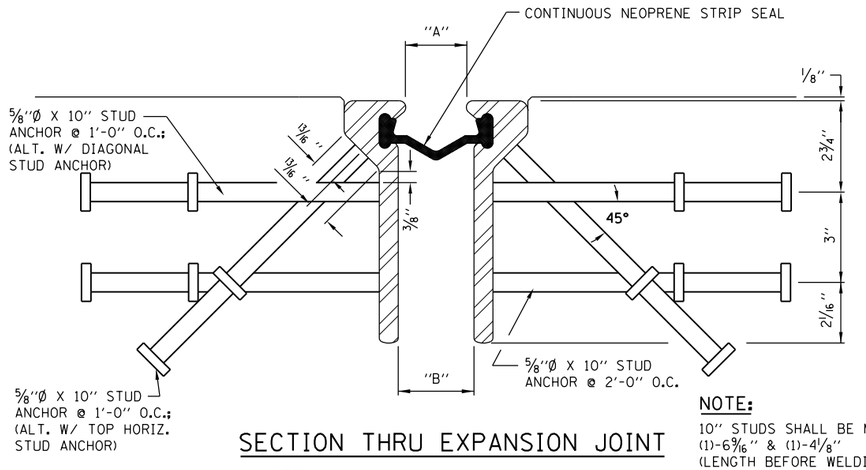


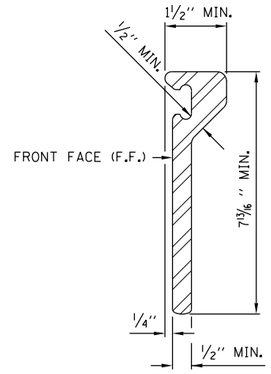
SECTION THRU EXPANSION JOINT

NOTE:

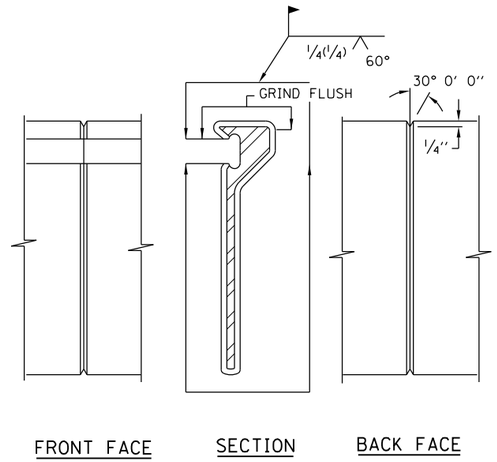
DIMENSIONS "A" AND "B" ARE PERPENDICULAR TO THE EXPANSION JOINT

NOTE:

10" STUDS SHALL BE MADE OF (1)-6 9/16" & (1)-4 1/8" (LENGTH BEFORE WELDING) PIGGY-BACKED.



TYPICAL SECTION THRU FRAME RAIL

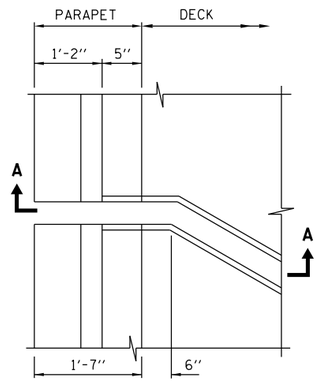


FRONT FACE SECTION BACK FACE

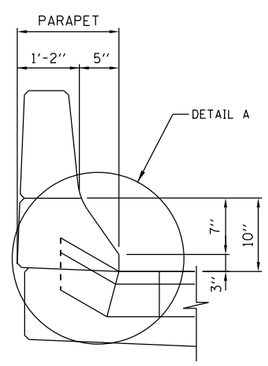
FRAME RAIL SPLICE DETAIL

NOTE:

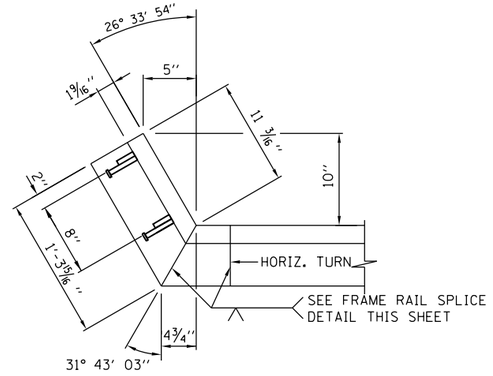
WELD ON FRONT SIDE OF FRAME MAY BE OMITTED AT STAGE CONSTRUCTION LINES



PLAN



SECTION A-A



DETAIL A

UPTURN AT PARAPET

NOTES:

1. WORK THIS DRAWING WITH THE BASE SHEET FOR EXPANSION JOINT FRAME RAIL SUPPORT SYSTEM.
2. EXPANSION JOINT SHALL FOLLOW ROADWAY GRADE & CROSS SLOPE. EXPANSION JOINT TO BE SET TO GRADE BY ATTACHING FRAME RAILS TO BACKWALL AND BEAMS.
3. FRAME RAILS AND OTHER STEEL SHALL BE AASHTO M270 GRADE 36, (ASTM A36).
4. STUD ANCHORS SHALL BE AASHTO M169 (ASTM A108).
5. EXPANSION ANCHORS SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS, SECTION 1211.
6. FRAME RAIL ASSEMBLY SHALL BE FABRICATED IN 20 FT. MAXIMUM LENGTHS. SHOP AND FIELD SPLICES SHALL BE PLACED AT CROWN BREAKS, CONSTRUCTION STAGE LINES, AND TRANSVERSE BREAKS IN DECK.
7. AT SPLICES, A CONTINUOUS GROUND SMOOTH WELD SHALL BE PROVIDED EXCEPT ON SURFACES IN LOCKING CONTACT WITH SEAL WHICH SHALL HAVE NO BURRS.
8. ALL STUD ANCHORS TO BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
9. AFTER FABRICATION IS COMPLETE FRAME RAILS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
10. CORRESPONDING SECTIONS SHALL BE TEMPORARILY SHOP ASSEMBLED, CHECKED FOR FIT, AND MATCH MARKED WITH STENCIL AND BLACK PAINT FOR SHIPMENT.
11. NEOPRENE SEAL SHALL BE CONTINUOUS. FACTORY VULCANIZED HORIZONTAL MITERS SHALL BE REQUIRED FOR ALL SKEWS.
12. NEOPRENE SEAL SHALL BE INSTALLED CONTINUOUS, SPLICING OF SEAL IN THE FIELD IS NOT PERMITTED.
13. NEOPRENE SEAL SHALL BE BONDED TO THE FRAME RAILS WITH AN ADHESIVE MEETING THE REQUIREMENTS OF ASTM D4070.
14. SUPPORT PLATES, NUTS AND WASHERS CONNECTED TO FRAME RAILS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111 AND M232 (ASTM A123 AND A153).
15. SUPPORT PLATES ON STEEL GIRDERS SHALL BE WELDED IN ACCORDANCE WITH ARTICLES 505.04 (q) & 505.08 (n) OF THE IDOT STANDARD SPECIFICATIONS.
16. FURNISHING AND INSTALLING EXPANSION JOINT FRAME RAIL SUPPORT SYSTEM SHALL BE INCLUDED IN THE COST OF BRIDGE EXPANSION JOINT SYSTEM.
17. JOINT OPENINGS SHALL BE ADJUSTED IN ACCORDANCE WITH THE FIELD ENGINEER'S INSTRUCTIONS.
18. UPON COMPLETION OF FIELD WELDING, THE CONTRACTOR SHALL CLEAN THE WELD AREA AND APPLY A COATING OF ORGANIC ZINC-RICH PAINT IN ACCORDANCE WITH SSPC-PS12.01.

NOTE TO DESIGNER

FOR SKEWS > 30°, DESIGNER SHALL REPLACE PARAPET DETAILS SHOWN WITH SLIDING PLATE DETAILS ON THE LATEST IDOT BASE SHEET EJ-SSJ

NOTE TO DESIGNER

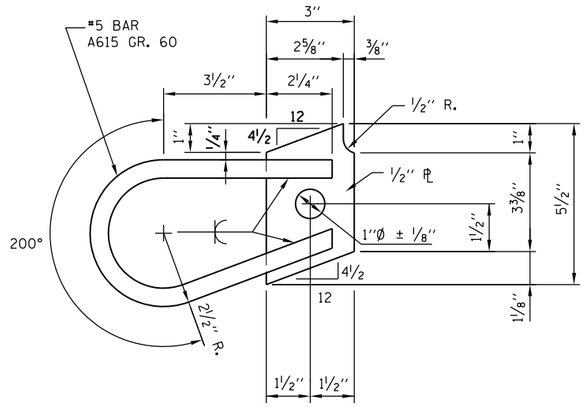
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

M-BRG-500

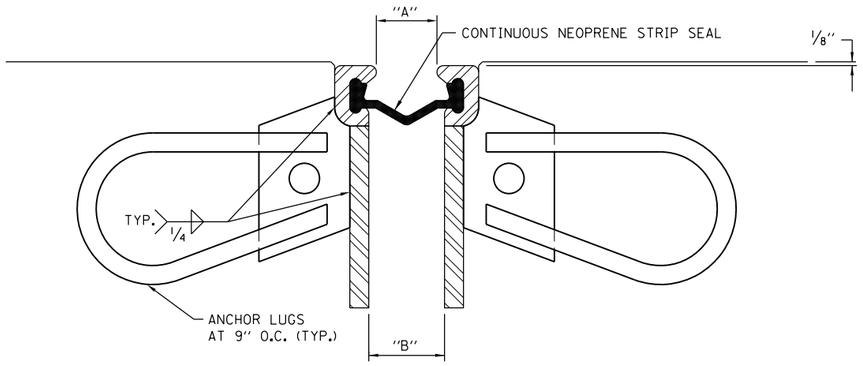
Illinois Tollway

EXPANSION JOINT FRAME RAIL AND SEAL ALTERNATIVE A

DATE 3-31-2017



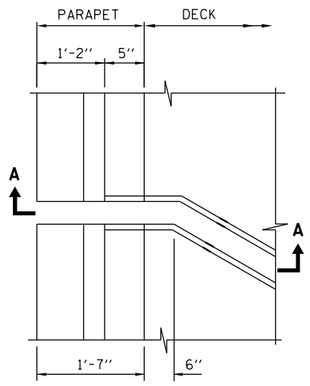
ANCHOR LUG DETAIL



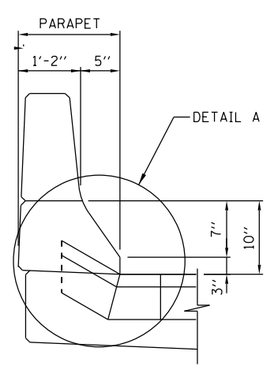
SECTION THRU EXPANSION JOINT

NOTE:

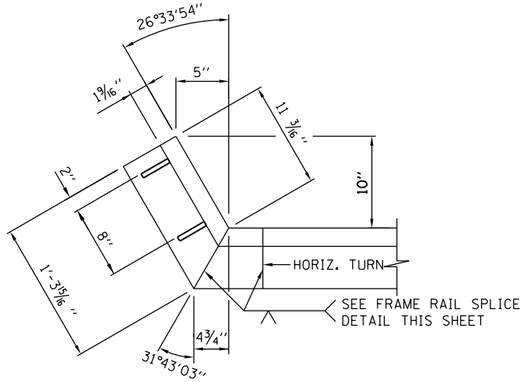
DIMENSIONS ''A'' AND ''B'' ARE PERPENDICULAR TO THE EXPANSION JOINT



PLAN

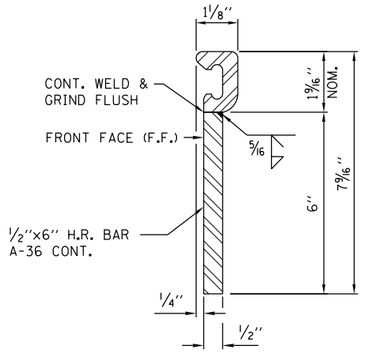


SECTION A-A

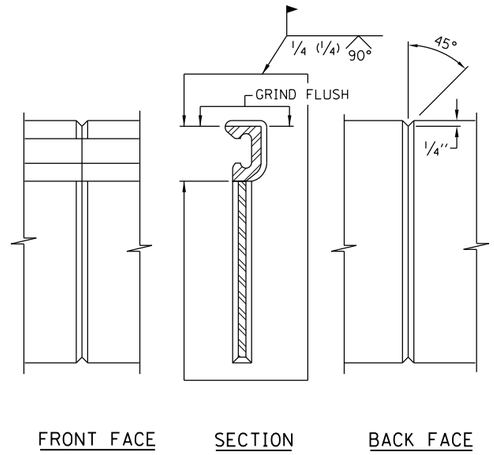


DETAIL A

UPTURN AT PARAPET



TYPICAL SECTION THRU FRAME RAIL



FRONT FACE SECTION BACK FACE

FRAME RAIL SPLICE DETAIL

NOTE:

WELD ON FRONT SIDE OF FRAME MAY BE OMITTED AT STAGE CONSTRUCTION LINES.

NOTES:

1. WORK THIS DRAWING WITH THE BASE SHEET FOR EXPANSION JOINT FRAME RAIL SUPPORT SYSTEM.
2. EXPANSION JOINT SHALL FOLLOW ROADWAY GRADE & CROSS SLOPE. EXPANSION JOINT TO BE SET TO GRADE BY ATTACHING FRAME RAILS TO BACKWALL AND BEAMS.
3. AT SPLICES, A CONTINUOUS GROUND SMOOTH WELD SHALL BE PROVIDED EXCEPT ON SURFACES IN LOCKING CONTACT WITH SEAL WHICH SHALL HAVE NO BURRS.
4. FRAME RAILS AND OTHER STEEL SHALL BE AASHTO M270 GRADE 36, (ASTM A36).
5. ANCHOR LUGS SHALL BE AASHTO M31 (ASTM A615).
6. EXPANSION ANCHORS SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS SECTION, 1211.
7. FRAME RAIL ASSEMBLY SHALL BE FABRICATED IN 20 FT. MAXIMUM LENGTHS. SHOP AND FIELD SPLICES SHALL BE PLACED AT CROWN BREAKS, CONSTRUCTION STAGE LINES, AND TRANSVERSE BREAKS IN DECK.
8. AFTER FABRICATION IS COMPLETE FRAME RAILS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111 (ASTM A123).
9. CORRESPONDING SECTIONS SHALL BE TEMPORARILY SHOP ASSEMBLED, CHECKED FOR FIT, AND MATCH MARKED WITH STENCIL AND BLACK PAINT FOR SHIPMENT.
10. NEOPRENE SEAL SHALL BE CONTINUOUS. FACTORY VULCANIZED HORIZONTAL MITERS SHALL BE REQUIRED FOR ALL SKEWS.
11. NEOPRENE SEAL SHALL BE INSTALLED CONTINUOUS, SPLICING OF SEAL IN THE FIELD IS NOT PERMITTED.
12. NEOPRENE SEAL SHALL BE BONDED TO THE FRAME RAILS WITH AN ADHESIVE MEETING THE REQUIREMENTS OF ASTM D4070.
13. SUPPORT PLATES ON STEEL GIRDERS SHALL BE WELDED IN ACCORDANCE WITH ARTICLES 505.04 (q) & 505.08 (n) OF THE IDOT STANDARD SPECIFICATIONS.
14. FURNISHING AND INSTALLING EXPANSION JOINT FRAME RAIL SUPPORT SYSTEM SHALL BE INCLUDED IN THE COST OF BRIDGE EXPANSION JOINT SYSTEM.
15. JOINT OPENINGS SHALL BE ADJUSTED IN ACCORDANCE WITH THE FIELD ENGINEER'S INSTRUCTIONS.
16. SUPPORT PLATES, NUTS, AND WASHERS CONNECTED TO FRAME RAILS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111 AND M232 (ASTM A123 AND A153).
17. UPON COMPLETION OF FIELD WELDING, THE CONTRACTOR SHALL CLEAN THE WELD AREA AND APPLY A COATING OF ORGANIC ZINC-RICH PAINT IN ACCORDANCE WITH SSPC-PS12.01.

NOTE TO DESIGNER

FOR SKEWS > 30°, DESIGNER SHALL REPLACE PARAPET DETAILS SHOWN WITH SLIDING PLATE DETAILS ON THE LATEST IDOT BASE SHEET EJ-SSJ

NOTE TO DESIGNER

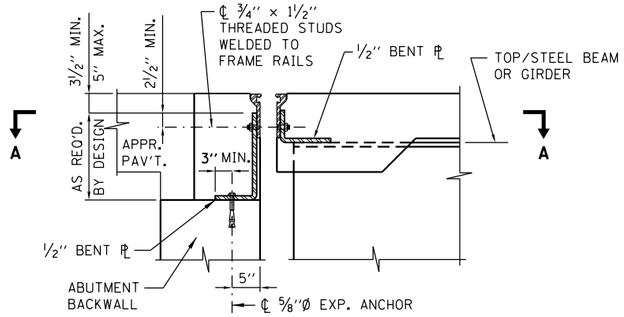
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

M-BRG-501

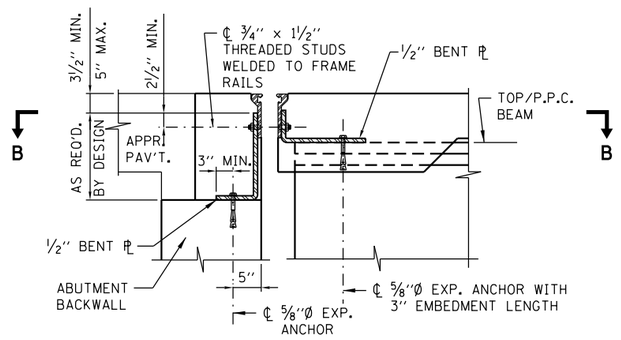
Illinois Tollway

EXPANSION JOINT
FRAME RAIL AND SEAL
ALTERNATIVE B

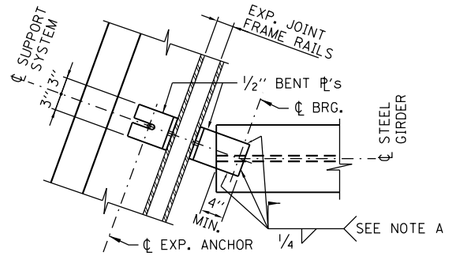
DATE
3-31-2017



TYPICAL SECTION THRU EXP. JOINT AND SUPPORT SYSTEM AT STEEL GIRDERS



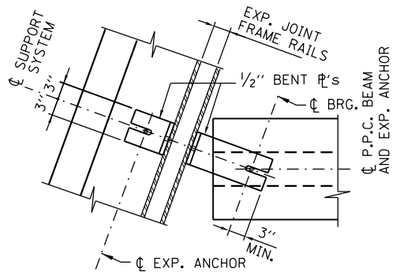
TYPICAL SECTION THRU EXP. JOINT AND SUPPORT SYSTEM AT P.P.C. BEAMS



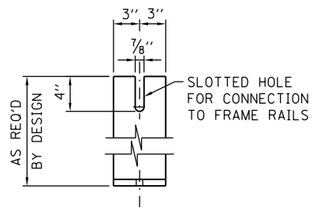
SECTION A-A

NOTE A:

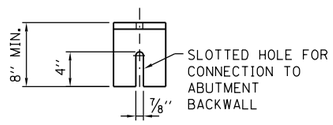
FIELD WELD AFTER SUPPORT SYSTEM IS ADJUSTED FOR THE OPENING AND HEIGHT REQUIREMENTS AND THE BENT PLATE ON THE OPPOSITE SIDE IS SECURED IN PLACE WITH EXPANSION ANCHOR INTO THE CONCRETE.



SECTION B-B

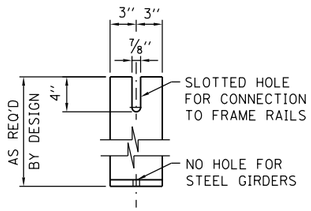


ELEVATION

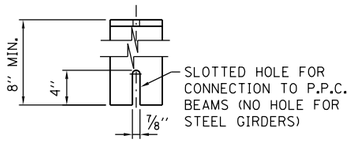


PLAN

BENT SUPPORT PLATE AT ABUTMENT



ELEVATION



PLAN

BENT SUPPORT PLATE AT BRIDGE DECK

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

NOTE:

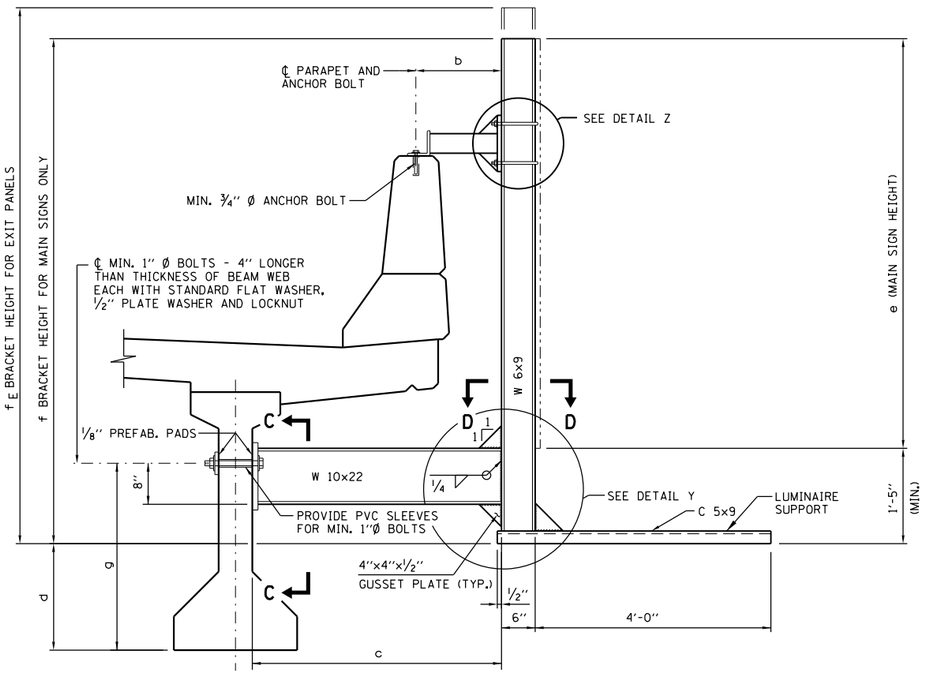
WORK THIS DRAWING WITH THE BASE SHEETS M-BRG-500 AND M-BRG-501 FOR EITHER EXPANSION JOINT FRAME RAIL AND SEAL ALTERNATIVE A OR ALTERNATIVE B.

M-BRG-502

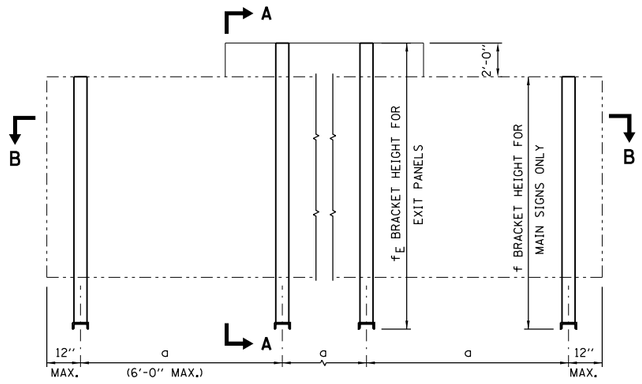
Illinois Tollway

EXPANSION JOINT FRAME RAIL SUPPORT SYSTEM

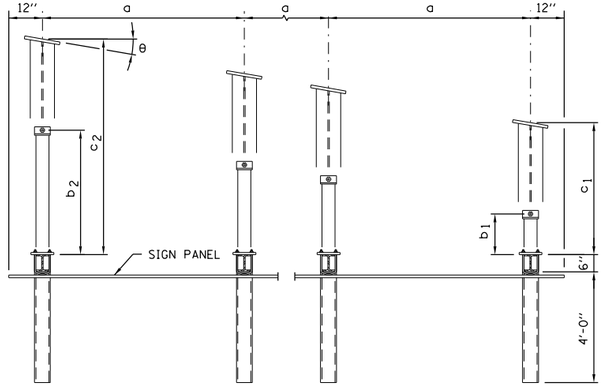
DATE 2-7-2012



SECTION A-A



TYPICAL FRONT ELEVATION



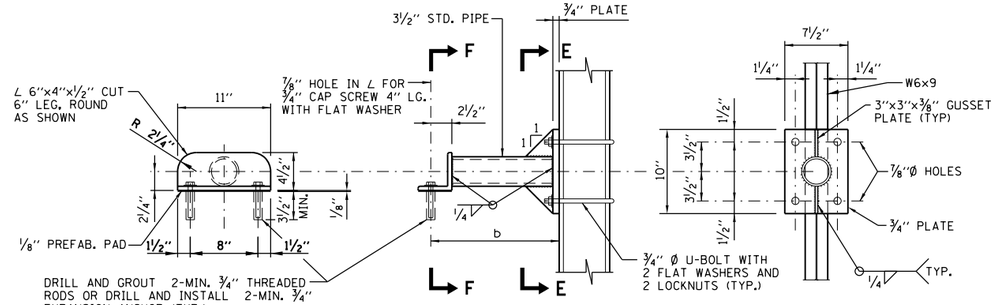
SECTION B-B

NOTES:

1. ALL STRUCTURE STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-270 GRADE 36.
2. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR C WITH A MINIMUM YIELD OF 46,000 PSI. IF A500 PIPE IS SUBSTITUTED FOR A53 THEN THE OUTSIDE DIAMETER SHALL BE AS DETAILED AND THE WALL THICKNESS GREATER THAN OR EQUAL TO A53.
3. ALL CAP SCREWS, BOLTS, U-BOLTS, WASHERS AND LOCKNUTS SHALL BE IN ACCORDANCE WITH ARTICLE 733.02 OF THE IDOT STANDARD SPECIFICATIONS AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-232.
4. ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH THE CURRENT AWS D1.1 STRUCTURAL WELDING CODE (STEEL) AND THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
5. ALL FABRICATION SHALL BE COMPLETE AND READY FOR ASSEMBLY BEFORE GALVANIZING. NO PUNCHING, DRILLING, CUTTING, NOR WELDING SHALL BE PERMITTED AFTER GALVANIZING.
6. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111.
7. CONTRACTOR SHALL FIELD CHECK ALL BRIDGE DIMENSIONS SHOWN ON PLANS BEFORE SUBMITTING SHOP DRAWINGS.
8. THE COST OF FURNISHING AND INSTALLING THE BEARING PADS AS HEREIN SPECIFIED SHALL BE INCLUDED WITH THE COST OF BRIDGE (CONCRETE) MOUNTED SIGN SUPPORT.
9. PRE-FAB BEARING PADS: FABRIC BEARING PADS SHALL CONSIST OF A FABRIC AND RUBBER BODY MADE WITH NEW, UNVULCANIZED RUBBER AND UNUSED FABRIC FIBERS.
10. METHOD OF MEASUREMENT SHALL BE IN ACCORDANCE WITH ARTICLE 733.08(b) OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR BRIDGE (CONCRETE) MOUNTED SIGN SUPPORT.
11. SIGN STRUCTURE WIRING SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS, SECTION 823.
12. CENTER LINE OF EXPANSION ANCHOR INTO PARAPET SHALL BE AT LEAST 12" TO CENTERLINE OF OPEN JOINT IN PARAPET. ENGINEER SHALL VERIFY THE MINIMUM DISTANCES BETWEEN EXPANSION ANCHORS AND PARAPET PRIOR TO ERECTION OF SIGN SUPPORT.

