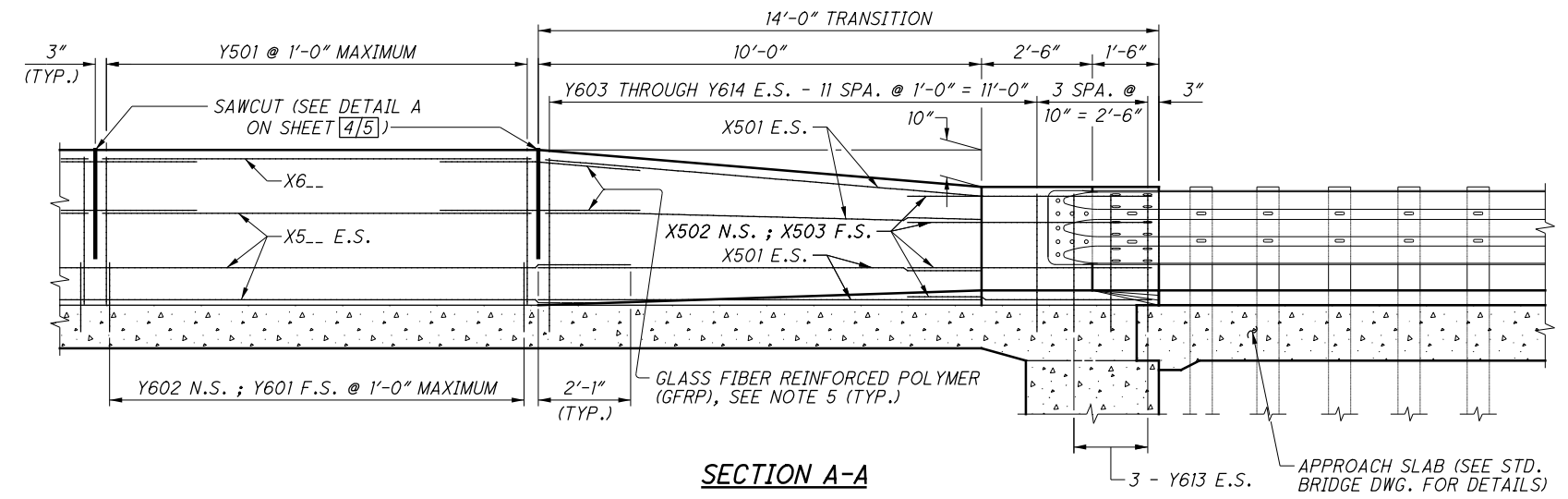
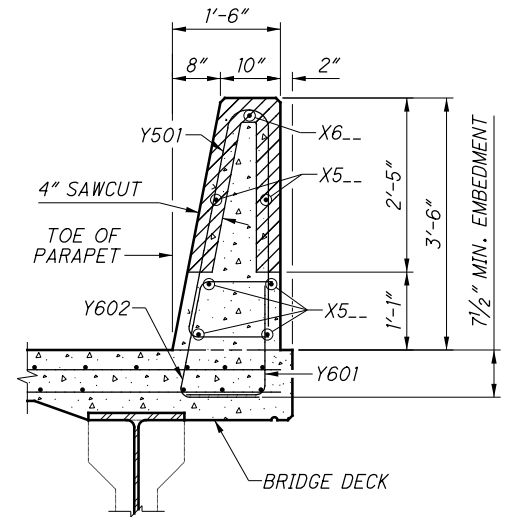


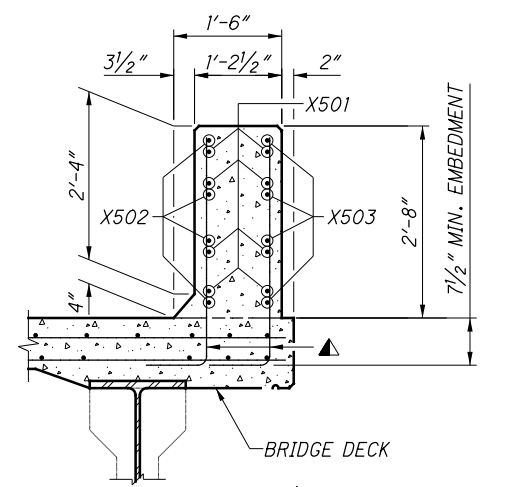
PLAN VIEW
42" SBR-1 TRANSITION MOUNTED ON BRIDGE WITH SEMI-INTEGRAL ABUTMENT SHOWN (INTEGRAL ABUTMENT AND CAPPED PILE ABUTMENT SIMILAR)



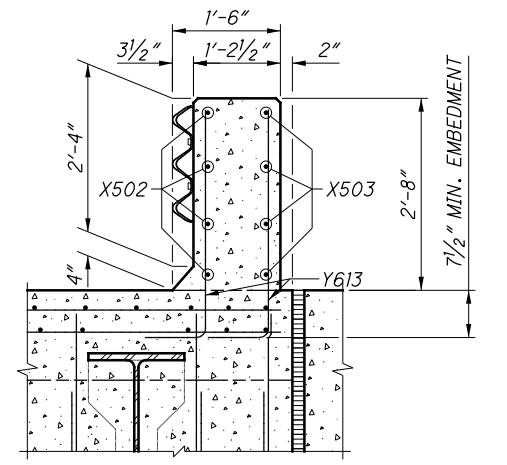
SECTION A-A



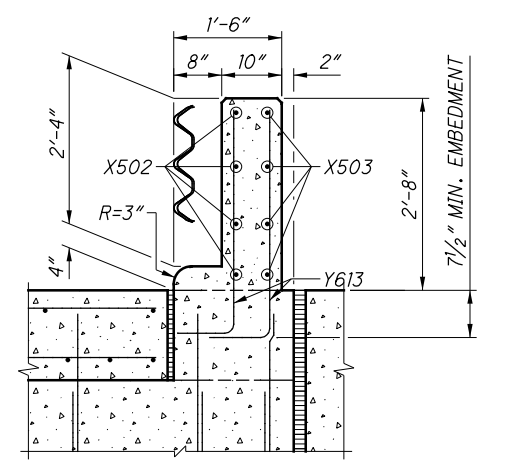
SECTION C-C
(GFRP NOT SHOWN)



