

NOTES

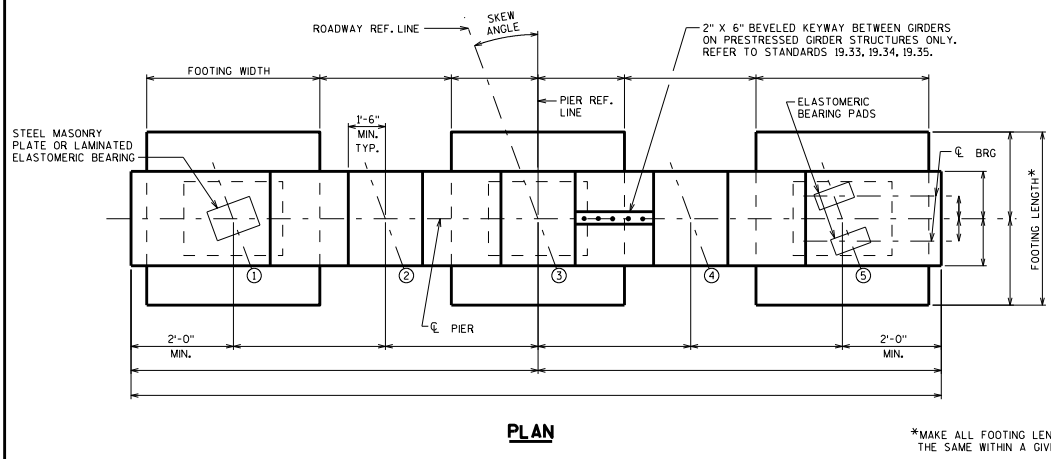
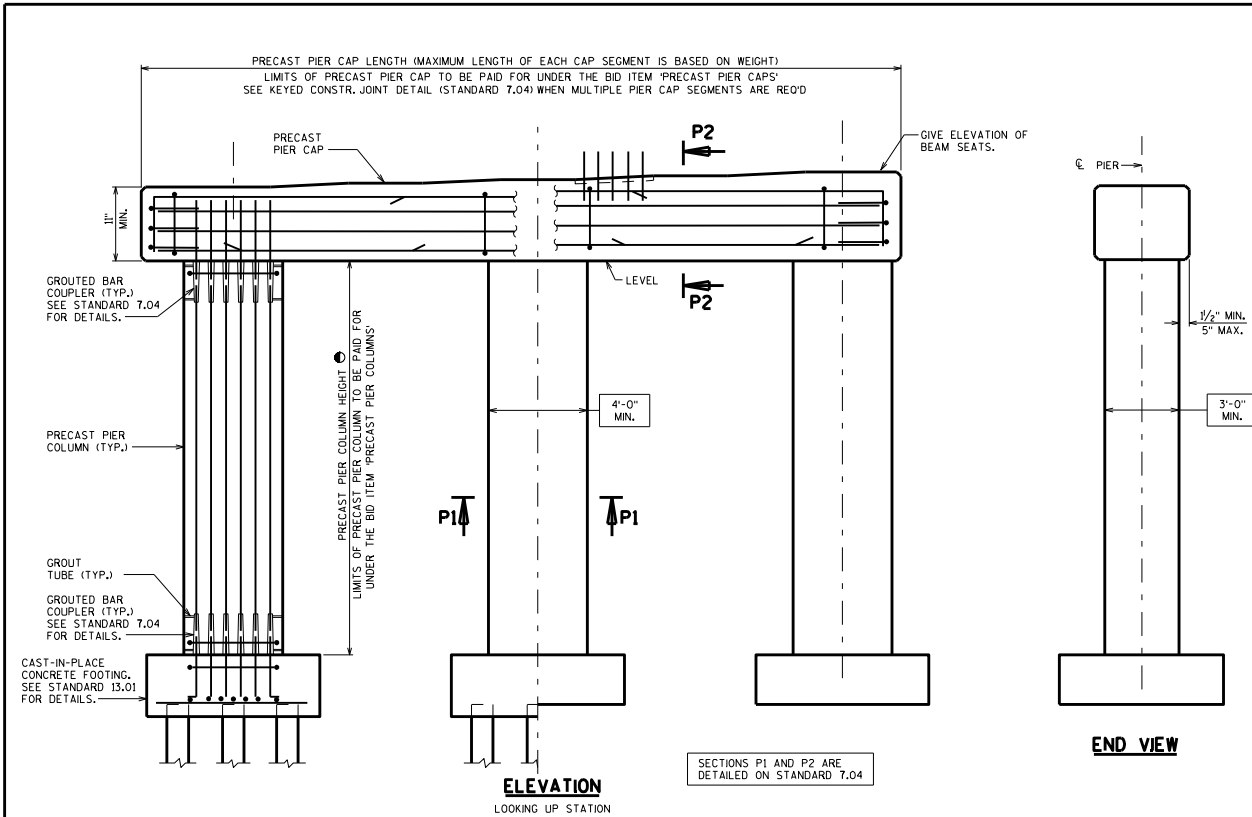
- PROVIDE A SUITABLE LIFTING DEVICE FOR THE PRECAST CAP AND COLUMN UNIT(S). CAST-IN-PLACE ALTERNATIVE IS NOT ALLOWED.
- STIRRUPS AT THE GROUTED COUPLERS ARE SIZED BASED ON A XX" OUTER DIAMETER COUPLER SLEEVE. ADJUST STIRRUP DIMENSIONS AS REQUIRED IF THE ACTUAL COUPLER SLEEVE DIAMETER DIFFERS.
- MANUFACTURER TO DETERMINE THE PRECAST PIER COLUMN LENGTHS ASSUMING 1/2" STEEL SHIMS AT THE TOP AND BOTTOM OF THE COLUMN.
- BID ITEM "PRECAST PIER COLUMNS" PAID PER PLAN VALUE AS BOTTOM OF PIER CAP ELEVATION MINUS TOP OF FOOTING ELEVATION.

DESIGNER NOTES

- IF THE PRECAST PIER CAP IS DIVIDED INTO MULTIPLE SEGMENTS, EACH SEGMENT MUST BE SUPPORTED BY A MINIMUM OF 3 COLUMNS.
- CONCRETE ULTIMATE DESIGN STRESS FOR PREFABRICATED PIER COLUMNS AND CAPS SHALL BE 3,500 PSI.
- THE FOLLOWING SPECIAL PROVISIONS SHALL BE USED:
 GROUTED BAR COUPLERS (SPV.0060.XXX)
 PRECAST PIER COLUMNS (SPV.0090.XXX)
 PRECAST PIER CAPS (SPV.0090.XXX)
- THE MAXIMUM WEIGHT OF EACH PRECAST ELEMENT SHALL BE 100 KIP.
- GROUTED COUPLER SLEEVES MAY BE OVERSIZED TO ALLOW FOR ADDITIONAL LATERAL TOLERANCE IN THE FIELD. STANDARD WISDOT PRACTICE IS TO OVERSIZE COUPLER SLEEVES BY 1 BAR SIZE. ADJUST SHEAR STIRRUPS AS NECESSARY TO ACCOUNT FOR LARGER DIAMETER COUPLER SLEEVES.
- VERIFY SEVERAL MANUFACTURER'S COUPLER SLEEVE DIMENSIONS PRIOR TO DESIGN. ASSUME THE MAXIMUM DIAMETER OF COUPLER SLEEVE FOR COLUMN REINFORCEMENT DESIGN.
- SEE STANDARDS 13.01 AND 13.07 FOR ADDITIONAL PIER NOTES AND DETAILS.

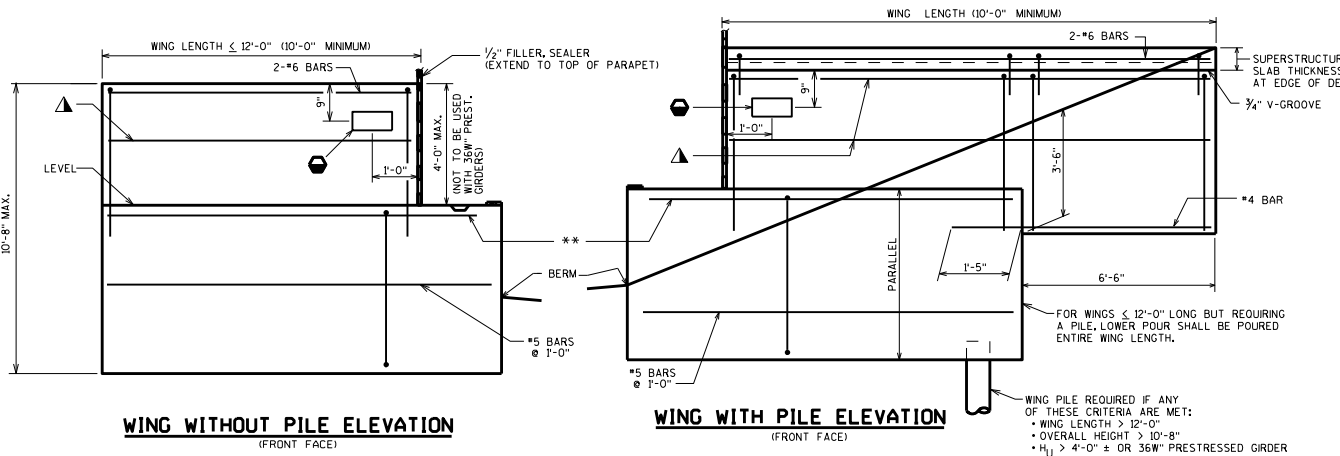
POLICY REGARDING THE USE OF PRECAST PIER CAPS AND COLUMNS IS BEING DEVELOPED BY THE BUREAU OF STRUCTURES AND WILL BE INCLUDED IN THE JULY, 2014 EDITION OF THE BRIDGE MANUAL. THIS POLICY WILL INCLUDE HOW TO BID A PRECAST PIER AS AN ALTERNATE TO A CAST-IN-PLACE PIER, WHETHER BOTH OPTIONS NEED TO BE DETAILED ON THE PLAN, ETC.

IF PRECAST PIER CAPS AND COLUMNS ARE DESIRED ON A PROJECT PRIOR TO JULY, 2014, PLEASE CONTACT THE BUREAU OF STRUCTURES FOR GUIDANCE.



*MAKE ALL FOOTING LENGTHS THE SAME WITHIN A GIVEN PIER

PRECAST PIER CAP AND COLUMNS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <u>Bill Oliva</u>	DATE: 1-14



DESIGNER NOTES

LENGTH OF A1 BARS SHALL BE \geq TO WING LENGTH.

WING WITH PILE & WING WITHOUT PILE CAN BE USED FOR EITHER SIDEWALK OR SLOPED FACE PARAPETS. THE TYPE OF WING TO USE IS BASED ONLY ON THE WING HEIGHT AND WING LENGTH LIMITATIONS SHOWN.

LAP LENGTH FOR HORIZONTAL BARS SHALL BE BASED ON A "CLASS C" TOP TENSION LAP SPlice.

WING BARS AND DOWEL BARS SHALL BE EPOXY COATED.

NAME PLATE (ONLY FOR TYPE "F", "W" AND "M" OR TIMBER RAIL AS SHOWN ON STANDARD 30.24), LOCATE NAME PLATE ON FIRST RIGHT WING TRAVELING UP STATION.

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). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

LRFD DESIGN LOADS

LIVE LOAD = 2'-0" SURCHARGE

EXPOSURE CLASS 2, $\gamma_e = 0.75$

LOAD FACTORS:

$\gamma_{DC} = 1.25$ $f'_c = 3,500$ P.S.I.

$\gamma_{DW} = 1.50$ HORIZ. EARTH LOAD BASED ON:

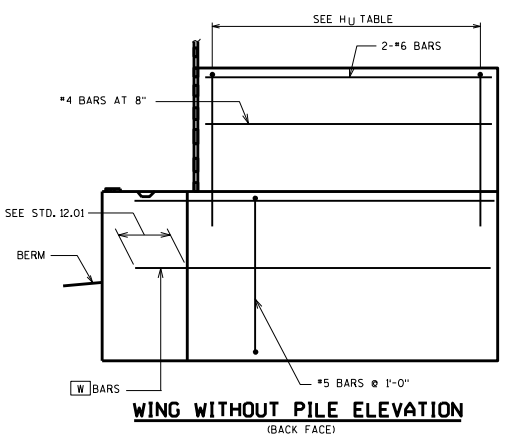
$\gamma_{EV} = 1.35$ 35 P.C.F. EQUIV. FLUID UNIT

$\gamma_{LS} = 1.75$ WEIGHT OF SOIL

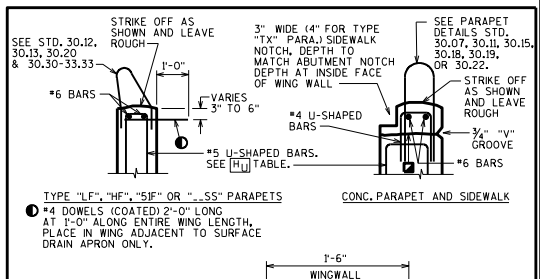
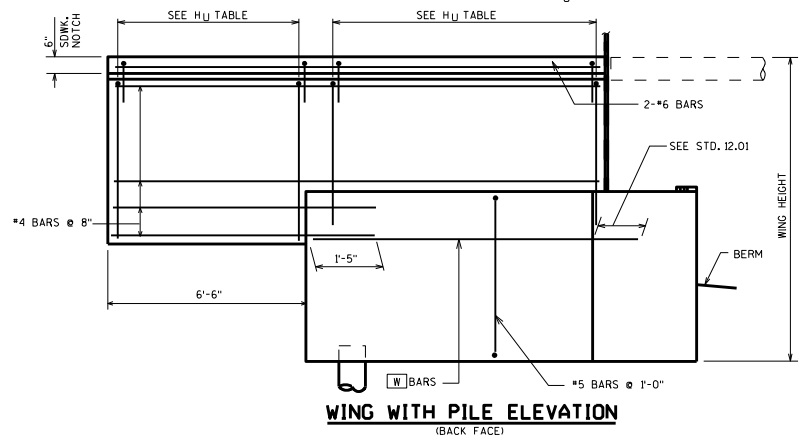
WING LENGTH	WING HEIGHT			BARS	
	8'-6"	10'-0"	11'-6"		
10'-0"	#6-#6's	#6-#6's	6-#5's	W	
10'-0"	#7-#8's	#7-#8's	6-#5's	A1	
12'-0"	#6-#6's	#7-#6's	7-#5's	W	
12'-0"	#7-#8's	#7-#8's	6-#7's	A1	
16'-0"	7-#6's	8-#6's	7-#7's	8-#7's	W
16'-0"	5-#8's	6-#8's	7-#8's	8-#8's	A1
20'-0"	7-#7's	7-#8's	8-#8's	8-#9's	W
20'-0"	6-#9's	7-#9's	7-#10's	8-#10's	A1
24'-0"	8-#8's	9-#8's	9-#9's	9-#10's	W
24'-0"	7-#9's	8-#9's	8-#10's	9-#10's	A1

* WING WITHOUT PILE VALUES SHOWN. (FOR WING WITH PILE THAT HAS WING LENGTH IN THIS REGION, USE VALUES FOR 11'-6" WING HEIGHT.)

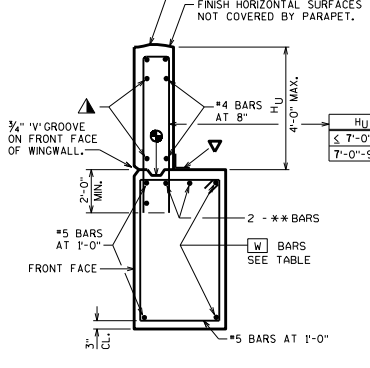
WING WITHOUT PILE ELEVATION (FRONT FACE)



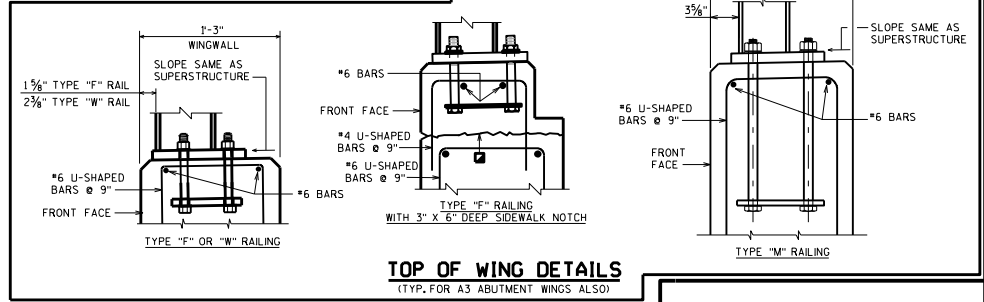
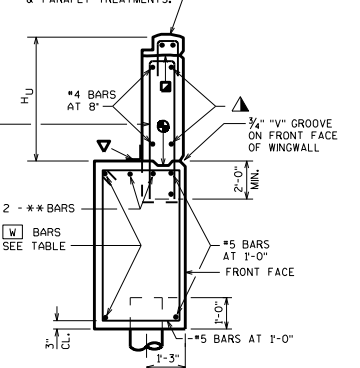
WING WITH PILE ELEVATION (FRONT FACE)



DETAIL FOR TYPE "LF", "HF", "SF" OR "SS" PARAPETS SHOWN. SEE "TOP OF WING DETAILS" FOR OTHER RAILING & PARAPET TREATMENTS.



DETAIL FOR CONC. PARAPET WITH SIDEWALK SHOWN. SEE "TOP OF WING DETAILS" FOR OTHER RAILING & PARAPET TREATMENTS.



- CONSTRUCTION JOINT, LEAVE ROUGH. REQUIRED FOR PRESTRESSED CONCRETE SUPERSTRUCTURES. OPTIONAL FOR OTHERS. POUR CONCRETE ABOVE THIS JOINT AFTER DECK IS IN PLACE. IF JOINT IS USED, UTILIZE RUBBERIZED MEMBRANE WATERPROOFING (COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES").
- USE #4 BARS ϕ 1'-6" FOR WINGWALL WIDTH = 1'-3". USE #4 BARS ϕ 1'-4" FOR WINGWALL WIDTH = 1'-6".
- ** BARS TO BE SAME SIZE AS "W" BARS.
- OPTIONAL CONST. JOINT FORMED BY BEVELED 2" X 6" KEYWAY WITH MEMBRANE ON BACKFACE.
- 1/8" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

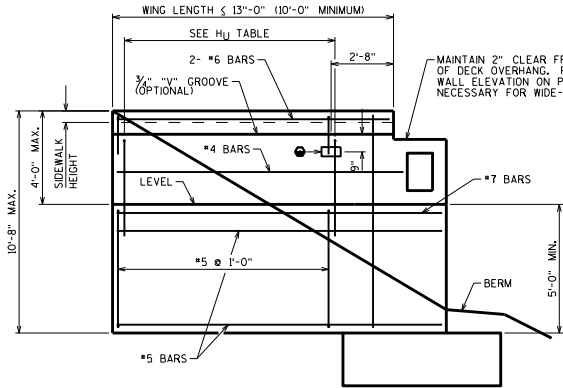
ABUTMENT TYPE A1

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

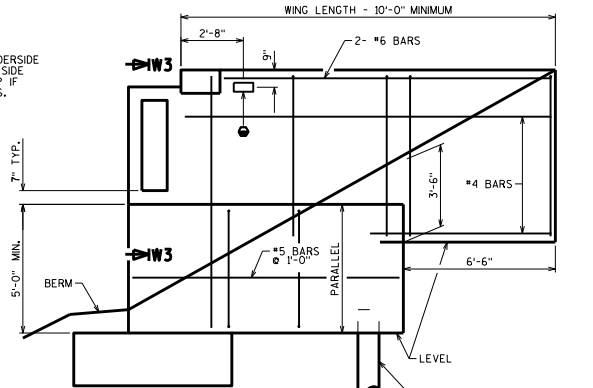
APPROVED: *Bill Oliva* DATE: 1-14

WING WITHOUT PILE SECTION

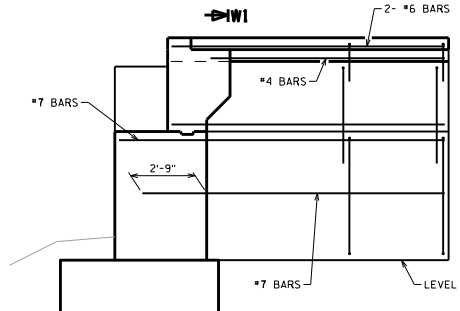
WING WITH PILE SECTION



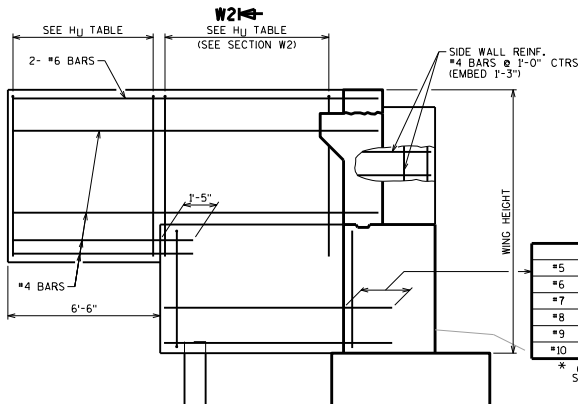
WING WITHOUT PILE ELEVATION
(FRONT FACE)



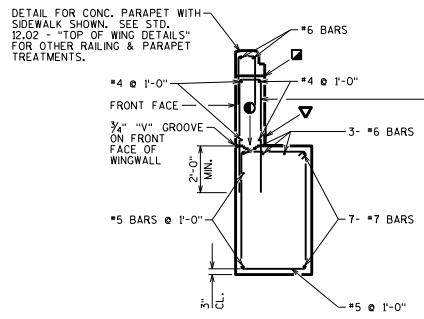
WING WITH PILE ELEVATION
(FRONT FACE)



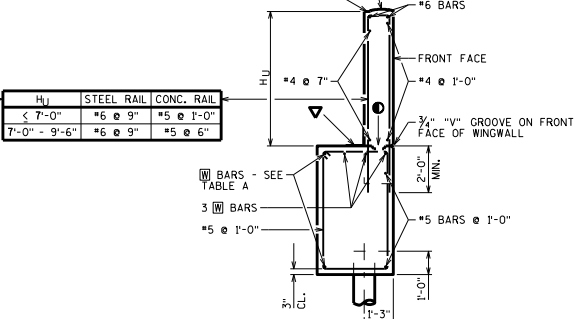
WING WITHOUT PILE ELEVATION
(BACK FACE)



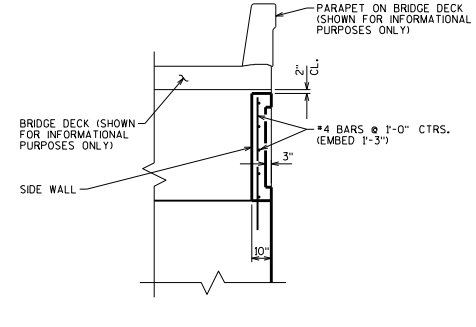
WING WITH PILE ELEVATION
(BACK FACE)



SECTION W1
(WING WITHOUT PILE)



SECTION W2
(WING WITH PILE)



SECTION W3

DESIGNER NOTES

- LENGTH OF A3 BARS SHALL BE \geq TO WING LENGTH.
- WING WITH PILE & WING WITHOUT PILE CAN BE USED FOR EITHER SIDEWALK OR SLOPED FACE PARAPETS. THE TYPE OF WING TO USE IS BASED ONLY ON THE WING HEIGHT AND WING LENGTH LIMITATIONS SHOWN.
- LAP LENGTH FOR HORIZONTAL BARS SHALL BE BASED ON A "CLASS C" TOP TENSION LAP SPLICE.
- BARS IN WINGS, ABUTMENT BACKWALL, AND PAVING BLOCK SHALL BE EPOXY COATED.
- NAME PLATE (ONLY FOR TYPE "F", "W", AND "M" OR TIMBER RAIL AS SHOWN ON STANDARD 30.24). LOCATE NAME PLATE ON FIRST RIGHT WING TRAVELING UP STATION.
- FRONT ROW PILE DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 40 P.C.F. WITH $\gamma_{EH} = 150$, AND SUPERSTRUCTURE REACTIONS "P". BACK ROW PILE DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 40 P.C.F. WITH $\gamma_{EH} \text{ MIN.} = 0.90$, AND "P".
- FOR MODULAR EXPANSION JOINTS WITH CONCRETE DIAPHRAGMS RUNNING TO EDGE OF DECK; IF SIDEWALL IS USED, FORM SIDEWALL 2" BELOW CONCRETE DIAPHRAGM.
- CONSTRUCTION JOINT. LEAVE ROUGH, REQUIRED FOR PRESTRESSED CONCRETE SUPERSTRUCTURES. OPTIONAL FOR OTHERS. POUR CONCRETE ABOVE THIS JOINT AFTER DECK IS IN PLACE.
- OPTIONAL CONSTRUCTION JOINT FORMED BY BEVELED 2" X 6" KEYWAY WITH MEMBRANE ON BACKFACE.
- "B" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

LRFD DESIGN LOADS

LIVE LOAD = 2'-0" SURCHARGE
LOAD FACTORS:
 $\phi_{DC} = 1.25$
 $\phi_{DW} = 1.50$
 $\phi_{EH} = 1.50$
 $\phi_{EH} \text{ MIN.} = 0.90$
 $\phi_{EV} = 1.35$
 $\phi_{LL} = 1.75$
 EXPOSURE CLASS 2, $\gamma_e = 0.75$
 $f_y = 60,000 \text{ P.S.I.}$
 $f'_c = 3,500 \text{ P.S.I.}$
 HORIZONTAL EARTH LOAD BASED ON:
 35 P.C.F. EQUIVALENT FLUID UNIT WEIGHT OF SOIL

TABLE A

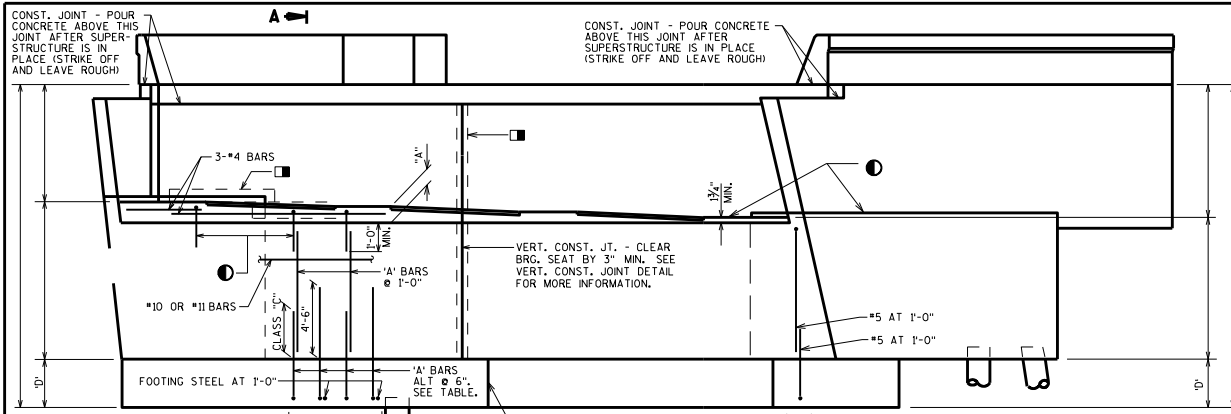
WING 2 LENGTH	WING 2 HEIGHT				BARS
	10'-0"	11'-6"	13'-0"	14'-6"	
12'-0"	6-#6's		7-#6's		W
	7-#6's		8-#7's		A3
16'-0"	8-#6's		7-#7's		W
	7-#6's		5-#8's		A3
20'-0"	8-#7's		9-#8's		W
	5-#9's		6-#9's		A3
24'-0"	9-#8's		10-#9's		W
	9-#8's		9-#10's		A3
26'-0"	9-#9's		10-#9's		W
	7-#10's		9-#10's		A3

* OR EQUIVALENT STANDARD HOOK
 * USE 4'-6" FOR LOWER WING POUR WIDTH
 ** USE 3'-3" MIN. FOR BEARING SEAT WIDTH

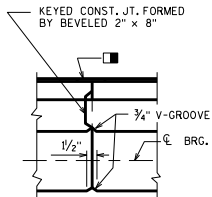
ABUTMENT TYPE A3

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 STRUCTURES DEVELOPMENT SECTION

APPROVED: *Bill Oliva* DATE: 1-14



FRONT ELEVATION



VERT. CONST. JOINT

$$P = \gamma D C (P_{DC} + \gamma D W + P_{DW}) + \gamma L L (P_{LL})$$

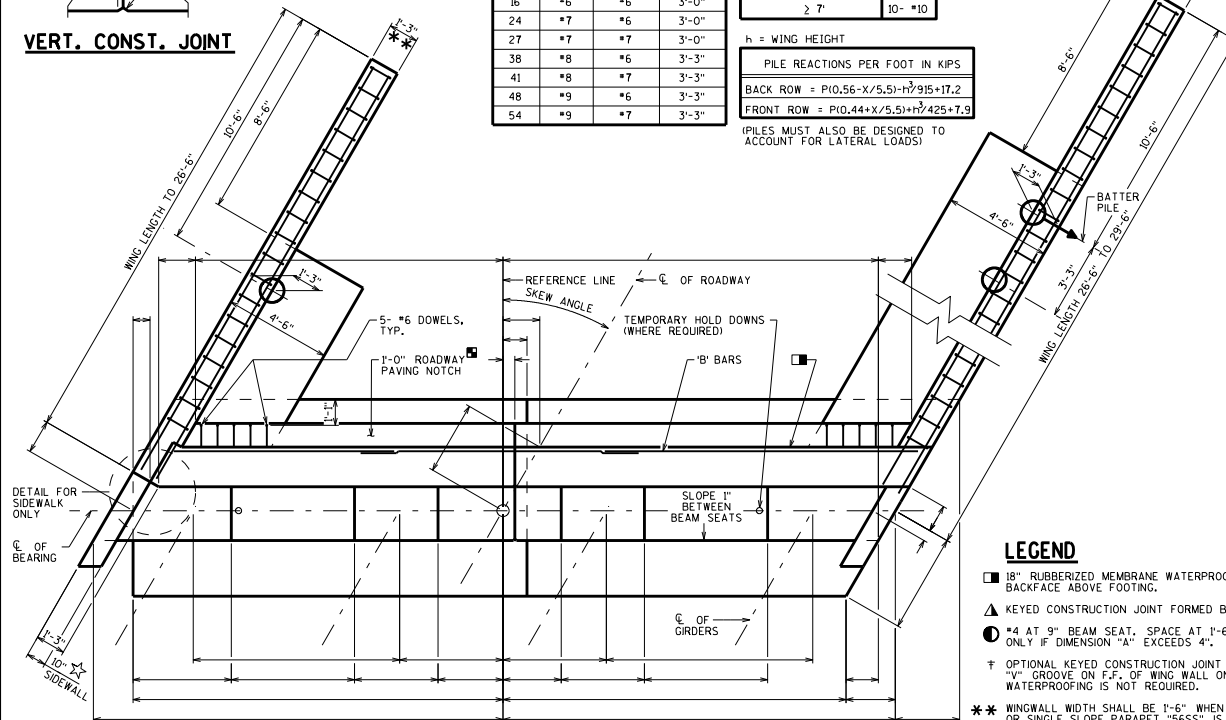
P ¹ K/FT	'A' BAR SIZE	FOOTING STEEL SIZE	FOOTING DEPTH 'D'
16	#6	#6	3'-0"
24	#7	#6	3'-0"
27	#7	#7	3'-0"
38	#8	#6	3'-3"
41	#8	#7	3'-3"
48	#9	#6	3'-3"
54	#9	#7	3'-3"

ABUTMENT BODY DEPTH 'D'	'B' BARS
< 7'	9- #11
≥ 7'	10- #10

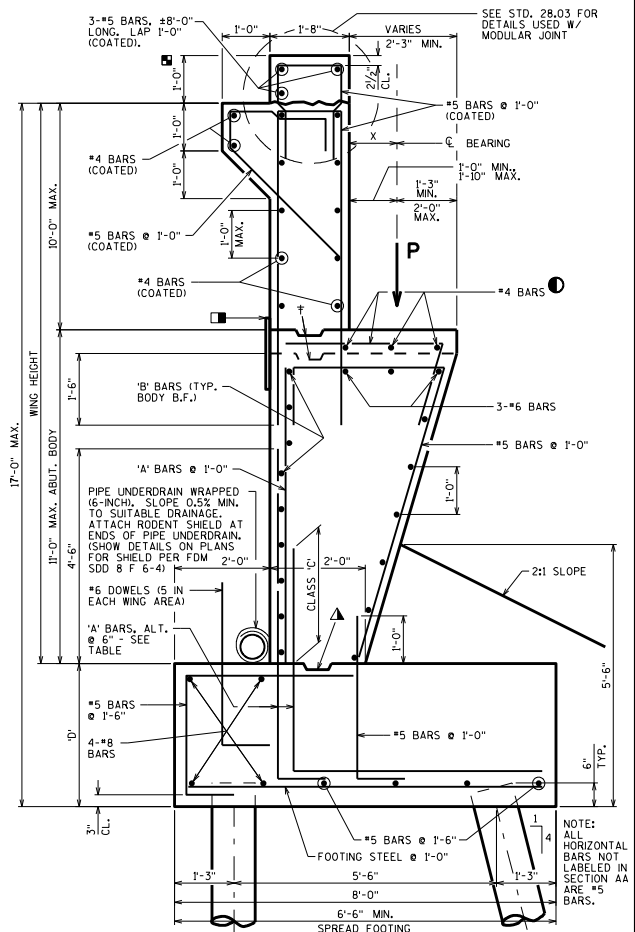
h = WING HEIGHT

PILE REACTIONS PER FOOT IN KIPS
BACK ROW = $P(0.56 - X/5.5) - h^2/915 + 17.2$
FRONT ROW = $P(0.44 + X/5.5) + h^2/425 + 7.9$

PILES MUST ALSO BE DESIGNED TO ACCOUNT FOR LATERAL LOADS



PLAN



SECTION AA

DESIGNER NOTES

- PIILING SPACING IN ABUTMENT FOOTING SHALL BE 8'-0" MAXIMUM.
- WHEN BODY SECTION IS MORE THAN 50'-0"± LONG, PROVIDE VERTICAL CONSTRUCTION JOINT. RUN BAR STEEL THRU JOINT, SEAL JOINT WITH 18" RUBBERIZED MEMBRANE WATERPROOFING. SEE STD. 12.09 FOR ALTERNATE CONSTRUCTION JOINT.

