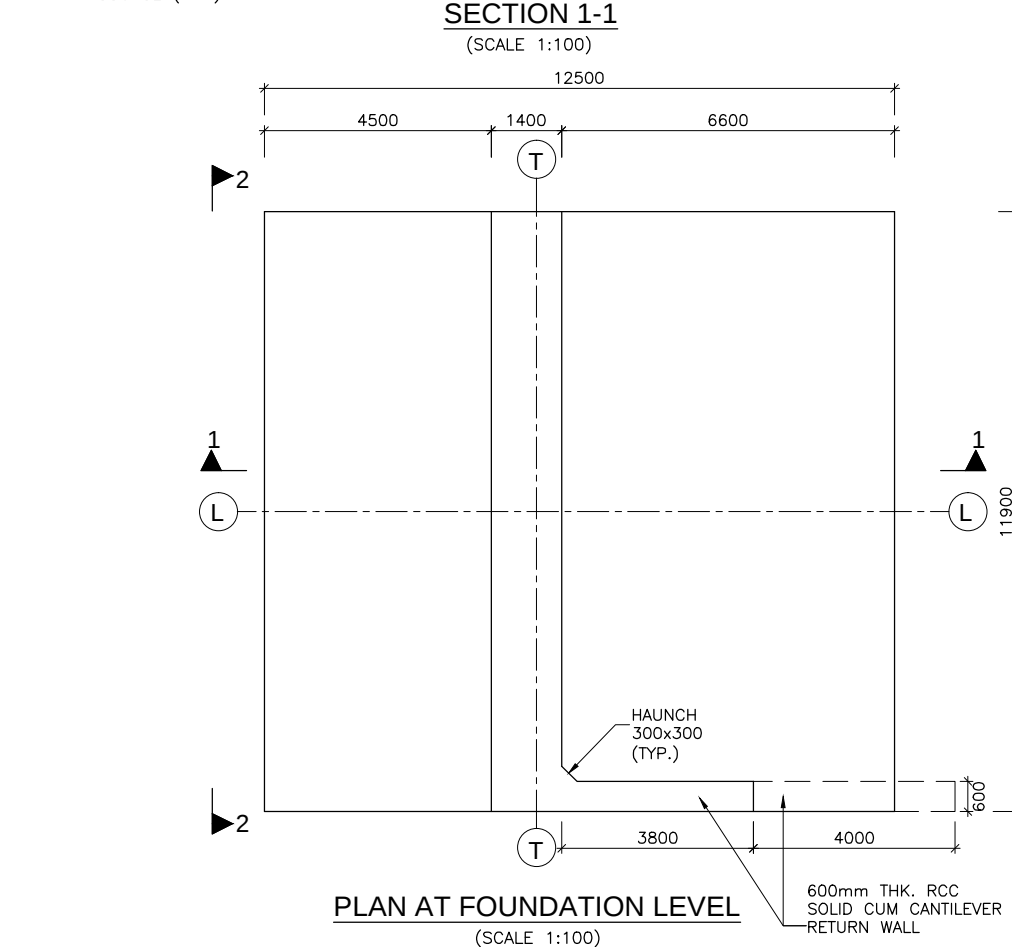
NOTES:-

- 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:
 - 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
 - SUPERSTRUCTURE - M35
 - RETURN/RETAINING WALL - M30
 - CRASH BARRIER - M40
 - 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 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 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 $C=0$, $\phi=35^\circ$, $\delta=22.5^\circ$ & $\gamma_d = 20 \text{ KN/M}^3$.
- 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 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.

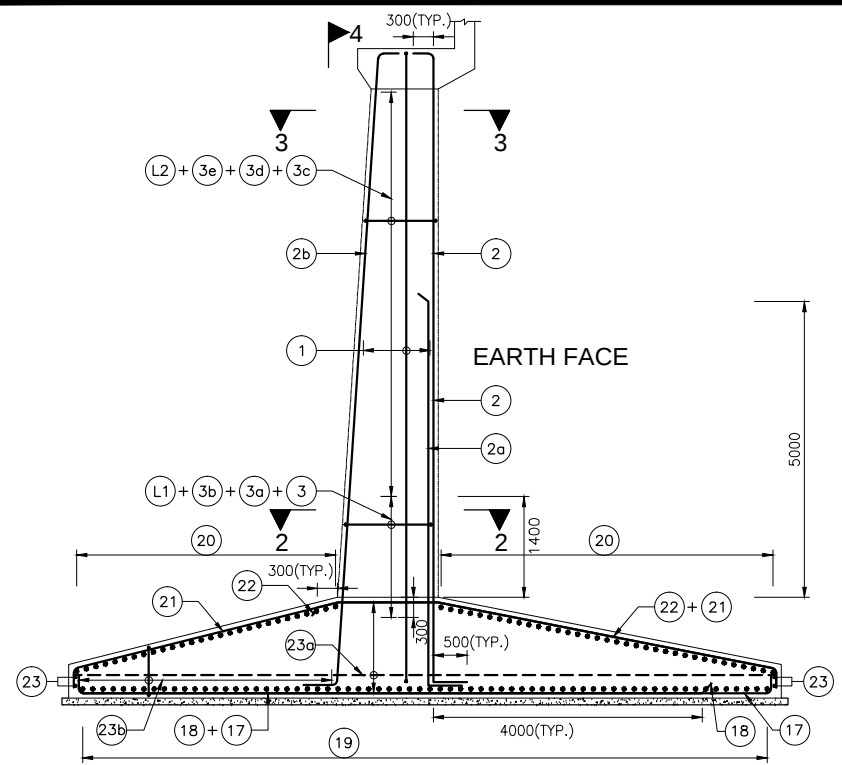
ABUTMENT CAP SHALL BE CAST ONLY AFTER COMPLETING THE BACK FILLING WORK UP TO ABUTMENT SHAFT TOP LEVEL.

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
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) Detailed Design 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	PARDEEP	AGNIMITA DAS	P.K.KHAN	B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH:- 36+455KM OVER GALAUDI KHOLA (1x22.00m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 2 OF 2)
							Drawing No.: NIRTP/NAG-MUG/GALAUDI/GAD		

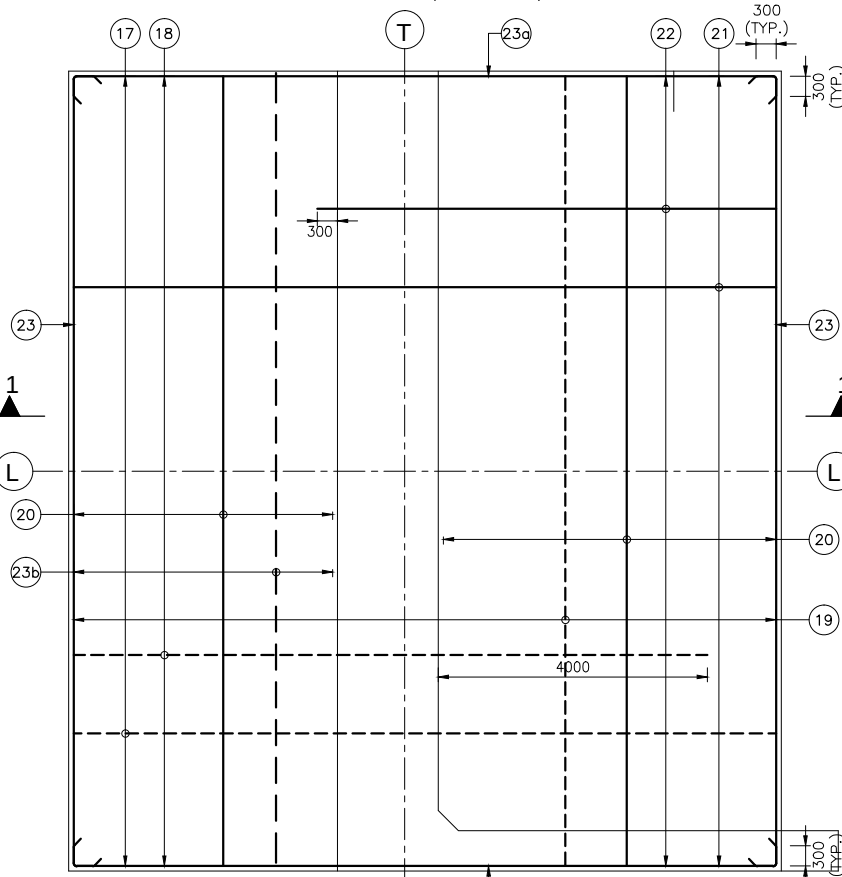


-
- CLING
- OF BRG.
- OF EXP. GAP
- 740 300 3500
- 10mm BITUMINOUS JOINT FILLER WITH JOINT SEALING COMPOUND
- 300 300
- 300mm THK. APPROACH SLAB
- 150mm THK. LEVELING COURSE
- LONGITUDINAL SEISMIC STOPPER
- TRANSVERSE SEISMIC STOPPER
- 320 700 900
- 300(MIN.) 750 300 300
- 600mm THK. FILTER MEDIA
- POT-PTFE BEARING (TYP.)
- 200 1000 540 1740
- DETAIL 'A'**
- (SCALE 1:50)
- S LOCATION IN PLAN

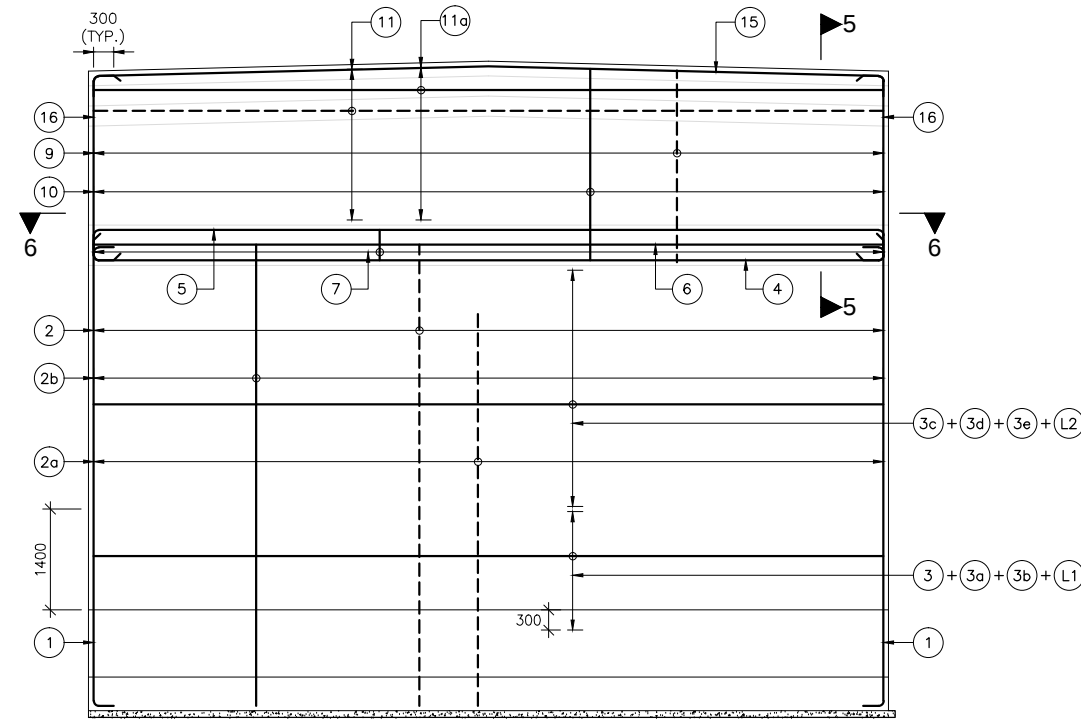
MARK	FRL (m)	ABUTMENT CAP TOP LVL. (m)	GR. LEVEL (m)	FDN. LEVEL (m)
ABUTMENT A1	379.138	376.637	375.413	367.750
ABUTMENT A2	379.138	376.637	376.028	367.750



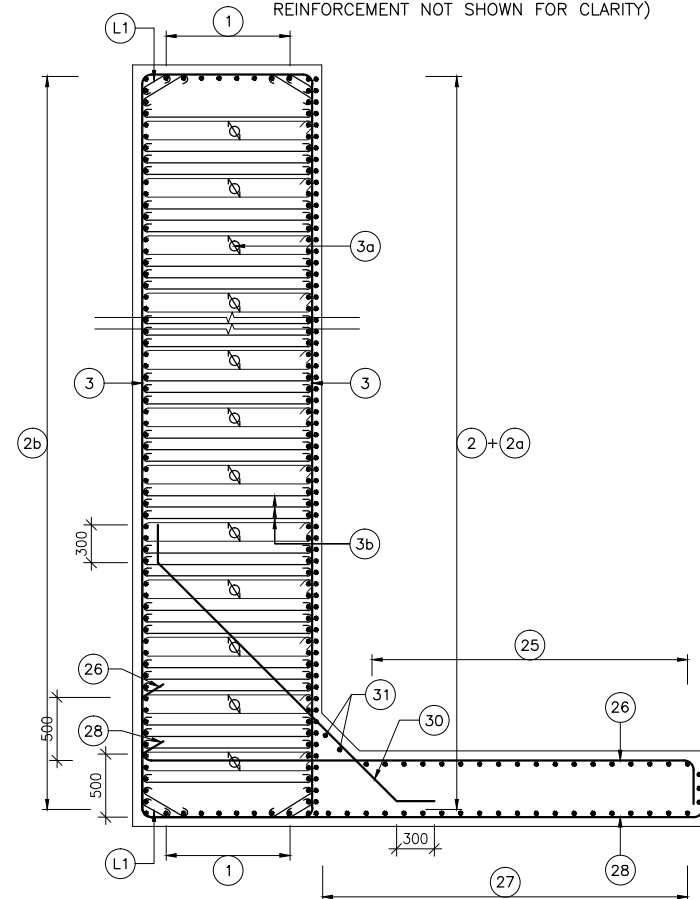
SECTION 1-1
(SCALE 1:75)



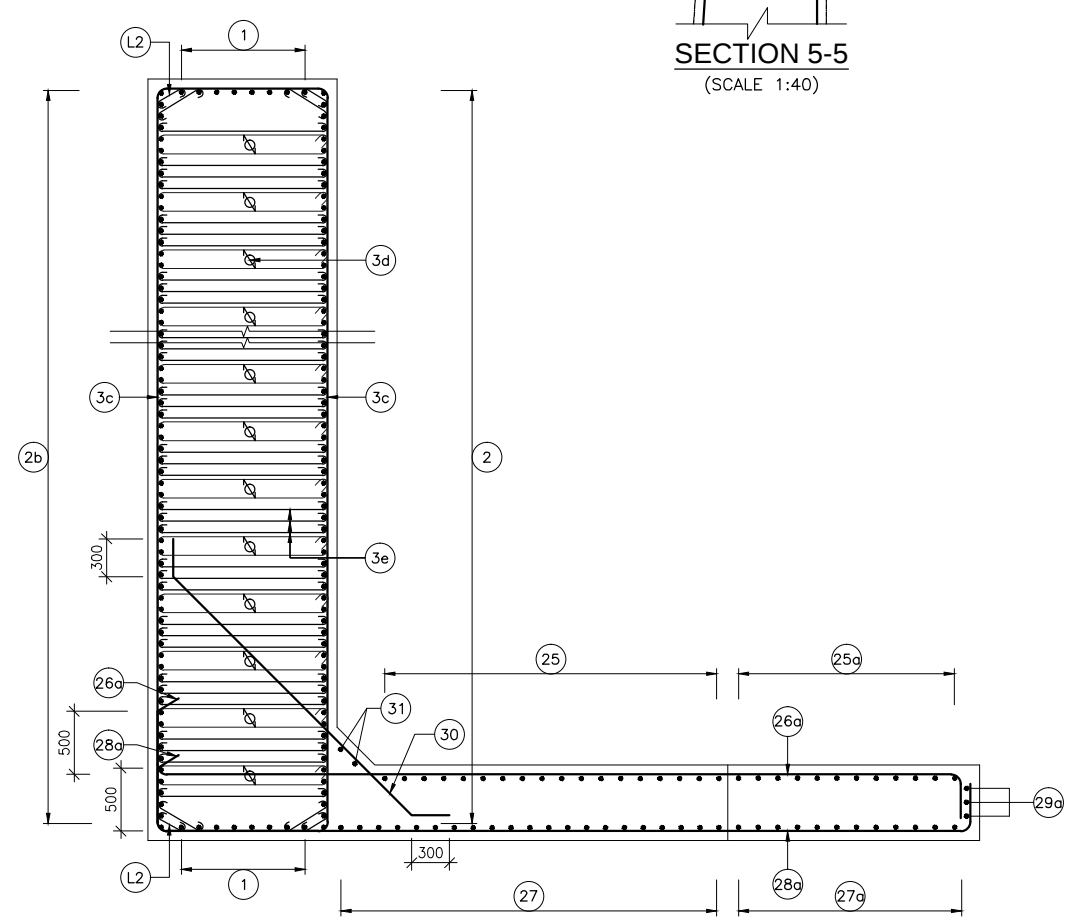
FOUNDATION PLAN
(SCALE 1:75)