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

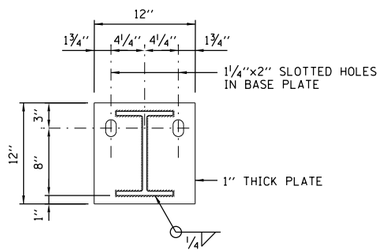


SECTION F-F

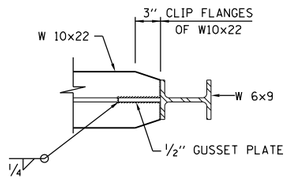
DETAIL Z

SECTION E-E

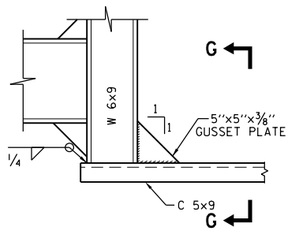
SIGN NO.	ROUTE	STATION	BRIDGE NAME	SIGN SKEW ANGLE (θ)	NO. BR'K'TS f	NO. BR'K'TS f_E	a	b_1	b_2	c_1	c_2	d	e	f	f_E	g	MAIN SIGN SIZE	EXIT PANEL WIDTH



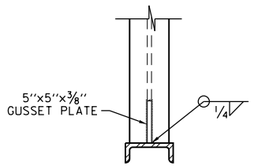
SECTION C-C



SECTION D-D



DETAIL Y



SECTION G-G

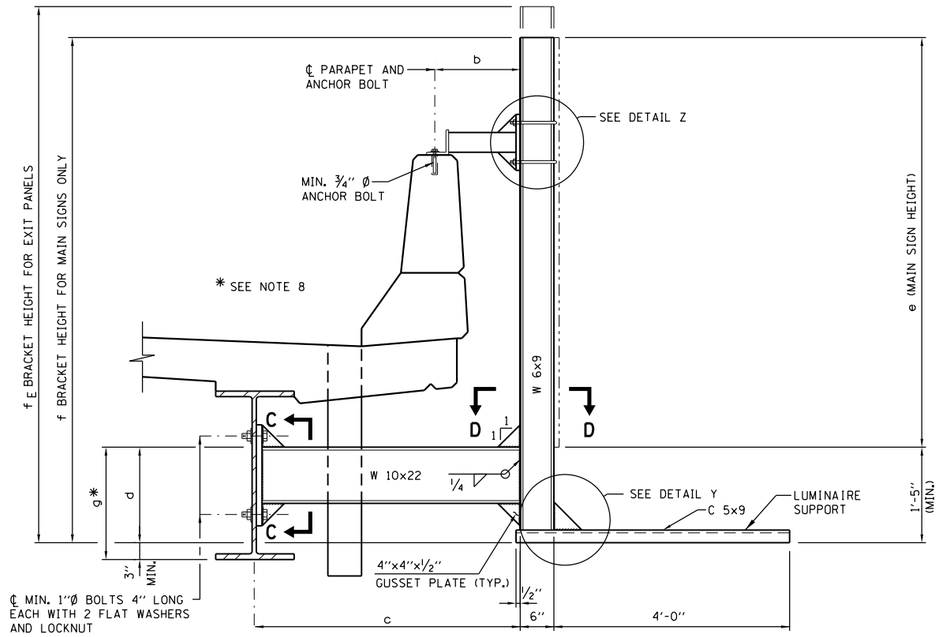
TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL

M-BRG-503

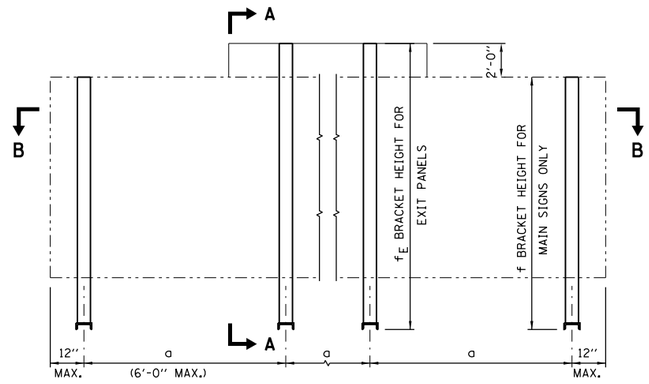
Illinois Tollway

BRIDGE (CONCRETE) MOUNTED SIGN SUPPORT

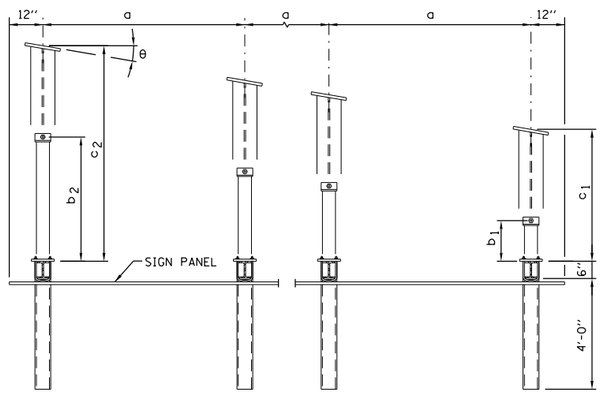
DATE
2-7-2012



SECTION A-A



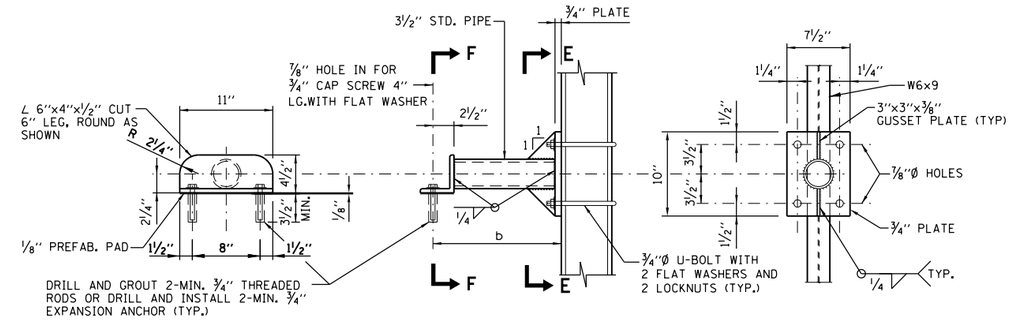
TYPICAL FRONT ELEVATION



SECTION B-B

NOTES:

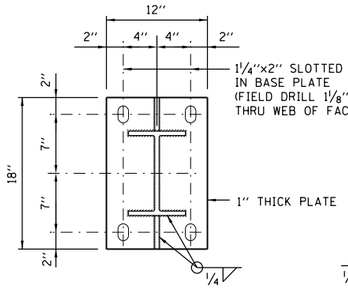
1. ALL STRUCTURE STEEL SHAPES AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-270 GRADE 36.
2. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53 GRADE B OR C WITH A MINIMUM YIELD OF 46,000 PSI. IF A500 PIPE IS SUBSTITUTED FOR A53 THEN THE OUTSIDE DIAMETER SHALL BE AS DETAILED AND THE WALL THICKNESS GREATER THAN OR EQUAL TO A53.
3. ALL CAP SCREWS, BOLTS, U-BOLTS, WASHERS AND LOCKNUTS SHALL BE IN ACCORDANCE WITH ARTICLE 733.02 OF THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-232.
4. ALL WELDS TO BE CONTINUOUS UNLESS OTHERWISE SHOWN. ALL WELDING TO BE DONE IN ACCORDANCE WITH THE CURRENT AWS D1.1 STRUCTURAL WELDING CODE (STEEL) AND THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS.
5. ALL FABRICATION SHALL BE COMPLETE AND READY FOR ASSEMBLY BEFORE GALVANIZING. NO PUNCHING, DRILLING, CUTTING, NOR WELDING SHALL BE PERMITTED AFTER GALVANIZING.
6. ALL STRUCTURAL STEEL PLATES AND SHAPES SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M111.
7. CONTRACTOR SHALL FIELD CHECK ALL BRIDGE DIMENSIONS SHOWN ON PLANS BEFORE SUBMITTING SHOP DRAWINGS.
8. ALL HOLES DRILLED IN BRIDGE BEAM OR PLATE GIRDER SHALL BE LOCATED IN THE MIDDLE HALF OF THE WEB. THERE SHALL NOT BE ANY HOLES DRILLED IN THE WEB OF BEAM OR PLATE GIRDER CLOSER TO THE FLANGE THAN THE DEPTH OF BEAM DIVIDED BY FOUR (4) OR ONE-FOURTH (1/4) THE DEPTH OF THE BEAM. THE ENGINEER MAY ADJUST DIMENSION "g" TO MEET THE ABOVE CONDITION AND TO KEEP THE SIGN LEVEL.
9. THE COST OF FURNISHING AND INSTALLING THE BEARING PADS AS HEREIN SPECIFIED SHALL BE INCLUDED WITH THE COST OF BRIDGE (STEEL) MOUNTED SIGN SUPPORT.
10. PRE-FAB BEARING PADS: FABRIC BEARING PADS SHALL CONSIST OF A FABRIC AND RUBBER BODY MADE WITH NEW, UNVULCANIZED RUBBER AND UNUSED FABRIC FIBERS.
11. METHOD OF MEASUREMENT SHALL BE IN ACCORDANCE WITH ARTICLE 733.08(b) OF ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT FOR BRIDGE (STEEL) MOUNTED SIGN SUPPORT.
12. SIGN STRUCTURE WIRING SHALL BE IN ACCORDANCE WITH THE ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS, SECTION 823.
13. CENTER LINE OF EXPANSION ANCHOR INTO PARAPET SHALL BE AT LEAST 12" TO CENTER LINE OF OPEN JOINT IN PARAPET. ENGINEER SHALL VERIFY THE MINIMUM DISTANCES BETWEEN EXPANSION ANCHORS & PARAPET PRIOR TO ERECTION OF SIGN SUPPORT.



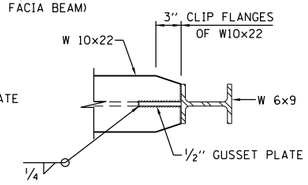
SECTION F-F

DETAIL Z

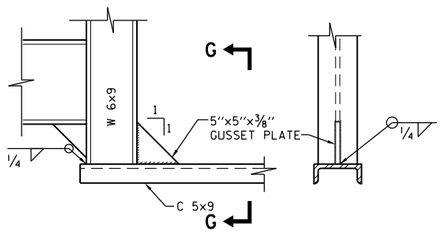
SECTION E-E



SECTION C-C



SECTION D-D



DETAIL Y SECTION G-G

SIGN NO.	ROUTE	STATION	BRIDGE NAME	SIGN SKEW ANGLE (θ)	NO. BR'K'TS f	NO. BR'K'TS f_E	a	b_1	b_2	c_1	c_2	d	e	f	f_E	g	MAIN SIGN SIZE	EXIT PANEL WIDTH

TOTAL BILL OF MATERIAL			
PAY ITEM	DESCRIPTION	UNIT	TOTAL

NOTE TO DESIGNER

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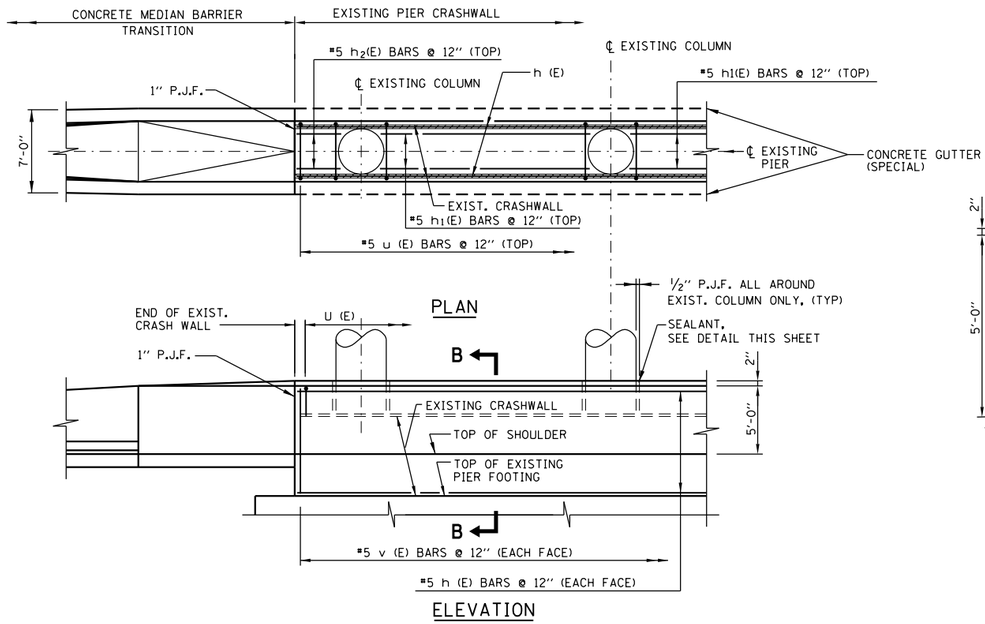
M-BRG-504

Illinois Tollway

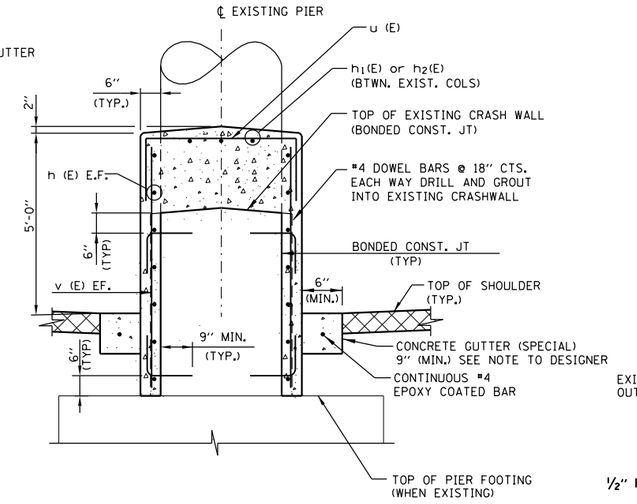
BRIDGE (STEEL) MOUNTED SIGN SUPPORT

DATE
2-7-2012



ELEVATION

PROTECTION FOR EXISTING MEDIAN PIER WITH CRASH WALL

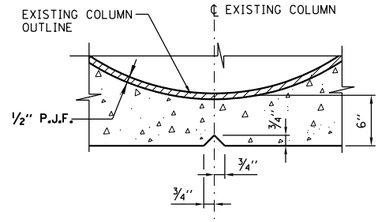


SECTION B-B

NOTE TO DESIGNER

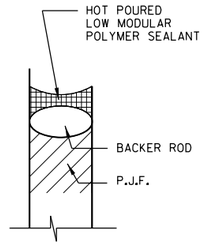
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

WHEN THERE IS A MINIMUM DISTANCE OF 6" FROM THE FACE OF THE PIER CRASHWALL TO THE OUTER EDGE OF GUTTER OF THE CONCRETE MEDIAN BARRIER TRANSITION BASE, A CONCRETE GUTTER (SPECIAL) SHALL BE INSTALLED ALONG THE LENGTH OF PIER CRASHWALL. WHEN THERE IS LESS THAN 6" DISTANCE AN ASPHALT SHOULDER SHALL BE PLACED TO THE FACE OF THE CRASHWALL. THE WIDTH OF THE PIER CRASHWALL AND GUTTER SHALL BE EQUAL TO THE ADJACENT MEDIAN BARRIER BASE.

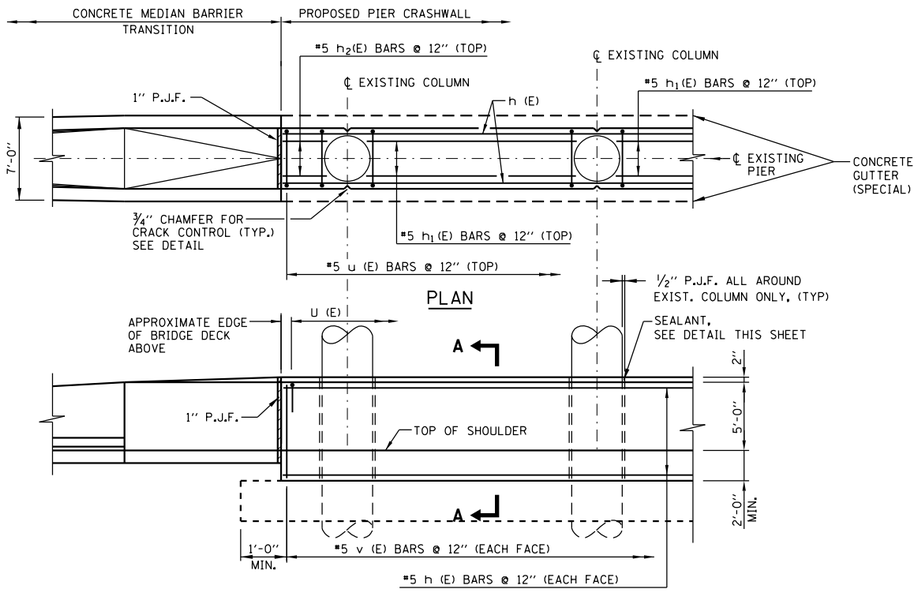


CRACK CONTROL DETAIL

REINFORCEMENT BARS OMITTED FOR CLARITY

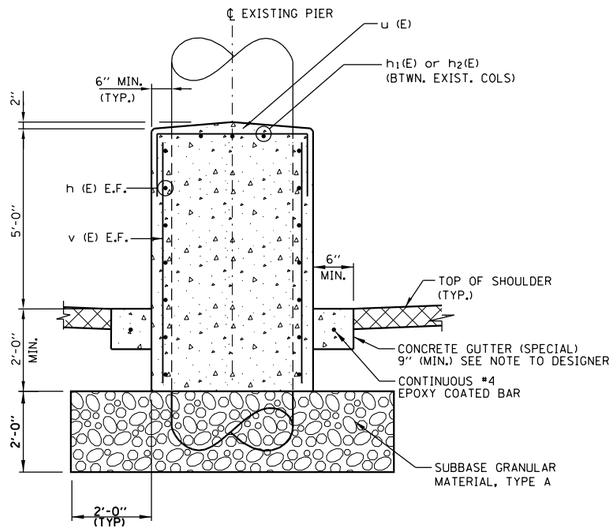


SEALANT DETAIL



ELEVATION

PROTECTION FOR EXISTING MEDIAN PIER WITHOUT CRASH WALL



SECTION A-A

NOTES:

1. REMOVE EXISTING CONCRETE CRASHWALL BACK TO FACE OF COLUMNS PRIOR TO PLACING CONCRETE AROUND EXISTING CRASHWALL AND COLUMNS. SURFACES TO RECEIVE NEW CONCRETE SHALL BE BLAST CLEANED. COST OF CLEANING SHALL BE INCLUDED IN THE COST OF CONCRETE REMOVAL.
2. CONCRETE MEDIAN BARRIER TRANSITION TAPER LENGTHS, PAY LIMITS AND MEASUREMENT, AND BASIS OF PAYMENT ALL IN ACCORDANCE WITH THE ILLINOIS TOLLWAY STANDARD DRAWING C13, C14 AND THE SPECIAL PROVISIONS.
3. THE CLEAR COVER FOR REINFORCEMENT BARS TO THE SURFACE OF CONCRETE SHALL BE 2" UNLESS OTHERWISE SHOWN.
4. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
5. EXPOSED CONCRETE EDGES SHALL HAVE 3/4"×45° CHAMFERS. CHAMFERS ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.
6. CONCRETE SEALANT SHALL BE APPLIED TO THE EXPOSED SURFACES OF ALL NEW AND/OR MODIFIED PIER CRASH WALLS.
7. E.F. DENOTES EACH FACE

LEGEND:

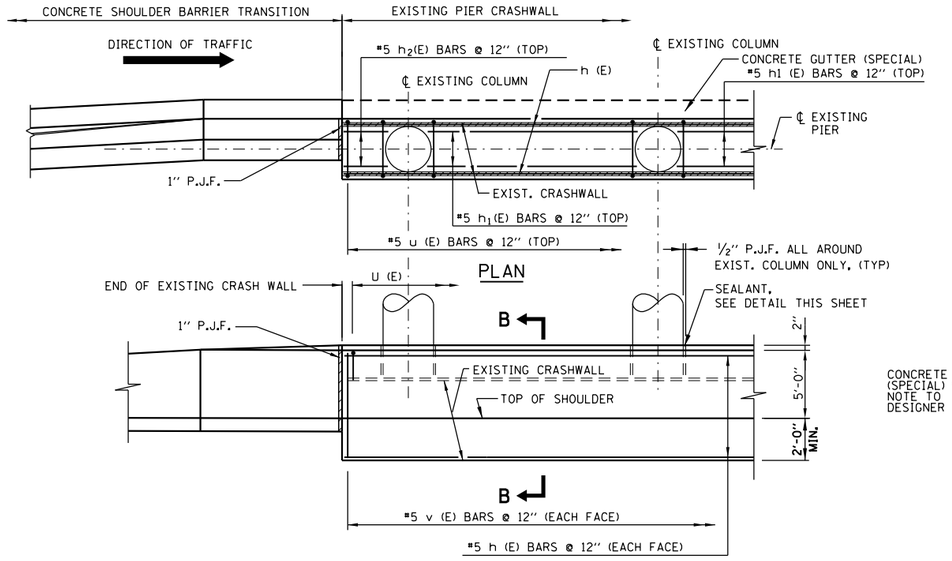
- P.J.F.
- NEW CONCRETE
- BITUMINOUS SHOULDER

M-BRG-507

Illinois Tollway

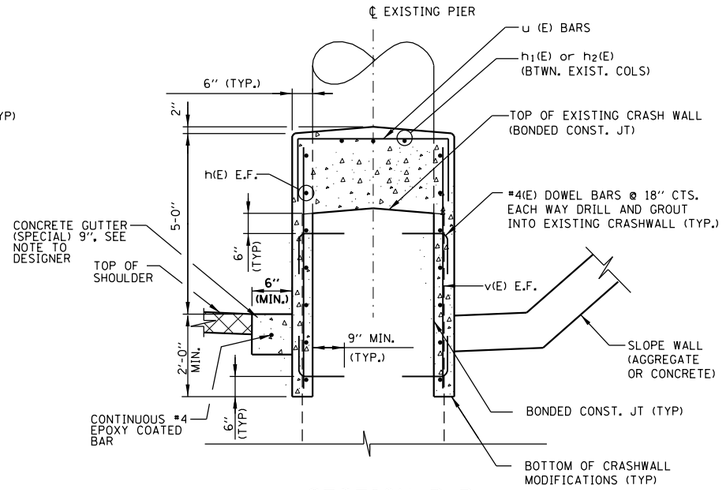
CRASH WALL MODIFICATIONS MEDIAN PIERS

DATE 3-31-2016



ELEVATION

PROTECTION FOR EXISTING SHOULDER PIER WITH CRASH WALL



SECTION B-B

NOTE TO DESIGNER

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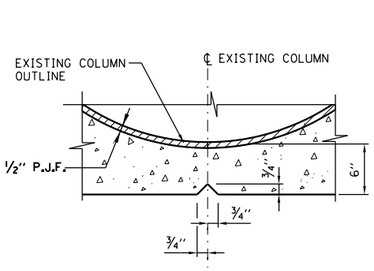
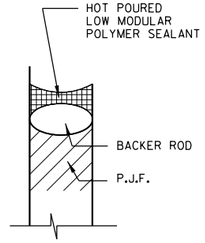
WHEN THERE IS A MINIMUM DISTANCE OF 6" FROM THE FACE OF THE PIER CRASHWALL TO THE OUTER EDGE OF GUTTER OF THE CONCRETE MEDIAN BARRIER TRANSITION BASE, A CONCRETE GUTTER (SPECIAL) SHALL BE INSTALLED ALONG THE LENGTH OF PIER CRASHWALL. WHEN THERE IS LESS THAN 6" DISTANCE AN ASPHALT SHOULDER SHALL BE PLACED TO THE FACE OF THE CRASHWALL. THE WIDTH OF PIER CRASHWALL AND GUTTER SHALL BE EQUAL TO THE ADJACENT MEDIAN BARRIER BASE.

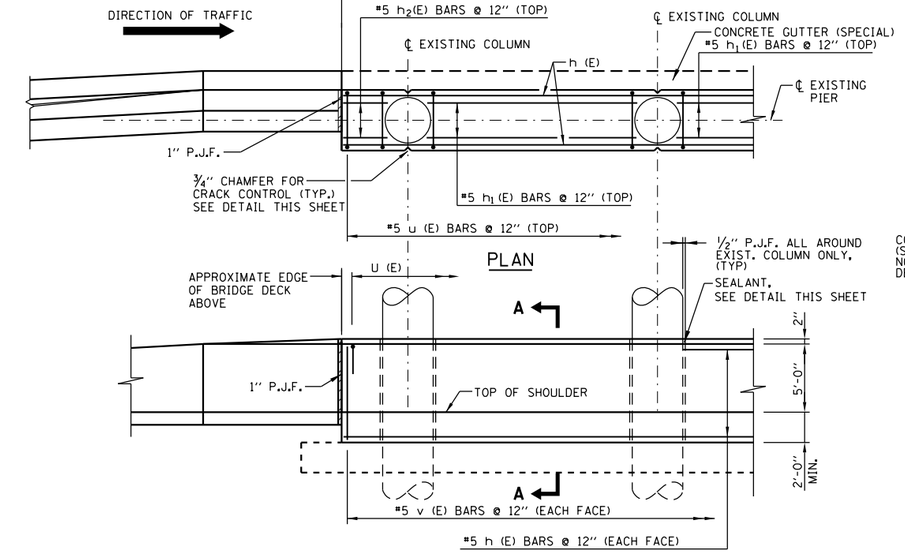


CRACK CONTROL DETAIL

REINFORCEMENT BARS OMITTED FOR CLARITY

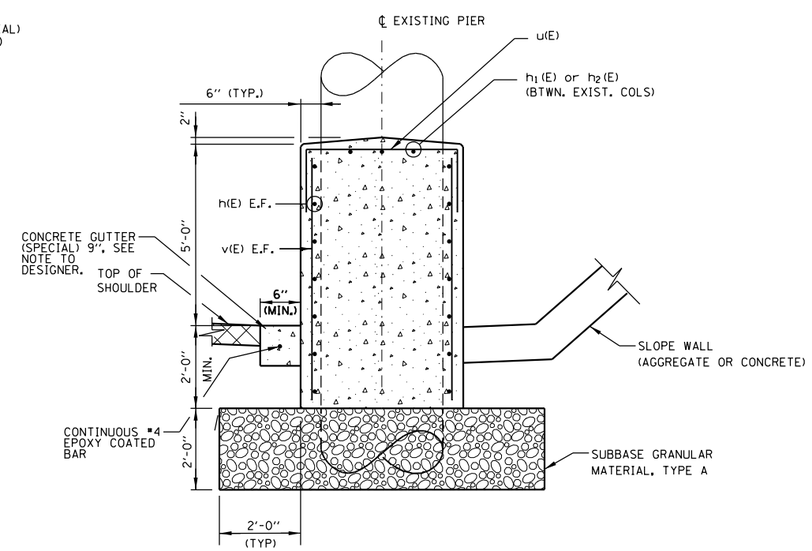


SEALANT DETAIL



ELEVATION

PROTECTION FOR EXISTING SHOULDER PIER WITHOUT CRASH WALL



SECTION A-A

NOTES:

1. REMOVE EXISTING CONCRETE CRASHWALL BACK TO FACE OF COLUMNS PRIOR TO PLACING CONCRETE AROUND EXISTING CRASHWALL AND COLUMNS. SURFACES TO RECEIVE NEW CONCRETE SHALL BE BLAST CLEANED. COST OF CLEANING SHALL BE INCLUDED IN THE COST OF CONCRETE REMOVAL.
2. CONCRETE SHOULDER MEDIAN BARRIER TRANSITION TAPER LENGTHS, PAY LIMITS AND MEASUREMENT, AND BASIS OF PAYMENT ALL IN ACCORDANCE WITH THE ILLINOIS TOLLWAY STANDARD DRAWING C7, C13, C14 AND THE SPECIAL PROVISIONS.
3. THE CLEAR COVER FOR REINFORCEMENT BARS TO THE SURFACE OF CONCRETE SHALL BE 2" UNLESS OTHERWISE SHOWN.
4. REINFORCEMENT BARS DESIGNATED "(E)" SHALL BE EPOXY COATED.
5. EXPOSED CONCRETE EDGES SHALL HAVE ¾"x45° CHAMFERS. CHAMFERS ON VERTICAL EDGES SHALL BE CONTINUED A MINIMUM OF ONE FOOT BELOW FINISHED GROUND LEVEL.
6. CONCRETE SEALANT SHALL BE APPLIED TO THE EXPOSED SURFACES OF ALL NEW AND/OR MODIFIED PIER CRASH WALLS.
7. E.F. DENOTES EACH FACE

LEGEND:

P.J.F.

NEW CONCRETE

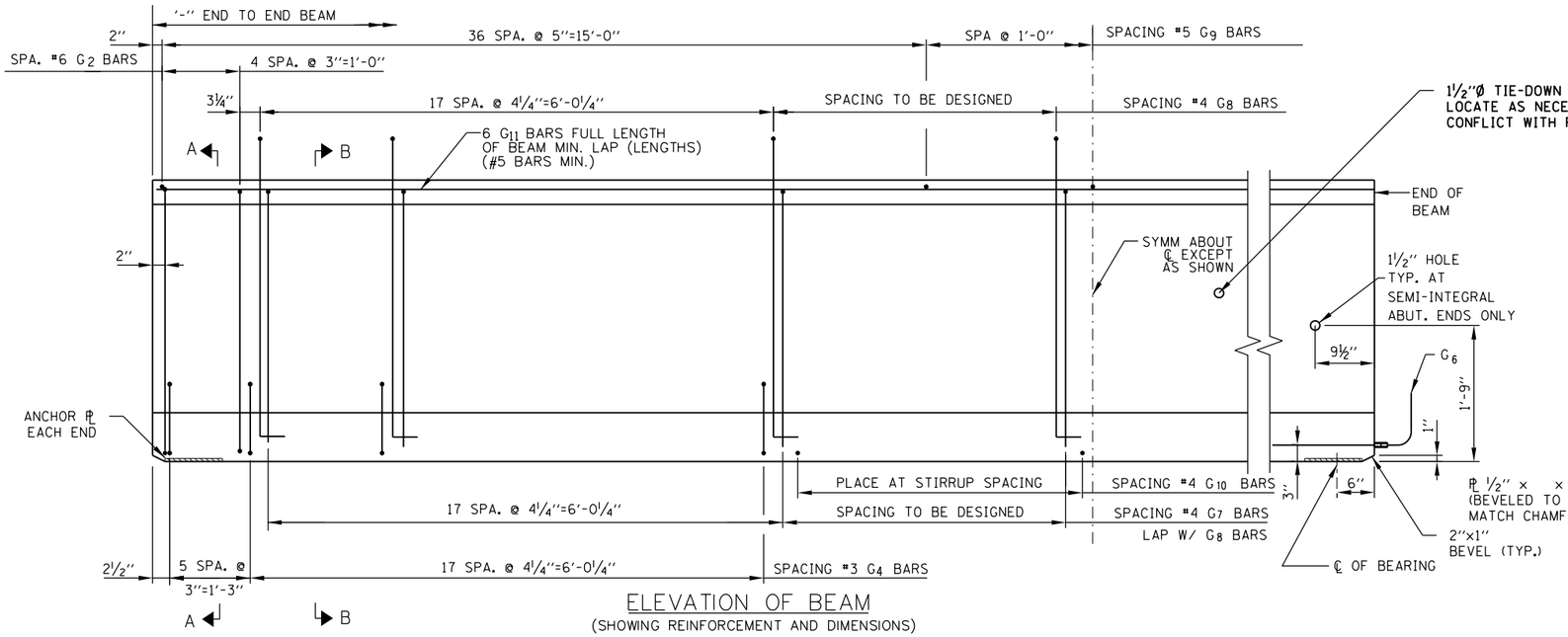
BITUMINOUS SHOULDER

M-BRG-508

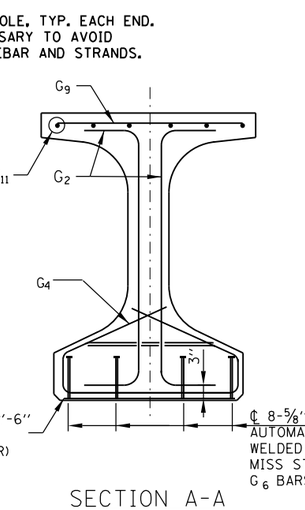
Illinois Tollway

CRASH WALL MODIFICATIONS SHOULDER PIERS

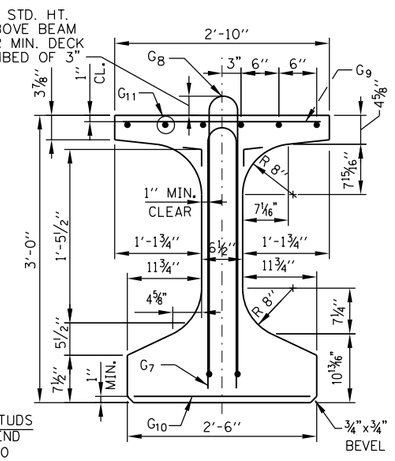
DATE
3-31-2016



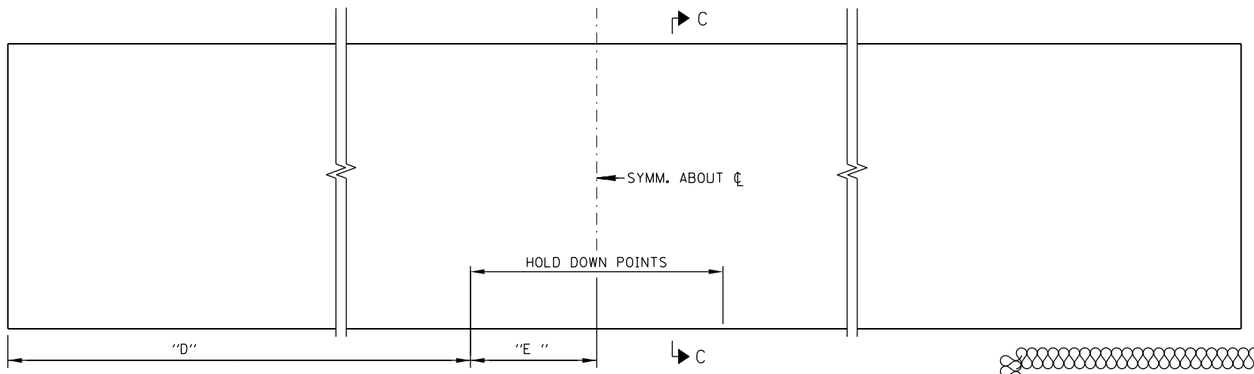
ELEVATION OF BEAM
(SHOWING REINFORCEMENT AND DIMENSIONS)



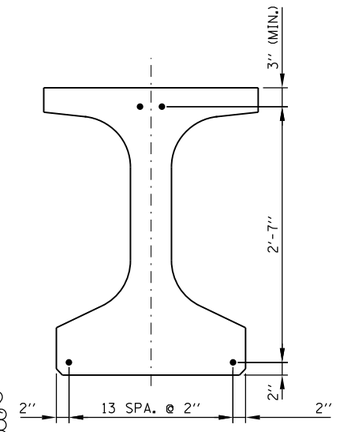
SECTION A-A
STRANDS NOT SHOWN



SECTION B-B
STRANDS NOT SHOWN



ELEVATION OF BEAM
(SHOWING PRESTRESSING STEEL)



SECTION C-C

NOTE TO DESIGNER

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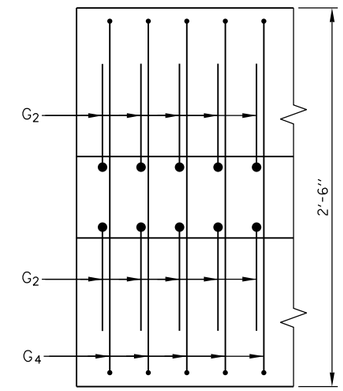
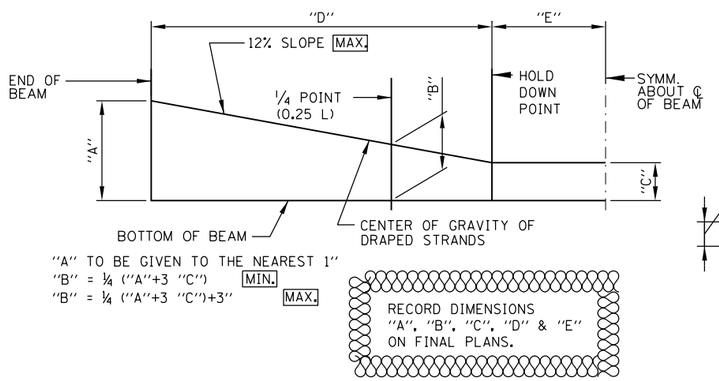
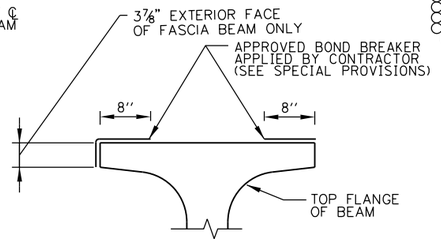


PLAN–BOTTOM FLANGE DETAIL AT END OF BEAM



LOCATION OF DRAPED STRANDS



LOCATIONS OF BOND BREAKER

NOTE:
WORK THIS SHEET WITH BASE SHEET M-BRG-510.