DESIGNER NOTES CONT'D

- IN "FRONT ELEVATION" VIEW, GIVE ELEVATION OF ALL BEARING AREAS AND ELEVATION AT BOTTOM OF PARAPETS AT EACH END OF WINGS. ALL ELEVATIONS ARE TAKEN AT FRONT FACE OF BACKWALL.
- LAP LENGTHS FOR HORIZONTAL BARS SHALL BE BASED ON A "CLASS C" TOP TENSION LAP SPLICE.
- PARAPET NOT SHOWN IN PLAN VIEW FOR CLARITY. SEE STD. 12.03 FOR ADDITIONAL DETAILS.

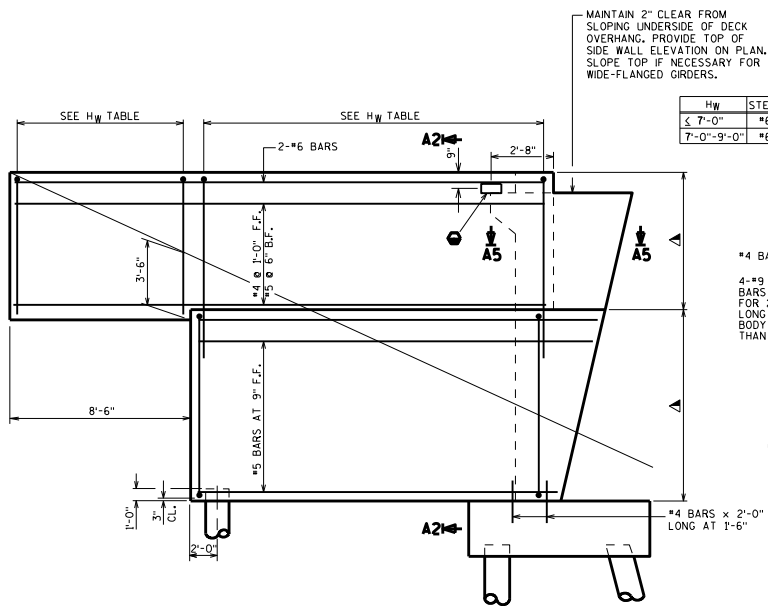
LEGEND

- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACKFACE ABOVE FOOTING.
- ▲ KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" X 6".
- #4 AT 9" BEAM SEAT. SPACE AT 1'-6" BETWEEN SEATS. THIS STEEL IS REQUIRED ONLY IF DIMENSION "A" EXCEEDS 4'.
- † OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2" X 6". USE 3/4" V-GROOVE ON F.F. OF WING WALL ONLY. IF JOINT IS NOT USED, WATERPROOFING IS NOT REQUIRED.
- ** WINGWALL WIDTH SHALL BE 1'-6" WHEN TYPE "M" RAILING, VERTICAL FACE PARAPET "TX", OR SINGLE SLOPE PARAPET "56SS" IS USED. "56SS" SHOULD NOT BE USED ON A SIDEWALK.
- PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.12) IS USED.
- ☆ SIDE WALL IS 1'-3" WIDE IF STRUCTURAL APPROACH SLAB (STD. 12.12) IS USED.

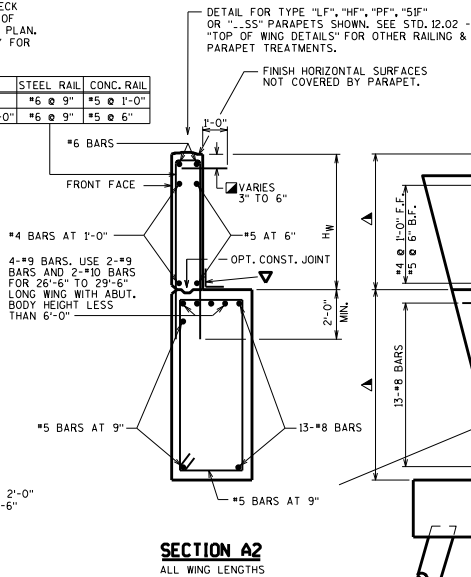
ABUTMENT A4 PILE FOOTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

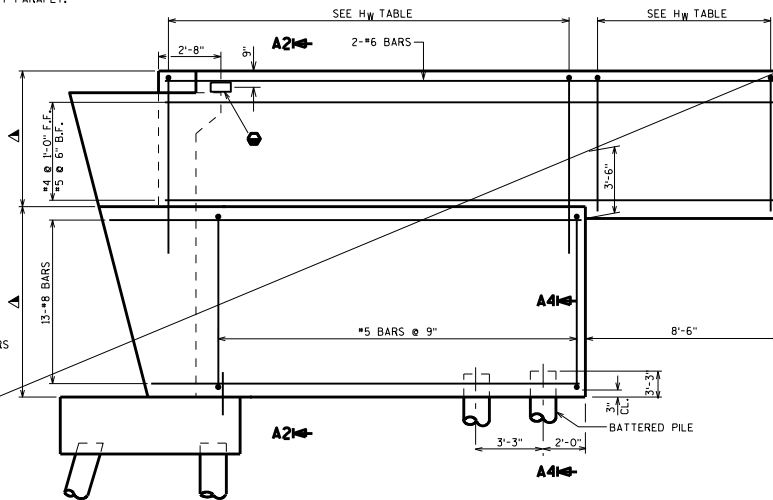
APPROVED: Bill Oliva DATE: 1-14



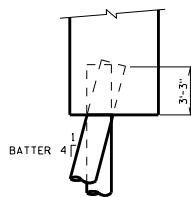
WING ELEVATION
WING LENGTH TO 26'-6"



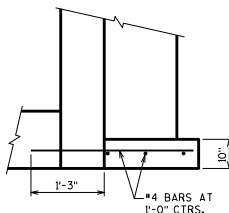
SECTION A2
ALL WING LENGTHS



WING ELEVATION
WING LENGTH OVER 26'-6" TO 29'-6"



SECTION A4



SECTION A5

DESIGNER NOTES

BODY DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 40 P.C.F., A 1'-6" SURCHARGE, AND SUPERSTRUCTURE REACTIONS "P".

WING DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 35 P.C.F. AND A 2'-0" SURCHARGE. A 5 KIP LATERAL RESISTANCE IS USED FOR EACH WING PILE.

FRONT ROW PILE DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 40 P.C.F. WITH $\gamma_{\text{DEH}} = 1.50$, AND SUPERSTRUCTURE REACTIONS "P". BACK ROW PILE DESIGN IS BASED ON AN EQUIVALENT FLUID UNIT WEIGHT OF SOIL OF 20 P.C.F. WITH $\gamma_{\text{DEHmin}} = 0.90$, AND "P".

UNIT WEIGHT OF SOIL IS ASSUMED AS 120 P.C.F.

BRIDGE SEATS BETWEEN BEARINGS SHALL SLOPE 1" FROM FRONT FACE OF BACKWALL.

PAY LIMITS FOR EXCAVATION FOR STRUCTURES & GRANULAR BACKFILL IS SHOWN IN CHAPTER 12 OF THE BRIDGE MANUAL.

BARs IN WINGS, ABUTMENT BACKWALL, AND PAVING BLOCK SHALL BE EPOXY COATED.

NAME PLATE (ONLY FOR TYPE "F", "W" AND "M" OR TIMBER RAIL AS SHOWN ON STANDARD 30.24), LOCATE NAME PLATE ON FIRST RIGHT WING TRAVELING UP STATION.

FOR MODULAR EXPANSION JOINTS W/CONC. DIAPH. RUNNING TO EDGE OF DECK: IF SIDEWALL IS USED, FORM SIDEWALL 2" BELOW CONC. DIAPH.

#4 DOWELS (COATED), 2'-0" LONG AT 1'-0" CTRS. FROM WING TIP TO PAVING NOTCH. PLACE IN WING ADJACENT TO SURFACE DRAIN APRON ONLY.

DIMENSIONS TO BE CONSTANT.

18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

LRFD DESIGN LOADS

LIVE LOAD

BODY = 1'-6" SURCHARGE
WINGS = 2'-0" SURCHARGE

HORIZ. EARTH LOAD BASED ON:

BODY = 40 P.C.F. EQUIV. FLUID UNIT WGT. OF SOIL
WINGS = 35 P.C.F. EQUIV. FLUID UNIT WGT. OF SOIL

LOAD FACTORS:

$\gamma_{\text{DCL}} = 1.25$
 $\gamma_{\text{DPL}} = 1.50$
 $\gamma_{\text{DEH}} = 1.50$
 $\gamma_{\text{DEH MN}} = 0.90$
 $\gamma_{\text{DEV}} = 1.35$
 $\gamma_{\text{LL}} = 1.75$

EXPOSURE CLASS 2, $\gamma_{\text{E}} = 0.75$

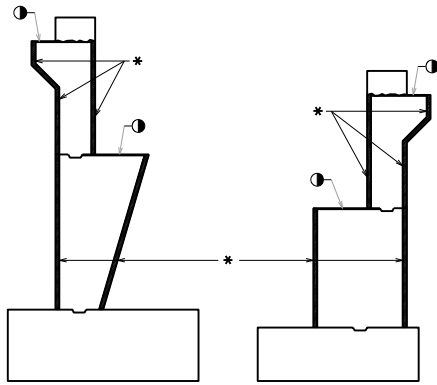
$f_y = 60,000$ P.S.I.
 $f'_c = 3,500$ P.S.I.

**ABUTMENT A4
PILE FOOTING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

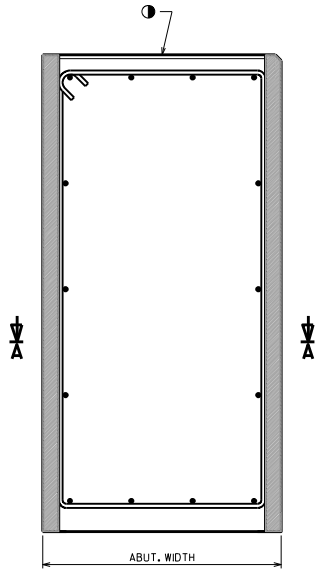
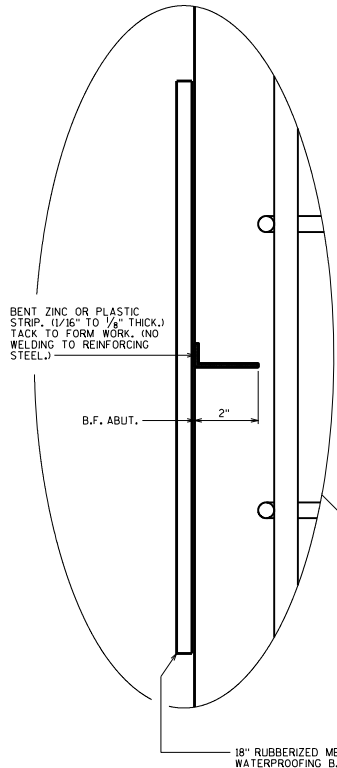
APPROVED: *Bill Oliva*

DATE:
1-14

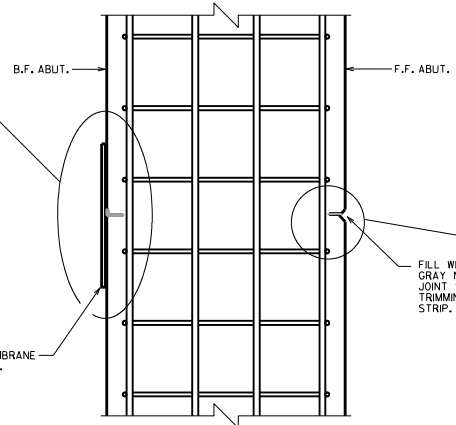


A4 ABUTMENT

A3 ABUTMENT

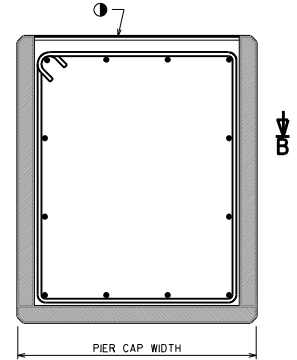
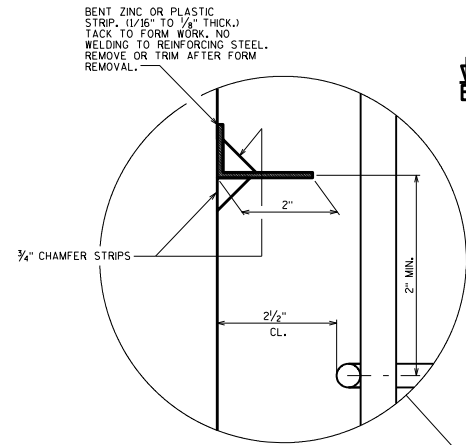


SECTION THRU ABUTMENT BODY
A1 ABUTMENT SHOWN, A5 SIMILAR

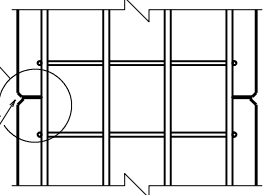


SECTION A-A

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

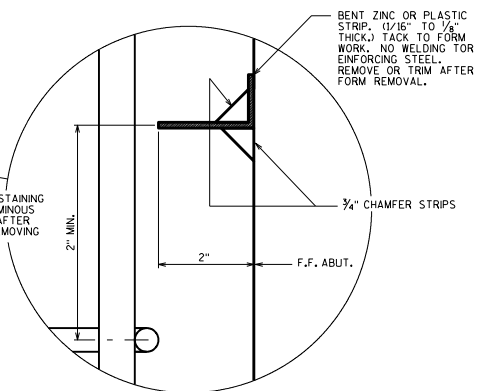


SECTION THRU PIER CAP



SECTION B-B

ALTERNATE CONSTRUCTION JOINT AT PIER CAP



NOTES

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT, WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

① USE A JOINT TOOL TO CONSTRUCT A CONTRACTION JOINT APPROXIMATELY 1/2" DEEP.

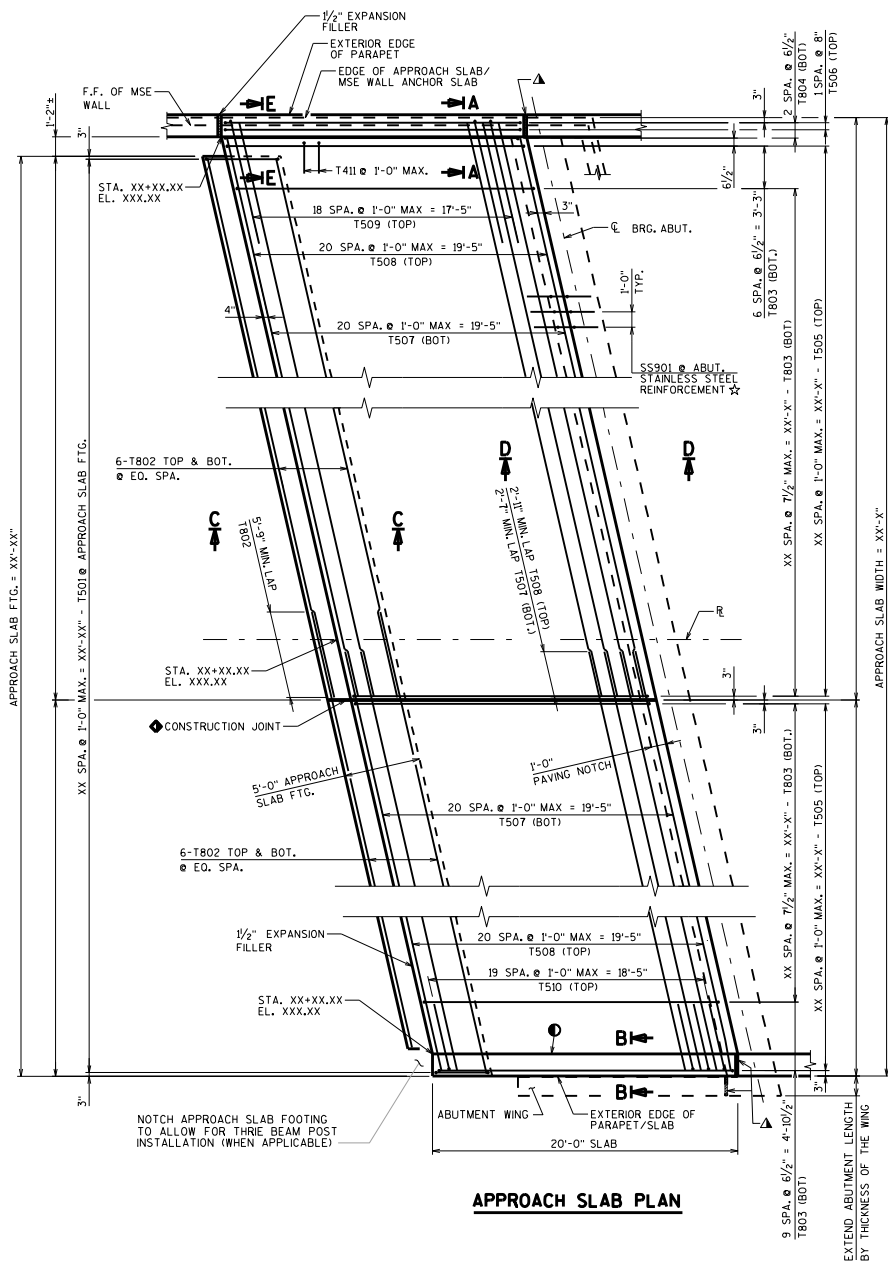
* BENT ZINC OR PLASTIC STRIP.

ALTERNATE CONSTRUCTION JOINT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

DATE:
1-14



APPROACH SLAB PLAN

DESIGNER NOTES

STRUCTURAL APPROACH SLABS AND PARAPETS SHALL BE USED ON ALL LH BRIDGES AND U.S.H. BRIDGES. 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 BRIDGES, 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 S5901 BARS SHALL BE SPECIAL PROVISION "BAR STEEL REINFORCEMENT HS STAINLESS BRIDGES".

DESIGNER TO COORDINATE LOCATION OF SURFACE DRAINS, INLETS, AND/OR FLUMES WITH ROADWAY DESIGNER AND FDM SDD 802 OR 803.

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). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

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, f_y: 60,000 P.S.I.
 ALLOWABLE SOIL BEARING PRESSURE: 2,000 P.S.F.

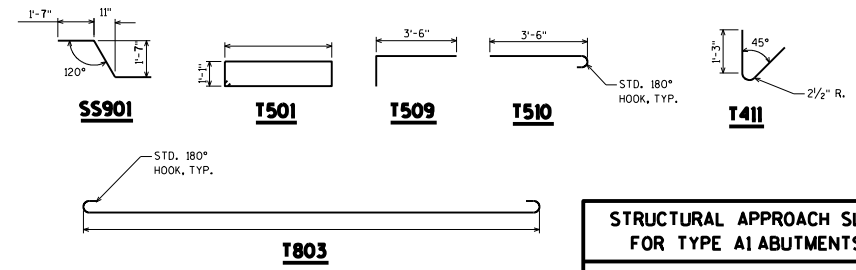
NOTE: FOR NEW STRUCTURES ON NEW ALIGNMENTS, BASE AGGREGATE DENSE 1-1/4 INCH AS PER FDM 14-5 AND BRIDGE MANUAL FIGURE 12.6-2 SHALL BE UTILIZED. FOR REPLACEMENT STRUCTURES ON EXISTING ALIGNMENTS, THE EXISTING SOIL MAY REMAIN IN PLACE IF THE REGION SOILS ENGINEER DETERMINES THAT THE EXISTING SOIL BEARING PRESSURE MEETS THE REQUIREMENT ABOVE.

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
S5901			5'-0"	X		CONC. ABUT. DIAPH. 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'-3"	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

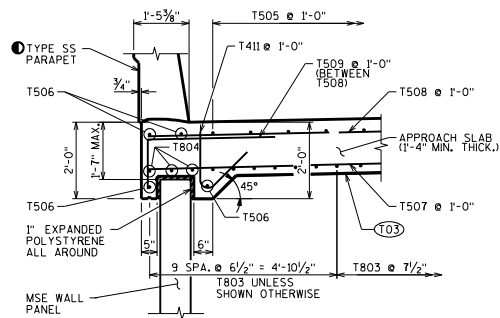


SECTIONS A-A THRU E-E ARE SHOWN ON STANDARD 12.11

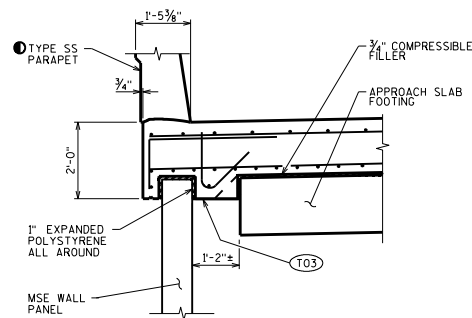
STRUCTURAL APPROACH SLAB FOR TYPE A1 ABUTMENTS

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 STRUCTURES DEVELOPMENT SECTION

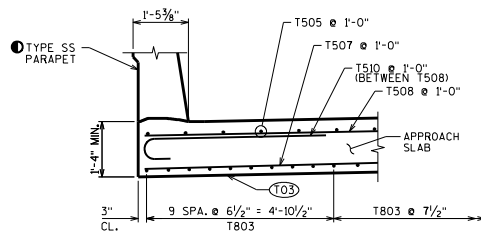
APPROVED: Bill Oliva DATE: 1-14



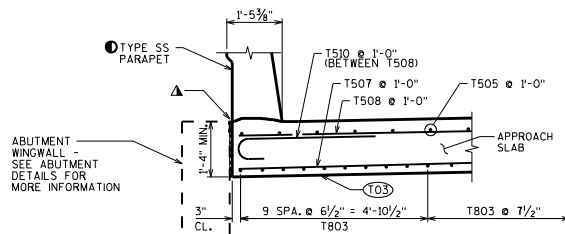
SECTION A-A
(AT MSE WINGWALLS)



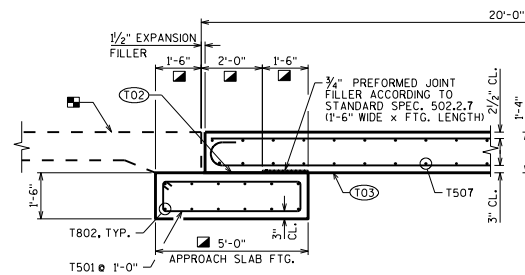
SECTION E-E
(AT MSE WINGWALLS)



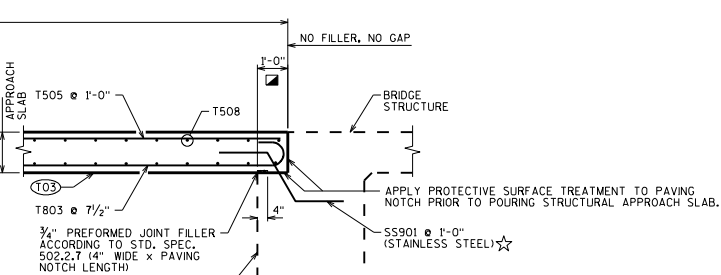
SECTION B-B
(AT WINGWALLS PERP. TO BRIDGE)



SECTION B-B
(AT WINGWALLS PARALLEL TO BRIDGE)



SECTION C-C



SECTION D-D

SECTION THRU APPROACH SLAB

MEASURED NORMAL TO ABUTMENT

LEGEND

- (T02) STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF FOOTING.
- (T03) PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE BENEATH SLAB.
- ▲ 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). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

DESIGNER NOTES

STRUCTURAL APPROACH SLABS AND PARAPETS SHALL BE USED ON ALL LH. BRIDGES AND U.S.H. BRIDGES. 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 BRIDGES, 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.

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 S5901 BARS SHALL BE SPECIAL PROVISION "BAR STEEL REINFORCEMENT HS STAINLESS BRIDGES".

DESIGNER TO COORDINATE LOCATION OF SURFACE DRAINS, INLETS, AND/OR FLUMES WITH ROADWAY DESIGNER AND FDM SDD 802 OR 803.

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

BELOW THE APPROACH SLAB FOOTING AND STRUCTURAL APPROACH SLAB, SHOW BASE AGGREGATE DENSE 1-1/4 INCH AS PER FDM 14-5 AND BRIDGE MANUAL FIGURE 12.6-2.

■ FOLLOW FDM 14-10-15 REQUIREMENTS FOR ROADWAY APPROACH PAVEMENT.

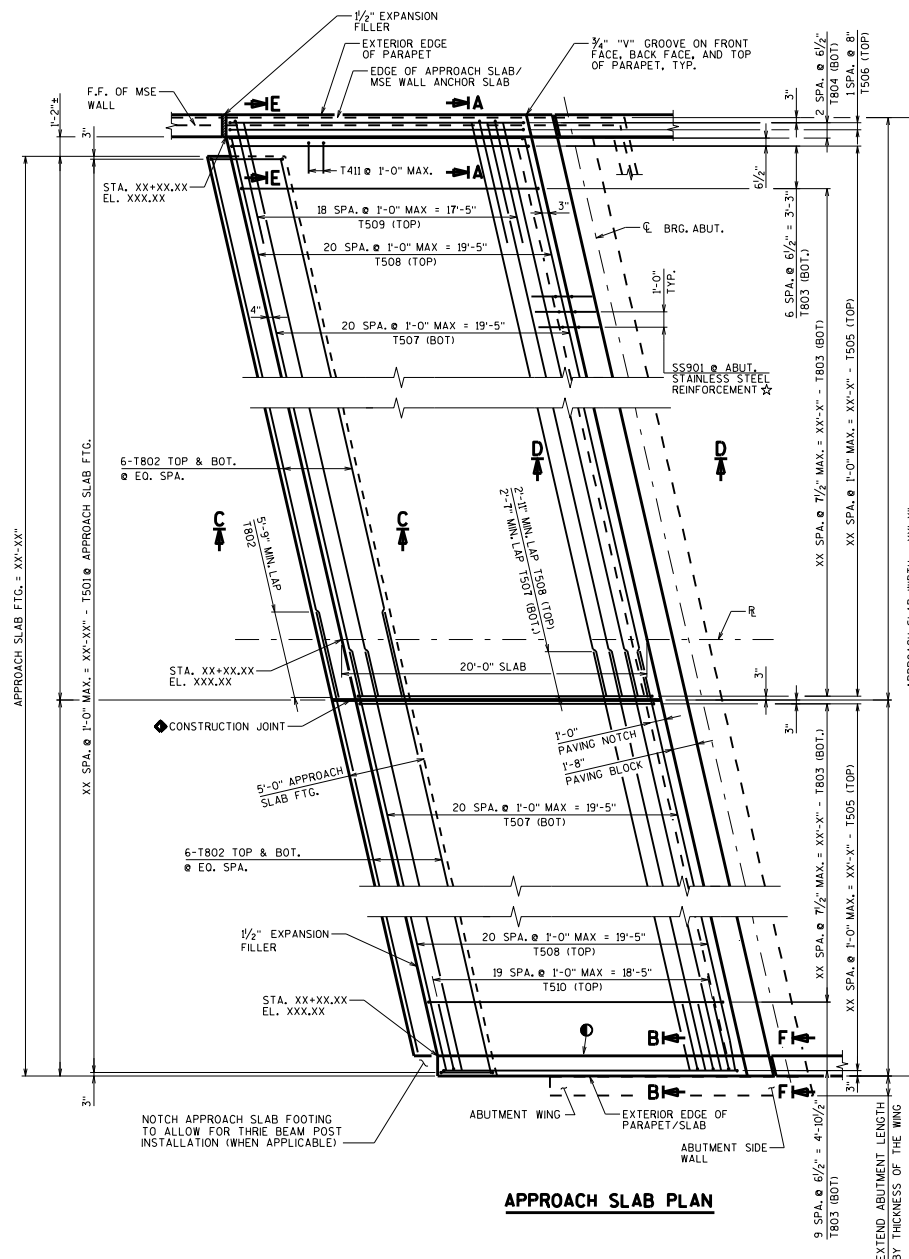
**STRUCTURAL APPROACH SLAB
DETAILS FOR TYPE A1 ABUTMENTS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: *Bill Oliva*

DATE:
1-14

SECTIONS SHOWN HERE ARE FROM STANDARD 12.10



APPROACH SLAB PLAN

APPROACH SLAB FTG. = XX'-XX"

APPROACH SLAB WIDTH = XX'-X"

2- T506 (BOT), SEE SECTION A-A

9 SPA. @ 6 1/2" = 4'-10 1/2" T803 (BOT)

EXTEND ABUTMENT LENGTH BY THICKNESS OF THE WING

DESIGNER NOTES

STRUCTURAL APPROACH SLABS AND PARAPETS SHALL BE USED ON ALL I.H. BRIDGES AND U.S.H. BRIDGES. 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 BRIDGES, 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 BARS SHALL BE SPECIAL PROVISION "BAR STEEL REINFORCEMENT HS STAINLESS BRIDGES".

DESIGNER TO COORDINATE LOCATION OF SURFACE DRAINS, INLETS, AND/OR FLUMES WITH ROADWAY DESIGNER AND FDM SDD 802 OR 803.

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). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

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.

NOTE: FOR NEW STRUCTURES ON NEW ALIGNMENTS, BASE AGGREGATE DENSE 1-1/4 INCH AS PER FDM 14-5 AND BRIDGE MANUAL FIGURE 12.6-2 SHALL BE UTILIZED. FOR REPLACEMENT STRUCTURES ON EXISTING ALIGNMENTS, THE EXISTING SOIL MAY REMAIN IN PLACE IF THE REGION SOILS ENGINEER DETERMINES THAT THE EXISTING SOIL BEARING PRESSURE MEETS THE REQUIREMENT ABOVE.

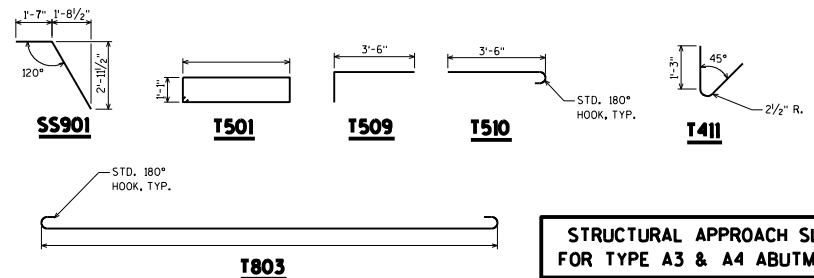
BILL OF BARS

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

BAR MARK	COAT	NO. REOD.	LENGTH	BENT	BAR SERIES	LOCATION
SS901			5'-0"	X		CONC. BACKWALL TO APPROACH SLAB

STAINLESS STEEL →

BAR MARK	COAT	NO. REOD.	LENGTH	BENT	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'-3"	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

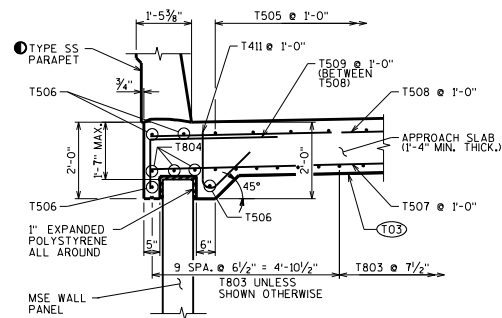


STRUCTURAL APPROACH SLAB FOR TYPE A3 & A4 ABUTMENTS

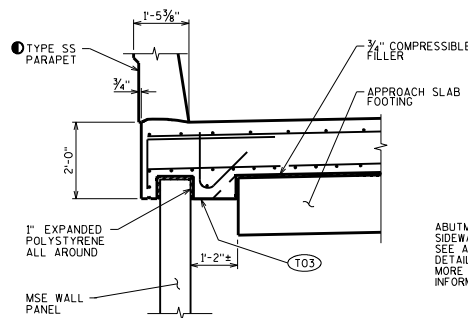
STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION
 STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva DATE: 1-14

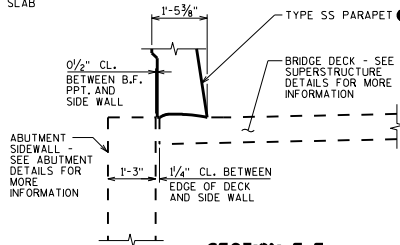
SECTIONS A-A THRU F-F ARE DETAILED ON STANDARD 12.13



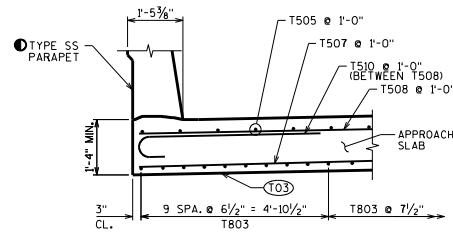
SECTION A-A
(AT MSE WINGWALLS)



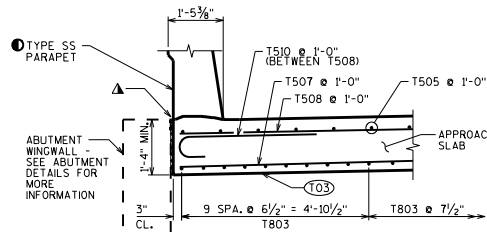
SECTION E-E
(AT MSE WINGWALLS)



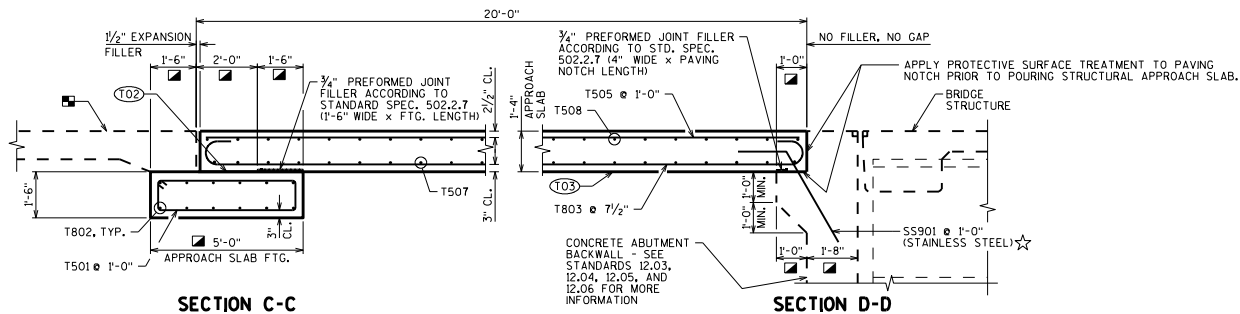
SECTION F-F
(AT WINGWALLS PARALLEL TO BRIDGE)



SECTION B-B
(AT WINGWALLS PERP. TO BRIDGE)



SECTION B-B
(AT WINGWALLS PARALLEL TO BRIDGE)



SECTION THRU APPROACH SLAB

MEASURED NORMAL TO ABUTMENT

LEGEND

- (T02) STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF FOOTING.
- (T03) PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE.
- ▲ 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). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.

