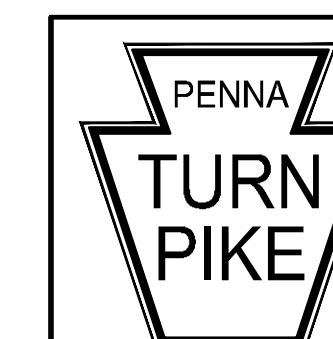


PENNSYLVANIA TURNPIKE COMMISSION

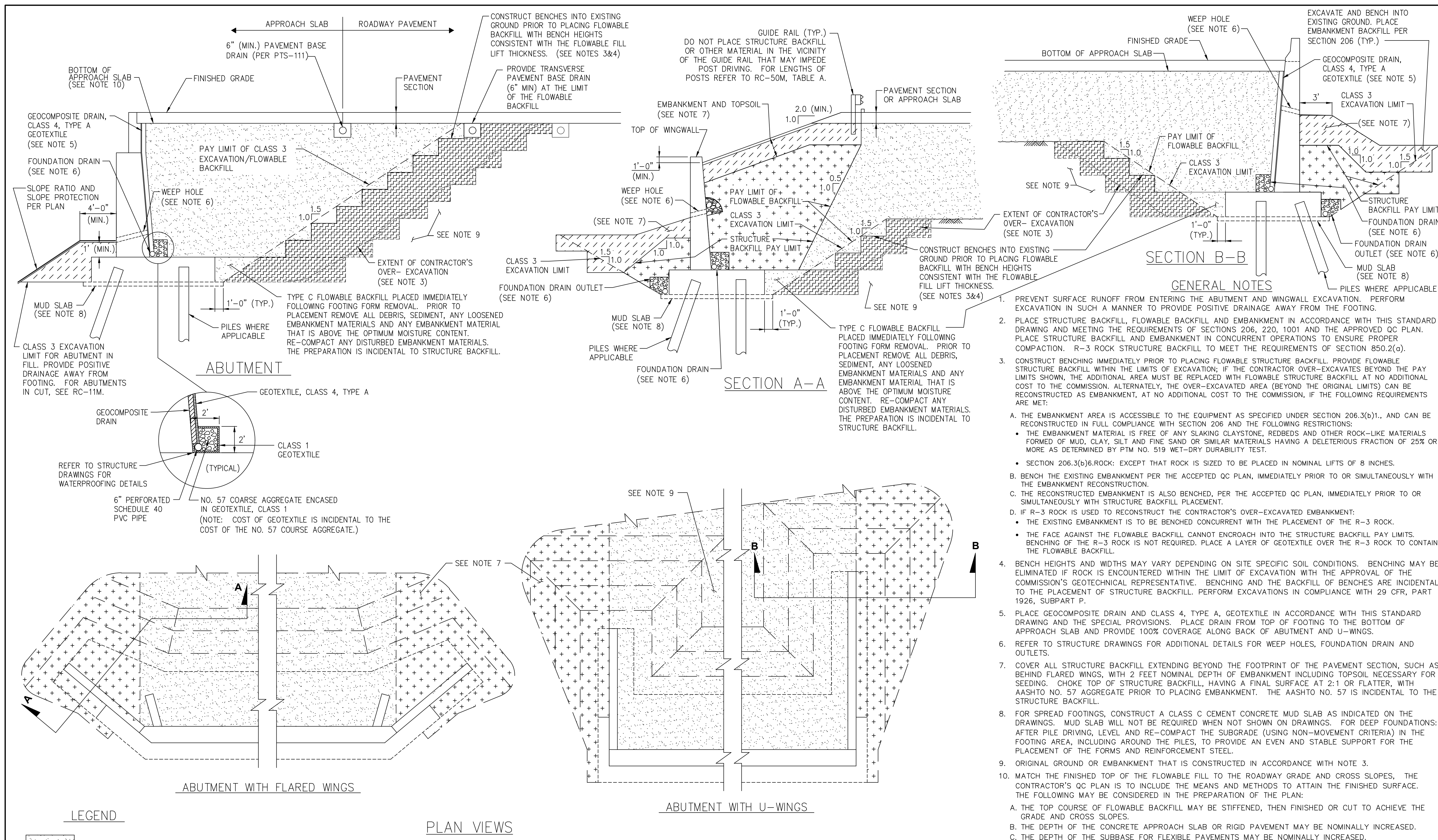
INDEX OF STANDARDS FOR BRIDGE CONSTRUCTION

<u>STANDARD DRAWING NUMBER</u>	<u>DRAWING DATE</u>	<u>DESCRIPTION</u>
*** PTS-700 (1 Sheet)	FEBRUARY 2016	STRUCTURE BACKFILL AT BRIDGE ABUTMENTS AND WINGWALLS FLOWABLE BACKFILL - TYPE C
*** PTS-701 (1 Sheet)	FEBRUARY 2016	STRUCTURE BACKFILL AT BRIDGE ABUTMENTS AND WINGWALLS R-3 ROCK LINING
*** PTS-702 (2 Sheets)	OCTOBER 2007	GEOGRID REINFORCED BACKFILL AT STRUCTURES (DELETED)
PTS-710 (1 Sheet)	OCTOBER 2007	BRIDGE DECK TEMPORARY BARRIER
PTS-715 (2 Sheets)	OCTOBER 2007	PERMANENT CONCRETE GLARE SCREEN AND CONCRETE MEDIAN BARRIER, STRUCTURE MOUNTED - F-SHAPE
** PTS-740 (8 Sheets)	OCTOBER 2015	MONOPIPE SIGN STRUCTURES FOR STATIC PANELS
** PTS-750 (12 Sheets)	OCTOBER 2015	MONOPIPE SIGN STRUCTURES FOR DYNAMIC MESSAGE SIGNS

* - CHANGE NO. 1 (REVISED BY CHANGE NO. 2)
 ** - CHANGE NO. 2
 *** - CHANGE NO. 3



OCTOBER 2007 EDITION



- GENERAL NOTES**
- PREVENT SURFACE RUNOFF FROM ENTERING THE ABUTMENT AND WINGWALL EXCAVATION. PERFORM EXCAVATION IN SUCH A MANNER TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE FOOTING.
 - PLACE STRUCTURE BACKFILL, FLOWABLE BACKFILL AND EMBANKMENT IN ACCORDANCE WITH THIS STANDARD DRAWING AND MEETING THE REQUIREMENTS OF SECTIONS 206, 220, 1001 AND THE APPROVED QC PLAN. PLACE STRUCTURE BACKFILL AND EMBANKMENT IN CONCURRENT OPERATIONS TO ENSURE PROPER COMPACTION. R-3 ROCK STRUCTURE BACKFILL TO MEET THE REQUIREMENTS OF SECTION 850.2(a).
 - CONSTRUCT BENCHING IMMEDIATELY PRIOR TO PLACING FLOWABLE STRUCTURE BACKFILL. PROVIDE FLOWABLE STRUCTURE BACKFILL WITHIN THE LIMITS OF EXCAVATION; IF THE CONTRACTOR OVER-EXCAVATES BEYOND THE PAY LIMITS SHOWN, THE ADDITIONAL AREA MUST BE REPLACED WITH FLOWABLE STRUCTURE BACKFILL AT NO ADDITIONAL COST TO THE COMMISSION. ALTERNATELY, THE OVER-EXCAVATED AREA (BEYOND THE ORIGINAL LIMITS) CAN BE RECONSTRUCTED AS EMBANKMENT, AT NO ADDITIONAL COST TO THE COMMISSION, IF THE FOLLOWING REQUIREMENTS ARE MET:
 - A. THE EMBANKMENT AREA IS ACCESSIBLE TO THE EQUIPMENT AS SPECIFIED UNDER SECTION 206.3(b)1., AND CAN BE RECONSTRUCTED IN FULL COMPLIANCE WITH SECTION 206 AND THE FOLLOWING RESTRICTIONS:
 - THE EMBANKMENT MATERIAL IS FREE OF ANY SLAKING CLAYSTONE, REDBEDS AND OTHER ROCK-LIKE MATERIALS FORMED OF MUD, CLAY, SILT AND FINE SAND OR SIMILAR MATERIALS HAVING A DELETERIOUS FRACTION OF 25% OR MORE AS DETERMINED BY PTM NO. 519 WET-DRY DURABILITY TEST.
 - SECTION 206.3(b)6.ROCK: EXCEPT THAT ROCK IS SIZED TO BE PLACED IN NOMINAL LIFTS OF 8 INCHES.
 - B. BENCH THE EXISTING EMBANKMENT PER THE ACCEPTED QC PLAN, IMMEDIATELY PRIOR TO OR SIMULTANEOUSLY WITH THE EMBANKMENT RECONSTRUCTION.
 - C. THE RECONSTRUCTED EMBANKMENT IS ALSO BENCHED, PER THE ACCEPTED QC PLAN, IMMEDIATELY PRIOR TO OR SIMULTANEOUSLY WITH STRUCTURE BACKFILL PLACEMENT.
 - D. IF R-3 ROCK IS USED TO RECONSTRUCT THE CONTRACTOR'S OVER-EXCAVATED EMBANKMENT:
 - THE EXISTING EMBANKMENT IS TO BE BENCHED CONCURRENT WITH THE PLACEMENT OF THE R-3 ROCK.
 - THE FACE AGAINST THE FLOWABLE BACKFILL CANNOT ENCROACH INTO THE STRUCTURE BACKFILL PAY LIMITS. BENCHING OF THE R-3 ROCK IS NOT REQUIRED. PLACE A LAYER OF GEOTEXTILE OVER THE R-3 ROCK TO CONTAIN THE FLOWABLE BACKFILL.
 - BENCH HEIGHTS AND WIDTHS MAY VARY DEPENDING ON SITE SPECIFIC SOIL CONDITIONS. BENCHING MAY BE ELIMINATED IF ROCK IS ENCOUNTERED WITHIN THE LIMIT OF EXCAVATION WITH THE APPROVAL OF THE COMMISSION'S GEOTECHNICAL REPRESENTATIVE. BENCHING AND THE BACKFILL OF BENCHES ARE INCIDENTAL TO THE PLACEMENT OF STRUCTURE BACKFILL. PERFORM EXCAVATIONS IN COMPLIANCE WITH 29 CFR, PART 1926, SUBPART P.
 - PLACE GEOCOMPOSITE DRAIN AND CLASS 4, TYPE A, GEOTEXTILE IN ACCORDANCE WITH THIS STANDARD DRAWING AND THE SPECIAL PROVISIONS. PLACE DRAIN FROM TOP OF FOOTING TO THE BOTTOM OF APPROACH SLAB AND PROVIDE 100% COVERAGE ALONG BACK OF ABUTMENT AND U-WINGS.
 - REFER TO STRUCTURE DRAWINGS FOR ADDITIONAL DETAILS FOR WEEP HOLES, FOUNDATION DRAIN AND OUTLETS.
 - COVER ALL STRUCTURE BACKFILL EXTENDING BEYOND THE FOOTPRINT OF THE PAVEMENT SECTION, SUCH AS BEHIND FLARED WINGS, WITH 2 FEET NOMINAL DEPTH OF EMBANKMENT INCLUDING TOPSOIL NECESSARY FOR SEEDING. CHOKE TOP OF STRUCTURE BACKFILL, HAVING A FINAL SURFACE AT 2:1 OR FLATTER, WITH AASHTO NO. 57 AGGREGATE PRIOR TO PLACING EMBANKMENT. THE AASHTO NO. 57 IS INCIDENTAL TO THE STRUCTURE BACKFILL.
 - FOR SPREAD FOOTINGS, CONSTRUCT A CLASS C CEMENT CONCRETE MUD SLAB AS INDICATED ON THE DRAWINGS. MUD SLAB WILL NOT BE REQUIRED WHEN NOT SHOWN ON DRAWINGS. FOR DEEP FOUNDATIONS: AFTER PILE DRIVING, LEVEL AND RE-COMPACT THE SUBGRADE (USING NON-MOVEMENT CRITERIA) IN THE FOOTING AREA, INCLUDING AROUND THE PILES, TO PROVIDE AN EVEN AND STABLE SUPPORT FOR THE PLACEMENT OF THE FORMS AND REINFORCEMENT STEEL.
 - ORIGINAL GROUND OR EMBANKMENT THAT IS CONSTRUCTED IN ACCORDANCE WITH NOTE 3.
 - MATCH THE FINISHED TOP OF THE FLOWABLE FILL TO THE ROADWAY GRADE AND CROSS SLOPES, THE CONTRACTOR'S QC PLAN IS TO INCLUDE THE MEANS AND METHODS TO ATTAIN THE FINISHED SURFACE. THE FOLLOWING MAY BE CONSIDERED IN THE PREPARATION OF THE PLAN:
 - A. THE TOP COURSE OF FLOWABLE BACKFILL MAY BE STIFFENED, THEN FINISHED OR CUT TO ACHIEVE THE GRADE AND CROSS SLOPES.
 - B. THE DEPTH OF THE CONCRETE APPROACH SLAB OR RIGID PAVEMENT MAY BE NOMINALLY INCREASED.
 - C. THE DEPTH OF THE SUBBASE FOR FLEXIBLE PAVEMENTS MAY BE NOMINALLY INCREASED.

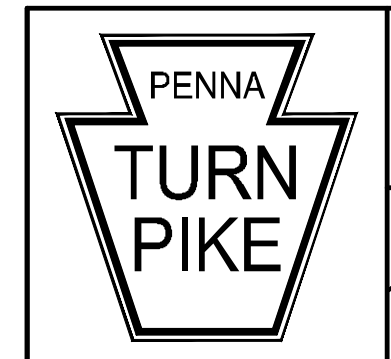
RECOMMENDED: FEBRUARY 5, 2016
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: FEBRUARY 5, 2015
 CHIEF ENGINEER

**STRUCTURE BACKFILL AT
 BRIDGE ABUTMENTS AND WINGWALLS
 FLOWABLE BACKFILL - TYPE C**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

FILE NAME: PTS-700-1.DWG
 DRAWING TYPE: 5A

DATE: FEBRUARY 2016
 SHEET 1 OF 1
 PTS-700



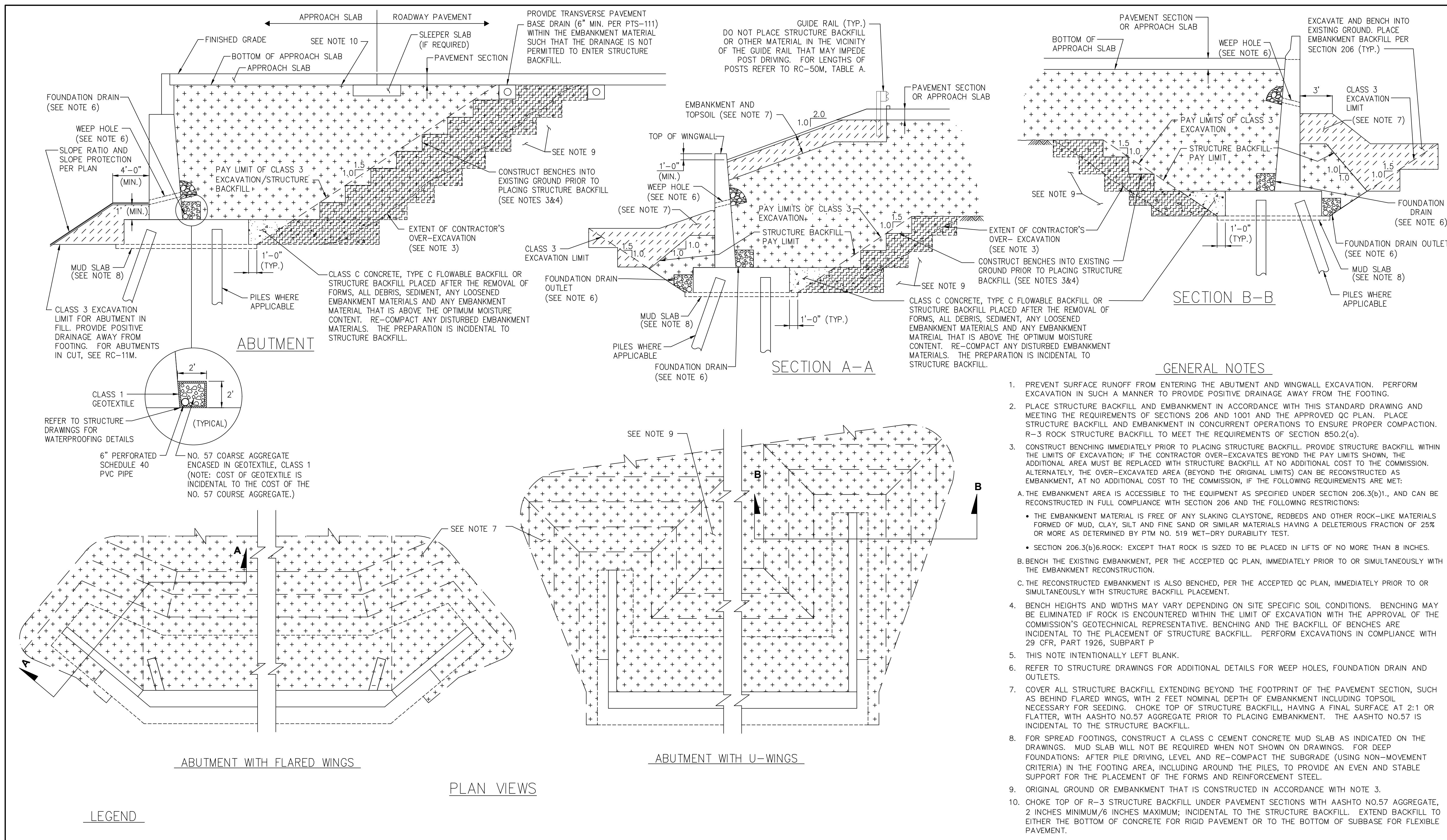
LEGEND

- FLOWABLE BACKFILL - TYPE C
- EMBANKMENT MATERIAL
- STRUCTURE BACKFILL
- CONTRACTOR'S OVER-EXCAVATION AREA

PLAN VIEWS

ABUTMENT WITH FLARED WINGS

ABUTMENT WITH U-WINGS



- GENERAL NOTES**
1. PREVENT SURFACE RUNOFF FROM ENTERING THE ABUTMENT AND WINGWALL EXCAVATION. PERFORM EXCAVATION IN SUCH A MANNER TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE FOOTING.
 2. PLACE STRUCTURE BACKFILL AND EMBANKMENT IN ACCORDANCE WITH THIS STANDARD DRAWING AND MEETING THE REQUIREMENTS OF SECTIONS 206 AND 1001 AND THE APPROVED QC PLAN. PLACE STRUCTURE BACKFILL AND EMBANKMENT IN CONCURRENT OPERATIONS TO ENSURE PROPER COMPACTION. R-3 ROCK STRUCTURE BACKFILL TO MEET THE REQUIREMENTS OF SECTION 850.2(g).
 3. CONSTRUCT BENCHING IMMEDIATELY PRIOR TO PLACING STRUCTURE BACKFILL. PROVIDE STRUCTURE BACKFILL WITHIN THE LIMITS OF EXCAVATION; IF THE CONTRACTOR OVER-EXCAVATES BEYOND THE PAY LIMITS SHOWN, THE ADDITIONAL AREA MUST BE REPLACED WITH STRUCTURE BACKFILL AT NO ADDITIONAL COST TO THE COMMISSION. ALTERNATELY, THE OVER-EXCAVATED AREA (BEYOND THE ORIGINAL LIMITS) CAN BE RECONSTRUCTED AS EMBANKMENT, AT NO ADDITIONAL COST TO THE COMMISSION, IF THE FOLLOWING REQUIREMENTS ARE MET:
 - A. THE EMBANKMENT AREA IS ACCESSIBLE TO THE EQUIPMENT AS SPECIFIED UNDER SECTION 206.3(b)1., AND CAN BE RECONSTRUCTED IN FULL COMPLIANCE WITH SECTION 206 AND THE FOLLOWING RESTRICTIONS:
 - THE EMBANKMENT MATERIAL IS FREE OF ANY SLAKING CLAYSTONE, REDBEDS AND OTHER ROCK-LIKE MATERIALS FORMED OF MUD, CLAY, SILT AND FINE SAND OR SIMILAR MATERIALS HAVING A DELETERIOUS FRACTION OF 25% OR MORE AS DETERMINED BY PTM NO. 519 WET-DRY DURABILITY TEST.
 - SECTION 206.3(b)6.ROCK: EXCEPT THAT ROCK IS SIZED TO BE PLACED IN LIFTS OF NO MORE THAN 8 INCHES.
 - B. BENCH THE EXISTING EMBANKMENT, PER THE ACCEPTED QC PLAN, IMMEDIATELY PRIOR TO OR SIMULTANEOUSLY WITH THE EMBANKMENT RECONSTRUCTION.
 - C. THE RECONSTRUCTED EMBANKMENT IS ALSO BENCHED, PER THE ACCEPTED QC PLAN, IMMEDIATELY PRIOR TO OR SIMULTANEOUSLY WITH STRUCTURE BACKFILL PLACEMENT.
 4. BENCH HEIGHTS AND WIDTHS MAY VARY DEPENDING ON SITE SPECIFIC SOIL CONDITIONS. BENCHING MAY BE ELIMINATED IF ROCK IS ENCOUNTERED WITHIN THE LIMIT OF EXCAVATION WITH THE APPROVAL OF THE COMMISSION'S GEOTECHNICAL REPRESENTATIVE. BENCHING AND THE BACKFILL OF BENCHES ARE INCIDENTAL TO THE PLACEMENT OF STRUCTURE BACKFILL. PERFORM EXCAVATIONS IN COMPLIANCE WITH 29 CFR, PART 1926, SUBPART P
 5. THIS NOTE INTENTIONALLY LEFT BLANK.
 6. REFER TO STRUCTURE DRAWINGS FOR ADDITIONAL DETAILS FOR WEEP HOLES, FOUNDATION DRAIN AND OUTLETS.
 7. COVER ALL STRUCTURE BACKFILL EXTENDING BEYOND THE FOOTPRINT OF THE PAVEMENT SECTION, SUCH AS BEHIND FLARED WINGS, WITH 2 FEET NOMINAL DEPTH OF EMBANKMENT INCLUDING TOPSOIL NECESSARY FOR SEEDING. CHOKE TOP OF STRUCTURE BACKFILL, HAVING A FINAL SURFACE AT 2:1 OR FLATTER, WITH AASHTO NO.57 AGGREGATE PRIOR TO PLACING EMBANKMENT. THE AASHTO NO.57 IS INCIDENTAL TO THE STRUCTURE BACKFILL.
 8. FOR SPREAD FOOTINGS, CONSTRUCT A CLASS C CEMENT CONCRETE MUD SLAB AS INDICATED ON THE DRAWINGS. MUD SLAB WILL NOT BE REQUIRED WHEN NOT SHOWN ON DRAWINGS. FOR DEEP FOUNDATIONS: AFTER PILE DRIVING, LEVEL AND RE-COMPACT THE SUBGRADE (USING NON-MOVEMENT CRITERIA) IN THE FOOTING AREA, INCLUDING AROUND THE PILES, TO PROVIDE AN EVEN AND STABLE SUPPORT FOR THE PLACEMENT OF THE FORMS AND REINFORCEMENT STEEL.
 9. ORIGINAL GROUND OR EMBANKMENT THAT IS CONSTRUCTED IN ACCORDANCE WITH NOTE 3.
 10. CHOKE TOP OF R-3 STRUCTURE BACKFILL UNDER PAVEMENT SECTIONS WITH AASHTO NO.57 AGGREGATE, 2 INCHES MINIMUM/6 INCHES MAXIMUM; INCIDENTAL TO THE STRUCTURE BACKFILL. EXTEND BACKFILL TO EITHER THE BOTTOM OF CONCRETE FOR RIGID PAVEMENT OR TO THE BOTTOM OF SUBBASE FOR FLEXIBLE PAVEMENT.

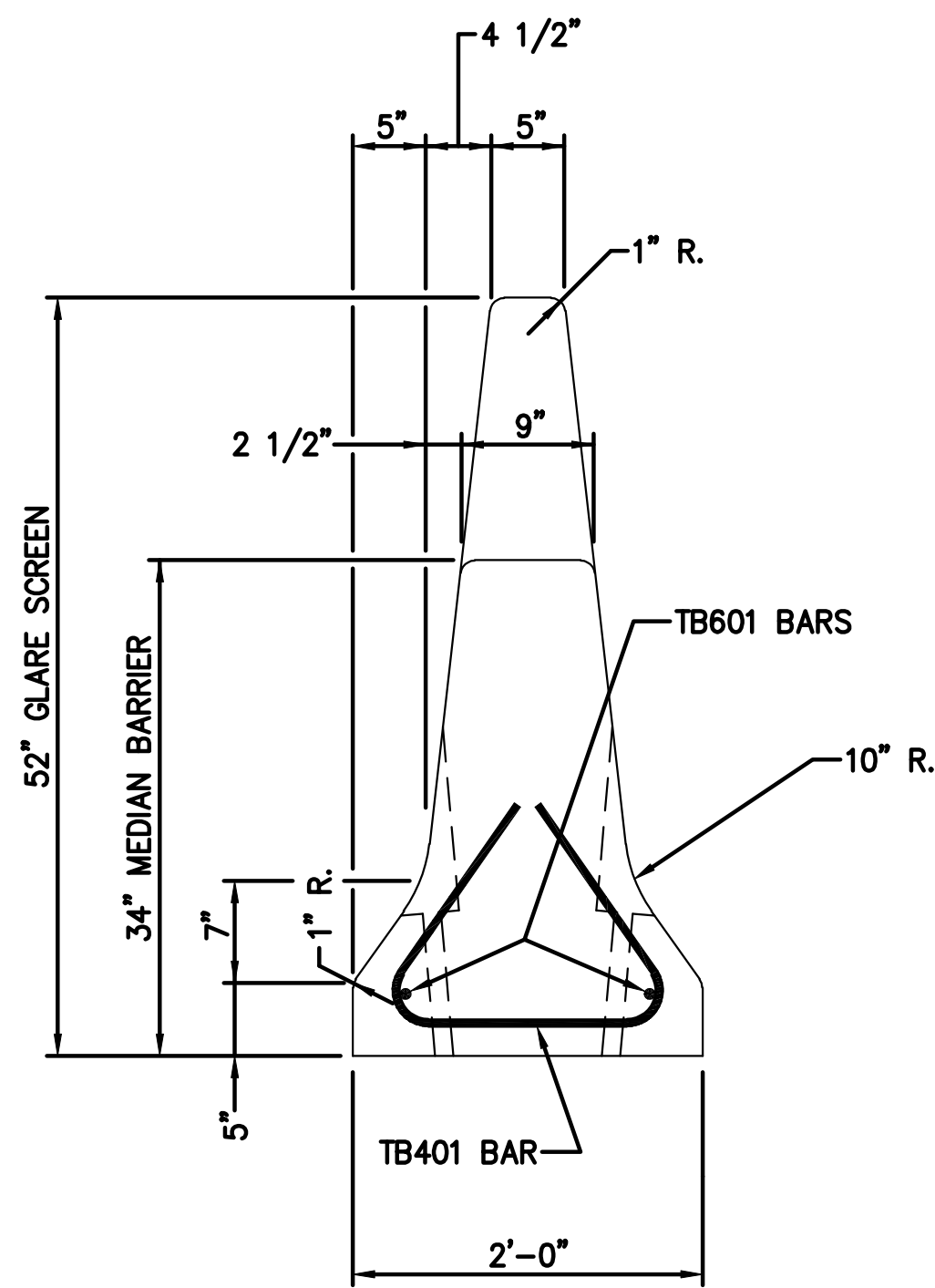
LEGEND

	EMBANKMENT MATERIAL		CLASS C CONCRETE OR TYPE C FLOWABLE FILL
	STRUCTURE BACKFILL		CONTRACTOR'S OVER-EXCAVATION AREA

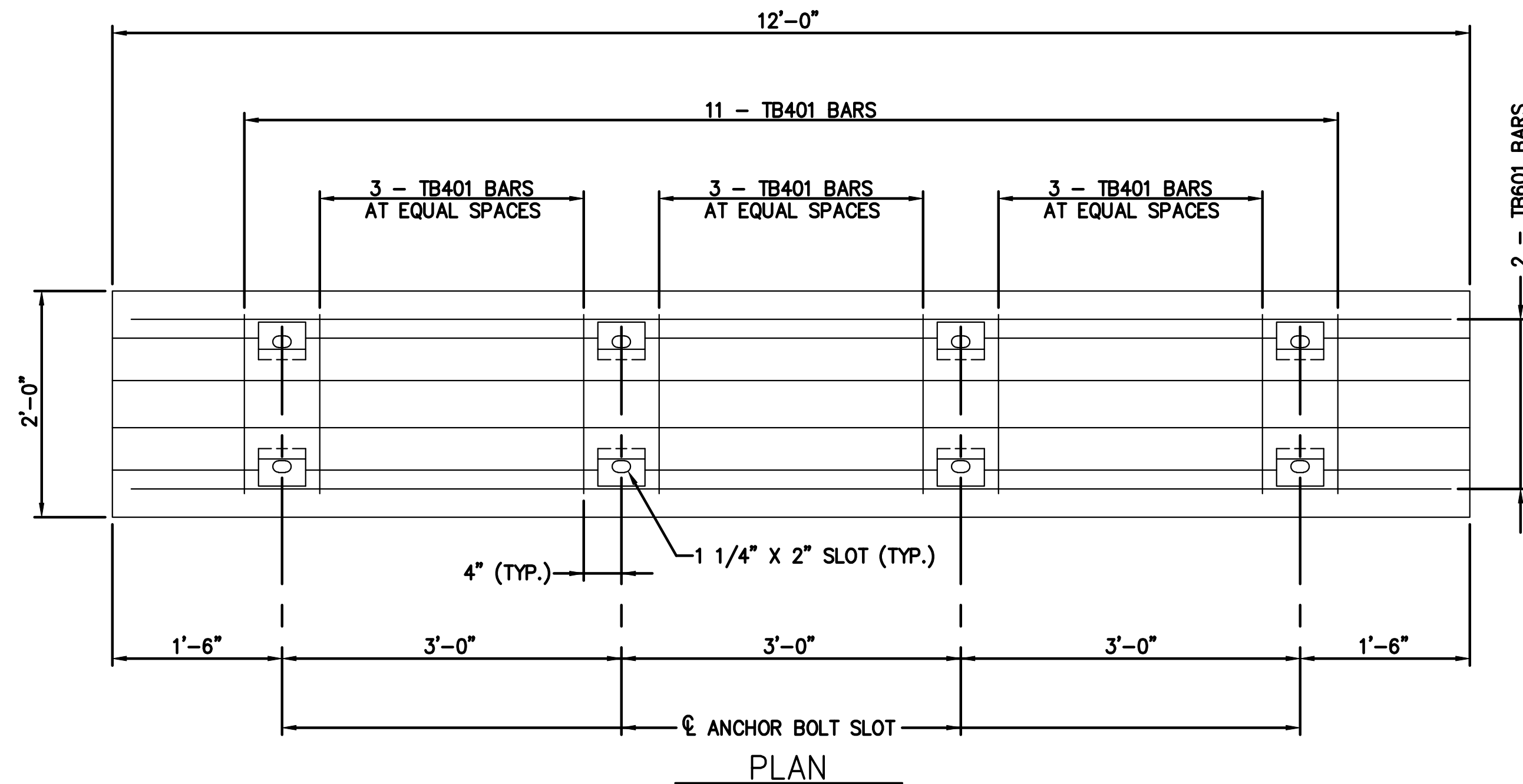
	RECOMMENDED: FEBRUARY 5, 2016
	ASSISTANT CHIEF ENGINEER - DESIGN
	APPROVED: FEBRUARY 5, 2016
	CHIEF ENGINEER

**STRUCTURE BACKFILL AT
BRIDGE ABUTMENTS AND WINGWALLS
R-3 ROCK**

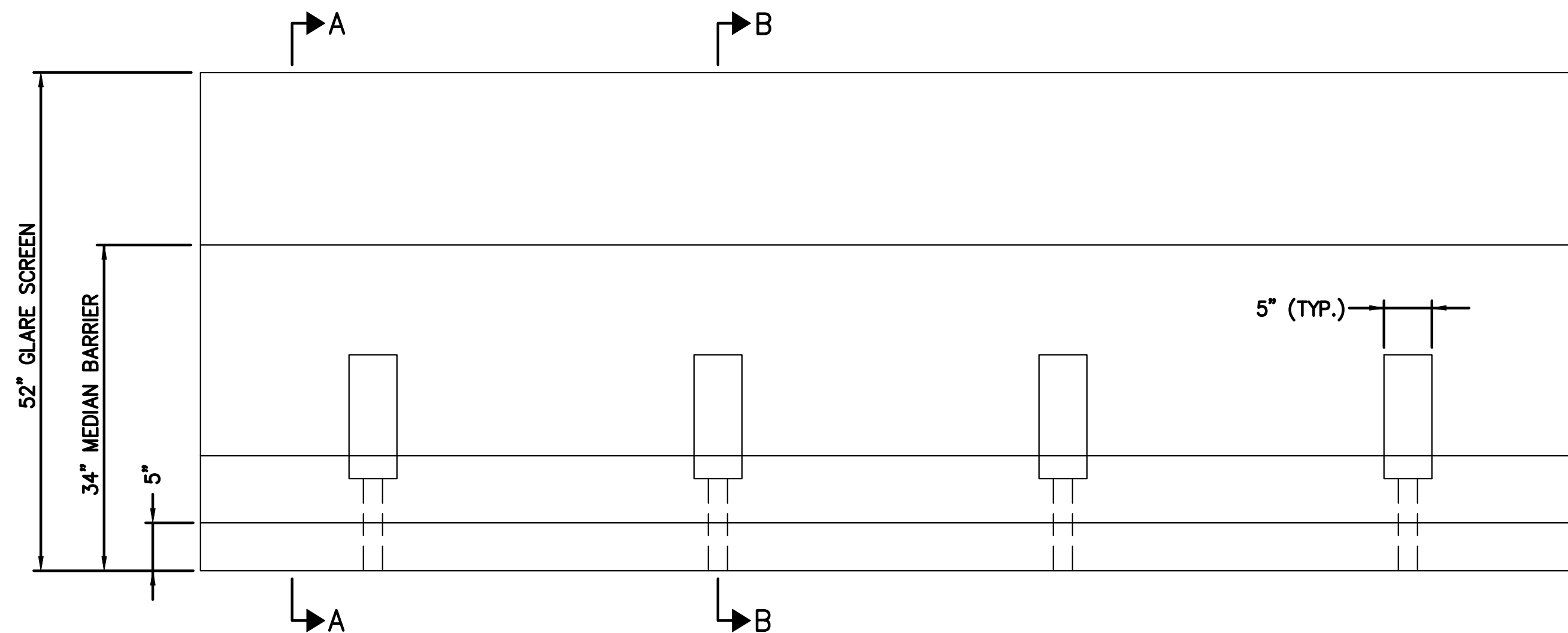
PENNSYLVANIA TURNPIKE COMMISSION STANDARD DRAWING	
FILE NAME: PTS-701-1	SHEET 1 OF 1
DRAWING TYPE: 5A	
DATE: FEBRUARY 2016	PTS-701



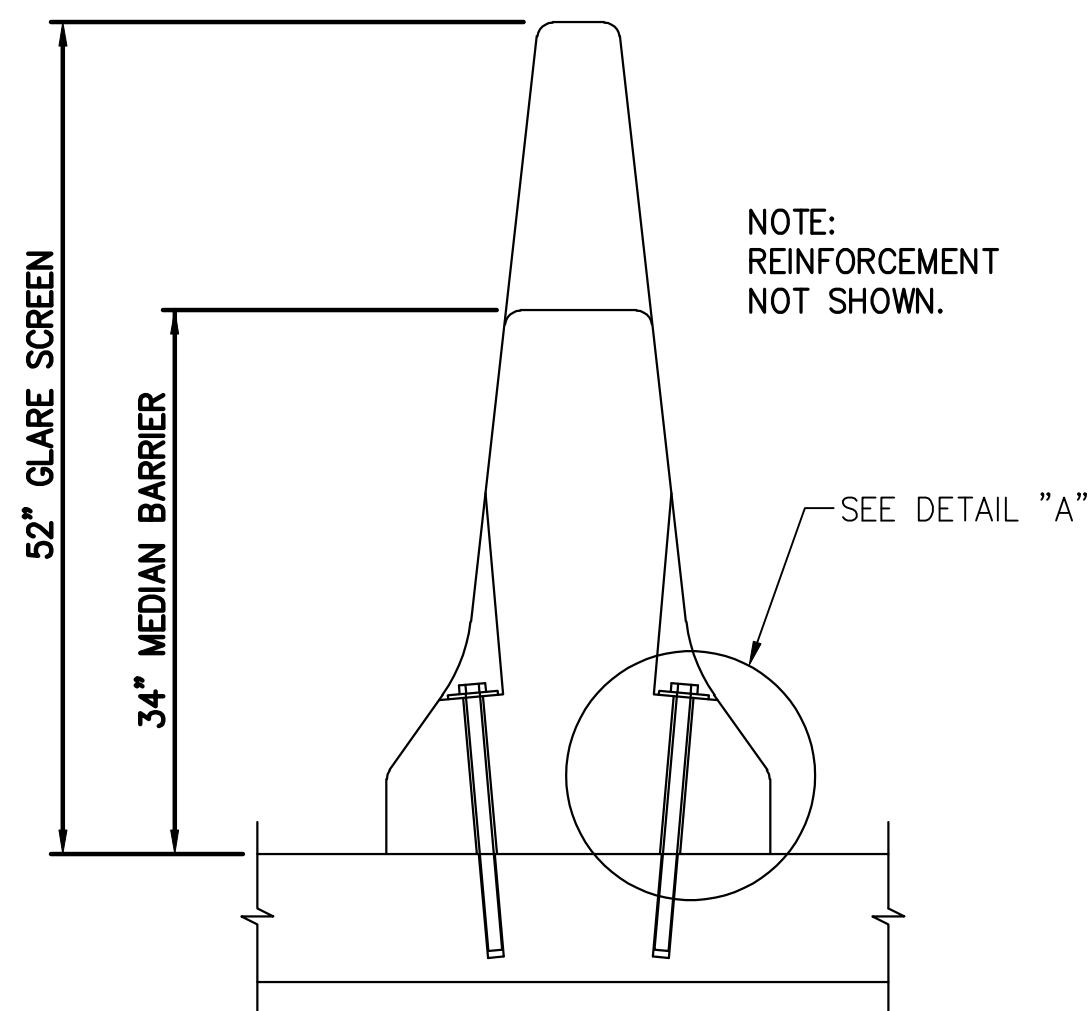
SECTION A-A



PLAN



ELEVATION



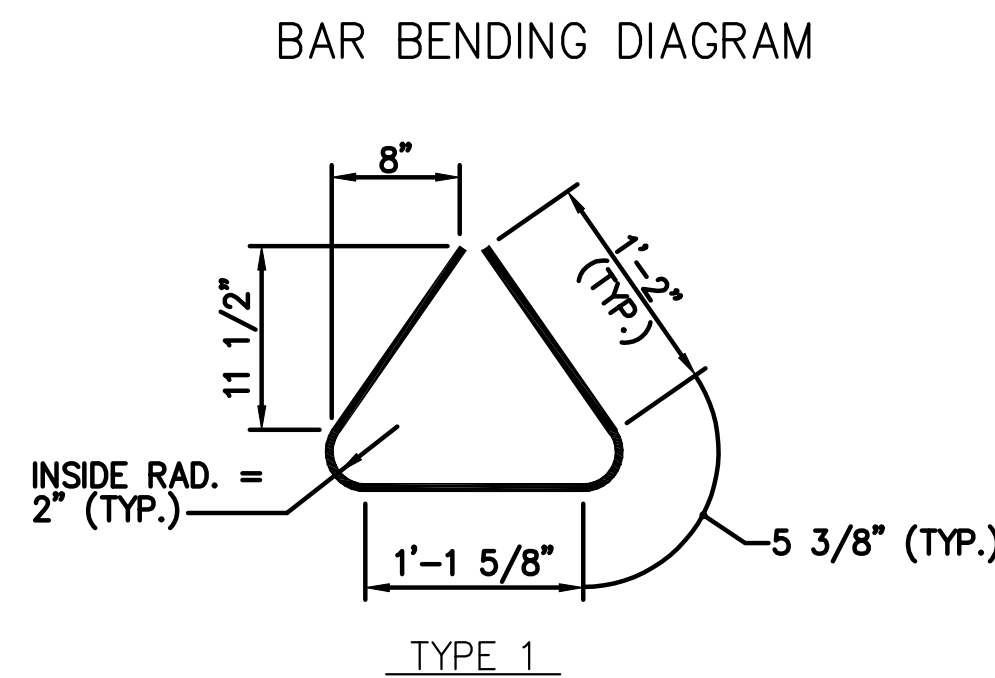
SECTION B-B

NOTE:
REINFORCEMENT
NOT SHOWN.

