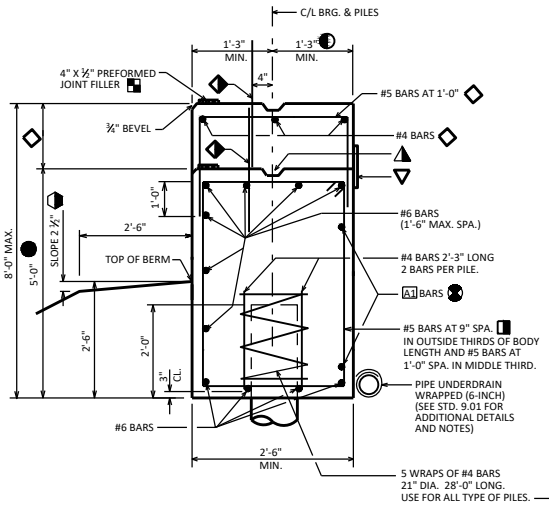
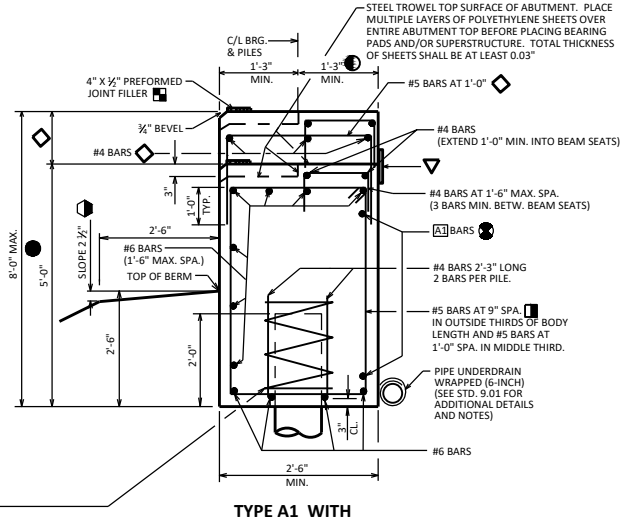


TYPE A1 WITH FIXED SEAT



TYPE A1 WITH SEMI-EXPANSION SEAT

DESIGNER NOTES

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

WING BARS AND DOWEL BARS SHALL BE EPOXY COATED.

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

TOTAL LENGTH OF A1 BARS SHALL BE ≥ TO WING LENGTH.

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

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

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

WHEN THE BOTTOM OF GIRDER SLOPES MORE THAN 1%, SLOPE THE BEAM SEAT BASED ON ADDING THESE TWO VALUES:
- LONGITUDINAL GRADE OF GIRDER (PERCENT)
- CAMBER EFFECT = 4(RC)/L X 100 (PERCENT), WHERE:
  RC = RESIDUAL CAMBER (INCHES)
  L = GIRDER LENGTH (INCHES)

(SEE STANDARD 13.01 FOR SLOPED SEAT DETAILS)

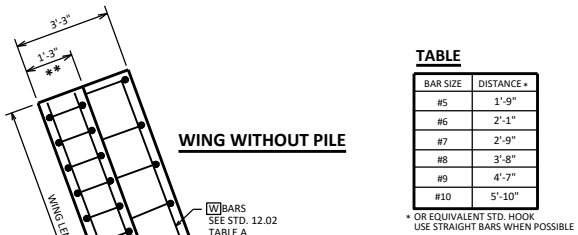
ABUTMENT DETAILED WITHOUT STRUCTURAL APPROACH SLAB. SEE STD. 12.10 THRU 12.13 FOR STRUCTURAL APPROACH DETAILS.

USE THIS SHEET FOR BEAM SEAT DETAILS (WITH OR WITHOUT A STRUCTURAL APPROACH SLAB).

USE ¾" THICK FILLER FOR SLAB STRUCTURES.

LEGEND

- #5 BARS (COATED) AT 1'-0" CENTERS X 2'-0" LONG, EMBED 1'-0". THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.
- WHEN THIS DIMENSION ≥ 4" THIS ADDITIONAL REINFORCEMENT SHALL BE ADDED. MAX. SPA. OF HORIZ. #4 BARS = 1'-0".
- USE 1'-3" FOR SLAB SPANS AND FOR GIRDER SPANS WITH NO PAVING NOTCH.
  USE 1'-6" FOR GIRDER SPANS WITH NO PAVING NOTCH, BUT WHERE 36W", 45W", 54", 54W", 70", 72W" OR 82W" GIRDERS ARE USED, AND SKEW > 25°.
  USE 1'-3" FOR SLAB SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB.
  USE 1'-11" FOR GIRDER SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB.
  USE 1'-7" FOR SLAB SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10)
  USE 2'-3" FOR GIRDER SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10)
- DIMENSION IS FROM BOTTOM OF ABUTMENT TO LOW BEAM SEAT OR LOW SIDE OF SLAB TYPE SUPERSTRUCTURE.
- 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.
- KEYED CONST. JOINT FORMED BY BEVELED 2" X 6".
- ** WINGWALL WIDTH SHALL BE 1'-6" WHEN TYPE "M" RAILING, VERTICAL FACE PARAPET "TX", OR SINGLE SLOPE PARAPET "56SS" IS USED. "56SS" SHOULD NOT BE USED ON A SIDEWALK. WINGWALL WIDTH SHALL BE 1'-4" WHEN PARAPET 'A' ON A RAISED SIDEWALK IS USED. WINGWALL WIDTH SHALL BE 1'-9" WHEN TYPE "NY3" OR "NY4" RAILING IS USED. (USE 2'-0" WIDTH WHEN "NY4" IS USED ON A SIDEWALK).
- USE #5 BARS AT 6" SPA. IN OUTSIDE THIRDS OF BODY LENGTH WHEN THE WING LENGTH > 20'-0" AND WING HEIGHT > 10'-0".
- WHEN BODY SECTION IS > 50'-0" ± LONG PROVIDE VERTICAL CONSTRUCTION JOINT. RUN BAR STEEL THRU JOINT AND SEAL JOINT WITH 18" RUBBERIZED MEMBRANE WATERPROOFING. SEE STD. 12.09 FOR ALTERNATE CONSTRUCTION JOINT.
- SHOW ALL BARS FOR CLARITY.
- NO SLOPE FOR HEAVY RIPRAP. SEE STANDARD 12.08 FOR DETAILS.

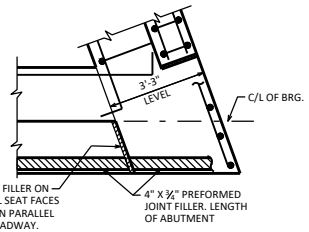


WING WITHOUT PILE

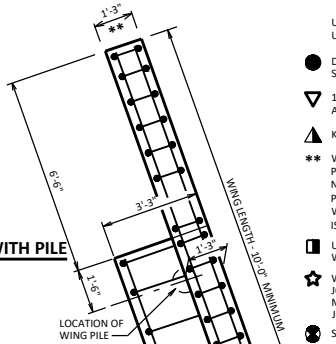
TABLE

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

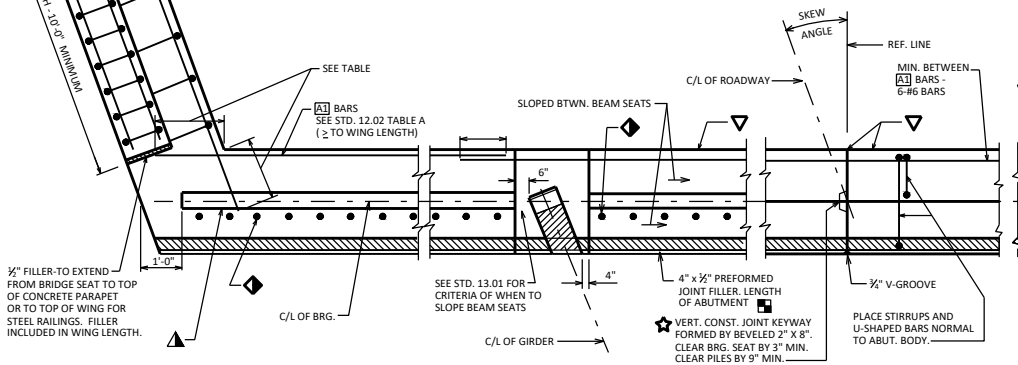
* OR EQUIVALENT STD. HOOK USE STRAIGHT BARS WHEN POSSIBLE



SLAB SPAN WITH SEMI EXPANSION SEAT



WING WITH PILE



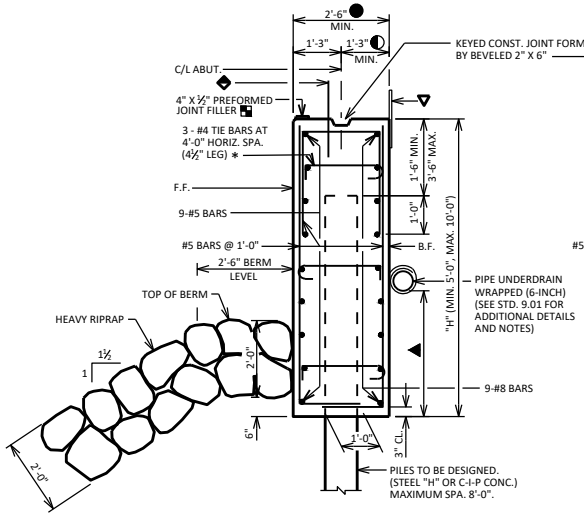
SLAB SPAN WITH FIXED SEAT | **GIRDER SPAN WITH FIXED SEAT** | **SLAB SPAN WITH SEMI EXPANSION SEAT** | **GIRDER SPAN WITH SEMI EXPANSION SEAT**

ABUTMENT TYPE A1 (INTEGRAL ABUTMENT)

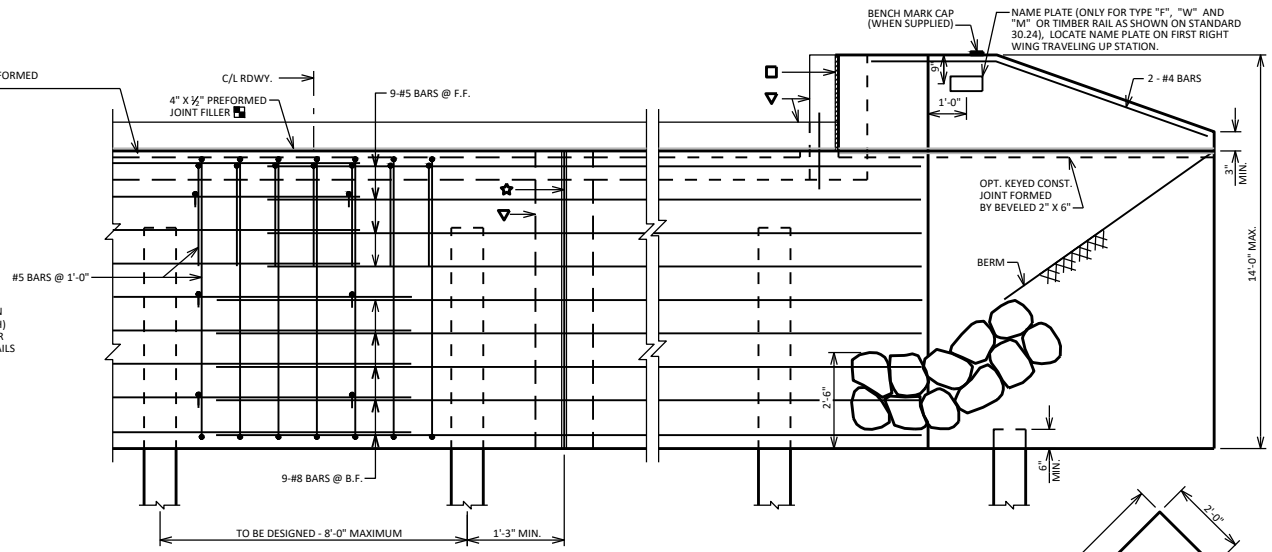
BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

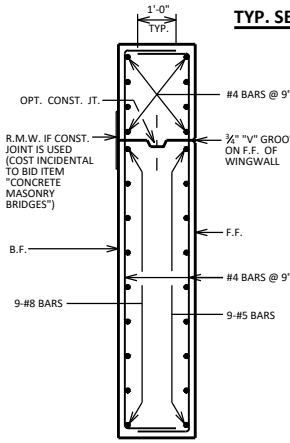
STANDARD 12.01



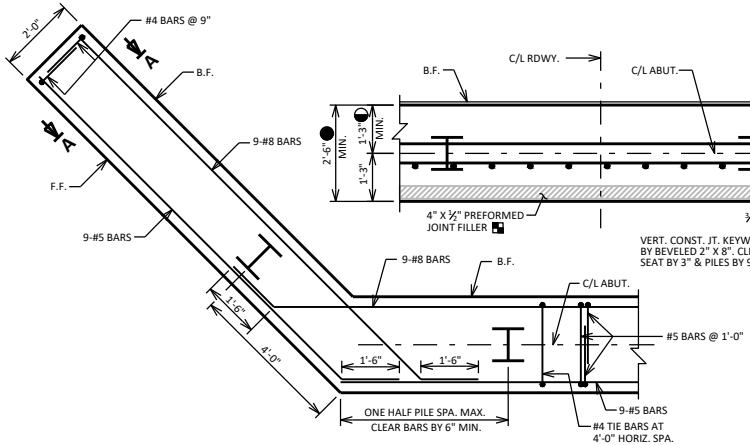
TYP. SECTION THRU ABUTMENT BODY



ELEVATION

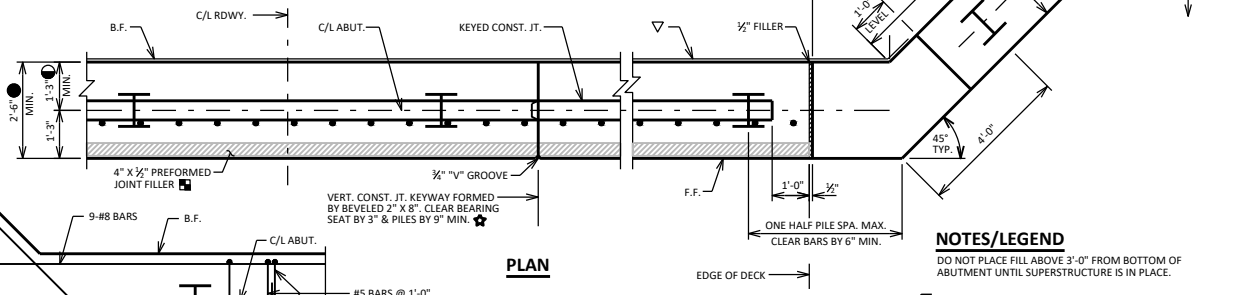


SECTION A-A



PLAN

SHOWING BAR STEEL REINFORCEMENT



PLAN

DESIGNER NOTES

FOR SLAB AND PRESTRESSED GIRDER SPANS L < 200'-0" & FOR STEEL GIRDER SPANS L < 150'-0" WHERE L = LENGTH OF CONTINUOUS SUPERSTRUCTURE BETWEEN ABUTMENTS.

WHEN GIRDERS WITH SEMI EXPANSION SEAT OR FIXED SEAT, OR SLAB SPAN WITH SEMI EXPANSION SEAT ARE USED, MAKE BEAM SEATS SIMILAR TO THAT SHOWN ON STANDARD 12.01.

WING BARS AND DOWEL BARS SHALL BE EPOXY COATED.

✿ WHEN BODY SECTION IS ± 50'-0" LONG, PROVIDE VERT. CONST. JOINT. RUN BAR STEEL THRU JOINT. BEVEL EXPOSED EDGES ¾" AND SEAL JOINT. SEE STD. 12.09 FOR ALTERNATE CONSTRUCTION JOINT.

◐ USE 1'-3" FOR SLAB SPANS AND FOR GIRDER SPANS WITH NO PAVING NOTCH.
USE 1'-6" FOR GIRDER SPANS WITH NO PAVING NOTCH, BUT WHERE 36W", 45W", 54", 54W", 70", 72W" OR 82W" GIRDERS ARE USED, AND SKEW > 25°.
USE 1'-3" FOR SLAB SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB.
USE 1'-11" FOR GIRDER SPANS WITH A PAVING NOTCH, BUT NO STRUCTURAL APPROACH SLAB.
USE 1'-7" FOR SLAB SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10)
USE 2'-3" FOR GIRDER SPANS WITH A STRUCTURAL APPROACH SLAB. (STD. 12.10)

▲ FOR BOTTOM OF ABUTMENTS LOCATED ABOVE NORMAL WATER, PLACE UNDERDRAIN NEAR THE BOTTOM OF ABUTMENT AS SHOWN IN STANDARD 12.01. FOR BOTTOM OF ABUTMENTS LOCATED BELOW NORMAL WATER, PLACE UNDERDRAIN ABOVE NORMAL WATER. SEE BRIDGE MANUAL 12.6.1 FOR ADDITIONAL GUIDANCE. FOR UNDERDRAIN EXPOSED TO HIGH WATER, CONSIDER CAPPING THE UPSTREAM END TO PREVENT CLOGGING.

