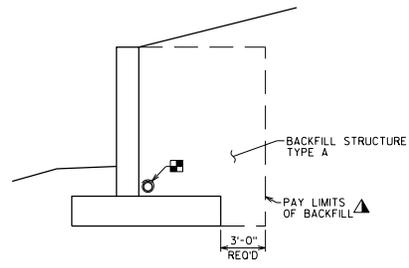
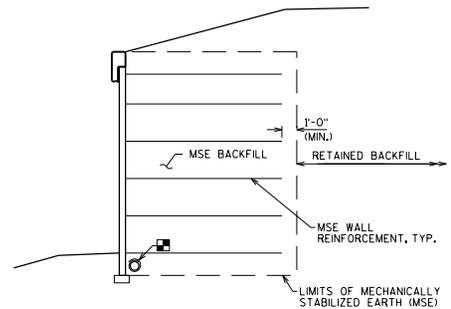


**TYPICAL SECTION
THRU BOX CULVERT**



**TYPICAL SECTION
THRU RETAINING WALL**



**TYPICAL SECTION
THRU MSE RETAINING WALL**

☆ CULVERT UNDERCUT AND BEDDING BACKFILL TO BE DETERMINED BY GEOTECHNICAL ENGINEER. (CHOOSE APPLICABLE NOTE, MODIFY AS NEEDED)

NOTES (BOX CULVERTS)

- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C--" SHALL BE THE EXISTING GROUNDLINE.
- THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE B" REQUIRED ON THE BOX CULVERT SIDES AND BEHIND APRON WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.
- NOTE AND DIMENSION NOT REQUIRED. (UNDERCUT NOT REQUIRED PER GEOTECHNICAL ENGINEER OR WHEN CONSTRUCTED ON FILLS)
- UNDER CUT 'X'-"X", EXCAVATION FOR UNDER CUT TO BE INCLUDED IN EXCAVATION FOR STRUCTURES. BACKFILL WITH "BACKFILL STRUCTURE TYPE B".
- UNDER CUT 'X'-"X", EXCAVATION FOR UNDER CUT TO BE INCLUDED IN EXCAVATION FOR STRUCTURES. PLACE "GEOTEXTILE TYPE C" AND BACKFILL WITH "BREAKER RUN".
- IN LIEU OF USING BREAKER RUN FOR THE BOX CONSTRUCTION PLATFORM, THE CONTRACTOR MAY ELECT TO SUBSTITUTE #1 OR #2 CONCRETE COARSE AGGREGATE, SELECT CRUSHED MATERIAL OR OTHER GRANULAR MATERIAL AS APPROVED BY THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR BASE STABILITY WITH ANY SUBSTITUTED MATERIAL. THE REGION GEOTECHNICAL ENGINEER MAY BE CONTACTED TO DETERMINE IF "OTHER GRANULAR MATERIAL" IS ACCEPTABLE.
- ALL PRECAST BOX SECTIONS SHALL BE PLACED ON A BEDDING OF "BACKFILL STRUCTURE TYPE B" OF 6" MINIMUM DEPTH. (NOTE APPLICABLE WHEN PRECAST NOTE IS SHOWN ON THE PLANS)

NOTES (RETAINING WALLS)

- THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES RETAINING WALLS R--" SHALL BE THE EXISTING GROUNDLINE.
- THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED FOR THE ENTIRE WALL LENGTH. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

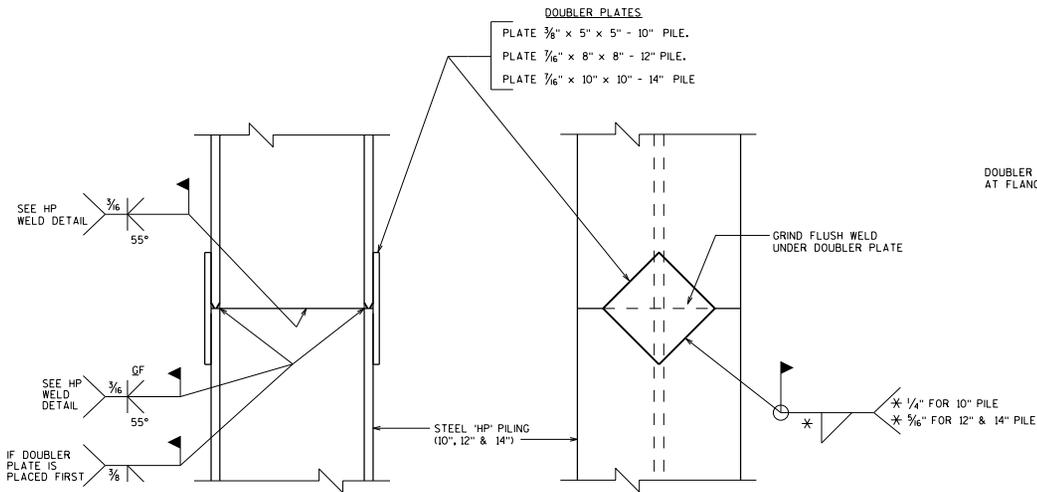
DESIGNER NOTES

- ▲ THE DESIGN ENGINEER SHOULD PROVIDE ALL NECESSARY BACKFILL PAY LIMITS AND NOTES IN ORDER TO DETERMINE QUANTITIES. SEE BRIDGE MANUAL SECTIONS 6.4.2 AND 9.10 FOR ADDITIONAL INFORMATION.
- FOR CULVERTS, THE ABOVE NOTE REGARDING POTENTIAL SUBSTITUTION OF BREAKER RUN SHOULD ONLY BE INCLUDED ON THE PLANS IF ALLOWED BY THE REGION GEOTECHNICAL ENGINEER.

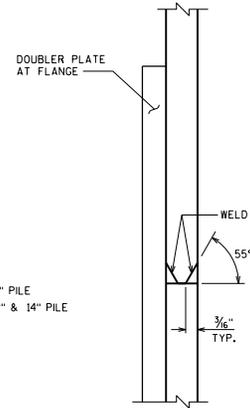
LEGEND

- ▲ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.
- PIPE UNDERDRAIN (WRAPPED 16-INCH), SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. (SHOW DETAIL ON PLANS)

STRUCTURE BACKFILL LIMITS AND NOTES 2	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: <u>7-18</u>



STEEL 'HP' SHAPES



HP WELD DETAIL
FLANGE SHOWN, WEB SIMILAR

DESIGNER NOTES

FULL DESIGN LOADING CAN BE USED IF PREBORED HOLE IS LARGE ENOUGH TO AVOID PILE HANGUPS AND ALLOW FILLING WITH SAND.

SEE WISDOT POLICY ITEM IN BRIDGE MANUAL 11.3.1.12.3 FOR GUIDANCE ON "HP" PILES.

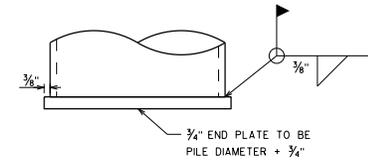
SEE BRIDGE MANUAL SECTION 11.3.1.17.7 FOR PILE RESISTANCE VALUES.

IF LESS THAN THE MAXIMUM AXIAL RESISTANCE IS REQUIRED BY DESIGN, STATE ONLY THE REQUIRED CORRESPONDING DRIVING RESISTANCE ON THE PLANS. CONSULT WITH THE GEOTECHNICAL ENGINEER REGARDING POSSIBLE ESTIMATED PILE LENGTH ADJUSTMENT.

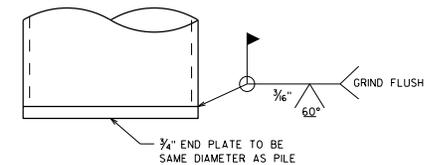
NOTES

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION.

IF APPLICABLE, PLACE THE FOLLOWING NOTE ON THE PLANS:
PILES PLACED IN PREBORED HOLES CORED INTO ROCK DO NOT REQUIRE DRIVING.



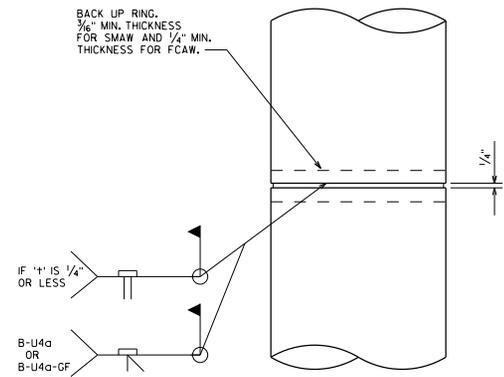
END PLATE DETAIL FOR CIP PILING



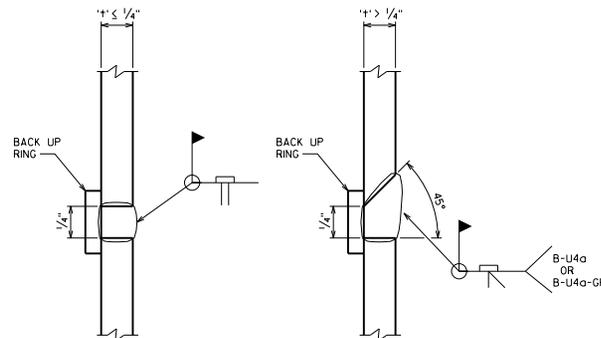
END PLATE DETAIL FOR CIP PILING

IN ARTESIAN CONDITIONS

(ONLY USE FOR ARTESIAN CONDITIONS)



CAST-IN-PLACE 'PIPE PILE'

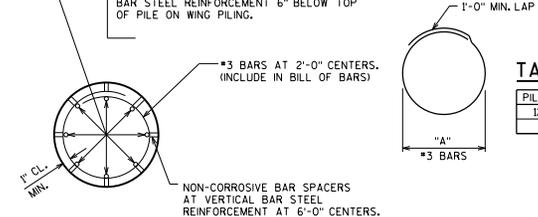


CIP PILE WELD DETAIL

FOR 12 3/4" DIA. PILES, USE 6 - #7 BARS.
FOR 14" DIA. PILES, USE 8 - #7 BARS.
INCLUDE IN BILL OF BARS, EXTEND 1'-2" (FOR ALL PILE SIZES) INTO CONCRETE CAP.

TERMINATE REINFORCEMENT 10'-0" BELOW GROUNDLINE OR STREAMBED ELEVATION.

FOR TIMBER BACKED ABUTMENTS, CUT OFF BAR STEEL REINFORCEMENT 6" BELOW TOP OF PILE ON WING PILING.



SECTION THRU CONCRETE

CAST-IN-PLACE PILING

USED WHEN PILES ARE EXPOSED

(OPEN PILE BENTS OR TIMBER BACKED ABUTMENTS)

TABLE

PILE DIA.	DIM "A"	LENGTH
12 3/4"	9 3/4"	3'-7"
14"	11"	3'-11"

PILE DETAILS



APPROVED: Bill Oliva DATE: 7-18

DESIGNER NOTES

LAP LENGTHS FOR HORIZONTAL BARS SHALL BE BASED ON A "CLASS C" TOP TENSION LAP SPLICE.

WING BARS AND DOWEL BARS SHALL BE EPOXY COATED.

PILING SPACING IN ABUTMENT BODY SHALL BE 8'-0" MAX. FOR ALL TYPES OF PILING. THE MAX. PILE SPACING FROM THE END OF THE ABUT. BODY TO THE FIRST PILE SHALL BE THE MINIMUM OF ONE-HALF PILE SPACE OR 2'-6".

TOTAL LENGTH OF [A] BARS SHALL BE ≥ TO WING LENGTH.

CONCRETE POURED UNDER WATER WILL BE ALLOWED AND SHALL BE DONE IN ACCORDANCE WITH SECTION 502.3.5.3 STANDARD SPECIFICATIONS.

THE SEMI-EXPANSION SEAT SHALL BE USED WHEN REQUIRED AS STATED IN CHAPTER 12, FIGURE 12.7-1 OF THE BRIDGE MANUAL OR WHENEVER A WING PILE IS REQUIRED.

THE FIXED SEAT CANNOT BE USED WHEN A WING PILE IS REQUIRED (SEE STD. 12.02 FOR CRITERIA).

WHEN THE BOTTOM OF GIRDER SLOPES MORE THAN 1% SLOPE THE BEAM SEAT BASED ON ADDING THESE TWO VALUES:

- LONGITUDINAL GRADE OF GIRDER (PERCENT)
 - CAMBER EFFECT = $\frac{4RC}{L} \times 100$ (PERCENT), WHERE:
RC = RESIDUAL CAMBER (INCHES)
L = GIRDER LENGTH (INCHES)
- (SEE STANDARD 13.01 FOR SLOPED SEAT DETAILS)

ABUTMENT DETAILED WITHOUT STRUCTURAL APPROACH SLAB. SEE STD. 12.10 THRU 12.13 FOR STRUCTURAL APPROACH DETAILS.

LEGEND

- ◆ #5 BARS (COATED) AT 1'-0" (2'-0" LONG). THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- ◇ WHEN THIS DIMENSION > 4" THIS ADDITIONAL REINFORCEMENT SHALL BE ADDED. MAX. SPA. OF HORIZ. #4 BARS = 1'-0".
- USE 1'-3" FOR SLAB SPANS AND FOR GIRDER SPANS WITH NO PAVING NOTCH. USE 1'-6" FOR GIRDER SPANS WITH NO PAVING NOTCH, BUT WHERE 36W, 45W, 54W, 54W, 70W, 72W OR B2W GIRDERS ARE USED, AND SKEW > 25°. USE 1'-3" FOR SLAB SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB. USE 1'-11" FOR GIRDER SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB. USE 1'-7" FOR SLAB SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10) USE 2'-3" FOR GIRDER SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10)
- DIMENSION IS FROM BOTTOM OF ABUTMENT TO LOW BEAM SEAT OR LOW SIDE OF SLAB TYPE SUPERSTRUCTURE.
- ▽ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.
- ▲ KEYED CONST. JOINT FORMED BY BEVELED 2" x 6".
- * * * WINGWALL WIDTH SHALL BE 1'-6" WHEN TYPE "M" RAILING, VERTICAL FACE PARAPET "TX", OR SINGLE SLOPE PARAPET "565S" IS USED. WINGWALL WIDTH SHALL BE 1'-9" WHEN TYPE "NY3" OR "NY4" RAILING IS USED.
- USE #5 BARS AT 6" SPA. IN OUTSIDE THIRDS OF BODY LENGTH WHEN THE WING LENGTH > 20'-0" AND WING HEIGHT > 10'-0".
- ☆ WHEN BODY SECTION IS > 50'-0" LONG PROVIDE VERTICAL CONSTRUCTION JOINT. RUN BAR STEEL THRU JOINT AND SEAL JOINT WITH 18" RUBBERIZED MEMBRANE WATERPROOFING. SEE STD. 12.09 FOR ALTERNATE CONSTRUCTION JOINT.
- SHOW ALL BARS FOR CLARITY.

TABLE

BAR SIZE	DISTANCE*
#5	1'-9"
#6	2'-1"
#7	2'-9"
#8	3'-8"
#9	4'-7"
#10	5'-10"

* OR EQUIVALENT STD. HOOK USE STRAIGHT BARS WHEN POSSIBLE

1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

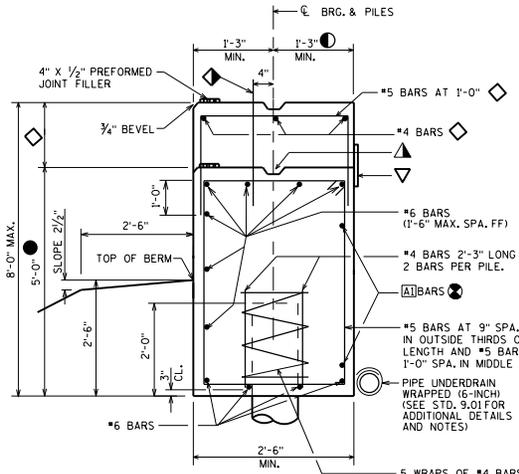
#4 BARS AT 1'-0" ABUTMENT ENDS

#5 BARS AT 1'-0" SEE STD. 12.02

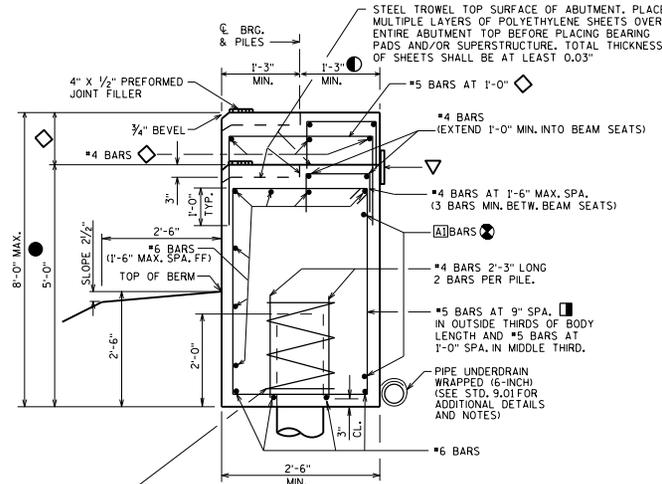
ABUTMENT TYPE A1 (INTEGRAL ABUTMENT)



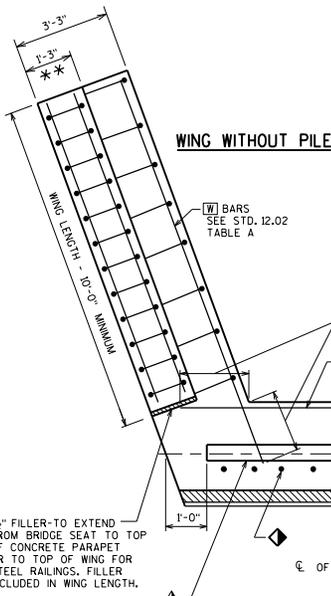
APPROVED: Bill Oliva DATE: 7-18



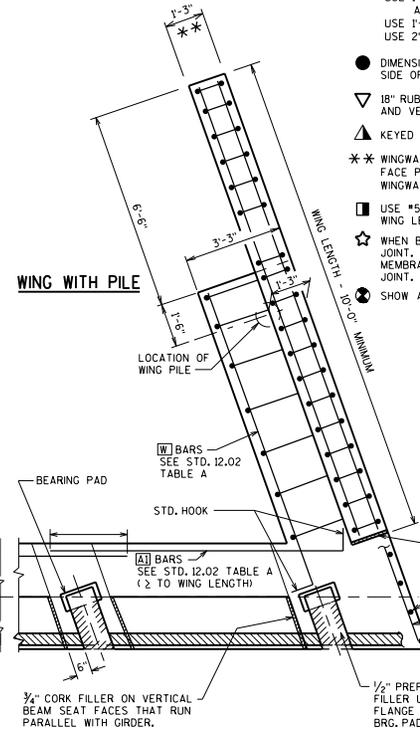
TYPE A1 WITH FIXED SEAT



TYPE A1 WITH SEMI-EXPANSION SEAT



WING WITHOUT PILE



WING WITH PILE

SLAB SPAN WITH FIXED SEAT

GIRDER SPAN WITH FIXED SEAT

SLAB SPAN WITH SEMIEXPANSION SEAT

GIRDER SPAN WITH SEMIEXPANSION SEAT

1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

1'-0" SEE TABLE

SEE TABLE

SEE STD. 12.02 TABLE A (2 TO WING LENGTH)

SEE STD. 13.01 FOR CRITERIA OF WHEN TO SLOPE BEAM SEATS

4" x 1/2" PREFORMED JOINT FILLER, LENGTH OF ABUTMENT

3/4" V-GROOVE

4" x 1/2" PREFORMED JOINT FILLER, LENGTH OF ABUTMENT

3/4" V-GROOVE

PLACE STIRRUPS AND U-SHAPED BARS NORMAL TO ABUT. BODY.

1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

1'-0" SEE TABLE

SEE TABLE

SEE STD. 12.02 TABLE A (2 TO WING LENGTH)

SEE STD. 13.01 FOR CRITERIA OF WHEN TO SLOPE BEAM SEATS

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3/4" V-GROOVE

PLACE STIRRUPS AND U-SHAPED BARS NORMAL TO ABUT. BODY.

1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

1'-0" SEE TABLE

SEE TABLE

SEE STD. 12.02 TABLE A (2 TO WING LENGTH)

SEE STD. 13.01 FOR CRITERIA OF WHEN TO SLOPE BEAM SEATS

1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

1'-0" SEE TABLE

SEE TABLE

SEE STD. 12.02 TABLE A (2 TO WING LENGTH)

SEE STD. 13.01 FOR CRITERIA OF WHEN TO SLOPE BEAM SEATS

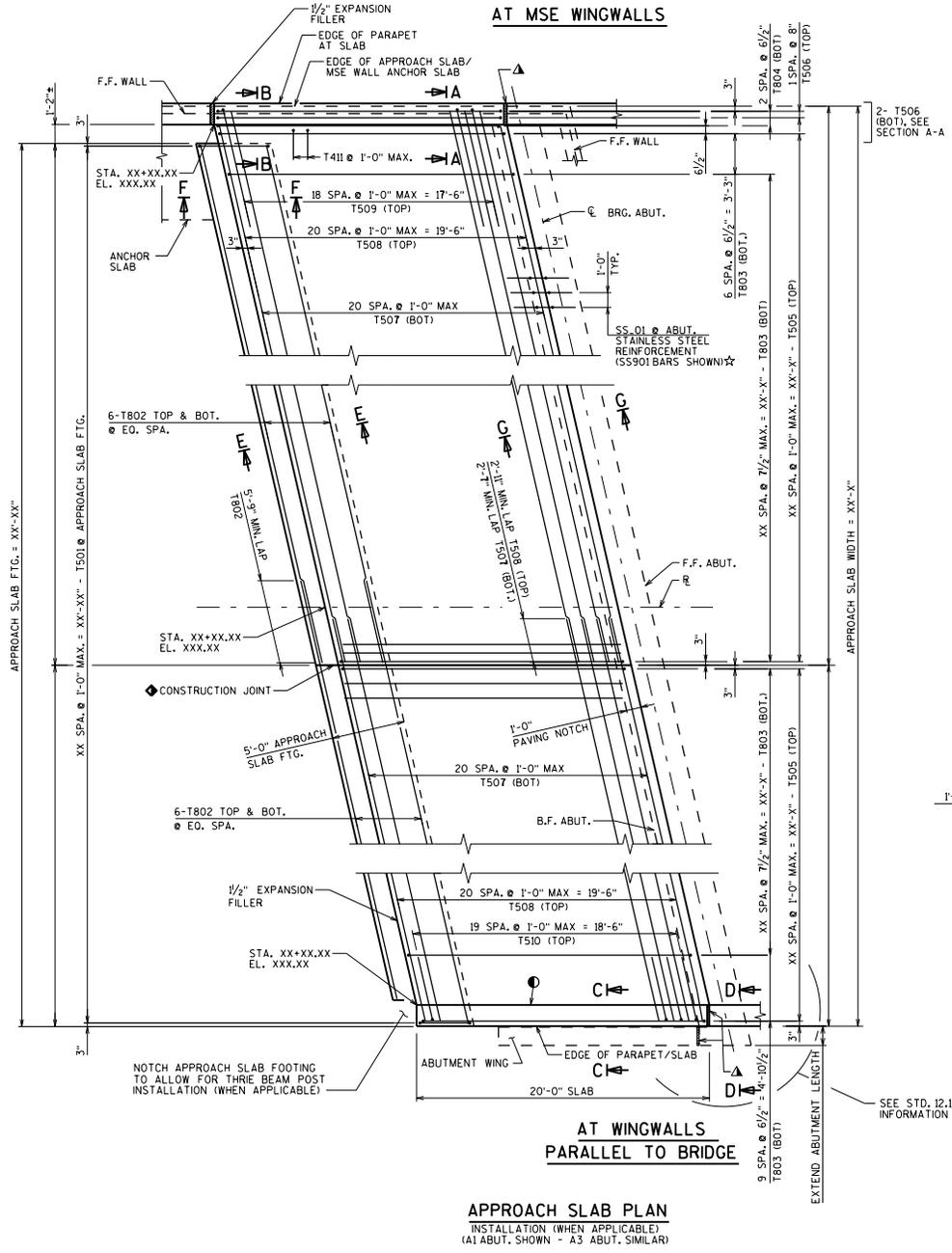
1/2" FILLER-TO EXTEND FROM BRIDGE SEAT TO TOP OF CONCRETE PARAPET OR TO TOP OF WING FOR STEEL RAILINGS. FILLER INCLUDED IN WING LENGTH.

1'-0" SEE TABLE

SEE TABLE

SEE STD. 12.02 TABLE A (2 TO WING LENGTH)

SEE STD. 13.01 FOR CRITERIA OF WHEN TO SLOPE BEAM SEATS



DESIGNER NOTES

STRUCTURAL APPROACH SLABS AND PARAPETS SHALL BE USED ON ALL BRIDGES CARRYING TRAFFIC VOLUMES GREATER THAN 3500 AADT (FUTURE DESIGN YEAR). OTHER LOCATIONS CAN BE CONSIDERED WITH THE APPROVAL OF THE CHIEF STRUCTURAL DESIGN ENGINEER.

STRUCTURAL APPROACH SLABS TO BE PART OF THE BRIDGE PLAN. BID ITEMS ARE CONCRETE MASONRY BRIDGES, BAR STEEL REINFORCEMENT HS COATED STRUCTURES, ETC. POLYETHYLENE SHEETS SHALL BE INCIDENTAL TO CONCRETE MASONRY BRIDGES.

QUANTITIES FOR APPROACH SLABS SHALL BE SHOWN IN A SEPARATE COLUMN WITHIN THE TOTAL ESTIMATED QUANTITIES TABLE IN THE FINAL PLANS.

◆ CONSTRUCTION JOINT REQUIRED WHEN WIDTH OF SUPERSTRUCTURE EXCEEDS 90'. RUN REINFORCEMENT THROUGH THE JOINT.

LONGITUDINAL APPROACH SLAB REINFORCEMENT SHALL BE PLACED PARALLEL TO THE APPROACH (I.E., NOT NORMAL TO THE ABUTMENT WITH SKEWED STRUCTURES).

STRUCTURE APPROACH SLABS TO BE DETAILED TO MATCH THE BRIDGE DECK (I.E., PROTECTIVE SURFACE TREATMENT, STAINLESS STEEL REINFORCEMENT, LONGITUDINAL GROOVING, ETC.), WHERE HIGH PERFORMANCE CONCRETE IS USED AT THE BRIDGE DECK. HPC SHALL BE USED FOR THE APPROACH SLAB ONLY (I.E., HPC IS NOT REQUIRED FOR APPROACH SLAB FOOTING).

☆ THE BID ITEM FOR SS901 AND SS601 BARS SHALL BE STANDARD SPECIAL PROVISION "BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES".

DESIGNER TO COORDINATE LOCATION OF SURFACE DRAINS, INLETS, AND/OR FLUMES WITH ROADWAY DESIGNER AND THE FDM.

SEE STANDARD 9.01 FOR BACKFILL AND BASE AGGREGATE DENSE 1-1/4 INCH DETAILS.

LEGEND

▲ SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE).

● SEE PARAPET STANDARD DETAILS FOR LOCATION OF NAME PLATE AND BENCH MARK WITH RESPECT TO THE END OF PARAPET.

DESIGN DATA

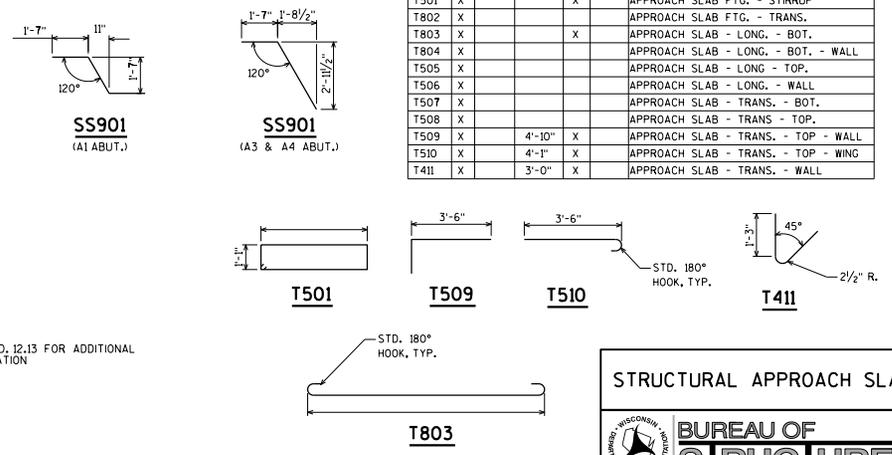
CONCRETE STRENGTH, f'c: 4,000 P.S.I.
 BAR STEEL REINFORCEMENT, GRADE 60, fy: 60,000 P.S.I.
 ALLOWABLE SOIL BEARING PRESSURE: 2,000 P.S.F.

BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D.	LENGTH	BEND	BAR SERIES	LOCATION
SS901			5'-0"	X		CONC. ABUT. DIAPH. TO APPROACH SLAB
SS901			5'-0"	X		CONC. BACKWALL TO APPROACH SLAB
SS601			3'-0"			STRUCTURE SLAB TO APPROACH SLAB

BAR MARK	COAT	NO. REQ'D.	LENGTH	BEND	BAR SERIES	LOCATION
T501	X			X		APPROACH SLAB FTG. - STIRRUP
T802	X					APPROACH SLAB FTG. - TRANS.
T803	X			X		APPROACH SLAB - LONG. - BOT.
T804	X					APPROACH SLAB - LONG. - BOT. - WALL
T505	X					APPROACH SLAB - LONG. - TOP.
T506	X					APPROACH SLAB - LONG. - WALL
T507	X					APPROACH SLAB - TRANS. - BOT.
T508	X					APPROACH SLAB - TRANS. - TOP.
T509	X		4'-10"	X		APPROACH SLAB - TRANS. - TOP - WALL
T510	X		4'-1"	X		APPROACH SLAB - TRANS. - TOP - WING
T411	X		3'-0"	X		APPROACH SLAB - TRANS. - WALL



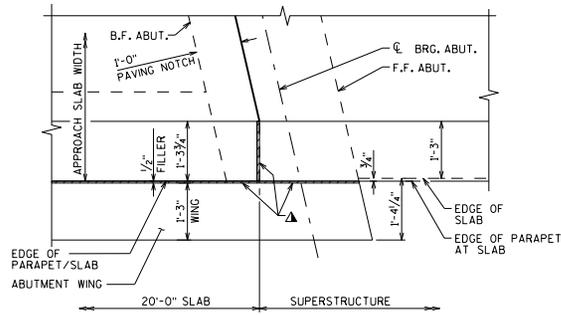
SECTIONS A-A THRU G-G ARE SHOWN ON STANDARD 12.11 & 12.12

STRUCTURAL APPROACH SLAB

APPROVED: Bill Oliva DATE: 7-18

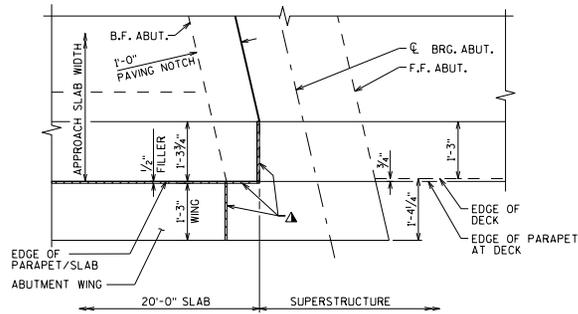
LEGEND

- ▲ SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER, (1" DEEP AND HOLD 1/4" BELOW SURFACE OF CONCRETE).
- * PARTIAL PLAN REPRESENTATIVE OF SIMILAR LOCATION AS SHOWN ON STANDARD 12.10 FOR DIFFERENT APPLICATION.