SEE DETAIL "A"

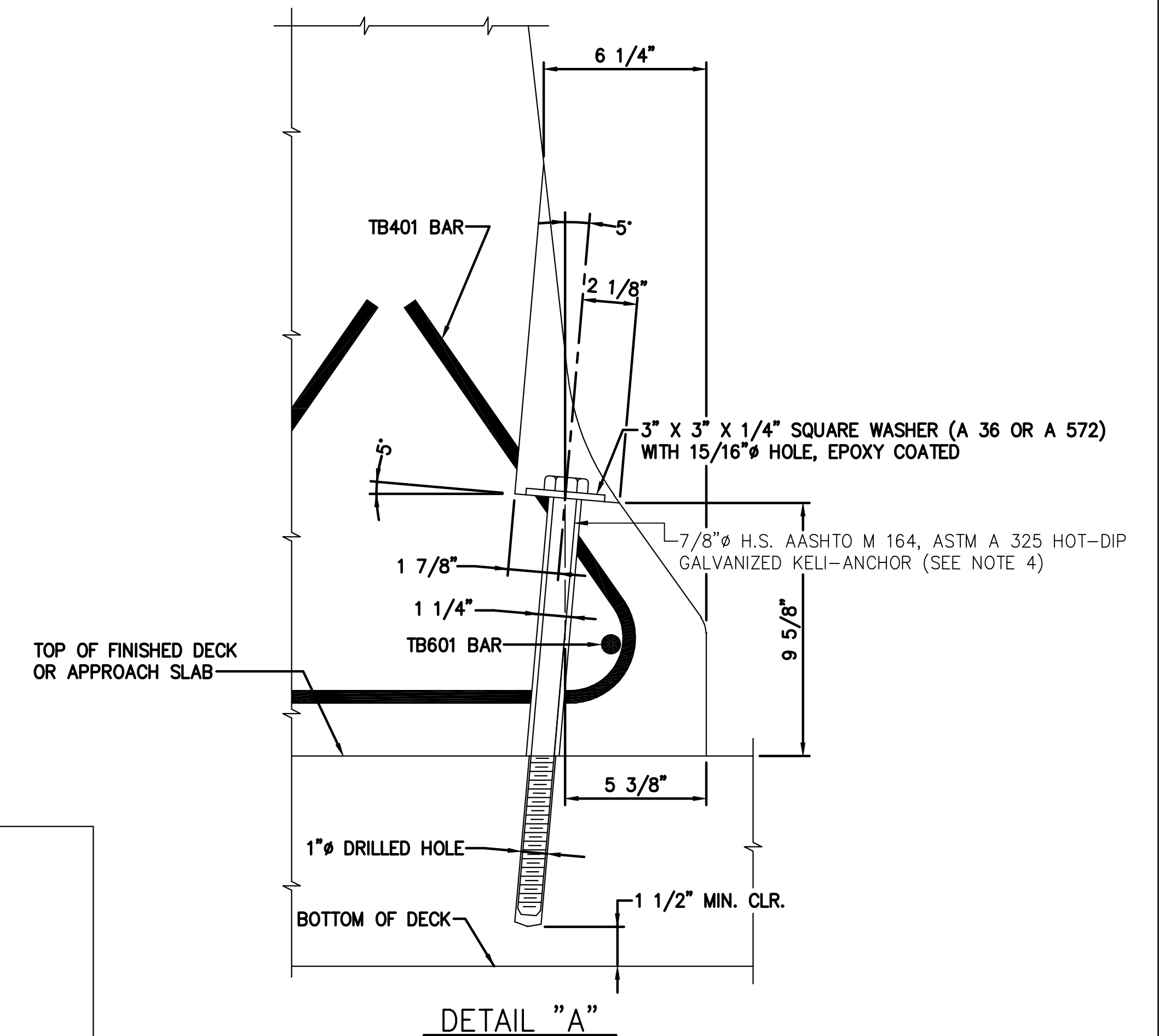
REINFORCEMENT BAR SCHEDULE				
MARK	SIZE	NO.	LENGTH	TYPE
TB401	4	11	4'-4 3/8"	1
TB601	6	2	11'-8"	STR.

NOTE: ALL REINFORCEMENT BARS ARE TO BE EPOXY COATED. BAR SCHEDULE SHOWN IS FOR ONE 12' BARRIER SECTION. ADJUST LENGTH OF TB601 BARS AS NECESSARY FOR SHORTER BARRIER SECTIONS.



NOTES:

1. PROVIDE CONCRETE MEDIAN BARRIER MEETING THE REQUIREMENTS OF SECTION 627 AND SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
2. INSTALL ANCHOR BOLTS ON TRAFFIC SIDE OF BARRIER.
3. IN ADDITION TO REINFORCEMENT SHOWN, PROVIDE REINFORCEMENT AS SHOWN ON RC-59M.
4. USE THE ANCHORAGE SYSTEM ON THE DECK THAT PERMITS THE ANCHOR BOLTS TO BE UNSCREWED FOR THE REMOVAL OF THE BARRIER WHEN NO LONGER REQUIRED. USE H.S. AASHTO M 164, ASTM A 325 HOT-DIP GALVANIZED REMOVABLE KELI-ANCHOR SYSTEM PRECOATED WITH KELI-SLIP AND ANCHORED WITH KELI-GROUT RESIN OR APPROVED EQUAL. DETERMINE ANCHOR BOLT LENGTH AND EMBEDMENT DEPTH ACCORDING TO THE RECOMMENDATIONS OF THE MANUFACTURER.
5. AFTER REMOVAL OF TEMPORARY BARRIER AND ANCHOR BOLTS FROM NEW DECK, FILL ANCHOR BOLT HOLES IN NEW DECK WITH KELI-GROUT RESIN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FINISH KELI-GROUT RESIN NEATLY AND FLUSH WITH TOP OF NEW DECK.
6. PROVIDE SLOTTED PLATE CONNECTIONS BETWEEN BARRIER SECTIONS AS SHOWN ON RC-57M.



DETAIL "A"



RECOMMENDED: OCTOBER 29, 2007
Gayle Sch...
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 31, 2007
Mark Kempf
 CHIEF ENGINEER

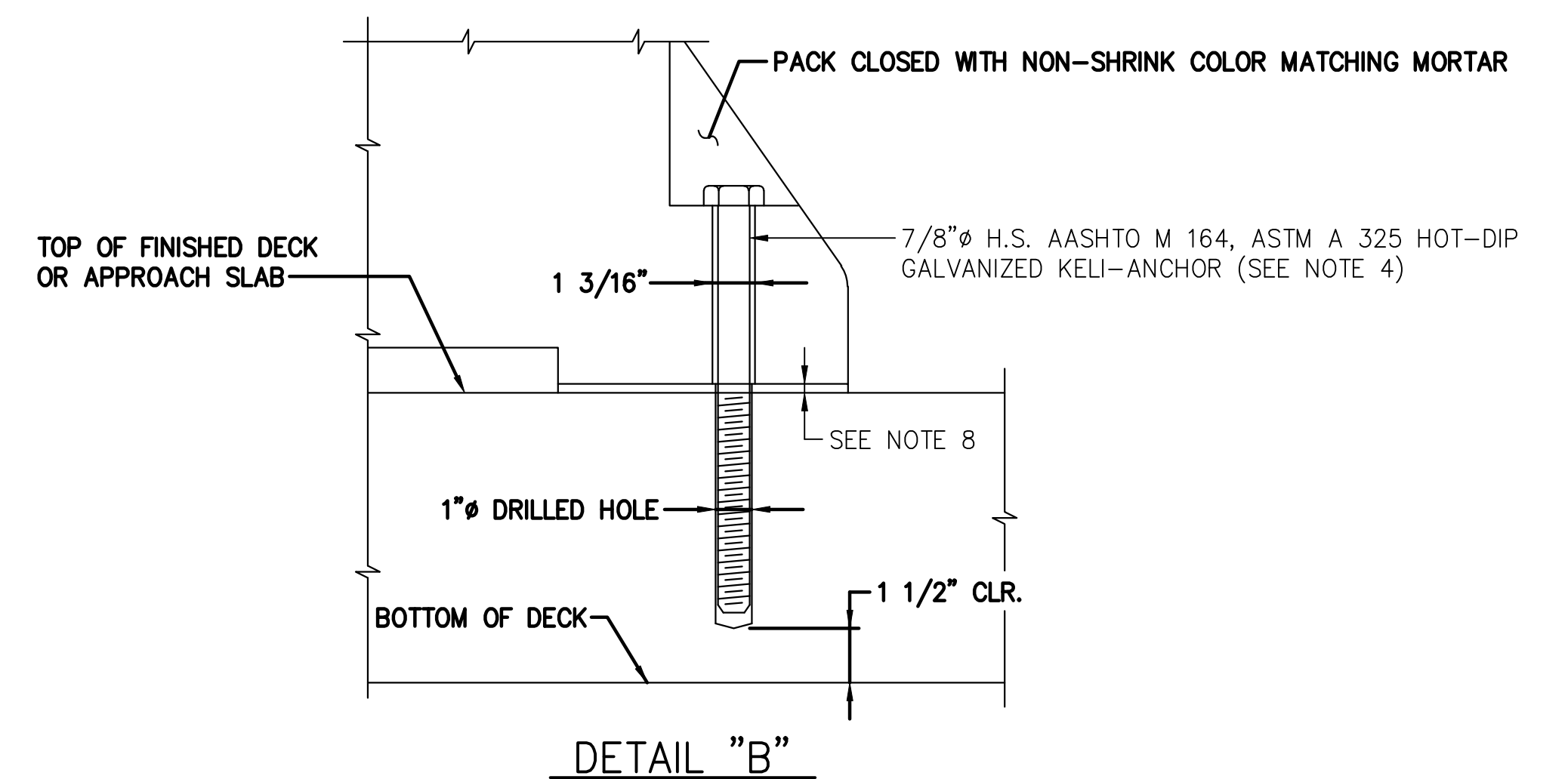
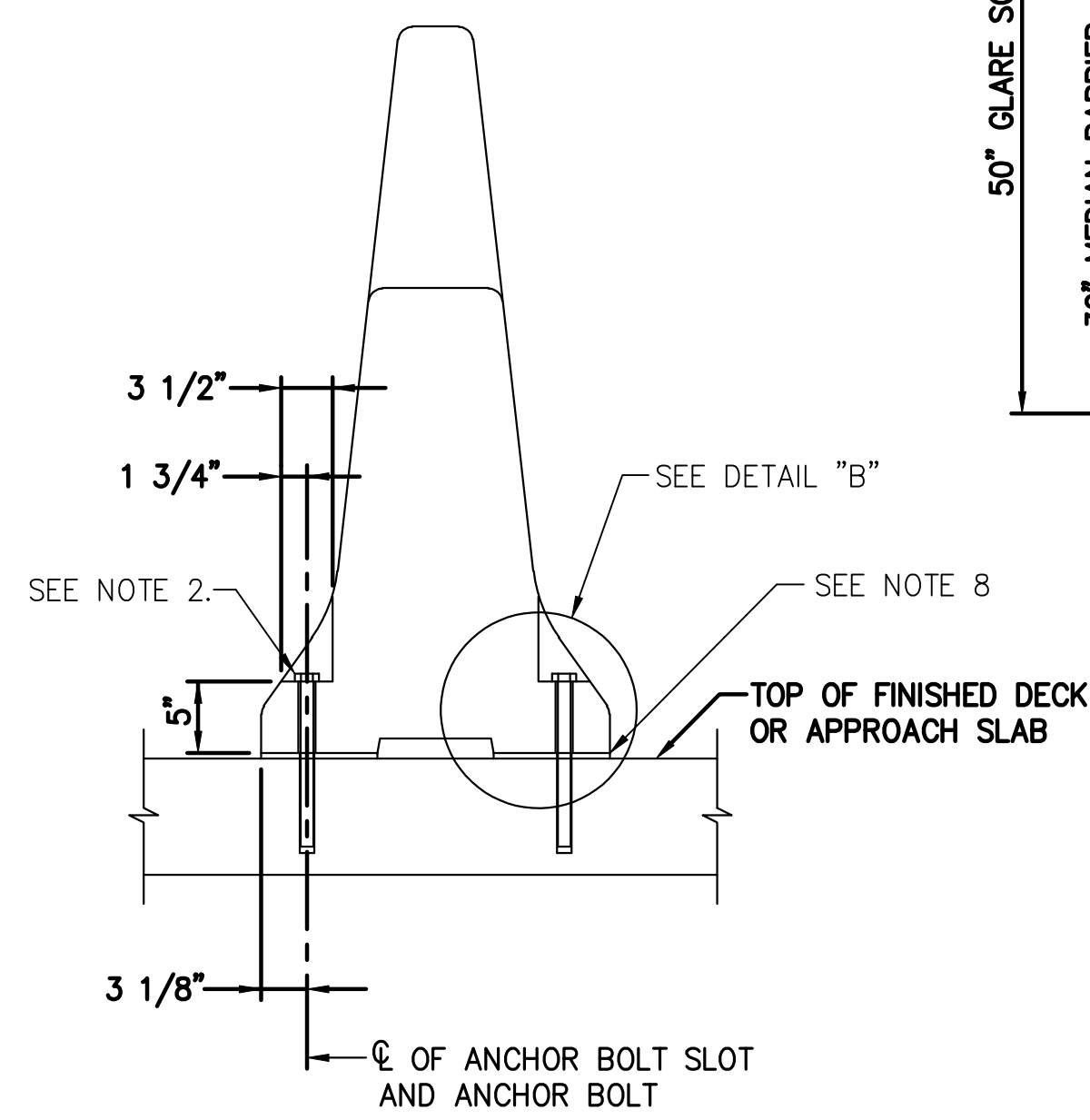
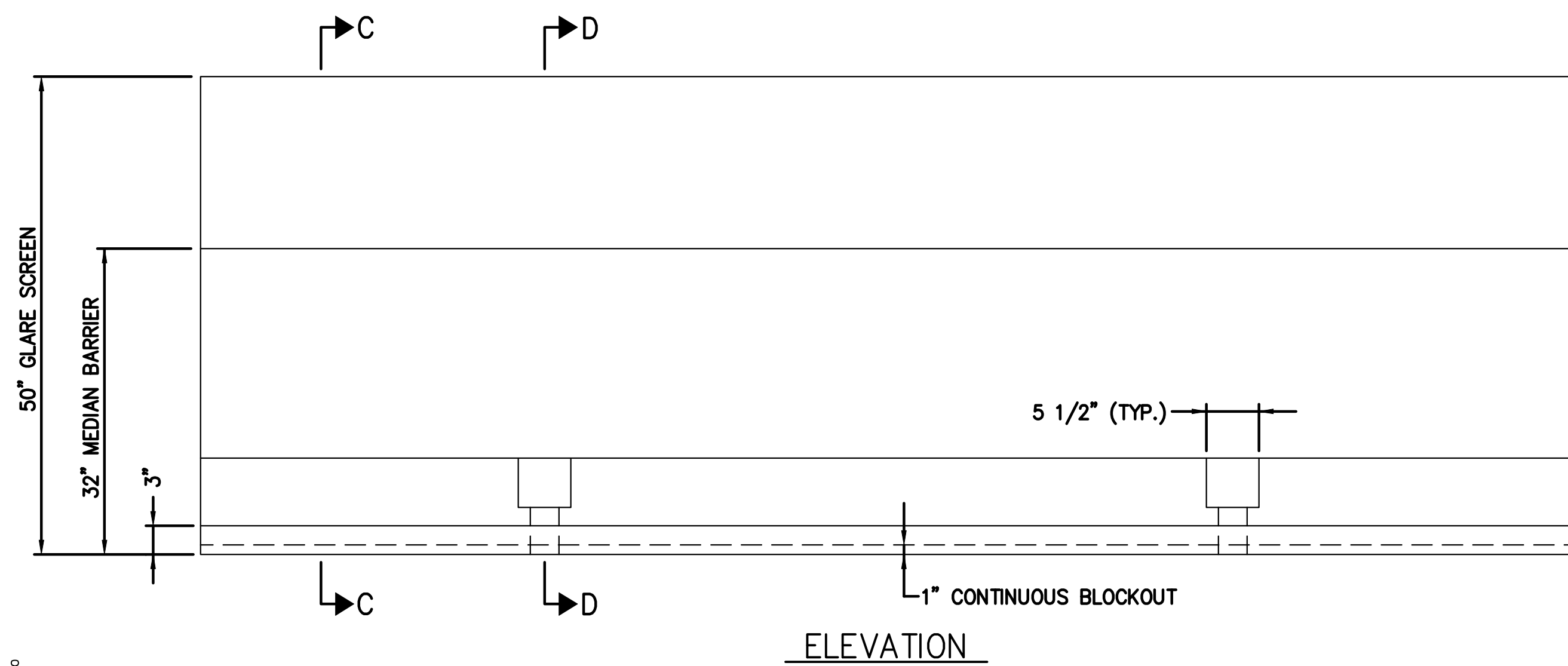
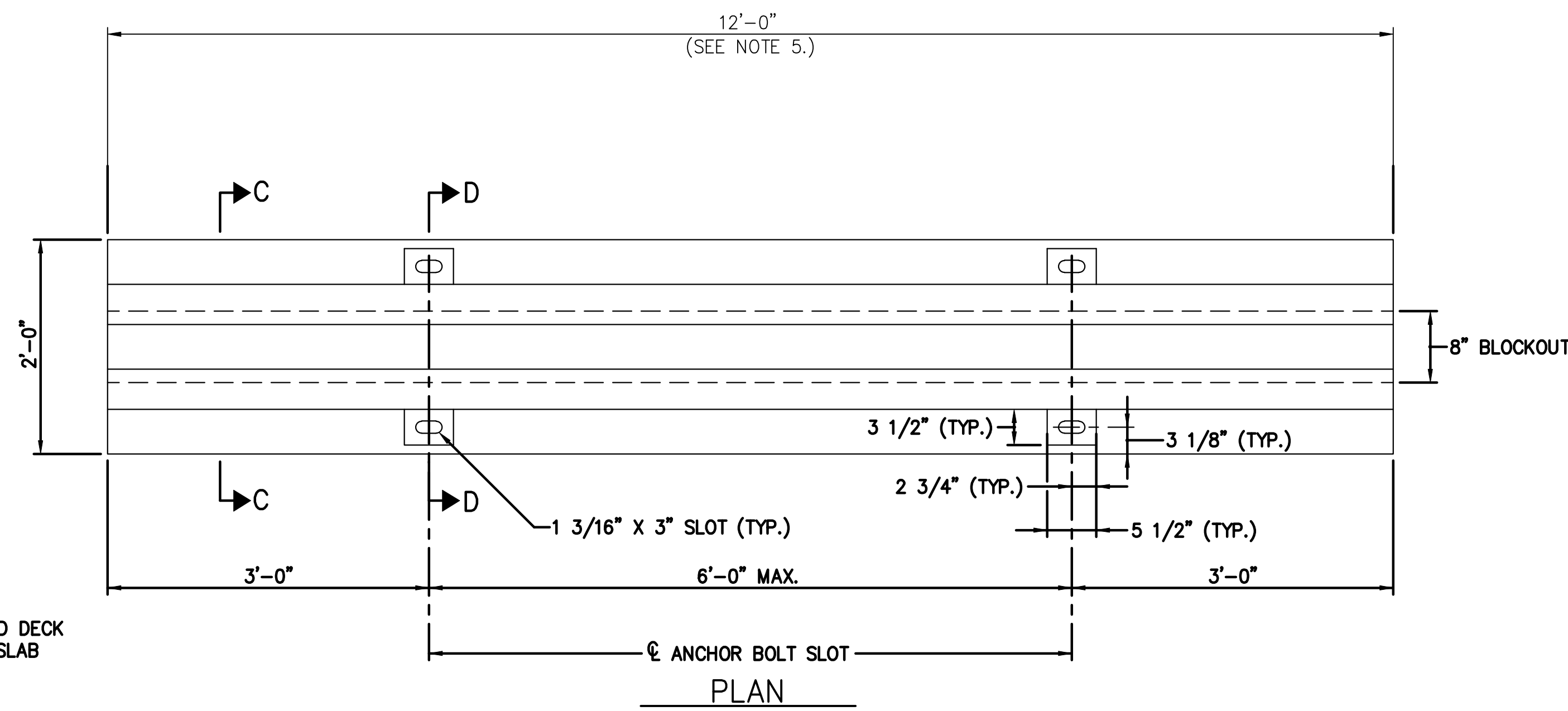
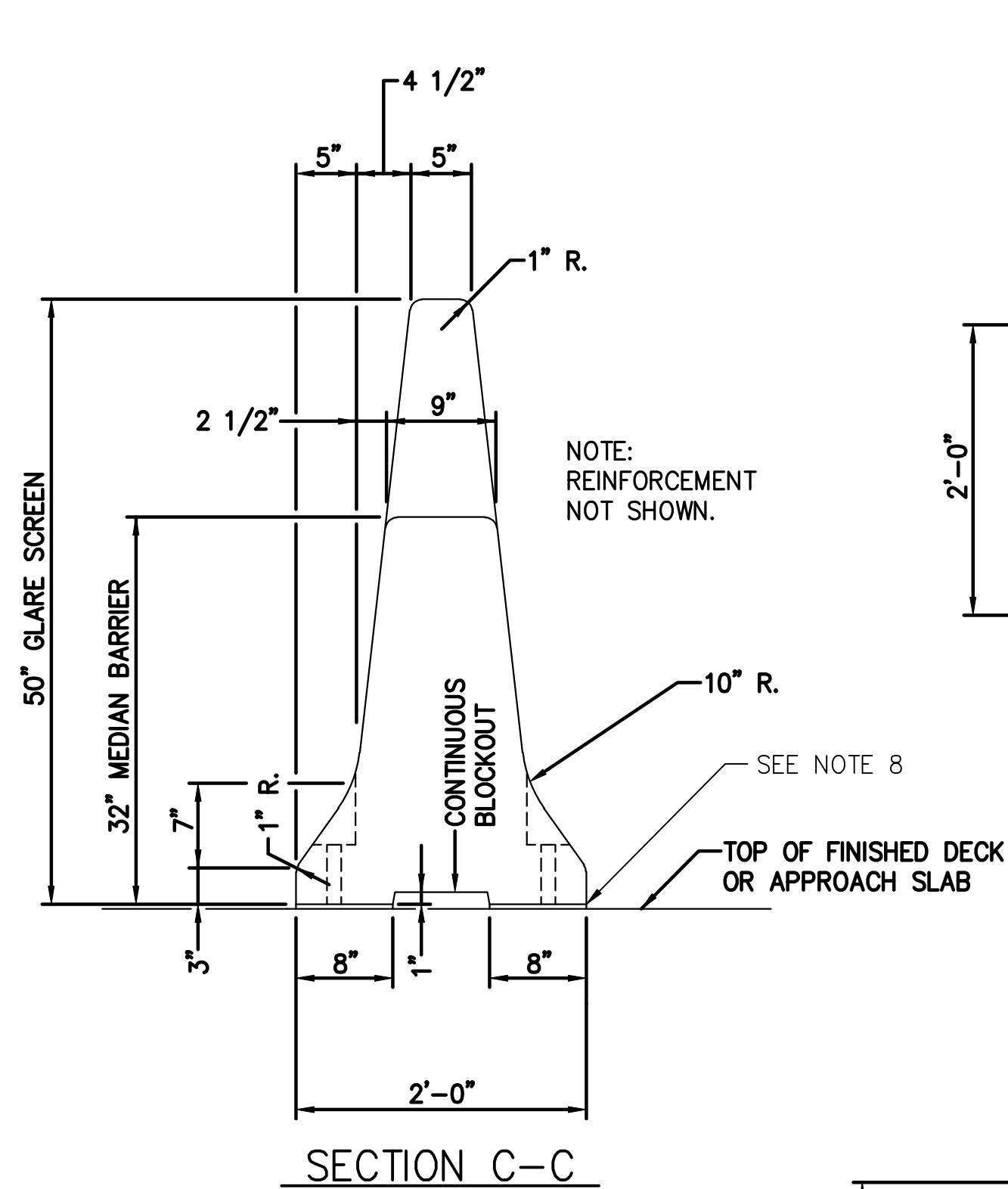
BRIDGE DECK
 TEMPORARY BARRIER

PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING

FILE NAME: PTS-710.DWG
 DRAWING TYPE: 5A

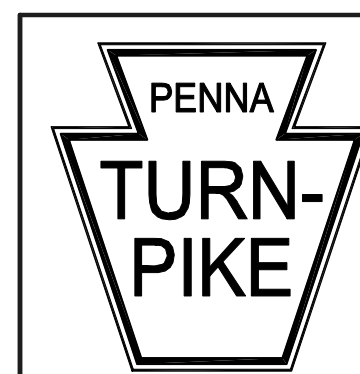
SHEET 1 OF 1

DATE: OCTOBER 2007
 PTS-710



NOTES:

1. PROVIDE CONCRETE GLARE SCREEN AND CONCRETE MEDIAN BARRIER MEETING THE REQUIREMENTS OF SECTIONS 622, 623 AND 714 AND SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15.
2. INSTALL ANCHOR BOLTS ON BOTH SIDES OF GLARE SCREEN OR MEDIAN BARRIER.
3. PROVIDE REINFORCEMENT FOR CONCRETE GLARE SCREEN AS SHOWN ON RC-59M AND FOR CONCRETE MEDIAN BARRIER AS SHOWN ON RC-57M.
4. USE THE ANCHORAGE SYSTEM THAT WILL PERMIT THE ANCHOR BOLTS TO BE UNSCREWED FOR RELOCATION OR REMOVAL OF THE GLARE SCREEN OR MEDIAN BARRIER DURING STAGED CONSTRUCTION ON FUTURE PROJECTS. USE H.S. AASHTO M 164, A 325 HOT-DIP GALVANIZED REMOVABLE KELI-ANCHOR SYSTEM PRECOATED WITH KELI-SLIP AND ANCHORED WITH KELI-GROUT RESIN OR APPROVED EQUAL.
5. LENGTH OF ONE OR BOTH ENDS OF GLARE SCREEN OR MEDIAN BARRIER SECTION(S) MAY BE REDUCED TO A MINIMUM OF 6 FEET TO MEET THE END OF THE BRIDGE DECK.
6. RECESS ENDS OF GLARE SCREEN OR MEDIAN BARRIER SECTIONS ADJACENT TO EXPANSION DAMS TO RECEIVE STEEL HOOD PLATES.
7. PROVIDE SLOTTED PLATE CONNECTIONS BETWEEN BARRIER SECTIONS AS SHOWN ON RC-57M.
8. PLACE EACH SECTION OF GLARE SCREEN ON A LEVELING BED OF MORTAR OF A MINIMUM DEPTH SUFFICIENT TO FILL ANY IRREGULARITIES BETWEEN THE BASE OF THE GLARE SCREEN AND THE DECK.



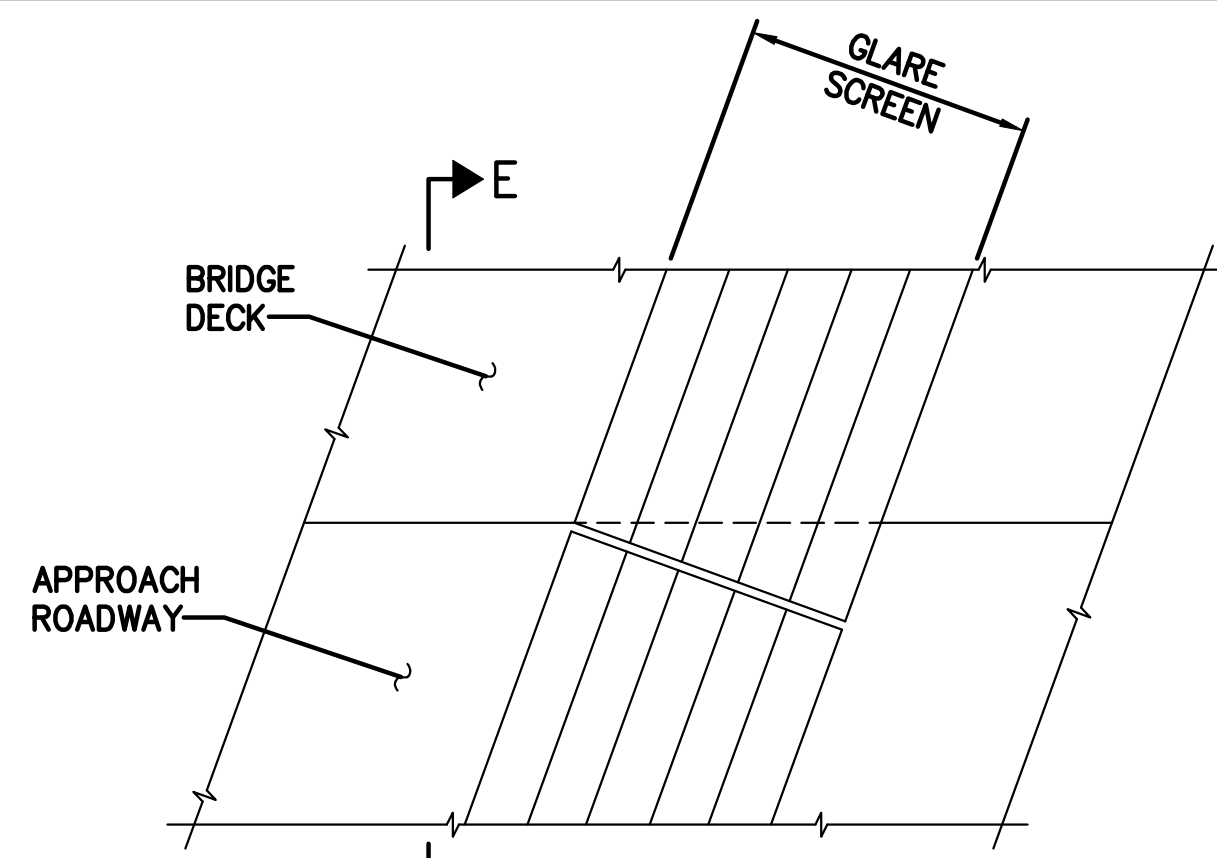
RECOMMENDED: OCTOBER 29, 2007
Gayle G. John
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 31, 2007
Mark Keryff
 CHIEF ENGINEER

PERMANENT CONCRETE GLARE SCREEN AND CONCRETE MEDIAN BARRIER, STRUCTURE MOUNTED F-SHAPE

PENNSYLVANIA TURNPIKE COMMISSION STANDARD DRAWING

FILE NAME: PTS-715-1.DWG SHEET 1 OF 2
 DRAWING TYPE: 5A

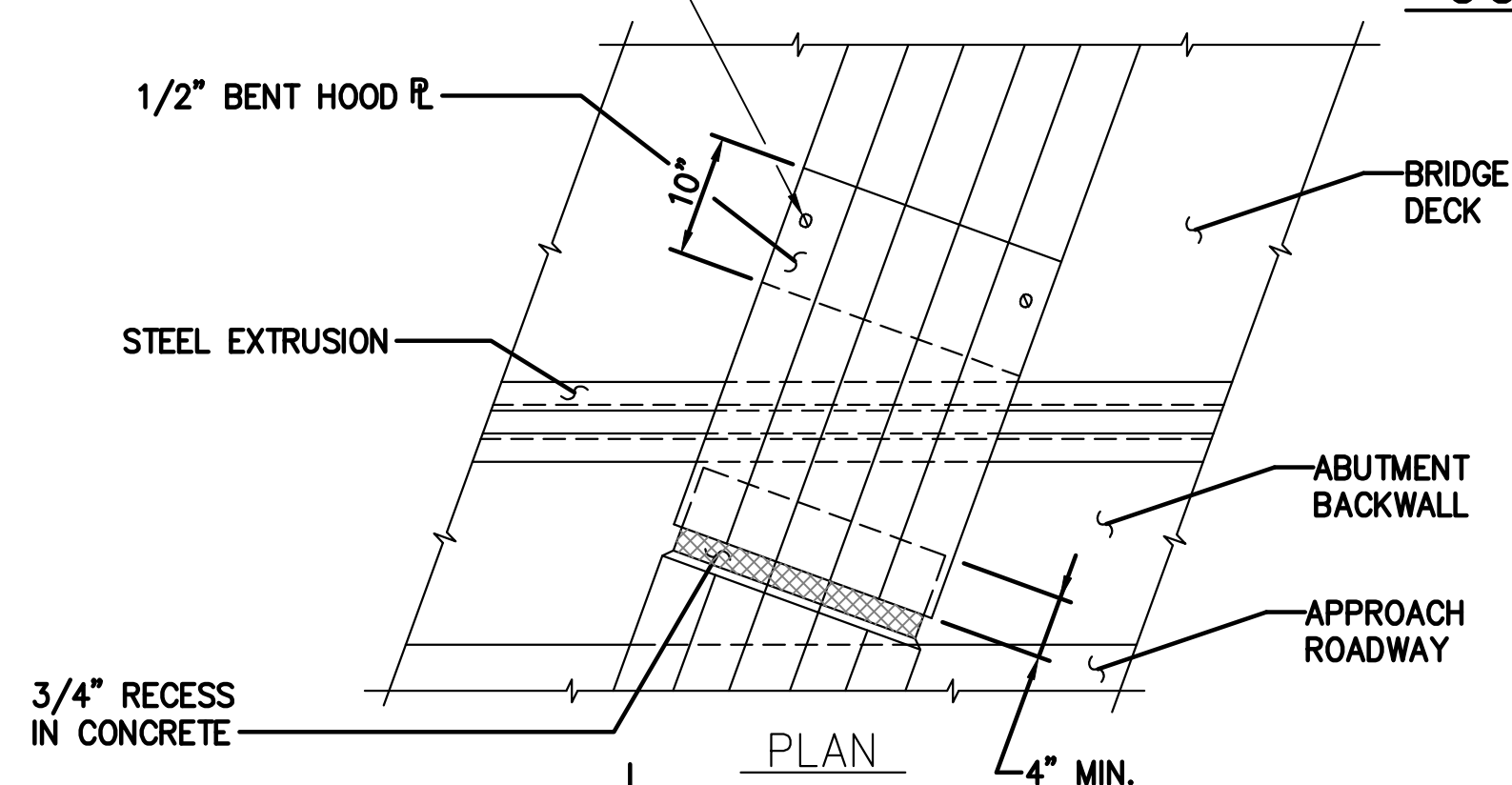
DATE: OCTOBER 2007 PTS-715



3/4" CONC. INSERT AND COUNTERSUNK SCREWS (TYP.) (SEE TYPICAL SECTION THIS SHEET FOR LOCATION)

PLAN

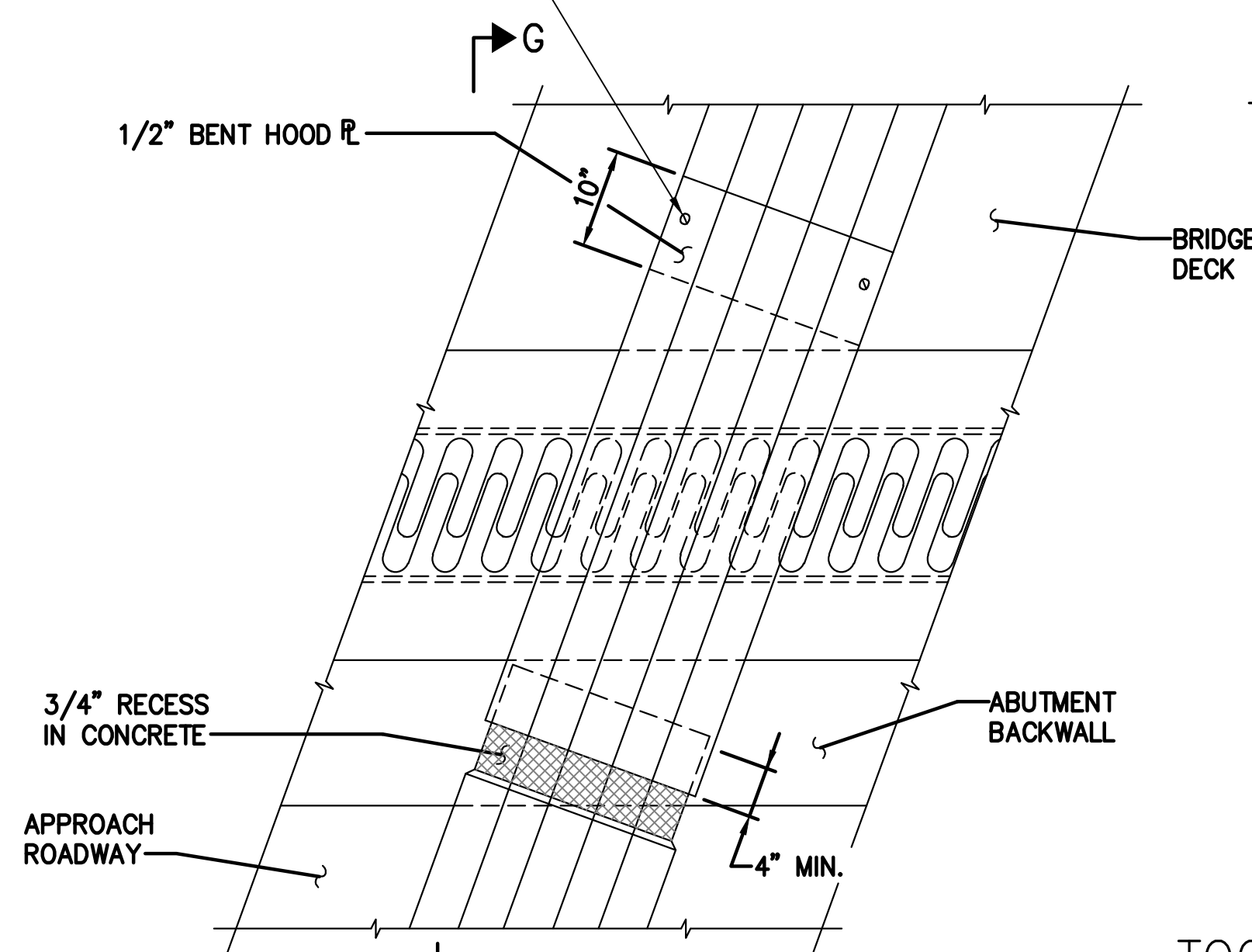
F



3/4" CONC. INSERT AND COUNTERSUNK SCREWS (TYP.) (SEE TYPICAL SECTION THIS SHEET FOR LOCATION)

