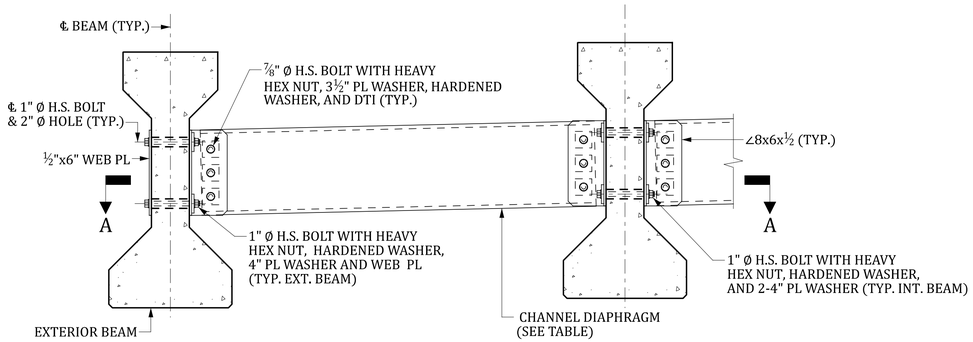
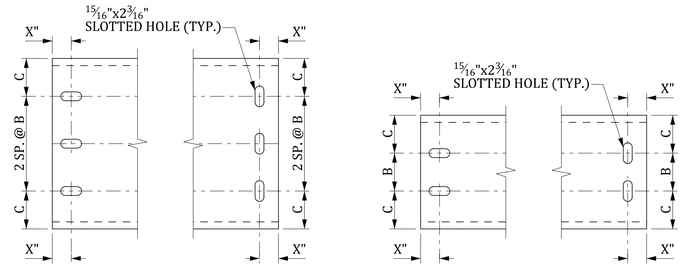
BRIDGE PLANS ID	SHEET
####-####	001



ELEVATION

AASHTO TYPE IV SHOWN, OTHERS SIMILAR.



18" CHANNEL

10" OR 12" CHANNEL

CHANNEL END DETAIL

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

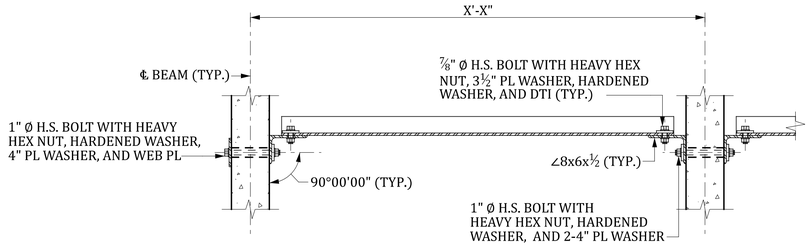
FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

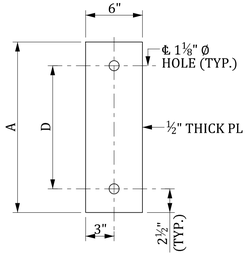
DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.



SECTION A-A



WEB PLATE DETAIL

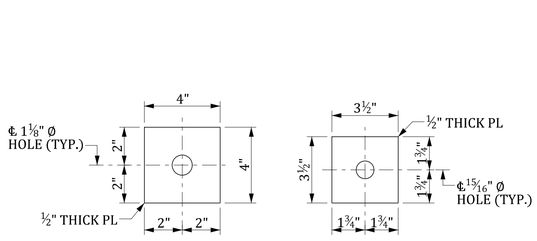
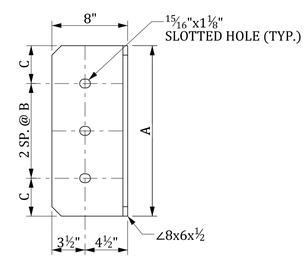
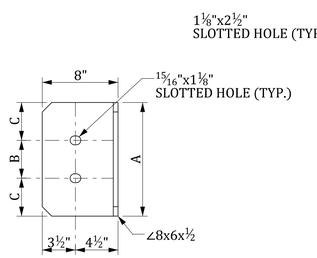


PLATE WASHER DETAIL

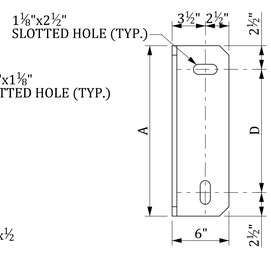
USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



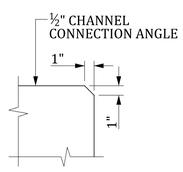
DIAPHRAGM FACE
FOR 18" CHANNEL



DIAPHRAGM FACE
FOR 10" OR 12" CHANNEL



WEB FACE



CORNER CLIP

CHANNEL CONNECTION ANGLE DETAILS

BEAM	DIAPHRAGM	CONNECTION DIMENSIONS			
		A	B	C	D
TYPE I MOD.	MC10X22	10"	4"	3"	5"
TYPE II	MC12X31	1'-0"	4"	4"	7"
TYPE III	MC18X42.7	1'-6"	5"	4"	1'-1"
TYPE IV	MC18X42.7	1'-6"	5"	4"	1'-1"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

	REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION
Dylan.Danks 6/21/2024 3:30:47 PM 704_StIntDia.dgn	REV.				
	REV.				

CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

AASHTO I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 1

COUNTY: ####

ROUTE: ####

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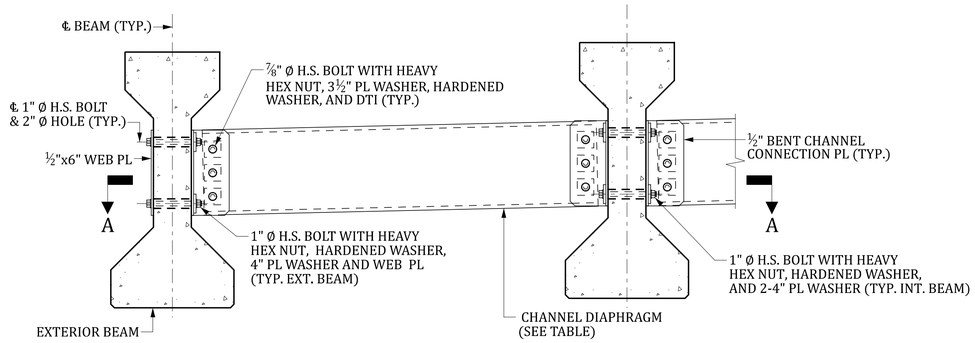
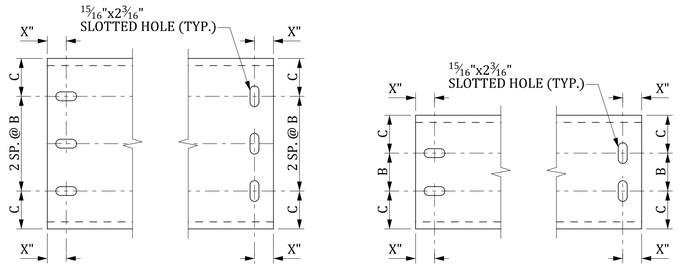
DRAWING NUMBER: 704-AASHTO.STLINTDIA.CHAN.SK000

BRIDGE PLANS ID	SHEET
####-####	002



ELEVATION

AASHTO TYPE IV SHOWN, OTHERS SIMILAR.



18" CHANNEL

10" OR 12" CHANNEL

CHANNEL END DETAIL

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

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TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

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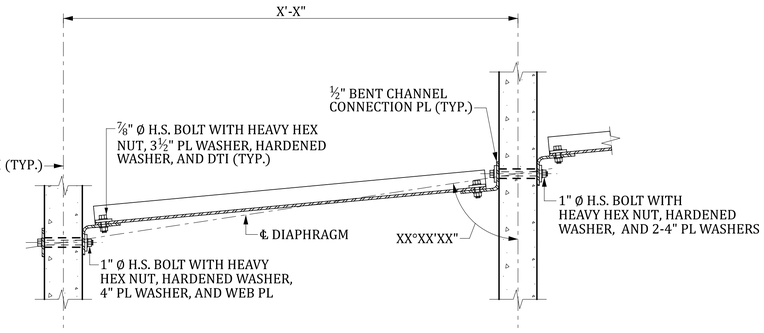
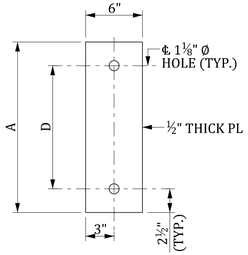


SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



WEB PLATE DETAIL

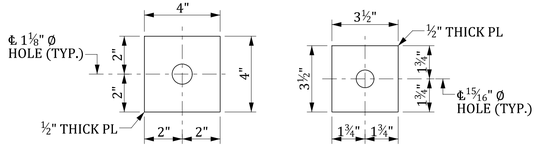
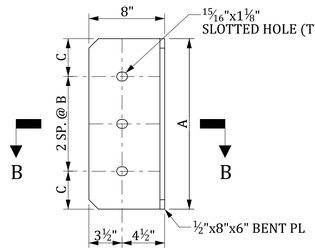
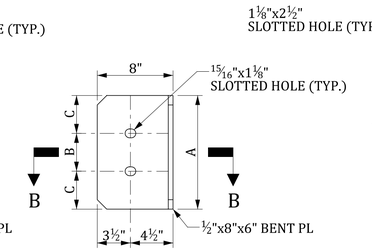


PLATE WASHER DETAIL

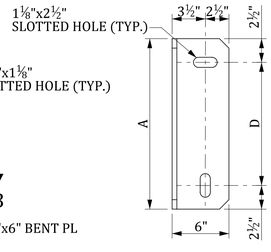
USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



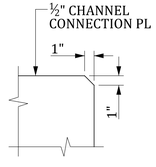
DIAPHRAGM FACE
FOR 18" CHANNEL



DIAPHRAGM FACE
FOR 10" OR 12" CHANNEL

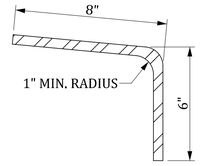


WEB FACE



CORNER CLIP

CHANNEL CONNECTION BENT PLATE DETAILS



SECTION B-B

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
TYPE I MOD.	MC10X22	10"	4"	3"	5"
TYPE II	MC12X31	1'-0"	4"	4"	7"
TYPE III	MC18X42.7	1'-6"	5"	4"	1'-1"
TYPE IV	MC18X42.7	1'-6"	5"	4"	1'-1"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