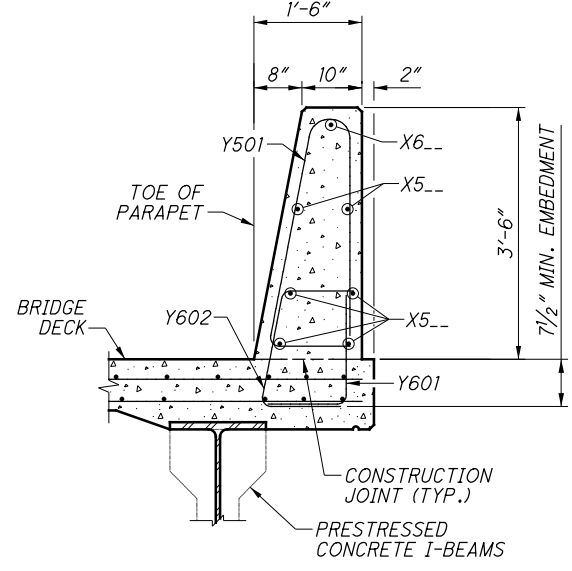
SECTION D-D ▲ : Y603 THROUGH Y614



SECTION E-E

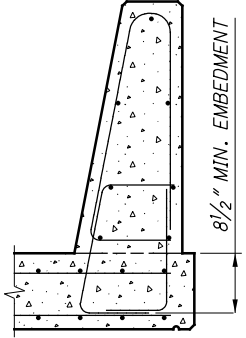


SECTION F-F



SECTION B-B

REINFORCED CONCRETE DECK ON STEEL OR PRESTRESSED CONCRETE I-BEAMS/GIRDERS



CONTINUOUS OR SINGLE SPAN REINFORCED CONCRETE SLAB BRIDGE

REINFORCING STEEL FOR 42" SBR-1 TRANSITION MOUNTED ON BRIDGE OR APPROACH SLAB			BENDING DIAGRAMS	
MARK	LENGTH	TYPE		
X501	10'-0"	STR		
X502	5'-8"	BENT		
X503	5'-8"	STR		
X5..	⊕	STR		
X6.. *	⊕	STR		
Y501	7'-4"	BENT		
Y601	A + 1'-9"	BENT		
Y602	A + 2'-6"	BENT		
Y603 THROUGH Y614	A + B + 10"	BENT		

X502

Y501

Y601

Y602

Y603 THROUGH Y614

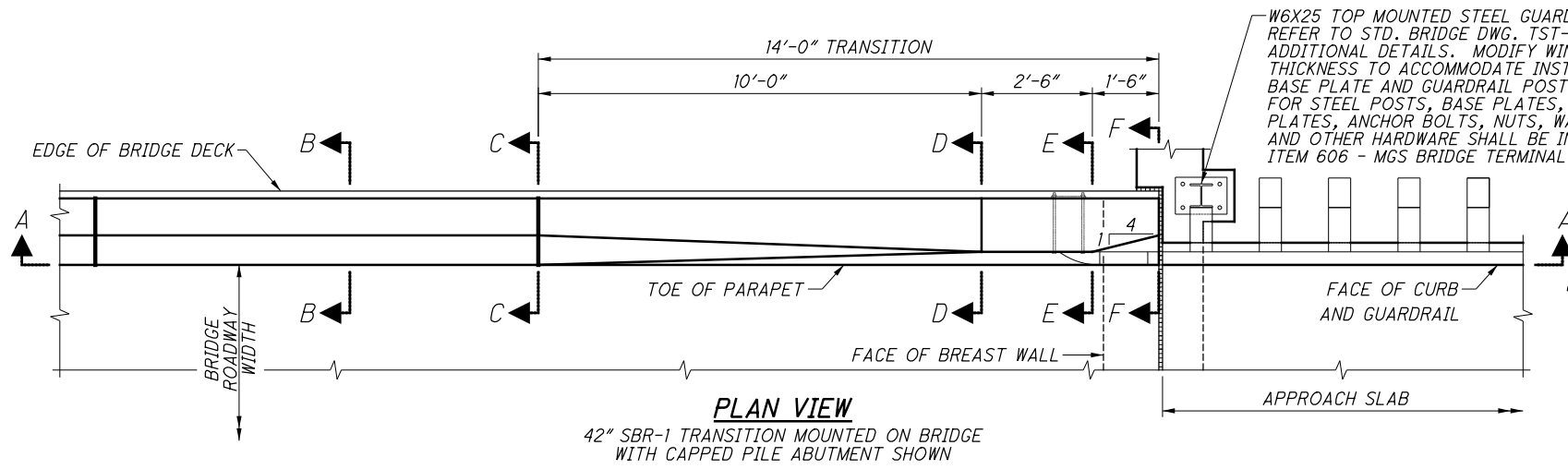
NOTES:

- FOR ALL SINGLE SLOPE CONCRETE BRIDGE RAILINGS INCLUDING THE 14'-0" TRANSITIONS, PROJECT PLANS SHALL INCLUDE PLAN VIEW, ELEVATION VIEW, SECTIONS, REINFORCING MARKS, REINFORCING BENDING DIAGRAMS, AND REINFORCING WEIGHTS.
- SEE APPROPRIATE STANDARD BRIDGE DRAWING FOR ABUTMENT DETAILS.
- FOR BRIDGE TERMINAL ASSEMBLY, SEE STD. CONSTR. DWGS. MGS-3.1 AND MGS-3.2.
- FOR SAWCUT PERIMETER LENGTH, SEE DETAIL A ON SHEET [4/5].
- FOR DEFLECTION JOINT DETAILS AND ADDITIONAL NOTES, SEE SHEET [5/5].

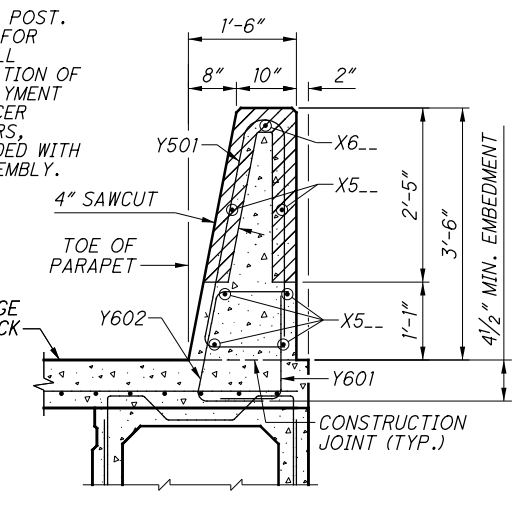
LEGEND:

E.S. = EACH SIDE
F.S. = FAR SIDE
N.S. = NEAR SIDE

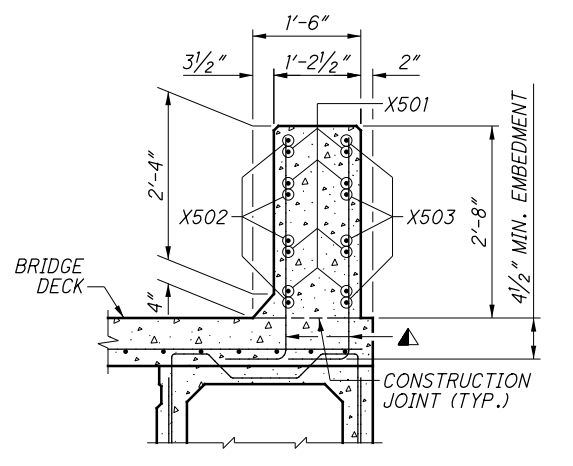
⊕ SEE PROJECT PLANS.
* FIELD BEND BARS WHERE NECESSARY.



