



GOVERNMENT OF NEPAL
MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT
DEPARTMENT OF ROADS
BRIDGE BRANCH

STANDARD SUPERSTRUCTURE DRAWINGS FOR ROAD BRIDGES

70.0M SIMPLY SUPPORTED SPAN BOWSTRING STEEL TRUSS BRIDGE

(7.5m CARRIAGEWAY WIDTH WITH BOTH SIDE 1.5m WIDE FOOTPATHS)

REFERENCE 'NOTES':

1. All dimensions are in millimeters, unless stated otherwise.
2. No dimensions shall be scaled from the Drawings, only written dimensions shall be followed.
3. Any doubtful Dimensions / Descriptions shall be brought to the attention of the Engineer - in - charge for any corrections (if any) before execution of works.
4. Number of reinforcement bars, bolts, and shear connectors shall not be counted from the drawings, only given spacing and / or specified number of bars shall be provided.
5. This Bridge Superstructure is designed for One Lane of IRC 70R loading, Two lanes of IRC Class A Loading and One Lane of IRC Class A Loading, whichever governs, in addition to a Footpath Live Load corresponding to 500kg/m² of Footpath area as per IRC : 6 - 2017.
6. The Contractor shall be responsible for construction and maintaining all parts of the structure in stable, acceptable and serviceable condition, ensuring on part under construction is unduly stressed and unsafe.
7. This Bridge Superstructure is designed for Wind Loads calculated accordingly from clause 209 of IRC: 6 - 2017 for the bridge structure with the average height of soffit of superstructure above the mean retarding surface as 30m only.
8. The horizontal seismic coefficient assumed is 0.54 (i.e. 0.54G) accompanied by a vertical seismic coefficient of + Or - 0.36G.
9. This Bridge Superstructure is NOT designed for

- i. Bridges located near ports, heavy industries and mines and any others areas where frequent congestion of heavy vehicles may occur as defined in clause 204.4 of IRC: 6-2017.
- ii. Bridge which are located in the region where snowfall are possible, this bridge superstructure is not designed for snow loads.
- iii. Bridge which are located within "Near field regions" as per clause 219.1.2 g) of IRC: 6 - 2017.

10. MATERIALS :

- i. All structural steel shall be of Grade E350.
- ii. All bolts shall be of Property Class 8.8, High Strength Friction Grip bolt (HSFG).
- iii. All reinforcing steel bars are Fe500, conforming to IS: 1786.
- iv. The structural concrete of deck slab, precast footpath slab, parapet posts and their bases and road kerbs are of grade M35.

11. WEARING COURSE :

Asphalt concrete wearing course - 75mm thick at roadway crown, gradually reducing to 50mm at the road kerbs, shall be provided over the Deck Slab.

12. ERECTION SEQUENCE :

- i. Fabrication of all the necessary members, plates and bolts etc. all shall be ready before execution of erection works of superstructure and as per IRC : 24 - Steel Road Bridges.
- ii. Erection sequence of this Bridge Superstructure can vary as per contractor's choice depending on site conditions, ease in transportation and availability of expertise and skilled manpower and adequate equipment. One of the erection

sequence which is "STAGING IN SITE" is shown in drawing provided. However in case the contractor wishes to opt for any other alternate erection technique, then it has to be adequately designed so that the stresses in any member, joints of superstructure as well as in any members used in erection process at any point of time during erection does not exceed the permissible stresses as per relevant IRC codes. It is recommended to keep the supporting points for erection process at the nodes of superstructure in order to minimize any unnecessary secondary stresses in the members of superstructure.

iii. "STAGING IN SITE" erection technique shall be executed as shown in drawing provided.

- a. All steel support stanchions for erection work shall be adequately designed and shall be kept at the nodal locations as provided in the drawings.
- b. Erection sequence shall be started by first placing Bottom Chords, then followed by Cross Girders, Verticals, Diagonals and then Top chords. After all triangulations are formed then Bottom Diagonal Bracings, Stringers, Lateral Beams and Top Diagonal Bracings shall be erected.
- c. Deck slab then shall be casted after completion of erection of all the steel superstructure works.
- d. Super imposed dead loads (i.e. Roads kerbs, railing posts, railings, P/C footpath slabs, expansion joints, wearing course and utilities) can be laid after the deck slab has attained full strength.

13. BEARINGS :

- i. "POT" and "POT - PTFE" bearings shall be used, Their Material Specifications, Design, Acceptance Criteria and Installation shall be generally in accordance with IRC : 83 Part 3, the AASHTO Design Specifications and Sound Engineering Practice.
- ii. The Bearing shall be obtained from approved and experienced Manufacturers.
- iii. Installation of Bearings shall be carried out under the expert supervision of the Manufacture's Technical Representative.
- iv. The design of Bearings shall be based on the Design Loads, Rotations etc. as given in the table in its relevant drawings.
- v. Detailed shop drawings shall be prepared by the manufacturer, which shall be checked and duly approved before the bearings are manufactured and installed.

14. MISCELLANEOUS :

- i. Each of the lifting jacks shall have a safe lifting capacity of at least 200 Tonnes.
- ii. All jacks must be operated simultaneously, equally gradually and in unison.
- iii. For future lifting of superstructure for any maintenance purposes positions of jacks should be placed as indicated in drawings.
- iv. Pier caps and Abutment caps must be structurally adequately designed for the reactions from the said lifting jacks, transmitted at their designated locations.

15. DESIGN CHECKING :

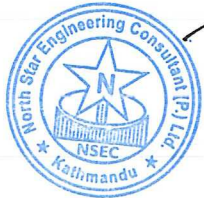
This design has been checked by North Star Engineering Consultant (P). Ltd.

LIST OF DRAWINGS :

DRAWING NO.	DRAWING TITLE
1 of 12 Bowstring Truss Bridge - 70.0m - SS Span	REFERENCE NOTES
2 of 12 Bowstring Truss Bridge - 70.0m - SS Span	GENERAL ARRANGEMENT AND DIMENSIONS
3 of 12 Bowstring Truss Bridge - 70.0m - SS Span	SECTIONAL DETAILS OF TRUSS
4 of 12 Bowstring Truss Bridge - 70.0m - SS Span	SECTIONAL DETAILS OF MEMBERS
5 of 12 Bowstring Truss Bridge - 70.0m - SS Span	MEMBER JOINT DETAILS (4 SHEETS) : SHEET 1/4
6 of 12 Bowstring Truss Bridge - 70.0m - SS Span	MEMBER JOINT DETAILS (4 SHEETS) : SHEET 2/4
7 of 12 Bowstring Truss Bridge - 70.0m - SS Span	MEMBER JOINT DETAILS (4 SHEETS) : SHEET 3/4
8 of 12 Bowstring Truss Bridge - 70.0m - SS Span	MEMBER JOINT DETAILS (4 SHEETS) : SHEET 4/4
9 of 12 Bowstring Truss Bridge - 70.0m - SS Span	MEMBER SPLICING DETAILS
10 of 12 Bowstring Truss Bridge - 70.0m - SS Span	REINFORCEMENT DETAILS OF DECK SLAB
11 of 12 Bowstring Truss Bridge - 70.0m - SS Span	CANTILEVER FOOTPATH & SERVICE DUCT DETAILS.
12 of 12 Bowstring Truss Bridge - 70.0m - SS Span	ERECTION METHOD BY STAGING IN SITE DETAILS

LEGEND FOR BRIDGE MEMBERS :

S.No.	SYMBOL	DESCRIPTION	REMARKS
1.	BC	BOTTOM CHORD	
2.	ETC	END TOP CHORD	
3.	MTC	MID TOP CHORD	
4.	VM	VERTICAL MEMBER	
5.	TDB	TOP DIAGONAL BRACING	
6.	BDB	BOTTOM DIAGONAL BRACING	
7.	SB	STRINGER	
8.	SW	SWAY BRACING	
9.	KB	KNEE BRACING	
10.	PB	PORTAL BEAM	
11.	LB	LATERAL BEAM	
12.	ECG	END CROSS GIRDER	
13.	MCG	MID CROSS GIRDER	
14.	CB	CANTILEVER BEAM	
15.	BP	BEARING PLATE	