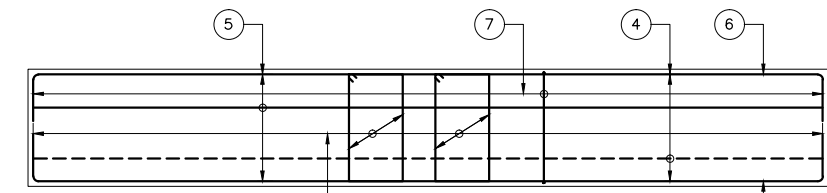
SECTION 4-4
(SCALE 1:75)
(FOUNDATION REINFORCEMENT & CORBEL
REINFORCEMENT NOT SHOWN FOR CLARITY)



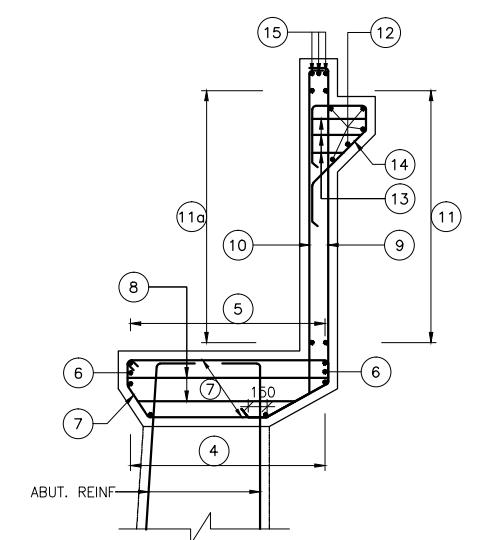
SECTION 2-2
(SCALE 1:40)



SECTION 3-3
(SCALE 1:40)

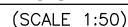


VIEW 6-6
SHOWING ABUTMENT CAP REINF.
(SCALE 1:75)



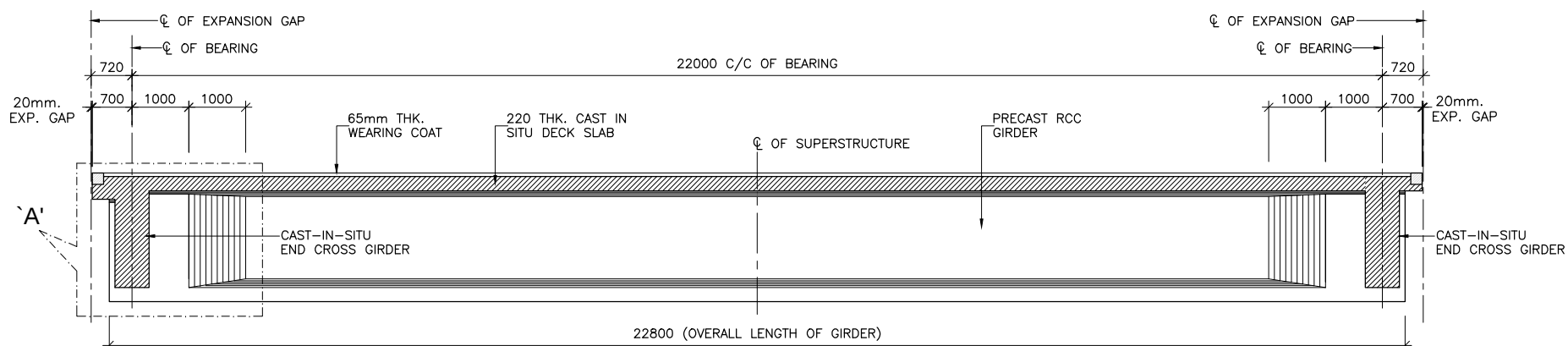
SECTION 5-5
(SCALE 1:40)

EMPLOYER		PROJECT	DESIGN CONSULTANT		Prepared By	Pardeep	PARDEEP	DRAWING TITLE:	Scale:	Date: JUNE-2018
	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) Detailed Design 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		AGNIMITA DAS	REINFORCEMENT DETAILS OF ABUTMENT, DIRT WALL, RETURN WALL, PEDESTAL AND SEISMIC STOPPER FOR MINOR BRIDGE AT CH:- 36+455KM OVER GALAUDI KHOLA PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 1 OF 2)
					Checked By		P.K.KHAN			
					Approved By		B.N.SINGH	Drawing No.: NIRTP/NAG-MUG/GALAUDI /SUB-02		

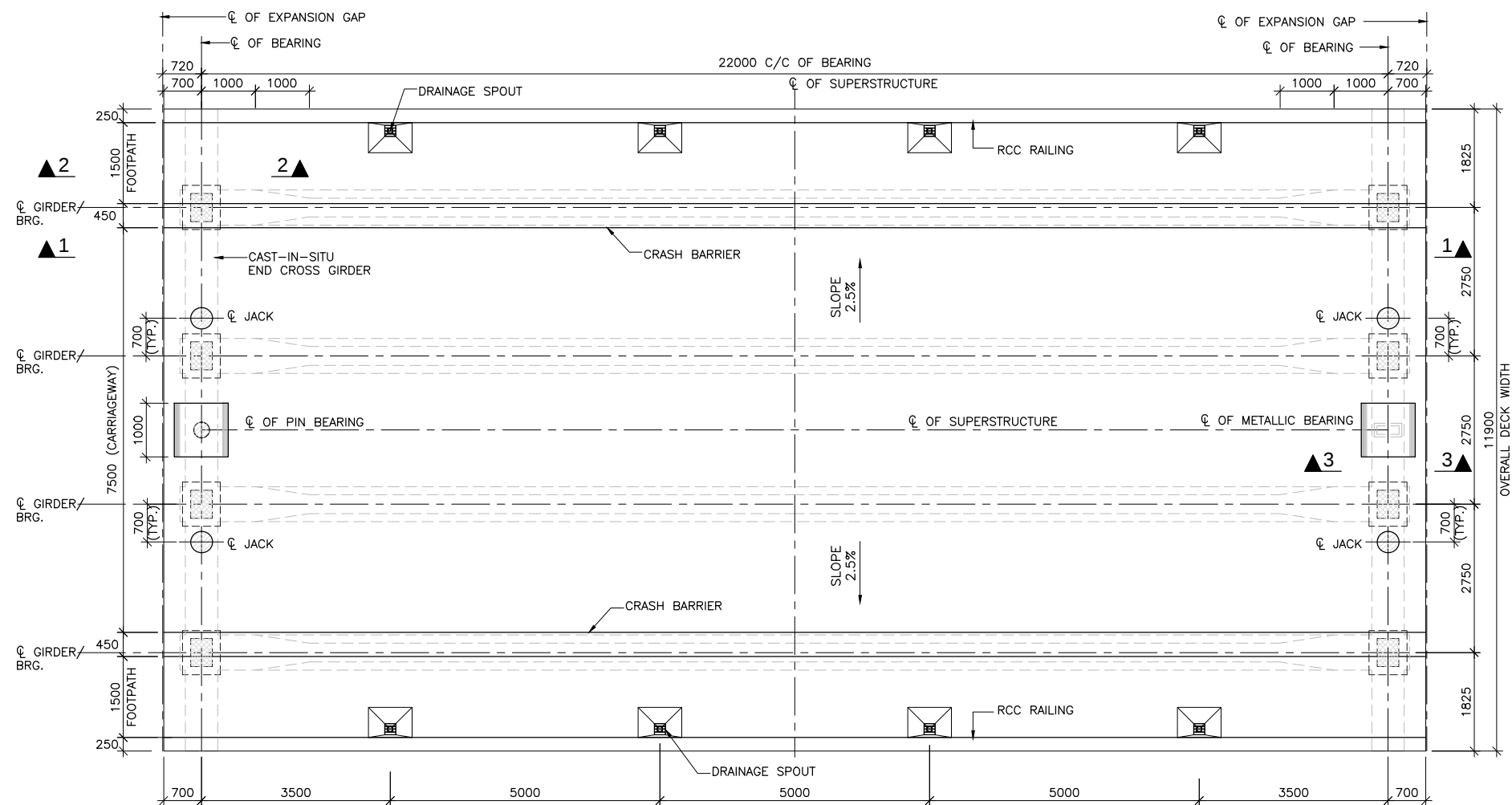


LONGITUDINAL
SEISMIC

=====	EARTH FACE/BOTTOM FACE
-----	NON EARTH FACE/TOP FACE
=====	



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:-

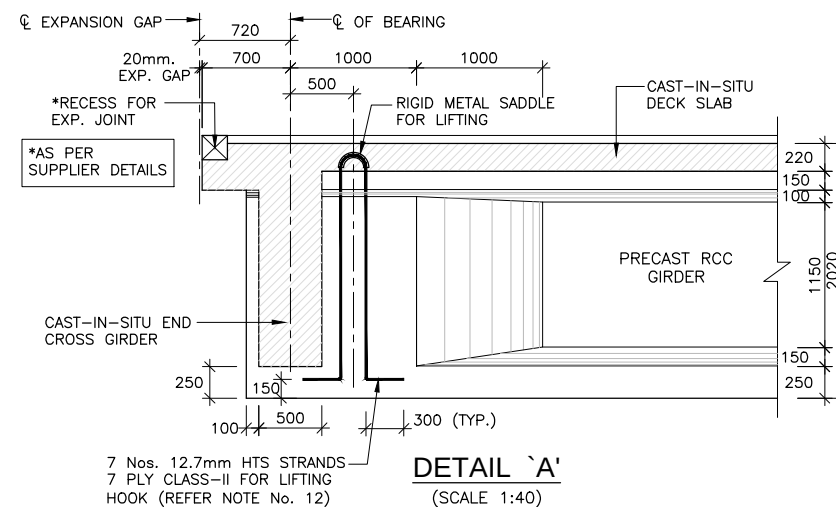
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSIONS SHALL BE SCALED.
3. THE BRIDGE HAS BEEN DESIGNED FOR TWO LANE TRAFFIC FOR LIVE LOAD COMBINATIONS OF CLASS A AND 70R WITH FOOTPATH LIVE LOAD. OR IRC SV VEHICLE WITH FOOTPATH LIVE LOAD. OR 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. UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED (TMT), HYSD BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
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**.

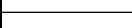
SEQUENCE OF CONSTRUCTION:-

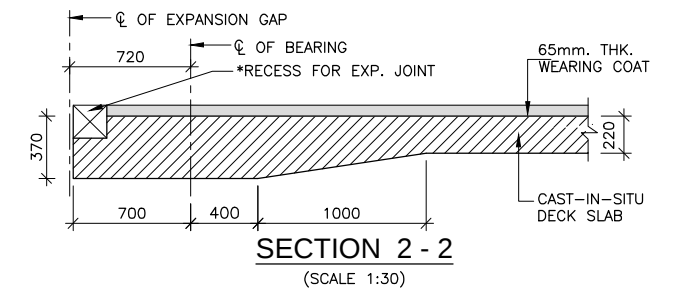
AGE OF GIRDER (IN DAYS)	ACTIVITY	STRENGTH OF CONC. (IN MPa)
0	CASTING OF LONGITUDINAL GIRDER AT CASTING YARD WITH PORTION OF DIAPHRAGM	-
14 to 28	POSITION OF LONGITUDINAL GIRDER ON TEMPORARY BRGS. AND HOLD THEM IN POSITION BY LATERAL BRACING. REINF. OF DECK SLAB & END DIAPHRAGM WILL BE FIXED IN POSITION	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:-

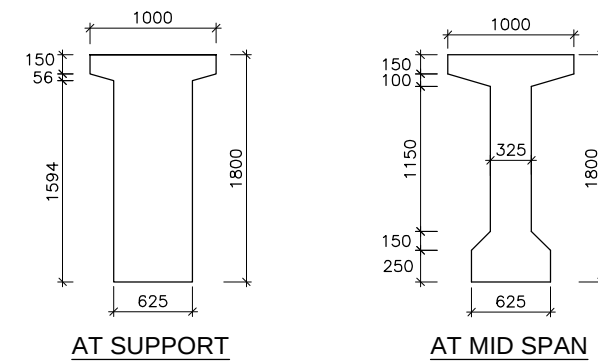
1. REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/02
2. REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/03
3. REINFORCEMENT DETAILS OF RCC DECK SLAB:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/04(SHEET 1&2)
4. DETAILS OF LOAD AND FORCES FOR POT/PTEF BEARINGS: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



EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		K.M.JOHR	DRAWING TITLE: DIMENSION DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE EFFECTIVE SPAN : 22.00m	Scale:	Date: JUNE-2018
	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) Detailed Design 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.: NIRTPP/NAG-MUG/GALAUDI/RCC-G/22m/01



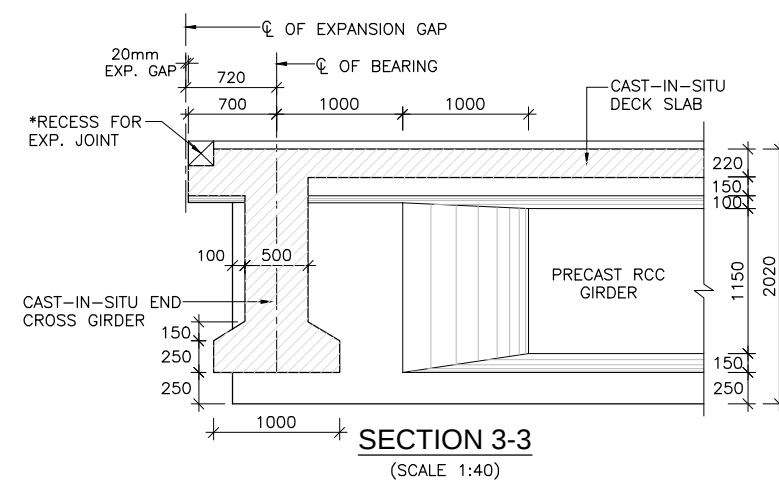
AT MID SPAN



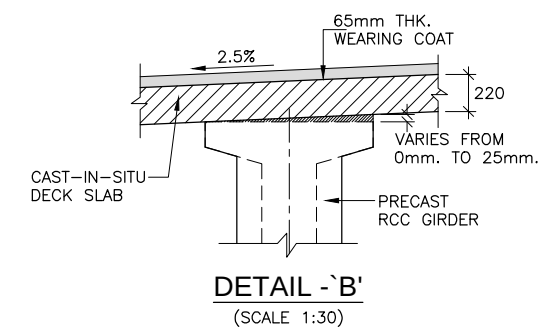
DETAIL - 'D'

(SCALE 1:20)

DETAIL - 'D'
(SCALE 1:20)



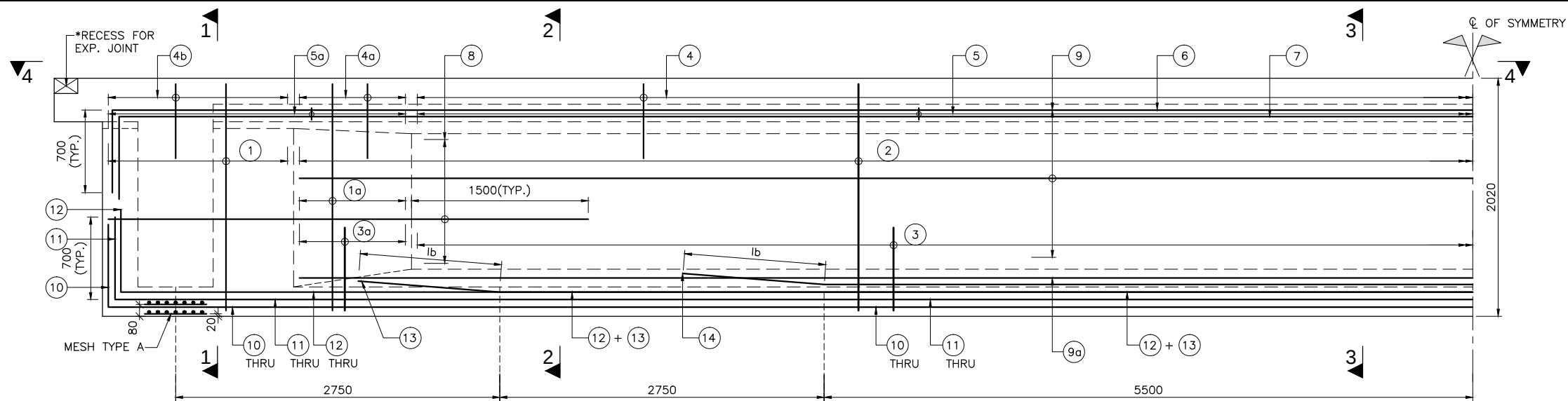
SECTION 3-3
(SCALE 1:40)