DESIGNER NOTES

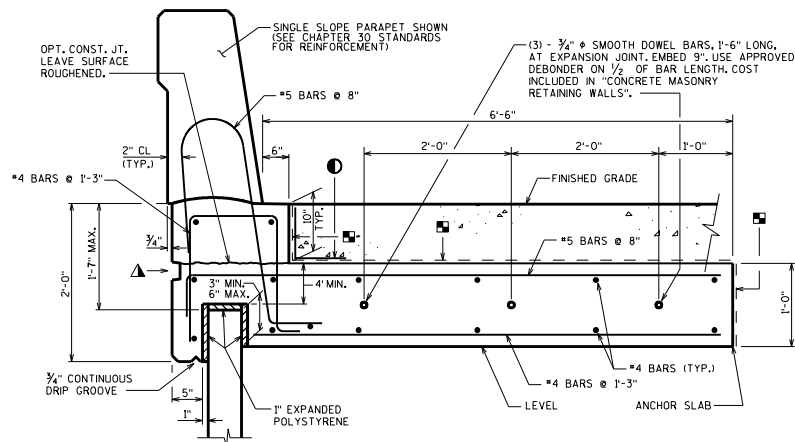
- STRUCTURAL APPROACH SLABS AND PARAPETS SHALL BE USED ON ALL I.H. BRIDGES AND U.S.H. BRIDGES. OTHER LOCATIONS CAN BE CONSIDERED WITH THE APPROVAL OF THE CHIEF STRUCTURAL DESIGN ENGINEER.
- STRUCTURAL APPROACH SLABS TO BE PART OF THE BRIDGE PLAN. BID ITEMS ARE CONCRETE MASONRY BRIDGES. BAR STEEL REINFORCEMENT IS COATED BRIDGES, 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.
- 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 S5901 BARS SHALL BE SPECIAL PROVISION "BAR STEEL REINFORCEMENT HS STAINLESS BRIDGES".
- DESIGNER TO COORDINATE LOCATION OF SURFACE DRAINS, INLETS, AND/OR FLUMES WITH ROADWAY DESIGNER AND FDM SDD 802 OR 803.
- SEE PARAPET STANDARD DETAILS FOR REINFORCEMENT, LOCATION OF NAME PLATE AND BENCH MARK WITH RESPECT TO THE END OF PARAPET, ETC.
- BELOW THE APPROACH SLAB FOOTING AND STRUCTURAL APPROACH SLAB, SHOW BASE AGGREGATE DENSE 1-1/4 INCH AS PER FDM 14-5 AND BRIDGE MANUAL FIGURE 12.6-2.
- FOLLOW FDM 14-10-15 REQUIREMENTS FOR ROADWAY APPROACH PAVEMENT.

**STRUCTURAL APPROACH SLAB
DETAILS FOR TYPE A3 & A4
ABUTMENTS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

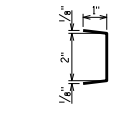
APPROVED: Bill Oliva DATE: 1-14

SECTIONS SHOWN HERE ARE CUT ON STANDARD 12.12

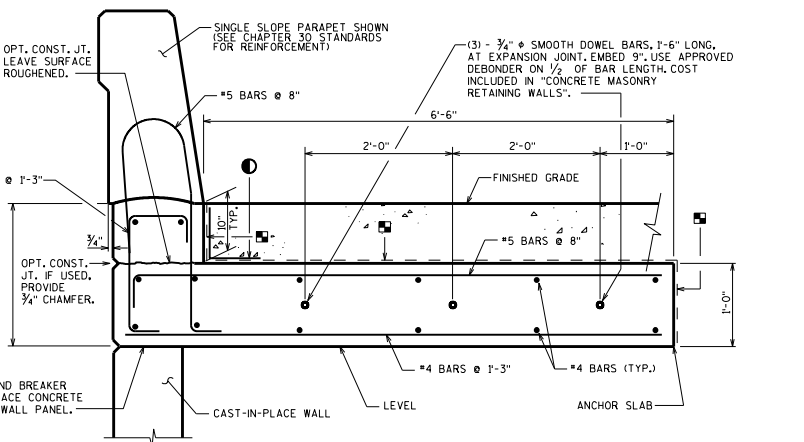


18" RUBBERIZED MEMBRANE WATERPROOFING TO BE PLACED ON THESE SURFACES AT EACH JOINT.

IF THE OPT. CONST. JOINT IS USED, PLACE 18" MEMBRANE WATERPROOFING ALONG THE ENTIRE LONGITUDINAL JOINT. THE MEMBRANE WATERPROOFING SEALING THE OPTIONAL CONST. JOINT IS INCIDENTAL TO THE CONCRETE MASONRY BID ITEM.



RUSTICATION DETAIL
 PROVIDE RUSTICATION IF OPT. CONST. JOINT IS USED.



LIQUID OR OTHER BOND BREAKER BETWEEN CAST-IN-PLACE CONCRETE AND CAST-IN-PLACE WALL PANEL.

CAST-IN-PLACE CONCRETE TRAFFIC BARRIER DETAIL FOR PRECAST WALL PANELS

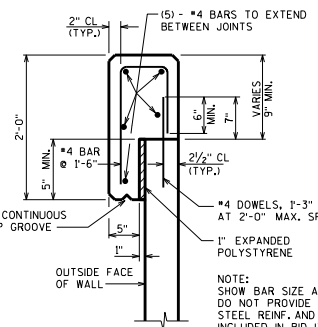
OPTIONAL CONSTRUCTION JOINTS IN THE PARAPET AND ANCHOR SLAB BETWEEN EXPANSION JOINTS MAY BE USED. RUN BAR REINFORCEMENT THRU THE JOINT. SEE STANDARDS 30.07, 30.12, 30.13 & 30.30-30.32 FOR MINIMUM LAP LENGTHS IN PARAPET BARS. DEFINE CONSTRUCTION JOINT WITH A 3/4" "V" GROOVE.

LAP LONGITUDINAL #4 BARS A MINIMUM OF 1'-0".
 ALL BAR STEEL SHALL BE EPOXY COATED.
 CONCRETE QUANTITY BASED ON 3" PANEL EMBEDMENT.

CAST-IN-PLACE CONCRETE TRAFFIC BARRIER DETAIL FOR CAST-IN-PLACE WALL PANELS

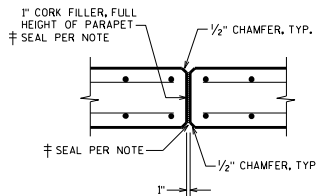
OPTIONAL CONSTRUCTION JOINTS IN THE PARAPET AND ANCHOR SLAB BETWEEN EXPANSION JOINTS MAY BE USED. RUN BAR REINFORCEMENT THRU THE JOINT. SEE STANDARDS 30.07, 30.12, 30.13 & 30.30-30.32 FOR MINIMUM LAP LENGTHS IN PARAPET BARS. DEFINE CONSTRUCTION JOINT WITH A 3/4" "V" GROOVE.

LAP LONGITUDINAL #4 BARS A MINIMUM OF 1'-0".
 ALL BAR STEEL SHALL BE EPOXY COATED.

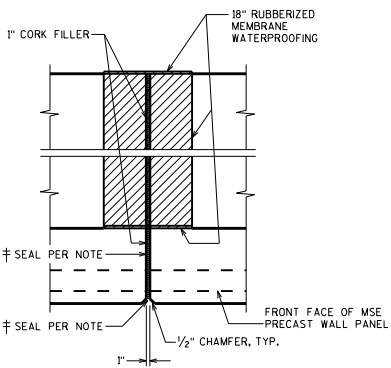


CAST-IN-PLACE CONCRETE COPING DETAIL

NOTE: CONCRETE COPING REINFORCING STEEL SHALL BE DESIGNED AT LOCATIONS WHERE RAILING, FENCING, OR ANY OTHER ATTACHMENTS ARE MADE.



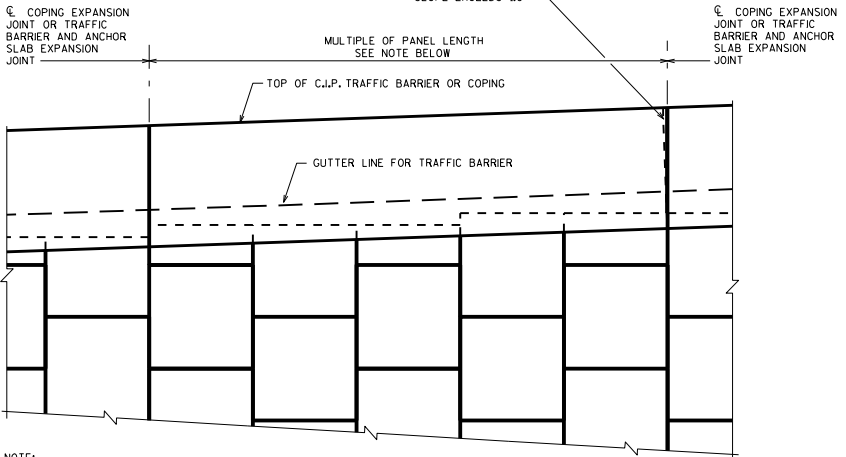
TRAFFIC BARRIER EXPANSION JOINT DETAIL



ANCHOR SLAB EXPANSION JOINT DETAIL

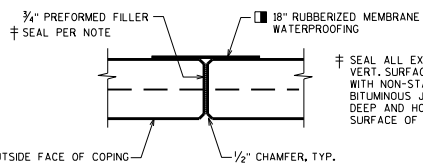
EXPANSION JOINTS TO BE SPACED AT A MINIMUM OF 20' AND A MAXIMUM OF 30'. LOCATE EXPANSION JOINTS OVER WALL JOINTS. DO NOT RUN BAR STEEL THRU JOINT, EXCEPT FOR DOWEL BARS. JOINT TO EXTEND FULL DEPTH OF PARAPET AND ANCHOR SLAB. PROVIDE THE NUMBER OF BARS AND OVERALL LENGTH FOR QUANTITY PURPOSES, ONLY. DO NOT DETAIL SPECIFIC BAR LENGTHS BETWEEN EXPANSION JOINTS AS THESE LENGTHS ARE BASED ON UNKNOWN MSE PANEL LENGTH AND CONFIGURATION.

PLACE EXPANSION JOINT NORMAL TO TOP OF COPING WHEN TOP OF COPING SLOPE EXCEEDS 1:8



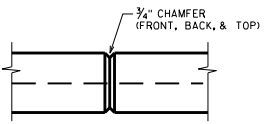
NOTE: ALL JOINTS SHALL BE LOCATED AS SHOWN ON WALL ELEVATIONS AND MUST COINCIDE WITH PANEL JOINT ON FRONT FACE.

C.J.P. TRAFFIC BARRIER OR COPING PARTIAL ELEVATION



COPING EXPANSION JOINT

DO NOT RUN BAR STEEL THRU JOINT. MAX. SPACING OF JOINT = 50'



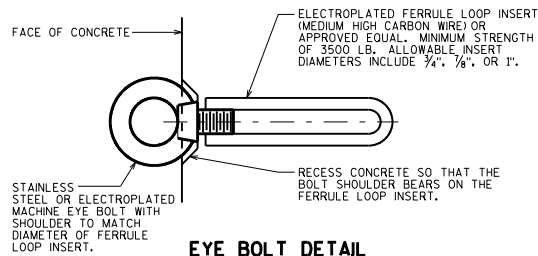
COPING CONTRACTION JOINT

DO NOT RUN BAR STEEL THRU JOINT. MAX. SPACING OF JOINT = 12'

DESIGNER NOTES

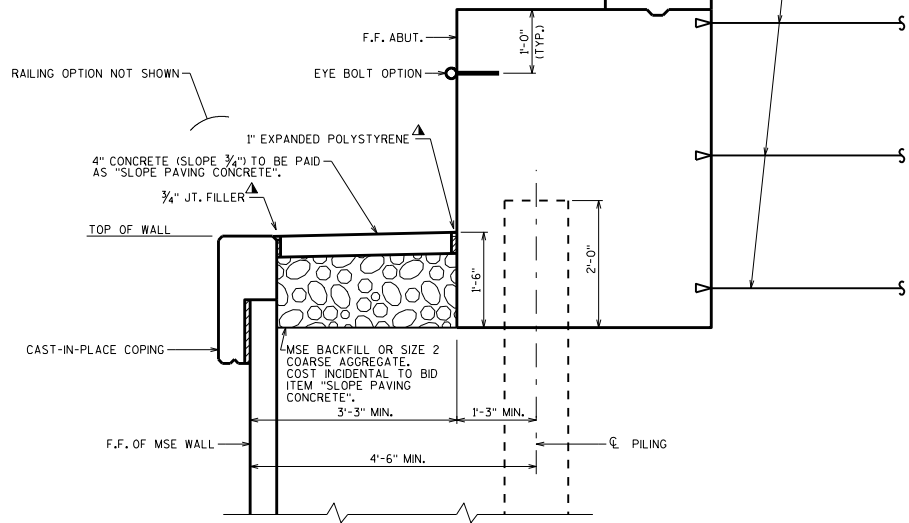
MODIFIED ANCHOR SLAB DETAILS SHALL SATISFY AASHTO LRFD STRENGTH AND STABILITY REQUIREMENTS.

MSE RETAINING WALL DETAILS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <i>Bill Oliva</i>	DATE: 1-14



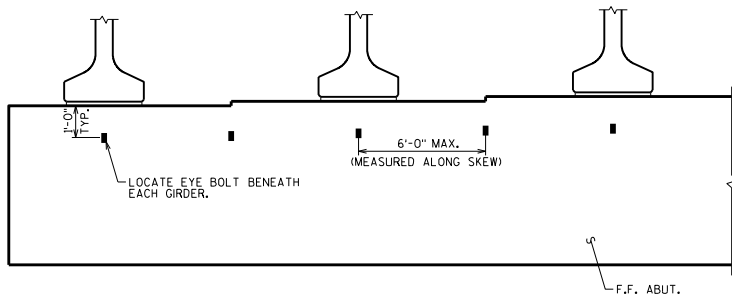
EYE BOLT DETAIL

COST INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES".



CROSS SECTION THRU ABUTMENT AT MSE WALL

EXPANSION ABUT. SHOWN; SEE STANDARDS 12.01 & 12.02 FOR APPLICABLE BODY REINFORCEMENT AND STANDARDS 12.03 & 12.04 FOR BACKWALL AND WING REINFORCEMENT.



PARTIAL ELEVATION OF F.F. ABUTMENT SHOWING EYE BOLT FALL PROTECTION OPTION

RETAINING WALL NOT SHOWN

ABUTMENT ANCHORAGE TO BE DETERMINED BY THE MSE WALL DESIGNER. (ISOL REINFORCEMENT STRIPS SHOWN.)

DESIGNER NOTES

DUE TO MAINTENANCE CONCERNS, MSE WALLS SHALL NOT BE USED FOR THE SINGULAR PURPOSE OF REDUCING SPAN LENGTH. IF THE GRADE LINE CANNOT BE RAISED, THEN MSE WALLS MAY BE USED TO MAINTAIN THE SUPERSTRUCTURE DEPTH. OTHER CIRCUMSTANCES MAY ALSO JUSTIFY THE USE OF MSE WALLS AT ABUTMENTS.

FALL PROTECTION SHALL BE PROVIDED. THE OPTION PROVIDED SHOULD BE BASED ON THE PREFERENCE OF THE BRIDGE MAINTENANCE AND REGION PROJECT STAFF.

IF PIPE RAILING IS USED, SEE STD. 30.26 FOR APPLICABLE NOTES. (NOTE: STD. 30.26 IS STILL UNDER DEVELOPMENT)

"SLOPE PAVING CONCRETE" ITEMS TO BE SHOWN AS PART OF BRIDGE PLAN.

NOTES

UNFACTORED SUPERSTRUCTURE LATERAL LOADS TRANSFERRED TO THE ABUTMENT ARE TAKEN TO BE KIPS PER FOOT OF ABUTMENT LENGTH. THE VALUES ARE TO BE USED FOR THE LRFD DESIGN OF THE ABUTMENT ANCHORAGE BY THE MSE MANUFACTURER (MSE SYSTEM, DEAD MAN ANCHOR, OTHER). THE FOLLOWING AASHTO LINE LOADS SHALL BE NOTED ON PLAN:

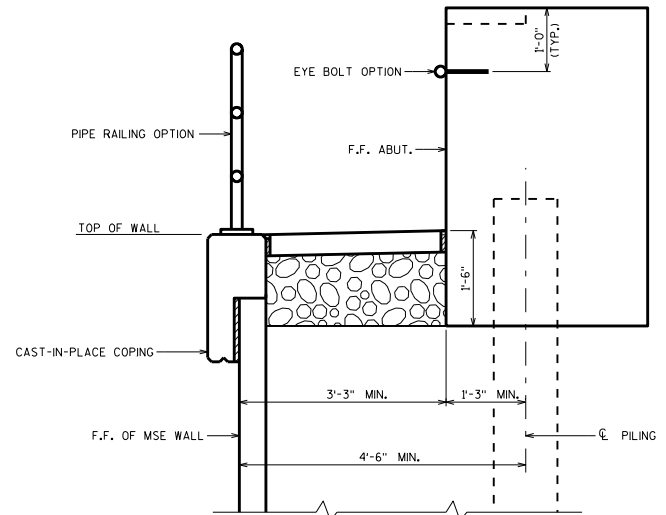
BR = --- KLF WS = --- KLF
TU = --- KLF WL = --- KLF

FOR SEMI-EXPANSION OR FIXED TYPE A1 ABUTMENTS:

THE DESIGN OF THE WALL IN FRONT OF THE ABUTMENT SHALL INCLUDE THE HORIZONTAL EARTH LOADS AND 240 PSF LIVE LOAD SURCHARGE ACTING ON THE BACK OF THE ABUTMENT BELOW THE BEAM SEATS.

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

EXPANSION ABUTMENTS TO BE BACKFILLED TO A MINIMUM OF THE BEAM SEAT ELEVATION PRIOR TO PLACING GRIDERS.



CROSS SECTION THRU ABUTMENT AT MSE WALL SHOWING BOTH EYE BOLT AND RAILING FALL PROTECTION OPTIONS

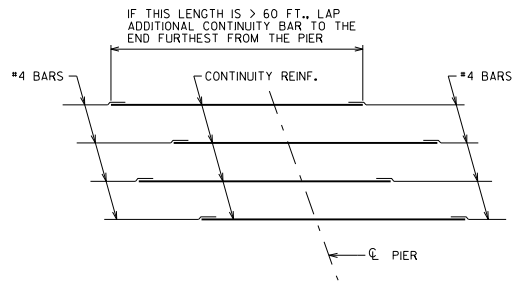
TYPE A1 SEMI-EXPANSION ABUTMENT SHOWN

MSE WALL AT ABUTMENT

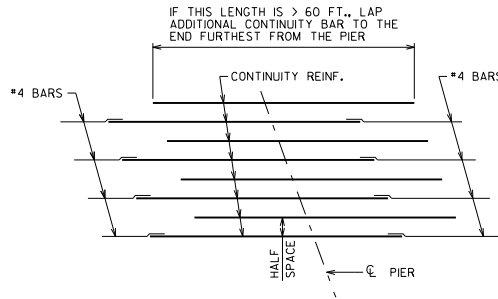
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

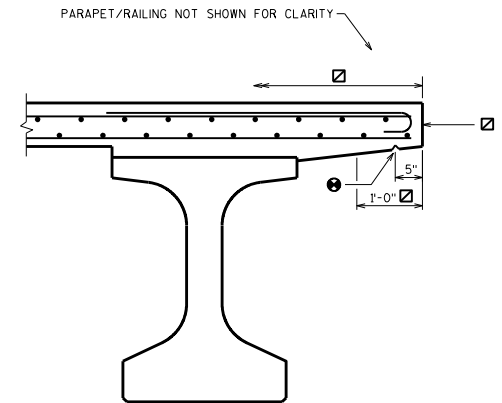
DATE:
1-14



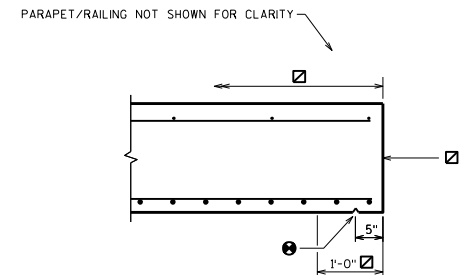
PLAN VIEW OF DECK CONTINUITY REINFORCEMENT FOR PRESTRESSED GIRDER BRIDGES
(SHOWING TYPICAL BAR SPACING FROM CHAPTER 17 TABLES)



PLAN VIEW OF DECK CONTINUITY REINFORCEMENT FOR PRESTRESSED GIRDER BRIDGES SHOWING HALF-SPACES
(SHOWING TYPICAL BAR SPACING FROM CHAPTER 17 TABLES + HALF-SPACE)

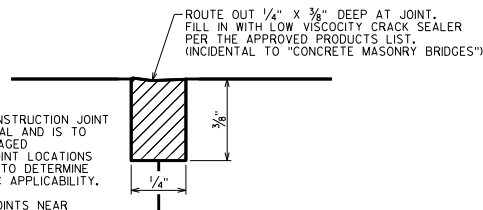


CROSS SECTION THRU EDGE OF DECK
(SHOWING DRIP GROOVE FOR ALL PARAPET AND RAILINGS, AND PROTECTIVE SURFACE TREATMENT FOR OPEN RAILINGS)

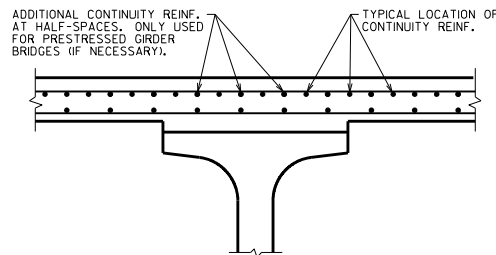


CROSS SECTION THRU EDGE OF SLAB
(SHOWING DRIP GROOVE FOR ALL PARAPET AND RAILINGS, AND PROTECTIVE SURFACE TREATMENT FOR OPEN RAILINGS)

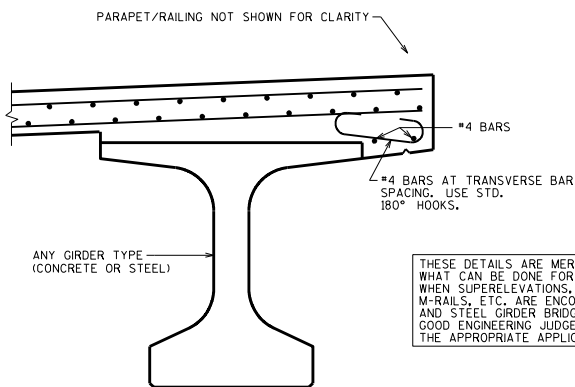
- NOTES:
- LONGITUDINAL CONSTRUCTION JOINT DETAIL IS OPTIONAL AND IS TO BE USED FOR STAGED CONSTRUCTION JOINT LOCATIONS ONLY. DESIGNER TO DETERMINE PROJECT SPECIFIC APPLICABILITY.
 - AVOID PLACING JOINTS NEAR WHEEL PATHS. IF POSSIBLE, PLACE JOINTS AT LINE LINES.



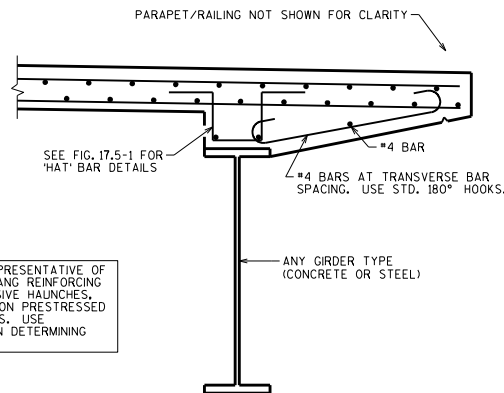
LONGITUDINAL CONSTRUCTION JOINT DETAIL



CROSS SECTION THRU DECK
(SHOWING TOP LONGIT. REINF. LOCATION RELATIVE TO BOTTOM LONGIT. REINF.)



CROSS SECTION THRU EDGE OF DECK
(SHOWING ADDITIONAL OVERHANG REINFORCEMENT)



CROSS SECTION THRU EDGE OF DECK
(SHOWING ADDITIONAL OVERHANG REINFORCEMENT)

THESE DETAILS ARE MERELY REPRESENTATIVE OF WHAT CAN BE DONE FOR OVERHANG REINFORCING WHEN SUPERELEVATIONS, EXCESSIVE HAUNCHES, M-RAILS, ETC. ARE ENCOUNTERED ON PRESTRESSED AND STEEL GIRDER BRIDGE DECKS. USE GOOD ENGINEERING JUDGEMENT IN DETERMINING THE APPROPRIATE APPLICATION.

DESIGNER NOTES

- 3/4" V-GROOVE. TERMINATE 2'-0" FROM FRONT FACE OF EXPANSION ABUTMENTS, OR FIXED ABUTMENTS ON STEEL BEARINGS.
- 3/4" V-GROOVE. EXTEND V-GROOVE TO 3" FROM FRONT FACE OF ABUTMENT DIAPHRAGM FOR TYPE A1 FIXED AND SEMI-EXPANSION ABUTMENTS.
- V-GROOVES ARE REQUIRED.

NOTES

- 3/4" V-GROOVE. TERMINATE 2'-0" FROM FRONT FACE OF ABUTMENTS.
- 3/4" V-GROOVE. EXTEND V-GROOVE TO 3" FROM FRONT FACE OF ABUTMENT DIAPHRAGM.
- V-GROOVES ARE REQUIRED.

- FOR OPEN RAILINGS, COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS. PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE TOP AND EXTERIOR EXPOSED FACE OF WINGS, AND THE END 1'-0" OF THE FRONT FACE OF ABUTMENT.

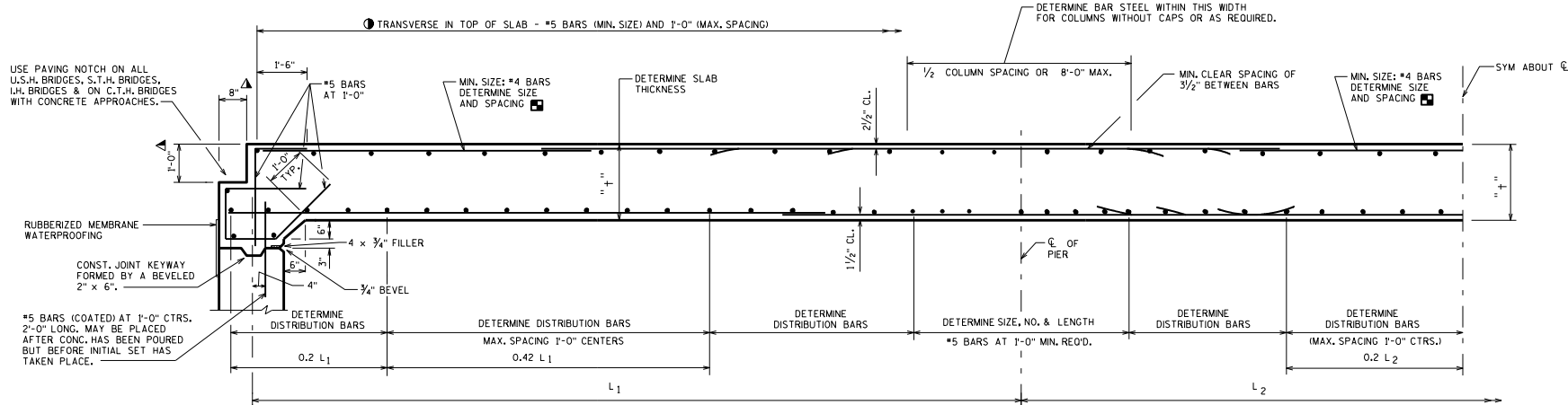
- COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS.

DECK AND SLAB DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

DATE:
1-14



HALF LONGITUDINAL SECTION

NOTES

TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS EACH WAY. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

PARAPETS, SIDEWALKS AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED, EXCEPT FOR STAGED CONSTRUCTION.

CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C. OF ABUTMENTS, THE C. OF PIERS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR C.

DESIGNER NOTES

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

ALL BAR SPLICES TO BE BASED ON "CLASS C" TENSION LAP SPLICE.

USE OPTIONAL LONGITUDINAL JOINTS WHEN OVERALL SLAB WIDTH IS OVER 52'-0".

FOR BRIDGES LOCATED IN REMOTE AREAS USE OPTIONAL TRANSVERSE JOINT WHEN POUR EXCEEDS 400 C.Y. PLACE KEYED JOINT NEAR POINT OF DEAD LOAD INFLECTION.

ALL TRANSVERSE BAR STEEL REINFORCEMENT SHALL BE PLACED ON THE SKEW.

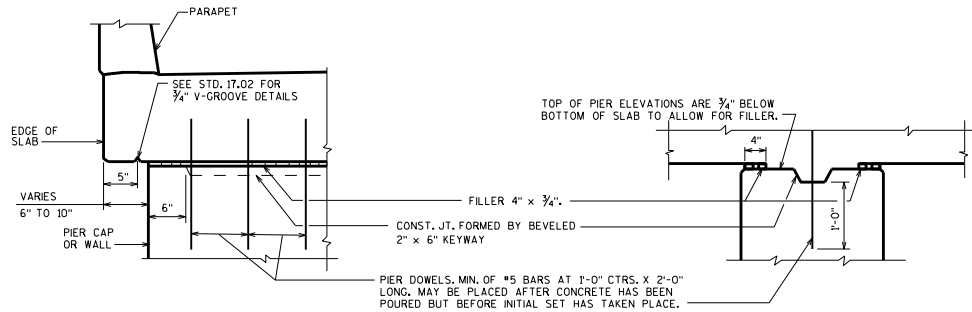
FLOOR DRAINS ARE TO BE OMITTED FROM SLAB STRUCTURES WHERE POSSIBLE. IF FLOOR DRAINS ARE REQUIRED, PLACE ONLY AT THE 2/10 AND 8/10 PTS. BEND MAIN REBARS PAST DRAINS - DO NOT CUT.

PIER CAP OR WALL TYPE PIERS SHALL BE USED ON MOST STRUCTURES. "COLUMN WITHOUT CAP" TYPE PIERS (SEE STD. 18.01) MAY BE USED WITH THE APPROVAL OF THE STRUCTURES DESIGN SECTION.

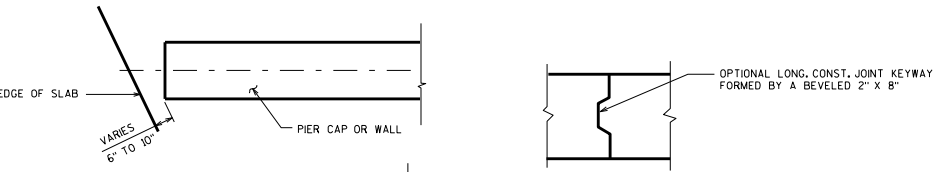
ON THE PLANS, PROVIDE CAMBER VALUES AT THE TENTH POINTS OF ALL SPANS. ALSO PROVIDE TOP OF SLAB ELEVATIONS AT THE CENTERLINE (AND/OR CROWN) AND OUTSIDE EDGES OF SLAB AT TENTH POINTS.