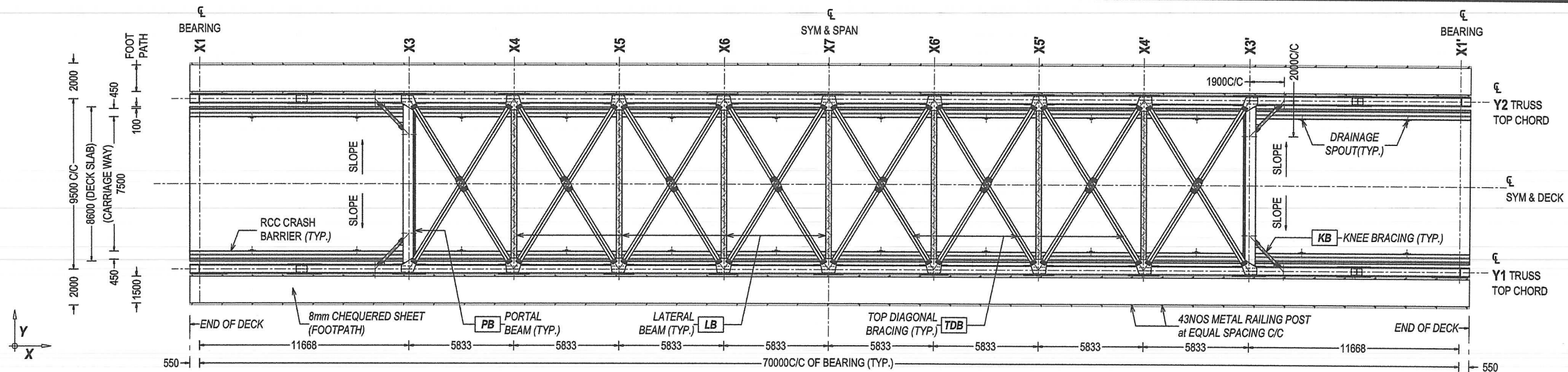


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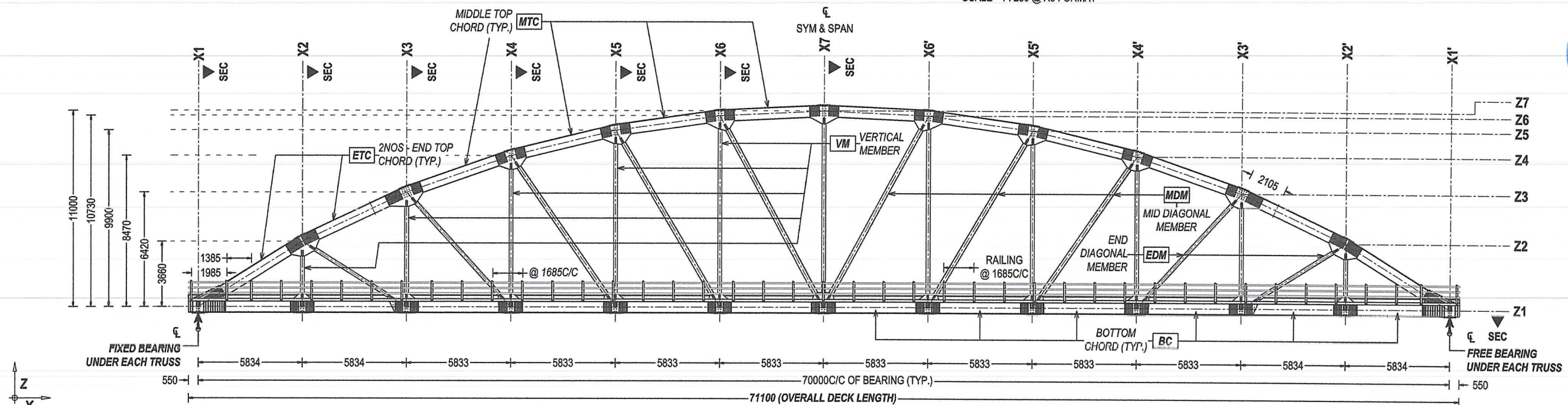
GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH		
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES		
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide	Overall Bridge Width: 10.00 m	
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading		
Drg. No.: 1/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span		
Drg. TITLE : REFERENCE NOTES		
Designed by : Biva Shrestha Malla (Structural Engineer)	Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)
Accepted by : Umesh Bindu Shrestha (DDG, DoR)	Approved by : Shiva Prasad Nepal (Acting DG, DoR)	Date : Jun, 2022 Revised by : 00

इ. उमेश बिन्दु श्रेष्ठ
उप-महानिर्देशक

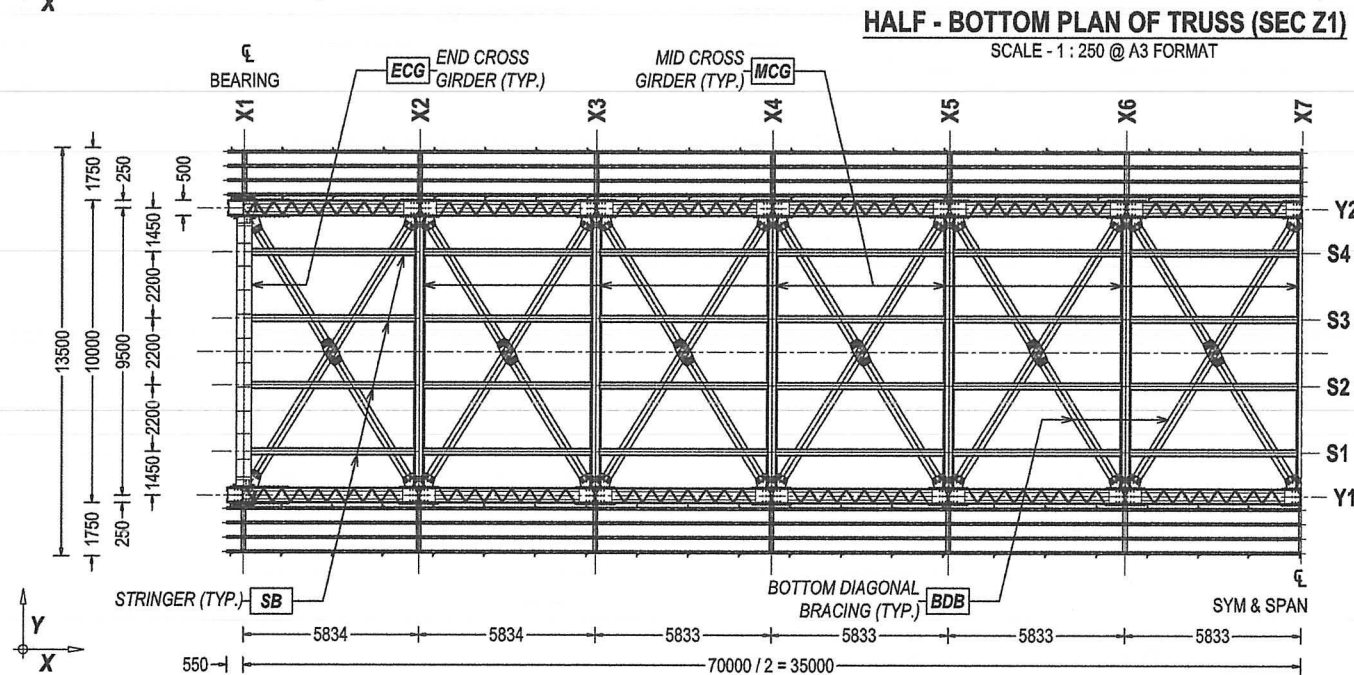
Shiva Prasad Nepal
Acting Director General



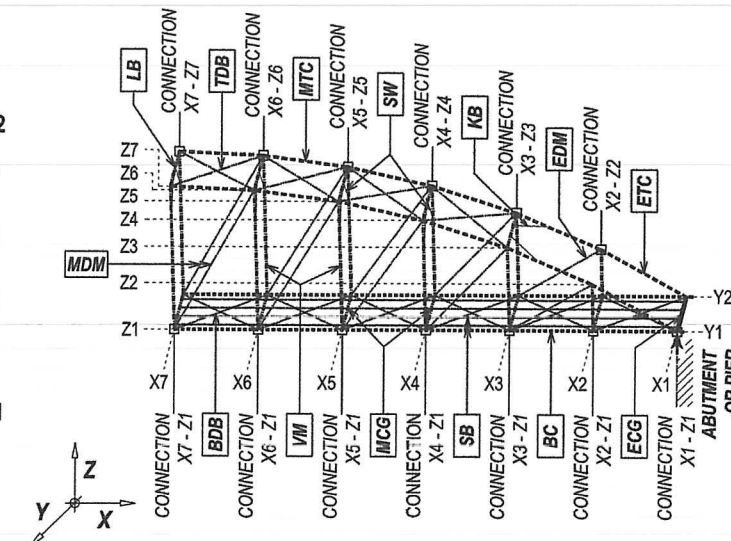
TOP PLAN OF TRUSS
SCALE - 1 : 250 @ A3 FORMAT



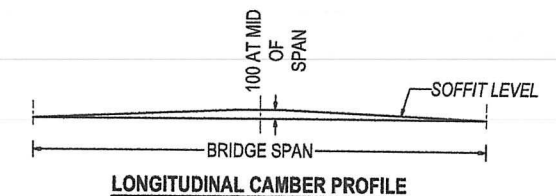
ELEVATION OF TRUSS
SCALE - 1 : 250 @ A3 FORMAT