▪ USE ¾" THICK FILLER FOR SLAB STRUCTURES

NOTES/LEGEND

DO NOT PLACE FILL ABOVE 3'-0" FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

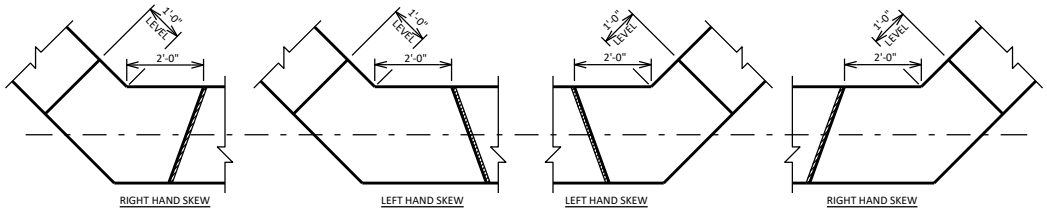
□ SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD " BELOW SURFACE OF CONC.)

▽ 18" RUBBERIZED MEMBRANE WATERPROOFING.

● WHEN ABUTMENT WIDTH > 2'-10" FIXED POINT OF WING ROTATION SHALL BE ON F.F. OF ABUTMENT (0° SKEW ONLY).

◆ THESE BARS MAY BE PLACED AFTER CONCRETE IS POURED, BUT BEFORE INITIAL SET HAS TAKEN PLACE. SEE STD. 12.01 & 27.05

✱ ALTERNATE THE POSITION OF THE 90° AND 180° HOOKS AT EACH VERTICAL LAYER OF TIES.



WING DETAIL FOR SKEWED STRUCTURES

ABUTMENT A5 (INTEGRAL, PILE ENCASED ABUTMENT)

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

STANDARD 12.08

DESIGNER NOTES

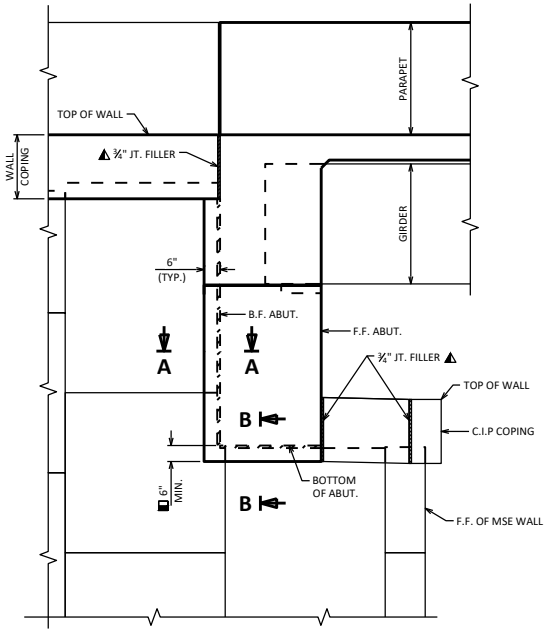
THIS STANDARD IS FOR INFORMATIONAL PURPOSES ONLY. MODIFY DETAILS TO THE PROJECT-SPECIFIC REQUIREMENTS.

◧ 6-INCH MINIMUM ASSUMES NO LONG-TERM DIFFERENTIAL SETTLEMENT BETWEEN THE ABUTMENT AND MSE WALL.

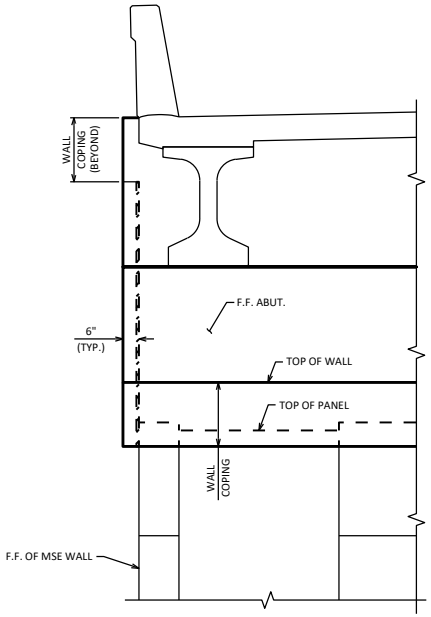
SEE STANDARD 14.04 FOR ADDITIONAL INFORMATION.

NOTES

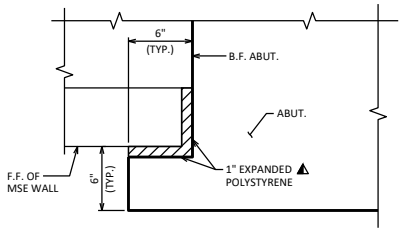
⚠ SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE).



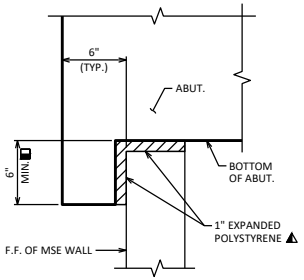
ALTERNATE MSE WALL AT ABUTMENT WITH WRAPPED MSE WALL



FRONT ELEVATION OF ALTERNATE MSE WALL AT ABUTMENT WITH WRAPPED MSE WALL



SECTION A-A



SECTION B-B

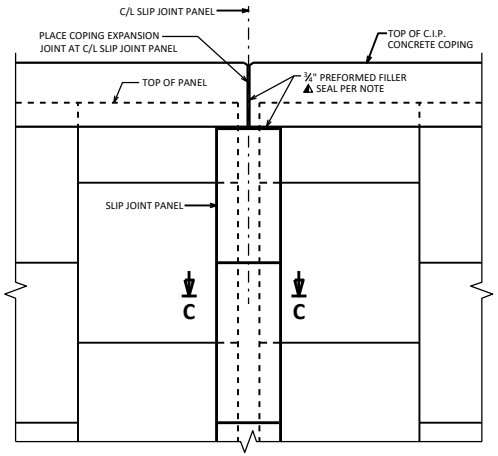
DESIGNER NOTES

SEE STANDARD 14.02 FOR C.I.P. CONCRETE COPING DETAILS.

WHEN REQUIRED FOR STAGING OR BY DESIGN, PROVIDE SLIP JOINT LOCATIONS ON THE PLANS AND PROVIDE COPING NOTES AND DETAILS TO ACCOMMODATE A SLIP JOINT. DO NOT RUN BAR STEEL THRU COPING EXPANSION JOINT.

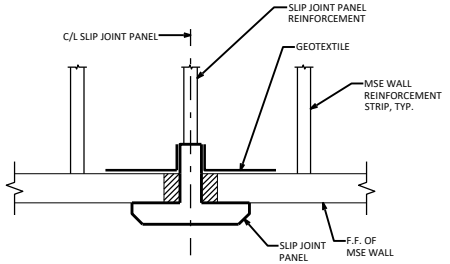
NOTES

⚠ SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE).



C.I.P CONCRETE COPING PARTIAL ELEVATION AT SLIP JOINT

DO NOT RUN BAR STEEL THRU COPING EXPANSION JOINT
(RAILING NOT SHOWN FOR CLARITY)



SECTION C-C

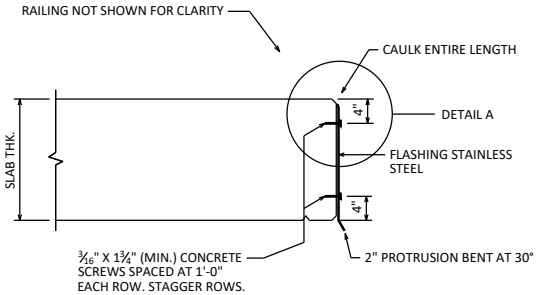
SLIP JOINT DETAIL SHOWN FOR INFORMATIONAL PURPOSES ONLY.
WALL SUPPLIER TO SUBMIT JOINT DETAIL FOR ACCEPTANCE.

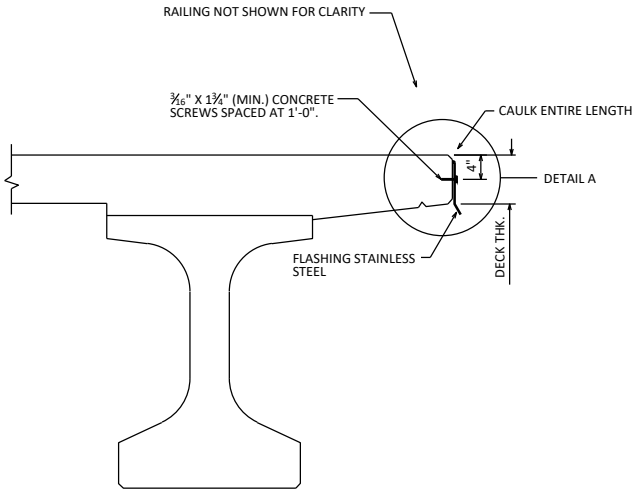
MSE WALL DETAILS

BUREAU OF STRUCTURES

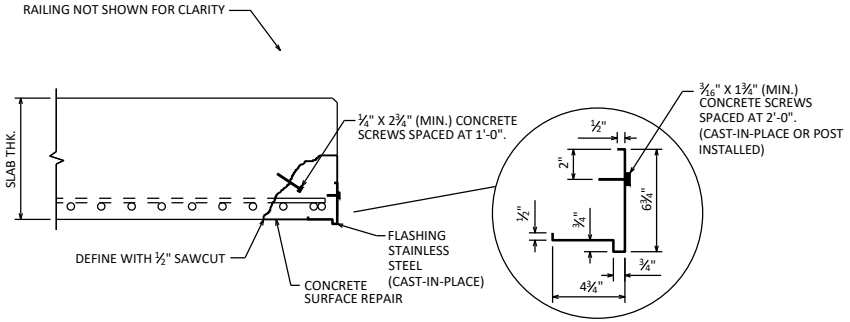
APPROVED: *Laura Shadewald*

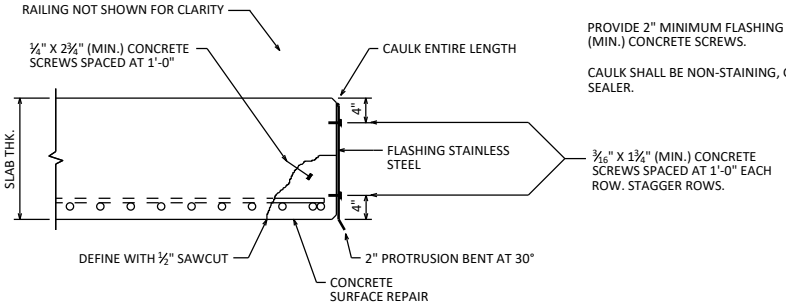
DATE: 1-25





FLASHING DETAIL FOR NEW BRIDGES WITH OPEN RAILING





REHABILITATION FLASHING DETAIL 1

NOTES (REHAB DETAIL 1)

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, AND CONCRETE SCREWS.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED AFTER FLASHING IS INSTALLED AND LIMITED TO THE EXPOSED CONCRETE SURFACES. PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP SURFACE OF THE SLAB, THE EXTERIOR EDGE OF THE SLAB, AND THE FIRST 1'-0" OF THE UNDERSIDE OF THE SLAB.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO B.F. OF ABUTMENT DIAPHRAGM.

PROVIDE 2" MINIMUM FLASHING OVERLAP, FASTEN WITH 3/16" X 2" (MIN.) CONCRETE SCREWS.

REHABILITATION FLASHING DETAIL 2

NOTES (REHAB DETAIL 2)

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

FLASHING TO BE INSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION. PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP SURFACE OF THE SLAB, THE EXTERIOR EDGE OF THE SLAB, AND THE FIRST 1'-0" OF THE UNDERSIDE OF THE SLAB.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO B.F. OF ABUTMENT DIAPHRAGM.

TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF DECK/SLAB SURFACE.

THE FLASHING IS TO BE A CONSTANT HEIGHT BASED ON THE THINNEST SLAB DEPTH OVER THE BRIDGE LENGTH.

PROVIDE 2" MINIMUM FLASHING OVERLAP, FASTEN WITH 3/16" X 2" (MIN.) CONCRETE SCREWS.

CAULK SHALL BE NON-STAINING, GRAY NON-BITUMINOUS JOINT SEALER.

DESIGNER NOTES

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

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

THE DESIGN ENGINEER SHALL PROVIDE CONCRETE SURFACE REPAIR DETAILS AS NEEDED AND WILL BE PAID FOR SEPARATELY. CONCEPTUAL DETAILS ARE SHOWN ON THIS STANDARD.

DO NOT USE FLASHING IF FREEBOARD IS LESS THAN 3" FOR A SLAB BRIDGE. DETAIL 1 NOT TO BE USED IF CLEARANCE IS AN ISSUE OR IF DEBRIS IS A CONCERN.

NOTES (NEW BRIDGES WITH OPEN RAILINGS)

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

FLASHING TO BE INSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION. PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP SURFACE OF THE SLAB, THE EXTERIOR EDGE OF THE SLAB, AND THE FIRST 1'-0" OF THE UNDERSIDE OF THE SLAB.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

EXTEND FLASHING TO B.F. OF ABUTMENT DIAPHRAGM.

TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF DECK/SLAB SURFACE.

THE FLASHING IS TO BE A CONSTANT HEIGHT BASED ON THE THINNEST SLAB DEPTH OVER THE BRIDGE LENGTH.

PROVIDE 2" MINIMUM FLASHING OVERLAP, FASTEN WITH 3/16" X 2" (MIN.) CONCRETE SCREWS.

CAULK SHALL BE NON-STAINING, GRAY NON-BITUMINOUS JOINT SEALER.

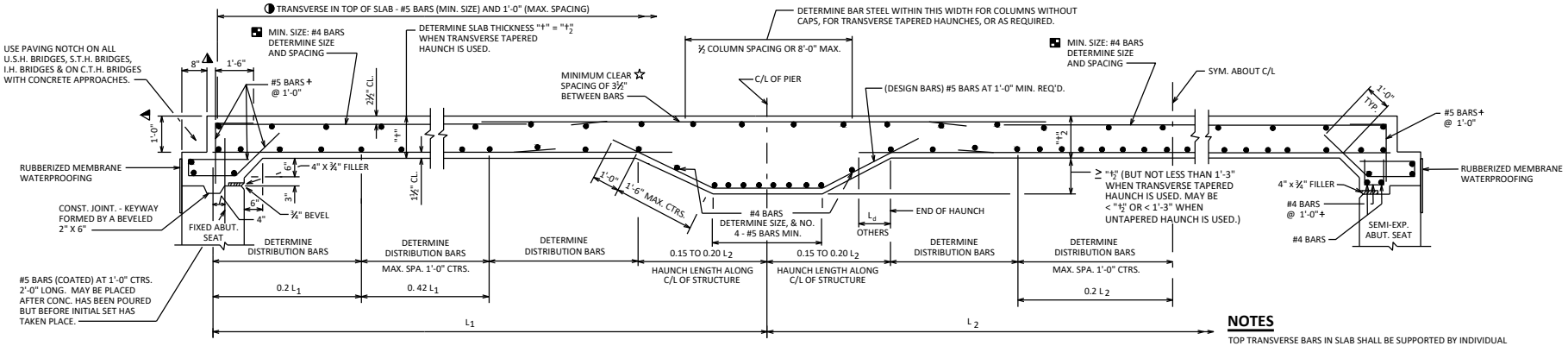
EDGE OF DECK FLASHING

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

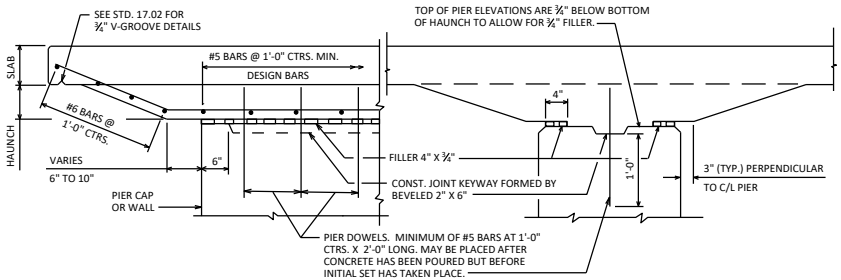
DATE: 1-25

STANDARD 17.03



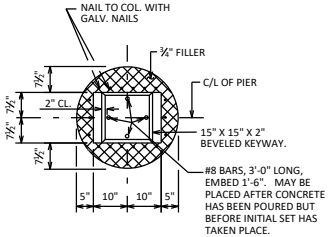
LONGITUDINAL SECTION

+ BARS PLACED PARALLEL TO R/L
SPACING PERPENDICULAR TO R/L

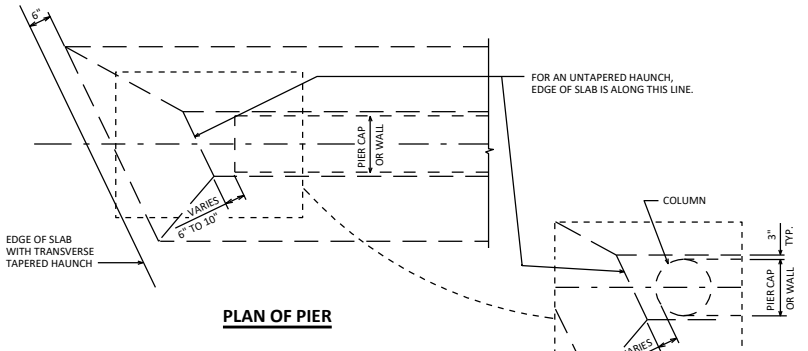


PIER CAP OR WALL TYPE PIER

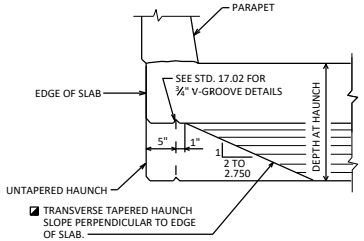
SHOWING TRANSVERSE TAPERED HAUNCH



COLUMN W/0 CAP TYPE PIER DETAIL AT TOP OF COLUMN



PLAN OF PIER



TAPERED/UNTAPERED HAUNCH CROSS 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 (+).