Dylan.Danks 6/21/2024 3:30:49 PM 704_StlIntDia.dgn

CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

AASHTO I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 2

COUNTY: ####

ROUTE: ####

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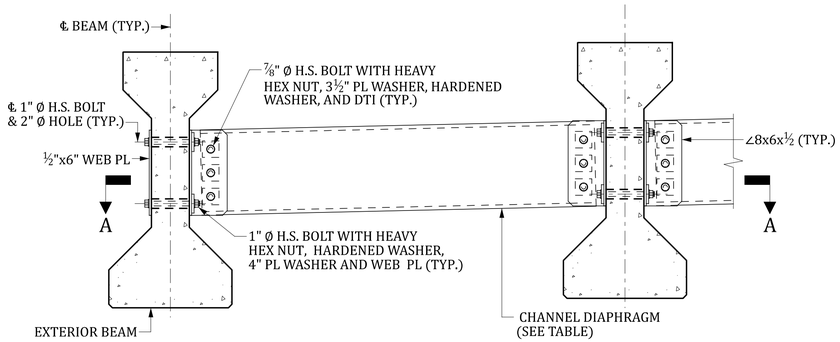
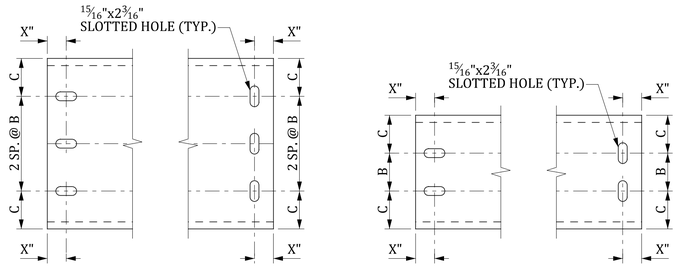
DRAWING NUMBER: 704-AASHTO.STLINTDIA.CHAN.SKUNDER20

BRIDGE PLANS ID	SHEET
####-####	003



ELEVATION

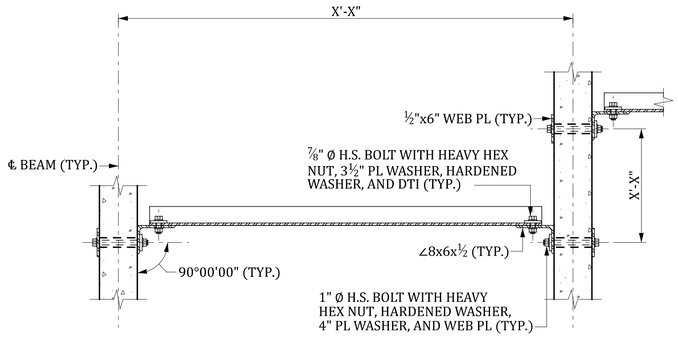
AASHTO TYPE IV SHOWN, OTHERS SIMILAR.



18" CHANNEL

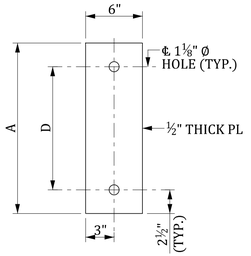
10" OR 12" CHANNEL

CHANNEL END DETAIL



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



WEB PLATE DETAIL

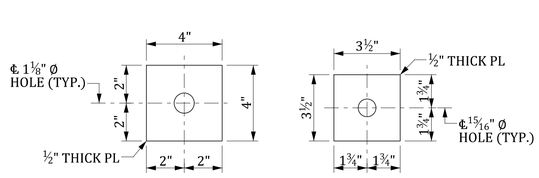


PLATE WASHER DETAIL

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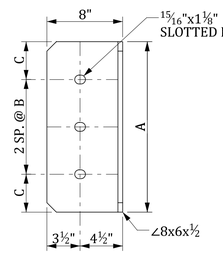
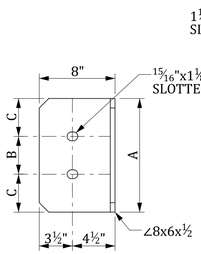
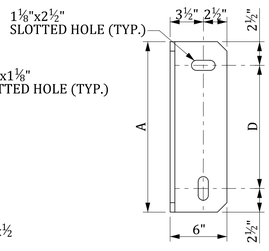


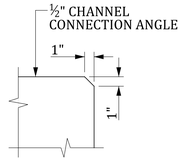
DIAPHRAGM FACE
FOR 18" CHANNEL



DIAPHRAGM FACE
FOR 10" OR 12" CHANNEL



WEB FACE



CORNER CLIP

CHANNEL CONNECTION ANGLE DETAILS

BEAM	DIAPHRAGM	CONNECTION DIMENSIONS			
		A	B	C	D
TYPE I MOD.	MC10X22	10"	4"	3"	5"
TYPE II	MC12X31	1'-0"	4"	4"	7"
TYPE III	MC18X42.7	1'-6"	5"	4"	1'-1"
TYPE IV	MC18X42.7	1'-6"	5"	4"	1'-1"

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

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SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ⅓ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

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INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

Dylan.Danks 6/21/2024 3:30:50 PM 704_StlIntDia.dgn

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

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CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

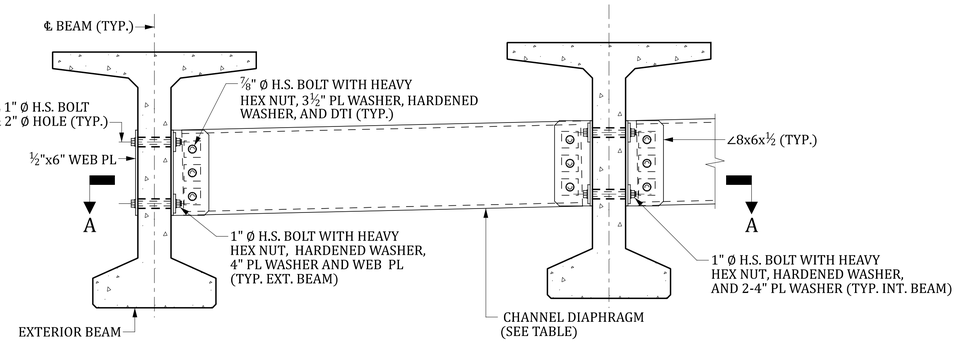
AASHTO I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 3

COUNTY: ####

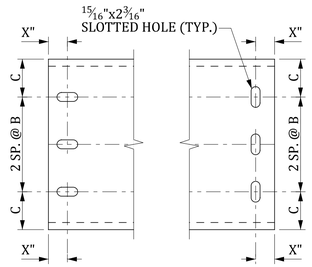
ROUTE: ####

DRAWING NUMBER: 704-AASHTO.STLINTDIA.CHAN.SKOVER20

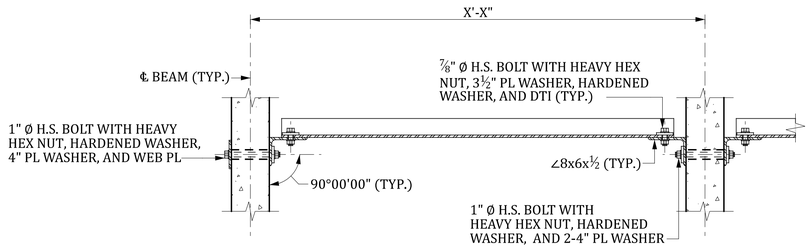
BRIDGE PLANS ID	SHEET
####-####	004



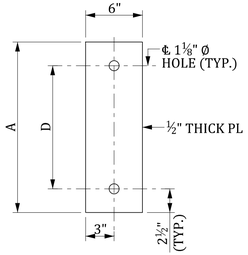
ELEVATION



CHANNEL END DETAIL



SECTION A-A



WEB PLATE DETAIL

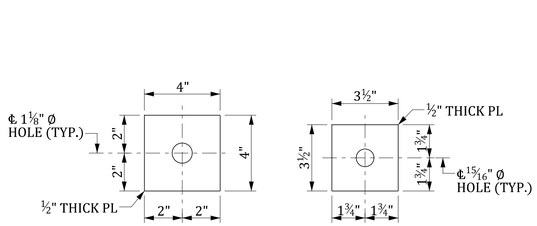
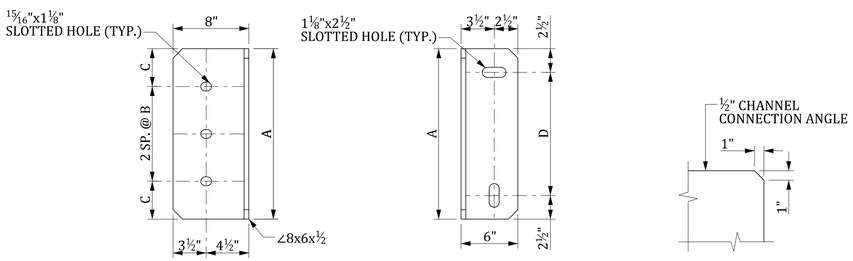


PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL $^{15}/_{16}$"x2$^{3}/_{16}$" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



DIAPHRAGM FACE | WEB FACE | CORNER CLIP

CHANNEL CONNECTION ANGLE DETAILS

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
54" MOD. B.T.	MC18X42.7	1'-6"	5"	4"	1'-1"

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REVIEWED			
QUAN.			DATE
DR.	DMD	AEL	04-24
DES.			CHK.
			BY

REV.					DESCRIPTION OF REVISION
REV.				DATE	
REV.			CHK.		
		BY			

Dylan.Danks 6/21/2024 3:30:51 PM 704_StlIntDia.dgn

CONSULTANT NAME/LOGO

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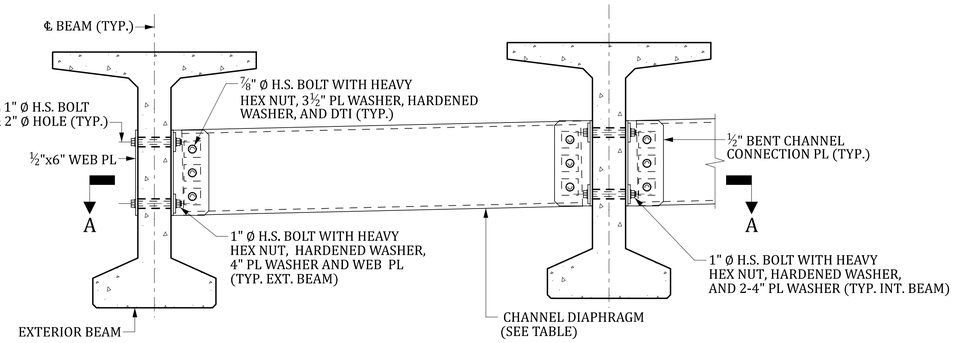
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MODIFIED BULB TEE BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 1