BILL OF MATERIAL

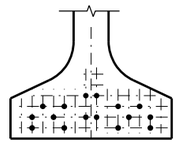
ITEM	UNIT	TOTAL
FURNISHING AND ERECTING SHALLOW-DEPTH PRECAST PRESTRESSED CONCRETE BULB-T BEAM, 36''	FOOT	

M-BRG-509

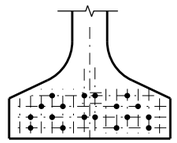
Illinois Tollway

36'' PPC BULB-T BEAM

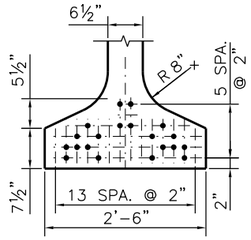
DATE
3-31-2014



16 STRANDS

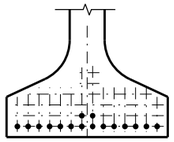


18 STRANDS

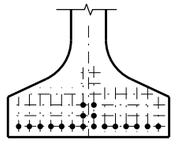


20 STRANDS

STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.6"Ø STRANDS



16 STRANDS



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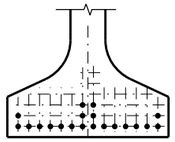
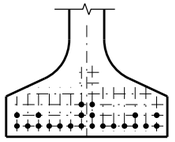
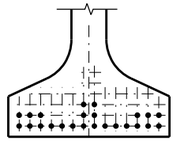


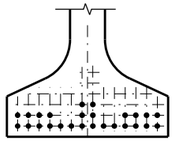
20 STRANDS



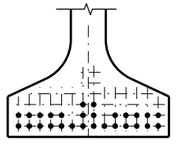
22 STRANDS



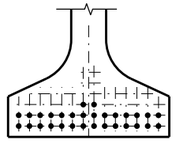
24 STRANDS



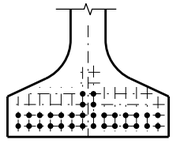
26 STRANDS



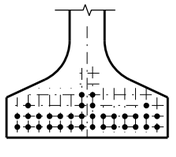
28 STRANDS



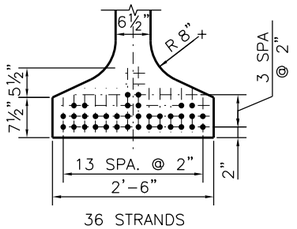
30 STRANDS



32 STRANDS



34 STRANDS



36 STRANDS

ARRANGEMENT AT ℄ SPAN - FOR BEAMS WITH DRAPED 0.6"Ø STRANDS

36-BT BEAM

A = 632 SQ. IN.
r^2 = 158.20 IN.^{2}
Y_T = 19.37 IN.
Y_B = −16.63 IN.
I = 99,980 IN.^{4}
S_T = 5,162 IN.^{3}
S_B = −6,012 IN.^{3}
WT. = 658#/FT.

PRE-TENSION

f'_S = 270,000 P.S.I.

f_S = 0.75 x 270,000 = 202,500 P.S.I. for low relaxation strands

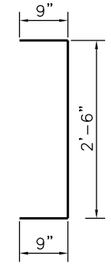
Pi PER 0.6"ø STRAND = 0.217 x 202,500 = 43.94 KIPS

$\frac{y_B}{r^2} = \frac{-16.63}{158.20} = -0.10512\ in/in^2$

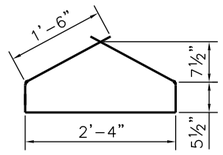
$f_B\ (init.) = \frac{A_s f_s}{A}(1+\frac{e_s y_B}{r^2})$

BAR LIST

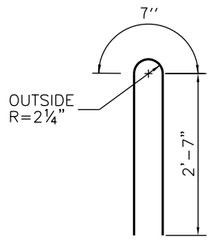
BAR	NO.	SIZE	LENGTH	SHAPE
G_2	20	#6	4'-0"	
G_4	46	#3	6'-3"	
G_6	2	#8	6'-6"	
G_7		#4	5'-9"	
G_8		#4		
G_9		#5	2'-7"	
G_{10}		#4	2'-3"	
G_{11}				



BAR G_2

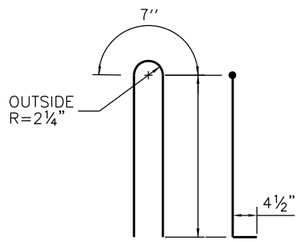


BAR G_4

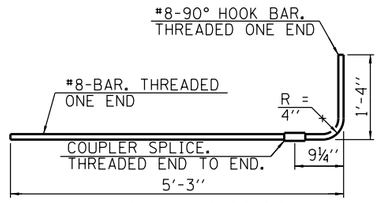


OUTSIDE R=2¼"

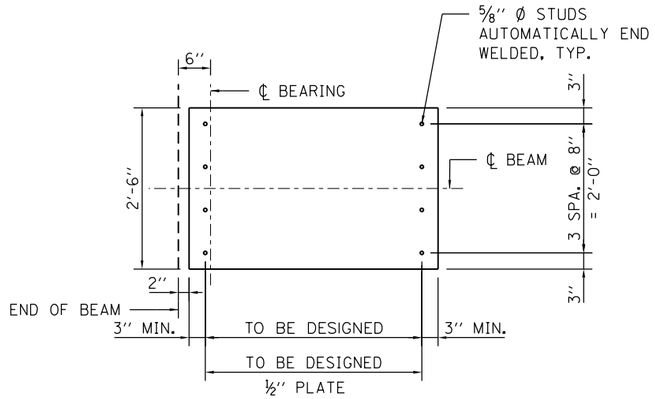
BAR G_7



BAR G_8



G_6 BAR ASSEMBLY



ANCHOR PLATE

NOTES:

TOP OF BEAM TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF BEAM, 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.

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

STRANDS SHALL BE FLUSH WITH END OF BEAM. FOR BEAM ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR BEAM ENDS THAT ARE FINALLY EXPOSED, COAT THE BEAM ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE BEAM 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.

PRESTRESSING STRANDS SHALL BE 0.6" DIA., 7-WIRE LOW, RELAXATION FOR ALL PATTERNS WITH AN ULTIMATE STRENGTH OF 270,000 psi. THE MAX NUMBER OF DRAPED 0.6"Ø STRANDS IS 8.

INSERTS FOR ¾"Ø THREADED DOWEL RODS, WHEN SPECIFIED AT EXPANSION JOINT ENDS, SHALL BE TWO-STRUT, FERRULE-TYPE FOR INTERIOR BEAMS AND SINGLE-FERRULE, FLARED-LOOP TYPE FOR EXTERIOR BEAMS.

NOTE TO DESIGNER

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.

REINFORCEMENT IN STANDARD END SECTION OF THE BEAM IS BASED ON THE STRAND PATTERNS LISTED ON THIS SHEET. USING DIFFERENT STRAND PATTERNS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT. PRIOR APPROVAL FROM THE ILLINOIS TOLLWAY IS REQUIRED IF DESIGN OF THE END REINFORCEMENT IS REQUIRED.

THE DESIGN ENGINEER DETERMINES THE PROJECTION OF BAR G_8 BASED ON ½" MIN. HAUNCH AT EDGE OF BEAM, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL BEAM CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.8. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH ⅓ OF THE BEAM 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.

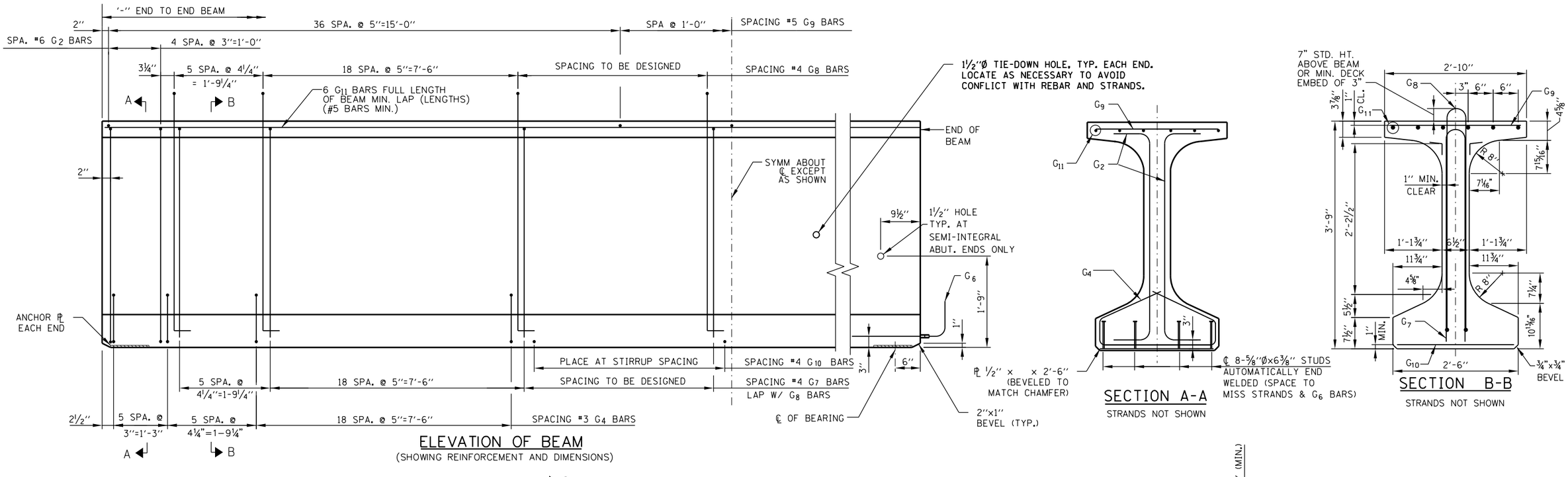
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

M-BRG-510

Illinois Tollway

36" PPC BULB-T BEAM DETAILS

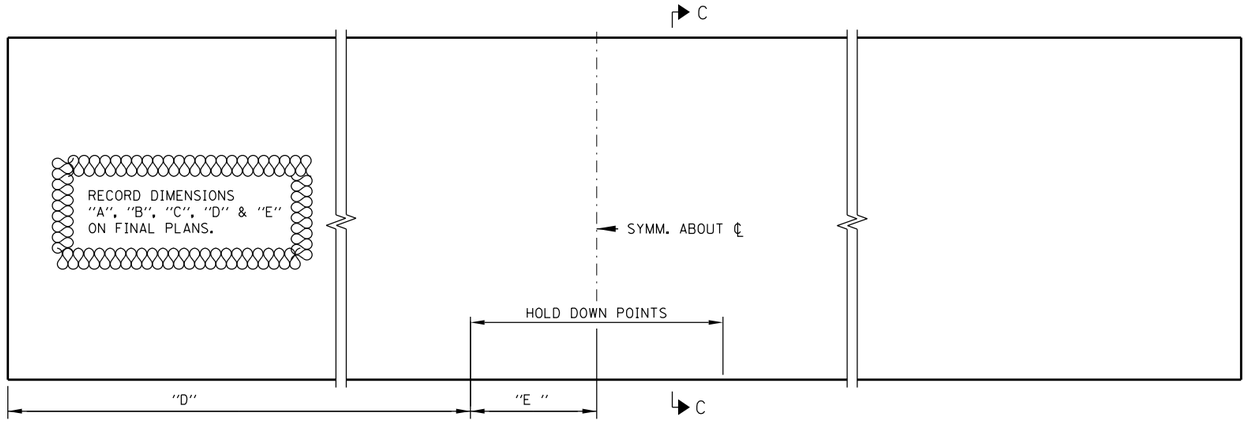
DATE
7-15-2013



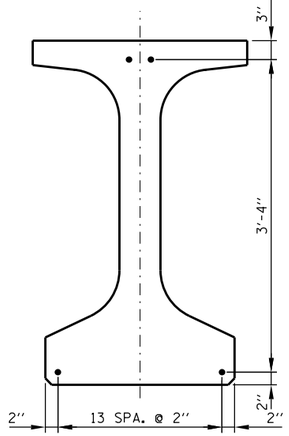
ELEVATION OF BEAM
(SHOWING REINFORCEMENT AND DIMENSIONS)

SECTION A-A
STRANDS NOT SHOWN

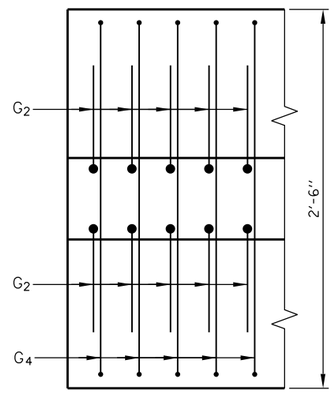
SECTION B-B
STRANDS NOT SHOWN



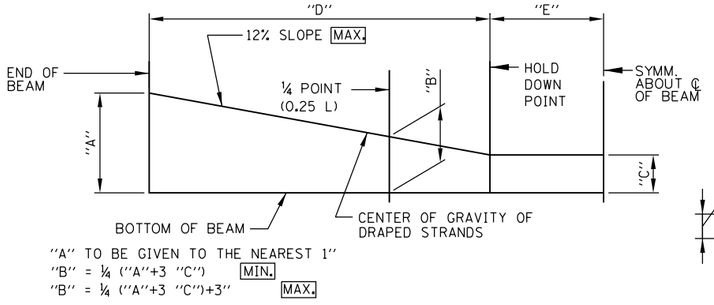
ELEVATION OF BEAM
(SHOWING PRESTRESSING STEEL)



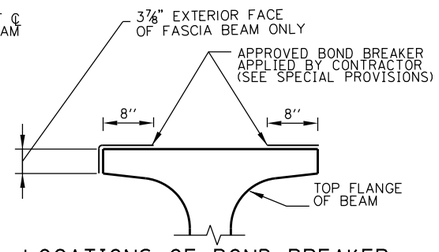
SECTION C-C



PLAN–BOTTOM FLANGE DETAIL AT END OF BEAM



LOCATION OF DRAPED STRANDS



LOCATIONS OF BOND BREAKER

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE ''CADD STANDARDS MANUAL'' ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL ''NOTE TO DESIGNER'' BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
FURNISHING AND ERECTING SHALLOW-DEPTH PRECAST PRESTRESSED CONCRETE BULB-T BEAM, 45''	FOOT	

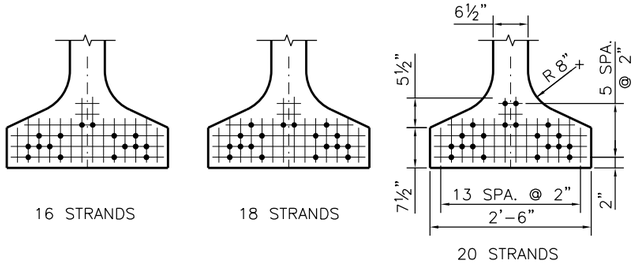
NOTE:
WORK THIS SHEET WITH BASE SHEET M-BRG-512.

M-BRG-511

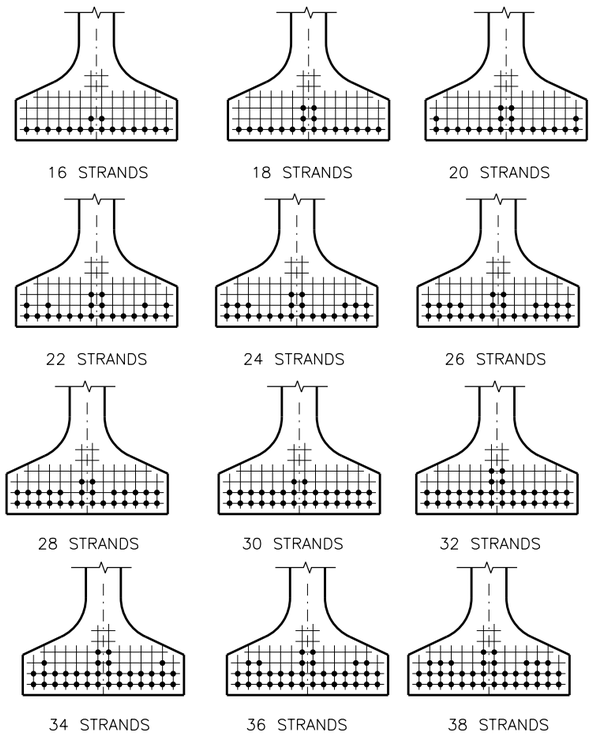
Illinois Tollway

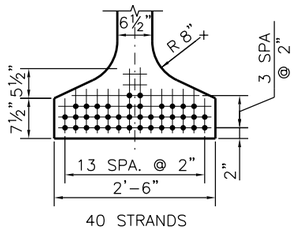
45'' PPC BULB-T BEAM

DATE
7-17-2013



STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.6"Ø STRANDS





ARRANGEMENT AT ℄ SPAN - FOR BEAMS WITH DRAPED 0.6"Ø STRANDS

45-BT BEAM

A = 692 SQ. IN.
r^2 = 258.70 IN.^{2}
Y_T = 24.26 IN.
Y_B = −20.74 IN.
I = 178,971 IN.^{4}
S_T = 7,377 IN.^{3}
S_B = −8,629 IN.^{3}
WT. = 721#/FT.

PRE-TENSION

f'_S = 270,000 P.S.I.

f_S = 0.75 x 270,000 = 202,500 P.S.I. for low relaxation strands

Pi PER 0.6"ø STRAND = 0.217 x 202,500 = 43.94 KIPS

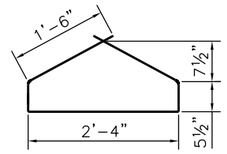
$$\frac{y_B}{r^2} = \frac{-20.74}{258.70} = -0.08017 \text{ in/in}^2$$

$$f_B \text{ (init.)} = \frac{A_s f_s}{A}\left(1 + \frac{e_s y_B}{r^2}\right)$$

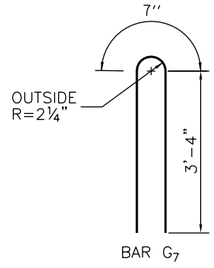
BAR LIST

BAR	NO.	SIZE	LENGTH	SHAPE
G_2	20	#6	4'-9"	
G_4	58	#3	6'-3"	
G_6	2	#8	6'-6"	
G_7		#4	7'-3"	
G_8		#4		
G_9		#5	2'-7"	
G_{10}		#4	2'-3"	
G_{11}				

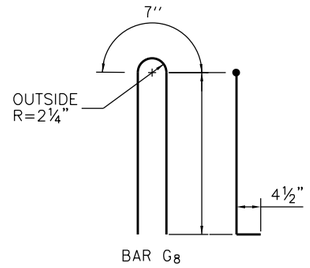
BAR G_2



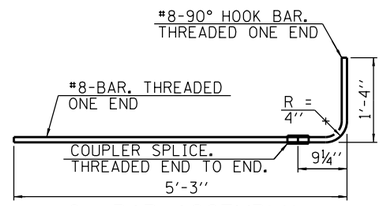
BAR G_4



BAR G_7



BAR G_8



G_6 BAR ASSEMBLY

NOTES:

TOP OF BEAM TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF BEAM, 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.

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

STRANDS SHALL BE FLUSH WITH END OF BEAM. FOR BEAM ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR BEAM ENDS THAT ARE FINALLY EXPOSED, COAT THE BEAM ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE BEAM 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.

PRESTRESSING STRANDS SHALL BE 0.6" DIA., 7-WIRE LOW, RELAXATION FOR ALL PATTERNS WITH AN ULTIMATE STRENGTH OF 270,000 psi. THE MAX NUMBER OF DRAPED 0.6"Ø STRANDS IS 8.

INSERTS FOR "Ø THREADED DOWEL RODS, WHEN SPECIFIED AT EXPANSION JOINT ENDS, SHALL BE TWO-STRUT, FERRULE-TYPE FOR INTERIOR BEAMS AND SINGLE-FERRULE, FLARED-LOOP TYPE FOR EXTERIOR BEAMS.

NOTE TO DESIGNER

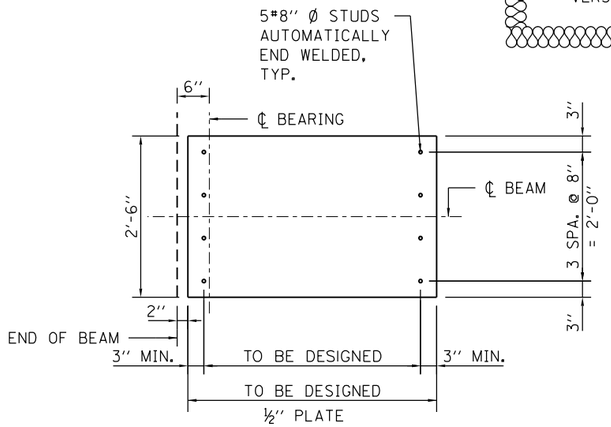
THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

NOTES:

1. 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.

2. REINFORCEMENT IN STANDARD END SECTION OF THE BEAM IS BASED ON THE STRAND PATTERNS LISTED ON THIS SHEET. USING DIFFERENT STRAND PATTERNS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT. PRIOR APPROVAL FROM THE ILLINOIS TOLLWAY IS REQUIRED IF DESIGN OF THE END REINFORCEMENT IS REQUIRED.

3. THE DESIGN ENGINEER DETERMINES THE PROJECTION OF BAR G_8 BASED ON ½" MIN. HAUNCH AT EDGE OF BEAM, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL BEAM CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.8. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH OF THE BEAM 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,



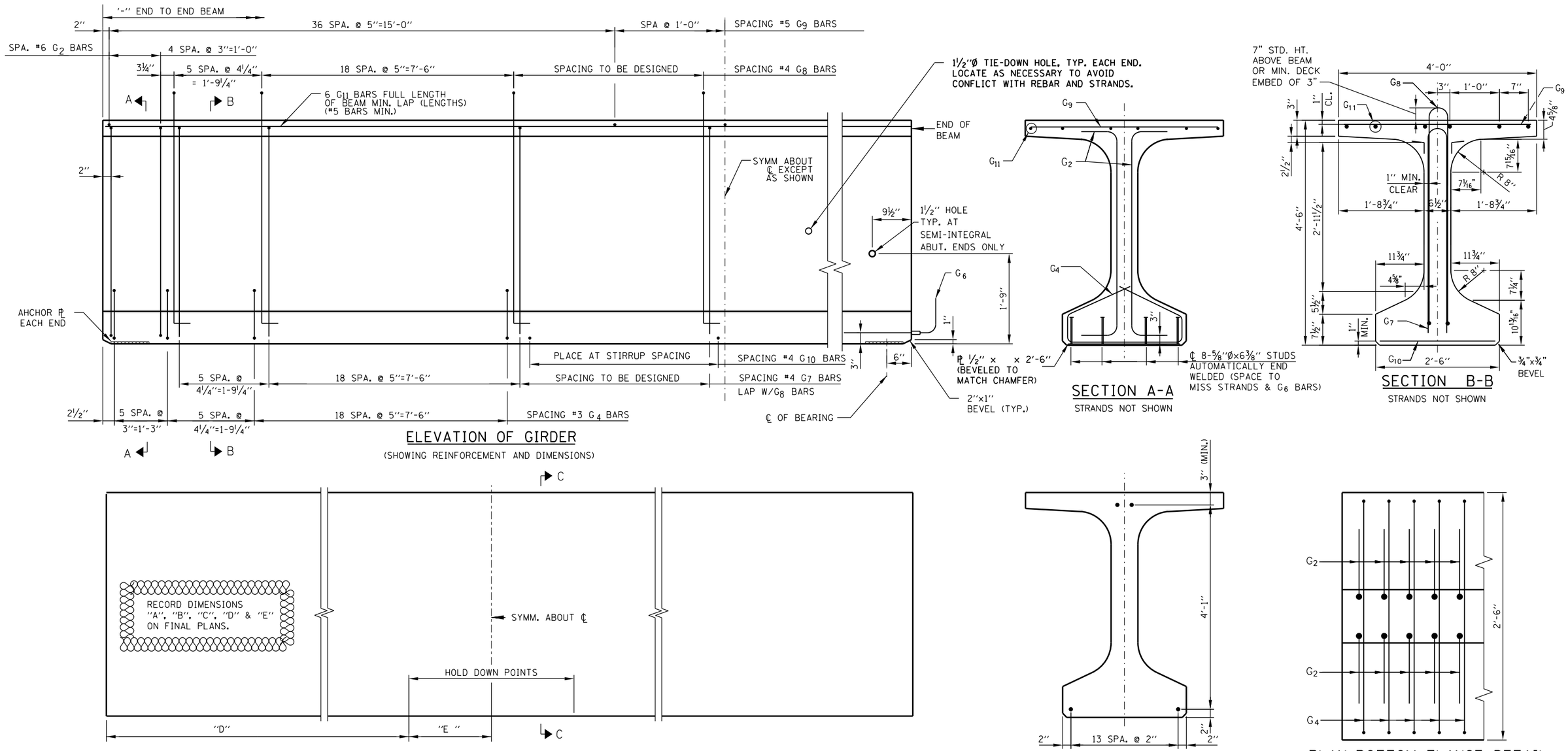
ANCHOR PLATE

M-BRG-512

Illinois Tollway

45" PPC BULB-T BEAM DETAILS

DATE 7-15-2015



ELEVATION OF GIRDER

(SHOWING REINFORCEMENT AND DIMENSIONS)

SECTION A-A

STRANDS NOT SHOWN

SECTION B-B

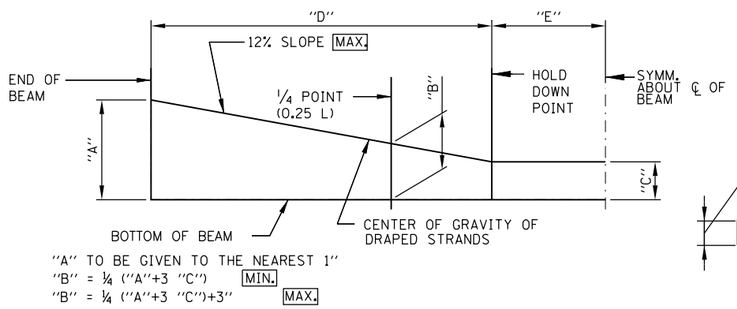
STRANDS NOT SHOWN

ELEVATION OF BEAM

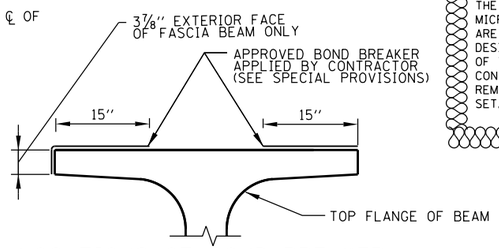
(SHOWING PRESTRESSING STEEL)

SECTION C-C

PLAN-BOTTOM FLANGE DETAIL AT END OF BEAM



LOCATION OF DRAPED STRANDS



LOCATIONS OF BOND BREAKER

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE ''CADD STANDARDS MANUAL'' ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL ''NOTE TO DESIGNER'' BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

NOTE:

WORK THIS SHEET WITH BASE SHEET M-BRG-514.

M-BRG-513

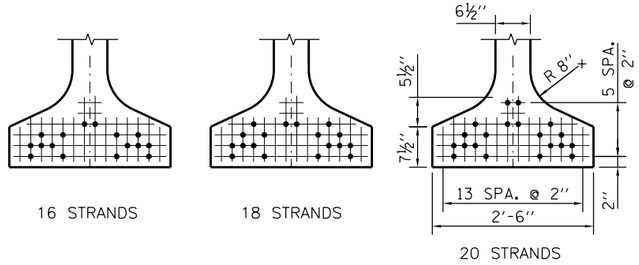
BILL OF MATERIAL

ITEM	UNIT	TOTAL
FURNISHING AND ERECTING SHALLOW-DEPTH PRECAST PRESTRESSED CONCRETE BULB-T BEAM, 54''	FOOT	

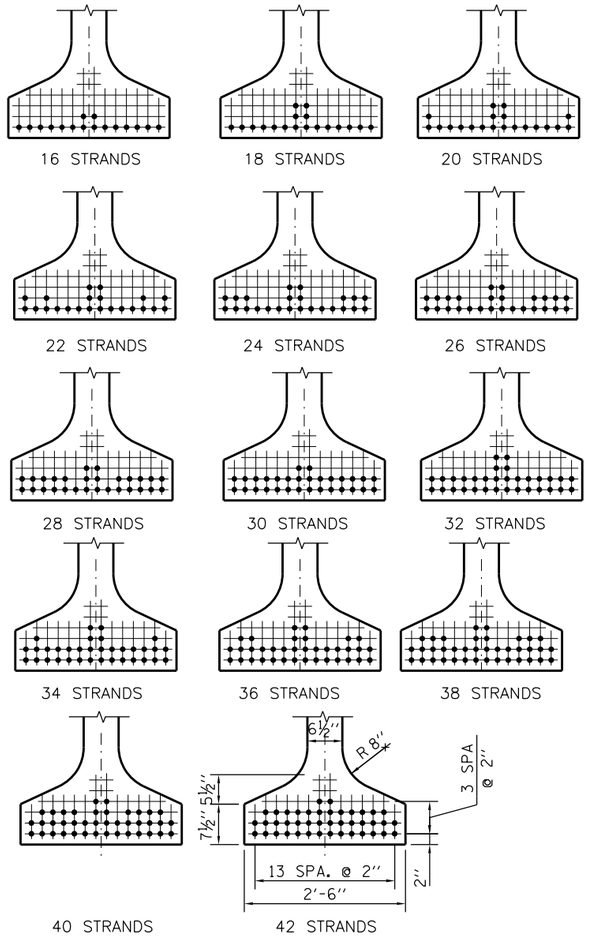
Illinois Tollway

54'' PPC BULB-T BEAM

DATE 7-17-2013



STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.6''Ø STRANDS



ARRANGEMENT AT ℄ SPAN - FOR BEAMS WITH DRAPED 0.6''Ø STRANDS

54-BT BEAM

A = 798 SQ. IN.
r^2 = 402.41 IN.^{2}
y_T = 27.70 IN.
y_B = −26.30 IN.
I = 321,049 IN.^{4}
S_T = 11,592 IN.^{3}
S_B = −12,205 IN.^{3}
WT. = 831#/FT.