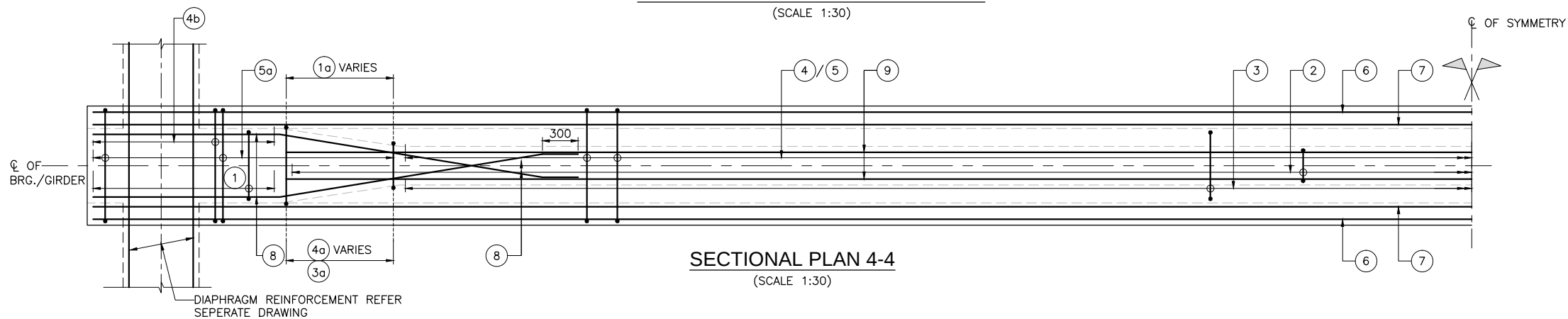
DETAIL - 'C'

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

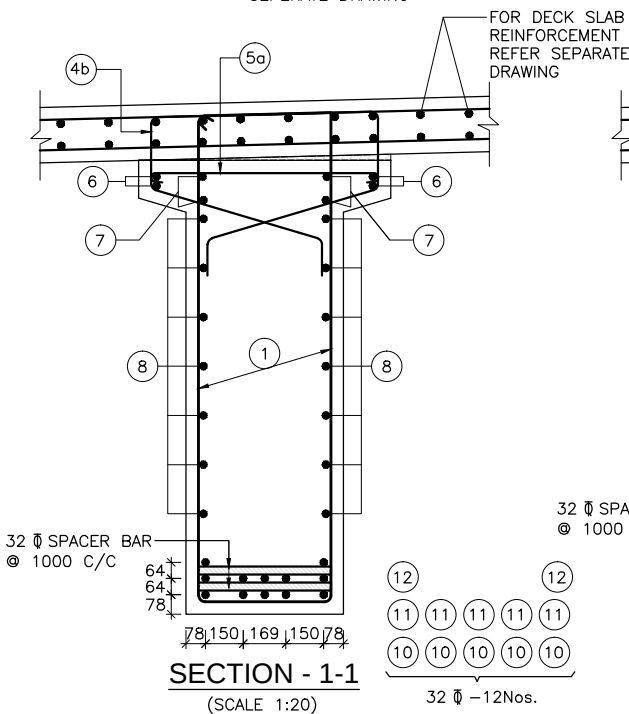
37



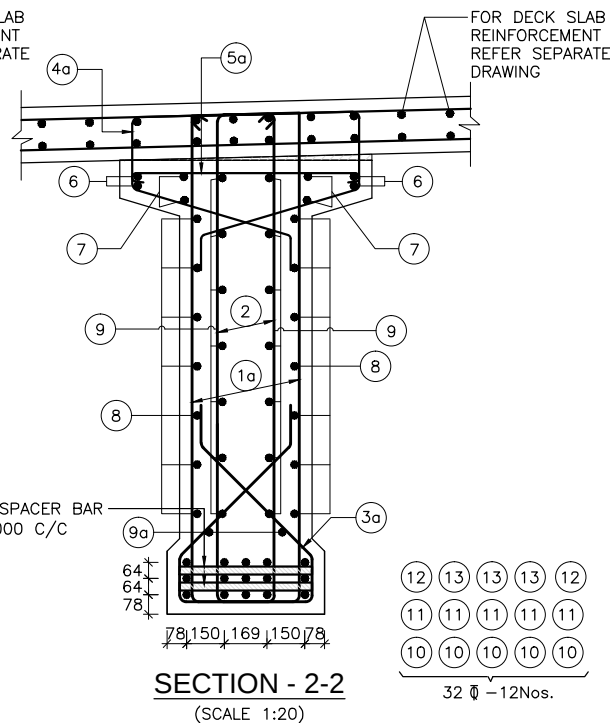
SECTIONAL ELEVATION OF GIRDER
(SCALE 1:30)



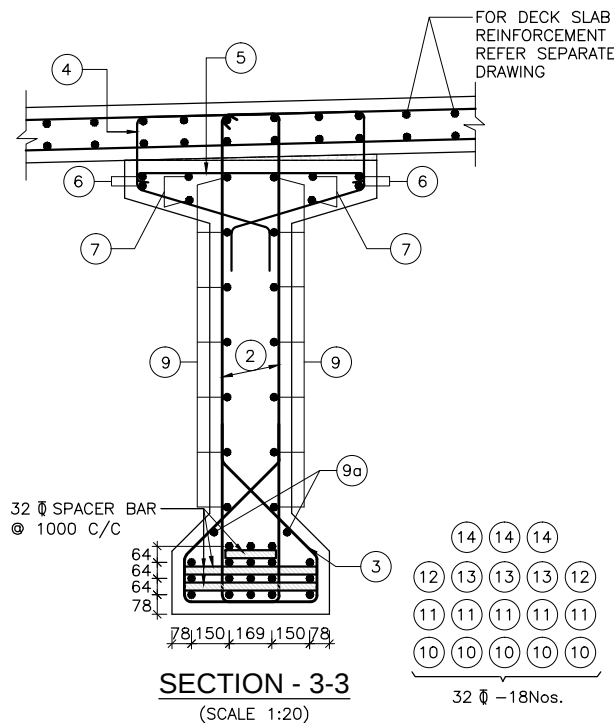
SECTIONAL PLAN 4-4
(SCALE 1:30)



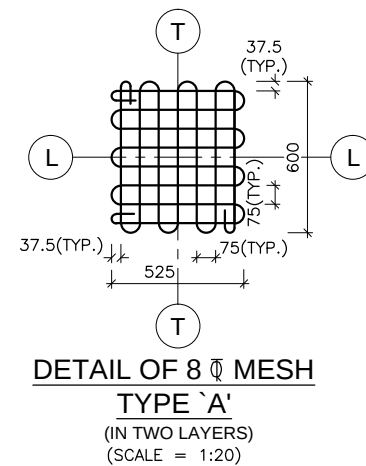
SECTION - 1-1
(SCALE 1:20)



SECTION - 2-2
(SCALE 1:20)



SECTION - 3-3
(SCALE 1:20)



DETAIL OF 8 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)

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

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

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

$$\alpha l = 1.4\ FOR\ 33\% < p \leq 50\%$$
(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 (1.43)

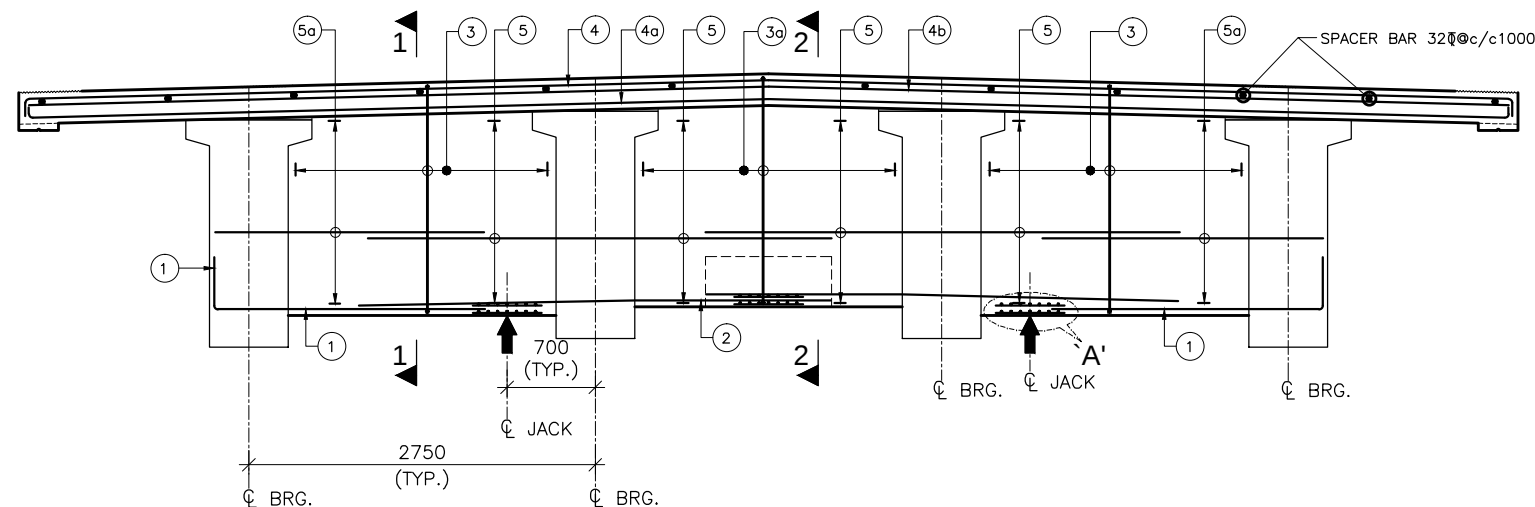
REFERENCE DRAWINGS:-

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

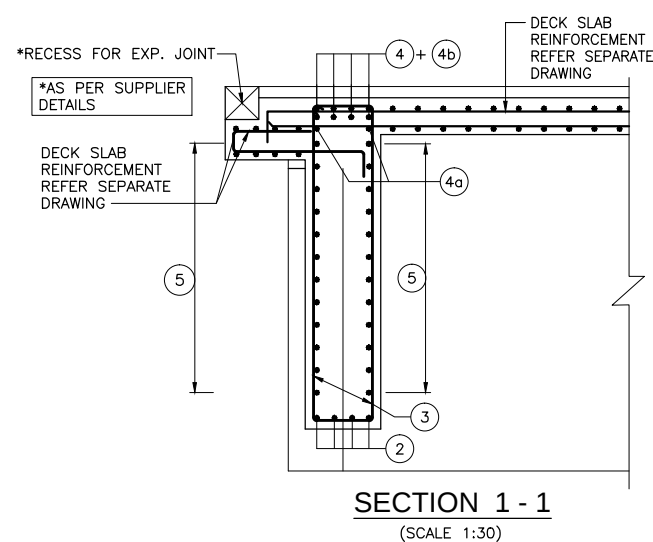
SCHEDULE OF REINFORCEMENT

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.		

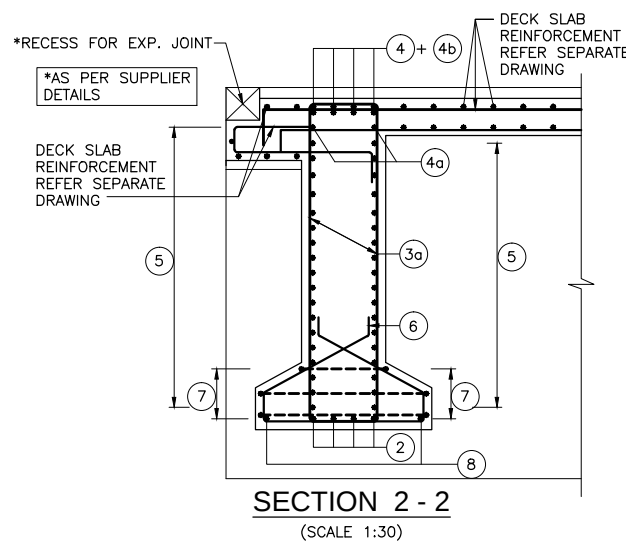
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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	K.M. JOHRI	V. CHAUDHARY	P.K. KHAN	B.N. SINGH	REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER EFFECTIVE SPAN : 22.00m	As Shown	JUNE-2018
							Drawing No.:		
							NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/02		



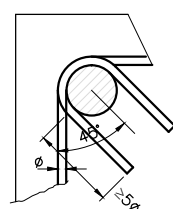
SECTIONAL ELEVATION OF END DIAPHRAGM
(SCALE 1:40)



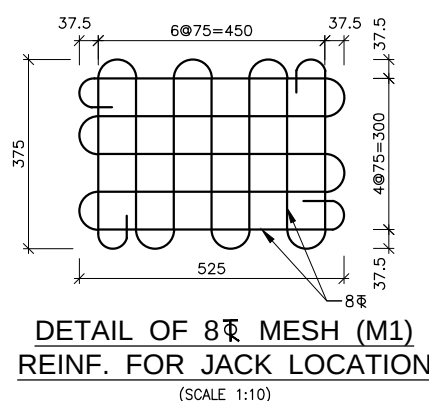
SECTION 1 - 1
(SCALE 1:30)



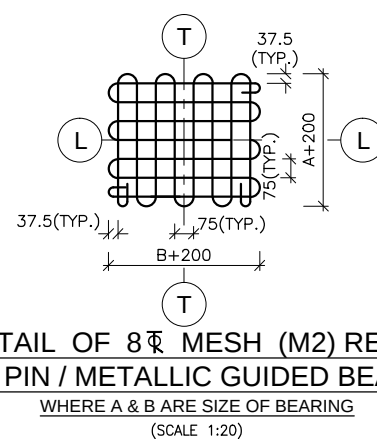
SECTION 2 - 2
(SCALE 1:30)



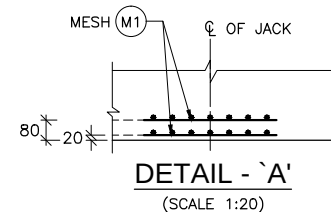
TYPICAL DETAIL INDICATING
ANCHORAGE OF STIRRUP
(SCALE 1:30)



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



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



DETAIL - 'A'
(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 $(\frac{100}{\phi})$