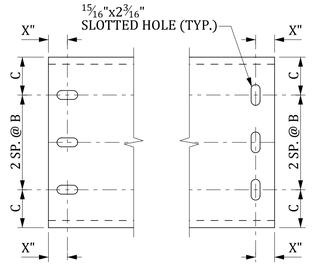
COUNTY: #### | ROUTE: ####

DRAWING NUMBER: 704-MBT.STLINTDIA.CHAN.SK000

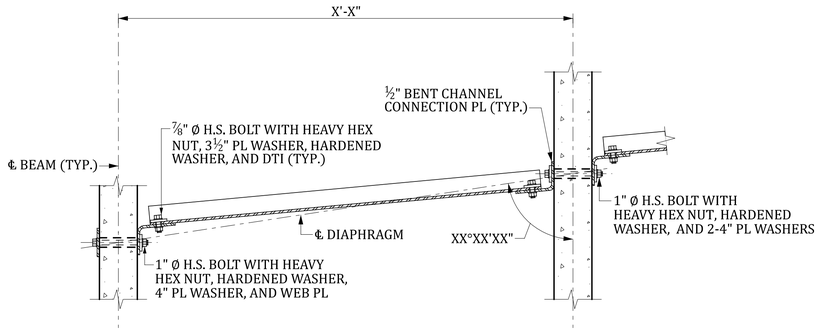
BRIDGE PLANS ID	SHEET
####-####	005



ELEVATION

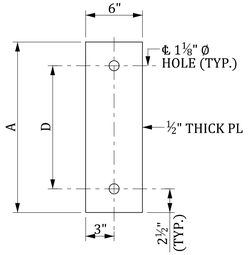


CHANNEL END DETAIL



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



WEB PLATE DETAIL

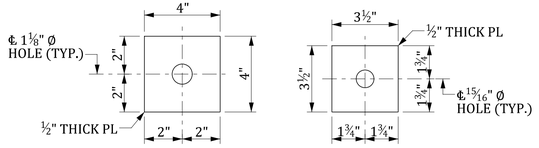
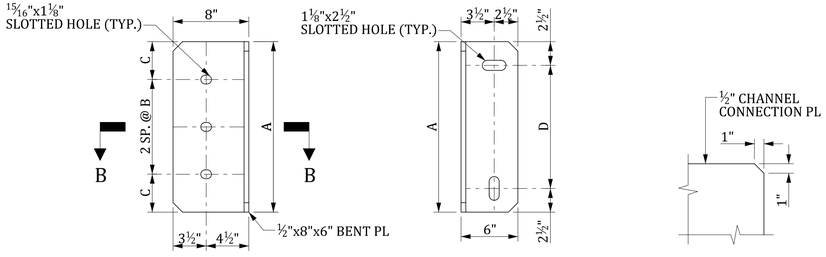


PLATE WASHER DETAIL

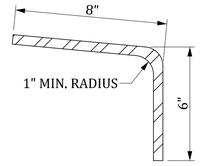
USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



DIAPHRAGM FACE

WEB FACE

CORNER CLIP



SECTION B-B

CHANNEL CONNECTION BENT PLATE DETAILS

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
54" MOD. B.T.	MC18X42.7	1'-6"	5"	4"	1'-1"

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

Dylan.Danks 6/21/2024 3:30:51 PM 704_StlIntDia.dgn

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CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

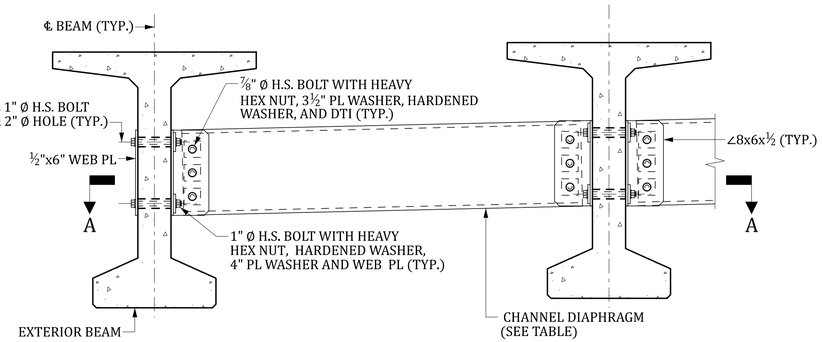
MODIFIED BULB TEE BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 2

COUNTY: ####

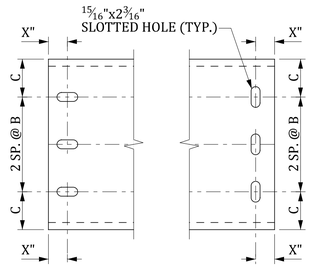
ROUTE: ####

DRAWING NUMBER: 704-MBT.STLINTDIA.CHAN.SKUNDER20

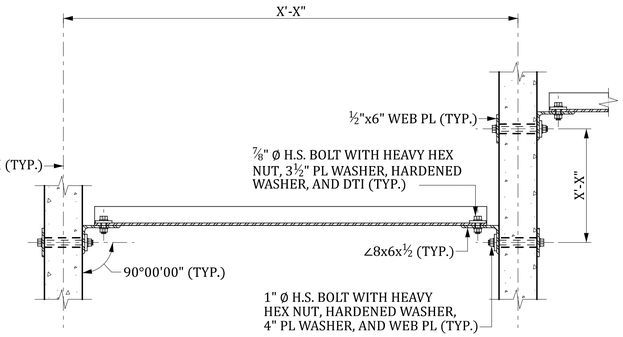
BRIDGE PLANS ID	SHEET
####-####	006



ELEVATION

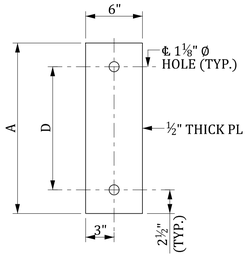


CHANNEL END DETAIL



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



WEB PLATE DETAIL

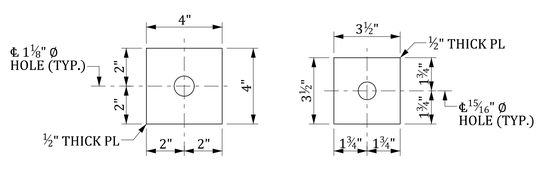
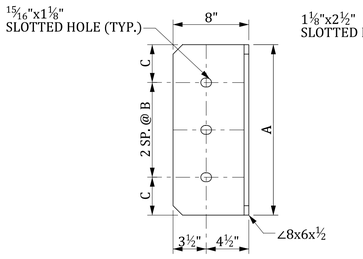
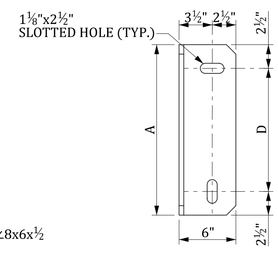


PLATE WASHER DETAIL

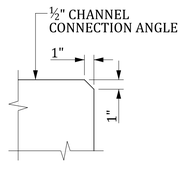
USE 3½" PLATE WASHER OVER ALL 15/16"x2 3/16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



DIAPHRAGM FACE



WEB FACE



CORNER CLIP

CHANNEL CONNECTION ANGLE DETAILS

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
54" MOD. B.T.	MC18X42.7	1'-6"	5"	4"	1'-1"

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE		DESCRIPTION OF REVISION

Dylan.Danks 6/21/2024 3:30:52 PM 704_StlIntDia.dgn

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CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

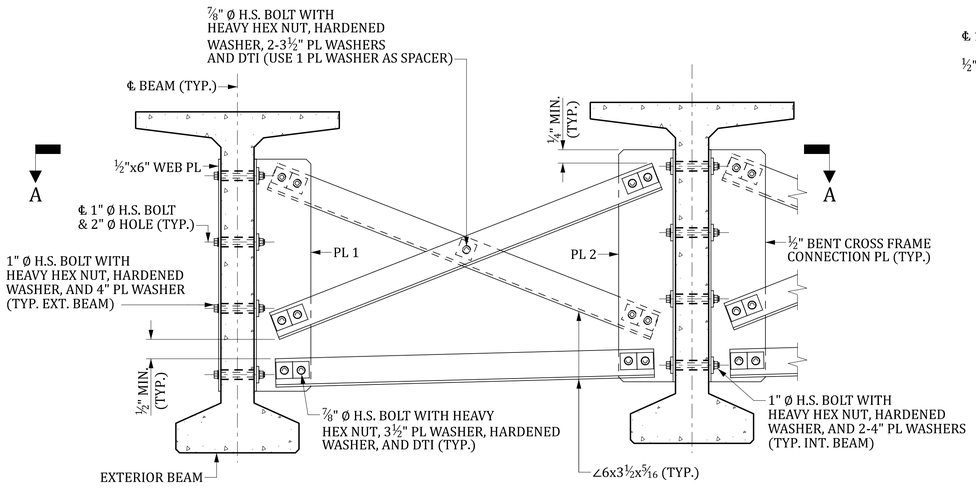
MODIFIED BULB TEE BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 3

COUNTY: ####

ROUTE: ####

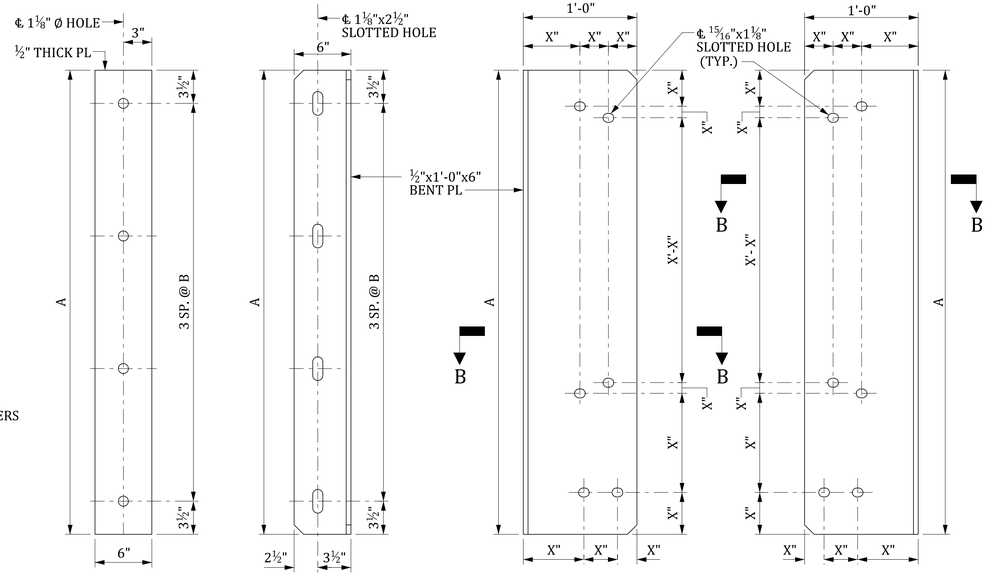
DRAWING NUMBER: 704-MBT.STLINTDIA.CHAN.SKOVER20

BRIDGE PLANS ID	SHEET
####-####	007



ELEVATION

72" MODIFIED BULB TEE SHOWN, OTHERS SIMILAR.



WEB FACE DIAPHRAGM FACE - PL 1 DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED CROSS FRAME CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL CROSS FRAMES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

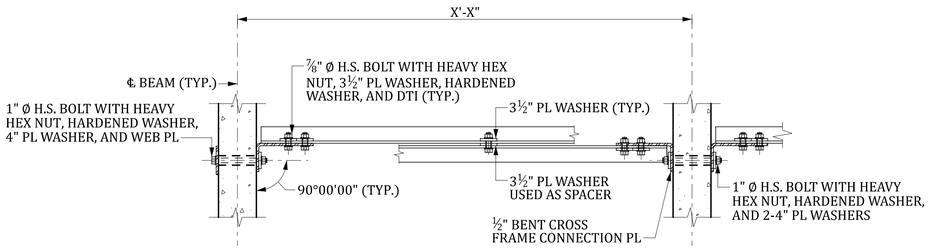
AFTER INSTALLATION OF STEEL CROSS FRAMES, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL CROSS FRAMES ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL CROSS FRAMES IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.