PRE-TENSION

f'_S = 270,000 P.S.I.

f_S = 0.75 x 270,000 = 202,500 P.S.I. for low relaxation strands

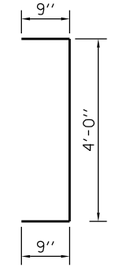
Pi PER 0.6"ø STRAND = 0.217 x 202,500 = 43.94 KIPS

$$\frac{y_B}{r^2} = \frac{-26.30}{402.41} = -0.06536 \text{ in/in}^2$$

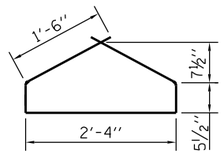
$$f_B \text{ (init.)} = \frac{A_S f_S}{A}\left(1 + \frac{e_S y_B}{r^2}\right)$$

BAR LIST

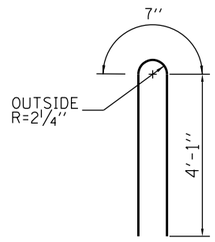
BAR	NO.	SIZE	LENGTH	SHAPE
G_2	20	#6	5'-6''	
G_4	58	#3	6'-3''	
G_6	2	#8	6'-6''	
G_7		#4	8'-9''	
G_8		#4		
G_9		#5	3'-9''	
G_{10}		#4	2'-3''	
G_{11}				



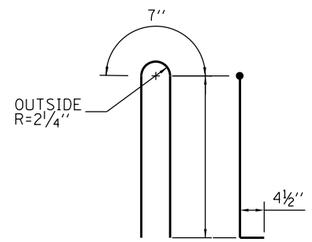
BAR G_2



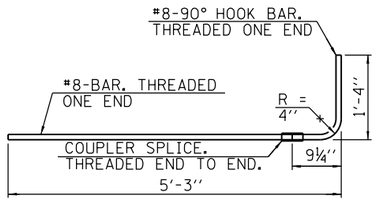
BAR G_4



BAR G_7



BAR G_8



G_6 BAR ASSEMBLY

NOTES:

TOP OF BEAM TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 15'' OF BEAM, 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.

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

STRANDS SHALL BE FLUSH WITH END OF BEAM. FOR BEAM ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR BEAM ENDS THAT ARE FINALLY EXPOSED, COAT THE BEAM ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE BEAM 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 BEAMS SHALL BE CAST FULL LENGTH AS SHOWN.

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

PRESTRESSING STRANDS SHALL BE 0.6'' DIA., 7-WIRE LOW, RELAXATION FOR ALL PATTERNS WITH AN ULTIMATE STRENGTH OF 270,000 psi. THE MAX NUMBER OF DRAPED 0.6''Ø STRANDS IS 8.

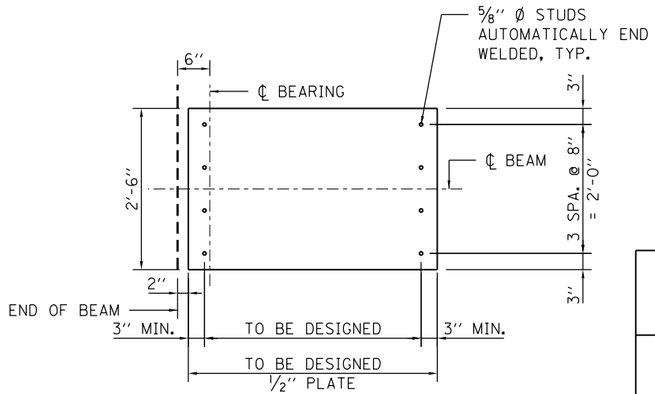
INSERTS FOR 3#4''Ø THREADED DOWEL RODS, WHEN SPECIFIED AT EXPANSION JOINT ENDS, SHALL BE TWO-STRUT, FERRULE-TYPE FOR INTERIOR BEAMS AND SINGLE-FERRULE, FLARED-LOOP TYPE FOR EXTERIOR BEAMS.

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE ''CADD STANDARDS MANUAL'' ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL ''NOTE TO DESIGNER'' BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

NOTES:

1. 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.
2. REINFORCEMENT IN STANDARD END SECTION OF THE BEAM IS BASED ON THE STRAND PATTERNS LISTED ON THIS SHEET. USING DIFFERENT STRAND PATTERNS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT. PRIOR APPROVAL FROM THE ILLINOIS TOLLWAY IS REQUIRED IF DESIGN OF THE END REINFORCEMENT IS REQUIRED.
3. THE DESIGN ENGINEER DETERMINES THE PROJECTION OF BAR G_8 BASED ON ½'' MIN. HAUNCH AT EDGE OF GIRDER, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL BEAM CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.8. THIS VALUE CAN VARY AND SHOULD BE GIVEN FOR EACH ⅓ OF THE BEAM 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.



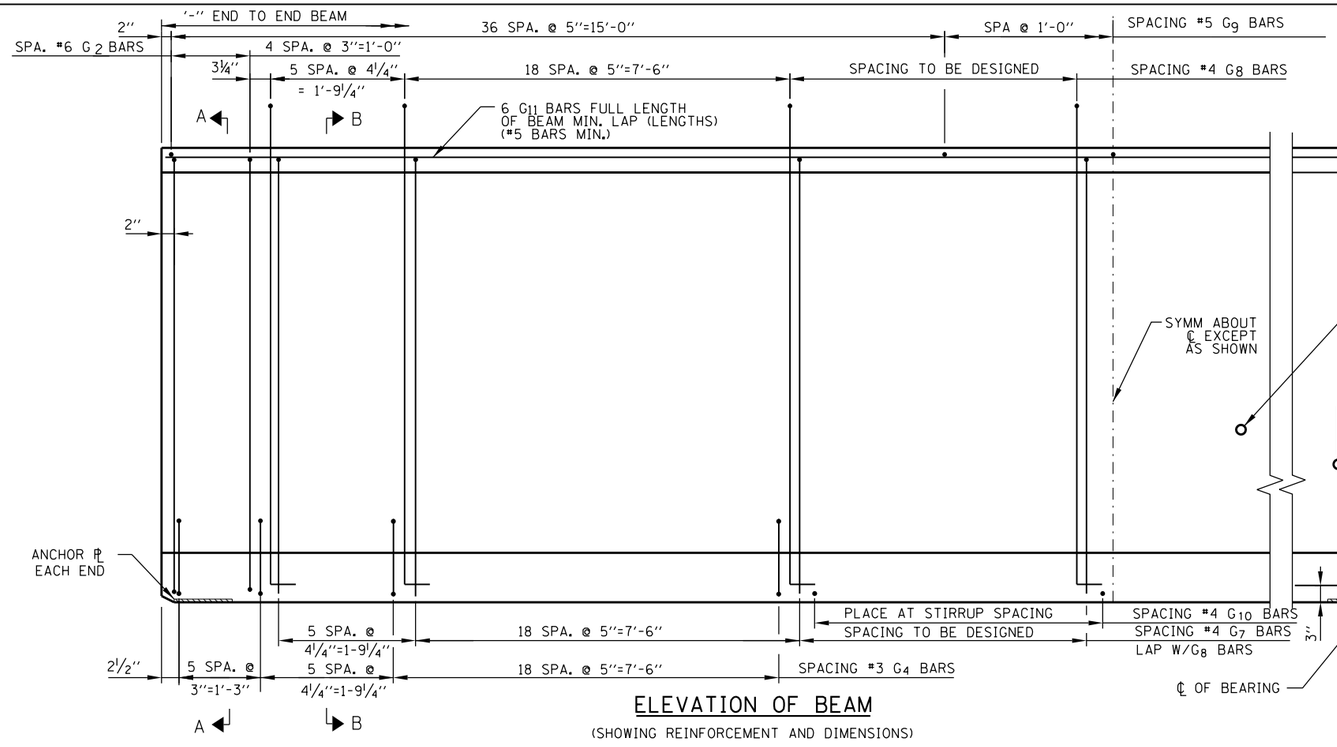
ANCHOR PLATE

M-BRG-514

Illinois Tollway

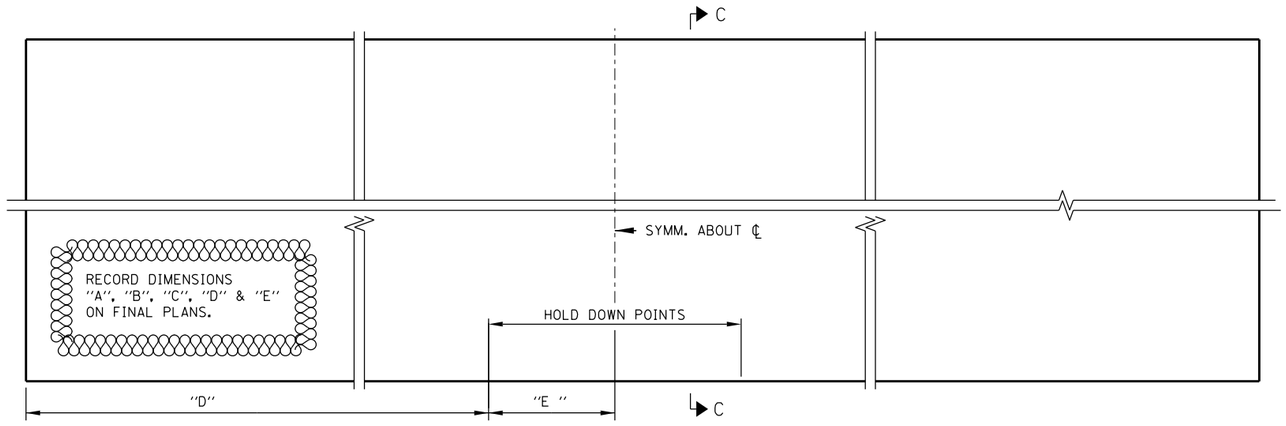
54'' PPC BULB-T BEAM DETAILS

DATE 7-17-2013



ELEVATION OF BEAM

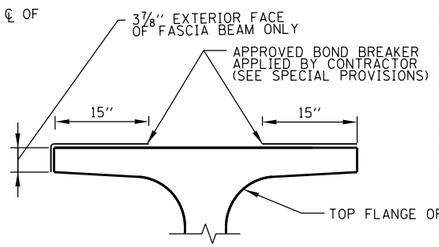
(SHOWING REINFORCEMENT AND DIMENSIONS)



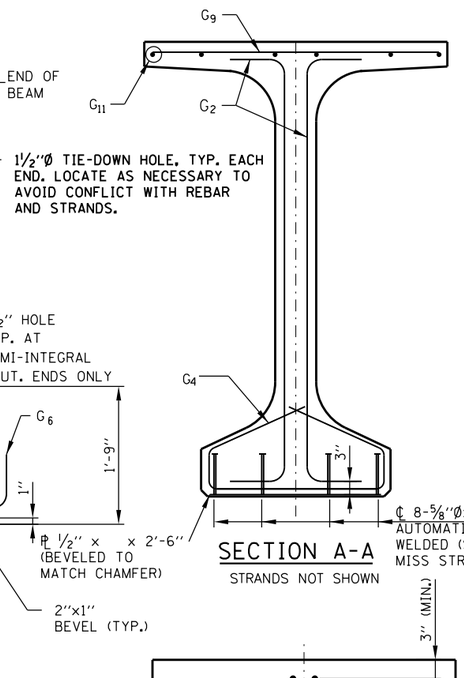
ELEVATION OF BEAM

(SHOWING PRESTRESSING STEEL)

LOCATION OF DRAPED STRANDS

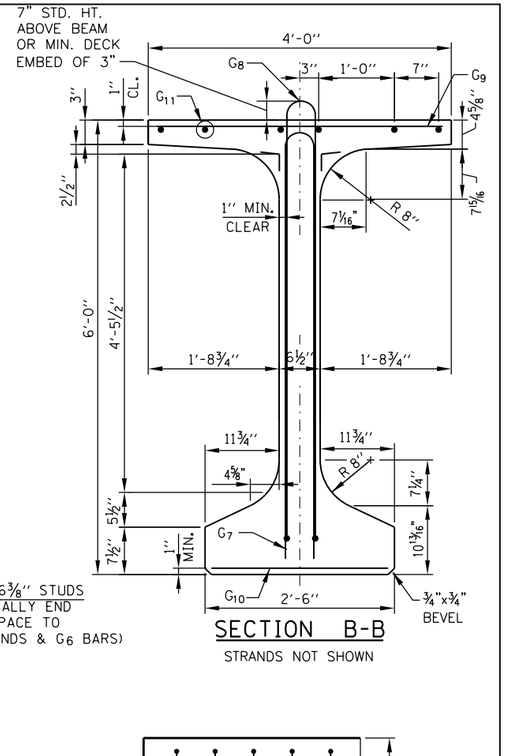


LOCATIONS OF BOND BREAKER



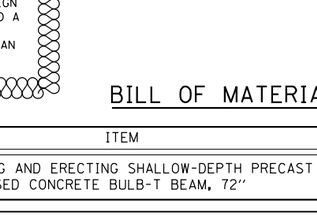
SECTION A-A

STRANDS NOT SHOWN

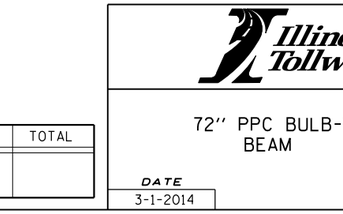


SECTION B-B

STRANDS NOT SHOWN



SECTION C-C



PLAN-BOTTOM FLANGE DETAIL AT END OF BEAM

NOTE TO DESIGNER

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NOTE:

WORK THIS SHEET WITH BASE SHEET M-BRG-516.

M-BRG-515

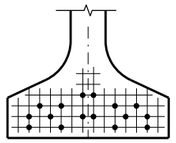
BILL OF MATERIAL

ITEM	UNIT	TOTAL
FURNISHING AND ERECTING SHALLOW-DEPTH PRECAST PRESTRESSED CONCRETE BULB-T BEAM, 72"	FOOT	

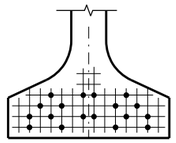
Illinois Tollway

72" PPC BULB-T BEAM

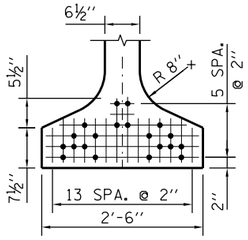
DATE 3-1-2014



16 STRANDS

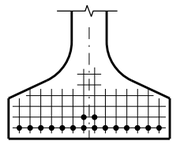


18 STRANDS



20 STRANDS

STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF 0.6''Ø STRANDS



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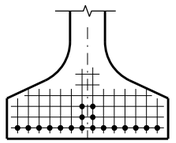

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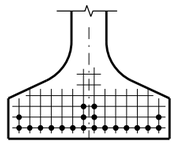

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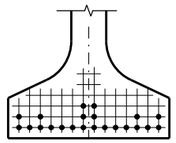
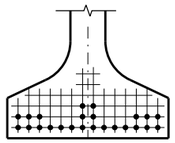
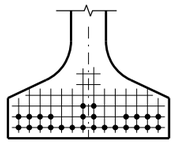


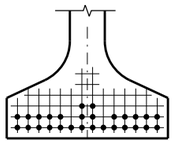
22 STRANDS



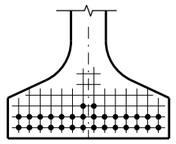
24 STRANDS



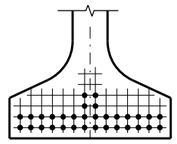
26 STRANDS



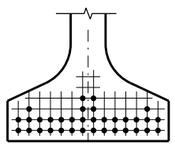
28 STRANDS



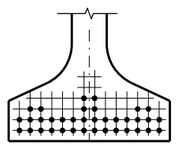
30 STRANDS



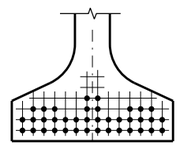
32 STRANDS



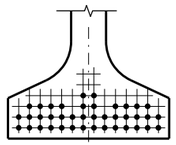
34 STRANDS



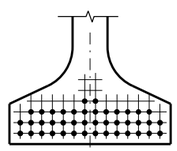
36 STRANDS



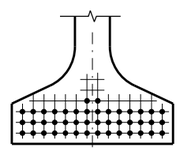
38 STRANDS



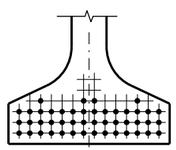
40 STRANDS



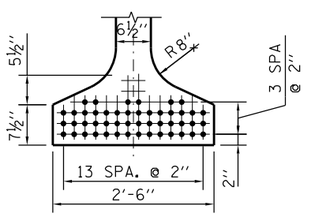
42 STRANDS



44 STRANDS



46 STRANDS

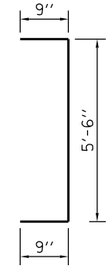


48 STRANDS

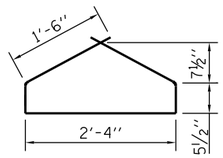
ARRANGEMENT AT ℄ SPAN - FOR BEAMS WITH DRAPED 0.6''Ø STRANDS

BAR LIST

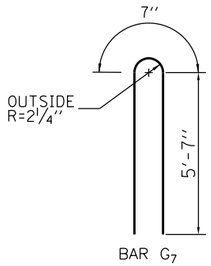
BAR	NO.	SIZE	LENGTH	SHAPE
G_2	20	#6	7'-0''	
G_4	58	#3	6'-3''	
G_6	2	#8	6'-6''	
G_7		#4	11'-9''	
G_8		#4		
G_9		#5	3'-9''	
G_{10}		#4	2'-3''	
G_{11}				



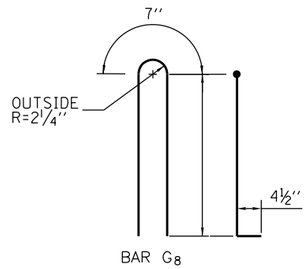
BAR G_2



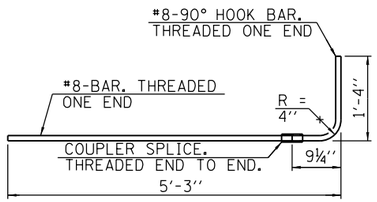
BAR G_4



BAR G_7



BAR G_8



G6 BAR ASSEMBLY

72-BT BEAM

A = 915 SQ. IN.
r^2 = 717.5 IN.^{2}
y_T = 37.13 IN.
y_B = −34.87 IN.
I = 656,426 IN.^{4}
S_T = 17,680 IN.^{3}
S_B = −18,825 IN.^{3}
WT. = 953 #/FT.

PRE-TENSION

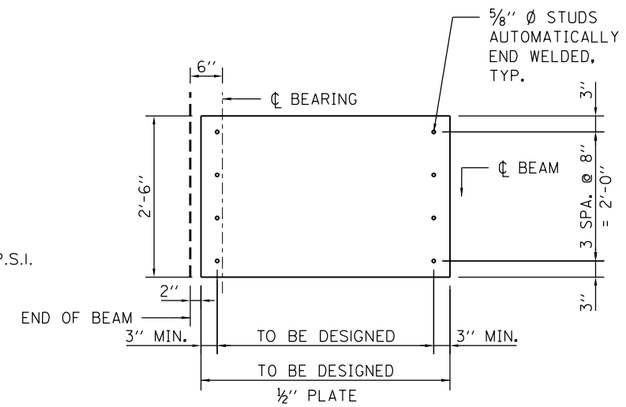
f'_S = 270,000 P.S.I.

f_S = 0.75 x 270,000 = 202,500 P.S.I. for low relaxation strands

Pi PER 0.6"ø STRAND = 0.217 x 202,500 = 43.94 KIPS

$$\frac{y_B}{r^2} = \frac{-34.87}{717.50} = -0.0486 \text{ in/in}^2$$

$$f_B \text{ (init.)} = \frac{A_s f_s}{A}\left(1 + \frac{e_s y_B}{r^2}\right)$$



ANCHOR PLATE

NOTES:

TOP OF BEAM TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 15'' OF BEAM, 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.

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

STRANDS SHALL BE FLUSH WITH END OF BEAM. FOR BEAM ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR BEAM ENDS THAT ARE FINALLY EXPOSED, COAT THE BEAM ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE BEAM 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 BEAMS SHALL BE CAST FULL LENGTH AS SHOWN.

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

PRESTRESSING STRANDS SHALL BE 0.6'' DIA., 7-WIRE LOW, RELAXATION FOR ALL PATTERNS WITH AN ULTIMATE STRENGTH OF 270,000 psi. THE MAX NUMBER OF DRAPED 0.6''Ø STRANDS IS 8.

INSERTS FOR ¾''Ø THREADED DOWEL RODS, WHEN SPECIFIED AT EXPANSION JOINT ENDS, SHALL BE TWO-STRUT, FERRULE-TYPE FOR INTERIOR BEAMS AND SINGLE-FERRULE, FLARED-LOOP TYPE FOR EXTERIOR BEAMS.

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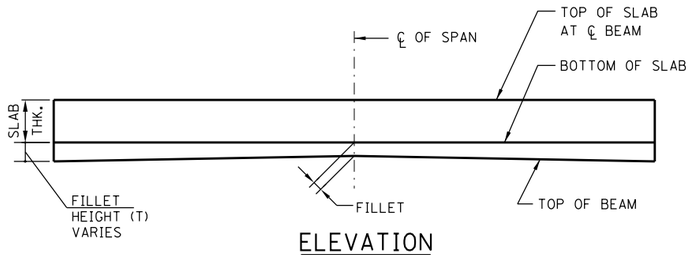
4. FOR LATERAL STABILITY DURING LIFTING THESE GIRDER LENGTHS MAY REQUIRE PICK-UP POINT LOCATIONS GREATER THAN DISTANCE d (GIRDER DEPTH) FROM THE ENDS OF THE GIRDER. THE DESIGNER SHALL ASSUME THE PICK-UP POINTS WILL BE AT THE POINTS FROM THE END OF THE GIRDER AND PROVIDE EXTRA NON-PRESTRESSED STEEL IN THE TOP FLANGE, IF REQUIRED, AND CHECK THE CONCRETE STRENGTH NEAR THE LIFT LOCATION BASED ON f'_{ci}. A NOTE SHALL BE PLACED ON THE GIRDER DETAILS SHEET TO REFLECT THE GIRDER WAS ANALYZED FOR POTENTIAL LIFT AT THE 1/10 POINT.

M-BRG-516

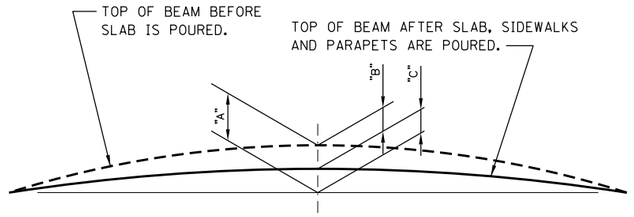
Illinois Tollway

72'' PPC BULB-T BEAM DETAILS

DATE
3-1-2014



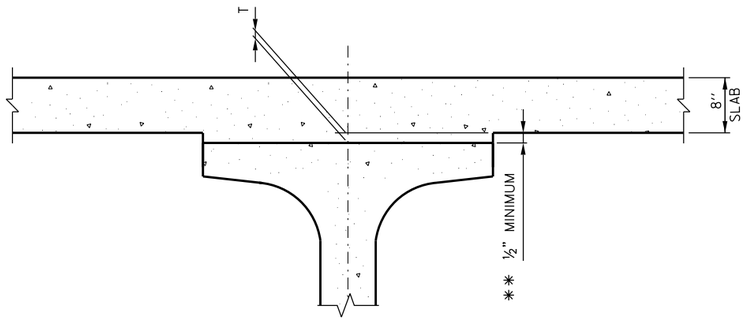
ELEVATION



CAMBER & DEFLECTION DIAGRAM

* "A" = PRESTRESS CAMBER
* "B" = DEAD LOAD DEFLECTION
* "C" = RESIDUAL CAMBER

* ROUND OFF TO NEAREST 1/8"



ALL GIRDER SIZES
INTERIOR GIRDER DETAIL

NOTE TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE FROM THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

NOTES:

1. PRESENT PRACTICE IS TO USE A MINIMUM "FILLET" (AT EDGE OF BEAM FLANGE) OF ½" FOR DESIGN CALCULATIONS. THE MINIMUM FILLET (AT EDGE OF BEAM FLANGE) ALLOWED IN CONSTRUCTION IS ½".

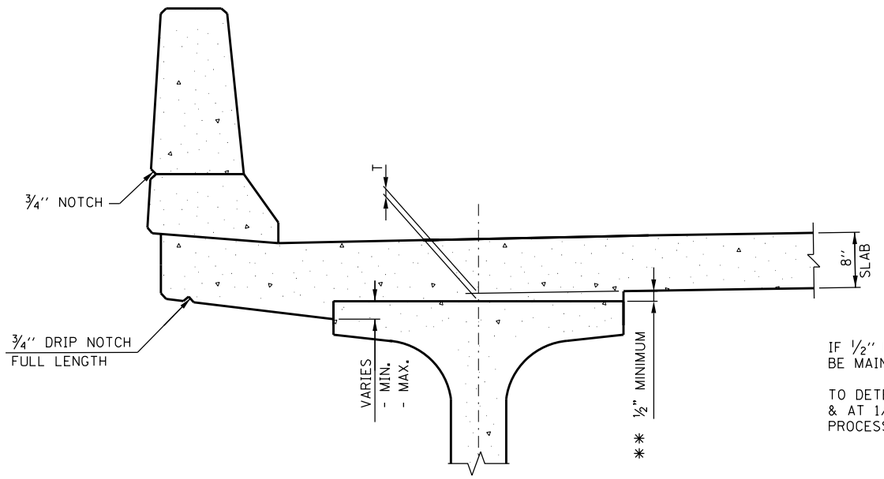
** 2. IF ½" MINIMUM FILLET HEIGHT AT EDGE OF BEAM CANNOT BE MAINTAINED DURING CONSTRUCTION, THE GRADE LINE MAY BE RAISED BY UP TO ½" FROM THE PLAN PROFILE AT THE DISCRETION OF THE DESIGNER. 3" MINIMUM DECK EMBEDMENT OF THE TIE BAR SHALL BE MAINTAINED. THE PLAN SLAB THICKNESS SHALL BE HELD.

3. USE THE CALCULATED THEORETICAL AVERAGE "FILLET HEIGHT" AT CENTERLINE OF FLANGE FOR COMPUTING THE FILLET CONCRETE QUANTITY.

4. USE TOP OF DECK ELEVATIONS AND CALCULATED "FILLET HEIGHT" AT CENTERLINE OF BEAM FOR COMPUTING BEAM SEAT ELEVATIONS AT SUBSTRUCTURES.

5. FOR SKEWS ≤ 10°, PLACE INTERMEDIATE DIAPHRAGMS IN A STRAIGHT LINE. REFER TO SHEETS M41-BRG, M42-BRG AND M43-BRG. PROVIDE OFFSET FOR SKEWS > 10°.

6. DIAPHRAGM SPACING: FOR SPANS < 80'-0", PLACE ONE DIAPHRAGM AT MID-LENGTH OF BEAM. FOR SPANS OVER 80'-0", PLACE AT ⅓ AND ⅔ POINTS.

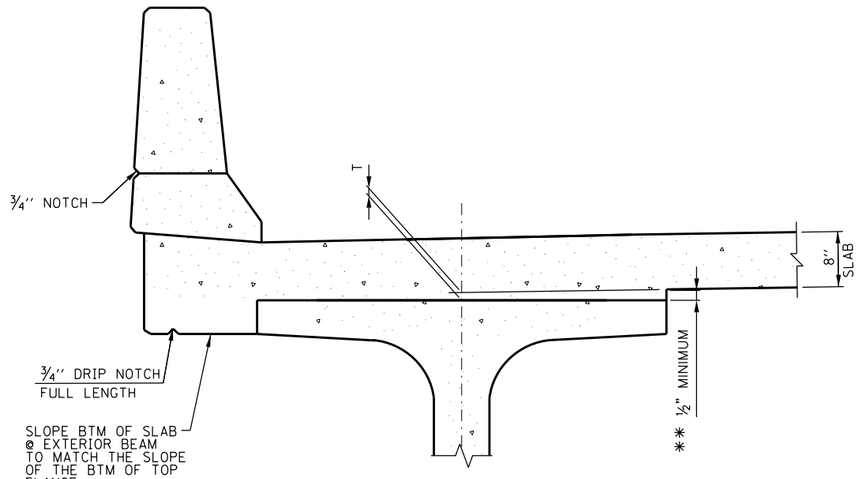


36" & 45" PPC BULB-T BEAMS
SLAB HAUNCH DETAIL

IF ½" MINIMUM FILLET HEIGHT AT THE EDGE OF BEAM CANNOT BE MAINTAINED, NOTIFY THE ENGINEER OF RECORD.

TO DETERMINE 'T', ELEV. OF TOP OF BEAMS AT ℄ OF STRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
\- TOP OF BEAM ELEVATION
\+ DEAD LOAD DEFLECTION
\- SLAB THICKNESS
= FILLET HEIGHT 'T'



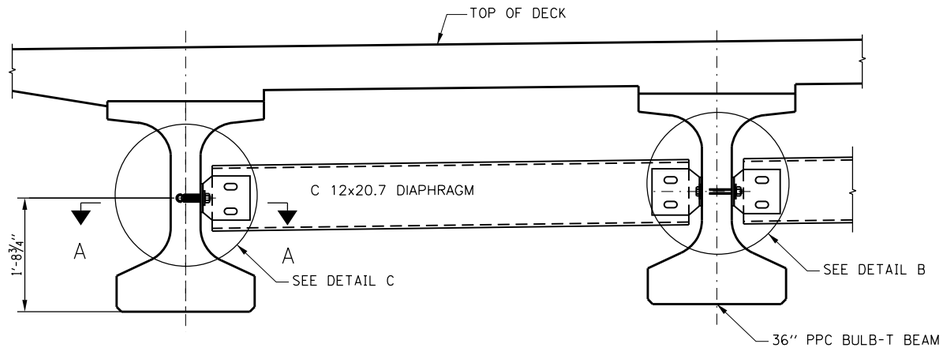
54" & 72" PPC BULB-T BEAMS
SLAB HAUNCH DETAIL

M-BRG-517

Illinois Tollway

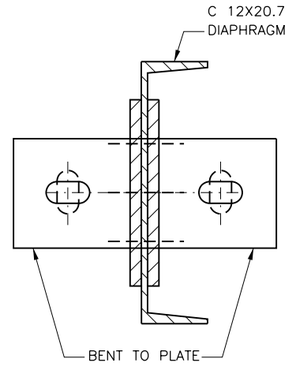
36", 45", 54" AND 72"
PPC BULB-T BEAMS DETAILS

DATE
8-26-2013



EXTERIOR BEAM INTERIOR BEAM

PART TRANSVERSE SECTION AT DIAPHRAGM



ATTACHMENT TO CHANNEL

NOTES:

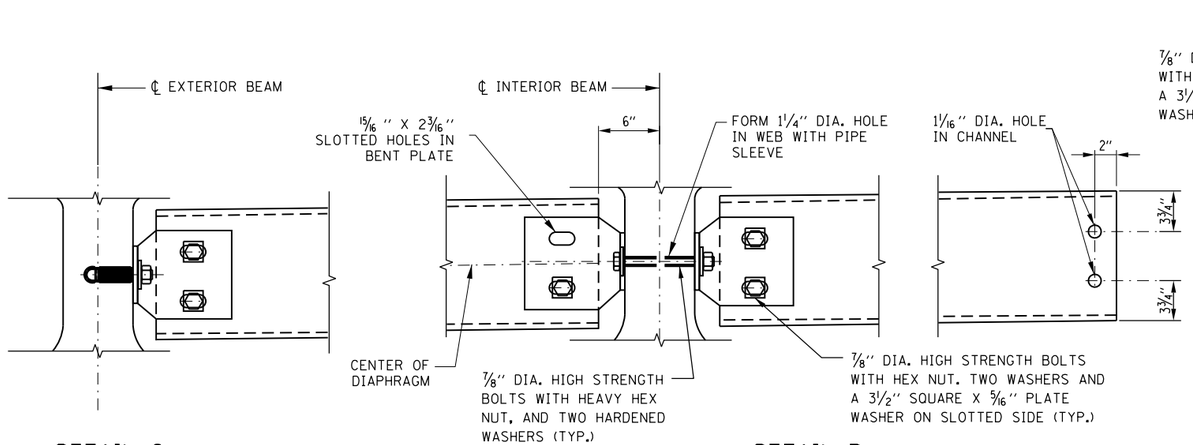
ALL DIAPHRAGM ASSEMBLY MATERIAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID FOR FURNISHING AND ERECTING STRUCTURAL STEEL.