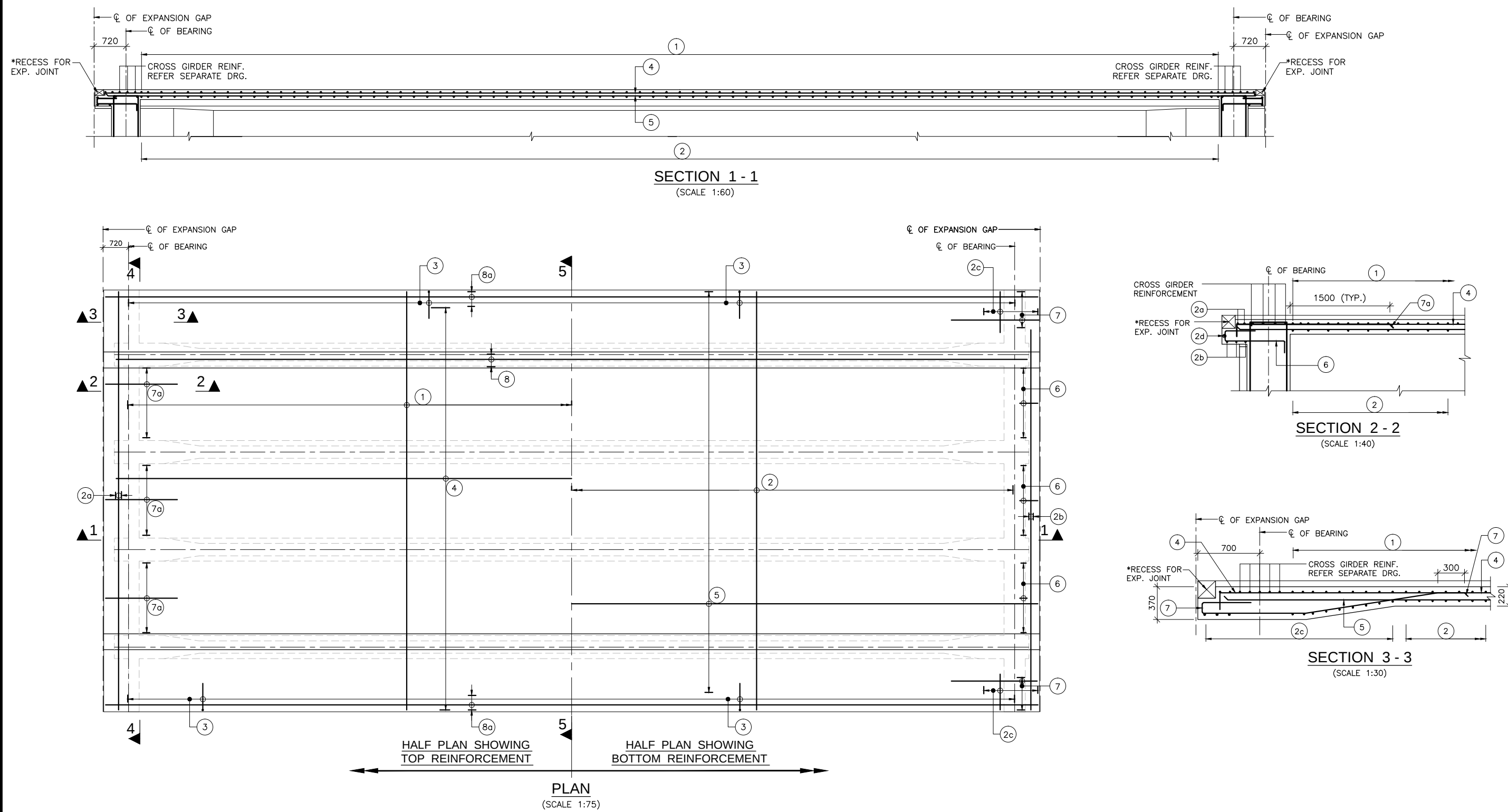
REFERENCE DRAWINGS:-

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

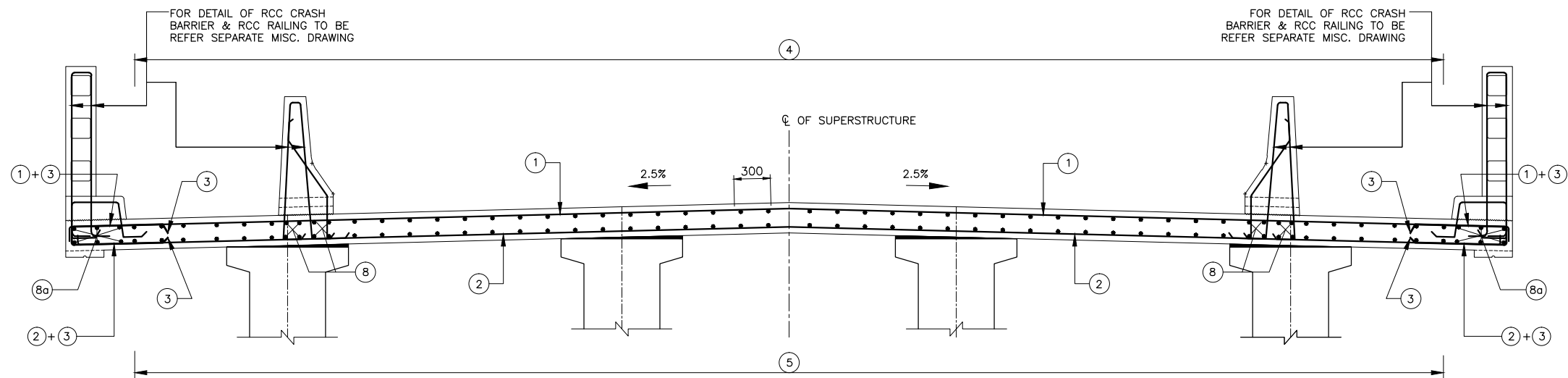
REINFORCEMENT SCHEDULE FOR END DIAPHRAGM

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

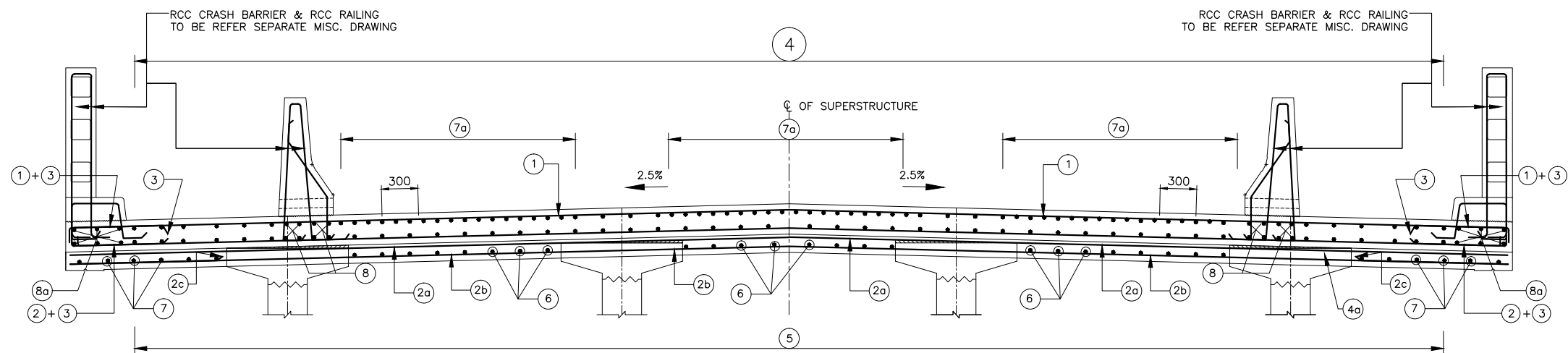
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date:
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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 END CROSS GIRDER EFFECTIVE SPAN : 22.00m Drawing No.: NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/03	As Shown	JUNE-2018



EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 22.00m	Scale:	Date: JUNE-2018
 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) Detailed Design 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		(SHEET 1 OF 2)	
				Checked By		P.K.K.KHAN				
				Approved By		B.N.SINGH				
						Drawing No.: NIRTP/NAG-MUG/GALAUDI/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:-

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)

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

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

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

$$\alpha l = 1.4\ FOR\ 33\% < p \leq 50\%$$

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

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

$$l_b = k \phi$$

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

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

$$k = 34\ FOR\ M40\ (Fe500D)$$
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 $(\frac{100}{\phi})$
6. RECESS FOR EXPANSION JOINT, AS PER SUPPLIER DETAILS.

REFERENCE DRAWINGS:-

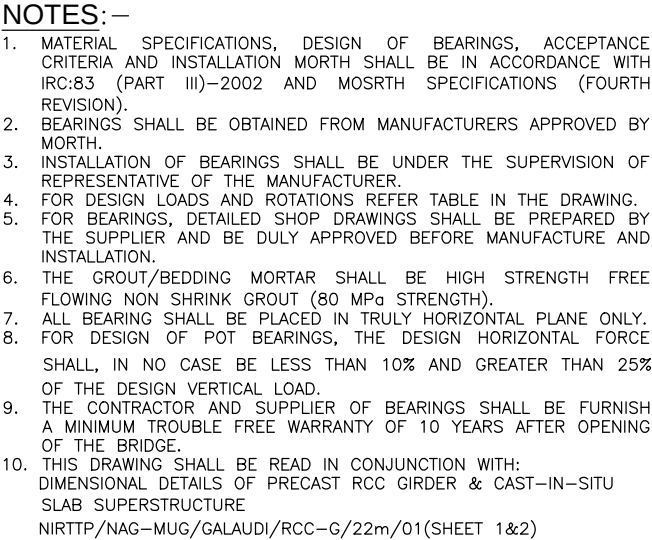
1. DIMENSIONAL DETAILS OF PRECAST RCC GIRDER & CAST-IN-SITU SLAB SUPERSTRUCTURE:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/01
2. REINFORCEMENT DETAILS OF LONGITUDINAL GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/02
3. REINFORCEMENT DETAILS OF END CROSS GIRDER:
-NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/03
4. DETAILS OF LOAD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

REINFORCEMENT SCHEDULE

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

EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHRI	DRAWING TITLE: REINFORCEMENT DETAILS OF DECK SLAB EFFECTIVE SPAN : 22.00m Drawing No.: NIRTP/NAG-MUG/GALAUDI/RCC-G/22m/04	Scale:	Date: JUNE-2018	
	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) Detailed Design 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		(SHEET 2 OF 2)
					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				

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



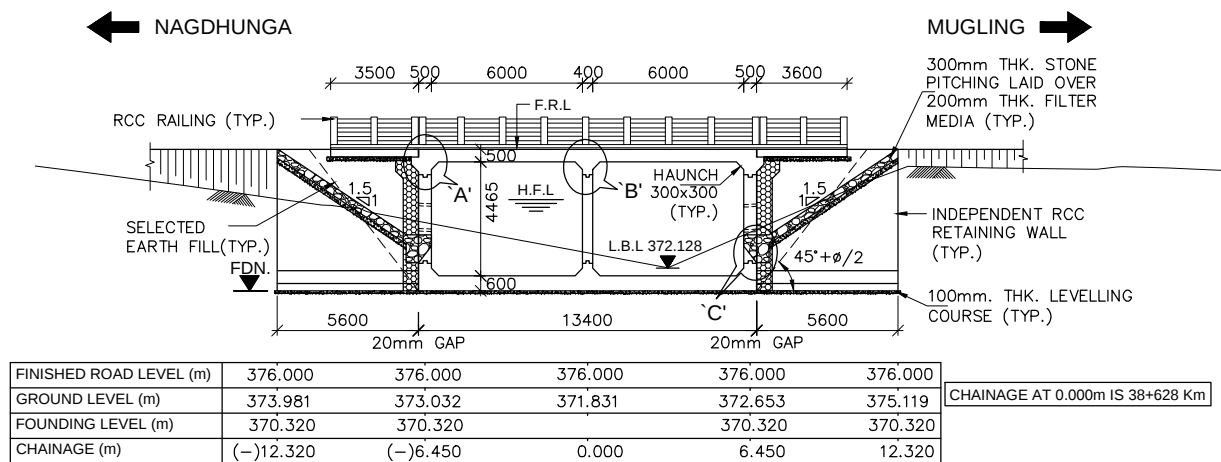
1. STRUCTURE IS LOCATED IN SEISMIC ZONE : V
2. GRADE OF CONCRETE
ABUTMENT CAP. M-30
PEDESTAL M-40

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.	 FREE POT —CUM PTFE	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.	 PIN BEARING	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.	 METALLIC GUIDE BEARING	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	—	

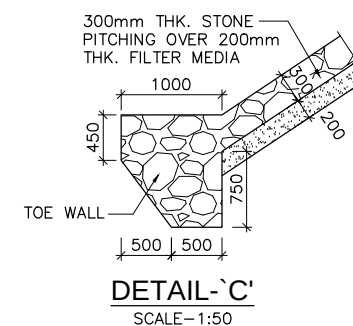
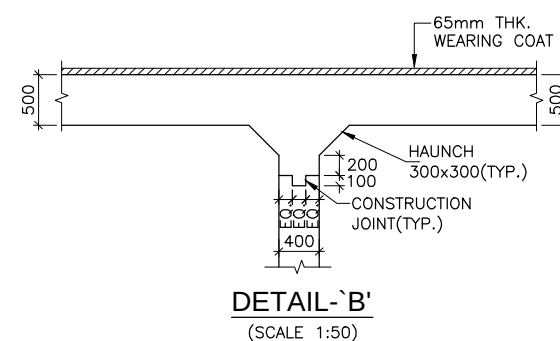
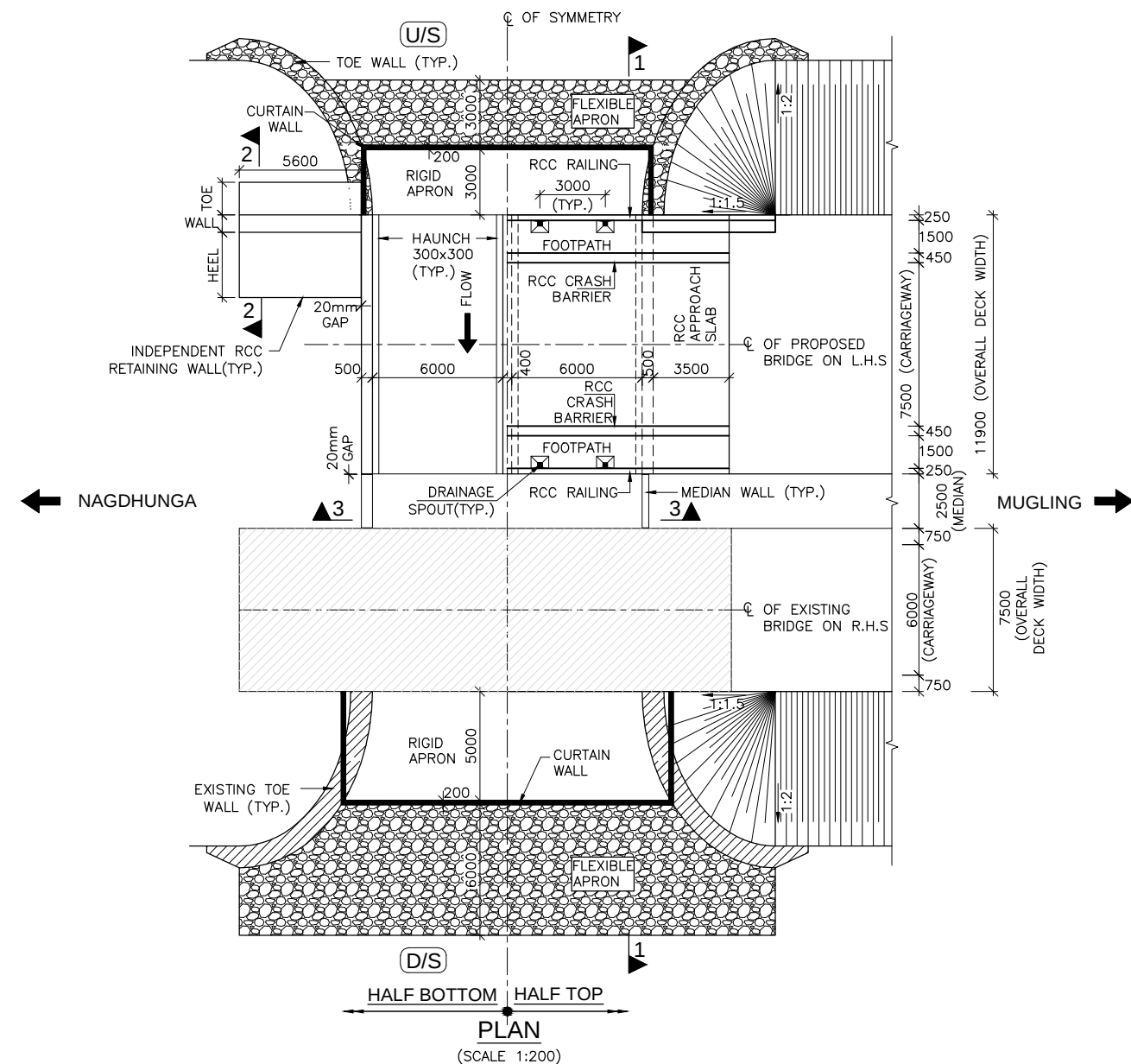
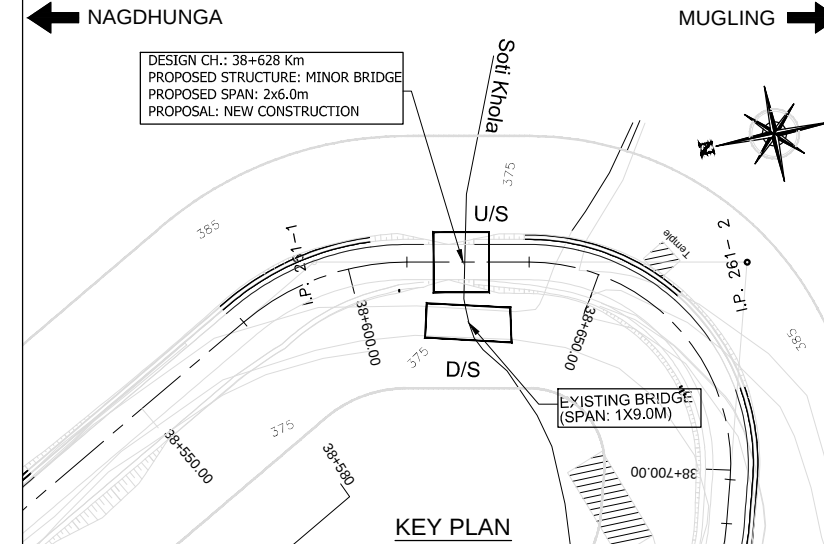
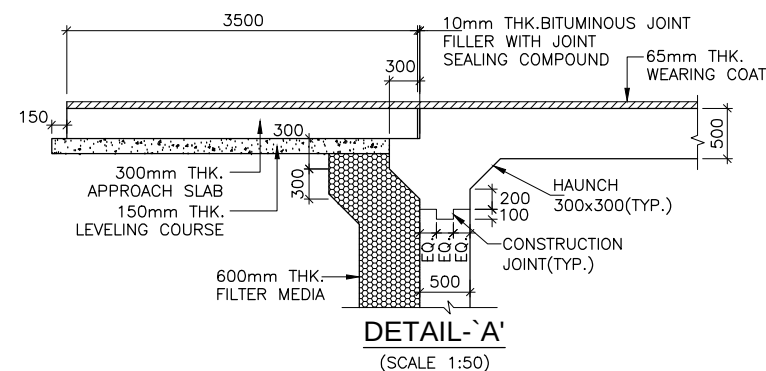
- Mugling Road and Bridges

SOTI KHOLA BRIDGE

CHAINAGE : 38+628



LONGITUDINAL ELEVATION OF PROPOSED BRIDGE
(SCALE 1:200)



LEGEND:

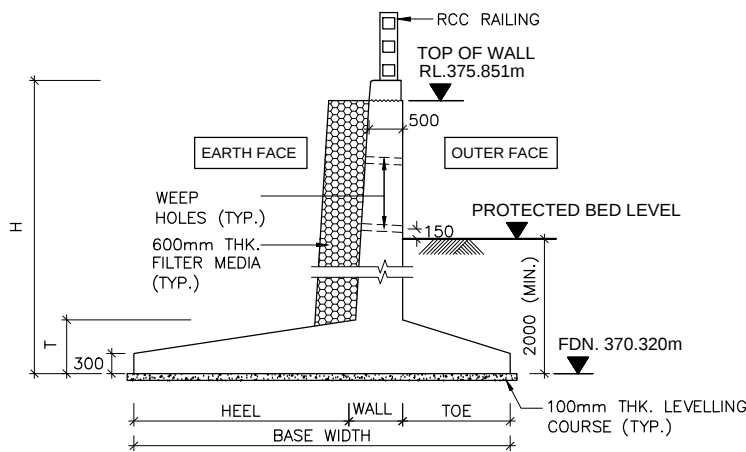
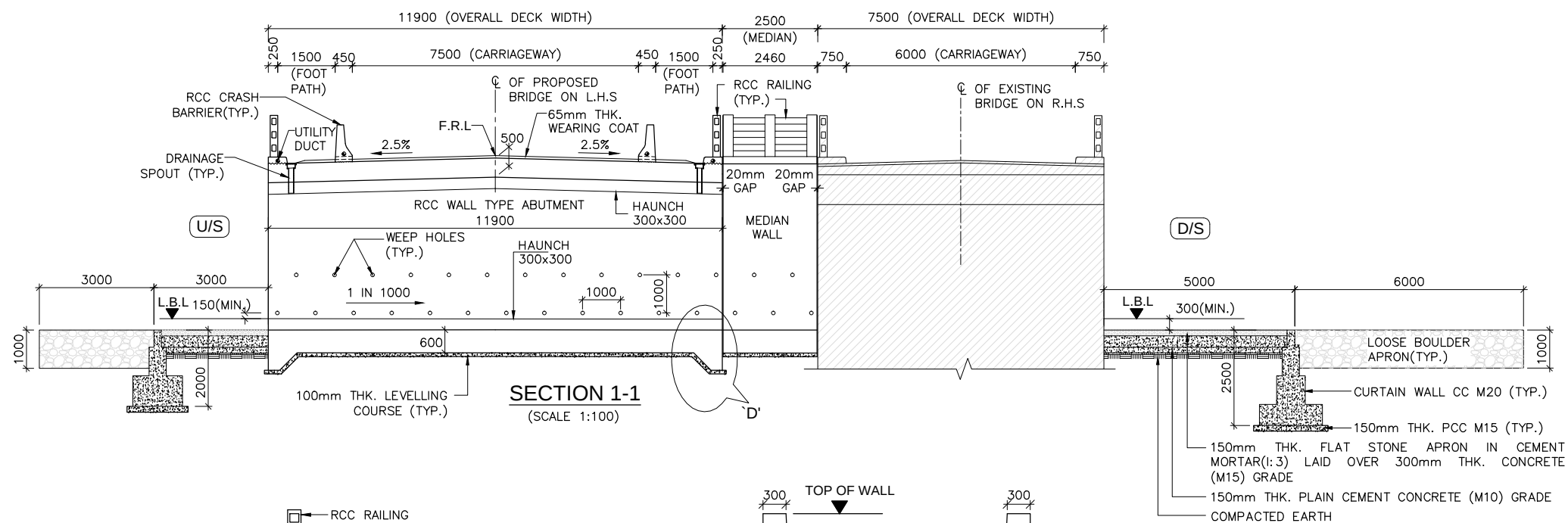
F.R.L	:	FINISHED ROAD LEVEL
H.F.L	:	HIGH FLOOD LEVEL
CL	:	CENTER LINE
LVL.	:	LEVEL
TYP.	:	TYPICAL
THK.	:	THICK
D/S	:	DOWNSTREAM
U/S	:	UPSTREAM
G.L	:	GROUND LEVEL
L.B.L	:	LOWEST BED LEVEL
FDN.	:	FOUNDING LEVEL
M.S.L	:	MAXIMUM SCOUR LEVEL
BH	:	BORE HOLE
EQ.	:	EQUAL
RCC	:	REINFORCED CEMENT CONCRETE
PCC	:	PLAIN CEMENT CONCRETE
CC	:	CEMENT CONCRETE
CONC.	:	CONCRETE
RL	:	REDUCED LEVEL
EXISTING	:	
PROPOSED	:	

HYDRAULIC DATA:-

DESIGN DISCHARGE	-	32 cumec
VELOCITY OF FLOW	-	1.87m/s
H.F.L	-	373.938m
M.S.L	-	369.380

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

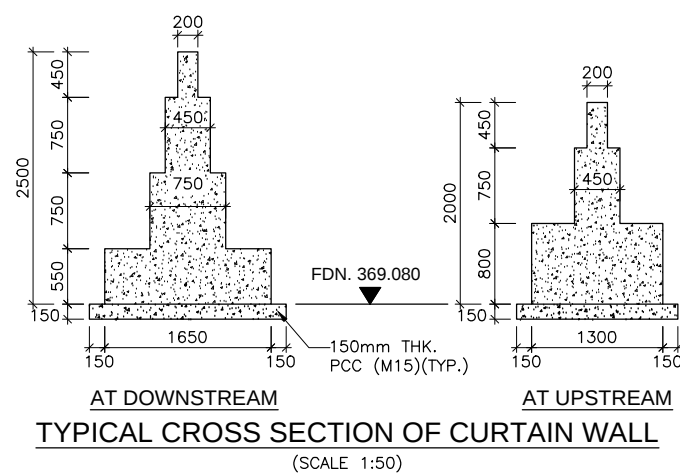
EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	Designed By	Checked By	Approved By	M.L.GUPTA	NEELAM N.	P.K.KHAN	B.N.SINGH	DRAWING TITLE:	Scale:	Date: JUNE-2018
Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTPP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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									GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 38+628KM OVER SOTI KHOLA (2/6.0mx4.465m) PACKAGE-III (GALCHI-BENIGHAT)	As Shown	(SHEET 1 OF 2)
											Drawing No.: NIRTPP/NAG-MUG/SOTI/GAD		



SECTION 2-2

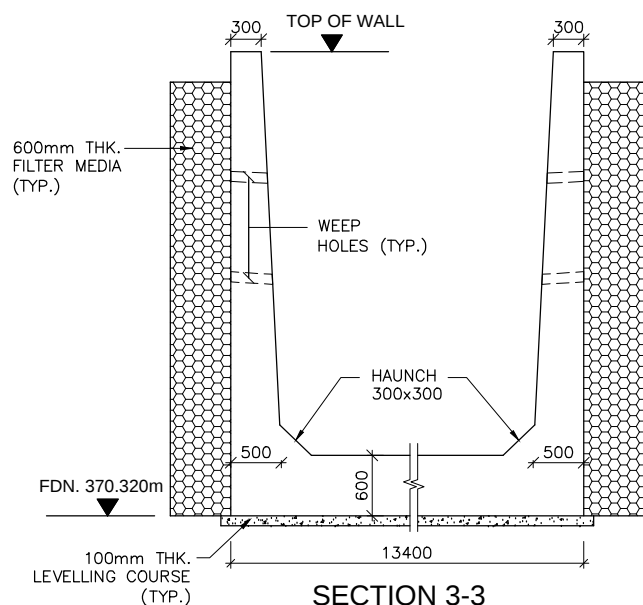
(SCALE 1:75)

REFER SEPARATE DRAWING FOR DETAILS



TYPICAL CROSS SECTION OF CURTAIN WALL

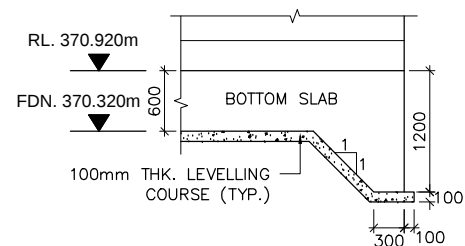
(SCALE 1:50)



SECTION 3-3

(SCALE 1:50)

U-TYPE TROUGH AS MEDIAN WALL



DETAIL 'D'

(SCALE 1:50)

NOTES:-

- ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS 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 CUBES AS FOLLOWS :-

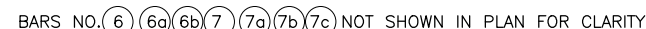
a. LEVELING COURSE (UNDER FOUNDATION)	- M10
b. LEVELING COURSE (UNDER APPROACH SLAB)	- M15
c. BOX STRUCTURE	- M30
d. RETURN/RETAINING WALL	- M30
e. CRASH BARRIER	- M40
f. APPROACH SLAB	- M30
- UNTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED, (TMT) HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION Fe-500D CONFORMING TO IS: 1786.
- 65mm THK. 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 BOX RETURN/RETAINING WALLS AT A SLOPE OF 1 VERTICAL TO 20 HORIZONTAL TOWARDS THE DRAINING FACE.
- WATER TO BE USED IN CONCRETING, & CURING SHALL CONFORM TO CLAUSE 18.4.5 OF IRC:112-2011.
- LAYING, COMPACTION AND EXTENT OF BACKFILL BEHIND BOX AND RETURN/RETAINING WALLS SHALL CONSIST OF SELECTED EARTH CONFORMING TO APPENDIX-6 OF IRC:78-2014 HAVING PROPERTIES $C=0$, $\phi=35^\circ$, $\gamma_d = 20 \text{ KN/m}^3$.
- MINIMUM CLEAR COVER TO OUTER MOST STEEL SHALL BE AS UNDER:-

(i) EARTH FACE	- 75mm
(ii) NON EARTH FACE	- 50mm
- 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.
- 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.
- WHERE FOUNDATION 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, G.L SHALL BE CONFIRMED AT SITE PRIOR TO EXECUTION.
- FOR APPROACH SLAB, DRAINAGE SPOUTS, CRASH BARRIER, PROTECTION WORK, RETAINING WALL DETAILS, REFER SEPARATE DRAWINGS.
- 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.

REFERENCE DRAWINGS:-

- REINFORCEMENT DETAILS OF RCC BOX:
 - NIRTP/NAG-MUG/SOTI/REINF-01 (SHEET 1, 2 & 3)

EMPLOYER	PROJECT	DESIGN CONSULTANT	Prepared By	M.L.GUPTA	DRAWING TITLE:	Scale:	Date: JUNE-2018
 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) Detailed Design 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 Checked By Approved By	NEELAM N. P.K.KHAN B.N.SINGH	GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE AT CH: 38+628KM OVER SOTI KHOLA (2/6.0mx4.465m) PACKAGE-III (GALCHI-BENIGHAT) Drawing No.: NIRTP/NAG-MUG/SOTI/GAD	As Shown	(SHEET 2 OF 2)



REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE
(1)	16 Φ 200 c/c	
(1a)	16 Φ 200 c/c	
(1b)	16 Φ 200 c/c	
(2)	12 Φ 150 c/c	
(3)	12 Φ 150 c/c	
(4)	12 Φ 200 c/c	
(5)	16 Φ 200 c/c	
(6)	12 Φ 2x4 NOS.	
(6a)	12 Φ 8x2 NOS.	
(6b)	12 Φ 4x8 NOS.	
(7)	12 Φ 200 c/c	
(7a)	12 Φ 200 c/c	
(7b)	12 Φ 200 c/c	
(7c)	12 Φ 200 c/c	
(8)	16 Φ 200 c/c	
(9)	12 Φ 150 c/c	
(10)	16 Φ 200 c/c	
(10a)	16 Φ 200 c/c	
(11)	12 Φ 150 c/c	
(11a)	12 Φ 150 c/c	
(12)	12 Φ 150 c/c	
(13)	12 Φ 200 c/c	
(14)	16 Φ 200 c/c	
(15)	12 Φ 150 c/c	
(16)	16 Φ 200 c/c	
(17)	12 Φ 2x12 NOS.	
(18)	12 Φ 5x2 NOS.	
(19)	12 Φ 100 c/c	
(20)	3NOS. 2L-12 Φ STIRRUPS	
(21)	12 Φ 150 c/c	
(22)	12 Φ 2x2 NOS.	

a = 0.3A OR lb, WHICHEVER IS GREATER

b = 0.3B OR lb, WHICHEVER IS GREATER

c = 0.15A

A = CLEAR SPAN

B = CLEAR HEIGHT

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED. NO DIMENSION SHALL BE SCALED.
 2. CONCRETE SHALL BE DESIGN MIX WITH A MINIMUM CHARACTERISTIC STRENGTH OF 30MPa FOR RCC BOX STRUCTURE.
 3. CLEAR COVER TO OUTER MOST STEEL SHALL BE AS FOLLOWS:-

EARTH FACE	– 75mm
OTHER FACE	– 50mm
 4. UNSTENSIONED REINFORCEMENT SHALL BE THERMO MECHANICALLY TREATED, (TMT) HIGH YIELD STRENGTH DEFORMED BARS OF GRADE DESIGNATION FE-500D CONFORMING TO IS: 1786.
 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 $l_s = \alpha l_{bnet}$

α	= 1.0 FOR $p \leq 25\%$
α	= 1.15 FOR $25\% \leq p \leq 33\%$
α	= 1.4 FOR $33\% \leq p \leq 50\%$

 (IRC:112-2011) (CLAUSE:15.2.3.3)
 DEVELOPMENT LENGTH (l_{bnet})
 $l_{bnet} = \alpha l_b$ ($\alpha = 1.0$)
 $l_b = k \phi$

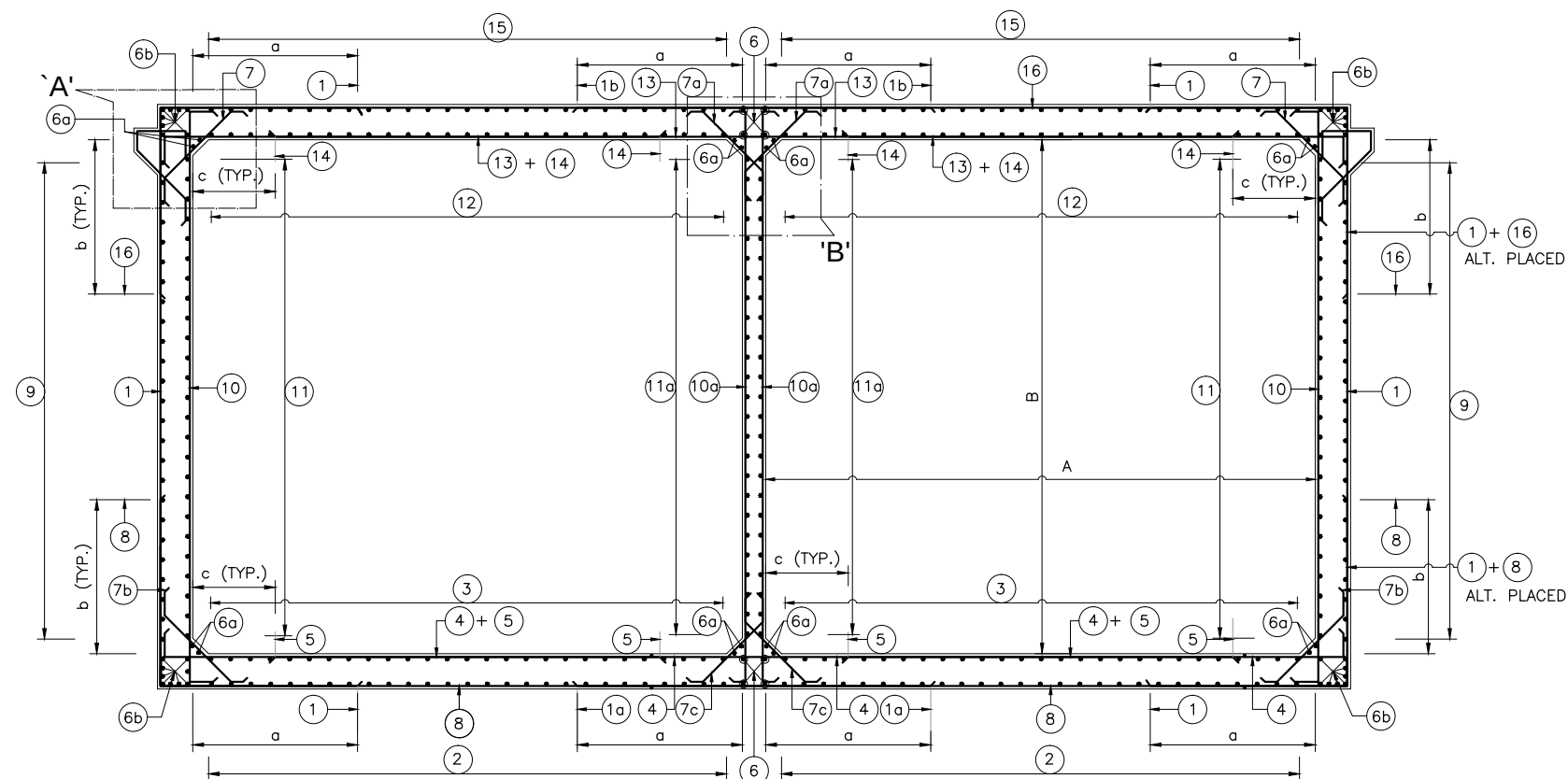
k	= 40 FOR M30 (Fe500D)
k	= 36 FOR M35 (Fe500D)
k	= 34 FOR M40 (Fe500D)
- FOR UNFAVORABLE BOND CONDITION THE l_b SHOULD BE MULTIPLIED BY FACTOR OF 1.43.
 FOR $\phi > 32mm$ l_b SHOULD BE INCREASED BY MULTIPLYING FACTOR OF $(1.25 \times \frac{\phi}{32})$