SECTION A-A

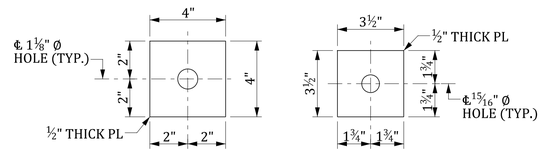
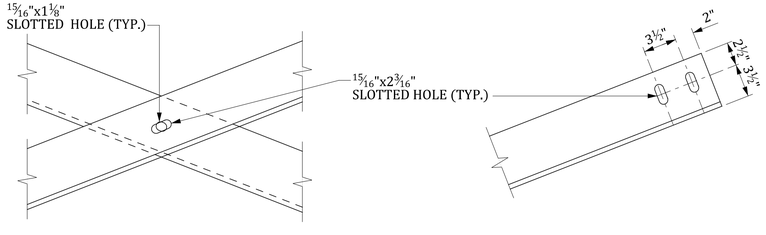


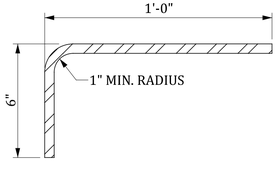
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES

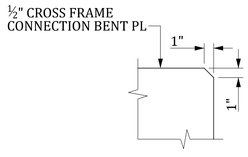


CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



SECTION B-B



CORNER CLIP DETAIL

BEAM	CONNECTION DIMENSIONS A	B
63" MOD. B.T.	3'-4"	11"
72" MOD. B.T.	4'-1"	1'-2"
74" MOD. B.T.	4'-1"	1'-2"
78" MOD. B.T.	4'-7"	1'-4"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

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CONSULTANT NAME/LOGO

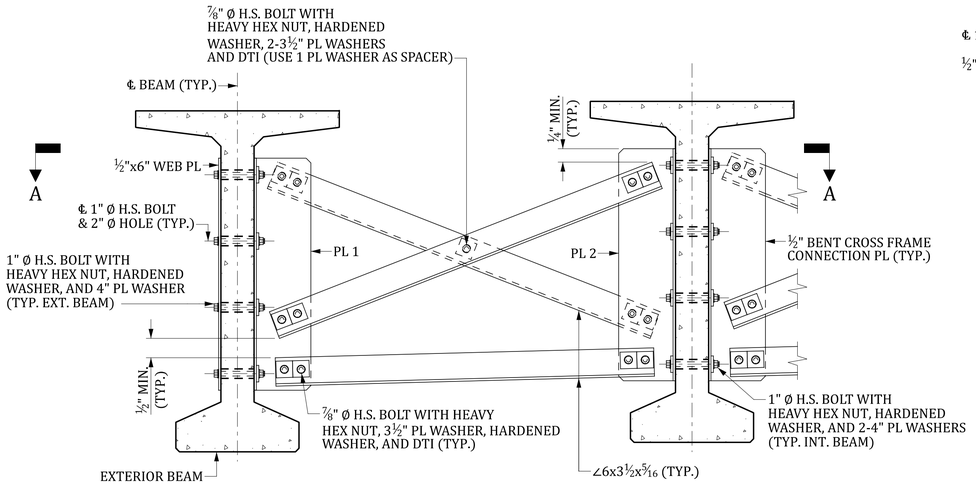
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MODIFIED BULB TEE BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 1

COUNTY: #### ROUTE: ####

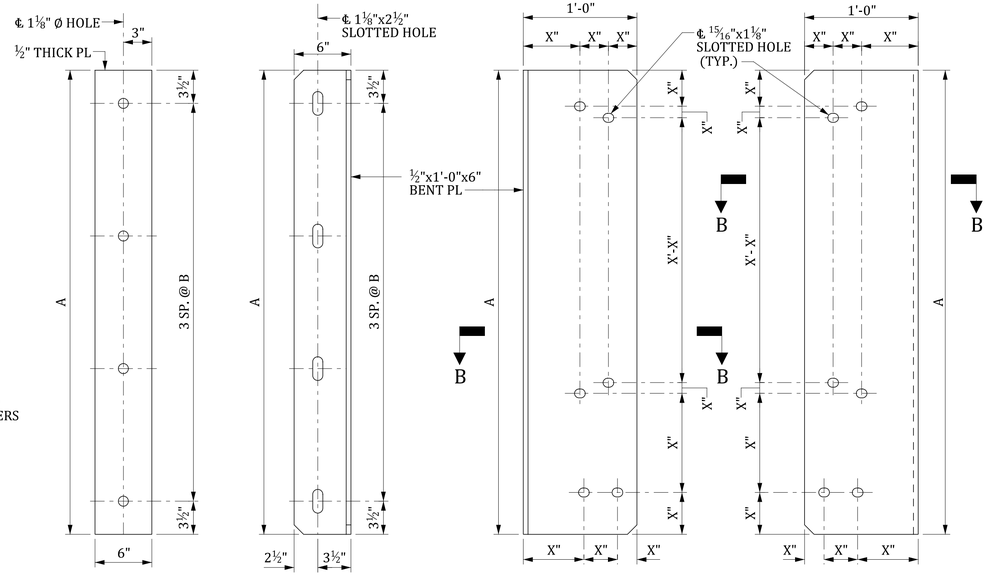
DRAWING NUMBER: 704-MBT.STLINTDIA.CROSS.SK000

BRIDGE PLANS ID	SHEET
####-####	008



ELEVATION

72" MODIFIED BULB TEE SHOWN, OTHERS SIMILAR.



WEB FACE DIAPHRAGM FACE - PL 1 DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED CROSS FRAME CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL CROSS FRAMES IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

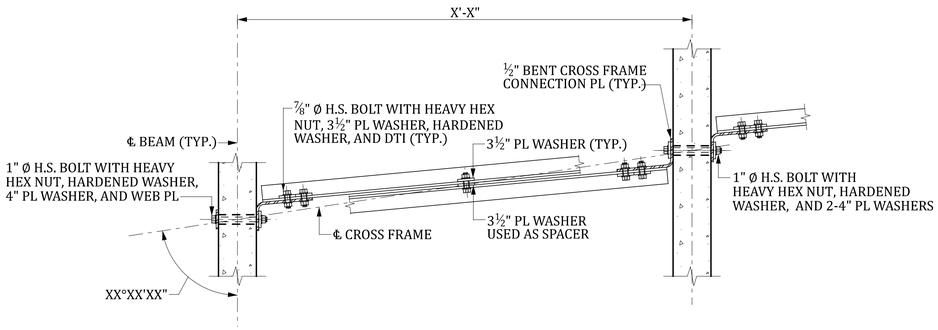
AFTER INSTALLATION OF STEEL CROSS FRAMES, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL CROSS FRAMES ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL CROSS FRAMES IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.

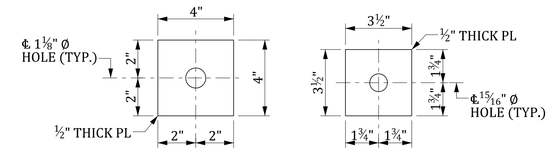
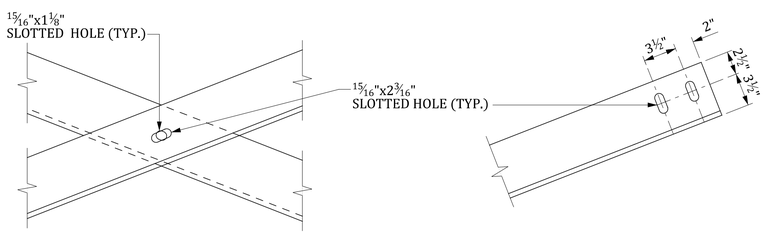


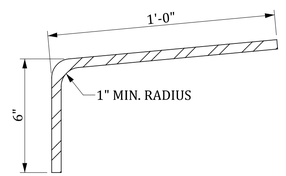
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2⅜" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES

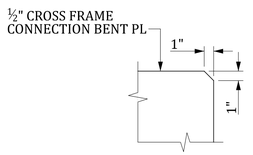


CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



SECTION B-B



CORNER CLIP DETAIL

BEAM	CONNECTION DIMENSIONS A	B
63" MOD. B.T.	3'-4"	11"
72" MOD. B.T.	4'-1"	1'-2"
74" MOD. B.T.	4'-1"	1'-2"
78" MOD. B.T.	4'-7"	1'-4"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

Dylan.Danks 6/21/2024 3:30:54 PM 704_StlIntDia.dgn

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CONSULTANT NAME/LOGO

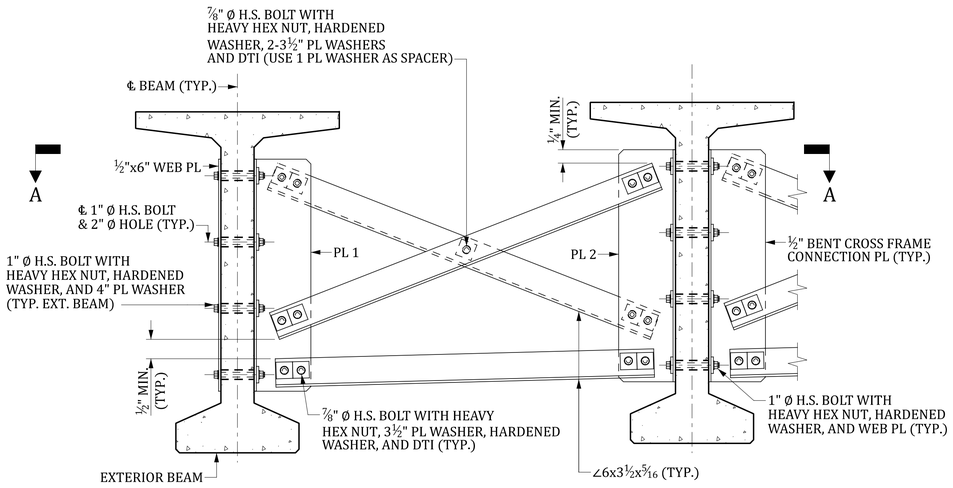
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MODIFIED BULB TEE BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 2

COUNTY: #### ROUTE: ####

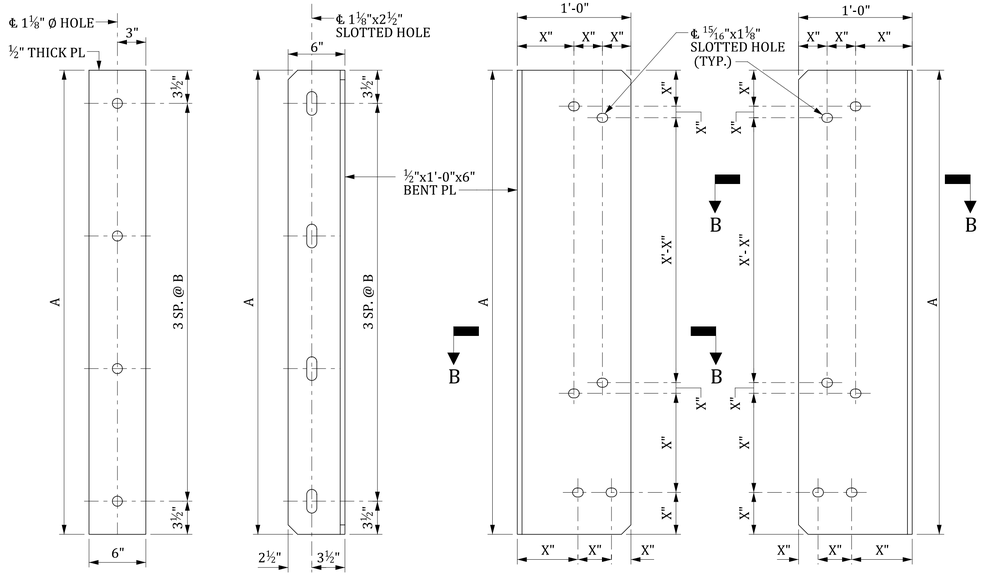
DRAWING NUMBER: 704-MBT.STLINTDIA.CROSS.SKUNDER20

BRIDGE PLANS ID	SHEET
####-####	009



ELEVATION

72" MODIFIED BULB TEE SHOWN, OTHERS SIMILAR.