EACH DIAPHRAGM BETWEEN BEAMS SHALL CONSTITUTE ONE UNIT.

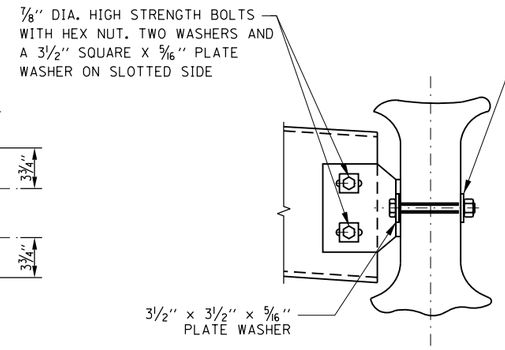
ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36 OR 50. ALL BOLTS, NUTS AND WASHERS SHALL BE ASTM A325 TYPE 1.

ALL DIAPHRAGM STRUCTURAL STEEL SHOWN 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.

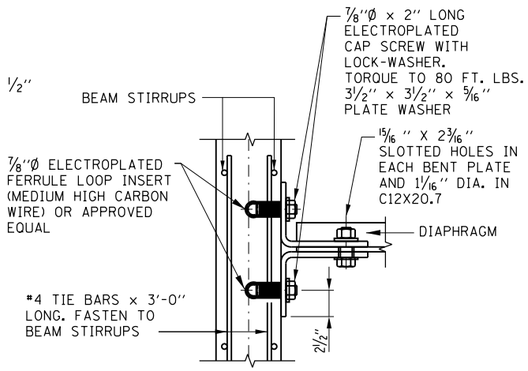
FOR SPANS EQUAL TO OR LESS THAN 80'-0", PLACE ONE DIAPHRAGM AT MID-LENGTH OF BEAM. FOR SPANS OVER 80'-0", PLACE AT ⅓ AND ⅔ POINTS.



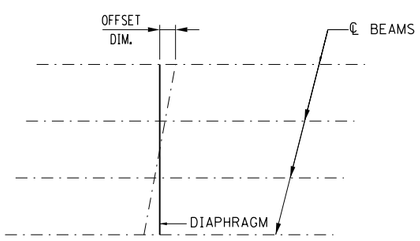
DETAIL C DETAIL B



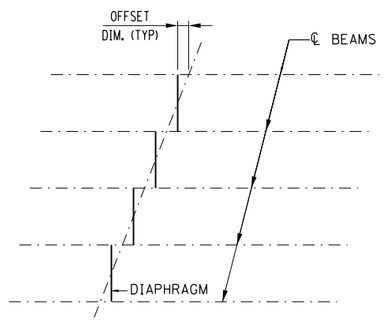
SECTION AT INTERIOR BEAMS THRU DIAPHRAGM FOR SKEW ANGLES > 10°



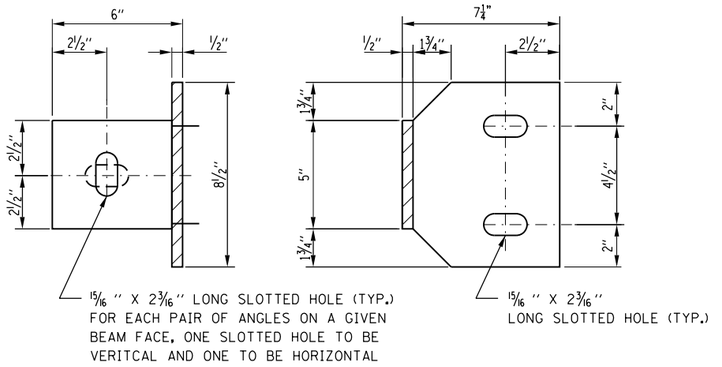
SECT. A-A
(FOR EXTERIOR ATTACHMENT)



PLAN FOR SKEW ANGLES < 10°



PLAN FOR SKEW ANGLES > 10°



BEAM FACE DIAPHRAGM FACE

DIAPHRAGM SUPPORT

NOTE TO DESIGNER

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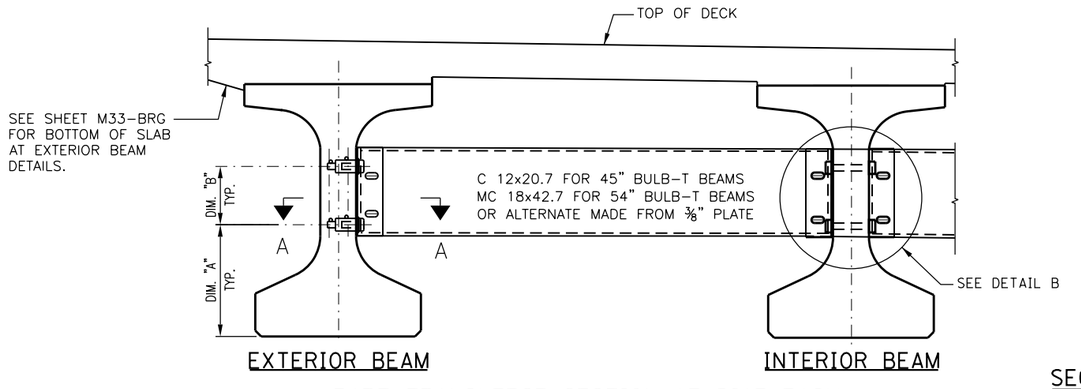
M-BRG-518

Illinois Tollway

36" PPC BULB-T BEAM
INTERIOR STEEL DIAPHRAGMS

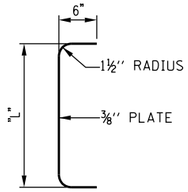
DATE
4-2-2014



PART TRANSVERSE SECTION AT DIAPHRAGM

TABLE

BEAM	DIM. "A"	DIM. "B"	DIM. "L"	* DIM. "X"
45" BULB-T	1'-9⅛"	8⅛"	1'-0½"	2¾"
54" BULB-T	1'-9⅛"	1'-5⅞"	1'-9½"	4¼"



SECTION THRU ALTERNATE DIAPHRAGM

*DIM "X" = 2½" FOR ALTERNATE PLATE DIAPHRAGM

NOTES:

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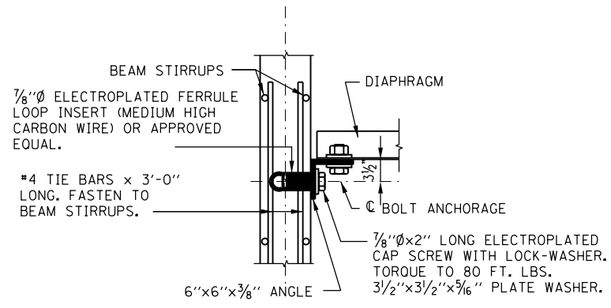
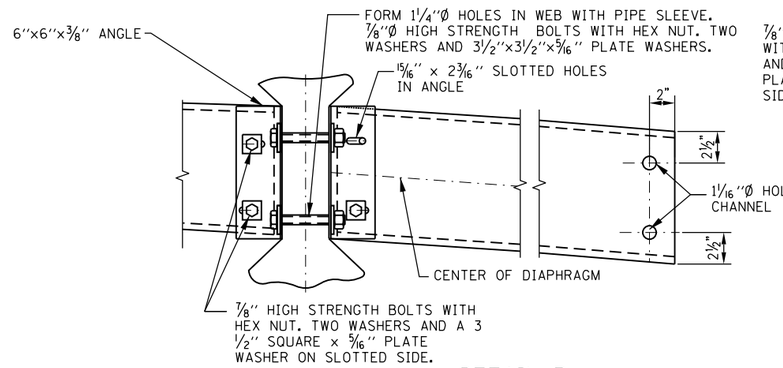
FOR SPANS EQUAL TO OR LESS THAN 80'-0", PLACE ONE DIAPHRAGM AT MID-LENGTH OF BEAM. FOR SPANS OVER 80'-0", PLACE AT ⅓ AND ⅔ POINTS.



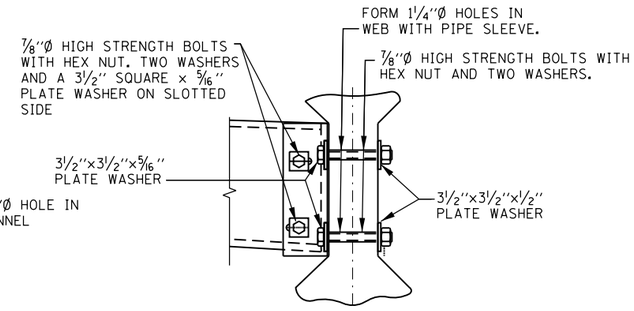
SECT. A-A

(FOR EXTERIOR ATTACHMENT)

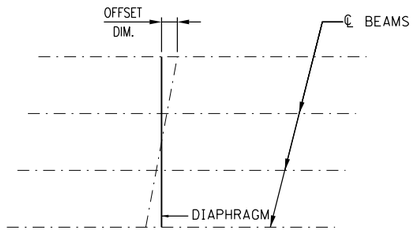


DETAIL B

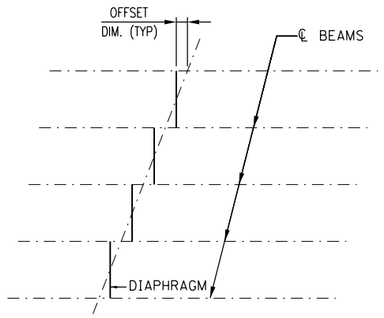
(FOR CONTINUOUS LINE OF DIAPHRAGMS)



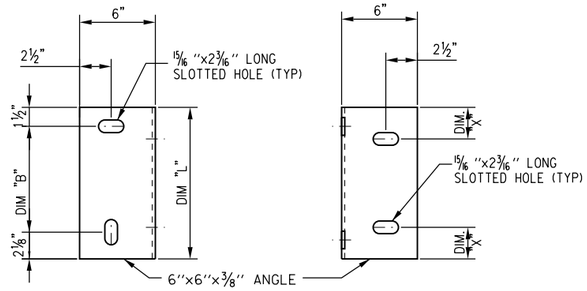
SECTION AT INTERIOR BEAMS THRU DIAPHRAGM FOR SKEW ANGLES > 10°



PLAN FOR SKEW ANGLES ≤ 10°



PLAN FOR SKEW ANGLES > 10°



BEAM FACE

DIAPHRAGM FACE

DIAPHRAGM SUPPORT

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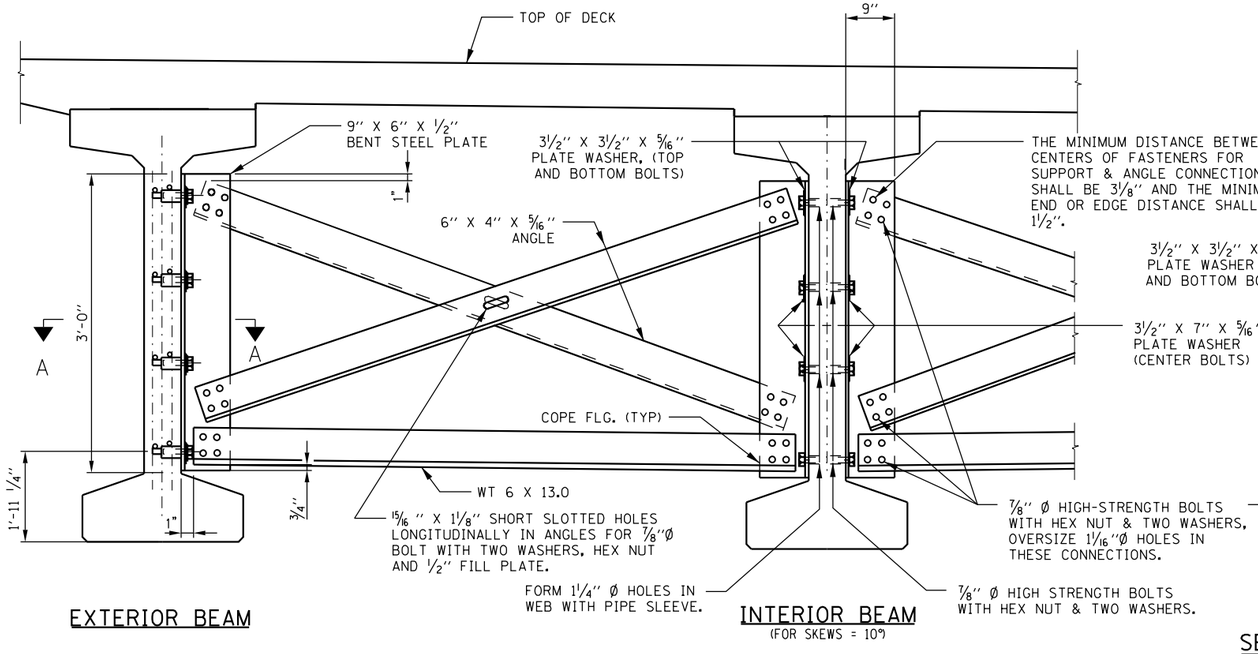
M-BRG-519

Illinois Tollway

45" PPC BULB-T AND 54" PPC BULB-T BEAMS INTERIOR STEEL DIAPHRAGMS

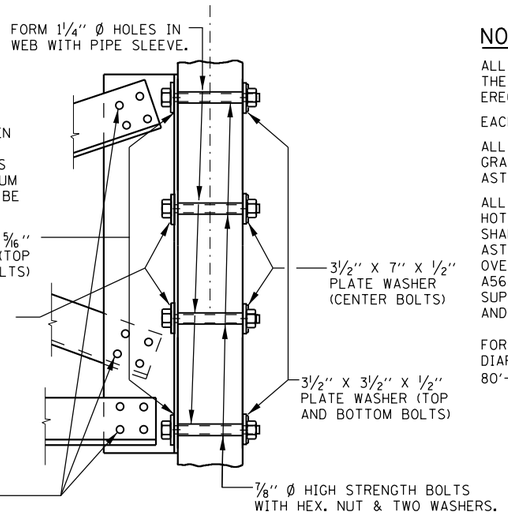
DATE

8-26-2013



EXTERIOR BEAM

INTERIOR BEAM
(FOR SKEWS = 10°)



NOTES:

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

PART TRANSVERSE SECTION AT DIAPHRAGM

NOTE TO DESIGNER

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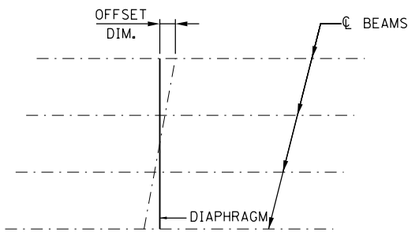
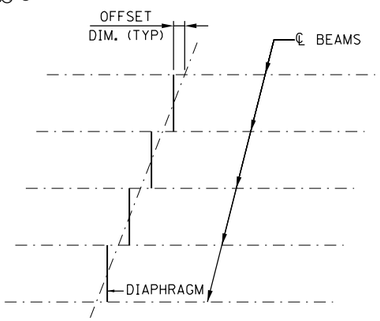
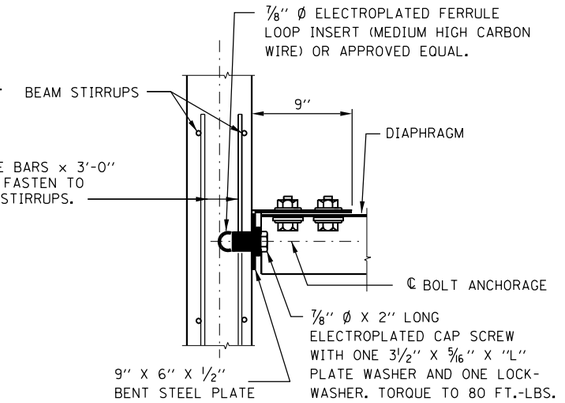


PLAN FOR SKEW ANGLES ≤ 10°



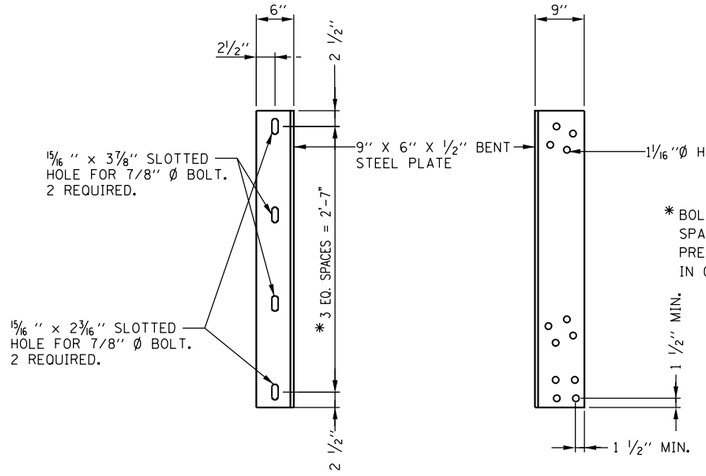
PLAN FOR SKEW ANGLES > 10°

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



SECT. A-A
(FOR EXTERIOR ATTACHMENT)

"L" = 3 1/2": TOP & BOTTOM BOLTS
"L" = 7": CENTER BOLTS



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

BASE FACE

DIAPHRAGM FACE

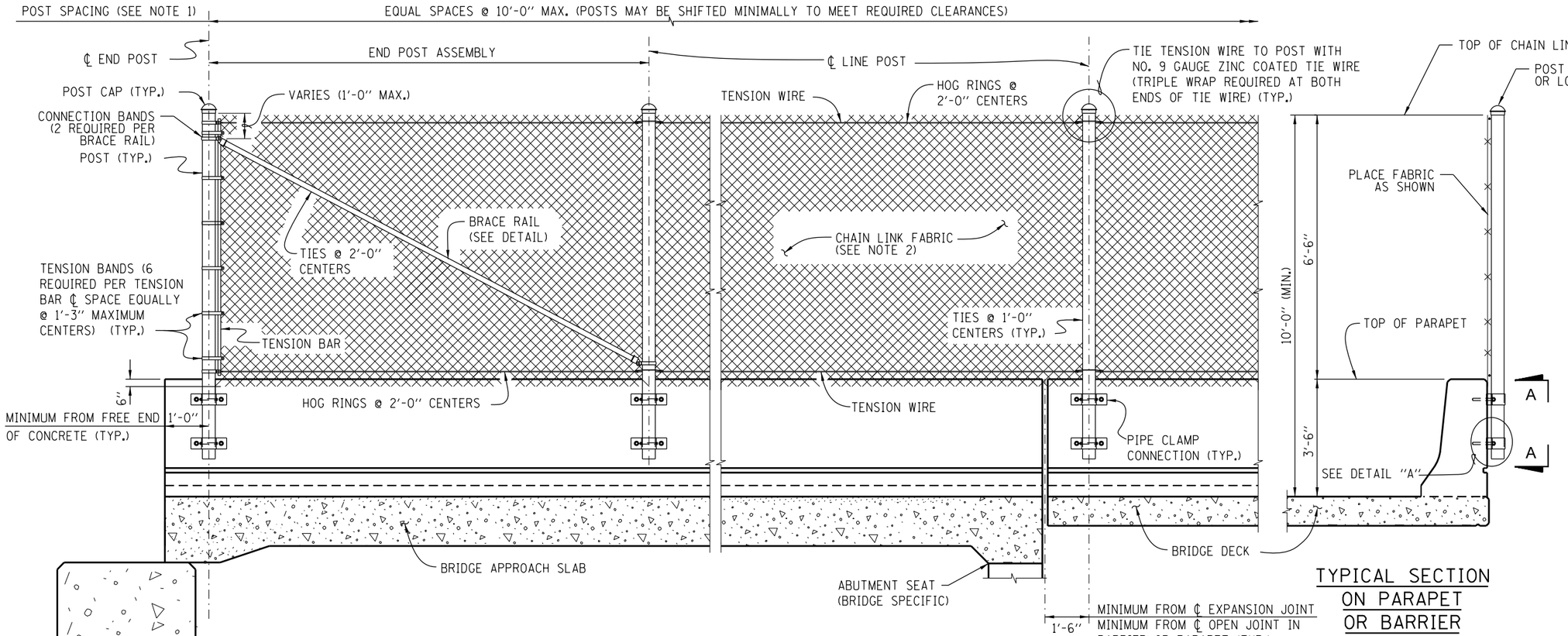
DIAPHRAGM SUPPORT

M-BRG-520

Illinois Tollway

72'' PPC BULB-T BEAM
INTERIOR STEEL DIAPHRAGMS

DATE
3-1-2014



ELEVATION OF OUTSIDE FACE OF BARRIER PARAPET AND FENCE

TYPICAL SECTION ON PARAPET OR BARRIER

* FENCING SHALL NOT ANCHOR TO THE TOP OF PARAPETS.

NOTE TO DESIGNER

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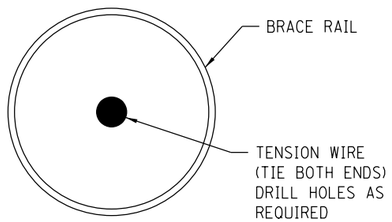
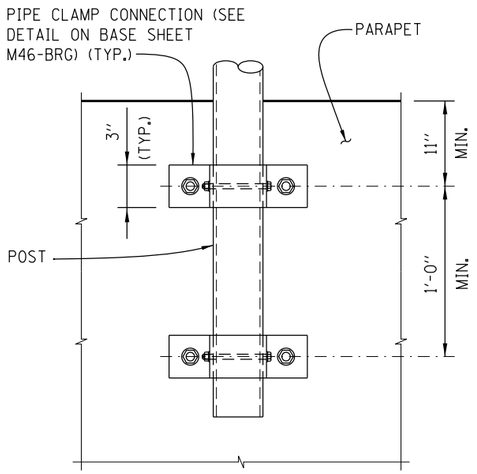
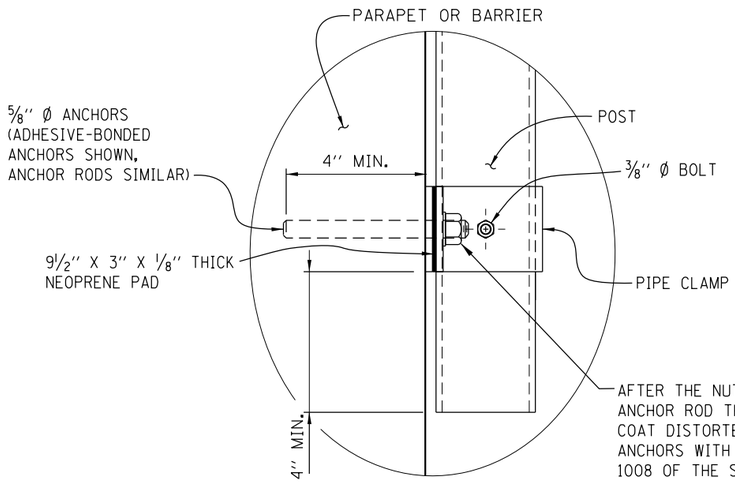


BRACE RAIL DETAIL



VIEW A-A



AFTER THE NUTS HAVE BEEN TIGHTENED, DISTORT THE ANCHOR ROD THREADS TO PREVENT REMOVAL OF THE NUTS. COAT DISTORTED THREADS AND EXPOSED TRIMMED ENDS OF ANCHORS WITH A COATING IN ACCORDANCE WITH SECTION 1008 OF THE STANDARD SPECIFICATIONS.

DETAIL A

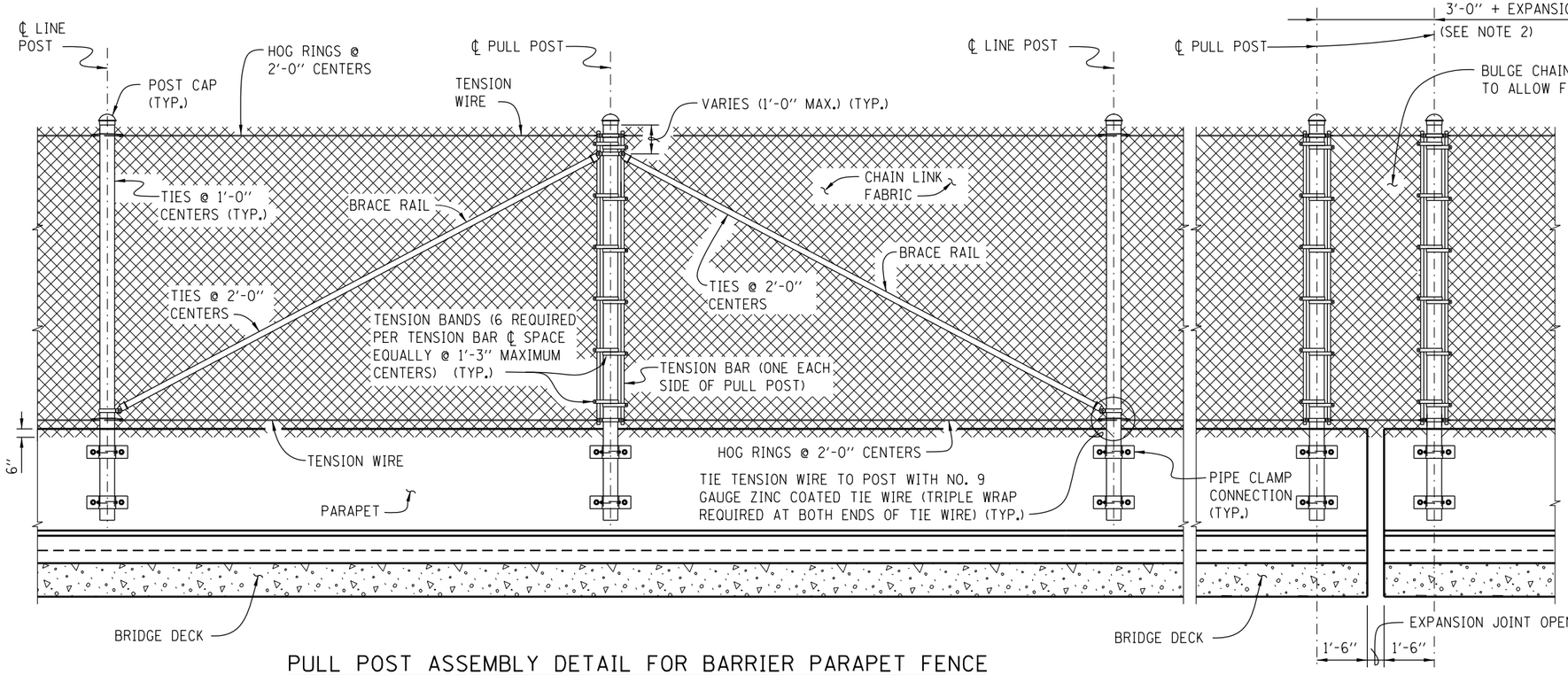
DESIGNER NOTES:

1. PULL POST ASSEMBLY IS REQUIRED AT MAXIMUM INTERVALS OF 200'. SEE SHEET 2 OF THIS SERIES.
2. FABRIC SHALL NOT BE SPLICED BY PICKETS. FABRIC SPLICES IF REQUIRED SHALL ONLY OCCUR AT POSTS AT A MINIMUM OF 100 FT. BETWEEN SPLICES. (ADD THIS NOTE TO PLANS.)
3. RAILROAD BRIDGE FENCE SHALL BE DETAILED ON SUPERSTRUCTURE DRAWING.
4. COORDINATE LIMITS OF RAILROAD BRIDGE FENCE WITH SPECIFIC RAILROAD REQUIREMENTS.

Illinois Tollway

RAILROAD BRIDGE FENCE

DATE 4-13-2014



PULL POST ASSEMBLY DETAIL FOR BARRIER PARAPET FENCE

EXPANSION ASSEMBLY DETAIL

(REQUIRED ONLY AT EXPANSION JOINT LOCATIONS WHERE TOTAL MOVEMENT EXCEEDS 6")

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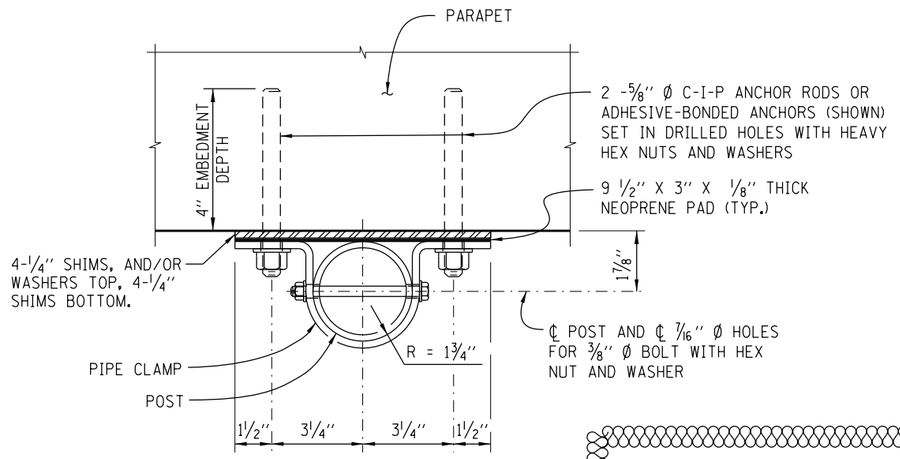
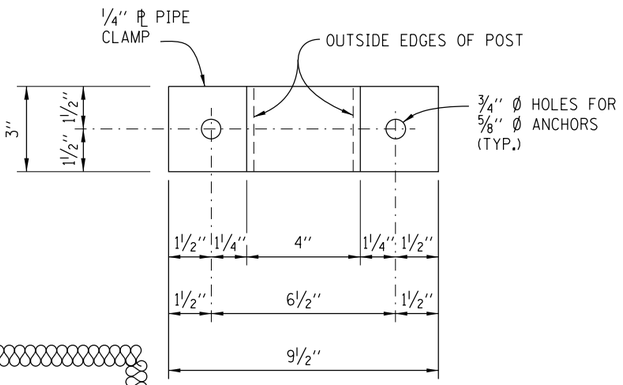
1. FOR TREATMENT AT BRIDGE ENDS, SEE SHEET 1 OF THIS SERIES.
2. THE 3'-0" DIMENSION SHOWN IS FOR EXPANSION JOINT OPENINGS 9" OR LESS. IF THE EXPANSION JOINT OPENING EXCEEDS 9", INCREASE THIS DIMENSION BY THE DIFFERENCE BETWEEN THE EXPANSION JOINT OPENING AND 9".