PLAN

F



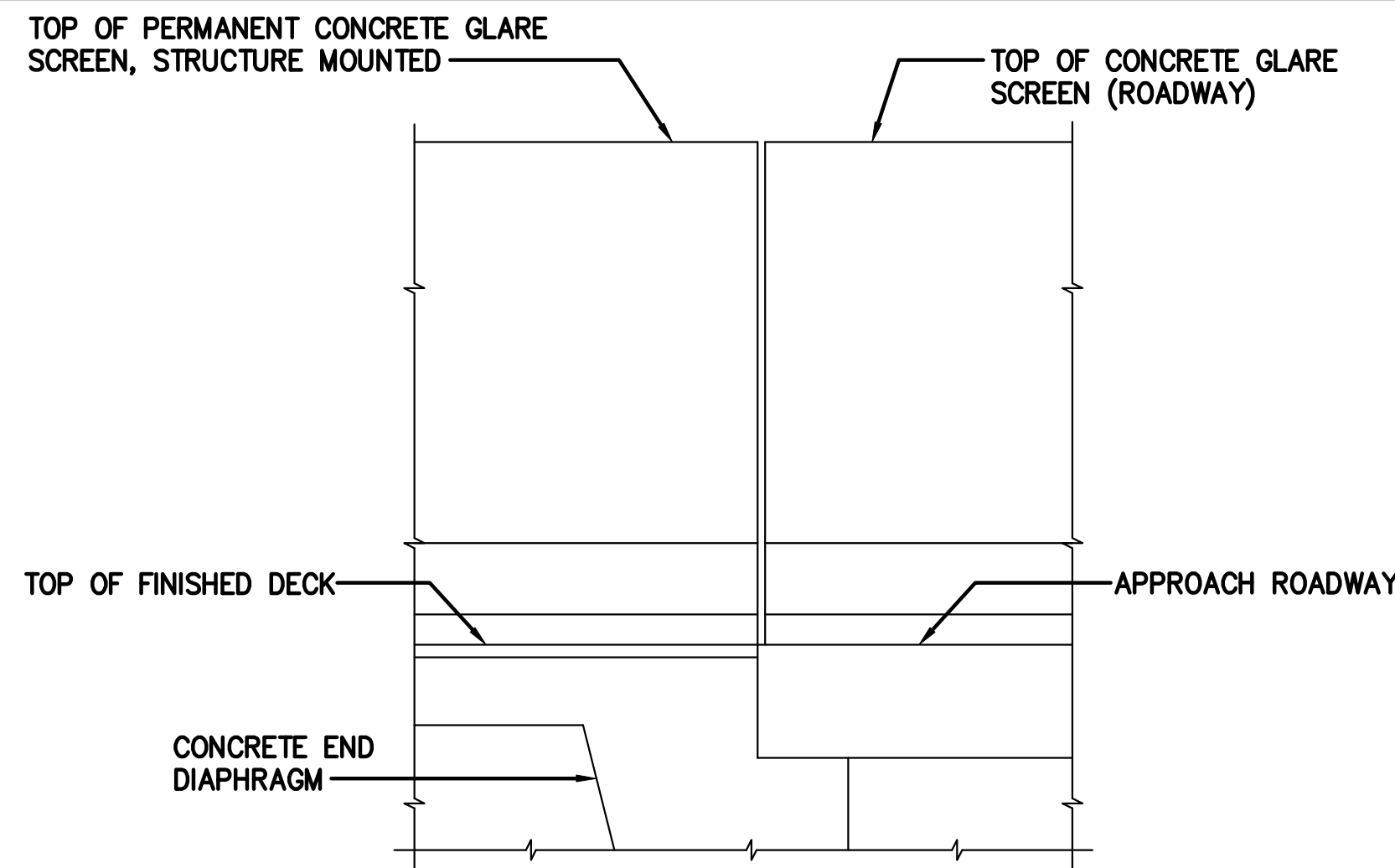
PLAN

G

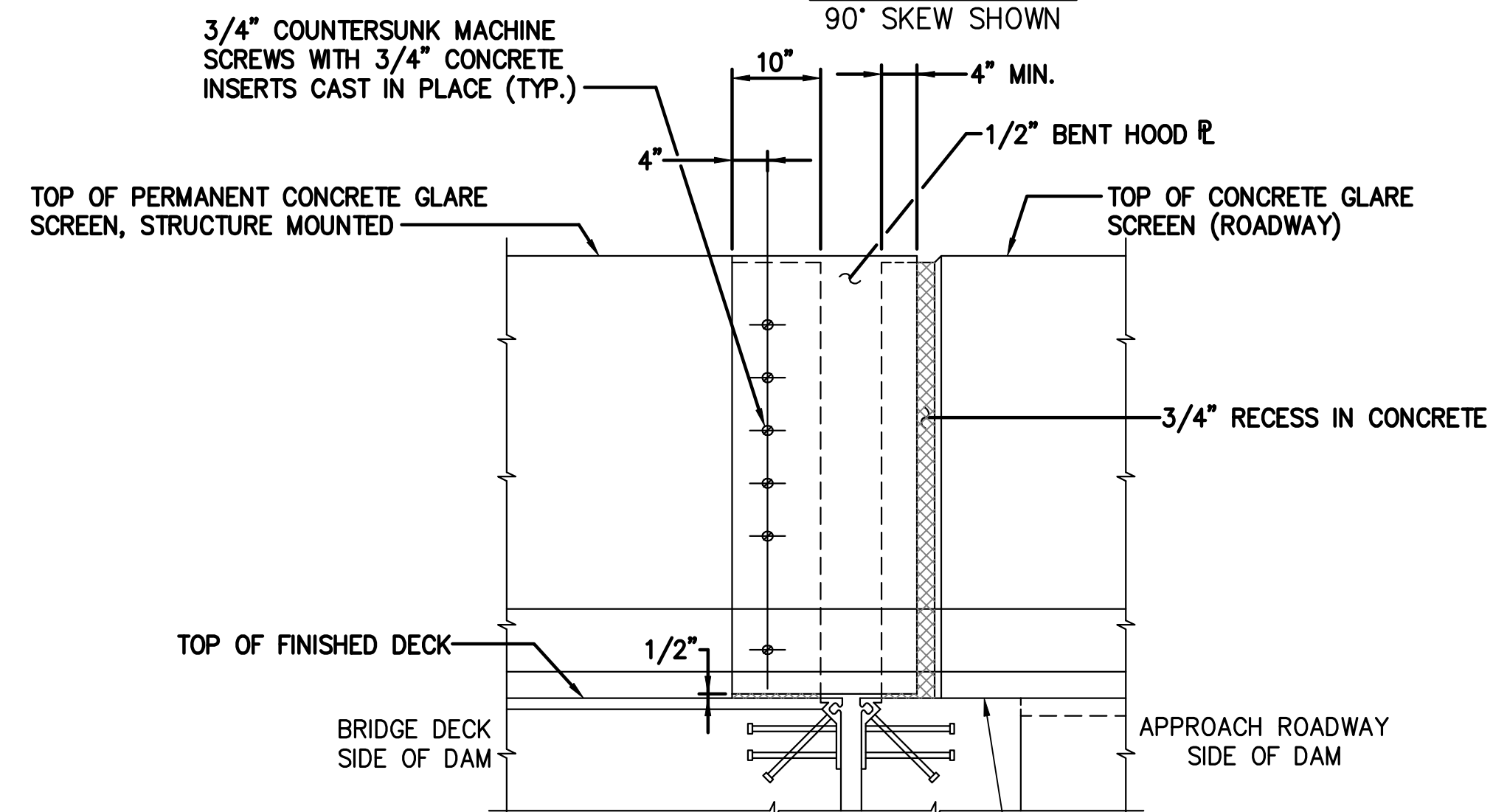
CONCRETE END DIAPHRAGM

STRIP SEAL

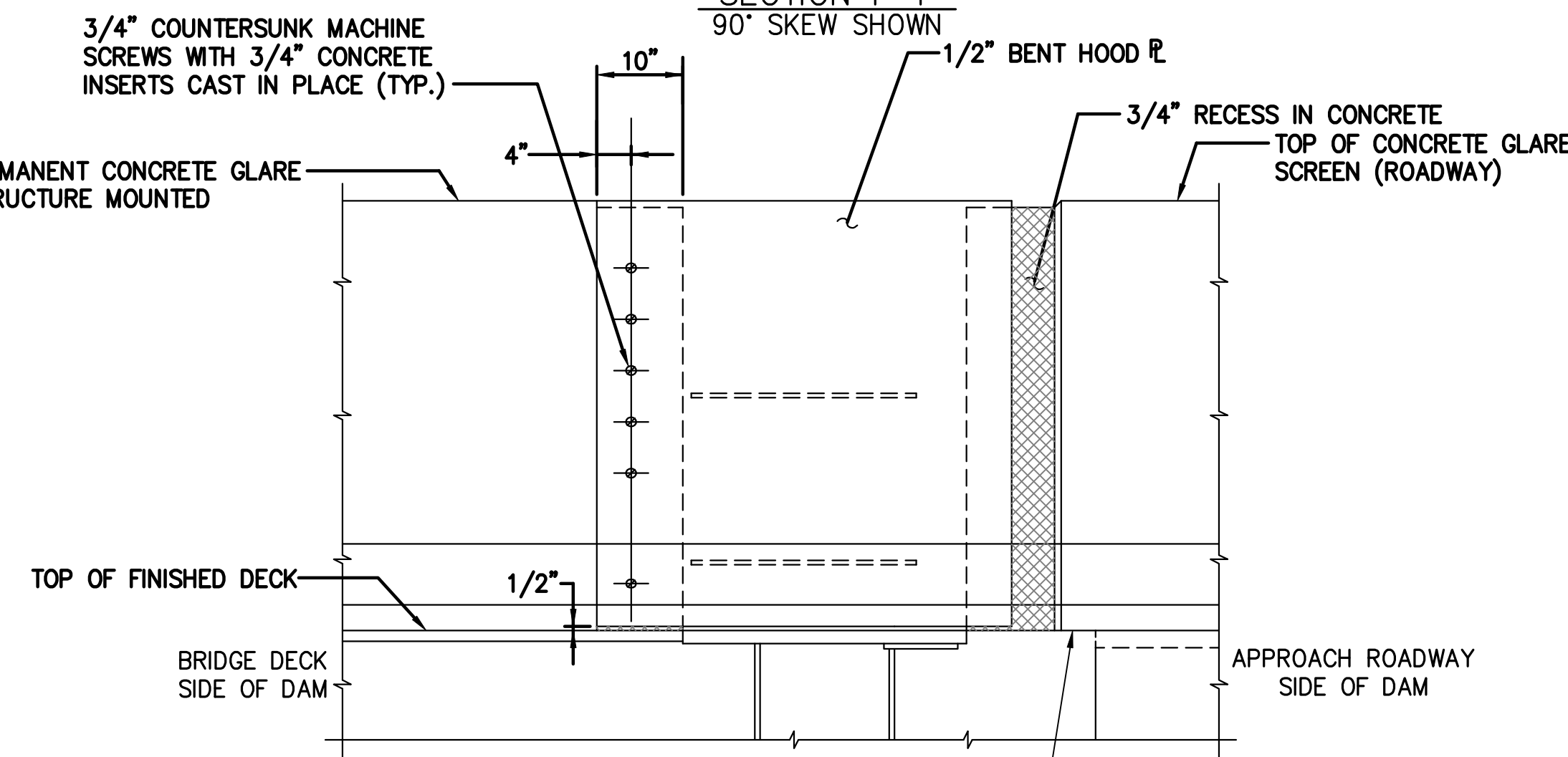
TOOTH DAM



SECTION E-E
90° SKEW SHOWN



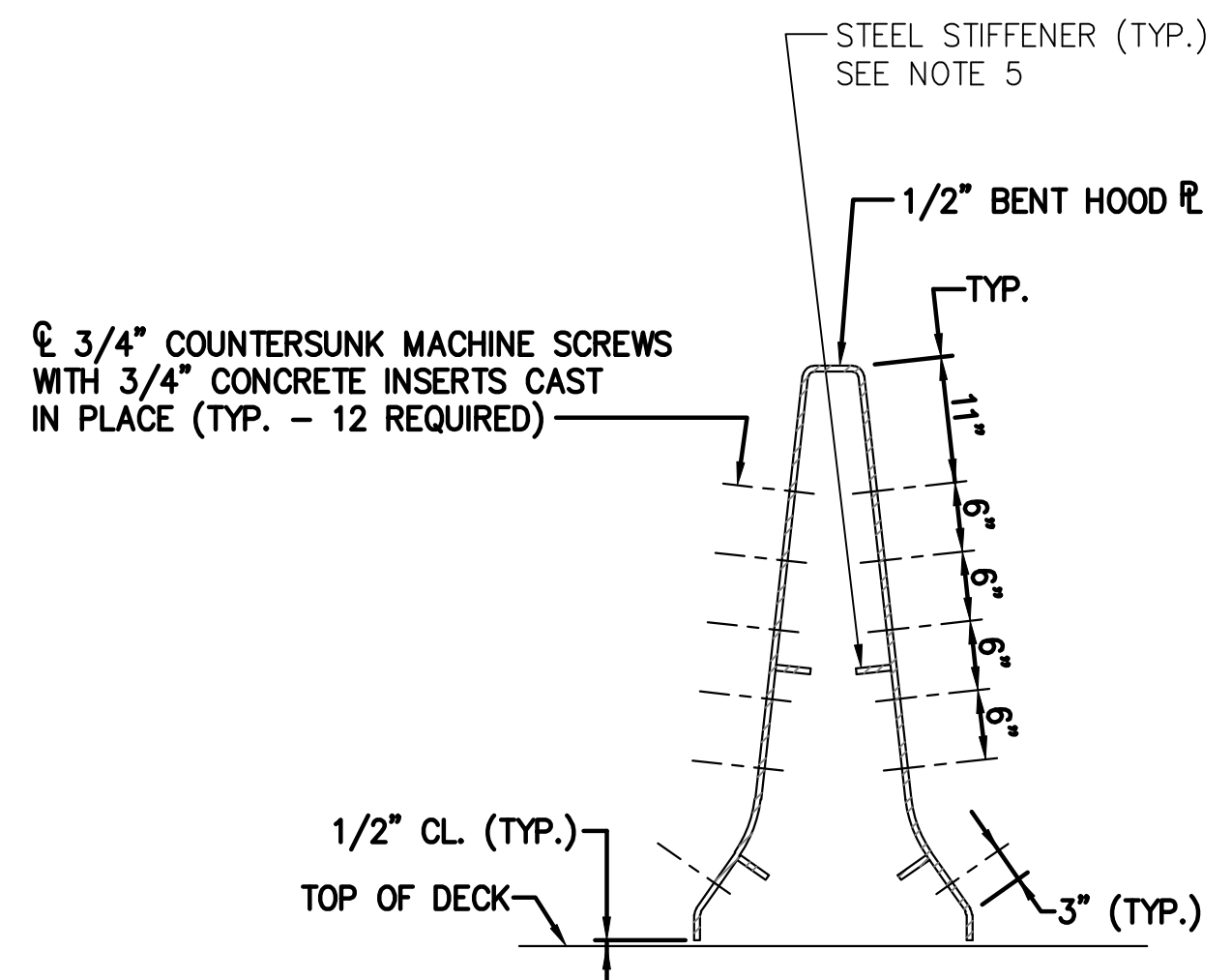
SECTION F-F
90° SKEW SHOWN



SECTION G-G
90° SKEW SHOWN

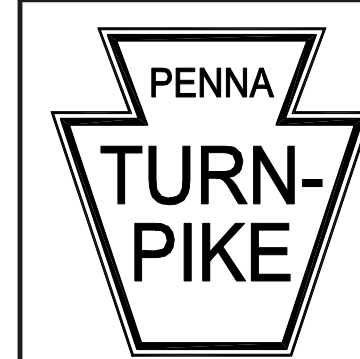
NOTES:

1. ALL STEEL TO CONFORM TO AASHTO M 270/M 270M GRADE 250 OR ASTM A 709/A 709M GRADE 250.
2. ALL FLATHEAD COUNTERSUNK SCREWS TO CONFORM TO ASTM F 738M, TYPE 304 (STAINLESS STEEL).
3. PAINT STEEL IN ACCORDANCE WITH SECTION 1060.
4. APPLY ONE COAT OF ASPHALT CEMENT PAINT WA-1 TO STEEL SURFACES SLIDING ON CONCRETE.
5. IF DISTANCE BETWEEN ENDS OF GLARE SCREEN OR MEDIAN BARRIER EXCEEDS 18", PROVIDE STEEL STIFFENERS ON INSIDE OF BENT HOOD PLATE AS NECESSARY.
6. GLARE SCREEN AND MEDIAN BARRIER SECTIONS ADJACENT TO THE EXPANSION DAMS ARE TO BE CAST WITH THE BENT HOOD PLATE, INSERTS AND BOLTS IN PLACE TO ENSURE PROPER ALIGNMENT OF INSERTS WITH HOLES IN THE BENT HOOD PLATE. REMOVE PLATES FOR BARRIER INSTALLATION. APPLY BOND-BREAKER TO HOOD PLATES PRIOR TO INSTALLATION.
7. USE CONCRETE GLARE SCREEN OR CONCRETE MEDIAN BARRIER, STRUCTURE MOUNTED, ON APPROACH SLABS.
8. IF NECESSARY, PROVIDE 2" DEEP BLOCK-OUT IN BOTTOM OF FIRST SECTION OF PERMANENT CONCRETE GLARE SCREEN OR CONCRETE MEDIAN BARRIER (ROADWAY) ADJACENT TO EXPANSION DAM TO CLEAR BACKWALL.
9. PROVIDE REINFORCEMENT FOR CONCRETE GLARE SCREEN AS SHOWN ON RC-59M AND FOR CONCRETE MEDIAN BARRIER AS SHOWN ON RC-57M.
10. DETAILS SHOWN ARE FOR 50" CONCRETE GLARE SCREEN. WHEN 32" CONCRETE MEDIAN BARRIER (F-SHAPE) IS USED, PROVIDE BENT HOOD PLATE TO MATCH DIMENSIONS SHOWN ON SHEET 1 AND USE A TOTAL OF 6 MACHINE SCREWS FOR ATTACHMENT TO BARRIER.



NOTE: EXPANSION DAM AND GLARE SCREEN REINFORCEMENT NOT SHOWN.

SECTION AT BENT HOOD PLATE



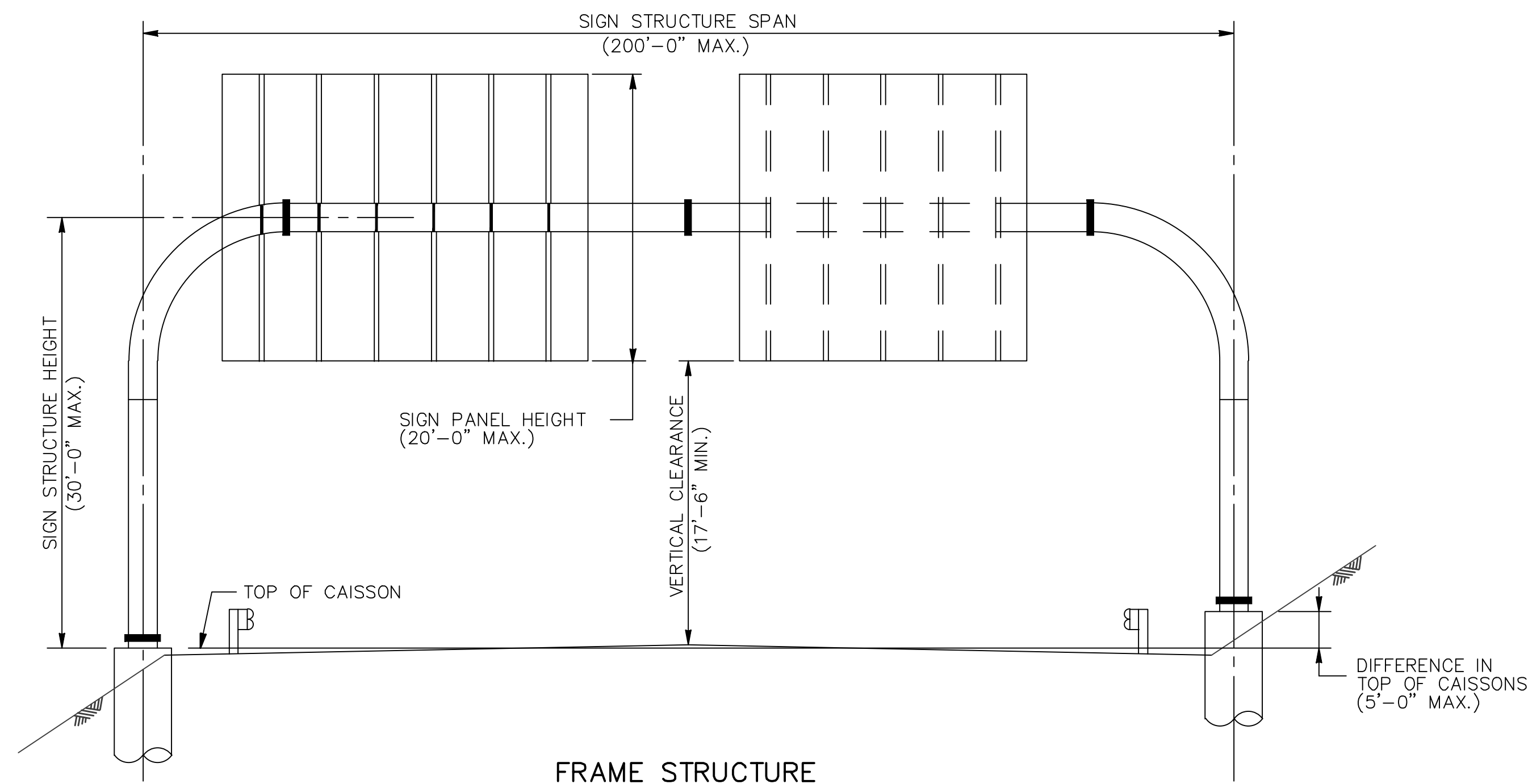
RECOMMENDED: OCTOBER 29, 2007
Gayle G. Sch...
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 31, 2007
Mark K...
 CHIEF ENGINEER

PERMANENT CONCRETE GLARE SCREEN AND CONCRETE MEDIAN BARRIER, STRUCTURE MOUNTED F-SHAPE

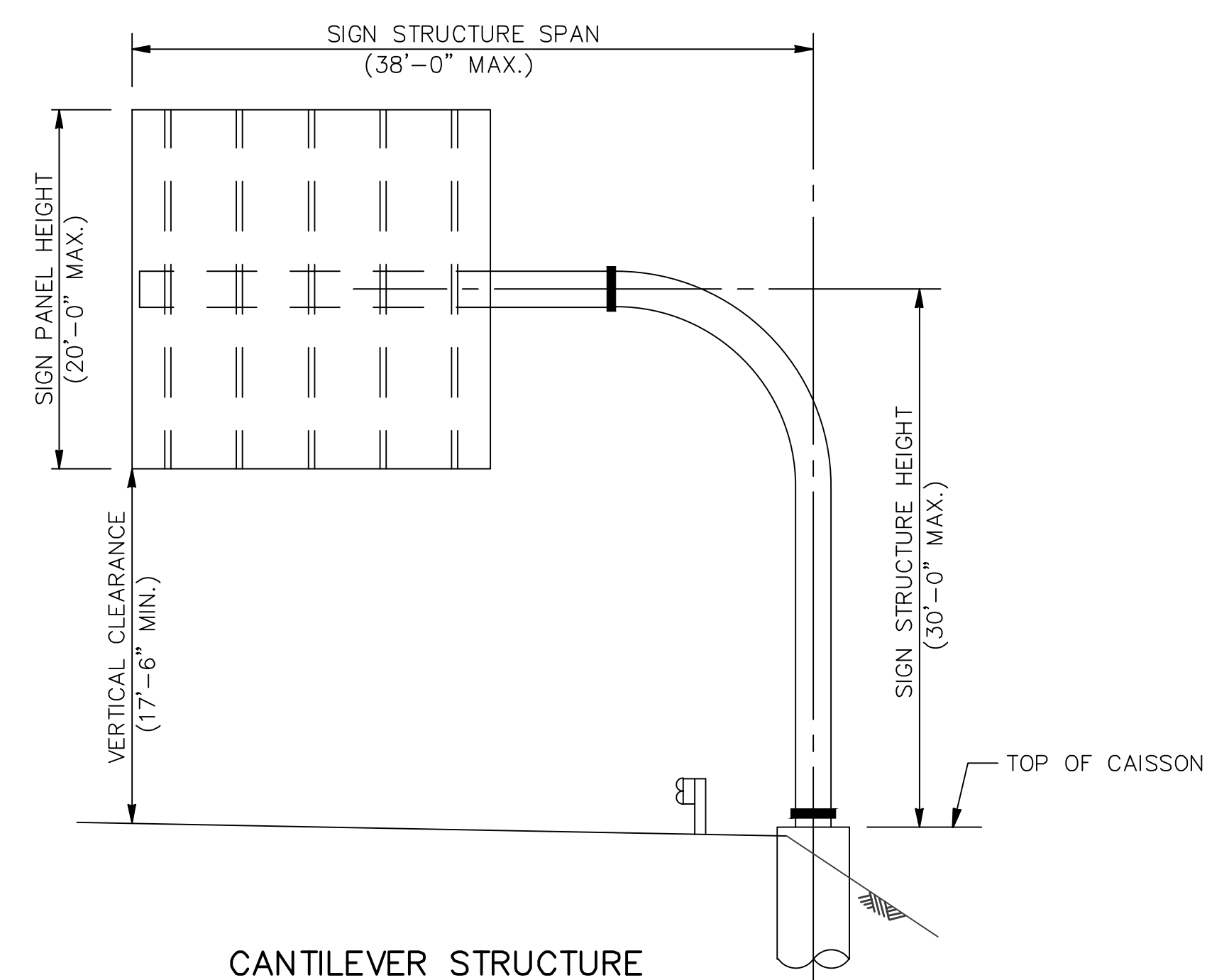
PENNSYLVANIA TURNPIKE COMMISSION STANDARD DRAWING

FILE NAME: PTS-715-2.DWG SHEET 2 OF 2
 DRAWING TYPE: 5A

DATE: OCTOBER 2007 PTS-715



FRAME STRUCTURE



CANTILEVER STRUCTURE

DESIGN

- SPECIFICATIONS: "AASHTO 4TH EDITION STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" (2001 WITH INTERIMS THROUGH 2003) AND "AASHTO 17TH EDITION STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" (2004).
- ALL DIMENSIONS ARE IN US CUSTOMARY UNITS.
- WIND LOADS ARE BASED ON 90 MPH VELOCITY.
- FATIGUE CATEGORIES:
 - PIPE TO BASE/END/SPLICE PLATE WELD - CATEGORY E
 - STIFFENER PLATE TO BASE/END/SPLICE PLATE WELD - CATEGORY C
 - STIFFENER PLATE TO PIPE WELD - CATEGORY D
 - PIPE TO PIPE WELD - CATEGORY D
- PANEL AREA IN COMPONENT SELECTION TABLE IS TOTAL AREA (COMBINED AREA WHEN MULTIPLE PANELS ARE USED).
- CAISSON FOUNDATIONS ARE BASED ON A MAXIMUM 1/2" LATERAL DEFLECTION AT TOP OF CAISSON AND ON THE FOLLOWING SOIL PARAMETERS:
 - LOOSE GRANULAR SOIL WITH 100 PCF UNIT WEIGHT, 28 DEGREE INTERNAL FRICTION ANGLE, 0 PSF COHESION, AND 25 PCI MODULUS OF SUBGRADE REACTION.
 - SOFT COHESIVE SOIL WITH 100 PCF UNIT WEIGHT, 0 DEGREE INTERNAL FRICTION ANGLE, 800 PSF COHESION, 200 PCI MODULUS OF SUBGRADE REACTION, AND 0.02 E50 STRAIN.
- BORINGS AND TEST RESULTS ARE REQUIRED AT EACH FOUNDATION LOCATION TO VERIFY THAT SOIL PARAMETERS FALL BETWEEN THOSE USED FOR THIS STANDARD.
- CAISSON SELECTION TABLES ON SHEET 8 CANNOT BE USED IF SITE SPECIFIC SOIL PARAMETERS ARE OUTSIDE THOSE USED FOR THIS STANDARD.

MATERIAL

- PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS PUBLICATION 408, THE PENNSYLVANIA TURNPIKE COMMISSION SPECIFICATIONS, THE AASHTO/AWS/D1.5M/D1.5:2008 BRIDGE WELDING CODE, AND THE CONTRACT SPECIAL PROVISIONS. USE ANSI/AWS/D1.1/D1.1M-2008 FOR WELDING NOT COVERED IN AASHTO/AWS/D1.5M/D1.5:2008.
- PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M270, GRADE 36 OR GREATER (ASTM A709, GRADE 36 OR GREATER) DESIGNATION EXCEPT WHEN NOTED OTHERWISE.
- PROVIDE WELDED OR SEAMLESS STEEL PIPE CONFORMING TO ASTM A53, GRADE B.
- PROVIDE HIGH-STRENGTH STEEL BOLTS CONFORMING TO AASHTO M164 (ASTM A325). PROVIDE ANCHOR BOLTS CONFORMING TO ASTM F1554, GRADE 55. PROVIDE U-BOLTS CONFORMING TO ASTM A449. MECHANICALLY GALVANIZE ALL BOLTS (EXCEPT ANCHOR BOLTS), NUTS AND WASHERS. EITHER MECHANICALLY OR HOT-DIP GALVANIZE ALL ANCHOR BOLTS IN ACCORDANCE WITH FABRICATION NOTE 7 ON THIS SHEET.
- PROVIDE GRADE 60 REINFORCEMENT STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM-A615 OR ASTM-A706. DO NOT WELD REINFORCEMENT BARS.
- USE CLASS A CONCRETE IN CAISSON FOUNDATIONS.
- CHARPY V-NOTCH TESTING IS REQUIRED ON ALL STEEL PLATES AND PIPES OVER 1/2" THICK. PROVIDE STEEL CONFORMING TO THE CHARPY V-NOTCH REQUIREMENTS FOR ZONE 2, NON FRACTURE CRITICAL AS GIVEN IN THE AASHTO MATERIAL SPECIFICATIONS.

FABRICATION

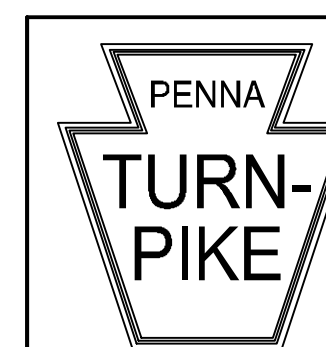
- POSITION ALL SIGN PANELS SO EQUAL HEIGHT IS ABOVE AND BELOW MAST ARM CENTERLINE. OBTAIN PERMISSION FROM THE REPRESENTATIVE PRIOR TO POSITIONING SIGN PANELS IN ANY OTHER MANNER.
- CONSTRUCT SIGN STRUCTURES TRUE TO DIMENSION, FREE FROM KINKS, TWISTS OR BENDS, AND UNIFORM IN APPEARANCE. ASSEMBLE COMPLETED SECTIONS IN THE SHOP AND CHECK FOR STRAIGHTNESS, ALIGNMENT, DIMENSION, AND UNIFORM CONTACT BETWEEN SPLICE PLATES. CORRECT ANY VARIATIONS TO THE SATISFACTION OF THE REPRESENTATIVE.
- FORM MASTS FOR SIGN STRUCTURES TO THE RADII SHOWN ON THE PLANS IN ACCORDANCE WITH THE TUBE AND PIPE ASSOCIATION INTERNATIONAL RECOMMENDED STANDARDS FOR INDUCTION BENDING OF PIPE AND TUBE (TPA-IBS-98).
- AFFIX CLIPS, EYES, OR REMOVABLE BRACKETS TO ALL MASTS AND MAST ARMS, AS NECESSARY, TO SECURE THE SIGN STRUCTURE DURING SHIPPING AND FOR LIFTING AND MOVING DURING ERECTION. THIS IS TO PREVENT DAMAGE TO THE FINISHED GALVANIZED OR PAINTED SURFACES. REMOVE BRACKETS ON SIGN STRUCTURES AFTER ERECTION. INCLUDE DETAILS OF SUCH DEVICES ON THE SHOP DRAWINGS.
- FABRICATE ALL SIGN STRUCTURES INTO THE LARGEST PRACTICAL SECTIONS PRIOR TO GALVANIZING. SUBMIT SPLICE LOCATIONS TO THE REPRESENTATIVE FOR APPROVAL. DO NOT COMMENCE FABRICATION UNTIL SUCH SPLICE LOCATIONS ARE APPROVED.
- GRIND ALL AREAS TO BE WELDED TO BRIGHT METAL. BUTT WELD SPLICES ARE NOT PERMITTED, UNLESS SHOWN ON THE PLANS. COMPLETE ALL WELDING AND REQUIRED TESTING BEFORE ANY MATERIAL IS GALVANIZED. NON-DESTRUCTIVELY TEST ALL CIRCUMFERENTIAL AND STIFFENER WELDS USING THE METHODS AND PROCEDURES IN ACCORDANCE WITH SECTION 948. THE ACCEPTABLE CRITERIA ARE STATED IN TABLE 6.1 OF ANSI/AWS D1.1/D1.1M. PROVIDE FULL PENETRATION GROOVE WELDS FOR ALL LONGITUDINAL WELDS WITHIN 6" OF A FULL PENETRATION CIRCUMFERENTIAL GROOVE WELD AND INSPECT AS SPECIFIED ABOVE. MINIMIZE UNDERCUT. UNDERCUT GREATER THAN 0.01" IS NOT PERMITTED.
- HOT-DIP GALVANIZE ALL COMPONENTS (EXCEPT REINFORCEMENT BARS, ALUMINUM, AND NON-FERROUS INCIDENTALS) AFTER FABRICATION PER ASTM A123 OR ASTM A153, AS APPROPRIATE. PROVIDE POLYESTER POWDER COATING OR AN EPOXY/URETHANE PAINT OVER ALL GALVANIZED STRUCTURAL STEEL AS PER SPECIAL PROVISIONS.
- PROVIDE STIFFENERS AS INDICATED IN CONNECTION COMPONENT TABLES.

CONSTRUCTION

- USE TEMPLATES TO ACCURATELY SET BASE PLATE ANCHOR BOLTS TO CORRECT ELEVATION AND ALIGNMENT. SECURELY BRACE ANCHOR BOLTS AGAINST DISPLACEMENT BEFORE CAISSON CONCRETE IS PLACED AND DURING CONCRETE CURING.
- ERECT SIGN STRUCTURE ONLY AFTER CAISSON CONCRETE MEETS 7 DAY STRENGTH REQUIREMENTS.
- TEMPORARILY SUPPORT MAST ARMS TO RELIEVE LOAD FROM THE SPLICES WHILE HIGH-STRENGTH BOLTS ARE BEING TIGHTENED IN ORDER TO FIRMLY SEAT THE CONNECTION PLATES.
- GROUT IS NOT REQUIRED BETWEEN BASE PLATE AND CONCRETE CAISSON.
- TIGHTEN UPPER ANCHOR BOLT NUTS USING TURN-OF-NUT METHOD (ADDITIONAL 1/4 TURN AFTER SNUG TIGHT).
- PROVIDE A SPACE OF 2'-0" OR LESS, OR ONE-HALF THE TALLER PANEL HEIGHT OR MORE, BETWEEN ADJACENT SIGN PANELS WHEN PRESENT.
- FOR CAISSON INFORMATION, SEE SHEET 8.
- FOR SIGN PANEL SUPPORT BEAM ATTACHMENT DETAILS, SEE SHEET 7.
- SEAL BASE PLATE TO FOUNDATION GAP WITH GALVANIZED STEEL SCREEN, 1/2" BY 1/2" MESH AND 0.063" DIAMETER WIRES. SCREEN IS TO PREVENT ENTRY OF RODENTS WHILE PERMITTING DRAINAGE. SCREEN IS TO BE REMOVABLE AND ATTACHED TO BASE PLATE WITH STAINLESS STEEL HARDWARE.

INDEX OF SHEETS

- GENERAL NOTES
- CANTILEVER DETAILS & TABLES
- FRAME DETAILS
- FRAME TABLES - 1
- FRAME TABLES - 2
- MAST & MAST ARM DETAILS
- SIGN PANEL SUPPORT BEAM DETAILS
- FOUNDATION TABLES & DETAILS

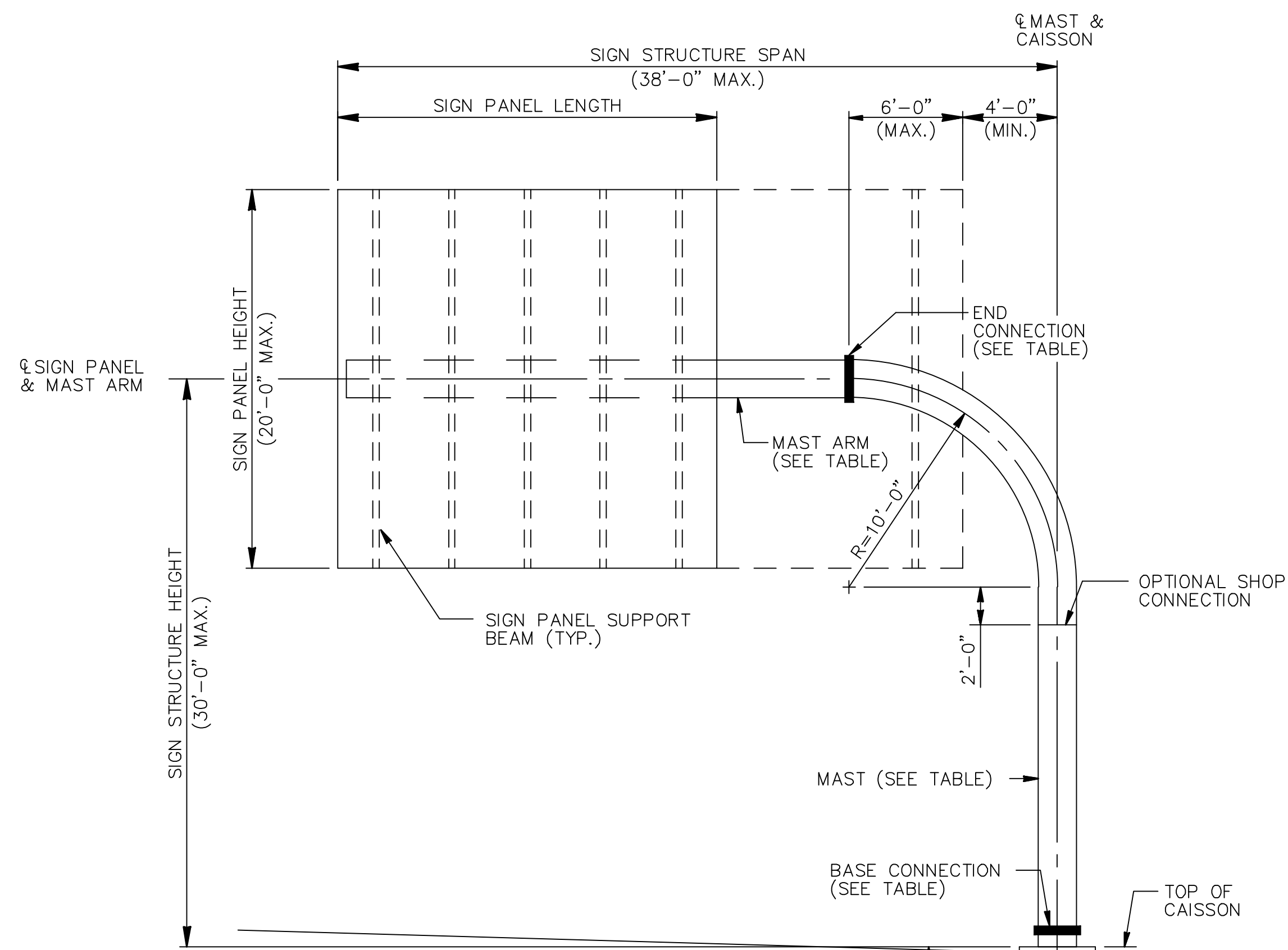


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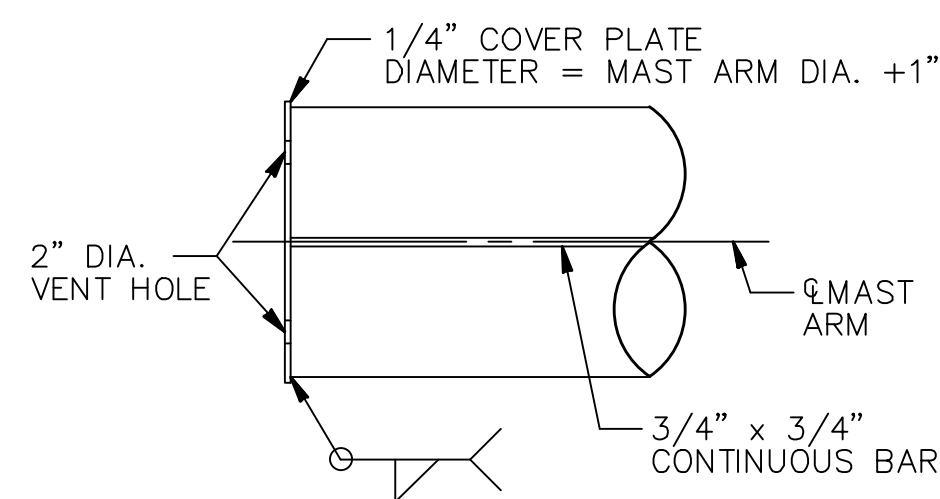
**MONOPIPE SIGN STRUCTURES
FOR STATIC PANELS
GENERAL NOTES**

**PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING**

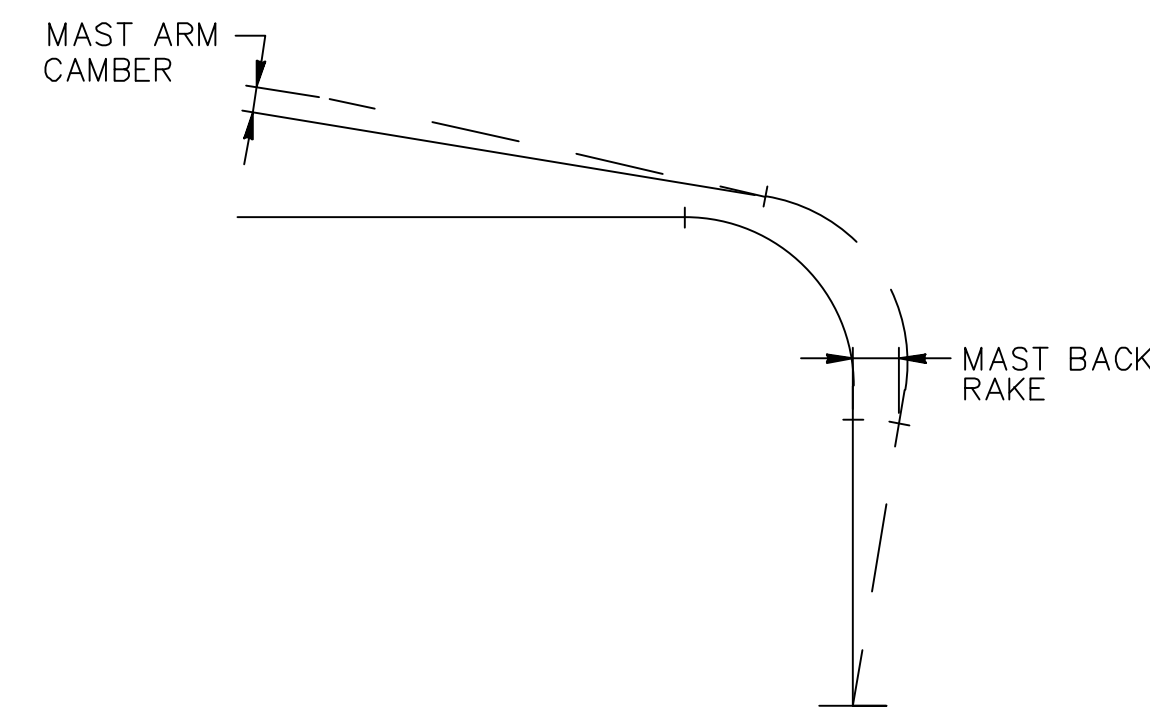
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DATE: OCTOBER 2015	PTS-740



ELEVATION



MAST ARM END DETAIL



MAST CAMBER DIAGRAM

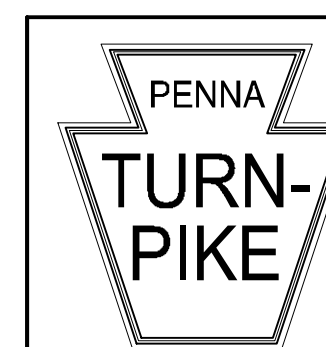
CAMBER TABLE		
SPAN (FEET)	MAST BACK RAKE (INCHES)	MAST ARM CAMBER (INCHES)
27	3/8	3/4
38	9/16	2 3/16

NOTES

- FOR GENERAL NOTES, SEE SHEET 1.
- FOR BASE, SPLICE AND SHOP CONNECTION DETAILS, SEE SHEET 6.
- CAMBER REPRESENTS MAXIMUM DEAD LOAD DEFLECTIONS.