WEB FACE DIAPHRAGM FACE - PL 1 DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

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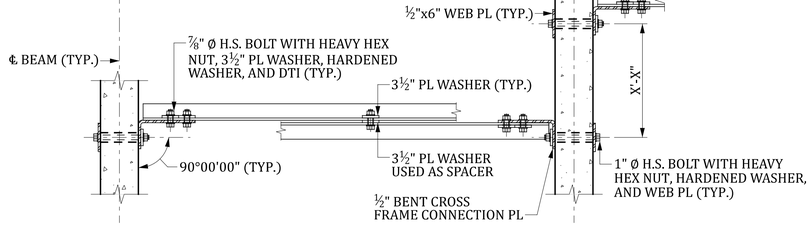


SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.

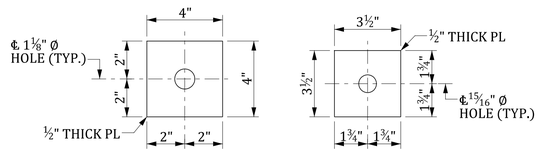
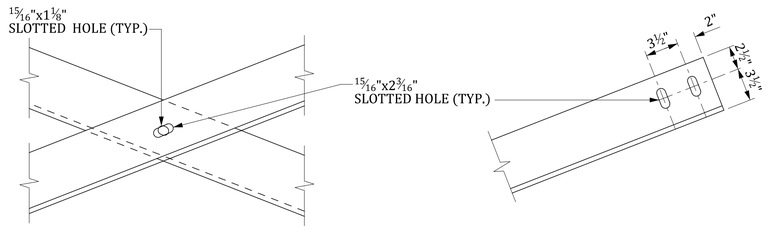


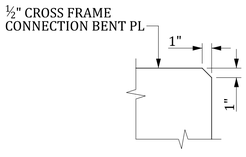
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2⅜16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



CORNER CLIP DETAIL

BEAM	CONNECTION DIMENSIONS A	B
63" MOD. B.T.	3'-4"	11"
72" MOD. B.T.	4'-1"	1'-2"
74" MOD. B.T.	4'-1"	1'-2"
78" MOD. B.T.	4'-7"	1'-4"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

Dylan.Danks 6/21/2024 3:30:55 PM 704_StlIntDia.dgn

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CONSULTANT NAME/LOGO

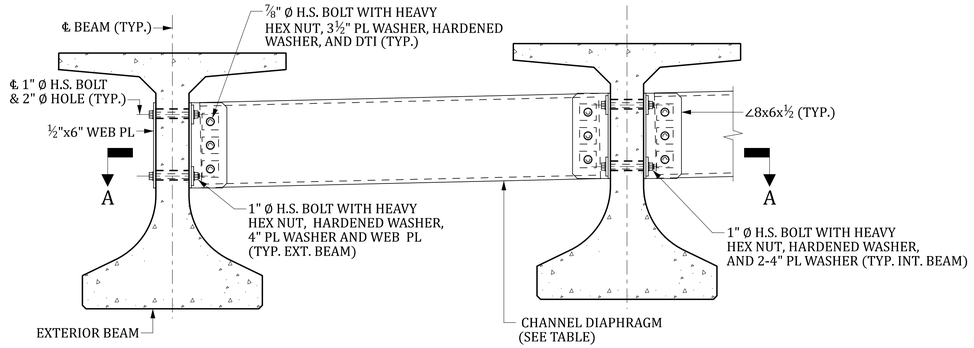
SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MODIFIED BULB TEE BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 3

COUNTY: #### ROUTE: ####

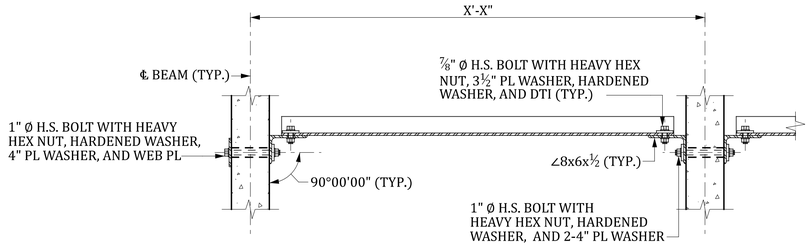
DRAWING NUMBER: 704-MBT.STLINTDIA.CROSS.SKOVER20

BRIDGE PLANS ID	SHEET
####-####	010

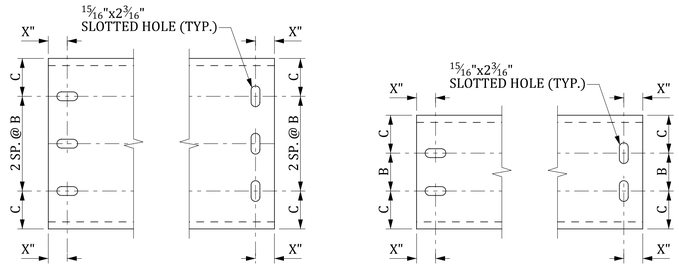


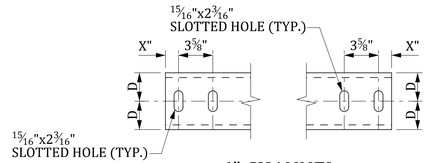
ELEVATION

54" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.

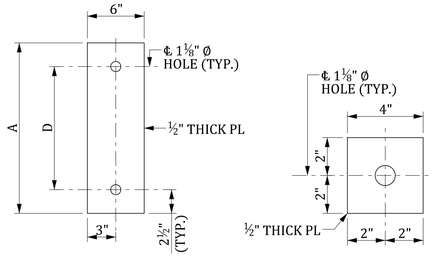


SECTION A-A





CHANNEL END DETAIL



WEB PLATE DETAIL

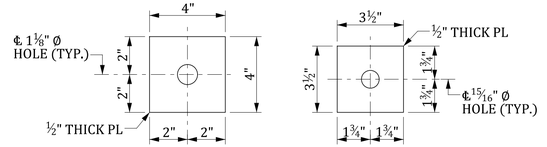
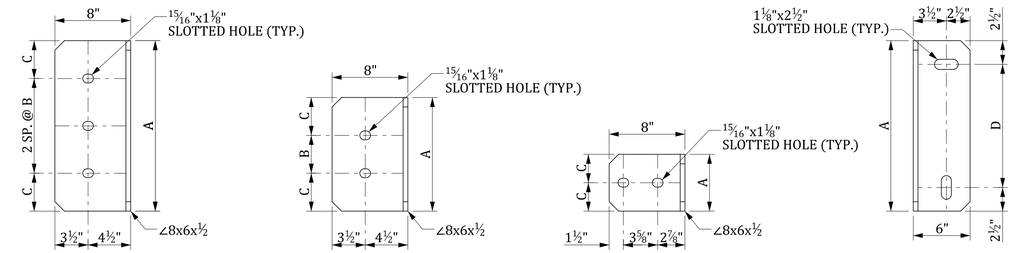


PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
36" F.I.B.	MC6X18	3½"	N/A	1¾"	N/A
45" F.I.B.	MC10X22	10"	4"	3"	5"
54" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"
63" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"
72" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"



CHANNEL CONNECTION ANGLE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REVIEWED			
QUAN.			DATE
DR.	DMD	AEL	04-24
DES.			CHK.
			BY

REV.					DESCRIPTION OF REVISION
REV.				DATE	
REV.			CHK.		
		BY			

Dylan.Danks 6/21/2024 3:30:56 PM 704_StIntDia.dgn

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CONSULTANT NAME/LOGO

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

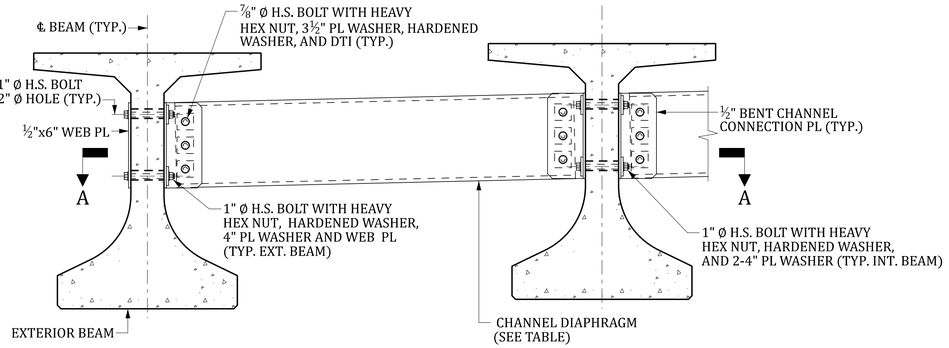
FLORIDA I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 1

COUNTY: ####

ROUTE: ####

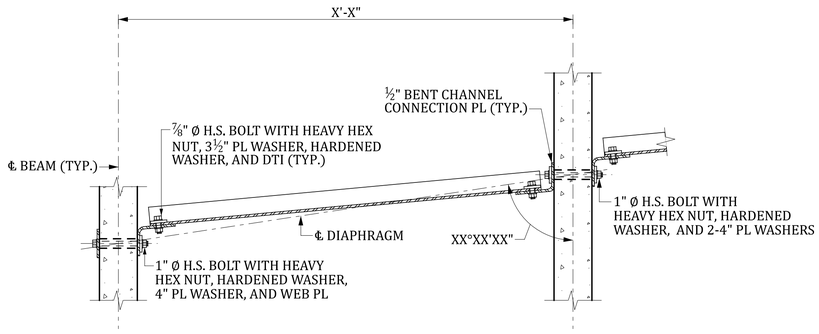
DRAWING NUMBER: 704-FIB.STLINTDIA.CHAN.SK000

BRIDGE PLANS ID	SHEET
####-####	011



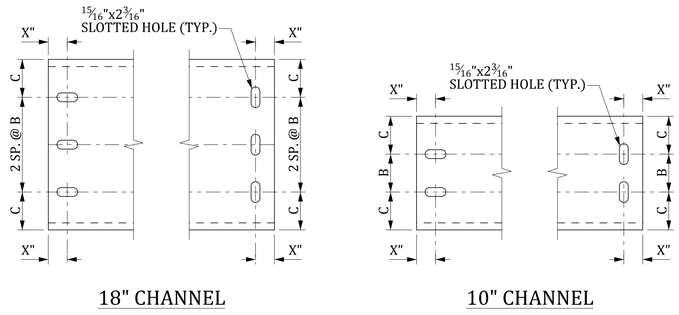
ELEVATION

54" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.