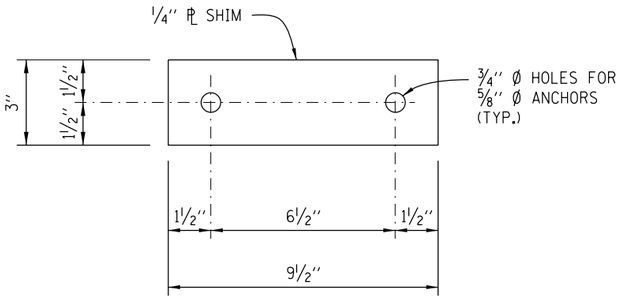
PIPE CLAMP CONNECTION DETAIL

NOTES:

1. FOR TREATMENT AT BRIDGE ENDS, SEE BASE SHEET M45-BRG.
2. THE 3'-0" DIMENSION SHOWN IS FOR EXPANSION JOINT OPENINGS 9" OR LESS. IF THE EXPANSION JOINT OPENING EXCEEDS 9", INCREASE THIS DIMENSION BY THE DIFFERENCE BETWEEN THE EXPANSION JOINT OPENING AND 9".



PIPE CLAMP DETAIL



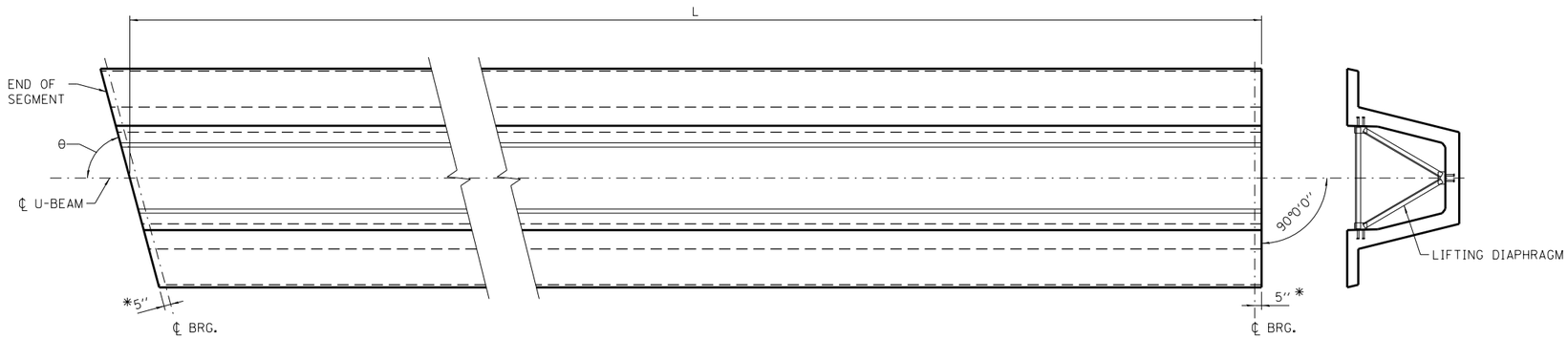
SPACER DETAIL

(MUST BE MANUFACTURED FROM AN INCOMPRESSIBLE MATERIAL (I.E., STEEL OR ALUMINUM))

Illinois Tollway

RAILROAD BRIDGE FENCE

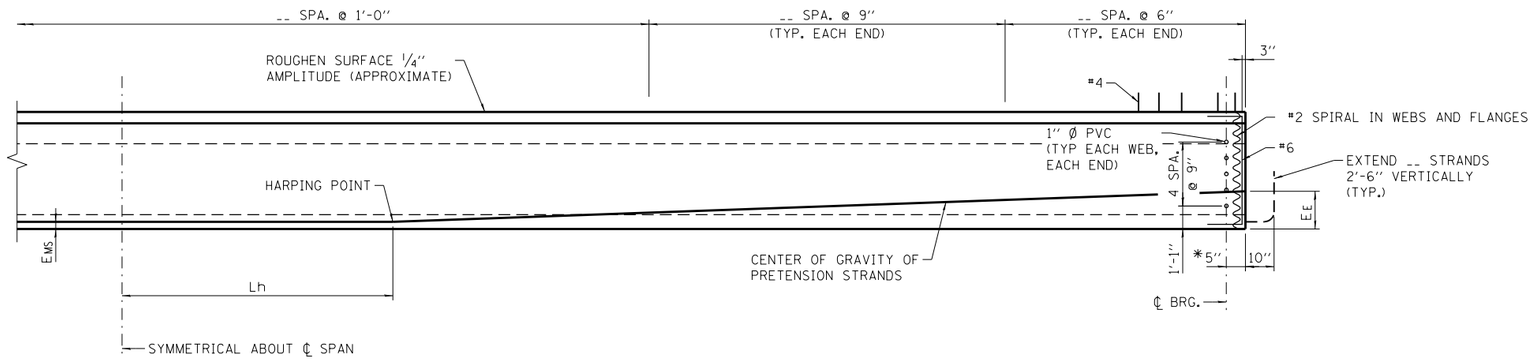
DATE
4-13-2014



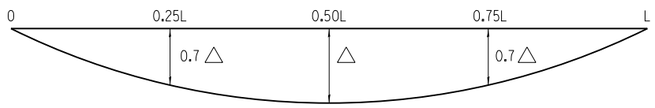
SKEWED END

SQUARE END

PLAN



U-BEAM ELEVATION



DEAD LOAD DEFLECTION DIAGRAM

U-BEAM SCHEDULE

SPAN NO.	GIRDER NO.	L (Ft)	Fw (In.)	D (In.)	Θ (Deg.)	Tw (In.)	Tb (In.)	Lh (Ft)	A_s* In.^{2}	DEBOND STRANDS (PERCENT)	E_E (In.)	E_{MS} (In.)	F_j (Kips)	F_f (Kips)	CONCRETE STRENGTH f'_{ci} (psi)	CONCRETE STRENGTH f'_c (psi)	Δ (In.)	PREDICTED CAMBER (in.)

NOTES:

TOP OF BEAM TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF BEAM, 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 TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

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

STRANDS SHALL BE FLUSH WITH END OF BEAM. FOR BEAM ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR BEAM ENDS THAT ARE FINALLY EXPOSED, COAT THE BEAM ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE BEAM 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 U-BEAMS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT. IF THE FABRICATOR CHOOSES TO BUILD A BAR STEEL CAGE BY WELDING LONGITUDINAL REINFORCEMENT TO THE #4 STIRRUPS, ONE OPTION IS AVAILABLE:

USE ASTM A706, GRADE 60 REINFORCEMENT AND THE STIRRUP SPACING AS SHOWN ON THE PLANS.

PRESTRESSING STRANDS SHALL BE 0.6" DIA., 7-WIRE LOW, RELAXATION FOR ALL PATTERNS WITH AN ULTIMATE STRENGTH OF 270,000 psi. THE MAX NUMBER OF DRAPED 0.6"Ø STRANDS IS 8.

- A_s* = MINIMUM AREA OF THE PRESTRESSING STEEL.
- d_s = NOMINAL STRAND DIAMETER.
- f'_s = ULTIMATE STRENGTH OF THE PRESTRESSING STEEL.
- F_J = JACKING FORCE PER U-BEAM.
- F_f = FINAL FORCE PER U-BEAM AFTER ALL LOSSES.
- f'_{ci} = REQUIRED CONCRETE STRENGTH AT RELEASE OF PRESTRESS FORCE.
- f'_c = REQUIRED CONCRETE STRENGTH AT 28 DAYS OF AGE.
- L = LENGTH OF U-BEAM ALONG THE GRADE OF THE U-BEAM.
- Δ = DEFLECTION AT CENTERLINE OF SPAN DUE TO CAST-IN-PLACE SLAB, SIDEWALK AND PARAPETS.
- P = PROJECTION, 6" IN THE MIDDLE 1/3 OF THE MEMBER VARYING TO THE SPECIFIED HAUNCH AT THE BEARING PLUS 4".
- Θ = BRIDGE SKEW ANGLE

PREDICTED CAMBER IS THE CAMBER FOR THE GIRDER ALONE AT ___ DAYS.

DESIGNER NOTES:

SPECIFY CONCRETE STRENGTH AS REQUIRED BY DESIGN FROM A MINIMUM OF 6,000 PSI TO A MAX. OF 8,500 PSI.

REINFORCEMENT IN STANDARD END SECTION OF THE BEAM IS BASED ON THE STRAND PATTERNS LISTED ON SHEET M48. USING DIFFERENT STRAND PATTERNS WILL REQUIRE A COMPLETE DESIGN OF THIS REINFORCEMENT. PRIOR APPROVAL FROM THE ILLINOIS TOLLWAY IS REQUIRED IF DESIGN OF THE END REINFORCEMENT IS REQUIRED.

THE DESIGN ENGINEER DETERMINES THE PROJECTION OF BAR G1 BASED ON 2" MIN. HAUNCH AT EDGE OF BEAM, X-SLOPE, PROFILE GRADE LINE AND CALCULATED RESIDUAL BEAM CAMBER, INCLUDING THE CAMBER MULTIPLIER OF 1.4. THIS VALVE CAN VARY AND SHOULD BE GIVEN FOR EACH OF THE BEAM LENGTH. PROVIDE VALUES THAT MAINTAIN 3" MIN. DECK EMBEDMENT AND 2" CLEAR FROM TOP OF DECK WHILE ACCOUNTING FOR ±¾" VARIANCE IN ACTUAL CAMBER VERSUS THE CALCULATED RESIDUAL CAMBER.

DIMENSIONS NOTED WITH (•) ARE A FUNCTION OF THE DESIGN REQUIREMENTS AND MAY VARY.

NOTE TO DESIGNER

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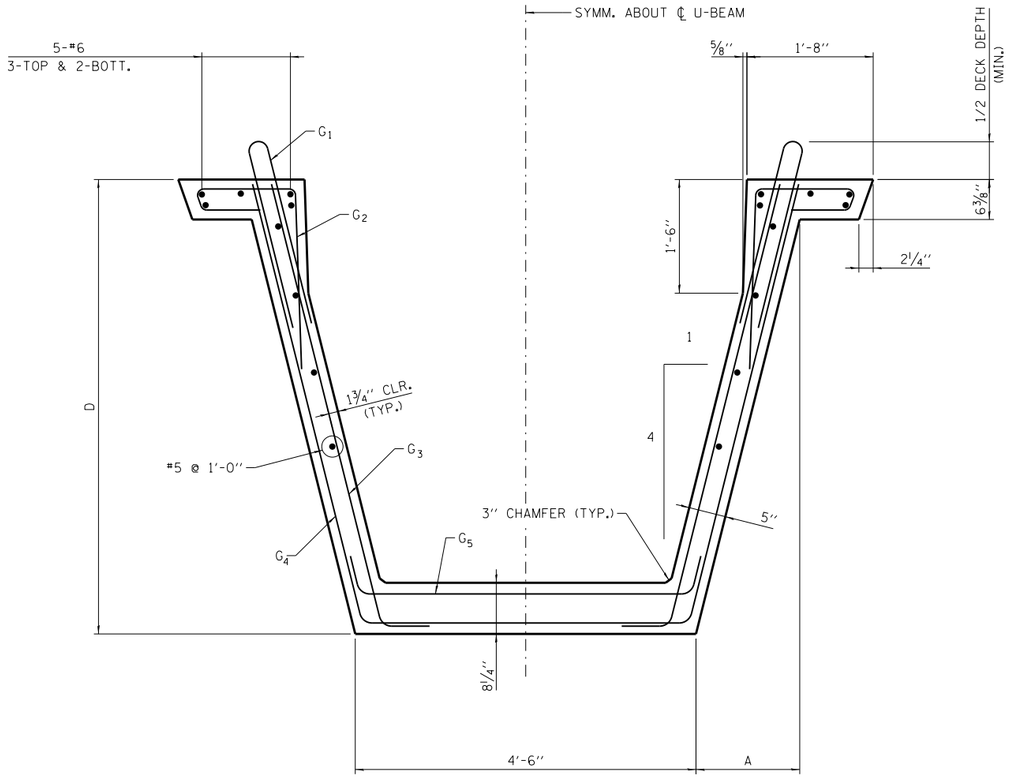
Illinois Tollway

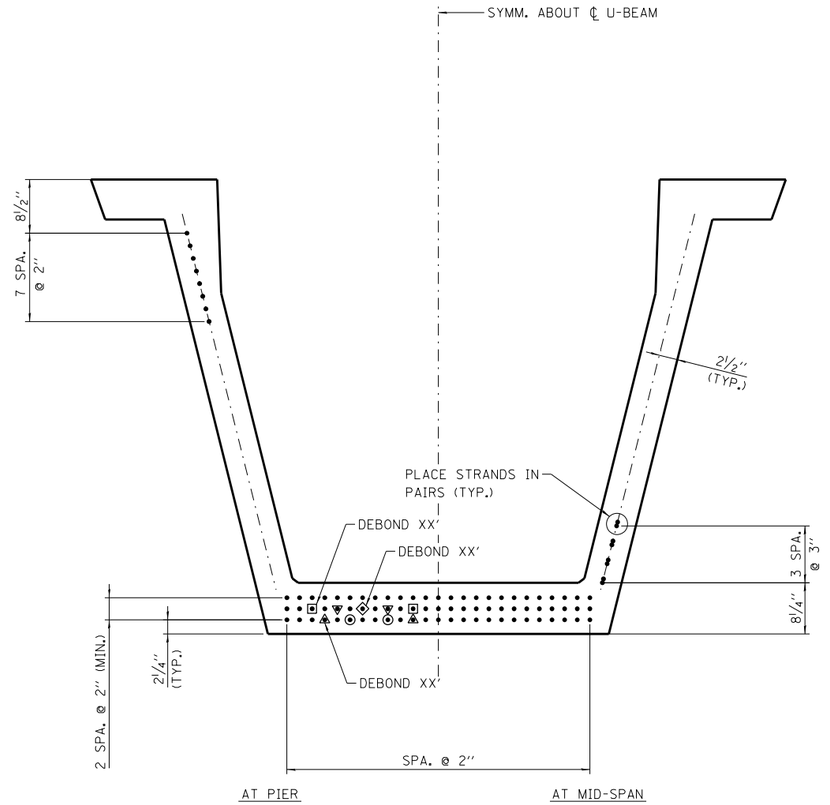
PPC U-BEAM PRETENSIONED

DATE
12-19-2014

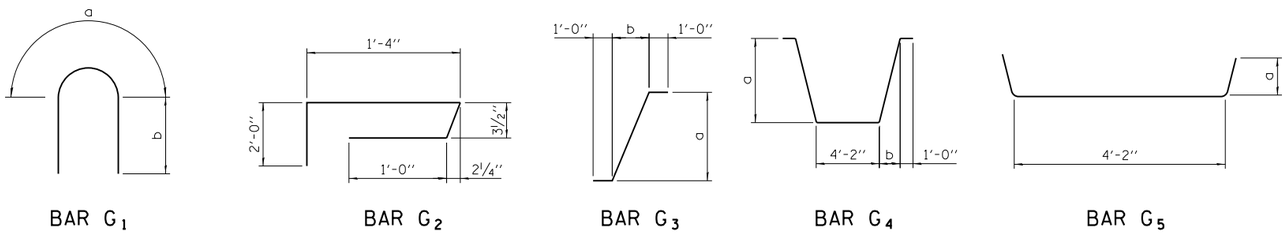
SJohnson
4/17/2017
M-BRG-522 PPC U-Beam Pretensioned.dgn



TYPICAL U-BEAM SECTION
(REINFORCEMENT SHOWN AT SPAN)



TYPICAL U-BEAM PRESTRESSING
(PRETENSIONING)



BAR G_1 BAR G_2 BAR G_3 BAR G_4 BAR G_5

BAR LIST

BAR	NO.	SIZE	LENGTH	SHAPE
G_1	0	#4	X'-X''	∩
G_2				⌐
G_3				∫
G_4				⋃
G_5				⌣
				—

VARIABLE DIMENSIONS

BAR	a	b
G_1		
G_2		
G_3		
G_4		
G_5		

BEAM TABLE

D	A
48''	10 3/8''
60''	1'-1 3/8''
72''	1'-4 3/8''

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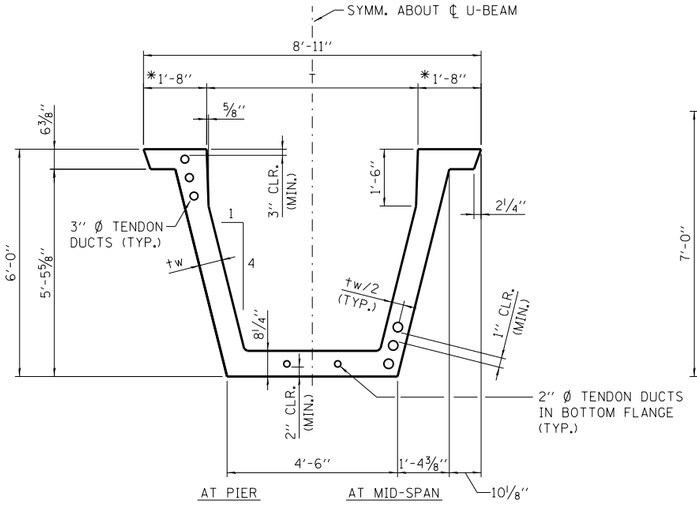
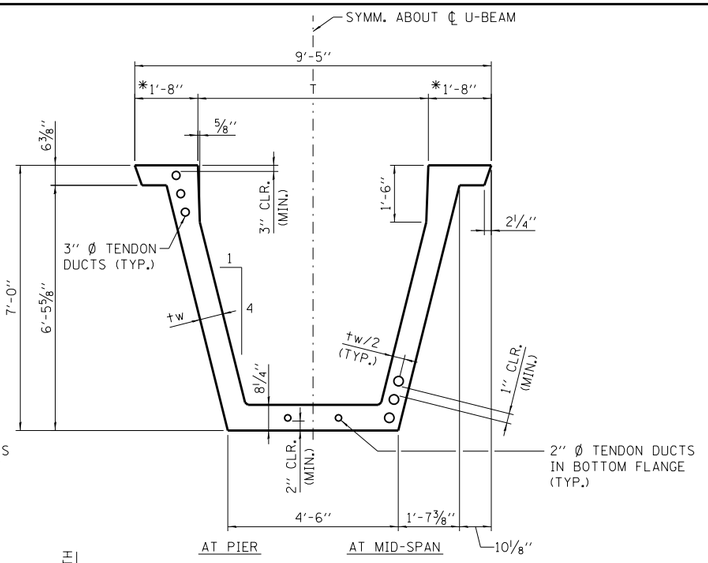


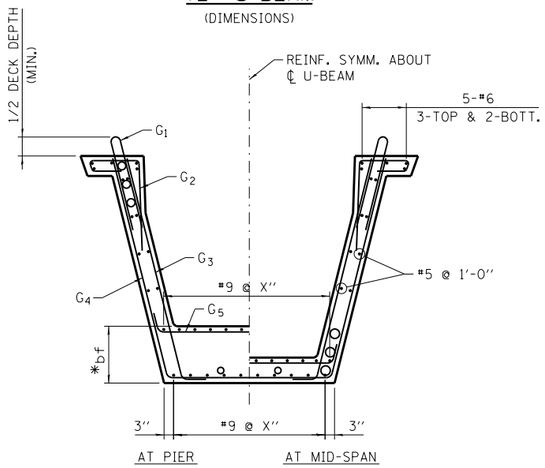
72" U-BEAM

(DIMENSIONS)



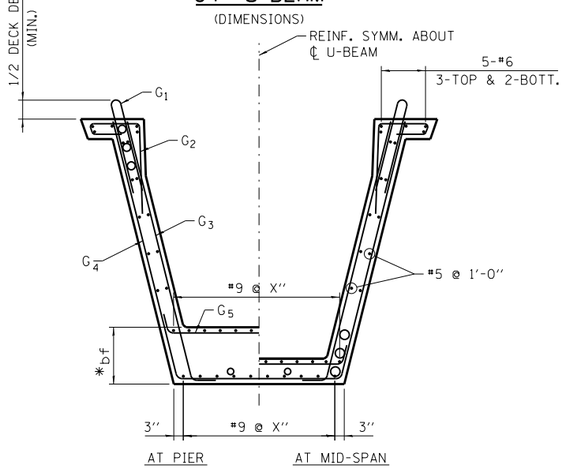
84" U-BEAM

(DIMENSIONS)



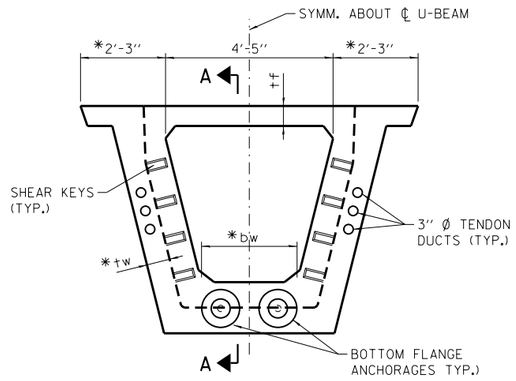
72" U-BEAM

(REINFORCEMENT)



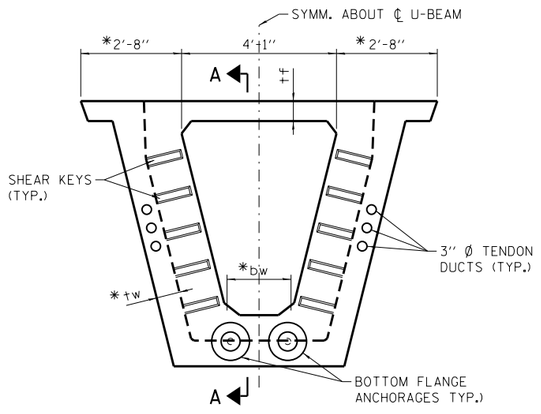
84" U-BEAM

(REINFORCEMENT)



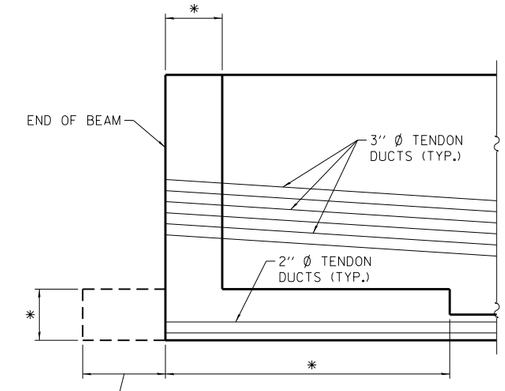
72" U-BEAM

(END SECTION)



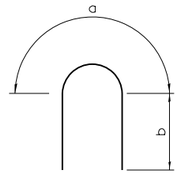
84" U-BEAM

(END SECTION)

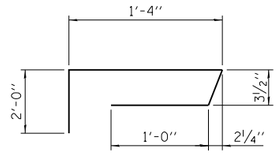


SECTION A-A

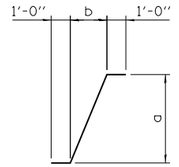
(END SECTION)



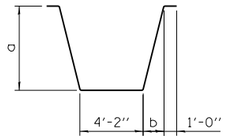
BAR G_1



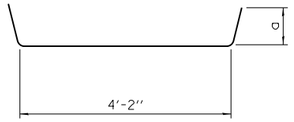
BAR G_2



BAR G_3



BAR G_4



BAR G_5

BAR	NO.	SIZE	LENGTH	SHAPE
G_1	0	#4	X'-X"	∩
G_2				⌐
G_3				/
G_4				V
G_5				⌣
				—

VARIABLE DIMENSIONS

BAR	a	b
G_1		
G_2		
G_3		
G_4		
G_5		

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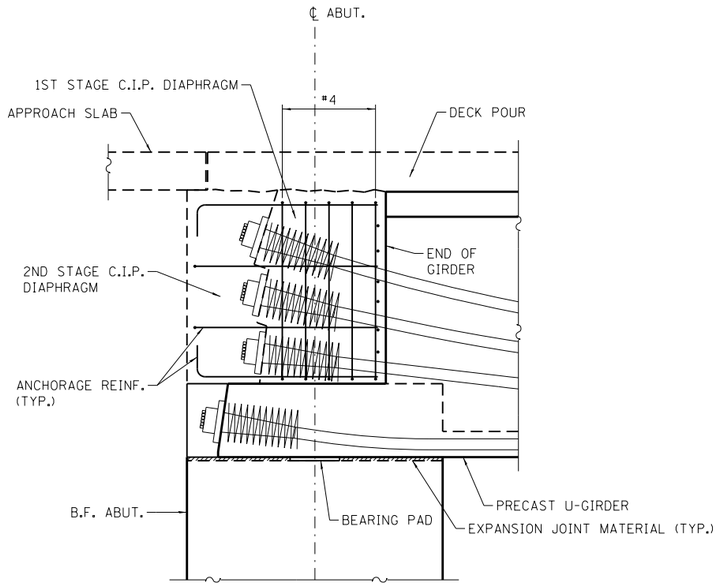
DIMENSIONS NOTED WITH (*) ARE A FUNCTION OF THE DESIGN REQUIREMENTS AND MAY VARY.

Illinois Tollway

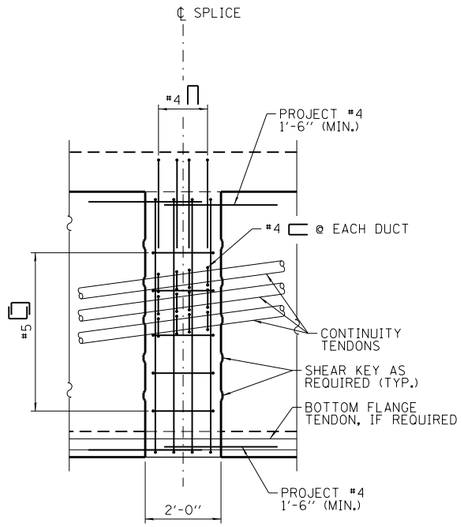
72" & 84" PPC U-BEAM POST-TENSIONED

DATE
12-19-2014

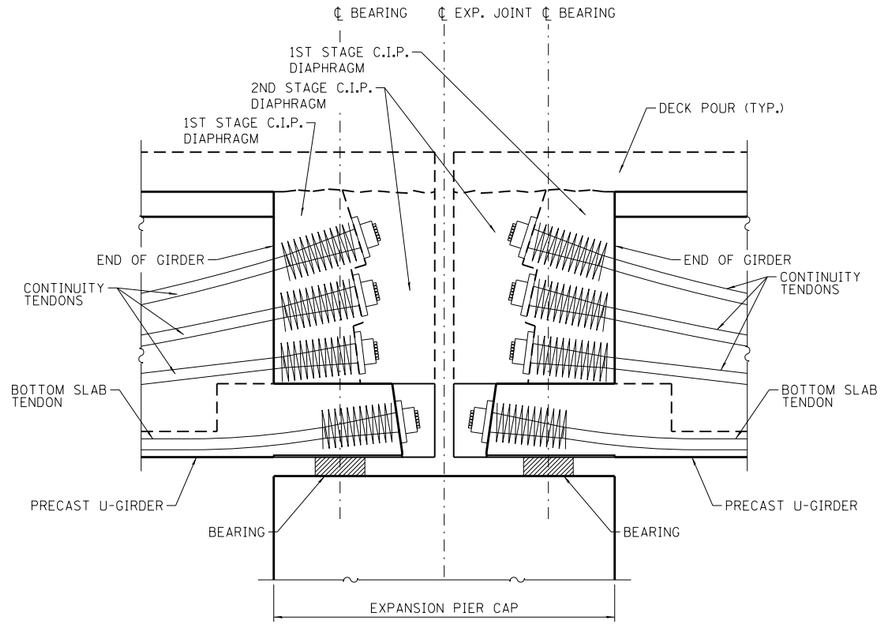
Sjohnson
4/17/2017
M-BRG-523 72in and 84in PPC U-Beam Post-Tensioned.dgn



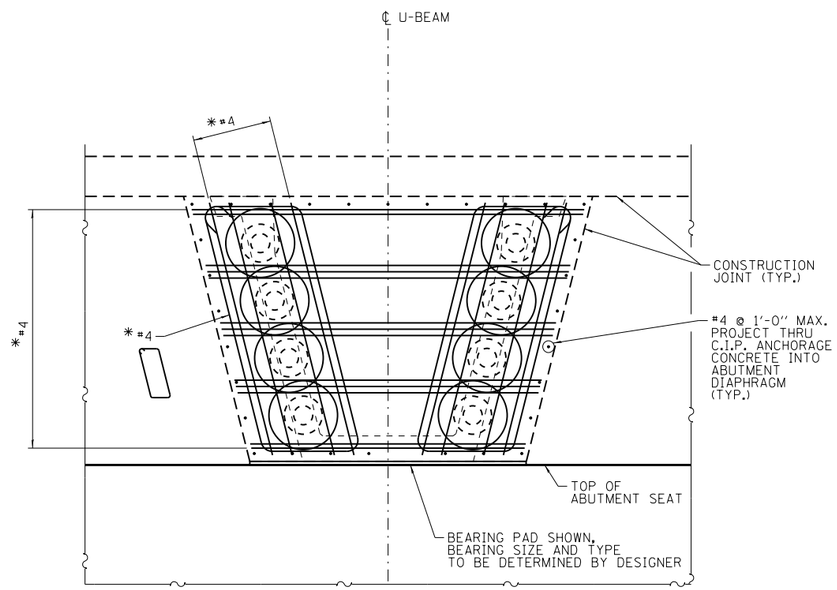
INTEGRAL ABUTMENT



SPLICE DETAIL



EXPANSION PIER



END VIEW
(INTEGRAL ABUTMENT)

DIAPHRAGM DETAILS

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Illinois Tollway

72" & 84"
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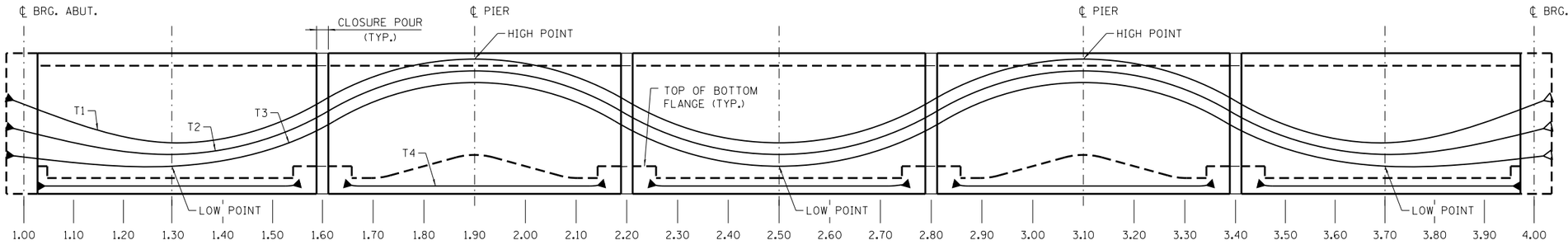


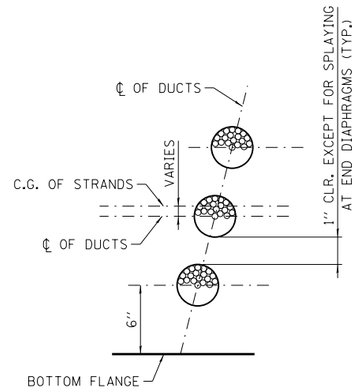
WEB ELEVATION

TENDON	LOCATION																													
	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.30	2.40	2.50	2.60	2.70	2.80	2.90	3.00	3.10	3.20	3.30	3.40	3.50	3.60	3.70	3.80	3.90	4.00
T1	X.XX′																													
T2	X.XX′																													
T3	X.XX′																													
T4	X.XX′																													

TENDON PROFILE

LEGEND

- ▶—— - DENOTES LIVE END
- ▷—— - DENOTES DEAD END



STRAND LOCATION DETAIL

(TENDON IN SAG CURVE)

NOTES:

REINFORCING THAT INTERFERES WITH THE PRESTRESSING TENDON ALIGNMENT SHALL BE ADJUSTED AS APPROVED BY THE ENGINEER.

WHERE DEAD END ANCHORAGE AND TENDONS ARE ACCESSIBLE, THE ANCHORAGE SYSTEM AND LENGTH OF PROJECTING PRESTRESSING STEEL SHALL PERMIT JACKING WITH THE SAME JACKING EQUIPMENT THAT WAS USED ON THE LIVE END.