MAST & BASE CONNECTION COMPONENT SELECTION TABLE													
SPAN (FEET)	PANEL AREA (S.F.)	MAST		ANCHOR BOLTS		BASE PLATE		STIFFENERS					
		DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)
38	680	24	1.531 (SCH. 100)	16	2 1/4	40 1/2	48	2 3/4	8	3/8	11	30 1/2	5/16
	540	24	1.531 (SCH. 100)	16	2 1/4	38 1/2	46	2 1/2	8	3/8	10	27 1/2	5/16
400	400	24	1.219 (SCH. 80)	18	2	39	45 1/2	2 1/8	9	3/8	9 3/4	27	5/16
	250	24	0.688 (SCH. 40)	18	1 3/4	35	41	2	9	3/8	7 1/2	21	5/16
27	460	24	0.688 (SCH. 40)	16	1 3/4	35	41	2 1/2	8	3/8	7 1/2	21	5/16
	350	24	0.562 (SCH. 30)	16	1 3/4	31	37	2 1/8	8	3/8	5 1/2	15 1/2	5/16
250	24	0.500 (WT. XS)	18	1 1/2	30 1/2	35 1/2	2	9	3/8	4 3/4	13 1/2	5/16	

MAST ARM & END CONNECTION COMPONENT SELECTION TABLE													
SPAN (FEET)	PANEL AREA (S.F.)	MAST ARM		H.S. BOLTS		SPLICE PLATE		STIFFENERS					
		DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)
38	680	24	0.688 (SCH. 40)	20	1 1/2	31 1/2	36 1/2	2	10	3/8	5 1/4	14 1/2	5/16
	540	24	0.688 (SCH. 40)	20	1 1/2	31 1/2	36 1/2	2	10	3/8	5 1/4	14 1/2	5/16
400	400	24	0.688 (SCH. 40)	18	1 1/2	32	37	2	9	3/8	5 1/2	15 1/2	5/16
	250	24	0.500 (WT. XS)	18	1 3/8	29	34	2	9	3/8	4	11	5/16
27	460	24	0.375 (SCH. 20)	20	1	27 1/2	31	2	-	-	-	-	-
	350	24	0.375 (SCH. 20)	20	1	27 1/2	31	2	-	-	-	-	-
250	24	0.375 (SCH. 20)	18	1	27 1/2	31	2	-	-	-	-	-	



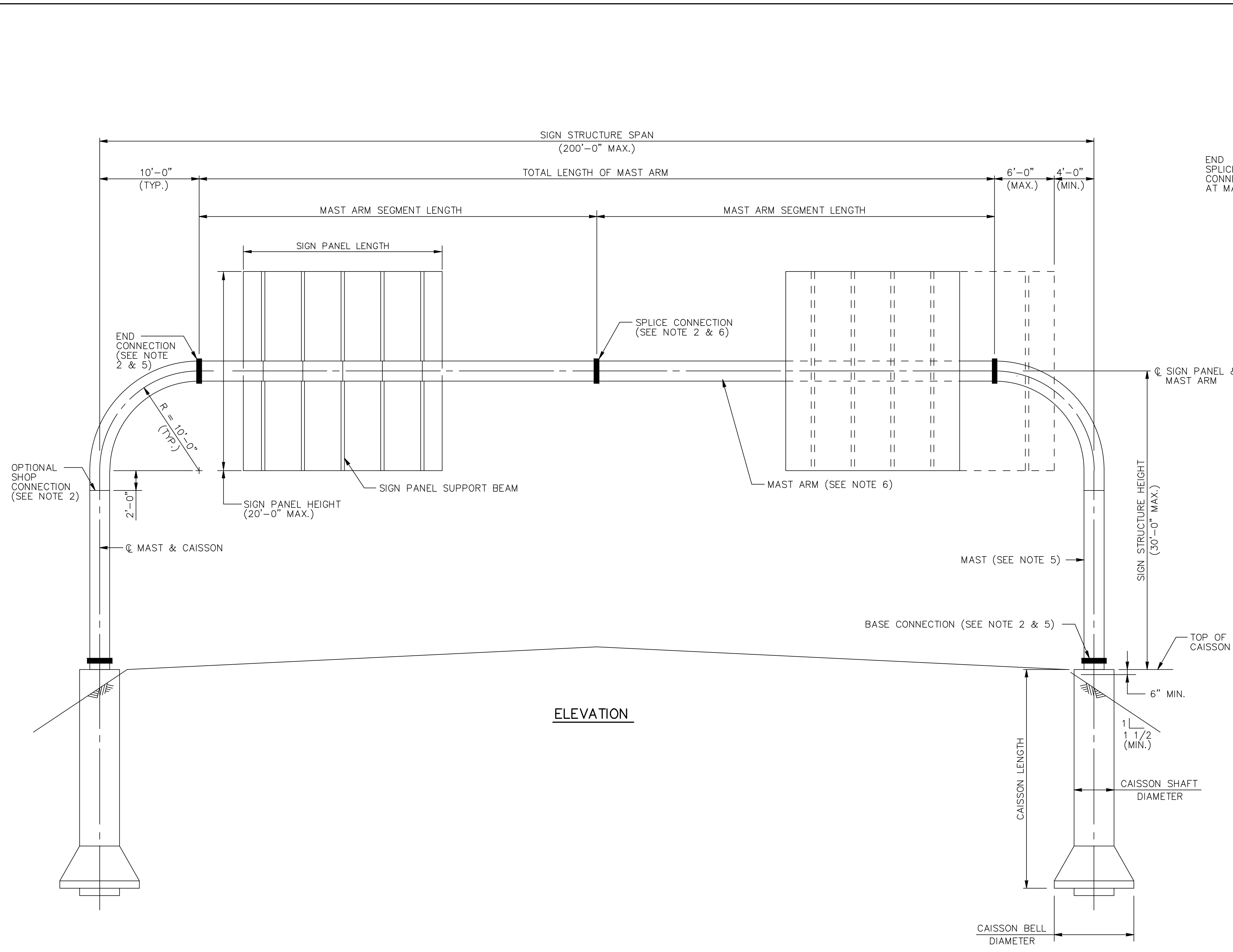
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MONOPIPE SIGN STRUCTURES
 FOR STATIC PANELS
 CANTILEVER DETAILS & TABLES

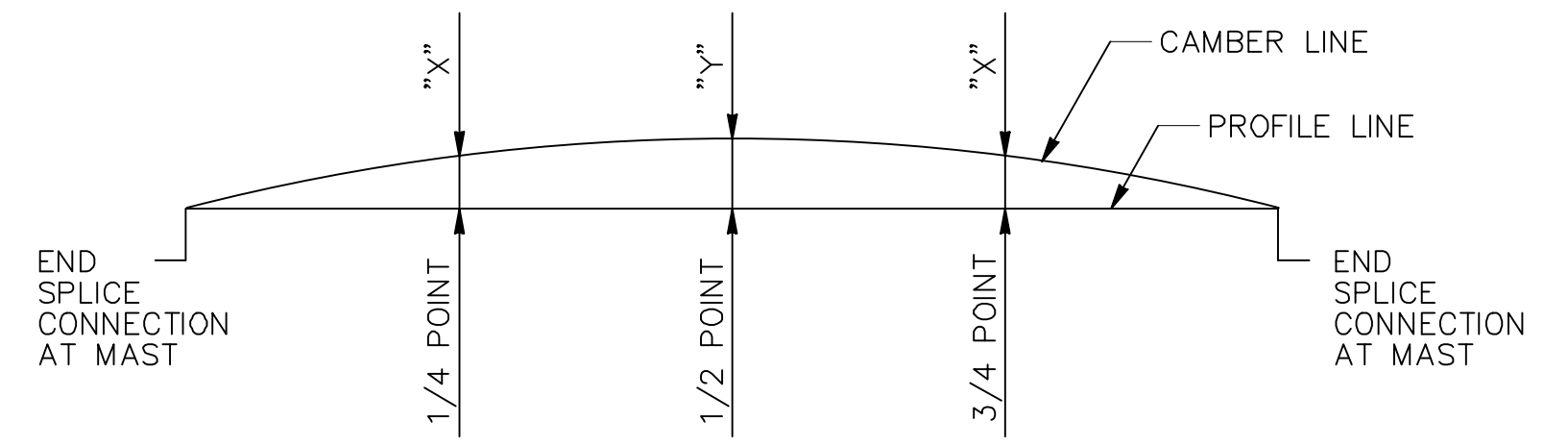
PENNSYLVANIA TURNPIKE COMMISSION
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 SHEET 2 OF 8

DATE: OCTOBER 2015
 PTS-740



ELEVATION

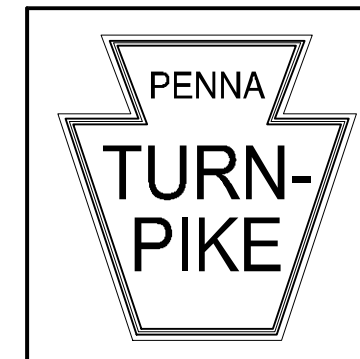


CAMBER DIAGRAM

CAMBER		
SPAN (FEET)	X (INCHES)	Y (INCHES)
60	9/16	13/16
80	13/16	1 3/16
100	1 1/2	2 1/16
120	2 1/8	3
140	3 7/16	5
160	5 1/4	7 13/16
180	8	12 1/8
200	11 7/16	17 1/2

NOTES

- FOR GENERAL NOTES, SEE SHEET 1.
- FOR BASE, END, SPLICE AND SHOP CONNECTION DETAILS, SEE SHEET 6.
- PRIOR TO ERECTION, DEMONSTRATE TO THE REPRESENTATIVE BY PREASSEMBLY OR OTHER APPROVED METHOD THAT FRAME STRUCTURE LENGTH IN A NO-LOAD CONDITION MATCHES FIELD MEASURED CAISSON SPACING WITHIN 1/2".
- ADEQUATELY SUSPEND/SUPPORT FRAME STRUCTURES TO AVOID DISTORTIONS OR CHANGES IN SPAN LENGTH IF ERECTED ONTO FOUNDATIONS AS ONE UNIT.
- FOR MAST, BASE CONNECTION AND END CONNECTION COMPONENT SELECTION TABLE, SEE SHEET 4.
- FOR MAST ARM & SPLICE CONNECTION COMPONENT SELECTION TABLE, AND MAST ARM SEGMENT ARRANGEMENT TABLE, SEE SHEET 5.
- CAMBER REPRESENTS MAXIMUM DEAD LOAD DEFLECTION BETWEEN END CONNECTIONS, AND SPAN EQUALS DISTANCE BETWEEN MASTS.



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**MONOPIPE SIGN STRUCTURES
 FOR STATIC PANELS
 FRAME DETAILS**

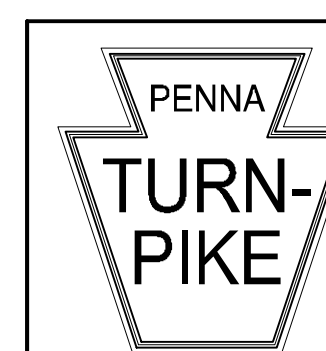
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 STANDARD DRAWING**
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 SHEET 3 OF 8
 DATE: OCTOBER 2015
 PTS-740

MAST & BASE CONNECTION COMPONENT SELECTION TABLE													
SPAN (FEET)	PANEL AREA (S.F.)	MAST		ANCHOR BOLTS		BASE PLATE		STIFFENERS					
		DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)
60	1,040	24	0.500 (WT. XS)	10	2 1/4	31 1/2	39	2 1/2	10	3/8	6 1/2	18	5/16
	760	24	0.375 (SCH. 20)	10	2	32	39 1/2	2 1/4	10	3/8	6 3/4	19	5/16
	440	20	0.375 (SCH. 20)	8	2	27 1/2	35	2 3/8	8	3/8	6 1/2	18	5/16
80	1,000	24	0.500 (WT. XS)	12	2 1/4	31 1/2	40 1/2	2	12	3/8	7 1/4	20	5/16
	880	24	0.500 (WT. XS)	10	2 1/4	31 1/2	41	2 1/4	10	3/8	7 1/2	21	5/16
	600	24	0.375 (SCH. 20)	10	2	31 1/2	38 1/2	2 3/8	10	3/8	6 1/4	17 1/2	5/16
	360	20	0.375 (SCH. 20)	8	2	27	34	2 3/8	8	3/8	6	16 1/2	5/16
100	1,000	24	0.688 (SCH. 40)	12	2 1/4	32	40 1/2	2 1/4	12	3/8	7 1/4	20	5/16
	740	24	0.500 (WT. XS)	10	2 1/4	31 1/2	40 1/2	2 1/4	10	3/8	7 1/4	20	5/16
	520	24	0.500 (WT. XS)	10	2	31 1/2	39	2 1/4	10	3/8	6 1/2	18	5/16
	280	20	0.375 (SCH. 20)	8	2	26 1/2	34	2 1/8	8	3/8	6	16 1/2	5/16
120	1,000	24	0.969 (SCH. 60)	14	2 1/4	34	41 1/2	2 1/4	14	3/8	7 3/4	21 1/2	5/16
	800	24	0.688 (SCH. 40)	12	2 1/4	31 1/2	39	2 1/4	12	3/8	6 1/2	18	5/16
	520	24	0.500 (WT. XS)	10	2 1/4	31 1/2	39	2 3/8	10	3/8	6 1/2	18	5/16
	360	24	0.375 (SCH. 20)	10	2	30 1/2	38	2	10	3/8	6	16 1/2	5/16
140	1,000	24	1.219 (SCH. 80)	12	2 1/2	33 1/2	41 1/2	2 5/8	12	3/8	7 3/4	21 1/2	5/16
	840	24	0.969 (SCH. 60)	12	2 1/2	32	40	2 1/2	12	3/8	7	19 1/2	5/16
	600	24	0.688 (SCH. 40)	12	2 1/4	31 1/2	39	2 3/8	12	3/8	6 1/2	18	5/16
	420	24	0.500 (WT. XS)	10	2	31 1/2	38	2 3/8	-	-	-	-	-
	300	24	0.375 (SCH. 20)	10	2	30 1/2	37 1/2	2	-	-	-	-	-
160	1,000	24	1.531 (SCH. 100)	10	2 3/4	36 1/2	45 1/2	3	10	3/8	9 3/4	27	5/16
	720	24	0.969 (SCH. 60)	12	2 1/2	32	40	2 3/8	12	3/8	7	19 1/2	5/16
	420	24	0.688 (SCH. 40)	12	2	30 1/2	37	2 3/8	-	-	-	-	-
	300	24	0.500 (WT. XS)	10	2	30 1/2	37	2 1/8	-	-	-	-	-
180	750	24	1.219 (SCH. 80)	12	2 1/2	34 1/2	42 1/2	2 5/8	12	3/8	8 1/4	23	5/16
	600	24	0.969 (SCH. 60)	10	2 1/2	34	42	3	-	-	-	-	-
	450	24	0.688 (SCH. 40)	10	2 1/4	32 1/2	40	2 5/8	-	-	-	-	-
	300	24	0.688 (SCH. 40)	12	2	30 1/2	37	2 1/4	-	-	-	-	-
200	600	24	1.219 (SCH. 80)	14	2 1/2	35 1/2	43 1/2	3 1/4	-	-	-	-	-
	450	24	0.969 (SCH. 60)	12	2 1/4	32 1/2	40	2 3/4	-	-	-	-	-
	300	24	0.688 (SCH. 40)	12	2	30 1/2	37	2 1/4	-	-	-	-	-

END CONNECTION COMPONENT SELECTION TABLE													
SPAN (FEET)	PANEL AREA (S.F.)	H.S. BOLTS		SPLICE PLATE		STIFFENERS							
		NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)		
60	1,040	12	1	27 1/2	31	2	-	-	-	-	-	-	-
	760	12	1	27 1/2	31	2	-	-	-	-	-	-	-
	440	11	1	23 1/2	27	2	-	-	-	-	-	-	-
80	1,000	18	1 1/8	28	32	2	-	-	-	-	-	-	-
	880	18	1 1/8	28	32	2	-	-	-	-	-	-	-
	600	14	1 1/8	28	32	2	-	-	-	-	-	-	-
	360	11	1 1/8	24	28	2	-	-	-	-	-	-	-
100	1,000	22	1 3/8	32	36 1/2	2	11	3/8	5 1/4	14 1/2	5/16	5/16	
	740	20	1 1/4	29	33 1/2	2	10	3/8	3 3/4	10 1/2	5/16	5/16	
	520	20	1 1/8	28 1/2	32 1/2	2	10	3/8	3 1/4	9	5/16	5/16	
	280	12	1 1/8	24	28	2	-	-	-	-	-	-	
120	1,000	22	1 1/2	34 1/2	39 1/2	2	11	3/8	6 3/4	19	5/16	5/16	
	800	22	1 3/8	32 1/2	37	2	11	3/8	5 1/2	15 1/2	5/16	5/16	
	520	20	1 1/4	29	33 1/2	2	10	3/8	3 3/4	10 1/2	5/16	5/16	
	360	18	1 1/8	28	32	2	9	3/8	3	8 1/2	5/16	5/16	
140	1,000	22	1 5/8	38 1/2	44	2	11	3/8	9	25	5/16	5/16	
	840	22	1 1/2	37	42	2	11	3/8	8	22	5/16	5/16	
	600	22	1 3/8	32	36 1/2	2	11	3/8	5 1/4	14 1/2	5/16	5/16	
	420	20	1 1/4	30	34 1/2	2	10	3/8	4 1/4	12	5/16	5/16	
	300	20	1 1/8	28	32	2	10	3/8	3	8 1/2	5/16	5/16	
160	1,000	22	1 3/4	40	46	2 3/8	11	3/8	10	27 1/2	5/16	5/16	
	720	22	1 1/2	37 1/2	42 1/2	2 3/8	11	3/8	8 1/4	23	5/16	5/16	
	420	22	1 1/4	33	37 1/2	2	11	3/8	5 3/4	16	5/16	5/16	
	300	22	1 1/8	29	33	2	11	3/8	3 1/2	10	5/16	5/16	
180	750	22	1 5/8	39 1/2	45	2 3/4	11	3/8	9 1/2	26 1/2	5/16	5/16	
	600	22	1 1/2	37	42 1/2	2 1/2	11	3/8	8 1/4	23	5/16	5/16	
	450	22	1 3/8	32 1/2	40 1/2	2 1/8	11	3/8	7 1/4	20	5/16	5/16	
	300	22	1 1/4	29	35 1/2	2	11	3/8	4 3/4	13 1/2	5/16	5/16	
200	600	24	1 1/2	40 1/2	46 1/2	2 5/8	12	1/2	10 1/4	28 1/2	7/16	3/8	
	450	22	1 1/2	35 1/2	41	2 1/2	11	1/2	7 1/2	21	3/8	3/8	
	300	22	1 1/4	32	37 1/2	2 1/8	11	1/2	5 3/4	16	3/8	3/8	

NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.



RECOMMENDED: OCTOBER 14, 2015
Gayle S. Smith
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
M/S
 CHIEF ENGINEER

MONOPIPE SIGN STRUCTURES
 FOR STATIC PANELS
 FRAME TABLES - 1

PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING

FILE NAME: PTS-740-04.DWG
 DRAWING TYPE: 5A
 SHEET 4 OF 8

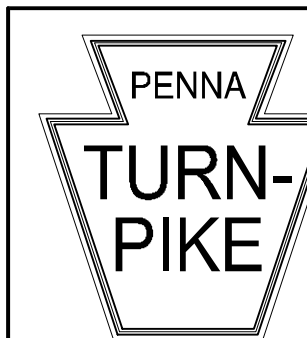
DATE: OCTOBER 2015
 PTS-740

MAST ARM & SPLICE CONNECTION COMPONENT SELECTION TABLE

SPAN (FEET)	PANEL AREA (S.F.)	USING MAXIMUM LENGTH OF MAST ARM SEGMENTS												USING MINIMUM LENGTH OF MAST ARM SEGMENTS												PANEL AREA (S.F.)	SPAN (FEET)		
		MAST ARM		SEGMENT ARRANGEMENT	H.S. BOLTS		SPLICE PLATE		STIFFENERS					MAST ARM		SEGMENT ARRANGEMENT	H.S. BOLTS		SPLICE PLATE		STIFFENERS								
		DIAMETER (INCHES)	THICKNESS (INCHES)		NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)	DIAMETER (INCHES)		THICKNESS (INCHES)	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)			HEIGHT (INCHES)	WELD (INCHES)
60	1,040	24	0.375 (SCH. 20)	A	-	-	-	-	-	-	-	-	-	24	0.375 (SCH. 20)	B	22	1	28	31 1/2	2	11	3/8	2 3/4	8	5/16	1,040	60	
	760	24	0.375 (SCH. 20)	A	-	-	-	-	-	-	-	-	-	24	0.375 (SCH. 20)	B	22	1	28	31 1/2	2	11	3/8	2 3/4	8	5/16	760		
	440	20	0.375 (SCH. 20)	A	-	-	-	-	-	-	-	-	-	20	0.375 (SCH. 20)	B	20	1	23 1/2	27	2	10	3/8	2 1/2	7	5/16	440		
80	1,000	24	0.500 (WT. XS)	B	22	1 1/4	30 1/2	35	2	11	3/8	4 1/2	12 1/2	5/16	24	0.500 (WT. XS)	C	20	1 1/4	31	35 1/2	2	10	3/8	4 3/4	13 1/2	5/16	1,000	80
	880	24	0.500 (WT. XS)	B	22	1 1/4	29	33 1/2	2	11	3/8	3 3/4	10 1/2	5/16	24	0.500 (WT. XS)	C	20	1 1/4	29	33 1/2	2	10	3/8	3 3/4	10 1/2	5/16	880	
	600	24	0.375 (SCH. 20)	B	22	1 1/8	29 1/2	33 1/2	2	11	3/8	3 3/4	10 1/2	5/16	24	0.375 (SCH. 20)	C	20	1 1/8	29	33	2	10	3/8	3 1/2	10	5/16	600	
	360	20	0.375 (SCH. 20)	B	20	1 1/8	24	29	2	10	3/8	3 1/2	10	5/16	20	0.375 (SCH. 20)	C	18	1 1/8	24	28	2	9	3/8	3	8 1/2	5/16	360	
100	1,000	24	0.688 (SCH. 40)	B	24	1 3/8	36	40 1/2	2	12	3/8	7 1/4	20	5/16	24	0.688 (SCH. 40)	C	22	1 3/8	32	36 1/2	2	11	3/8	5 1/4	14 1/2	5/16	1,000	100
	740	24	0.688 (SCH. 40)	B	24	1 1/4	36	40 1/2	2	12	3/8	7 1/4	20	5/16	24	0.500 (WT. XS)	C	22	1 1/4	31 1/2	36	2	11	3/8	5	14	5/16	740	
	520	24	0.500 (WT. XS)	B	24	1 1/8	32 1/2	36 1/2	2	12	3/8	5 1/4	14 1/2	5/16	24	0.375 (SCH. 20)	C	22	1 1/8	29	33	2	11	3/8	3 1/2	10	5/16	520	
	280	20	0.500 (SCH. 30)	B	22	1 1/8	27	31	2	11	3/8	4 1/2	12 1/2	5/16	20	0.375 (SCH. 20)	C	20	1 1/8	24	28	2	10	3/8	3	8 1/2	5/16	280	
120	1,000	24	0.969 (SCH. 60)	C	22	1 1/2	34 1/2	39 1/2	2	11	3/8	6 3/4	19	5/16	24	0.969 (SCH. 60)	D	24	1 1/2	37 1/2	42 1/2	2	12	3/8	8 1/4	23	5/16	1,000	120
	800	24	0.688 (SCH. 40)	C	24	1 3/8	34 1/2	39	2	12	3/8	6 1/2	18	5/16	24	0.969 (SCH. 60)	D	22	1 1/2	36 1/2	41 1/2	2	11	3/8	7 3/4	21 1/2	5/16	800	
	520	24	0.500 (WT. XS)	C	22	1 1/4	32	36 1/2	2	11	3/8	5 1/4	14 1/2	5/16	24	0.688 (SCH. 40)	D	24	1 1/4	34 1/2	39	2	12	3/8	6 1/2	18	5/16	520	
	360	24	0.375 (SCH. 20)	C	24	1 1/8	29	33	2	12	3/8	3 1/2	10	5/16	24	0.500 (WT. XS)	D	24	1 1/8	31 1/2	35 1/2	2	12	3/8	4 3/4	13 1/2	5/16	360	
140	1,000	24	1.219 (SCH. 80)	C	22	1 5/8	37	42 1/2	2	11	3/8	8 1/4	23	5/16	24	1.219 (SCH. 80)	D	20	1 3/4	39	45	2 3/8	10	3/8	9 1/2	26 1/2	5/16	1,000	140
	840	24	0.969 (SCH. 60)	C	22	1 1/2	36 1/2	41 1/2	2	11	3/8	7 3/4	21 1/2	5/16	24	1.219 (SCH. 80)	D	22	1 5/8	38	43 1/2	2 1/4	11	3/8	8 3/4	24 1/2	5/16	840	
	600	24	0.688 (SCH. 40)	C	22	1 3/8	34	38 1/2	2	11	3/8	6 1/4	17 1/2	5/16	24	0.969 (SCH. 60)	D	24	1 3/8	38 1/2	43	2	12	3/8	8 1/2	23 1/2	5/16	600	
	420	24	0.500 (WT. XS)	C	22	1 1/4	31	35 1/2	2	11	3/8	4 3/4	13 1/2	5/16	24	0.688 (SCH. 40)	D	24	1 1/4	34 1/2	39	2	12	3/8	6 1/2	18	5/16	420	
	300	24	0.375 (SCH. 20)	C	22	1 1/8	29	33	2	11	3/8	3 1/2	10	5/16	24	0.500 (WT. XS)	D	24	1 1/8	31 1/2	36	2	12	3/8	5	14	5/16	300	
160	1,000	24	1.531 (SCH. 100)	D	20	1 7/8	40 1/2	46 1/2	2 5/8	10	3/8	10 1/4	28 1/2	5/16	24	1.531 (SCH. 100)	E	22	1 3/4	40	46	2 3/8	11	3/8	10	27 1/2	5/16	1,000	160
	720	24	1.219 (SCH. 80)	D	20	1 3/4	37 1/2	43 1/2	2 3/8	10	3/8	8 3/4	24 1/2	5/16	24	1.219 (SCH. 80)	E	20	1 3/4	36	42	2 3/8	10	3/8	8	22	5/16	720	
	420	24	0.688 (SCH. 40)	D	22	1 3/8	34 1/2	39	2	11	3/8	6 1/2	18	5/16	24	0.688 (SCH. 40)	E	22	1 3/8	32 1/2	37	2	11	3/8	5 1/2	15 1/2	5/16	420	
	300	24	0.500 (WT. XS)	D	22	1 1/4	30 1/2	35	2	11	3/8	4 1/2	12 1/2	5/16	24	0.500 (WT. XS)	E	20	1 1/4	32	36 1/2	2	10	3/8	5 1/4	14 1/2	5/16	300	
180	750	24	1.531 (SCH. 100)	D	20	1 7/8	39	45	2 3/4	10	3/8	9 1/2	26 1/2	5/16	24	1.531 (SCH. 100)	E	20	1 7/8	38 1/2	44 1/2	2 3/4	10	3/8	9 1/4	25 1/2	5/16	750	180
	600	24	1.219 (SCH. 80)	D	20	1 3/4	37	43	2 1/2	10	3/8	8 1/2	23 1/2	5/16	24	1.219 (SCH. 80)	E	20	1 3/4	36	42	2 3/8	10	3/8	8	22	5/16	600	
	450	24	0.969 (SCH. 60)	D	22	1 1/2	36 1/2	41 1/2	2 1/4	11	3/8	7 3/4	21 1/2	5/16	24	0.969 (SCH. 60)	E	22	1 1/2	34 1/2	39 1/2	2 1/4	11	3/8	6 3/4	19	5/16	450	
	300	24	0.688 (SCH. 40)	D	22	1 3/8	32	36 1/2	2	11	3/8	5 1/4	14 1/2	5/16	24	0.688 (SCH. 40)	E	20	1 3/8	30	35	2	10	3/8	4 1/2	12 1/2	5/16	300	
200	600	24	1.219 (SCH. 80)	E	20	1 3/4	38 1/2	44 1/2	2 5/8	10	3/8	9 1/4	25 1/2	5/16	24	1.531 (SCH. 100)	F	22	1 3/4	40	46	2 3/4	11	3/8	10	27 1/2	5/16	600	200
	450	24	0.969 (SCH. 60)	E	22	1 1/2	37	42	2 3/8	11	3/8	8	22	5/16	24	0.969 (SCH. 60)	F	24	1 1/2	37 1/2	42 1/2	2 3/8	12	3/8	8 1/4	23	5/16	450	
	300	24	0.688 (SCH. 40)	E	22	1 3/8	32	36 1/2	2 1/8	11	3/8	5 1/4	14.5	5/16	24	0.688 (SCH. 40)	F	22	1 3/8	32 1/2	37 1/2	2 1/8	11	3/8	5 3/4	16	5/16	300	

ARRANGEMENT	SEGMENT LENGTH / MAST ARM LENGTH	ARRANGEMENT	SEGMENT LENGTH / MAST ARM LENGTH
A	-----1-----	D	1/4 1/4 1/4 1/4
B	-----1/2----- 1/2	E	1/5 1/5 1/5 1/5 1/5
C	1/3 1/3 1/3	F	1/6 1/6 1/6 1/6 1/6 1/6

NOTES
1. FOR GENERAL NOTES, SEE SHEET 1.



RECOMMENDED: OCTOBER 14, 2015
Gary J. Smith
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
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 CHIEF ENGINEER

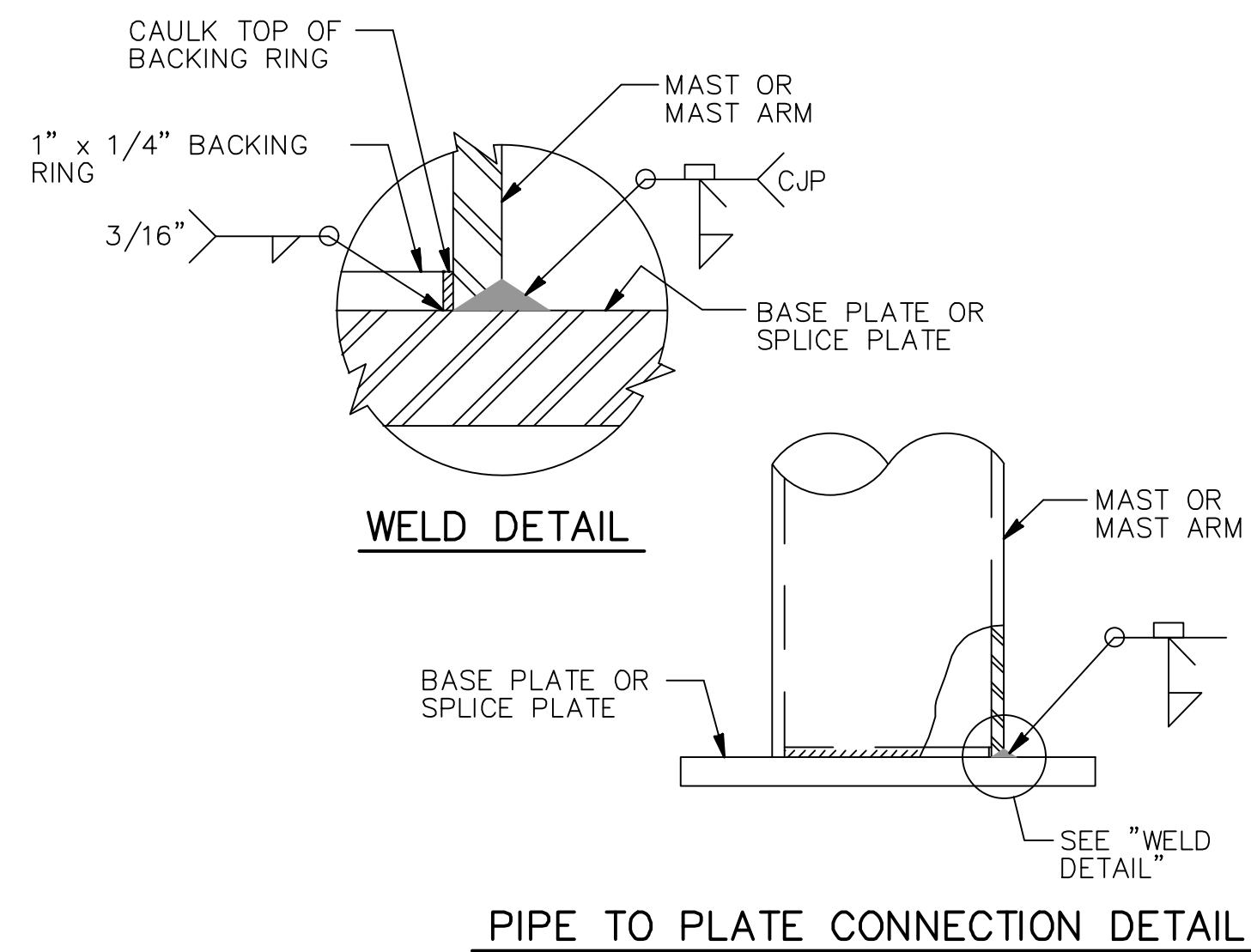
**MONOPIPE SIGN STRUCTURES
FOR STATIC PANELS
FRAME TABLES - 2**

**PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING**

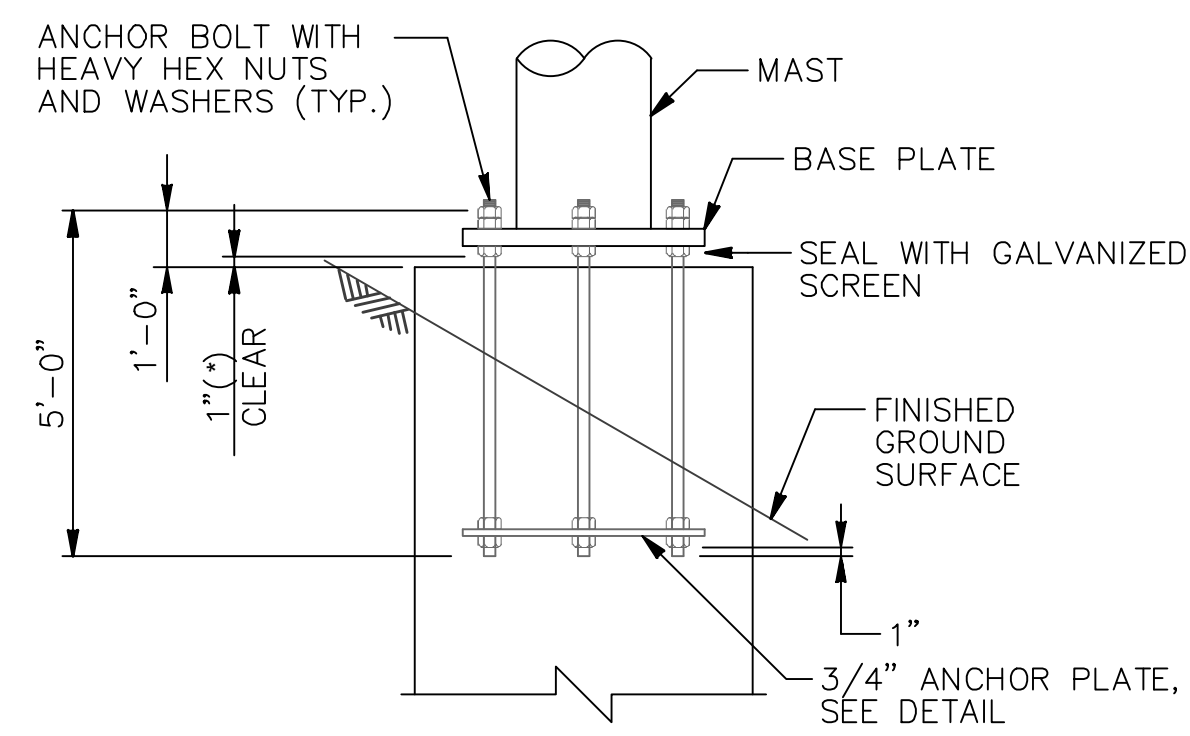
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DRAWING TYPE: 5A

DATE: OCTOBER 2015

SHEET 5 OF 8
PTS-740

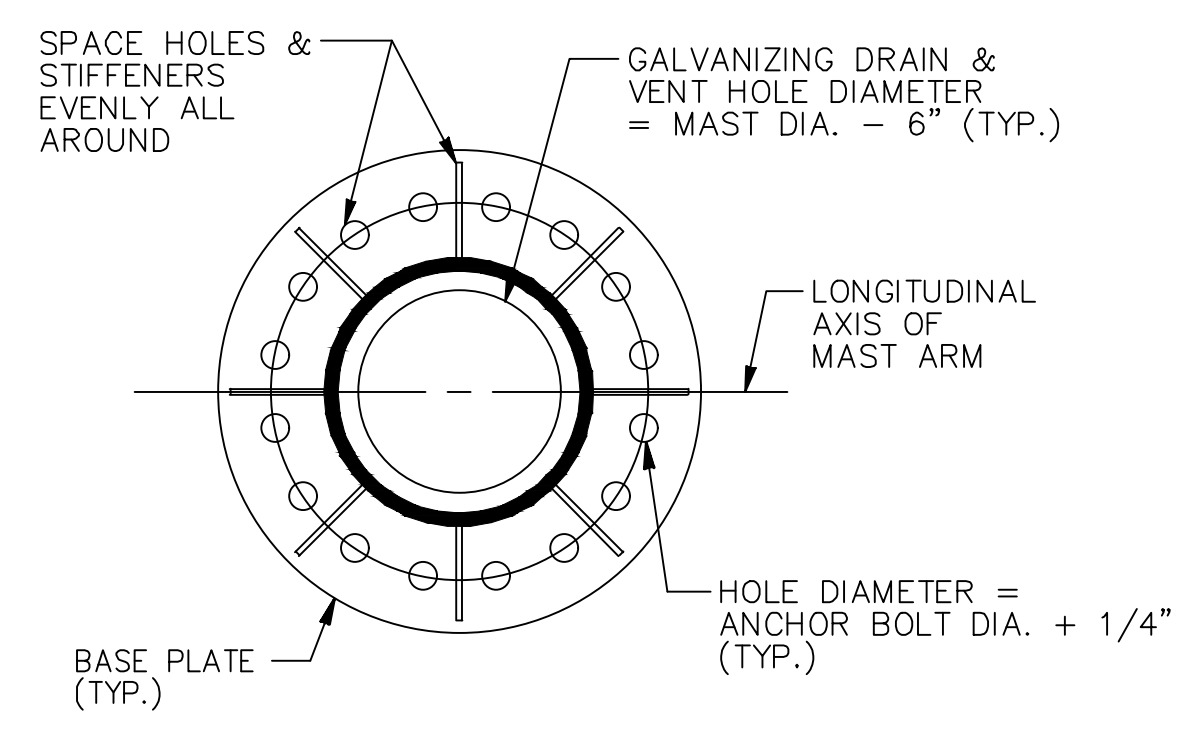


PIPE TO PLATE CONNECTION DETAIL



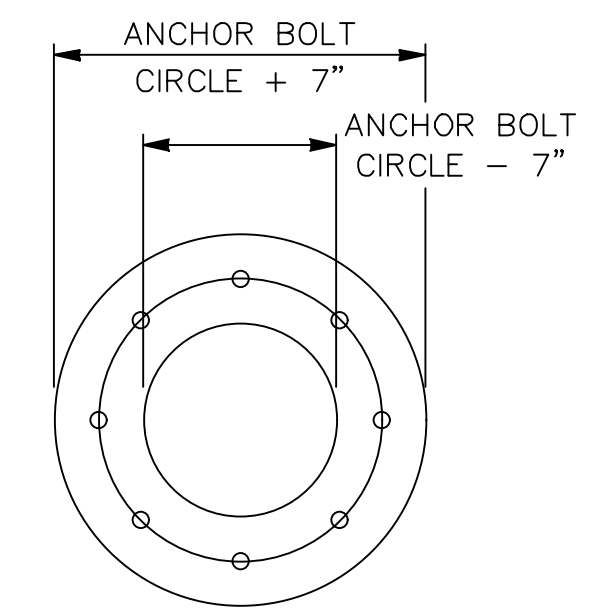
NOTE: STIFFENERS NOT SHOWN FOR CLARITY

ELEVATION

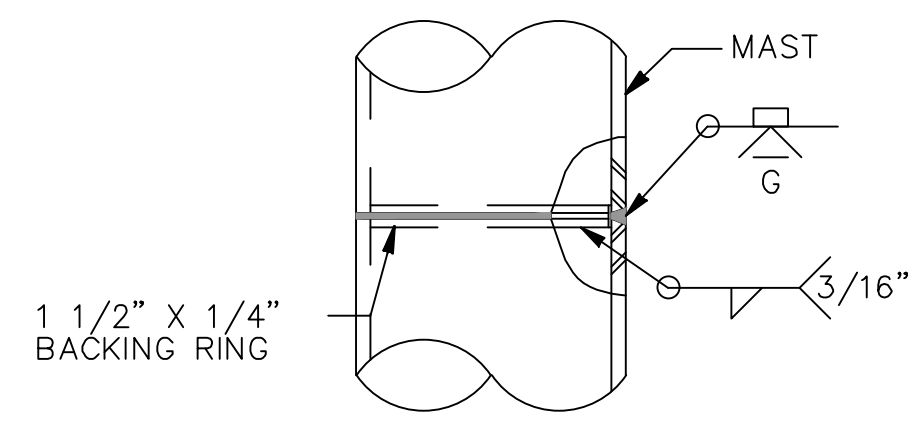


SECTION

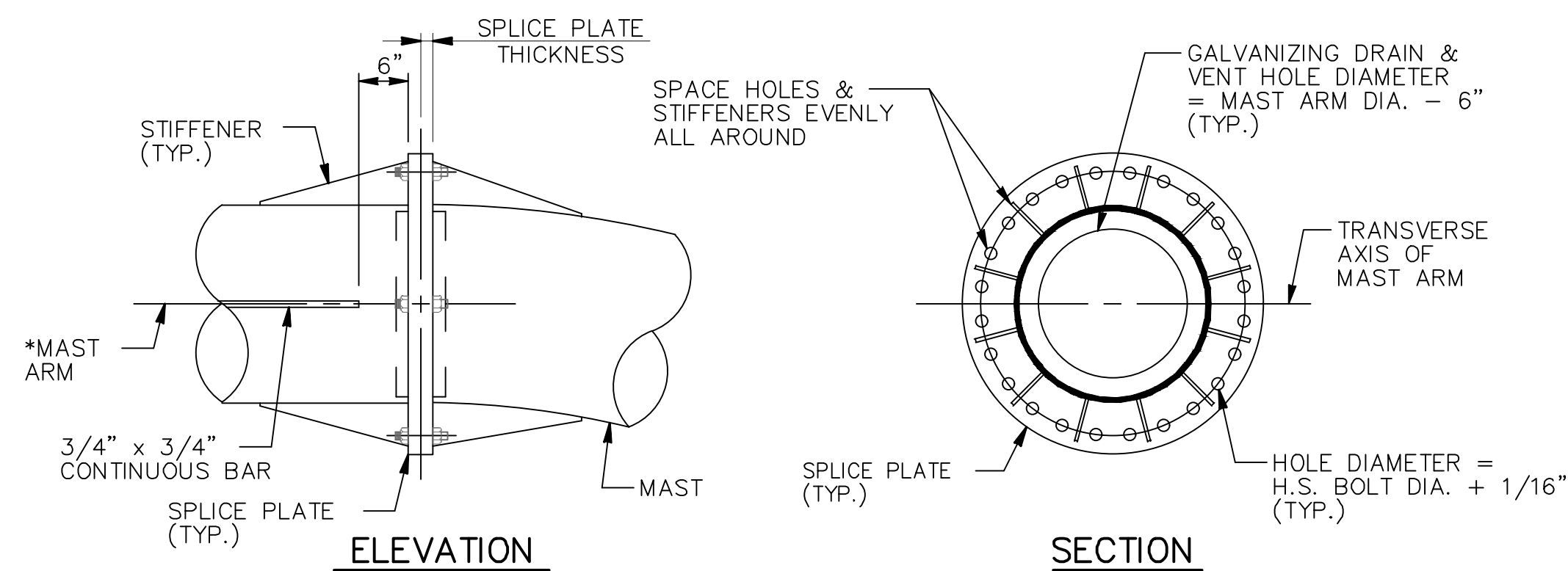
BASE CONNECTION DETAILS



ANCHOR PLATE DETAIL



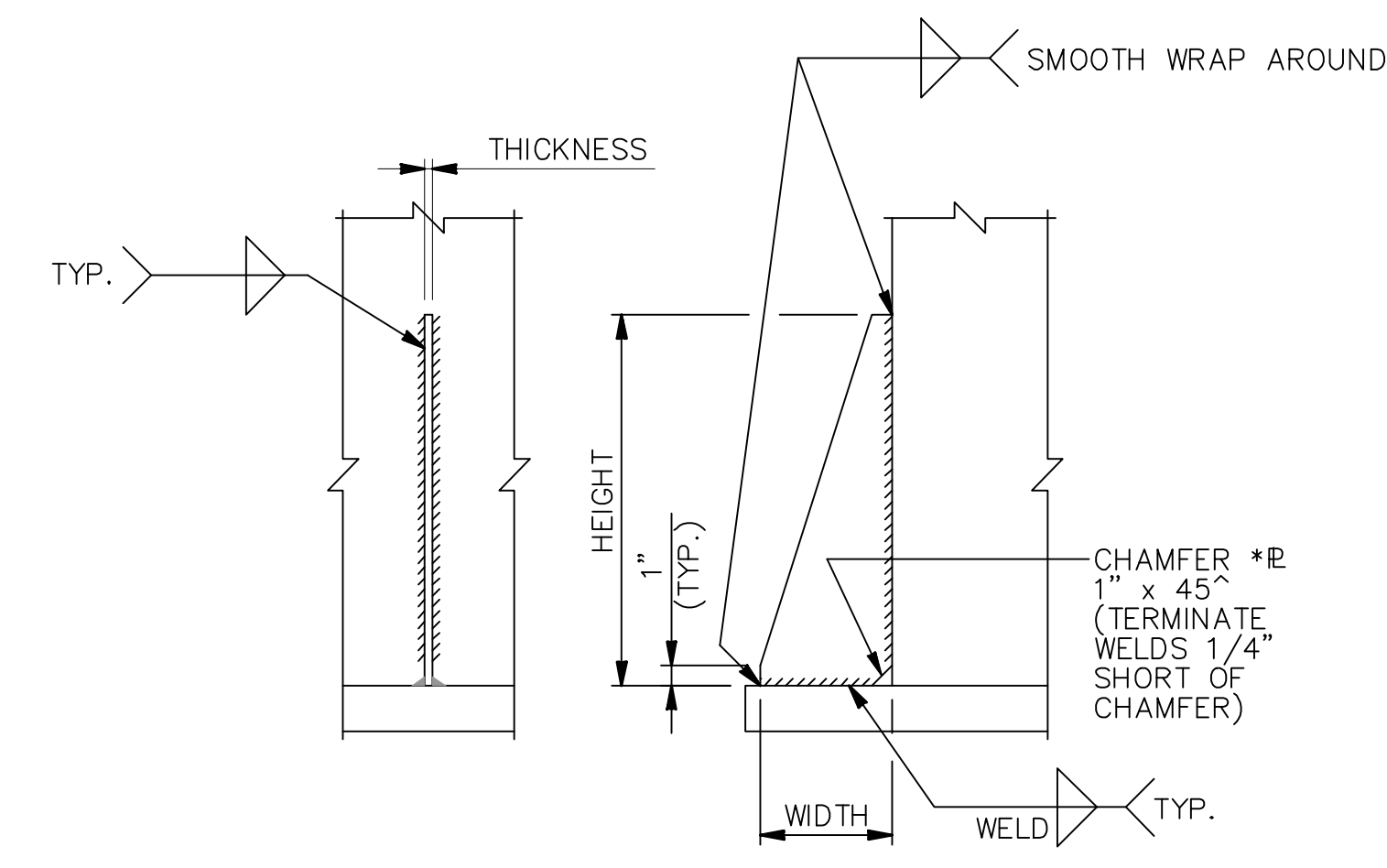
OPTIONAL SHOP CONNECTION DETAIL



ELEVATION

SECTION

END CONNECTION DETAILS
(MAST ARM SPLICE CONNECTION SIMILAR)



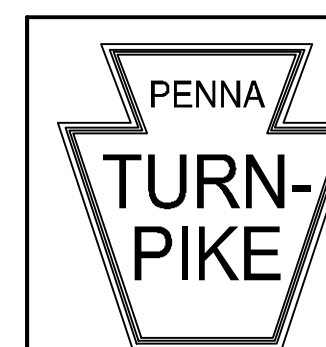
SECTION

ELEVATION

STIFFENER DETAILS

NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.

