

Ontario Ministry of Transportation

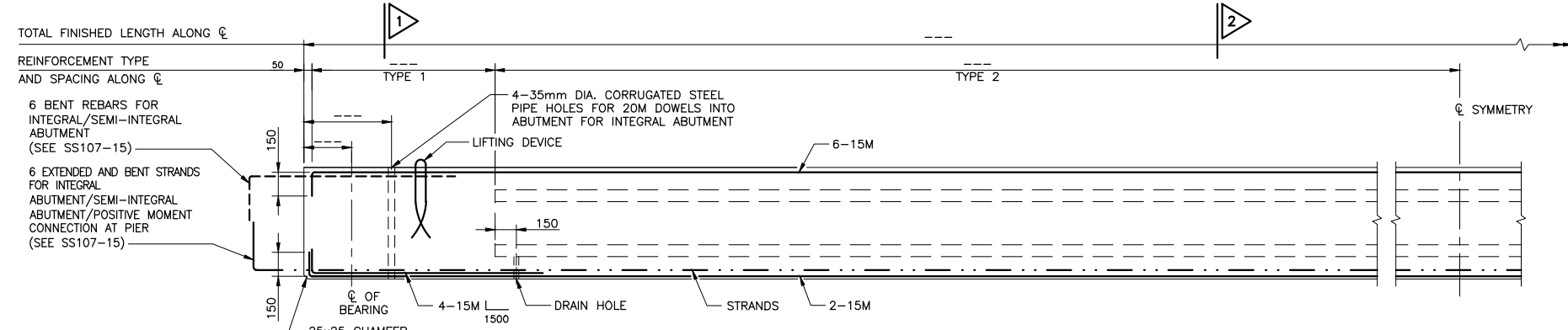
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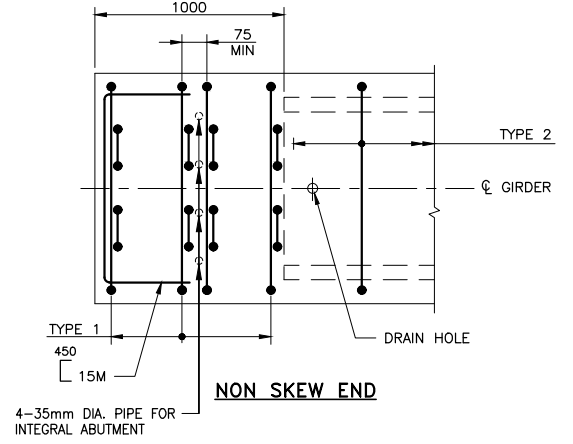
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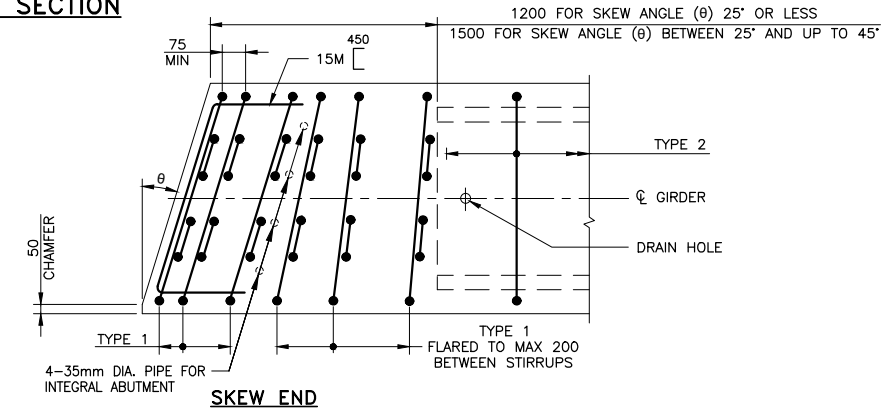
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TYPE		---	---
SIZE (mm)		---x---x---	---x---x---
NUMBER REQUIRED		---	---
SERVICEABILITY LIMIT STATES	DEAD LOAD (kN)	---	---
	TOTAL LOAD (kN)	---	---
	MOVEMENT (mm)	+/----	+/----
	ROTATION (radian)	---	---
SHEAR RATE @ 20°C (kN/mm)		---	---