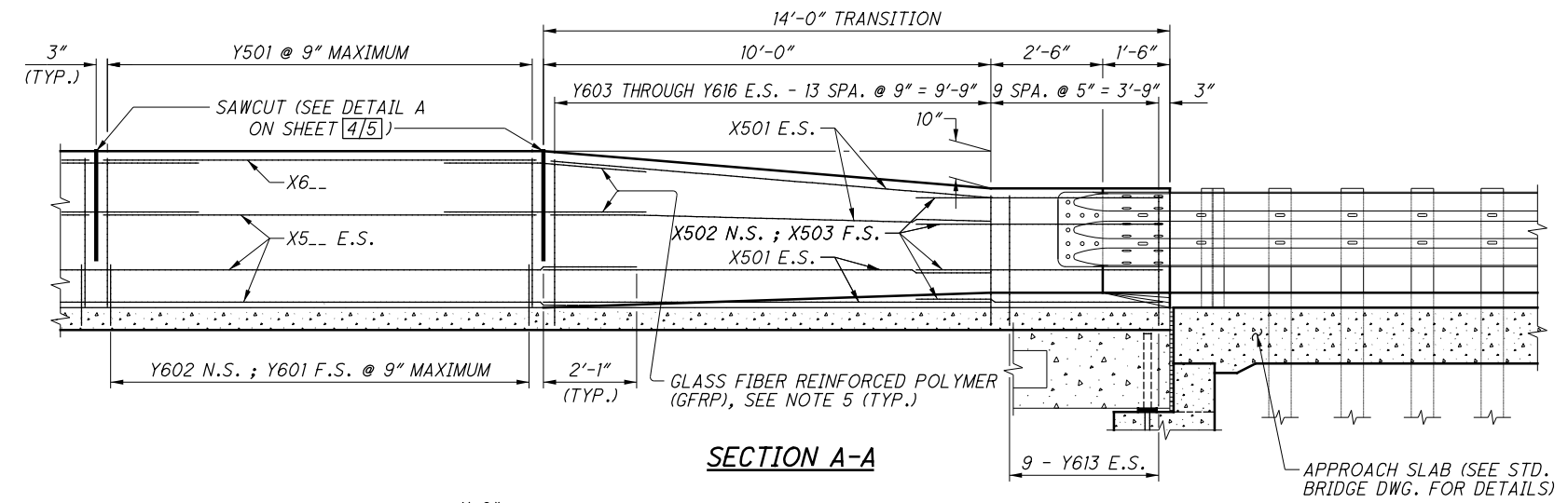
PLAN VIEW
42" SBR-1 TRANSITION MOUNTED ON BRIDGE WITH CAPPED PILE ABUTMENT SHOWN



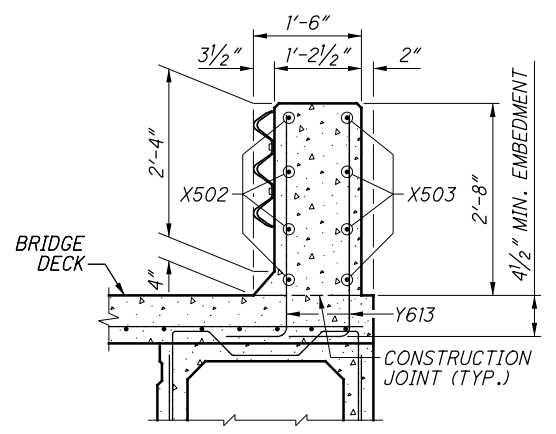
SECTION C-C
(GFRP NOT SHOWN)



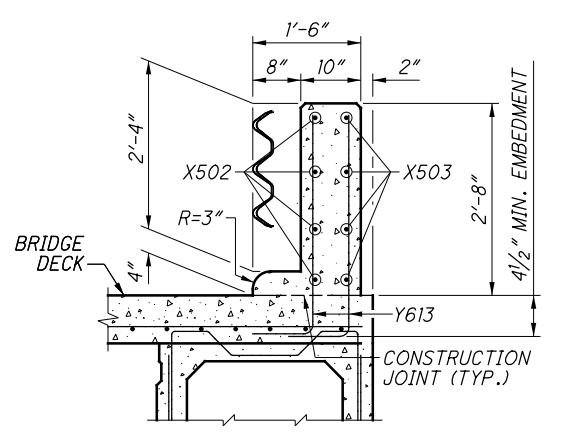
SECTION D-D ▲: Y603 THROUGH Y616



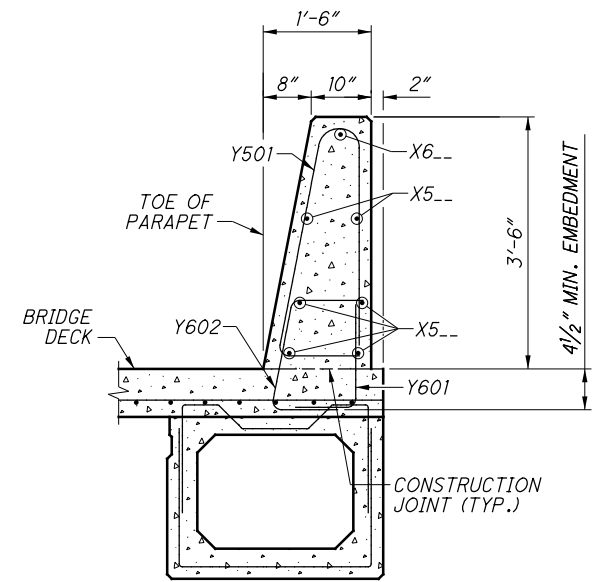
SECTION A-A



SECTION E-E



SECTION F-F



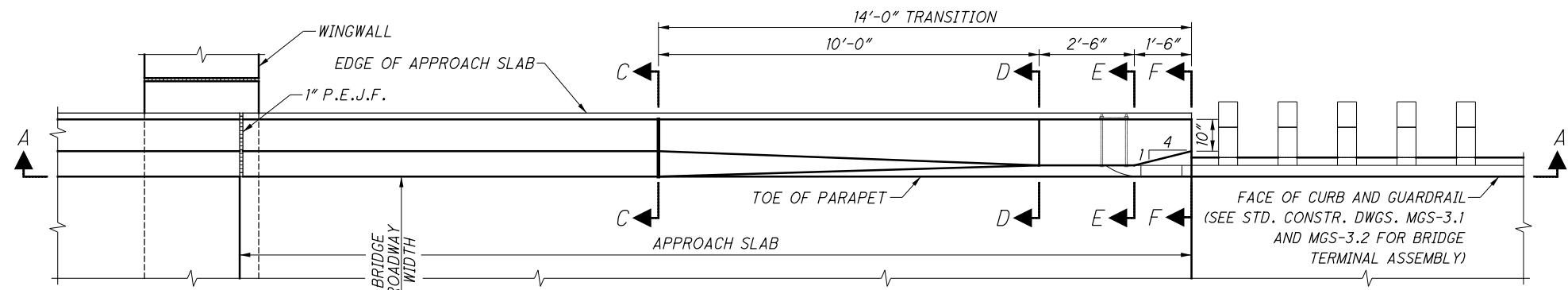
SECTION B-B
COMPOSITE PRESTRESSED CONCRETE BOX BEAMS

REINFORCING STEEL FOR 42" SBR-1 TRANSITION MOUNTED ON BRIDGE			BENDING DIAGRAMS	
MARK	LENGTH	TYPE		
X501	10'-0"	STR		
X502	5'-8"	BENT		
X503	5'-8"	STR		
X504	⊕	STR		
X505	⊕	STR		
X506 *	⊕	STR		
Y501	7'-4"	BENT		
Y601	A + 1'-9"	BENT		
Y602	A + 2'-6"	BENT		
Y603	A + B + 10"	BENT		
THROUGH Y614				
Y615				
Y616				