HALF - BOTTOM PLAN OF TRUSS (SEC Z1)
SCALE - 1 : 250 @ A3 FORMAT



HALF - ISOMETRIC VIEW FOR MEMBER & JOINT DETAILS
SCALE - NON

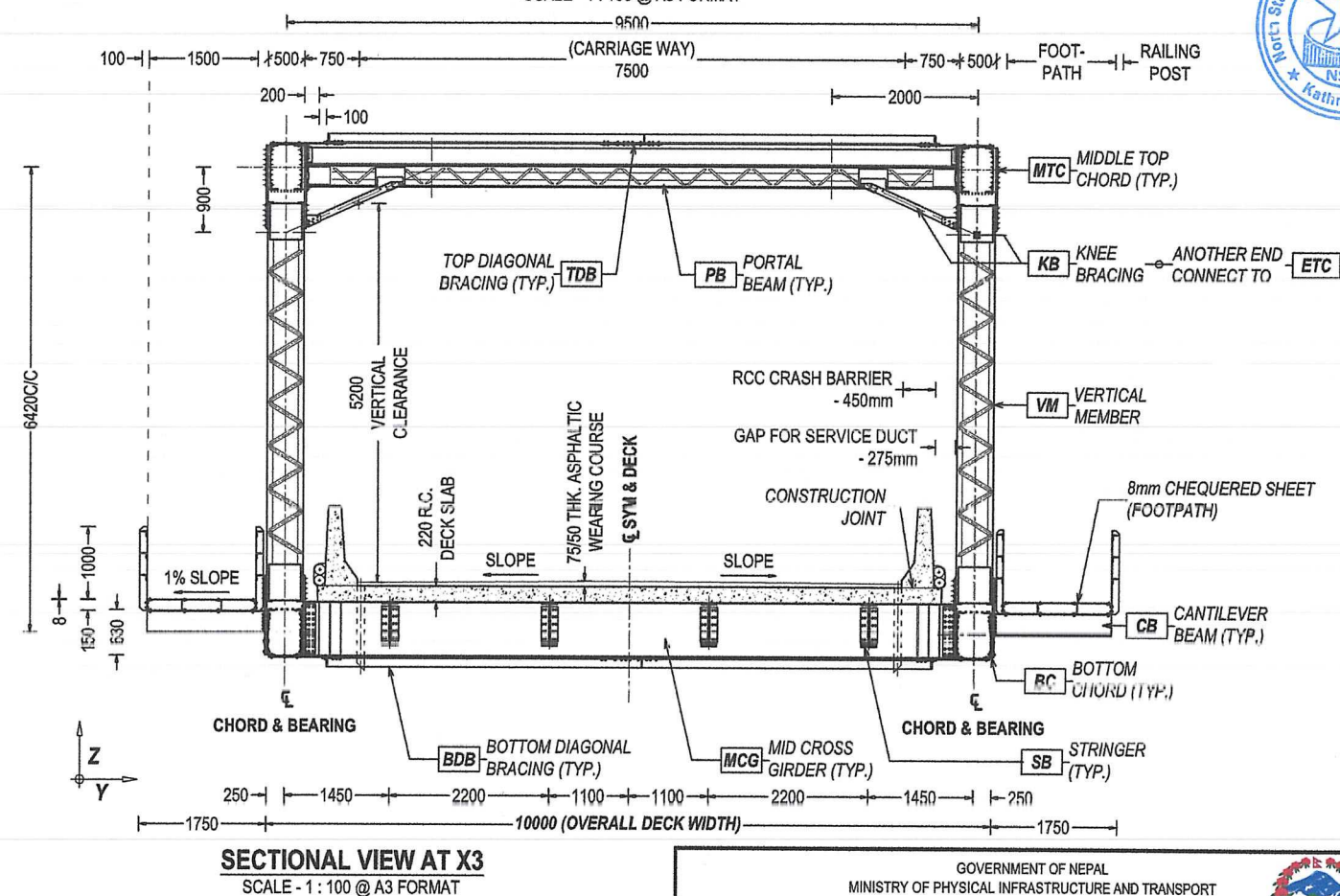
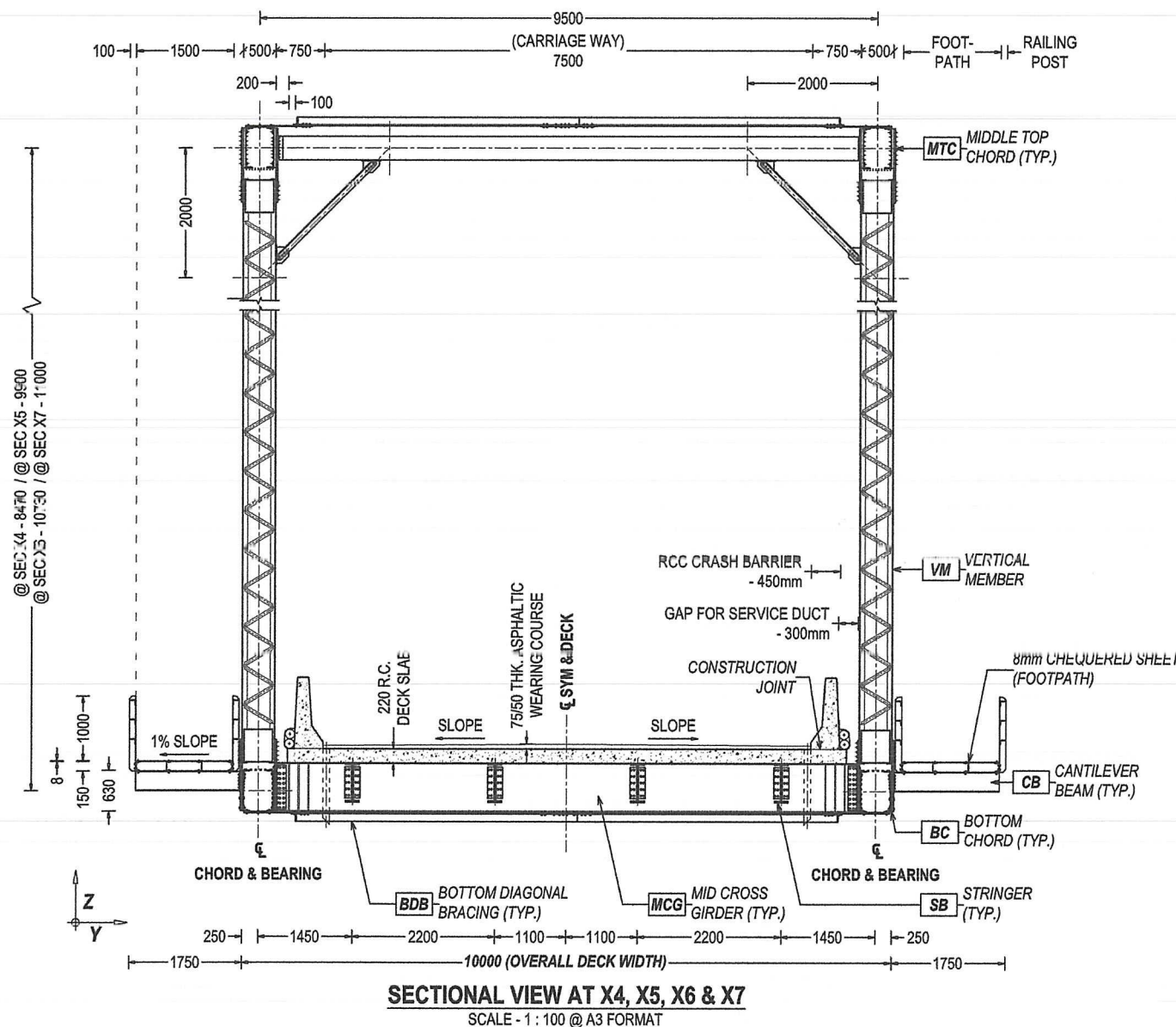
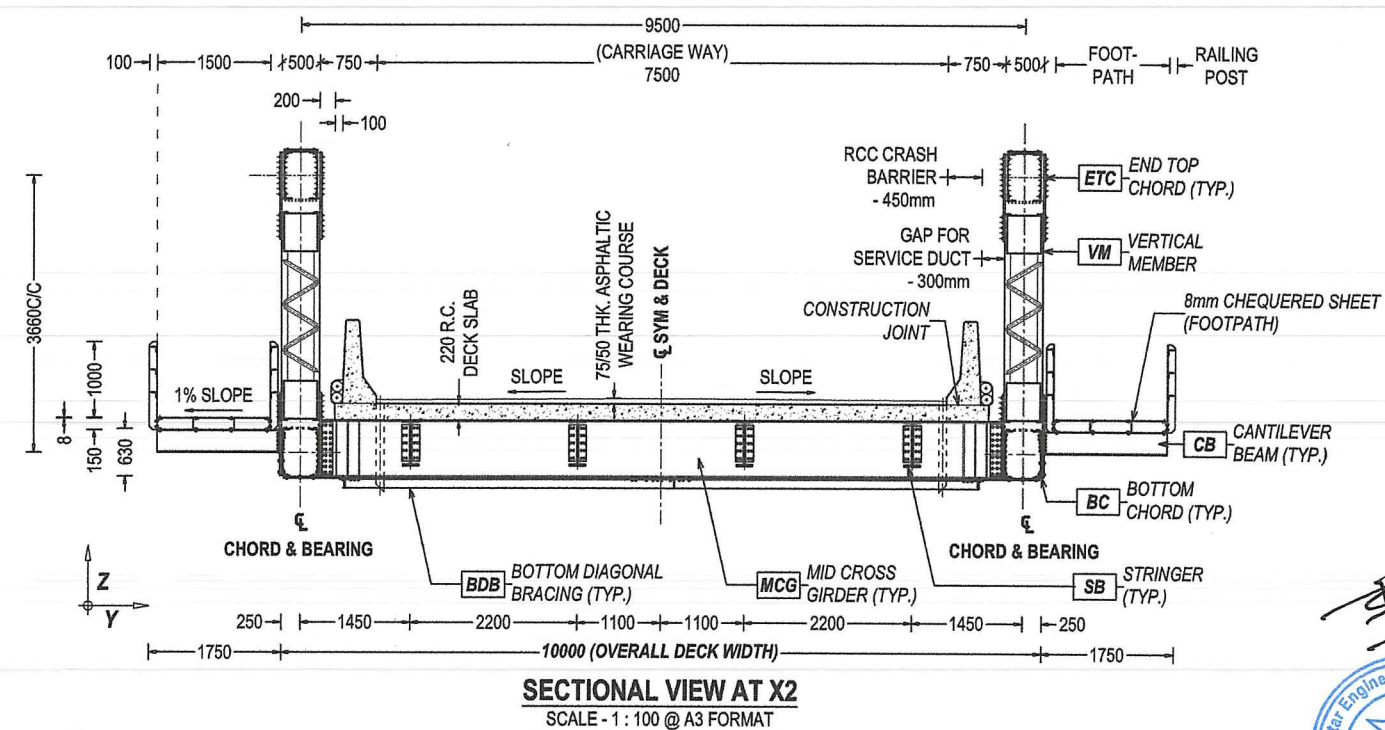
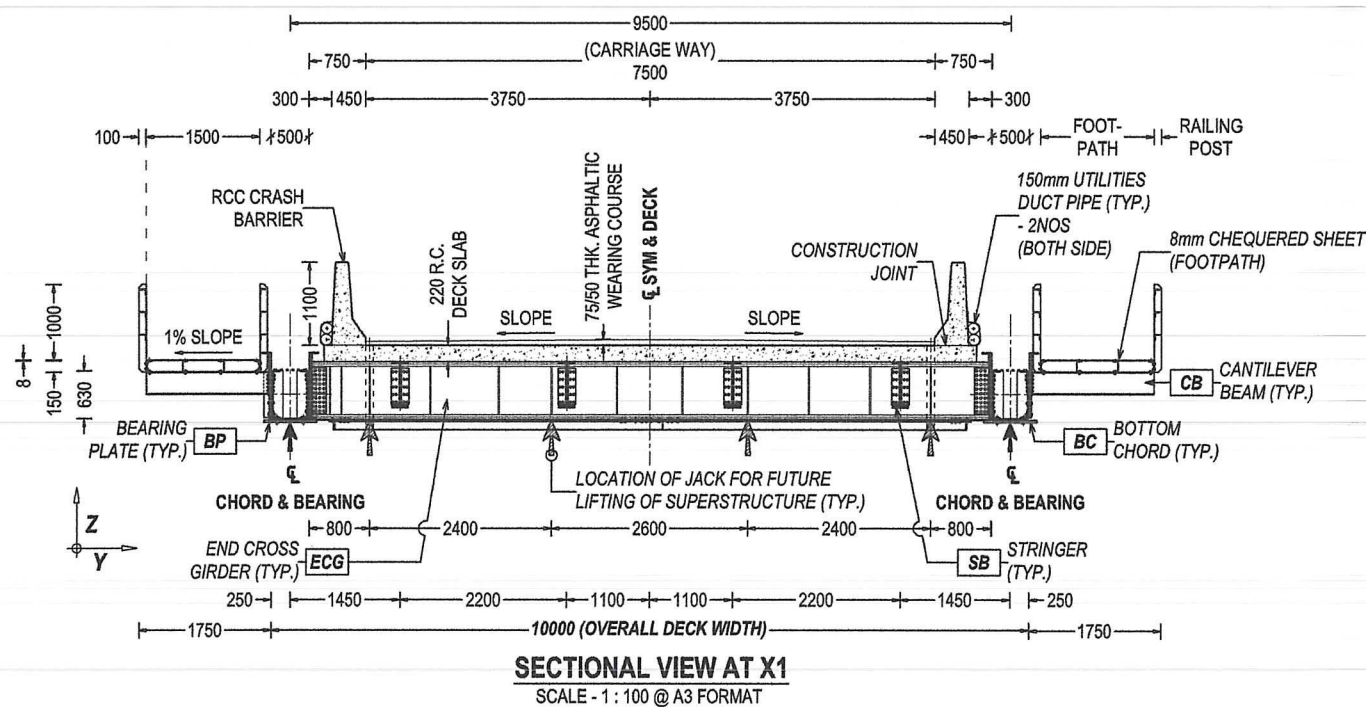


GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH		
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES		
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide	Overall Bridge Width: 10.00 m	
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading		
Drg. No.: 2/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span		
Drg. TITLE : GENERAL ARRANGEMENT AND DIMENSIONS		
Designed by : Biva Shrestha Malla (Structural Engineer)	Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)
Accepted by : Umesh Bindu Shrestha (DDG, DoR)	Approved by : Shiva Prasad Nepal (Acting DG, DoR)	Date : Jun, 2022 Reviewed by : Shiva Prasad Nepal Director General



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उप-महानिर्देशक

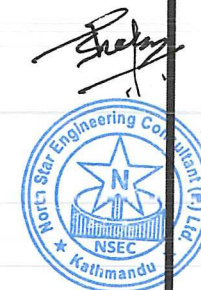
Er. Shiva Prasad Nepal
Acting Director General



NOTES :

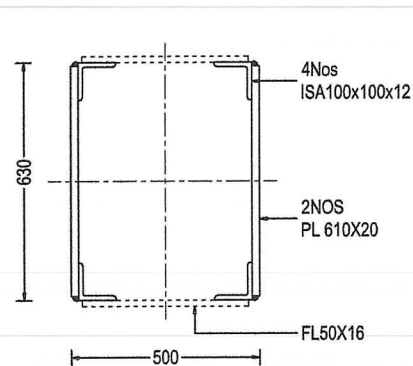
1. All dimensions are in millimeters, unless stated otherwise.
2. No dimensions shall be scaled from drawing, only written dimensions shall be followed.
3. Grade of Structure steel is E350 conforming to IS:800:2007 / IS:2062 shall be used.
4. All the welded connection are fillet weld with 8mm weld all around unless otherwise stated.

GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH				
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES				
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide			Overall Bridge Width: 10.00 m	
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading				
Drg. No.: 3/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span				
Drg. TITLE : SECTIONAL DETAILS OF TRUSS				
Designed by : Biva Shrestha Malla (Structural Engineer)	Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)	Date : Jun, 2022	
Accepted by : Umesh Bindu Shrestha (DDG, DoR)	Approved by : Shiva Prasad Nepal (Acting DG, DoR)	Revisions : 00		

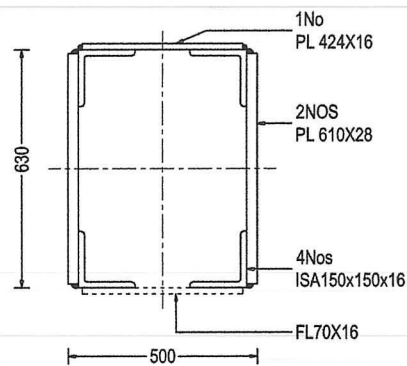


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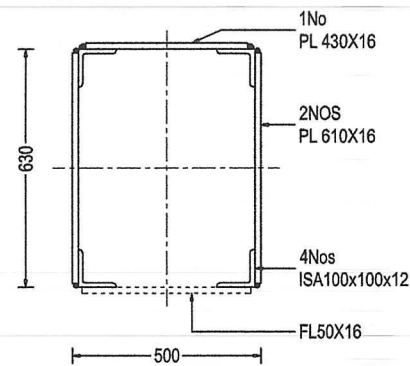
Er. Shiva Prasad Nepal
Acting Director General