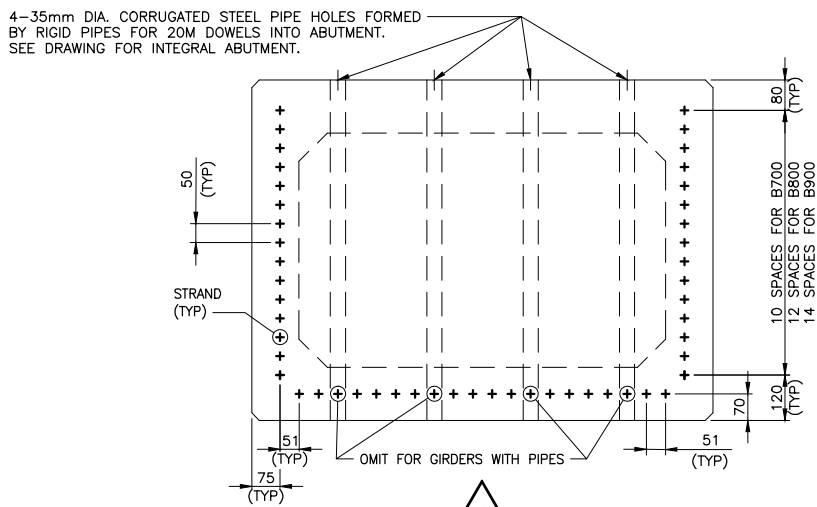
LONGITUDINAL SECTION



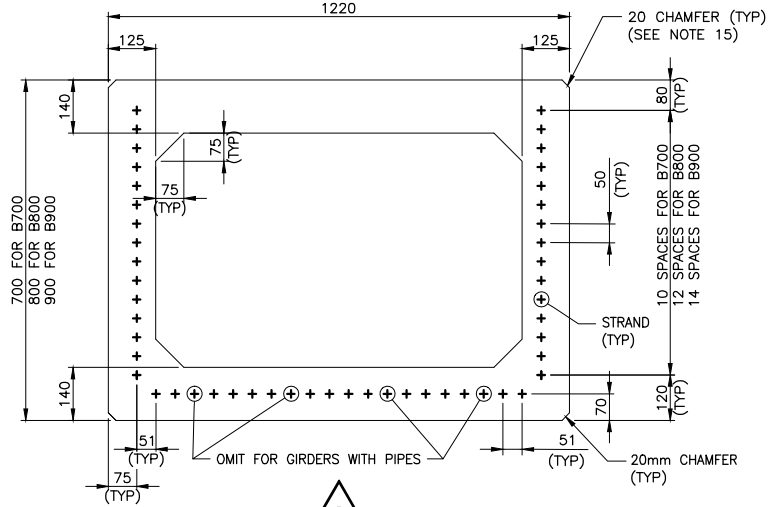
PLAN (TYPICAL END REINFORCEMENT) 1:20



SKEW END

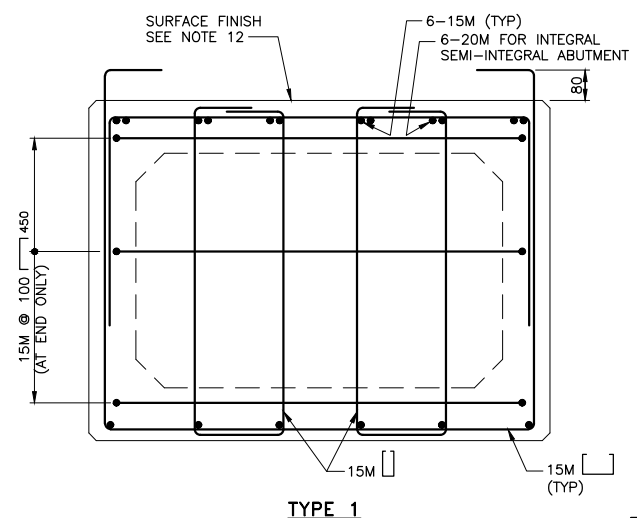


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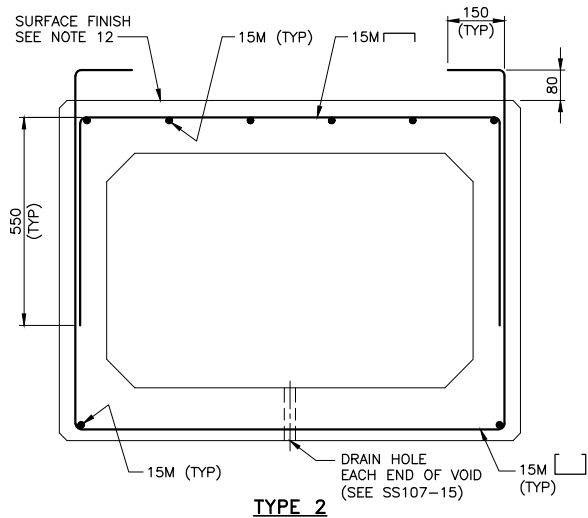


2

STRAND GRID ARRANGEMENT



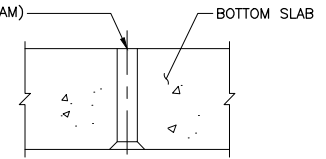
TYPE 1



TYPE 2

REINFORCING DETAILS

30mm DIA. DRAIN HOLE WITH 55 x 55 x 13mm RECESS AT LOW ENDS OF EACH VOID (TYP, EACH BOX BEAM)



DETAIL FOR THE DRAIN HOLE

B700	B800	B900
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NOTES:

- PRESTRESSING STEEL SHALL BE LOW-RELAXATION SEVEN WIRE STRANDS, SIZE DESIGNATION 15, GRADE 1860.
- MINIMUM BREAKING STRENGTH OF STRAND 261 kN.
- PRESTRESSING FORCE PER STRAND IMMEDIATELY PRIOR TO TRANSFER 192.7 kN.
- FORCE PER STRAND AFTER ALL LOSSES ____ kN.
- THE ELAPSED TIME INTERVAL BETWEEN JACKING OF STRANDS AND TRANSFER SHALL NOT BE LESS THAN 15 HOURS.
- SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTH PRECAST GIRDER 50 MPa.
- CONCRETE STRENGTH AT TRANSFER ____ MPa.
- REINFORCING STEEL SHALL BE GRADE 500W. STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPa.
- CLEAR COVER TO REINFORCING STEEL:
 SOFFIT OF BOTTOM SLAB (EXCEPT UNDERCUT) 48 +15mm/-5mm
 UNDERCUT AND ELSEWHERE 30 +15mm/-5mm
- ALL STIRRUPS, DOWELS INTO DECK AND BURSTING/SPLITTING REINFORCEMENT WITHIN 1000mm FROM THE GIRDER END WITH EXPANSION JOINT SHALL BE STAINLESS.
- FOR BRIDGES ON GRADES EXCEEDING 3%, THE ENDS OF GIRDERS SHALL BE CAST SO THAT THEY ARE VERTICAL WHEN ERECTED.
- THE TOP OF PRECAST BEAM SHALL BE GIVEN ROUGH FINISH OF ABOUT 5mm AMPLITUDE ACROSS THE WIDTH.
- DRAWING TO BE READ IN CONJUNCTION WITH SS107-15.
- NO WELDING SHALL BE PERMITTED EXCEPT AS SHOWN ON THIS DRAWING OR APPROVED BY THE OWNER.
- 20mm CHAMFER AT TOP CORNERS OF GIRDER SECTION IS OPTIONAL.
- VOID IN THE BOX GIRDER SHALL BE FILLED WITH SOLID STYROFOAM.

NOTES TO DESIGNER:

- THE DESIGNER SHALL USE STRAIGHT STRANDS ONLY.
- ROTATION IN BEARING DATA TABLE CORRESPONDS TO TOTAL LOAD.
- DETERMINE WHICH SECTIONS APPLY AND DELETE THOSE THAT DO NOT APPLY.
- CONCRETE STRENGTH AT TRANSFER SHALL NOT BE MORE THAN 38 MPa.
- THE 'NOTES TO DESIGNER' SHALL BE DELETED FROM THIS DRAWING PRIOR TO ISSUING.

REFER TO THE STRUCTURAL MANUAL FOR PROFESSIONAL ENGINEER STAMPING REQUIREMENTS.

STANDARD DRAWING JULY 25, 2023 **SS107-13**

PRESTRESSED BOX GIRDERS AND BEARINGS (B700, B800, B900)

REVISIONS	DATE	BY	DESCRIPTION

DESIGN	CHK	CODE	CHBDC-19/LOAD	DATE
DRAWN	CHK	SITE		DWG

FILE NAME: C:\USERS\WEZAKVA\ONE DRIVE - GOVERNMENT OF ONTARIO\DESKTOP\SERAJ B GIRDERS OCT 2022\1 SSD 0107.0014 JULY 25 2023 DRAFT.DWG
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MINISTRY OF TRANSPORTATION OF ONTARIO
 STRUCTURAL

2020-05
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Ontario Ministry of Transportation

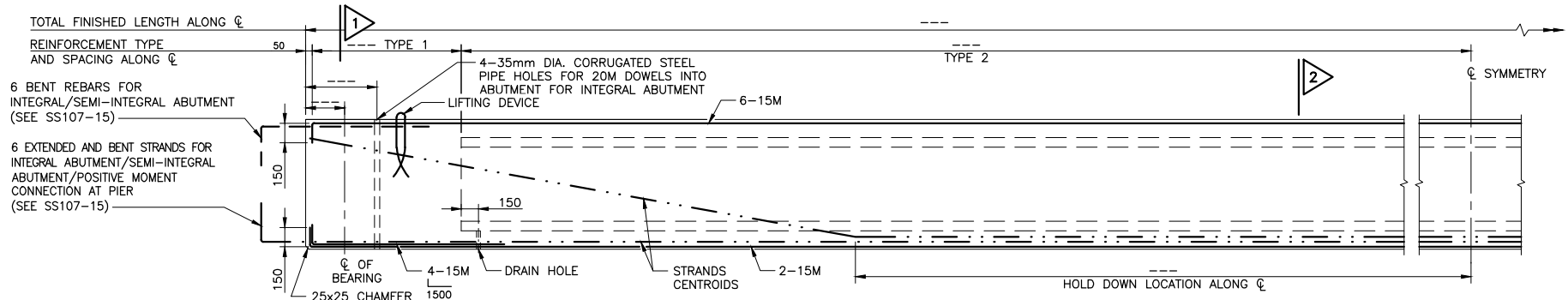
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SHEET

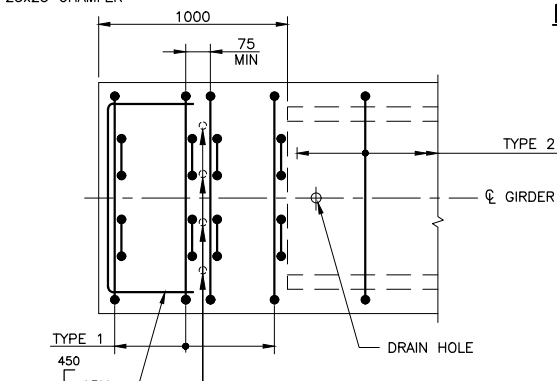
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BEARING DATA