- NOTES:**
- FOR ALL SINGLE SLOPE CONCRETE BRIDGE RAILINGS INCLUDING THE 14'-0" TRANSITIONS, PROJECT PLANS SHALL INCLUDE PLAN VIEW, ELEVATION VIEW, SECTIONS, REINFORCING MARKS, REINFORCING BENDING DIAGRAMS, AND REINFORCING WEIGHTS.
 - SEE APPROPRIATE STANDARD BRIDGE DRAWING FOR ABUTMENT DETAILS.
 - FOR BRIDGE TERMINAL ASSEMBLY, SEE STD. CONSTR. DWGS. MGS-3.1 AND MGS-3.2.
 - FOR SAWCUT PERIMETER LENGTH, SEE DETAIL A ON SHEET [4/5].
 - FOR DEFLECTION JOINT DETAILS AND ADDITIONAL NOTES, SEE SHEET [5/5].

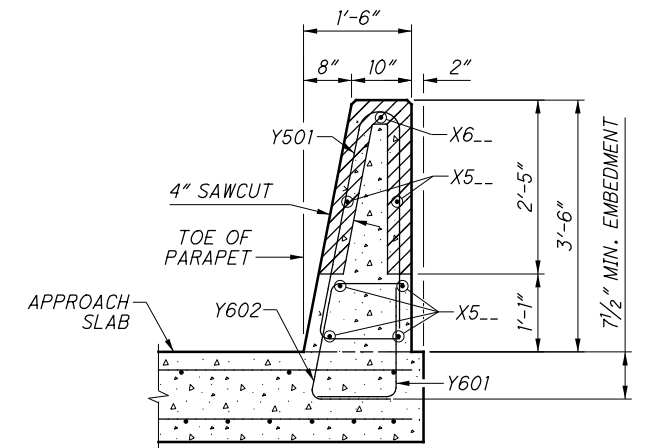
LEGEND:
E.S. = EACH SIDE
F.S. = FAR SIDE
N.S. = NEAR SIDE

⊕ SEE PROJECT PLANS.
* FIELD BEND BARS WHERE NECESSARY.

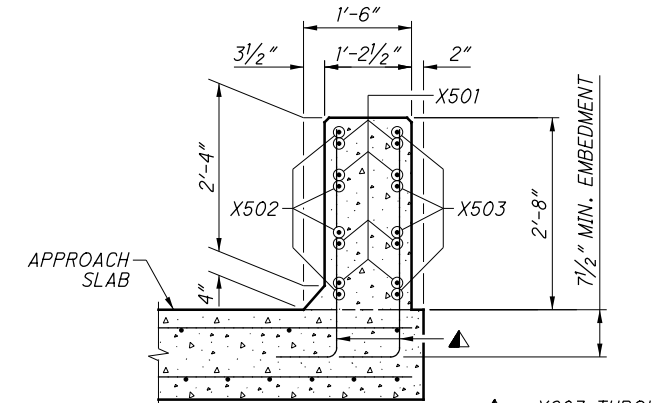


PLAN VIEW
 42" SBR-1 TRANSITION MOUNTED ON APPROACH SLAB
 WITH SEMI-INTEGRAL ABUTMENT SHOWN
 (INTEGRAL ABUTMENT AND CAPPED PILE ABUTMENT SIMILAR)

LEGEND:
 E.S. = EACH SIDE
 F.S. = FAR SIDE
 N.S. = NEAR SIDE
 P.E.J.F. = PREFORMED EXPANSION
 JOINT FILLER

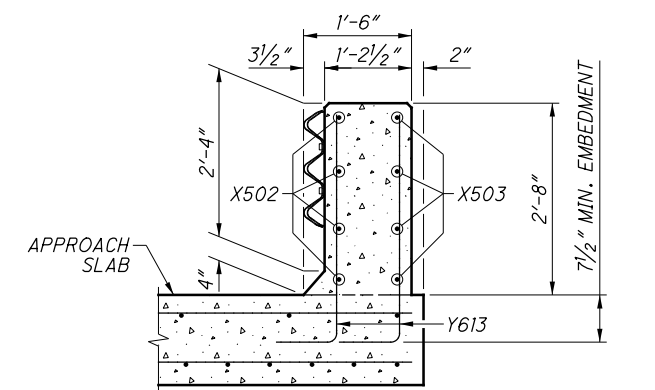


SECTION C-C
 (GFRP NOT SHOWN)