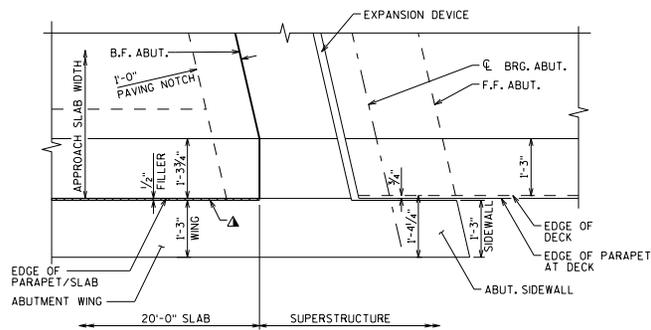
APPROACH SLAB PARTIAL PLAN

(AT WINGWALLS PARALLEL TO BRIDGE - A1 ABUT. - SLAB SPAN)



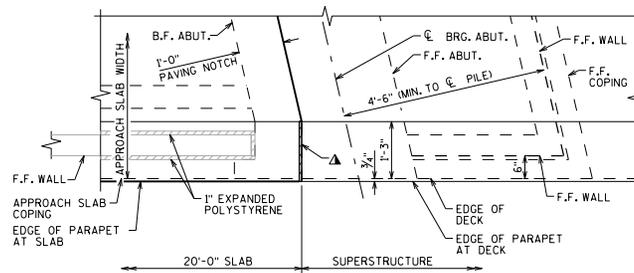
APPROACH SLAB PARTIAL PLAN

(AT WINGWALLS PARALLEL TO BRIDGE - A1 ABUT. - GIRDER SPAN)



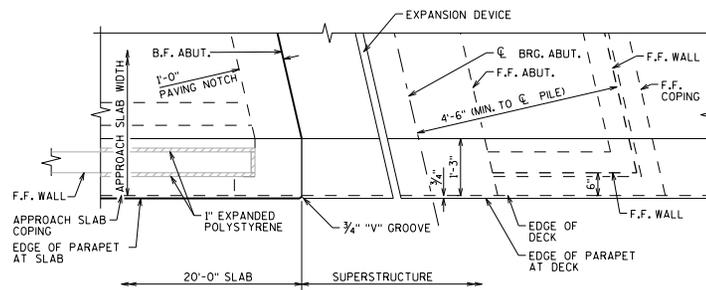
APPROACH SLAB PARTIAL PLAN *

(AT WINGWALLS PARALLEL TO BRIDGE - A3 ABUT. - GIRDER SPAN)



APPROACH SLAB PARTIAL PLAN *

(AT WINGWALLS PARALLEL TO BRIDGE - A1 ABUT. AT MSE WINGWALLS - GIRDER SPAN)



APPROACH SLAB PARTIAL PLAN *

(AT WINGWALLS PARALLEL TO BRIDGE - A3 ABUT. AT MSE WINGWALLS - GIRDER SPAN)

PARTIAL PLANS SHOWN HERE ARE FROM STANDARD 12.10

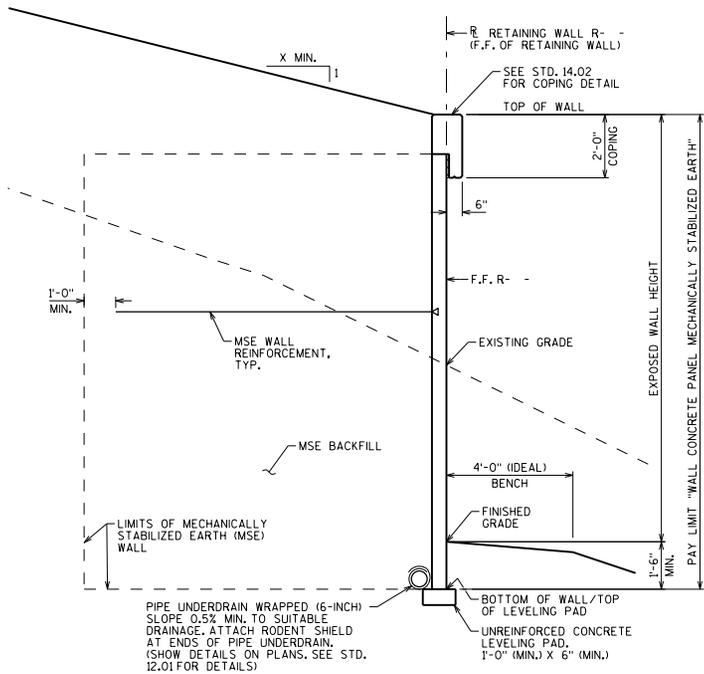
**STRUCTURAL APPROACH
SLAB DETAILS 3**



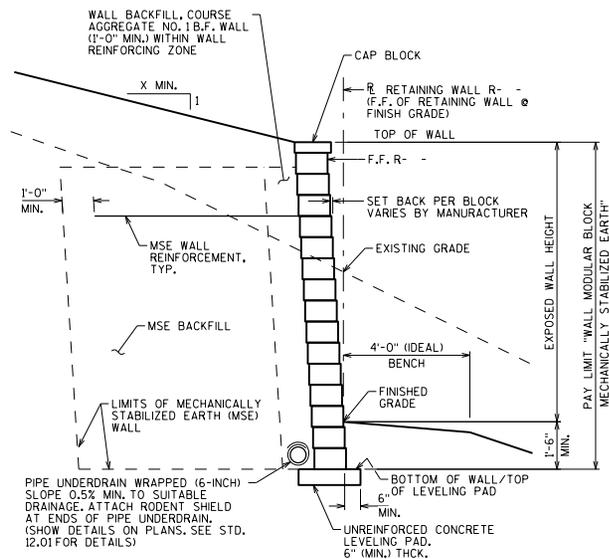
**BUREAU OF
STRUCTURES**

APPROVED: Bill Oliva

DATE:
7-18



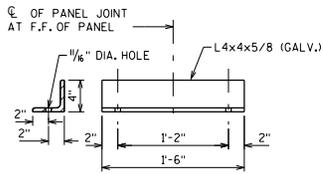
TYPICAL SECTION
(MSE WALL WITH CONCRETE PANEL FACING)



TYPICAL SECTION
(MSE WALL WITH MODULAR BLOCK FACING)

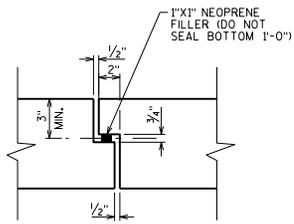
DESIGNER NOTE
SEE STANDARD 14.02 FOR ADDITIONAL INFORMATION

MSE WALL PANEL AND BLOCK FACING	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18

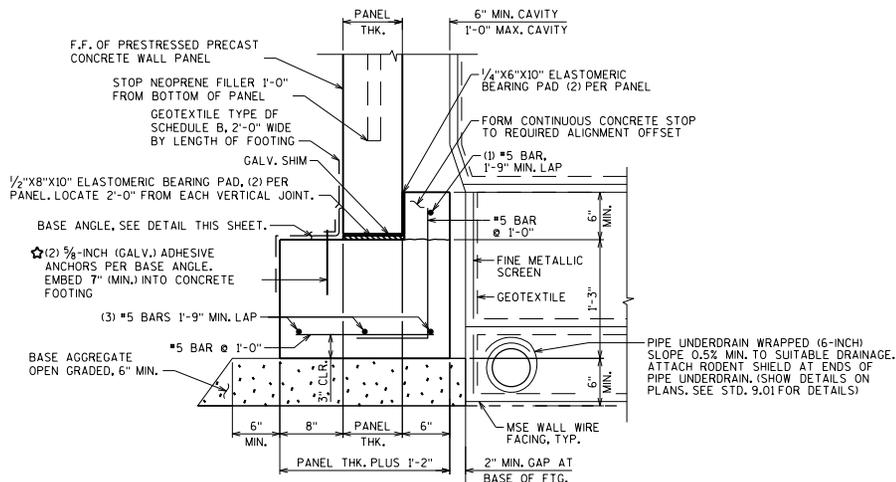


BASE ANGLE DETAIL

CENTERED ON PANEL JOINT OR AT EACH FOOTING END OR STEP ELEVATION.



WALL PANEL JOINT DETAIL

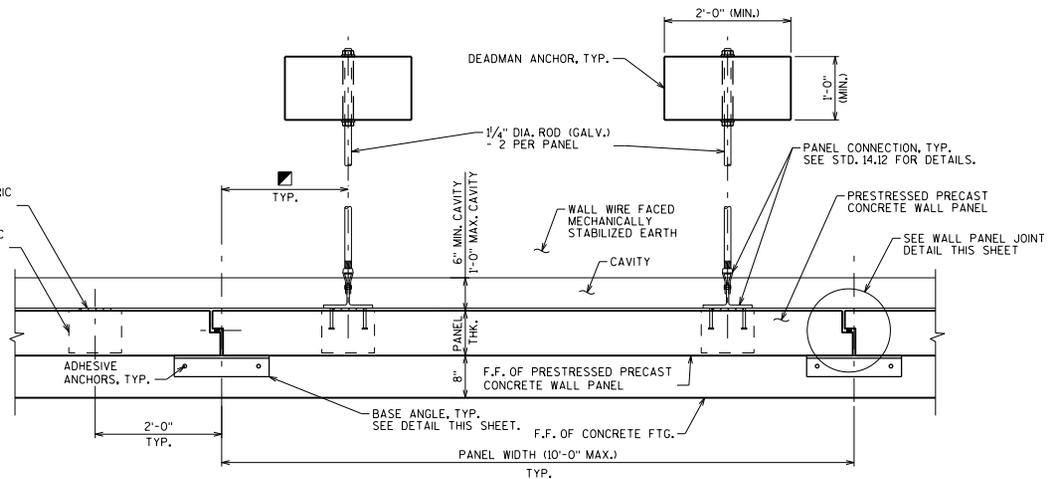


ALL ITEMS SHOWN ARE INCLUDED IN BID ITEM "PRESTRESSED PRECAST CONCRETE WALL PANEL"

ALL ITEMS SHOWN EXCEPT PIPE UNDERDRAIN ARE INCLUDED IN BID ITEM "WALL WIRE FACED MECHANICALLY STABILIZED EARTH"

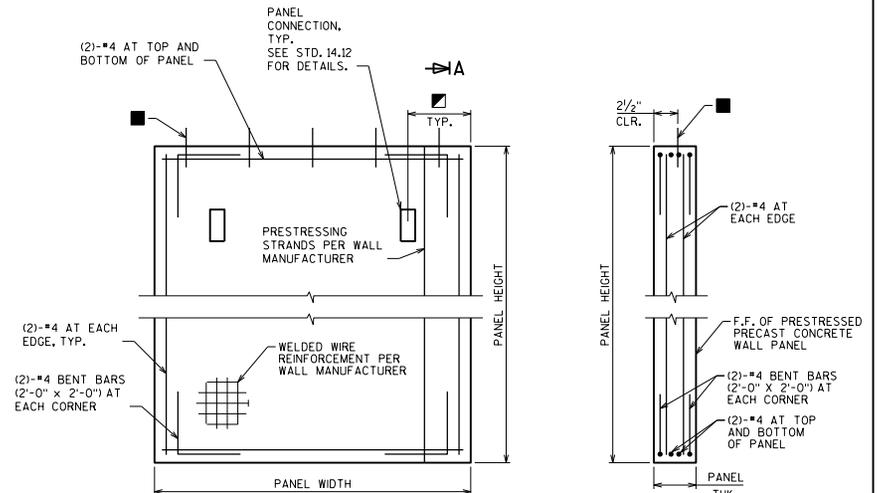
WALL PANEL FOOTING DETAIL

☆ ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.



TYPICAL WALL PANEL CONNECTION - PLAN VIEW

ALL ITEMS SHOWN ARE INCLUDED IN BID ITEM "PRESTRESSED PRECAST CONCRETE WALL PANEL".



ELEVATION PRESTRESSED PRECAST CONCRETE WALL PANEL

DO NOT PROVIDE BILL OF BARS, BAR STEEL REINF. AND CONCRETE ARE INCLUDED IN BID ITEM "PRESTRESSED PRECAST CONCRETE WALL PANEL."

PRECAST PANELS 6 FEET OR LESS IN HEIGHT DO NOT REQUIRE PRESTRESSING STRANDS.

SECTION A-A

PRESTRESSING STRANDS NOT SHOWN FOR CLARITY.

DESIGNER NOTE

■ DOWELS REQUIRED FOR CAST-IN-PLACE CONCRETE COPING ONLY. IF CAST-IN-PLACE CONCRETE COPING PROPOSED, INCLUDE THE FOLLOWING NOTE:

*4 DOWELS, 1-3" LONG AT 2-0" MAX. SPACING ALTERNATE ANCHORAGE: 1/2" DIA. ELECTROPLATED FERRULE LOOP INSERT (MEDIUM HIGH CARBON WIRE) OR APPROVED EQUAL.

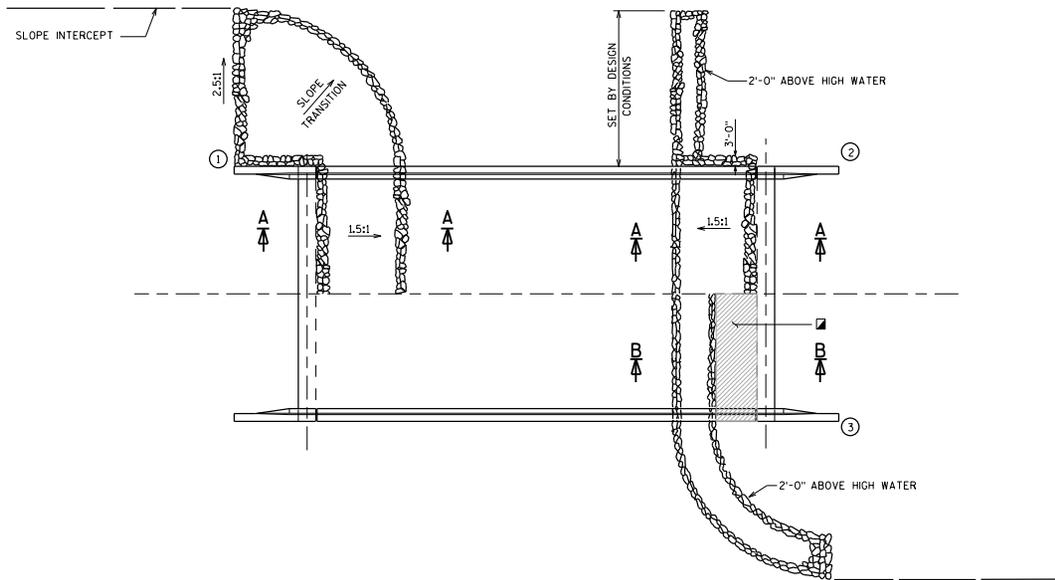
LEGEND

■ USE 2-0" ON 10-0" PANELS
 ■ USE 1-0" ON PANELS LESS THAN 10-0".

MSE WALL WIRE FACING 2



APPROVED: Bill Oliva DATE: 7-18



ALTERNATE ①

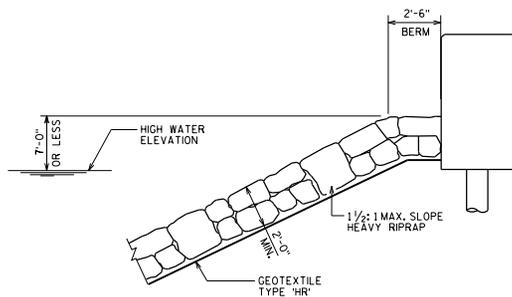
NORMAL CONDITION FOR EMBANKMENT FILLS

ALTERNATE ②

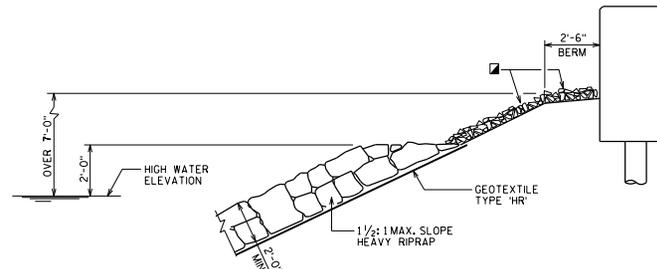
USE WHERE BERM ELEVATION IS LESS THAN 7'-0" ABOVE HIGH WATER

ALTERNATE ③

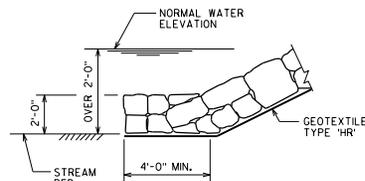
USE WHERE BERM ELEVATION IS OVER 7'-0" ABOVE HIGH WATER



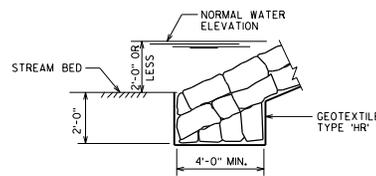
SECTION A-A



SECTION B-B



TOE DETAIL
NORMAL WATER ELEVATION > 2'-0" ABOVE STREAM BED



TOE DETAIL
NORMAL WATER ELEVATION ≤ 2'-0" ABOVE STREAM BED

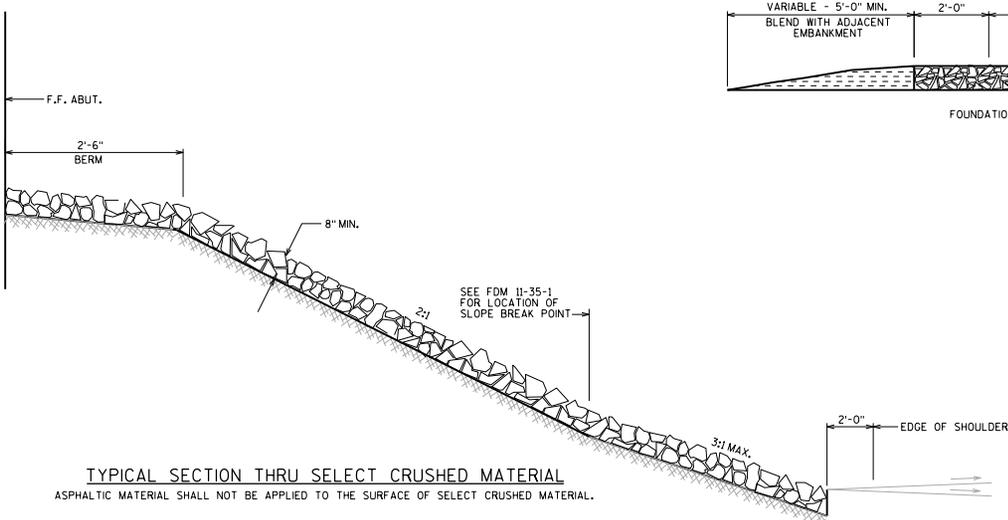
HEAVY RIPRAP OR OTHER SLOPE PROTECTION, IF HEAVY RIPRAP IS USED, PLACE GEOTEXTILE TYPE 'HR' BELOW IT.

PLACEMENT OF HEAVY RIPRAP AT RIVER CROSSINGS

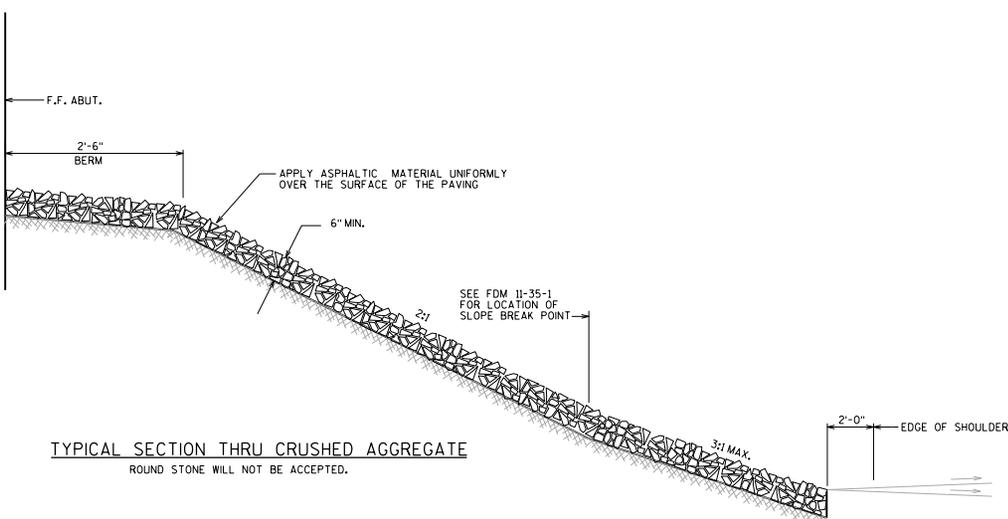


BUREAU OF STRUCTURES

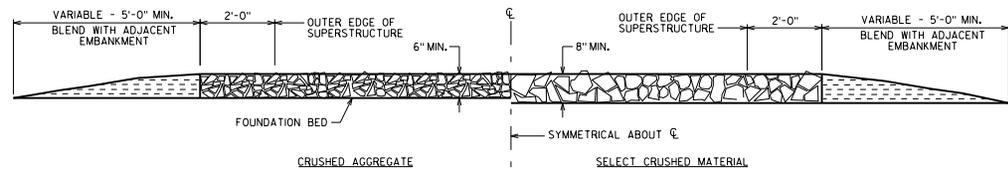
APPROVED: Bill Oliva DATE: 7-18



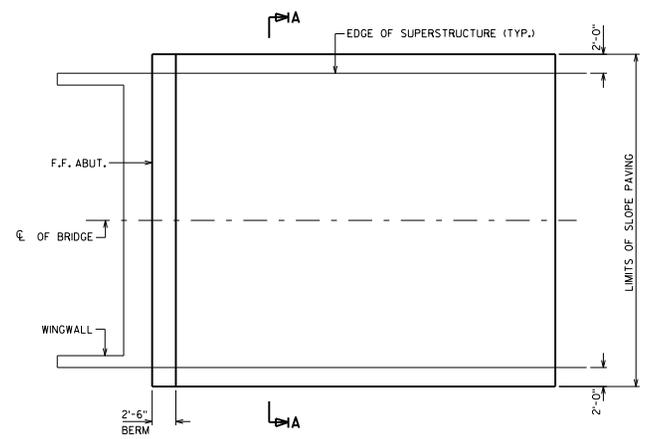
TYPICAL SECTION THRU SELECT CRUSHED MATERIAL
ASPHALTIC MATERIAL SHALL NOT BE APPLIED TO THE SURFACE OF SELECT CRUSHED MATERIAL.



TYPICAL SECTION THRU CRUSHED AGGREGATE
ROUND STONE WILL NOT BE ACCEPTED.



SECTION A-A

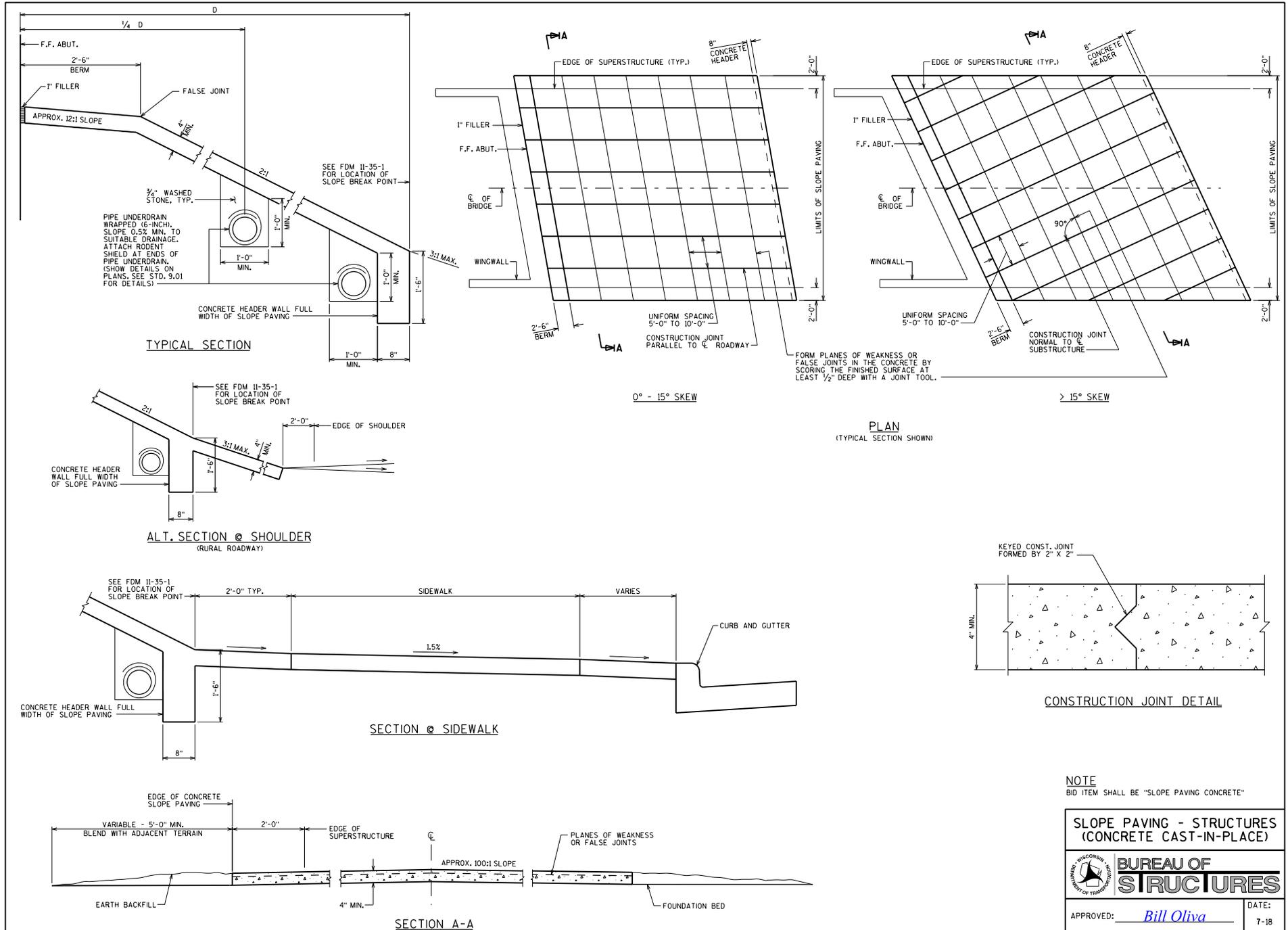


PLAN

NOTES
 BID ITEM SHALL BE "SLOPE PAVING CRUSHED AGGREGATE" (OR "SLOPE PAVING SELECT CRUSHED MATERIAL")
 WOOD FORMS MAY BE LEFT IN PLACE WHEN OF A QUALITY ACCEPTABLE TO THE ENGINEER.

DESIGNER NOTE
 PREFERRED SECTION SHOWN. FOR ALTERNATE SECTION SEE FDM II-35-1.

SLOPE PAVING - STRUCTURES (CRUSHED AGGREGATE & SELECT CRUSHED MATERIAL)	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18

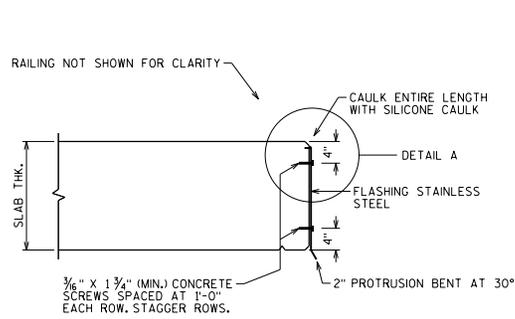


NOTE
 BID ITEM SHALL BE "SLOPE PAVING CONCRETE"

SLOPE PAVING - STRUCTURES (CONCRETE CAST-IN-PLACE)

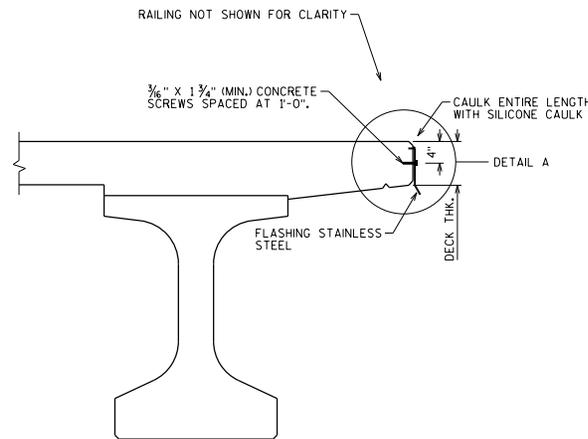
BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



FLASHING DETAIL FOR NEW BRIDGES WITH OPEN RAILING

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, 3/8" CONCRETE SCREWS AND CLEANING THE EDGE OF THE DECK PRIOR TO ATTACHMENT OF THE FLASHING.



DESIGNER NOTES

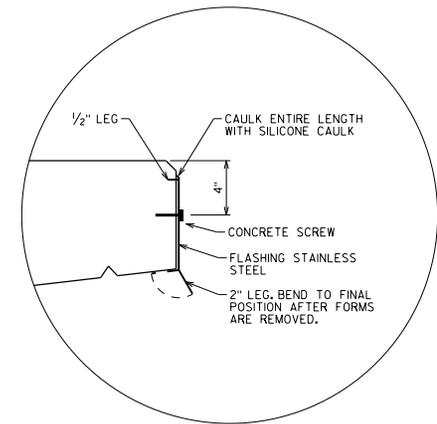
EDGE OF DECK FLASHING IS FOR OPEN RAIL BRIDGES AND MAY BE USED FOR REHABILITATION OR NEW CONSTRUCTION. CONTACT THE REGION BRIDGE MAINTENANCE ENGINEER FOR THE DECISION ON WHETHER OR NOT TO USE THE FLASHING ON NEW BRIDGES.

DETAIL 1 OR DETAIL 2, OR A COMBINATION OF THE TWO, MAY BE USED FOR REHABILITATION.

THE DESIGN ENGINEER SHALL PROVIDE CONCRETE SURFACE REPAIR DETAILS AS NEEDED. CONCEPTUAL DETAILS ARE SHOWN ON THIS STANDARD.

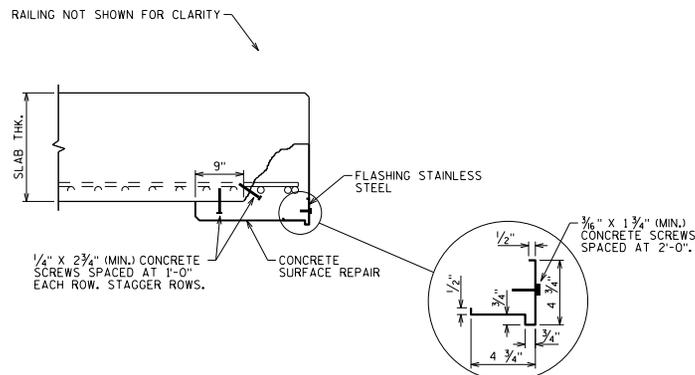
NOTE

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL



DETAIL A

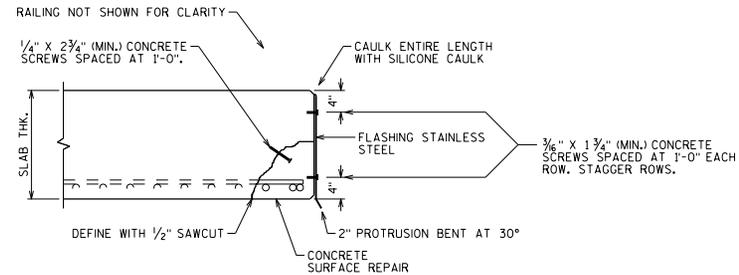
DETAIL FOR CONCRETE SLAB BRIDGE SIMILAR



REHABILITATION FLASHING DETAIL 1

DETAIL 1 NOT TO BE USED IF CLEARANCE IS AN ISSUE OR IF DEBRIS IS A CONCERN.

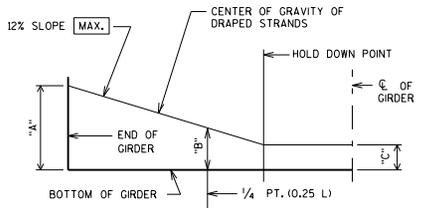
THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING AND CONCRETE SCREWS, INCLUDING THE 1/4" SCREWS USED TO SECURE THE CONCRETE SURFACE REPAIR.



REHABILITATION FLASHING DETAIL 2

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, 3/8" AND 1/4" CONCRETE SCREWS, AND CLEANING THE EDGE OF THE DECK PRIOR TO ATTACHMENT OF THE FLASHING.

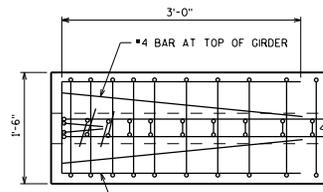
EDGE OF DECK FLASHING	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18



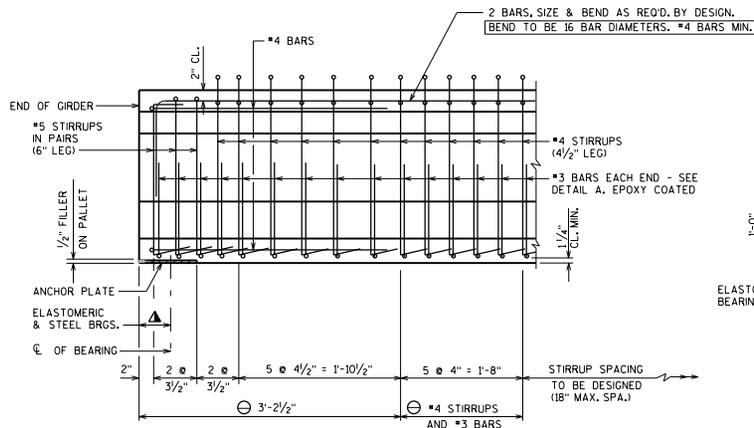
"A" TO BE GIVEN TO THE NEAREST 1"
 "B" = $\frac{1}{4}("A" + 3 "C")$ [MIN.]
 "B" = $\frac{1}{4}("A" + 3 "C") + 3$ [MAX.]

RECORD DIMENSIONS
 "A", "B" & "C"
 ON FINAL PLANS.

LOCATION OF DRAPED STRANDS

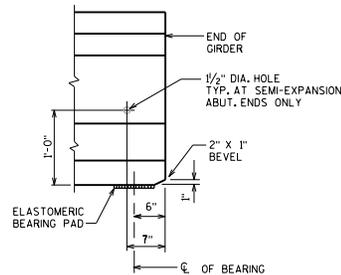


PLAN VIEW

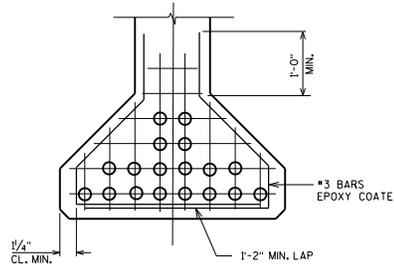


SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

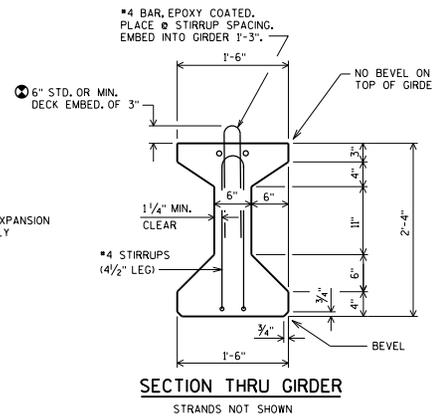
SIDE VIEW OF GIRDER



SUPPORT WITH 1/2" ELASTOMERIC BRG. PAD



DETAIL A



SECTION THRU GIRDER

STRANDS NOT SHOWN

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 2" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 2" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON ACCEPTANCE OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WSDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE (DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE I 28-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6000 PSI. USE ONLY 0.5" DIA. STRAND FOR THE DRAPED PATTERN. THE MAX. NUMBER OF DRAPED 0.5" DIA. STRANDS IS 8. USE 0.6" DIA. FOR THE STRAIGHT PATTERN, UNLESS ONLY 0.5" DIA. WORK FOR KEEPING STRESSES AT ACCEPTABLE LEVELS.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.02 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-1. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

▲ VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS. (STD. 27.09)

○ DETAIL TYPICAL AT EACH END

● THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR 3/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.

#4 BAR, EPOXY COATED. PLACE ○ STIRRUP SPACING REQUIRED FOR NON WWF STIRRUPS. EMBED INTO GIRDER 1'-3".

AREA OF HORIZ. WIRE SHALL BE > 40% OF VERT. WIRE AREA (ASTM A1064)
 HORIZ. WIRES SHALL BE LOCATED IN TOP AND BOTT. FLANGES AND NOT IN THE WEB.
 D18 MIN. VERTICAL WIRE (DEFORMED)
 1" MINIMUM CLEARANCE TO VERTICAL WIRE
 CLEARANCE - 1/4" MIN., 2" MAX.

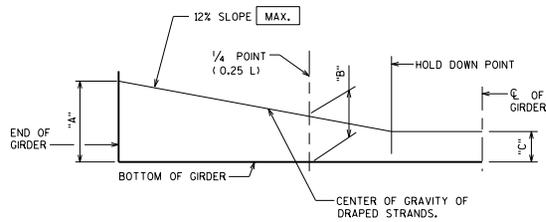
SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
 ASTM A1064 (FY = 70 KSI)

28" PRESTRESSED GIRDER DETAILS



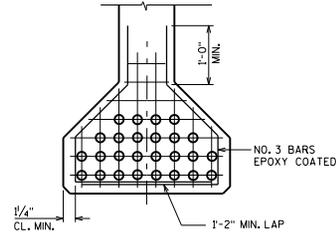
APPROVED: Bill Oliva DATE: 7-18



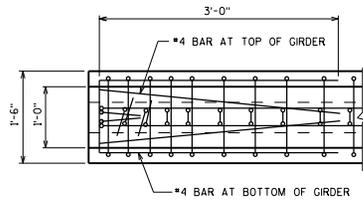
"A" TO BE GIVEN TO THE NEAREST 1"
 "B" = $1/4"A + 3"C$ (MIN.)
 "B" = $1/4"A + 3"C + 3"$ (MAX.)

RECORD DIMENSIONS
 "A", "B" & "C"
 ON FINAL PLANS.