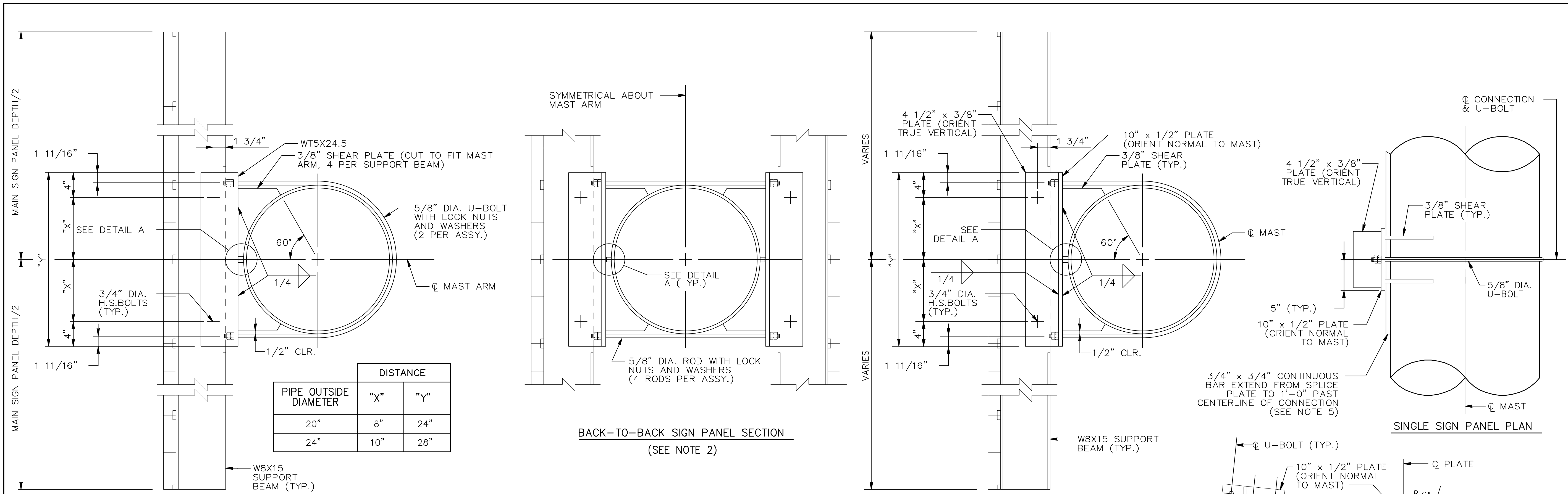


RECOMMENDED: OCTOBER 14, 2015
Gary L. Sch...
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 APPROVED: OCTOBER 14, 2015
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 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
 FOR STATIC PANELS
 MAST & MAST ARM DETAILS**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

FILE NAME: \$FILES\$	SHEET 6 OF 8
DRAWING TYPE: 5A	
DATE: OCTOBER 2015	PTS-740



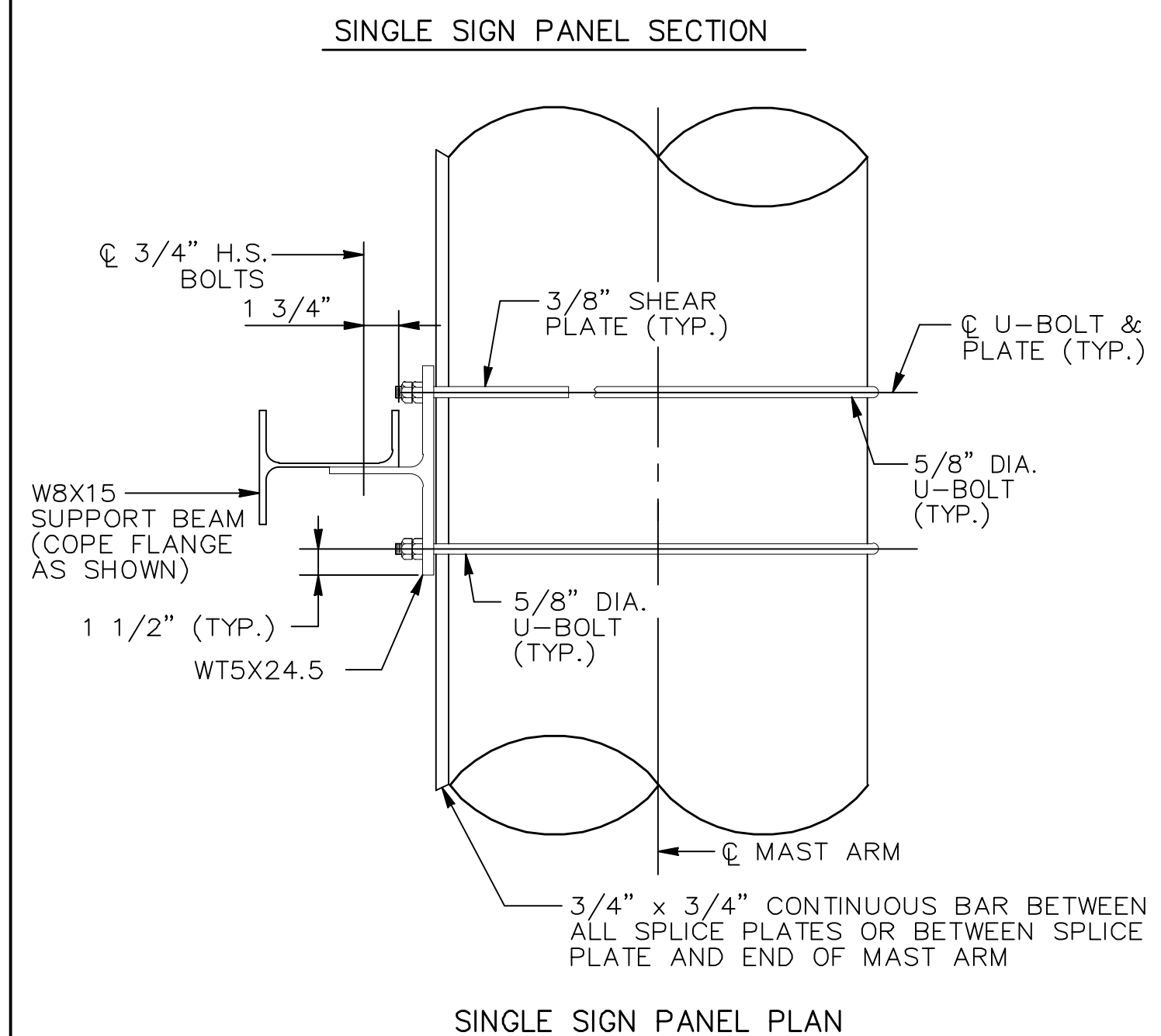
PIPE OUTSIDE DIAMETER	DISTANCE	
	"X"	"Y"
20"	8"	24"
24"	10"	28"

SINGLE SIGN PANEL SECTION

BACK-TO-BACK SIGN PANEL SECTION
(SEE NOTE 2)

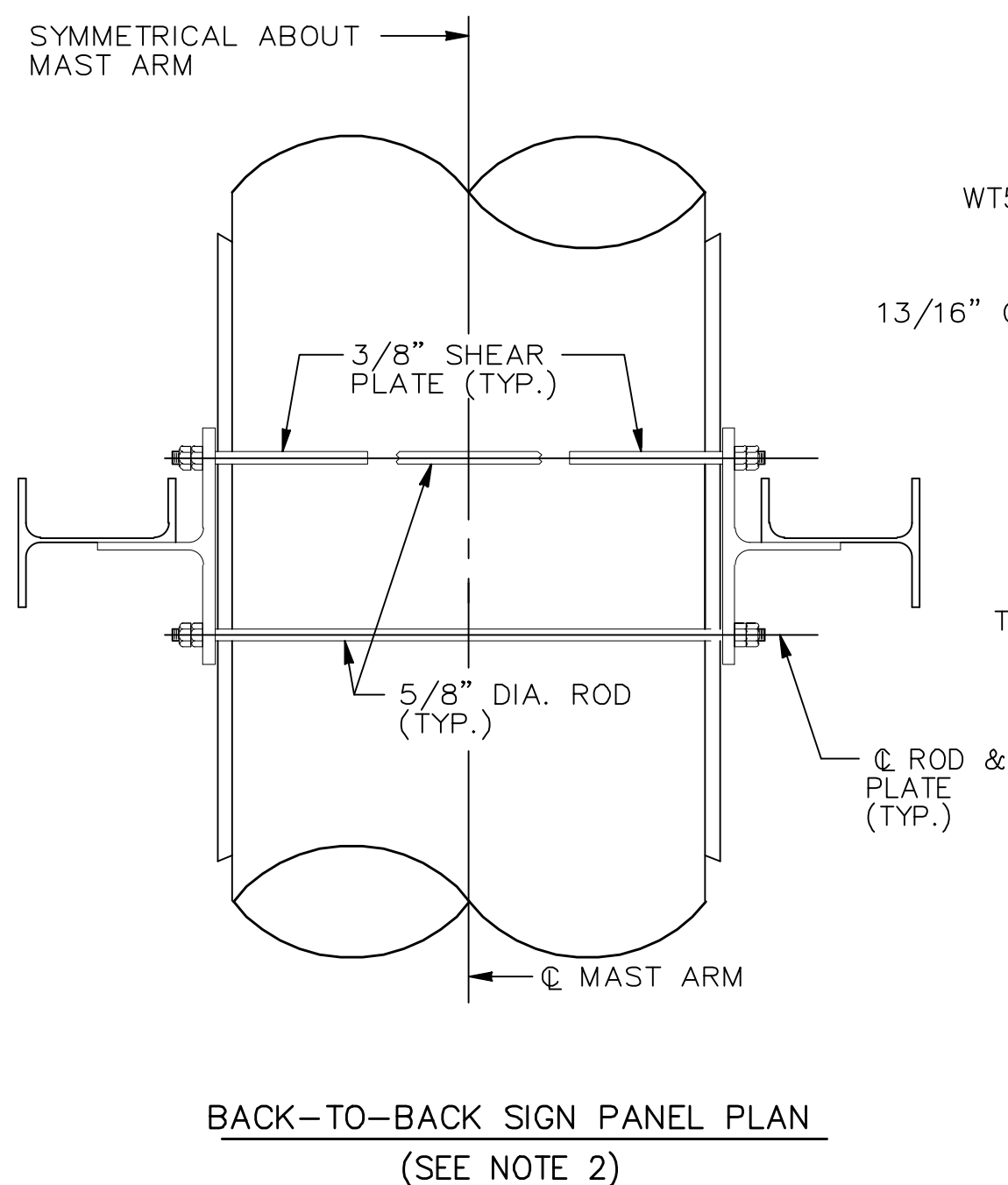
SINGLE SIGN PANEL SECTION

SINGLE SIGN PANEL PLAN

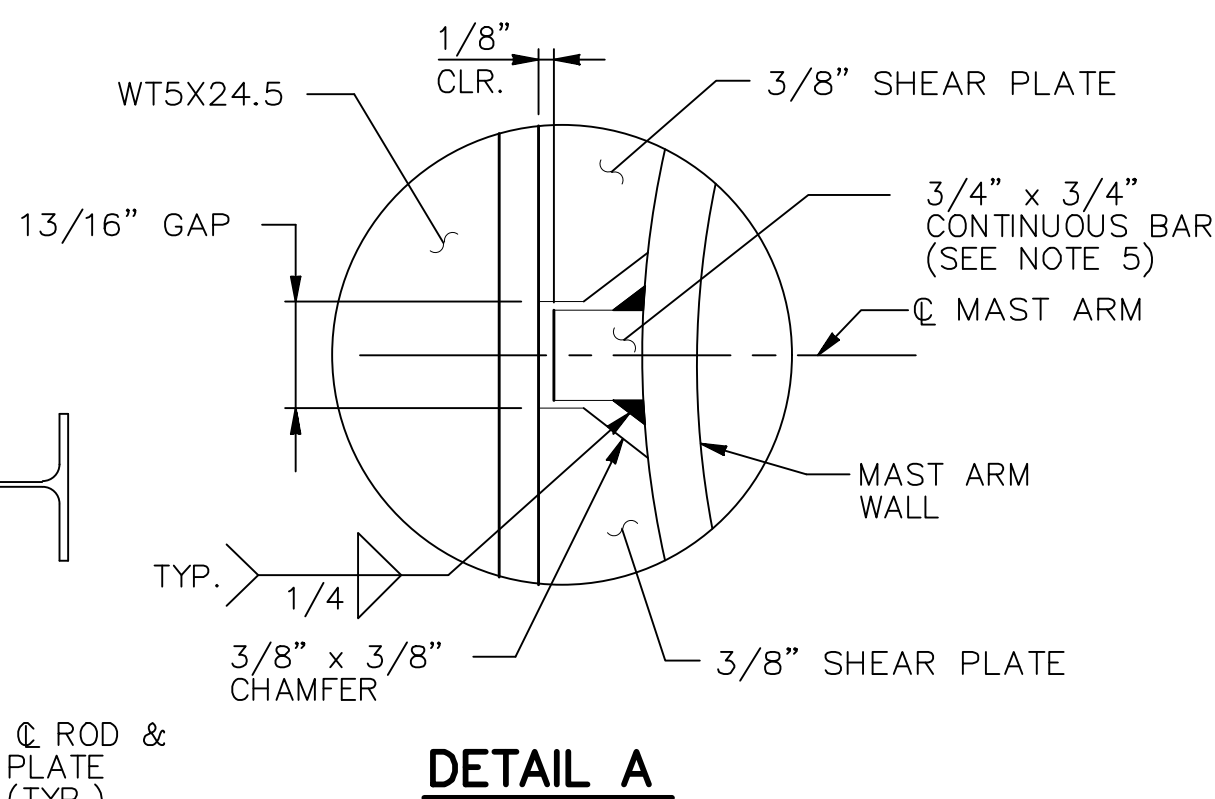


SINGLE SIGN PANEL PLAN

SUPPORT BEAM TO MAST ARM CONNECTION DETAILS

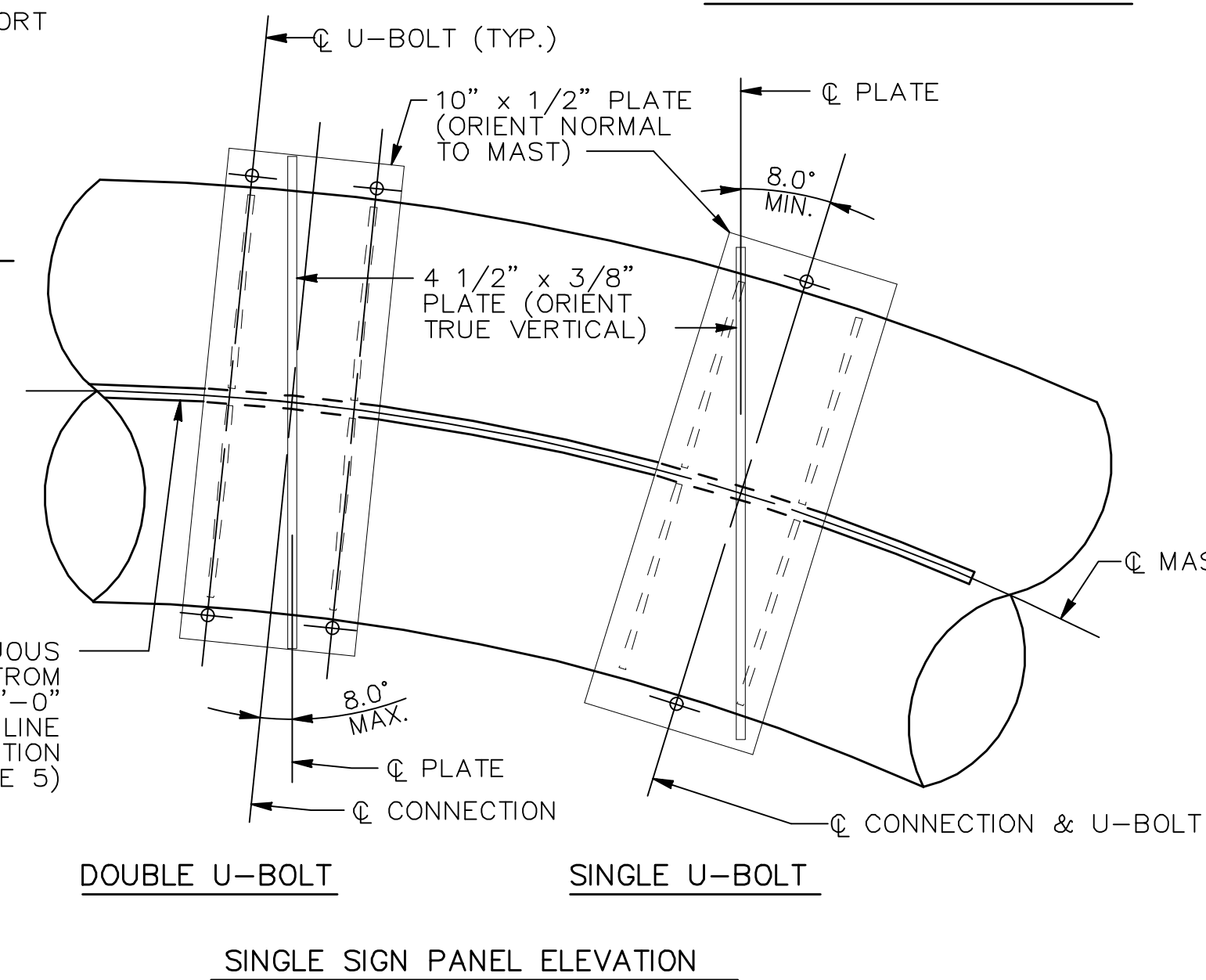


BACK-TO-BACK SIGN PANEL PLAN
(SEE NOTE 2)



DETAIL A

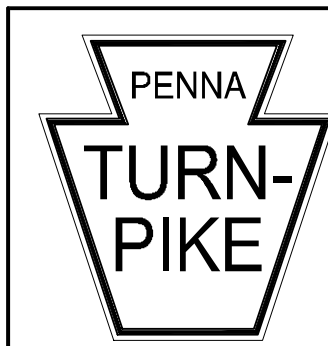
- NOTES
- FOR GENERAL NOTES, SEE SHEET 1.
 - FOR DETAILS NOT SHOWN OR NOTED, SEE SINGLE SIGN PANEL SUPPORT DETAILS.
 - FOR DETAILS OF SIGN PANELS, SEE PENNDOT STANDARD TC-8701E.
 - LOCATE SUPPORT BEAMS TO AVOID END AND SPLICE CONNECTIONS. MAXIMUM SPACING = 5'-0". MAXIMUM DISTANCE TO PANEL EDGE = 2'-6".
 - PROVIDE BAR IN SINGLE OR MULTIPLE PIECES. MAINTAIN 1'-0" MIN. FROM JOINT(S) TO CONNECTION.



DOUBLE U-BOLT SINGLE U-BOLT

SUPPORT BEAM TO MAST CONNECTION DETAILS

(FOR DETAILS NOT SHOWN OR NOTED, SEE SUPPORT BEAM TO MAST ARM CONNECTION DETAILS)
(SUPPORT BEAM NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY)



RECOMMENDED: OCTOBER 14, 2015
Gayle S. Smith
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
M/S
 CHIEF ENGINEER

MONOPIPE SIGN STRUCTURES
 FOR STATIC PANELS
 SIGN PANEL SUPPORT BEAM DETAILS

PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING

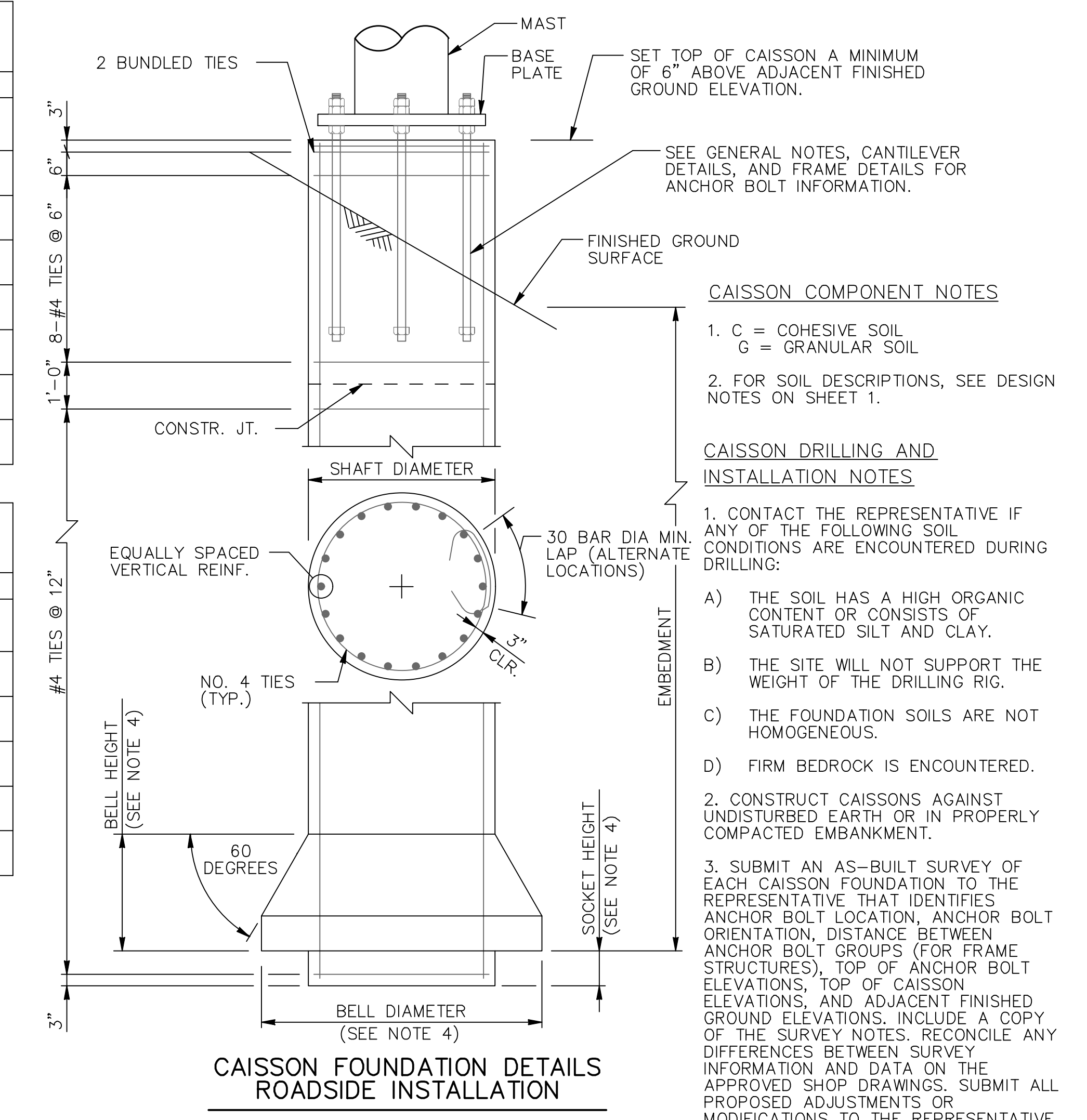
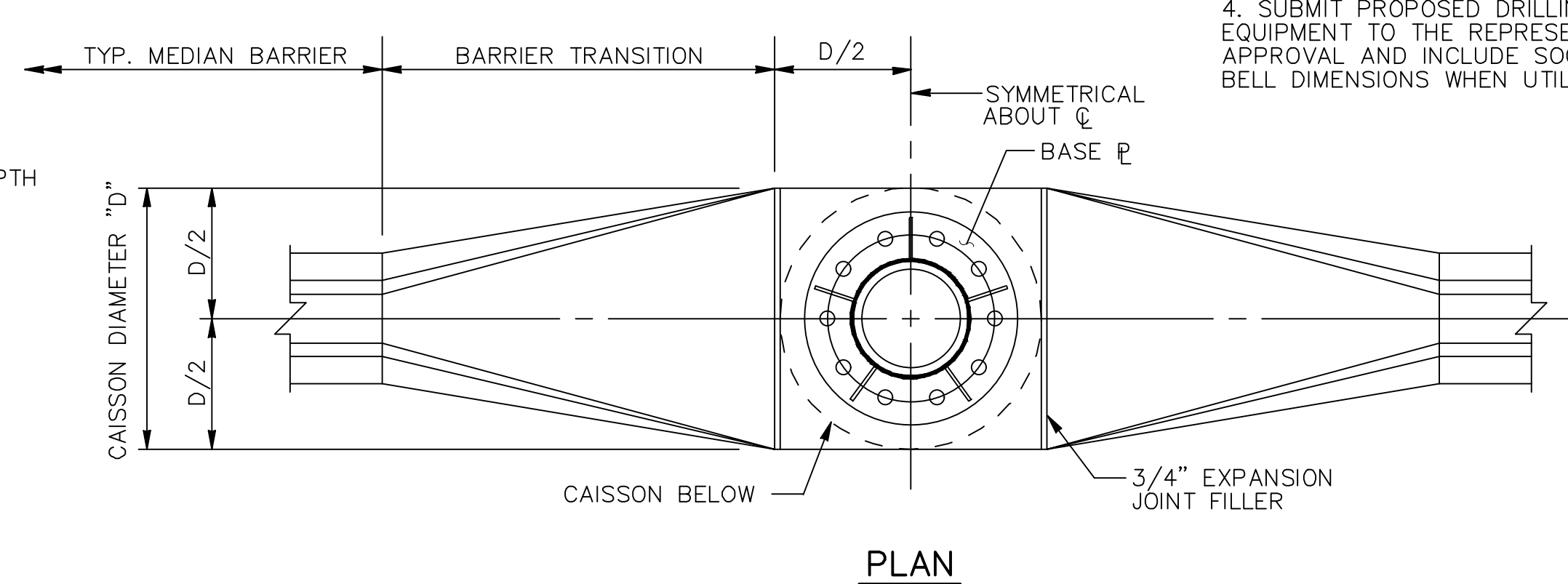
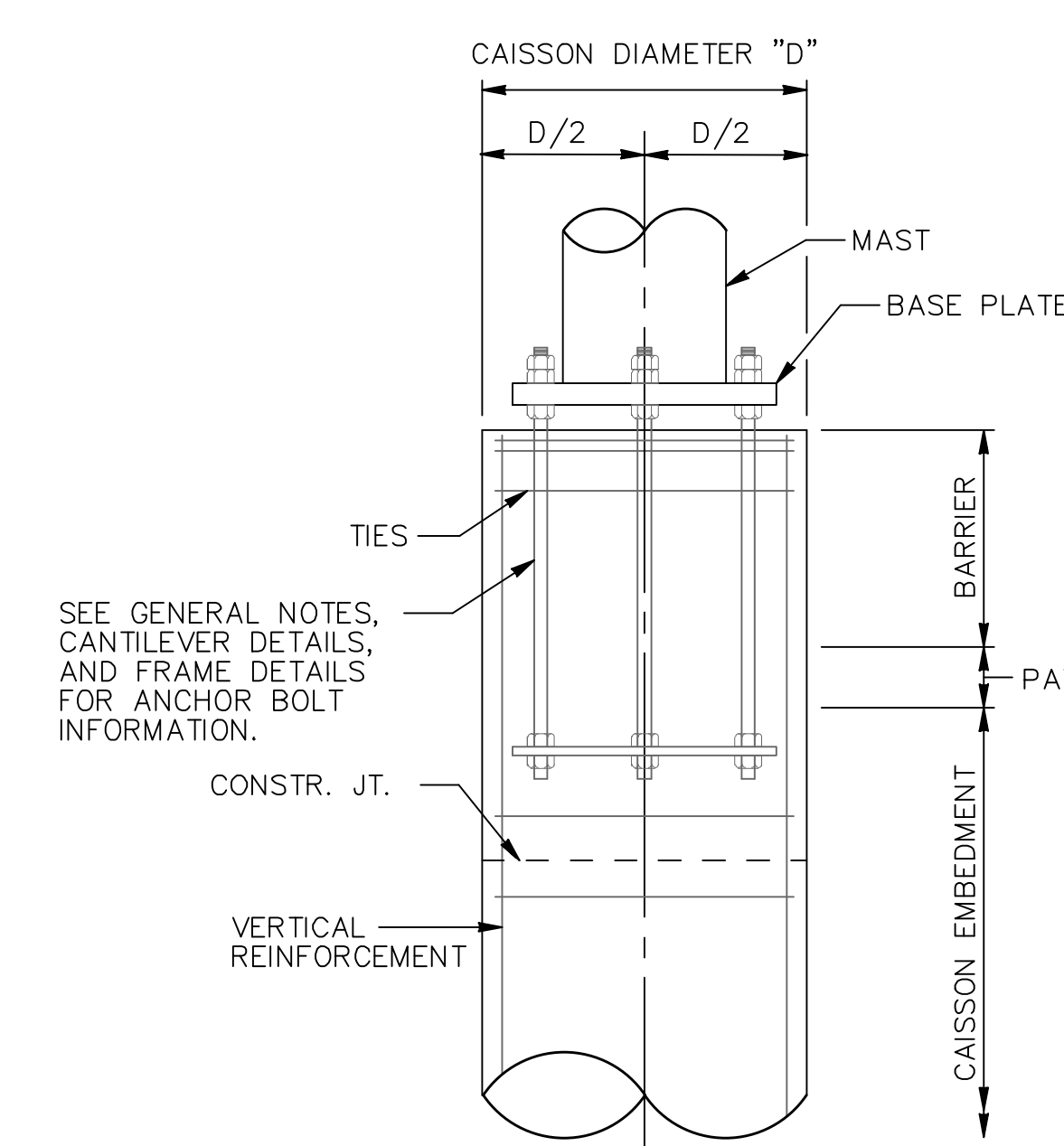
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 DRAWING TYPE: 5A SHEET 7 OF 8

DATE: OCTOBER 2015 PTS-740

CAISSON COMPONENT SELECTION TABLE FRAME STRUCTURES										
SPAN (FEET)	PANEL AREA (S.F.)	SHAFT DIAMETER (INCHES)	BELL DIAMETER (INCHES)	SOIL	EMBEDMENT (FEET)				VERT. REINF.	
					MAX. GROUND SLOPE				NO.	SIZE
					8:1	4:1	2:1	1.5:1		
60	1,040	54	-	C	23.0	24.0	25.0	25.5	18	NO. 8
		760	48	-	G	19.5	20.0	21.5		
	440	48	-	C	22.0	23.0	24.0	24.5	16	NO. 8
80	1,000	60	-	C	18.5	19.0	21.0	-	13	NO. 8
		880	54	-	G	18.5	19.0	19.5		
	600	48	-	C	24.5	25.5	26.5	27.5	20	NO. 8
	360	48	-	G	21.0	22.0	22.5	-		
	100	1,000	60	-	C	22.0	22.5	23.5	24.5	16
740			54	-	G	18.5	19.0	21.0	-	
520		48	-	C	26.5	27.5	30.0	32.0	22	NO. 8
280		48	-	G	22.5	23.0	24.0	-		
120	1,000	60	-	C	24.5	25.0	27.0	29.0	19	NO. 8
		800	54	-	G	20.5	21.0	22.5		
	520	48	-	C	22.0	23.0	24.0	24.5	16	NO. 8
	360	48	-	G	18.5	19.0	21.0	-		
	140	1,000	60	-	C	17.5	17.5	18.5	19.0	12
840			60	-	G	15.5	16.0	17.0	-	
600		54	-	C	29.5	30.5	34.0	35.5	24	NO. 8
420		48	-	G	24.0	24.0	26.0	-		
160		1,000	66	-	C	27.5	29.0	32.0	34.0	21
	420		48	-	G	22.5	22.5	25.0	-	
	300	48	-	C	23.5	24.5	26.5	28.5	17	NO. 8
	160	66	-	G	19.5	20.0	22.0	-		
	180	1,000	66	-	C	20.0	20.5	21.5	22.0	14
720			54	-	G	17.0	17.5	19.5	-	
420		48	-	C	36.5	38.5	42.5	45.0	31	NO. 8
300		48	-	G	28.0	28.0	30.0	-		
200		1,000	66	-	C	33.5	35.5	40.0	42.5	25
	420		48	-	G	25.5	26.0	28.5	-	
	300	48	-	C	25.5	26.5	29.5	31.5	18	NO. 8
	180	66	-	G	20.5	21.0	23.5	-		
	200	600	78	-	C	21.5	22.0	23.5	24.0	15
450			54	-	G	18.0	18.5	20.5	-	
300		48	-	C	36.5	39.0	43.0	46.0	31	NO. 8
180		60	-	G	28.0	28.0	30.0	-		
200		600	78	-	C	34.5	36.5	41.0	43.5	27
	450		54	-	G	26.5	26.5	29.0	-	
	300	48	-	C	29.5	31.5	35.0	37.0	22	NO. 8
	180	60	-	G	23.5	23.5	26.0	-		
	200	600	78	-	C	25.5	27.0	30.0	32.0	17
450			54	-	G	20.5	21.0	23.5	-	
300		48	-	C	40.5	43.0	47.5	50.0	35	NO. 8
180		60	-	G	30.5	31.0	32.0	-		
200		450	66	-	C	32.5	34.5	38.5	41.0	25
	300		60	-	G	25.5	25.5	27.5	-	
	300	60	-	C	25.5	26.5	29.5	31.5	19	NO. 8

CAISSON COMPONENT SELECTION TABLE CANTILEVER STRUCTURES										
SPAN (FEET)	PANEL AREA (S.F.)	SHAFT DIAMETER (INCHES)	BELL DIAMETER (INCHES)	SOIL	EMBEDMENT (FEET)				VERT. REINF.	
					MAX. GROUND SLOPE				NO.	SIZE
					8:1	4:1	2:1	1.5:1		
38	680	60	-	C	27.0	27.5	30.0	31.5	23	NO. 8
		540	60	-	G	25.0	25.0	25.0		
	400	60	-	C	24.5	25.0	26.0	26.5	20	NO. 8
	250	54	-	G	24.5	24.5	24.5	-		
	27	460	54	-	C	21.5	22.0	23.0	23.5	17
350			48	-	G	22.5	22.5	22.5	-	
250		48	-	C	18.5	18.5	19.5	19.5	14	NO. 8
250		48	-	G	21.0	21.0	21.0	-		
27		460	54	-	C	22.0	22.5	23.5	24.0	17
	350		48	-	G	20.0	20.0	21.0	-	
	250	48	-	C	20.5	21.0	21.5	22.0	15	NO. 8
	250	48	-	G	17.5	18.0	18.5	19.0		
	27	460	54	-	C	19.0	19.0	19.0	-	12
350			48	-	G	19.0	19.0	19.0	-	

OPTIONAL CAISSON COMPONENT SELECTION TABLE FRAME STRUCTURES - MEDIAN BARRIER INSTALLATION										
SPAN (FEET)	PANEL AREA (S.F.)	SHAFT DIAMETER (INCHES)	BELL DIAMETER (INCHES)	SOIL	EMBEDMENT (FEET)				VERT. REINF.	
					MAX. GROUND SLOPE				NO.	SIZE
					8:1	4:1	2:1	1.5:1		
60	1,040	48	-	C	24.0	25.0	27.0	28.5	18	NO. 8
		80	48	-	G	20.0	20.5	22.5		
80	1,000	48	-	C	27.0	28.0	31.0	33.0	20	NO. 8
		100	48	-	G	21.5	22.0	24.5		
100	1,000	48	54	C	25.5	27.0	29.5	31.0	19	NO. 8
		740	48	-	G	21.0	21.5	23.5		
100	1,000	48	-	C	29.5	31.5	35.0	37.0	22	NO. 8
		740	48	-	G	23.0	23.5	27.0		
100	1,000	48	-	C	25.5	27.0	29.5	31.5	19	NO. 8
		740	48	-	G	21.0	21.5	23.5		

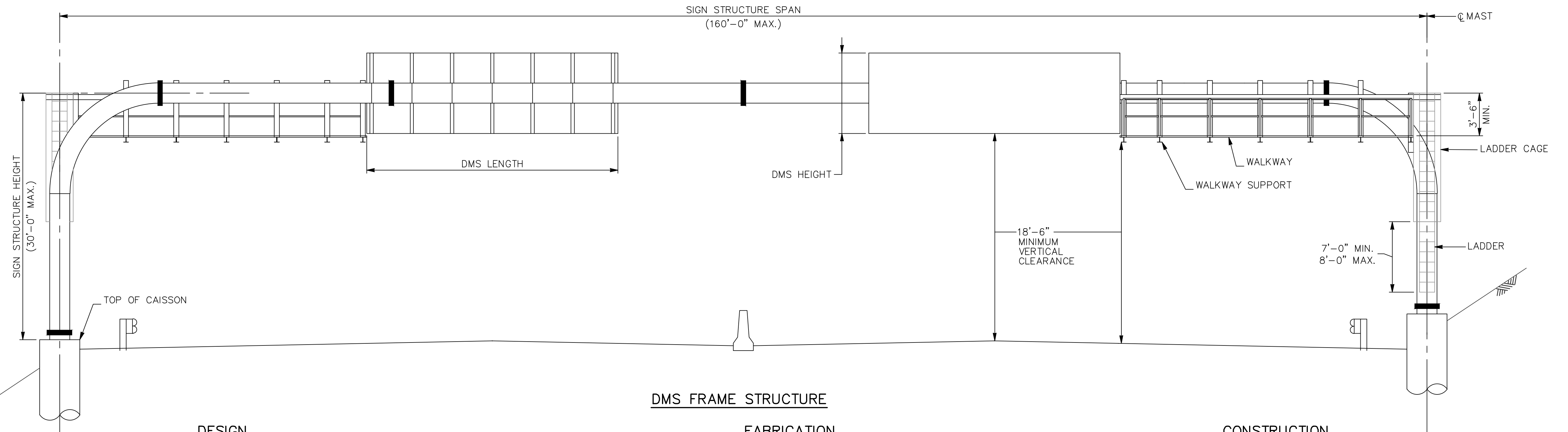


- CAISSON COMPONENT NOTES**
- C = COHESIVE SOIL
G = GRANULAR SOIL
 - FOR SOIL DESCRIPTIONS, SEE DESIGN NOTES ON SHEET 1.
- CAISSON DRILLING AND INSTALLATION NOTES**
- CONTACT THE REPRESENTATIVE IF ANY OF THE FOLLOWING SOIL CONDITIONS ARE ENCOUNTERED DURING DRILLING:
 - THE SOIL HAS A HIGH ORGANIC CONTENT OR CONSISTS OF SATURATED SILT AND CLAY.
 - THE SITE WILL NOT SUPPORT THE WEIGHT OF THE DRILLING RIG.
 - THE FOUNDATION SOILS ARE NOT HOMOGENEOUS.
 - FIRM BEDROCK IS ENCOUNTERED.
 - CONSTRUCT CAISSONS AGAINST UNDISTURBED EARTH OR IN PROPERLY COMPACTED EMBANKMENT.
 - SUBMIT AN AS-BUILT SURVEY OF EACH CAISSON FOUNDATION TO THE REPRESENTATIVE THAT IDENTIFIES ANCHOR BOLT LOCATION, ANCHOR BOLT ORIENTATION, DISTANCE BETWEEN ANCHOR BOLT GROUPS (FOR FRAME STRUCTURES), TOP OF ANCHOR BOLT ELEVATIONS, TOP OF CAISSON ELEVATIONS, AND ADJACENT FINISHED GROUND ELEVATIONS. INCLUDE A COPY OF THE SURVEY NOTES. RECONCILE ANY DIFFERENCES BETWEEN SURVEY INFORMATION AND DATA ON THE APPROVED SHOP DRAWINGS. SUBMIT ALL PROPOSED ADJUSTMENTS OR MODIFICATIONS TO THE REPRESENTATIVE FOR APPROVAL.
 - SUBMIT PROPOSED DRILLING EQUIPMENT TO THE REPRESENTATIVE FOR APPROVAL AND INCLUDE SOCKET AND BELL DIMENSIONS WHEN UTILIZED.