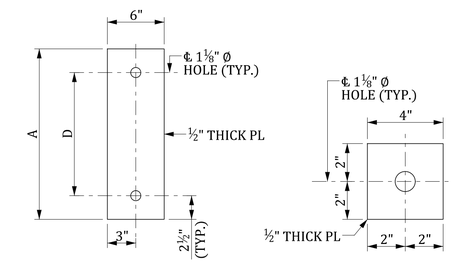


SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



CHANNEL END DETAIL



WEB PLATE DETAIL

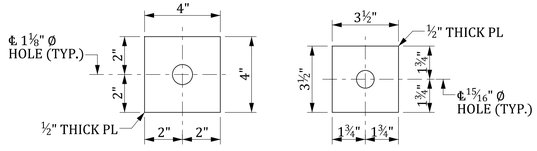


PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
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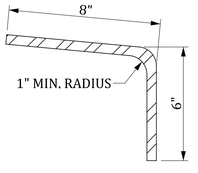

SECTION B-B

		CONNECTION DIMENSIONS			
BEAM	DIAPHRAGM	A	B	C	D
36" F.I.B.	MC6X18	3½"	N/A	1¾"	N/A
45" F.I.B.	MC10X22	10"	4"	3"	5"
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63" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"
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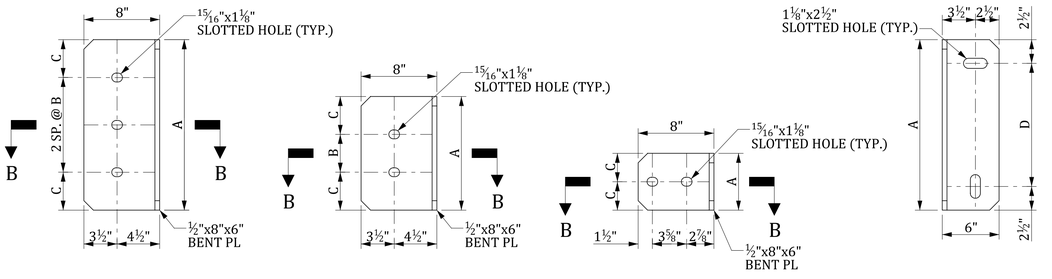

CHANNEL CONNECTION BENT PLATE DETAILS

NOTES:

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MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL INTERMEDIATE DIAPHRAGMS IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.

INCLUDE ALL COST OF FURNISHING AND INSTALLING STEEL INTERMEDIATE DIAPHRAGM ASSEMBLIES IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BEAMS.

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION
REV.				
REV.				
REV.				

Dylan.Danks 6/21/2024 3:30:57 PM 704_StlIntDia.dgn

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

CONSULTANT NAME/LOGO

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

FLORIDA I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 2

COUNTY: ####

ROUTE: ####

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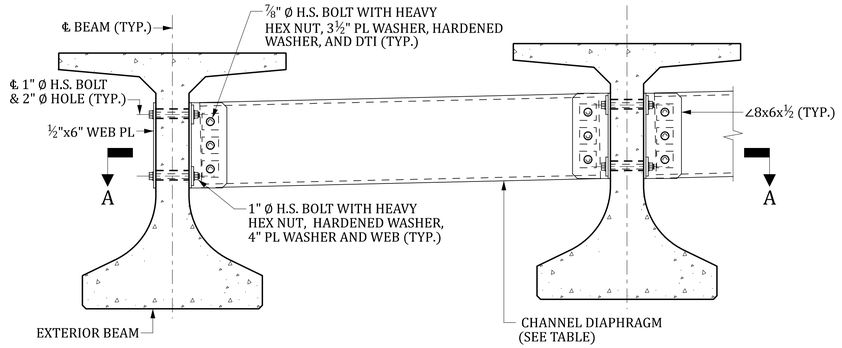
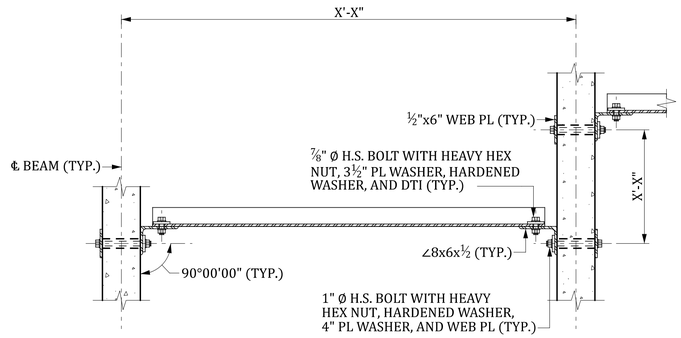
DRAWING NUMBER: 704-FIB.STLINTDIA.CHAN.SKUNDER20

BRIDGE PLANS ID	SHEET
####-####	012



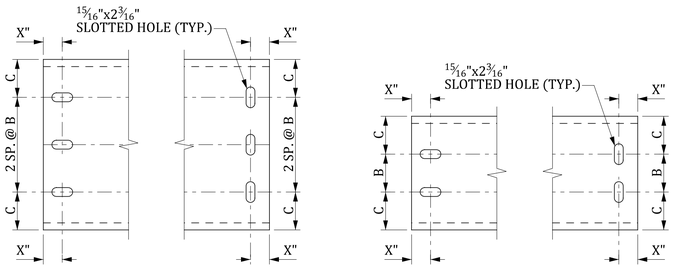
ELEVATION

54" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.

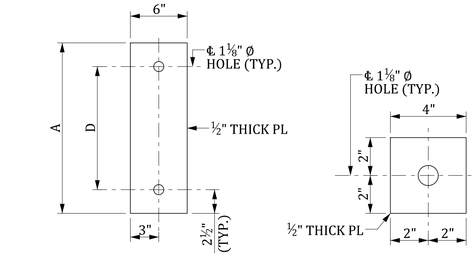


SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.



CHANNEL END DETAIL



WEB PLATE DETAIL

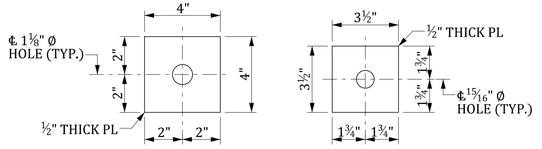
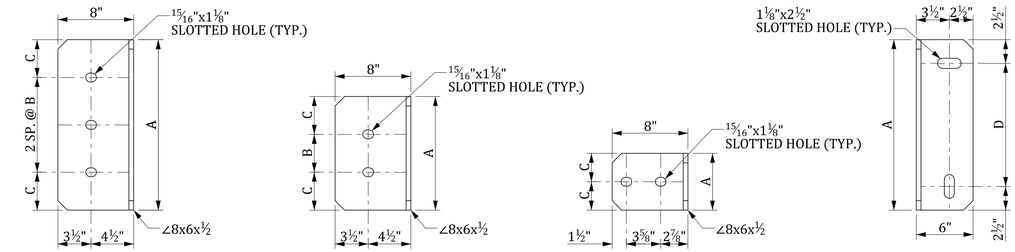


PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2 3⁄16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



CHANNEL CONNECTION ANGLE DETAILS

BEAM	DIAPHRAGM	CONNECTION DIMENSIONS			
		A	B	C	D
36" F.I.B.	MC6X18	3½"	N/A	1¾"	N/A
45" F.I.B.	MC10X22	10"	4"	3"	5"
54" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"
63" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"
72" F.I.B.	MC18X42.7	1'-6"	5"	4"	1'-1"

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF DIAPHRAGMS INCLUDING CONNECTION ANGLE OR CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED DIAPHRAGM CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

SUBMIT SHOP PLANS FOR STEEL INTERMEDIATE DIAPHRAGMS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AFTER INSTALLATION OF STEEL DIAPHRAGMS, REPAIR ALL DAMAGED AREAS OF THE GALVANIZED FINISH IN ACCORDANCE WITH ASTM A 780. USE PAINT METHOD TO REPAIR FINISH ON HARDWARE.

FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL INTERMEDIATE DIAPHRAGMS ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

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REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION
REV.				
REV.				