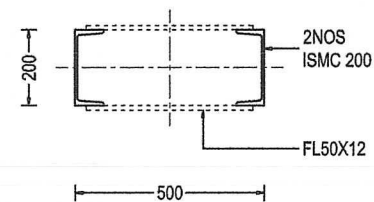
SECTIONAL VIEW AT SEC M1



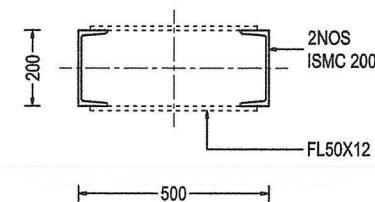
SECTIONAL VIEW AT SEC M2



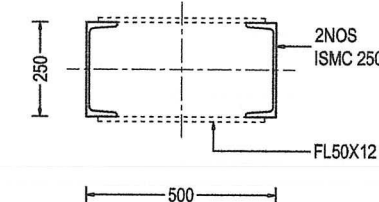
SECTIONAL VIEW AT SEC M3



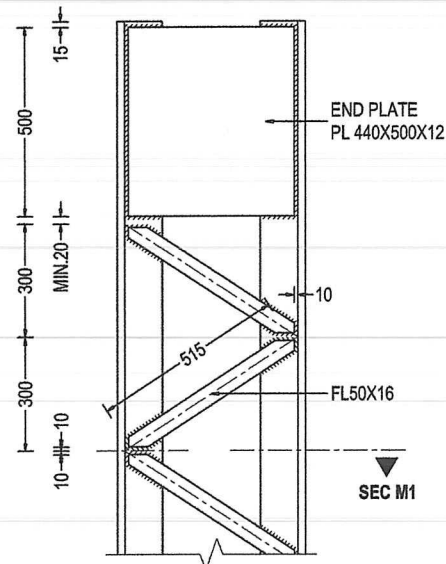
SECTIONAL VIEW AT SEC M4



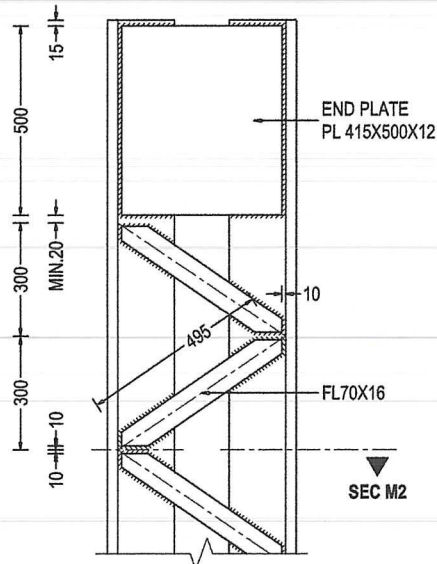
SECTIONAL VIEW AT SEC M5



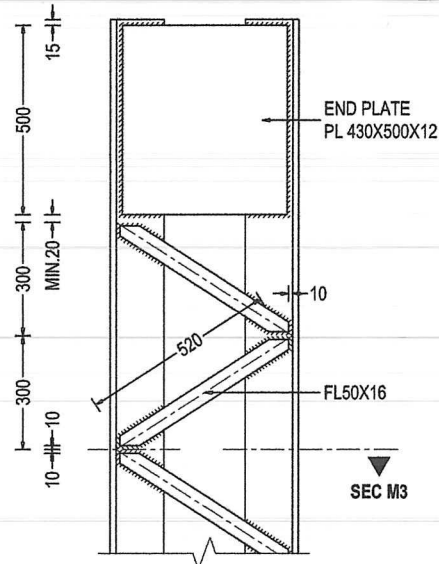
SECTIONAL VIEW AT SEC M6



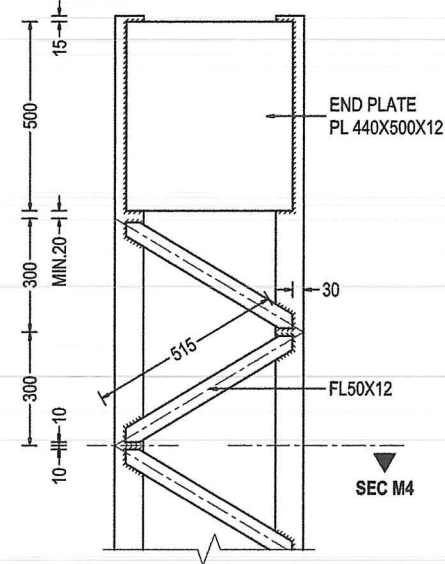
**LACING DETAIL VIEW
BOTTOM CHORD DETAIL (BC)**
SCALE - 1 : 20 @ A3 FORMAT



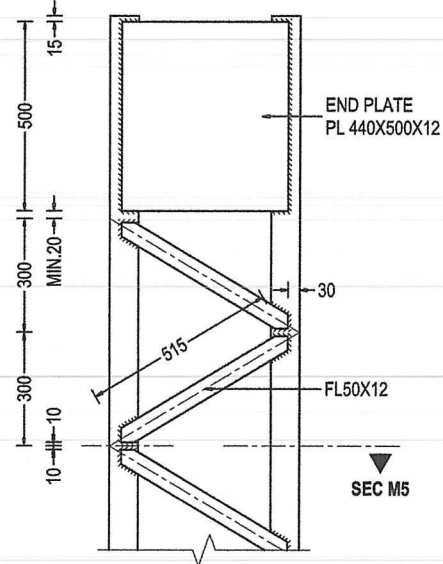
**LACING DETAIL VIEW
END TOP CHORD DETAIL (ETC)**
SCALE - 1 : 20 @ A3 FORMAT



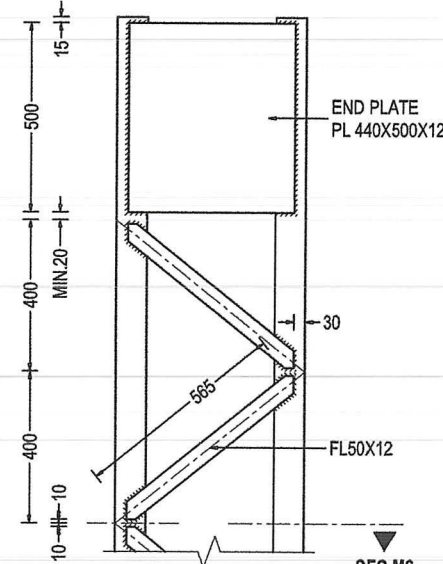
**LACING DETAIL VIEW
MID TOP CHORD DETAIL (MTC)**
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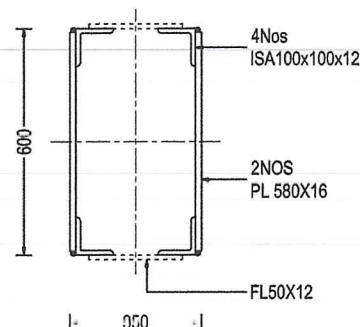
**LACING DETAIL VIEW
VERTICAL MEMBER (VM)**
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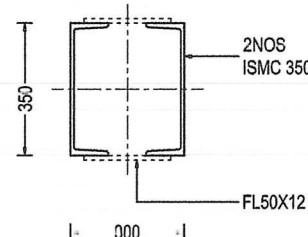
**LACING DETAIL VIEW
END DIAGONAL MEMBER (EDM)**
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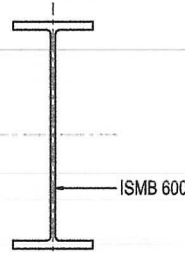
**LACING DETAIL VIEW
MID DIAGONAL MEMBER (MDM)**
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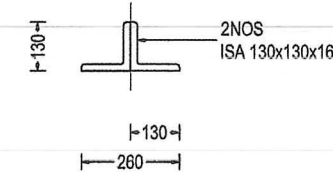
SECTIONAL VIEW AT SEC M7



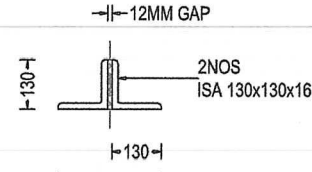
SECTIONAL VIEW AT SEC M8



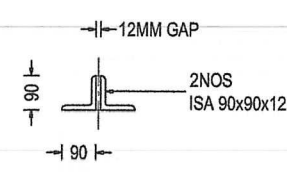
**SECTIONAL VIEW
STRINGER (SB)**
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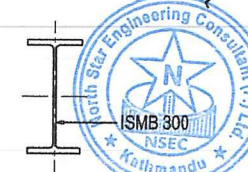
**SECTIONAL VIEW
TOP AND BOTTOM
DIAGONAL BRACING (TDB & BDB)**
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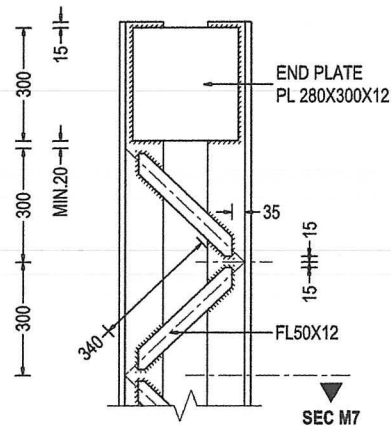
**SECTIONAL VIEW
KNEE BRACING (KB)**
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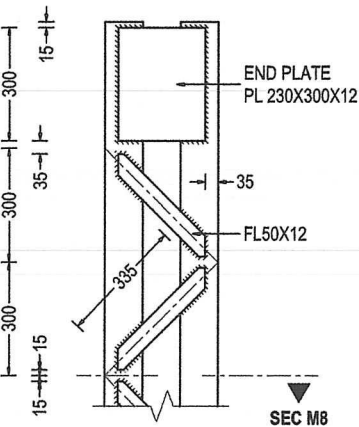
**SECTIONAL VIEW
SWAY BRACING (SW)**
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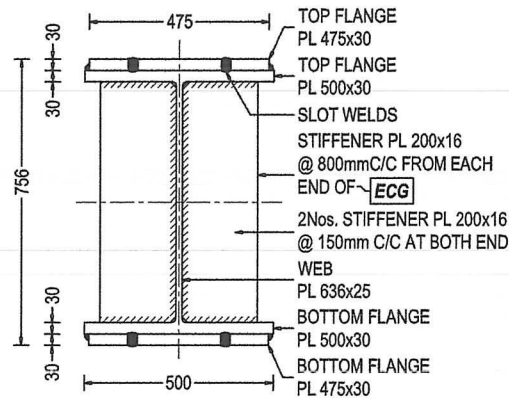
**SECTIONAL VIEW
CANTILEVER BEAM (CB)**
SCALE - 1 : 20 @ A3 FORMAT



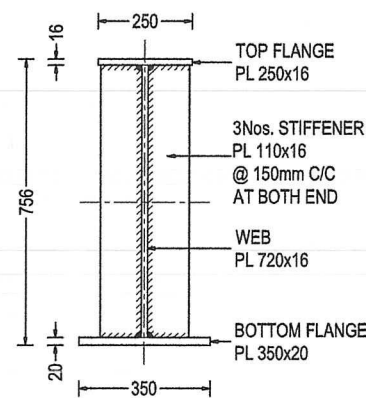
**LACING DETAIL VIEW
PORTAL BEAM DETAIL (PB)**
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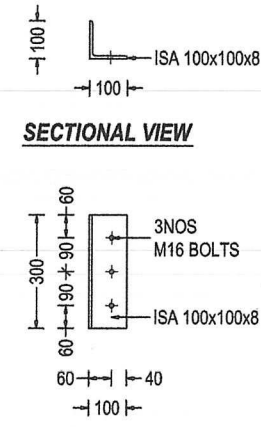
**LACING DETAIL VIEW
LATERAL BEAM (LB)**
SCALE - 1 : 20 @ A3 FORMAT