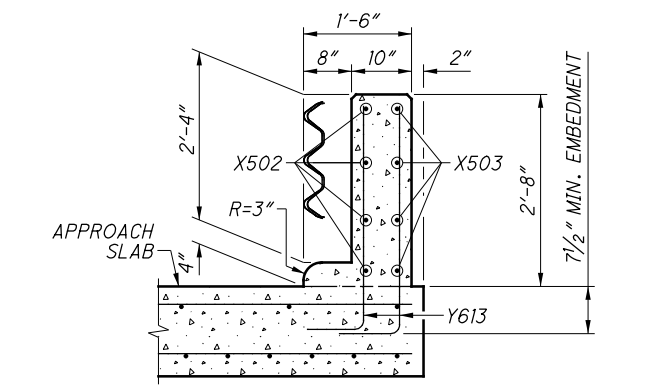


SECTION D-D

▲ : Y603 THROUGH Y614

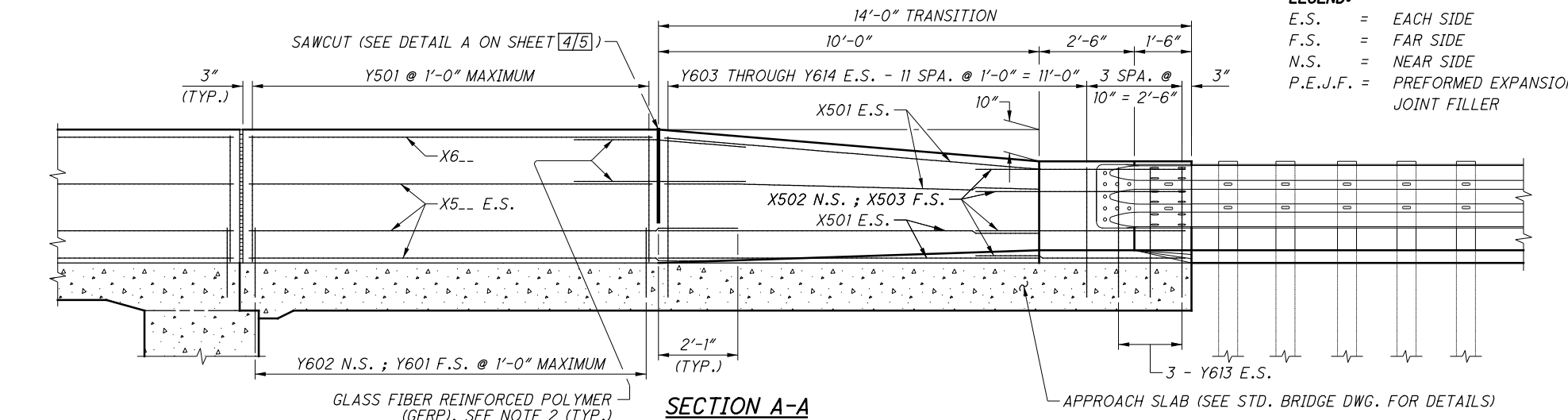


SECTION E-E

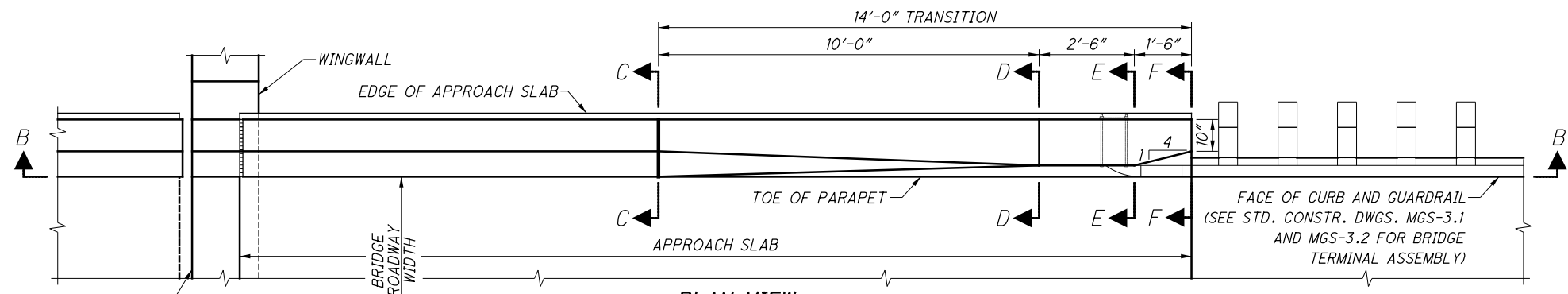


SECTION F-F

NOTES:
 1. FOR REINFORCING STEEL LIST, SEE SHEET [1/5].
 2. FOR ADDITIONAL DETAILS AND NOTES, SEE SHEETS [1/5] AND [5/5].