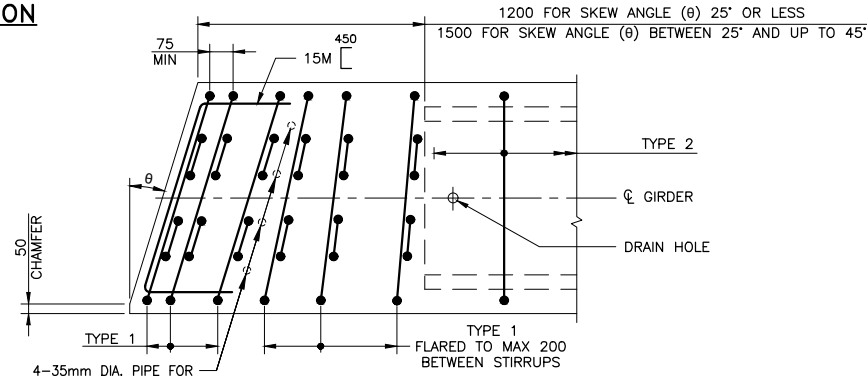
LOCATION		ABUTMENTS	PIERS
TYPE		---	---
SIZE (mm)		---x---x---	---x---x---
NUMBER REQUIRED		---	---
SERVICEABILITY LIMIT STATES	DEAD LOAD (kN)	---	---
	TOTAL LOAD (kN)	---	---
	MOVEMENT (mm)	+/----	+/----
	ROTATION (radian)	---	---
SHEAR RATE @ 20°C (kN/mm)		---	---