**SECTIONAL VIEW
END CROSS GIRDER (ECG)**
SCALE - 1 : 20 @ A3 FORMAT



**SECTIONAL VIEW
MID CROSS GIRDER (MCG)**
SCALE - 1 : 20 @ A3 FORMAT



**ELEVATION VIEW
GUSSET ANGLE (GA)**
SCALE - 1 : 20 @ A3 FORMAT

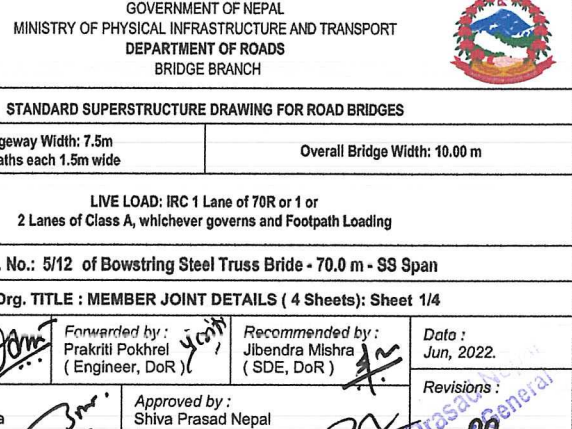
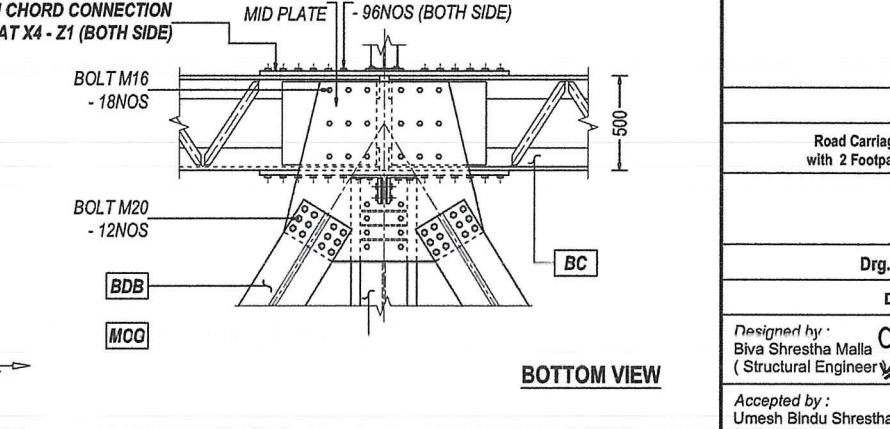
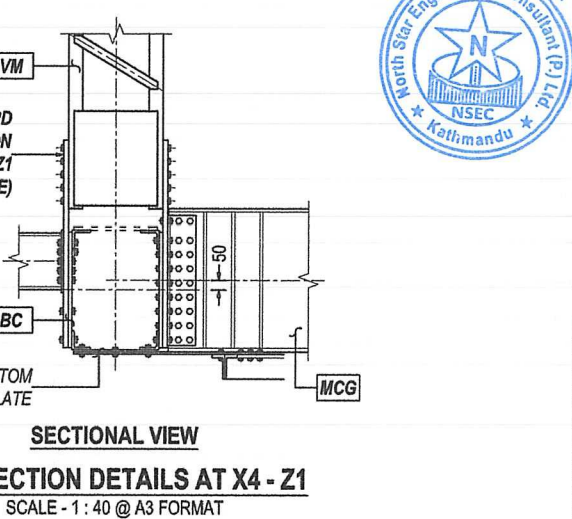
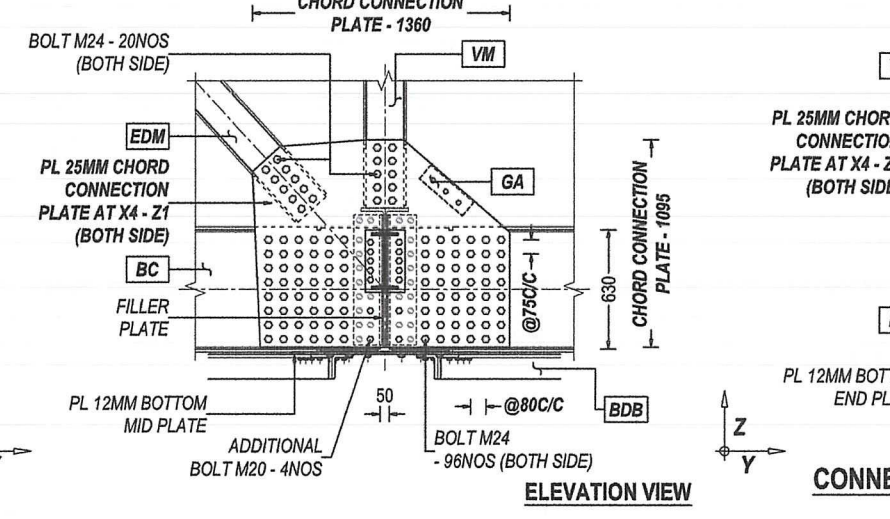
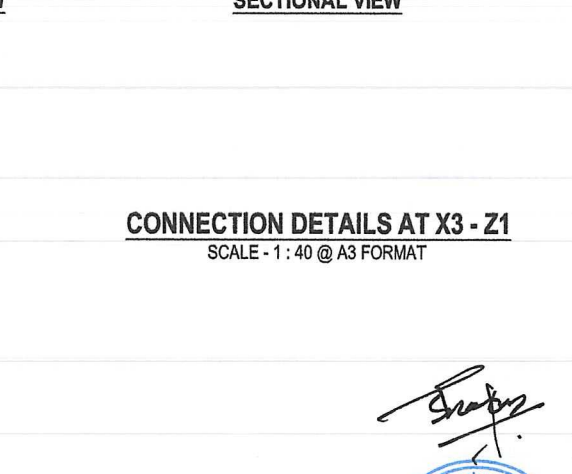
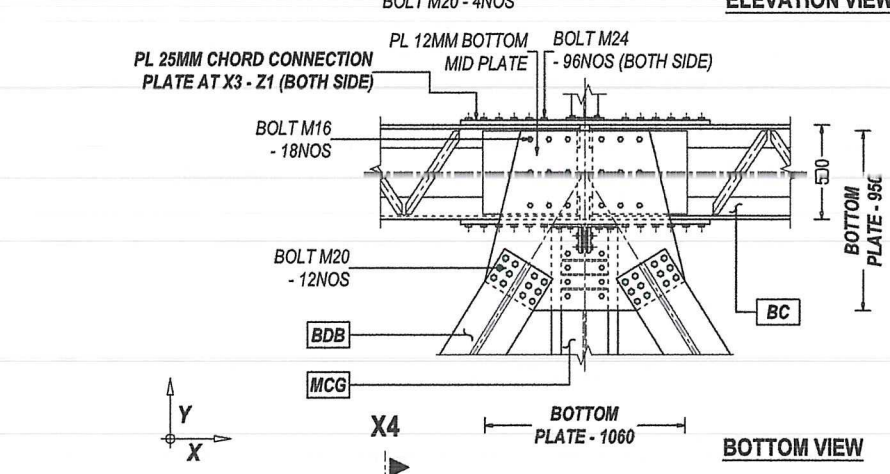
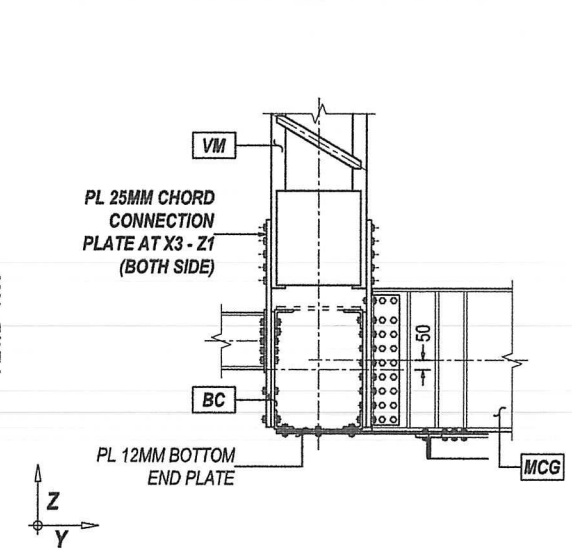
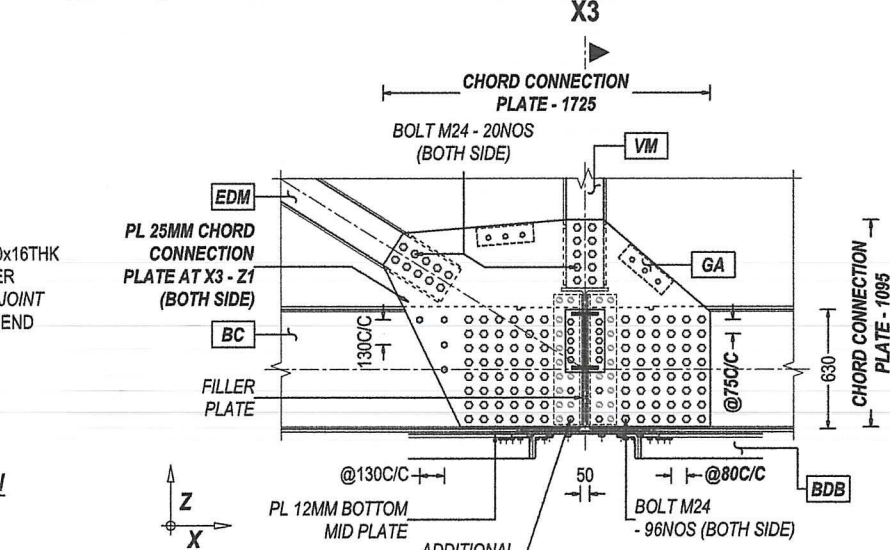
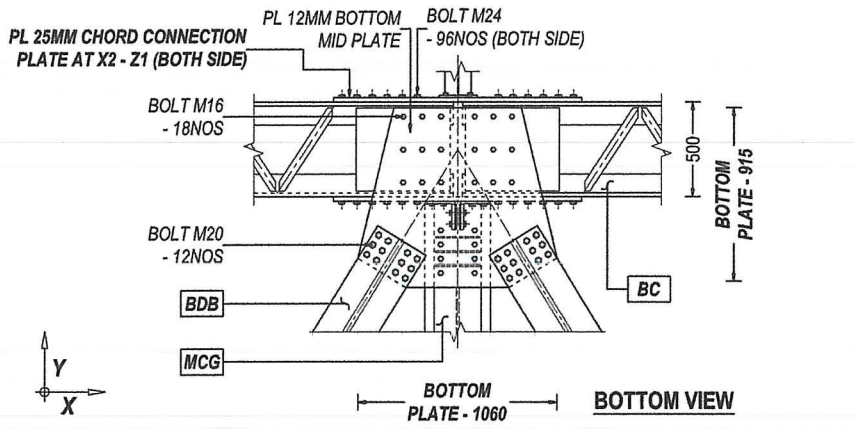
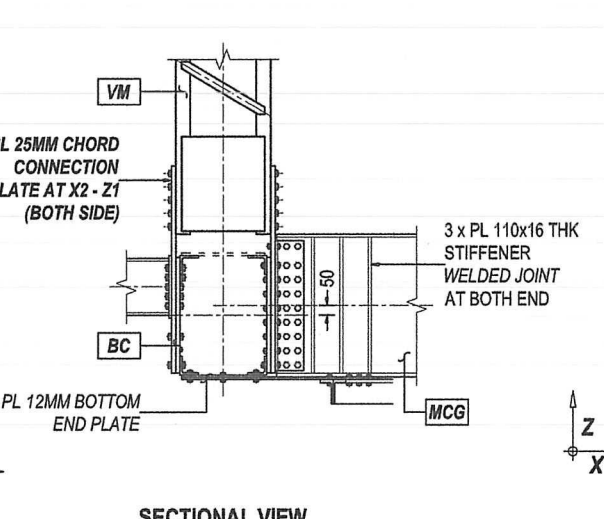
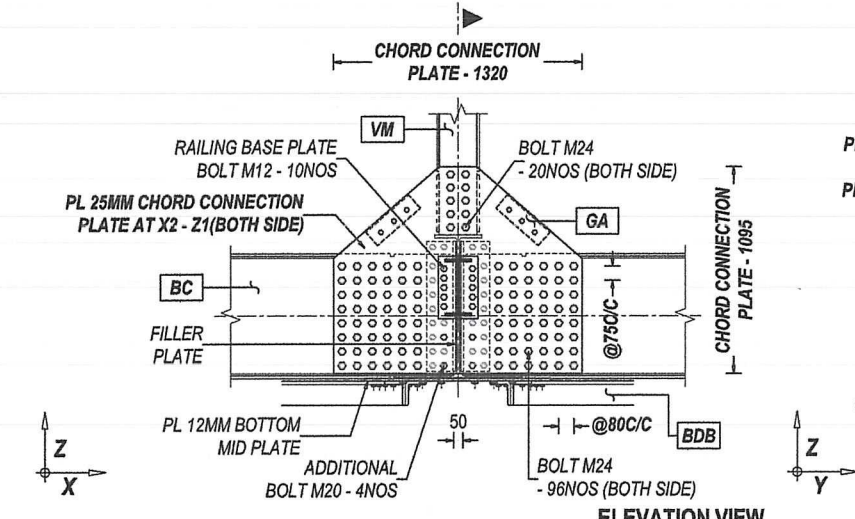
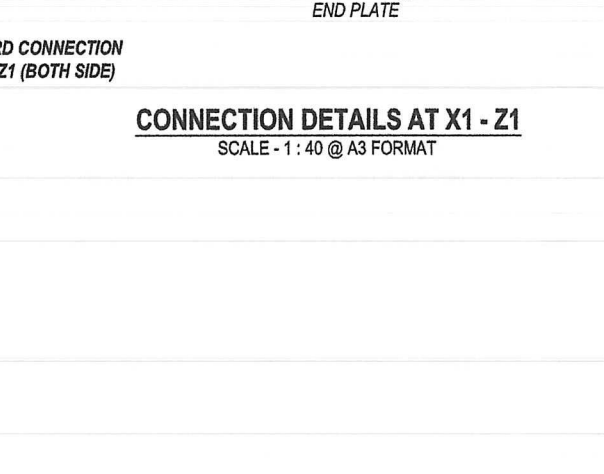
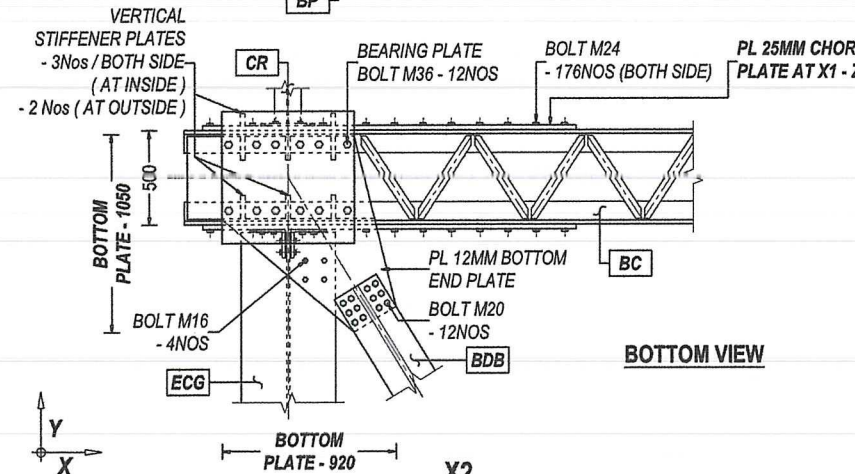
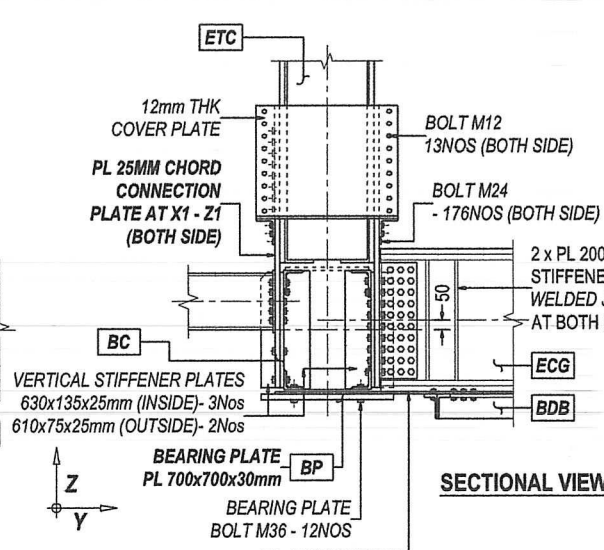
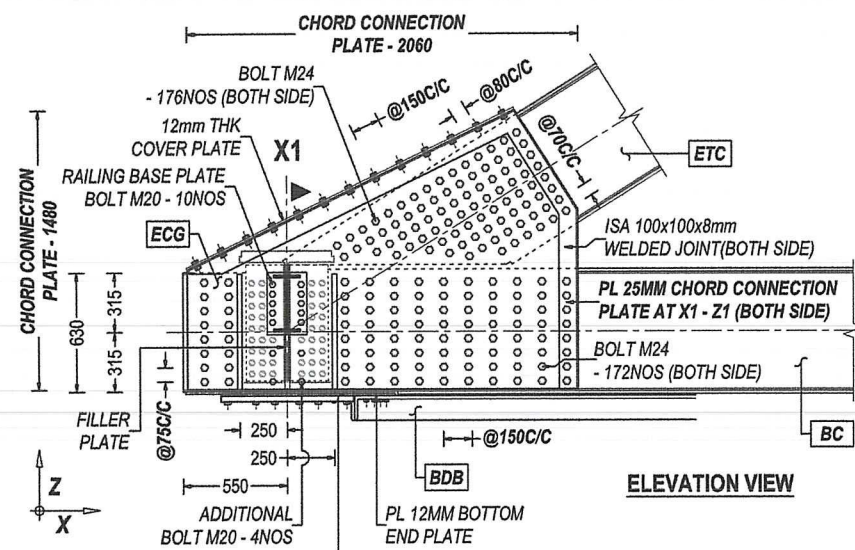
NOTES FOR STIFFENERS AT END CROSS GIRDER (ECG)