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

■ REINFORCEMENT IN SLAB MUST MEET TEMPERATURE AND SHRINKAGE REQUIREMENTS.



PIER CAP OR WALL TYPE PIER
SEE STD. 18.01 FOR COLUMN W/O CAP PIER DETAIL.



PLAN OF PIER

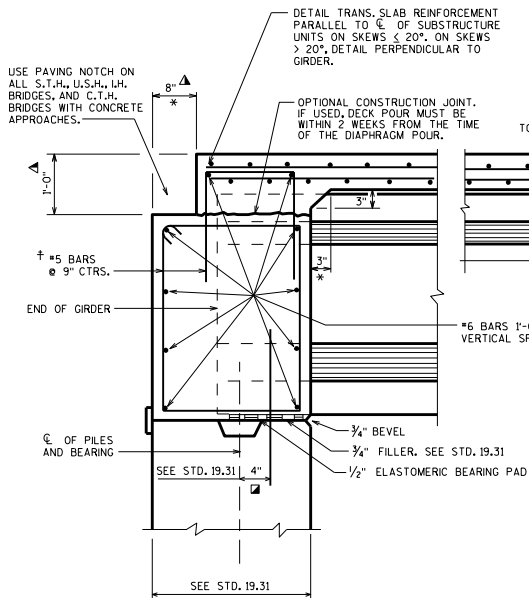
OPTIONAL LONGITUDINAL CONSTRUCTION JOINT

TOP TRANSVERSE REINF. FOR RAILINGS/PARAPETS		
SINGLE SLOPE OR SLOPED FACE PARAPETS	MAIN BARS RUN FROM EDGE TO EDGE OF SLAB	SHORT BARS PLACED BETWEEN MAIN BARS AT EDGE OF SLAB
SLAB THICK. ≥ 15"	(#5 @ 1'-0")	(#5 @ 1'-0") 5'-0" LONG NO HOOK REQ'D. AT END
13" ≤ SLAB THICK. < 15"	(#5 @ 10")	(#5 @ 10") 5'-0" LONG STD. HOOK REQ'D. AT END
STEEL RAILINGS TYPE "M"/"W"	① TOP TRANSVERSE REINF. SPECIFIED IN "LONGIT. SECTION" IS ADEQUATE	

CONTINUOUS FLAT SLAB

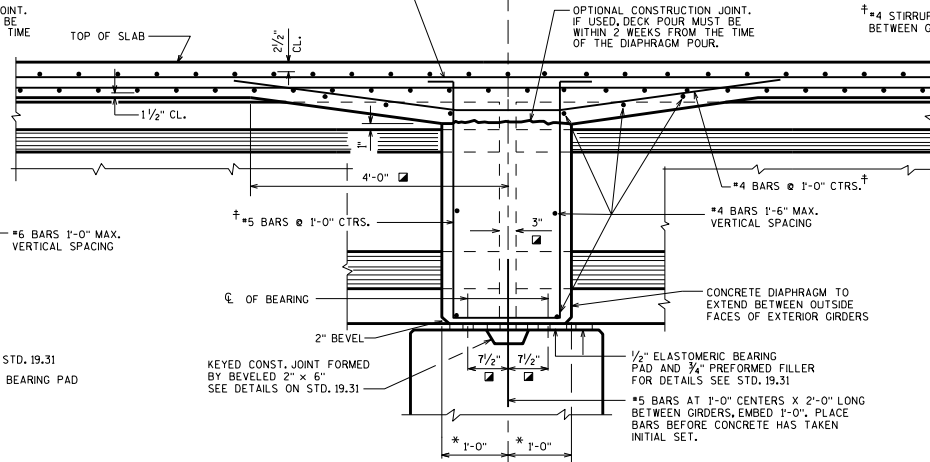
STATE OF WISCONSIN
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**FIXED END
FOR SKEWED AND SQUARE STRUCTURES**

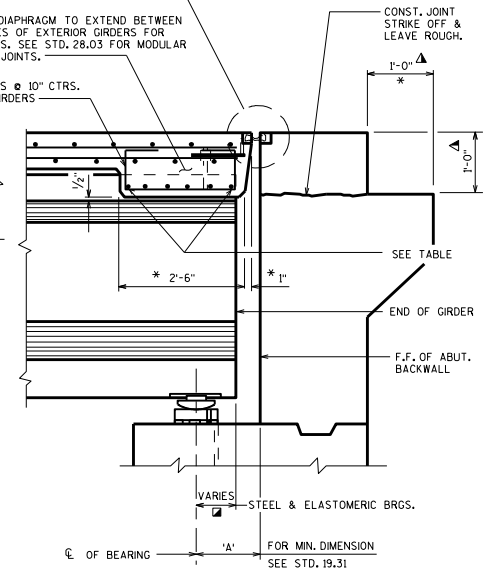
SEE BRIDGE MANUAL 19.3.2.3.1 FOR GUIDANCE ON REQUIRED LONGITUDINAL REINFORCING OVER PIERS.



DIAPHRAGM AT 1/2" ELASTOMERIC BEARING

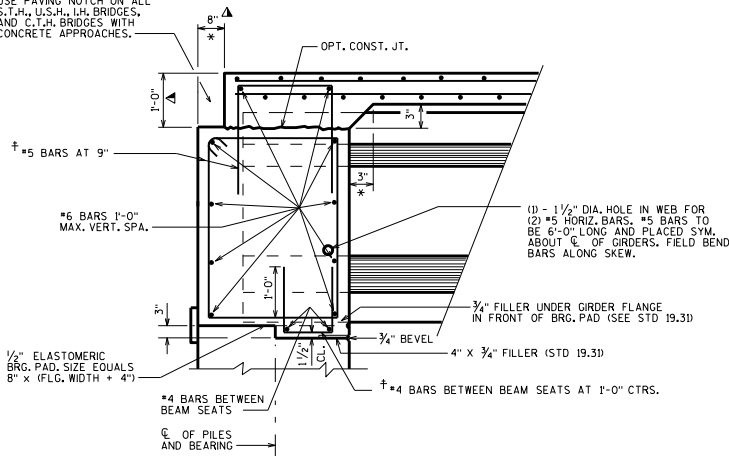
SEE STD. 28.01 FOR STRIP SEAL EXPANSION JOINT DEVICE. SEE STD. 28.03 FOR MODULAR JOINT EXPANSION JOINT DEVICE AND ABUTMENT BACKWALL DETAILS.

CONCRETE DIAPHRAGM TO EXTEND BETWEEN INSIDE FACES OF EXTERIOR GIRDERS FOR STRIP SEALS. SEE STD. 28.03 FOR MODULAR EXPANSION JOINTS.



EXPANSION END

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



**PRESTRESSED GIRDER WITH
SEMI-EXPANSION SEAT**

EXPANSION END DIAPHRAGM STEEL

DIAPHRAGM LENGTH (ALONG SKEW) BETWEEN GIRDERS (CL. TO CL. OF GRDS.)	NO. OF BARS & BAR SIZE	
	28"	36"
< 8'-4"	6 - #6	6 - #6
> 8'-4" < 11'-4"	6 - #8	6 - #7
> 11'-4" < 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 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 GIRDERS; SPACING PERPENDICULAR TO CL. GIRDERS.

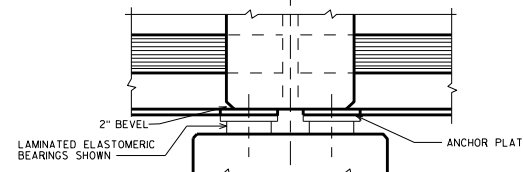
SEE STANDARD 19.34 FOR 36" & 45" PRESTRESSED GIRDERS SLAB AND SUPERSTRUCTURE DETAILS

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

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

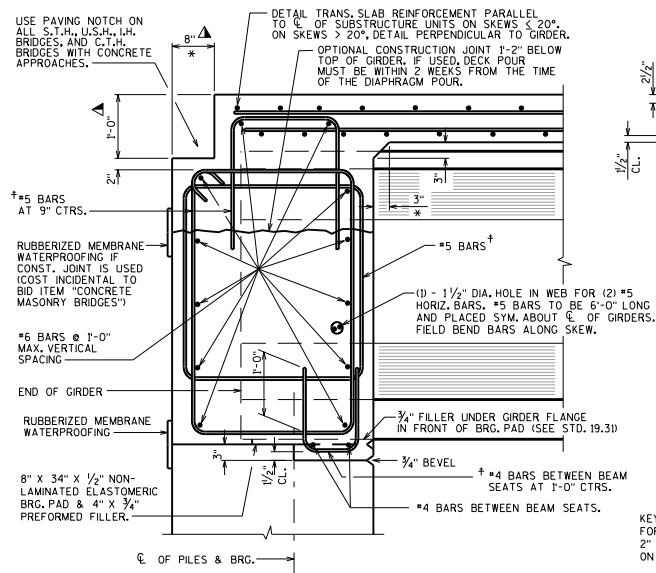
STATE OF WISCONSIN
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STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva DATE: 1-14

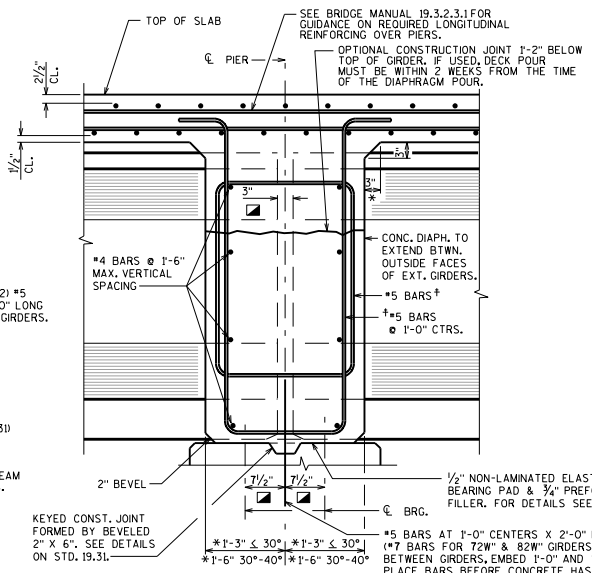


**DIAPHRAGM AT STEEL OR ELASTOMERIC BEARINGS
SECTION THRU DIAPHRAGM AT PIER**

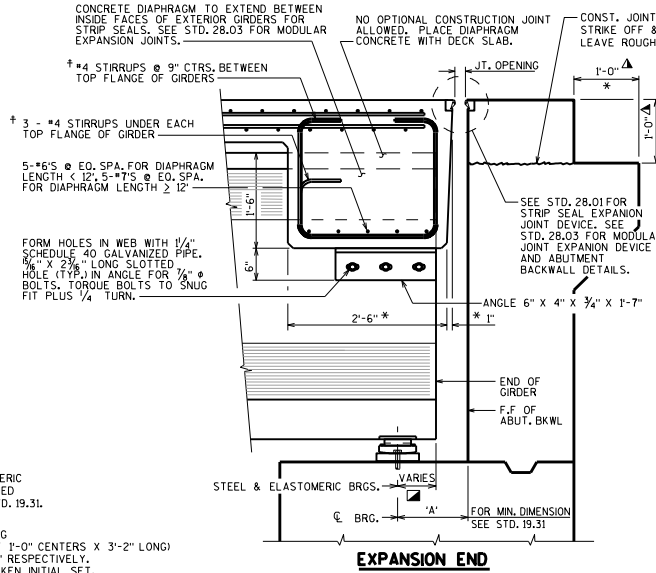
FOR STEEL BEARINGS, FORM DIAPHRAGM APPROXIMATELY 1/2" ABOVE BEARING KEEPER BARS



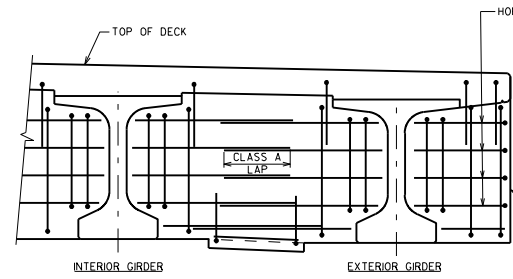
PRESTRESSED GIRDER WITH SEMI-EXPANSION SEAT



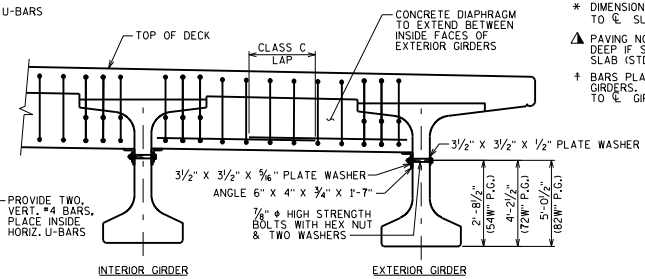
DIAPHRAGM AT 1/2" ELASTOMERIC BEARING



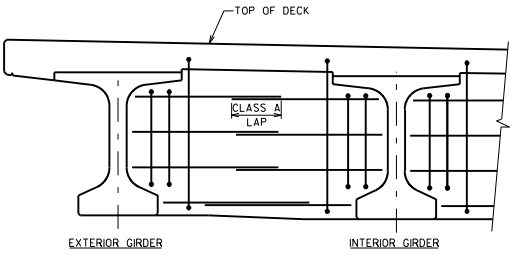
EXPANSION END
0° SKEW SHOWN (NON 0° SKEW SHOWN IN TOP VIEW)



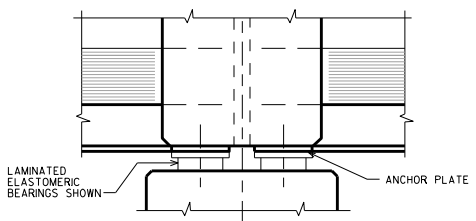
PART TRANSVERSE SECTION AT DIAPHRAGM SEMI-EXPANSION END



PART TRANSVERSE SECTION AT DIAPHRAGM EXPANSION END



PART TRANSVERSE SECTION AT DIAPHRAGM PIER

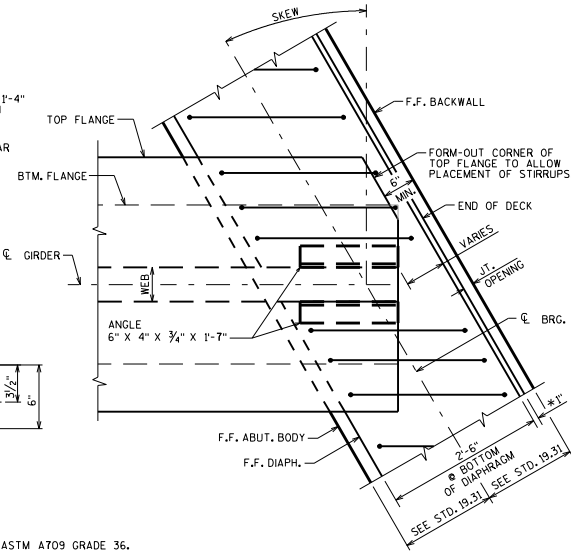


DIAPHRAGM AT STEEL OR ELASTOMERIC BEARINGS SECTION THRU DIAPHRAGM AT PIER

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, SPACING PERPENDICULAR TO CL GIRDERS.



TOP VIEW OF DIAPHRAGM (EXPANSION END)

NOTES

DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1. ALL SUPPORT ANGLES SHALL BE HOT-DIPPED GALVANIZED. ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL BE TAPPED OVERSIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A563 AND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTARY REQUIREMENT S1 OF ASTM A563. LUBRICANT AND TEST FOR COATED NUTS. ALL DIAPHRAGM SUPPORT HARDWARE SHALL BE INCIDENTAL TO "CONCRETE MASONRY BRIDGES".

DESIGNER NOTES

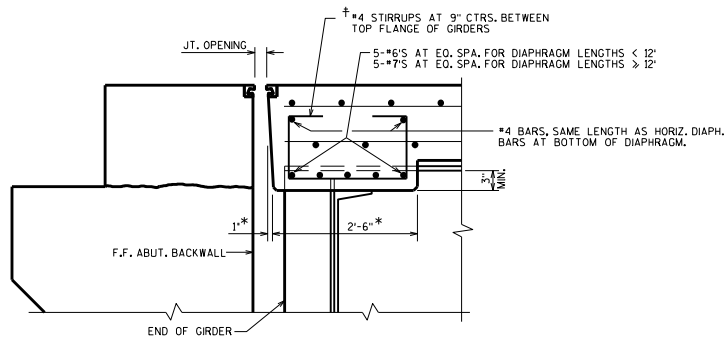
LAP LENGTHS FOR DIAPHRAGM REINFORCEMENT SHALL BE BASED ON A CLASS "C" TENSION LAP SPLICE, UNLESS OTHERWISE NOTED.

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

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION

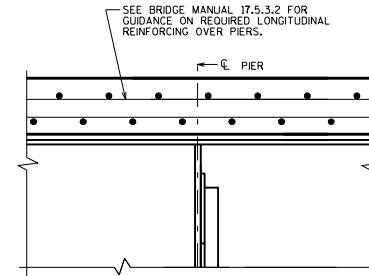
APPROVED: *Bill Oliva*

DATE: 1-14

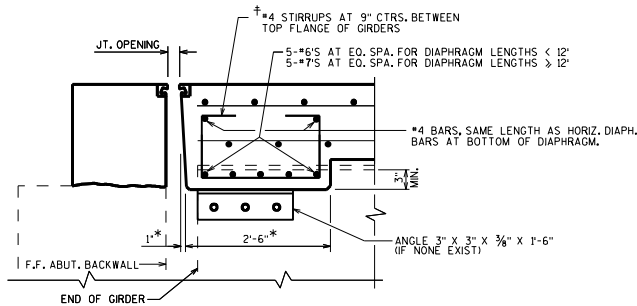


SECTION THRU EXPANSION END

DIAPHRAGM TO EXTEND TO GIRDER WEB
(SEE PART TRANSVERSE SECTION AT DIAPHRAGM
EXPANSION END FOR TYPICAL EXTENTS)

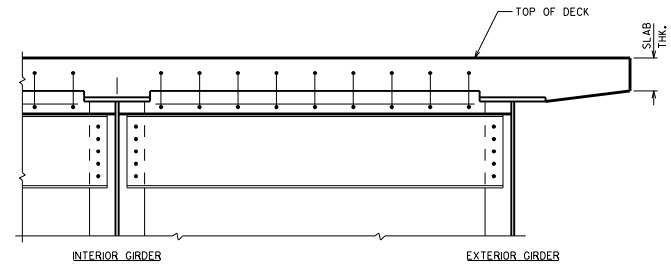


SECTION AT PIER



**SECTION THRU EXPANSION END OF NEW DECK
SHOWING EXISTING STEEL GIRDER
WITHOUT EXISTING STEEL DIAPHRAGM**

(SEE STD. 40.04 FOR ADDITIONAL DETAILS)



**PART TRANSVERSE SECTION AT DIAPHRAGM
EXPANSION END**

NOTES

FOR REHABILITATION PROJECTS:
DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36.
ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

ALL SUPPORT ANGLES SHALL BE HOT-DIPPED GALVANIZED.
ALL BOLTS, NUTS AND WASHERS SHALL BE HOT-DIPPED GALVANIZED
IN ACCORDANCE WITH ASTM A153 CLASS C. GALVANIZED NUTS SHALL
BE TAPPED OVSIZED IN ACCORDANCE WITH THE REQUIREMENTS OF
ASTM A563 AND SHALL MEET THE REQUIREMENTS OF SUPPLEMENTARY
REQUIREMENT S1 OF ASTM A563, LUBRICANT AND TEST FOR COATED NUTS.

ALL DIAPHRAGM SUPPORT HARDWARE SHALL BE INCIDENTAL TO
"CONCRETE MASONRY BRIDGES".

ALL REPLACEMENT PAVING BLOCK DIMENSIONS SHALL MATCH EXISTING
PLAN DIMENSIONS UNLESS DESIGNER DETERMINES OTHERWISE.

LEGEND

† BARS PLACED PARALLEL TO GIRDERS.
SPACING PERPENDICULAR TO ϵ GIRDERS.
* DIMENSION IS TAKEN NORMAL TO ϵ ABUTMENT

STEEL GIRDER SLAB & SUPERSTRUCTURE DETAILS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <u>Bill Oliva</u>	DATE: 1-14

LENGTH OF PLATE "C"	TOTAL LOAD KIPS	PLATE C			PLATE D			HEIGHT FEET
		X	Y	Z	X	Y	Z	
10"	215	5"	2 3/8"	10"	8"	1 3/4"	1'-7"	0.354
12"	260	5"	2 3/8"	1'-0"	9"	1 3/4"	1'-9"	0.354
	280	5"	2 3/8"	1'-0"	10"	2 3/8"	1'-9"	0.406
14"	280	5"	1 3/4"	1'-2"	9"	1 3/4"	1'-11"	0.318
	335	5"	2 3/8"	1'-2"	11"	2 3/8"	1'-11"	0.406
	385	5"	2 3/8"	1'-2"	1'-1"	2 3/8"	1'-11"	0.448
16"	410	5"	2 3/8"	1'-2"	1'-3"	2 3/8"	2'-0"	0.448
	275	5"	1 3/4"	1'-4"	8"	1 3/4"	2'-1"	0.318
	330	5"	1 3/4"	1'-4"	10"	2 3/8"	2'-1"	0.370
18"	390	5"	2 3/8"	1'-4"	1'-0"	2 3/8"	2'-1"	0.406
	465	5"	2 3/8"	1'-4"	1'-2"	2 3/8"	2'-2"	0.448
	490	5"	2 3/8"	1'-4"	1'-4"	3 3/8"	2'-2"	0.490
20"	325	5"	1 3/4"	1'-6"	9"	1 3/4"	2'-3"	0.318
	390	5"	1 3/4"	1'-6"	11"	2 3/8"	2'-3"	0.370
	465	5"	2 3/8"	1'-6"	1'-1"	2 3/8"	2'-4"	0.448
22"	495	5"	2 3/8"	1'-6"	1'-2"	2 3/8"	2'-4"	0.448
	560	5"	2 3/8"	1'-6"	1'-4"	3 3/8"	2'-4"	0.490
	350	5"	1 3/4"	1'-8"	9"	1 3/4"	2'-5"	0.318
24"	380	5"	1 3/4"	1'-8"	10"	2 3/8"	2'-5"	0.370
	460	5"	2 3/8"	1'-8"	1'-0"	2 3/8"	2'-6"	0.406
	530	5"	2 3/8"	1'-8"	1'-2"	2 3/8"	2'-6"	0.448
26"	600	5"	2 3/8"	1'-8"	1'-4"	3 3/8"	2'-6"	0.490
	640	5"	2 3/8"	1'-8"	1'-6"	3 3/8"	2'-6"	0.531
	405	5"	1 3/4"	1'-10"	10"	2 3/8"	2'-7"	0.370
28"	490	5"	1 3/4"	1'-10"	1'-0"	2 3/8"	2'-8"	0.370
	565	5"	2 3/8"	1'-10"	1'-2"	2 3/8"	2'-8"	0.448
	635	5"	2 3/8"	1'-10"	1'-4"	3 3/8"	2'-8"	0.490
30"	705	5"	2 3/8"	1'-10"	1'-6"	3 3/8"	2'-8"	0.531
	720	5"	2 3/8"	1'-10"	1'-8"	3 3/8"	2'-8"	0.531

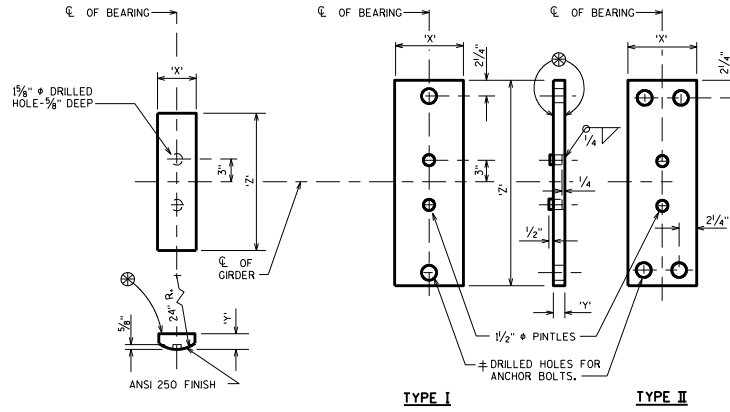
ANCHOR BOLT NOTES

FOR SPAN LENGTHS UP TO 100'-0":
USE A TYPE I MASONRY PLATE "D" WITH
(2) - 1/4" ϕ x 1'-5" LONG ANCHOR BOLTS.

FOR SPAN LENGTHS FROM 100'-0" UP TO 150'-0":
USE A TYPE I MASONRY PLATE "D" WITH
(2) - 1/2" ϕ x 1'-10" LONG ANCHOR BOLTS.

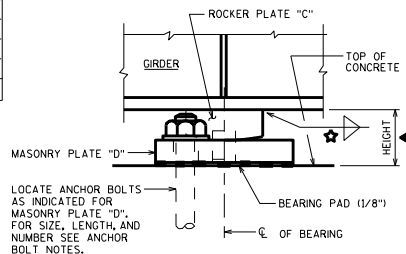
FOR SPAN LENGTHS GREATER THAN 150'-0":
USE A TYPE II MASONRY PLATE "D" WITH
(4) - 1/2" ϕ x 1'-10" LONG ANCHOR BOLTS.

CHECK THAT ANCHOR BOLTS PROVIDE ADEQUATE
HORIZONTAL CAPACITY.

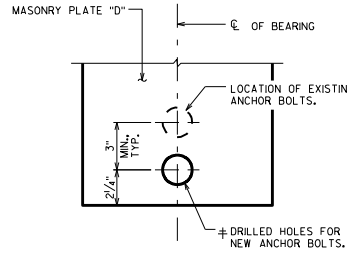


ROCKER PLATE "C"

MASONRY PLATE "D"



FIXED BEARING ASSEMBLY



MASONRY PLATE "D"

BEARING REPLACEMENTS

BEARING NOTES

ALL BEARINGS ARE SYMMETRICAL ABOUT CL OF GIRDER AND CL OF BEARING.

IN LIEU OF USING SHIM PLATES, FABRICATOR MAY INCREASE THICKNESS OF MASONRY PLATE "D" BY THE SHIM PLATE THICKNESS.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

ALL FINISHED SURFACES SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.

ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. PROJECT ANCHOR BOLTS, MASONRY PLATE "D" THICKNESS + 2/4", ABOVE TOP OF CONCRETE.

ALL MATERIAL IN BEARINGS, INCLUDING SHIM PLATES, BUT EXCLUDING PINTLES, ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 50W.

STEEL PINTLES SHALL CONFORM TO ASTM A449 OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.

ALL MATERIAL IN TYPE "A" BEARINGS, INCLUDING SHIM PLATES AND BEARING PADS, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING ASSEMBLIES FIXED B-...", EACH.

CHAMFER TOP OF PINTLES 1/8". DRILL HOLES FOR ALL PINTLES IN MASONRY PLATE "D" FOR A DRIVING FIT.

PROVIDE 1/4" THICK BEARING PAD THE SAME SIZE AS MASONRY PLATE "D" FOR EACH BEARING.

CHAMFER ANCHOR BOLTS PRIOR TO THREADING.

ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 36, OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS C.

ROCKER PLATE "C" SHALL BE SHOP PAINTED WITH A WELDABLE PRIMER.

MASONRY PLATE "D" SHALL BE GALVANIZED.

PLACE SHIM PLATES BETWEEN BEARING PAD AND MASONRY PLATE "D". PLATES SHALL HAVE "X" AND "Z" DIMENSIONS THAT MATCH MASONRY PLATE "D".

DRILLED HOLES FOR ANCHOR BOLTS IN MASONRY PLATE "D" SHALL HAVE A DIAMETER 1/8" LARGER THAN ANCHOR BOLT.

FINISH THESE SURFACES TO ANSI 250 IF "Y" DIMENSION IS GREATER THAN 2".

DESIGNER NOTES

HEIGHT OF BEARINGS GIVEN IN TABLE INCLUDES 1/8" BEARING PAD.

DETAIL SHIM PLATES AS DESCRIBED IN NOTES ON STANDARD 24.02.

REFER TO THE DETAILS BELOW FOR THE USE OF BEVELED ROCKER PLATE "C" ON GRADES GREATER THAN 3% AND ALSO CLEARANCE REQUIREMENTS.

FOR WELD SIZE, REFER TO STANDARD 24.02

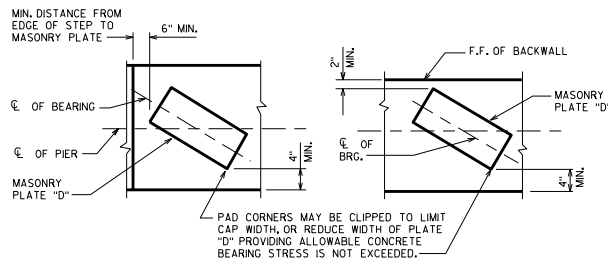
ADJUST HEIGHT IF BEVELED ROCKER PLATE "C" IS USED.

FOR BEARING REPLACEMENTS, DESIGNER SHALL UTILIZE A WIDER BEARING THAN THE EXISTING GIRDER BOTTOM FLANGE WIDTH TO ALLOW FOR FIELD WELDING CLEARANCES.

CALCULATE THE REACTION AT THE BEARINGS DUE TO "TOTAL LOADS". USE THE AASHTO LRFD SERVICE I LOAD COMBINATION. CONSIDER ONLY DEAD LOAD (DC + DW) AND HL-93 LIVE LOADS (LL), INCLUDING A 33% DYNAMIC LOAD ALLOWANCE (IM).

THE VALUES IN THE TABLES ARE THE BEARING CAPACITIES FOR "TOTAL LOAD" (DC + DW + (LL + IM)).

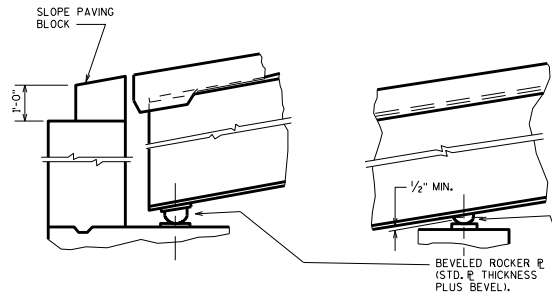
SELECT A BEARING THAT HAS A CAPACITY GREATER THAN OR EQUAL TO THE CALCULATED REACTION FOR "TOTAL LOADS".



AT SKEWED PIER

AT SKEWED ABUTMENTS

CLEARANCE DIAGRAM



AT EXPANSION BRG.

AT FIXED BRG.

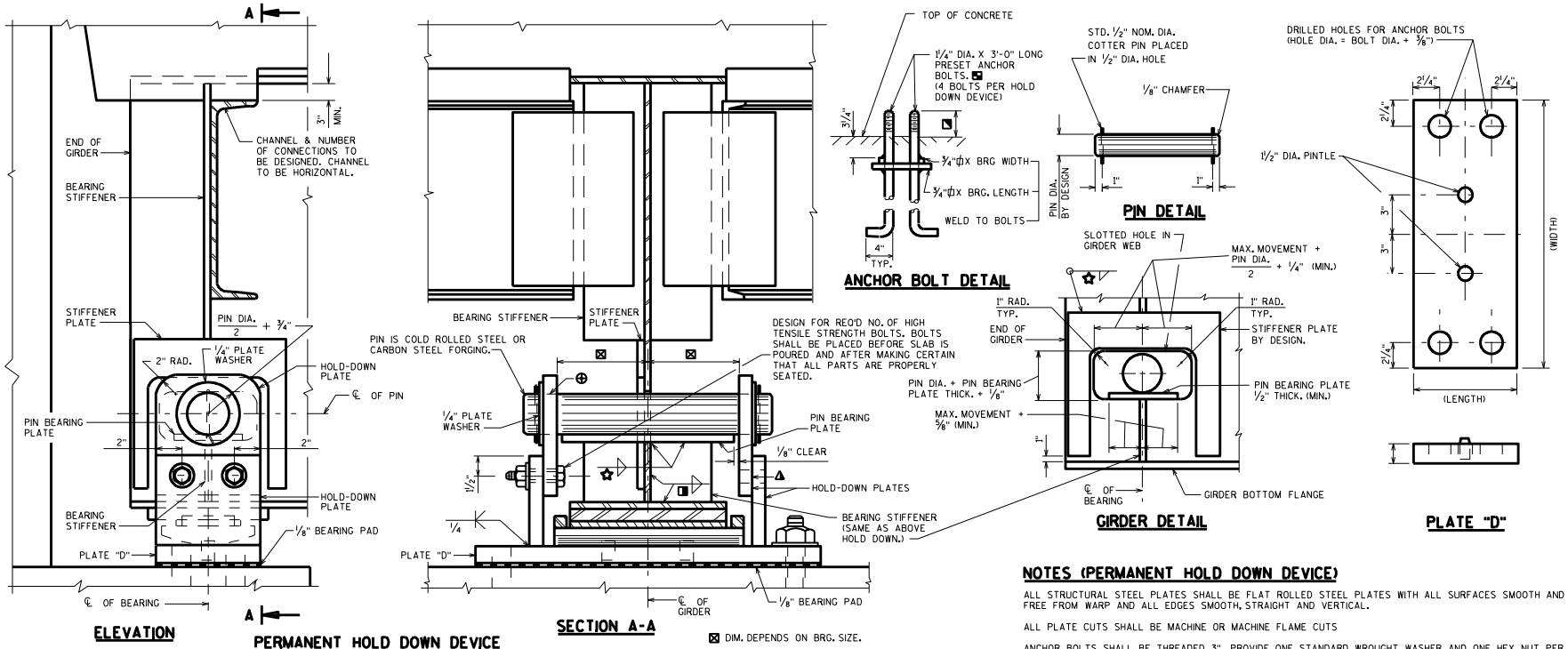
BEVELED ROCKERS WITH GRADES GREATER THAN 3%

**FIXED BEARING DETAILS
TYPE 'A' - STEEL GIRDERS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: *Bill Oliva*

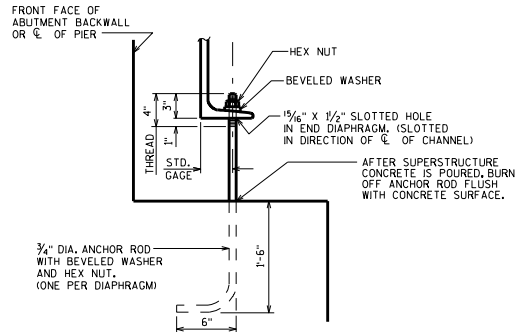
DATE:
1-14



WHEN REQUIRED, HOLD DOWN DEVICES SHALL BE PLACED SYMMETRICALLY ABOUT LONGITUDINAL \bar{C} OF FRAMING PLAN. MAXIMUM SPACING OF HOLD DOWNS SHALL BE AT ALTERNATE GIRDERS. HOLD DOWN DEVICE TO BE DESIGNED FOR MINIMUM UPLIFT CAPACITY OF 20 KIPS.