LONGITUDINAL SECTION

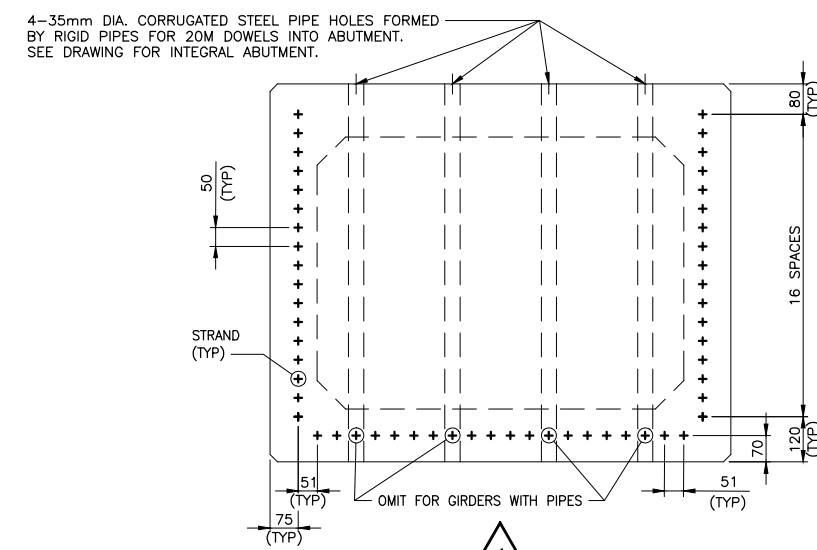


NON SKEW END

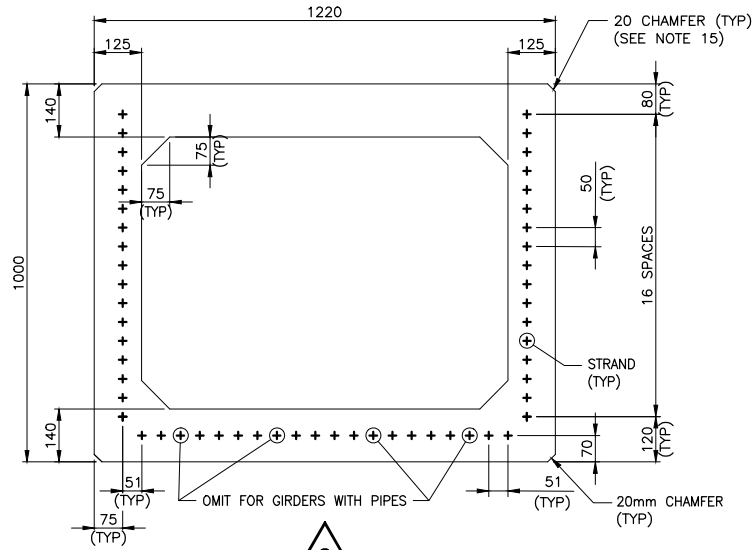


SKEW END

PLAN (TYPICAL END REINFORCEMENT) 1:20

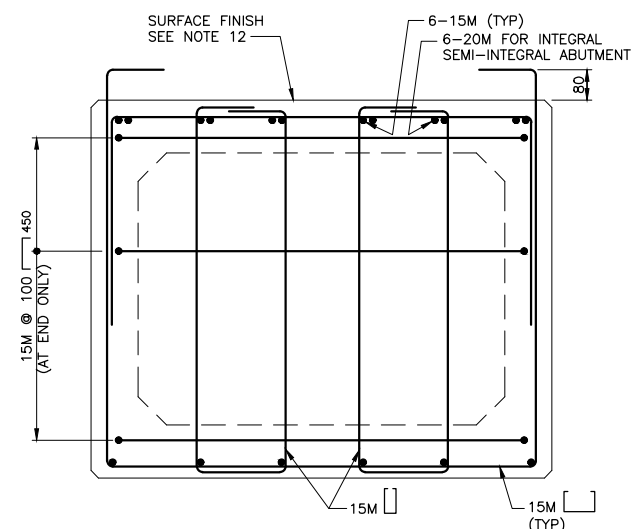


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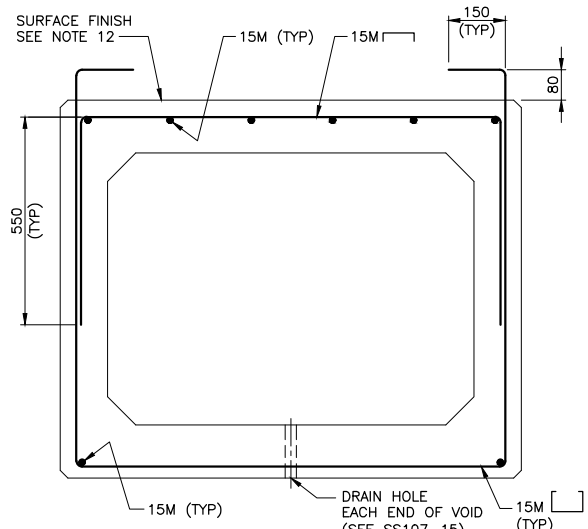


2

STRAND GRID ARRANGEMENT



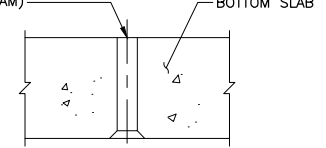
TYPE 1



TYPE 2

REINFORCING DETAILS

30mm DIA. DRAIN HOLE WITH 55 x 55 x 13mm RECESS AT LOW ENDS OF EACH VOID (TYP, EACH BOX BEAM)



DETAIL FOR THE DRAIN HOLE

B1000

NOTES:

- PRESTRESSING STEEL SHALL BE LOW-RELAXATION SEVEN WIRE STRANDS, SIZE DESIGNATION 15, GRADE 1860.
- MINIMUM BREAKING STRENGTH OF STRAND 261 kN.
- PRESTRESSING FORCE PER STRAND IMMEDIATELY PRIOR TO TRANSFER 192.7 kN.
- FORCE PER STRAND AFTER ALL LOSSES ____ kN.
- THE ELAPSED TIME INTERVAL BETWEEN JACKING OF STRANDS AND TRANSFER SHALL NOT BE LESS THAN 15 HOURS.
- SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTH PRECAST GIRDER 50 MPa.
- CONCRETE STRENGTH AT TRANSFER ____ MPa.
- REINFORCING STEEL SHALL BE GRADE 500W. STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPa.
- CLEAR COVER TO REINFORCING STEEL:
 SOFFIT OF BOTTOM SLAB (EXCEPT UNDERCUT) 48 +15mm/-5mm
 UNDERCUT AND ELSEWHERE 30 +15mm/-5mm
- ALL STIRRUPS, DOWELS INTO DECK AND BURSTING/SPLITTING REINFORCEMENT WITHIN 1000mm FROM THE GIRDER END WITH EXPANSION JOINT SHALL BE STAINLESS.
- FOR BRIDGES ON GRADES EXCEEDING 3%, THE ENDS OF GIRDERS SHALL BE CAST SO THAT THEY ARE VERTICAL WHEN ERECTED.
- THE TOP OF PRECAST BEAM SHALL BE GIVEN ROUGH FINISH OF ABOUT 5mm AMPLITUDE ACROSS THE WIDTH.
- DRAWING TO BE READ IN CONJUNCTION WITH SS107-15.
- NO WELDING SHALL BE PERMITTED EXCEPT AS SHOWN ON THIS DRAWING OR APPROVED BY THE OWNER.
- 20mm CHAMFER AT TOP CORNERS OF GIRDER SECTION IS OPTIONAL.
- VOID IN THE BOX GIRDER SHALL BE FILLED WITH SOLID STYROFOAM.

NOTES TO DESIGNER:

- THE DESIGNER SHALL USE STRAIGHT STRANDS ONLY.
- ROTATION IN BEARING DATA TABLE CORRESPONDS TO TOTAL LOAD.
- DETERMINE WHICH SECTIONS APPLY AND DELETE THOSE THAT DO NOT APPLY.
- CONCRETE STRENGTH AT TRANSFER SHALL NOT BE MORE THAN 38 MPa.
- THE 'NOTES TO DESIGNER' SHALL BE DELETED FROM THIS DRAWING PRIOR TO ISSUING.

REFER TO THE STRUCTURAL MANUAL FOR PROFESSIONAL ENGINEER STAMPING REQUIREMENTS.