1. PLATE (PL 200x16) STIFFENERS AT 800mm C/C TO BE KEPT FROM EACH END OF ECG SUCH THAT EACH ALTERNATIVE STIFFENERS LIES AT EXACT LOCATION OF JACKING POINT.

GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH			
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES			
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide		Overall Bridge Width: 10.00 m	
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading			
Drg. No.: 4/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span			
Drg. TITLE : SECTIONAL DETAILS OF MEMBERS			
Designed by : Bhiva Shrestha Malla (Structural Engineer)	Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)	Date : Jun, 2022.
Accepted by : Umesh Bindu Shrestha (DDG, DoR)	Approved by : Shiva Prasad Nepal (Acting DG, DoR)	Revisions :	

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श्री. शिवा प्रसाद नेपाल
निर्देशक



CONNECTION DETAILS AT X1 - Z1
SCALE - 1 : 40 @ A3 FORMAT

CONNECTION DETAILS AT X3 - Z1
SCALE - 1 : 40 @ A3 FORMAT

CONNECTION DETAILS AT X2 - Z1
SCALE - 1 : 40 @ A3 FORMAT

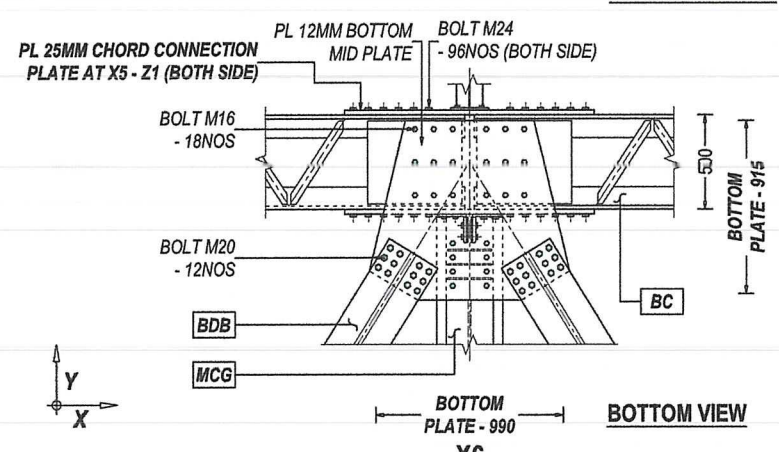
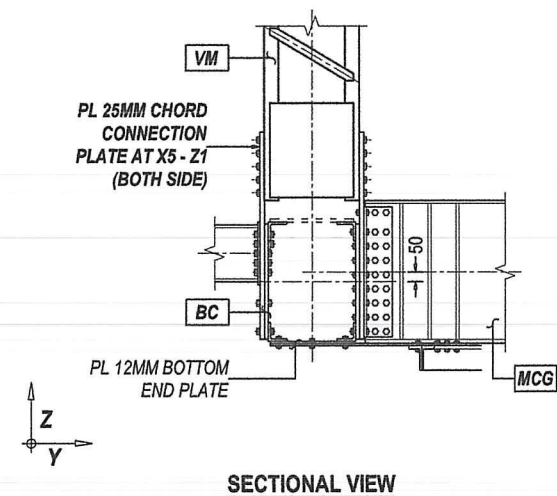
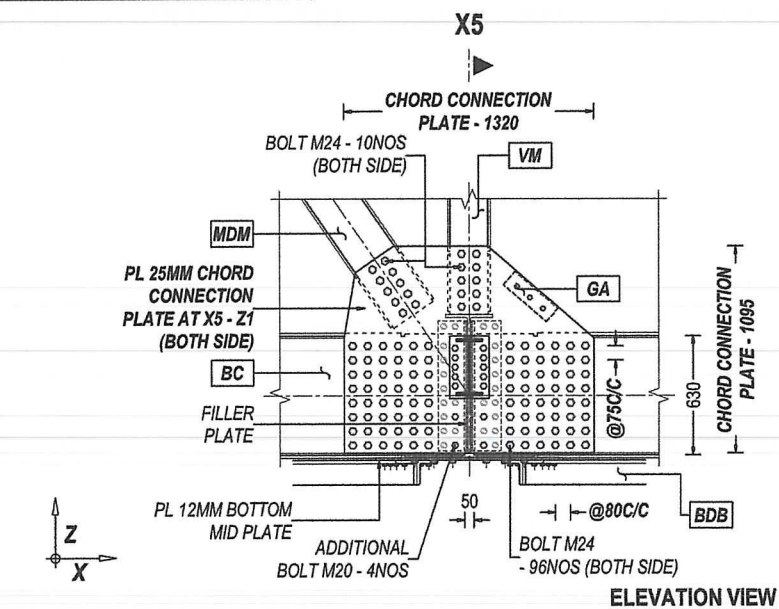
CONNECTION DETAILS AT X4 - Z1
SCALE - 1 : 40 @ A3 FORMAT

GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH				
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES				
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide			Overall Bridge Width: 10.00 m	
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading				
Drg. No.: 5/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span				
Drg. TITLE : MEMBER JOINT DETAILS (4 Sheets): Sheet 1/4				
Designed by : Biva Shrestha Malla (Structural Engineer)		Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)	Date : Jun, 2022.
Accepted by : Umesh Bindu Shrestha (DDG, DoR)		Approved by : Shiva Prasad Nepal (Acting DG, DoR)		Revisions :  00