NOTES (PERMANENT HOLD DOWN DEVICE)

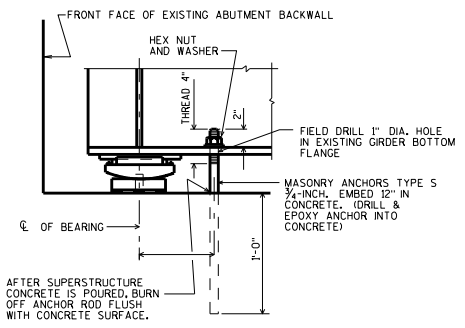
- ALL STRUCTURAL STEEL PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.
- ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS
- ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. CHAMFER TOP OF ANCHOR BOLTS PRIOR TO THREADING.
- ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS C.
- THE MATERIAL FOR THE HOLD-DOWN PLATES SHALL CONFORM TO ASTM A709 GRADE 50W.
- ALL MATERIAL WELDED TO THE GIRDERS, WHICH INCLUDES BEARING STIFFENERS, STIFFENER PLATE, AND PIN BEARING PLATE, SHALL MATCH THE STEEL REQUIREMENTS OF THE WEB AT THAT LOCATION.
- ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 36 OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.
- ALL MATERIAL IN HOLD DOWN DEVICES, WHICH INCLUDES HOLD-DOWN PLATES, HIGH TENSILE STRENGTH BOLTS, PINS AND ANCHOR BOLTS, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION B-...".
- ALL MATERIAL WELDED TO THE GIRDERS, WHICH INCLUDES BEARING STIFFENERS, STIFFENER PLATE, AND PIN BEARING PLATE, SHALL BE INCLUDED IN THE BID ITEM USED FOR THE STEEL GIRDER QUANTITIES.
- FOR REPLACEMENT BEARINGS, ANCHOR BOLTS SHALL BE 1/2" DIAMETER X 3'-0" LONG AND FULLY THREADED. THESE ANCHOR BOLTS SHALL BE PAID FOR AS "MASONRY ANCHORS TYPE S 1 1/2"-INCH" AND BE EPOXY ANCHORED.
- SHOP DRILL HOLES IN HOLD-DOWN PLATE ATTACHED TO PLATE "D". FIELD DRILL HOLES IN UPPER HOLD-DOWN PLATE AFTER ALIGNING IN THE FIELD.
- SEE STANDARD 24.02 FOR TABLE OF FILLET WELD SIZES.
- SEE STANDARD 24.02 FOR WELD DETAILS SHOWING BEARING STIFFENER CONNECTION TO WEB AND FLANGE.
- PROJECT ANCHOR BOLTS, PLATE "D" THICKNESS + 2/4", ABOVE TOP OF CONCRETE.
- HOLES FOR PIN IN HOLD-DOWN PLATES AND PLATE WASHERS SHALL BE AS STATED IN STANDARD SPECIFICATION 506.3.17.



ELEVATION - NEW CONSTRUCTION

TEMPORARY HOLD DOWN DEVICES SHALL BE PLACED AT THAT END OF ALL CONTINUOUS STEEL GIRDER UNITS WHERE THE SLAB POUR TERMINATES, EXCEPT WHERE PERMANENT HOLD DOWN DEVICES ARE PLACED AT THIS LOCATION. LOCATE 7'-6" (NORMAL) OFF \bar{C} OF GIRDER. TO BE PAID FOR AS "STRUCTURAL CARBON STEEL".

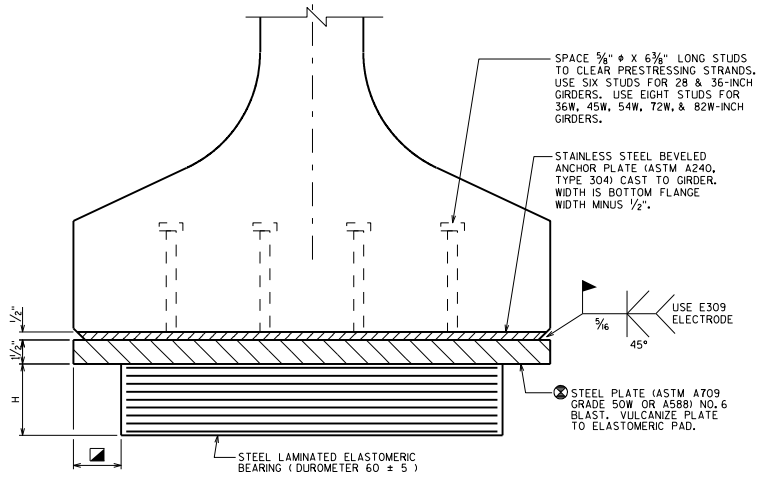
TEMPORARY HOLD DOWN DEVICE



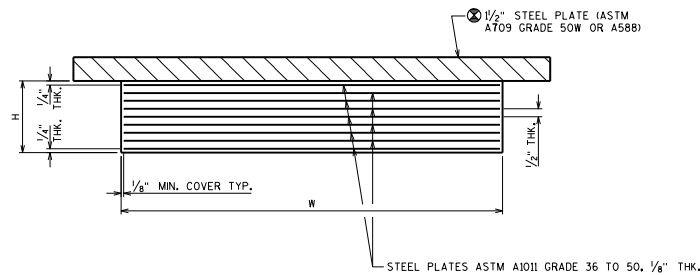
ELEVATION - DECK REPLACEMENT

PLACE ONE ANCHOR ROD PER GIRDER AT ABUTMENT WHERE SLAB POUR TERMINATES. LOCATE 4" (NORMAL) OFF \bar{C} OF GIRDER. ANCHOR ROD, NUT, WASHER, AND DRILLED HOLE IN GIRDER FLANGE SHALL BE PAID FOR AS "MASONRY ANCHORS TYPE S 3/4"-INCH". EMBED 12" IN CONCRETE.

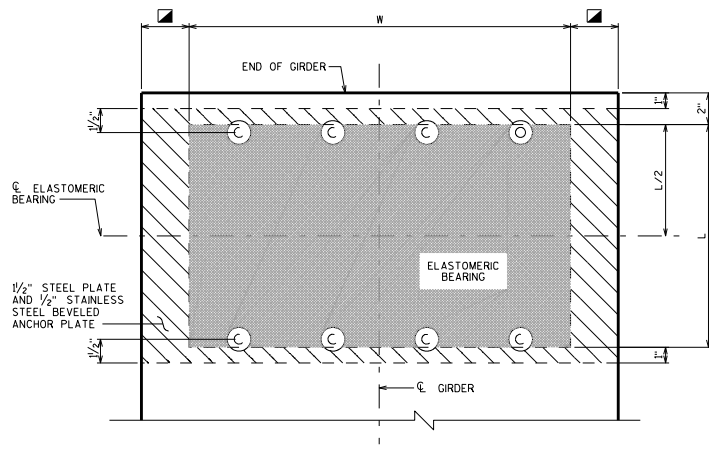
HOLD DOWN DEVICES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <i>Bill Oliva</i>	DATE: 1-14



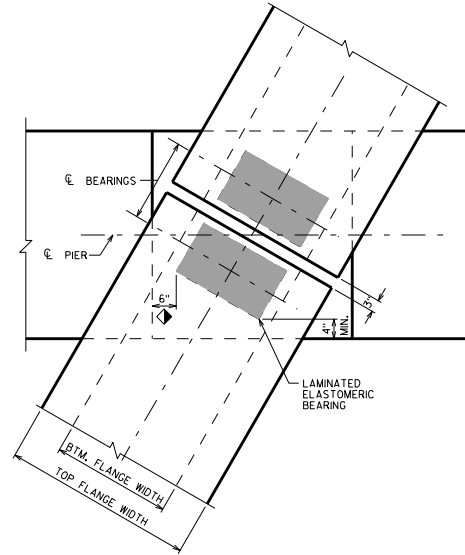
END VIEW



SECTION THRU ELASTOMERIC BEARING

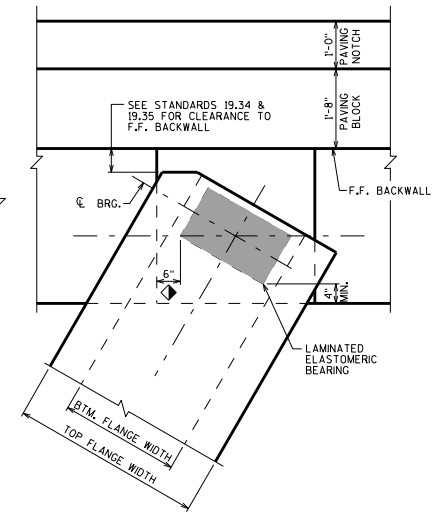


PLAN VIEW



AT SKEWED PIER

DETAIL SHOWN IS FOR A CONTINUOUS DECK AT AN EXPANSION PIER. IF PIER CAP WIDTH BECOMES EXCESSIVE, CONSIDER USING STEEL BEARINGS.



AT SKEWED ABUTMENTS

CLEARANCE DIAGRAM

DESIGNER NOTES

FOR ALL NEW BRIDGES, THE STEEL TOP PLATE SHALL HAVE A MINIMUM THICKNESS OF $\frac{1}{2}$ ".

FOR BEARINGS USED IN BEARING REPLACEMENT PROJECTS, THE STEEL TOP PLATE THICKNESS MAY BE REDUCED TO A MINIMUM OF $\frac{3}{4}$ " TO MATCH THE OVERALL EXISTING BEARING HEIGHT. WHEN THE THICKNESS IS REDUCED, THE FOLLOWING NOTE SHALL BE LOCATED ON THE PLANS:

"WELDING PROCEDURES SHALL BE ESTABLISHED BY THE CONTRACTOR TO RESTRICT THE MAXIMUM TEMPERATURE REACHED BY SURFACES IN CONTACT WITH ELASTOMER TO 200°F (93°C). TEMPERATURES SHALL BE CONTROLLED BY TEMPERATURE INDICATING WAX PENCILS OR OTHER SUITABLE MEANS APPROVED BY THE ENGINEER."

NOTES

ALL MATERIAL USED FOR BEARINGS SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING PADS ELASTOMERIC LAMINATED", EACH.

ON BEARING REPLACEMENTS, COMPRESSION LOAD AND ADHESION TESTS WILL BE WAIVED WHERE BEARINGS ARE DETAILED TO MEET HEIGHT REQUIREMENTS.

ALL STRUCTURAL STEEL PLATES SHALL BE FLAT ROLLED WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT, AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

SEE CHAPTER 40 STANDARDS FOR USE OF ELASTOMERIC BEARINGS ON NEW AND REHABILITATED STEEL GIRDER BRIDGES.

☒ CHECK 27.2.1 ELASTOMERIC BEARINGS IN THE BRIDGE MANUAL FOR REQUIREMENTS TO SEE IF THIS PLATE SHOULD BE TAPERED.

☑ 3" FOR 36W, 45W, 54W, 72W & 82W
1" FOR 28" & 36"

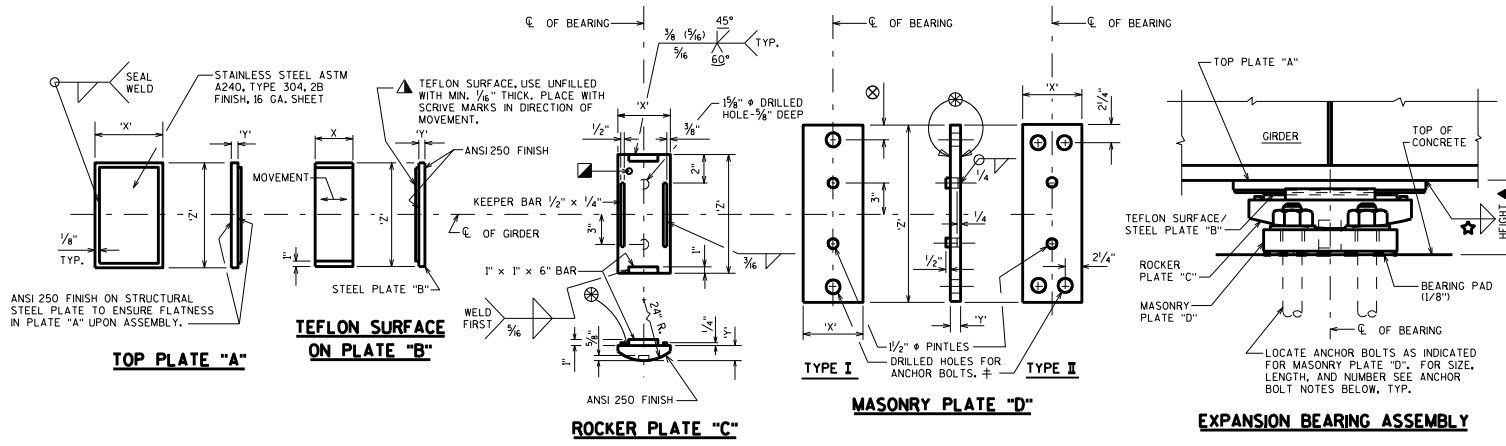
◆ MIN. DISTANCE FROM EDGE OF PIER/ABUT. STEP TO LAMINATED ELASTOMERIC BEARING

ELASTOMERIC BEARINGS FOR PRESTRESSED CONCRETE GIRDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

DATE:
1-14



BEARING NOTES

- ALL BEARINGS ARE SYMMETRICAL ABOUT \bar{C} OF GIRDER AND \bar{C} OF BEARING.
- FINISH THESE SURFACES TO ANSI 250 IF "Y" DIMENSION IS GREATER THAN 2".
- ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153, CLASS C.
- ROCKER PLATE "C" AND MASONRY PLATE "D" SHALL BE GALVANIZED, TOP PLATE "A" AND STEEL PLATE "B" SHALL BE SHOP PAINTED. USE A WELDABLE PRIMER ON TOP PLATE "A". DO NOT PAINT STAINLESS STEEL OR TEFLON SURFACES.
- ALL MATERIAL IN BEARINGS, INCLUDING SHIM PLATES, BUT EXCLUDING STAINLESS STEEL SHEET, TEFLON SURFACE, PINTLES, ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 50W.
- IN LIEU OF USING SHIM PLATES, FABRICATOR MAY INCREASE THICKNESS OF TOP PLATE "A" OR MASONRY PLATE "D" BY THE SHIM PLATE THICKNESS.
- DIMENSION IS 2" WHEN 1/4" ϕ ANCHOR BOLTS ARE USED AND 2 1/4" WHEN 1/2" ϕ ANCHOR BOLTS ARE USED.
- ALL MATERIAL IN TYPE "A-T" BEARINGS, INCLUDING SHIM PLATES AND BEARING PADS, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING ASSEMBLIES EXPANSION B--", EACH.
- CHAMFER ANCHOR BOLTS PRIOR TO THREADING.
- ALL FINISHED SURFACES SHALL BE MACHINE FINISHED BY AN AUTOMATIC PROCESS.
- ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.
- ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED STEEL PLATES WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.
- PROVIDE 1/8" THICK BEARING PAD THE SAME SIZE AS MASONRY PLATE "D" FOR EACH BEARING.
- ANCHOR BOLTS SHALL BE THREADED 3". PROVIDE ONE STANDARD WROUGHT WASHER AND ONE HEX NUT PER BOLT. PROTECT ANCHOR BOLTS, MASONRY PLATE "D" THICKNESS + 2/4", ABOVE TOP OF CONCRETE.
- CHAMFER TOP OF PINTLES 1/8". DRILL HOLES FOR ALL PINTLES IN MASONRY PLATE "D" FOR A DRIVING FIT.
- STEEL PINTLES SHALL CONFORM TO ASTM A449 OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.
- ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A709 GRADE 36, OR MATERIAL OF EQUIVALENT YIELD STRENGTH AND ELONGATION.
- PLACE SHIM PLATES BETWEEN BEARING PAD AND MASONRY PLATE "D". PLATES SHALL HAVE "X" AND "Z" DIMENSIONS THAT MATCH MASONRY PLATE "D".
- PROVIDE A METHOD FOR HANDLING ROCKER PLATE "C" DURING GALVANIZING.
- BOND STEEL PLATE "B" AND TEFLON WITH ADHESIVE MATERIAL MEETING FEDERAL SPECIFICATION MMM-A-134, FEP FILM OR EQUAL.
- DRILLED HOLES FOR ANCHOR BOLTS IN MASONRY PLATE "D" SHALL HAVE A DIAMETER 3/16" LARGER THAN ANCHOR BOLT.
- AT INSTALLATION, ENSURE STAINLESS STEEL SLIDING FACE OF THE UPPER ELEMENT AND THE TFE SLIDING FACE OF THE LOWER ELEMENT HAVE THE SURFACE FINISH SPECIFIED AND ARE CLEAN AND FREE OF ALL DUST, MOISTURE, OR ANY OTHER FOREIGN MATTER.

DESIGNER NOTES

HEIGHT OF BEARINGS GIVEN IN TABLES INCLUDES 1/4" BEARING PAD, 1/8" GAGE STAINLESS STEEL SHEET AND 1/16" TEFLON SURFACE.

DETAIL SHIM PLATES AS DESCRIBED IN NOTES ON STANDARD 24.02.

SEE STANDARD 27.02 FOR THE USE OF BEVELED ROCKER PLATE "C" ON GRADES GREATER THAN 3% AND ALSO CLEARANCE REQUIREMENTS.

AT ABUTMENTS, WHEN THE "X" DIMENSION OF PLATE "A" EXCEEDS 11", INCREASE STANDARD DISTANCE FROM \bar{C} OF BEARING TO END OF GIRDER.

- FOR WELD SIZE, REFER TO STANDARD 24.02.
- ADJUST HEIGHT IF BEVELED ROCKER PLATE "C" IS USED.
- FOR BEARING REPLACEMENTS, DESIGNER SHALL UTILIZE A WIDER BEARING THAN THE EXISTING GIRDER BOTTOM FLANGE WIDTH TO ALLOW FOR FIELD WELDING CLEARANCES.
- FOR BEARING REPLACEMENTS, SEE STD. 27.02 FOR MINIMUM ANCHOR BOLT CLEARANCE INFORMATION.
- CALCULATE THE REACTIONS AT THE BEARINGS DUE TO "TOTAL LOADS" AND ALSO "DEAD LOADS" ONLY. USE THE AASHTO LRFD SERVICE I LOAD COMBINATION. CONSIDER ONLY DEAD LOAD (DC + DW) AND HL-93 LIVE LOADS (LL), INCLUDING A 33% DYNAMIC LOAD ALLOWANCE (IM).
- THE VALUES IN THE TABLES ARE THE BEARING CAPACITIES FOR "TOTAL LOAD" (DC + DW + LL + IM). TAKE 60% OF THE VALUES IN THE TABLES TO DETERMINE THE BEARING CAPACITIES FOR "DEAD LOAD" ONLY (DC + DW).
- SELECT A BEARING THAT HAS A "TOTAL LOAD" CAPACITY GREATER THAN OR EQUAL TO THE CALCULATED "TOTAL LOAD" REACTION AND ALSO A "DEAD LOAD" CAPACITY GREATER THAN OR EQUAL TO THE CALCULATED "DEAD LOAD" REACTION.

ANCHOR BOLT NOTES

- FOR SPAN LENGTHS UP TO 100'-0": USE A TYPE I MASONRY PLATE "D" WITH (2) - 1/4" ϕ X 1'-5" LONG ANCHOR BOLTS.
- FOR SPAN LENGTHS FROM 100'-0" UP TO 150'-0": USE A TYPE I MASONRY PLATE "D" WITH (2) - 1/2" ϕ X 1'-10" LONG ANCHOR BOLTS.
- FOR SPAN LENGTHS GREATER THAN 150'-0": USE A TYPE II MASONRY PLATE "D" WITH (4) - 1/2" ϕ X 1'-10" LONG ANCHOR BOLTS.
- CHECK THAT ANCHOR BOLTS PROVIDE ADEQUATE HORIZONTAL CAPACITY.

STAINLESS STEEL - TFE EXPANSION BEARING DETAILS TYPE 'A-T'	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <i>Bill Oliva</i>	DATE: 1-14

10" BEARING

TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
100	9"	5/8"	10"	5"	1/2"	10"	7"	1 1/8"	1'-0 1/4"	8"	1 1/2"	1'-8"	0.360
180	1'-1"	5/8"	10"	9"	1/2"	10"	11"	2 3/8"	1'-0 1/4"	8"	1 1/2"	1'-8"	0.438
260	1'-5"	5/8"	10"	1'-1"	1/2"	10"	1'-3"	3 3/8"	1'-0 1/4"	11"	2"	1'-8"	0.604

14" BEARING

TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
210	11"	5/8"	1'-2"	7"	1/2"	1'-2"	9"	1 1/8"	1'-4 1/4"	8"	1 1/2"	2'-0"	0.401
375	1'-5"	5/8"	1'-2"	1'-1"	1/2"	1'-2"	1'-3"	3 3/8"	1'-4 1/4"	1'-2"	2 3/8"	2'-0"	0.677
500	1'-9"	5/8"	1'-2"	1'-5"	1/2"	1'-2"	1'-7"	4 3/8"	1'-4 1/4"	1'-5"	3 3/8"	2'-1"	0.802

18" BEARING

TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
280	11"	5/8"	1'-6"	7"	1/2"	1'-6"	9"	1 1/8"	1'-8 1/4"	9"	2"	2'-4"	0.443
360	1'-1"	5/8"	1'-6"	9"	1/2"	1'-6"	11"	2 3/8"	1'-8 1/4"	11"	2"	2'-4"	0.479
600	1'-7"	5/8"	1'-6"	1'-3"	1/2"	1'-6"	1'-5"	3 3/8"	1'-8 1/4"	1'-5"	3 3/8"	2'-5"	0.719
650	1'-11"	5/8"	1'-6"	1'-7"	1/2"	1'-6"	1'-9"	4 3/8"	1'-8 1/4"	1'-10"	3 3/8"	2'-5"	0.844

12" BEARING

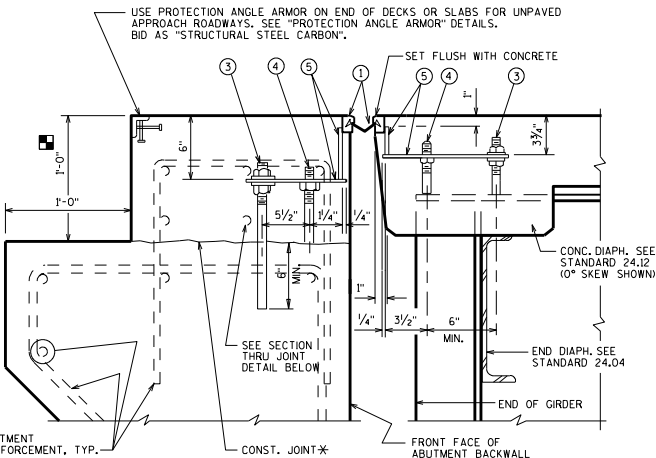
TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
125	9"	5/8"	1'-0"	5"	1/2"	1'-0"	7"	1 1/8"	1'-2 1/4"	8"	1 1/2"	1'-10"	0.360
175	11"	5/8"	1'-0"	7"	1/2"	1'-0"	9"	1 1/8"	1'-2 1/4"	8"	1 1/2"	1'-10"	0.401
275	1'-3"	5/8"	1'-0"	11"	1/2"	1'-0"	1'-1"	2 3/8"	1'-2 1/4"	11"	2"	1'-10"	0.521

16" BEARING

TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
245	11"	5/8"	1'-4"	7"	1/2"	1'-4"	9"	1 1/8"	1'-6 1/4"	8"	1 1/2"	2'-2"	0.401
370	1'-3"	5/8"	1'-4"	11"	1/2"	1'-4"	1'-1"	2 3/8"	1'-6 1/4"	1'-0"	2 3/8"	2'-3"	0.552
525	1'-7"	5/8"	1'-4"	1'-3"	1/2"	1'-4"	1'-5"	3 3/8"	1'-6 1/4"	1'-4"	3 3/8"	2'-3"	0.719
575	1'-9"	5/8"	1'-4"	1'-5"	1/2"	1'-4"	1'-7"	4 3/8"	1'-6 1/4"	1'-6"	3 3/8"	2'-3"	0.844

20" BEARING

TOTAL LOAD (KIPS)	PLATE A			PLATE B			PLATE C			PLATE D			HEIGHT FEET
	X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z	
225	9"	5/8"	1'-8"	5"	1/2"	1'-8"	7"	1 1/8"	1'-10 1/4"	8"	1 1/2"	2'-6"	0.360
315	11"	5/8"	1'-8"	7"	1/2"	1'-8"	9"	1 1/8"	1'-10 1/4"	9"	2"	2'-6"	0.443
495	1'-3"	5/8"	1'-8"	11"	1/2"	1'-8"	1'-1"	2 3/8"	1'-10 1/4"	1'-1"	2 3/8"	2'-7"	0.594
675	1'-7"	5/8"	1'-8"	1'-3"	1/2"	1'-8"	1'-5"	3 3/8"	1'-10 1/4"	1'-6"	3 3/8"	2'-7"	0.760
705	1'-11"	5/8"	1'-8"	1'-7"	1/2"	1'-8"	1'-9"	4 3/8"	1'-10 1/4"	1'-11"	3 3/8"	2'-7"	0.844

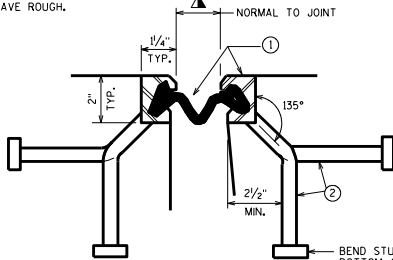


TYPICAL SECTION THRU JOINT AT STEEL GIRDER

NORMAL TO \perp SUBSTRUCTURE

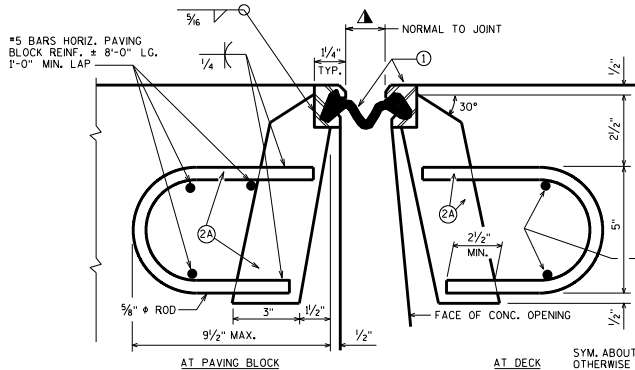
* POUR CONC. ABOVE THIS JOINT AFTER SUPERSTRUCTURE IS IN PLACE. STRIKE OFF AND LEAVE ROUGH.

PAVING NOTCH IS 1'-0" WIDE BY 1'-4" DEEP IF STRUCTURAL APPROACH SLAB (STD. 12.12) IS USED.



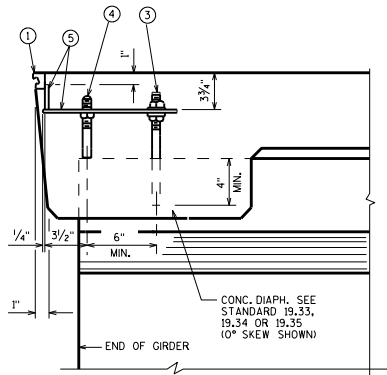
SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF DECK, AND AT PARAPETS, MEDIANS AND SIDEWALKS



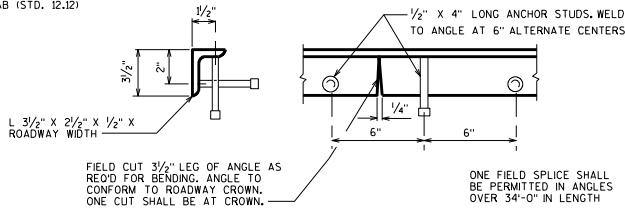
SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS.



PART SECTION THRU JOINT AT PRESTRESSED GIRDERS

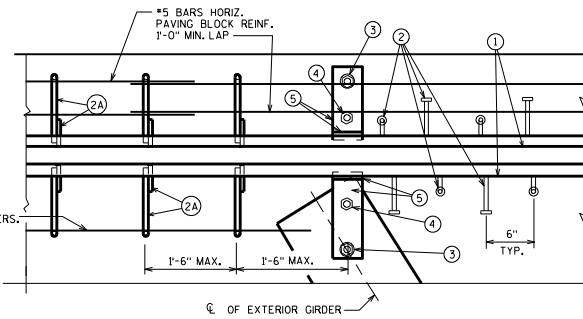
NORMAL TO \perp SUBSTRUCTURE



PROTECTION ANGLE ARMOR

SANDBLAST PROTECTION ANGLE AFTER FABRICATION PER NOTES. AFTER BLAST CLEANING, THE PROTECTION ANGLE SHALL BE HOT DIPPED GALVANIZED.

IF TEMPERATURE TABLE IS SHOWN, PLACE FOLLOWING NOTE ADJACENT TO TABLE: "A SMALL JOINT OPENING DUE TO A HIGH TEMPERATURE AT TIME OF CONSTRUCTION MAY REQUIRE NEOPRENE STRIP SEAL INSTALLATION INTO STEEL EXTRUSIONS PRIOR TO SETTING THE EXPANSION JOINT."



PART PLAN

LEGEND

- 1 NEOPRENE STRIP SEAL L-INCH AND STEEL EXTRUSIONS. SET JOINT OPENING AT 1/4" WHEN EXPANSION LENGTH < 230'-0". WHEN EXPANSION LENGTH > 230'-0", PREPARE A TEMPERATURE TABLE SHOWING JOINT OPENINGS FROM 5°F TO 85°F IN 10°F INCREMENTS. ACCOUNT FOR PRESTRESSED GIRDER SHRINKAGE DUE TO CREEP WHEN DETERMINING THIS TABLE. JOINT OPENINGS GIVEN NORMAL TO JOINT.
- 2 STUDS 3/8" DIA. X 6 3/8" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
- 2A 1/2" THICK ANCHOR PLATE WITH 3/8" DIA. ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.
- 3 3/4" DIA. THREADED ROD WITH 2 NUTS AND PLATE WASHERS. FOR PRESTRESSED GIRDERS, GROUT THREADED ROD INTO FIELD DRILLED HOLES ON \perp OF GIRDER. FOR STEEL GIRDERS, WELD THREADED ROD TO TOP FLANGE OR ATTACH BY BOLTING THRU FLANGE. ON ABUTMENT SIDE, GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.
- 4 3/4" DIA. THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- 5 FABRICATE SUPPORT FROM 3" X 1/2" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE. SHOP OR FIELD WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1/2" DIA. HOLE FOR NO. 3 AND 1" DIA. HOLE FOR NO. 4.
- 6 GALVANIZED PLATE 3/8" X 10" X (2'-2" LONG FOR SKEWS TO 45° AND 3'-0" LONG FOR SKEWS > 45° WITH HOLES FOR NO. 7. FOR SINGLE SLOPE PARAPET, FOR SLOPED FACE PARAPET, SEE STANDARD 28.07.
- 7 3/4" DIA. X 1/2" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLACE IN COUNTERSUNK HOLE. RECESS 1/16" BELOW PLATE SURFACE.
- 8 3/4" DIA. X 4" GALVANIZED HEX HEAD BOLT, BEND 45°.
- 9 3/4" DIA. X 2 1/4" GALVANIZED THREADED COUPLING.
- 10 SIDEWALK COVER PLATE 3/8" X 10" X (2'-0" WIDE FOR SKEWS TO 45° AND 3'-0" WIDE FOR SKEWS > 45°) X LIMITS SHOWN. BEND DOWN FACE OF SIDEWALK WITH HOLES FOR NO. 7. GALVANIZE PLATE AFTER SLIP-RESISTANT SURFACE IS APPLIED.
- 11 1" X 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7. PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.