**CAISSON FOUNDATION DETAILS
MEDIAN BARRIER INSTALLATION**
(SEE ROADSIDE INSTALLATION FOR ADDITIONAL INFORMATION)

NOTES
FOR GENERAL NOTES, SEE SHEET 1.

	RECOMMENDED: OCTOBER 14, 2015 	MONOPIPE SIGN STRUCTURES FOR STATIC PANELS FOUNDATION TABLES & DETAILS	PENNSYLVANIA TURNPIKE COMMISSION STANDARD DRAWING		
	ASSISTANT CHIEF ENGINEER - DESIGN APPROVED: OCTOBER 14, 2015 		FILE NAME: PTS-740-8.DWG DRAWING TYPE: 5A	SHEET 8 OF 8	
	CHIEF ENGINEER		DATE: OCTOBER 2015	PTS-740	



DESIGN

- SPECIFICATIONS: "AASHTO 6TH EDITION STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS" (2013) AND "AASHTO 17TH EDITION STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" (2004).
- ALL DIMENSIONS ARE IN US CUSTOMARY UNITS.
- LIVE LOAD: SINGLE 500 LB LOAD DISTRIBUTED OVER 2 FT. APPLIED TO WALKWAY ONLY.
- WIND LOADS ARE BASED ON 90 MPH VELOCITY.
- FATIGUE CRITERIA:
 - INFINITE LIFE
 - IMPORTANCE FACTOR = 1.0
 - NATURAL WIND & TRUCK-INDUCED GUST LOADINGS
- DMS HEIGHT = 8'-0", DMS LENGTH = 25'-0", DMS WEIGHT: 3,400 POUNDS.
ONE DMS FOR SIGN STRUCTURE SPAN 60' & 80'.
TWO DMS FOR SIGN STRUCTURE SPAN 100' THROUGH 160' (ONE NEAR SIDE, ONE FAR SIDE).
- CAISSON FOUNDATIONS ARE BASED ON A MAXIMUM 1/2" LATERAL DEFLECTION AT TOP OF CAISSON AND ON THE FOLLOWING SOIL PARAMETERS:
 - LOOSE GRANULAR SOIL WITH 100 PCF UNIT WEIGHT, 28 DEGREE INTERNAL FRICTION ANGLE, 0 PSF COHESION, AND 25 PCI MODULUS OF SUBGRADE REACTION.
 - SOFT COHESIVE SOIL WITH 100 PCF UNIT WEIGHT, 0 DEGREE INTERNAL FRICTION ANGLE, 800 PSF COHESION, 200 PCI MODULUS OF SUBGRADE REACTION, AND 0.02 E50 STRAIN.
- BORINGS AND TEST RESULTS ARE REQUIRED AT EACH FOUNDATION LOCATION TO VERIFY THAT SOIL PARAMETERS FALL BETWEEN THOSE USED FOR THIS STANDARD.
- CAISSON SELECTION TABLES ON SHEET 12 CANNOT BE USED IF SITE SPECIFIC SOIL PARAMETERS ARE OUTSIDE THOSE USED FOR THIS STANDARD. IN THIS CASE, PROVIDE FOUNDATION DESIGN USING ACTUAL SOIL PARAMETERS.
- OBTAIN APPROVAL FROM PENNSYLVANIA TURNPIKE COMMISSION FOR SPAN LENGTH GREATER THAN 140'.

MATERIAL

- PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS PUBLICATION 408, THE PENNSYLVANIA TURNPIKE COMMISSION SPECIFICATIONS, THE AASHTO/AWS/D1.5M/D1.5:2008 BRIDGE WELDING CODE, AND THE CONTRACT SPECIAL PROVISIONS. USE ANSI/AWS/D1.1/D1.1M-2008 FOR WELDING NOT COVERED IN AASHTO/AWS/D1.5M/D1.5:2008.
- PROVIDE STRUCTURAL STEEL CONFORMING TO AASHTO M270, GRADE 36 OR GREATER (ASTM A709, GRADE 36 OR GREATER) DESIGNATION EXCEPT WHEN NOTED OTHERWISE.
- PROVIDE WELDED OR SEAMLESS STEEL PIPE CONFORMING TO ASTM A53, GRADE B.
- PROVIDE HIGH-STRENGTH STEEL BOLTS CONFORMING TO AASHTO M164 (ASTM A325). PROVIDE ANCHOR BOLTS CONFORMING TO ASTM F1554, GRADE 55. PROVIDE U-BOLTS CONFORMING TO ASTM A449. MECHANICALLY GALVANIZE ALL BOLTS (EXCEPT ANCHOR BOLTS), NUTS AND WASHERS. EITHER MECHANICALLY OR HOT-DIP GALVANIZE ALL ANCHOR BOLTS IN ACCORDANCE WITH FABRICATION NOTE 7 ON THIS SHEET.
- PROVIDE GRADE 60 REINFORCEMENT STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM-A615 OR ASTM-A706. DO NOT WELD REINFORCEMENT BARS.
- USE CLASS A CONCRETE IN CAISSON FOUNDATIONS.
- CHARPY V-NOTCH TESTING IS REQUIRED ON ALL STEEL PLATES AND PIPES OVER 1/2" THICK. PROVIDE STEEL CONFORMING TO THE CHARPY V-NOTCH REQUIREMENTS FOR ZONE 2, NON FRACTURE CRITICAL AS GIVEN IN THE AASHTO MATERIAL SPECIFICATIONS.
- PROVIDE STRUCTURAL STEEL LADDERS AND LADDER CAGES THAT MEET OR EXCEED APPLICABLE ASTM REQUIREMENTS AND OSHA STANDARD 1910.27, INCLUDING DISTANCE FROM GROUNDLINE TO FIRST LADDER RUNG.
- INCLUDE ANTI-CLIMB SIDE EXIT LADDER CAGE WITH A LOCKABLE SECURITY GATE.

FABRICATION

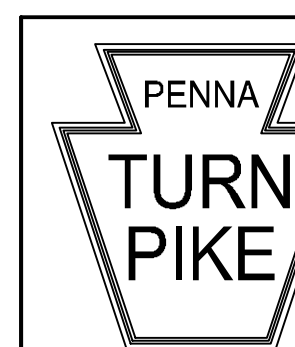
- POSITION ALL DMS SO EQUAL HEIGHT IS ABOVE AND BELOW MAST ARM CENTERLINE. OBTAIN PERMISSION FROM THE REPRESENTATIVE PRIOR TO POSITIONING DMS IN ANY OTHER MANNER.
- CONSTRUCT SIGN STRUCTURES TRUE TO DIMENSION, FREE FROM KINKS, TWISTS OR BENDS, AND UNIFORM IN APPEARANCE. ASSEMBLE COMPLETED SECTIONS IN THE SHOP AND CHECK FOR STRAIGHTNESS, ALIGNMENT, DIMENSION, AND UNIFORM CONTACT BETWEEN SPLICE PLATES. CORRECT ANY VARIATIONS TO THE SATISFACTION OF THE REPRESENTATIVE.
- FORM MASTS FOR SIGN STRUCTURES TO THE RADII SHOWN ON THE PLANS IN ACCORDANCE WITH THE TUBE AND PIPE ASSOCIATION INTERNATIONAL RECOMMENDED STANDARDS FOR INDUCTION BENDING OF PIPE AND TUBE (TPA-IBS-98).
- AFFIX CLIPS, EYES, OR REMOVABLE BRACKETS TO ALL MASTS AND MAST ARMS, AS NECESSARY, TO SECURE THE SIGN STRUCTURE DURING SHIPPING AND FOR LIFTING AND MOVING DURING ERECTION. THIS IS TO PREVENT DAMAGE TO THE FINISHED GALVANIZED OR PAINTED SURFACES. REMOVE BRACKETS ON SIGN STRUCTURES AFTER ERECTION. INCLUDE DETAILS OF SUCH DEVICES ON THE SHOP DRAWINGS.
- FABRICATE ALL SIGN STRUCTURES INTO THE LARGEST PRACTICAL SECTIONS PRIOR TO GALVANIZING. SUBMIT SPLICE LOCATIONS TO THE REPRESENTATIVE FOR APPROVAL. DO NOT COMMENCE FABRICATION UNTIL SUCH SPLICE LOCATIONS ARE APPROVED.
- GRIND ALL AREAS TO BE WELDED TO BRIGHT METAL. BUTT WELD SPLICES ARE NOT PERMITTED, UNLESS SHOWN ON THE PLANS. COMPLETE ALL WELDING AND REQUIRED TESTING BEFORE ANY MATERIAL IS GALVANIZED. NON-DESTRUCTIVELY TEST ALL CIRCUMFERENTIAL AND STIFFENER WELDS USING THE METHODS AND PROCEDURES IN ACCORDANCE WITH SECTION 948. THE ACCEPTABLE CRITERIA ARE STATED IN TABLE 6.1 OF ANSI/AWS D1.1/D1.1M. PROVIDE FULL PENETRATION GROOVE WELDS FOR ALL LONGITUDINAL WELDS WITHIN 6" OF A FULL PENETRATION CIRCUMFERENTIAL GROOVE WELD AND INSPECT AS SPECIFIED ABOVE. MINIMIZE UNDERCUT. UNDERCUT GREATER THAN 0.01" IS NOT PERMITTED.
- HOT-DIP GALVANIZE ALL COMPONENTS (EXCEPT REINFORCEMENT BARS, ALUMINUM, AND NON-FERROUS INCIDENTALS) AFTER FABRICATION PER ASTM A123 OR ASTM A153, AS APPROPRIATE. PROVIDE POLYESTER POWDER COATING OR AN EPOXY/URETHANE PAINT OVER ALL GALVANIZED STRUCTURAL STEEL AS PER SPECIAL PROVISIONS.
- PROVIDE STIFFENERS AS INDICATED IN CONNECTION COMPONENT SELECTION TABLES.
- COORDINATION IS REQUIRED BETWEEN MAST TO BASE PLATE STIFFENERS, LOWERMOST LADDER SUPPORT, AND DMS CONTROL CABINET AND HANDHOLE.

CONSTRUCTION

- USE TEMPLATES TO ACCURATELY SET BASE PLATE ANCHOR BOLTS TO CORRECT ELEVATION AND ALIGNMENT. SECURELY BRACE ANCHOR BOLTS AGAINST DISPLACEMENT BEFORE CAISSON CONCRETE IS PLACED AND DURING CONCRETE CURING.
- ERECT SIGN STRUCTURE ONLY AFTER CAISSON CONCRETE MEETS 7 DAY STRENGTH REQUIREMENTS.
- TEMPORARILY SUPPORT MAST ARMS TO RELIEVE LOAD FROM THE SPLICES WHILE HIGH-STRENGTH BOLTS ARE BEING TIGHTENED IN ORDER TO FIRMLY SEAT THE CONNECTION PLATES.
- GROUT IS NOT REQUIRED BETWEEN BASE PLATE AND CONCRETE CAISSON.
- TIGHTEN UPPER ANCHOR BOLT NUTS USING TURN-OF-NUT METHOD (ADDITIONAL 1/4 TURN AFTER SNUG TIGHT).
- PROVIDE A SPACE OF 4'-0" OR MORE, BETWEEN ADJACENT DMS WHEN PRESENT.
- FOR CAISSON INFORMATION, SEE SHEET 12.
- FOR SUPPORT BEAM ATTACHMENT DETAILS, SEE SHEETS 5 AND 6.
- SEAL BASE PLATE TO FOUNDATION GAP WITH GALVANIZED STEEL SCREEN, 1/2" BY 1/2" MESH AND 0.063" DIAMETER WIRES. SCREEN IS TO PREVENT ENTRY OF RODENTS WHILE PERMITTING DRAINAGE. SCREEN IS TO BE REMOVABLE AND ATTACHED TO BASE PLATE WITH STAINLESS STEEL HARDWARE.

INDEX OF SHEETS

- GENERAL NOTES
- FRAME DETAILS
- FRAME TABLES
- MAST & MAST ARM DETAILS
- DMS SUPPORT BEAM DETAILS 1
- DMS SUPPORT BEAM DETAILS 2
- WALKWAY DETAILS 1
- WALKWAY DETAILS 2
- WALKWAY SUPPORT DETAILS
- LADDER SUPPORT DETAILS
- MISCELLANEOUS DETAILS
- FOUNDATION TABLES & DETAILS

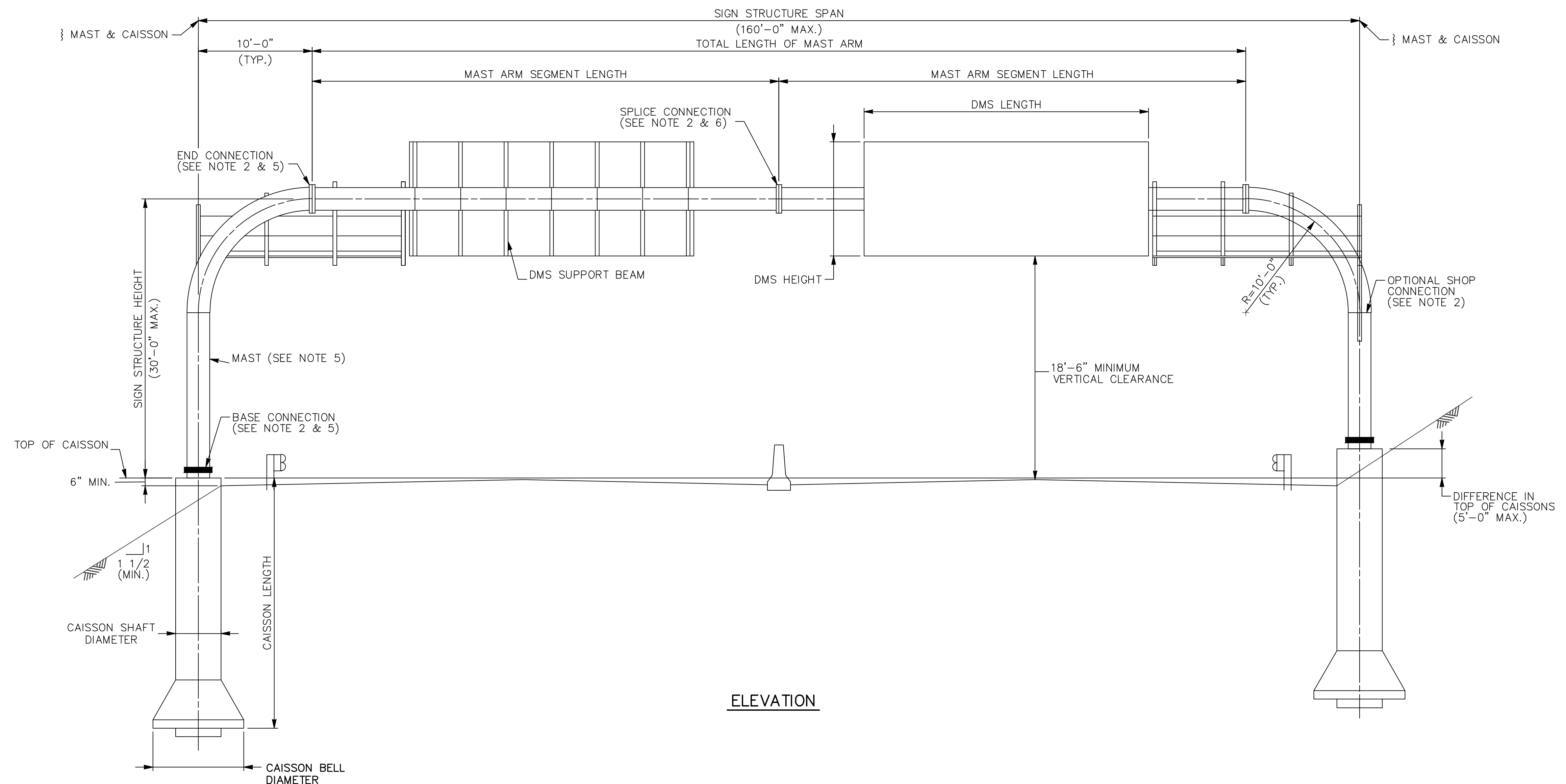


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M.B.
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
FOR DYNAMIC MESSAGE SIGNS
GENERAL NOTES**

**PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING**

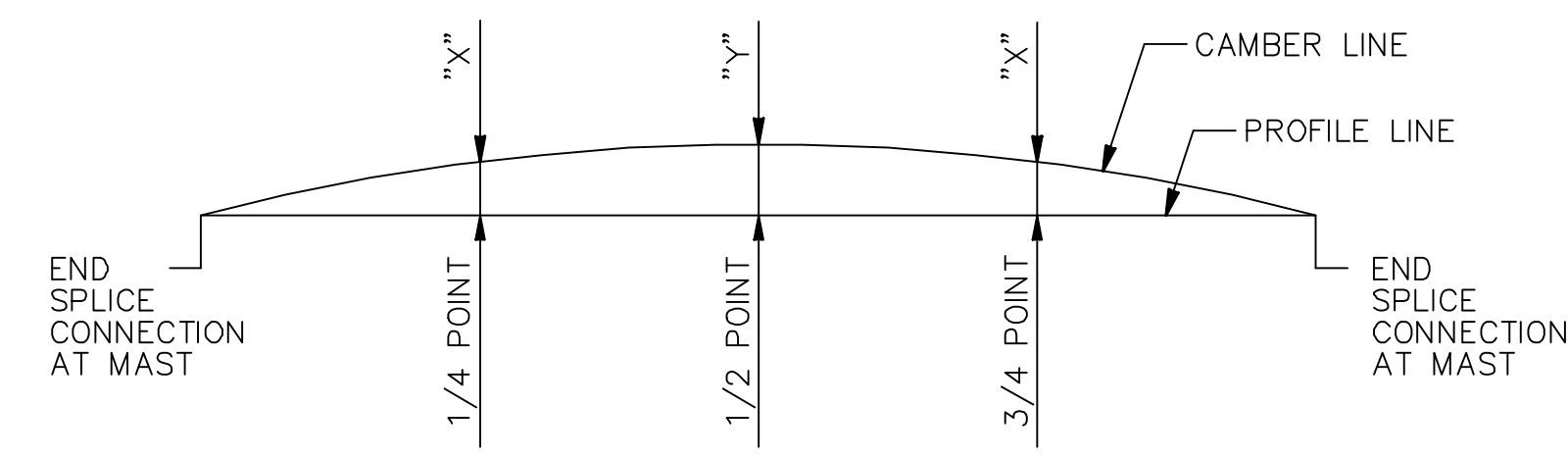
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 SHEET 1 OF 12
 DATE: OCTOBER 2015
 PTS-750



ELEVATION

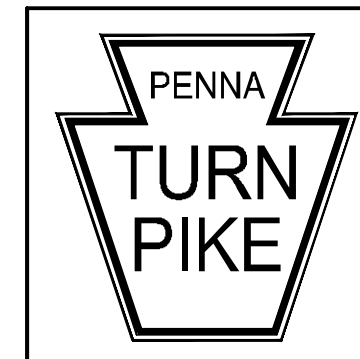
NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.
2. FOR BASE, END, SPLICE AND SHOP CONNECTION DETAILS, SEE SHEET 4.
3. PRIOR TO ERECTION, DEMONSTRATE TO THE REPRESENTATIVE BY PREASSEMBLY OR OTHER APPROVED METHOD THAT FRAME STRUCTURE LENGTH IN A NO-LOAD CONDITION MATCHES FIELD MEASURED CAISSON SPACING WITHIN 1/2".
4. ADEQUATELY SUSPEND/SUPPORT FRAME STRUCTURES TO AVOID DISTORTIONS OR CHANGES IN SPAN LENGTH IF ERECTED ONTO FOUNDATIONS AS ONE UNIT.
5. FOR MAST, BASE CONNECTION AND END CONNECTION COMPONENT SELECTION TABLE, SEE SHEET 3.
6. FOR MAST ARM & SPLICE CONNECTION COMPONENT SELECTION TABLE, AND MAST ARM SEGMENT ARRANGEMENT TABLE, SEE SHEET 3.
7. CAMBER REPRESENTS MAXIMUM DEAD LOAD DEFLECTION BETWEEN END CONNECTIONS, AND SPAN EQUALS DISTANCE BETWEEN MASTS.
8. WALKWAY AND LADDER NOT SHOWN.



MAST ARM CAMBER DIAGRAM

MAST ARM CAMBER		
SPAN (FEET)	X (INCHES)	Y (INCHES)
60	1/4	3/8
80	1	1 1/4
100	2 1/4	3 1/4
120	3	4 3/4
140	4 3/4	7 1/2
160	6 1/4	9 3/4

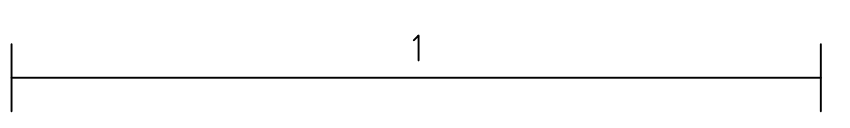
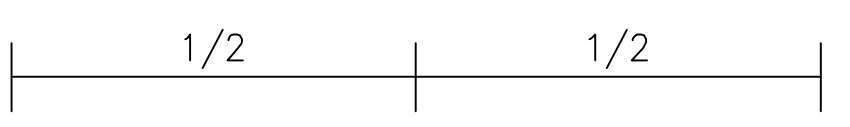
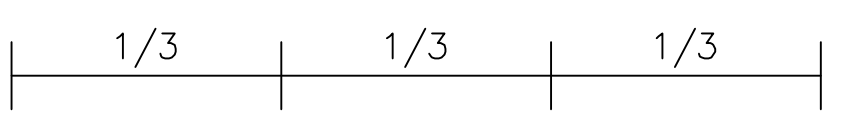
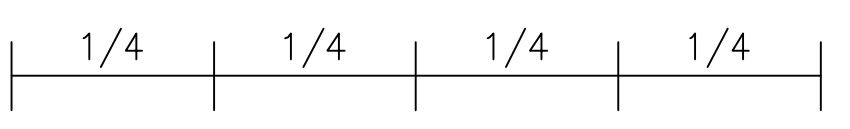
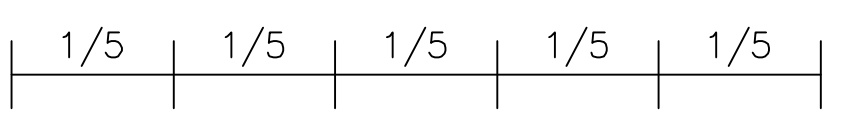


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MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 FRAME DETAILS

PENNSYLVANIA TURNPIKE COMMISSION
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 FILE NAME: PTS750-2.DWG
 DRAWING TYPE: 5A
 SHEET 2 OF 12
 DATE: OCTOBER 2015
 PTS-750

MAST & BASE CONNECTION COMPONENT SELECTION TABLE												
SPAN (FEET)	MAST		ANCHOR BOLTS			BASE PLATE		STIFFENERS				
	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)
60	20	0.375 (SCH. 20)	10	1 3/4	26	32	2	-	-	-	-	-
80	20	0.375 (SCH. 20)	12	1 3/4	26	32	2 7/8	-	-	-	-	-
100	20	0.594 (SCH. 40)	12	2	27	33 1/2	2 1/8	12	3/8	5	19	5/16
120	24	0.500 (WT. XS)	12	2	32 1/2	39	2 1/4	12	3/8	5 1/2	21	5/16
140	24	0.688 (SCH. 40)	12	2 1/4	31 1/2	39	2 1/4	12	3/8	5 1/2	21	5/16
160	24	1.219 (SCH. 80)	12	2 1/2	32	40 1/2	2 3/8	12	3/8	5 1/2	21	5/16

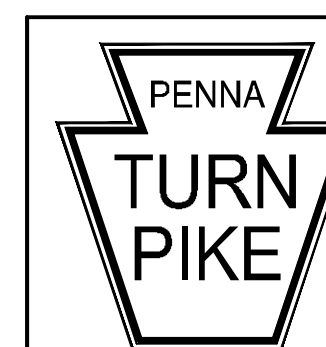
MAST ARM SEGMENT ARRANGEMENT TABLE	
ARRANGEMENT	SEGMENT LENGTH / MAST ARM LENGTH
A	
B	
C	
D	
E	

END CONNECTION COMPONENT SELECTION TABLE																		
SPAN (FEET)	H.S. BOLTS			MAST SIDE					MAST ARM SIDE								SPAN (FEET)	
	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)		WELD (INCHES)
60	8	1	23 1/2	27	2	-	-	-	-	-	27	2	-	-	-	-	-	60
80	8	1	23 1/2	27	2	-	-	-	-	-	27	2	-	-	-	-	-	80
100	8	1 1/4	24 1/2	29	2	-	-	-	-	-	29	2	-	-	-	-	-	100
120	10	1 1/4	28 1/2	33	2	-	-	-	-	-	33	2	-	-	-	-	-	120
140	12	1 1/2	29	34	2 1/4	-	-	-	-	-	34	2 1/8	-	-	-	-	-	140
160	14	1 3/4	30	36	2 3/4	-	-	-	-	-	36	2 3/4	-	-	-	-	-	160

MAST ARM & SPLICE CONNECTION COMPONENT SELECTION TABLE																											
SPAN (FEET)	USING MAXIMUM LENGTH OF MAST ARM SEGMENTS													USING MINIMUM LENGTH OF MAST ARM SEGMENTS													
	MAST ARM		SEGMENT	H.S. BOLTS			SPLICE PLATE		STIFFENERS					MAST ARM		SEGMENT	H.S. BOLTS			SPLICE PLATE		STIFFENERS					SPAN (FEET)
DIAMETER (INCHES)	THICKNESS (INCHES)	ARRANGEMENT	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	ARRANGEMENT	NO.	DIAMETER (INCHES)	CIRCLE (INCHES)	DIAMETER (INCHES)	THICKNESS (INCHES)	NO.	THICKNESS (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)	WELD (INCHES)		
60	20	0.375 (SCH. 20)	B	8	1	23 1/2	27	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	
80	20	0.375 (SCH. 20)	B	10	1	23 1/2	27	2	-	-	-	-	20	0.375 (SCH. 20)	C	8	1	23 1/2	27	2	-	-	-	-	-	-	80
100	20	0.375 (SCH. 20)	B	10	1 1/4	24 1/2	29	2	-	-	-	-	20	0.375 (SCH. 20)	C	8	1 1/4	24 1/2	29	2	-	-	-	-	-	-	100
120	24	0.375 (SCH. 20)	C	10	1 1/4	29	33 1/2	2	-	-	-	-	24	0.375 (SCH. 20)	D	10	1 1/4	29	33 1/2	2	-	-	-	-	-	-	120
140	24	0.500 (WT. XS)	C	12	1 1/4	28 1/2	33	2	-	-	-	-	24	0.500 (WT. XS)	D	14	1 1/4	29	33 1/2	2 1/8	-	-	-	-	-	-	140
160	24	0.969 (SCH. 60)	D	12	1 3/4	30	37	2 1/2	12	3/8	4	15	5/16	24	0.969 (SCH. 60)	E	14	1 1/2	29	34 1/2	2 5/8	-	-	-	-	-	160

NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.



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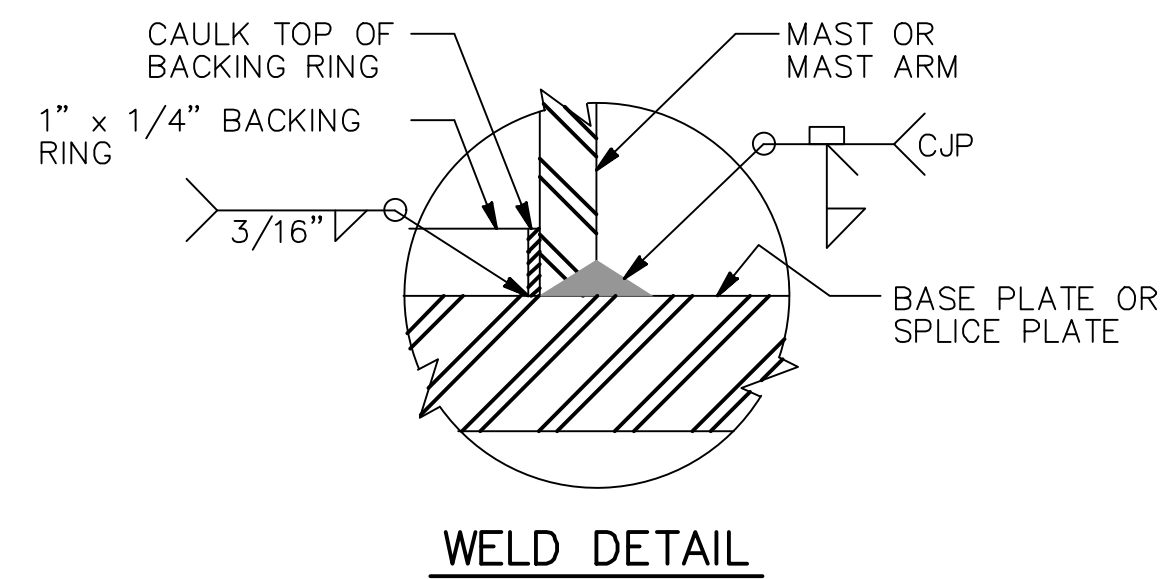
**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 FRAME TABLES**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

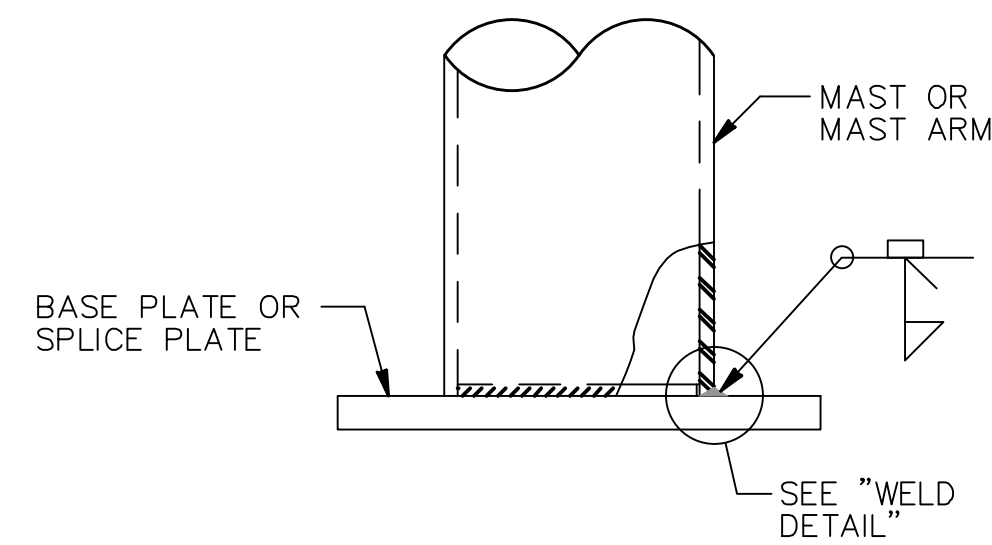
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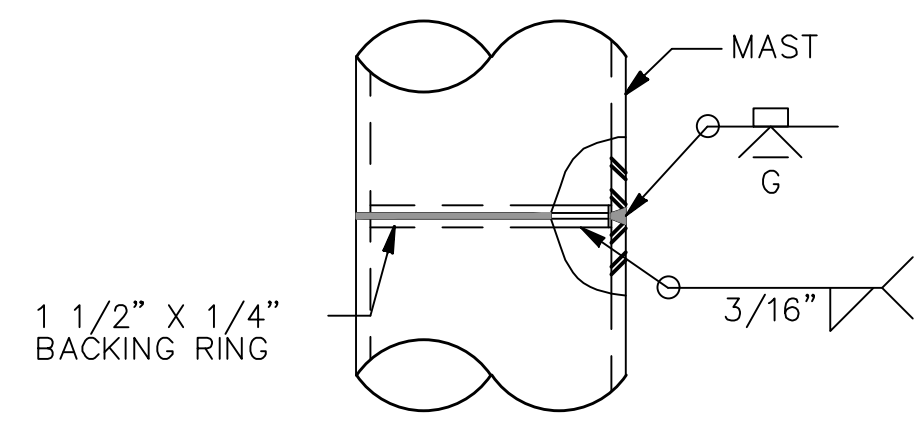
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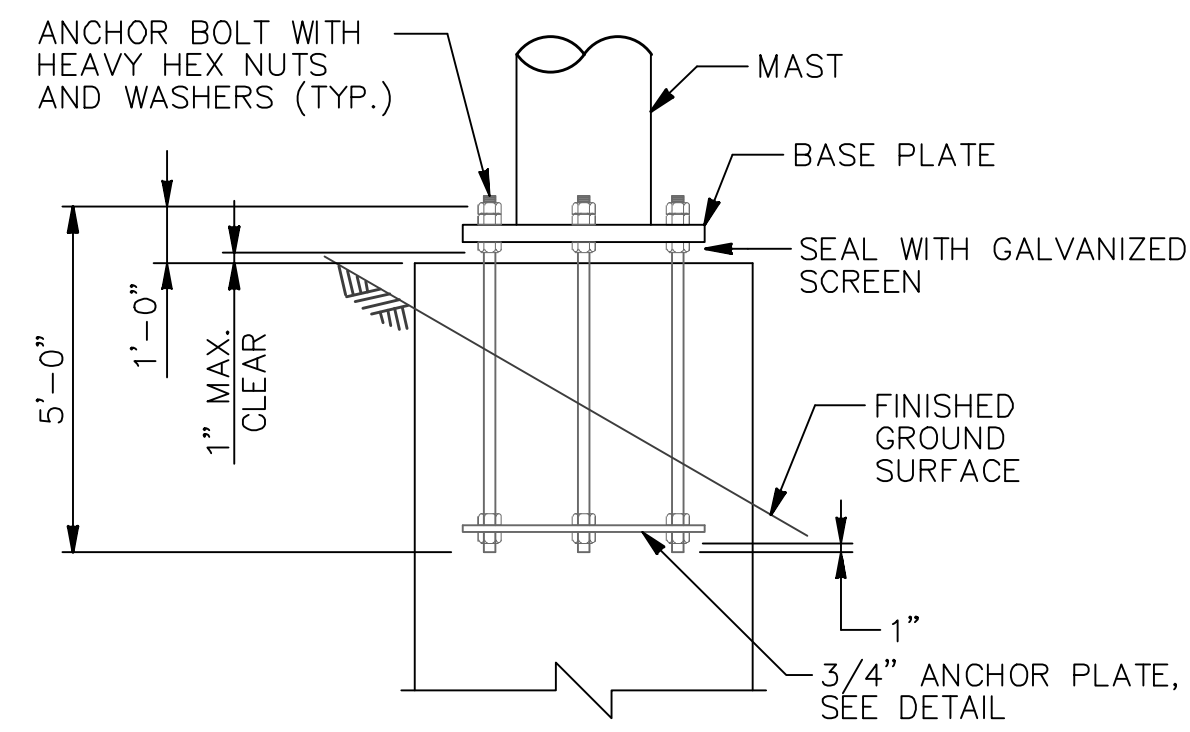
WELD DETAIL