SELECT ONE

- PARAPETS, SIDEWALKS, AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED. (FOR NON-STAGED CONSTRUCTION)
- SLAB-SUPPORTING FALSEWORK SHALL REMAIN IN-PLACE UNTIL ALL STAGES OF THE SUPERSTRUCTURE HAS CURED, FOR DEFLECTION CONTROL BETWEEN STAGES. DO NOT RELEASE ANY FALSEWORK UNTIL PARAPETS, SIDEWALKS, AND MEDIANS HAVE CURED. (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/L OF ABUTMENTS, THE C/L OF PIERS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR R/L . RECORD ELEVATIONS ON AS BUILT PLANS. SEE STD. 18.03

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". SEE STANDARD 18.02 FOR DETAIL.

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 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 REFERENCE LINE (OR CROWN) AND OUTSIDE EDGES OF SLAB AT TENTH POINTS. SEE STD. 18.03

◪ TRANSVERSE TAPERED HAUNCHES MAY BE USED TO ELIMINATE A COLUMN (PROVIDED A MINIMUM OF 3 COLUMNS ARE USED), OR FOR AESTHETICS.

▲ 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.

☆ REFER TO CHAPTER 18 FOR BAR CUTOFF LOCATIONS AND STANDARD 17.02 FOR BAR SPACING CONSIDERATIONS OVER PIERS.

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 "NY"/"M"/"W"	◑ TOP TRANSVERSE REINF. SPECIFIED IN "LONGIT. SECTION" IS ADEQUATE	

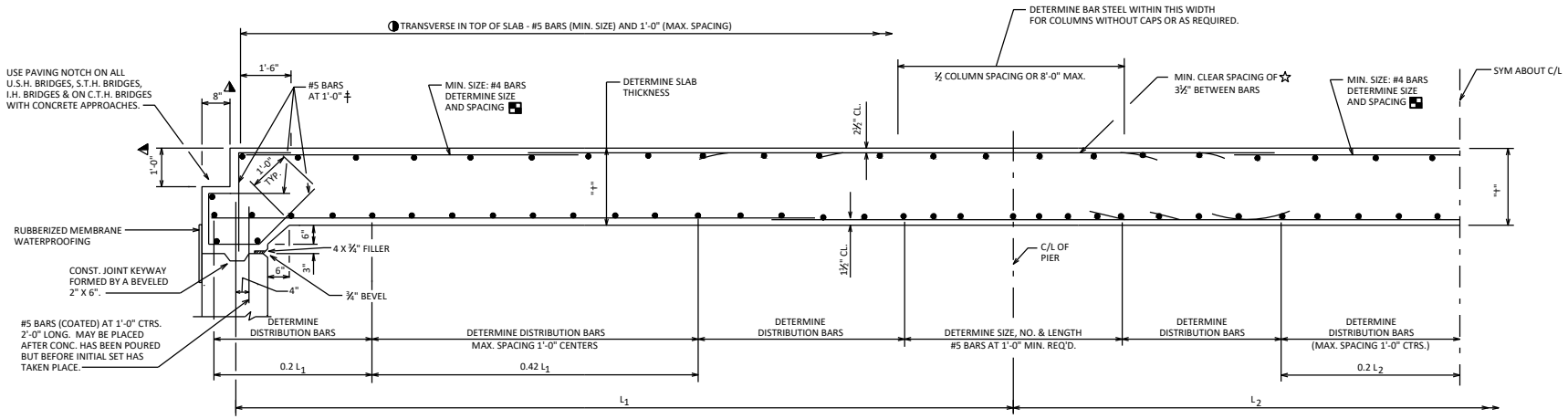
CONTINUOUS HAUNCHED SLAB

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

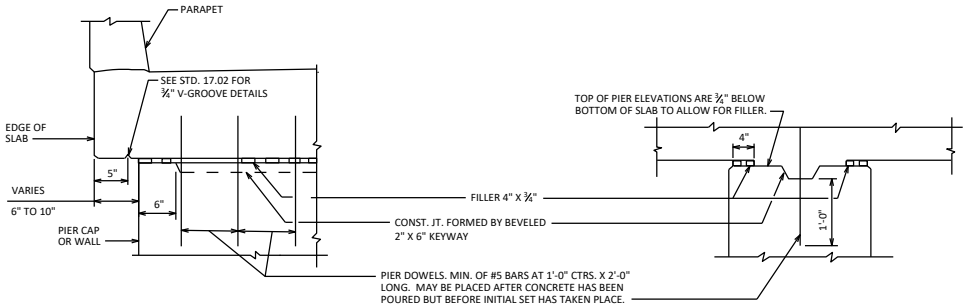
DATE: 1-25

STANDARD 18.01



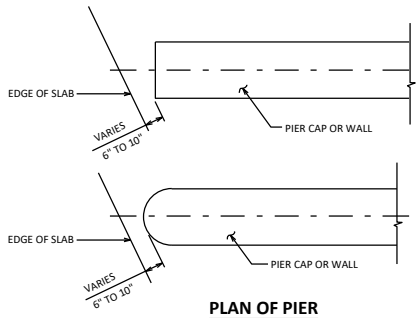
HALF LONGITUDINAL SECTION

‡ BARS PLACED PARALLEL TO R/L. SPACING PERPENDICULAR TO R/L.

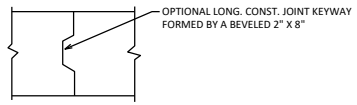


PIER CAP OR WALL TYPE PIER

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



PLAN OF PIER



OPTIONAL LONGITUDINAL CONSTRUCTION JOINT

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 (+).

SELECT ONE

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

SLAB-SUPPORTING FALSEWORK SHALL REMAIN IN-PLACE UNTIL ALL STAGES OF THE SUPERSTRUCTURE HAS CURED, FOR DEFLECTION CONTROL BETWEEN STAGES. DO NOT RELEASE ANY FALSEWORK UNTIL PARAPETS, SIDEWALKS, AND MEDIANS HAVE CURED. (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/L OF ABUTMENTS, THE C/L OF PIERS AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND CROWN OR R/L . RECORD ELEVATIONS ON AS BUILT PLANS. SEE STD. 18.03

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 REFERENCE LINE (OR CROWN) AND OUTSIDE EDGES OF SLAB AT TENTH POINTS. SEE STD. 18.03

⚠ 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.

☆ REFER TO CHAPTER 18 FOR BAR CUTOFF LOCATIONS AND STANDARD 17.02 FOR BAR SPACING CONSIDERATIONS OVER PIERS.

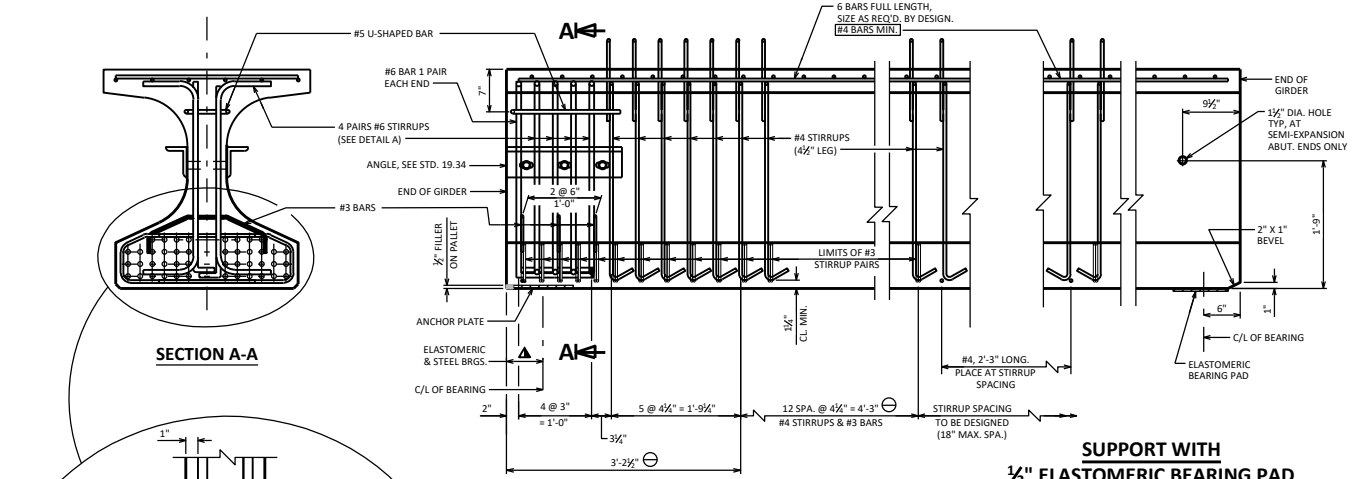
TOP TRANSVERSE REINF. FOR RAILINGS/PARAPETS		
SINGLE SLOPE OR SLOPED FACE PARAPETS	MAIN BARS RUN FROM EDGE TO EDGE OF SLAB	SHORT BARS PLACED BETWEEN MAIN BARS AT EDGE OF SLAB
SLAB THICK. ≥ 15"	(#5 @ 1'-0")	(#5 @ 1'-0") 5'-0" LONG NO HOOK REQ'D. AT END
13" ≤ SLAB THICK. < 15"	(#5 @ 10")	(#5 @ 10") 5'-0"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

CONTINUOUS FLAT SLAB

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

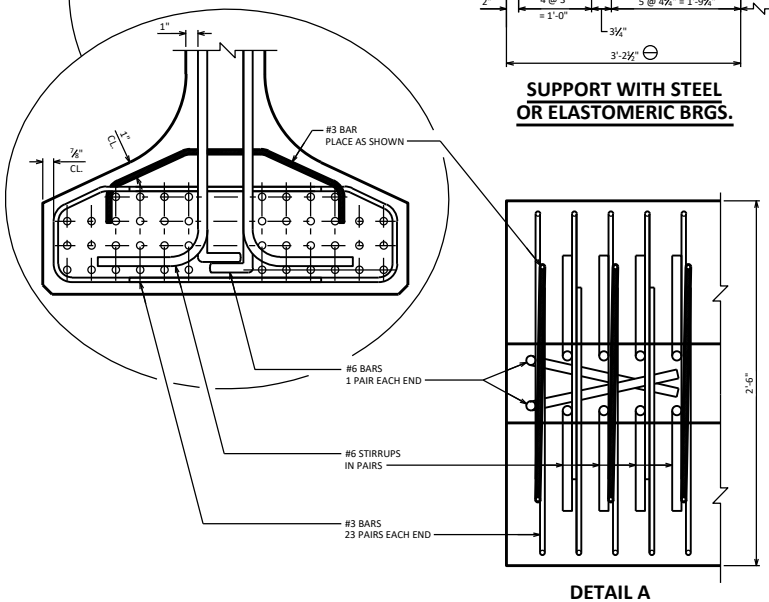
STANDARD 18.02



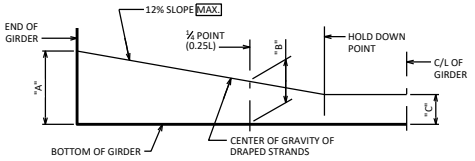
SECTION A-A

SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

SUPPORT WITH ½" ELASTOMERIC BEARING PAD



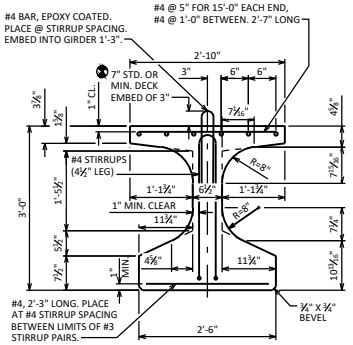
DETAIL A
BOTTOM FLANGE



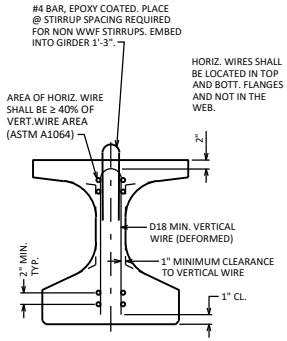
"A" TO BE GIVEN TO THE NEAREST 1"
"B" = ½ ("A" + 3 "C") MIN.
"B" = ½ ("A" + 3 "C") + 3" MAX.

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

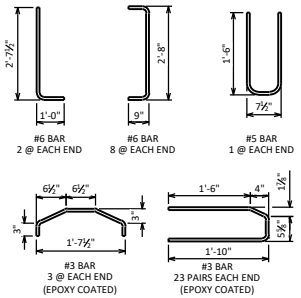
LOCATION OF DRAPED STRANDS



SECTION THRU GIRDER
STRANDS NOT SHOWN



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



NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

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

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.4 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

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

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

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

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

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

DESIGNER NOTES

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

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6,800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

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

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

⊖ DETAIL TYPICAL AT EACH END

⊗ THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2½" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ±¼" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

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

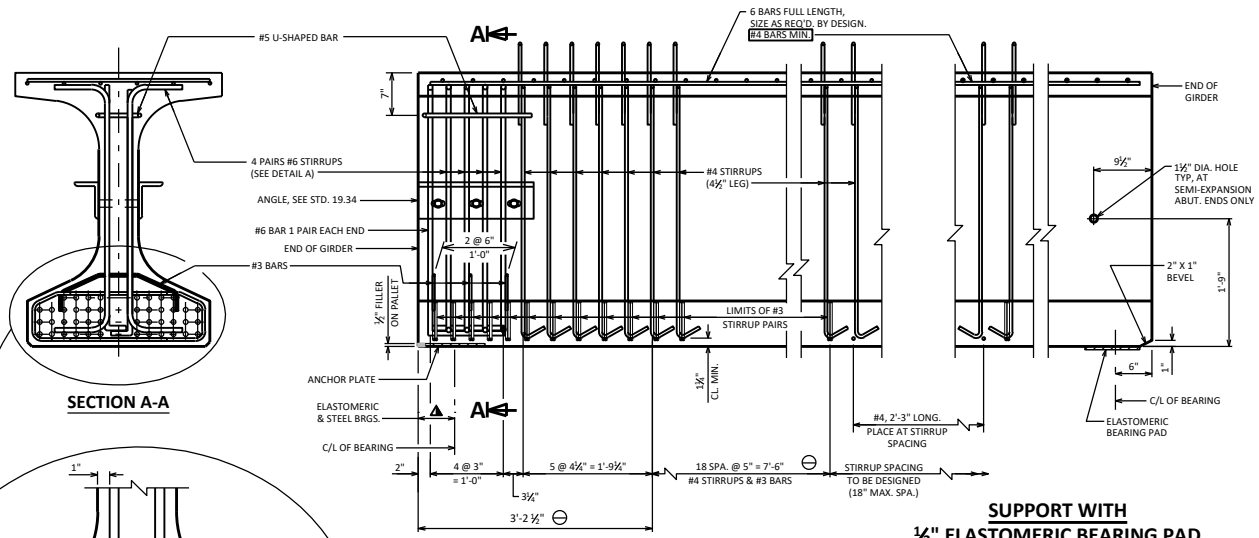
36W'' PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

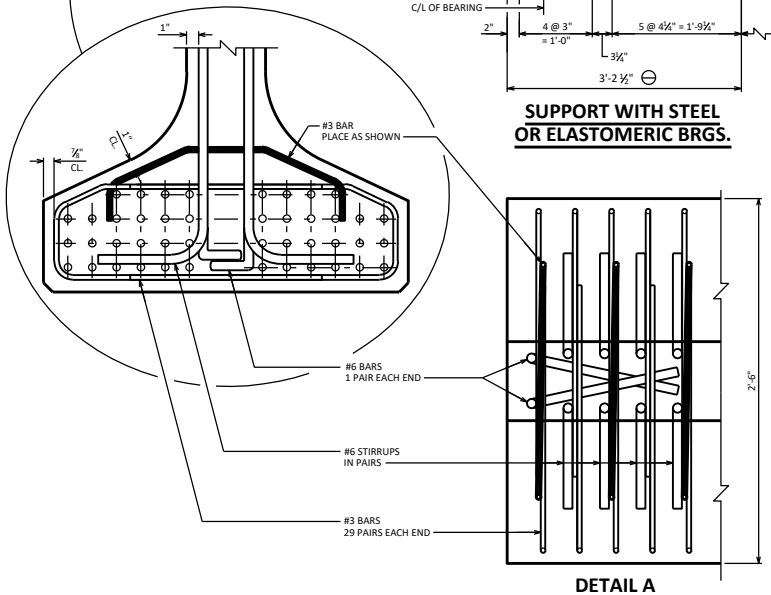
STANDARD 19.11



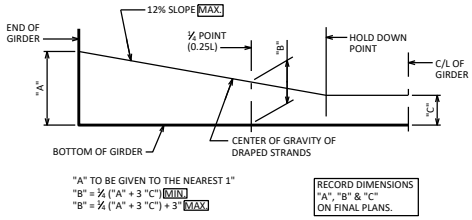
SECTION A-A

SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

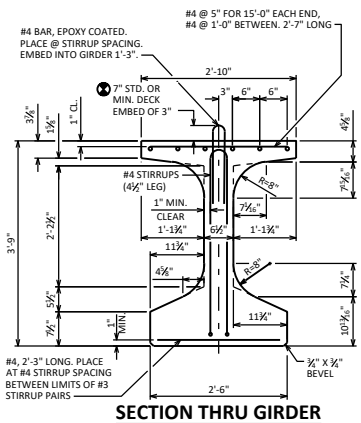
SUPPORT WITH ½" ELASTOMERIC BEARING PAD



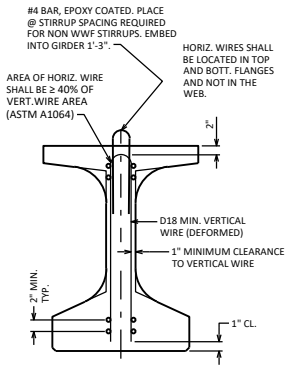
DETAIL A
BOTTOM FLANGE



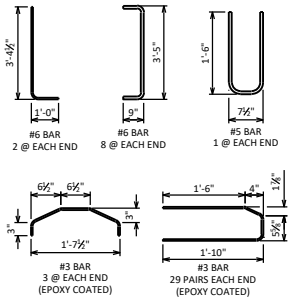
LOCATION OF DRAPED STRANDS



SECTION THRU GIRDER
STRANDS NOT SHOWN



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



NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

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

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.4 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