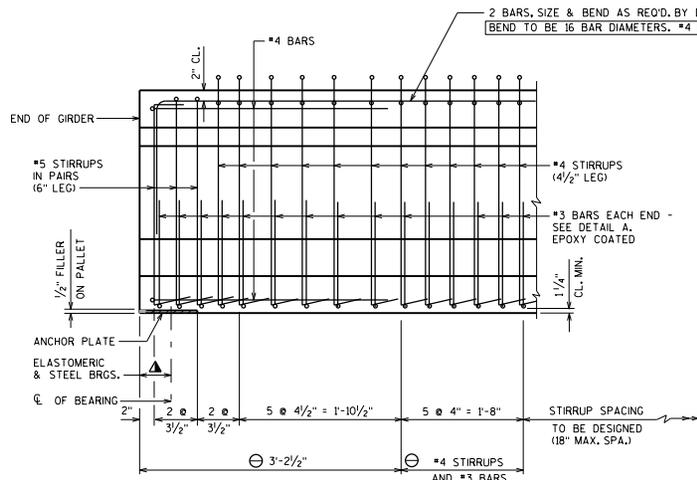
LOCATION OF DRAPED STRANDS



DETAIL A

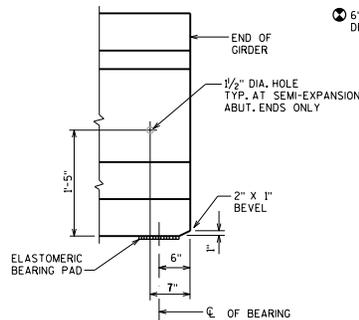


PLAN VIEW

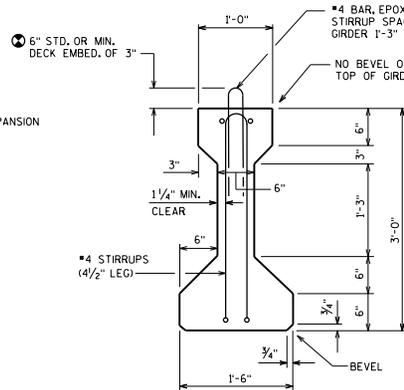


SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

SIDE VIEW OF GIRDER

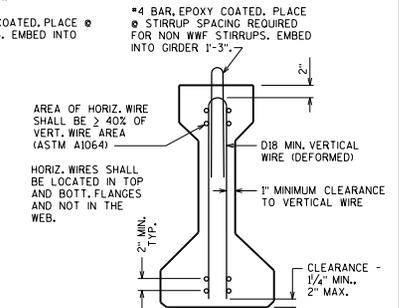


SUPPORT WITH 1/2" ELASTOMERIC BRG. PAD



SECTION THRU GIRDER

STRANDS NOT SHOWN



SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS ASTM A1064 (FY = 70 KSI)

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 2" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 2" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON ACCEPTANCE OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WOODOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE (DIA.)-7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE I 36-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE ONLY 0.5" DIA. STRAND FOR THE DRAPED PATTERN. THE MAX. NUMBER OF DRAPED 0.5" DIA. STRANDS IS 8. USE 0.6" DIA. FOR THE STRAIGHT PATTERN, UNLESS ONLY 0.5" DIA. WORK FOR KEEPING STRESSES AT ACCEPTABLE LEVELS.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.04 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-1. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

▲ VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS. (STD. 27.09)

⊖ DETAIL TYPICAL AT EACH END

⊙ THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ± 3/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

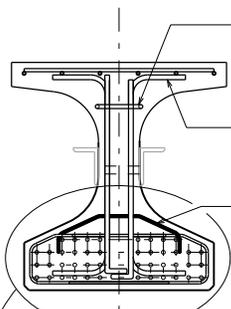
PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.

36" PRESTRESSED GIRDER DETAILS

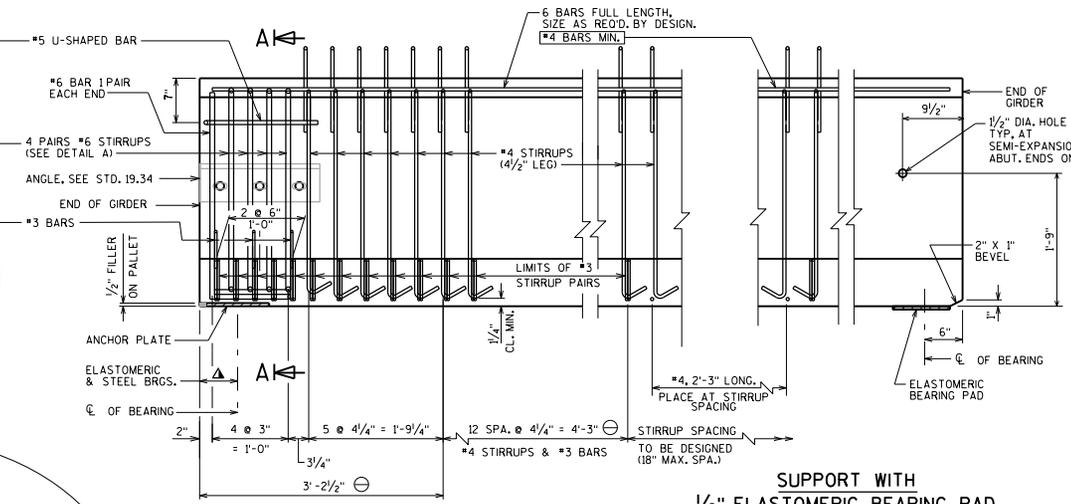
BUREAU OF STRUCTURES

WISCONSIN DEPARTMENT OF TRANSPORTATION

APPROVED: Bill Oliva DATE: 7-18

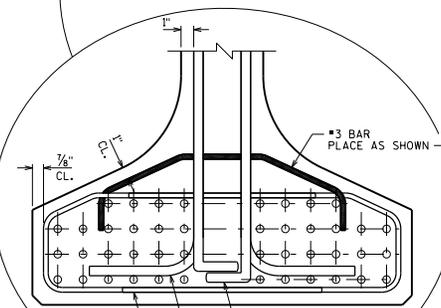


SECTION A-A

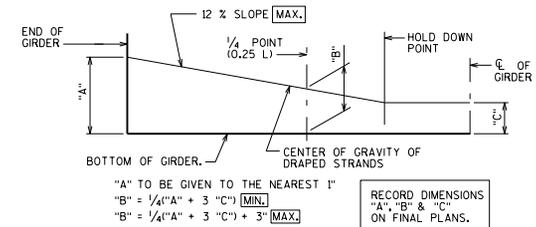


SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

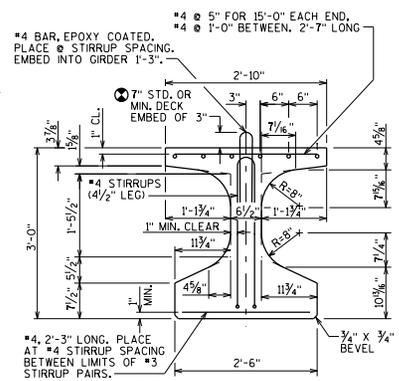
SUPPORT WITH 1/2" ELASTOMERIC BEARING PAD



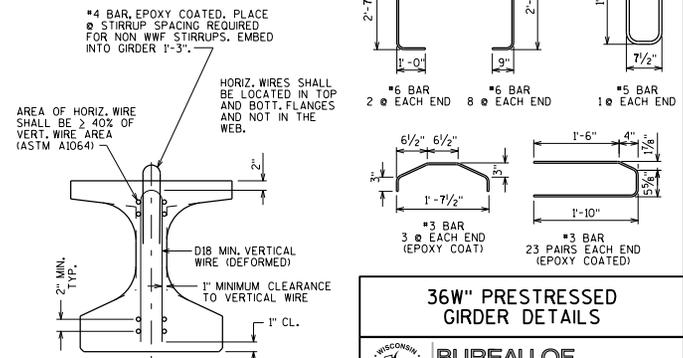
DETAIL A
BOTTOM FLANGE



LOCATION OF DRAPED STRANDS



SECTION THRU GIRDER
STRANDS NOT SHOWN



SECTION THRU GIRDER
SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
ASTM A1064 (FY = 70 KSI)

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY. EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE. DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE 0.6" DIA.-7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE I 36W-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.12 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-1. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS. (STD. 27.09)

DETAIL TYPICAL AT EACH END

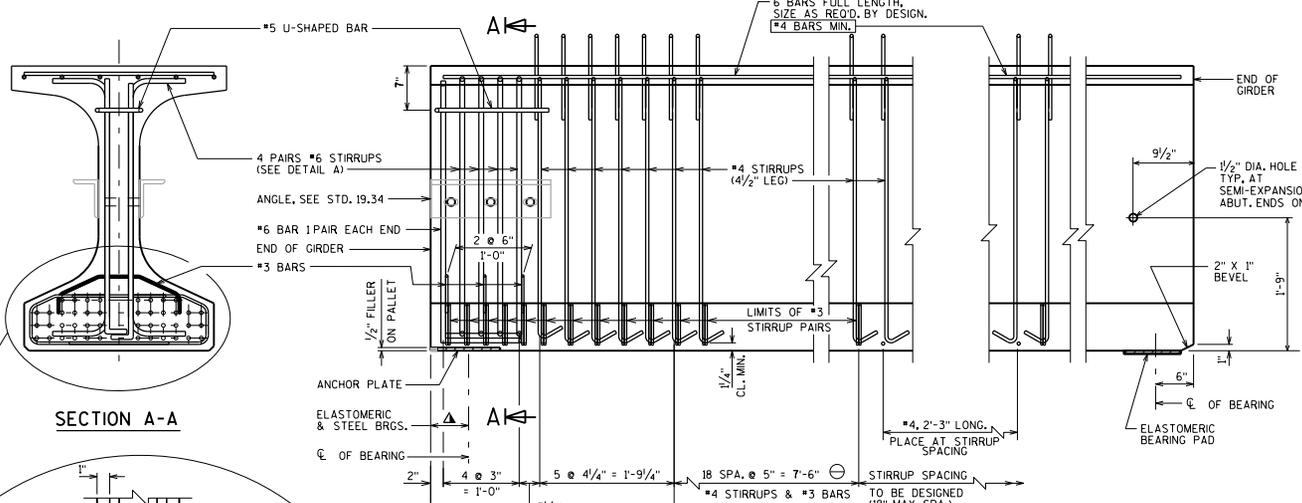
THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ± 3/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.

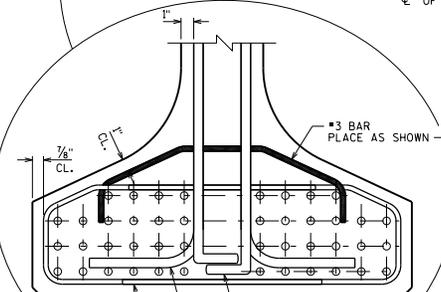
36W" PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18

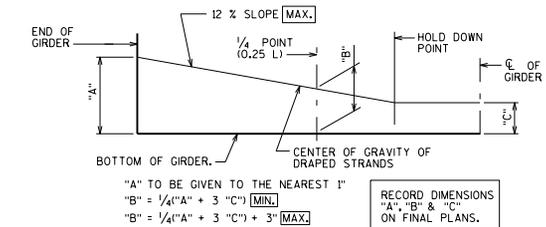


SECTION A-A

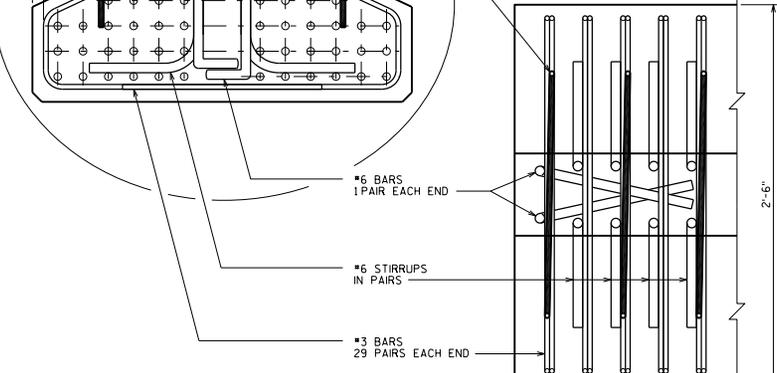


SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

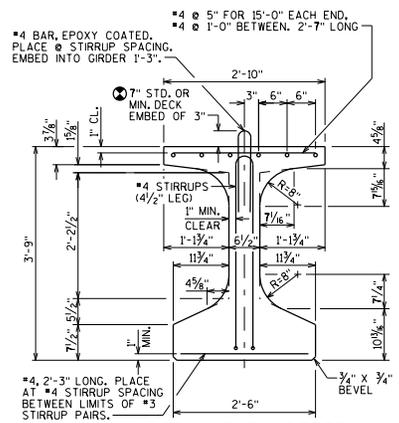
SUPPORT WITH 1/2" ELASTOMERIC BEARING PAD



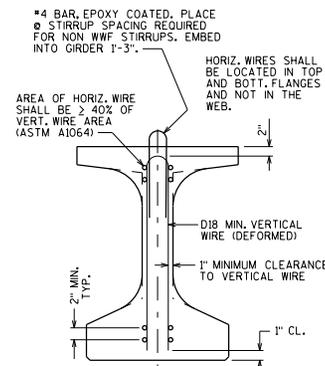
LOCATION OF DRAPED STRANDS



DETAIL A
BOTTOM FLANGE



SECTION THRU GIRDER
STRANDS NOT SHOWN



SECTION THRU GIRDER
SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
ASTM A1064 (FY = 70 KSI)

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY. EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE. DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE II, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE 0.6" DIA.-7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

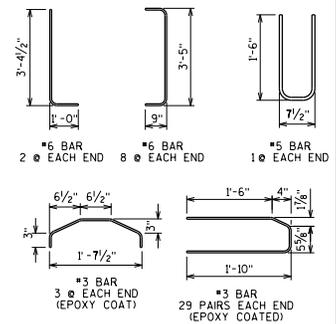
DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE I 45W-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.14 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-1. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

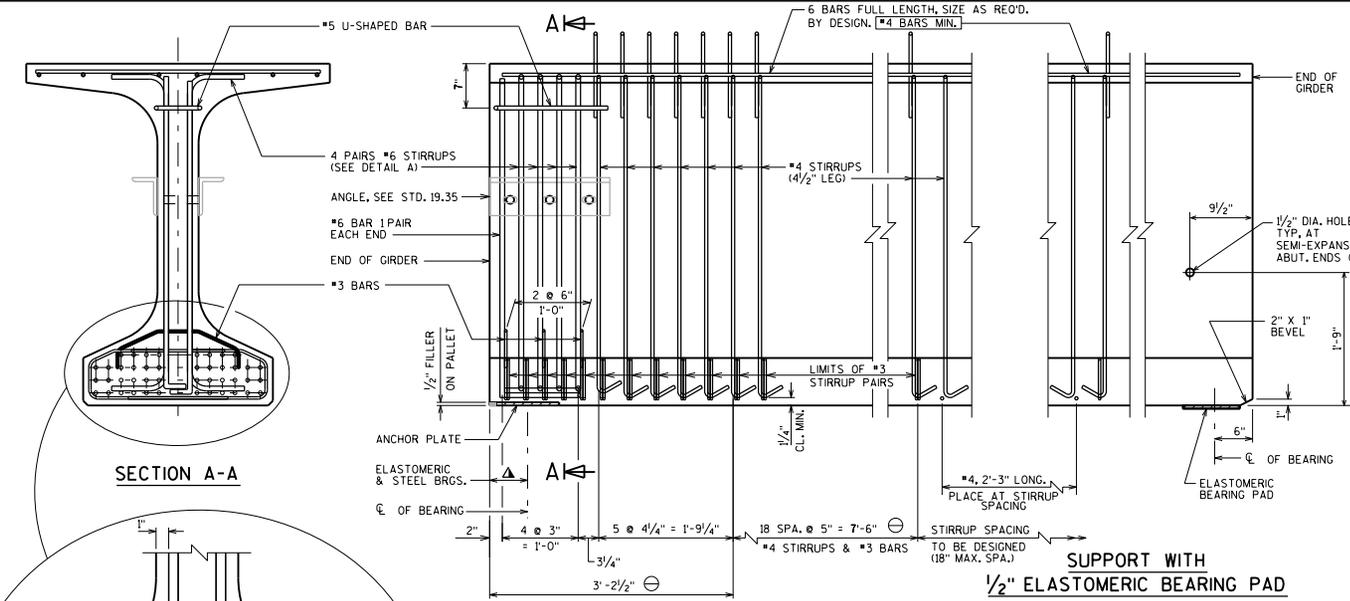
- △ VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS. (STD. 27.09)
 - DETAIL TYPICAL AT EACH END
 - THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.
- PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.



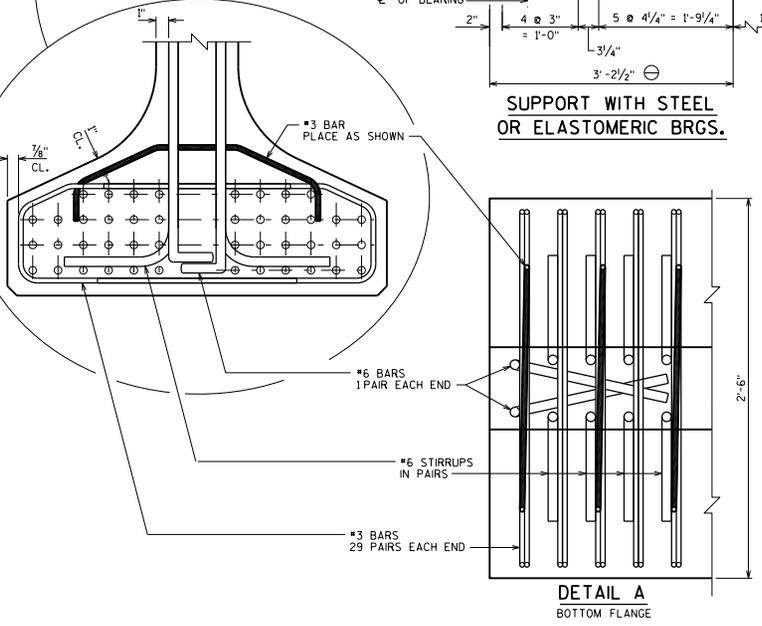
45W" PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18

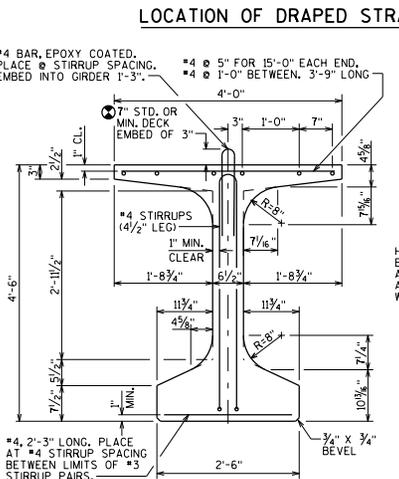
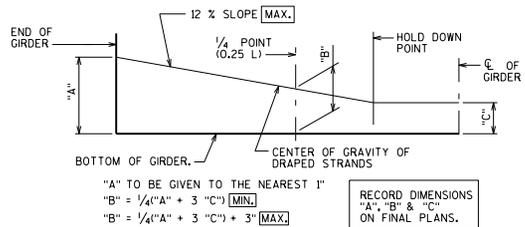


SECTION A-A

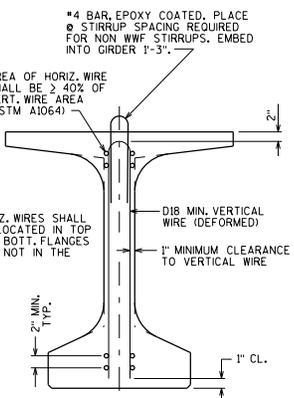


SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

SUPPORT WITH 1/2\"/>



SECTION THRU GIRDER STRANDS NOT SHOWN



SECTION THRU GIRDER SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS ASTM A1064 (FY = TO KSI)

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY. EXCEPT THE OUTSIDE 15" OF GIRDER WHICH SHALL RECEIVE A SMOOTH FINISH AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 15" OF THE TOP FLANGE. DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE II, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE 0.6" DIA.-7 WIRE LOW-RRELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE 1 54W-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

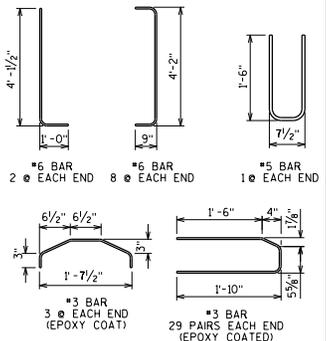
REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.16 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-2. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

▲ VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS. (STD. 27.09)

○ DETAIL TYPICAL AT EACH END

● THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ± 3/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

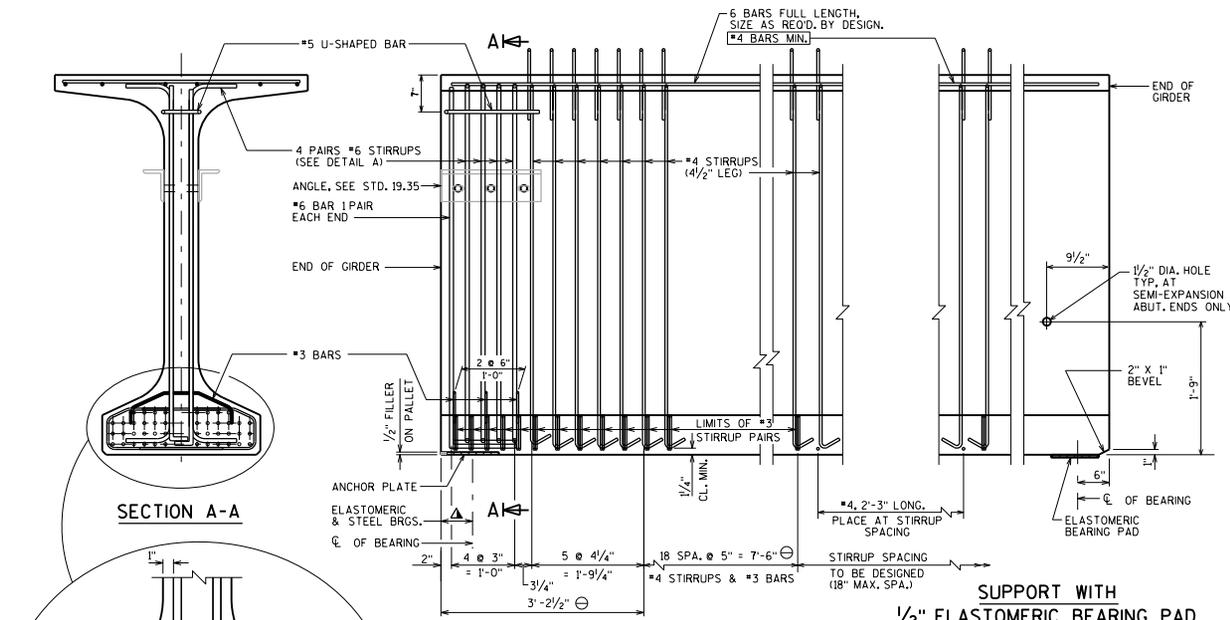
PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.



54W" PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

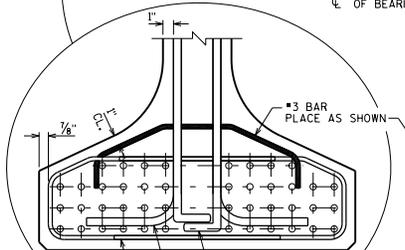
APPROVED: Bill Oliva DATE: 7-18



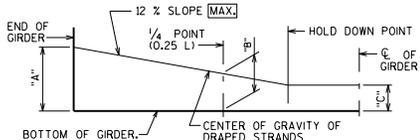
SECTION A-A

SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

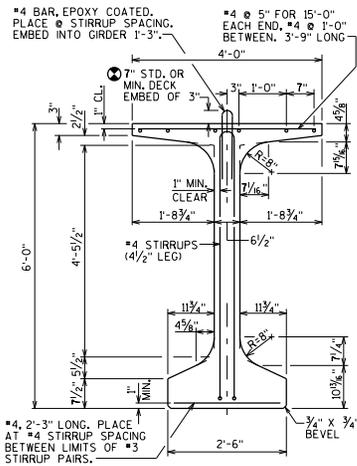
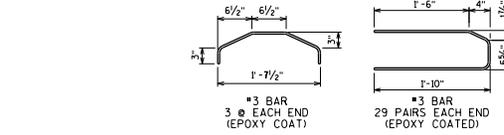
SUPPORT WITH 1/2" ELASTOMERIC BEARING PAD



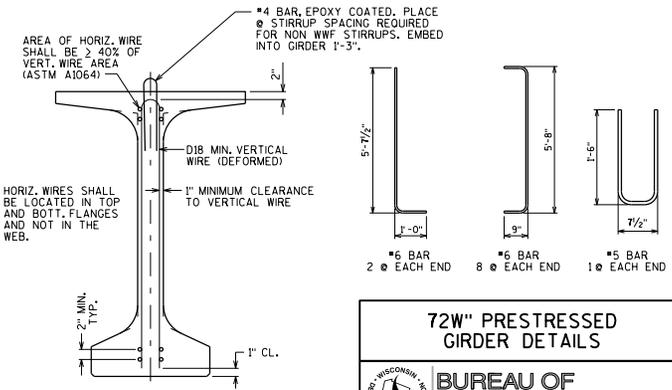
DETAIL A BOTTOM FLANGE



LOCATION OF DRAPED STRANDS



SECTION THRU GIRDER STRANDS NOT SHOWN



SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS ASTM A1064 (FY = 70 KSI)

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 15" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 15" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE 0.6" DIA.-7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

THIS NOTE APPLIES TO LONG SPANS AS DEFINED IN THE NOTES FOR THE 72" GIRDER, TABLE 19.3-2 OF THE BRIDGE MANUAL: FOR STORAGE, HANDLING, AND TRANSPORTING, THIS GIRDER IS REINFORCED TO ALLOW A MAXIMUM OVERHANG FROM THE LIFTING LOCATION OR POINT OF SUPPORT OF UP TO 1/10 THE GIRDER LENGTH. THE CONTRACTOR IS RESPONSIBLE FOR LATERAL STABILITY OF THE GIRDER UNTIL THE DECK IS CURED. (IF NOTE DOESN'T APPLY, REFERENCE SPEC. 503.3.3 OF STD. SPEC. FOR GUIDANCE)

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE I 72W-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.3B AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-2. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRE PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS (STD. 27.09)

DETAIL TYPICAL AT EACH END

THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ± 3/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

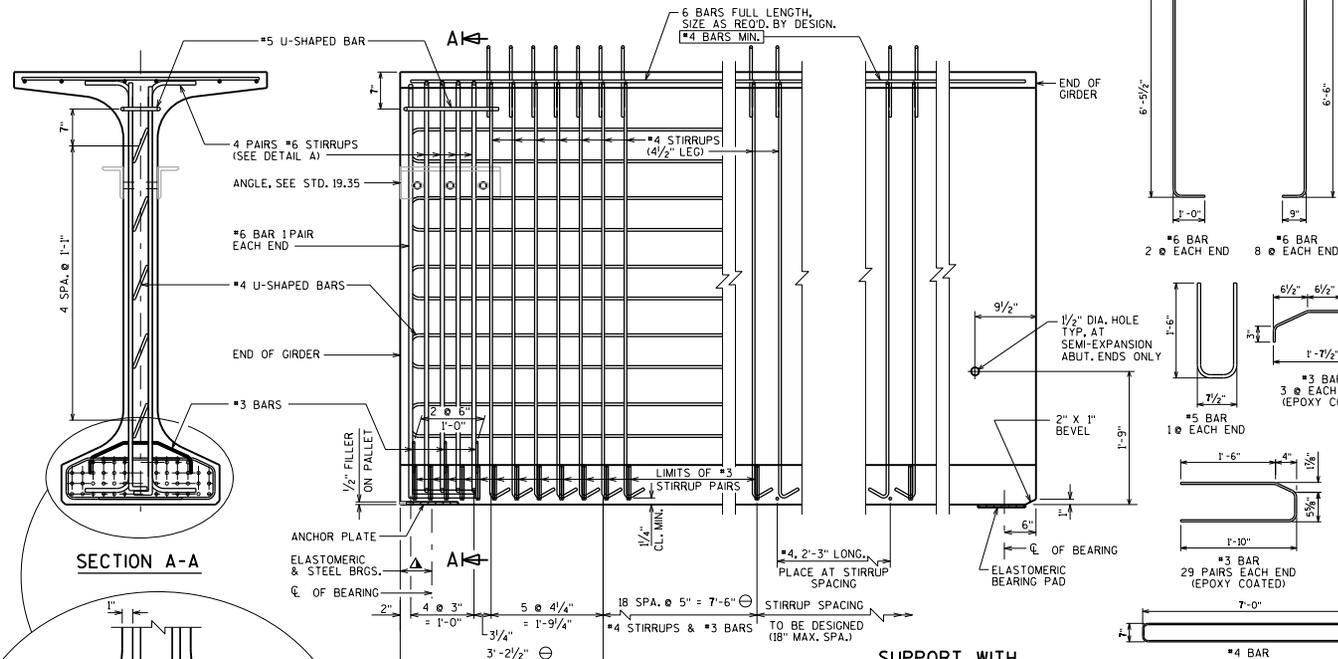
PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.

72" PRESTRESSED GIRDER DETAILS

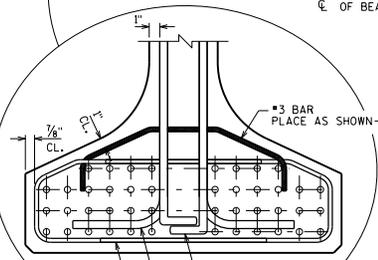
BUREAU OF STRUCTURES

WISCONSIN DEPARTMENT OF TRANSPORTATION

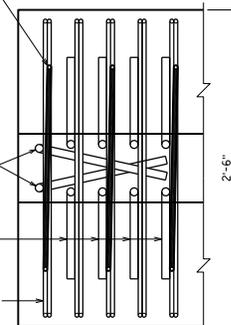
APPROVED: Bill Oliva DATE: 7-18



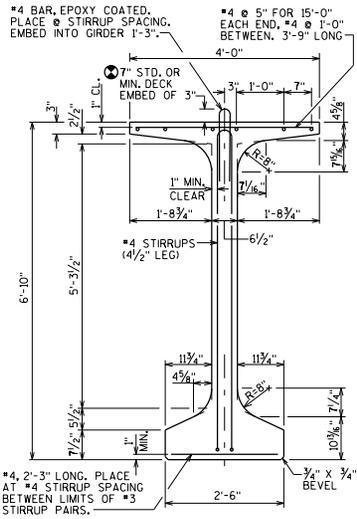
SECTION A-A



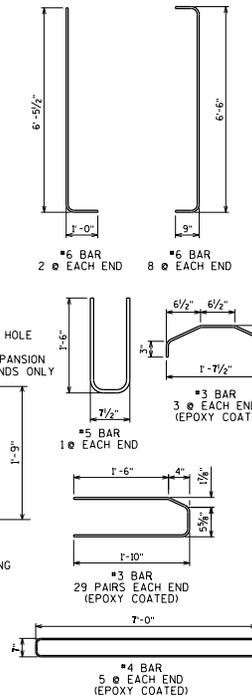
SUPPORT WITH STEEL OR ELASTOMERIC BRGS.



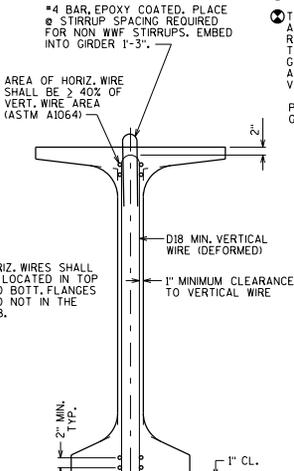
**DETAIL A
BOTTOM FLANGE**



**SECTION THRU GIRDER
STRANDS NOT SHOWN**



**SUPPORT WITH
1/2" ELASTOMERIC BEARING PAD**



**SECTION THRU GIRDER
SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
ASTM A1064 (FY = 70 KSI)**

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 15" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 15" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-FINISHED SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-BONDING EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

PRESTRESSING STRANDS SHALL BE 0.6" DIA.-7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

THIS NOTE APPLIES TO LONG SPANS AS DEFINED IN THE NOTES FOR THE 82W" GIRDER, TABLE 19.3-2 OF THE BRIDGE MANUAL: FOR STORAGE, HANDLING, AND TRANSPORTING, THIS GIRDER IS REINFORCED TO ALLOW A MAXIMUM OVERHANG FROM THE LIFTING LOCATION OR POINT OF SUPPORT UP TO 1/10 THE GIRDER LENGTH. THE CONTRACTOR IS RESPONSIBLE FOR LATERAL STABILITY OF THE GIRDER UNTIL THE DECK IS CURED. IF NOTE DOESN'T APPLY, REFERENCE SECT. 503.3.3 OF STD. SPEC. FOR GUIDANCE.

DESIGNER NOTES

BID ITEM SHALL BE "PRESTRESSED GIRDER TYPE 1 82W-INCH".

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

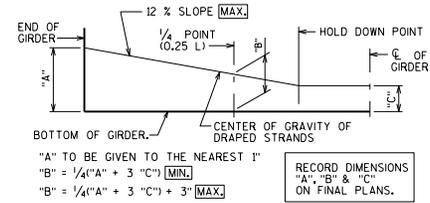
REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STANDARD PATTERNS LISTED ON STANDARD 19.20 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-2. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

▲ VARIES FOR ELASTOMERIC BRGS. (STD. 27.07) AND STEEL BRGS (STD. 27.09)

⊖ DETAIL TYPICAL AT EACH END

⊙ THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2 1/2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ± 1/4" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.



LOCATION OF DRAPED STRANDS

THERE IS CURRENTLY A MORATORIUM ON THE USE OF 82W" PRESTRESSED GIRDERS.