STANDARD DRAWING
 JULY 25, 2023

SS107-14

PRESTRESSED BOX GIRDERS AND BEARINGS (B1000)

REVISIONS	DATE	BY	DESCRIPTION

DESIGN	CHK	CODE	CHBDC-19/LOAD	DATE
DRAWN	CHK	SITE		DWG

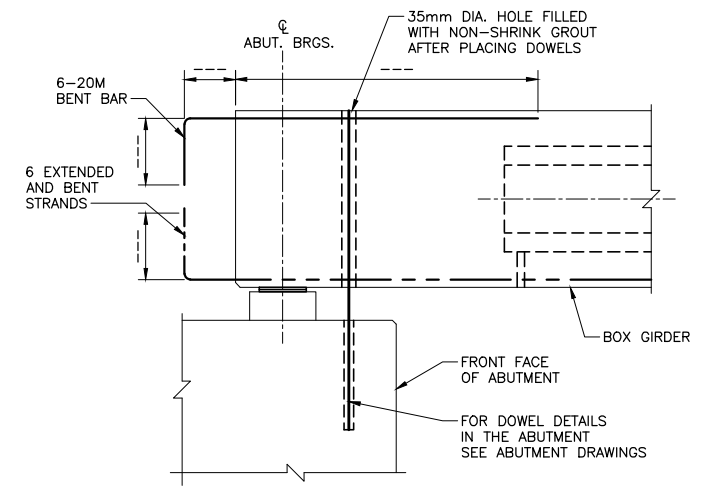
Ontario Ministry of Transportation

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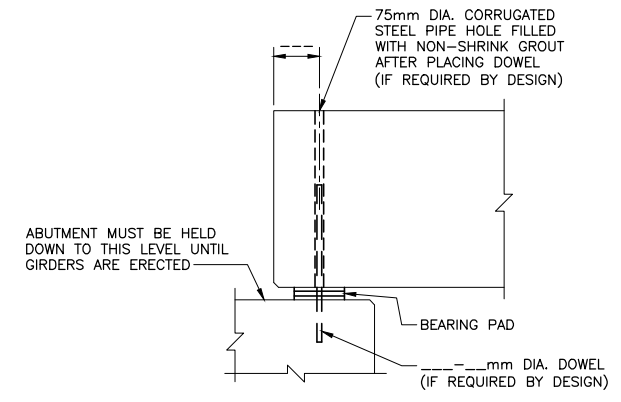
PRESTRESSED BOX GIRDERS DETAILS

SHEET

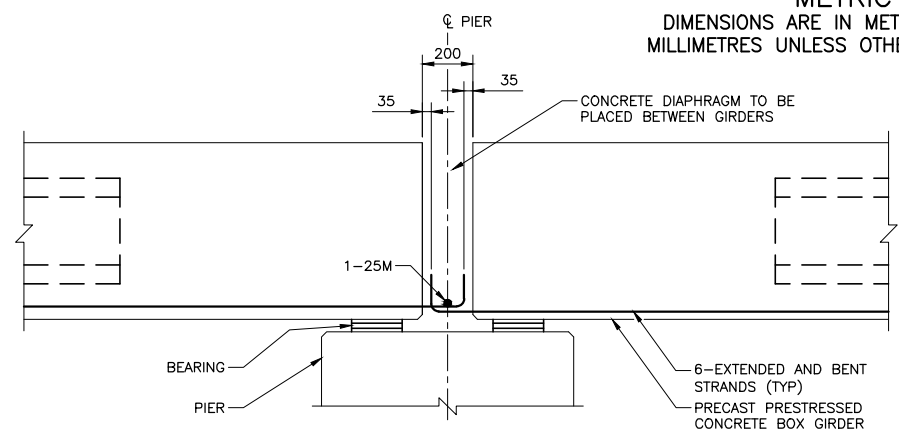
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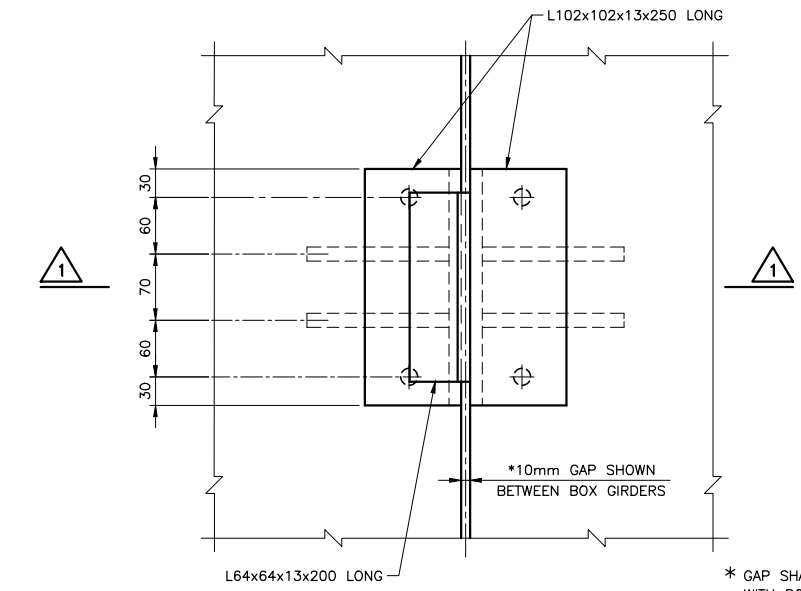
GIRDER TO INTEGRAL ABUTMENT DETAILS