REFERENCE DRAWINGS:-

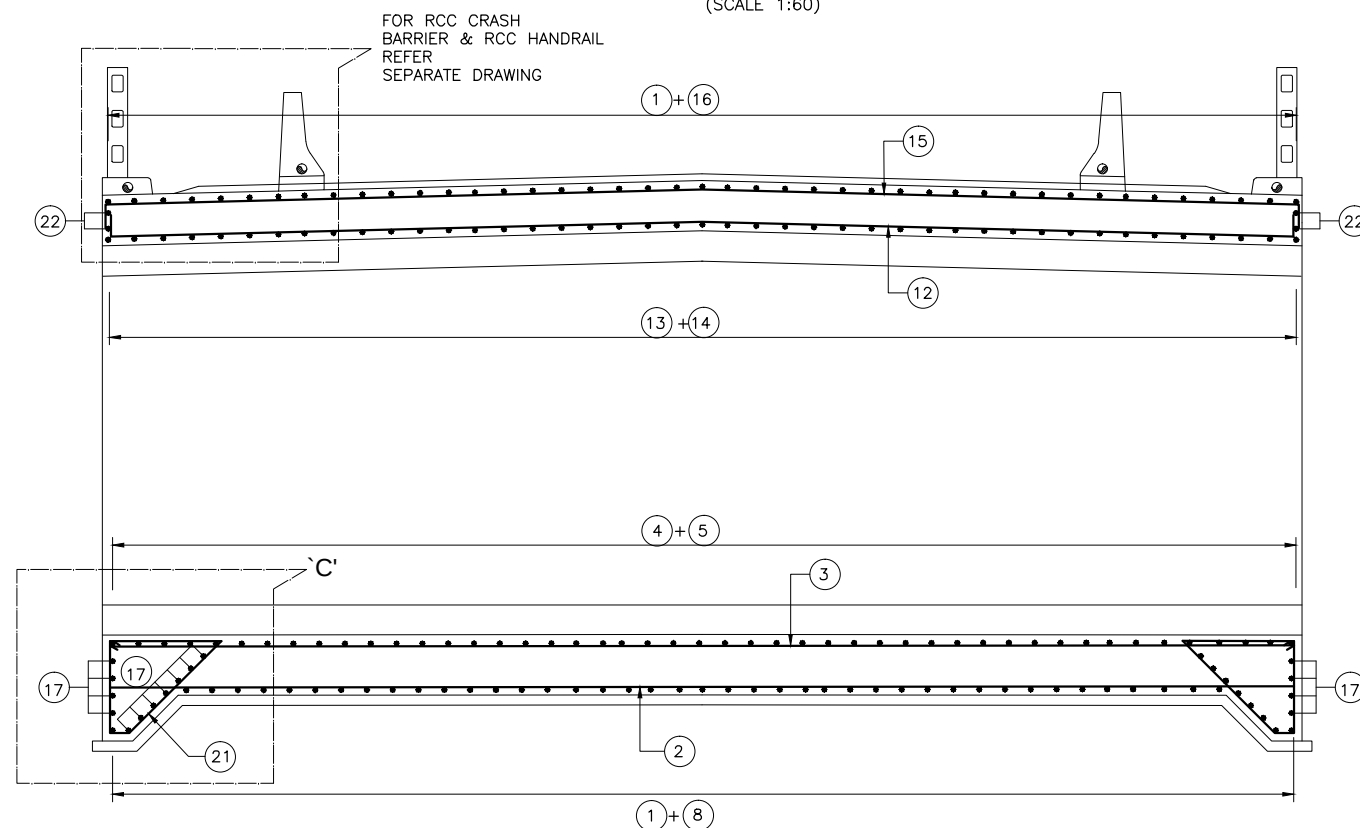
- 1 GENERAL ARRANGEMENT DRAWING FOR MINOR BRIDGE OVER SOTI KHOLA
AT CH:38+628-
NIRTP/NAG-MUG/SOTI/GAD (SHEET 1 & 2)

LEGEND:-

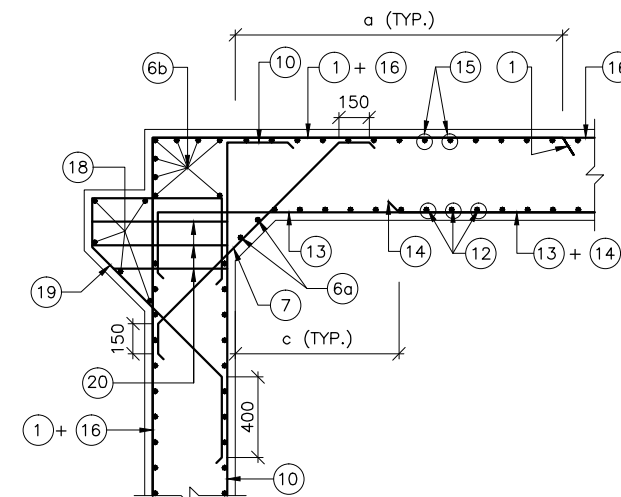
- TOP/OUTER REINFORCEMENT
 _____ BOTTOM/INNER REINFORCEMENT



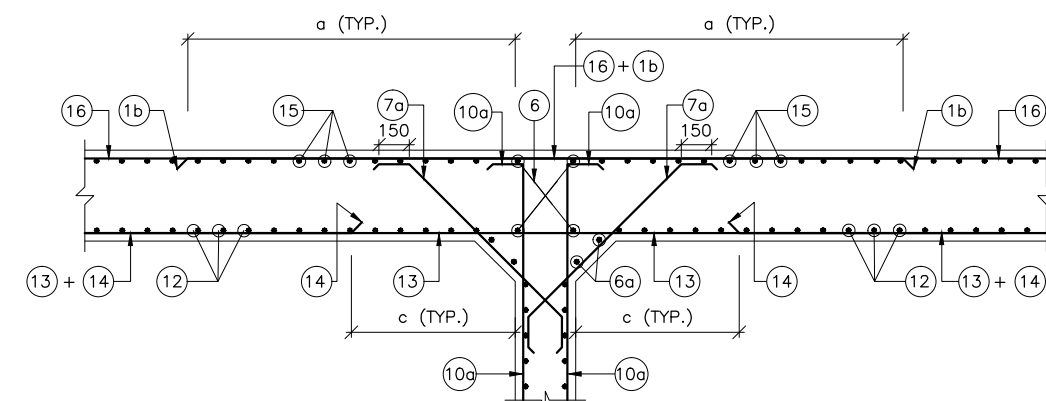
SECTION 1-1
(SCALE 1:60)



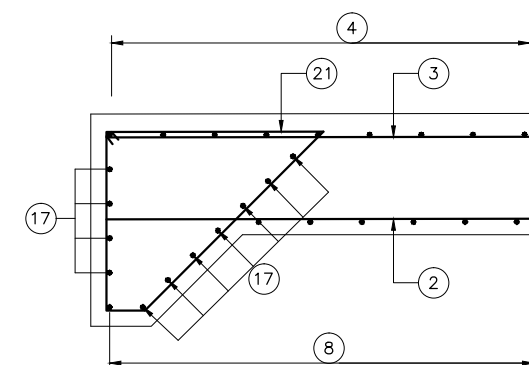
SECTION 2-2
(SCALE 1:50)



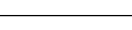
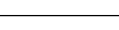
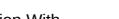
DETAIL AT 'A'
(SCALE 1:25)

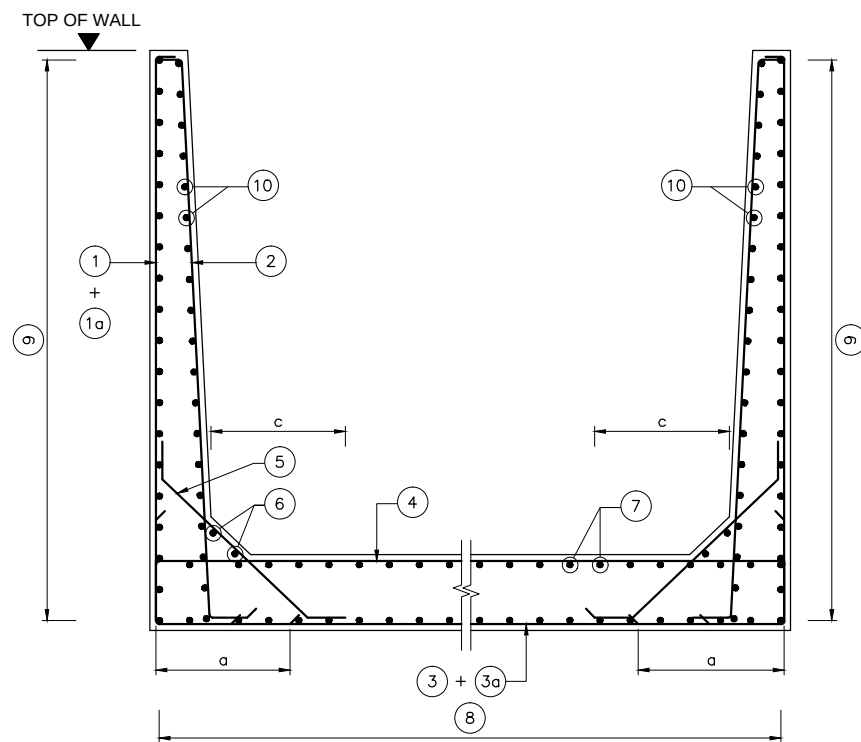


DETAIL AT 'B'
(SCALE 1:25)



DETAIL AT 'C'
(SCALE 1:25)

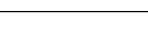
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By		M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF TWO CELL RCC BOX AT CH: 38+628KM PACKAGE-III (GALCHI-BENIGHAT)	Scale: As Shown	Date: JUNE-2018 (SHEET 2 OF 3)
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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		NEELAM N.				
					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				



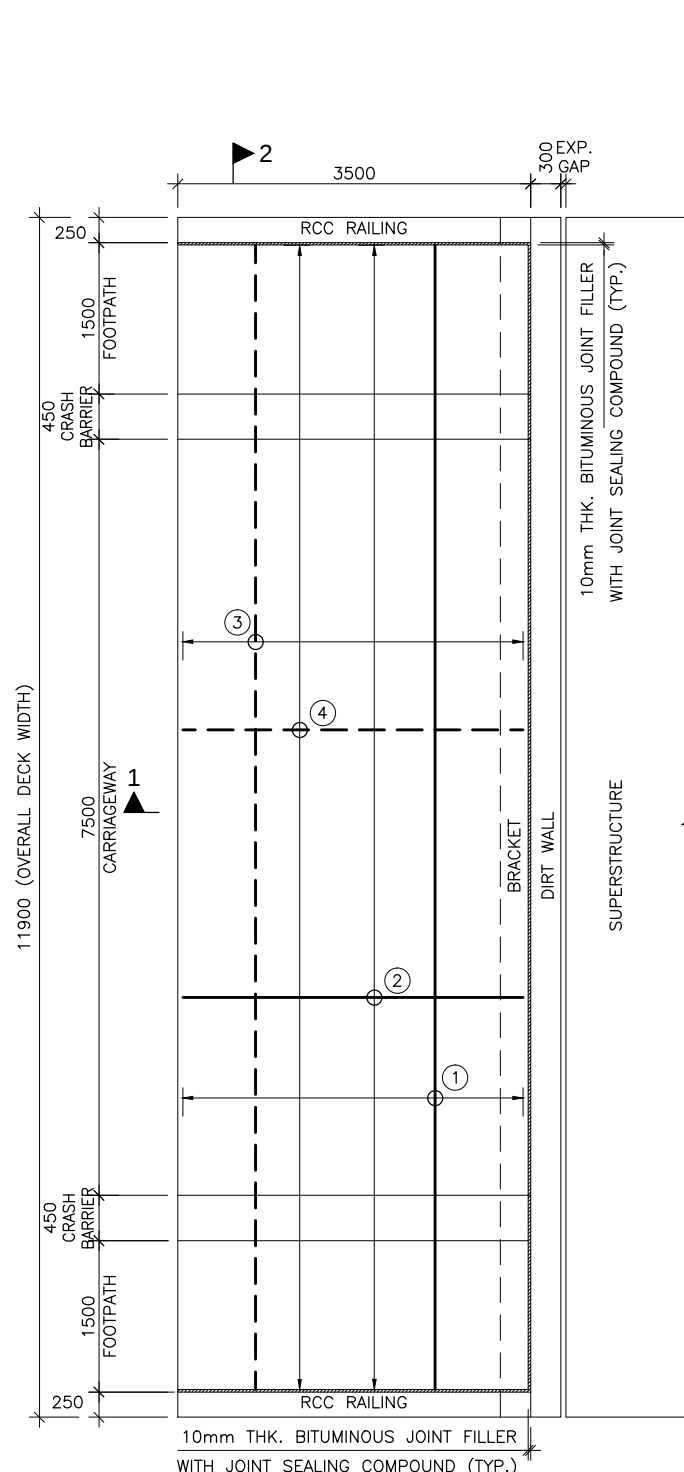
REINFORCEMENT DETAIL FOR U TYPE TROUGH AS
MEDIAN WALL
(SCALE 1:40)

REINFORCEMENT SCHEDULE

BAR MKD.	DESCRIPTION	SHAPE
①	20 ϕ @ 200 c/c	
①a	25 ϕ @ 200 c/c	
②	20 ϕ @ 200 c/c	
③	16 ϕ @ 200 c/c	
③a	20 ϕ @ 200 c/c	
④	12 ϕ @ 100 c/c	
⑤	12 ϕ @ 100 c/c	
⑥	12 ϕ 2x2 NOS.	
⑦	12 ϕ @ 150 c/c	
⑧	12 ϕ @ 150 c/c	
⑨	12 ϕ @ 150 c/c	
⑩	12 ϕ @ 150 c/c	
a = 0.3A OR 1b, WHICHEVER IS GREATER b = 0.3B OR 1b, WHICHEVER IS GREATER c = 0.15A A = CLEAR SPAN B = CLEAR HEIGHT		

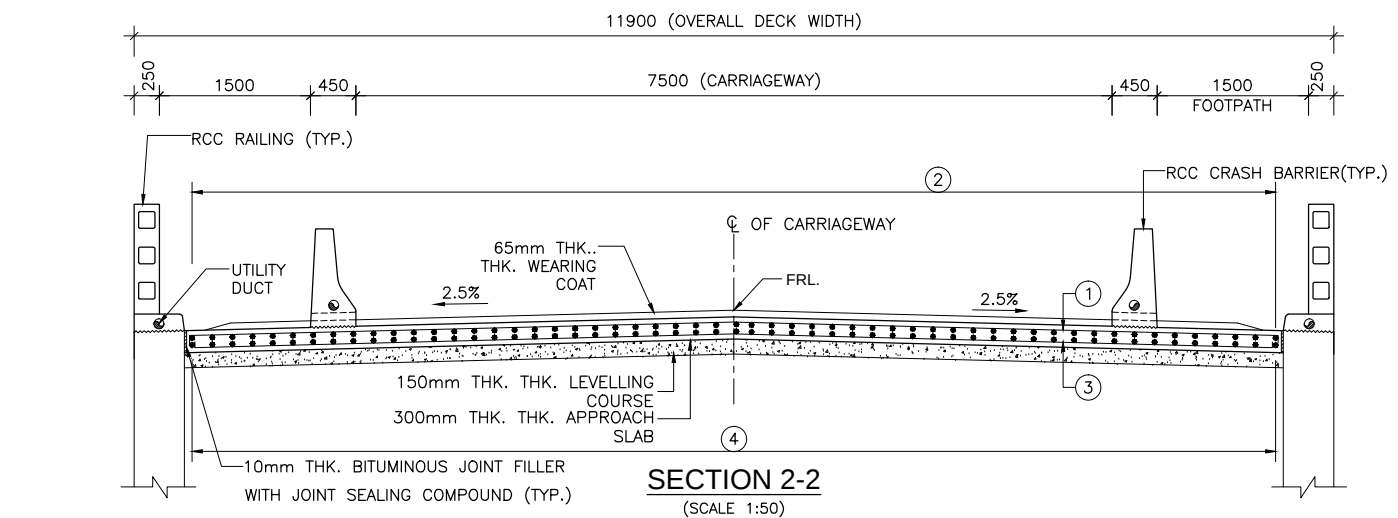
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	M.L.GUPTA	DRAWING TITLE: REINFORCEMENT DETAILS OF TWO CELL RCC BOX AT CH: 38+628KM PACKAGE-III (GALCHI-BENIGHAT)	Scale:	Date: JUNE-2018
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					Checked By		P.K.K.KHAN			
					Approved By		B.N.SINGH			
						Drawing No.: NIRTP/NAG-MUG/SOTI/REINF-01				