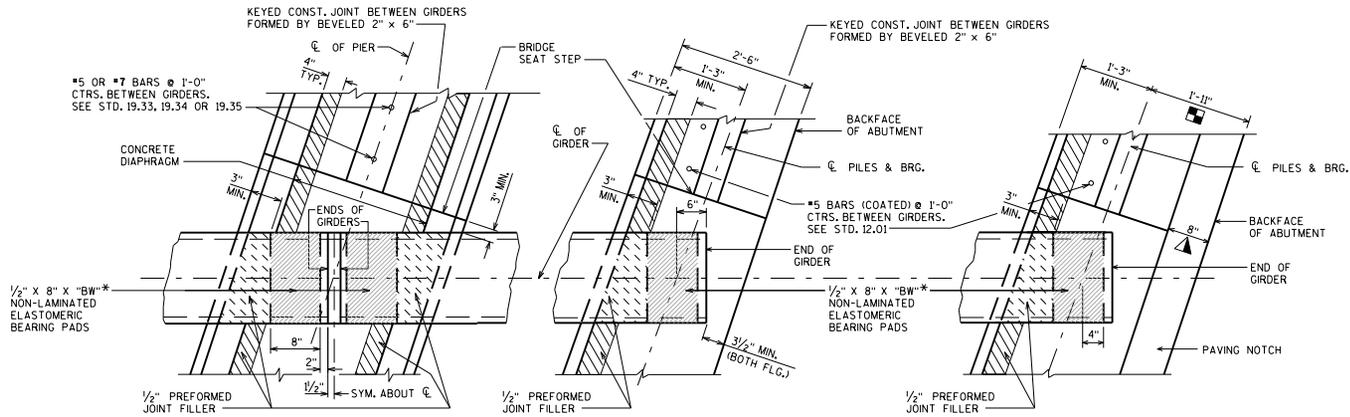
82W" PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

WISCONSIN DEPARTMENT OF TRANSPORTATION

DATE: _____

APPROVED: Bill Oliva 7-18



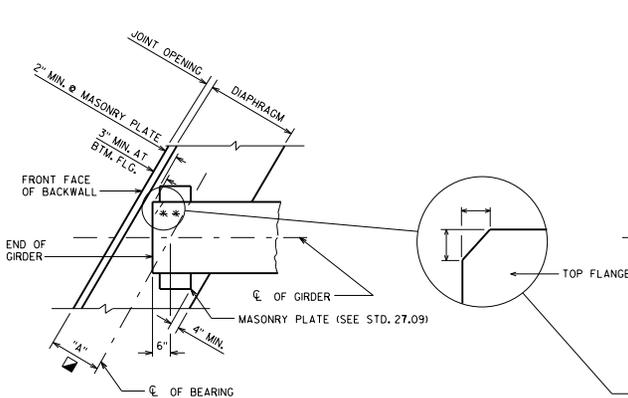
AT PIER

AT ABUTMENT

ABUTMENT: TYPE "A1 FIXED" AND "A5" W/O PAVING NOTCH

AT ABUTMENT

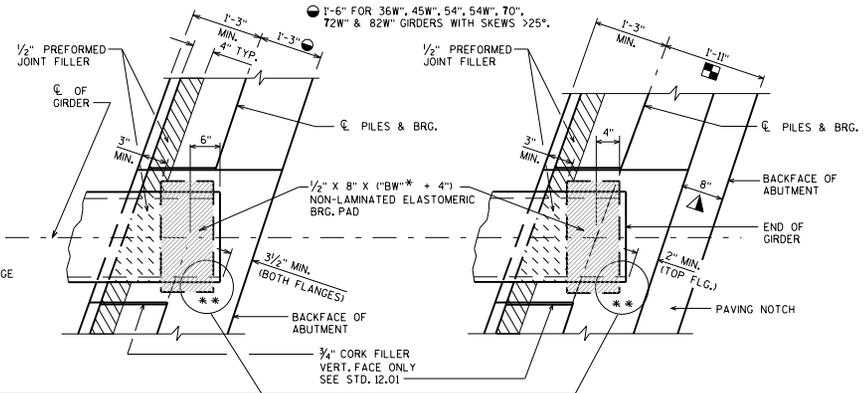
ABUTMENT: TYPE "A1 FIXED" AND "A5" WITH PAVING NOTCH.



PLAN AT ABUTMENT

ABUTMENT: TYPE "A3" SEE TABLE FOR MIN. "A" VALUES REOD. TO MEET MIN. CLEARANCE CRITERIA ABOVE.

** FORM-OUT CORNER OF TOP FLANGE ON 36W", 45W", 54W", 70", 72W" & 82W" PRESTRESSED GIRDERS TO MEET MIN. CLEARANCE REOD.



AT ABUTMENT

ABUTMENT: TYPE "A1 SEMI-EXP." W/O PAVING NOTCH

AT ABUTMENT

ABUTMENT: TYPE "A1 SEMI-EXP." WITH PAVING NOTCH.

■ USE 2'-3" WITH A STRUCTURAL APPROACH SLAB (STD. 12.10)

▲ PAVING NOTCH IS 1'-0" WIDE IF STRUCTURAL APPROACH SLAB (STD. 12.10) IS USED.

MIN. "A" DIMENSION IN INCHES FOR A3 ABUTMENTS WITH STEEL BEARINGS AS SHOWN ON STD. 27.09.

▲ "A" DIMENSION BASED ON BOTTOM FLANGE CLEARANCE IS CALCULATED USING 6" OFFSET FROM \bar{C} OF BRG. TO END OF GIRDER AND 3" MIN. OFFSET BETWEEN FLANGE AND BACKWALL TO ACCOMMODATE EXPANSION. IF CONDITIONS REQUIRE OFFSETS OTHER THAN THESE, THE "A" DIMENSION MUST BE CALCULATED. "A" DIMENSION BASED ON MASONRY PLATE CLEARANCE IS CALCULATED ASSUMING A 10" LONG PLATE. IF LONGER PLATE IS REQUIRED, RECALCULATE "A".

SKEW ANGLE °	GIRDER DEPTHS									
	28"	36"	36W"	45"	45W"	54"	54W"	70"	72W"	82W"
0-5	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
> 5-15	12"	12"	13"	12"	13"	12.5"	13"	13"	13"	13"
> 15-25	12.5"	12.5"	15"	13"	15"	14"	15"	15"	15"	15"
> 25-35	(14")	(14")	(17.5")	(15")	(17.5")	(16.5")	(17.5")	16.5"	(17.5")	(17.5")
> 35-45	(15.5")	(15.5")	(20")	(17")	(20")	(18.5")	(20")	(18.5")	(20")	(20")
> 45-55	(17")	(17")	(21.5")	(18.5")	(21.5")	(20")	(21.5")	(20")	(21.5")	(21.5")

VALUES IN PARENTHESIS ARE CONTROLLED BY 2" CLR. CRITERIA AT EDGE OF MASONRY PLATE. VALUES MAY BE ADJUSTED IF MASONRY PLATE IS CLIPPED PER STANDARD 27.02.

PRESTRESSED GIRDER FLANGE WIDTH TABLE

GIRDER DEPTH	28"	36"	36W"	45"	45W"	54"	54W"	70"	72W"	82W"
TOP FLANGE WIDTH	18"	12"	34"	16"	34"	20"	48"	30"	48"	48"
BOTTOM FLANGE WIDTH "BW"*	18"	18"	30"	22"	30"	26"	30"	26"	30"	30"

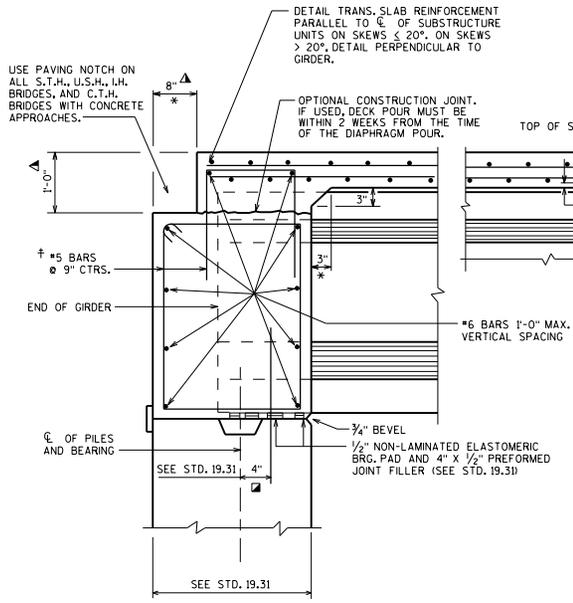
DESIGNER NOTES

STANDARD DETAIL DRAWINGS FOR THE 45", 54" AND 70" CAN BE FOUND IN CHAPTER 40, BRIDGE REHABILITATION. THESE GIRDERS HAVE BEEN REPLACED WITH THE 45W", 54W" AND 72W" RESPECTIVELY AND ARE NO LONGER USED ON NEW CONSTRUCTION PROJECTS.

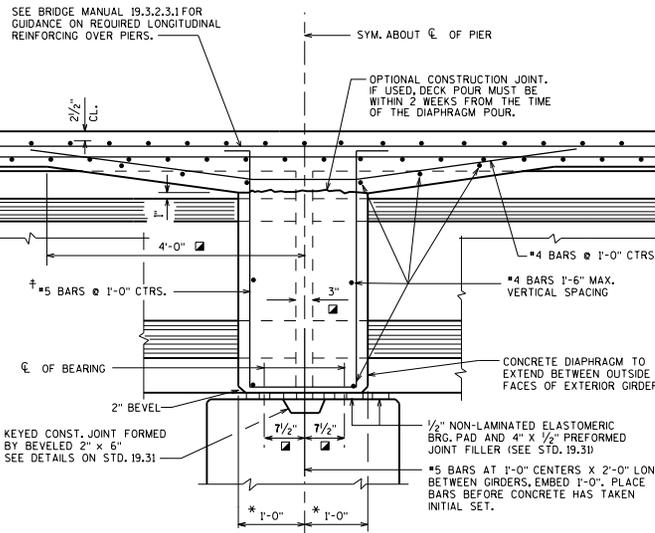
BEARING PAD DETAILS FOR PRESTRESSED CONCRETE GIRDERS



APPROVED: Bill Oliva DATE: 7-18

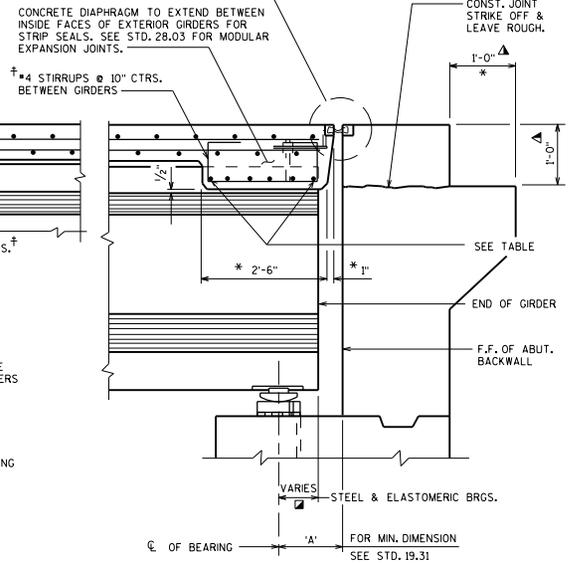


**FIXED END
FOR SKEWED AND SQUARE STRUCTURES**

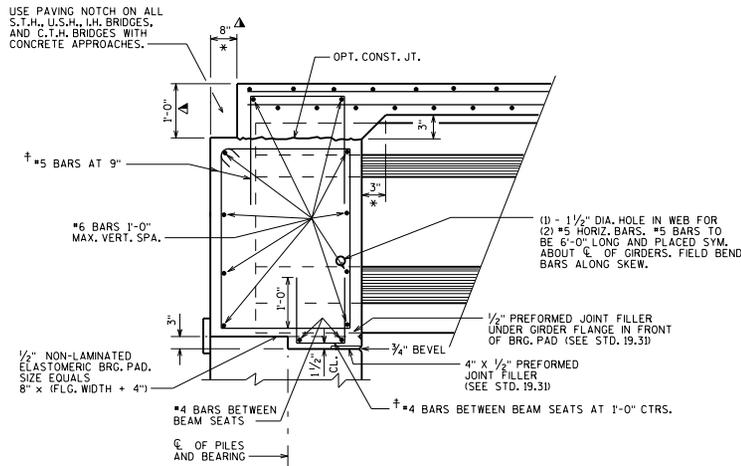


DIAPHRAGM AT 1/2" ELASTOMERIC BEARING

SEE STD. 28.01 FOR STRIP SEAL EXPANSION JOINT DEVICE.
SEE STD. 28.03 FOR MODULAR JOINT EXPANSION JOINT DEVICE
AND ABUTMENT BACKWALL DETAILS.



EXPANSION END



**PRESTRESSED GIRDER WITH
SEMI-EXPANSION SEAT**

EXPANSION END DIAPHRAGM STEEL

DIAPHRAGM LENGTH (ALONG SKEW) BETWEEN GIRDERS (\bar{C} TO \bar{C} OF GRDS.)	NO. OF BARS & BAR SIZE	
	28"	36"
$\leq 8'-4"$	6 - #6	6 - #6
$> 8'-4" \leq 11'-4"$	6 - #8	6 - #7
$> 11'-4" \leq 14'-9"$		6 - #8

DESIGNER NOTES

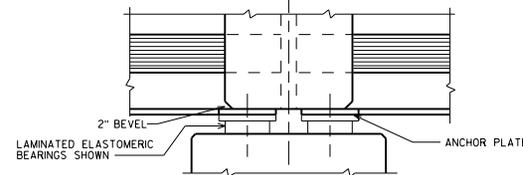
LAP LENGTHS FOR ALL BARS SHALL BE BASED ON A "CLASS C" TENSION LAP SPLICE, EXCEPT HORIZONTAL DIAPHRAGM BARS, IF SPLICED, CAN UTILIZE A "CLASS A" TENSION LAP SPLICE.

LEGEND

- DIMENSION IS TAKEN PARALLEL TO \bar{C} GIRDER.
- * DIMENSION IS TAKEN NORMAL TO \bar{C} SUBSTRUCTURE UNITS.
- ▲ PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.10) IS USED.
- † BARS PLACED PARALLEL TO GIRDERS, SPACING PERPENDICULAR TO \bar{C} GIRDERS.

SEE STANDARD 19.34 FOR 36W" & 45W" PRESTRESSED GIRDERS SLAB AND SUPERSTRUCTURE DETAILS

SEE STANDARD 19.35 FOR 54W", 72W" & 82W" PRESTRESSED GIRDERS SLAB & SUPERSTRUCTURE DETAILS.



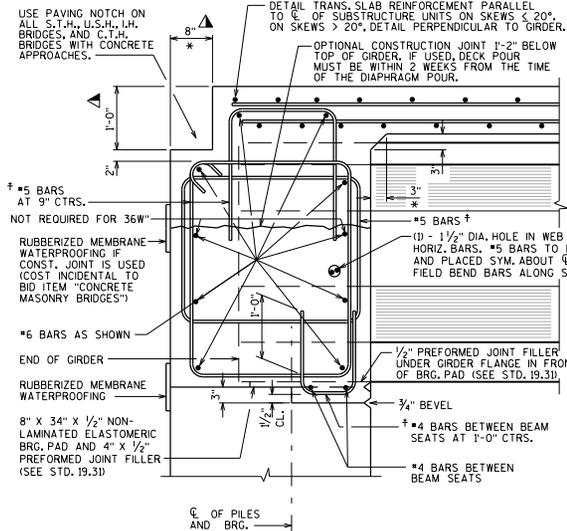
**DIAPHRAGM AT STEEL OR ELASTOMERIC BEARINGS
SECTION THRU DIAPHRAGM AT PIER**

FOR STEEL BEARINGS, FORM DIAPHRAGM APPROXIMATELY 1/2" ABOVE BEARING KEEPER BARS

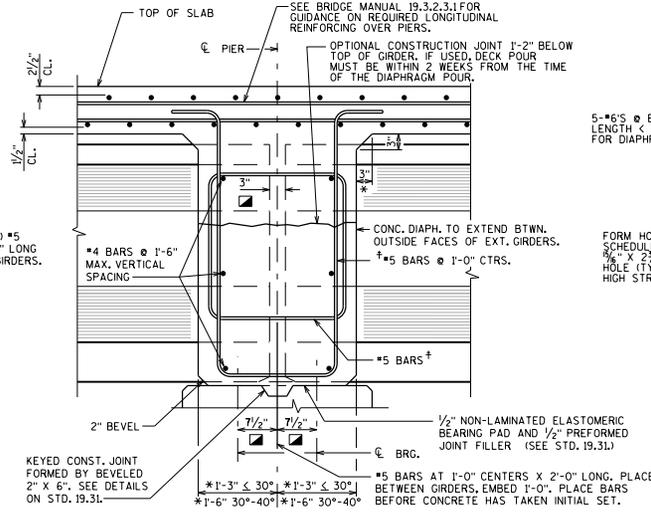
**28" & 36" PRESTRESSED
GIRDERS SLAB &
SUPERSTRUCTURE DETAILS**

**BUREAU OF
STRUCTURES**

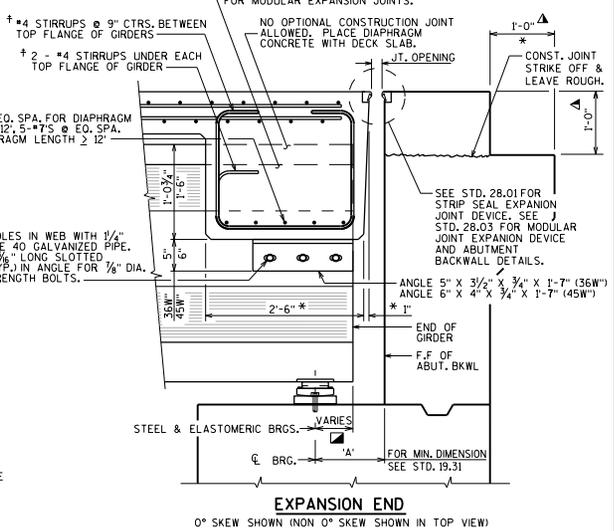
APPROVED: Bill Oliva DATE: 7-18



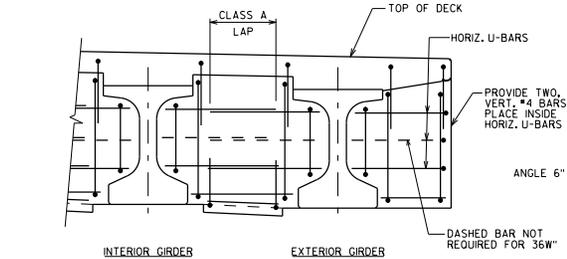
PRESTRESSED GIRDER WITH SEMI-EXPANSION SEAT



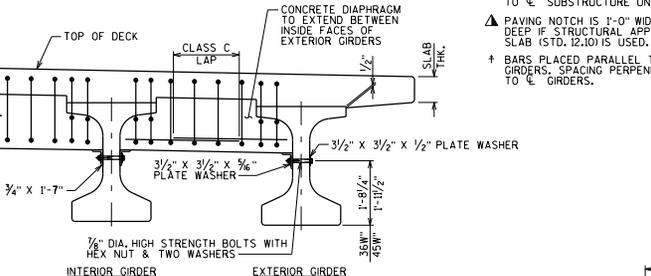
DIAPHRAGM AT 1/2" ELASTOMERIC BEARING



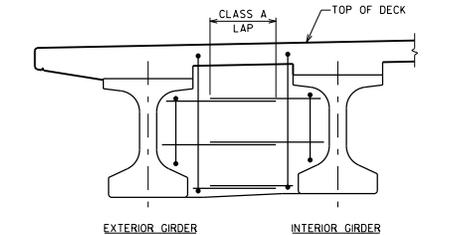
EXPANSION END
0° SKEW SHOWN (NON 0° SKEW SHOWN IN TOP VIEW)



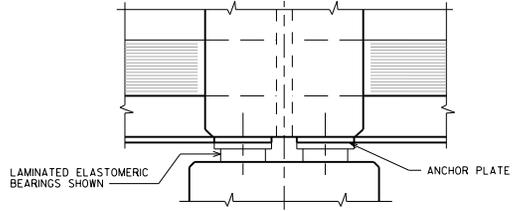
PART TRANSVERSE SECTION AT DIAPHRAGM SEMIEXPANSION END



PART TRANSVERSE SECTION AT DIAPHRAGM EXPANSION END



PART TRANSVERSE SECTION AT DIAPHRAGM PIER

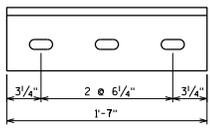


DIAPHRAGM AT STEEL OR ELASTOMERIC BEARINGS SECTION THRU DIAPHRAGM AT PIER

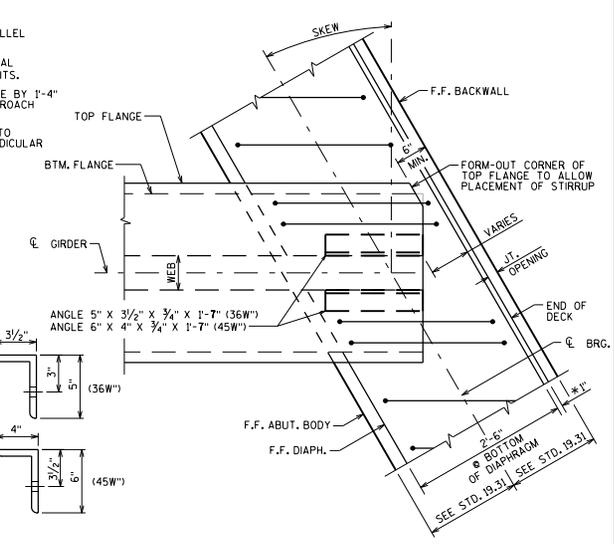
FOR STEEL BEARINGS, FORM DIAPHRAGM APPROXIMATELY 1/2" ABOVE BEARING KEEPER BARS

LEGEND

- DIMENSION IS TAKEN PARALLEL TO CL GIRDER.
- * DIMENSION IS TAKEN NORMAL TO CL SUBSTRUCTURE UNITS.
- △ PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.10) IS USED.
- † BARS PLACED PARALLEL TO CL GIRDERS.



ANGLE



TOP VIEW OF DIAPHRAGM (EXPANSION END)

NOTES

- ALL DIAPHRAGM SUPPORT HARDWARE SHALL BE INCIDENTAL TO "CONCRETE MASONRY BRIDGES".
- DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36.
- ALL DIAPHRAGM SUPPORT HARDWARE INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.
- STEEL DIAPHRAGM SUPPORT ANGLE TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

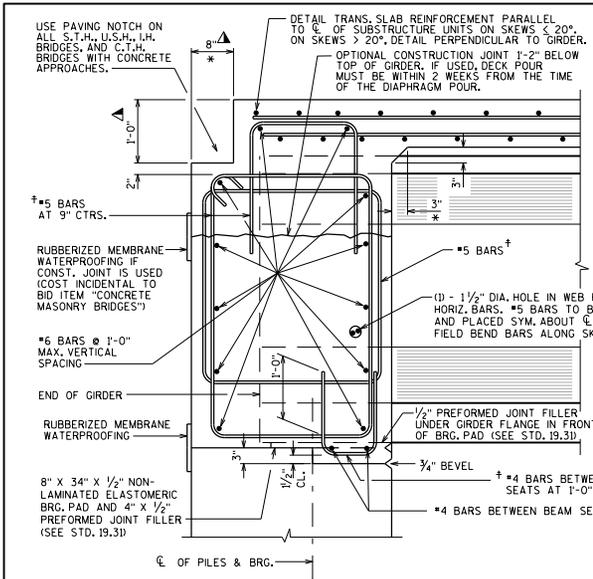
DESIGNER NOTE

LAP LENGTHS FOR DIAPHRAGM REINFORCEMENT SHALL BE BASED ON A CLASS "C" TENSION LAP SPLICE, UNLESS OTHERWISE NOTED.

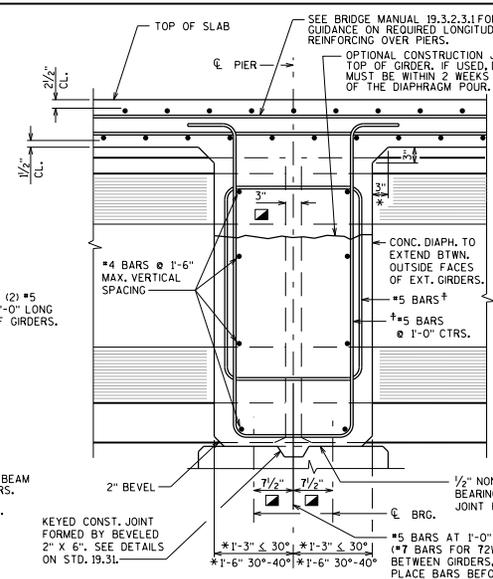
PRESTRESSED 36W" & 45W" GIRDER SLAB & SUPERSTRUCTURE DETAILS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



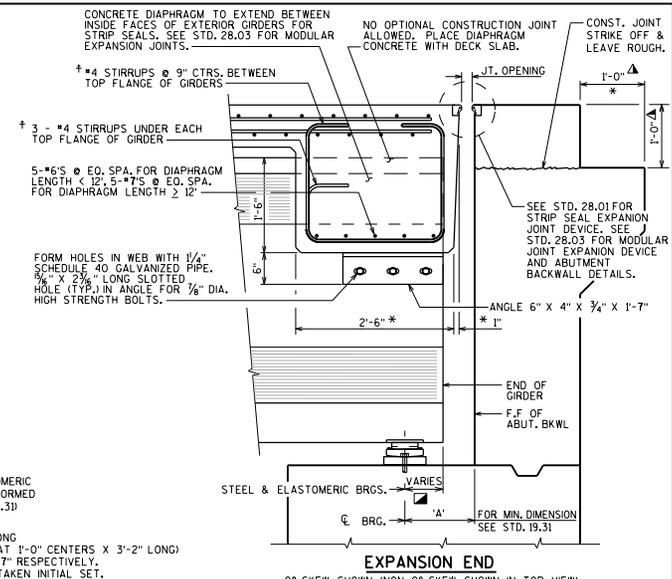
PRESTRESSED GIRDER WITH SEMI-EXPANSION SEAT



DIAPHRAGM AT 1/2" ELASTOMERIC BEARING

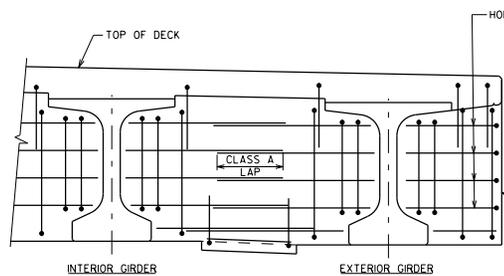
LEGEND

- ▣ DIMENSION IS TAKEN PARALLEL TO \bar{C} GIRDER.
- * DIMENSION IS TAKEN NORMAL TO \bar{C} SUBSTRUCTURE UNITS.
- ▲ PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.10) IS USED.
- † BARS PLACED PARALLEL TO GIRDERS, SPACING PERPENDICULAR TO \bar{C} GIRDERS.

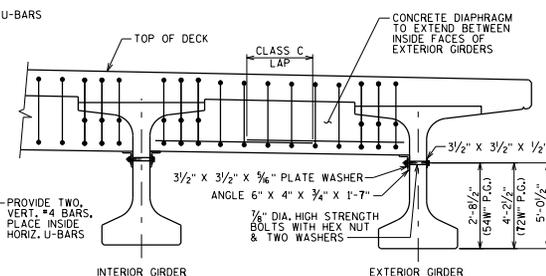


EXPANSION END

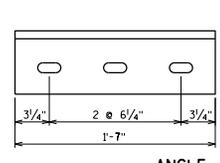
0° SKEW SHOWN (NON 0° SKEW SHOWN IN TOP VIEW)



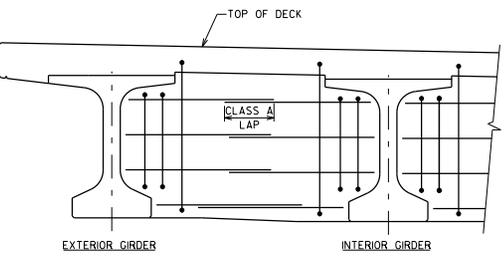
PART TRANSVERSE SECTION AT DIAPHRAGM SEMIEXPANSION END



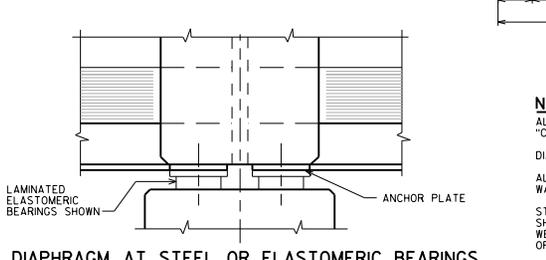
PART TRANSVERSE SECTION AT DIAPHRAGM EXPANSION END



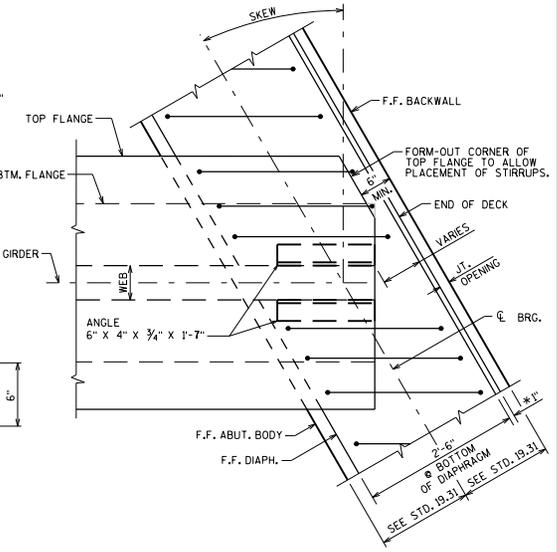
ANGLE



PART TRANSVERSE SECTION AT DIAPHRAGM PIER



DIAPHRAGM AT STEEL OR ELASTOMERIC BEARINGS SECTION THRU DIAPHRAGM AT PIER
FOR STEEL BEARINGS, FORM DIAPHRAGM APPROXIMATELY 1/2" ABOVE BEARING KEEPER BARS



TOP VIEW OF DIAPHRAGM (EXPANSION END)

NOTES

- ALL DIAPHRAGM SUPPORT HARDWARE SHALL BE INCIDENTAL TO "CONCRETE MASONRY BRIDGES".
- DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36.
- ALL DIAPHRAGM SUPPORT HARDWARE INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.
- STEEL DIAPHRAGM SUPPORT ANGLE TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN, HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

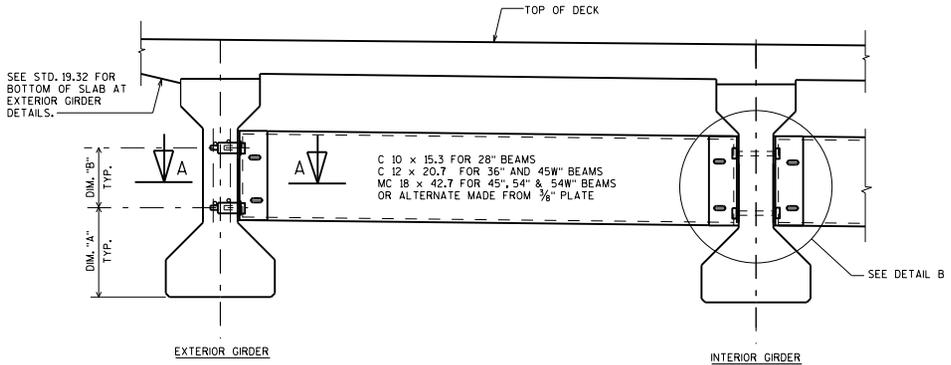
DESIGNER NOTES

- LAP LENGTHS FOR DIAPHRAGM REINFORCEMENT SHALL BE BASED ON A CLASS "C" TENSION LAP SPLICE, UNLESS OTHERWISE NOTED.

PRESTRESSED 54W", 72W" & 82W" GIRDER SLAB & SUPERSTRUCTURE DETAILS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



PART TRANSVERSE SECTION AT DIAPHRAGM

TABLE				
GIRDER HEIGHT	DIM. "A"	DIM. "B"	DIM. "L"	* DIM. "X"
28"	1'-0 1/8"	5 7/8"	9 1/2"	2 1/4"
36"	1'-2 7/8"	9 7/8"	1'-1 1/2"	3 1/4"
45"	1'-5 3/8"	1'-1 7/8"	1'-5 1/2"	2 1/4"
45W"	1'-9 1/4"	8 3/4"	1'-0 1/2"	2 3/4"
54"	1'-7 7/8"	1'-5 3/8"	1'-9 1/2"	4 1/4"
54W"	1'-9 1/8"	1'-5 7/8"	1'-9 1/2"	4 1/4"

NOTES

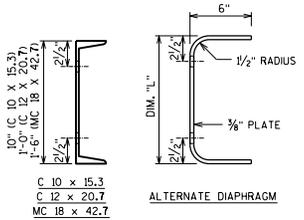
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B--", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE "SNUG-TIGHT PLUS 1/4 TURN, UNLESS NOTED OTHERWISE, HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

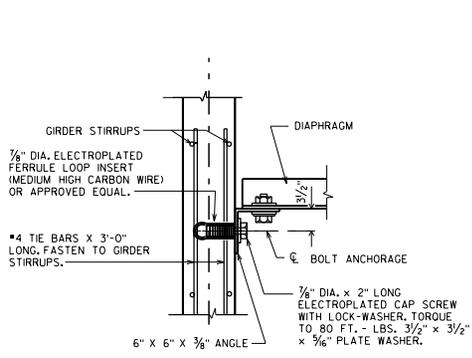


SECTION THRU DIAPHRAGM

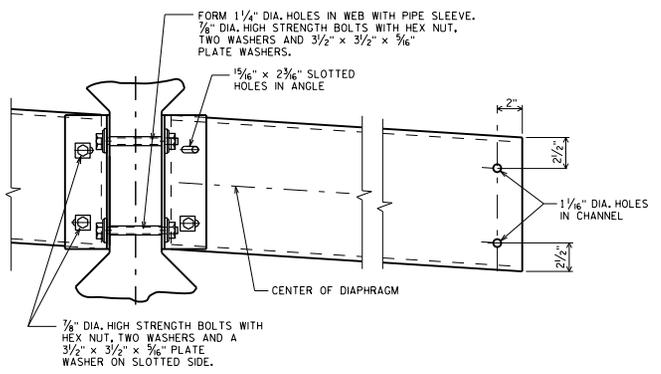
DESIGNER NOTES

FOR SPANS EQUAL TO OR LESS THAN 80'-0", PLACE ONE DIAPHRAGM AT MID-LENGTH OF GIRDER. FOR SPANS OVER 80'-0", PLACE AT 1/3 AND 2/3 POINTS.

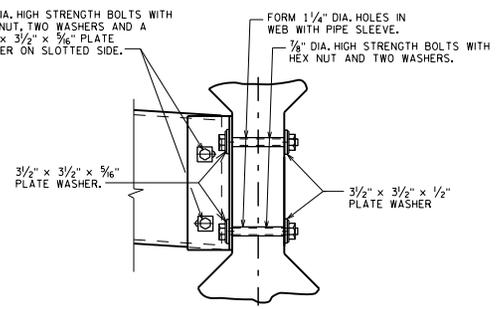
ON THE PLANS, SHOW LOCATION OF INSERTS/HOLES FOR DIAPHRAGM TO WEB CONNECTION, NOT ONLY FROM THE BOTTOM OF THE GIRDER (DIM "A" AND "B"), BUT ALSO FROM THE ENDS OF EACH GIRDER.