Dylan.Danks 6/21/2024 3:30:58 PM 704_StIntDia.dgn

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

CONSULTANT NAME/LOGO

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

FLORIDA I-BEAM STEEL INTERMEDIATE DIAPHRAGM DETAILS - ALT 3

COUNTY: ####

ROUTE: ####

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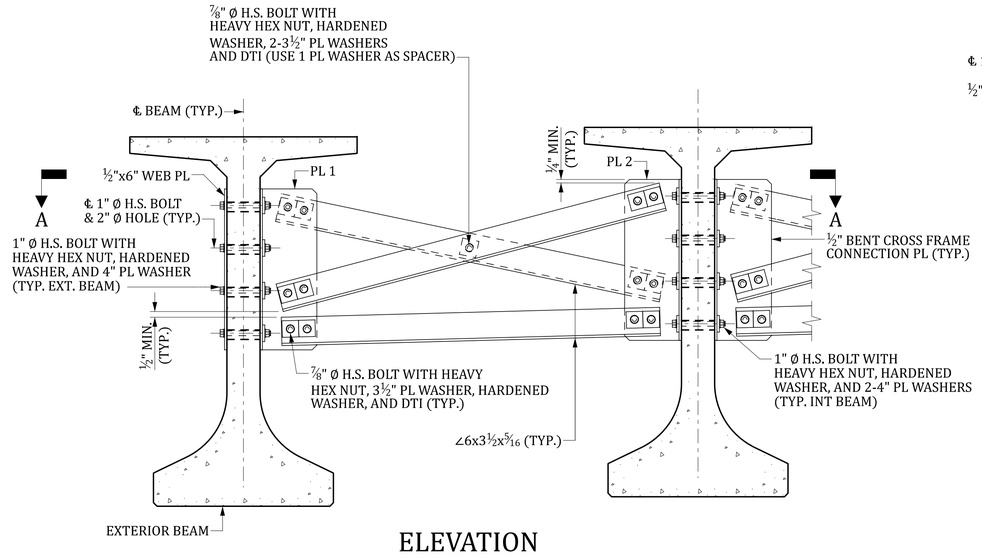
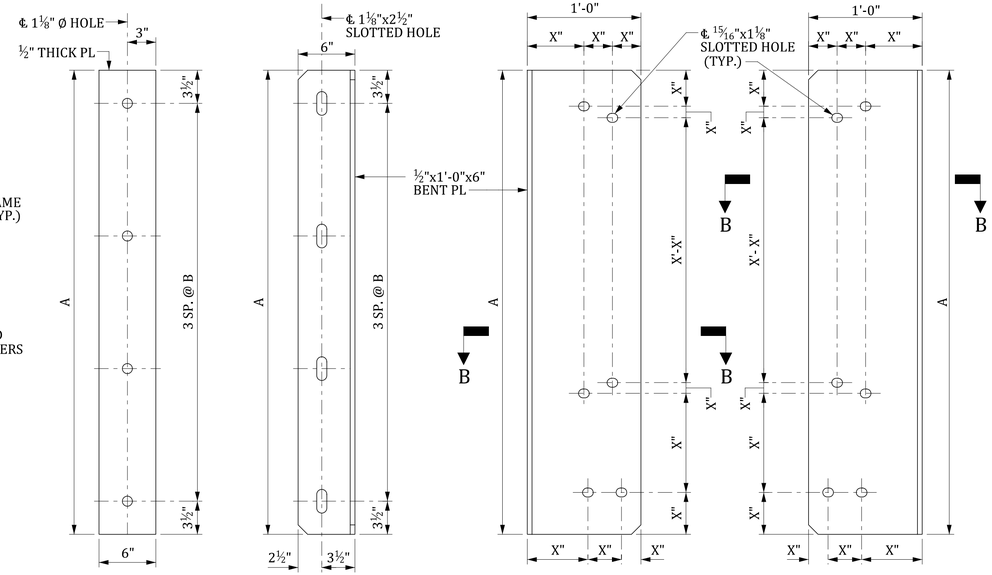
DRAWING NUMBER: 704-FIB.STLINTDIA.CHAN.SKOVER20

BRIDGE PLANS ID	SHEET
####-####	013



ELEVATION

78" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.



WEB FACE — DIAPHRAGM FACE - PL 1 — DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED CROSS FRAME CONNECTIONS WITH 7/8" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

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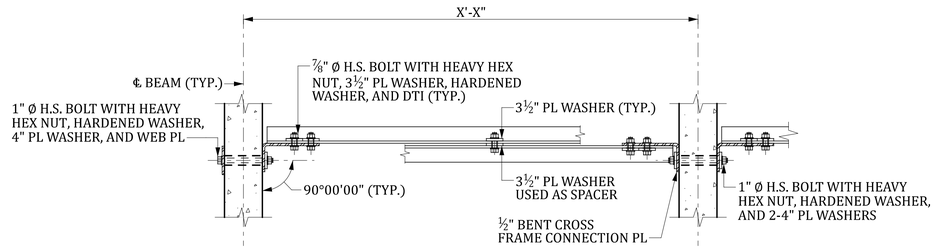


SECTION A-A

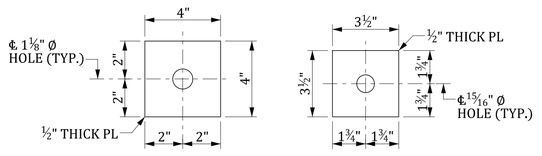
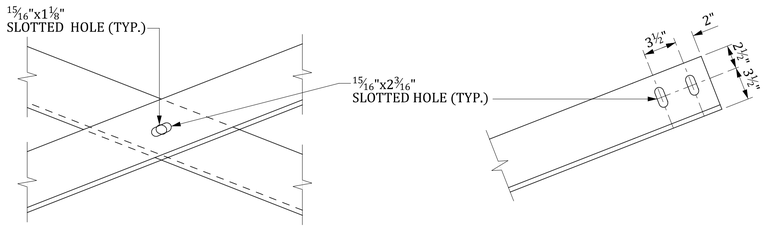


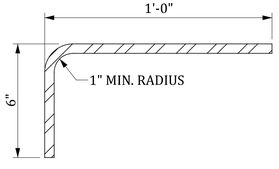
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15/16"x2 3/16" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES

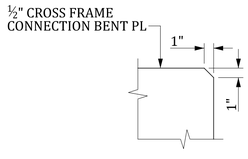


CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



SECTION B-B



CORNER CLIP DETAIL

BEAM	CONNECTION DIMENSIONS A	B
78" F.I.B.	3'-4"	11"
84" F.I.B.	3'-10"	1'-1"
96" F.I.B.	4'-10"	1'-5"

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

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CONSULTANT NAME/LOGO

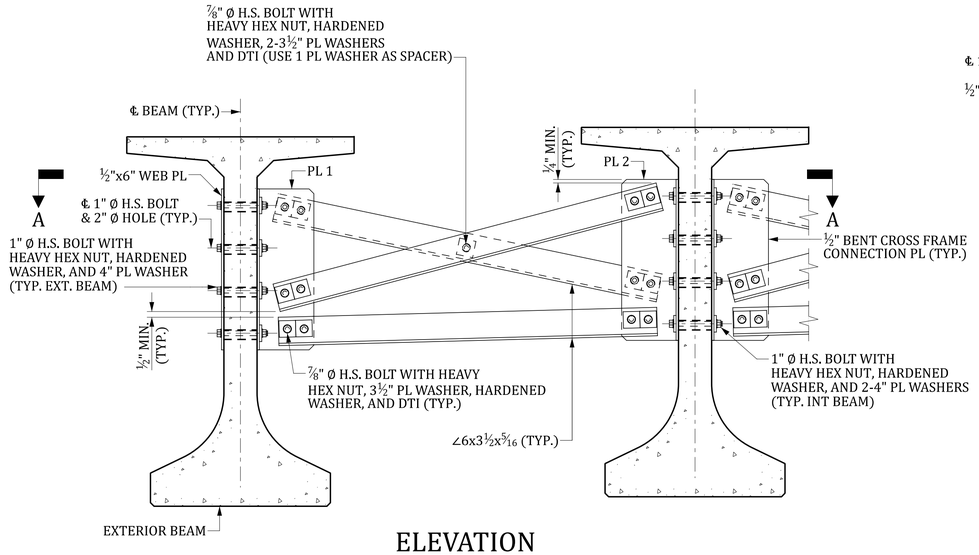
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

FLORIDA I-BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 1

COUNTY: #### | ROUTE: ####

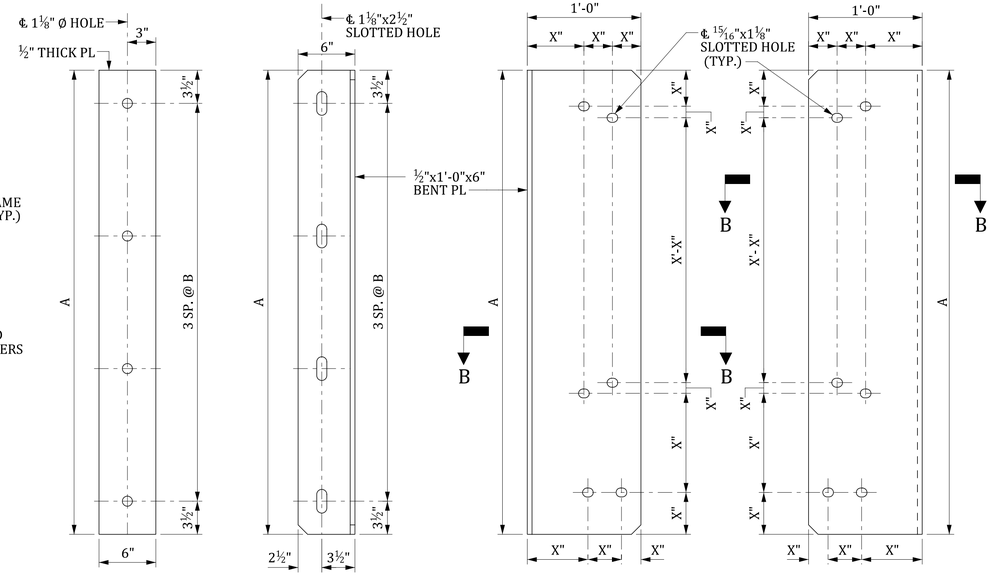
DRAWING NUMBER: 704-FIB.STLINTDIA.CROSS.SK000

BRIDGE PLANS ID	SHEET
####-####	014



ELEVATION

78" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.



WEB FACE DIAPHRAGM FACE - PL 1 DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

MAKE ALL BOLTED CROSS FRAME CONNECTIONS WITH ⅞" OR 1" ASTM F3125, GRADE A325 (TYPE 1) BOLTS. MECHANICALLY GALVANIZE BOLTS, HEAVY HEX NUTS, HARDENED WASHERS, AND DIRECT TENSION INDICATORS (DTI'S) IN ACCORDANCE WITH ASTM B 695 CLASS 50. FOR THE 1" BOLT ASSEMBLIES, GALVANIZING IN ACCORDANCE WITH AASHTO M 232 MAY BE SUBSTITUTED FOR MECHANICAL GALVANIZING.

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FORM BOLT HOLES IN PRESTRESSED CONCRETE BEAMS USING 2" INSIDE DIAMETER PIPE AND LEAVE PIPE IN PLACE AFTER FORMS ARE REMOVED.

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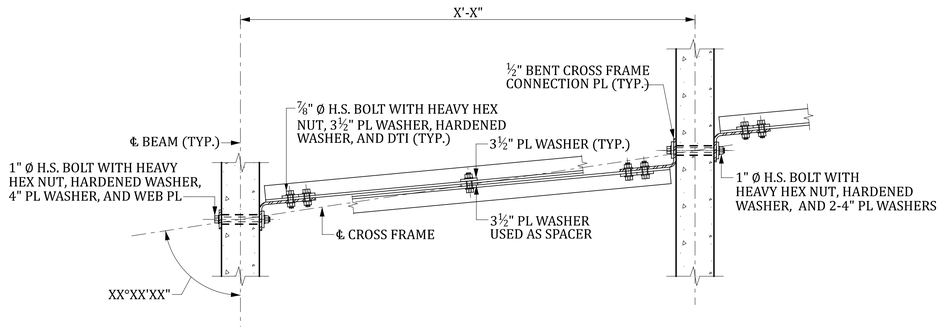
LEAVE STEEL CROSS FRAMES IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.