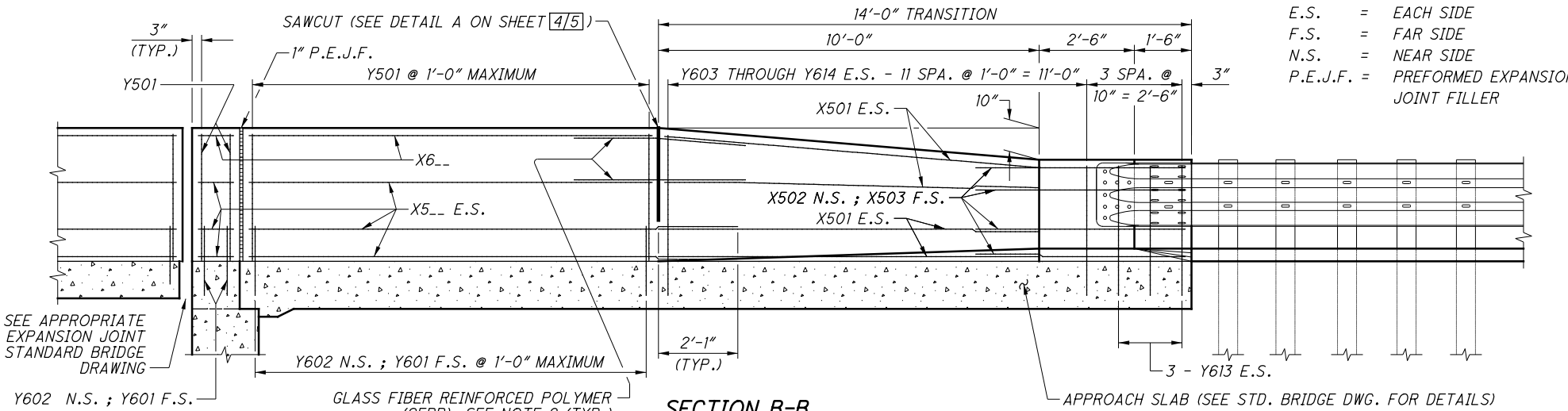


SECTION A-A

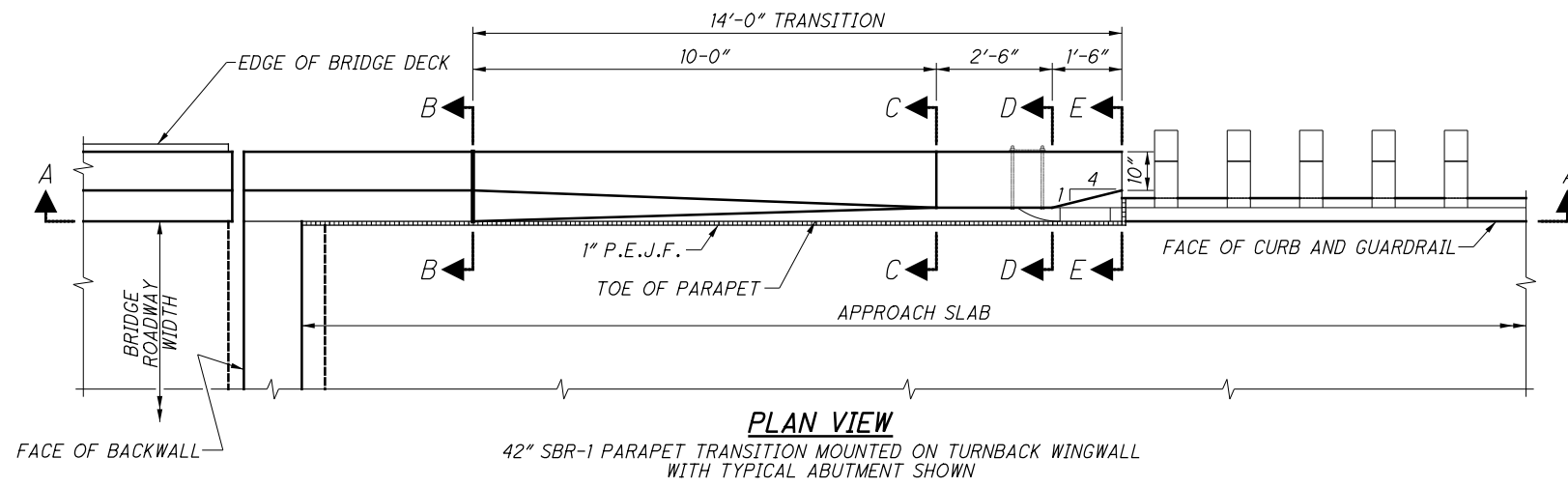


PLAN VIEW
 42" SBR-1 TRANSITION MOUNTED ON APPROACH SLAB
 WITH TYPICAL ABUTMENT SHOWN

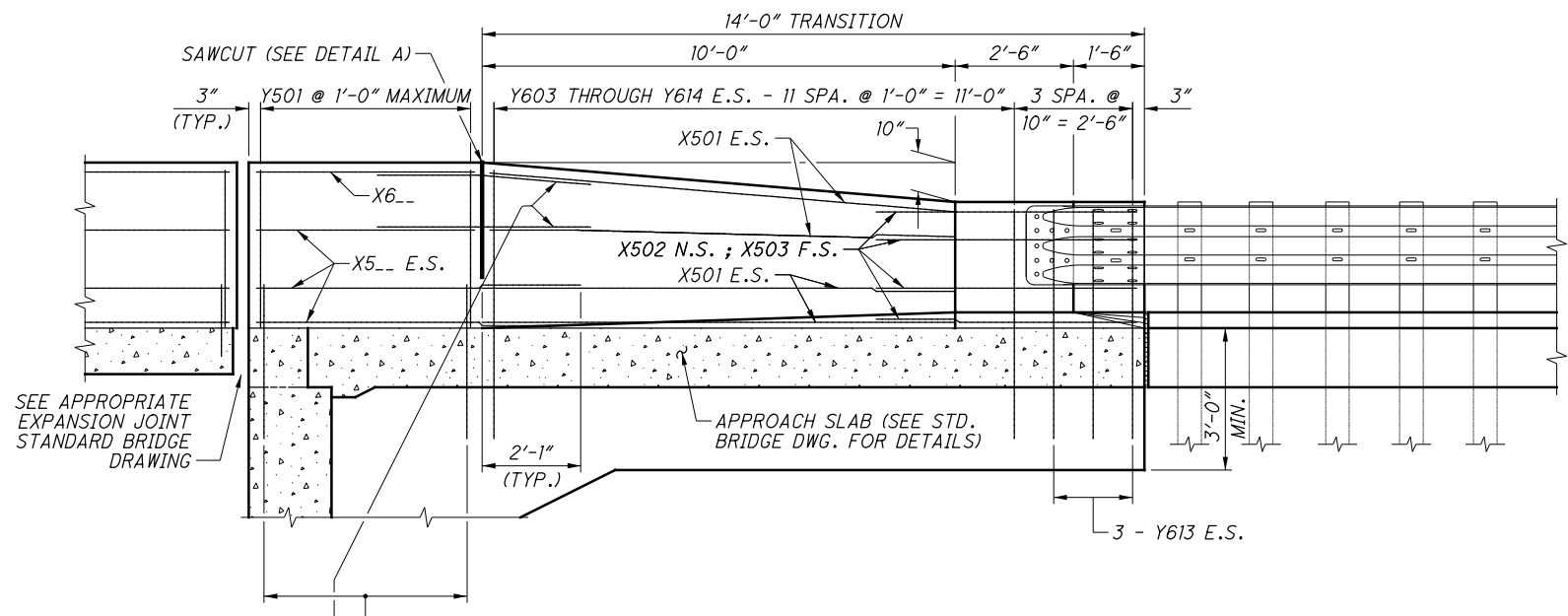
LEGEND:
 E.S. = EACH SIDE
 F.S. = FAR SIDE
 N.S. = NEAR SIDE
 P.E.J.F. = PREFORMED EXPANSION
 JOINT FILLER



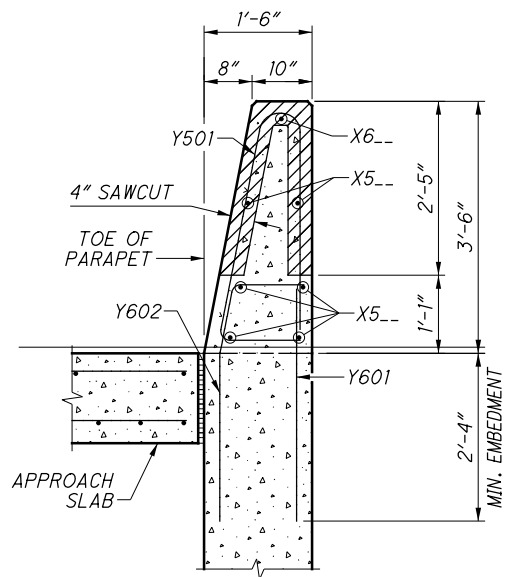
SECTION B-B



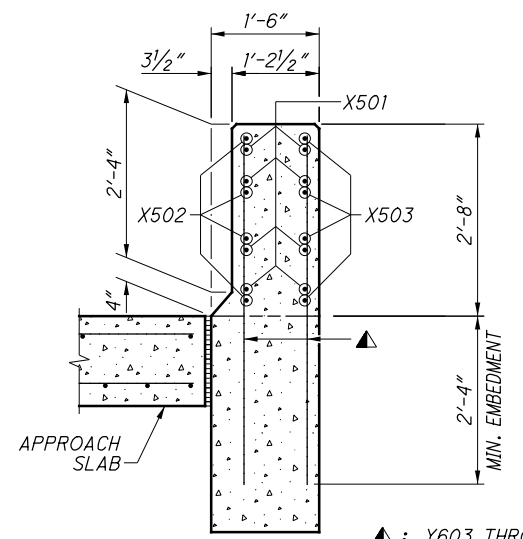
PLAN VIEW
42" SBR-1 PARAPET TRANSITION MOUNTED ON TURNBACK WINGWALL WITH TYPICAL ABUTMENT SHOWN



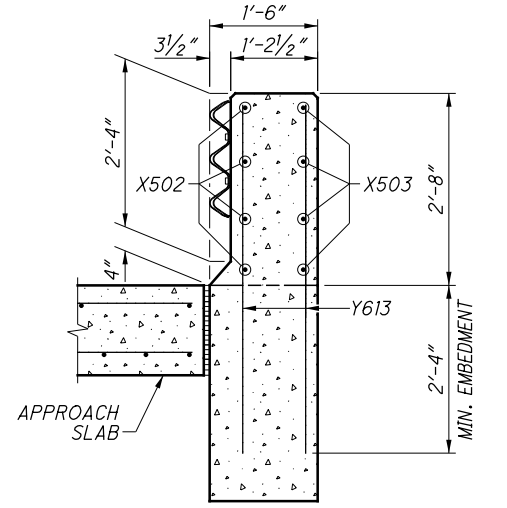
SECTION A-A



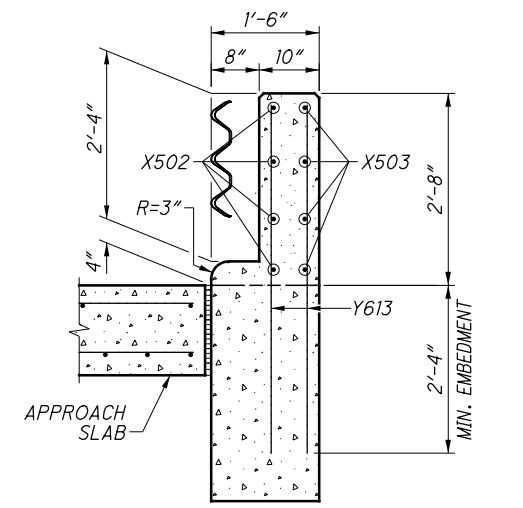
SECTION B-B
(GFRP NOT SHOWN)



SECTION C-C

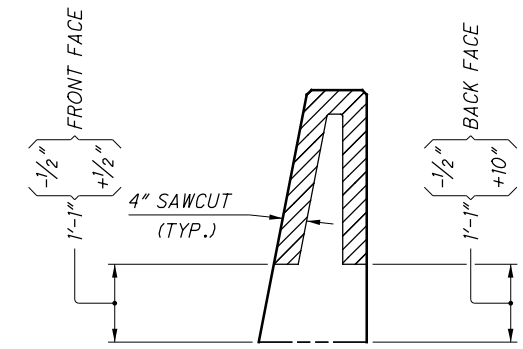


SECTION D-D



SECTION E-E

GLASS FIBER REINFORCED POLYMER (GFRP), SEE NOTE 4 (TYP.)