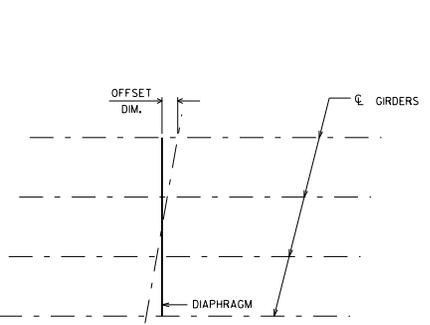
SECT. A-A (FOR EXTERIOR ATTACHMENT)



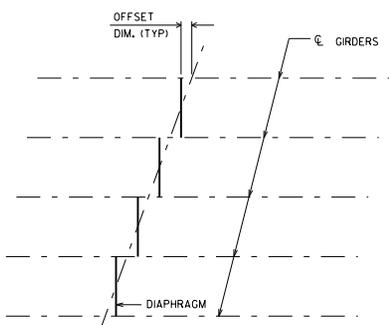
DETAIL B (FOR CONTINUOUS LINE OF DIAPHRAGMS)



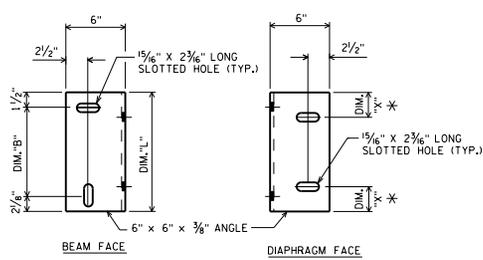
SECTION AT INTERIOR GIRDERS THRU DIAPHRAGM FOR SKEW ANGLES > 10°



PLAN FOR SKEW ANGLES ≤ 10°



PLAN FOR SKEW ANGLES > 10°



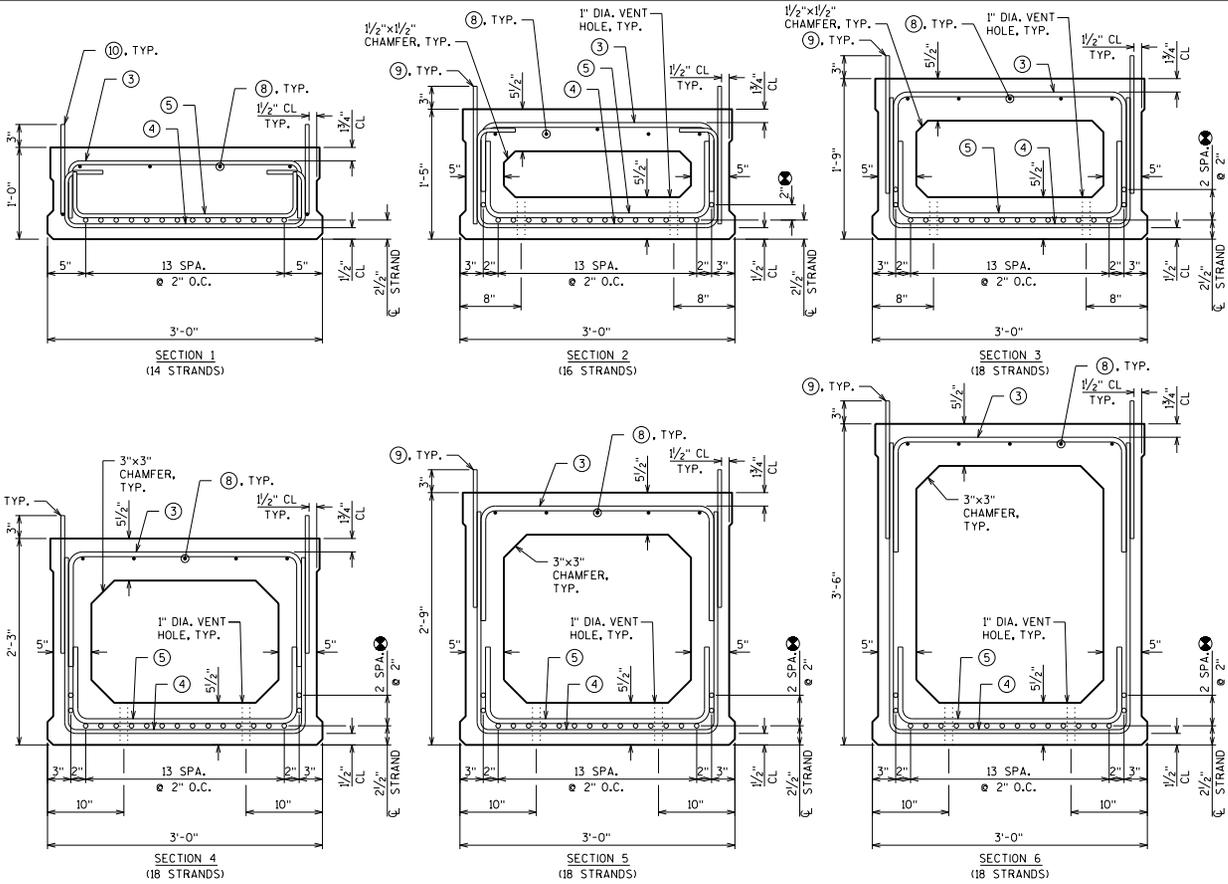
DIAPHRAGM SUPPORT

*2 1/2" FOR ALTERNATE PLATE DIAPHRAGM

INTER. STEEL DIAPHS. FOR 28", 36", 45", 45W" 54" & 54W" PRESTRESSED GIRDERS

BUREAU OF STRUCTURES

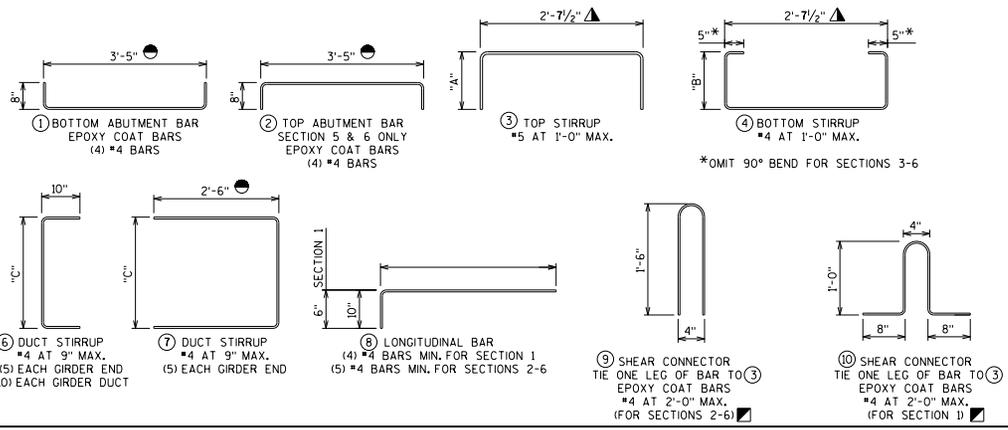
APPROVED: Bill Oliva DATE: 7-18



3'-0" SECTIONS

REBAR DIMENSION

SECT. DEPTH	SECT. NO.	"A"	"B"	"C"
1'-0"	1	7 1/2"	7 1/2"	6"
1'-5"	2	9"	1'-1"	10"
1'-9"	3	1'-3"	1'-5"	1'-2"
2'-3"	4	1'-3"	1'-11"	1'-8"
2'-9"	5	1'-3"	2'-5"	2'-2"
3'-6"	6	1'-3"	3'-2"	2'-11"



NOTES

THE CONCRETE MIX FOR THE PRESTRESSED BOX GIRDERS SHALL CONFORM TO SECTION 503.2.2 OF THE STANDARD SPECIFICATIONS.

AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO THE BOTTOM OF THE GIRDERS AND THE EXTERIOR FACE OF EXTERIOR GIRDERS. DO NOT APPLY CONCRETE SEALER OR EPOXY TO THE SHEAR KEY OR THE TOP OF GIRDERS.

STRANDS SHALL BE FLUSH WITH END OF GIRDER, FOR CONCRETE ABUTMENTS, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER, FOR GRS ABUTMENTS, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS, AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

VOIDS SHALL BE VENTED AND DRAINED BY CASTING (2)-1" DIA. TUBES AT EACH END OF VOID SEGMENT, LOCATE TUBES AT BOTTOM EDGES OF THE CORNER FILLETS, AVOID STRAND LOCATIONS.

FOUR WAY SLING MUST BE USED TO ENGAGE ALL 4 LIFTING DEVICES ON BOTH ENDS OF UNITS.

POST-TENSIONING OF THE TRANSVERSE TENDONS SHALL NOT BEGIN UNTIL THE GROUT BETWEEN THE PRECAST BOX GIRDERS HAS BEEN ALLOWED TO CURE FOR 48 HOURS AND GROUT HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI.

SEAL WASHER SHALL BE SPONGE NEOPRENE GASKET 3/4" MIN. THICK. STRESS POCKETS SHALL BE FILLED WITH CHLORIDE FREE NON-SHRINK GROUT AFTER POST-TENSIONING.

TRANSITION BETWEEN CHANGING SLOPES OF POST-TENSIONING DUCTS SHALL BE PROVIDED BY EITHER A CIRCULAR OR PARABOLIC CURVE WITH A MINIMUM LENGTH OF 3'-0".

DESIGNER NOTES

USE OF PRESTRESSED BOX GIRDERS IS SUBJECT TO PRIOR-APPROVAL BY THE BUREAU OF STRUCTURES, SEE 19.3.2.3.2 IN THE BRIDGE MANUAL FOR ADDITIONAL GUIDANCE.

THE MAXIMUM RECOMMENDED SKEW ANGLE OF THE STRUCTURE SHALL BE 30°.

BEAM SEATS SHALL BE SLOPED ALONG THE SUBSTRUCTURE UNITS TO ACCOUNT FOR THE CROSS SLOPE OR SUPERELEVATION ON THE DECK.

SLOPE BEAM SEATS PARALLEL TO GRADE LINE IF GRADE AT BRG. > 1%, PLACE ELEVATIONS ON PLANS TO MEET THESE REQUIREMENTS.

STRANDS TO BE DESIGNED, MAXIMUM NUMBER OF STRANDS AND STRAND ARRANGEMENTS ARE SHOWN, STRANDS NOT TO BE DRAPED.

MULTI-SPAN STRUCTURES REQUIRE ANCHOR DOWELS AT THE PIERS, WHICH MAY REDUCE THE MAXIMUM NUMBER OF STRANDS AVAILABLE BY 2. (CURRENTLY NOT USED)

CONTACT THE BUREAU OF STRUCTURES FOR THE MOST CURRENT PRESTRESSED BOX GIRDER SPECIAL PROVISION.

SEE STANDARD 19.51 FOR SHEAR KEY RECESS DETAIL.

MATERIAL PROPERTIES

CONCRETE MASONRY BRIDGES $f_c = 4,000$ PSI

BAR STEEL REINFORCEMENT, GRADE 60 $f_y = 60,000$ PSI

PRESTRESSED BOX GIRDERS, CONCRETE MASONRY $f_c = 5,000$ PSI

STRANDS - 0.5" OR 0.6" DIA. ULTIMATE TENSILE STRENGTH $f_t = 270,000$ PSI

PRE-TENSION

$f_t = 270,000$ P.S.I

$f_s = 0.75 \times 270,000 = 202,500$ P.S.I for low relaxation strands

PI PER 0.5" DIA. STRAND = $0.1531 \times 202,500 = 31.00$ KIPS

PI PER 0.6" DIA. STRAND = $0.217 \times 202,500 = 43.94$ KIPS

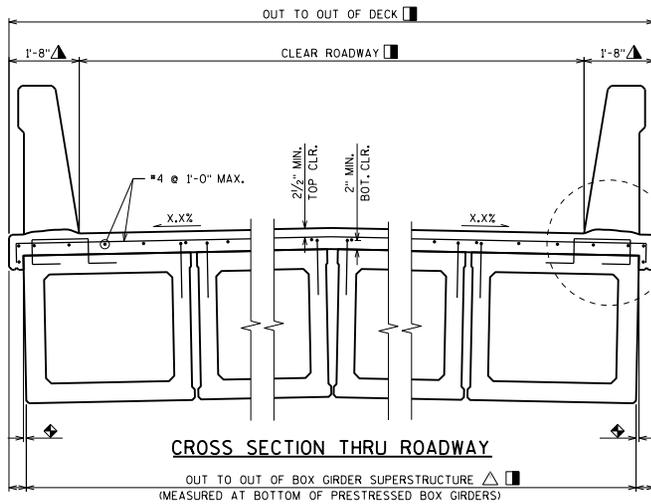
LEGEND

- DIMENSION GIVEN FOR A POST-TENSIONING DUCT 1'-10" FROM END OF PRESTRESSED BOX GIRDER.
- ▲ DIMENSION GIVEN FOR STIRRUPS PERPENDICULAR TO THE PRESTRESSED BOX GIRDER LENGTH, ADJUST THE DIMENSION FOR STIRRUPS AT SKEWED PRESTRESSED BOX GIRDER ENDS.
- ⊗ SHOW SPACING FOR THESE STRANDS ONLY IF REQUIRED BY DESIGN.
- SUBSTITUTE (1) BAR ON EXTERIOR EDGE OF EXTERIOR GIRDERS. SEE STANDARD 19.56.

3'-0" PRESTRESSED BOX GIRDER SECTIONS

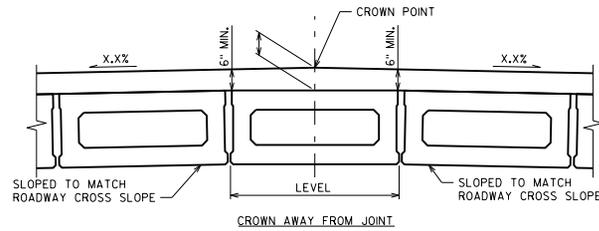
BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18

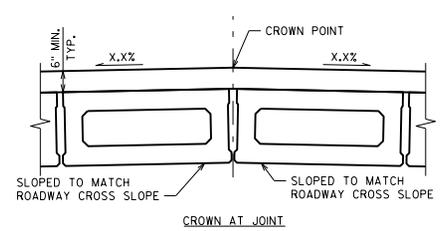


CROSS SECTION THRU ROADWAY

OUT TO OUT OF BOX GIRDER SUPERSTRUCTURE
(MEASURED AT BOTTOM OF PRESTRESSED BOX GIRDERS)



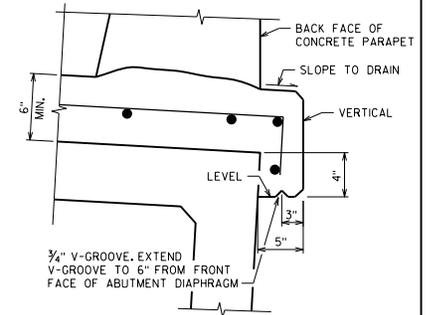
CROWN DETAIL AT LOCATION OF MIN. DECK THICKNESS



NUMBER OF SECTIONS

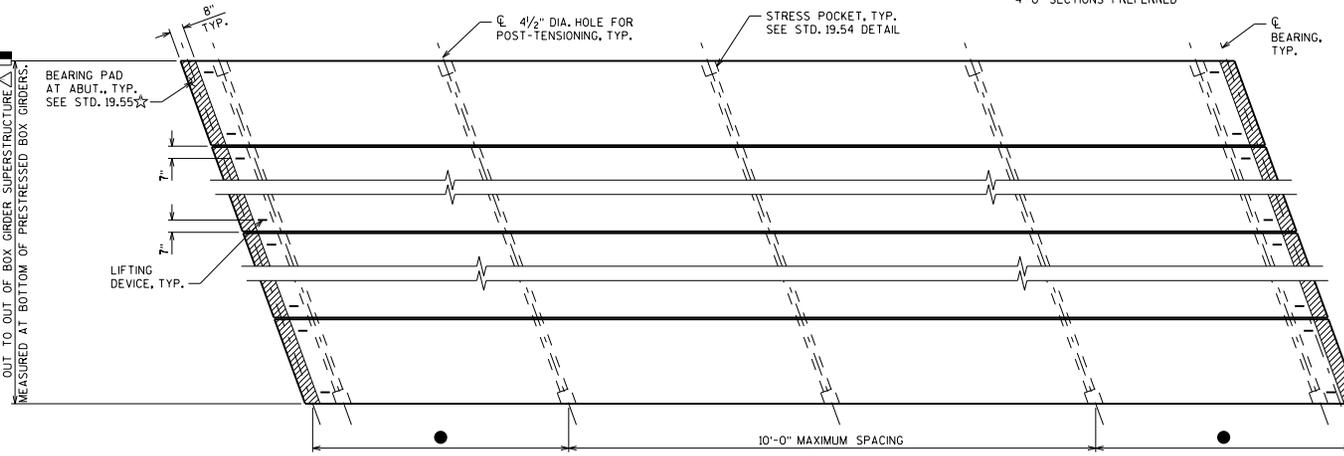
CLEAR ROADWAY	3'-0" SECTION	4'-0" * SECTION
26'-0"	10	7
30'-0"	11	8
36'-0"	13	10
40'-0"	14	11
44'-0"	16	12

* 4'-0" SECTIONS PREFERRED



DECK OVERHANG DETAIL

SEE STANDARD 19.56 FOR ADDITIONAL DETAILS



PLAN

DESIGNER NOTES

△ ACCOUNT FOR NUMBER OF PRESTRESSED BOX GIRDERS, NUMBER OF JOINTS (AT 1' NORMAL TO GIRDERS), AND ROADWAY CROSS SLOPE.

◆ DIMENSION IS HORIZONTAL DISTANCE FROM TOP OF PRESTRESSED BOX GIRDER TO BOTTOM OF PRESTRESSED BOX GIRDER.

DECK THICKNESS DETERMINATION PROCEDURE IS BASED ON TANGENT PROFILE GRADE LINE. STRUCTURES WITH VERTICAL CURVE PROFILE GRADE LINES MAY REQUIRE ADDITIONAL INVESTIGATION.

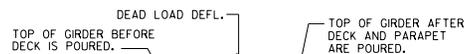
NOTES

NOTES: AN AVERAGE DECK THICKNESS OF WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

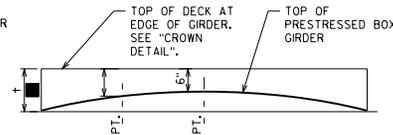
VARIATIONS TO THE GRADE LINE OVER 1/4" MUST BE SUBMITTED BY THE FIELD ENGINEER TO THE STRUCTURES DESIGN SECTION FOR REVIEW.

LEGEND

- ☆ BEARING PAD NOT REQUIRED FOR CRS ABUTMENTS.
- 1/4 SPAN FOR SPANS UP TO 80'-0".
1/5 SPAN FOR SPANS OVER 80'-0".
- DIMENSION ASSUMES 1" JOINT WIDTH. JOINT WIDTH DIMENSIONS MAY VARY DUE TO ±1/4" JOINT TOLERANCES.
- ▲ MAY BE REDUCED TO 1'-7" TO MAINTAIN ROADWAY CLEAR WIDTH.



DEAD LOAD DEFLECTION DIAGRAM



DECK THICKNESS DIAGRAM

■ TO DETERMINE DECK THICKNESS AT GIRDER ENDS FOLLOW THIS PROCESS:

- + 6" MIN. DECK SLAB THICKNESS
- + FIELD MEASURED GIRDER CAMBER (AT MID SPAN)
- DEADLOAD DEFLECTION (AT MIDSPAN)
- = DECK THICKNESS.

NOTE: PLAN DECK THICKNESS BASED ON THEORETICAL INITIAL CAMBER VALUE. 1/4 PT. MAY BE INTERPOLATED. USE FIELD MEASURED GIRDER CAMBER FOR ACTUAL DECK THICKNESS. THE 1/4 PT. IS INTERPOLATED BETWEEN DECK THICKNESS AT THE END OF DECK AND MIDSPAN.

** THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) **
1	

THESE VALUES ARE NOT TO BE USED IN DETERMINING '+'. USE FIELD MEASURED GIRDER CAMBER.

THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

GIRDER DATA

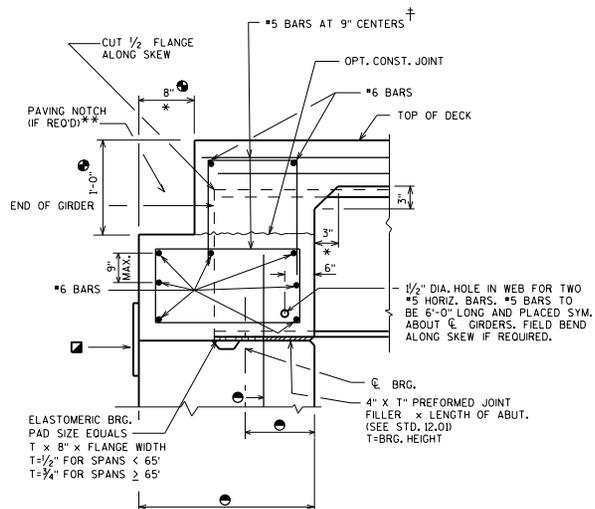
SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN.)		CONC. STRENGTH f'c (PSI)	DIA. OF STRAND (IN.)	UNDRAPED PATTERN	
			1/4 PT.	1/2 PT.			TOTAL NO. OF STRANDS	TOTAL INITIAL PRESTRESS FORCE (KIPS)
1								

* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

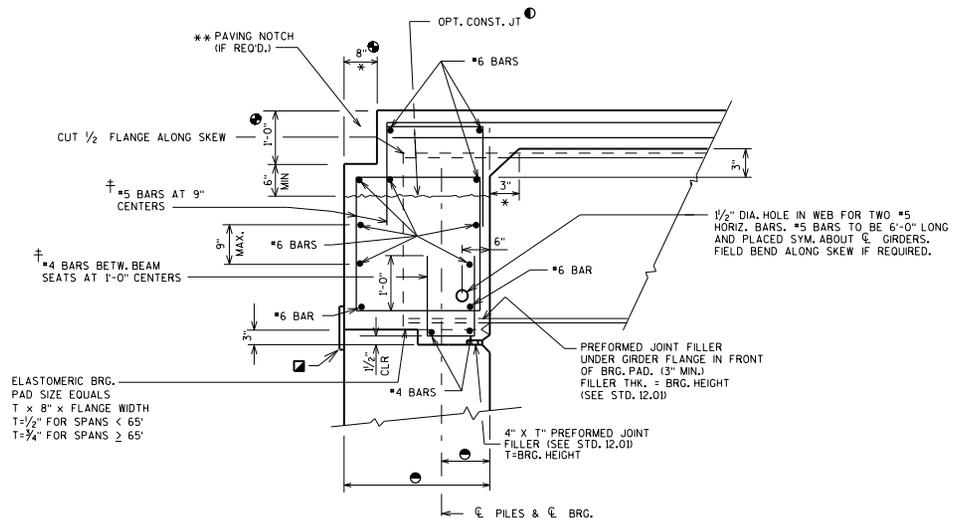
PRESTRESSED BOX GIRDER DETAILS 2



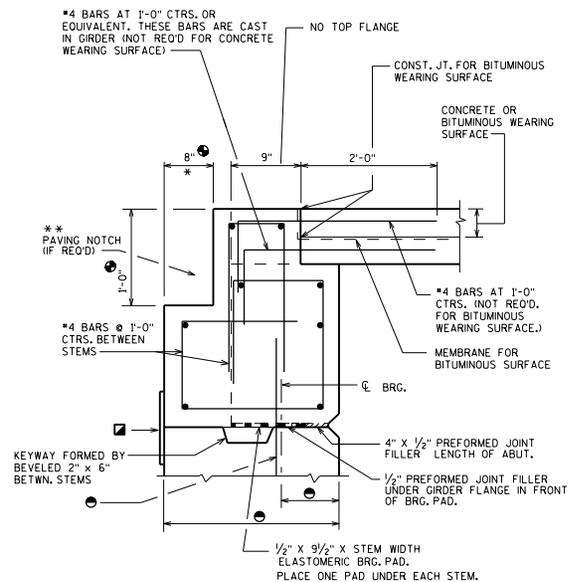
APPROVED: Bill Oliva DATE: 7-18



**STEEL GIRDER WITH
FIXED SEAT**



**STEEL GIRDER WITH
SEMI-EXPANSION SEAT**



**PRECAST DOUBLE TEE OR
MULTI-STEM SECTION**

NOTES

FOR SKEWED STRUCTURES CAST END OF PRECAST TEE ALONG SKEW.

* DIMENSION IS TAKEN NORMAL TO ϕ SUBSTRUCTURE UNITS.

▣ 1'-6" RUBBERIZED MEMBRANE WATERPROOFING

† BARS PLACED PARALLEL TO GIRDERS. SPACING PERPENDICULAR TO ϕ GIRDERS.

DESIGNER NOTES

SEE STANDARD 19.55 FOR PRESTRESSED BOX GIRDER BEARING DETAILS.

① THE USE OF THIS OPT. CONST. JOINT IS NOT RECOMMENDED FOR SKEWS OVER 15° WHEN LARGE DEADLOAD END ROTATION IS ANTICIPATED.

** USE PAVING NOTCH ON ALL U.S.H. BRIDGES, S.T.H. BRIDGES, I.H. BRIDGES & ON C.T.H. BRIDGES WITH CONCRETE APPROACHES.

② PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.10) IS USED.

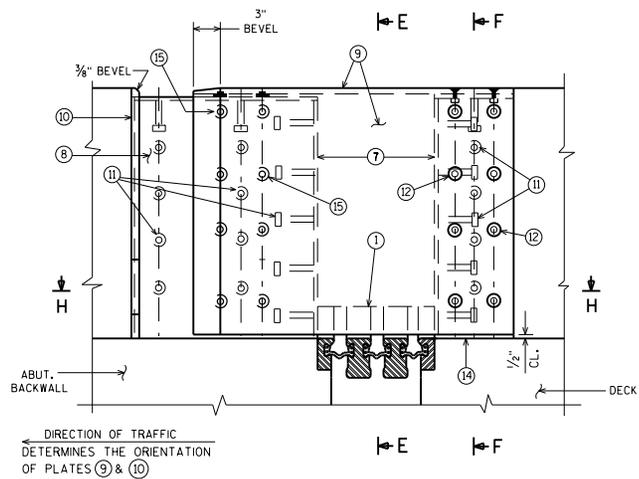
③ SEE STD. 12.01

**BRG. DETAILS FOR STEEL
GDRS. AND PRECAST
UNITS ON A1 ABUTMENTS**

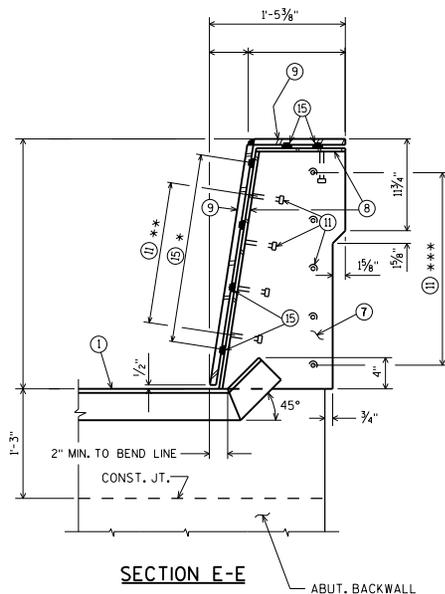


**BUREAU OF
STRUCTURES**

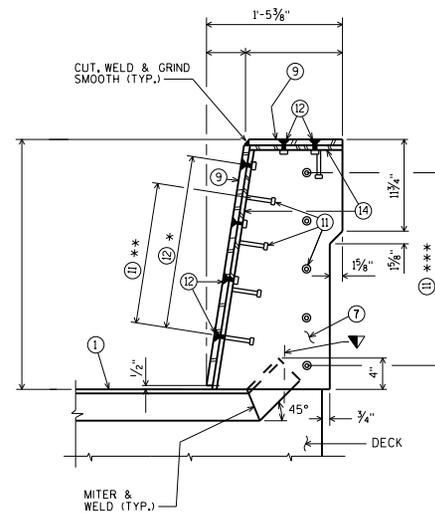
APPROVED: Bill Oliva DATE: 7-18



ELEVATION OF SINGLE SLOPE PARAPET

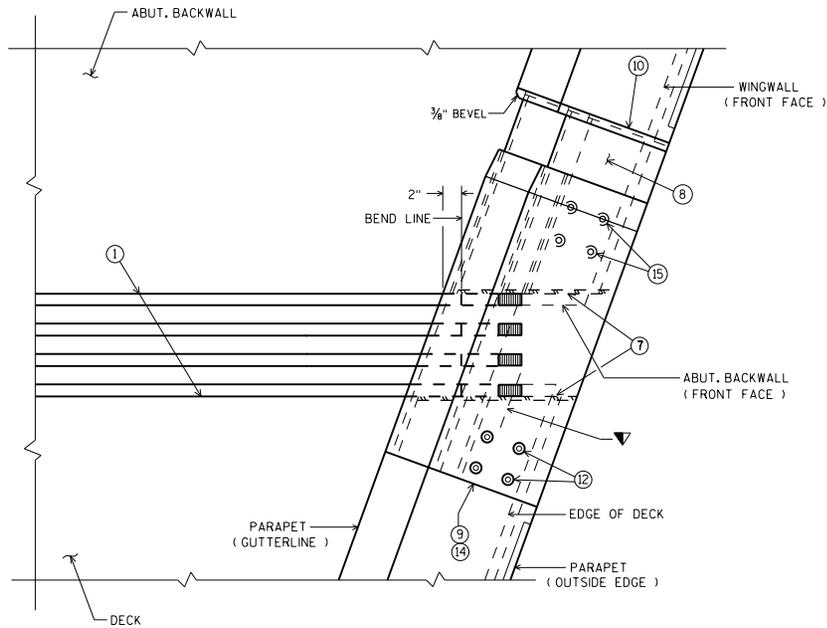


SECTION E-E

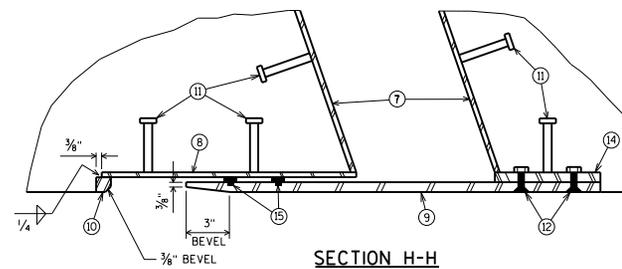


SECTION F-F

CROSS SECTION SHOWN FOR 32", 36", AND 42" SINGLE SLOPE PARAPET. DETAILS FOR 56" PARAPET ARE SIMILAR.



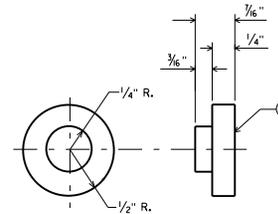
PLAN OF SINGLE SLOPE PARAPET



SECTION H-H

- * 3 EQ. SPA. (32")
- 4 EQ. SPA. (36")
- 5 EQ. SPA. (42")
- 7 EQ. SPA. (56")
- ** 3 SPA. (32")
- 4 SPA. (36")
- 5 SPA. (42")
- 7 EQ. SPA. (56")
- *** 4 SPA. (32")
- 5 SPA. (36")
- 6 SPA. (42")
- 8 SPA. (56")

▼ FOR STRUCTURES WITH SKEWS, ADD NOTE TO PLANS: "MITER EXTRUSION ENDS AS REQ'D TO PROVIDE CLEARANCE"



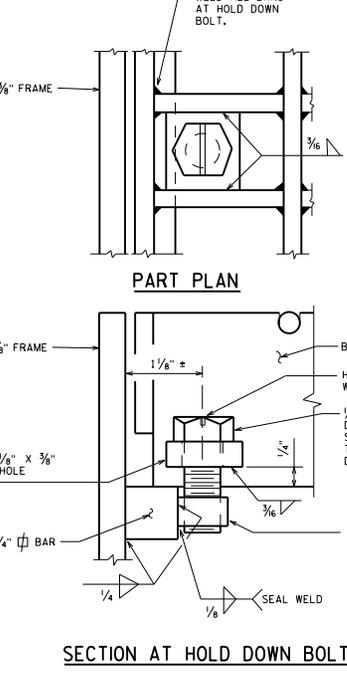
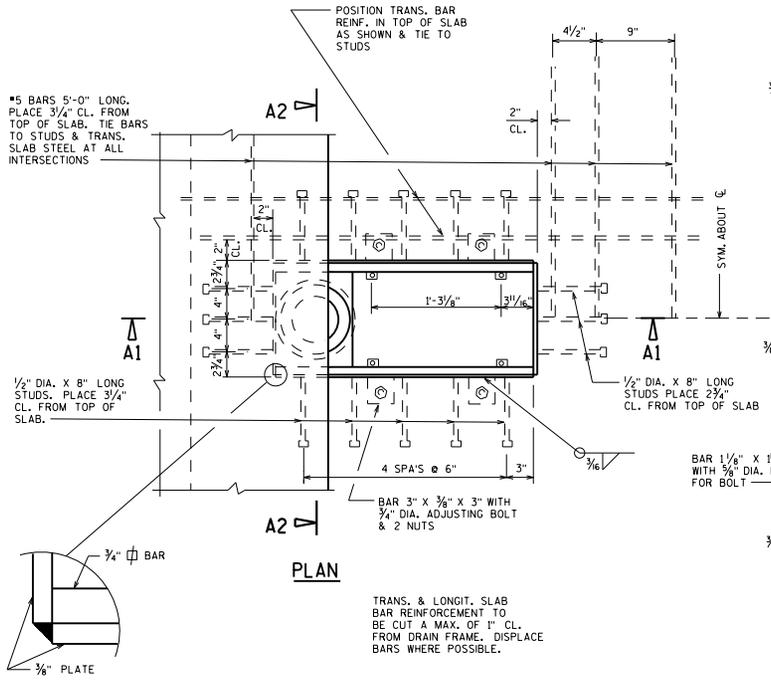
ADIPRENE BUTTON DETAIL

COVER PLATES FOR SINGLE SLOPE PARAPET



BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



NOTES

ALL DRAIN MATERIAL INCLUDING GRATE, EXCLUDING PIPE & GRATE HOLD DOWN BOLTS, SHALL BE ASTM A36 STEEL.

MATERIAL FOR BRACKETS SHALL CONFORM TO ASTM A36.

THE CONTRACTOR MAY PROPOSE AN ALTERNATE TYPE OF BRACKET. THE PROPOSED ALTERNATE DETAILS SHALL BE SUBMITTED AND SUBJECT TO THE APPROVAL OF THE ENGINEER.

ALL STEEL SHALL BE GALVANIZED. WELDS SHALL BE MADE WITH LOW HYDROGEN ELECTRODES.

SEAL WELD INSIDE OF DRAIN.

PRIOR TO GALVANIZING A NO. 6 BLAST CLEANING IS REQ'D.