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

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

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

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

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

DESIGNER NOTES

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

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6,800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

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

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

⊖ DETAIL TYPICAL AT EACH END

⊠ THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2½" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ±½" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

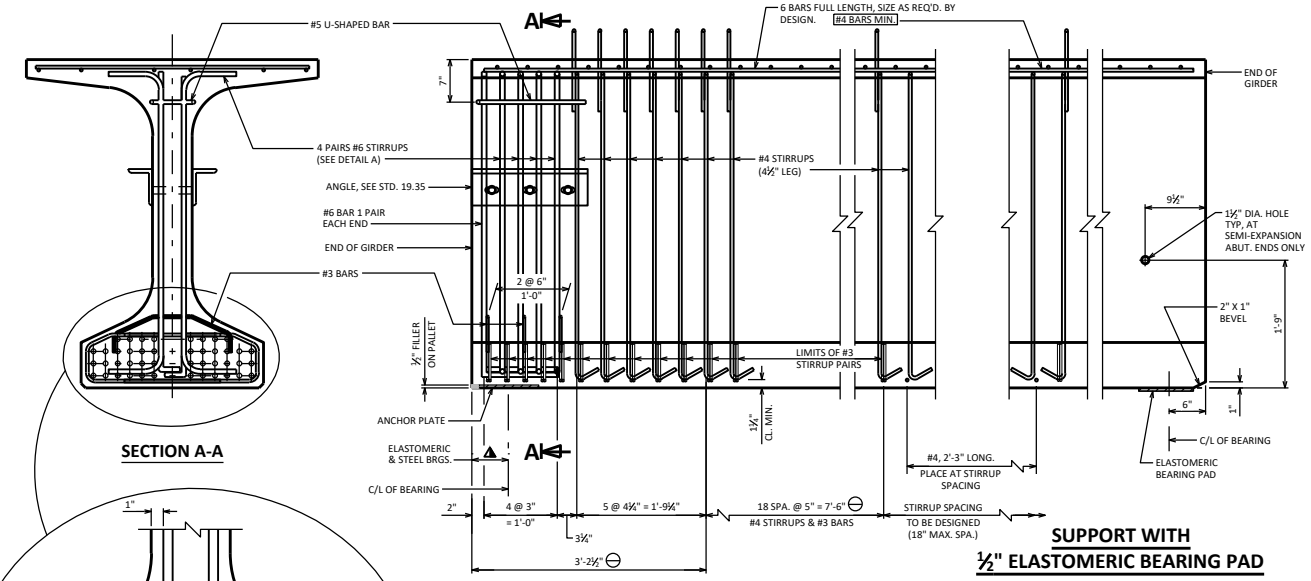
PROVIDE STIRRUP SPACING THAT IS SYMMETRICAL ABOUT THE C/L OF GIRDER.

45W'' PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

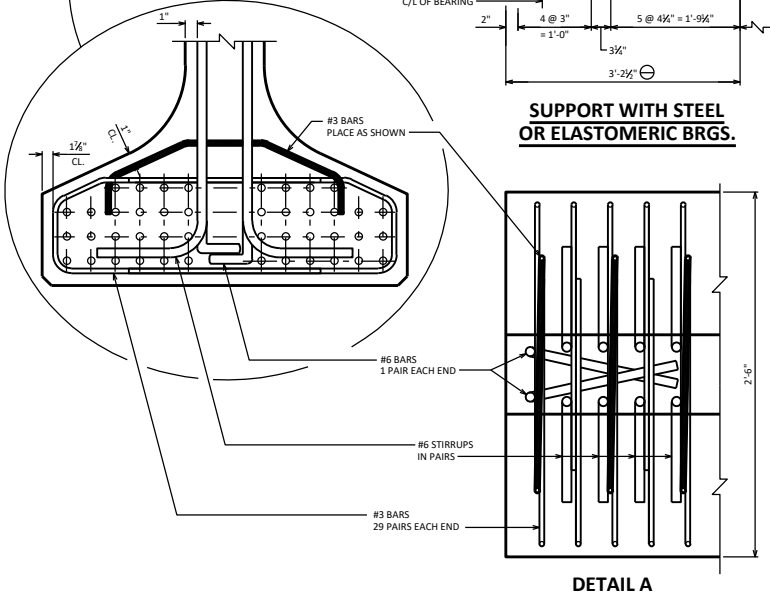
STANDARD 19.13



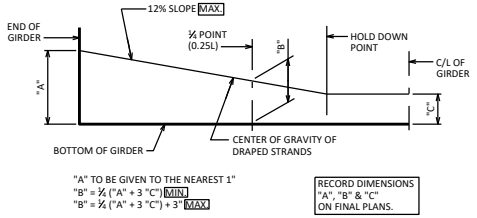
SECTION A-A

SUPPORT WITH STEEL OR ELASTOMERIC BRGS.

SUPPORT WITH ½" ELASTOMERIC BEARING PAD



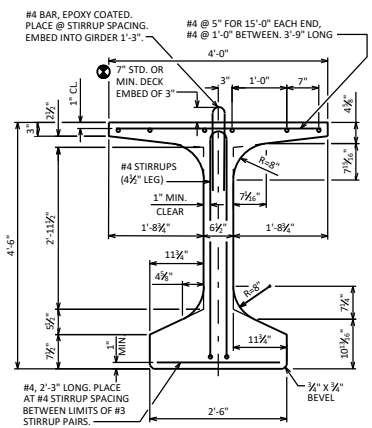
DETAIL A
BOTTOM FLANGE



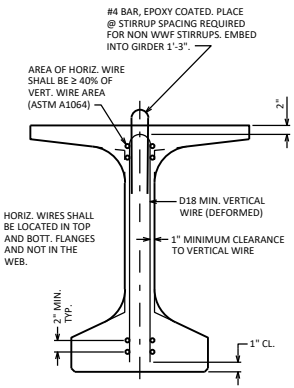
"A" TO BE GIVEN TO THE NEAREST 1"
"B" = ½ ("A" + 3 "C") MIN.
"B" = ½ ("A" + 3 "C") + 3" MAX.

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

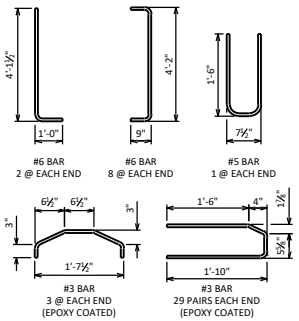
LOCATION OF DRAPED STRANDS



SECTION THRU GIRDER
STRANDS NOT SHOWN



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



NOTES

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

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

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.4 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

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

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

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

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

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

DESIGNER NOTES

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

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX OF 8,000 PSI. MAXIMUM RELEASE STRENGTH IS 6,800 PSI. USE 0.6" DIA. STRAND FOR ALL PATTERNS. THE MAX. NUMBER OF DRAPED 0.6" DIA. STRANDS IS 8.

REINFORCEMENT IN STANDARD END SECTION OF THE GIRDER IS BASED ON THE STANDARD STRAND PATTERNS LISTED ON STANDARD 19.16 AND THE SPAN LENGTHS SHOWN IN TABLE 19.3-1. USING DIFFERENT STRAND PATTERNS OR LONGER SPANS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT, WHICH REQUIRES PRIOR APPROVAL FROM THE BUREAU OF STRUCTURES.

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

⊖ DETAIL TYPICAL AT EACH END

⊗ THE DESIGN ENGINEER DETERMINES THIS VALUE BASED ON 2" MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL GIRDER CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH 1/3 OF THE GIRDER LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2½" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ±¾" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

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

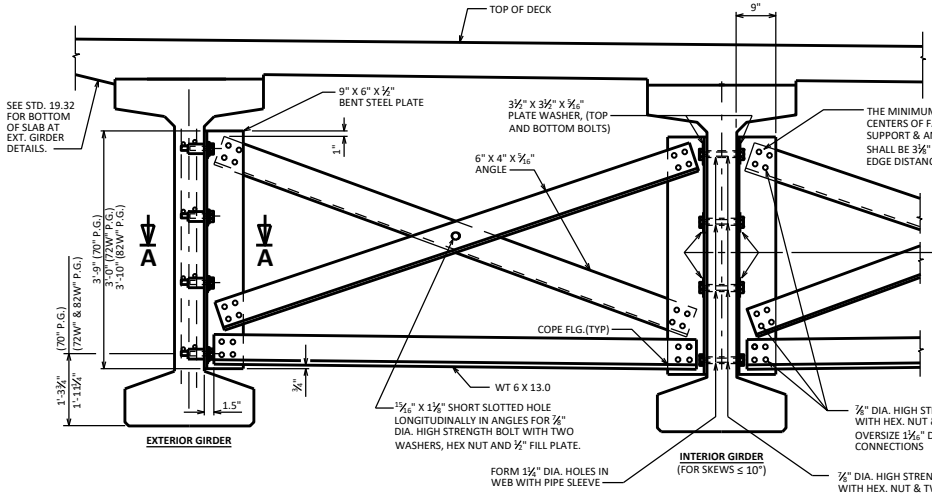
54W'' PRESTRESSED GIRDER DETAILS

BUREAU OF STRUCTURES

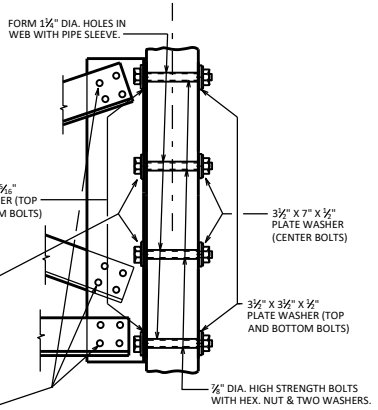
APPROVED: *Laura Shadewald*

DATE: 1-25

STANDARD 19.15



PART TRANSVERSE SECTION AT DIAPHRAGM



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

NOTES

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

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

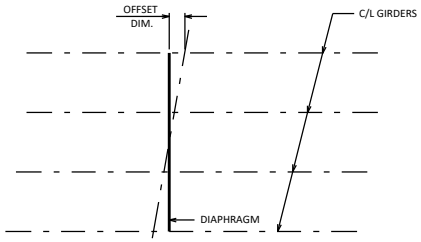
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS ⅓ TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

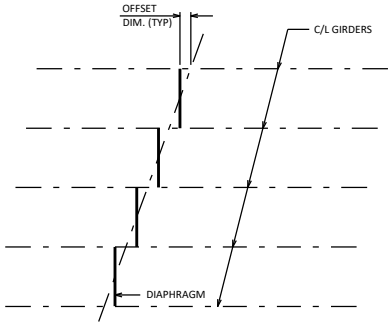
DESIGNER NOTES

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

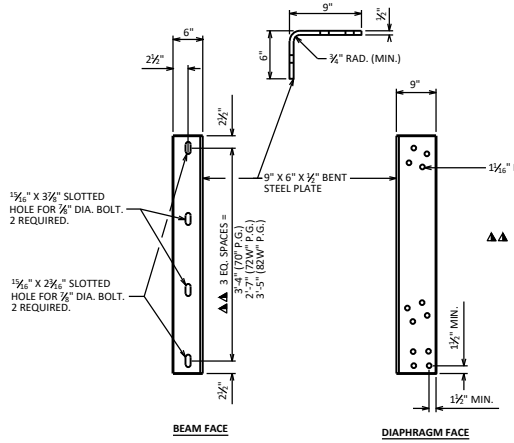
ON THE PLANS, SHOW LOCATION OF INSERTS/HOLES FOR DIAPHRAGM TO WEB CONNECTION, NOT ONLY FROM THE BOTTOM OF THE GIRDER (DIM "A" AND "B"), BUT ALSO FROM THE ENDS OF EACH GIRDER.



PLAN FOR SKEW ANGLES ≤ 10°

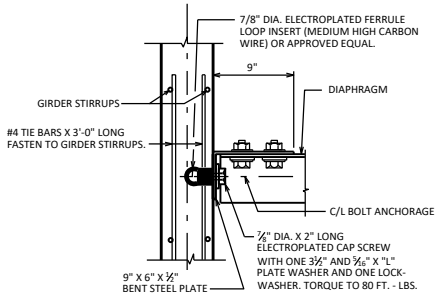


PLAN FOR SKEW ANGLES > 10°



DIAPHRAGM SUPPORT

▲▲ BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS.



SECT. A-A

(FOR EXTERIOR ATTACHMENT)

"L" = 3½" ; TOP & BOTTOM BOLTS
"L" = 7" ; CENTER BOLTS

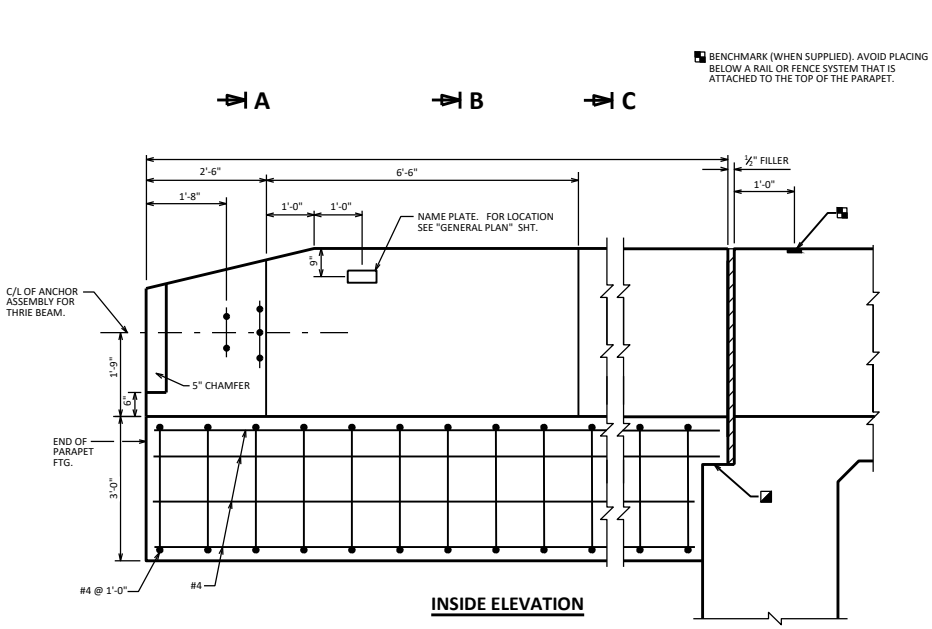
INTERMEDIATE STEEL DIAPHRAGMS FOR 70", 72W" & 82W" PRESTRESSED GIRDERS

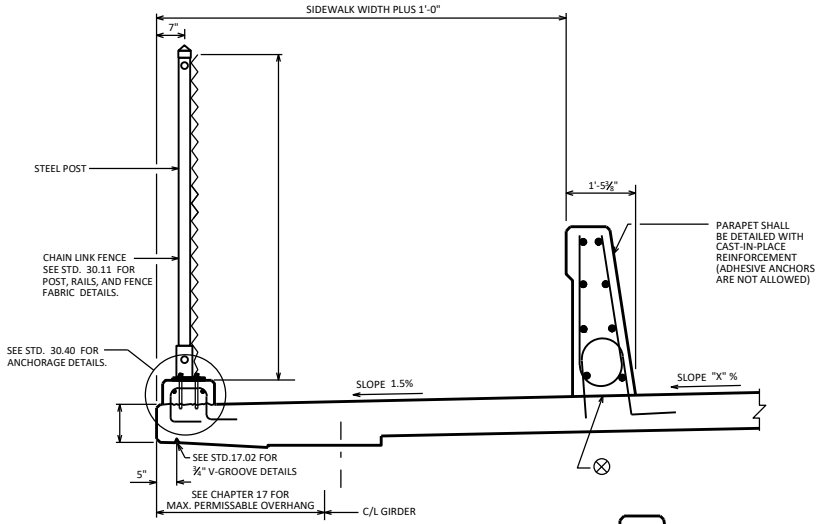
BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

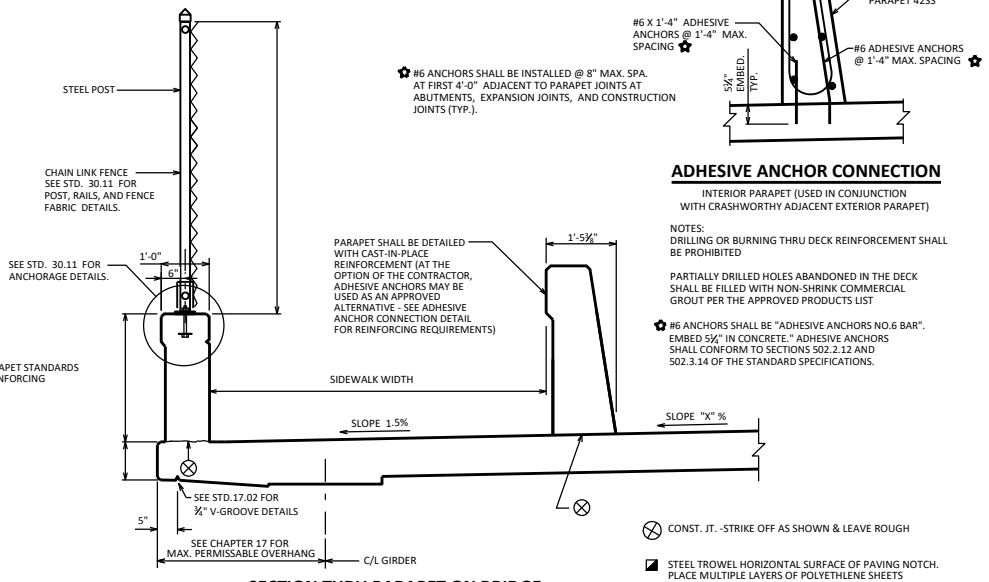
STANDARD 19.37





SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON DECK



SECTION THRU PARAPET ON BRIDGE

CHAIN LINK FENCE MOUNTED ON PARAPET

✿ #6 ANCHORS SHALL BE INSTALLED @ 8" MAX. SPA. AT FIRST 4'-0" ADJACENT TO PARAPET JOINTS AT ABUTMENTS, EXPANSION JOINTS, AND CONSTRUCTION JOINTS (TYP.).