MISCELLANEOUS DRAWINGS

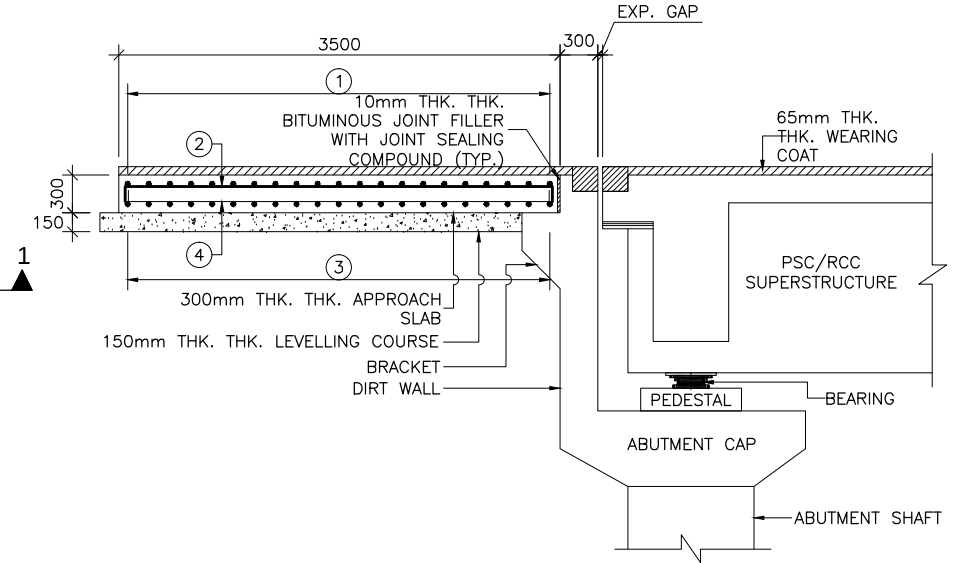


PLAN
(SCALE 1:50)

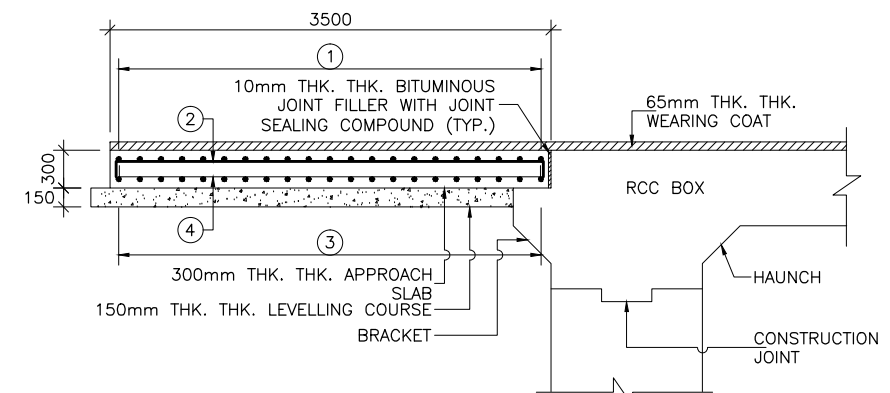
LEGEND:
 BOTTOM REINF. - - - - -
 TOP REINF. REINF. ———



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:-

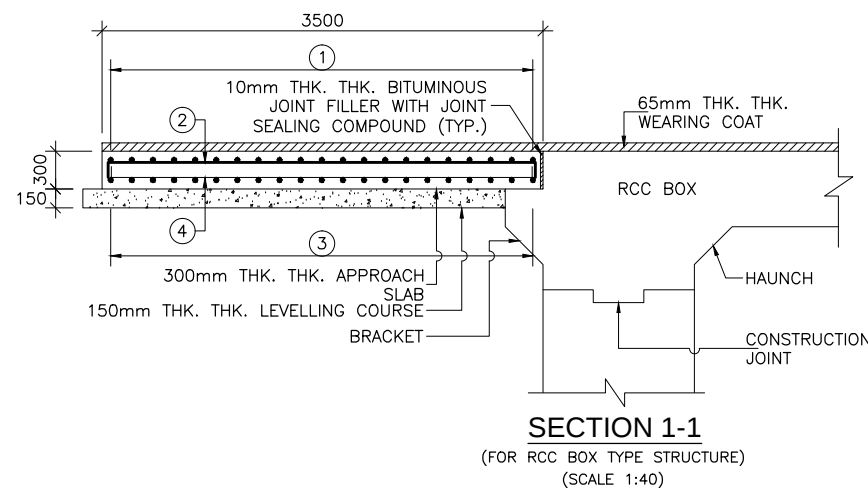
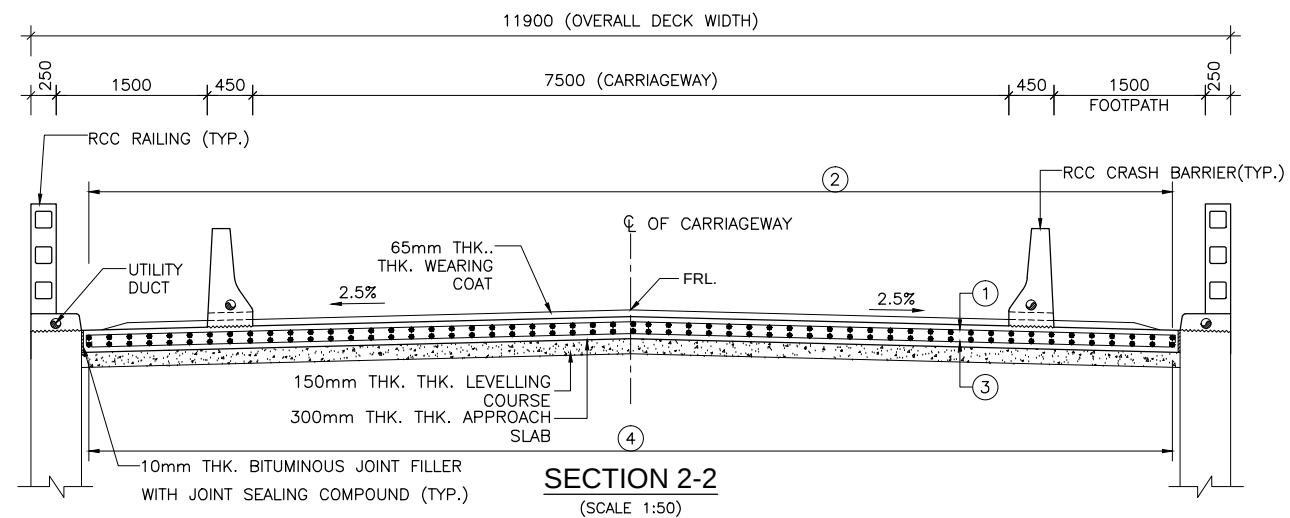
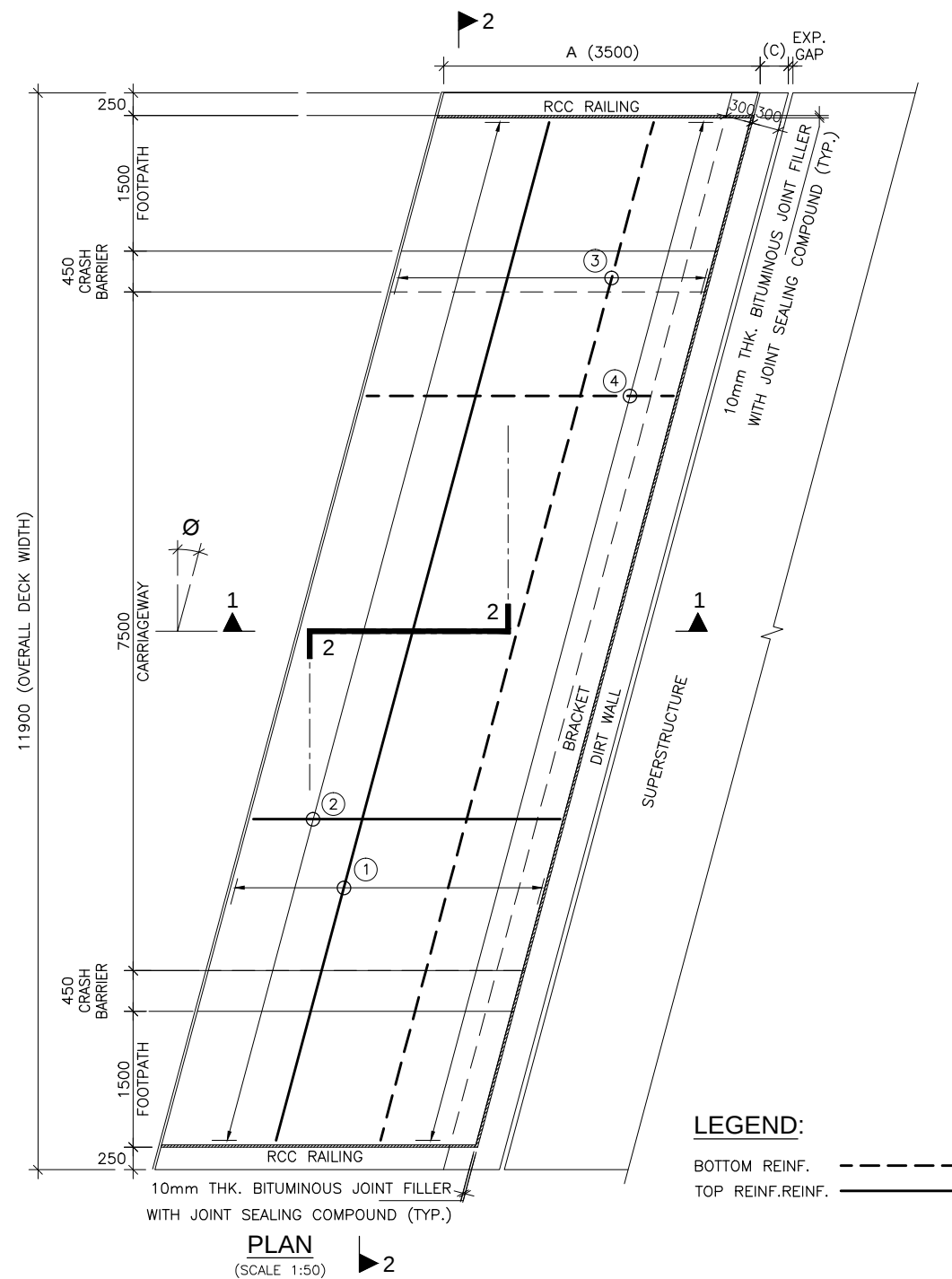
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- CONCRETE GRADE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm THK. CUBES AS FOLLOWS :-
 a. APPROACH SLAB - 30 MPa
 b. LEVelling COURSE - 15 MPa
- THE REINFORCING BARS SHALL BE OF THERMO MECHANICALLY TREATED (TMT) HYSD 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	Designed By	Checked By	Approved By	DRAWING TITLE:	Scale:	Date: JUNE-2018
 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) Detailed Design 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	DETAILS OF APPROACH SLAB PACKAGE-III (GALCHI-BENIGHAT) Drawing No.: NIRTP/NAG-MUG/PACKAGE-III/MISC.-01	As Shown	



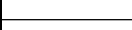
REINFORCEMENT SCHEDULE

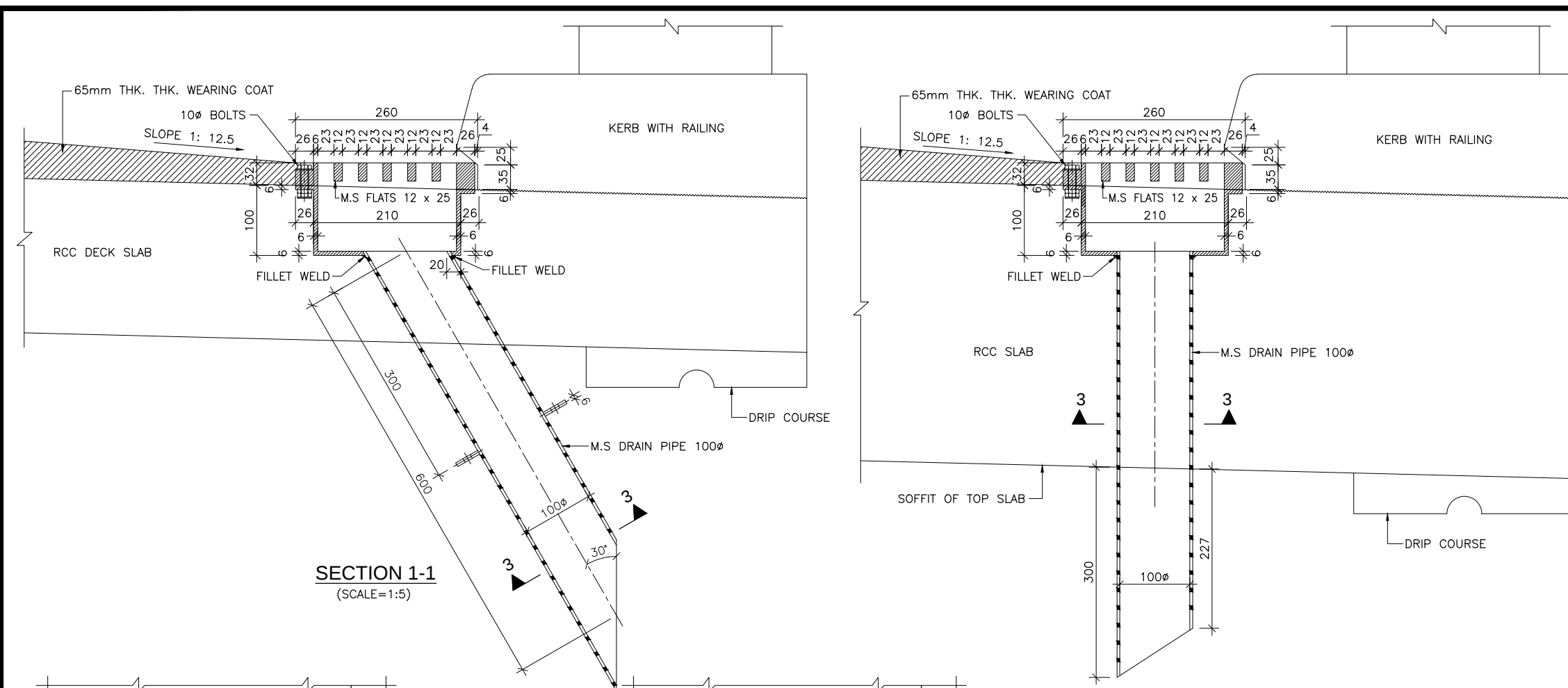
BAR MARK	DESCRIPTION	SHAPE	REMARKS
①	12 Φ 150c/c		
②	12 Φ 150c/c		
③	12 Φ 150c/c		
④	12 Φ 150c/c		