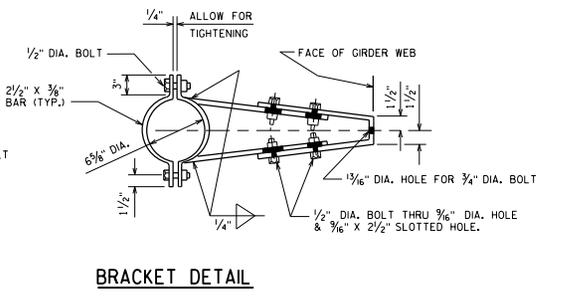
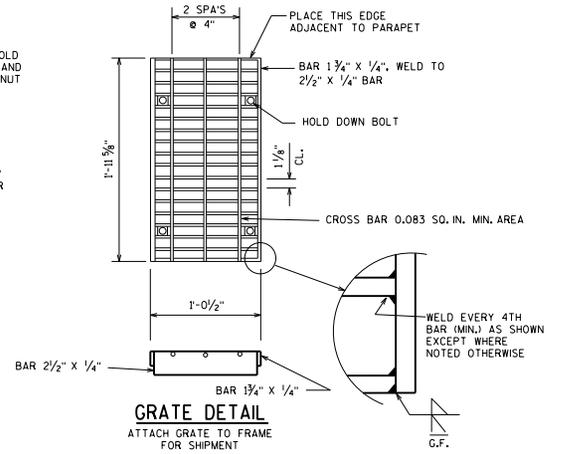
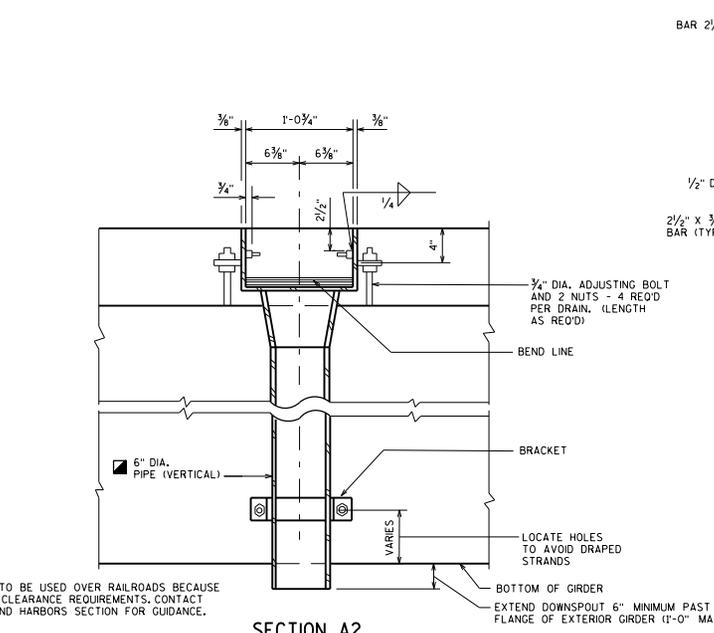
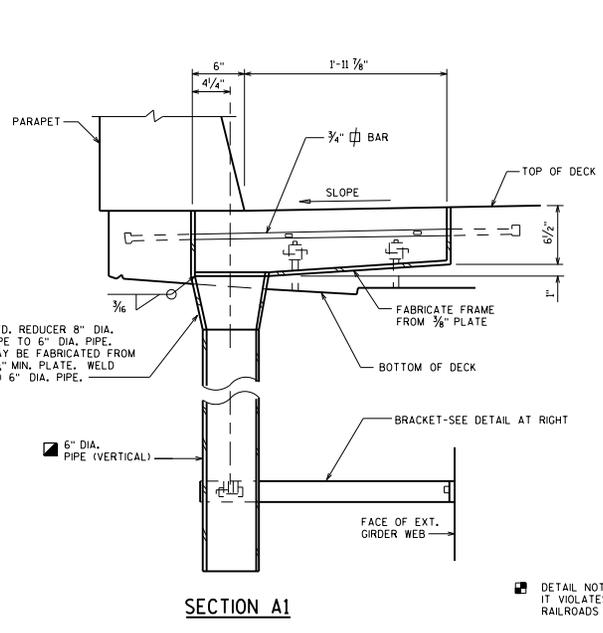
FLANGED 6" DIA. DOWNSPOUTS SHALL BE REINFORCED THERMOSETTING RESIN PIPE (TRTP) OR GALVANIZED STANDARD PIPE CONFORMING TO ASTM A53.

DESIGNER NOTES

ALL MATERIAL FOR FLOOR DRAINS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "FLOOR DRAINS TYPE H".

ALL MATERIAL FOR DOWNSPOUTS AND BRACKETS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "DOWNSPOUT 6-INCH".

ON THE PRESTRESSED GIRDER SHEET, SHOW LOCATION OF HOLES FOR BRACKET ANCHORAGE FROM TOP/BOTTOM AND END OF GIRDER.

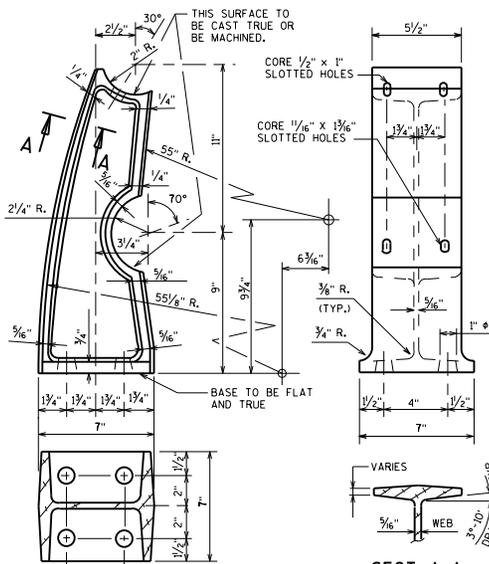


DETAIL NOT TO BE USED OVER RAILROADS BECAUSE IT VIOLATES CLEARANCE REQUIREMENTS. CONTACT RAILROADS AND HARBORS SECTION FOR GUIDANCE.

FLOOR DRAIN TYPE 'H'

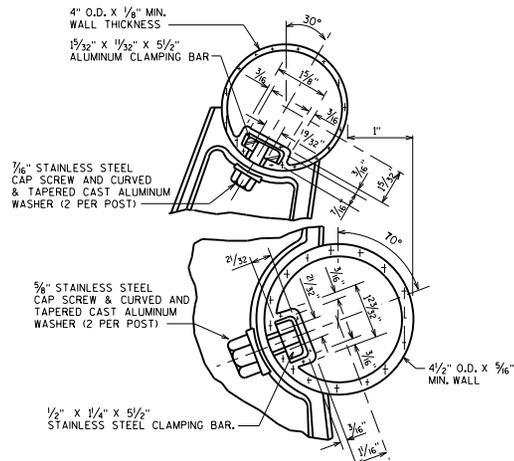
WISCONSIN DEPARTMENT OF TRANSPORTATION BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



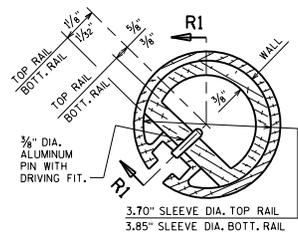
SECT. A-A

ALUMINUM POST CASTING

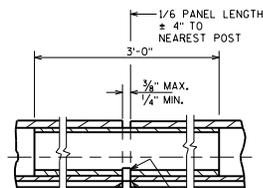


DETAIL OF ATTACHMENT TO POST

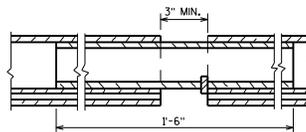
NOTES: MAX. REDUCTION IN DIAMETER OF BENT SECTION SHALL BE 3%.
WALL THICKNESS OF TUBING SHOWN ABOVE SHALL BE MIN. NOMINAL AVERAGE WALL THICKNESS.
MAX. REDUCTION IN SLOT WIDTH IN BENT TUBING SHALL BE 3%.



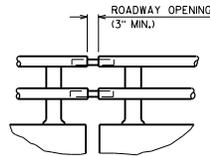
RAIL SPLICE DETAIL



SECTION R1

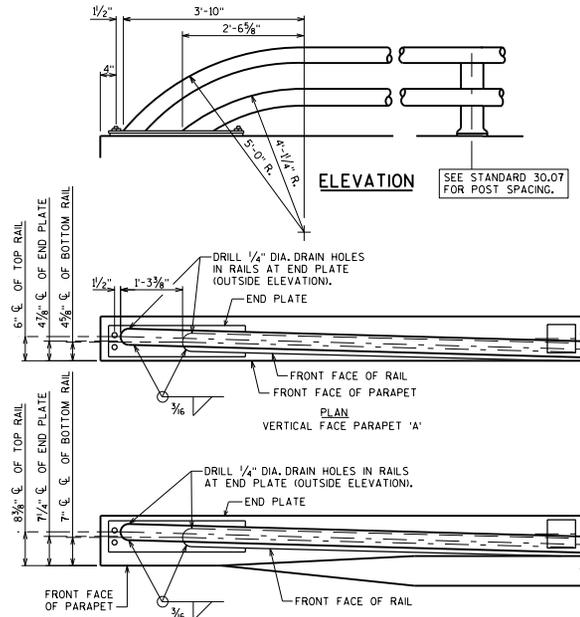


SLEEVE DETAIL AT ABUTMENT

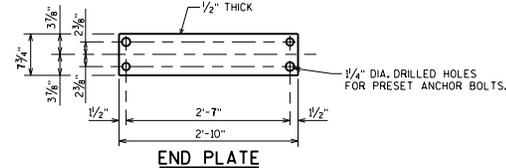


DETAIL AT RAIL OPENINGS

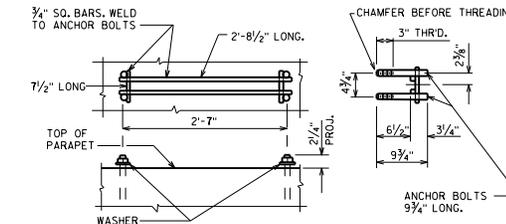
ALL SLEEVE DETAILS SAME AS "RAIL SPLICE DETAIL" UNLESS SHOWN OTHERWISE



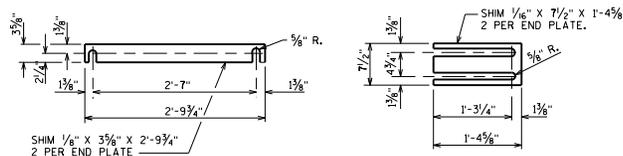
DETAIL OF RAIL BEND AT ABUTMENTS



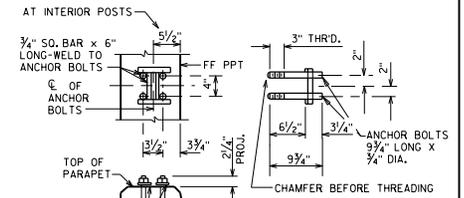
END PLATE



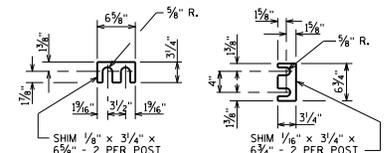
ANCHOR BOLTS AT END PLATE



END PLATE SHIM DETAILS



ANCHOR BOLTS AT POSTS

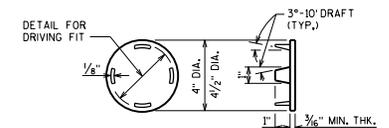


POST SHIM DETAILS

NOTES

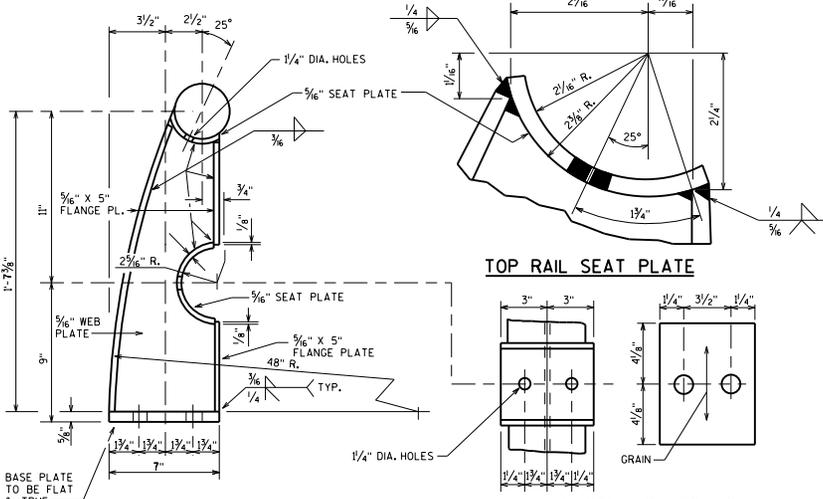
BID ITEM SHALL BE "RAILING TUBULAR TYPE H B-..." WHICH INCLUDES ALL ITEMS SHOWN.
SHIMS SHALL CONFORM TO SAME MATERIAL AS POSTS.
ANCHOR BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
RAILINGS SHALL BE FABRICATED IN 2 AND 3 PANEL LENGTHS.
RAILING POSTS SHALL BE SET NORMAL TO GRADE LINE.
ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF THE POST BASE.
SHIMS SHALL BE USED UNDER POSTS AND END PLATES WHERE RECD. FOR ALIGNMENT.
FILL ALL EXPOSED OPENINGS BETWEEN SHIMS AND POST ANCHOR BOLT HOLES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
RAILS SHALL BE BUILT STRAIGHT AND SPRUNG INTO PLACE FOR STRUCTURES CURVED UP TO 3° FOR STRUCTURES CURVED GREATER THAN 3°, RAILS SHALL BE CURVED TO FIT.

RAILING WEIGHT = 20 LB/FT

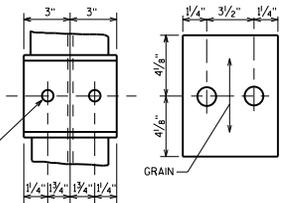


RAIL CLOSURE CAP DETAIL

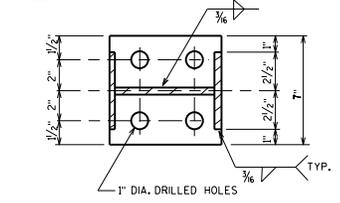
TUBULAR RAILING TYPE 'H' (ALUM.)	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: <u>7-18</u>



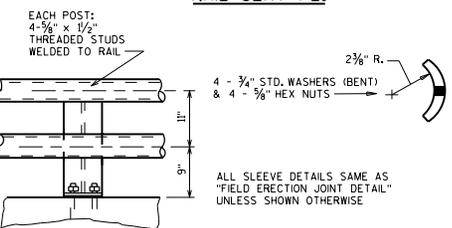
TOP RAIL SEAT PLATE



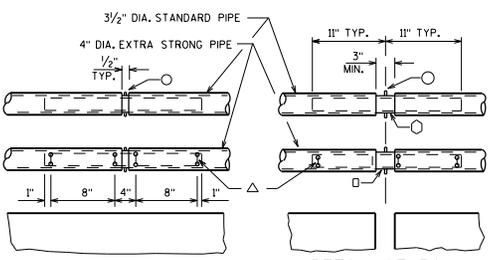
LAYOUT OF BOTTOM RAIL SEAT PL.



STEEL POST DETAILS

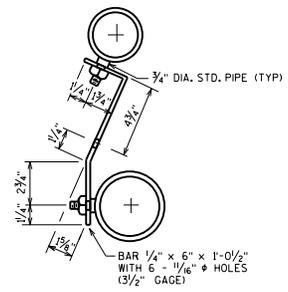


RAIL TO POST CONN.

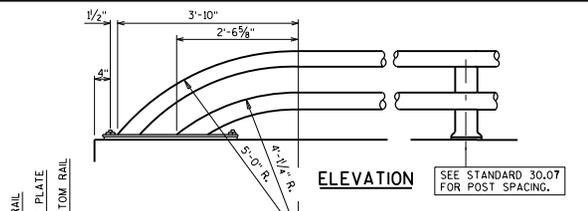


FIELD ERECTION JOINT DETAIL

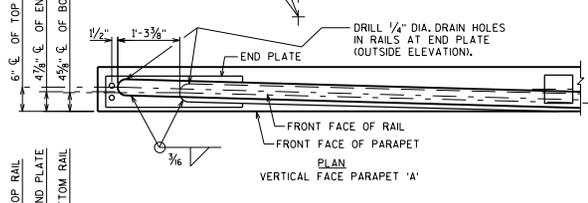
DETAIL AT RAIL OPENING



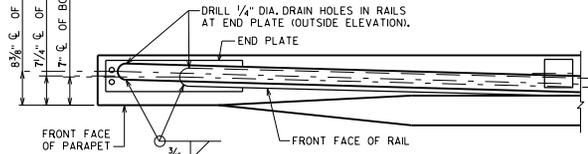
SHIPPING BAR
END SECTION ONLY



ELEVATION

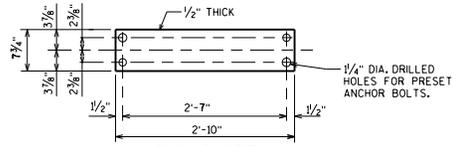


PLAN VERTICAL FACE PARAPET 'A'

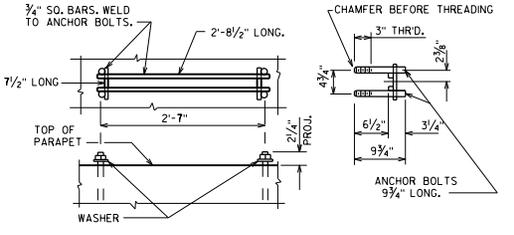


PLAN SLOPED FACE PARAPETS 'LF', '32SS', OR '36SS'

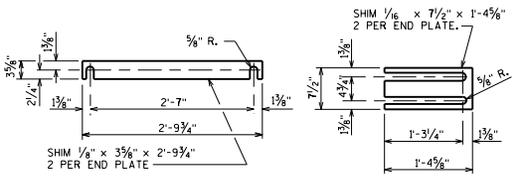
DETAIL OF RAIL BEND AT ABUTMENTS



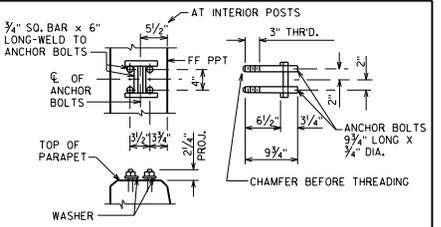
END PLATE



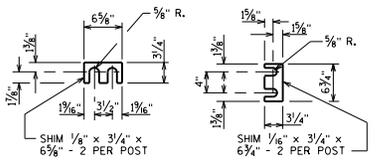
ANCHOR BOLTS AT END PLATE



END PLATE SHIM DETAILS



ANCHOR BOLTS AT POSTS



POST SHIM DETAILS

NOTES

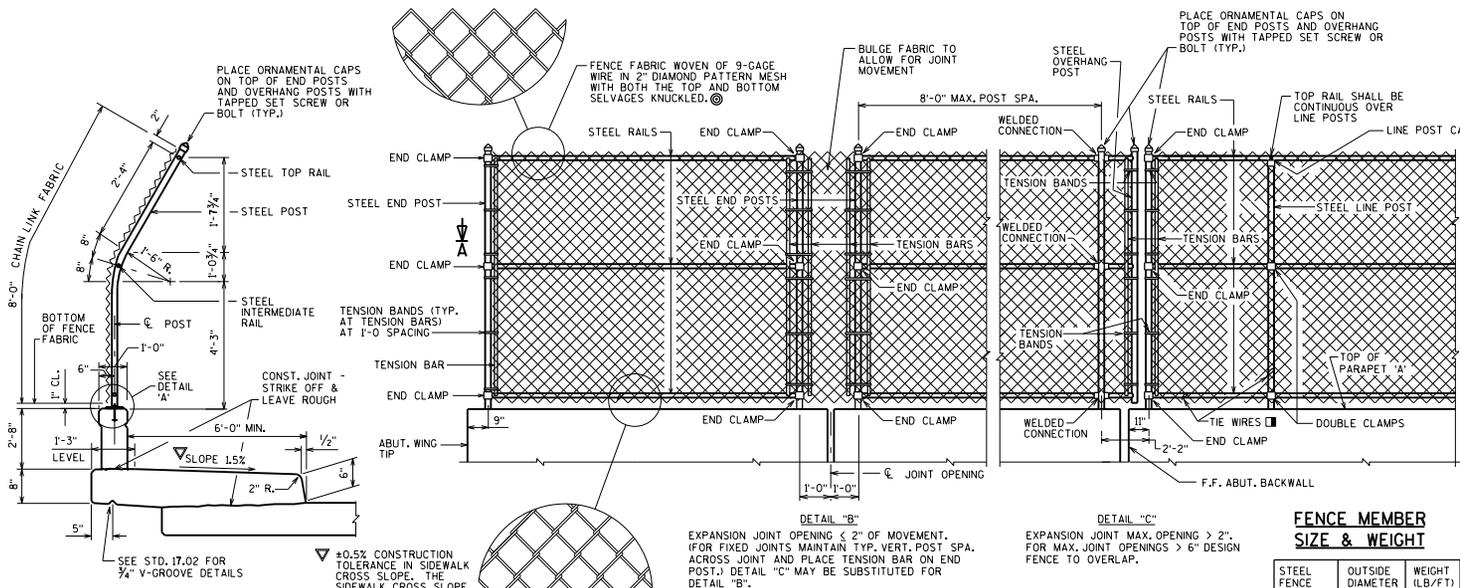
- BID ITEM SHALL BE "RAILING TUBULAR TYPE H B-..." WHICH INCLUDES ALL ITEMS SHOWN.
- ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM A307. IF A307 IS USED ELECTRO-GALVANIZED NUTS, WASHERS & TOP 3/2" OF ANCHOR BOLTS.
- CLOSURE ENDS ON STEEL RAILING SHALL BE 1/4" PLATE. WELD AND GRIND SMOOTH.
- RAILINGS SHALL BE FABRICATED IN 2 AND 3 PANEL LENGTHS.
- RAILING POSTS SHALL BE SET NORMAL TO GRADE LINE.
- ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG CENTERLINE OF THE POST BASE.
- SHIMS SHALL BE USED UNDER POSTS AND END PLATES WHERE REQD. FOR ALIGNMENT.
- FILL ALL EXPOSED OPENINGS BETWEEN SHIMS AND POST ANCHOR BOLT HOLES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- RAILS, POSTS & SHIMS SHALL BE MADE FROM MATERIALS CONFORMING TO ASTM DESIGNATION A709, GRADE 36.
- ALL MATERIALS, EXCEPT ANCHORAGES, SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
- RAILS SHALL BE BUILT STRAIGHT AND SPRUNG INTO PLACE FOR STRUCTURES CURVED UP TO 3". FOR STRUCTURES CURVED GREATER THAN 3", RAILS SHALL BE CURVED TO FIT.

RAILING WEIGHT = 30 LB/FT

LEGEND

- 3/8" x 3/8" WELDED STUDS
- 3" DIA. STD. PIPE x 1'-10" LONG
- 3" DIA. EXTRA STRONG PIPE x 1'-10" LONG
- △ 1/2" DIA. WELD BEADS AT 1/3 PTS. ON PIPE 11" CIRCUMF. GRIND BEADS SO THAT SLEEVE FITS FREELY IN THE I.D. OF 4" DIA. EXTRA STRONG PIPE.

TUBULAR RAILING TYPE 'H' (STEEL)	
	BUREAU OF STRUCTURES
	APPROVED: <u>Bill Oliva</u> DATE: 7-18



NOTES

POSTS ARE TO BE SET VERTICAL.

METALLIC-COATED FENCE SYSTEM:
ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL, EXCEPT THE FENCE FABRIC WHICH MAY BE ALUMINUM-COATED STEEL OR GALVANIZED STEEL.

FABRIC SHALL CONFORM TO ASTM A491 OR A392, CLASS 2. STEEL RAILS, POSTS AND POST SLEEVES SHALL CONFORM TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40). FITTINGS SHALL CONFORM TO ASTM F626.

THE BID ITEM SHALL BE "FENCE CHAIN LINK - FT."

POLYMER-COATED FENCE SYSTEM:
ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL WITH A COLORED POLYMER-COATING ON THE OUTSIDE.

FABRIC SHALL CONFORM TO ASTM F668, CLASS 2B. STEEL RAILS, POSTS AND POST SLEEVES SHALL CONFORM TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40). FITTINGS SHALL CONFORM TO ASTM F626. SEE THE "BRIDGE SPECIAL PROVISIONS" FOR ADDITIONAL DETAILS.

THE COLOR OF POLYMER-COATING FOR THIS STRUCTURE SHALL BE (SPECIFY: DARK GREEN, BROWN OR BLACK) IN ACCORDANCE WITH ASTM F934.

THE BID ITEM SHALL BE "FENCE CHAIN LINK POLYMER - COATED - FT. B - FT."

COMPLETE ANY REQUIRED WELDING OF COMPONENTS BEFORE GALVANIZING.

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.

BASE PLATES, ANCHOR PLATES AND SHIMS SHALL BE ASTM A709, GRADE 36.

ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG THE C/L OF THE POST.

CAULK AROUND PERIMETER OF BASE PLATE AND FILL PORTION OF SLOTTED HOLE AROUND ANCHOR BOLT IN SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

ALTERNATE TO DOUBLE CLAMP: USE LINE RAIL CLAMP (BOULEVARD) OR 180° BRACE BAND, WHICH MAY BE USED WHEN THE POSTS ARE EITHER BOLTED TO THE POST SLEEVES OR DIRECTLY WELDED TO THE BASE PLATE.

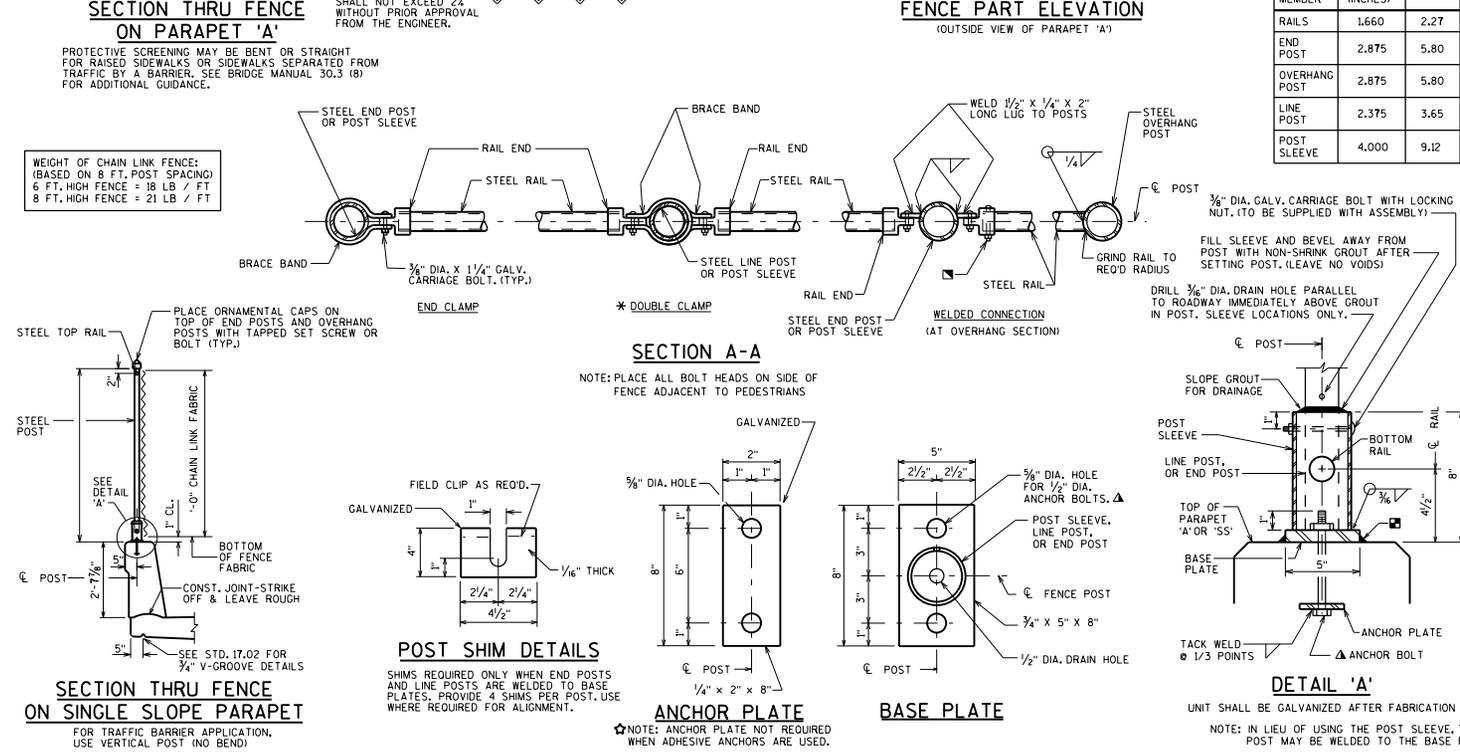
1/2" DIA. X 6 3/8" LONG GALVANIZED HEX BOLT WITH NUT & WASHER.

ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS 1/2"-INCH. EMBED 1" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.

ATTACH FABRIC TO RAILS, AND TO POSTS WITHOUT TENSION BANDS, WITH THE WIRES (ROUND, 9-GAGE) SPACED AT 1'-0".

BOLT RAIL TO RAIL END TO SECURE OVERHANG SECTION. ALTERNATE IS TO WELD RAIL DIRECTLY TO END POST.

MINIMUM LENGTH OF TOP RAIL BETWEEN SPLICES SHALL BE 20'-0". LOCATE SPLICES NEAR 1/4 POINT OF POST SPACING.



DESIGNER NOTES

THE CHAIN LINK FENCE SYSTEM SELECTED FOR THE STRUCTURE SHALL BE A "METALLIC-COATED FENCE SYSTEM" OR A "POLYMER-COATED FENCE SYSTEM".

A 1" MESH MAY BE USED ON PROTECTIVE SCREENING IN HIGHLY VULNERABLE AREAS, OR AS STATED IN FDM PROCEDURE 11-35-1 FOR PROTECTIVE SCREENING.

PEDESTRIAN RAILING MAY BE USED ON WINGWALL PARAPETS IF CHAIN LINK FENCE DOES NOT CONTINUE BEYOND BRIDGE.

HANDRAILS SHALL BE USED ALONG BRIDGE SIDEWALKS WHERE THE SLOPE OF THE SIDEWALK IS GREATER THAN 5%. TOP OF HANDRAIL GRIPPING SURFACES SHALL BE MOUNTED BETWEEN 30" & 34" ABOVE SIDEWALK SURFACE. USE 30" NEAR SCHOOL ZONES, IF FEASIBLE. HANDRAILS SHALL BE PROVIDED ALONG BOTH SIDES OF SIDEWALK. FOR HANDRAIL DETAILS SEE STANDARD 37.02.

THE DESIGN ENGINEER SHALL DESIGN THE SUPERSTRUCTURE TO ACCOUNT FOR THE MAXIMUM 2% SIDEWALK CROSS SLOPE.

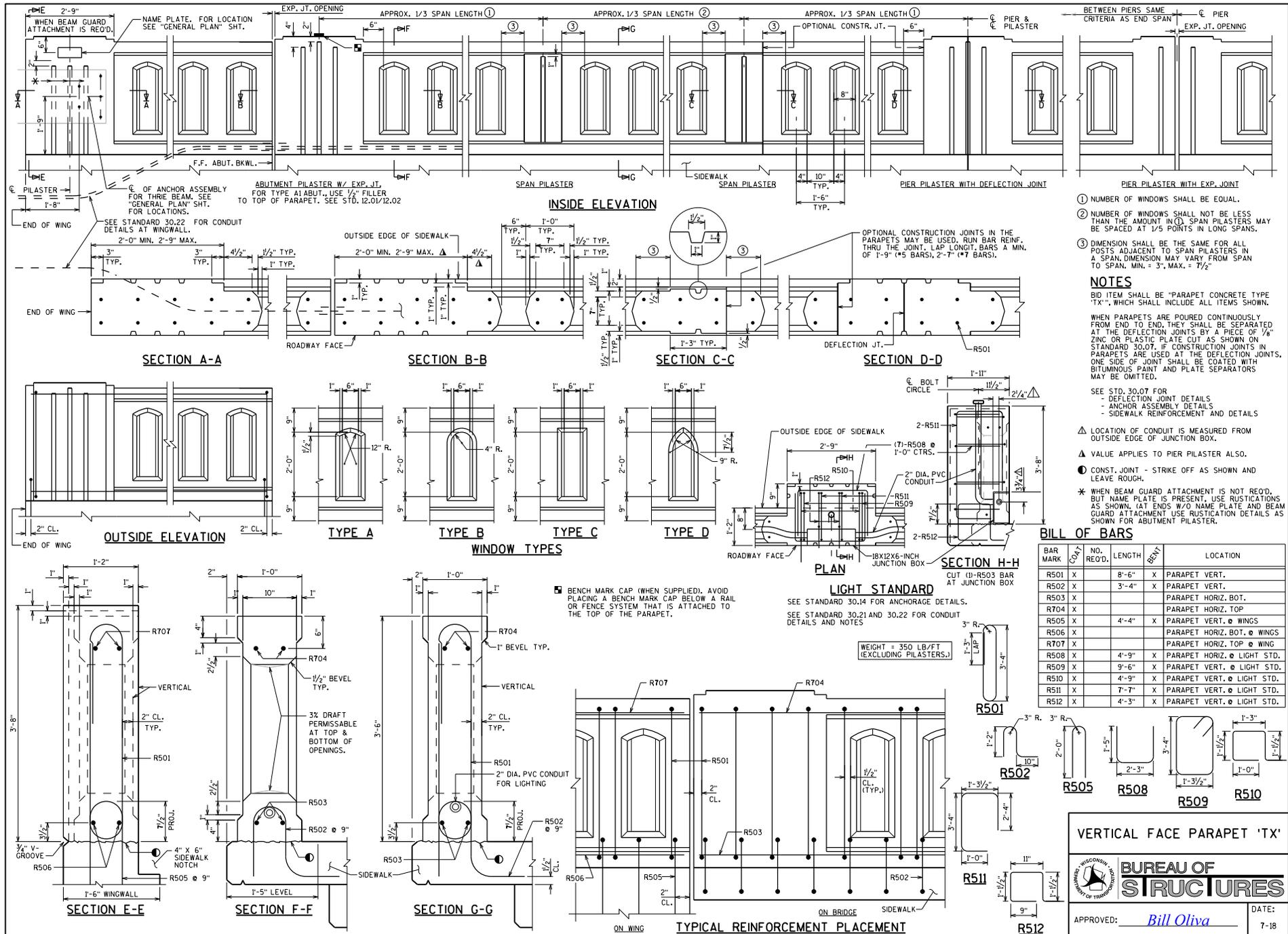
CHAIN LINK FENCE DETAILS

BUREAU OF STRUCTURES

DATE: _____

APPROVED: Bill Oliva 7-18

STANDARD 30.11



- ① NUMBER OF WINDOWS SHALL BE EQUAL.
- ② NUMBER OF WINDOWS SHALL NOT BE LESS THAN THE AMOUNT IND. SPAN PILASTERS MAY BE SPACED AT 1/5 POINTS IN LONG SPANS.
- ③ DIMENSION SHALL BE THE SAME FOR ALL POSTS ADJACENT TO SPAN PILASTERS IN A SPAN, DIMENSION MAY VARY FROM SPAN TO SPAN, MIN. = 3', MAX. = 7/2'

NOTES

BID ITEM SHALL BE "PARAPET CONCRETE TYPE 'TX'", WHICH SHALL INCLUDE ALL ITEMS SHOWN.

WHEN PARAPETS ARE POURED CONTINUOUSLY FROM END TO END, THEY SHALL BE SEPARATED AT THE DEFLECTION JOINTS BY A PIECE OF 1/8" ZINC OR PLASTIC PLATE CUT AS SHOWN ON STANDARD 30.07. IF CONSTRUCTION JOINTS IN PARAPETS ARE USED AT THE DEFLECTION JOINTS, ONE SIDE OF JOINT SHALL BE COATED WITH BITUMINOUS PAINT AND PLATE SEPARATORS MAY BE OMITTED.

SEE STD. 30.07 FOR

- DEFLECTION JOINT DETAILS
- ANCHOR ASSEMBLY DETAILS
- SIDEWALK REINFORCEMENT AND DETAILS

△ LOCATION OF CONDUIT IS MEASURED FROM OUTSIDE EDGE OF JUNCTION BOX.

▲ VALUE APPLIES TO PIER PILASTER ALSO.

● CONST. JOINT - STRIKE OFF AS SHOWN AND LEAVE ROUGH.

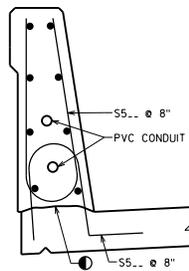
* WHEN BEAM GUARD ATTACHMENT IS NOT REQ'D., BUT NAME PLATE IS PRESENT, USE RUSTICATIONS AS SHOWN. (AT ENDS W/O NAME PLATE AND BEAM GUARD ATTACHMENT USE RUSTICATION DETAILS AS SHOWN FOR ABUTMENT PILASTER.