ADHESIVE ANCHOR CONNECTION

INTERIOR PARAPET (USED IN CONJUNCTION WITH CRASHWORTHY ADJACENT EXTERIOR PARAPET)

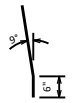
NOTES:
DRILLING OR BURNING THRU DECK REINFORCEMENT SHALL BE PROHIBITED

PARTIALLY DRILLED HOLES ABANDONED IN THE DECK SHALL BE FILLED WITH NON-SHRINK COMMERCIAL GROUT PER THE APPROVED PRODUCTS LIST

✿ #6 ANCHORS SHALL BE "ADHESIVE ANCHORS NO.6 BAR". EMBED 5¼" IN CONCRETE." ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.

⊗ CONST. JT. -STRIKE OFF AS SHOWN & LEAVE ROUGH

◪ STEEL TROWEL HORIZONTAL SURFACE OF PAVING NOTCH. PLACE MULTIPLE LAYERS OF POLYETHLENE SHEETS BETWEEN PARAPET FOOTING AND HORIZONTAL SURFACE OF PAVING NOTCH. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".



#6 BAR

LENGTH = 2'-10"
(ADHESIVE ANCHOR CONNECTION)

DESIGNER NOTES

'42SS' PARAPET SHOWN IN THIS STANDARD. FOR DETAILS, INCLUDING REINFORCING, SEE STANDARD 30.32.

ALL PARAPET FOOTING BARS SHALL BE EPOXY COATED.

DO NOT SHOW THE ADHESIVE ANCHOR CONNECTION DETAIL ON THE PLAN. THE CONTRACTOR MAY REQUEST THIS DETAIL IF DESIRED.

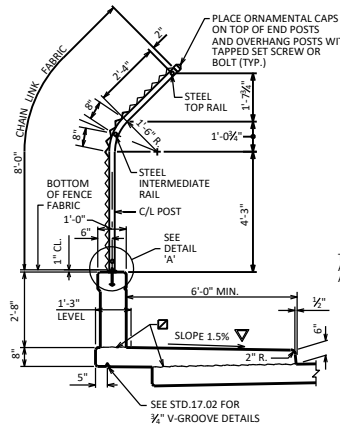
PARAPET FOOTING

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

STANDARD 30.10

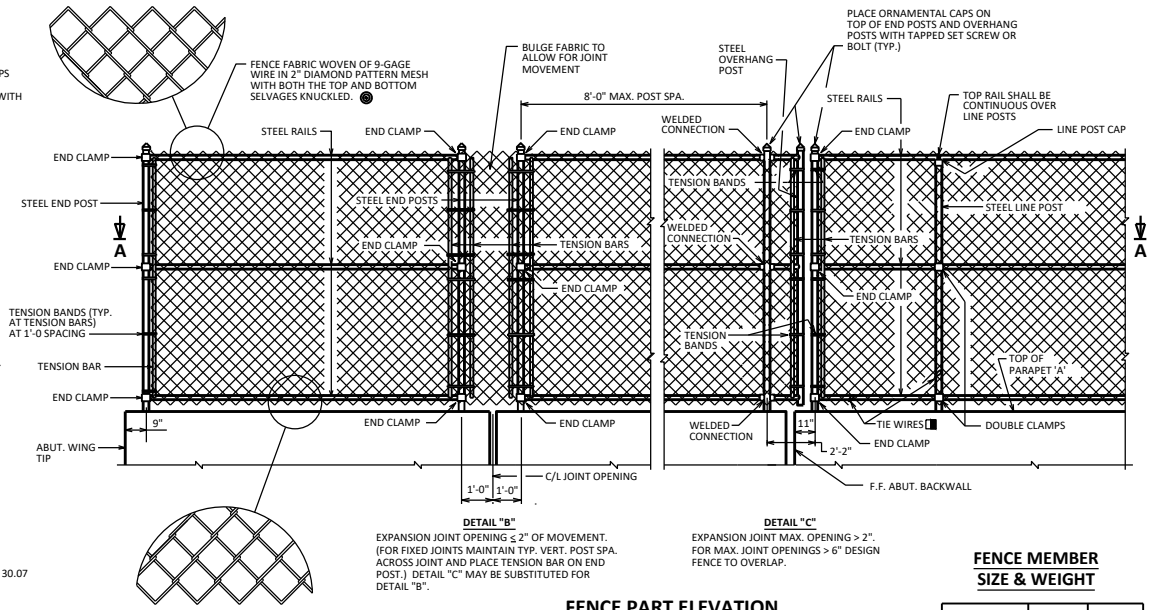


SECTION THRU FENCE ON PARAPET 'A'

PROTECTIVE SCREENING MAY BE BENT OR STRAIGHT FOR RAISED SIDEWALKS OR SIDEWALKS SEPARATED FROM TRAFFIC BY A BARRIER. SEE BRIDGE MANUAL 30.3 (14) FOR ADDITIONAL GUIDANCE. SEE STD. 30.07 FOR PARAPET REINFORCEMENT AND DETAILS. SEE STD. 17.01 FOR SIDEWALK REINFORCEMENT AND DETAILS.

☑ CONST. JOINT - STRIKE OFF & LEAVE ROUGH

▽ ± 0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



DETAIL "B"

EXPANSION JOINT OPENING ≤ 2" OF MOVEMENT. (FOR FIXED JOINTS MAINTAIN TYP. VERT. POST SPA. ACROSS JOINT AND PLACE TENSION BAR ON END POST.) DETAIL "C" MAY BE SUBSTITUTED FOR DETAIL "B".

DETAIL "C"

EXPANSION JOINT MAX. OPENING > 2". FOR MAX. JOINT OPENINGS > 6" DESIGN FENCE TO OVERLAP.

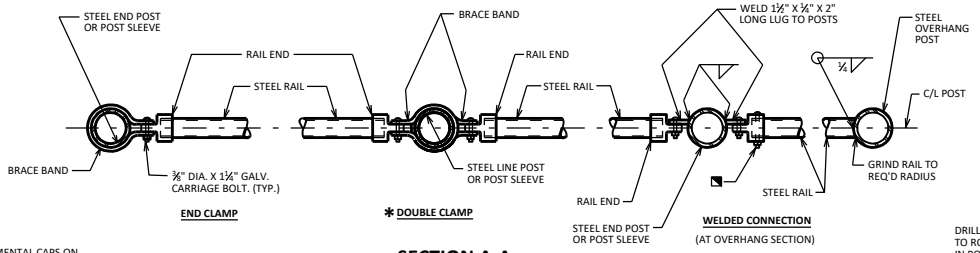
FENCE PART ELEVATION

(OUTSIDE VIEW OF PARAPET 'A')

FENCE MEMBER SIZE & WEIGHT

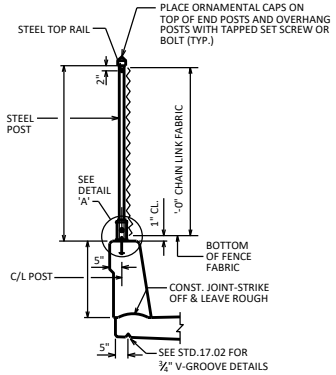
STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
RAILS	1.660	2.27
END POST	2.875	5.80
OVERHANG POST	2.875	5.80
LINE POST (ON PARAPET)	2.375	3.65
LINE POST (ON DECK/CURB)	2.875	5.80
POST SLEEVE	4.000	9.12

WEIGHT OF CHAIN LINK FENCE: (BASED ON 8 FT. POST SPACING)
6 FT. HIGH FENCE = 18 LB / FT
8 FT. HIGH FENCE = 21 LB / FT



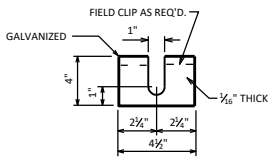
SECTION A-A

NOTE: PLACE ALL BOLT HEADS ON SIDE OF **FENCE ADJACENT TO PEDESTRIANS**



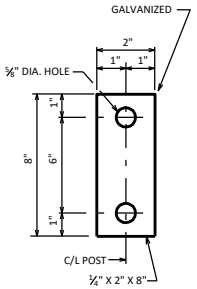
SECTION THRU FENCE ON SINGLE SLOPE PARAPET

FOR TRAFFIC BARRIER APPLICATION, USE STRAIGHT POSTS (NOT BENT POSTS)



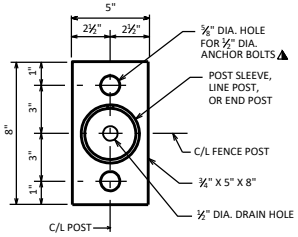
POST SHIM DETAILS

SHIMS REQUIRED ONLY WHEN END POSTS AND LINE POSTS ARE WELDED TO BASE PLATES. PROVIDE 4 SHIMS PER POST. USE WHERE REQUIRED FOR ALIGNMENT.

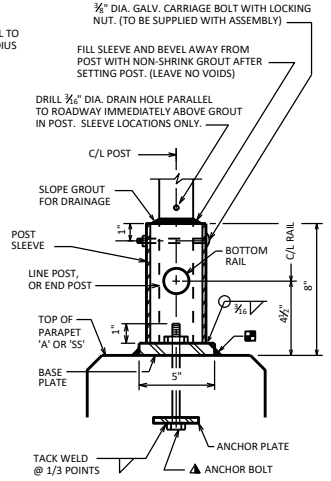


ANCHOR PLATE

✿ NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.



BASE PLATE



DETAIL 'A'

UNIT SHALL BE GALVANIZED AFTER FABRICATION

NOTE: IN LIEU OF USING THE POST SLEEVE, THE FENCE POST MAY BE WELDED TO THE BASE PLATE.

NOTES

POSTS ARE TO BE SET VERTICAL.

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

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

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

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

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

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

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

COMPLETE ANY REQUIRED WELDING OF COMPONENTS BEFORE GALVANIZING.

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

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

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

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

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

◭ ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM 307. IF 307 IS USED, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED.✿

✿ ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS ½"-INCH. EMBED 7" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.

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

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

MINIMUM LENGTH OF TOP RAIL BETWEEN SPLICES SHALL BE 20'-0". LOCATE SPLICES NEAR ¼ POINT OF POST SPACING.

DESIGNER NOTES

THIS STANDARD MAY BE USED ON STRUCTURES WITH A 45 M.P.H. DESIGN SPEED OR LESS, OR WHEN THE SIDEWALK IS SEPARATED FROM THE ROADWAY BY A PARAPET. 8'-0" MAXIMUM POST SPACING WITH 8'-0" MAXIMUM FENCE FABRIC HEIGHT WHEN MOUNTED ON PARAPET.

SEE STANDARD 30.40 WHEN MOUNTED ON CURB OR DECK.

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

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

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

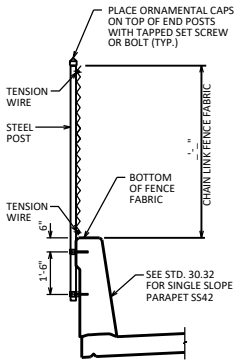
HANDRAILS SHALL BE USED ALONG BRIDGE SIDEWALKS WHERE THE SLOPE OF THE SIDEWALK IS GREATER THAN 5%. TOP OF HANDRAIL GRIPPING SURFACES SHALL BE MOUNTED BETWEEN 30" & 34" ABOVE SIDEWALK SURFACE. USE 30" NEAR SCHOOL ZONES, IF FEASIBLE, HANDRAILS SHALL BE PROVIDED ALONG BOTH SIDES OF SIDEWALK. FOR HANDRAIL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

FOR DEAD LOAD PURPOSES, THE SUPERSTRUCTURE DESIGN SHALL ACCOUNT FOR A MAXIMUM 2% SIDEWALK CROSS SLOPE.

CHAIN LINK FENCE DETAILS

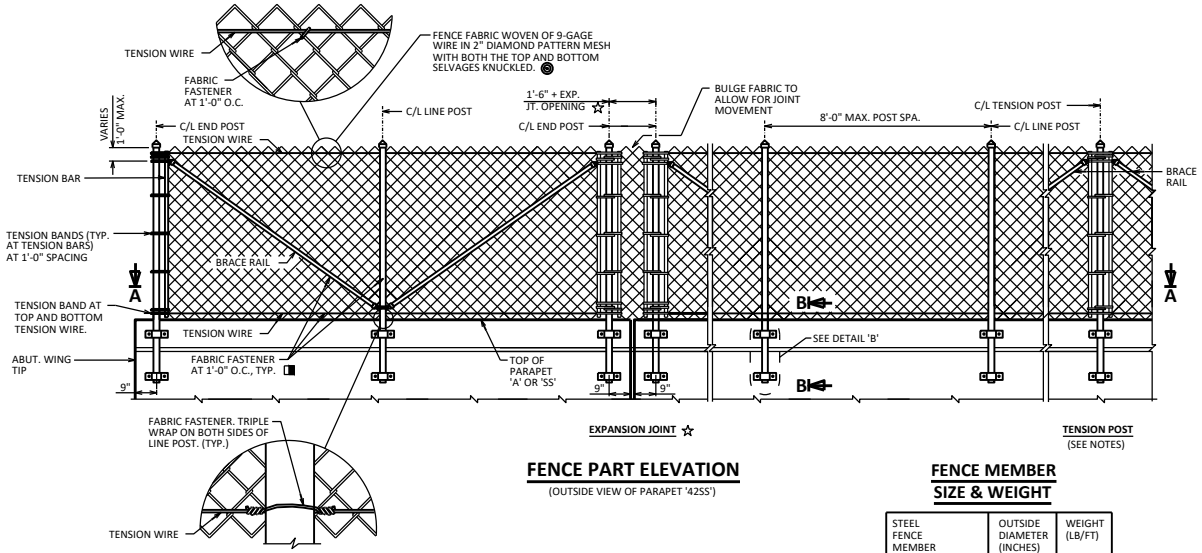
BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25



SECTION THRU FENCE ON PARAPET '42SS'

PROTECTIVE SCREENING SHALL BE STRAIGHT.

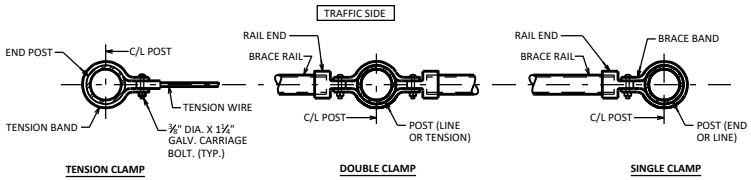


FENCE PART ELEVATION

(OUTSIDE VIEW OF PARAPET '42SS')

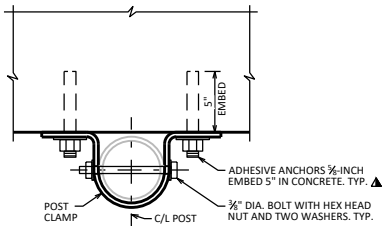
FENCE MEMBER SIZE & WEIGHT

STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
POST (END, LINE, OR TENSION)	3.50	7.576
BRACE RAIL	1.66	2.273

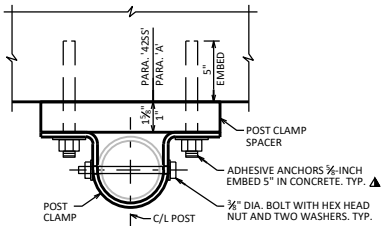


SECTION A-A

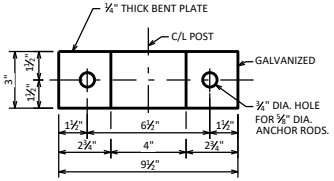
NOTE: PLACE ALL BOLT HEADS ON THE TRAFFIC SIDE



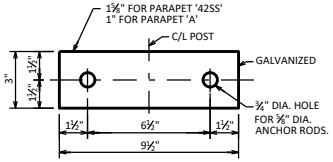
SECTION C-C



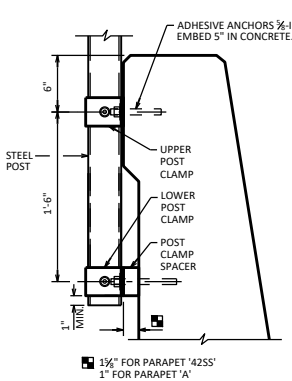
SECTION D-D



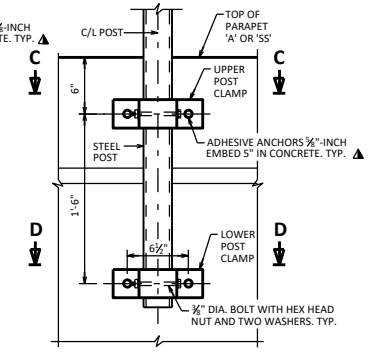
POST CLAMP DETAIL



POST CLAMP SPACER DETAIL



SECTION B-B



DETAIL 'B'

NOTES

POSTS ARE TO BE SET VERTICAL.