NOTES

ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS, UNLESS MORE ARE REQUIRED FOR STAGED CONSTRUCTION, HANDLING OR GALVANIZING REQUIREMENTS. IF USED, DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.

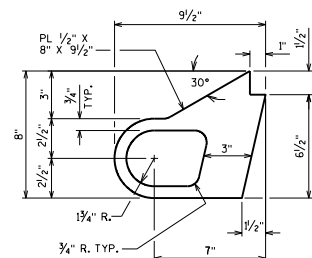
AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST AND SWEEP.

FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN AND SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST PLATES, SUPPORTS AND EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THE PLATES, SUPPORTS AND EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED. SLIP-RESISTANT SURFACE IS APPLIED TO SIDEWALK COVER PLATES BY THE MANUFACTURER AND THEN HOT DIPPED GALVANIZED TO THEIR RECOMMENDATIONS TO MAINTAIN THE INTEGRITY OF THIS SURFACE.

ANCHOR SYSTEM NO. 8 AND NO. 9 SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C AND D.

STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE B-...".



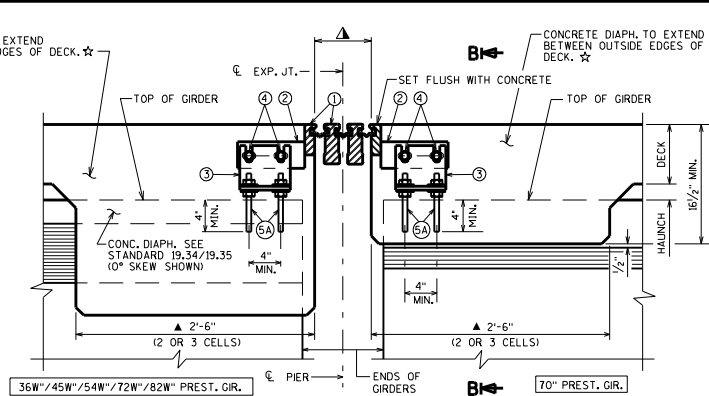
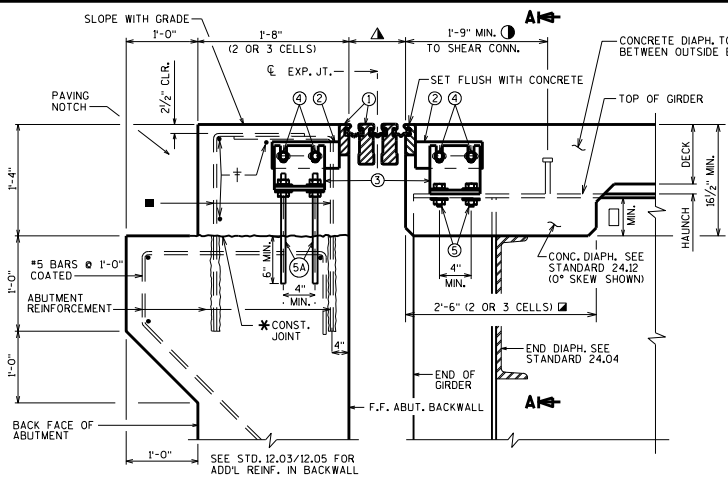
ALTERNATE STRIP SEAL ANCHOR

STRIP SEAL EXPANSION JOINT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

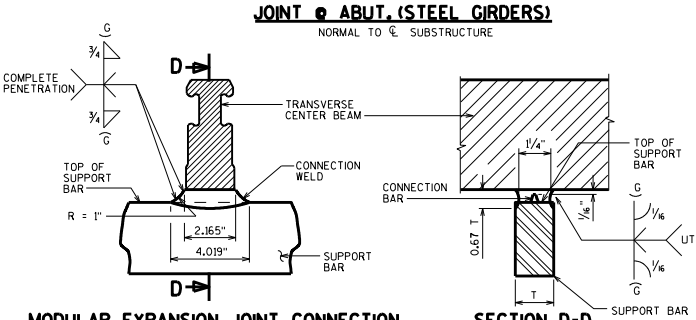
APPROVED: *Bill Oliva*

DATE:
1-14

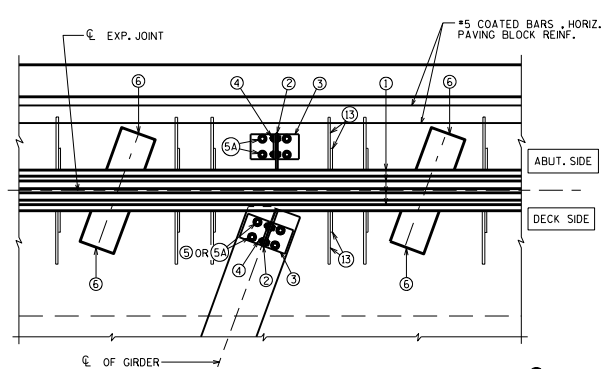


JOINT @ PIER (PRESTRESSED GIRDERS)
NORMAL TO SUBSTRUCTURE

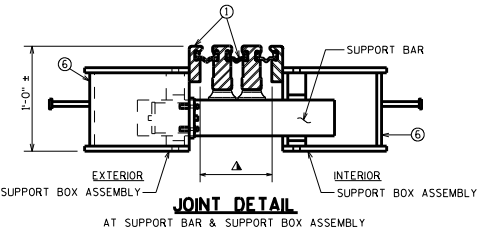
- LEGEND**
- ① MODULAR EXPANSION JOINT DEVICE, □ CELLS.
 - ② 1/2" PLATE, ONE PER GIRDER MIN. PROVIDE 2 - 1" X 2" MIN. SLOTTED HOLES PLACED HORIZONTALLY FOR NO. 4.
 - ③ WT 6 X 29 (OR EQUIVALENT) BUILT UP T-SECTION, ONE PER GIRDER. PROVIDE 2 - 1" X 3" MIN. SLOTTED HOLES PLACED VERTICALLY IN WEB OF WT FOR BOLTS NO. 4.
 - ④ 3/4" DIA. HIGH STRENGTH BOLTS WITH NUTS & WASHERS. (A325 GALV.)
 - ⑤ 3/4" DIA. HIGH STRENGTH BOLTS WITH NUTS & WASHERS. FIELD DRILL HOLES IN GIRDER TOP FLANGE. (A325 GALV.)
 - ⑥ 3/4" DIA. THREADED ROD WITH 2 NUTS & WASHERS. GROUT THREADED ROD INTO FIELD DRILLED HOLES (GALV.)
 - ⑦ SUPPORT BOX ASSEMBLY FOR SUPPORT BAR (SPA, PER MANUFACTURER). FABRICATE BOX FROM 1/2" PLATES.
 - ⑧ 3/4" BULKHEAD PLATE. WELD TO NO. 1, NO. 8 AND NO. 14.
 - ⑨ INSIDE PLATE. FABRICATE FROM 3/8" PLATE.
 - ⑩ OUTSIDE PLATE. FABRICATE FROM 3/8" PLATE.
 - ⑪ 3/4" DIA. X 4" LONG STUDS. WELD TO NO. 7, 8, & 14 AS SHOWN.
 - ⑫ 3/4" DIA. X 2" STAINLESS STEEL FLAT CTSK. SLOTTED HEAD CAP SCREWS W/ ANTI-SEIZE LUBRICANT. RECESS 1/16" BELOW PL. SURFACE.
 - ⑬ 1/2" PLATE WITH 3/8" DIA. LOOP ANCHOR FABRICATED AS SHOWN. SPACED AT MANUFACTURER'S SPEC.
 - ⑭ INSIDE PLATE. FABRICATE FROM 3/8" PLATE
 - ⑮ ADIPRENE BUTTON. SEE DETAIL. SET IN OUTSIDE PLATE.



**MODULAR EXPANSION JOINT CONNECTION
DETAIL AND WELD SPECIFICATION**

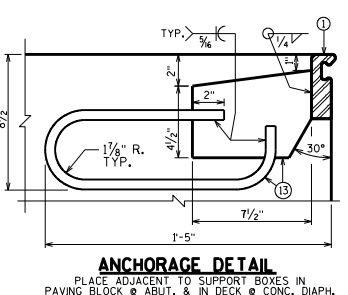


PART PLAN



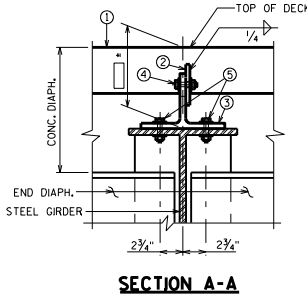
JOINT DETAIL

AT SUPPORT BAR & SUPPORT BOX ASSEMBLY

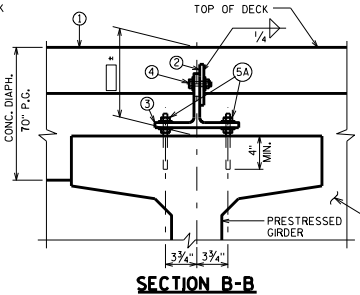


ANCHORAGE DETAIL

PLACE ADJACENT TO SUPPORT BOXES IN PAVING BLOCK @ ABUT. & IN DECK @ CONC. DIAPH.



SECTION A-A



SECTION B-B

TEMP. TABLE

TEMPERATURE TABLE FOR SETTING JOINT OPENINGS TO BE DETERMINED BY JOINT MANUFACTURER WITH THE FOLLOWING DESIGN DATA:

1. □ IN. OF MOVEMENT PER 10° F
2. MEDIAN TEMPERATURE OF 45° F
3. TEMP. RANGE IN TABLE FROM 15°F TO 185°F FOR PRESTRESSED CONCRETE GIRDERS AND FROM (-5°F) TO (+95°F) FOR STEEL GIRDERS.
4. ADJUST INITIAL JOINT OPENINGS BY A REDUCTION OF □ IN., WHICH ACCOUNTS FOR SHRINKAGE (CREEP) OF THE SUPERSTRUCTURE OVER TIME, TO PRODUCE FINAL JOINT OPENINGS FOR TABLE.

A TABLE OF JOINT OPENINGS BASED ON ABOVE DATA SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

INCLUDE ITEM 4. FOR PRESTRESSED GIRDER STRUCTURES ONLY. SEE CHAPT. 28 IN BRIDGE DESIGN MANUAL FOR ADJUSTMENT FACTOR.

- STANDARD COVERS:**
- SKEWS ≤ 30°
 - 2 OR 3 CELL MODULAR EXPANSION JOINTS
 - STEEL GIRDER BRIDGES
 - PRESTRESSED GIRDER BRIDGES (70", 36W", 45W", 54W", 72W" AND 82W" SECTION)

- ☆ AT LOCATION WHERE EXT. GIR. IS ADJACENT TO A RAISED SIDEWALK (STD.30.07), CONC. DIAPH. DOES NOT EXTEND OUT TO EDGE OF DECK, BUT IS TERMINATED AT INSIDE FACE OF EXT. GIR.
- † #5 COATED BARS, ± 8'-0" LONG, 1'-0" MIN. LAP. CUT IN FIELD TO CLEAR JOINT SUPPORT SYSTEM AS REQ'D.
- * POUR CONC. ABOVE THIS JOINT AFTER SUPERSTRUCTURE CONC. IS IN PLACE. STRIKE OFF & LEAVE ROUGH.
- ① DIMENSION IS PARALLEL TO C/G GIRDER.
- ▲ MANUFACTURER'S RECOMMENDED JOINT OPENING BASED ON THE TEMPERATURE ON THE DAY OF PLACEMENT PER TEMPERATURE TABLE. THE MODULAR EXPANSION DEVICE SHALL HAVE THE NUMBER OF CELLS AS INDICATED IN Q.
- (2) COATED L-SHAPED MASONRY ANCHORS TYPE S 3/8"-INCH. EMBED 12" IN CONCRETE. SPACE AT 1'-0". PLACE W/ EPOXY RESIN AFTER MODULAR JOINT IS IN POSITION. FOLLOW STANDARD SPECIFICATION FOR MASONRY ANCHOR TYPE S.
- ▣ TOP FLANGE WIDTH WITHIN LIMITS OF CONC. DIAPH. SHALL BE ≤ 20" FOR SKEWS ≤ 30°
- ▲ FOR PRESTRESSED GIRDERS, PLACE THE FOLLOWING NOTE ON PLANS: "JOINT MANUFACTURER SHALL INFORM AND PROVIDE NECESSARY DETAILS TO THE PRESTRESSED GIRDER FABRICATOR, WHEN FORM-OUT OF THE TOP FLANGE IS REQ'D, TO ALLOW PLACEMENT OF SUPPORT BOX ASSEMBLY."

GENERAL NOTES

ONE FIELD SPICE PERMITTED IN STEEL EXTRUSIONS. DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPlicing PERMITTED IN NEOPRENE GLAND.

AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST & SWEAP.

NO EXPANSION JOINT PROTRUSIONS PERMITTED ABOVE ROADWAY SURFACE. ON PARAPET ROADWAY FACE OR ABOVE SIDEWALK SURFACE IF FOR RAISED SIDEWALK.

THE EXPANSION JOINT SEALS SHALL BE PLACED, BONDED & SEALED AS RECOMMENDED BY THE MANUFACTURER. FORM WORK SHALL BE PLACED BETWEEN THE SUPPORT BOXES TO PREVENT CONCRETE INTRUSION INTO THE SUPPORT BOX. A TECHNICAL REPRESENTATIVE OF THE MANUFACTURER SHALL BE PRESENT DURING INSTALLATION. PRIOR TO SETTING THE JOINT ASSEMBLY IN POSITION, THE PROJECT ENGINEER SHALL DETERMINE THE PROPER JOINT OPENING.

EXPANSION JOINT EXTRUSIONS SHALL BE FABRICATED TO CONFORM TO ROADWAY CROWN & GRADE. FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN & SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST BARS, PLATES, WT-SECTION, ANCHORAGE LOOP, & EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THIS ASSEMBLY SHALL BE HOT DIPPED GALVANIZED.

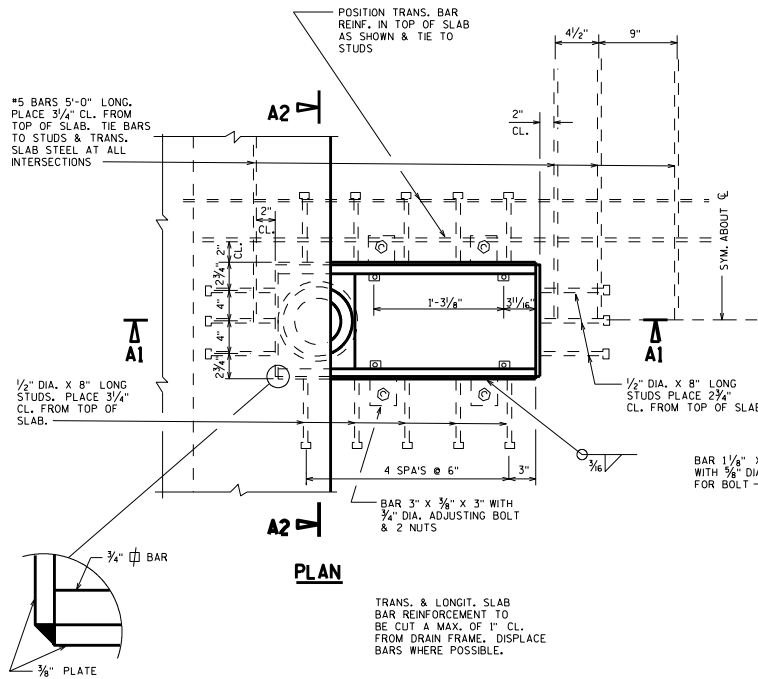
COST OF FURNISHING & PLACING OF THE EXPANSION JOINTS COMPLETE WITH PARAPET PLATES & SIDEWALK PLATES SHALL BE PAID FOR UNDER THE PRICE BID FOR "EXPANSION DEVICE MODULAR B-".

BAR STEEL REINF. IN DECK AND CONC. DIAPHRAGM SHALL BE RECESSED AS NECESSARY TO ALLOW PLACEMENT OF JOINT ASSEMBLY. TOP TRANSVERSE BARS, ADJACENT TO MOD. JT., TO BE CUT AND PLACED BETWEEN JT. SUPPORT SYSTEM.

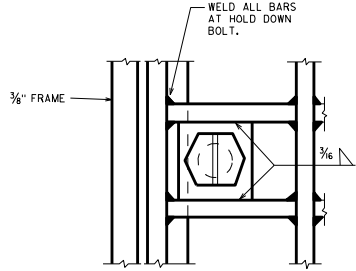
MODULAR EXPANSION JOINT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

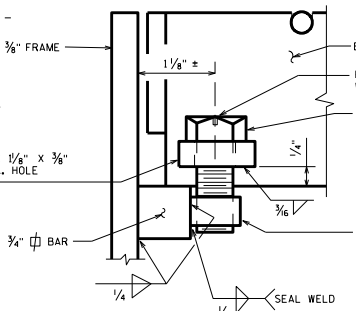
APPROVED: Bill Oliva DATE: 1-14



PLAN



PART PLAN



SECTION AT HOLD DOWN BOLT

GENERAL 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.

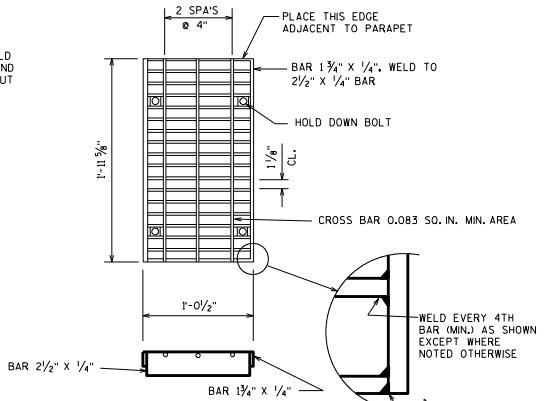
PRIOR TO GALVANIZING A NO. 6 BLAST CLEANING IS REQUIRED.

FLANGED 6" DIA. FIBERGLASS PIPE CONFORMING TO ASTM D2996, GRADE 1, CLASS A, MAY BE USED AS AN ALTERNATE TO GALVANIZED STANDARD PIPE CONFORMING TO ASTM A53.

DESIGNER NOTES

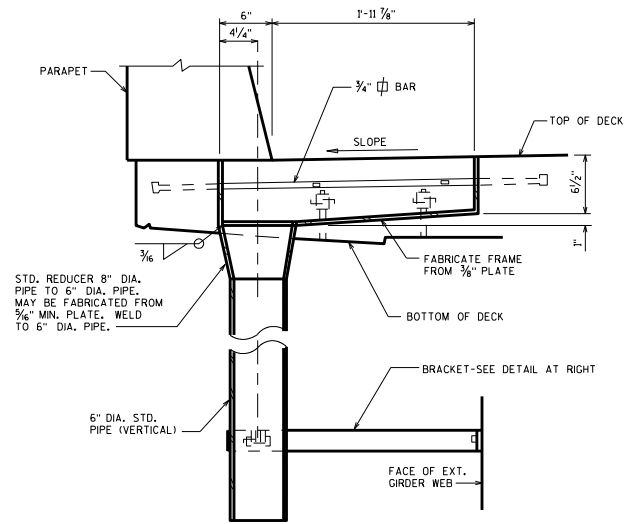
ALL MATERIAL FOR FLOOR DRAINS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "FLOOR DRAINS TYPE 'H'".

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

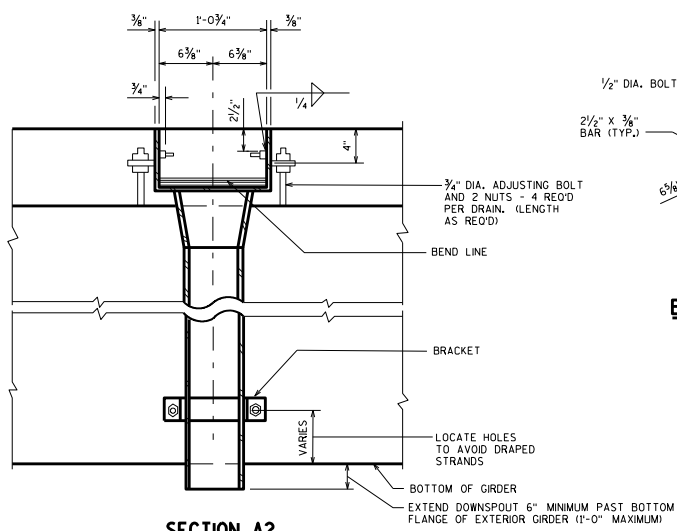


GRATE DETAIL

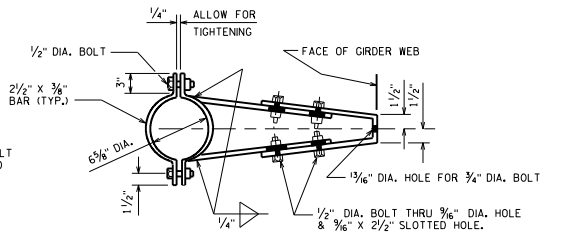
ATTACH GRATE TO FRAME FOR SHIPMENT



SECTION A1

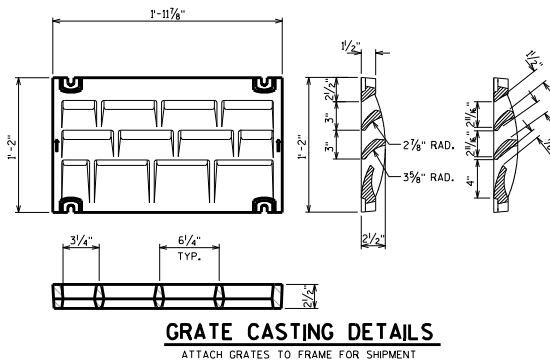
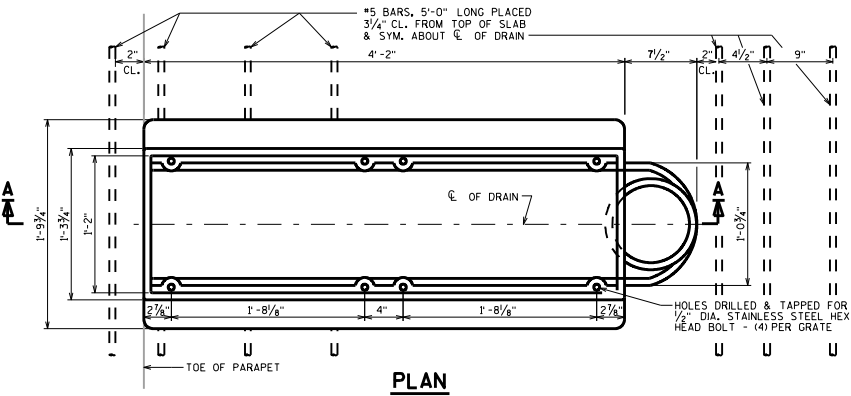


SECTION A2



BRACKET DETAIL

FLOOR DRAIN TYPE 'H'	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <i>Bill Oliva</i>	DATE: 1-14



GENERAL NOTES

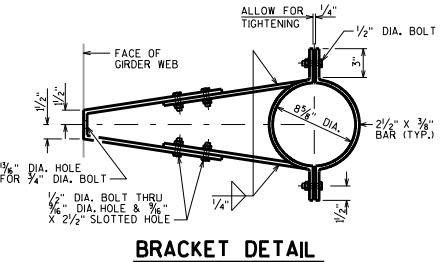
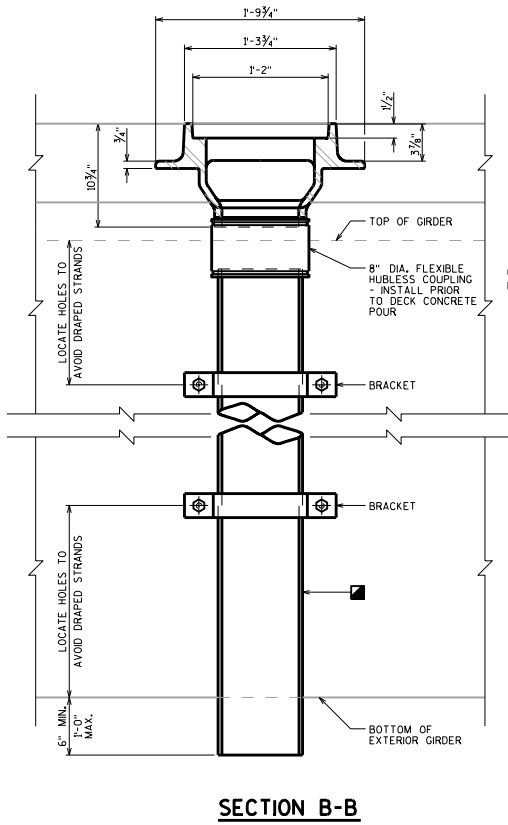
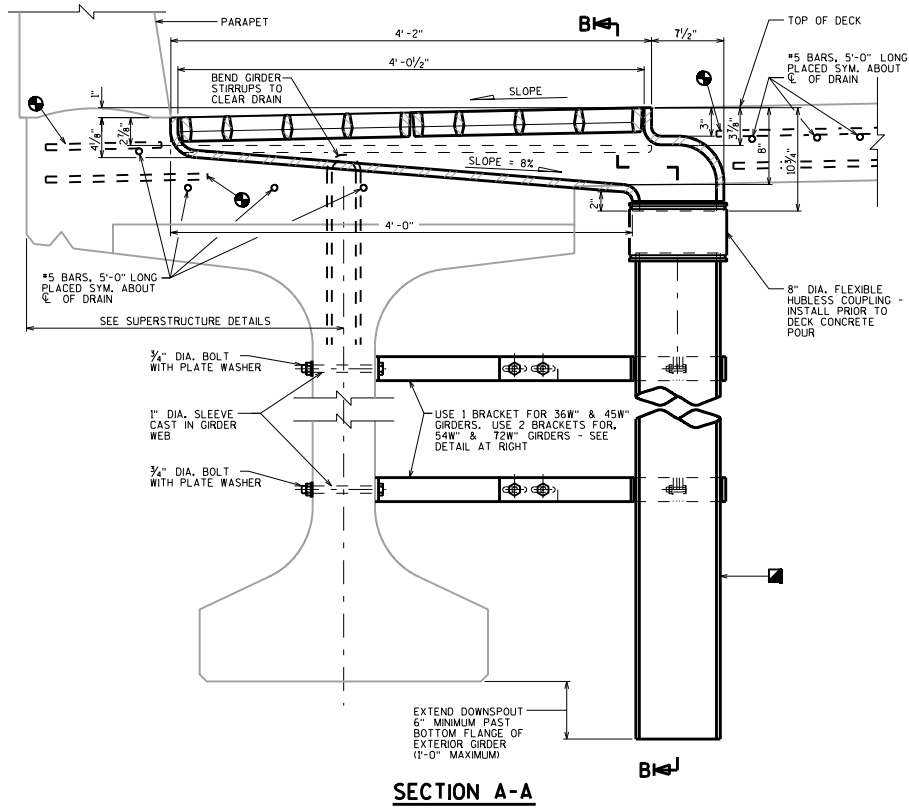
ALL MATERIAL FOR TYPE "WF" CASTING AND 8" DIA. CONNECTION PIPE, EXCLUDING GRATE HOLD DOWN SCREWS, SHALL BE GRAY IRON CONFORMING TO ASTM A48, CLASS 50.

- 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.
- 8" DIA. DOWNSPOUTS SHALL BE REINFORCED THERMOSETTING RESIN PIPE CONFORMING TO SECTION 514 OF THE STANDARD SPECIFICATIONS.
- TRANSVERSE & LONGITUDINAL SLAB BAR REINFORCEMENT TO BE CUT A MAXIMUM OF 1" CLEAR FROM DRAIN FRAME. DISPLACE BARS WHERE POSSIBLE.

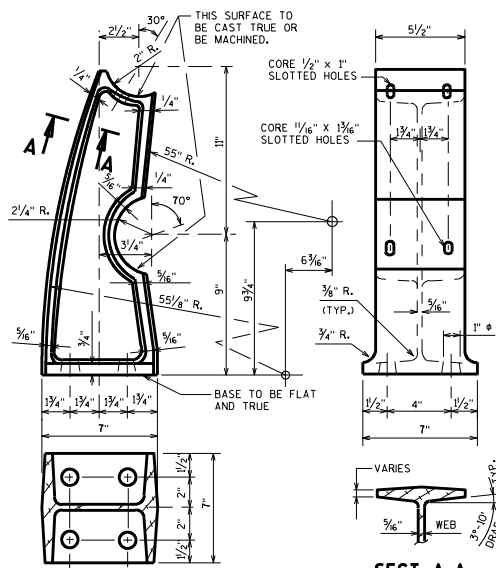
DESIGNER NOTES

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

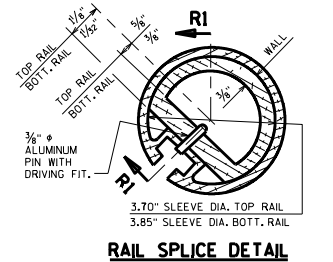
ALL MATERIAL FOR DOWNSPOUTS, CONNECTORS, AND BRACKETS AS SHOWN ON THIS SHEET SHALL BE INCLUDED IN THE BID ITEM "DOWNSPOUT 8-INCH".



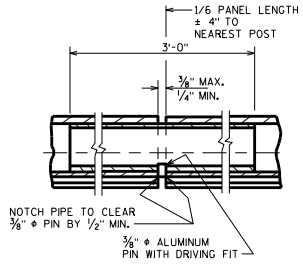
FLOOR DRAIN TYPE 'WF'	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <u>Bill Oliva</u>	DATE: 1-14



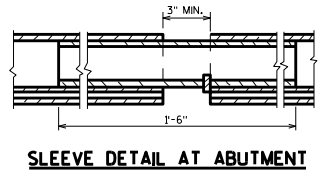
ALUMINUM POST CASTING



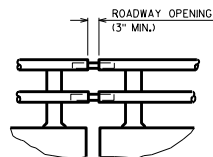
RAIL SPLICE DETAIL



SECTION R1

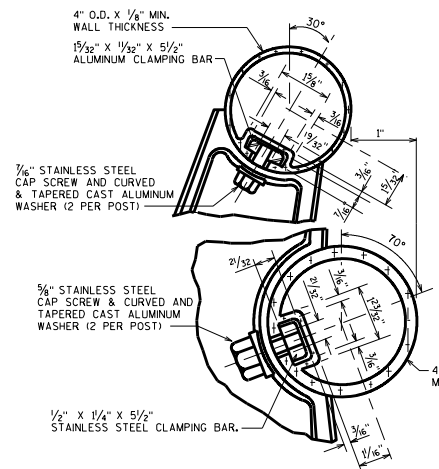


SLEEVE DETAIL AT ABUTMENT



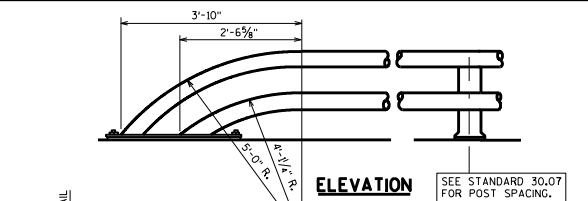
DETAIL AT RAIL OPENINGS

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



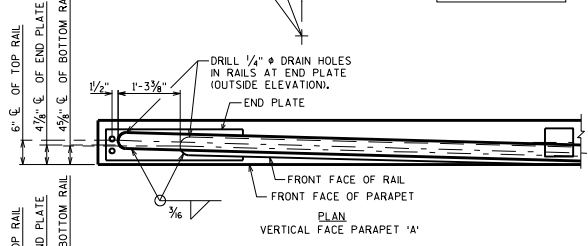
DETAIL OF ATTACHMENT TO POST

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 1/8%.

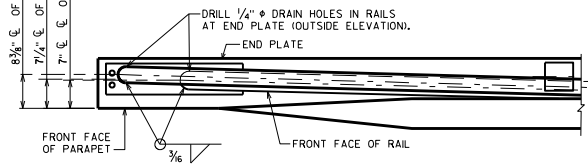


ELEVATION

SEE STANDARD 30.07 FOR POST SPACING.