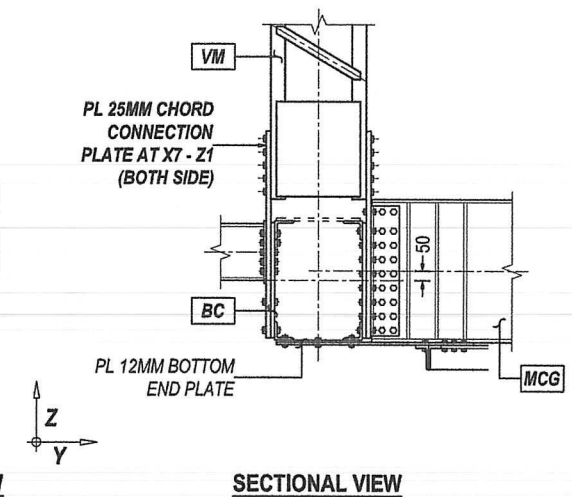
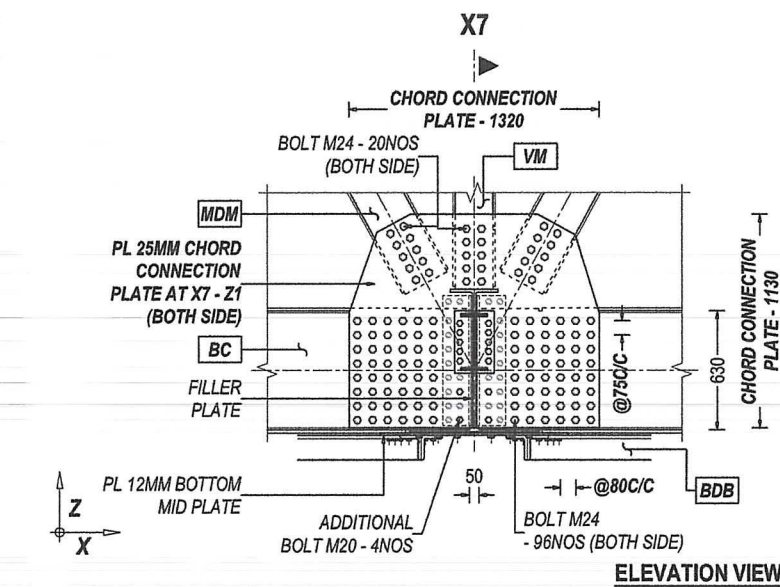


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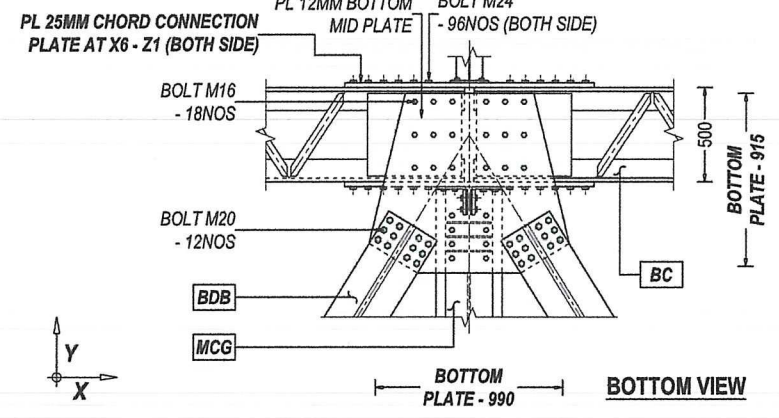
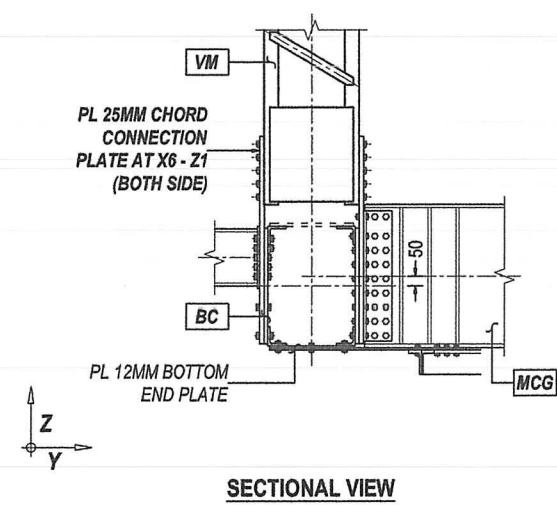
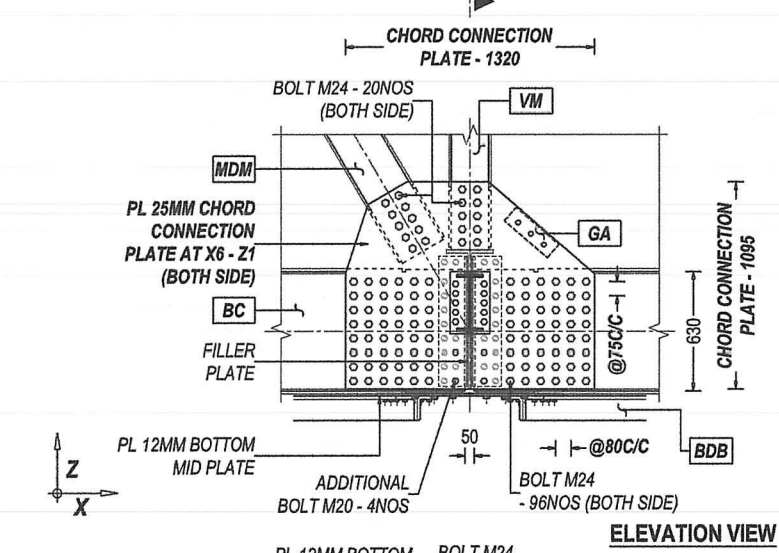
Er. Shiva Prasad Nepal
Acting Director General



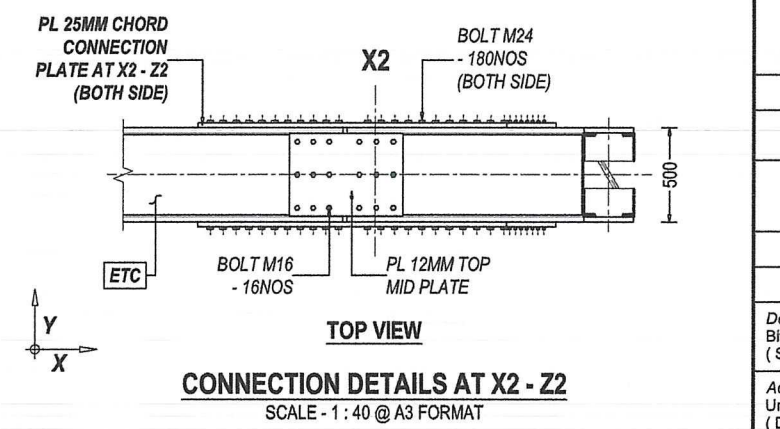
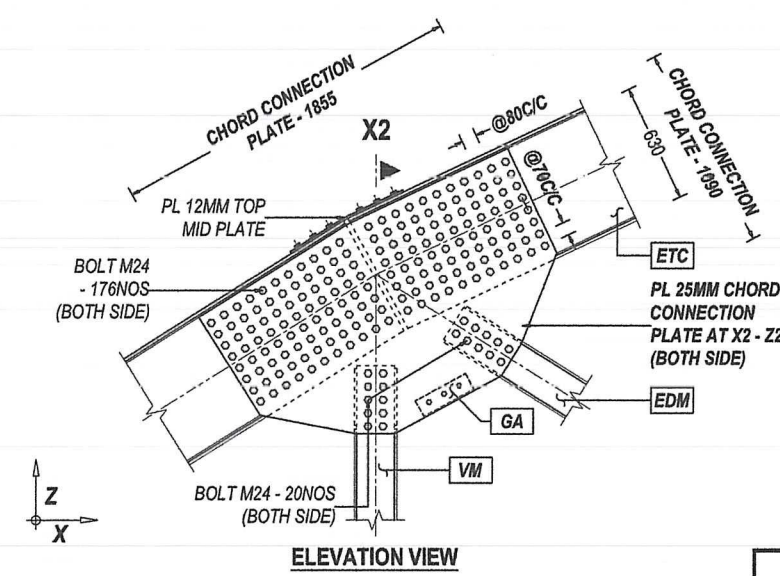
CONNECTION DETAILS AT X5 - Z1
SCALE - 1 : 40 @ A3 FORMAT



CONNECTION DETAILS AT X7 - Z1
SCALE - 1 : 40 @ A3 FORMAT



CONNECTION DETAILS AT X6 - Z1
SCALE - 1 : 40 @ A3 FORMAT



CONNECTION DETAILS AT X2 - Z2
SCALE - 1 : 40 @ A3 FORMAT

NOTES FOR ADDITIONAL BOLTS (FOR DRAWING No. : 5 / 12 TO 8 / 12)

ADDITIONAL M20 AND M12 BOLTS CAN BE KEPT AT ANY SUITABLE POSITION WITH SUITABLE NUMBERS MAINTAINING PITCH AND EDGE DISTANCES WHERE SPACING OF BOLTS IN GUSSET PLATES IS MORE THAN 300mm.

GOVERNMENT OF NEPAL MINISTRY OF PHYSICAL INFRASTRUCTURE AND TRANSPORT DEPARTMENT OF ROADS BRIDGE BRANCH				
STANDARD SUPERSTRUCTURE DRAWING FOR ROAD BRIDGES				
Road Carriageway Width: 7.5m with 2 Footpaths each 1.5m wide		Overall Bridge Width: 10.00 m		
LIVE LOAD: IRC 1 Lane of 70R or 1 or 2 Lanes of Class A, whichever governs and Footpath Loading				
Drg. No.: 6/12 of Bowstring Steel Truss Bridge - 70.0 m - SS Span				
Drg. TITLE : MEMBER JOINT DETAILS (4 Sheets): Sheet 2/4				
Designed by : Biva Shrestha Malla (Structural Engineer)	Forwarded by : Prakriti Pokhrel (Engineer, DoR)	Recommended by : Jibendra Mishra (SDE, DoR)	Date : Jun, 2022	Revisions 00
Accepted by : Umesh Bindu Shrestha (DDG, DoR)	Approved by : Shiva Prasad Nepal (Acting DG, DoR)			

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Acting Director General