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

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

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

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

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

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

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

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

ANCHOR RODS SHALL BE F1554 GRADE 36. BOLTS SHALL BE ASTM A307, NUTS SHALL BE ASTM A563, AND WASHERS SHALL BE ASTM F436. POST CLAMPS AND POST CLAMP SPACERS SHALL BE ASTM A709, GRADE 36. TENSION WIRE SHALL BE 7 GAGE STEEL WIRE COATED IN ACCORDANCE WITH ASTM A824 AND A817 AS EITHER TYPE I (ALUMINUMIZED) OR TYPE II, CLASS 4 (GALVANIZED).

ANCHOR RODS, BOLTS, NUTS, POST CLAMPS, POST CLAMP SPACERS AND WASHERS SHALL BE GALVANIZED.

COMPLETE ANY REQUIRED WELDING OF COMPONENTS BEFORE GALVANIZING.

▲ CONCRETE ADHESIVE ANCHORS ⅝" -INCH. EMBED 5" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.

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

PROVIDE TENSION POST AND BRACE RAILS TO LIMIT TENSION WIRE RUNS TO LESS THAN 500 FEET.

DESIGNER NOTES

THE SIDE-MOUNTED CHAIN LINK FENCE SHOULD ONLY BE USED WHEN THE DESIGN SPEED EXCEEDS 45 MPH AND PROTECTIVE SCREENING IS WARRANTED. 8'-0" MAXIMUM POST SPACING WITH 8'-0" MAXIMUM FENCE FABRIC HEIGHT WHEN MOUNTED ON PARAPET. FOR DESIGN SPEEDS 45 MPH OR LESS, THE TOP-MOUNTED CHAIN LINK FENCE (STANDARD 30.11) SHOULD BE USED.

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

PROVIDE 6'-0" CHAIN LINK FENCE FABRIC, UNLESS DIRECTED OTHERWISE. SEE BRIDGE MANUAL 30.9 FOR ADDITIONAL INFORMATION.

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

☆ EXPANSION JOINT OPENING ≤ 6" OF MOVEMENT. FOR FIXED JOINTS MAINTAIN TYP. VERT. POST SPA. ACROSS JOINT AND PLACE TENSION BAR ON END POST. FOR JOINT OPENINGS > 6" REFER TO STD. 30.11.

WEIGHT OF CHAIN LINK FENCE:
(BASED ON 8 FT. POST SPACING)
6 FT. HIGH FENCE = 18 LB / FT
8 FT. HIGH FENCE = 21 LB / FT

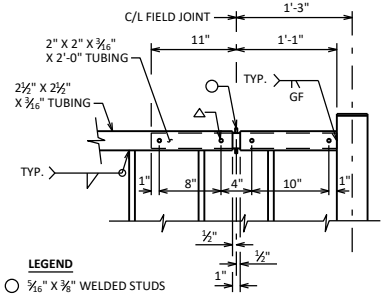
CHAIN LINK FENCE SIDE-MOUNTED DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

STANDARD 30.12

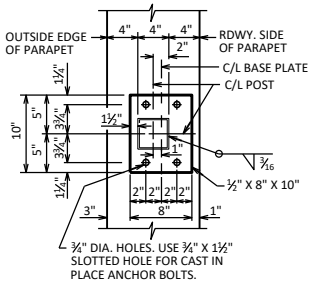


LEGEND

○ 5/16" X 3/8" WELDED STUDS

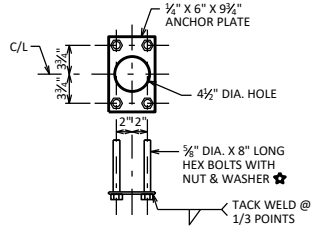
△ WELD BEAD ON EACH SIDE OF TUBE. GRIND BEADS SO THAT SLEEVE FITS FREELY INSIDE THE 2½" X 2½" TUBE.

RAILING EXPANSION JOINT DETAIL



¾" DIA. HOLES. USE ¾" X 1½" SLOTTED HOLE FOR CAST IN PLACE ANCHOR BOLTS.

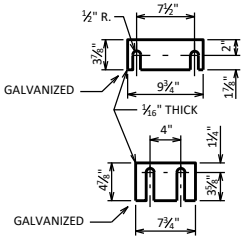
BASE PLATE



ANCHORAGE DETAIL

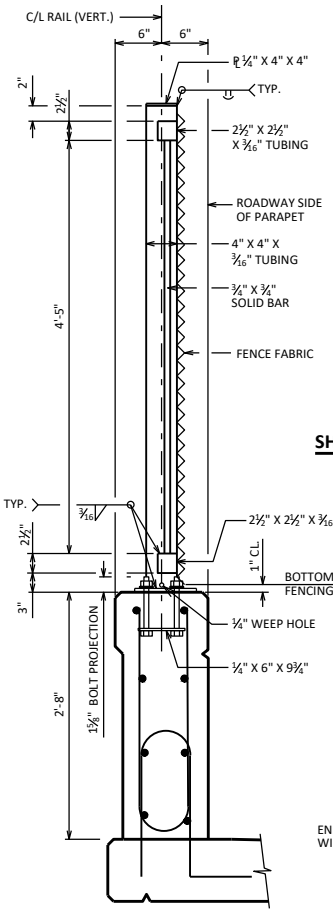
✿ ALTERNATIVE ANCHORAGE: ADHESIVE ANCHORS ⅝-INCH. EMBED 7" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.



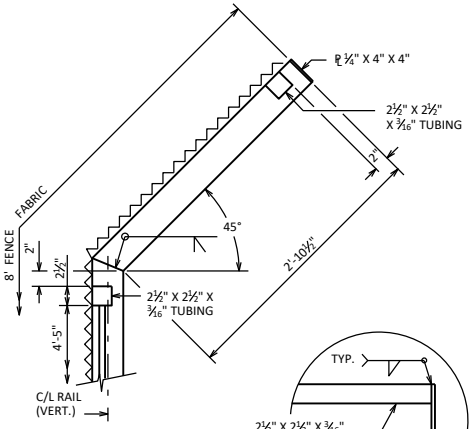
SHIM PLATE DETAILS

TWO SHIMS OF EACH SIZE REQUIRED PER POST

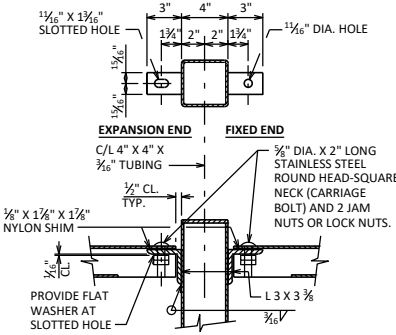


SECTION THRU RAILING

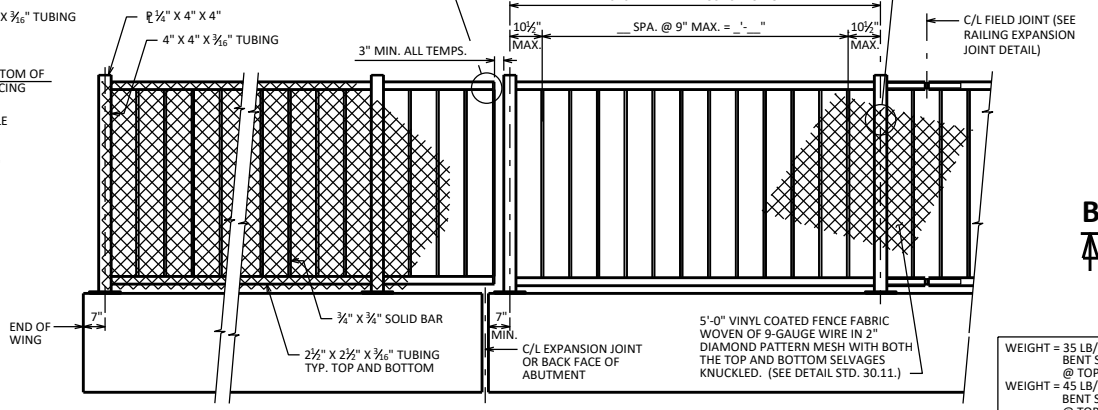
(SEE STD. 30.07 FOR PARAPET REINFORCEMENT AND DETAILS)



SECTION THRU FENCE SHOWING DETAILS FOR BENT TOP

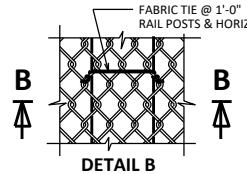


TOP RAIL CONNECTION FOR FENCE W/ BENT TOP

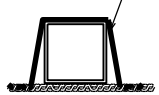


INSIDE ELEVATION OF RAILING

WEIGHT = 35 LB/FT (W/O BENT SECTION @ TOP)
WEIGHT = 45 LB/FT (W/ BENT SECTION @ TOP)



DETAIL B



SECTION B-B

NOTES

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

STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B. PLATES, ANGLES, BARS AND SHIMS SHALL CONFORM TO ASTM A709, GRADE 36. FENCE FABRIC SHALL CONFORM TO ASTM F668, CLASS 2B.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING. SET POSTS NORMAL TO GRADE.

ALL POST SPACINGS ARE TAKEN HORIZONTAL ALONG CENTERLINE OF RAILING AT BASE OF POST.

STEEL SHIMS SHALL BE PROVIDED & USED UNDER BASE PLATES WHERE REQUIRED FOR ALIGNMENT, AND SHALL BE GALVANIZED.

CAULK AROUND PERIMETER OF BASE PLATES AND FILL PORTION OF SLOTTED HOLES AROUND ANCHOR BOLTS WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

CUT BOTTOM OF POST TO MAKE VERTICAL IN TRANSVERSE DIRECTION.

ANCHOR BOLTS, NUTS AND WASHERS SHALL BE EITHER STAINLESS STEEL OR ASTM 307. IF 307 IS USED, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED. ✿

THE BID ITEM SHALL BE "RAILING TUBULAR SCREENING" WHICH SHALL INCLUDE ALL ITEMS SHOWN.

RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE NOT MORE THAN 3 POSTS.

VENT HOLES SHALL BE DRILLED IN MEMBERS AS REQUIRED TO FACILITATE GALVANIZING AND DRAINAGE.

ALL RAILING MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING THE STEEL RAILING SHALL BE GIVEN A NO. 6 BLAST CLEANING PER SSPC SPECIFICATIONS. PAINT OVER GALVANIZING WITH AN APPROVED TIE COAT AND TOP COAT AS SPECIFIED IN THE CONTRACT DOCUMENTS. THE RAILING SHALL BE PAINTED AMS STD. COLOR NO. ☐, ☐ (FILL IN COLOR NAME). FENCE FABRIC AND TIES TO BE VINYL-COATED. COLOR SHALL BE (SPECIFY: DARK GREEN, BROWN OR BLACK) IN ACCORDANCE WITH ASTM F934.

THE END OF THE FABRIC SHALL BE ATTACHED TO THE POST BY MEANS OF A TENSION BAR THREADED THROUGH THE END LOOPS OF THE FABRIC AND SECURED TO THE POST WITH CLAMPS & BOLT. THE FABRIC SHALL BE STRETCHED TO REMOVE ALL SLACK.

DESIGNER NOTES

TUBULAR SCREENING MAY BE USED ON STRUCTURES WITH A 45 M.P.H. DESIGN SPEED OR LESS, OR WHEN THE SIDEWALK IS SEPARATED FROM THE ROADWAY BY A PARAPET. 10'-0" MAXIMUM POST SPACING WITH 8'-0" MAXIMUM FENCE FABRIC HEIGHT WHEN MOUNTED ON PARAPET.

THIS RAILING MAY BE MOUNTED DIRECTLY TO A SIDEWALK CURB OR DECK PROVIDED IT IS SEPARATED FROM THE ROADWAY BY A TRAFFIC BARRIER. USE 6" CLEAR SPACING BETWEEN VERTICAL MEMBERS IF CHAIN LINK FENCE IS NOT USED. 8'-0" MAXIMUM POST SPACING WITH 8'-0" MAXIMUM FENCE FABRIC HEIGHT WHEN MOUNTED ON CURB OR DECK.

SEE STANDARD 30.40 WHEN MOUNTED ON CURB OR DECK.

FENCE HEIGHT, BENT OR STRAIGHT, MESH SIZE, COATING AND COLOR SHOULD BE COORDINATED WITH THE REGION. SEE BRIDGE MANUAL 30.3 (14) FOR ADDITIONAL GUIDANCE.

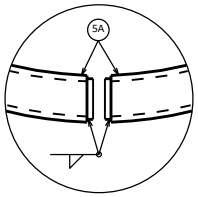
TUBULAR STEEL RAILING SCREENING

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

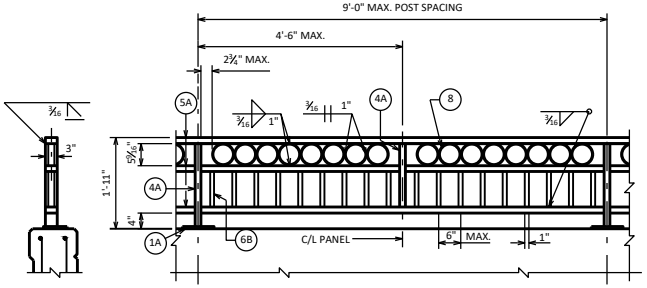
DATE: 1-25

STANDARD 30.15

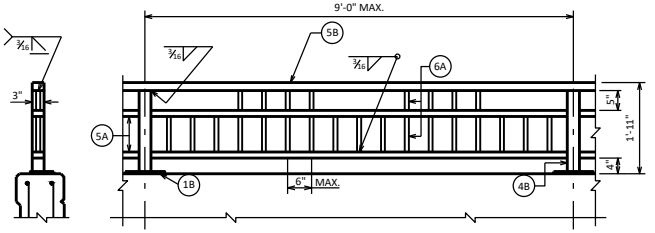


DETAIL A

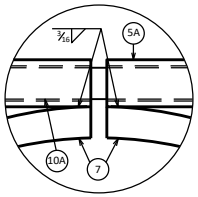
SEAL ENDS ON CURVED STRUCTURAL TUBING WITH ¼" PLATE. WELD AND GRIND SMOOTH.



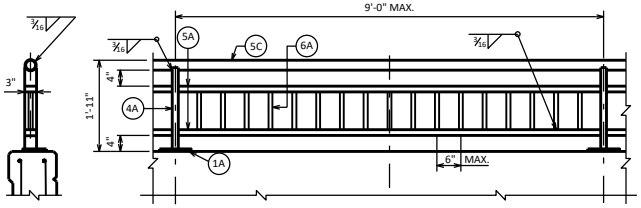
TYPE C1



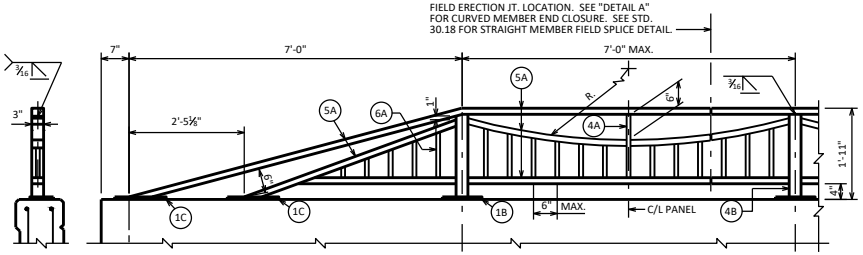
TYPE C4



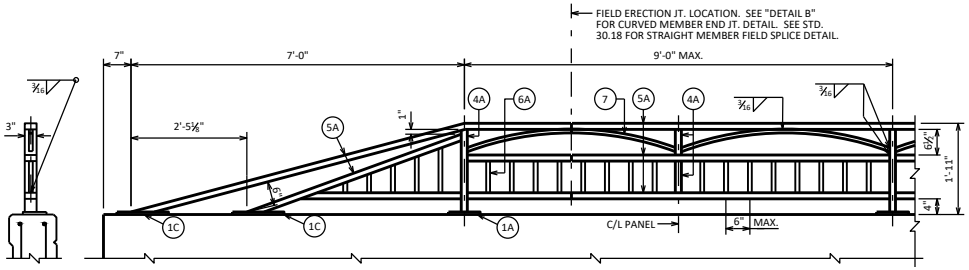
DETAIL B



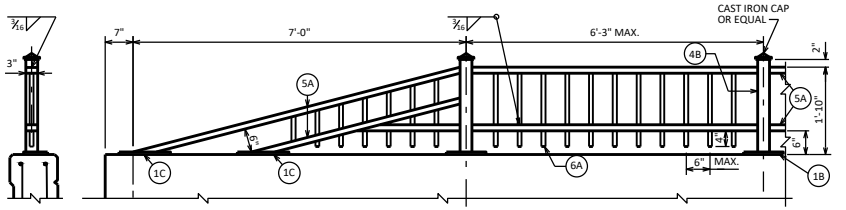
TYPE C2



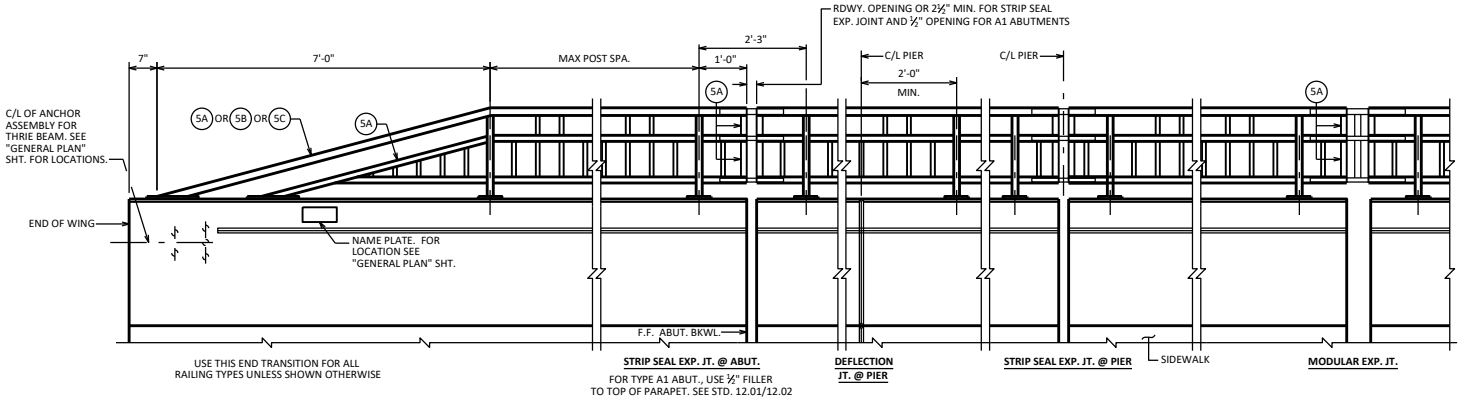
TYPE C5



TYPE C3



TYPE C6



INSIDE ELEVATION

OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-5". MIN. JOINT SPACING OF 80'-0". DEFINE CONSTR. JT. WITH A ¾" "V"-GROOVE.