GIRDER TO ABUTMENT FOR PINNED END



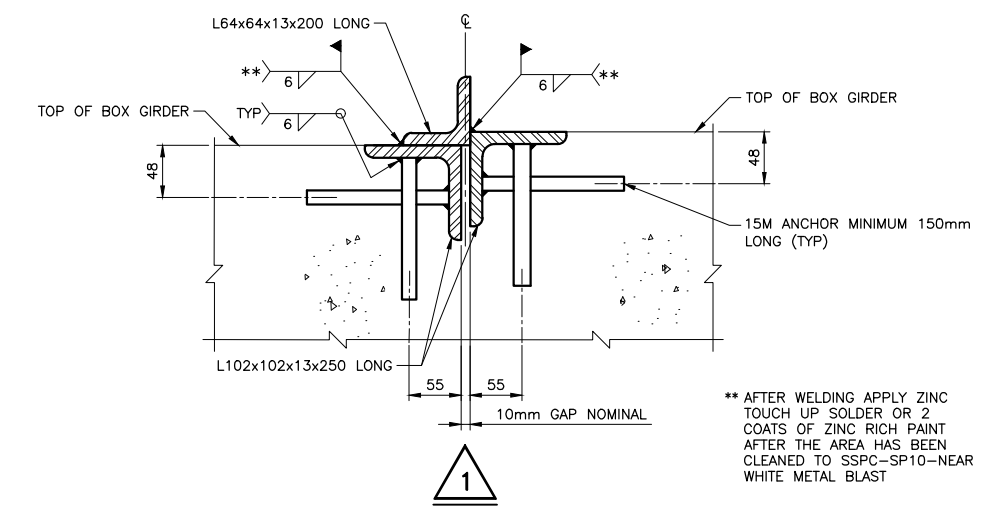
POSITIVE MOMENT CONNECTION AT PIERS



STEEL TIES BETWEEN BOXES PLAN

TRANSVERSE TIE LOCATIONS

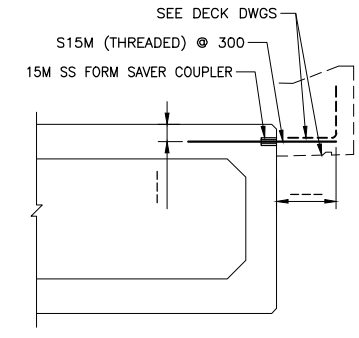
SPAN LENGTH	TIE LOCATIONS AT		
	1/4 SPAN	1/3 SPAN	MIDSPAN
<24m	-	X	-
>24m	X	-	X



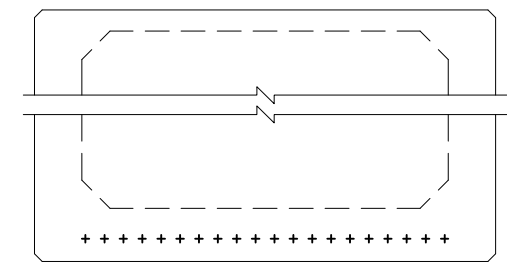
GIRDER SOFFIT DETAIL AT BEARINGS

NOTE: DIMENSIONS a AND b = 9, 12, 15 OR 18mm, AS REQUIRED BY THE DESIGN

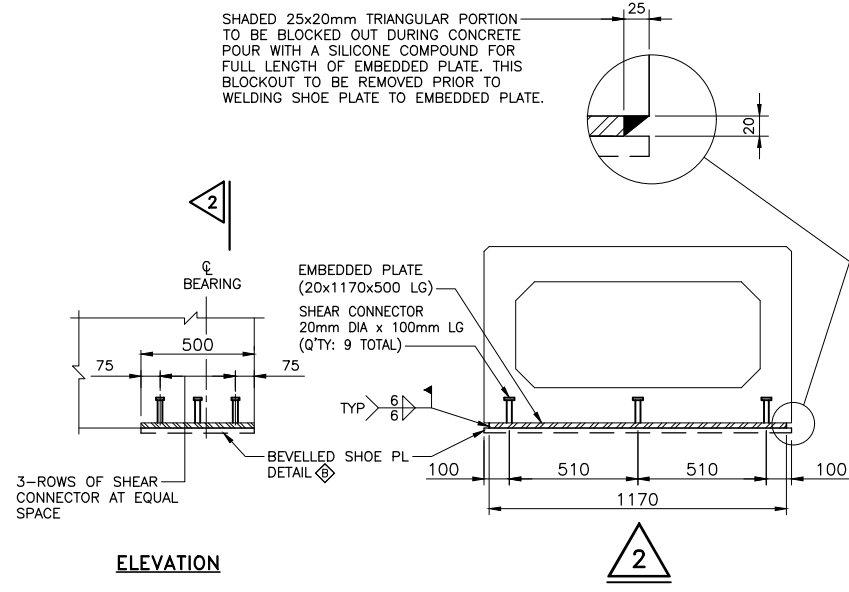
** AFTER WELDING APPLY ZINC TOUCH UP SOLDER OR 2 COATS OF ZINC RICH PAINT AFTER THE AREA HAS BEEN CLEANED TO SSPC-SP10-NEAR WHITE METAL BLAST