NOTES:-

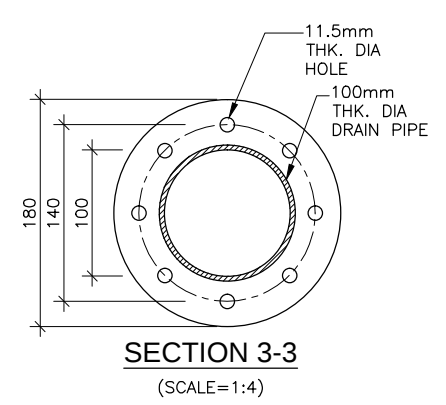
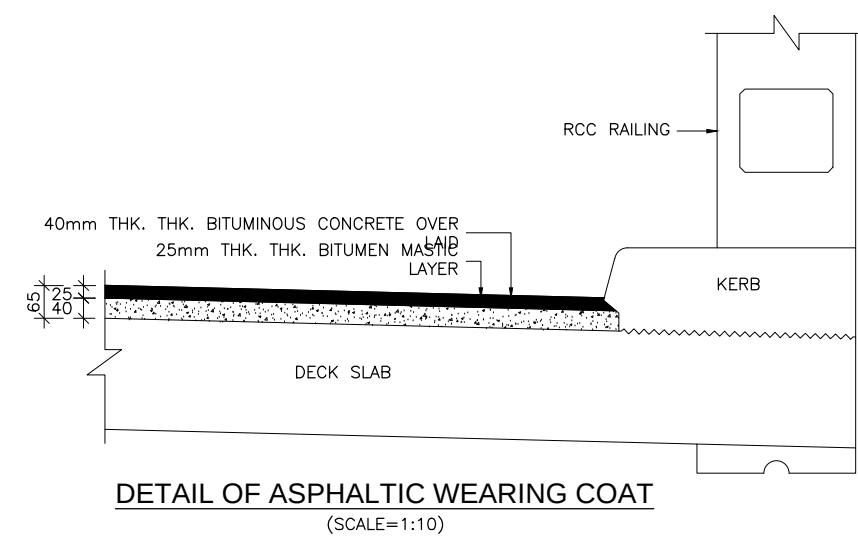
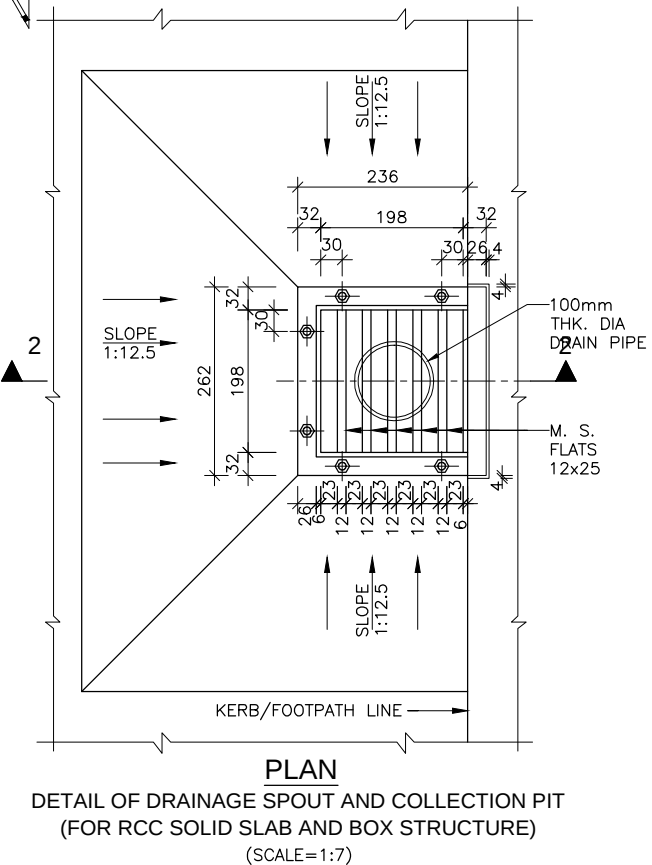
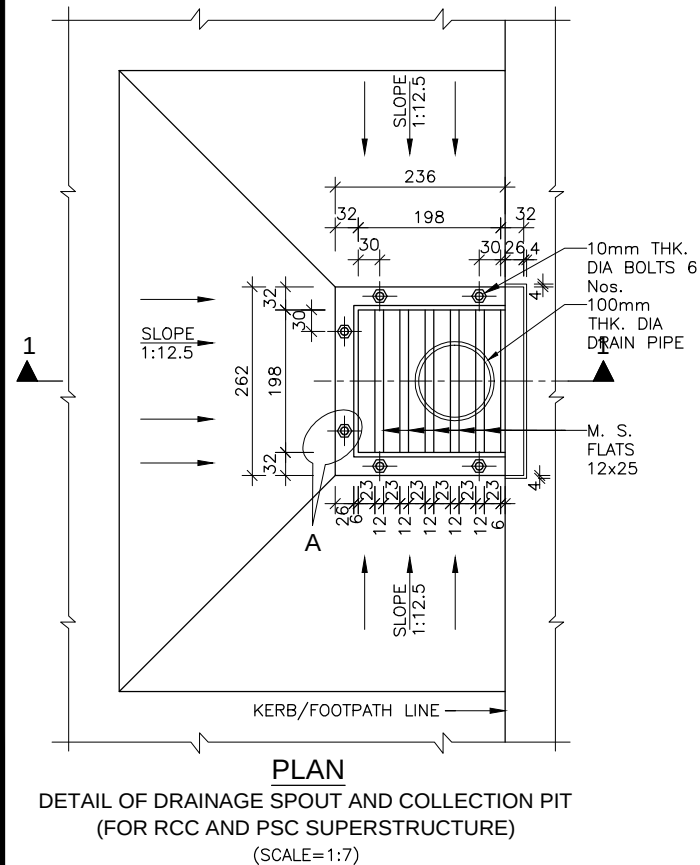
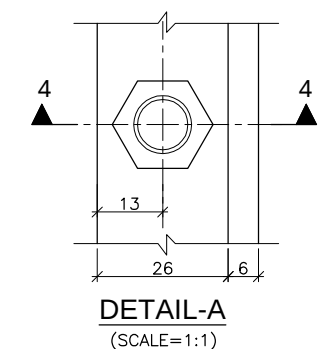
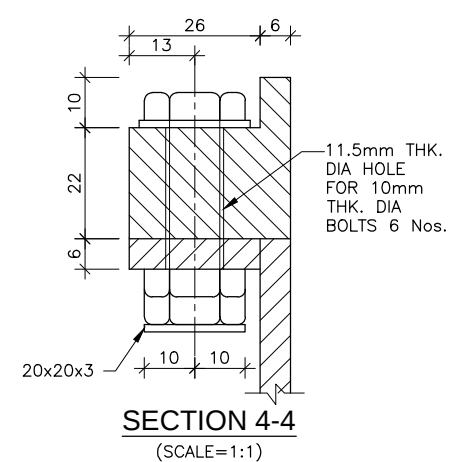
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- CONCRETE GRADE SHALL BE DESIGN MIX WITH A MINIMUM 28 DAYS CHARACTERISTIC STRENGTH ON 150mm THK. CUBES AS FOLLOWS :-
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- FILLING BEHIND THE ABUTMENT AND PROPER COMPACTION OF THE EMBANKMENT BELOW THE 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.

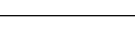
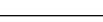
S.NO.	CHAINAGE	SKEW ANGLE	A	(B)	(C)
1	23+178	40° (RIGHT)	3500	11900	300

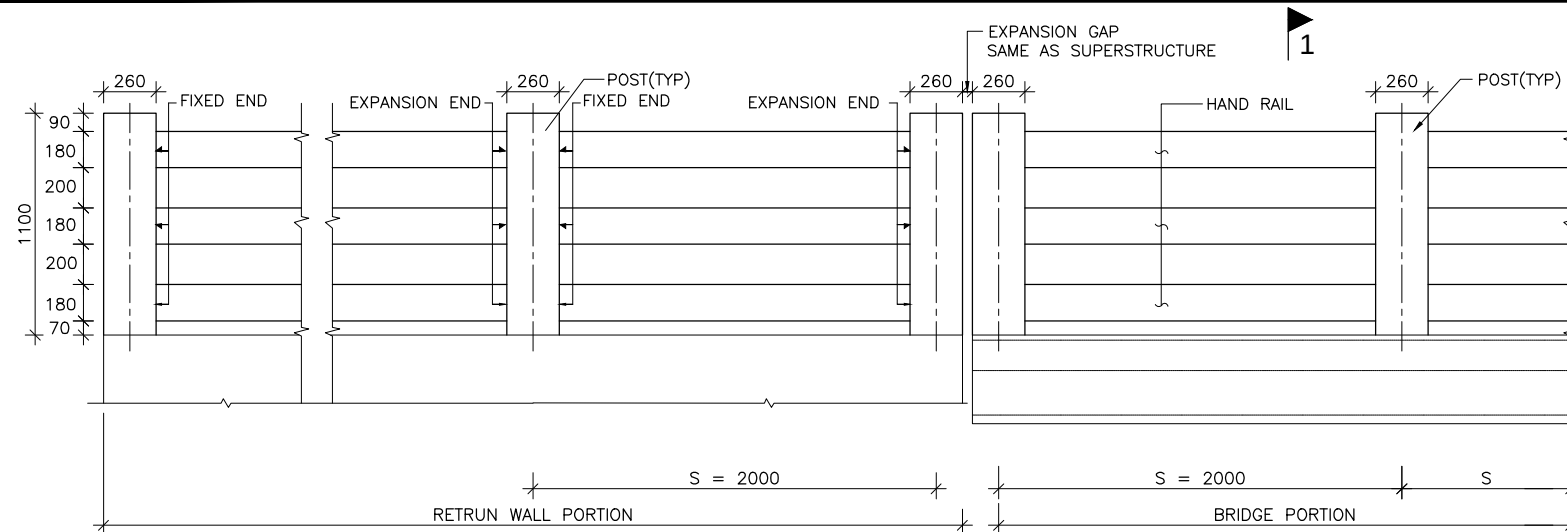
EMPLOYER		PROJECT	DESIGN CONSULTANT		Prepared By	K.M..JOHRI	DRAWING TITLE:	Scale:	Date: JUNE-2018
 Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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		AGNIMITA	DETAILS OF APPROACH SLAB PACKAGE-III (GALCHI-BENIGHAT)	As Shown	
				Checked By		P.K.K.KHAN			
				Approved By		B.N.SINGH	Drawing No.:		
				NIRTP/NAG-MUG/PACKAGE-III/MISC.-01a					



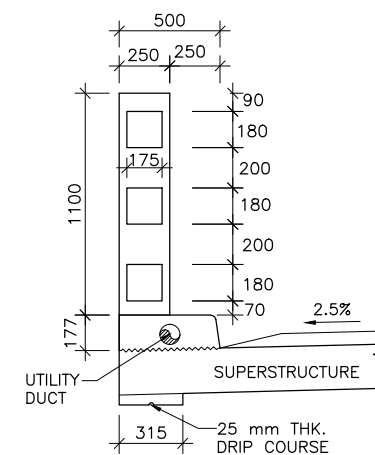
- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE MENTIONED. ONLY WRITTEN DIMENSIONS ARE TO BE FOLLOWED. NO DIMENSION IS TO BE SCALED.
 2. DRAINAGE SPOUT AND COLLECTION PIT ASSEMBLY SHALL BE FABRICATED FROM MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING MILD STEEL AND AFTER FABRICATION THE COMPLETE ASSEMBLY EXCEPT GRATING SHALL BE GIVEN A HOT DIPPED GALVANISED COATING.
 3. SPACING OF DRAINAGE SPOUT SHALL NOT EXCEED 5000 CENTER TO CENTER.
 4. 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.
 5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE GENERAL ARRANGEMENT DRAWING OF THE RESPECTIVE BRIDGES.



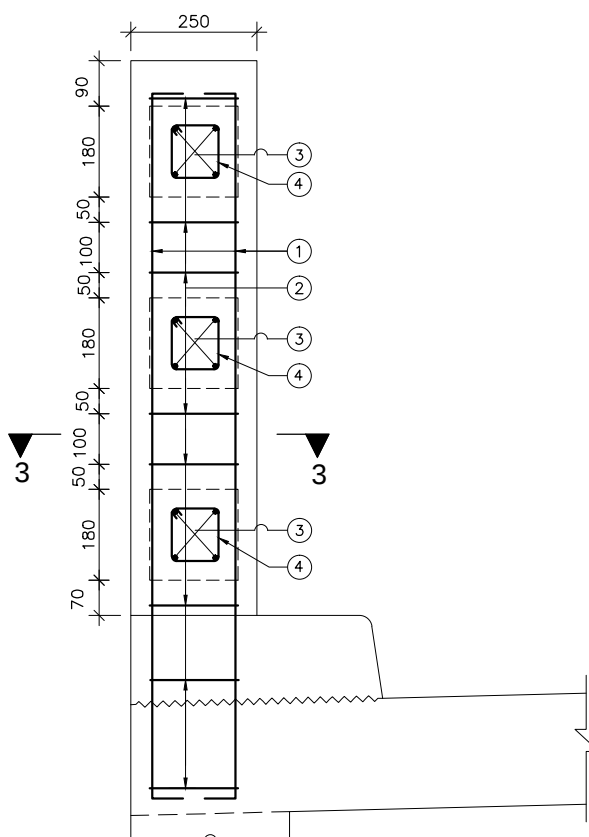
EMPLOYER		PROJECT		DESIGN CONSULTANT		Prepared By	K.M.JOHR	DRAWING TITLE: DETAILS OF DRAINAGE SPOUT AND WEARING COAT PACKAGE-III (GALCHI-BENIGHAT)	Scale: As Shown	Date: JUNE-2018	
	Government of Nepal Ministry of Physical Infrastructure and Transport, Department of Roads, Foreign Co-operation Branch	Nepal India Regional Trade and Transport Project (NIRTP) (IDA CREDIT No. 5273 - NEP) Detailed Design 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		AGNIMITA			Drawing No.: NIRTP/NAG-MUG/PACKAGE-III/MISC.-02	
					Checked By		P.K.KHAN				
					Approved By		B.N.SINGH				



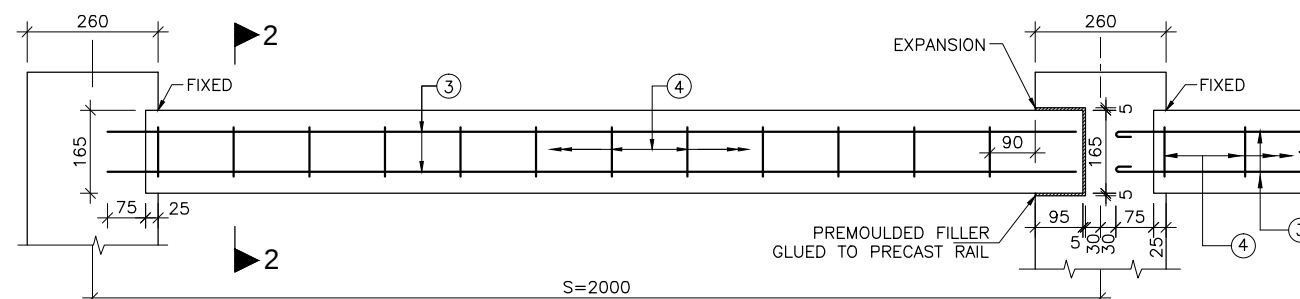
GENERAL ELEVATION
(SCALE 1:25)



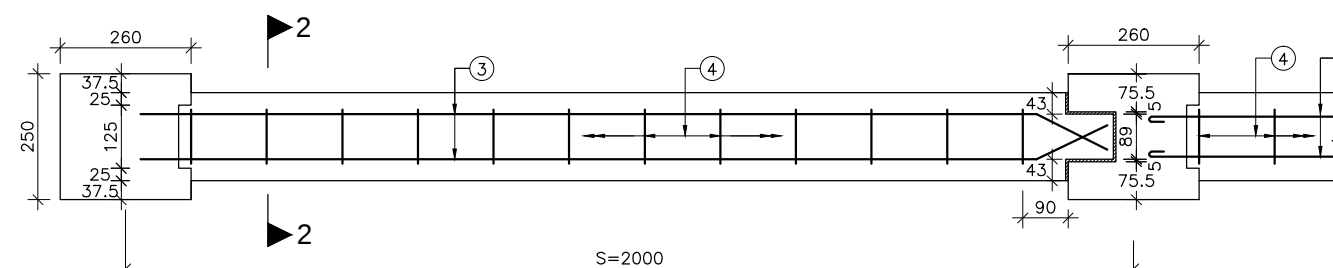
SECTION 1-1
(SCALE 1:25)



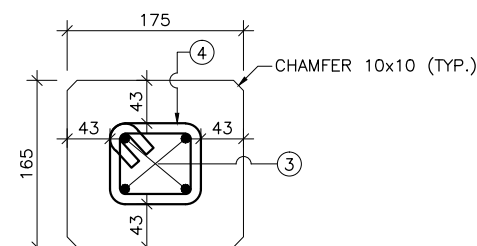
REINF. DETAILS OF RAILING POST
(SCALE 1:10)



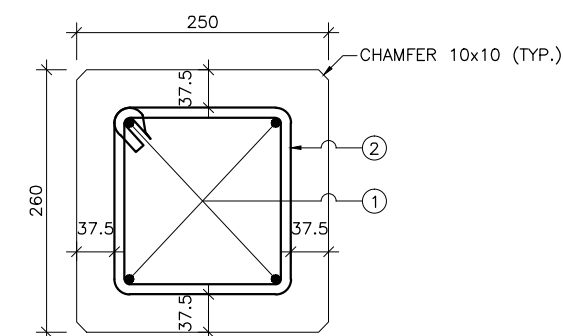
ELEVATION
(SCALE 1:10)



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



SECTION 2-2
(SCALE 1:5)



SECTION 3-3
(SCALE 1:5)

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

α = 1.0 FOR $p\% \leq 25\%$

α = 1.15 FOR $25\% \leq p\% \leq 33\%$

α = 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})

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

$l_b = k \phi$

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 (1.39)

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

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) Detailed Design 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-III (GALCHI-BENIGHAT)	As Shown	JUNE-2018
		Full Bright Consultancy (Pvt.) Ltd. 316,Baburam Acharya Sadak, Sinamangal, Kathmandu, GPO Box: 4970, Kathmandu, Nepal					Drawing No.: NIRTP/NAG-MUG/PACKAGE-III/MISC.-04		