DEVIATIONS FROM THE DUCT PATTERN, DUCT SIZE, AND STRAND SIZE ASSUMED IN THE DESIGN MUST BE APPROVED BY THE ENGINEER.

THE DEFLECTION SHOWN IS POSITIVE DOWNWARD. IT INCLUDES THE INSTANTANEOUS EFFECTS OF DEAD LOAD AND PRESTRESSING, AND A FACTOR OF THREE (3) MULTIPLIER TO ACCOUNT FOR LONG TERM CREEP. FORMED WEB ELEVATIONS MUST BE ADJUSTED UPWARD FOR AN INDICATED POSITIVE DEFLECTION.

USE LOW-RELAXATION STRANDS MEETING THE REQUIREMENTS OF ASTM A416 GRADE 270.

STRESSING SEQUENCE:

TENDONS MAY BE JACKED FROM BOTH ENDS, EITHER SIMULTANEOUSLY OR SEQUENTIALLY, OR ½ THE TENDONS MAY BE JACKED FROM EACH END. IF ½ THE TENDONS ARE JACKED FROM EACH END THE JACKING FORCE SHALL BE INCREASED ___KIPS. IF JACKING FORCE OR STEEL AREA IS GREATER THAN ASSUMED IN THE DESIGN, PRESTRESSING QUANTITIES SHALL NOT BE ADJUSTED.

NO MORE THAN ½ OF THE PRESTRESSING FORCE IN ANY WEB MAY BE STRESSED BEFORE AN EQUAL FORCE IS STRESSED IN THE ADJACENT WEBS. AT NO TIME DURING THE STRESSING OPERATIONS WILL MORE THAN 10% OF THE TOTAL PRESTRESSING FORCE BE APPLIED ECCENTRICALLY ABOUT THE CENTERLINE OF THE STRUCTURE.

AT THE CONTRACTORS OPTION, THE PRESTRESSING FORCE MAY VARY ±5% FROM THE THEORETICAL FORCE PER WEB PROVIDED THE TOTAL P(JACK) FORCE IS OBTAINED AND IS DISTRIBUTED SYMMETRICALLY ABOUT THE CENTERLINE OF THE TYPICAL SECTION. P(JACK) IS THE SUM OF THE PEAK FORCES REACHED DURING JACKING IN EACH TENDON.

BOTTOM FLANGE TENDONS TO BE STRESSED AT CASTING YARD OR ON SITE BEFORE CLOSURE POURS ARE FORMED AND CAST.

DESIGN:

DESIGN IS BASED ON K=0.0002 AND μ=0.14. P(JACK) AT THE JACKING ENDS INCLUDES FRICTION, ANCHOR SET OF 0.375″ AT THE JACKING END, ELASTIC SHORTENING, AND PROVISIONS FOR AN ADDITIONAL __ KSI LONG TERM LOSS IN STRESS.

DUCT PATTERN AS SHOWN, WITH ___ INCH DIAMETER LOW-RELAXATION STRANDS IN ___ O.D. DUCTS WAS ASSUMED IN THE DESIGN.

P(JACK) = ____ KIPS TOTAL AT JACKING ENDS
A_s • MINIMUM = ____ SQ. IN.
f'_s = 270 KSI
f'_c = 8500 PSI AT 28 DAYS FIELD COMPRESSIVE STRENGTH
f'_{ci} = 6000 PSI AT STRESSING

◆ DESIGNATES CRITICAL POINTS FOR P(JACK). THE CONTRACTOR SHALL SUBMIT ELONGATION AND JACKING CALCULATIONS BASED ON KL+$\mu\alpha$ (INCLUDING ANCHOR SET IF ANY) AND INITIAL STRESS (INITIAL STRESS RATIO TIMES JACKING STRESS BEFORE LONG TERM LOSSES) AT THE POINTS LABELED "◆" AND TABULATED BELOW.

PATH DETAILS

NOTE TO DESIGNER

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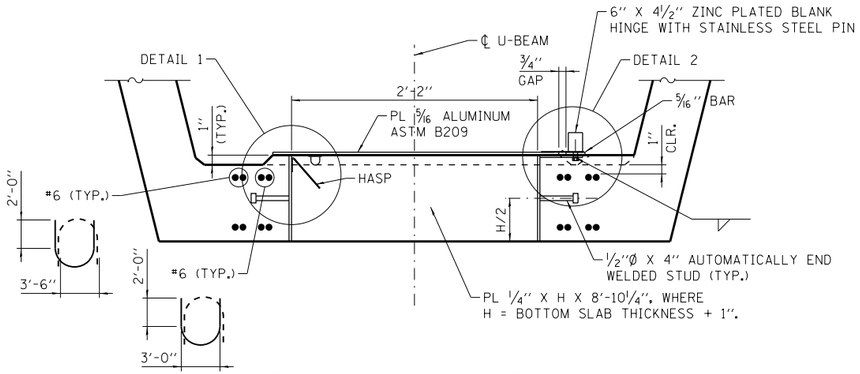
Illinois Tollway

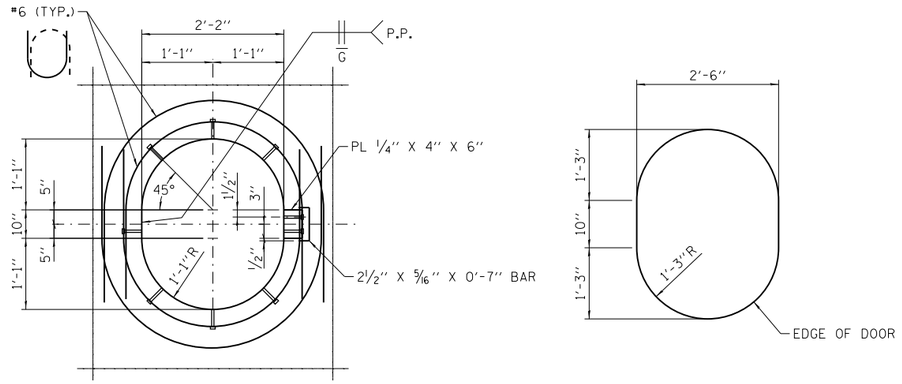
72″ & 84″
PPC U-BEAM
POST-TENSIONED

DATE
12-19-2014

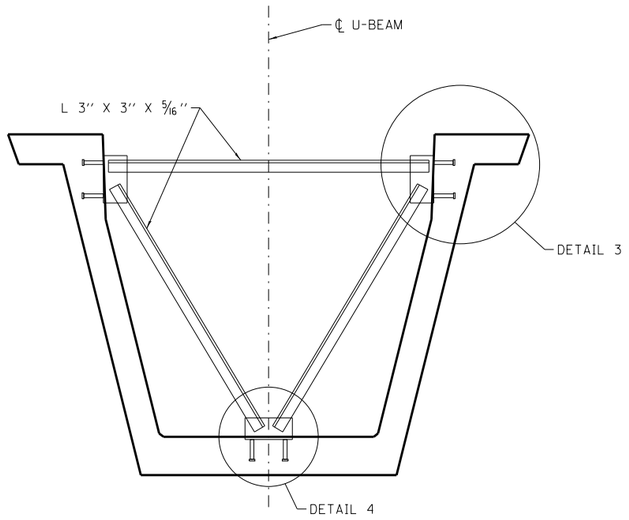
Sjohnson
4/17/2017
M-BRG-523 72in and 84in PPC U-Beam Post-Tensioned.dgn



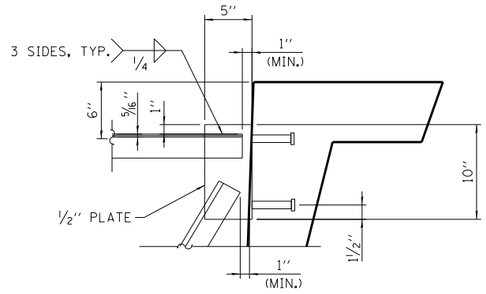
SECTION THROUGH ACCESS DOOR



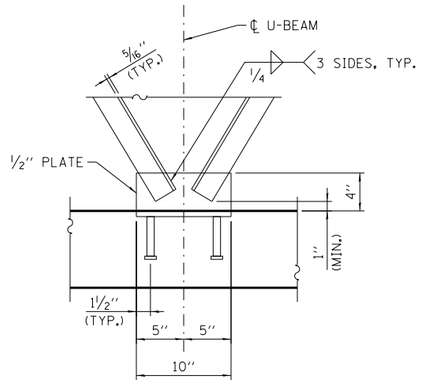
ACCESS DOOR DETAILS



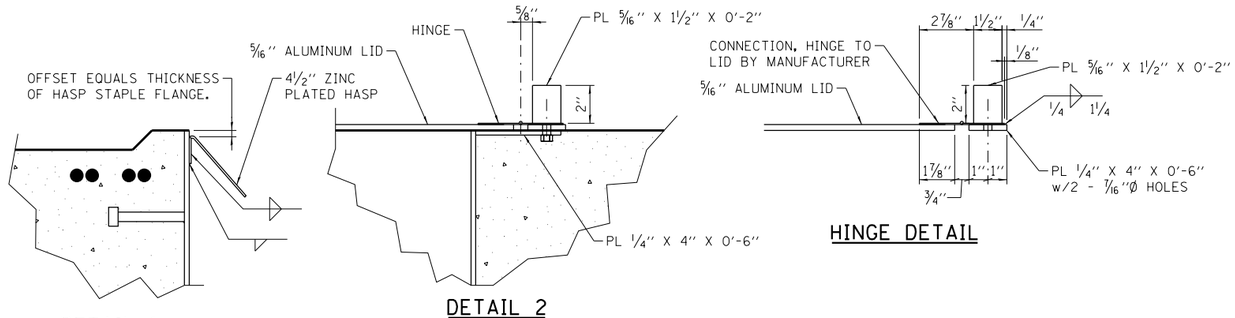
LIFTING DIAPHRAGM



DETAIL 3



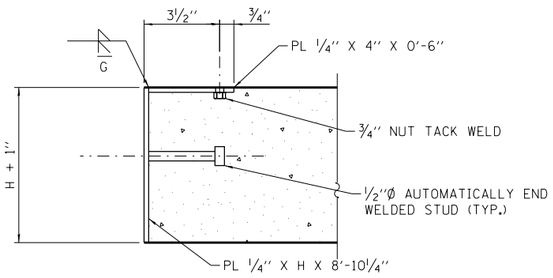
DETAIL 4



DETAIL 1

DETAIL 2

HINGE DETAIL



SECTION

NOTE TO DESIGNER

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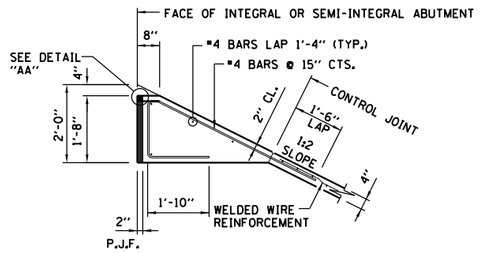
M-BRG-524

Illinois Tollway

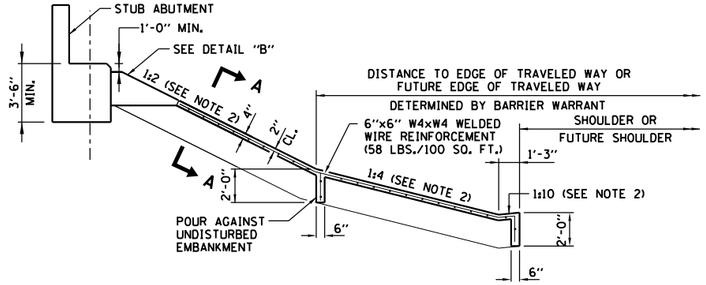
PPC U-BEAM MISCELLANEOUS DETAILS

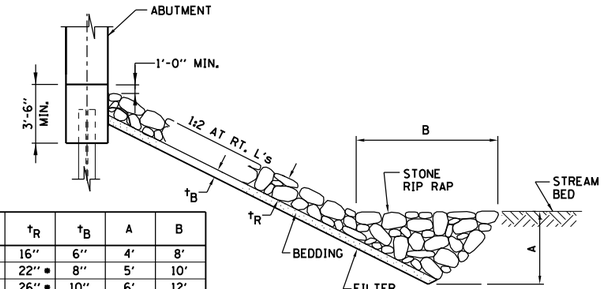
DATE
12-19-2014

SJohnson
4/17/2017
M-BRG-524 PPC U-Beam Miscellaneous Details.dgn



DETAIL "A"

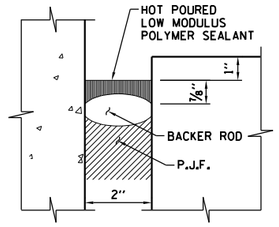




RIP RAP CLASS	t_R	t_B	A	B
A4	16"	6"	4'	8'
A5	22" •	8"	5'	10'
A6	26" •	10"	6'	12'
A7	30" •	12"	7'	14'

• CHECK ABUTMENT DEPTH AND INCREASE AS NECESSARY TO MATCH DEPTH OF RIP RAP

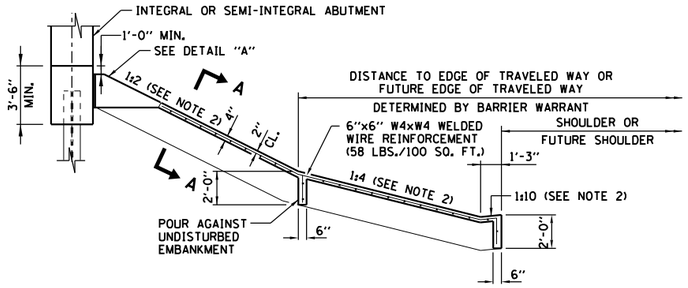
ILLINOIS TOLLWAY BRIDGES OVER WATERWAYS



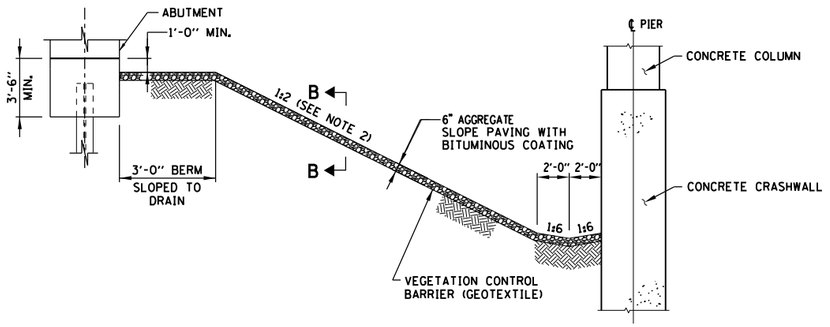
DETAIL "AA"

NOTE:

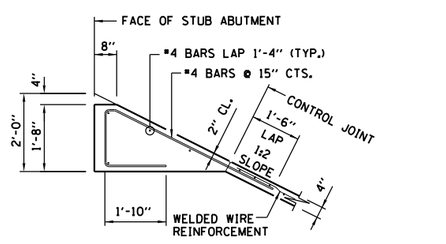
SEALANT, BACKER ROD AND PJF SHALL MEET THE REQUIREMENTS OF SECTIONS 1050 AND 1051 OF THE STANDARD SPECIFICATIONS.



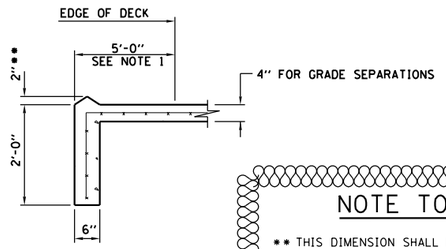
SLOPE WALLS FOR BRIDGES OVER ILLINOIS TOLLWAY



ILLINOIS TOLLWAY BRIDGES OVER RAILROADS



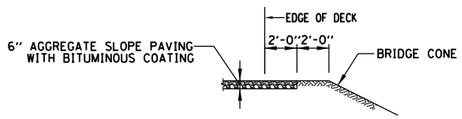
DETAIL "B"



SECTION A-A

NOTE TO DESIGNER

** THIS DIMENSION SHALL BE INCREASED TO 4" FOR STRUCTURES WITH SKEWS OF 10° OR GREATER AND DRAINAGE ELEMENTS THAT OUTLET ONTO SLOPEWALL.



SECTION B-B

NOTE TO DESIGNER

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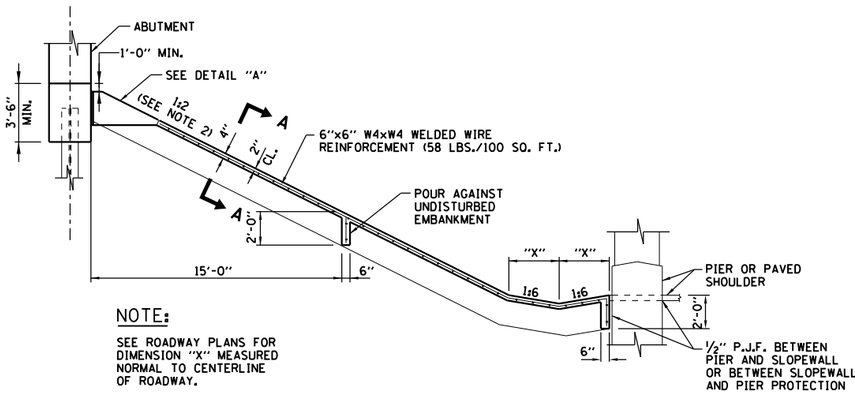
DESIGNER SHALL REMOVE ALL DETAILS THAT DO NOT APPLY.



NOTE:

SEE ROADWAY PLANS FOR DIMENSION "X" MEASURED NORMAL TO CENTERLINE OF ROADWAY.

ILLINOIS TOLLWAY BRIDGES OVER CROSSROADS

M-BRG-525

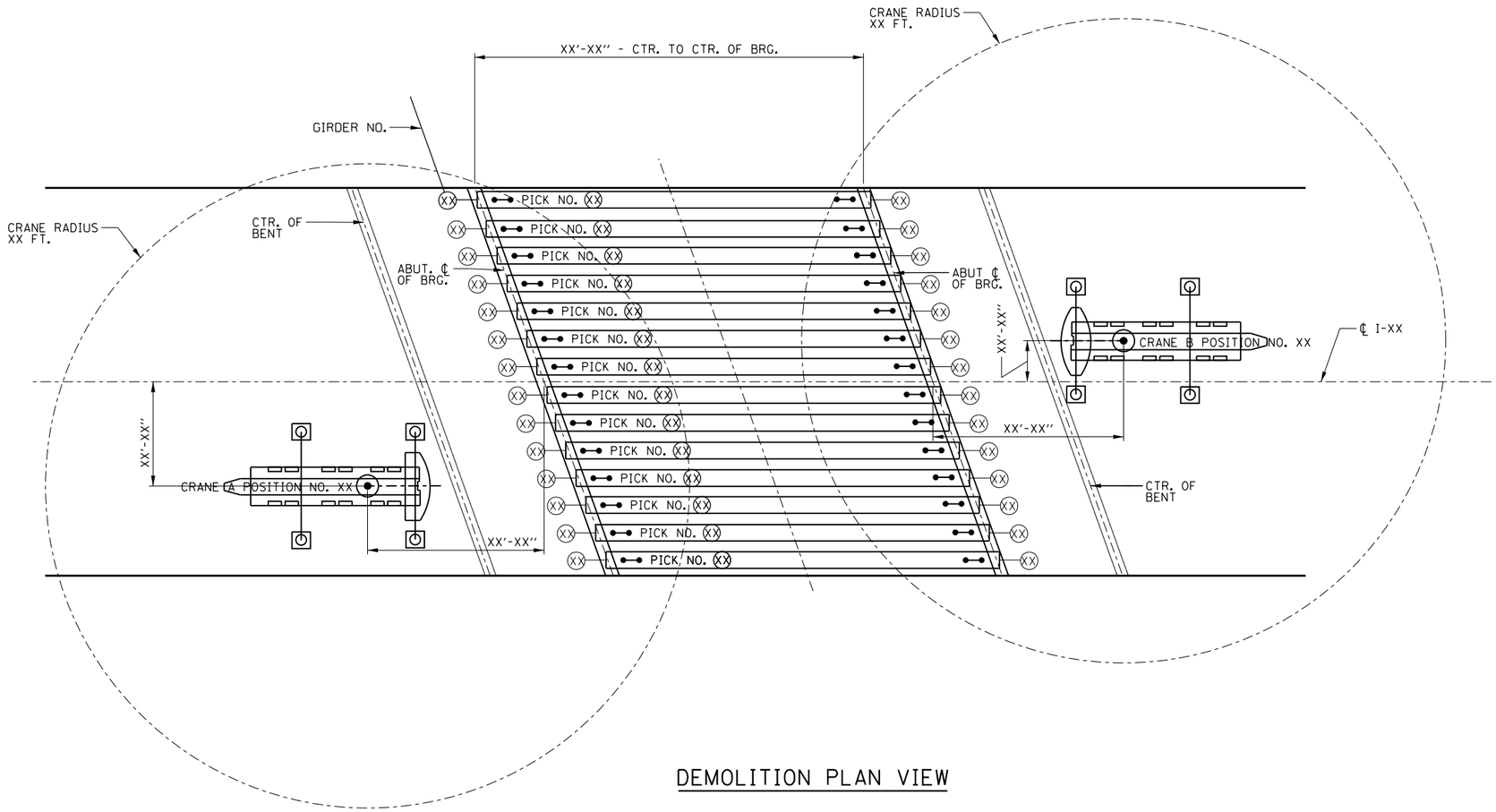
NOTES:

1. DIMENSIONS SHALL BE 2'-0" IF DECK DRAINS ARE NOT PROVIDED.
2. DIMENSIONS MARKED THUS ARE MEASURED NORMAL TO CENTERLINE OF ROADWAY OR TRACK.
3. ALL SLOPES ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).

Illinois Tollway

SLOPEWALL DETAILS

DATE
3-31-2016



DEMOLITION PLAN VIEW

NOTE TO DESIGNER/CONTRACTOR

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- SUGGEST IDENTIFY BEAM WEIGHTS OR PICK WEIGHTS AND IDENTIFY CROSS FRAMES TO BE REMOVED DURING DEMOLITION.
- ''XX'' DESIGNATES DIMENSION VALUES OR INPUT DATA TO BE PROVIDED ON SUBMITTED DRAWING.
- SEQUENCE SHALL ADDRESS TEMPORARY BLOCKING, BRACING OR OTHER TEMPORARY SUPPORTS.

CRANE INFORMATION:

CRANE ''A''-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X''

CRANE ''B''-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X''

DEMOLITION SEQUENCE:

1. __''XX''___
2. __''XX''___
3. __''XX''___
4. __''XX''___

DEMOLITION LIMITATIONS:

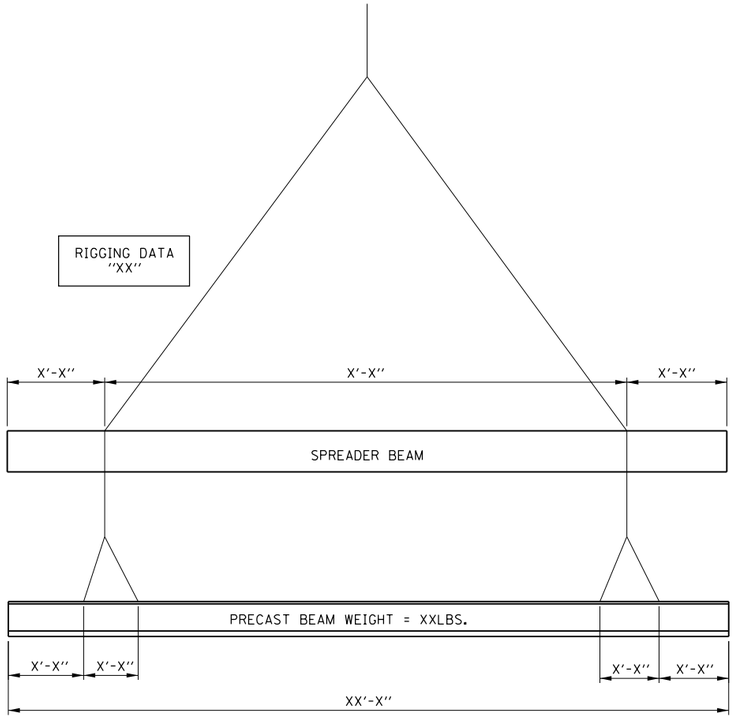
1. DEMOLITION PICKS SHALL NOT BE CONDUCTED IN WINDS XX MPH OR HIGHER
2. CRANE OUTRIGGERS SHALL BE FULLY EXTENDED WHEN IN USE.
3. __''XX''___
4. __''XX''___

M-BRG-526
SHEET 1 OF 3

Illinois Tollway

DEMOLITION PLAN

DATE
3-31-2017

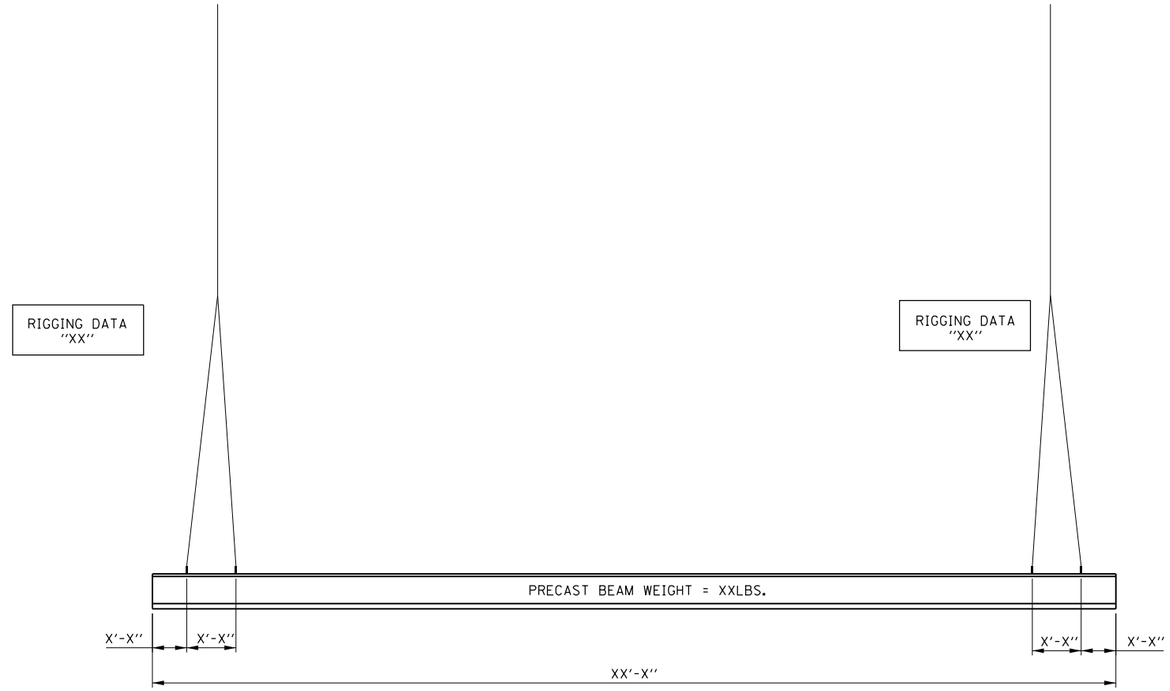


CALCULATED RIGGING WEIGHT = XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE WITH SPEADER BEAM

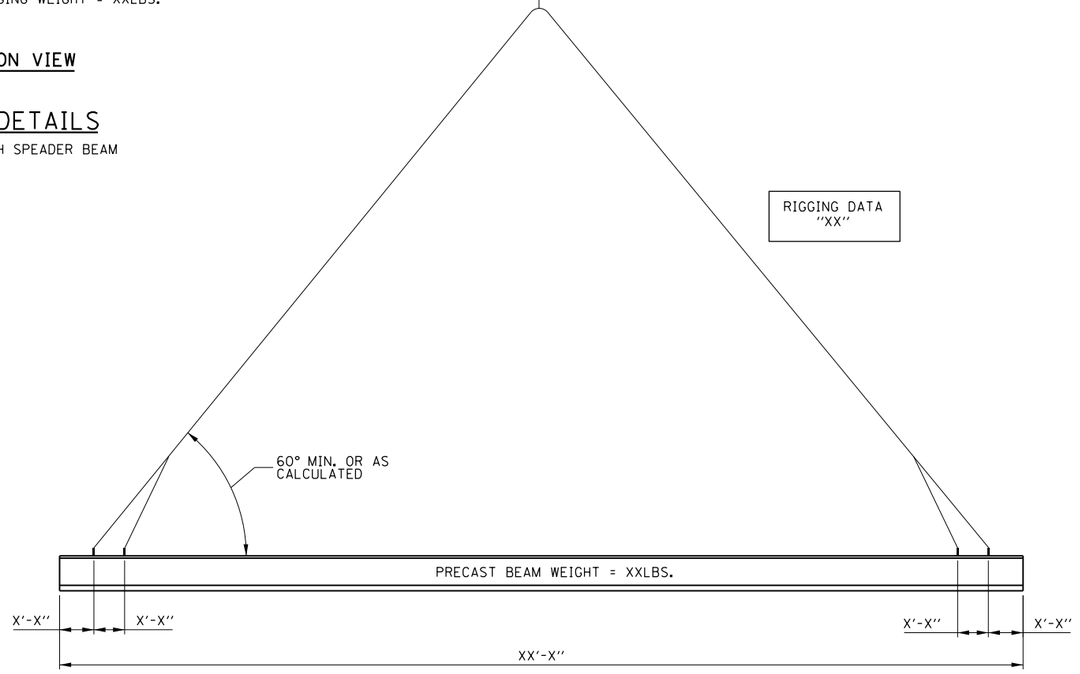


CALCULATED RIGGING WEIGHT = XX LBS.