RAILING WEIGHT = 22 LB/FT

DESIGNER NOTES

SEE STANDARD 30.40 FOR PEDESTRIAN RAILING MOUNTED ON CURB OR DECK. COMBINATION RAILINGS TYPE C1-C6 MAY BE MODIFIED AS A PEDESTRIAN RAIL MOUNTED DIRECTLY TO A BRIDGE CURB OR DECK BY INCREASING THE RAILING HEIGHT TO A MINIMUM OF 3'-6" AND A MAXIMUM OF 4'-6". USE A MINIMUM POST SIZE OF 3" X 3" X ⅜" WITH A 9'-0" MAXIMUM POST SPACING. WHEN USED AS A PEDESTRIAN RAIL, A TRAFFIC BARRIER IS REQUIRED BETWEEN THE ROADWAY AND THE SIDEWALK. FOR THIS PEDESTRIAN RAILING, BID ITEM SHALL BE "RAILING STEEL PEDESTRIAN TYPE C(1-6)". THE CLEAR SPACE BETWEEN THE TOP TWO RAILS MAY BE INCREASED TO A 6" MAXIMUM EXCEPT FOR "TYPE C1" RAILING.

A MINIMUM 12'-0" WING LENGTH IS RECOMMENDED TO ACCOMMODATE THE RAIL END TRANSITION AND PROVIDE A POST SPACING ON THE WING THAT WILL MAINTAIN THE RAIL AESTHETICS.

SEE STANDARD 30.18 FOR ADDITIONAL RAILING DETAILS.

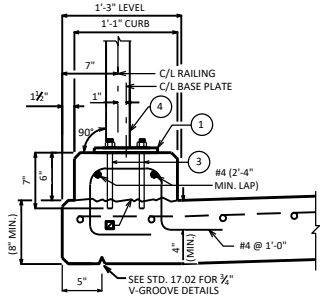
SEE STANDARD 30.07 FOR:
- DEFLECTION JOINT DETAILS AND NOTES
- BEAM GUARD ANCHOR ASSEMBLY DETAILS
- PARAPET REINFORCING BAR SIZE AND SPACING

COMBINATION RAILING TYPES 'C1 - C6'

BUREAU OF STRUCTURES

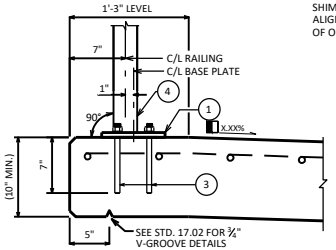
APPROVED: *Laura Shadewald*

DATE: 1-25

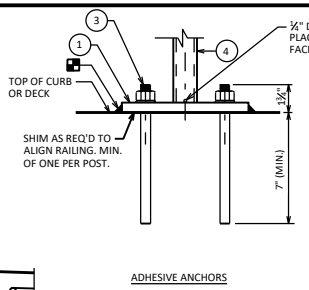


CURB MOUNTED PEDESTRIAN RAILING

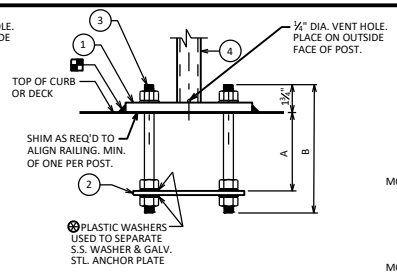
☒ CONST. JOINT-STRIKE OFF AS SHOWN AND LEAVE ROUGH.



DECK MOUNTED PEDESTRIAN RAILING



ADHESIVE ANCHORS



CAST-IN-PLACE ANCHORS

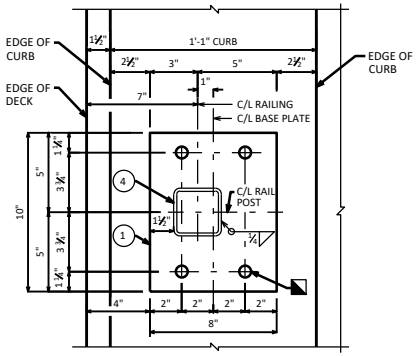
ANCHORAGE FOR RAIL POSTS

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.

APPLICATION	A	B
CURB MOUNTED	7"	10 ½"
DECK MOUNTED	5 ½"	9"

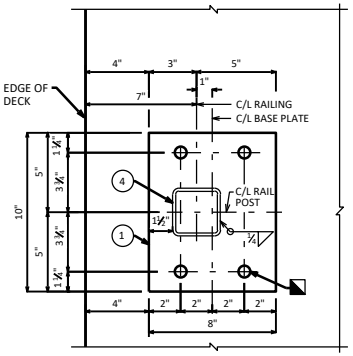
LEGEND

1. PLATE ⅝" X 8" X 10" WITH ¾" HOLES. ◪
2. ¼" X 6" X 9 ¾" ANCHOR PLATE WITH $^{11}/_{16}$" DIA. HOLES FOR THR'D. RODS NO.3.
3. CURB MOUNTED: ⅝" DIA. X 10 ½ " LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS ⅝-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.
3. DECK MOUNTED: ⅝" DIA. X 9" LONG, TYPE 316 STAINLESS STEEL THREADED RODS (MIN. TENSILE STRENGTH = 70 KSI) WITH NUT AND WASHERS OF SAME ALLOY GROUP. ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS ⅝-INCH. EMBED 7" IN CONCRETE FOR RAIL POSTS. ADHESIVE ANCHORS SHALL CONFORM TO SECTIONS 502.2.12 AND 502.3.14 OF THE STANDARD SPECIFICATIONS.
4. STD. 30.11: 4" O.D. POST SLEEVE. PLACE VERTICAL. WELD TO NO.1. (2.875" O.D. POSTS)
4. STD. 30.15: STRUCTURAL TUBING 4" X 4" X ⅜". PLACE VERTICAL. WELD TO NO.1.
4. STD. 30.17: STRUCTURAL TUBING 3" X 3" X ⅜". PLACE VERTICAL. WELD TO NO.1.



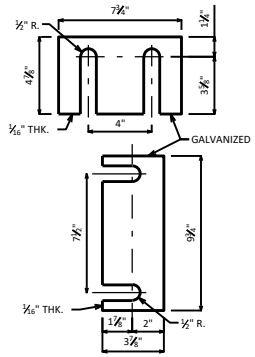
RAIL POST BASE PLATE - CURB MOUNTED

◪ ¾" DIA. HOLES FOR ADHESIVE ANCHORS
¾" DIA. X 1½" SLOTTED HOLES FOR CAST-IN-PLACE ANCHORS



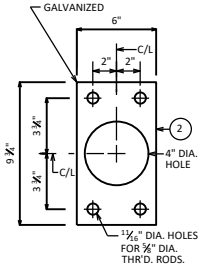
RAIL POST BASE PLATE - DECK MOUNTED

◪ ¾" DIA. HOLES FOR ADHESIVE ANCHORS
¾" DIA. X 1½" SLOTTED HOLES FOR CAST-IN-PLACE ANCHORS



SHIM PLATE DETAILS

TWO SHIMS OF EACH SIZE REQUIRED PER POSTS



ANCHOR PLATE

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.

NOTES

BID ITEM SHALL BE "RAILING STEEL PEDESTRIAN TYPE C(1-6)", WHICH SHALL INCLUDE ALL STEEL ITEMS SHOWN.

◪ CAULK AROUND PERIMETER OF BASE PLATES, NO. 1, AND FILL BOLT SLOT OPENINGS IN SHIMS AND BASE PLATES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

◧ FOR DECK MOUNTED APPLICATIONS, SLOPE AWAY FROM EDGE OF DECK. USE CURB MOUNTED DETAILS WHEN SLOPED TOWARDS EDGE OF DECK IS REQUIRED.

DESIGNER NOTES

STANDARD 30.17 RAILING DETAILS SHOWN. STANDARDS 30.11 AND 30.15 RAILING DETAILS SIMILAR. SEE TABLE FOR MAXIMUM POST SPACING (WHEN USING THIS STANDARD).

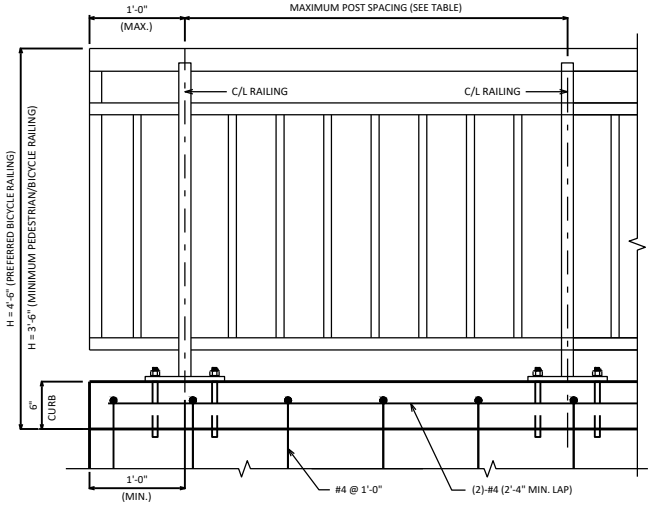
THIS STANDARD MAY BE USED WHEN THE SIDEWALK IS SEPARATED FROM THE ROADWAY BY A TRAFFIC BARRIER. DETAILS SHOWN ON THIS STANDARD PROVIDE PEDESTRIAN RAILING ANCHORAGE DETAILS FOR A REINFORCED CONCRETE CURB AND A REINFORCED CONCRETE DECK. THIS STANDARD MEETS THE REQUIREMENTS OF LRFD 13.8.2 FOR PEDESTRIAN RAILINGS.

REFER TO STANDARD REFERENCES FOR POST CONNECTIONS AND ADDITIONAL DETAILS.

DESIGN DATA

CONCRETE STRENGTH, f'c: 3,500 P.S.I.
REQUIRED CHARACTERISTIC BOND STRESS, λuncr: 970 P.S.I. (MIN.)

RAILING HEIGHT 'H'	MAXIMUM POST SPACING	STANDARD REFERENCES
≤ 4'-6"	9'-0"	30.17
> 4'-6"	8'-0"	30.11 & 30.15



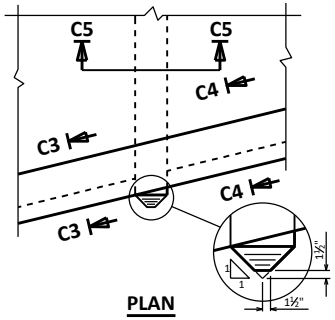
PARTIAL ELEVATION FOR PEDESTRIAN RAIL ON CURB

(SEE STD. 30.17 FOR RAILING DETAILS. DECK REINFORCEMENT NOT SHOWN FOR CLARITY)

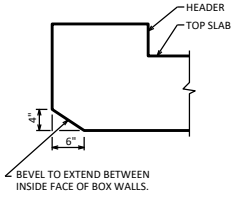
PEDESTRIAN RAILING

WISCONSIN DEPARTMENT OF TRANSPORTATION — BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

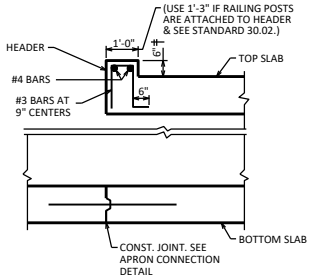


PLAN



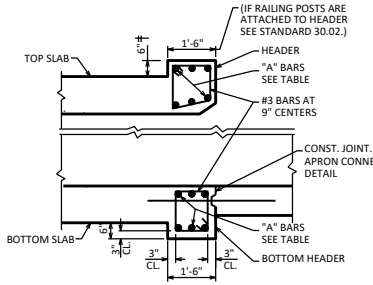
SECTION C3

TYPICAL ALL INLETS



SECTION C2

(OUTLET HEADERS SHOWN FOR SKEW OF 20° AND UNDER)



SECTION C2

(INLET HEADERS SHOWN FOR SKEW OVER 20°)

‡ IF RAILING POSTS ARE ATTACHED TO HEADER THIS DIMENSION MAY BE INCREASED IF NECESSARY TO KEEP RAILING PARALLEL TO ROADWAY. INCREASE WING HEIGHT IF NECESSARY.

✱HEADER LENGTH	"A" BARS
TO 11'-0"	6 - #7
OVER 11'-0" - 14'-0"	6 - #8
OVER 14'-0" - 17'-0"	6 - #9
OVER 17'-0" - 20'-0"	6 - #10

✱ HEADER LENGTH EQUALS THE DISTANCE BETWEEN C/L OF WALLS IN ONE CELL MEASURED ALONG THE SKEW.

DESIGNER NOTES

SEE BRIDGE MANUAL SECTION 36.2 FOR ADDITIONAL REQUIREMENTS FOR PEDESTRIAN UNDERPASSES AND CATTLE PASSES.

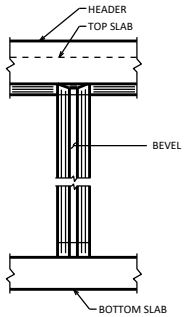
DETAIL NOT ALLOWED WHEN HAUNCHES ARE REQ'D OR FOR PEDESTRIAN UNDERPASSES. OMIT 1" CHAMFER IF ALTERNATIVE CONSTRUCTION JOINT IS USED.

◆ t = 1'-0" MIN. FOR PEDESTRIAN UNDERPASSES.
t = 1'-0" MIN. FOR SLABS WITH DEPTH OF FILLS < 2'-0"
t = 6½ MIN. OTHERWISE

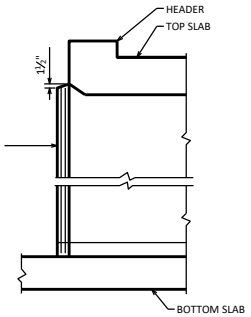
☆ TOP BARS FOR TOP SLAB:
- FOR t < 10" WITH DEPTH OF FILLS ≥ 2'-0": BARS NOT REQUIRED
- FOR t ≥ 10": #4 AT 1'-6" MAX. EACH DIRECTION
- FOR PEDESTRIAN UNDERPASSES: #4 AT 1'-6" MAX. EACH DIRECTION
- FOR SLABS WITH DEPTH OF FILLS < 2'-0": #4 AT 1'-0" MAX. EACH DIRECTION. USE CLASS 'C' LAPS

▲ FOR PEDESTRIAN UNDERPASSES, PROVIDE A CONTINUOUS SHEET MEMBRANE FOR THE ENTIRE LENGTH OF THE CULVERT IN LIEU OF 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING STRIPS OVER THE JOINTS. USE BID ITEM "SHEET MEMBRANE WATERPROOFING FOR BURIED STRUCTURES" (516.0610.S), UNLESS DIRECTED OTHERWISE. INCLUDE THE FOLLOWING NOTE:

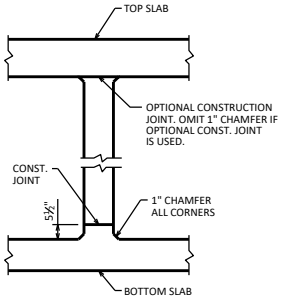
SHEET MEMBRANE WATERPROOFING REQUIRED ON THE WALLS AND ACROSS TOP SLAB FOR ENTIRE CULVERT LENGTH. EXTEND 6" MIN. BELOW THE TOP OF BOTTOM SLAB.