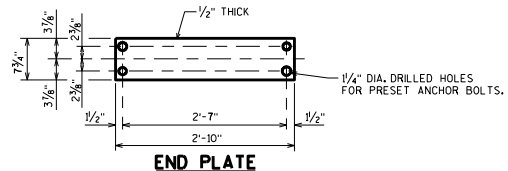


PLAN VERTICAL FACE PARAPET 'A'

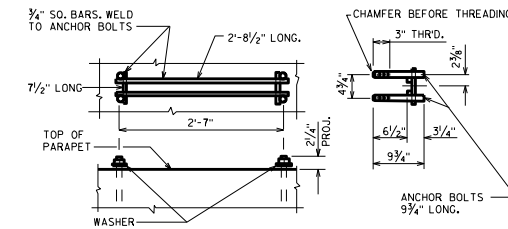


PLAN SLOPED FACE PARAPETS 'LF', '32SS', OR '36SS'

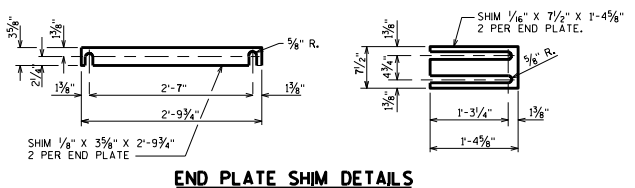
DETAIL OF RAIL BEND AT ABUTMENTS



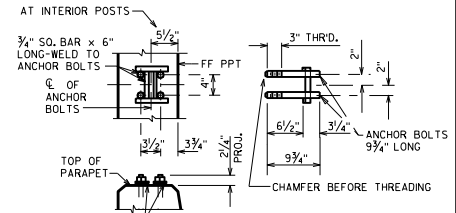
END PLATE



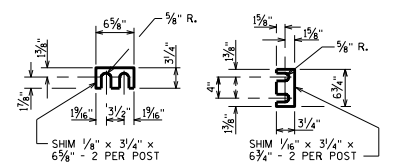
ANCHOR BOLTS AT END PLATE



END PLATE SHIM DETAILS



ANCHOR BOLTS AT POSTS

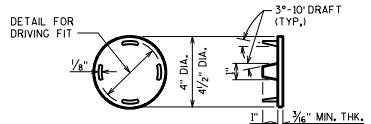


POST SHIM DETAILS

GENERAL NOTES

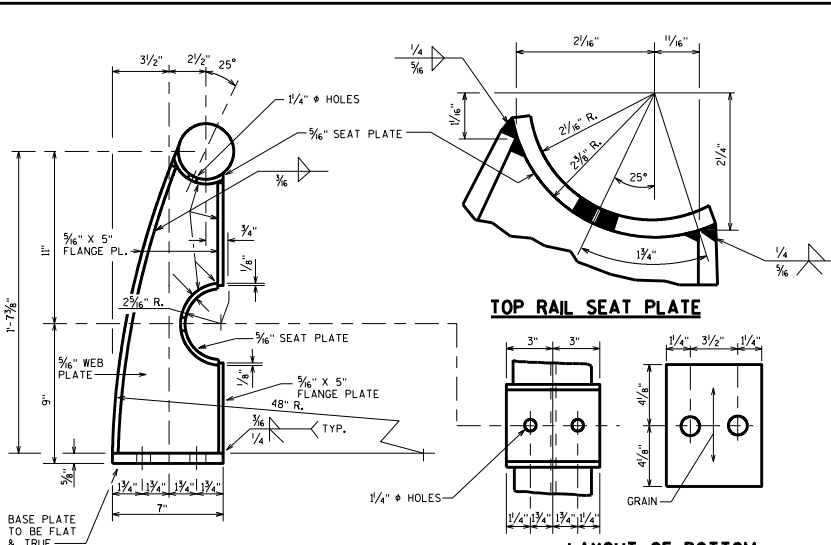
BID ITEM SHALL BE "RAILING TUBULAR TYPE H B-..." WHICH INCLUDES ALL ITEMS SHOWN.
 THE SHANK AND ROOT DIAMETER OF THREAD FOR ANCHOR BOLTS SHALL BE A MIN. OF 3/8".
 SHIMS SHALL CONFORM TO SAME MATERIAL AS POSTS.
 ANCHOR BOLTS, NUTS AND WASHERS SHALL BE STAINLESS STEEL.
 RAILINGS SHALL BE FABRICATED IN 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

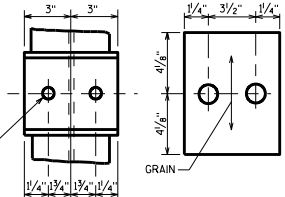


RAIL CLOSURE CAP DETAIL

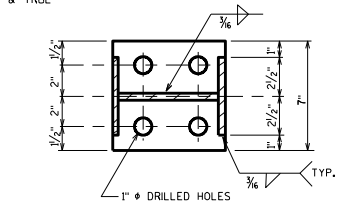
TUBULAR RAILING TYPE 'H' (ALUM.)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <i>Bill Oliva</i>	DATE: 1-14



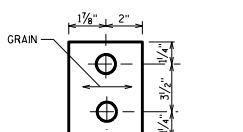
TOP RAIL SEAT PLATE



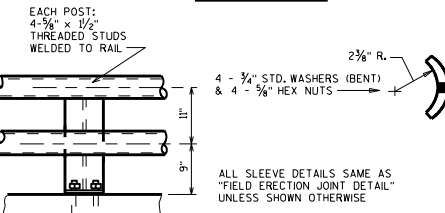
LAYOUT OF BOTTOM RAIL SEAT PL.



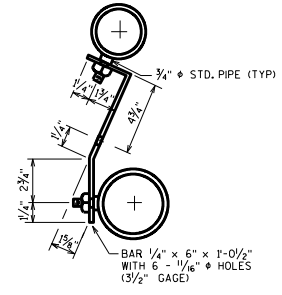
STEEL POST DETAILS



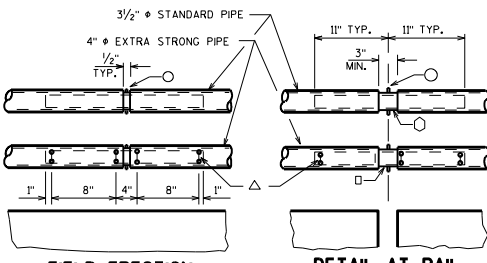
LAYOUT OF TOP RAIL SEAT PL.



RAIL TO POST CONN.



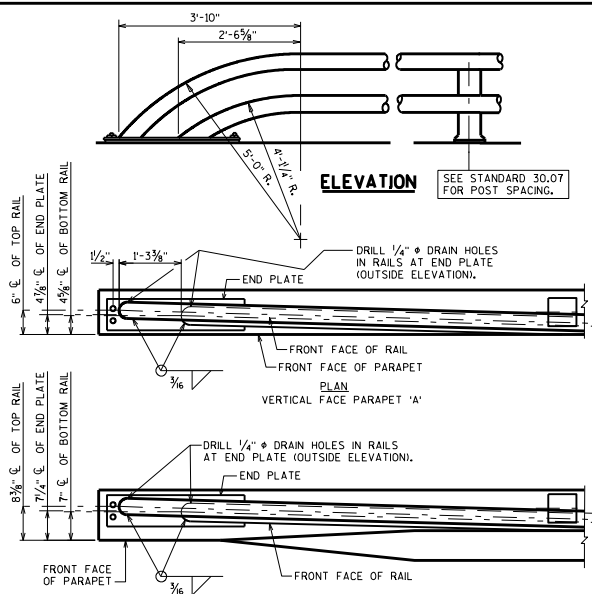
SHIPPING BAR
END SECTION ONLY



FIELD ERECTION JOINT DETAIL

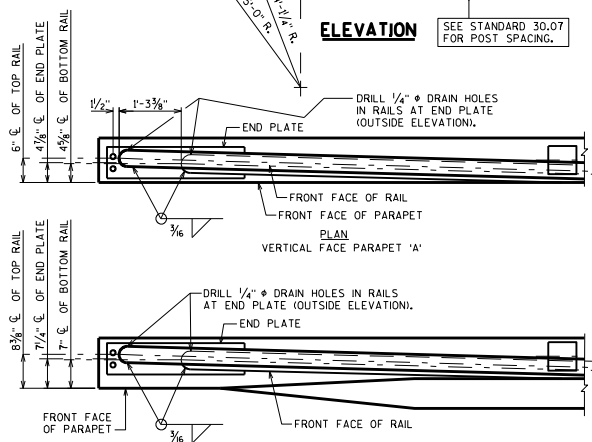


DETAIL AT RAIL OPENING

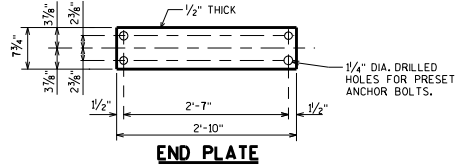


ELEVATION

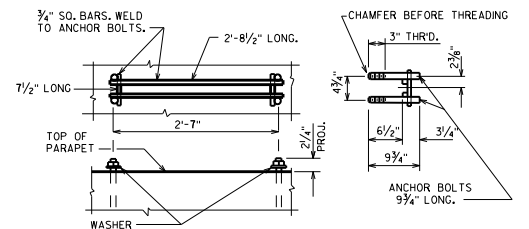
SEE STANDARD 30.07 FOR POST SPACING.



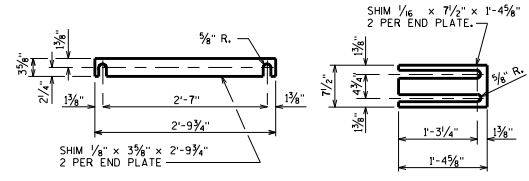
DETAIL OF RAIL BEND AT ABUTMENTS



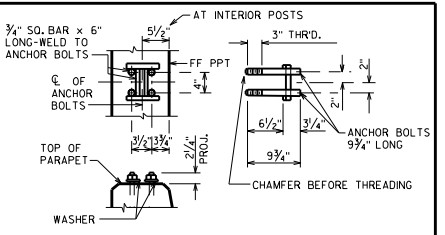
END PLATE



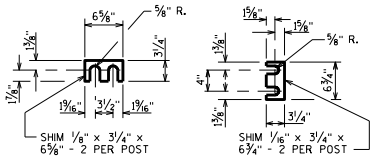
ANCHOR BOLTS AT END PLATE



END PLATE SHIM DETAILS



ANCHOR BOLTS AT POSTS



POST SHIM DETAILS

GENERAL NOTES

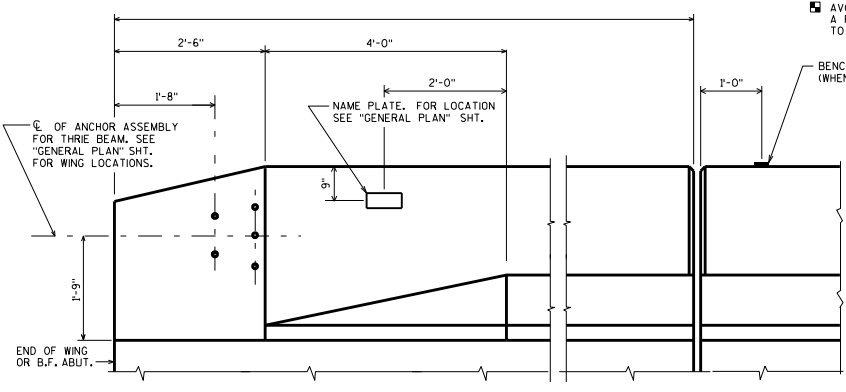
- BID ITEM SHALL BE "RAILING TUBULAR TYPE H B-..." WHICH INCLUDES ALL ITEMS SHOWN.
- THE SHANK AND ROOT DIAMETER OF THREAD FOR ANCHOR BOLTS SHALL BE A MIN. OF 3/8".
- ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM A307. IF A307 IS USED ELECTRO-GALVANIZE NUTS, WASHERS & TOP 3/2" 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 REQ'D. 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

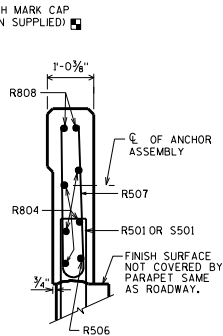
- 3/8" x 3/8" WELDED STUDS
- 3" STD. PIPE x 1'-10" LONG
- 3" EXTRA STRONG PIPE x 1'-10" LONG
- △ 1/2" WELD BEADS AT 1/3 PTS. ON PIPE 11" CIRCUMF. GRIND BEADS SO THAT SLEEVE FITS FREELY IN THE LD. OF 4" EXTRA STRONG PIPE.

TUBULAR RAILING TYPE 'H' (STEEL)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DEVELOPMENT SECTION	
APPROVED: <u>Bill Oliva</u>	DATE: 1-14

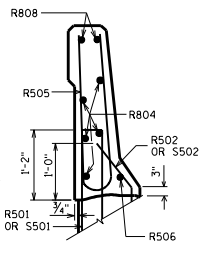


INSIDE ELEVATION

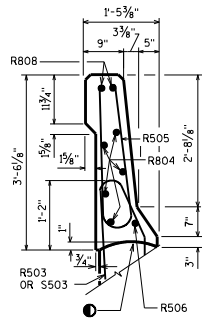
AVOID PLACING A BENCH MARK CAP BELOW A RAIL OR FENCE SYSTEM THAT IS ATTACHED TO THE TOP OF THE PARAPET.



SECTION A



SECTION B



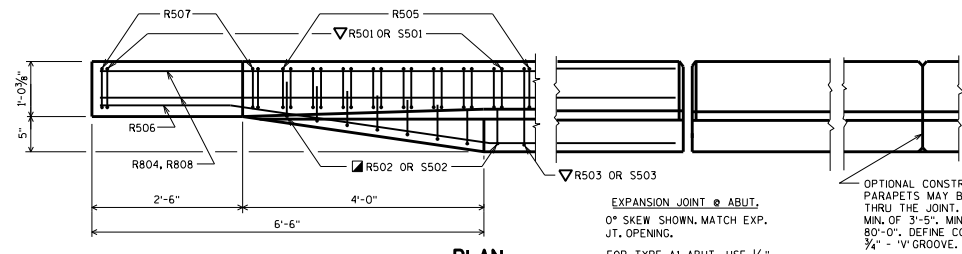
SECTION C

LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

BILL OF BARS		FOR ABUTMENT PARAPETS				
BAR MARK	Qty	ABUT.	ABUT.	LENGTH	BAR SERIES	LOCATION
R501	X			4'-7"	X	PARAPET VERT.
R502	X			2'-4"	X	PARAPET VERT.
R503	X			4'-7"	X	PARAPET VERT.
R804	X					PARAPET HORIZ.
R505	X			6'-6"	X	PARAPET VERT.
R506	X				X	PARAPET HORIZ.
R507	X			5'-8"	X	PARAPET VERT.
R808	X				X	PARAPET HORIZ.
S501	X			4'-5"	X	PARAPET VERT.
S502	X			2'-4"	X	PARAPET VERT.
S503	X			4'-2"	X	PARAPET VERT.

BAR SERIES TABLE

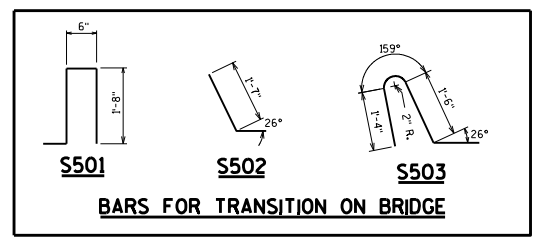
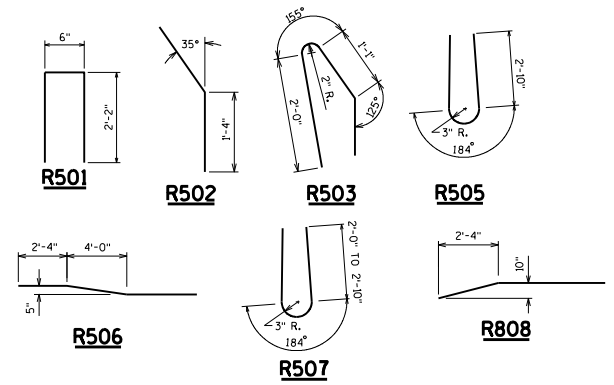
MARK	NO. REOD.	LENGTH
R507	4 SERIES OF 6	4'-10" TO 6'-6"



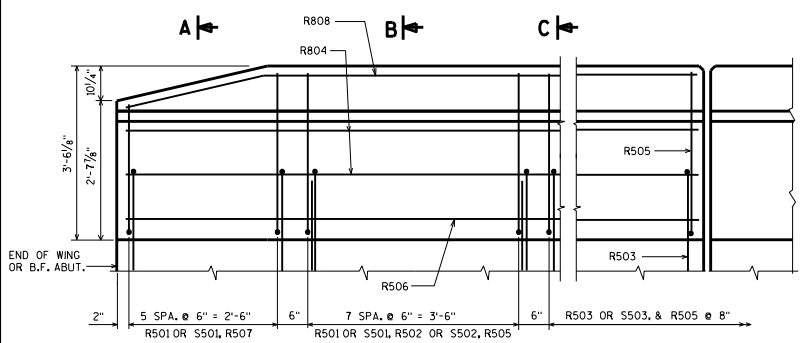
PLAN

OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 3'-5". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/4" - 1" GROOVE.

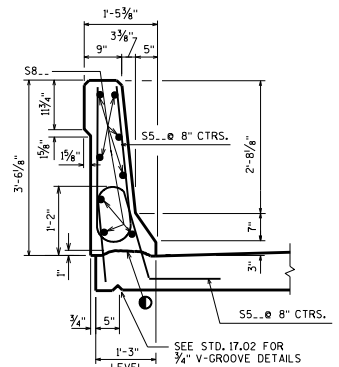
EXPANSION JOINT @ ABUT. 0° SKEW SHOWN. MATCH EXP. JT. OPENING. FOR TYPE A1 ABUT., USE 1/2" FILLER TO TOP OF PARAPET. SEE STD. 12.01.



BARS FOR TRANSITION ON BRIDGE



OUTSIDE ELEVATION



SECTION THRU PARAPET ON BRIDGE

AREA = 3.16 SF
WEIGHT = 474 LB/FT

CONST. JOINT - STRIKE OFF AS SHOWN.

R502 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE R502 OR S502 BARS CORRECTLY ALONG TRANSITION OF PARAPET.

R501 AND R503 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.

A R503 BAR MAY BE USED IN LIEU OF A S503 BAR ADJACENT TO THE PAVING NOTCH ON TYPE AT ABUTMENTS.

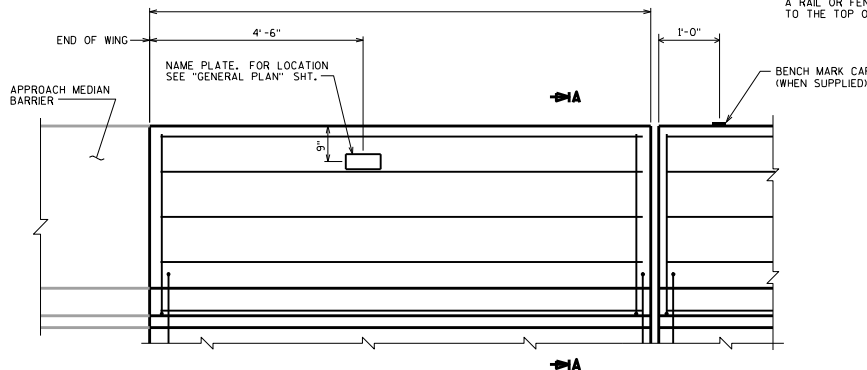
SLOPED FACE PARAPET 'HF'

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

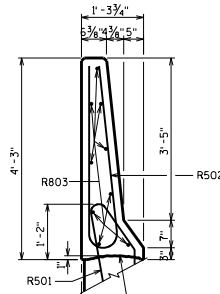
APPROVED: *Bill Oliva*

DATE:
1-14

AVOID PLACING A BENCH MARK CAP BELOW A RAIL OR FENCE SYSTEM THAT IS ATTACHED TO THE TOP OF THE PARAPET.



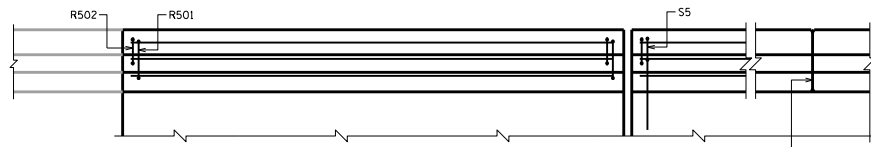
INSIDE ELEVATION



SECTION A

BILL OF BARS FOR ABUTMENT PARAPETS

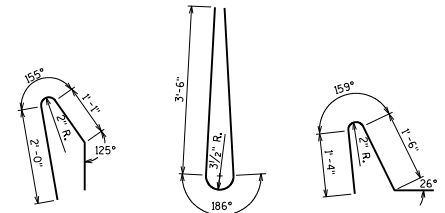
BAR MARK	CO ₂ S	ABUT.	ABUT.	LENGTH	REIN.	LOCATION
R501	X			4'-6"	X	PARAPET VERT.
R502	X			7'-11"	X	PARAPET VERT.
R803	X					PARAPET HORIZ.
S5	X			4'-2"	X	PARAPET VERT.
S5	X			7'-11"	X	PARAPET VERT.
S8	X					PARAPET HORIZ.



PLAN

OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 3'-5". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 1/4" - 'V' GROOVE.

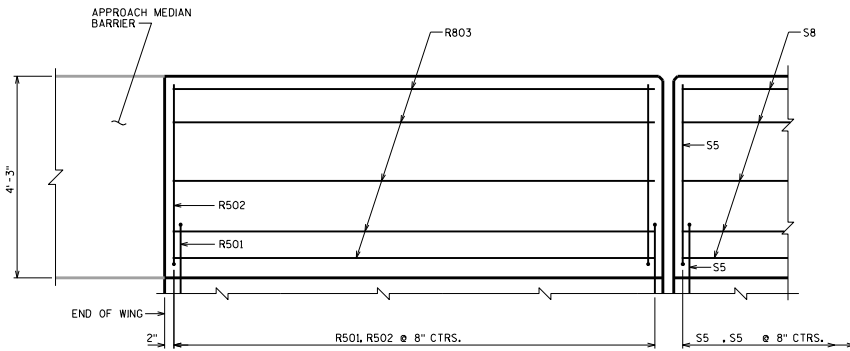
FOR TYPE A1 ABUT., USE 1/2" FILLER TO TOP OF PARAPET. SEE STD. 12.01.



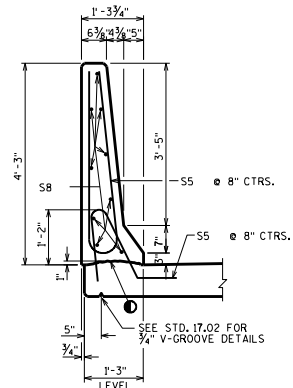
R501

R502/S5

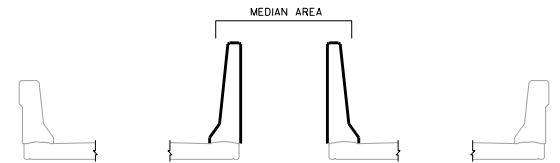
S5



OUTSIDE ELEVATION



SECTION THRU PARAPET ON BRIDGE



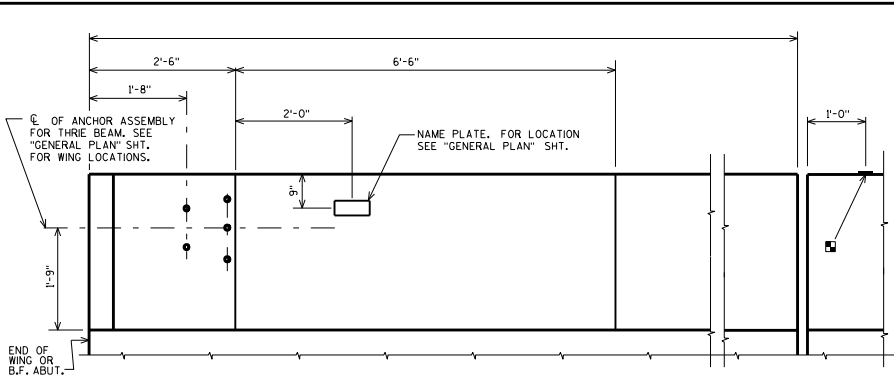
SLOPED FACE PARAPET '51F' MAY BE USED IN MEDIAN AREA OF ADJACENT STRUCTURES WHEN HIGHWAY MEDIAN APPROACH CONCRETE BARRIER IS 51" HIGH

- CONST. JOINT - STRIKE OFF AS SHOWN.
- A R501 BAR MAY BE USED IN LIEU OF A TYPICAL S5... BAR ADJACENT TO THE PAVING NOTCH ON TYPE A1 ABUTMENTS.
- AREA = 3.41 FT²
- WEIGHT = 512 LBS./FT.

SLOPED FACE PARAPET '51F'

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

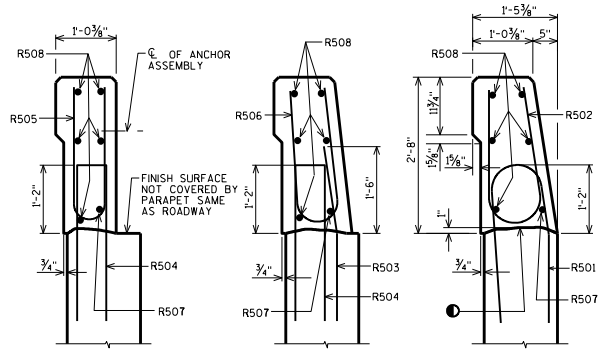
APPROVED: Bill Oliva DATE: 1-14



INSIDE ELEVATION

☐ 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.

NOTE: FOR SECTIONS A, B & C ONLY THE PARAPET TERMINATING ON A WING IS SHOWN. TERMINATION ON A DECK IS SIMILAR.

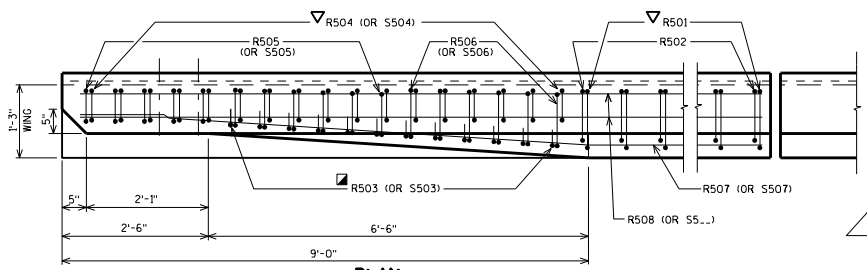


SECTION A SECTION B SECTION C

BILL OF BARS

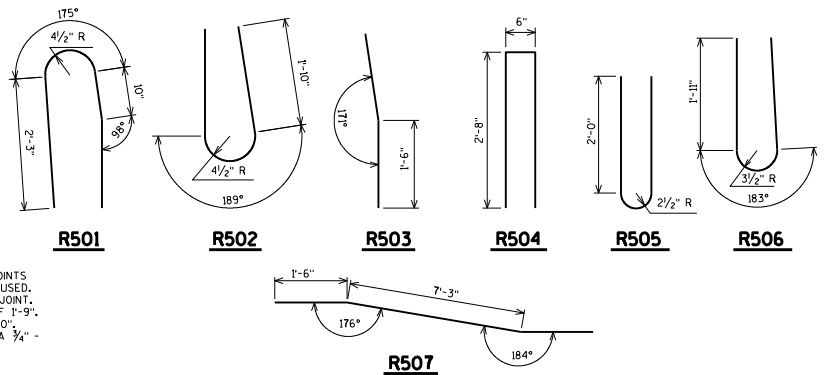
FOR ABUTMENT PARAPETS

BAR MARK	Qty	ABUT.	ABUT.	LENGTH	BENT	LOCATION
R501	X			5-10	X	PARAPET-VERT.
R502	X			5-0	X	PARAPET-VERT.
R503	X			3-0	X	PARAPET-VERT.
R504	X			5-7	X	PARAPET-VERT.
R505	X			4-9	X	PARAPET-VERT.
R506	X			4-10	X	PARAPET-VERT.
R507	X				X	PARAPET-HORIZ.
R508	X					PARAPET-HORIZ.
S501	X			4-5	X	PARAPET-VERT.
S503	X			2-9	X	PARAPET-VERT.
S504	X			4-4	X	PARAPET-VERT.

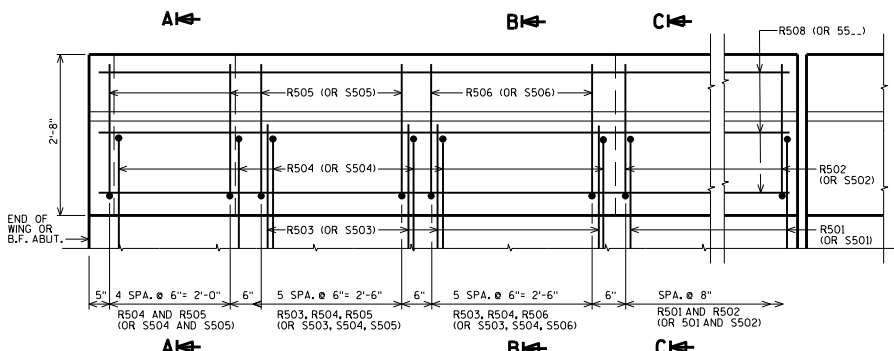


PLAN

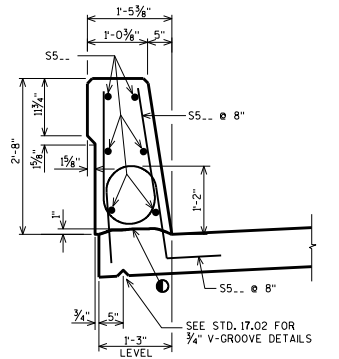
OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/4" V-GROOVE.



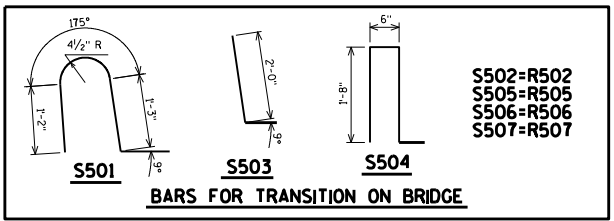
R501 R502 R503 R504 R505 R506 R507



OUTSIDE ELEVATION



SECTION THRU PARAPET ON BRIDGE



BARS FOR TRANSITION ON BRIDGE

S502=R502
S505=R505
S506=R506
S507=R507

AREA = 3.09 SF
WEIGHT = 464 LB/FT

● CONST. JOINT - STRIKE OFF AS SHOWN.

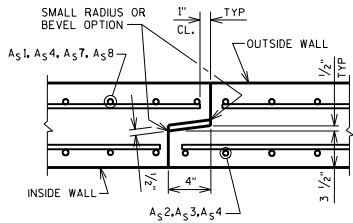
☑ R503 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE R503 OR S503 BARS CORRECTLY ALONG TRANSITION OF PARAPET.

▽ R501 AND R504 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED. DESIGNER MAY ELECT TO USE A R501 BAR IN LIEU OF A S501 BAR ADJACENT TO THE PAVING NOTCH ON TYPE AT ABUTMENTS.

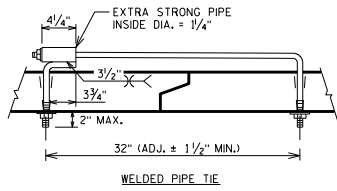
SINGLE SLOPE PARAPET 32SS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

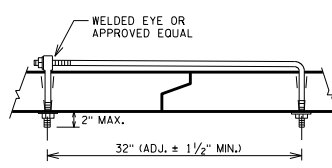
APPROVED: Bill Oliva DATE: 1-14



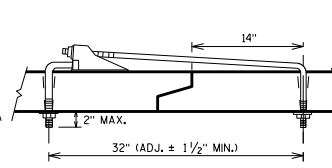
JOINT DETAIL



WELDED PIPE TIE



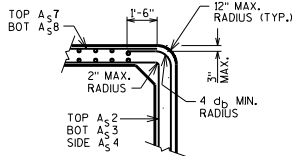
EYE BOLT TIE



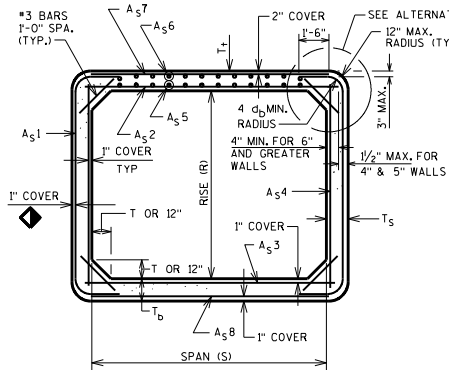
CANOPY TIE

JOINT TIES

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.)

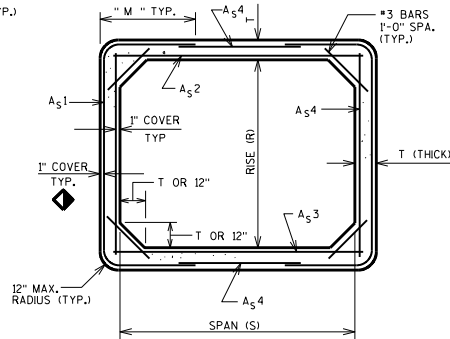


ALTERNATE DETAIL OPTION

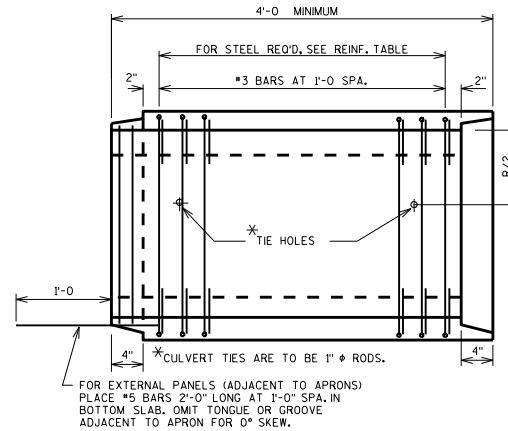


SECTION THRU BARREL
FOR LESS THAN 2 FEET OF COVER

1" OR 3 x WIRE DIAMETER, WHICHEVER IS GREATER

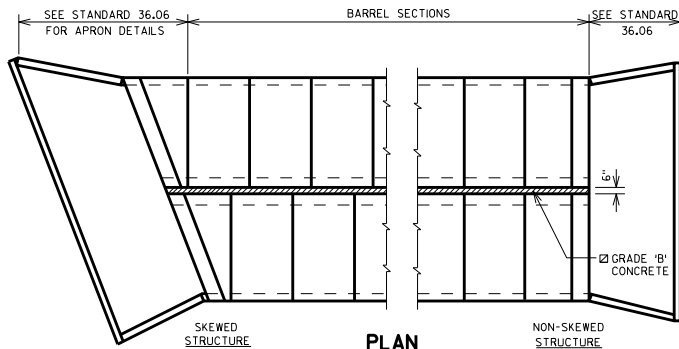


SECTION THRU BARREL
FOR 2'-0" OR MORE OF COVER



LONGITUDINAL SECTION

FOR EXTERNAL PANELS (ADJACENT TO APRONS) PLACE #5 BARS 2'-0" LONG AT 1'-0" SPA. IN BOTTOM SLAB. OMIT TONGUE OR GROOVE ADJACENT TO APRON FOR 0° SKEW.