DETAIL A
SECTION THROUGH SAWCUT
SAWCUT PERIMETER = 5'-9"

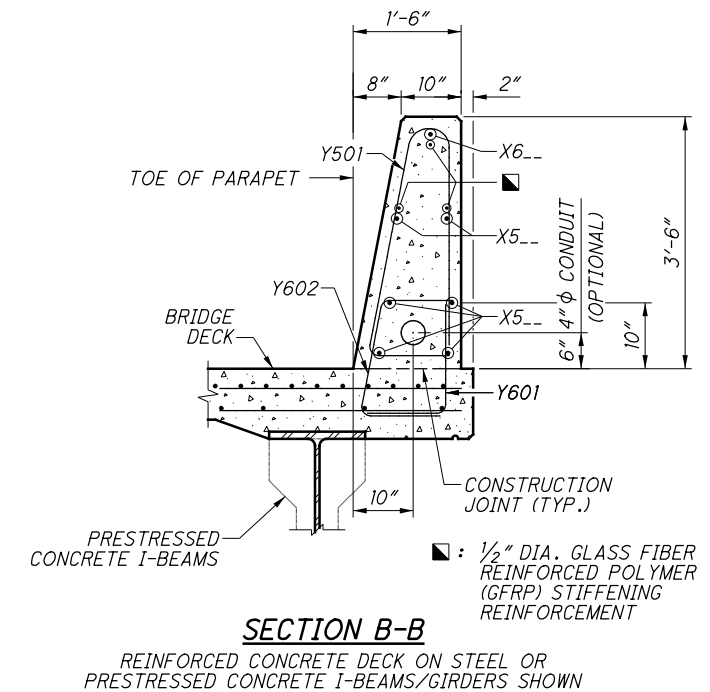
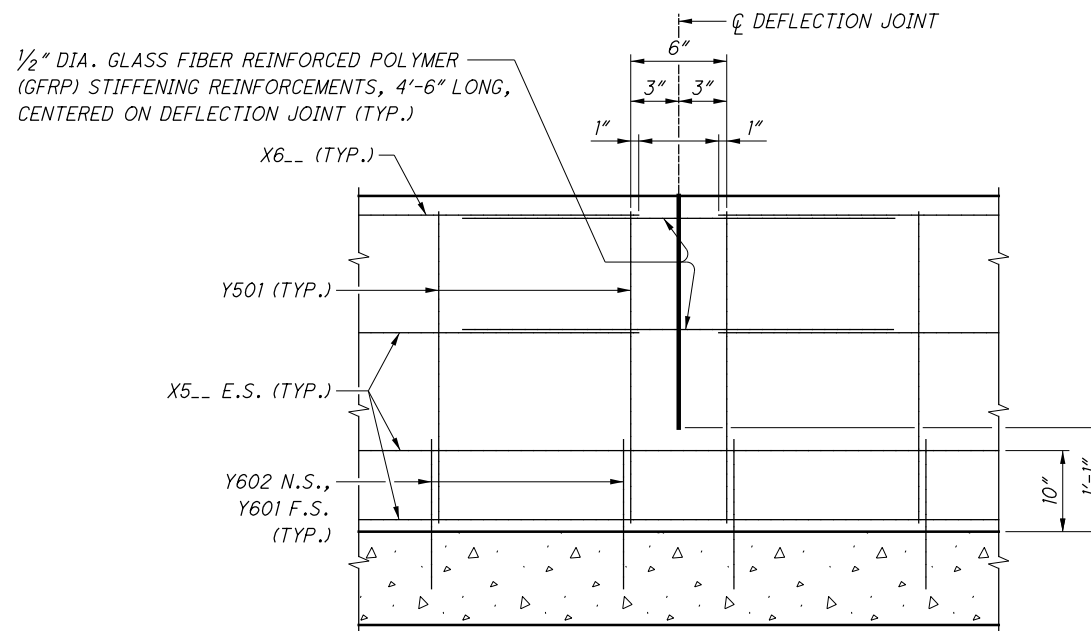
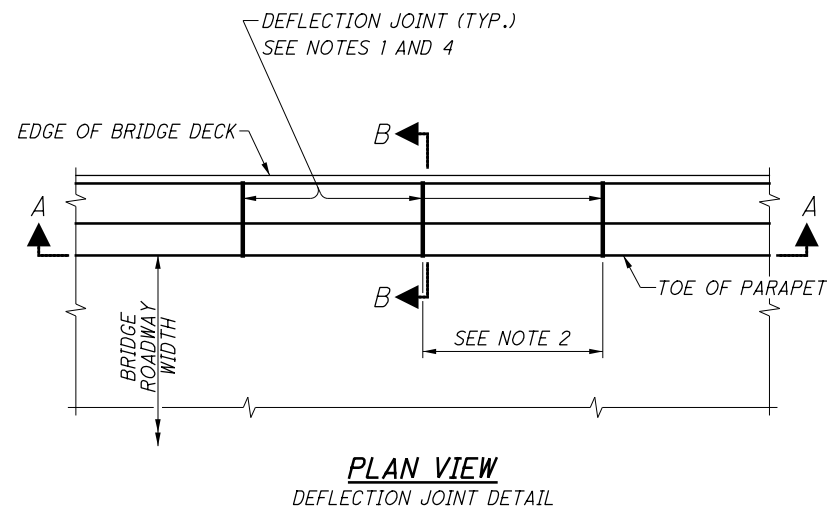
LEGEND:
E.S. = EACH SIDE
F.S. = FAR SIDE
N.S. = NEAR SIDE
P.E.J.F. = PREFORMED EXPANSION JOINT FILLER

REINFORCING STEEL FOR 42" SBR-1 TRANSITION MOUNTED ON WINGWALL

MARK	LENGTH	TYPE	BENDING DIAGRAMS
X501	10'-0"	STR	
X502	5'-8"	BENT	
X503	5'-8"	STR	
X5_	⊕	STR	
X6_ *	⊕	STR	
Y501	7'-4"	BENT	
Y601	A + 11"	STR	
Y602	A + 1'-8"	BENT	
Y603	A + B	STR	
Y604	3'-4"	STR	
Y605	3'-3"	STR	
Y606	3'-2"	STR	
Y607	3'-1"	STR	
Y608	3'-0"	STR	
Y609	2'-11"	STR	
Y610	2'-10"	STR	
Y611	2'-8"	STR	
Y612	2'-7"	STR	
Y613	2'-6"	STR	
Y614	2'-5"	STR	

- NOTES:**
- FOR ALL SINGLE SLOPE CONCRETE BRIDGE RAILINGS INCLUDING THE 14'-0" TRANSITIONS, PROJECT PLANS SHALL INCLUDE PLAN VIEW, ELEVATION VIEW, SECTIONS, REINFORCING MARKS, REINFORCING BENDING DIAGRAMS, AND REINFORCING WEIGHTS.
 - SEE APPROPRIATE STANDARD BRIDGE DRAWING FOR ABUTMENT DETAILS.
 - FOR BRIDGE TERMINAL ASSEMBLY, SEE STD. CONSTR. DWGS. MGS-3.1 AND MGS-3.2.
 - FOR DEFLECTION JOINT DETAILS AND ADDITIONAL NOTES, SEE SHEET [5]5.