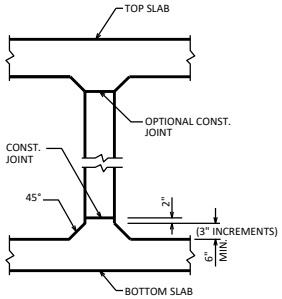
ELEVATION



SECTION C4



SECTION C5

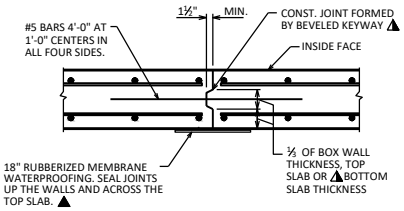


HAUNCH DETAIL

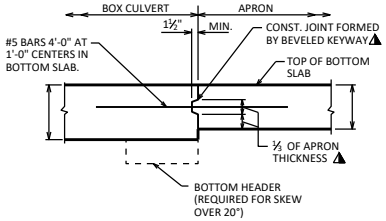
(PROVIDE HAUNCH DETAIL ONLY WHEN REQUIRED AS PER DESIGN)

INLET NOSE CENTER WALL DETAILS

TYPICAL ALL INLETS

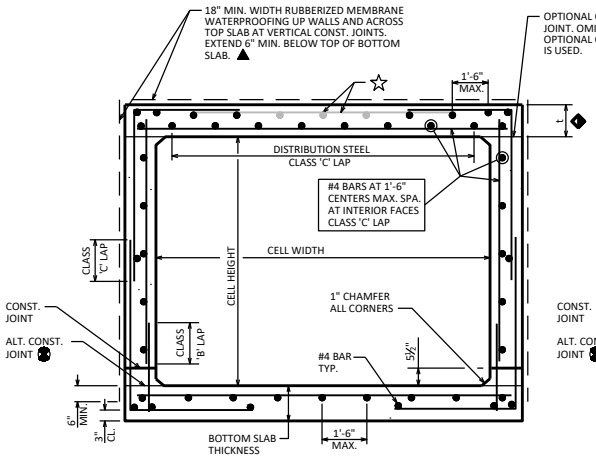


VERTICAL CONSTRUCTION JOINT



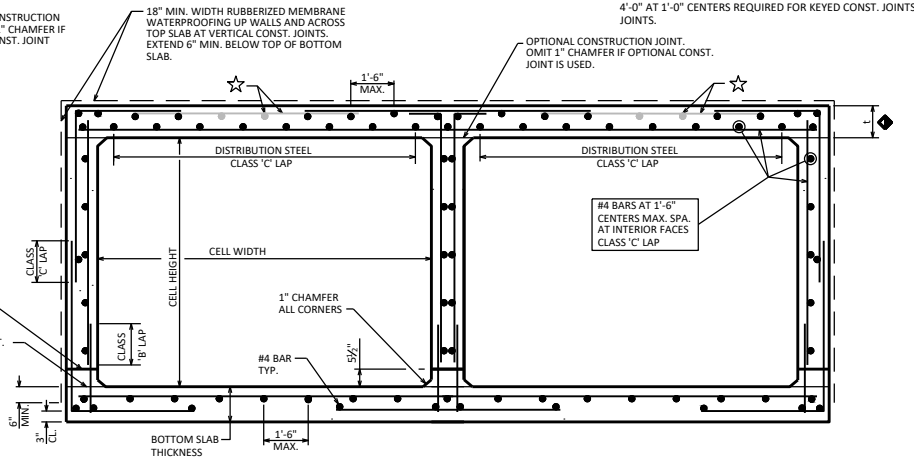
APRON CONNECTION DETAIL

▲ IN LIEU OF KEYED CONST. JOINTS IN THE BOTTOM SLAB, THE CONTRACTOR MAY USE 2" DEEP SAW CUTS WITHIN 12 HOURS AFTER POURING. #5 BARS 4'-0" AT 1'-0" CENTERS REQUIRED FOR KEYED CONST. JOINTS AND SAW CUT JOINTS.



SECTION THRU BOX

SINGLE CELL BOX



SECTION THRU BOX

TWIN CELL BOX

BOX CULVERT DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald*

DATE: 1-25

STANDARD 36.03

NOTES

STEEL RAILS, POSTS, HANDRAILS AND SLEEVES SHALL CONFORM TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40).

ALL POSTS, INCLUDING LIGHT POLES, SHALL BE SET VERTICAL. SPACE ALL POSTS OF 9'-0" HIGH FENCE OPPOSITE EACH OTHER TO PERMIT SQUARE PLACEMENT OF CROSS RAILS.

MAXIMUM SPACING FOR CROSS RAILS SHALL BE AT ALTERNATE POSTS. ALL END POSTS SHALL HAVE CROSS RAILS.

HANDRAILS SHALL BE CONTINUOUS EXCEPT AT EXPANSION JOINTS WHERE ENDS SHALL BE CAPPED.

WASHERS, HEX NUTS AND ANCHOR BOLTS FOR LIGHT POLES SHALL BE GALVANIZED AND SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STRUCTURAL STEEL CARBON".

GALVANIZED STEEL SHIMS OF ⅛" THICKNESS SHALL BE USED UNDER LAMP STANDARD BASE PLATE WHERE REQUIRED FOR ALIGNMENT. CAULK AROUND PERIMETER OF THIS PLATE AND FILL PORTION OF SLOTTED HOLE AROUND ANCHOR BOLT IN SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

FOR GALVANIZED CONDUIT PROVIDE GROUNDING LUG IN HAND-HOLE. GROUND WIRE FROM LUG TO CONDUIT SHALL BE NUMBER 6 AWG BARE OR WEATHER-PROOF COPPER, SINGLE CONDUCTOR.

SEE STANDARD 30.11 AND 30.40 FOR ADDITIONAL "NOTES".

DESIGNER NOTES

8'-0" MAXIMUM POST SPACING WITH 9'-0" MAXIMUM FENCE FABRIC HEIGHT WHEN MOUNTED ON CURB OR DECK.

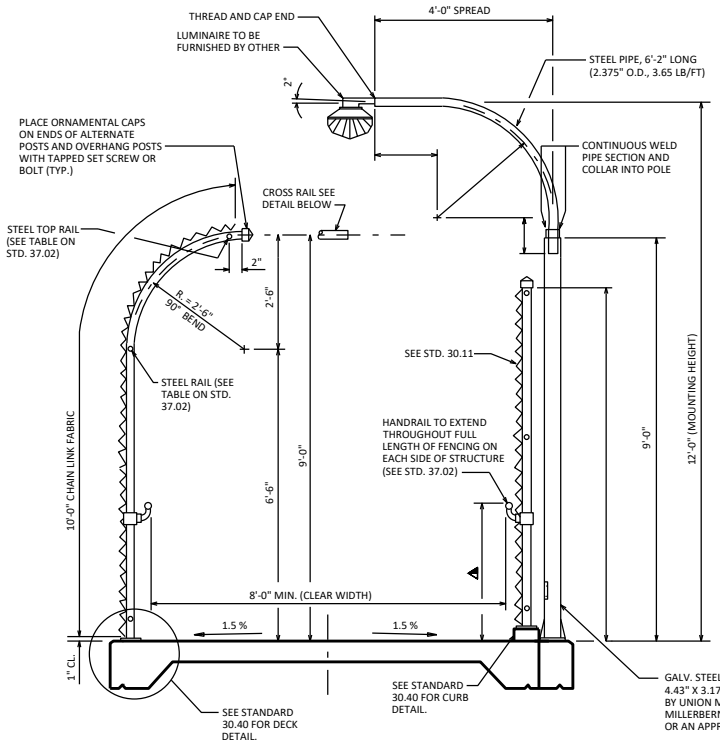
⚠ TOP OF HANDRAIL GRIPPING SURFACES SHALL BE MOUNTED BETWEEN 30" AND 34" ABOVE WALKING SURFACE. USE 30" NEAR SCHOOL ZONES.

FENCE HEIGHT, CURVED OR STRAIGHT, MESH SIZE, COATING AND COLOR SHOULD BE COORDINATED WITH THE REGION AND ALL OTHER APPLICABLE AGENCIES. SEE BRIDGE MANUAL SECTION 30.3 FOR ADDITIONAL GUIDANCE.

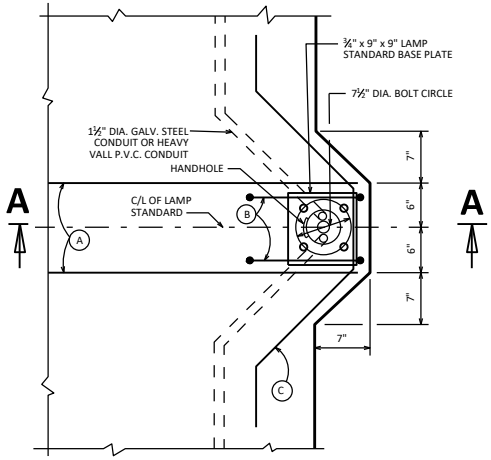
SEE STANDARD 30.11 FOR ADDITIONAL "DESIGNER NOTES" AND DETAILS.

SEE STANDARD 30.40 FOR CURB OR DECK MOUNTED DETAILS.

SEE STANDARD 37.02 FOR FENCE MEMBER SIZES.



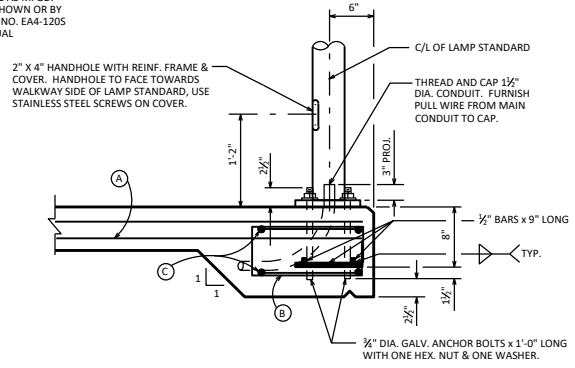
SECTION THRU PEDESTRIAN STRUCTURE



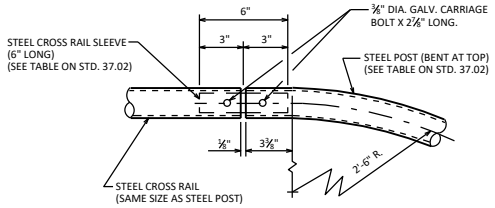
PLAN AT LAMP STANDARD

BAR STEEL REINFORCEMENT AT EACH LAMP STANDARD.

- (A) 4 - #5 BARS 4'-6" LONG
- (B) 2 - #4 BARS 4'-3" LONG
- (C) 2 - #4 BARS 5'-9" LONG



SECTION A-A



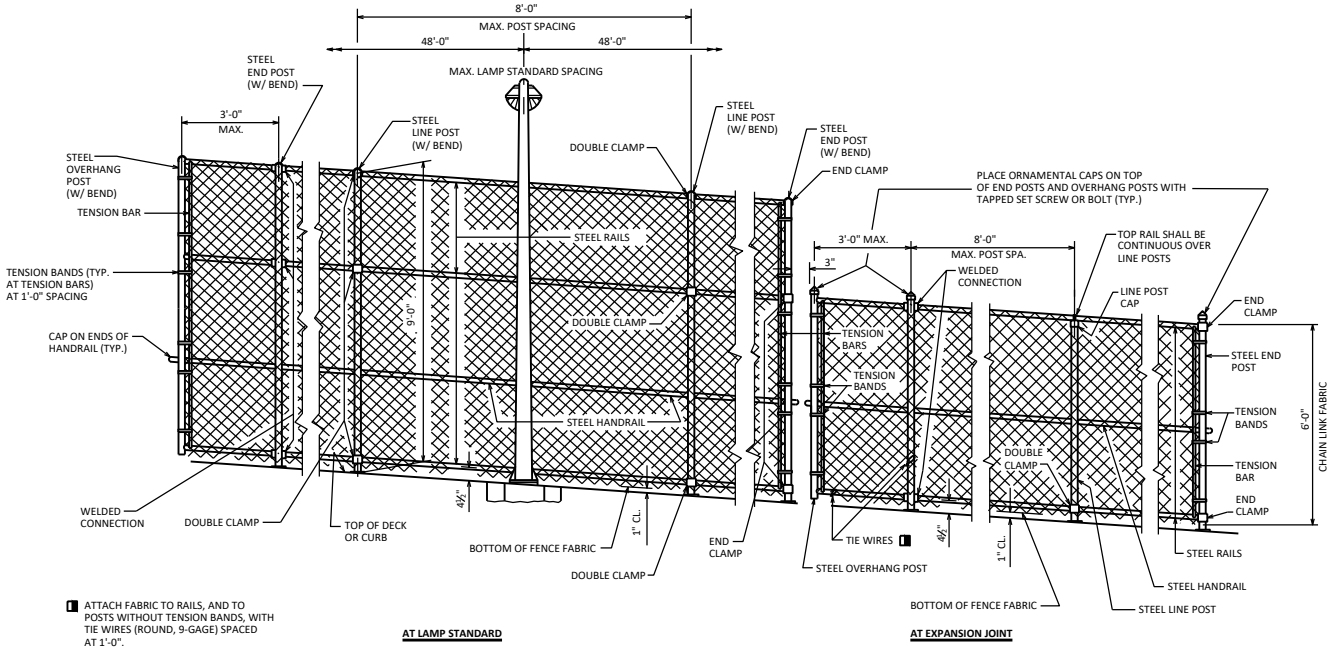
DETAIL OF CROSS RAIL AT TOP

PEDESTRIAN OVERPASS

WISCONSIN DEPARTMENT OF TRANSPORTATION — BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

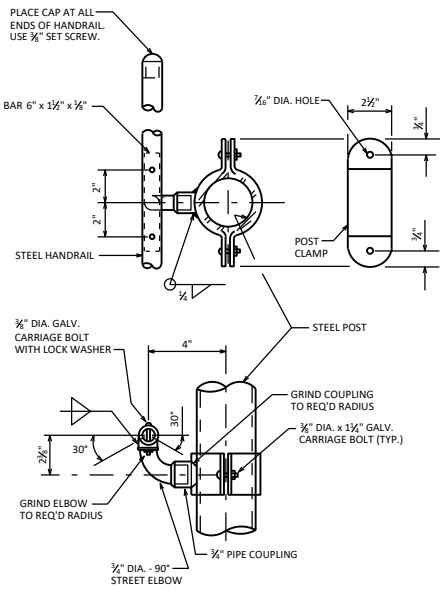
STANDARD 37.01



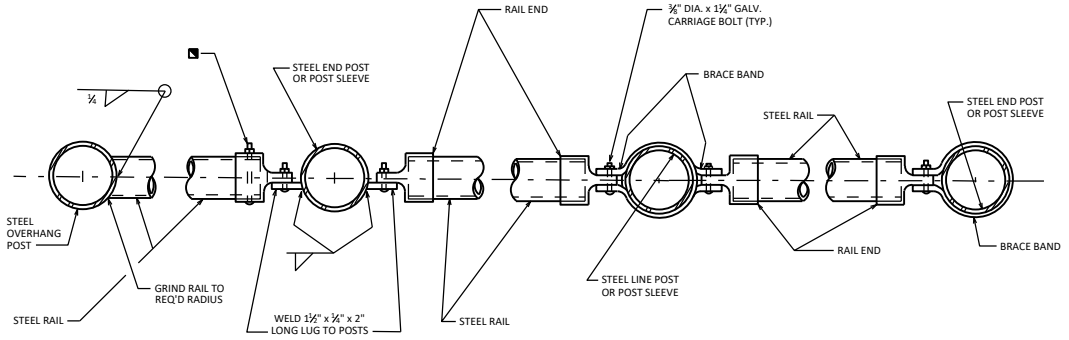
[1] ATTACH FABRIC TO RAILS, AND TO POSTS WITHOUT TENSION BANDS, WITH TIE WIRES (ROUND, 9-GAGE) SPACED AT 1'-0".

AT LAMP STANDARD **AT EXPANSION JOINT**

ELEVATION OF FENCE



HANDRAIL DETAILS



WELDED CONNECTION
(AT OVERHANG SECTION)

* **DOUBLE CLAMP**

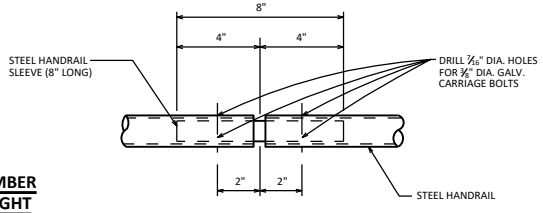
END CLAMP

PLAN OF RAILING

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

NOTE: PLACE ALL BOLT HEADS ON SIDE OF FENCE ADJACENT TO PEDESTRIANS

* ALTERNATE TO DOUBLE CLAMP: USE LINE RAIL CLAMP (BOULEVARD) OR 180° BRACE BAND, WHICH MAY BE USED WHEN THE POSTS ARE EITHER BOLTED TO THE POST SLEEVES OR DIRECTLY WELDED TO THE BASE PLATE. (AS SHOWN ON STANDARD 30.11)



HANDRAIL SPLICE

FENCE MEMBER SIZE & WEIGHT

STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
RAILS	1.660	2.27
END POST	2.875	5.80
OVERHANG POST	2.875	5.80
LINE POST	2.875	5.80
HANDRAIL	1.660	2.27
CROSS RAIL SLEEVE	1.900	2.72
HANDRAIL SLEEVE	1.315	1.68
POST SLEEVE	4.000	9.12

PEDESTRIAN OVERPASS DETAILS

BUREAU OF STRUCTURES

APPROVED: *Laura Shadewald* DATE: 1-25

STANDARD 37.02