EXTERIOR GIRDER DOWELS FOR OVERHANG CURBS



EXTENDED AND BENT STRANDS OUTSIDE BOX (SEE NOTE 7)



ELEVATION

EMBEDDED BEARING PLATE DETAIL (NON INTEGRAL ABUTMENT ONLY)

NOTES:

1. THIS DRAWING SHOWS TYPICAL DETAILS FOR PRECAST CONCRETE BOX GIRDERS AND IS TO BE READ IN CONJUNCTION WITH DRAWING SS107-15.
2. STEEL PLATES AND ANGLES SHALL BE ACCORDING TO CSA G40.20-13/G40.21-13, GRADE 300W.
3. STEEL PLATES AND ANGLES SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
4. IF ANCHORED EMBEDDED STEEL BEARING PLATES ARE REQUIRED AT GIRDER ENDS, THEY SHALL HAVE A THICKNESS OF 20mm. THEY SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. ALL DAMAGED GALVANIZED SURFACES SHALL BE COATED WITH TWO COATS OF ZINC-RICH PAINT.
5. AT ENDS OF GIRDERS WHICH ARE NOT TO BE ENCASED IN CONCRETE, STRAND ENDS SHALL BE RECESSED AND GROUDED, AND GIRDER END FACE SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT.
6. IF ANCHORED EMBEDDED STEEL BEARING PLATES ARE REQUIRED THE REINFORCING MAY BE ADJUSTED SLIGHTLY TO ACCOMMODATE THE SHEAR CONNECTORS.
7. THE CIRCLED STRANDS ON DETAIL 'A' SHALL BE EXTENDED AND BENT.
8. LIFTING DEVICES SHALL NOT BE CUT WITHOUT APPROVAL OF THE CONTRACT ADMINISTRATOR.

NOTES TO DESIGNER:

1. IN DETERMINING THE GIRDER SPACING ADD 10mm TO ACCOUNT FOR THE GAP BETWEEN THE BOXES.
2. AT EXTERIOR GIRDERS, THE OVERHANG LENGTH, CURB FACIA DEPTH, AND SOFFIT SLOPE SHALL BE ADJUSTED TO ACCOMMODATE THE COUPLER BAR LOCATION TO LAP WITH DECK REINFORCEMENT. THE COVER IN SOFFIT OF THE CANTILEVER OVERHANG MAY BE INCREASED FROM 40mm UP TO 100mm IF REQUIRED, AND THE COUPLER MAY BE DETAILED AT ANY DEPTH IN THE TOP FLANGE OF THE GIRDER RESPECTING COVER WITHIN THE PRECAST GIRDER.
3. ANCHORED EMBEDDED STEEL BEARING PLATES WITH PINTLED BEVEL PLATES SHALL BE USED ONLY IF THE CALCULATED REQUIRED GIRDER SOFFIT UNDERCUT DIMENSION EXCEEDS 18mm.
4. THE BEVELLED SHOE PLATE USED WITH ELASTOMERIC BEARING MAY HAVE PINTLES. THE DESIGNER SHALL DETAIL THIS REQUIREMENT.
5. TRANSVERSE TIES SHALL BE PROVIDED BETWEEN GIRDER AT LOCATIONS ACCORDING TO THE DESIGN TABLE AND TO BE SHOWN ON THE GIRDERS LAYOUT PLAN.
6. IF INSERTS FOR CANTILEVER REINFORCEMENT ARE REQUIRED, THEY SHALL BE DETAILED BY THE DESIGNER.
7. DETERMINE WHICH SECTIONS APPLY AND DELETE THOSE THAT DO NOT APPLY.
8. THE DESIGNER SHALL CIRCLE ON DETAIL 'A' THE 6 STRANDS THAT SHALL BE EXTENDED AND BENT AT INTEGRAL ABUTMENT, SEMI-INTEGRAL ABUTMENT, AND POSITIVE MOMENT CONNECTION OVER PIER. PROJECTED STRANDS SHALL NOT BE SIDE BY SIDE AND SHALL BE SPACED MINIMUM 100mm FOR THE ACCESS OF MECHANICAL BENDING DEVICE.
9. THE 'NOTES TO DESIGNER' SHALL BE DELETED FROM THIS DRAWING PRIOR TO ISSUING.

REFER TO THE STRUCTURAL MANUAL FOR PROFESSIONAL ENGINEER STAMPING REQUIREMENTS

STANDARD DRAWING JULY 25, 2023 **SS107-15**

PRESTRESSED BOX GIRDERS DETAILS

REVISIONS	DATE	BY	DESCRIPTION
DESIGN	CHK	CODE	CHBDC-19/LOAD
DRAWN	CHK	SITE	DATE DWG