PIPE TO PLATE CONNECTION DETAIL

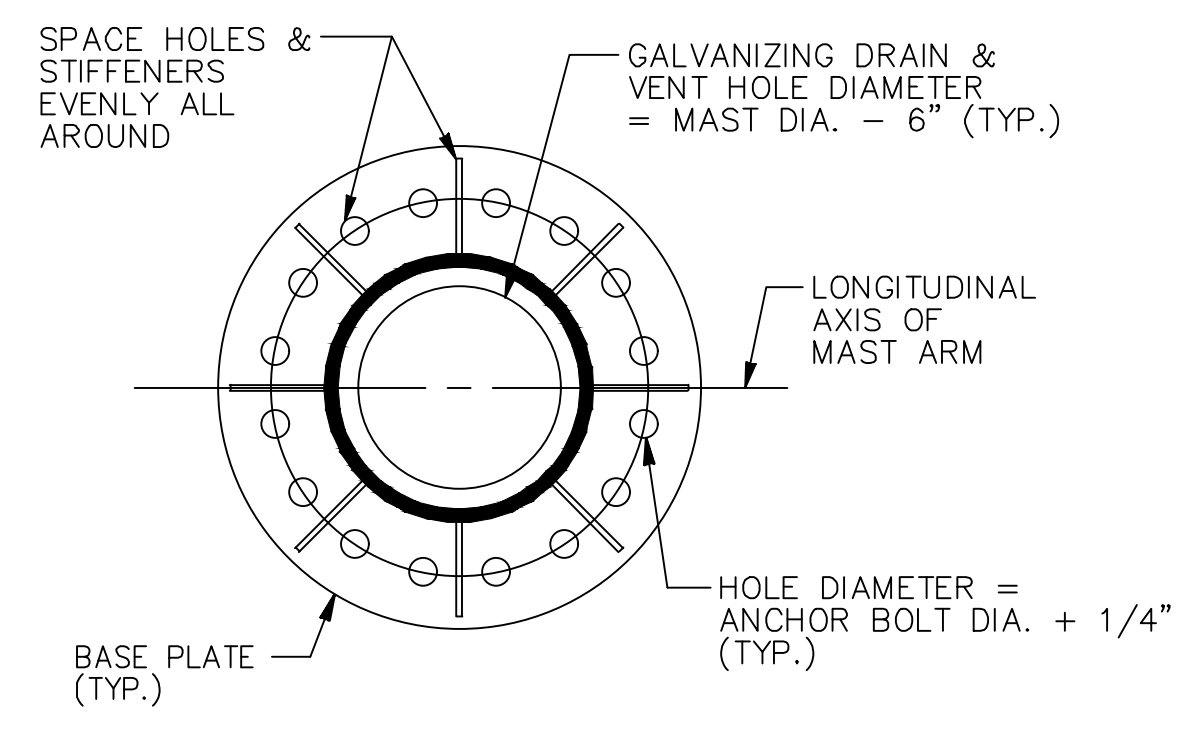


OPTIONAL SHOP CONNECTION DETAIL



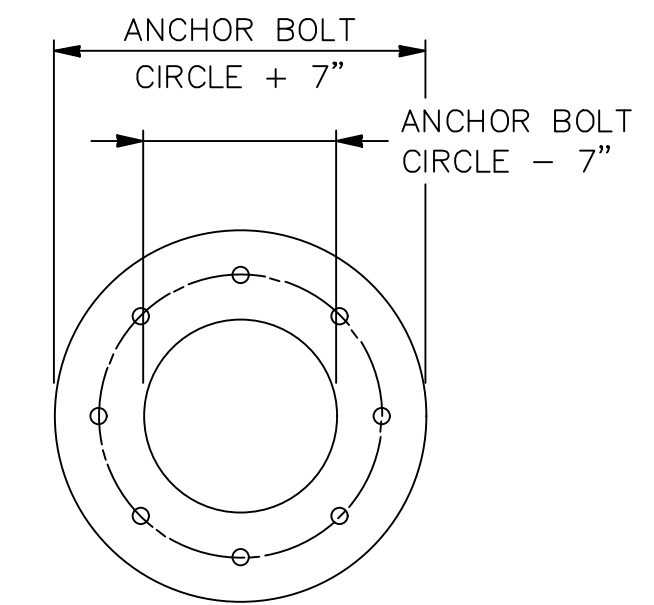
NOTE: STIFFENERS NOT SHOWN FOR CLARITY

ELEVATION

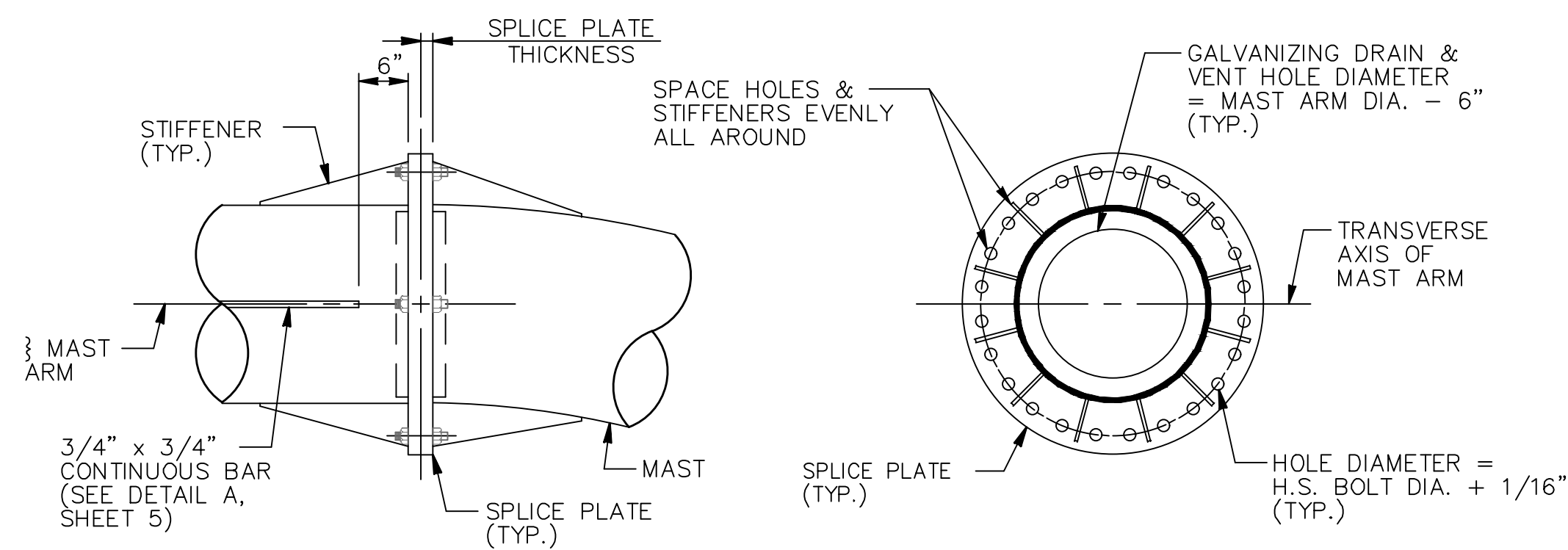


SECTION

BASE CONNECTION DETAILS



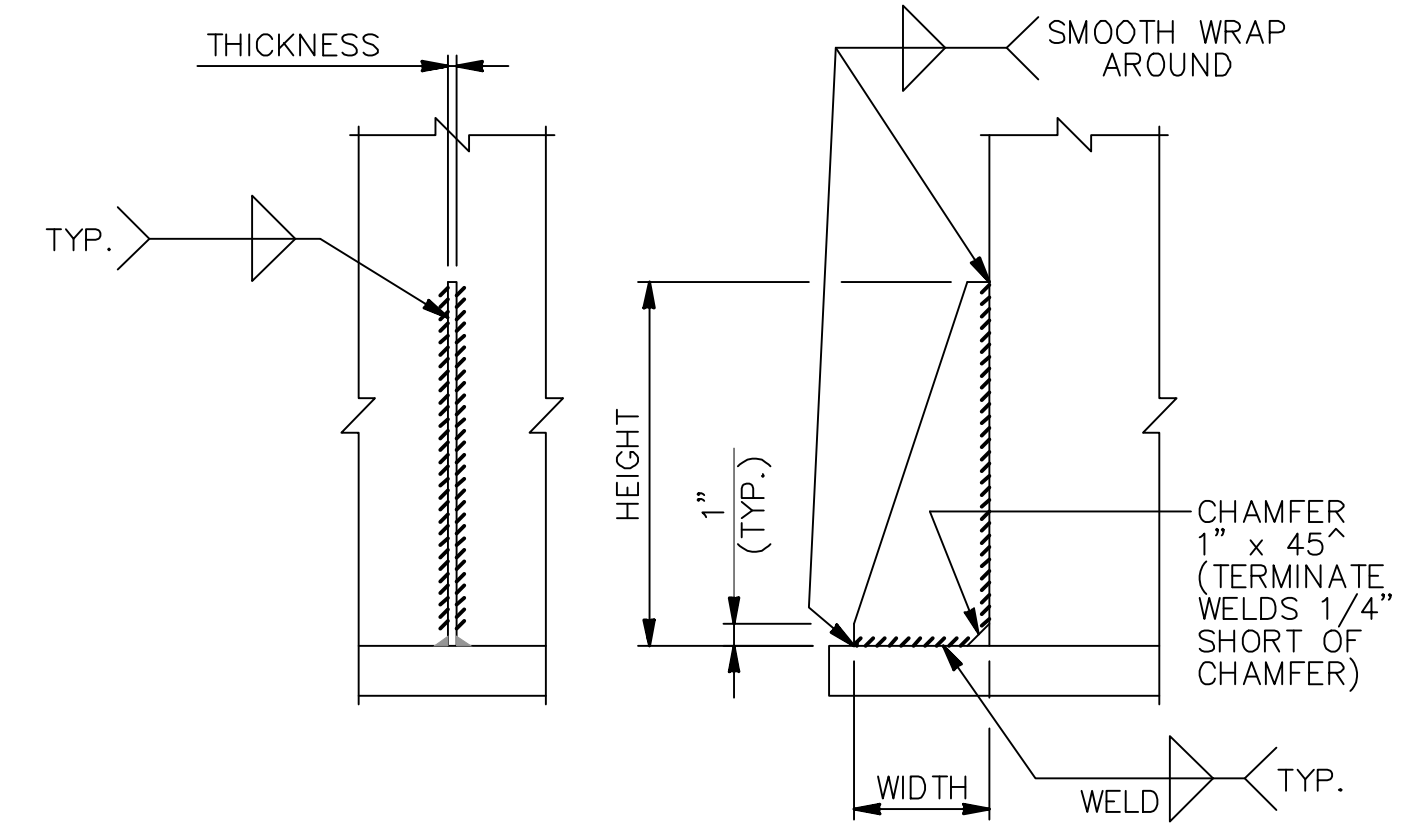
ANCHOR PLATE DETAIL



ELEVATION

SECTION

END CONNECTION DETAILS
(MAST ARM SPLICE CONNECTION SIMILAR)



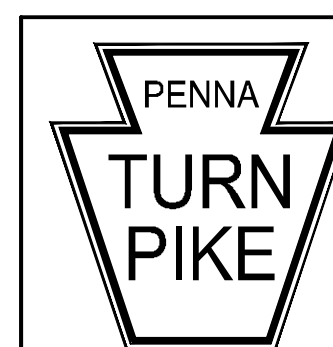
SECTION

ELEVATION

STIFFENER DETAILS

NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.

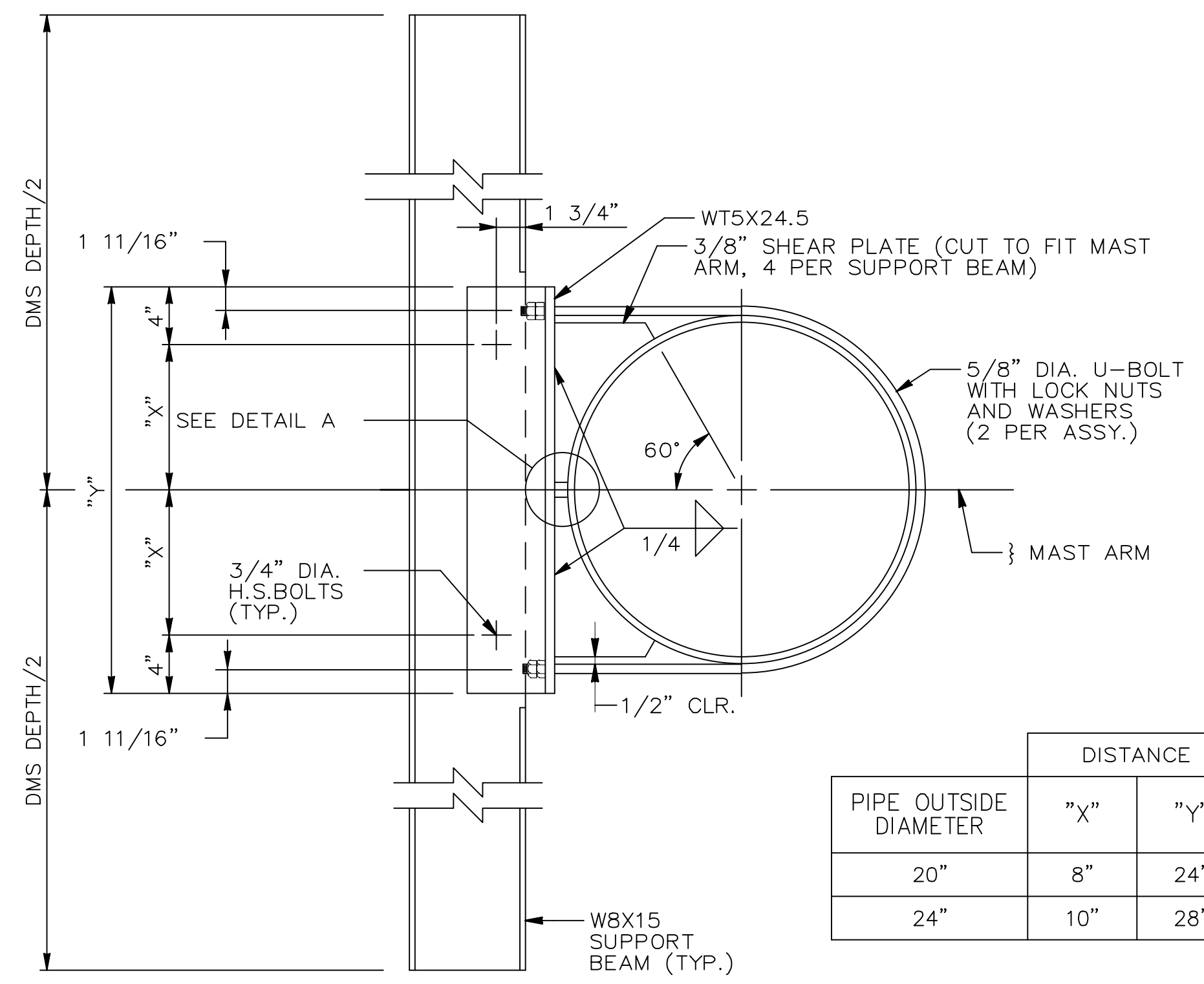


RECOMMENDED: OCTOBER 14, 2015
Gary J. Smith
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
[Signature]
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 MAST & MAST ARM DETAILS**

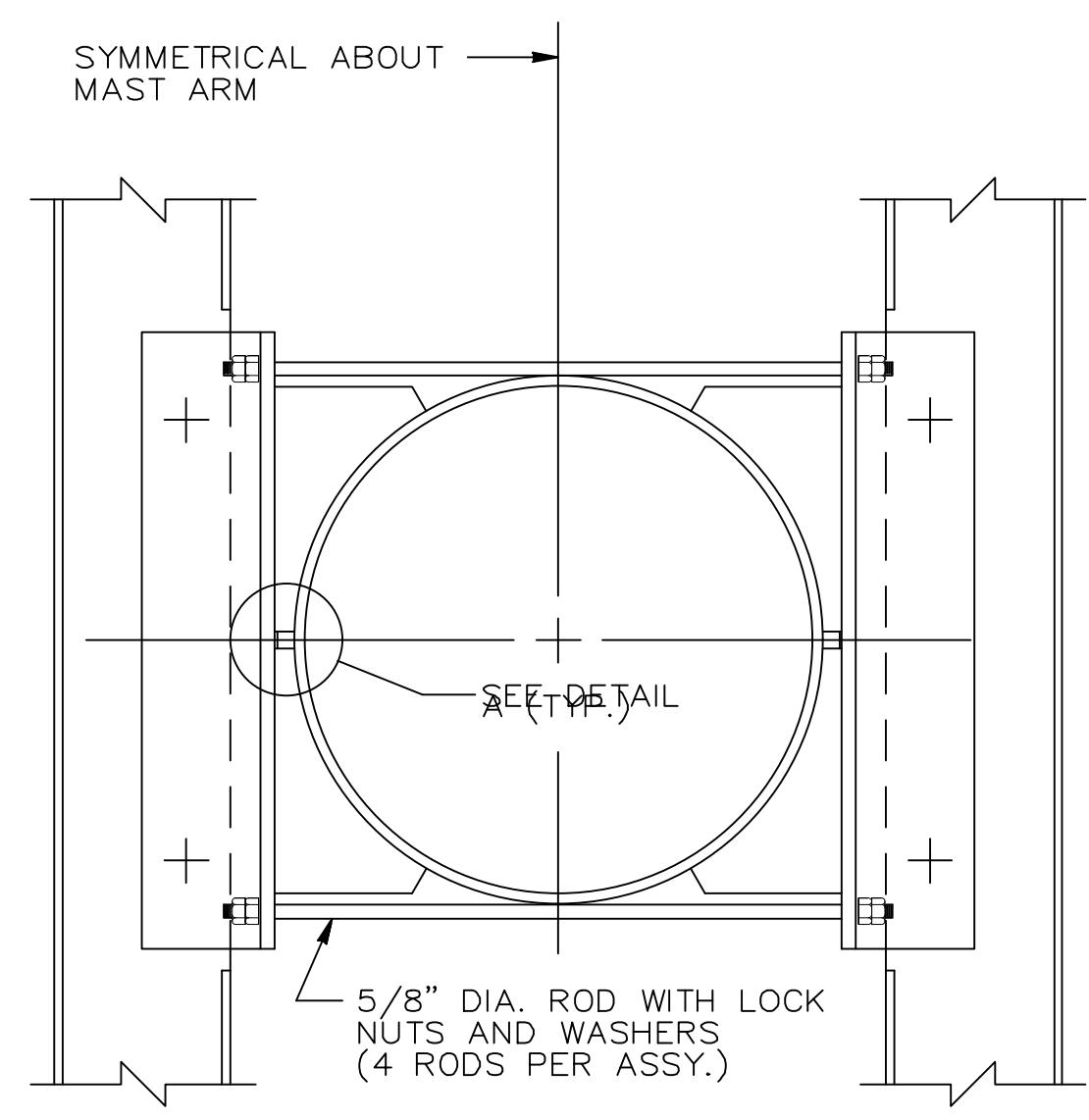
**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

FILE NAME: PTS750-4.DWG	SHEET 4 OF 12
DRAWING TYPE: 5A	
DATE: OCTOBER 2015	PTS-750

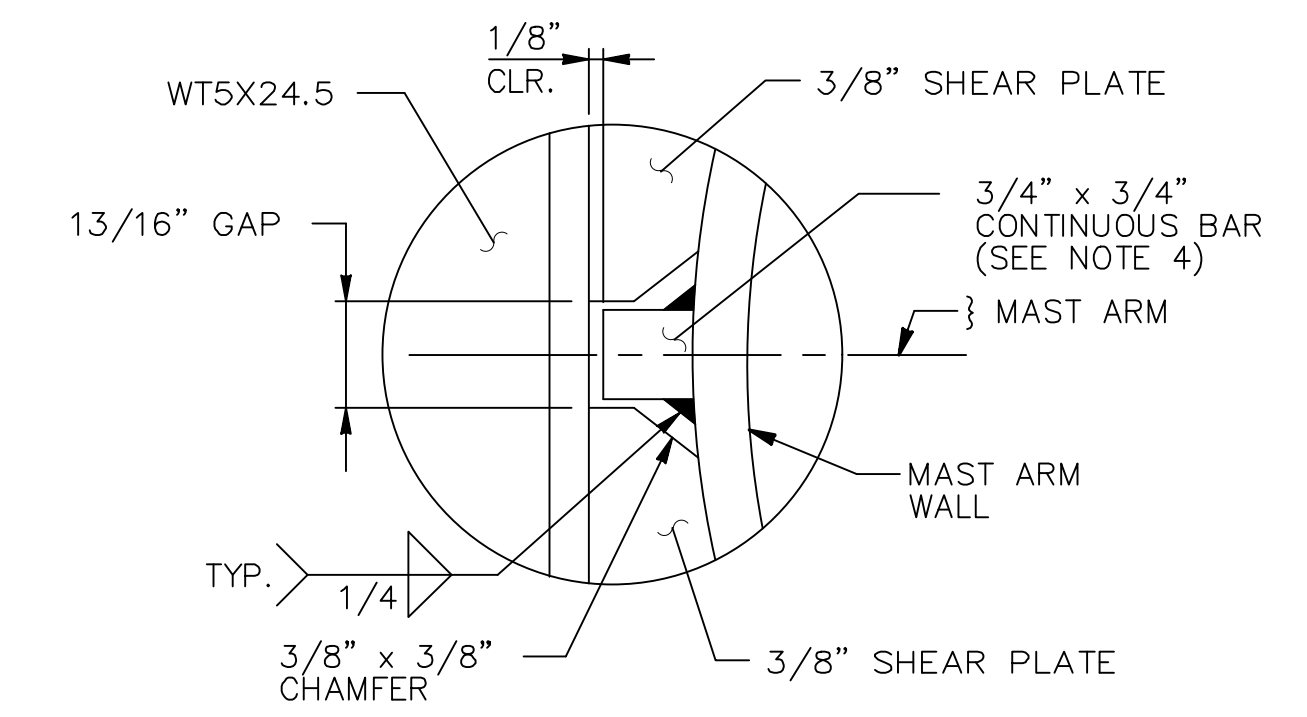


PIPE OUTSIDE DIAMETER	DISTANCE	
	"X"	"Y"
20"	8"	24"
24"	10"	28"

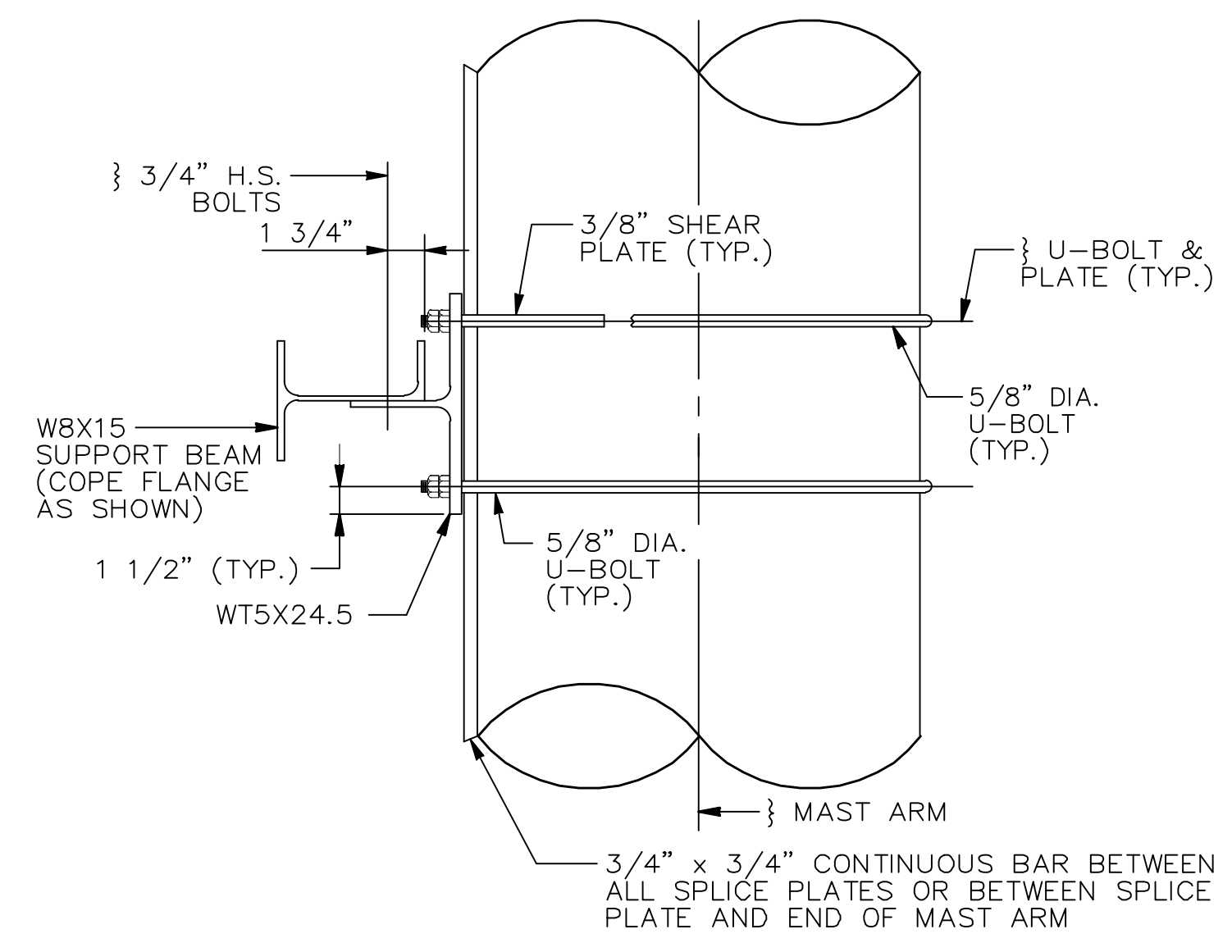
SINGLE DMS SECTION



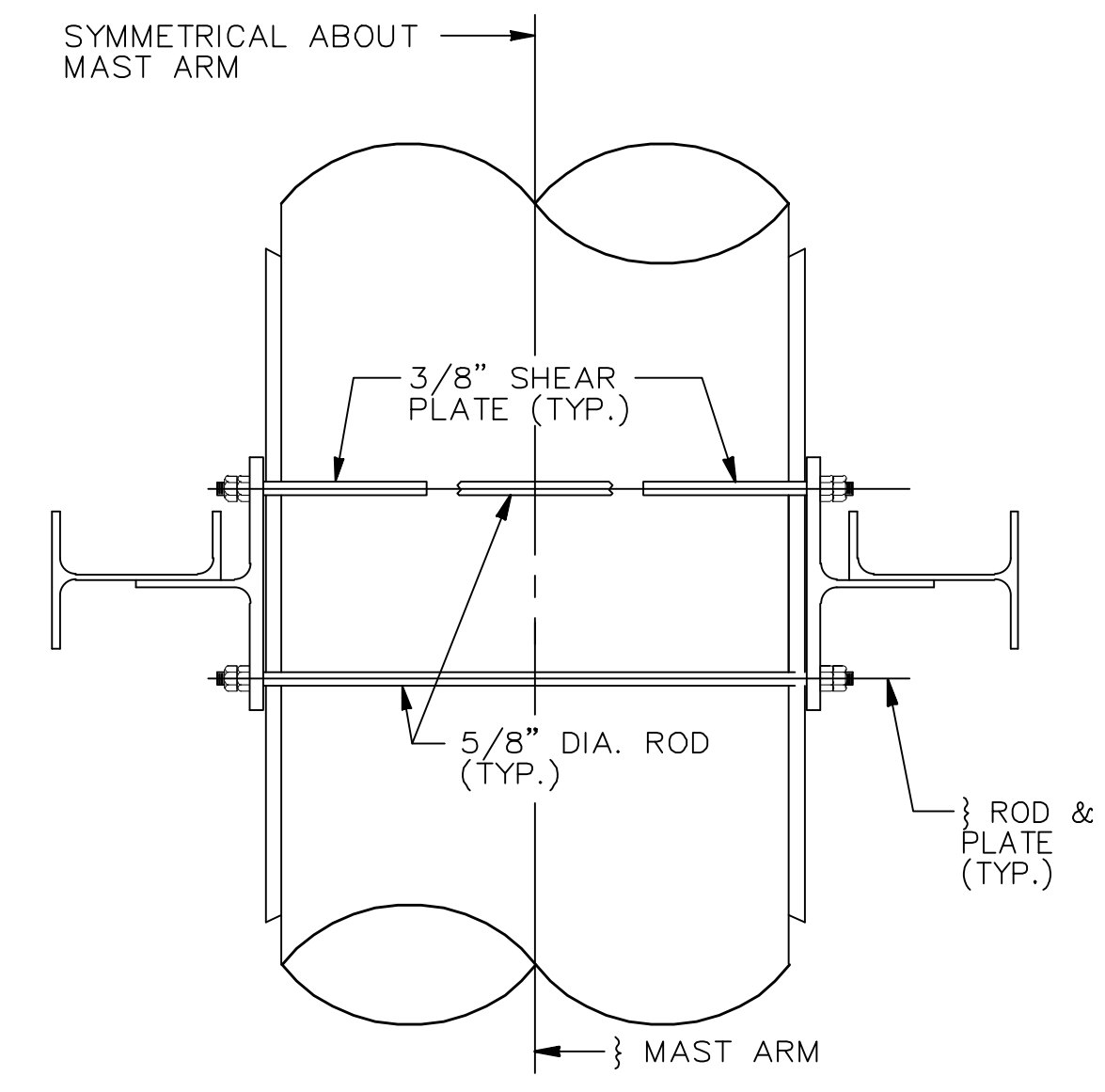
BACK-TO-BACK DMS SECTION
(SEE NOTE 2)



DETAIL A



SINGLE DMS PLAN

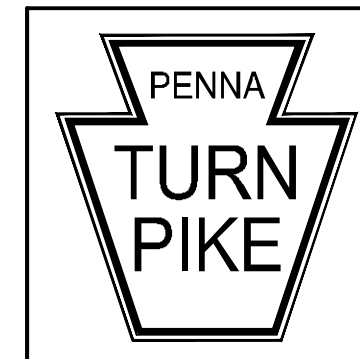


BACK-TO-BACK DMS PLAN
(SEE NOTE 2)

SUPPORT BEAM TO MAST ARM CONNECTION DETAILS

NOTES

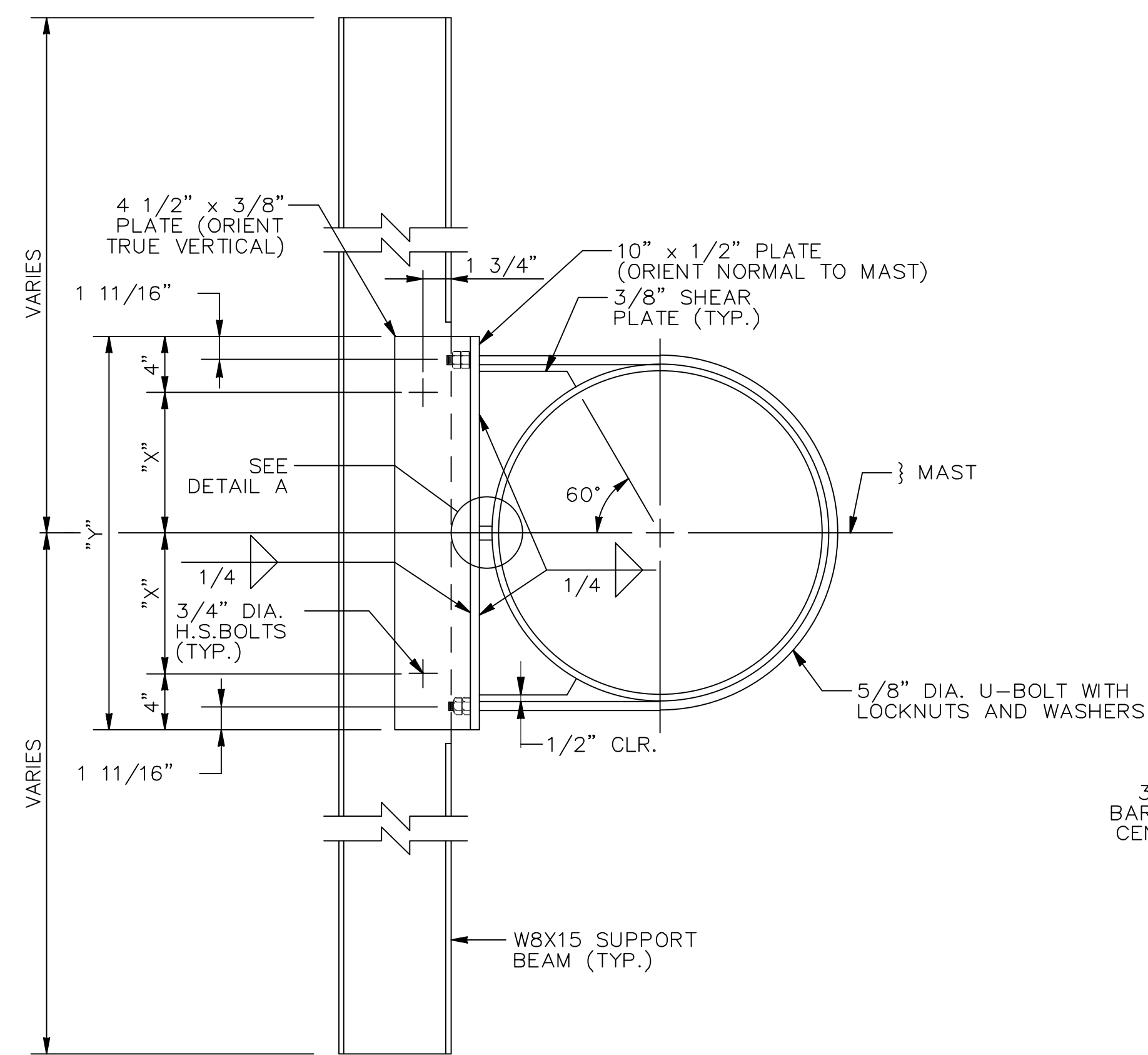
1. FOR GENERAL NOTES, SEE SHEET 1.
2. FOR DETAILS NOT SHOWN OR NOTED, SEE SINGLE DMS SUPPORT DETAILS.
3. LOCATE SUPPORT BEAMS TO AVOID END AND SPLICE CONNECTIONS. MAXIMUM SPACING = 5'-0". MAXIMUM DISTANCE TO DMS EDGE = 2'-6".
4. PROVIDE BAR IN SINGLE OR MULTIPLE PIECES. MAINTAIN 6" MIN. FROM JOINT(S) TO CONNECTION.



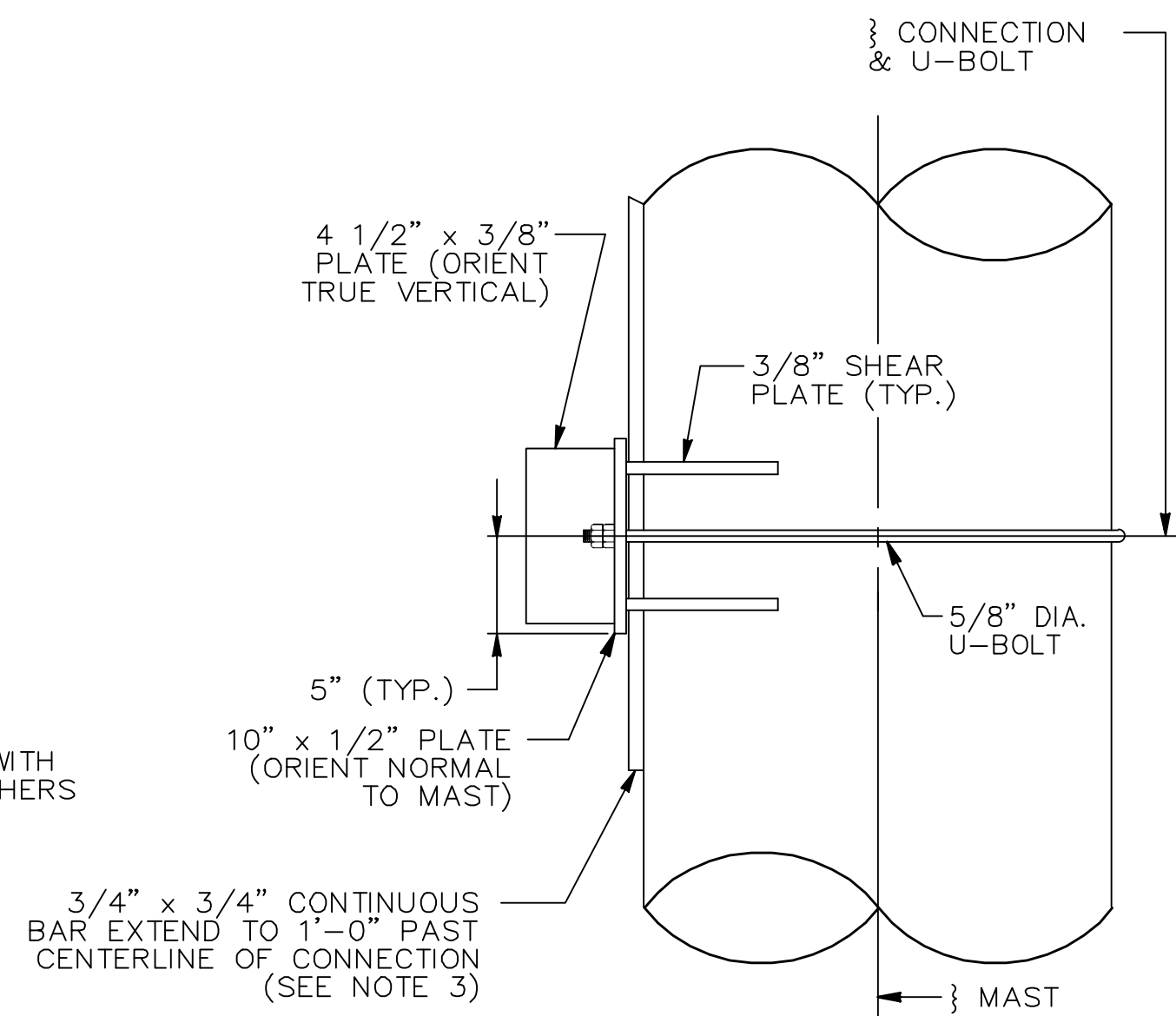
RECOMMENDED: OCTOBER 14, 2015
Gary S. [Signature]
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
[Signature]
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 DMS SUPPORT BEAM DETAILS 1**

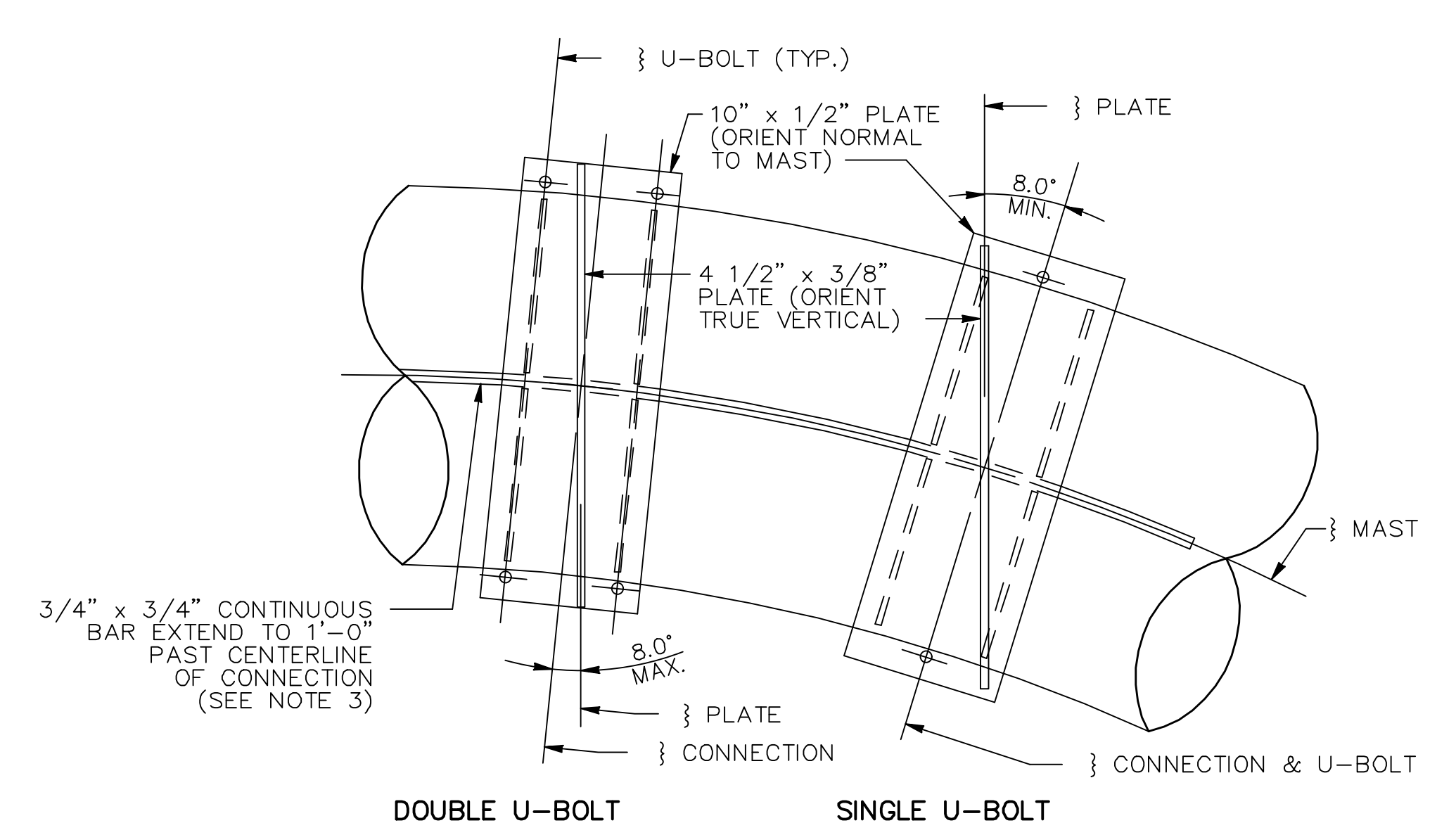
**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**
 FILE NAME: PTS750-5.DWG
 DRAWING TYPE: 5A
 SHEET 5 OF 12
 DATE: OCTOBER 2015
 PTS-750



SECTION



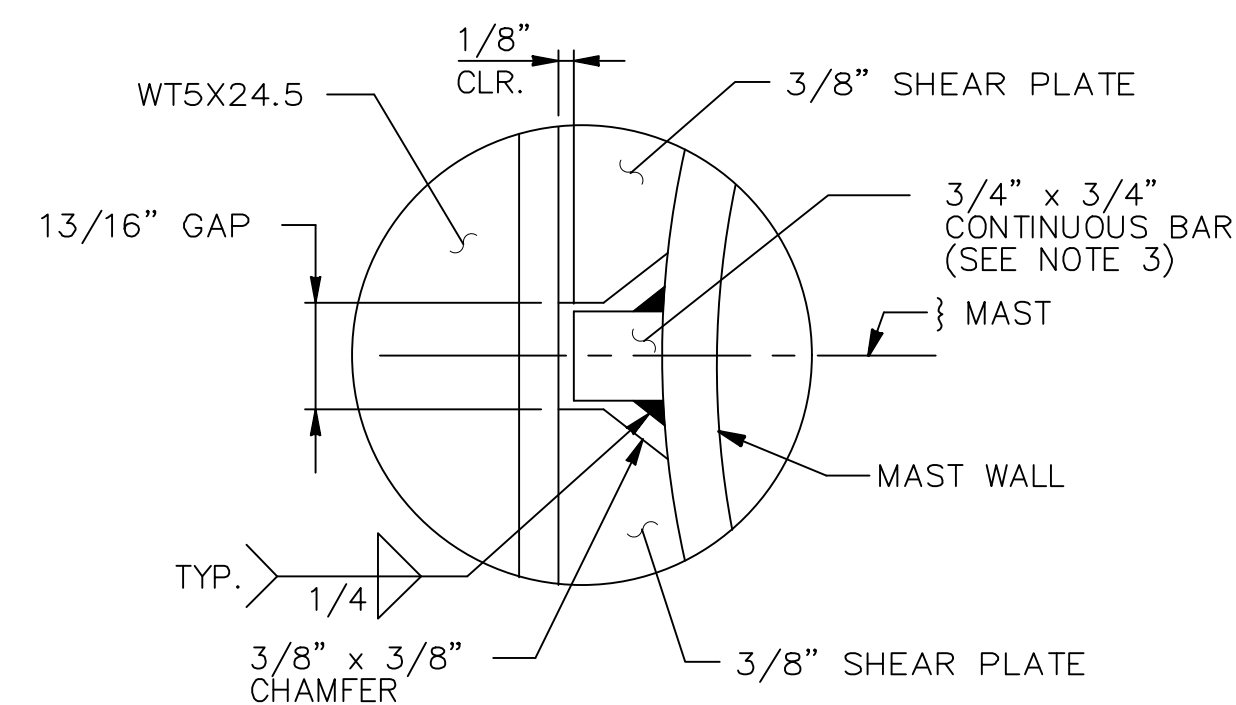
PLAN



ELEVATION

SUPPORT BEAM TO MAST CONNECTION DETAILS

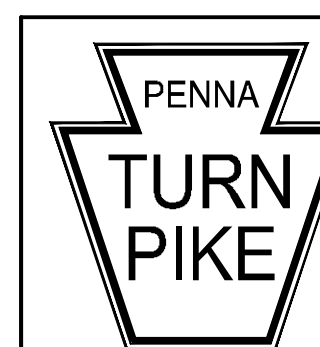
(FOR DETAILS NOT SHOWN OR NOTED, SEE SHEET 5)
 (SUPPORT BEAM NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY)



DETAIL A

NOTES

- FOR GENERAL NOTES, SEE SHEET 1.
- LOCATE SUPPORT BEAMS TO AVOID END AND SPLICE CONNECTIONS. MAXIMUM SPACING = 5'-0". MAXIMUM DISTANCE TO PANEL EDGE = 2'-6".
- PROVIDE BAR IN SINGLE OR MULTIPLE PIECES. MAINTAIN 6" MIN. FROM JOINT(S) TO CONNECTION.