⊕ SEE PROJECT PLANS.
* FIELD BEND BARS WHERE NECESSARY.



NOTES:

- FOR THE ENTIRE LENGTH OF SINGLE SLOPE CONCRETE BRIDGE RAILINGS, PROJECT PLANS SHALL SHOW THE LOCATIONS OF DEFLECTION JOINTS.
- DEFLECTION JOINT SPACING SHALL NOT EXCEED 15'-0" ON CENTERS. FOR CONTINUOUS STRUCTURES, THE DEFLECTION JOINTS WITHIN THE DEAD LOAD CONTRAFLEXURE (NEGATIVE MOMENT REGIONS OVER PIER LOCATIONS) SHALL BE SPACED NOT LESS THAN 5'-0" NOR MORE THAN 7'-6" ON CENTERS.
- PAYMENT FOR 1/2" DIA. GLASS FIBER REINFORCED POLYMER (GFRP) STIFFENING REINFORCEMENT SHALL BE INCLUDED WITH CONTRACT PRICE FOR ITEM 509 - EPOXY COATED REINFORCING STEEL.
- LIMITS OF SAWCUT IS SHOWN IN DETAIL A, SHEET [4/5]. THE 4" SAWCUT DEPTH SHOWN IN DETAIL A IS THE MINIMUM REQUIRED. HOWEVER, THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT.

DESIGN CRITERIA:

42" SINGLE SLOPE CONCRETE BRIDGE RAILINGS MEET THE REQUIREMENTS OF NCHRP 350 TEST LEVEL 5 AND "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS", 2012.

DESIGN DATA:

CONCRETE - COMPRESSIVE STRENGTH = 4.5 KSI
 REINFORCING STEEL - MINIMUM YIELD STRENGTH = 60 KSI

AREA OF STANDARD 42" SBR-1 CROSS SECTION = 588.0 SQ. IN.
 VOLUME OF 42" SBR-1 14'-0" TRANSITION SECTION = 1.82 CU. YD.

DEFLECTION JOINTS FOR CONCRETE PARAPETS:

FOR SLIPFORMED CONSTRUCTION:

AS SOON AS CUTTING OPERATIONS CAN BEGIN WITHOUT DAMAGING THE CONCRETE, SAWCUT 1 1/4 INCH DEEP DEFLECTION CONTROL JOINTS ALONG THE PERIMETER OF THE PARAPET.

AFTER THE CURING PERIOD AND BEFORE APPLYING LOAD TO THE PARAPET, PERFORM 4 INCH SAWCUT AS SHOWN IN DETAIL A, SHEET [4/5]. APPLIED PARAPET LOAD INCLUDES: CONSTRUCTION LOADS ON THE DECK (EXCLUDING PERSONNEL; HAND OPERATED EQUIPMENT AND MANUALLY POWERED VEHICLES); AND VEHICLE TRAFFIC IN THE LANE IMMEDIATELY ADJACENT TO THE PARAPET AFTER REMOVAL OF TRAFFIC CONTROL DEVICES.

FOR CONVENTIONALLY FORMED CONSTRUCTION:

REMOVE THE FORMS BEFORE APPLYING LOAD TO THE PARAPET. AS SOON AS THE FORMS ARE REMOVED, PERFORM 4-INCH SAWCUT AS SHOWN IN DETAIL A, SHEET [4/5]. THE 1 1/4 INCH SAWCUTS ARE NOT REQUIRED.

THE CONTRACTOR HAS AN OPTION TO PERFORM FULL DEPTH SAWCUT. HOWEVER, THE SAWCUT SHALL NOT BE LESS THAN 1'-0 1/2" FROM THE TOP OF THE CONCRETE DECK SLAB.

USE AN EDGE GUIDE, FENCE, OR JIG TO ENSURE THAT THE CUT JOINT IS STRAIGHT, TRUE, AND ALIGNED ON ALL FACES OF THE PARAPET. THE JOINT WIDTH SHALL BE THE WIDTH OF THE SAW BLADE, A NOMINAL WIDTH OF 1/4 INCH.

SEAL THE PERIMETER OF THE DEFLECTION JOINTS TO A MINIMUM DEPTH OF ONE INCH WITH A POLYURETHANE OR POLYMERIC MATERIAL CONFORMING TO ASTM C920, TYPE S. LEAVE THE BOTTOM 1/2 INCH OF BOTH THE INSIDE AND OUTSIDE FACES OF THE PARAPET UNSEALED TO ALLOW ANY WATER WHICH MAY ENTER THE JOINT TO ESCAPE.

AT EACH DEFLECTION JOINT LOCATION, USE GLASS FIBER REINFORCED POLYMER (GFRP) REINFORCEMENT TO MAINTAIN THE RIGIDITY OF THE CAGE ACROSS THE PROPOSED JOINTS AT THOSE LONGITUDINAL BARS AS SHOWN IN SECTIONS A-A & B-B ABOVE. OTHER NON-FERROUS REINFORCEMENT MAY BE PROPOSED FOR USE, SUBJECT TO APPROVAL BY THE ENGINEER.

FOR TRANSITION SECTION, PLACE A DEFLECTION JOINT AT THE BEGINNING OF THE 14'-0" TRANSITION. DEFLECTION JOINTS ARE NOT REQUIRED WITHIN THE 14'-0" TRANSITION SECTION.

MAXIMUM SPACING OF VERTICAL REINFORCING BARS FOR STANDARD 42" SBR-1 CONCRETE PARAPETS:

THE MAXIMUM SPACING OF VERTICAL REINFORCING BARS FOR THE STANDARD 42" SBR-1 CONCRETE PARAPET SHALL BE 1'-0", UNLESS NOTED OTHERWISE.

MAXIMUM SPACING OF VERTICAL REINFORCING BARS FOR 42" SBR-1 TRANSITIONS:

THE MAXIMUM SPACING OF VERTICAL REINFORCING BARS FOR THE 42" SBR-1 TRANSITION SECTION SHALL BE AS SHOWN ON SHEETS [1/5], [2/5], [3/5], OR [4/5].

MINIMUM EMBEDMENT OF VERTICAL REINFORCING BARS:

IF THE MINIMUM EMBEDMENT SHOWN FOR THE VERTICAL REINFORCING BARS INTO THE BRIDGE DECK, APPROACH SLAB, OR WINGWALL IS NOT MET, THEN THE DESIGNER SHALL CALCULATE THE REQUIRED REINFORCEMENT ACCORDING TO SECTION 13 OF THE "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.