LIGHT STANDARD

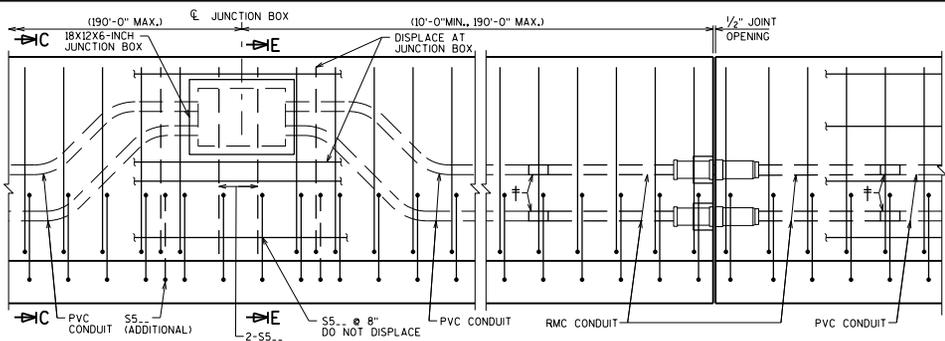
SEE STANDARD 30.14 FOR ANCHORAGE DETAILS. SEE STANDARD 30.21 AND 30.22 FOR CONDUIT DETAILS AND NOTES

WEIGHT = 350 LB/FT (EXCLUDING PILASTERS.)

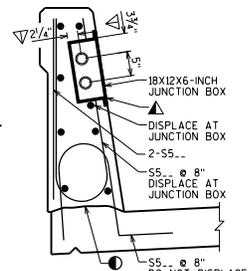
■ BENCH MARK CAP (WHEN SUPPLIED), AVOID PLACING A BENCH MARK CAP BELOW A RAIL OR FENCE SYSTEM THAT IS ATTACHED TO THE TOP OF THE PARAPET.



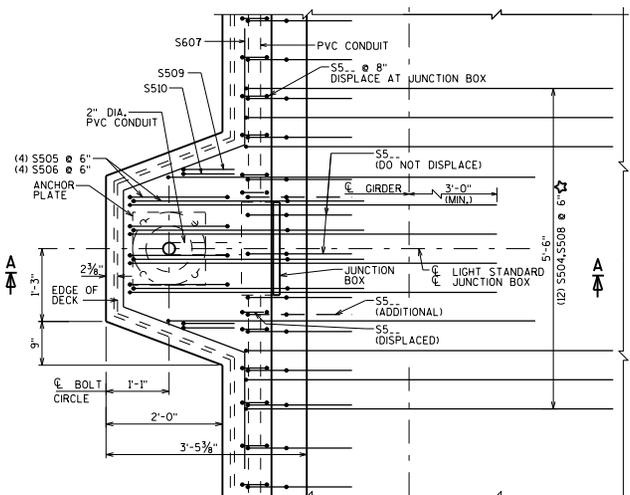
SECTION C-C



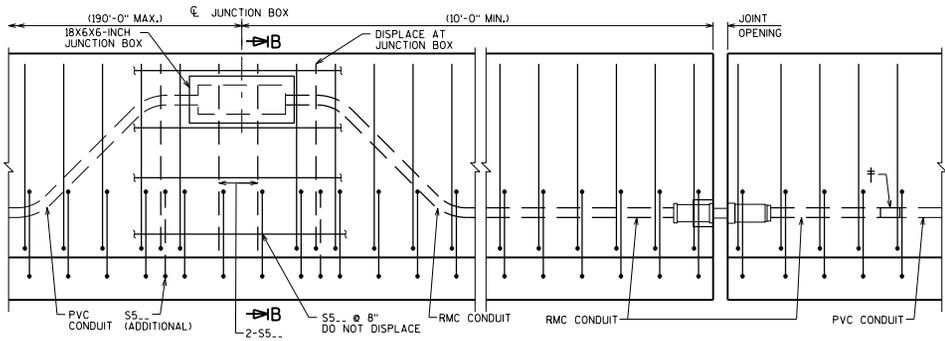
INSIDE ELEVATION AT JUNCTION BOX AT SEMI-EXP. JOINT
(DECK STEEL NOT SHOWN FOR CLARITY)



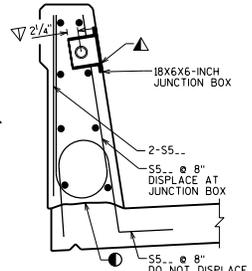
SECTION E-E



PLAN AT LIGHT STANDARD
(DECK STEEL NOT SHOWN FOR CLARITY)



INSIDE ELEVATION AT JUNCTION BOX AT EXP. JOINT
(DECK STEEL NOT SHOWN FOR CLARITY)



SECTION B-B

DESIGNER NOTES

THIS STANDARD ACCOMMODATES ELECTRICAL SERVICE TO LIGHTS STANDARDS MOUNTED ON STRUCTURES. ADDITIONAL REQUIREMENTS MAY BE REQUIRED FOR OTHER SYSTEMS. SEE BRIDGE MANUAL SECTION 32.6 FOR ADDITIONAL INFORMATION.

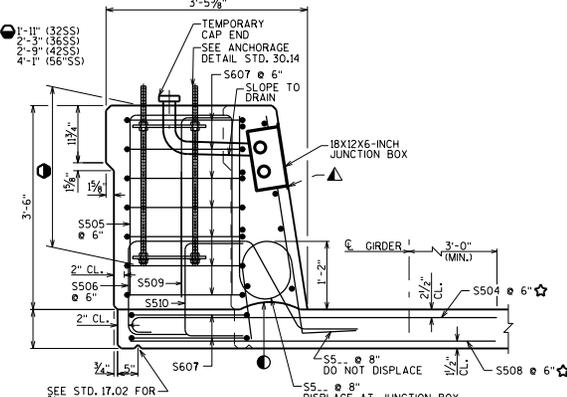
- POSSIBLE BID ITEMS:
 "JUNCTION BOXES 18X12X6-INCH", EACH
 "JUNCTION BOXES 18X6X6-INCH", EACH
 "CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH"
 "CONDUIT RIGID METALLIC 2-INCH"
 "ANCHOR ASSEMBLIES LIGHT POLES ON STRUCTURE"

SEE STD. 30.14 FOR ANCHORAGE DETAIL AND LIMITATIONS.
 SEE STD. 30.22 FOR CONDUIT DETAILS AND NOTES.

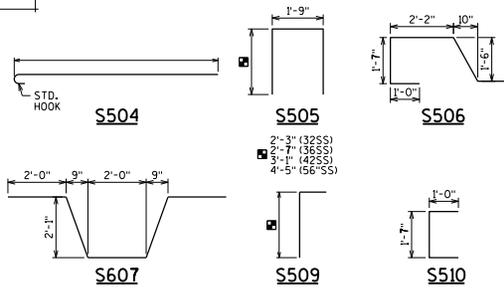
THIS STANDARD ACCOMMODATES A MAXIMUM 1 1/2" DIA. BOLT HOLE CIRCLE AND A MAXIMUM 15" X 15" SQUARE ANCHOR PLATE WITH (4) 1/2" DIA. ANCHOR BOLTS. THIS STANDARD IS BASED ON A 8" MIN. DECK THICKNESS AND A MAXIMUM OVERHANG OF 3-7" FROM G GIRDER TO EDGE OF DECK.

★ THESE BARS ARE IN ADDITION TO STANDARD TRANSVERSE BARS IN DECK. FOR CONC. SLAB STRUCTURES, REPLACE S504 & S508 BARS W/ S404 BARS @ 6" SPA. (W/O HOOK @ ENDS, 5'-6" LONG).

- CONDUIT REQUIREMENTS:
 • USE (1) - 2" DIA. CONDUIT TO PROVIDE ELECTRICAL SERVICE TO LIGHTS MOUNTED ON TOP OF THE PARAPET.
 • USE (2) - 2" DIA. CONDUITS IF AN ADDITIONAL ELECTRICAL SERVICE IS REQUIRED.
- JUNCTION BOX REQUIREMENTS:
 • USE A JUNCTION BOX TO KEEP A CONTINUOUS RUN OF CONDUIT (PULL LENGTH) TO A MAXIMUM OF 190 FT.
 - USE A 18" X 6" X 6" JUNCTION BOX WHEN (1) - 2" DIA. CONDUIT IS USED.
 - USE A 18" X 12" X 6" JUNCTION BOX WHEN (2) - 2" DIA. CONDUITS ARE USED.
 • USE A 18" X 12" X 6" JUNCTION BOX AT EACH LIGHT STANDARD (CENTERED ON LIGHT C).
 • USE A JUNCTION BOX AT EACH EXPANSION JOINT. LOCATE 10'-0" MINIMUM FROM EACH EXPANSION JOINT. (NOT REQUIRED AT SEMI-EXP. OR FIXED JOINTS)



SECTION A-A



BILL OF BARS

BAR MARK	NO. REOD.	LENGTH				REIN.	LOCATION
		32SS	36SS	42SS	56SS		
S504	X					X	LIGHT STD. - TRANS. - DECK - TOP
S505	X	6-0	6-8	7-8	10-0	X	LIGHT STD. - VERT. - PARAPET
S506	X	7-0	7-0	7-0	7-0	X	LIGHT STD. - VERT. - PARAPET
S607	X	10-0	10-0	10-0	10-0	X	LIGHT STD. - HORIZ. - PARAPET
S508	X					X	LIGHT STD. - TRANS. - DECK - BOT.
S509	X	3-2	3-6	4-0	5-4	X	LIGHT STD. - VERT. - PARAPET
S510	X	3-4	3-4	3-4	3-4	X	LIGHT STD. - VERT. - PARAPET

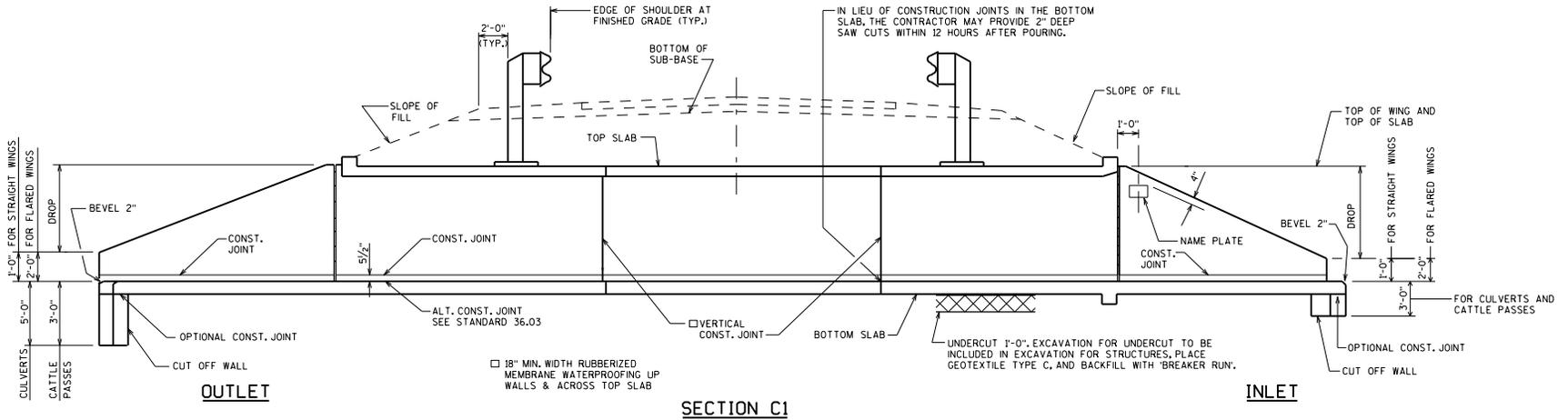
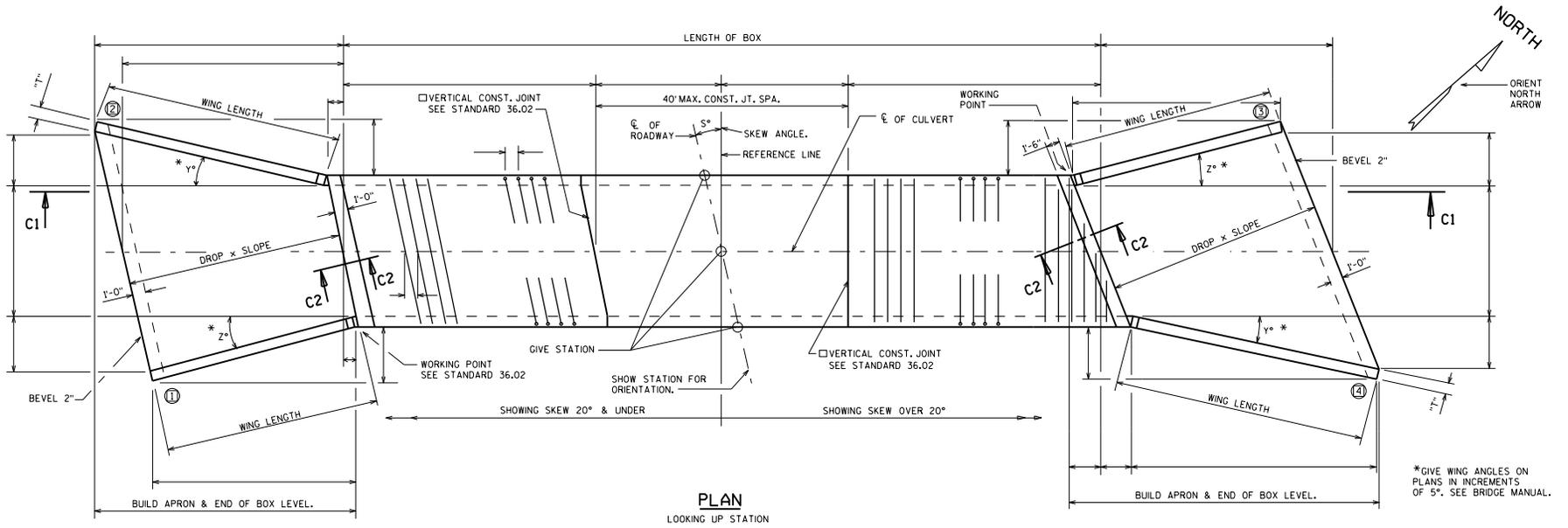
LEGEND

- CONSTRUCTION JOINT, STRIKE OFF AS SHOWN.
- ▲ CUT OUT + 1" OF GASKET AT BOTTOM OF JUNCTION BOX COVER TO ALLOW FOR DRAINAGE.
- ▽ LOCATION OF CONDUIT IS MEASURED FROM OUTSIDE EDGE OF JUNCTION BOX.
- † NONMETALLIC CONDUIT TO METALLIC CONDUIT ADAPTER FITTING (UL OR NRTL LISTED FOR ELECTRICAL USE SHALL BE USED)
- PVC = POLYVINYL CHLORIDE (RIGID NONMETALLIC) CONDUIT
- RMC = RIGID METALLIC CONDUIT

LIGHT STANDARD AND JUNCTION BOX FOR PARAPETS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18

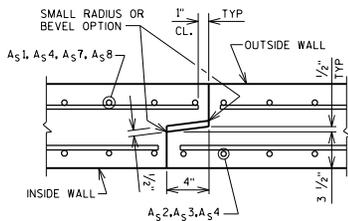


LEGEND
 ○ INDICATES WING NUMBER

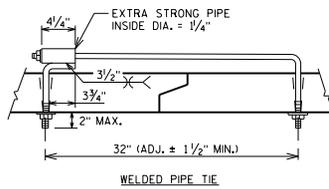
DESIGN DATA
 LIVE LOAD:
 DESIGN LOADING: HL-93
 INVENTORY RATING FACTOR: RF=L05
 OPERATING RATING FACTOR: RF=L35
 WISCONSIN STANDARD PERMIT VEHICLE (WIS.-SPV): 255 (KIPS)
 ** EARTH LOAD: DESIGNED FOR FILL HEIGHT RANGE OF ___ TO ___ FEET
 MATERIAL PROPERTIES:
 CONCRETE MASONRY $f'c = 3.5$ K.S.I.
 BAR STEEL REINFORCEMENT $f_y = 60.0$ K.S.I.

DESIGNER NOTES
 TYPICAL UNDERCUT SHOWN. SEE STANDARD 9.01 FOR ALTERNATIVES AND ADDITIONAL NOTES.
 FOR SECTION C2 SEE STANDARD 36.03
 ** SEE SECTION 36.5 FOR DESIGN RANGE OF FILL HEIGHTS.
 HEIGHT TO BE TO THE NEAREST 0.5 FEET ON FILLS UNDER 4 FEET AND TO THE NEAREST FOOT ON FILLS OVER 4 FEET.

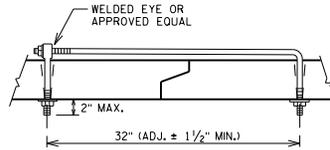
BOX CULVERT LAYOUT	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18



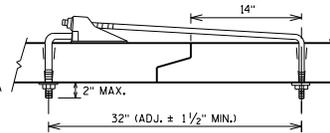
JOINT DETAIL



WELDED PIPE TIE



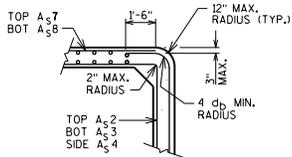
EYE BOLT TIE



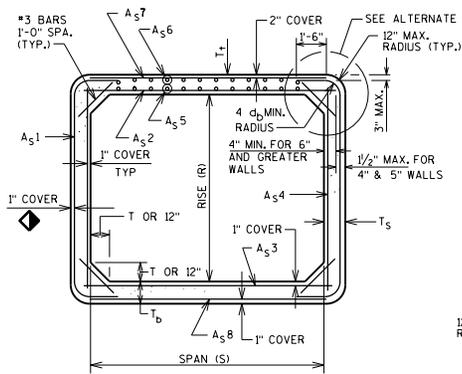
CANOPY TIE

NOTES:
EITHER EYE BOLT TIES, WELDED PIPE TIES, OR CANOPY TIES MAY BE USED. THREADS MAY BE CUT OR ROLLED. TIE NUTS SHALL BE TIGHTENED AS DIRECTED BY THE ENGINEER. (2 TIES REQ'D. PER JOINT.) (TIES TO BE GALVANIZED.)

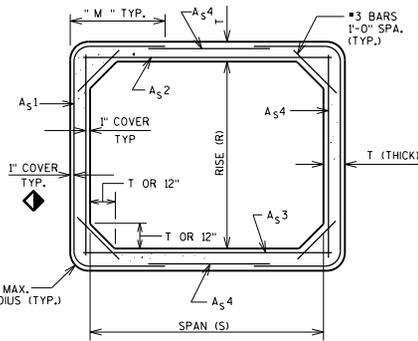
JOINT TIES



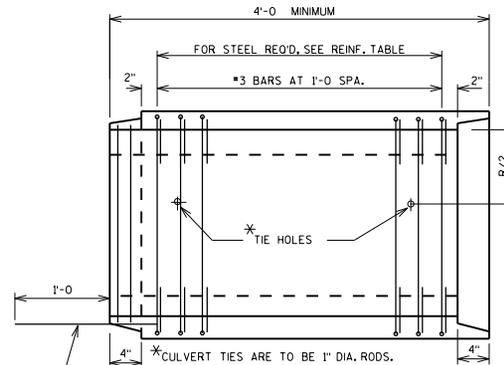
ALTERNATE DETAIL OPTION



SECTION THRU BARREL
FOR LESS THAN 2 FEET OF COVER



SECTION THRU BARREL
FOR 2'-0" OR MORE OF COVER



LONGITUDINAL SECTION

NOTES

DETAILS FOR MATERIALS, FABRICATION, CONSTRUCTION AND DESIGN OF PRECAST BOX CULVERTS NOT SHOWN OR STATED ON THIS DRAWING SHALL BE IN ACCORDANCE WITH THE CURRENT ASTM SPECIFICATION, C1577; AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS; WISCONSIN DOT BRIDGE MANUAL; WISCONSIN DOT STANDARD SPECIFICATIONS & APPLICABLE SPECIAL PROVISIONS, EXCEPT THAT THE CONCRETE MIXTURE SHALL CONTAIN NOT LESS THAN 565 LBS. OF CEMENTITIOUS MATERIALS PER CUBIC YARD.

THE DESIGN OF PRECAST BOX CULVERTS WITH ALL FILL HEIGHTS SHALL BE AS STATED IN ASTM C1577.

ALL PRECAST BOX SECTIONS SHALL BE PLACED ON A BEDDING OF "STRUCTURE BACKFILL" OF 6" MINIMUM DEPTH.

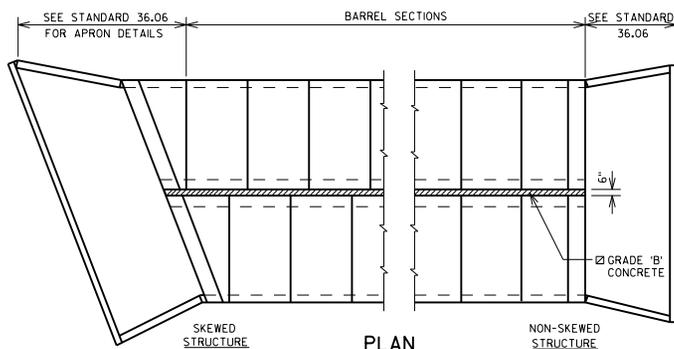
THE COVER OF CONCRETE OVER THE REINFORCEMENT SHALL BE 1 INCH OR 2 INCHES AS SHOWN WITH AN ALLOWABLE VARIATION OF -3/8" TO +1/2 INCH.

THE SPACING CTR. TO CTR. OF THE CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 4 INCHES. THE SPACING CTR. TO CTR. OF THE LONGIT. WIRES SHALL NOT BE MORE THAN 8 INCHES.

NOT MORE THAN FOUR (4) HOLES MAY BE CAST, DRILLED OR OTHERWISE NEATLY MADE IN THE SHELL OF EACH PIECE OF BOX SECTION FOR HANDLING. THE HOLES SHALL BE TAPERED UNLESS DRILLED. HOLES SHALL BE FILLED WITH PORTLAND CEMENT MORTAR EXCEPT TAPERED HOLES MAY BE FILLED WITH CONCRETE PLUGS SECURED WITH PORTLAND CEMENT MORTAR OR OTHER APPROVED ADHESIVE.

THE JOINT ON THE BOTTOM OF THE CULVERT & THE SIDES OF THE CULVERT FROM THE BOTTOM TO A POINT 1'-0" FROM THE CEILING SHALL BE SEALED WITH A PREFORMED MASTIC. PREFORMED MASTIC MUST CONFORM TO AASHTO MATERIALS SPEC. M198, TYPE B. A 2'-0" STRIP OF GEOTEXTILE TYPE OF SCHEDULE A SHALL BE PLACED OVER THE JOINTS ON THE TOP AND ON THE SIDES OF THE CULVERT. THE GEOTEXTILE SHALL CONFORM TO SECTION 645.2.2.4 OF THE STANDARD SPECIFICATION. (FABRIC NOT REQUIRED OVER INSIDE WALL JOINTS OF MULTICELL INSTALLATION.)

WHEN TWO OR MORE BARRELS ARE UTILIZED IN PARALLEL FOR MULTICELL INSTALLATIONS THE CLEAR SPACING BETWEEN BARRELS SHALL BE 6 INCHES AND THE SPACE BETWEEN ADJACENT BARRELS FROM TOP OF BEDDING TO TOP OF TOP SLAB SHALL BE FILLED WITH GRADE "B" CONCRETE.



MULTICELL INSTALLATION

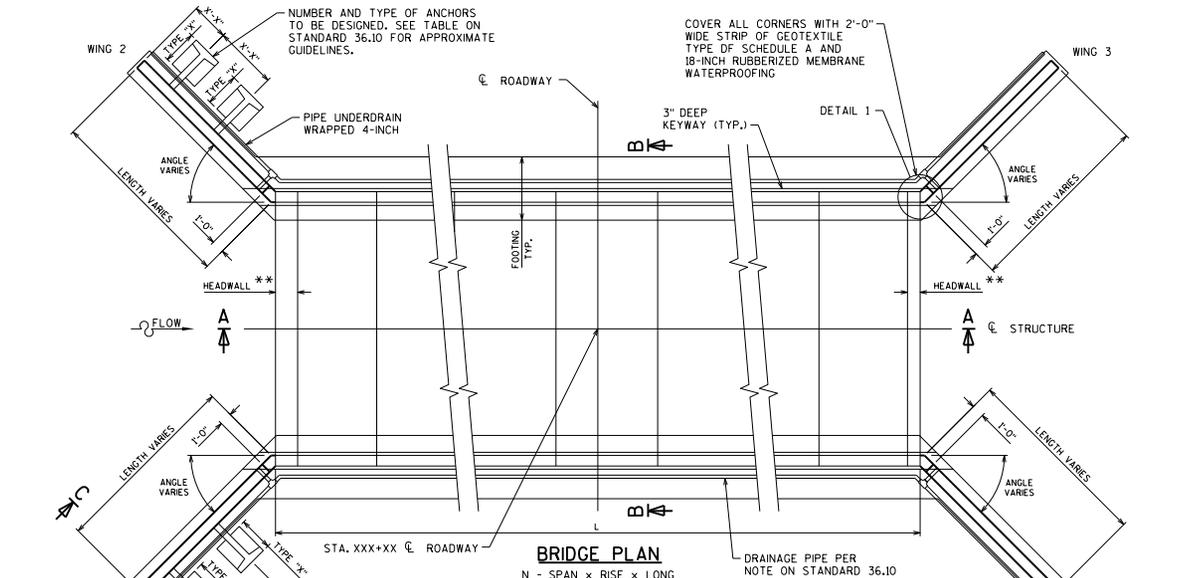
BOX CULVERT DATA

DIMENSIONS		EARTH COVER (FT.)													
S (FT.)	R(FT.)	T	T _s	T _b	T _f	(IN.)	AREA/FT.	LENGTH	M	AREA/FT.	LENGTH	M	AREA/FT.	LENGTH	M
REINFORCEMENT															
A _s 1															
A _s 2															
A _s 3															
A _s 4															
A _s 5															
A _s 6															
A _s 7															
A _s 8															
TOTAL BARREL OR PANEL LENGTH															

PRECAST CONCRETE BOX CULVERT BARREL DETAILS

BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18



GENERAL NOTES:

MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND THE CONTRACT SPECIAL PROVISIONS.

DESIGN SPECIFICATION: DESIGN STRUCTURE BY CURRENT EDITION AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AS SUPPLEMENTED BY WISDOT BRIDGE MANUAL.

USE GRADE A CONCRETE IN FOOTING AND WINGWALLS. $f_c = 4$ KSI(MIN.)

PROVIDE CONCRETE COVER ON REINFORCING BARS AS NOTED HEREIN.

CHAMFER EXPOSED CONCRETE EDGES $\frac{3}{4}$ " x $\frac{3}{4}$ " EXCEPT AS NOTED.

PROVIDE DEFORMED REINFORCEMENT STEEL MEETING THE REQUIREMENTS OF ASTM DESIGNATION 615, OR 617, GRADE 60 AS SET FORTH IN THE STANDARD SPECIFICATIONS.

IF A CAST-IN-PLACE OPTION IS SHOWN AND SPECIFICATIONS ALLOW FOR A PRECAST SUBSTITUTION, PRECAST STRUCTURE SYSTEM (INCLUDING WINGWALLS AND HEADWALLS) AND FOOTERS WILL BE DESIGNED BY CONTRACTORS.

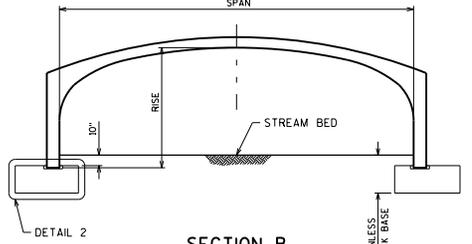
AT ANY TIME DURING PLACEMENT OF THE BACKFILL, DO NOT PERMIT A DIFFERENCE IN FILL ELEVATION ON THE SIDES OF THE CULVERT BARREL IN EXCESS OF 2'-0". DURING COMPACTION OF THE BACKFILL, DO NOT ALLOW THE WHEELS OF ROLLERS TO COME CLOSER THAN 1'-0" TO THE FACE OF THE OF THE STRUCTURE.

DESIGNER NOTES:

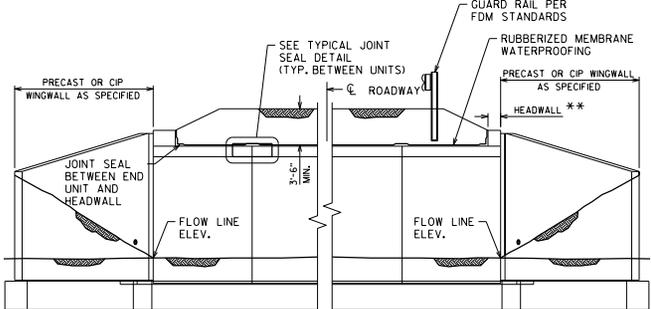
ALL BAR SPLICES TO BE "CLASS C" TENSION LAP SPLICES.

PRECAST CONCRETE CULVERT UNITS PLUS (N-1) JOINTS @ $\frac{1}{4}$ " TO $\frac{1}{2}$ " PER JOINT = L

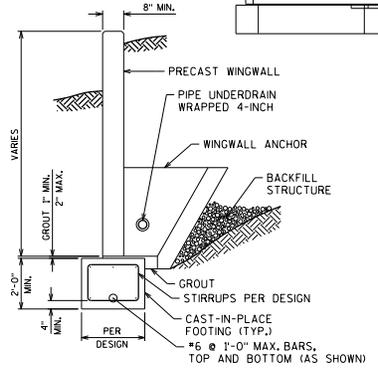
** SEE STANDARD 36.13 AND STANDARD 36.14 FOR HEADWALL DETAILS AND FEASIBILITY GUIDELINES



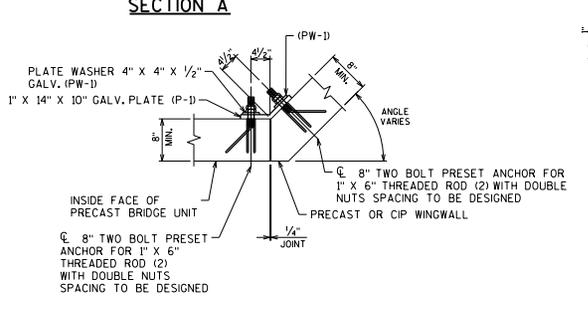
SECTION B



SECTION A



SECTION C



DETAIL 1

NOTE: CONNECTION PLATES (P-1) MUST BE POSITIONED WITH SMALL DIAMETER HOLES TOWARD PRECAST BRIDGE UNIT

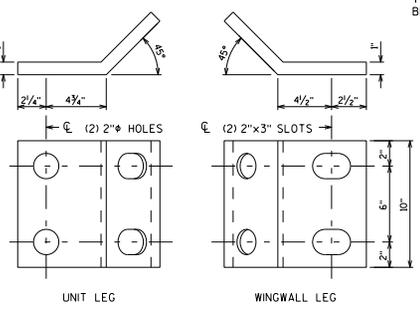
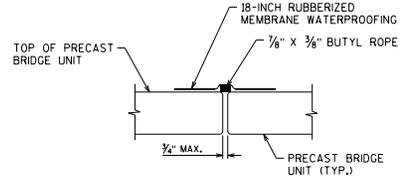


PLATE P-1

NOTE: PLATE LENGTH AND THICKNESS SHALL BE INCREASED AS REQUIRED BY DESIGN.