ELEVATION VIEW

RIGGING DETAILS

TWO CRANE



CALCULATED RIGGING WEIGHT=XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE

NOTES TO DESIGNER/CONTRACTOR

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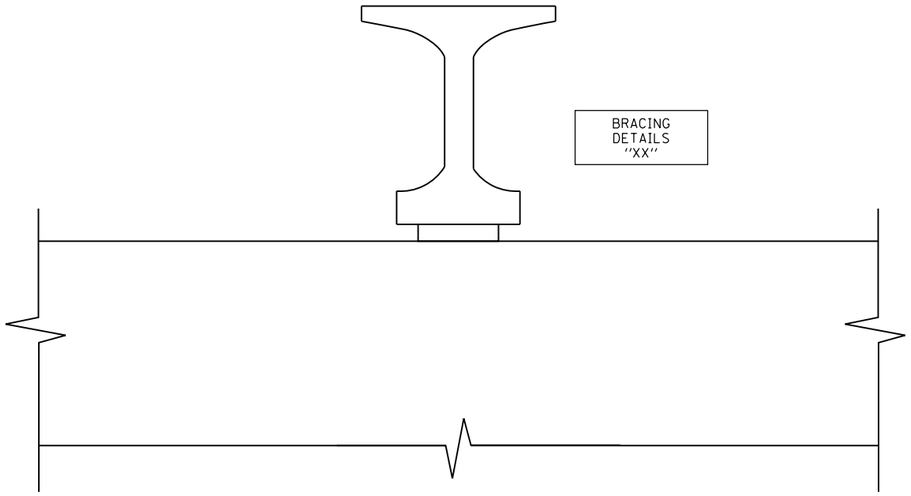
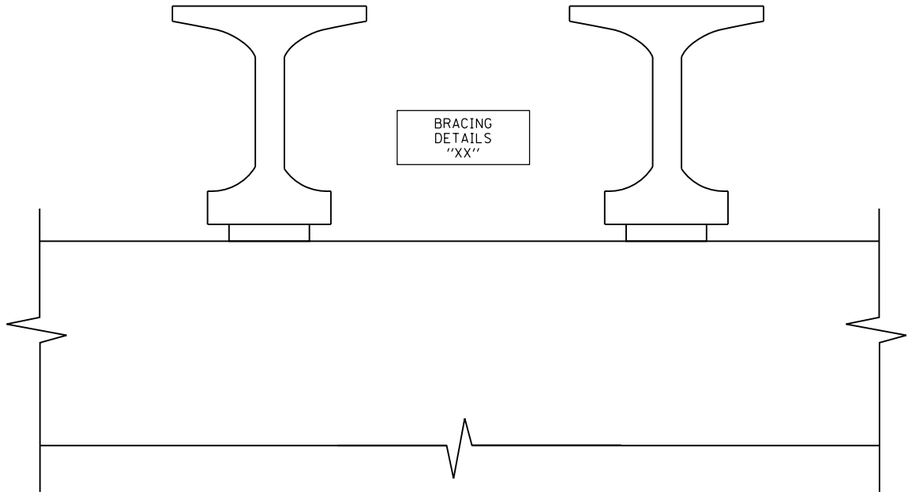
Illinois Tollway

DEMOLITION PLAN

DATE
3-31-2017



TEMPORARY DEMOLITION
BRACING DETAIL



TEMPORARY DEMOLITION
BRACING DETAIL

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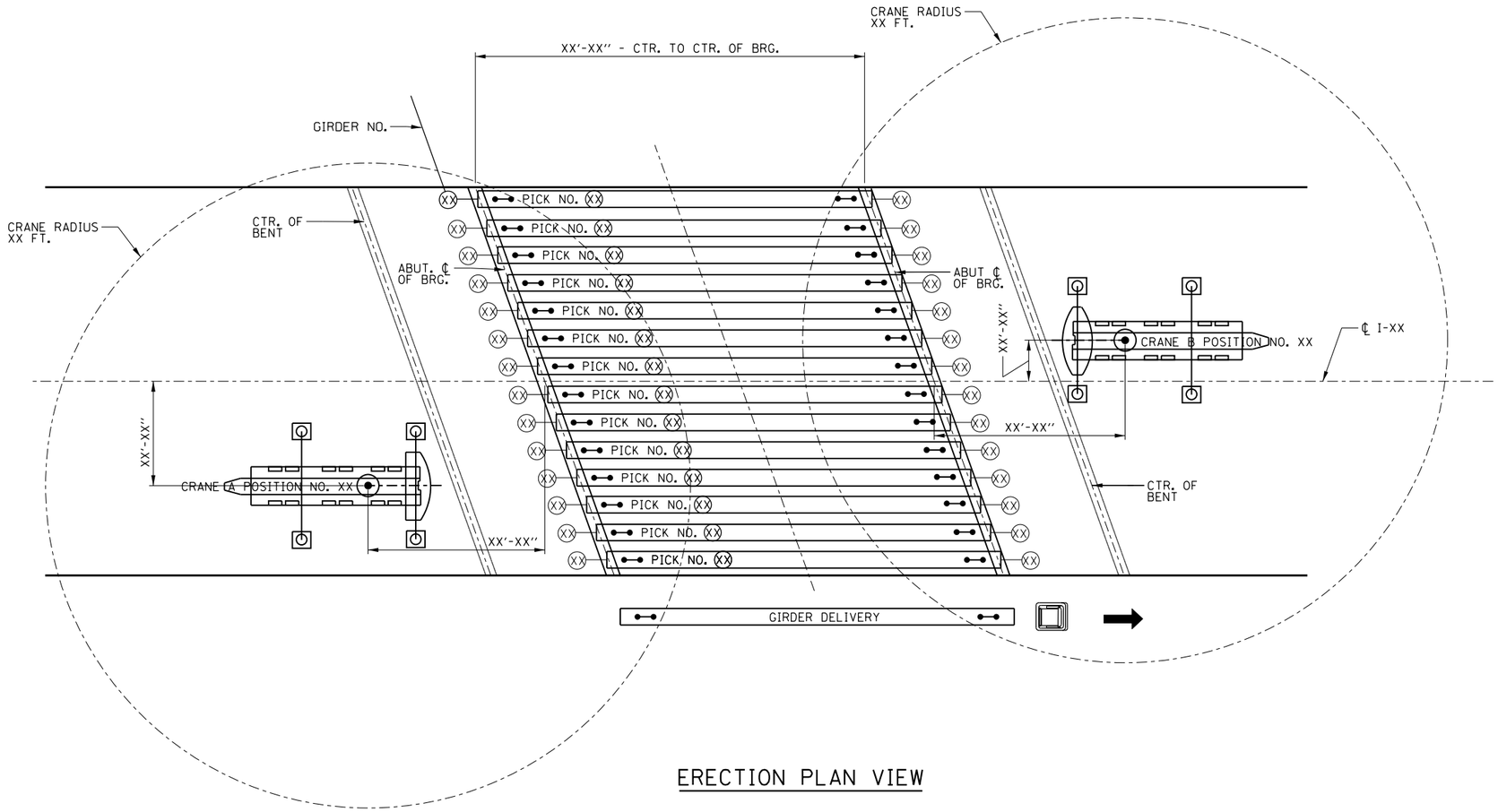
Illinois Tollway

DEMOLITION PLAN

DATE
3-31-2017



NOTE TO DESIGNER/CONTRACTOR

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- IDENTIFY TEMPORARY SHORING, IDENTIFY TEMPORARY CROSS FRAMES DURING ERECTION.
- ''XX'' DESIGNATES DIMENSION VALUES OR PROVIDED DATA TO BE PROVIDED ON SUBMITTED DRAWING.
- SEQUENCE SHALL ADDRESS TEMPORARY BLOCKING, BRACING OR OTHER TEMPORARY SUPPORTS.

ERECTION PLAN VIEW

CRANE INFORMATION:

CRANE ''A''-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X''

CRANE ''B''-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X''

ERECTION SEQUENCE:

1. ''XX''
2. ''XX''
3. ''XX''
4. ''XX''

ERECTION LIMITATIONS:

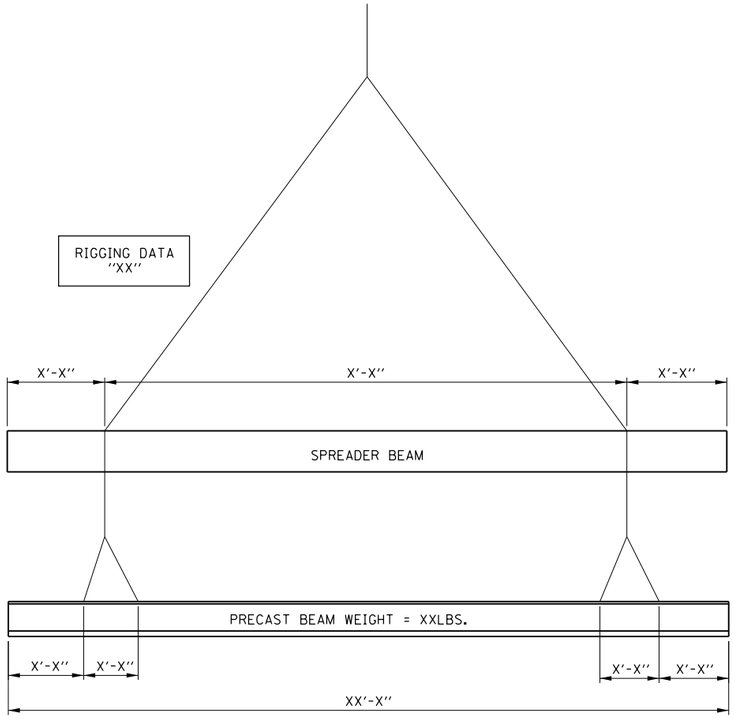
1. ERECTION SHALL NOT BE CONDUCTED IN WINDS XX MPH OR HIGHER
2. CRANE OUTRIGGERS SHALL BE FULLY EXTENDED WHEN IN USE.
3. ''XX''
4. ''XX''

M-BRG-527
SHEET 1 OF 3

Illinois Tollway

ERECTION PLAN - CONCRETE

DATE
3-31-2017

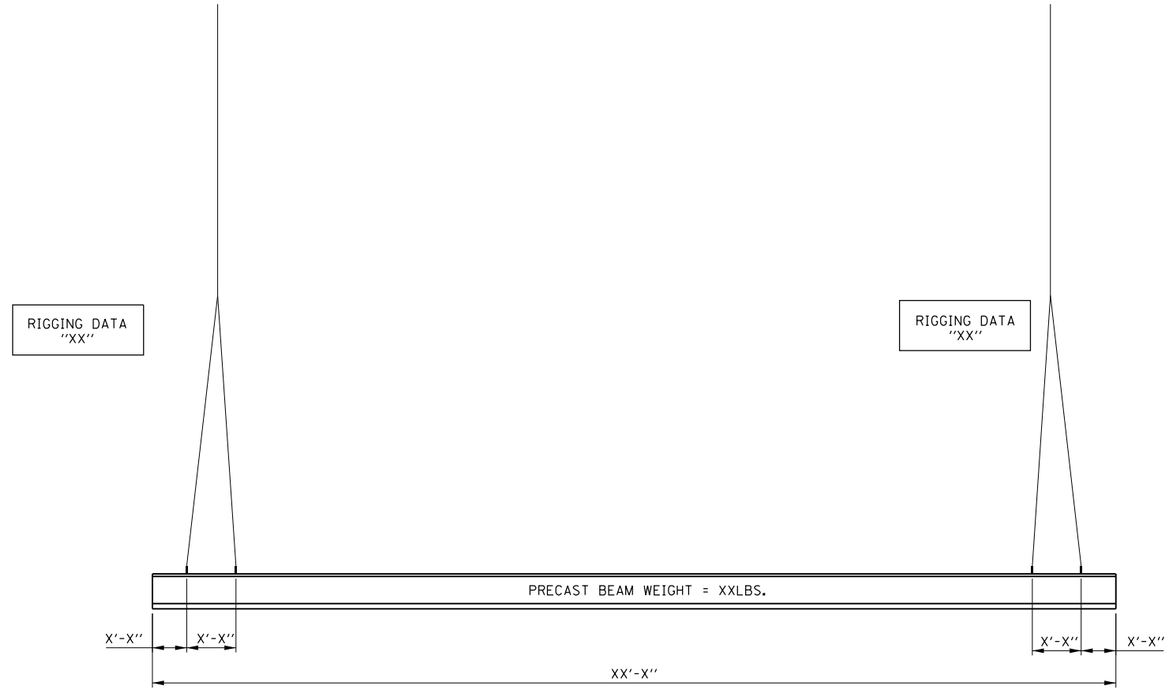


CALCULATED RIGGING WEIGHT = XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE WITH SPEADER BEAM

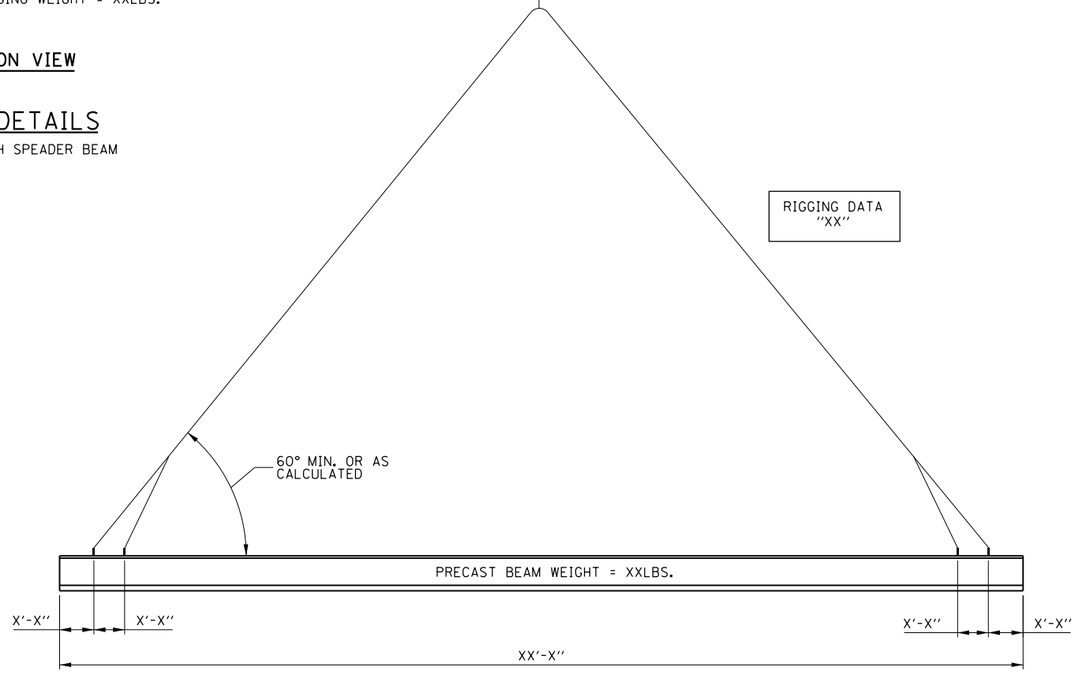


CALCULATED RIGGING WEIGHT = XX LBS.

ELEVATION VIEW

RIGGING DETAILS

TWO CRANE



CALCULATED RIGGING WEIGHT=XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE

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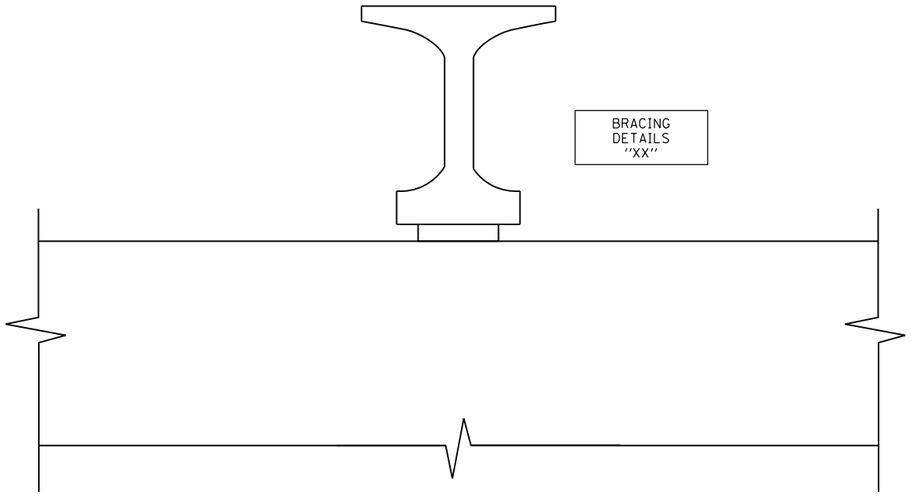
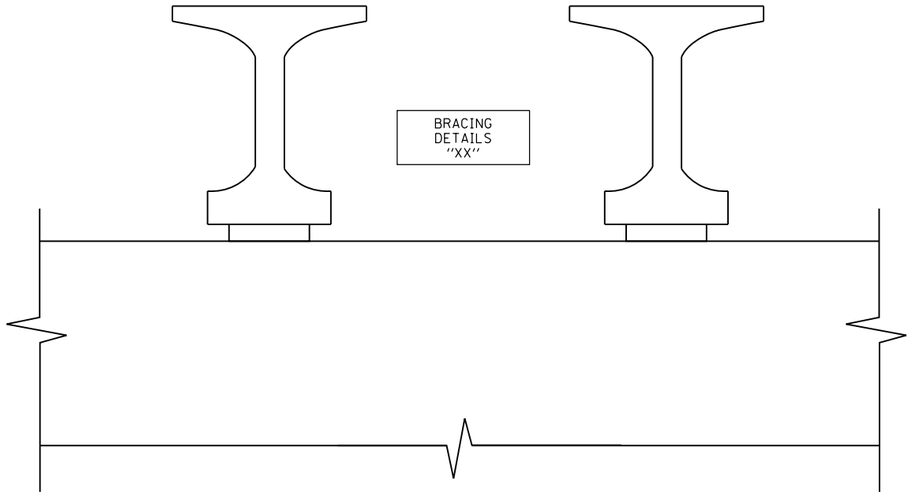
Illinois Tollway

ERECTION PLAN - CONCRETE

DATE
3-31-2017



TEMPORARY ERECTION
BRACING DETAIL



TEMPORARY ERECTION
BRACING DETAIL

NOTES TO DESIGNER/CONTRACTOR

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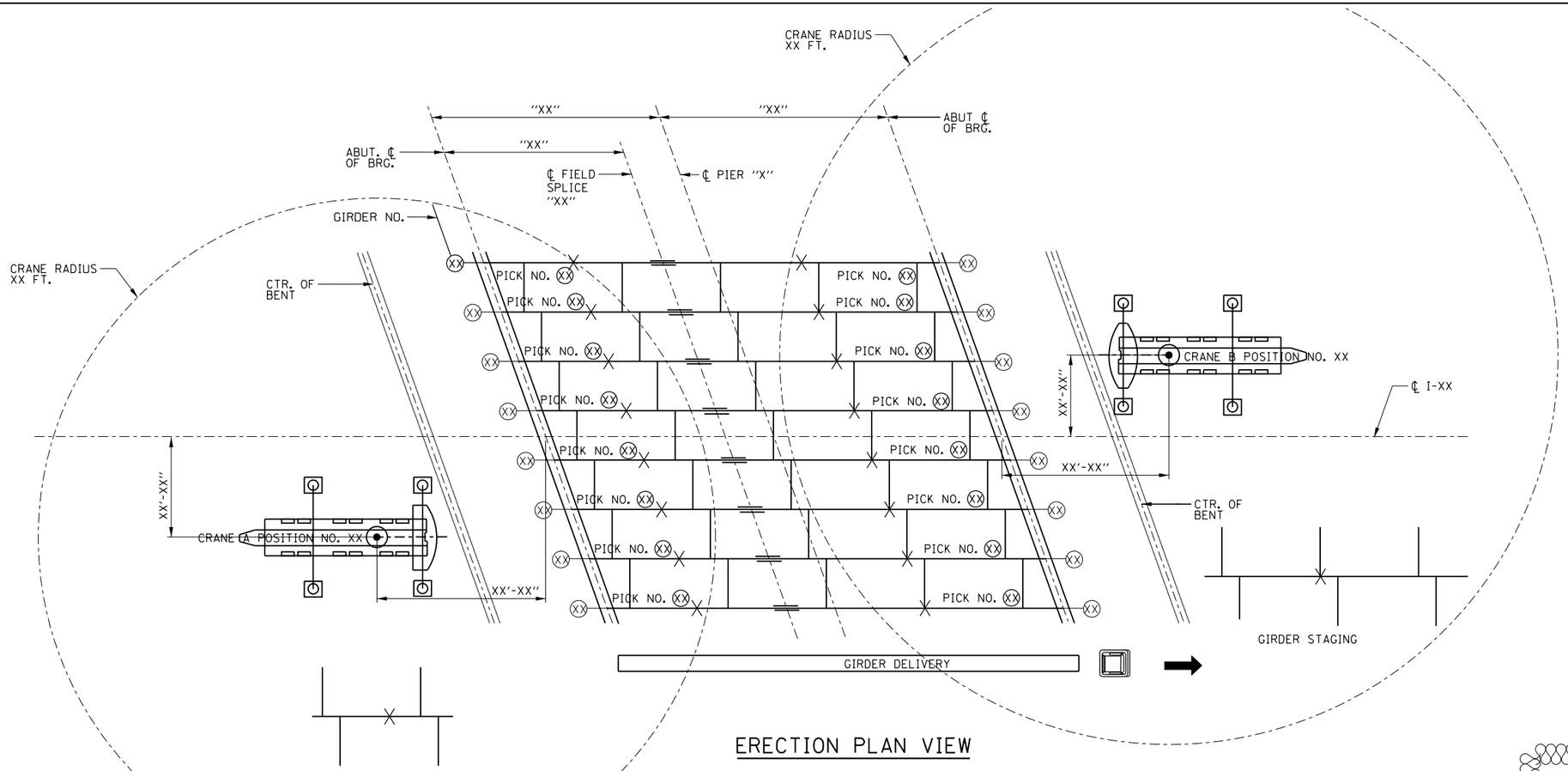
Illinois Tollway

ERECTION PLAN - CONCRETE

DATE
3-31-2017



ERECTION PLAN VIEW

X DENOTES PICK LOCATION

PICK NO.	CRANE I.D.	GIRDER NO.	PIECE NO.	PIECE LENGTH	PIECE WEIGHT	RIGGING WEIGHT	TOTAL PICK WEIGHT	CRANE CAPACITY

NOTE TO DESIGNER/CONTRACTOR

TABLE HEADING AND INFORMATION ARE SUGGESTED AND FOR USE AS A GUIDE FOR PREPARATION OF SUBMITTAL.

NOTE TO DESIGNER/CONTRACTOR

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CRANE INFORMATION:

CRANE "A"-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X"

CRANE "B"-XXX TON HYDRO
(OR EQUIVALENT)
COUNTERWEIGHT XXX,XXX LBS.
MAIN BOOM = XXX'
ANTICIPATED MAX WEIGHT XX,XXX LBS.
CAPACITY AT RADIUS= XX,XXX LBS.
MAX RADIUS=XX'-X"

ERECTION SEQUENCE:

1. "XX"
2. "XX"
3. "XX"
4. "XX"

ERECTION LIMITATIONS:

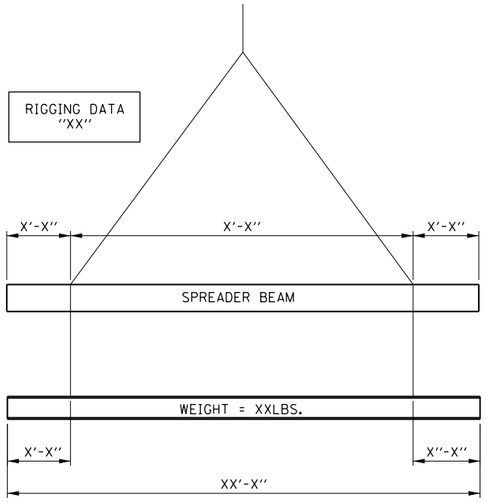
1. ERECTION SHALL NOT BE CONDUCTED IN WINDS XX MPH OR HIGHER
2. CRANE OUTRIGGERS SHALL BE FULLY EXTENDED WHEN IN USE.
3. "XX"
4. "XX"

M-BRG-528
SHEET 1 OF 3

Illinois Tollway

ERECTION PLAN - STEEL

DATE
3-31-2017

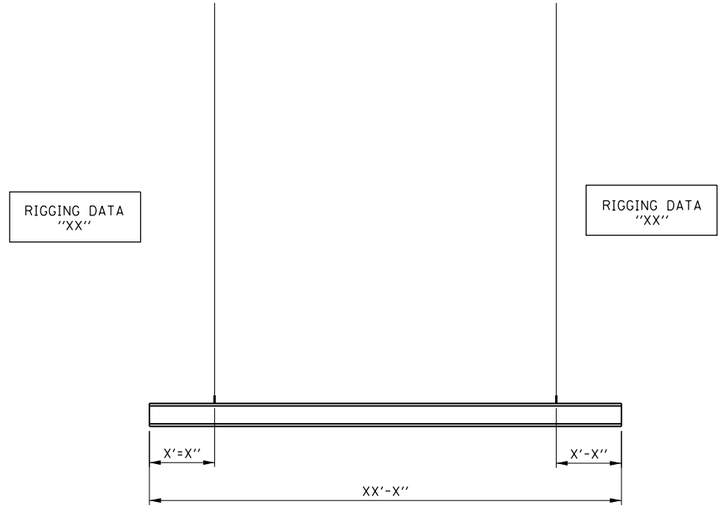


CALCULATED RIGGING WEIGHT = XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE WITH SPEADER BEAM

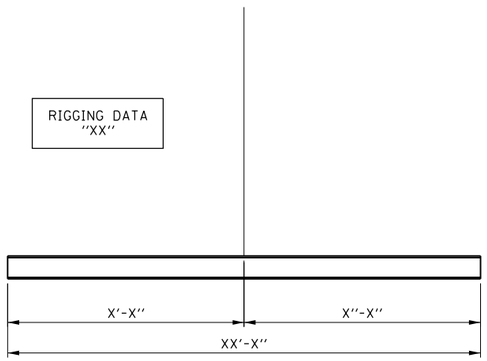


CALCULATED RIGGING WEIGHT = XX LBS.

ELEVATION VIEW

RIGGING DETAILS

TWO CRANE

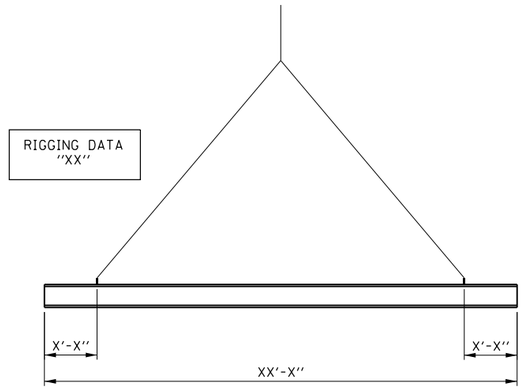


CALCULATED RIGGING WEIGHT = XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE



CALCULATED RIGGING WEIGHT=XXLBS.

ELEVATION VIEW

RIGGING DETAILS

SINGLE CRANE

NOTES TO DESIGNER/CONTRACTOR

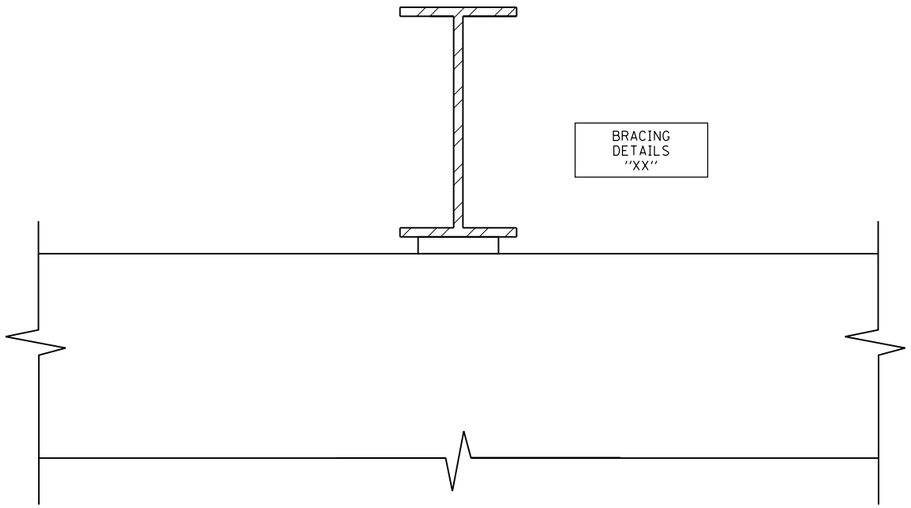
THIS BASE SHEET SHOWS TYPICAL CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. THS SHEET IS TO BE USED AS A GUIDE BY THE CONTRACTOR FOR PREPARATION OF AN ERECTION SUBMITAL PER THE CONTRACT REQUIREMENTS. MICROSTATION FILES ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE.

- ''XX'' DESIGNATES DIMENSION VALUES OR INPUT DATA TO BE PROVIDED ON SUBMITTED DRAWING.

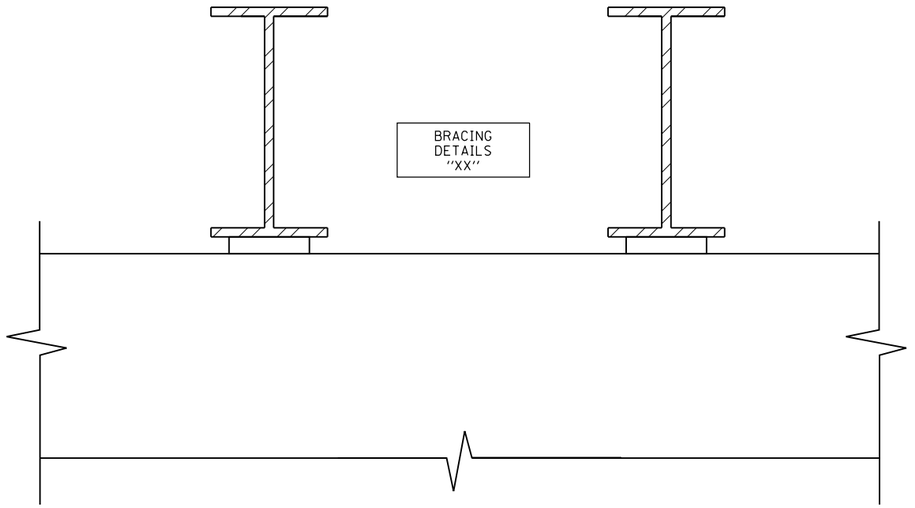
Illinois Tollway

ERECTION PLAN - STEEL

DATE
3-31-2017



TEMPORARY ERECTION
BRACING DETAIL



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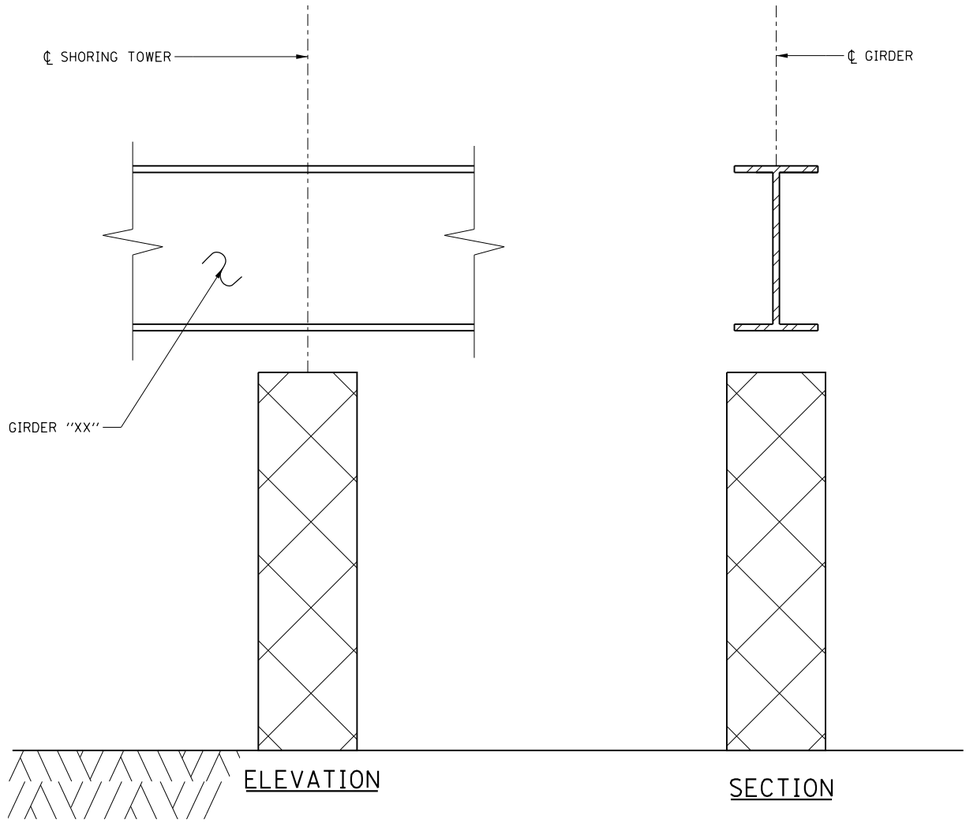
BRACING DETAIL



TEMPORARY SHORING DETAILS

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- PROPOSED TEMPORARY SHORING AND DETAILS SHALL BE SHOWN.

Illinois Tollway

ERECTION PLAN - STEEL

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