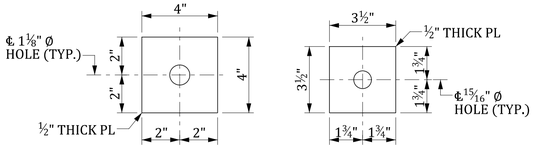
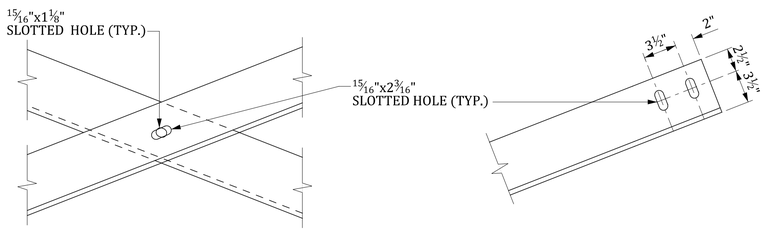


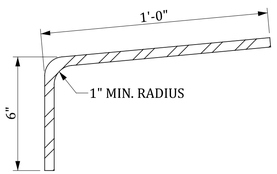
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2⅜" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES

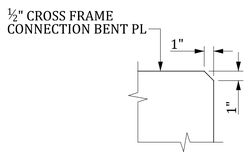


CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



SECTION B-B



CORNER CLIP DETAIL

	CONNECTION DIMENSIONS	
BEAM	A	B
78" F.I.B.	3'-4"	11"
84" F.I.B.	3'-10"	1'-1"
96" F.I.B.	4'-10"	1'-5"

REV.	BY	CHK.	DATE	DESCRIPTION OF REVISION
REV.				
REV.				

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REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

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CONSULTANT NAME/LOGO

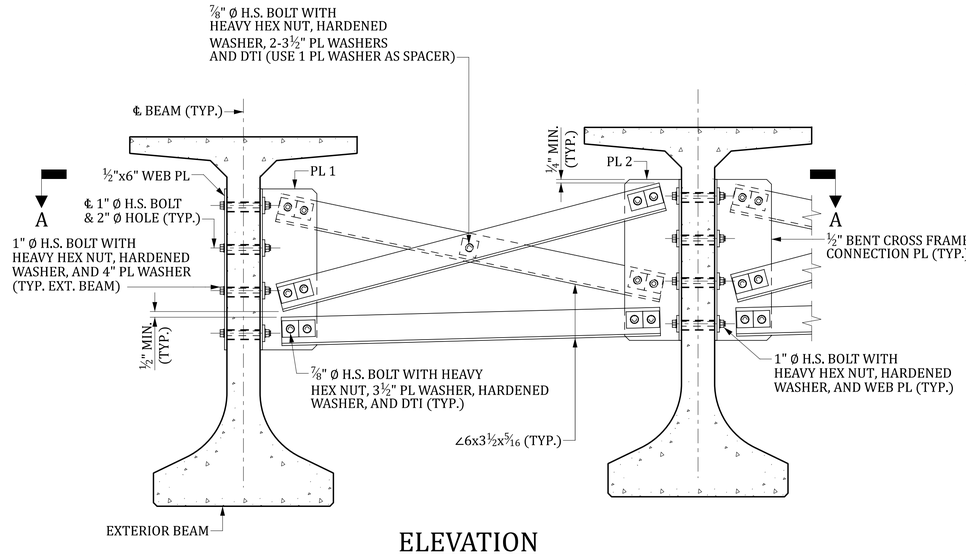
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

FLORIDA I-BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 2

COUNTY: #### ROUTE: ####

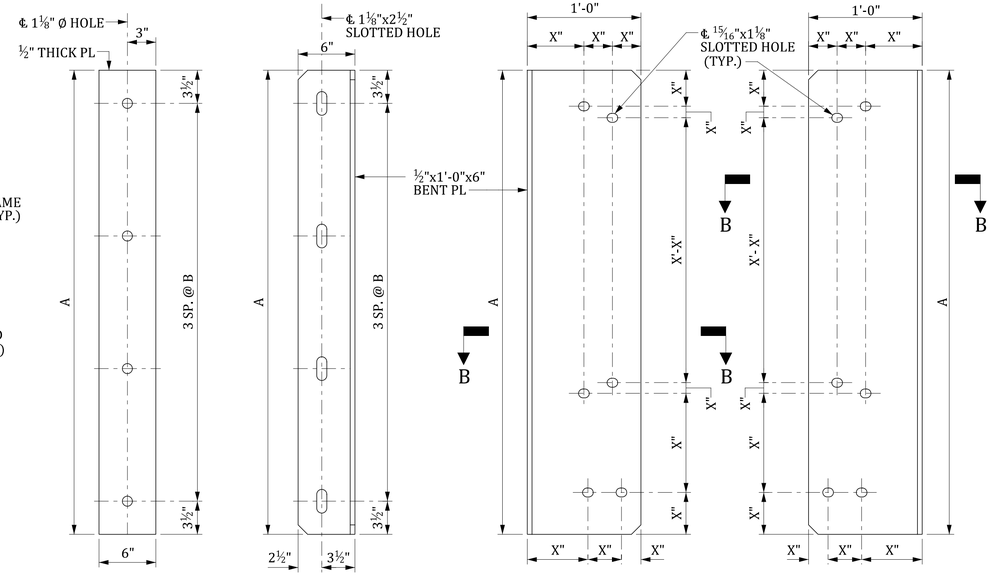
DRAWING NUMBER: 704-FIB.STLINTDIA.CROSS.SKUNDER20

BRIDGE PLANS ID	SHEET
####-####	015



ELEVATION

78" FLORIDA I-BEAM SHOWN, OTHERS SIMILAR.



WEB FACE — DIAPHRAGM FACE - PL 1 — DIAPHRAGM FACE - PL 2

WEB PLATE DETAIL

CROSS FRAME CONNECTION BENT PLATE DETAILS

NOTES:

PROVIDE STRUCTURAL STEEL SECTIONS, PLATES, AND PLATE WASHERS THAT CONFORM TO THE REQUIREMENTS OF AASHTO M 270, GRADE 50. GALVANIZE ALL COMPONENTS OF CROSS FRAMES INCLUDING CONNECTION PLATE AND PLATE WASHERS IN ACCORDANCE WITH AASHTO M 111. PERFORM GALVANIZING AFTER FABRICATION IS COMPLETED. ROUGHEN FAYING SURFACES OF BOLTED CONNECTIONS BY MEANS OF HAND-WIRE BRUSHING. POWER-WIRE BRUSHING IS NOT PERMITTED.

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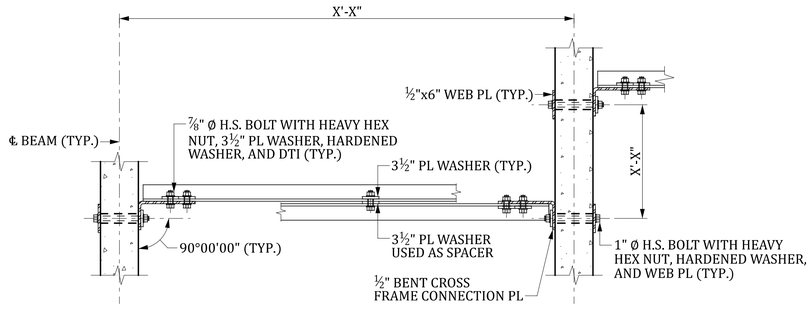
TENSION BOLTS THROUGH THE BEAM WEB TO BE SNUG TIGHT AND THEN TURN THE BOLTS AN ADDITIONAL ¼ TURN. PEEN THREADS ON ALL BOLTS INSTALLED THROUGH THE BEAM WEB. INSTALL ALL OTHER BOLTS USING A DTI AND HARDENED WASHER WITH EACH BOLT ASSEMBLY TO VERIFY PROPER TENSIONING.

DO NOT PLACE DECK SLAB UNTIL ALL CROSS FRAMES ARE PROPERLY INSTALLED AND TIGHTENED IN EACH SPAN WHERE DECK CONCRETE WILL BE PLACED DURING THE POUR.

LEAVE STEEL CROSS FRAMES IN PLACE AS A PERMANENT PART OF THE COMPLETED STRUCTURE.



SECTION A-A

LEFT SKEW SHOWN. RIGHT SKEW SIMILAR BY MIRROR ABOUT A LINE PARALLEL TO H.S. BOLT CENTERLINES.

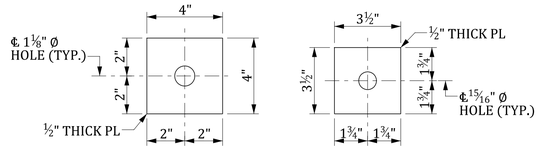
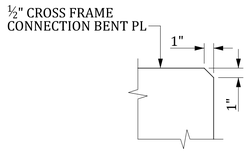


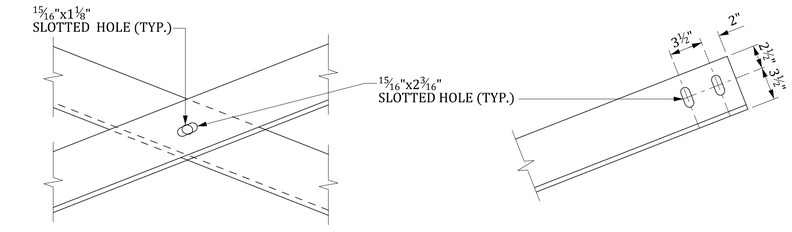
PLATE WASHER DETAIL

USE 3½" PLATE WASHER OVER ALL 15⁄16"x2⅜" HOLES
USE 4" PLATE WASHER OVER ALL 1⅛"x2½" HOLES



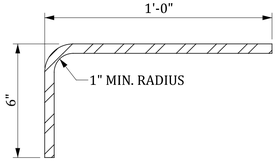
CORNER CLIP DETAIL

	CONNECTION DIMENSIONS	
BEAM	A	B
78" F.I.B.	3'-4"	11"
84" F.I.B.	3'-10"	1'-1"
96" F.I.B.	4'-10"	1'-5"



CROSS FRAME DETAILS

NOTE: BOLTS, NUTS, AND WASHERS NOT SHOWN FOR CLARITY.



SECTION B-B

CONSULTANT NAME/LOGO

SOUTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FLORIDA I-BEAM STEEL INTERMEDIATE CROSS FRAME DETAILS - ALT 3

COUNTY: #### ROUTE: ####

DRAWING NUMBER: 704-FIB.STLINTDIA.CROSS.SKOVER20

THIS DRAWING IS FURNISHED FOR INFORMATION ONLY. ALL DIMENSIONS SHOWN ARE SHEET SPECIFIC. ANY USE OF THIS DESIGN AND DRAWING, INCLUDING DIMENSIONS, MUST BE CHECKED BY THE USER'S ENGINEER TO ENSURE DESIGN IS ADEQUATE FOR THE INTENDED USE. ALL DRAWINGS MUST BE SIGNED AND SEALED BY A SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER WHEN USED.

REVIEWED			
QUAN.			
DR.	DMD	AEL	04-24
DES.			
	BY	CHK.	DATE

REV.					
REV.					
REV.					
	BY	CHK.	DATE	DESCRIPTION OF REVISION	

Dylan.Danks 6/21/2024 3:31:01 PM 704_StIlntDia.dgn