PLAN
MULTICELL INSTALLATION

BOX CULVERT DATA

S (FT.)	DIMENSIONS				EARTH COVER (FT.)					
	RIFT.)	T OR T _G , T _D , T _F (IN.)								
REINFORCEMENT		AREA/FT.	LENGTH	M	AREA/FT.	LENGTH	M	AREA/FT.	LENGTH	M
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										

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 PLUS 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 FABRIC SHALL BE PLACED OVER THE JOINTS ON THE TOP AND ON THE SIDES OF THE CULVERT. THE GEOTEXTILE FABRIC SHALL COMPLY WITH REQUIREMENTS OF STANDARD SPECIFICATION 645.2.4, SCHEDULE A. (FABRIC NOT REQUIRED OVER INSIDE WALL JOINTS OF MULTICELL INSTALLATION.)

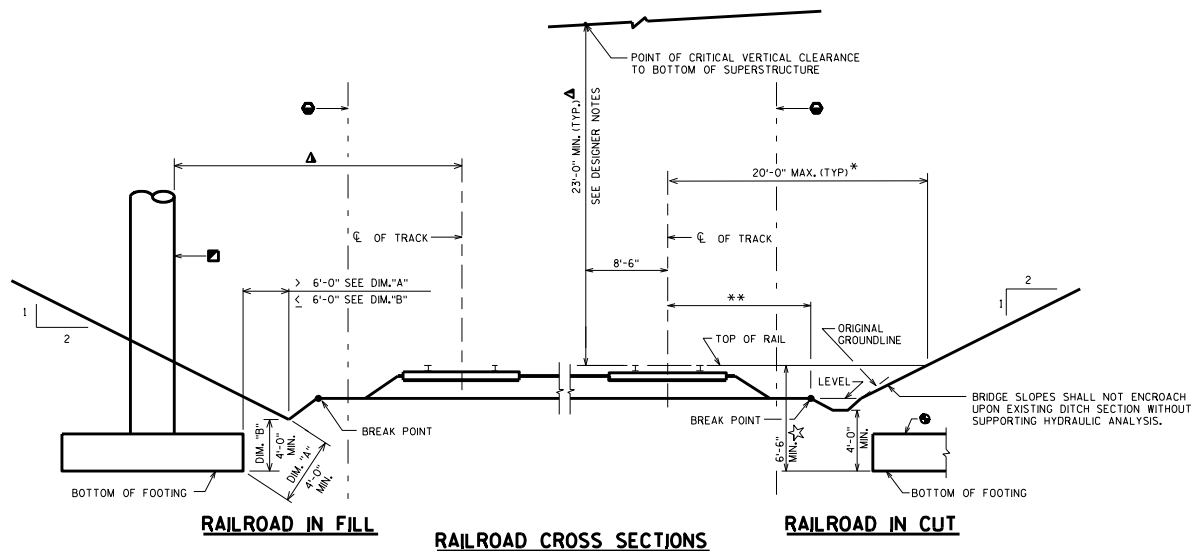
WHEN TWO OR MORE BARRELS ARE UTILIZED IN PARALLEL FOR MULTICELL INSTALLATIONS THE CLEAR SPACING BETWEEN ADJACENT BARRELS SHALL BE 6 INCHES AND THE SPACE BETWEEN ADJACENT BARRELS FROM TOP OF BEDDING TO TOP OF TOP SLAB SHALL BE FILLED WITH GRADE "B" CONCRETE.

PRECAST CONCRETE BOX CULVERT BARREL DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: *Bill Oliva*

DATE:
1-14

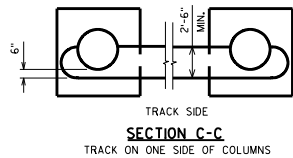


DESIGNER NOTES

- DIMENSIONS SHOWN APPLY TO CUT OR FILL SITUATIONS.
- DECK DRAINS OR DOWN SPOUTS SHALL NOT DISCHARGE ONTO RAILROAD TRACK BED.
- SINGLE SLOPE PARAPET SHALL BE USED. PEDESTRIAN RAILING WILL ONLY BE PROVIDED IF THERE IS A SIDEWALK. SEE CHAPTER 38 OF THE BRIDGE MANUAL.
- VERTICAL CLEARANCE LESS THAN 23'-0" MAY BE PROVIDED IN SOME SITUATIONS WITH APPROVAL OF THE OFFICE OF THE COMMISSIONER OF RAILROADS. CONSULT WITH CENTRAL OFFICE RAILROAD UNIT. MAXIMUM ALLOWABLE VERTICAL CLEARANCE OF 23'-3/2" IS ALLOWED BY FHWA.
- ** VARIABLE DISTANCE WHICH IS FOUND FROM FIELD SURVEY.
- * SITE SPECIFIC JUSTIFICATION REQUIRED FOR GREATER DISTANCES. LATERAL CLEARANCES SHALL BE ESTABLISHED BASED ON SITE SPECIFIC CONDITIONS AND ECONOMICAL STRUCTURE DESIGN. CONSULT WITH CENTRAL OFFICE RAILROAD UNIT. SEE 23 CODE OF FEDERAL REGULATIONS PT 646, SUBPT. B APPENDIX.
- ▲ FOR OFFSETS UP TO, AND INCLUDING 25'-0", A CRASH WALL OR HAMMERHEAD PIER DESIGNED TO AREMA STANDARDS (30 SO. FT. MIN. X-SECT) IS REQUIRED.
- ▲ ACCOMMODATION FOR ADDITIONAL TRACKS REQUIRES DEPARTMENT APPROVAL. CONFER WITH RAILROAD PROJECT COORDINATION ENGINEER IN CENTRAL OFFICE RAILROADS AND HARBORS SECTION AT (608) 266-0233.
- ▲ HORIZONTAL CLEARANCES LESS THAN 18'-0" AND VERTICAL CLEARANCES LESS THAN 23'-0" SHOULD BE REVIEWED WITH THE RAILROAD PROJECT COORDINATION ENGINEER IN THE CENTRAL OFFICE RAILROADS AND HARBORS SECTION.
- TEMPORARY CONSTRUCTION CLEARANCES ARE 21'-0" VERTICAL (21'-6" FOR BNSF AND UP RAILROADS) AND 12'-0" HORIZONTAL FROM CENTERLINE OF TRACK TO FALSEWORK.
- DESIGNER SHALL SHOW HORIZONTAL LOCATION OF SHORING NEEDED IN PLAN VIEW. DESIGNER SHALL ALSO DETERMINE IF THE SHORING IS TO BE DESIGNED FOR ZONE A, B OR C.
- ☆ 6'-6" MIN. NOT REQ'D IF BEDROCK IS PRESENT.
- THIS STANDARD IS TO MEET WISDOT REQUIREMENTS ONLY. THE DESIGN ENGINEER SHALL CONTACT THE RAILROAD FOR THEIR REQUIREMENTS.
- BNSF AND UP RAILROADS HAVE GREATER REQUIREMENTS THAN SHOWN. CONFER WITH RAILROAD PROJECT COORDINATION ENGINEER IN CENTRAL OFFICE RAILROADS AND HARBORS SECTION.
- BNSF AND UP RAILROAD REQUIRE A DEPTH OF FOOTING 6'-0" MIN. FROM BASE OF RAIL TO TOP OF FOOTING. IN LOCATIONS WHERE BEDROCK IS PRESENT, COORDINATE FOOTING DEPTHS WITH RAILROAD PROJECT COORDINATION ENGINEER.
- LIMITS OF RAILROAD RIGHT-OF-WAY. LOCATIONS SHOWN ARE FOR REFERENCE ONLY AND NEED NOT BE DIMENSIONED.
- AESTHETICS SHALL NOT BE EMPLOYED ALONG RAILROAD TRACKS.

NOTES

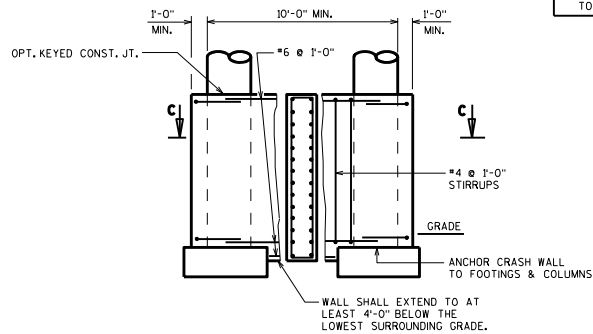
FINAL LOCATION AND TYPE OF SHORING SYSTEM TO BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT ALL DESIGN DRAWINGS AND CALCULATIONS DIRECTLY TO THE RAILROAD. SHORING COVERED BY BID ITEM "SPV.0165 TEMPORARY SHORING RAILROAD".



SECTION C-C
TRACK ON ONE SIDE OF COLUMNS

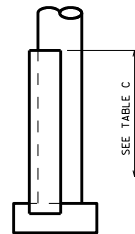
TABLE C

PIER LOCATION	HEIGHT OF CRASH WALL ABOVE TOP OF RAIL
PIERS < 12'-0" FROM CL TRACK	12'-0"
PIERS 12'-0" TO 50'-0"	6'-0"

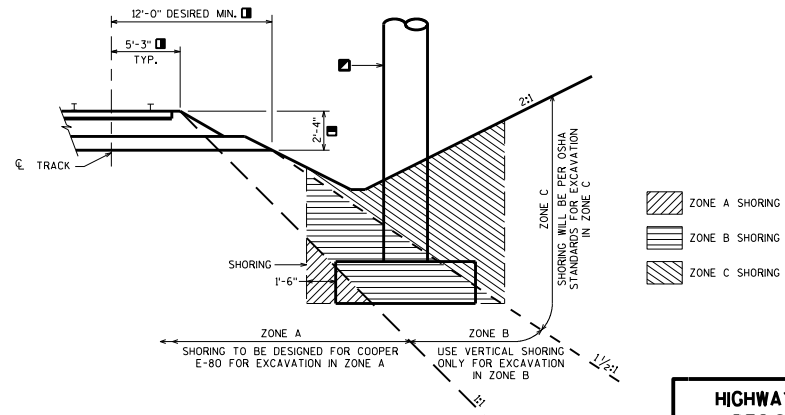


ELEVATION

CRASH WALL DETAILS



END VIEW



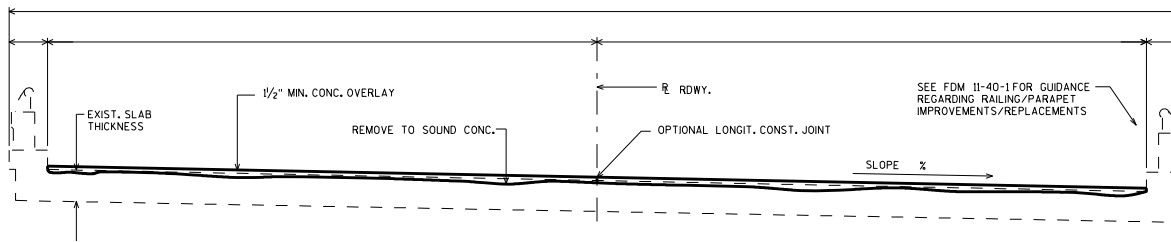
LIMITS BEFORE SHORING REQUIRED

HIGHWAY OVER RAILROAD DESIGN REQUIREMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

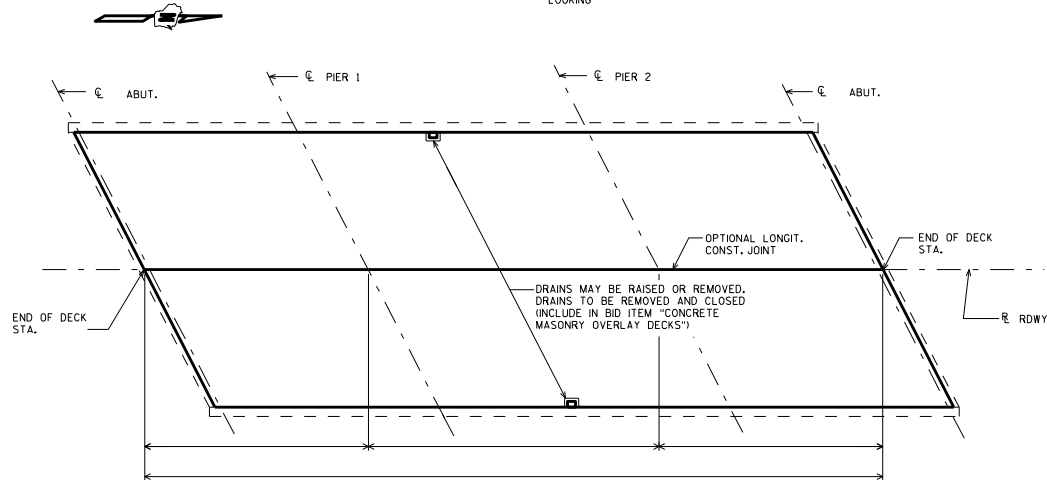
APPROVED: Bill Oliva

DATE:
1-14



CROSS SECT. THRU RDWY.

LOOKING



PLAN

DESIGNER NOTES

FOR CROSS SECTIONS NOT IN SUPERELEVATION TRANSITIONS THE PREFERRED MINIMUM SLOPE IS 2%.

PROVIDE AN AVERAGE OVERLAY THICKNESS ON THE PLANS. THIS OVERLAY THICKNESS SHOULD BE BASED ON 1/2" MIN. ABOVE THE DECK SURFACE AFTER "CLEANING DECKS", PROPOSED CROSS SLOPE VS. EXISTING CROSS SLOPE, ETC. BASED ON ORIGINAL STRUCTURE PLANS.

DO NOT PROVIDE A PROFILE GRADE LINE ON THE PLANS.

NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

UNDER THE BID ITEM "MASONRY ANCHORS TYPE S .-INCH", ANCHORED REINFORCING STEEL SHALL BE PAID FOR SEPARATELY AS PROVIDED IN SECTION 505 OF THE STANDARD SPECIFICATIONS FOR BAR STEEL REINFORCEMENT.

A MIN. OF 1-INCH OF CONCRETE SHALL BE REMOVED FROM THE ENTIRE BRIDGE DECK UNDER THE BID ITEM "CLEANING DECKS".

ANY EXCAVATION REQ'D TO COMPLETE THE OVERLAY OR THE PAVING BLOCK AT ABUTS. IS 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 "CLEANING DECKS". 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.

DESIGN DATA

LIVE LOAD: _____

INVENTORY RATING: HS- _____

OPERATIONAL RATING: HS - _____

MAXIMUM STANDARD PERMIT VEHICLE LOAD = _____ KIPS

ULTIMATE DESIGN STRESSES: _____

CONCRETE MASONRY OVERLAY DECKS $f'c = 4,000$ P.S.I.

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
509.2500	CONCRETE MASONRY OVERLAY DECKS	CY	
	POSSIBLE ADDITIONAL BID ITEMS		
502.3100	EXPANSION DEVICE B- - -	LS	
502.50- -	MASONRY ANCHORS TYPE L NO. - BARS	EACH	
502.61- -	MASONRY ANCHORS TYPE S .-INCH	EACH	
505.0605	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	
509.0301	PREPARATION DECKS TYPE 1	SY	
509.0302	PREPARATION DECKS TYPE 2	SY	
509.0500	CLEANING DECKS	SY	
509.1000	JOINT REPAIR	SY	
509.1200	CURB REPAIR	LF	
509.1500	CONCRETE SURFACE REPAIR	SF	
509.2000	FULL-DEPTH DECK REPAIR	SY	
509.9005.S	REMOVING CONCRETE MASONRY DECK OVERLAY	SY	
509.9020.S	EPOXY CRACK SEALING	LF	
514.0900	ADJUSTING FLOOR DRAINS	EACH	
SPV.0090	SAWING PAVEMENT DECK PREPARATION AREAS	LF	

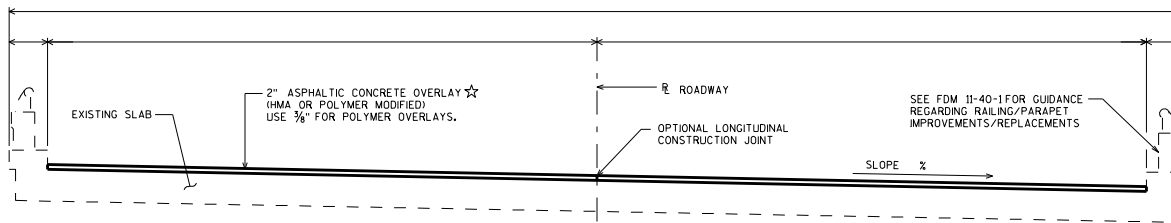
THIS IS A PARTIAL LIST OF POSSIBLE BID ITEMS. BID ITEMS MAY NEED TO BE ADDED OR REMOVED TO FIT EACH INDIVIDUAL CASE.

CONCRETE OVERLAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

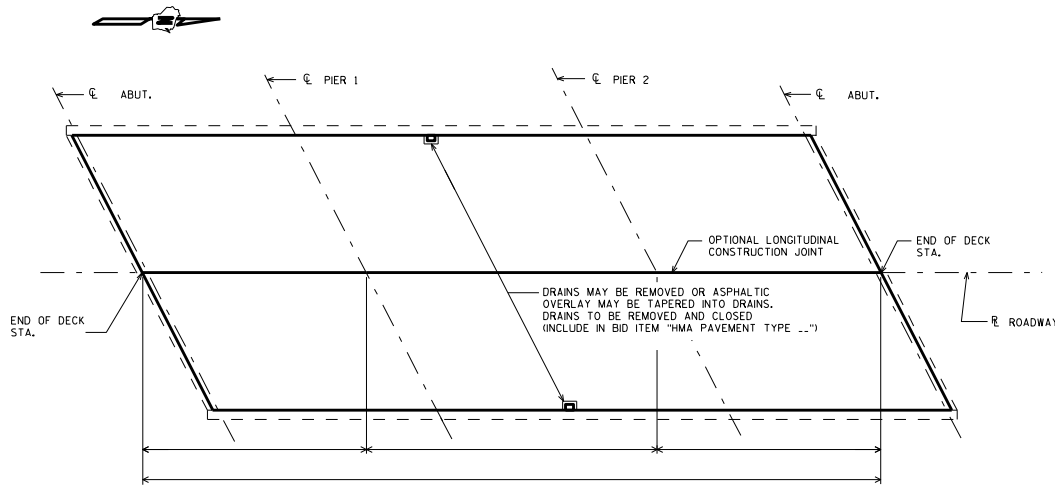
APPROVED: Bill Oliva

DATE:
1-14



CROSS SECT. THRU RDWY.

LOOKING -----



PLAN

DESIGNER NOTES

FOR CROSS SECTIONS NOT IN SUPERELEVATION TRANSITIONS THE PREFERRED MINIMUM SLOPE IS 2%.

PROVIDE AN AVERAGE OVERLAY THICKNESS ON THE PLANS. THIS OVERLAY THICKNESS SHOULD BE BASED ON 2" MIN. ABOVE THE DECK SURFACE AFTER ALL PREPARATION (3/8" FOR THIN BONDED POLYMER OVERLAYS), DIFFERENCES IN PROPOSED CROSS SLOPE VS. EXISTING CROSS SLOPE, ETC. BASED ON ORIGINAL STRUCTURE PLANS.

DO NOT PROVIDE A PROFILE GRADE LINE ON THE PLANS.

☆ POLYMER MODIFIED ASPHALTIC OVERLAYS NOT REQUIRING SHEET MEMBRANE WATERPROOFING ARE THE PREFERRED ASPHALTIC OVERLAY TYPE. WHERE POLYMER MODIFIED ASPHALTIC MATERIAL IS NOT AVAILABLE, DESIGNER TO UTILIZE ASPHALTIC OVERLAY WITH SHEET MEMBRANE WATERPROOFING. DESIGNER TO CONTACT THE BUREAU OF STRUCTURES DEVELOPMENT SECTION TO DETERMINE IF POLYMER MODIFIED ASPHALTIC MATERIAL IS AVAILABLE.

NOTE:
CONCRETE OVERLAYS ARE THE CURRENT PREFERRED METHOD TO OVERLAY A BRIDGE.

NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

UNDER THE BID ITEM "MASONRY ANCHORS TYPE S -INCH", ANCHORED REINFORCING STEEL SHALL BE PAID FOR SEPARATELY AS PROVIDED IN SECTION 505 OF THE STANDARD SPECIFICATIONS FOR BAR STEEL REINFORCEMENT.

A MIN. OF 1-INCH OF CONCRETE SHALL BE REMOVED FROM THE ENTIRE BRIDGE DECK UNDER THE BID ITEM "CLEANING DECKS".

ANY EXCAVATION REQ'D TO COMPLETE THE OVERLAY OR THE PAVING BLOCK AT ABUTS. IS INCIDENTAL TO THE BID ITEM " (OVERLAY TYPE) ".

PROFILE GRADE LINE SHALL BE DETERMINED IN THE FIELD BASED ON A MINIMUM OVERLAY THICKNESS OF 1 1/2" PLACED ABOVE THE FINAL DECK SURFACE AFTER ALL 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.

DESIGN DATA

LIVE LOAD:

INVENTORY RATING: HS-
OPERATIONAL RATING: HS -
MAXIMUM STANDARD PERMIT VEHICLE LOAD = ... Kips

ULTIMATE DESIGN STRESSES:

CONCRETE MASONRY SUPERSTRUCTURE f'c = 4,000 P.S.I.

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	TOTAL
☆ 455.0105	ASPHALTIC MATERIAL ..	TON	
☆ 460.1100	HMA PAVEMENT TYPE ..	TON	
509.5100.S	POLYMER OVERLAY	SY	
☆ 516.0600.S	SHEET MEMBRANE WATERPROOFING	SY	
SPV.0195	POLYMER MODIFIED ASPHALT OVERLAY	TON	
	POSSIBLE ADDITIONAL BID ITEMS		
502.3100	EXPANSION DEVICE B- -.	LS	
502.50..	MASONRY ANCHORS TYPE L NO. . BARS	EACH	
502.61..	MASONRY ANCHORS TYPE S -INCH	EACH	
505.0405	BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB	
509.0301	PREPARATION DECKS TYPE 1	SY	
509.0302	PREPARATION DECKS TYPE 2	SY	
509.1000	JOINT REPAIR	SY	
509.1200	CURB REPAIR	LF	
509.2000	FULL-DEPTH DECK REPAIR	SY	
509.2500	CONCRETE MASONRY OVERLAY DECKS	CY	
509.9005.S	REMOVING CONCRETE MASONRY DECK OVERLAY	SY	
509.9020.S	EPOXY CRACK SEALING	LF	
514.0900	ADJUSTING FLOOR DRAINS	EACH	
SPV.0090	SAWING PAVEMENT DECK PREPARATION AREAS	LF	
SPV.0035	CONCRETE MASONRY DECK PATCHING	CY	

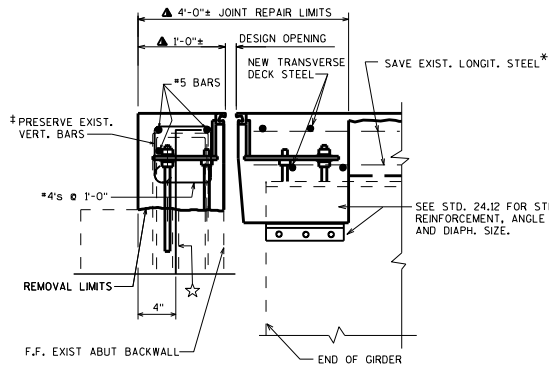
THIS IS A PARTIAL LIST OF POSSIBLE BID ITEMS. BID ITEMS MAY NEED TO BE ADDED OR REMOVED TO FIT EACH INDIVIDUAL CASE.

ASPHALTIC & POLYMER OVERLAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

DATE:
1-14

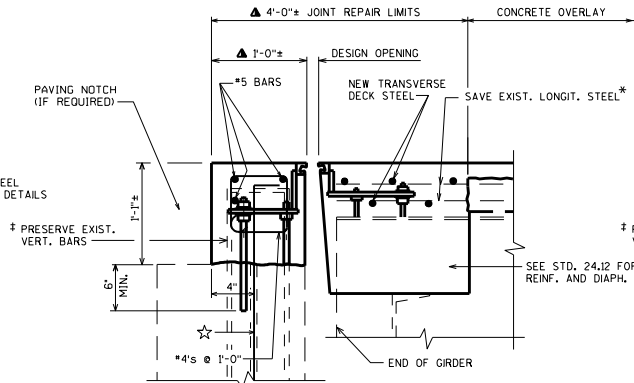


**SECTION THRU JOINT
STEEL GIRDER WITHOUT END DIAPHRAGM**

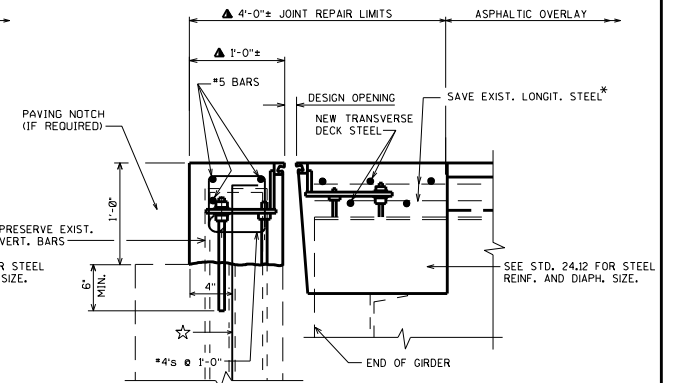
‡ EXISTING BARS ARE LIKELY TO BE CORRODED AND/OR DAMAGED DURING CONCRETE REMOVAL. PRESERVE AND INCORPORATE AS MUCH REBAR AS PRACTICAL. SUPPLEMENT WITH THE BARS INDICATED BY ☆.

☆ MASONRY ANCHORS TYPE L NO. 5 BARS, EMBED 1'-6" INTO CONCRETE. SPACE AT 1'-0". TURN 10° LEG AS NECESSARY TO FIT.

ALL REPLACEMENT PAVING BLOCK DIMENSIONS SHALL MATCH EXISTING PLAN DIMENSIONS UNLESS DESIGNER DETERMINES OTHERWISE, TYP. FOR ALL SECTIONS SHOWN ON THIS STANDARD.



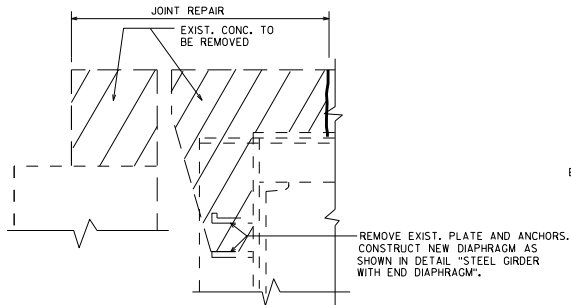
**SECTION THRU PROPOSED JOINT
STEEL GIRDER WITH END DIAPHRAGM
CONCRETE OVERLAY**



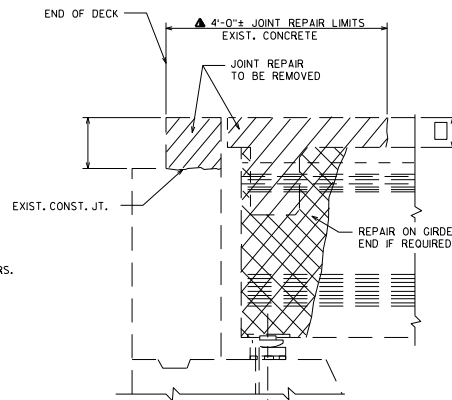
**SECTION THRU PROPOSED JOINT
STEEL GIRDER WITH END DIAPHRAGM
ASPHALTIC OVERLAY**

TOTAL ESTIMATED QUANTITIES

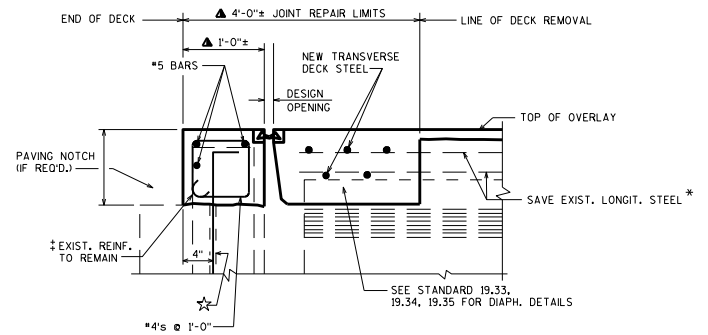
BID ITEMS	UNIT
JOINT REPAIR	SY
EXPANSION DEVICE B-1	1LS
BAR STEEL REINFORCEMENT HS COATED BRIDGES	LB



**JOINT REPAIR-REMOVAL
STEEL GIRDER**



**JOINT REPAIR-REMOVAL
SECTION THRU JOINT-PRESTRESSED GIRDER**



▲ DIMENSIONS GIVEN ARE NORMAL TO C. OF SUBSTRUCTURE UNIT. INCORPORATE EXISTING REINFORCEMENT

SEE STANDARD 28.01 FOR SUPPORTS USED WITH STRIP SEAL - STEEL EXTRUSIONS.

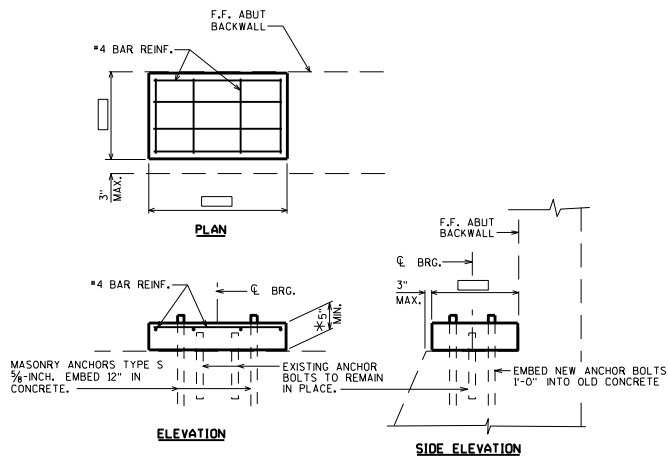
*FOR SKEWS > 20°, WHERE ORIGINAL TRANSVERSE DECK REINFORCEMENT WAS PLACED NORMAL TO THE GIRDERS, SAVE AND INCORPORATE 1'-6" MIN. OF TRANSVERSE REINFORCING BARS.

**STRIP SEALS & DIAPH.
DETAILS FOR OVERLAYS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

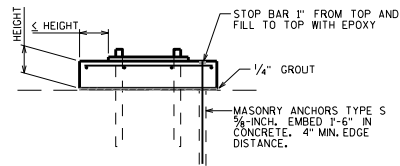
APPROVED: Bill Oliva

DATE:
1-14



CONCRETE BEARING BLOCK DETAILS

(MAY BE USED IN LIEU OF PLATE 'E' AS SHOWN ON STD. 40.08)



PRECAST CONCRETE BLOCK DETAIL

DEPTH = MIN. 5", MAX. 1'-0" *

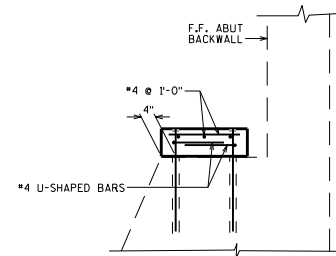
ANCHOR IN AT LEAST 4 LOCATIONS (ANCHORS INCLUDE EPOXY ANCHORS, ANCHOR BOLTS OR COMBINATION).

GROUT 1/4" BENEATH PRECAST ELEMENT - ELIMINATE STRESS CONCENTRATION AND REDUCE CRACKING.

PRECAST BLOCK (OR ANY CONCRETE BLOCK) MUST EXTEND BEYOND BEARING A DISTANCE EQUAL TO, OR GREATER THAN, THE HEIGHT OF THE CONCRETE BLOCK *. THIS IS TO ACCOUNT FOR 45-DEGREE DOWNWARD AND OUTWARD STRESS DISTRIBUTION. THIS PROVISION CAN BE DISREGARDED IF A FULL-DEPTH CONCRETE DIAPHRAGM IS USED IN CONJUNCTION WITH A 1/2" THICK ELASTOMERIC PAD (FIXED SEAT).

REINFORCEMENT SHOULD BE IN BOTH DIRECTIONS UTILIZING #4 @ 1'-0" MAXIMUM SPACING.

BURN EXISTING ANCHOR BOLTS OFF FLUSH WITH BEAM SEAT.



* ALTERNATE DETAIL

TO BE USED FOR CASES WHERE HEIGHT EXCEEDS 1'-0" OR INSUFFICIENT EDGE DISTANCE (PRECAST OPTION SHOWN)

CONCRETE BEARING BLOCK DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
STRUCTURES DEVELOPMENT SECTION

APPROVED: Bill Oliva

DATE:
7-13