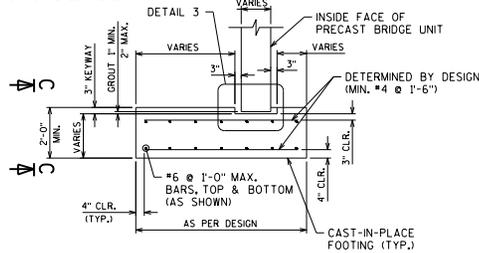


TYPICAL JOINT SEAL DETAIL

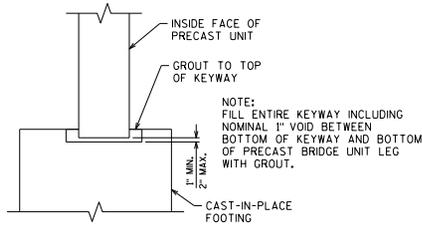
PRECAST THREE-SIDED BOX CULVERT LAYOUT DESIGNS

APPROVED: Bill Oliva DATE: 7-18

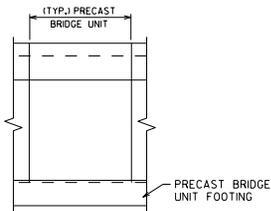
SPREAD FOOTING SHOWN, OTHER FOUNDATION TYPES POSSIBLE. (FOR PEDESTAL WALL, PILE AND BASE SLAB FOUNDATIONS, "SEE OPTIONAL DETAIL 2")



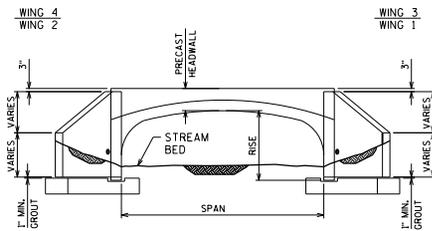
DETAIL 2



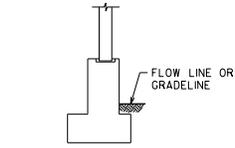
DETAIL 3



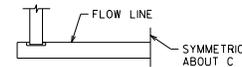
SECTION C



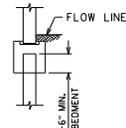
TYPICAL END ELEVATION



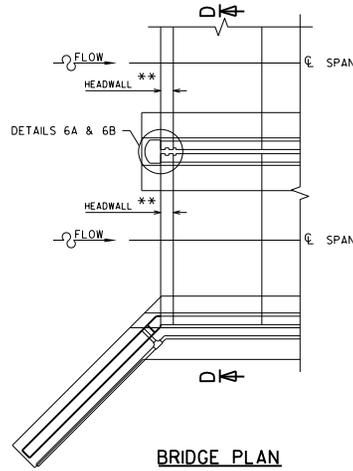
OPTIONAL DETAIL 2
IF PEDESTAL IS REQUIRED



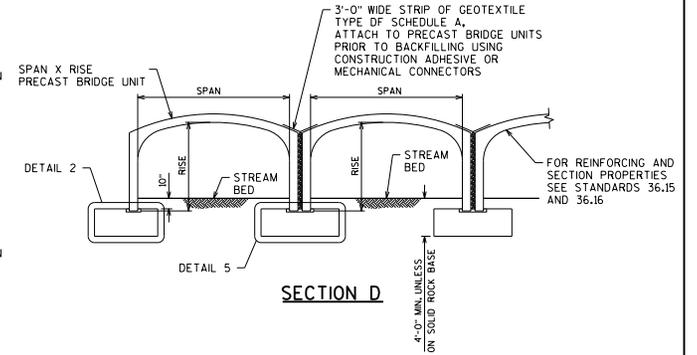
OPTIONAL DETAIL 2
IF BASE SLAB IS REQUIRED



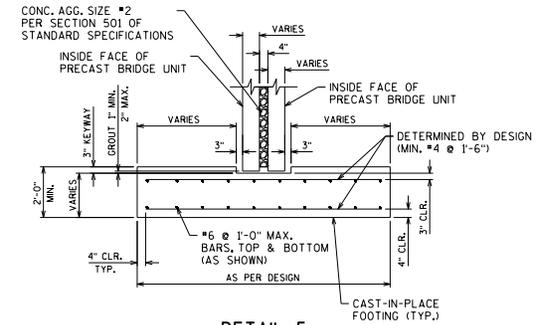
OPTIONAL DETAIL 2
IF PILES ARE REQUIRED



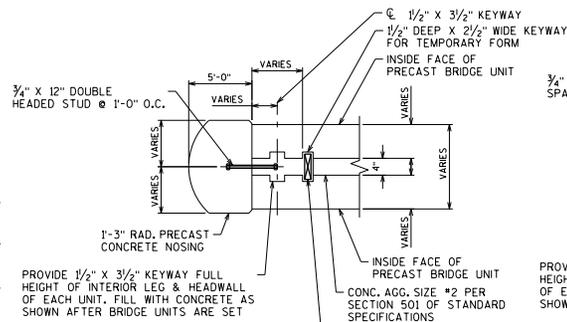
BRIDGE PLAN



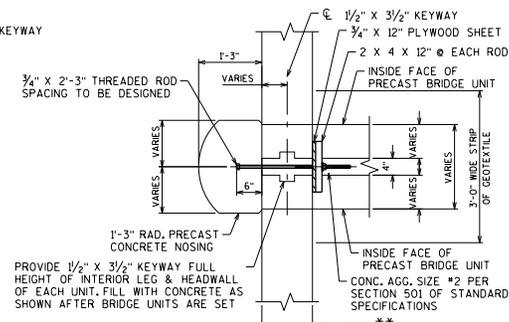
SECTION D



DETAIL 5



DETAIL 6A



DETAIL 6B

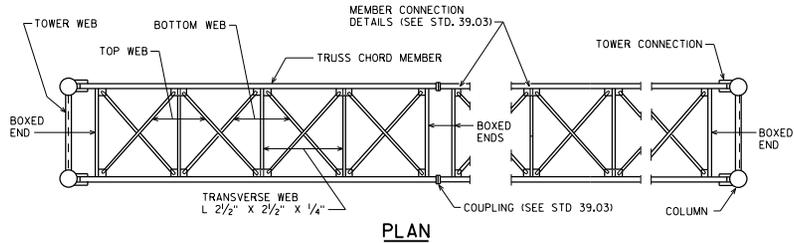
NOTES:

**SEE STANDARDS 36.13 AND 36.14 FOR HEADWALL DETAILS AND FEASIBILITY GUIDELINES

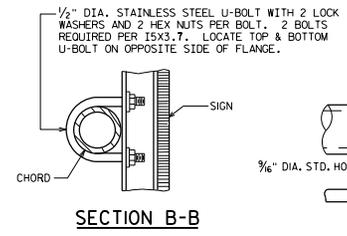
PRECAST THREE-SIDED BOX CULVERT DETAILS



APPROVED: Bill Oliva DATE: 7-18

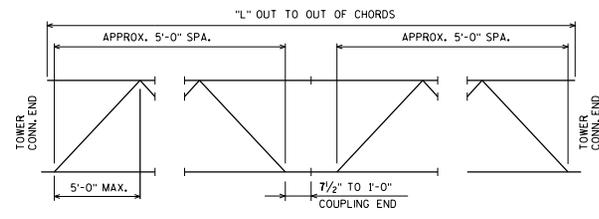
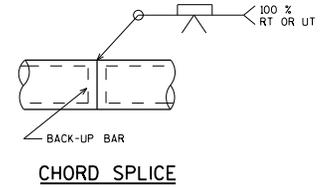
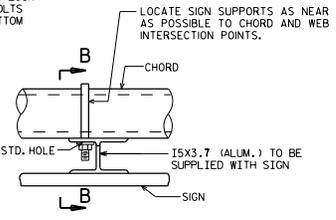


PLAN



SECTION B-B

TYPICAL SIGN CONNECTION
USE FOR TYPE I AND II SIGNS ONLY



TRUSS ARRANGEMENT

FABRICATOR MAY MAKE TRUSSES ANY LENGTH KEEPING A SECTION A MINIMUM OF 20'-0" & A MULTIPLE OF 5'-0". CHORD FIELD SPLICES SHALL BE MADE WITH COUPLINGS. CHORD SHOP SPLICE SHALL BE THE WELDED SPLICE SHOWN ABOVE.

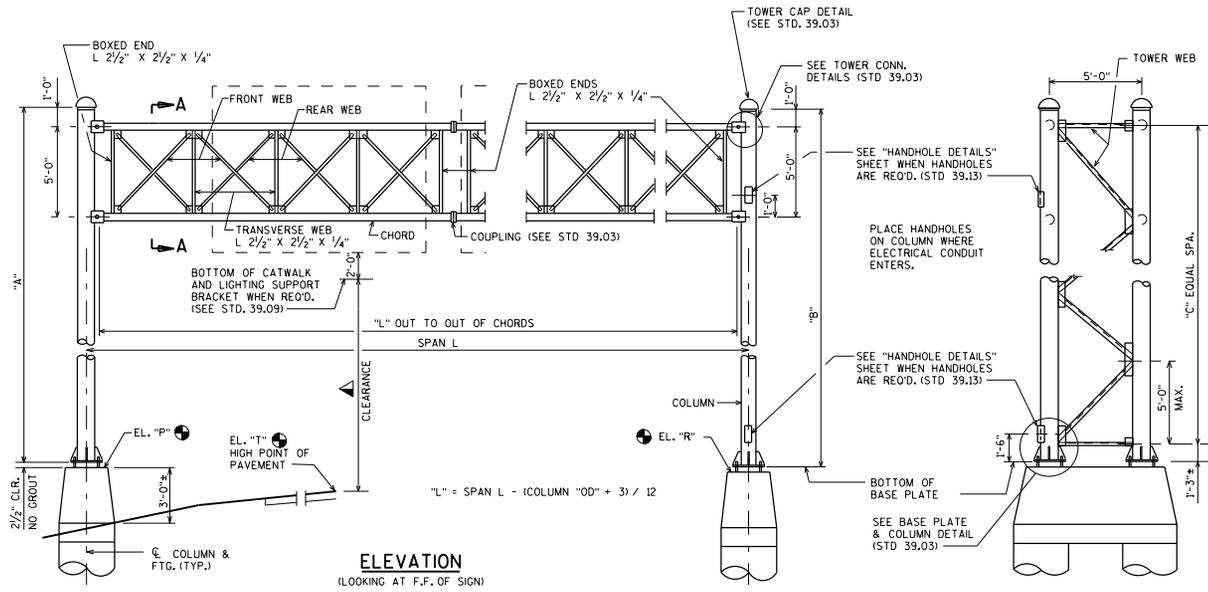
NOTES

- DRAWINGS SHALL NOT BE SCALED.
- STEEL COLUMN AND CHORD PIPES SHALL BE API SPEC. 5L GRADE X42 Fy = 42,000 PSI**
- PLATES, BARS & STRUCTURAL ANGLES SHALL BE ASTM A709 GRADE 36 Fy = 36,000 PSI
- STEEL ANCHOR RODS SHALL MEET THE REQUIREMENTS OF ASTM F1554 GRADE 55, ASTM A563A HEAVY HEX NUTS, AND ASTM F436 WASHERS.
- UNLESS DETAILED OTHERWISE IN THE PLANS, ALL H.S. BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIA. A325 GALVANIZED BOLTS. FIELD CONNECTIONS SHALL BE INSTALLED WITH DTI WASHERS.
- ALL STRUCTURAL STEEL MEMBERS, PLATES, ANCHOR RODS, H.S. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER SECTION 641 OF THE WISDOT STANDARD SPECIFICATIONS.
- WELDED CONNECTIONS CAN BE USED IN LIEU OF BOLTED CONNECTIONS, IF A TRUSS UNIT CAN BE GALVANIZED IN ONE PIECE.
- WELD TEST AS PER AWS D11.
- EXACT LOCATION OF SIGN BRIDGE SHALL BE DETERMINED BY THE REGION TRAFFIC ENGINEER.
- SEE SIGN PLATE NO. 44-6 OF THE SIGN PLATE MANUAL FOR INSTRUCTION ON CENTERING SIGN VERTICALLY ON TRUSS.
- ** AN ALTERNATE MATERIAL MAY BE SUBSTITUTED, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT SECTION, SEE SECTION 39.3 IN THE BRIDGE MANUAL FOR ACCEPTABLE MATERIAL.
- ELEVATIONS TO BE SHOWN ON "GENERAL LAYOUT" SHEET.
- ▲ 20'-0" MIN. FOR OSOW HIGH CLEARANCE ROUTE, 18'-3" MIN. FOR ALL OTHERS.

DESIGN DATA

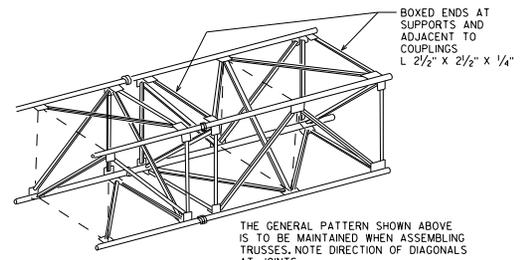
- DEAD LOAD - 3 PSF OF SIGN, WT. OF SUPPORTING STRUCTURE, CATWALK, LIGHTS AND RAILINGS.
- ICE LOAD - 3 PSF TO 1 FACE OF SIGN & AROUND SURFACE OF MEMBERS.
- WIND PRESSURE - 90 MPH (3-SECOND GUST SPEED) TO SIGN AREA & EXPOSED MEMBERS.
- FATIGUE GROUP LOAD IS APPLIED PER SECTION 39.4.2 OF THE WISDOT BRIDGE MANUAL.
- DESIGNED ACCORDING TO THE 6TH EDITION OF AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS."

STANDARDS 39.03, 39.09, AND 39.13 DETAILS ARE USED WITH THIS STANDARD TO DETAIL A "4-CHORD GALVANIZED STEEL SIGN BRIDGE" FOR TYPE I AND II SIGNS ONLY.



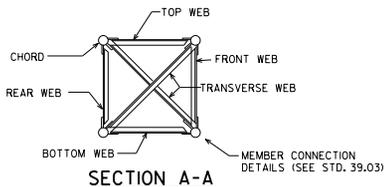
ELEVATION
(LOOKING AT F.F. OF SIGN)

END VIEW



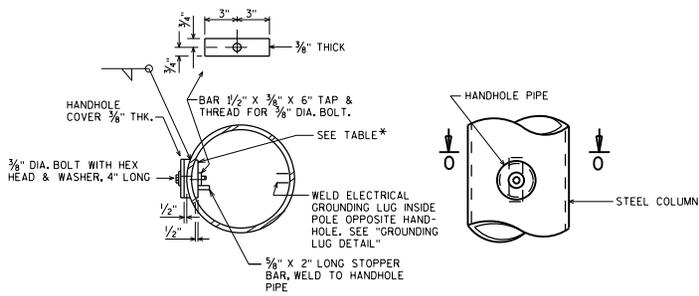
TYPICAL TRUSS SECTION

THE GENERAL PATTERN SHOWN ABOVE IS TO BE MAINTAINED WHEN ASSEMBLING TRUSSES. NOTE DIRECTION OF DIAGONALS AT JOINTS.



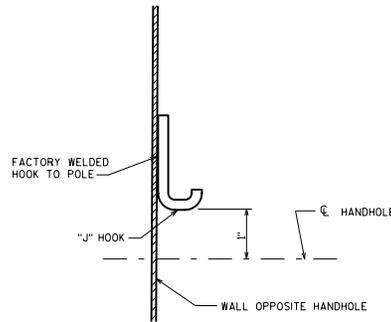
SECTION A-A

4-CHORD GALVANIZED STEEL SIGN BRIDGE	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18



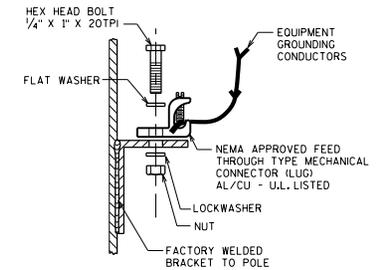
SECTION O-O

HANDHOLE DETAILS



TYPICAL "J" HOOK LOCATION

THE "J" HOOK SHALL BE FACTORY WELDED TO THE INSIDE OF ALL COLUMNS CONTAINING ELECTRICAL WIRING. THE "J" HOOK SHALL BE ATTACHED ABOVE THE CENTERLINE OF THE UPPER HANDHOLE AND MOUNTED DIRECTLY OPPOSITE THE HANDHOLE AS SHOWN IN THE DRAWING.



GROUNDING LUG DETAIL

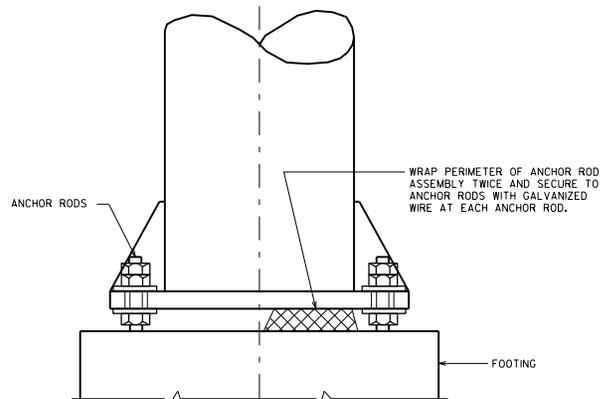
NUT, BOLT AND WASHERS SHALL BE STAINLESS STEEL

HANDHOLE NOTES

HANDHOLES SHALL BE LOCATED IN ONE COLUMN OF THE SIGN BRIDGE STRUCTURE IF ELECTRICALLY OPERATED DEVICES ARE INSTALLED ON/IN THE STRUCTURE. COLUMNS WITH HANDHOLES SHALL BE NEAR THE ELECTRICAL SERVICE. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE ELECTRICAL SERVICE ENTRANCE WITH THE REGION TRAFFIC SECTION PRIOR TO FABRICATION OF THE SIGN BRIDGE COLUMNS AND MEMBERS. CONDUIT (AS REQ'D) SHALL BE LOCATED, PLACED AND SIZED AS SHOWN ON THE ELECTRICAL PLAN DETAIL SHEETS.

UNLESS NOTED OTHERWISE, ALL HANDHOLE ELEMENTS TO BE GALVANIZED PER SECTION 641 OF THE WISDOT STANDARD SPECIFICATIONS.

* COLUMN SIZE O.D. X THK.	HANDHOLE PIPE O.D. X MIN. THK.
UP TO AND INCLUDING 16" X 0.375"	5.562" X 0.500"
GREATER THAN 16" X 0.375" TO AND INCLUDING 24" X 0.562"	6.625" X 0.562"



RODENT SCREEN

(ONLY REQ'D WHEN ELECTRICAL DEVICES ARE INSTALLED)

HANDHOLE DETAILS	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18

★ FOR CULVERT WINGS:

WITH WING WALL THICKNESS ≥ 8" USE:
ADHESIVE ANCHORS 3/8" INCH.
EMBED 5" IN CONCRETE.
SEE DETAIL "A"

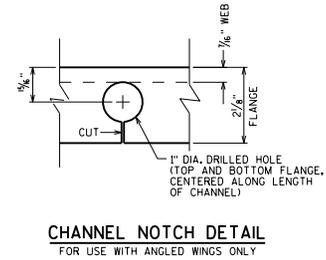
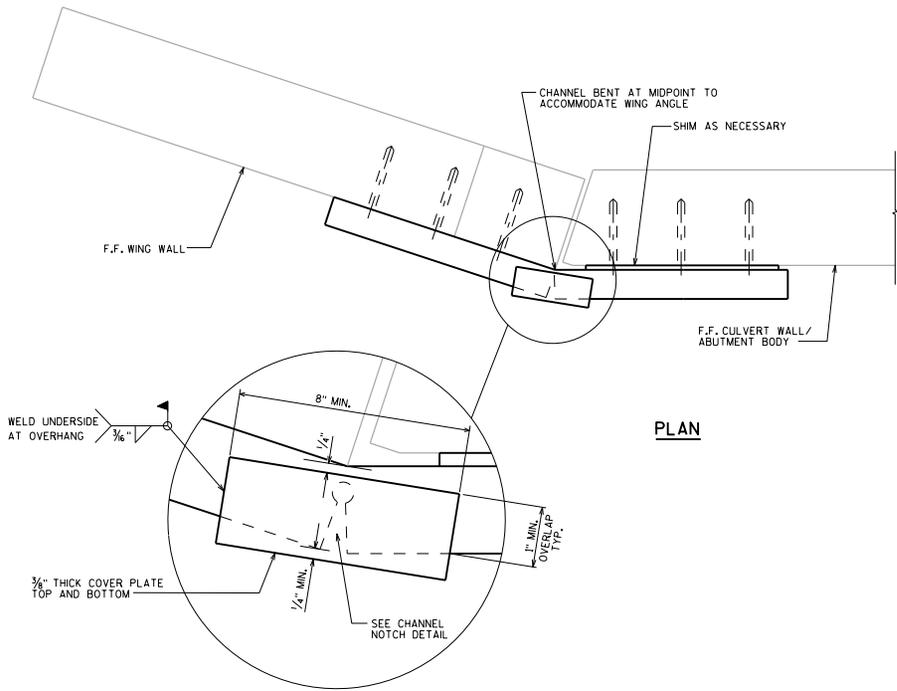
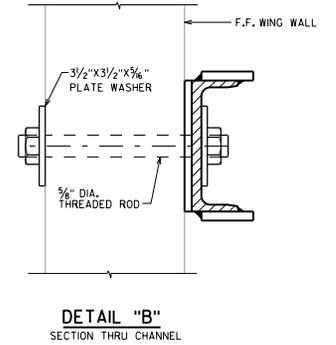
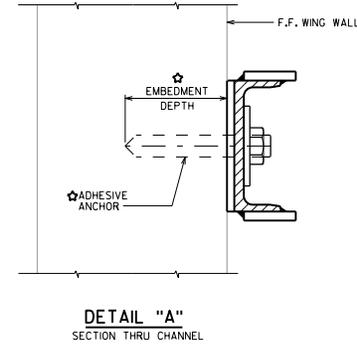
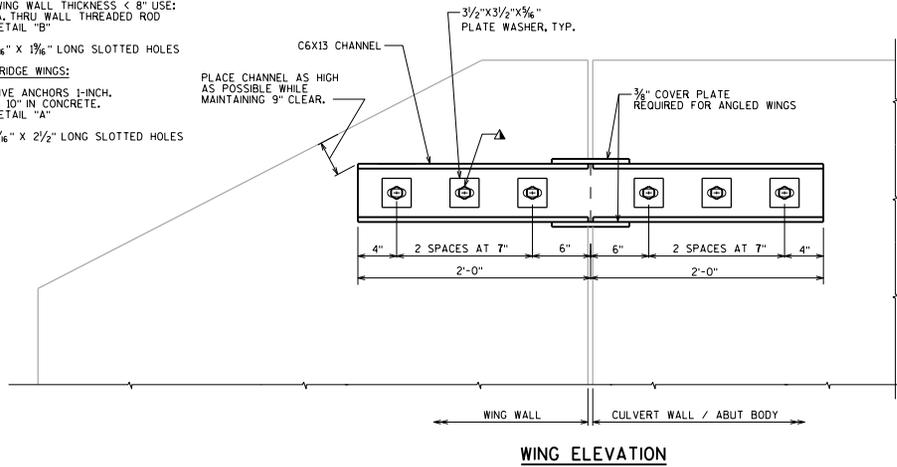
WITH WING WALL THICKNESS < 8" USE:
3/4" DIA. THRU WALL THREADED ROD
SEE DETAIL "B"

USE 1/8" X 1 3/8" LONG SLOTTED HOLES

FOR BRIDGE WINGS:

ADHESIVE ANCHORS 1-INCH.
EMBED 10" IN CONCRETE.
SEE DETAIL "A"

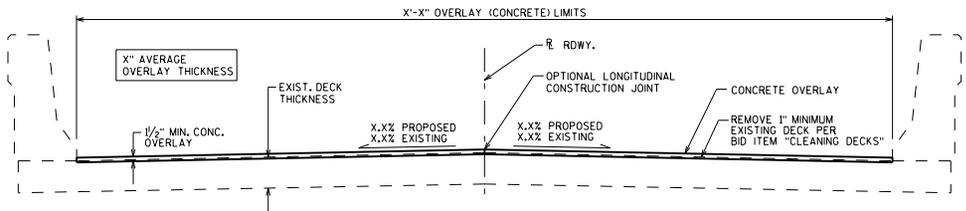
USE 1/8" X 2 1/2" LONG SLOTTED HOLES



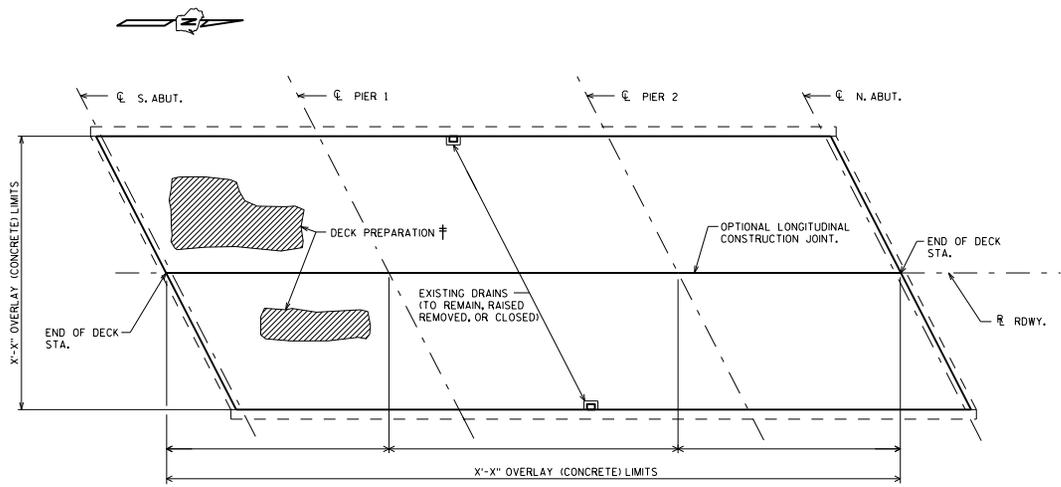
NOTES

- WING STRAPPING DETAIL FOR THE PURPOSE OF MITIGATING INWARD WING TIPPING, AS AN ALTERNATIVE TO THE PREFERRED METHOD OF WING REPLACEMENT.
- BID ITEM SHALL BE "STRAPPING B-XX-XXX" WHICH INCLUDES ALL ITEMS SHOWN.
- WISDOT REGIONAL BRIDGE MAINTENANCE ENGINEER TO APPROVE USE OF DETAIL PRIOR TO INSTALLATION.
- ALL PROVIDED STEEL MATERIAL SHALL CONFORM TO ASTM A36.
- ALL STRUCTURAL STEEL SHOWN SHALL BE GALVANIZED. THREADED RODS, MASONRY ANCHORS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C.
- CUTTING AND DRILLING OF CHANNEL SHALL BE DONE IN FABRICATION SHOP, PRIOR TO GALVANIZING.
- IF WELDING COVER PLATE IN FIELD, PRIOR TO WELDING, REMOVE GALVANIZING FROM AREA TO BE WELDED. TOUCH UP WITH PAINT ALL AREAS LACKING GALVANIZING WHEN COMPLETE.
- CAULK AROUND PERIMETER OF CHANNEL AND FILL PORTION OF HOLE AROUND ANCHOR BOLT AND SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.

WING STRAPPING	
	BUREAU OF STRUCTURES
APPROVED: <u>Bill Oliva</u>	DATE: 7-18



CROSS SECTION THRU ROADWAY
LOOKING NORTH



† SURVEY TYPE:
SURVEY COMPLETED DATE: .../.../....

PLAN
TOP OF DECK SHOWN

DESIGN DATA

LIVE LOAD:
INVENTORY RATING; HS-
OPERATING RATING; HS - ---
MAXIMUM STANDARD PERMIT VEHICLE LOAD = ... KIPS

MATERIAL PROPERTIES:
CONCRETE MASONRY OVERLAY DECKS $f_c = 4,000$ P.S.I.

NOTES

- DRAWINGS SHALL NOT BE SCALED.
- DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.
- PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE NEW CONCRETE OVERLAY.
- SEAL OVERLAY CONSTRUCTION JOINTS ACCORDING TO SECTION 502.3.13.1 OF THE STANDARD SPECIFICATIONS. COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY OVERLAY DECKS".
- A MINIMUM OF 1-INCH OF CONCRETE SHALL BE REMOVED FROM THE ENTIRE BRIDGE DECK UNDER THE BID ITEM "CLEANING DECKS".
- THE AVERAGE OVERLAY THICKNESS IS BASED ON THE MINIMUM OVERLAY THICKNESS PLUS 1/2-INCH TO ACCOUNT FOR VARIATIONS IN THE DECK SURFACE.
- PREPARATION DECKS TYPE 1, PREPARATION DECKS TYPE 2, AND FULL-DEPTH DECK REPAIR AREAS ARE BASED ON THE PLANS AND AS DETERMINED BY THE ENGINEER. DECK PREPARATION AND FULL-DEPTH DECK REPAIRS SHALL BE FILLED WITH "CONCRETE MASONRY OVERLAY DECKS".
- ANY EXCAVATION REQUIRED TO COMPLETE THE OVERLAY OR JOINT REPAIRS AT THE ABUTMENTS TO BE CONSIDERED INCIDENTAL TO THE BID ITEM "CONCRETE MASONRY OVERLAY DECKS".
- PROFILE GRADE LINE SHALL BE DETERMINED IN THE FIELD BASED ON A MINIMUM OVERLAY THICKNESS OF 1/2" PLACED ABOVE THE DECK SURFACE AFTER SURFACE PREPARATION. EXPECTED AVERAGE OVERLAY THICKNESS IS 2" (OR AS GIVEN ON THE PLANS). IF EXPECTED AVERAGE OVERLAY THICKNESS IS EXCEEDED BY MORE THAN 1/2", CONTACT THE STRUCTURES DESIGN SECTION.
- DRAINS REMOVED OR CLOSED IS INCIDENTAL TO THE BID ITEM "CONCRETE MASONRY OVERLAY DECKS".

DESIGNER NOTES

- PLAN VIEW APPLICABLE TO ALL OVERLAY METHODS AND DECK REPAIRS WITHOUT OVERLAYS.
- FOR CROSS SECTIONS NOT IN SUPERELEVATION TRANSITIONS, THE PREFERRED MINIMUM SLOPE IS 2%.
- PROVIDE AN AVERAGE OVERLAY THICKNESS ON THE PLANS. THE AVERAGE OVERLAY THICKNESS IS THE MINIMUM OVERLAY THICKNESS PLUS 1/2" TO ACCOUNT FOR VARIATIONS IN THE DECK SURFACE. CHANGES IN CROSS-SLOPE INCREASE THE AVERAGE OVERLAY THICKNESS. QUANTITIES ARE BASED ON THE AVERAGE OVERLAY THICKNESS.
- DO NOT PROVIDE A PROFILE GRADE LINE ON THE PLANS.
- DO NOT INCLUDE BID ITEM "SAWING PAVEMENT DECK PREPARATION AREAS" FOR DECK PREPARATION.
- * REMOVAL OF 1" OF EXISTING DECK UNDER BID ITEM "CLEANING DECKS" IS NOT INTENDED FOR PREVIOUSLY OVERLAIN DECKS. EXISTING CONCRETE COVER (1" MIN.) SHALL BE MAINTAINED AND CONSIDERED WHEN DETERMINING CONCRETE REMOVALS. INCLUDE THE BID ITEM "CLEANING DECKS TO REAPPLY CONCRETE MASONRY OVERLAY" WHEN REMOVING EXISTING OVERLAY.
- † PROVIDE (IF AVAILABLE) DECK CONDITION ASSESSMENT SURVEY ON PLANS. INCLUDE SURVEY TYPE AND DATE COMPLETED.
- JOINT REPAIR AREAS SHOULD NOT BE INCLUDED IN DECK REPAIR AREAS OR OVERLAY QUANTITIES. SEE STANDARD 40.04.
- INCLUDE THE BID ITEM "ADJUSTING FLOOR DRAINS" WHEN DRAINS ARE TO BE RAISED.
- RESTRICTIONS ON REMOVAL ITEMS SHALL BE PLACED ON THE PLANS TO PREVENT DAMAGE TO REINFORCING STEEL.

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
502.3200	PROTECTIVE SURFACE TREATMENT	SY	
509.0301	PREPARATION DECKS TYPE 1	SY	
509.0302	PREPARATION DECKS TYPE 2	SY	
509.0500	CLEANING DECKS	SY	
509.2000	FULL-DEPTH DECK REPAIR	SY	
509.2500	CONCRETE MASONRY OVERLAY DECKS	CY	
POSSIBLE ADDITIONAL BID ITEMS			
502.3210	PIGMENTED SURFACE SEALER	SY	
* 509.0505.S	CLEANING DECKS TO REAPPLY CONCRETE MASONRY OVERLAY	SY	
* 509.9005.S	REMOVING CONCRETE MASONRY DECK OVERLAY (STRUCTURE)	SY	
514.0900	ADJUSTING FLOOR DRAINS	EACH	

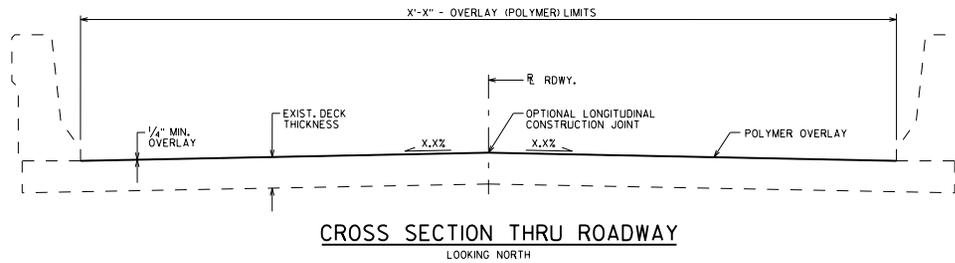
THIS IS A PARTIAL LIST OF POSSIBLE BID ITEMS. BID ITEMS MAY NEED TO BE ADDED OR REMOVED TO FIT EACH INDIVIDUAL CASE.

CONCRETE OVERLAY

BUREAU OF
STRUCTURES

APPROVED: Bill Oliva

DATE:
7-18



CROSS SECTION THRU ROADWAY
LOOKING NORTH

DESIGNER NOTES

REPAIRS USING CONCRETE REQUIRE A MINIMUM CURE TIME OF 28 DAYS BEFORE PLACING OVERLAY. WHEN DEEMED ABSOLUTELY NECESSARY (BY REGION AND BOS DESIGN STAFF) "RAPID SET DECK REPAIR" MAY BE USED IN LIEU OF "CONCRETE MASONRY DECK REPAIR" TO SHORTEN TIME REQUIRED FOR PLACING OVERLAY.
DO NOT PROVIDE A PROFILE GRADE LINE ON THE PLANS.
POLYMER OVERLAYS SHALL NOT BE PLACED ON CONCRETE APPROACHES.

DESIGN DATA

LIVE LOAD:
INVENTORY RATING: HS-...
OPERATING RATING: HS-...
MAXIMUM STANDARD PERMIT VEHICLE LOAD = ... KIPS

MATERIAL PROPERTIES:
CONCRETE MASONRY - DECK PATCHING $f'_c = 4,000$ P.S.I.

NOTES

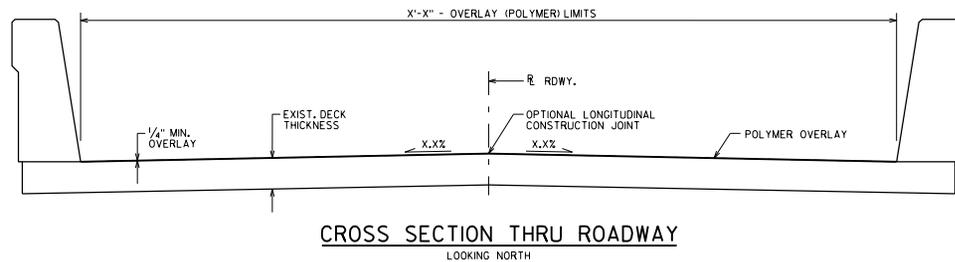
DRAWINGS SHALL NOT BE SCALED.
DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.
DECK SURFACE PREPARATION IS INCLUDED IN THE BID ITEM "POLYMER OVERLAY".
AREAS OF "PREPARATION DECKS TYPE 1" SHALL BE DEFINED BY A SAW CUT.
PREPARATION DECKS TYPE 1, PREPARATION DECKS TYPE 2, AND FULL-DEPTH DECK REPAIR AREAS ARE BASED ON THE PLANS AND AS DETERMINED BY THE ENGINEER. DECK PREPARATION AND FULL-DEPTH DECK REPAIRS SHALL BE FILLED WITH "CONCRETE MASONRY DECK REPAIR".

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
509.0301	PREPARATION DECKS TYPE 1	SY	
509.0302	PREPARATION DECKS TYPE 2	SY	
509.0310.S	SAWING PAVEMENT DECK PREPARATION AREAS	LF	
509.2000	FULL-DEPTH DECK REPAIR	SY	
509.2100.S	CONCRETE MASONRY DECK REPAIR	CY	
509.5100.S	POLYMER OVERLAY	SY	
	POSSIBLE BID ITEM		
SPV.0180	RAPID SET DECK REPAIR	CY	

THIS IS A PARTIAL LIST OF POSSIBLE BID ITEMS. BID ITEMS MAY NEED TO BE ADDED OR REMOVED TO FIT EACH INDIVIDUAL CASE.

REHABILITATION OVERLAY



CROSS SECTION THRU ROADWAY
LOOKING NORTH

DESIGNER NOTES

PREVENTATIVE OVERLAY INTENDED FOR USE ON DECKS WITH A MINIMUM AGE OF 28 DAYS AND A MAXIMUM AGE OF 2 YEARS. AN ADDITIONAL CONTRACT MAY BE REQUIRED FOR APPLYING THE OVERLAY DUE TO SCHEDULE AND DECK AGE CONSIDERATIONS.
WHEN BID ITEM "POLYMER OVERLAY" IS USED RATING SHOULD INCLUDE THE 5 PSF OVERLAY.
POLYMER OVERLAYS SHALL NOT BE PLACED ON CONCRETE APPROACHES.

DESIGN DATA

LIVE LOAD:
DESIGN LOADINGS: HL-93
INVENTORY RATING FACTOR: RF=1...
OPERATING RATING FACTOR: RF=1...
MAXIMUM STANDARD PERMIT VEHICLE LOAD = ... KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

NOTES

DRAWINGS SHALL NOT BE SCALED.
DECK SURFACE PREPARATION IS INCLUDED IN THE BID ITEM "POLYMER OVERLAY".

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
509.5100.S	POLYMER OVERLAY	SY	

PREVENTATIVE OVERLAY

POLYMER OVERLAY



BUREAU OF STRUCTURES

APPROVED: Bill Oliva DATE: 7-18