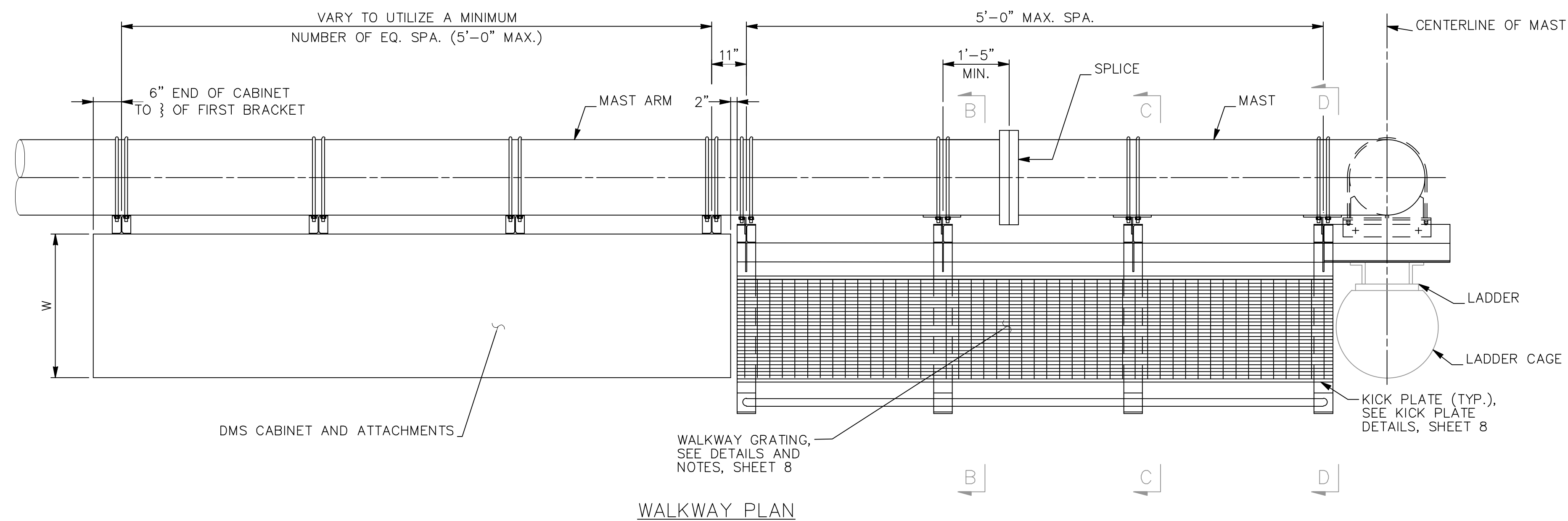
RECOMMENDED: OCTOBER 14, 2015
Gayle S. [Signature]
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
[Signature]
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 DMS SUPPORT BEAM DETAILS 2**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

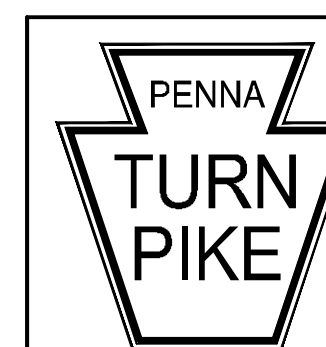
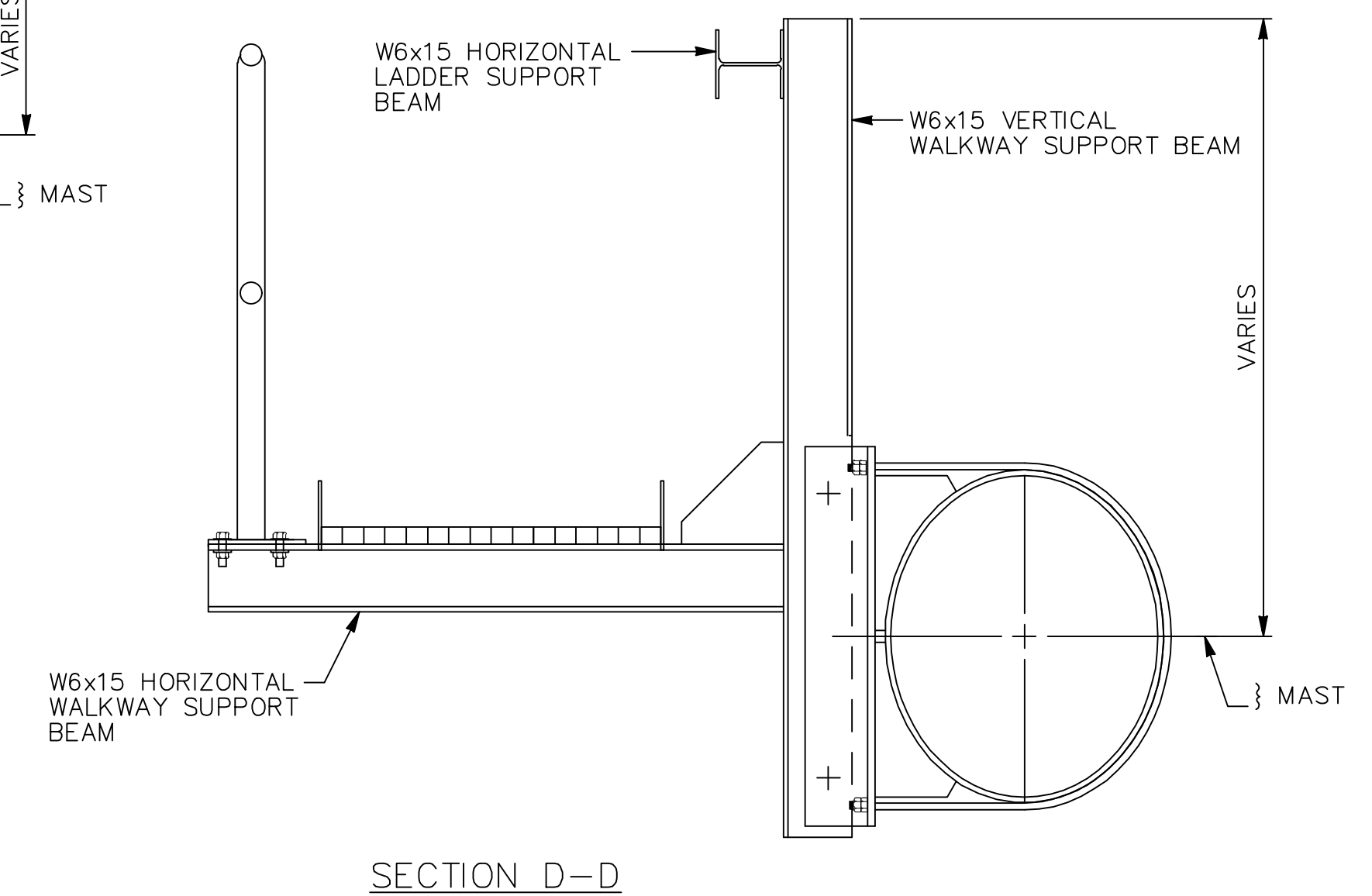
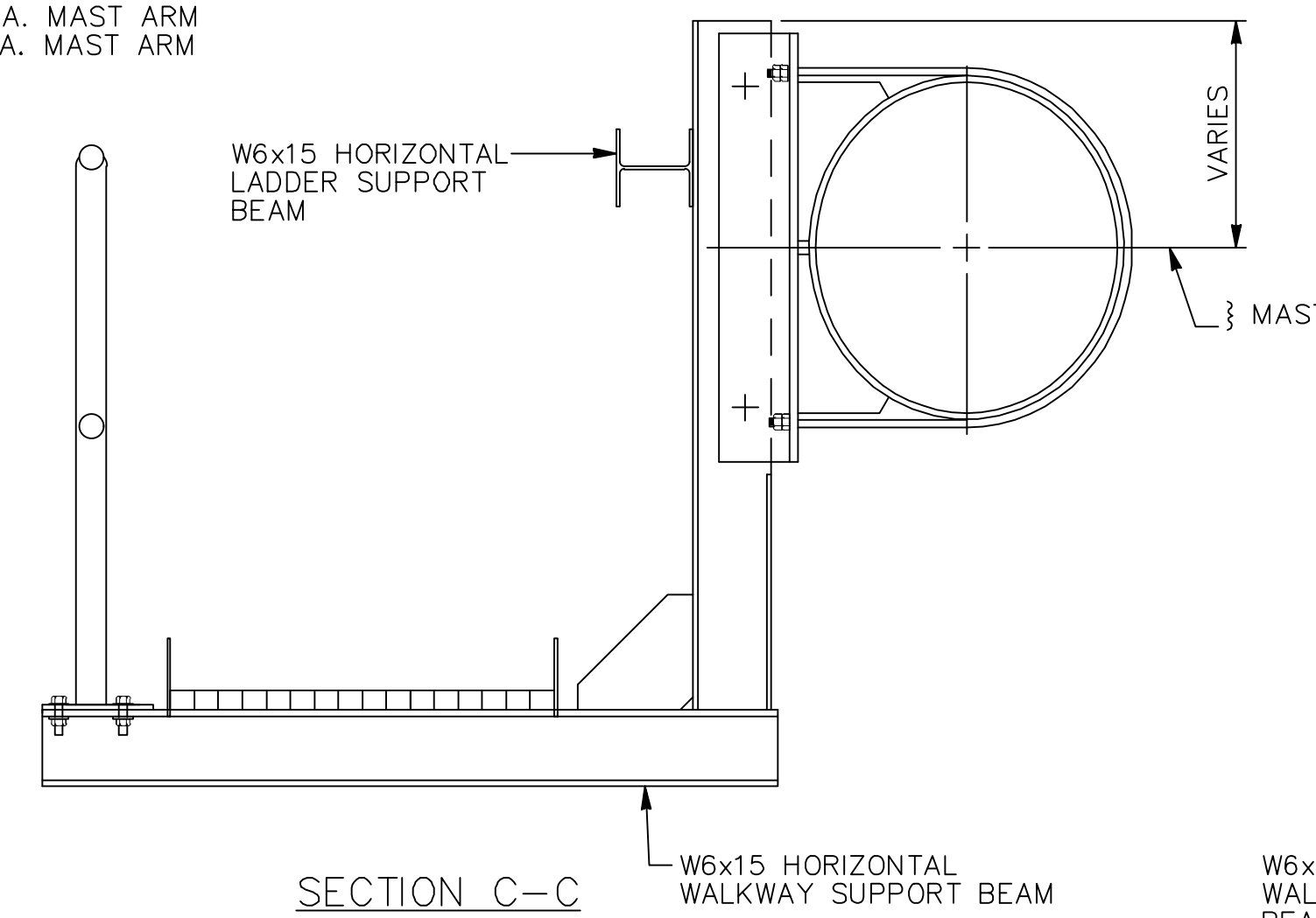
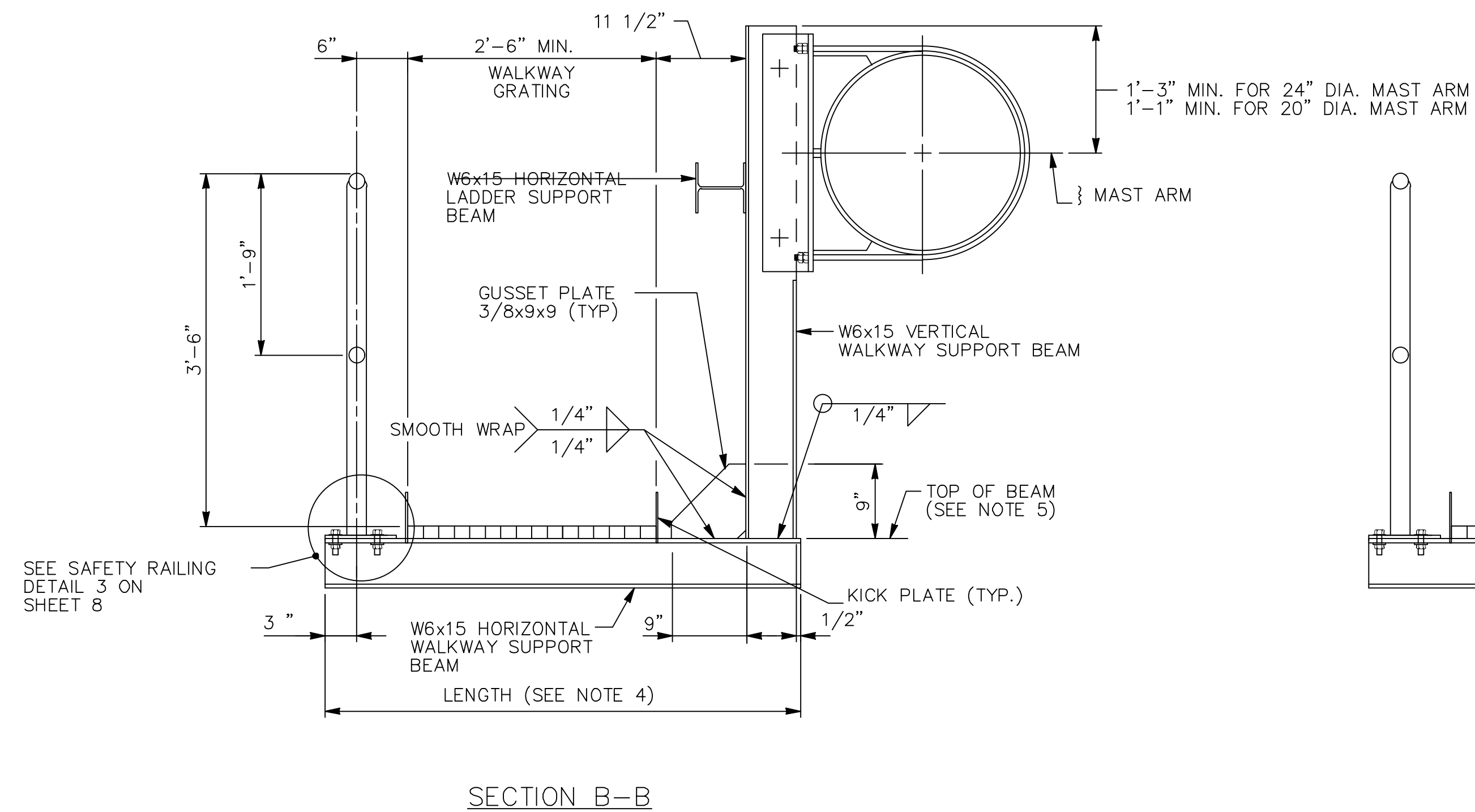
FILE NAME: PTS750-6.DWG
 DRAWING TYPE: 5A
 SHEET 6 OF 12

DATE: OCTOBER 2015
 PTS-750



NOTES

1. MAINTAIN UNIFORM VERTICAL WALKWAY SUPPORT BEAM SPACING WHERE POSSIBLE.
2. MAXIMUM VERTICAL WALKWAY SUPPORT BEAM SPACING SHALL NOT EXCEED 5'-0".
3. SEE SHEETS 8-10 FOR ADDITIONAL DETAILS NOT SHOWN HERE.
4. LENGTH OF HORIZONTAL WALKWAY SUPPORT BEAM SHALL BE BASED ON DMS WIDTH (W) TO PERMIT CLEARANCE BETWEEN RAILS FOR UNOBSTRUCTED OPENING OF DMS ACCESS DOOR.
5. TOP OF HORIZONTAL WALKWAY SUPPORT BEAM SHALL BE 3" BELOW THE BOTTOM OF DMS CABINET.

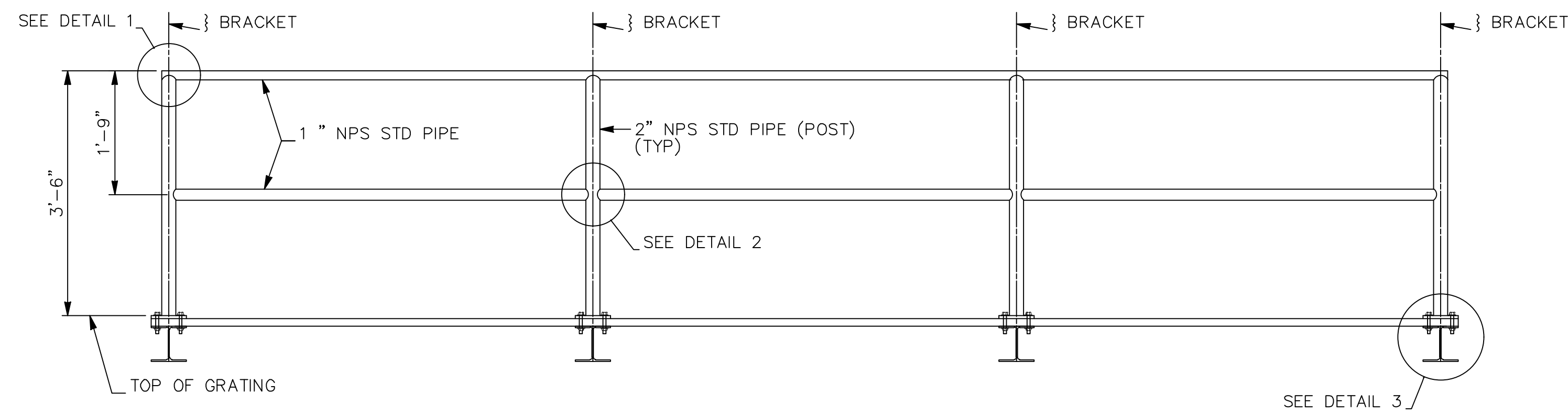


RECOMMENDED: OCTOBER 14, 2015
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
 CHIEF ENGINEER

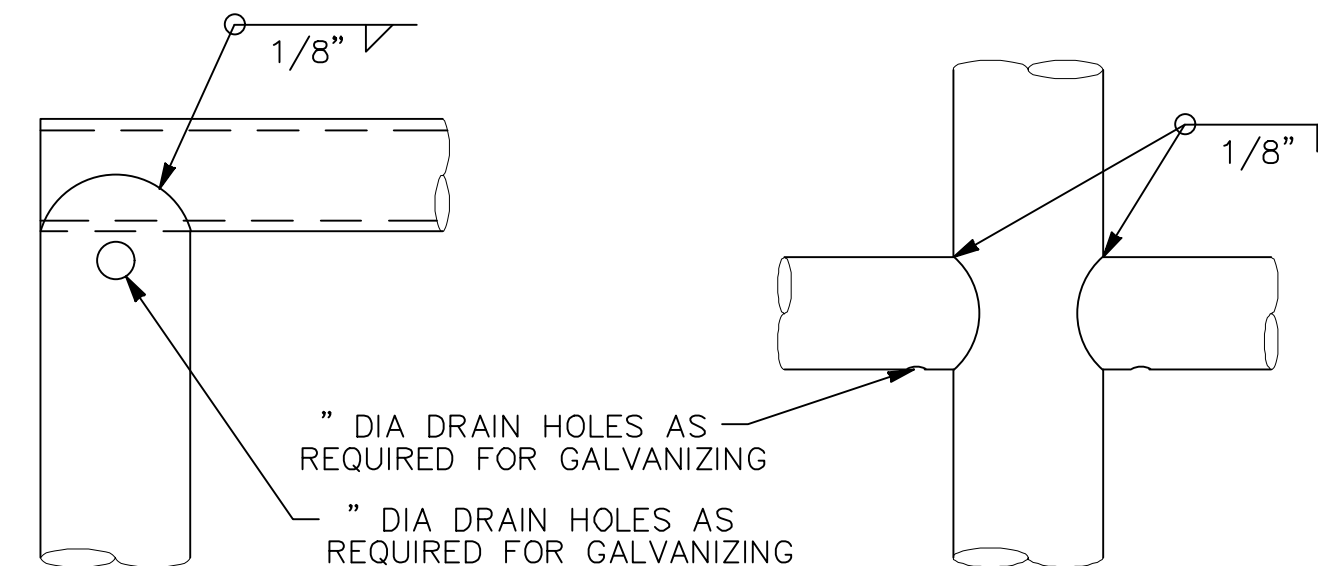
**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 WALKWAY DETAILS 1**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

FILE NAME: PTS750-7.DWG
 DRAWING TYPE: 5A
 SHEET 7 OF 12
 DATE: OCTOBER 2015
 PTS-750

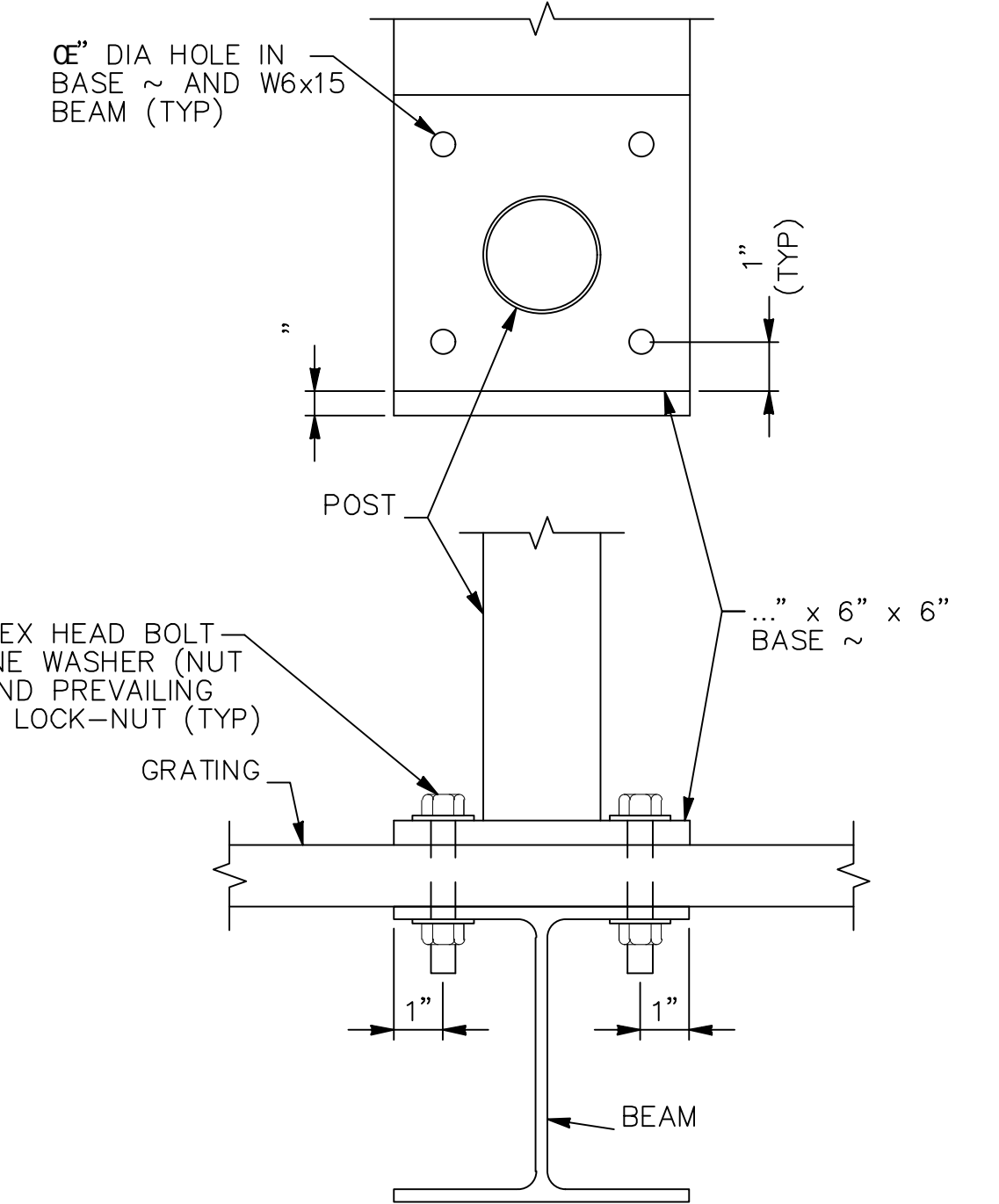


SAFETY RAILING ELEVATION

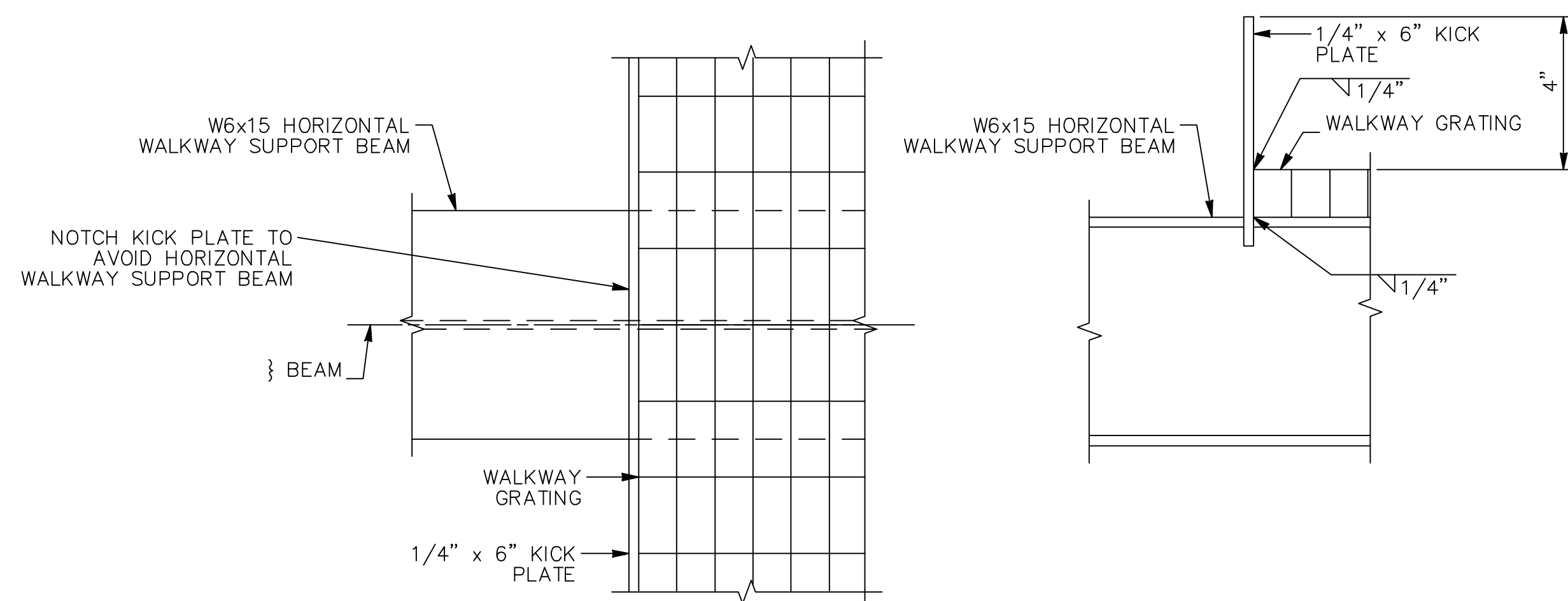


DETAIL 1

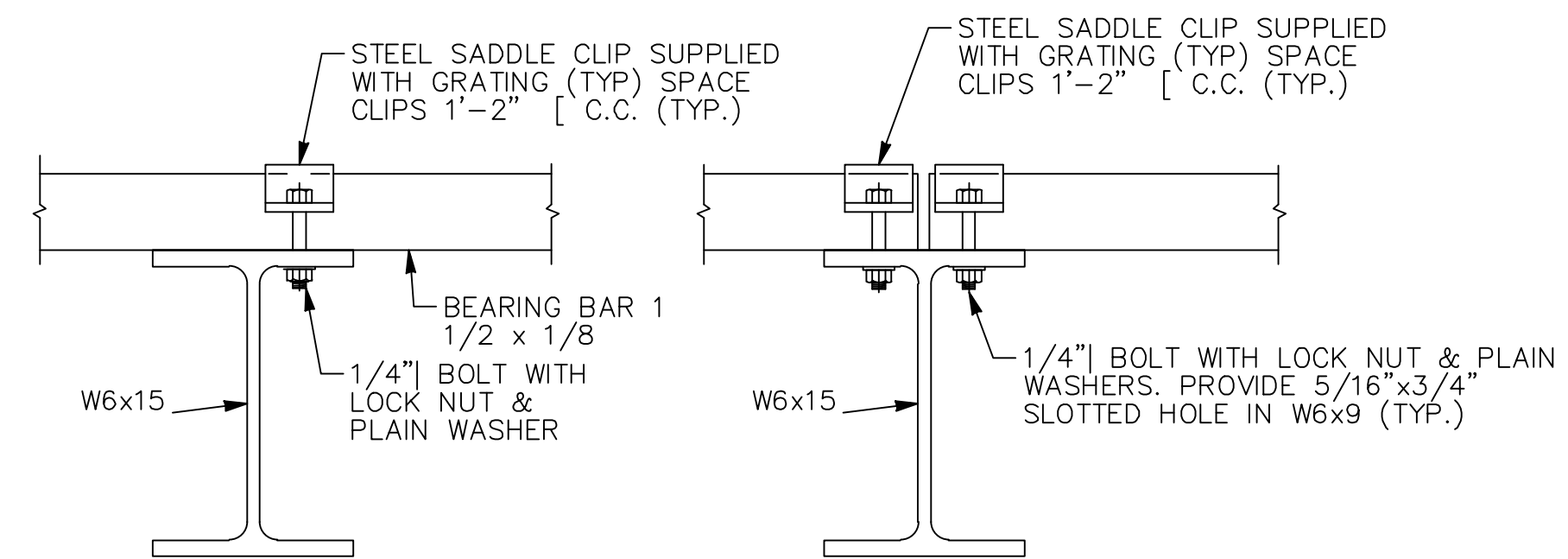
DETAIL 2



DETAIL 3



KICK PLATE DETAILS



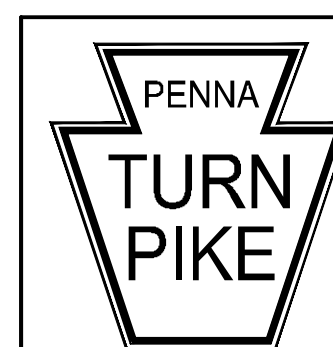
AT INTERMEDIATE SUPPORT AND END SUPPORT (GRATING CONTINUOUS)

AT INTERMEDIATE SUPPORT (GRATING BROKEN)

GRATING CONNECTION DETAILS

NOTES

1. WELDED TYPE GRATING SHALL HAVE 1 1/4" x 1/8" BEARING BARS AT 1 1/8" CENTERS WITH 1/4" DIAMETER (OR EQUAL) CROSS BARS AT 4" CENTERS. IF MECHANICAL LOCK GRATING IS USED, IT SHALL BE EQUAL IN STRENGTH TO THE WELDED TYPE. ALTERNATED HOLD-DOWN CLIPS MAY BE SUBMITTED FOR APPROVAL.
2. WALKWAY GRATING TO BE CONTINUOUS (NO SPLICES) OVER AS MANY WALKWAY BRACKETS AS PRACTICAL CONSISTENT WITH FABRICATION, EASE OF HANDLING AND ASSEMBLY.
3. ALL BOLTS SHOWN ON THIS SHEET SHALL BE ASTM A-307. THE TIGHTENING TORQUE IS 16 FT-LBS FOR 3/8" DIA BOLTS AND 40 FT-LBS FOR 1/2" DIA BOLTS. DO NOT OVER TIGHTEN BOLTS AT WALKWAY SADDLE ANCHOR LOCATIONS.



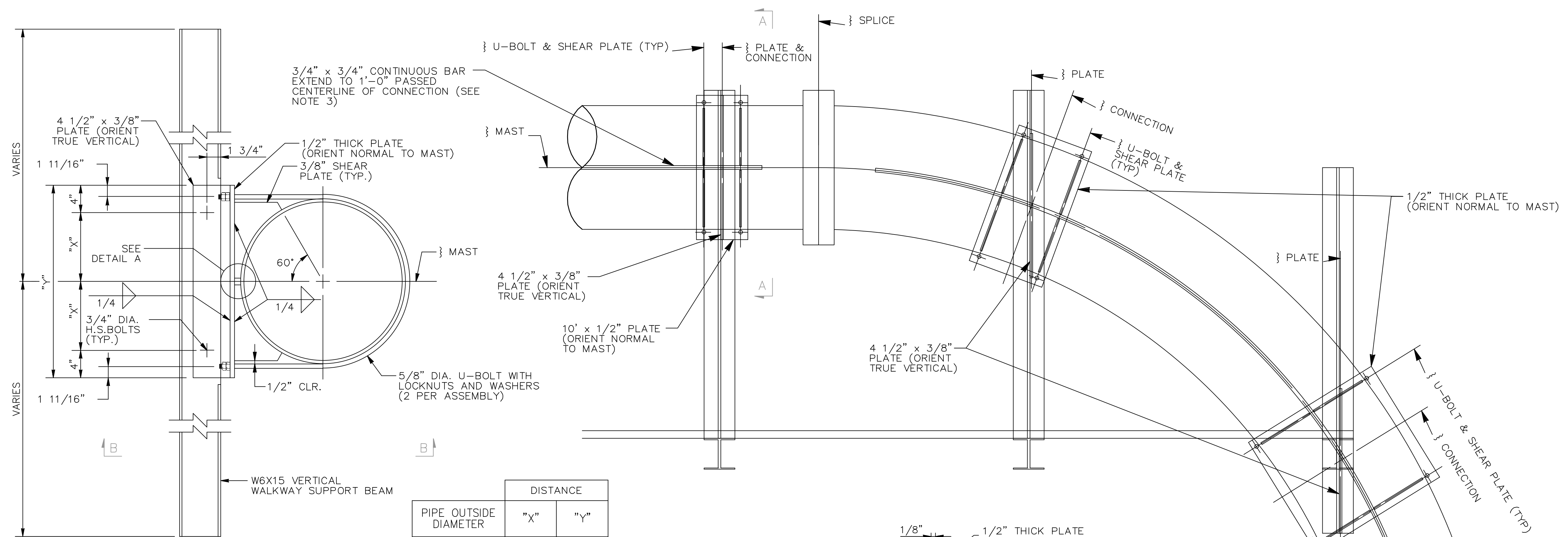
RECOMMENDED: OCTOBER 14, 2015
Gary J. Smith
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
M/BA
 CHIEF ENGINEER

MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 WALKWAY DETAILS 2

PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING

FILE NAME: PTS750-8.DWG
 DRAWING TYPE: 5A
 SHEET 8 OF 12

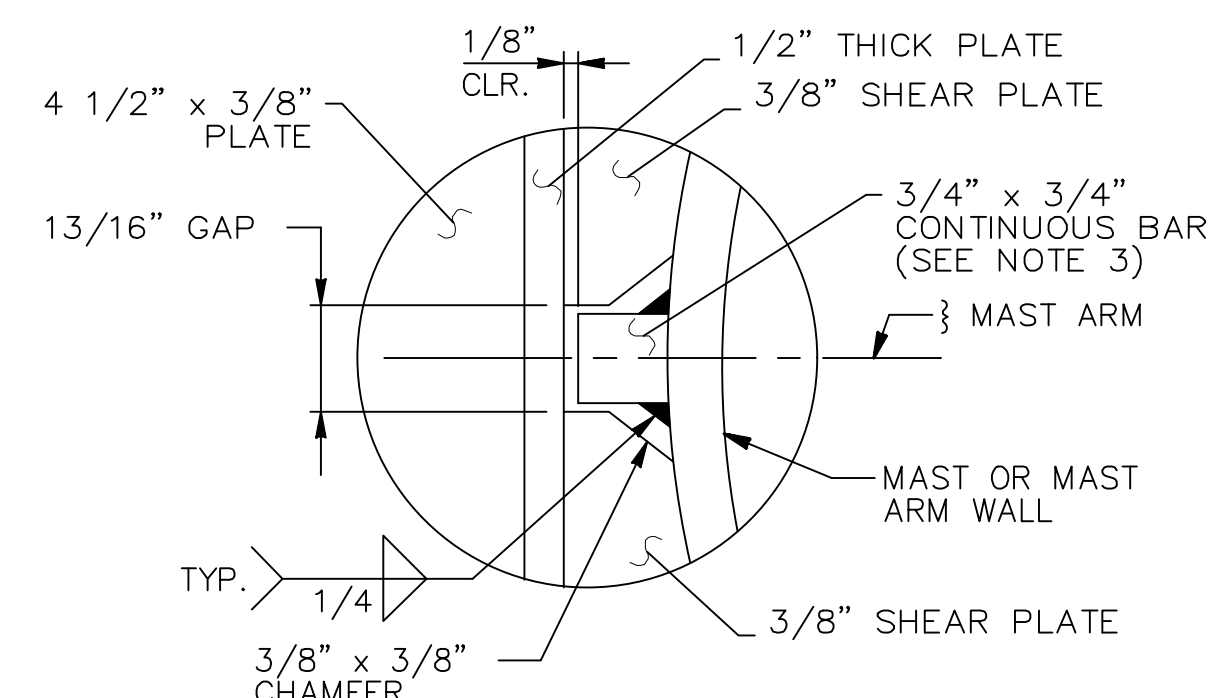
DATE: OCTOBER 2015
 PTS-750



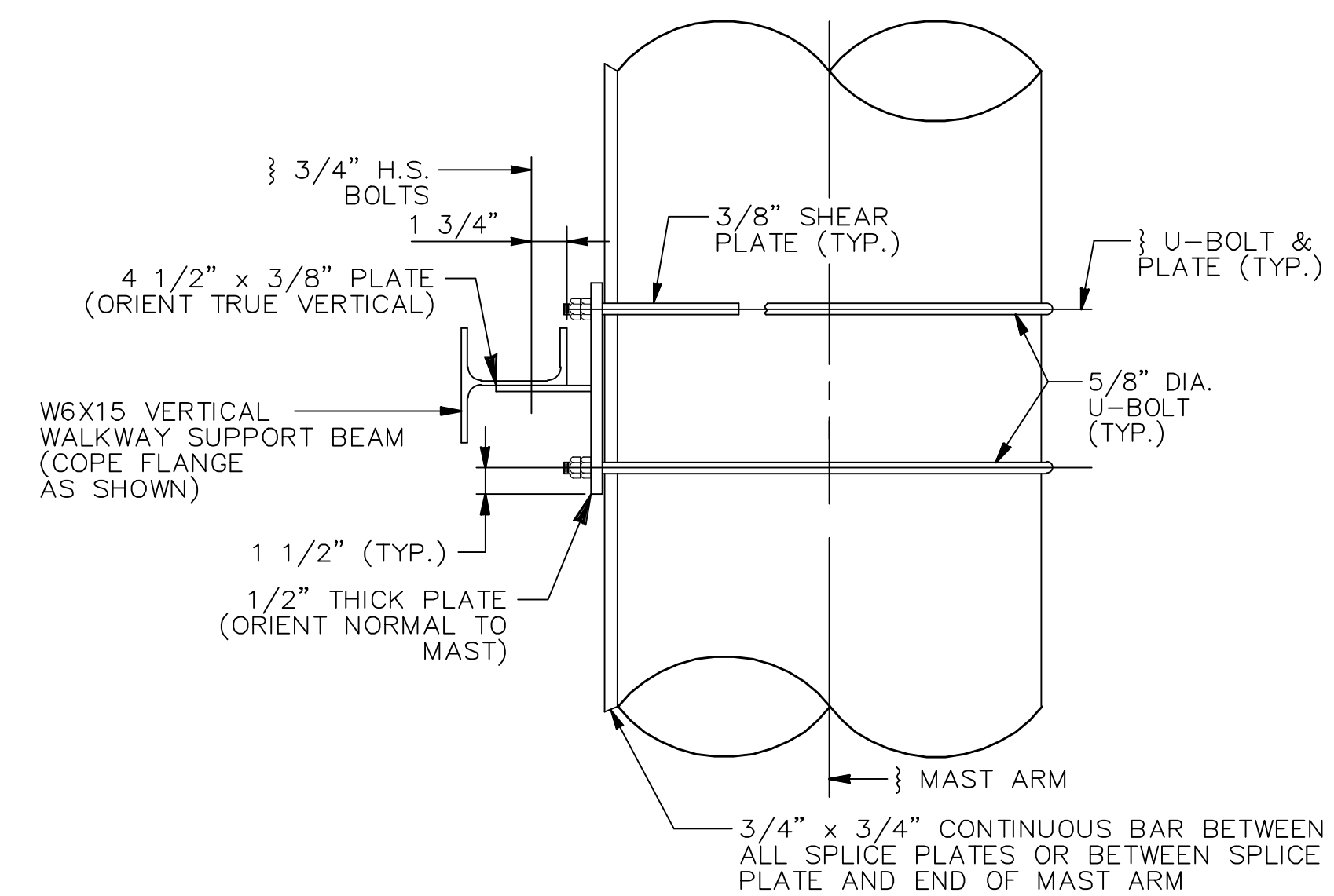
**SECTION A-A
WALKWAY SUPPORT SECTION**

WALKWAY SUPPORT ELEVATION

PIPE OUTSIDE DIAMETER	DISTANCE	
	"X"	"Y"
20"	8"	24"
24"	10"	28"



DETAIL A

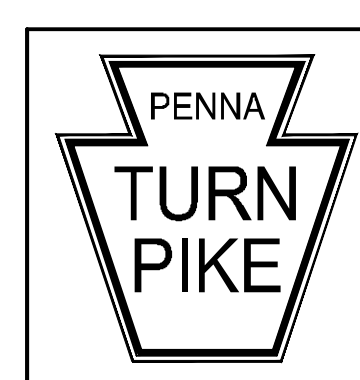


**SECTION B-B
WALKWAY SUPPORT PLAN**

WALKWAY SUPPORT BEAM TO MAST AND MAST ARM CONNECTION DETAILS
(FOR DETAILS NOT SHOWN OR NOTED, SEE SHEET 5)
(SUPPORT BEAM NOT SHOWN IN ELEVATION VIEW FOR CLARITY)

NOTES

1. FOR GENERAL NOTES, SEE SHEET 1.
2. LOCATE SUPPORT BEAMS TO AVOID END AND SPLICE CONNECTIONS. MAXIMUM SPACING = 5'-0".
3. PROVIDE BAR IN SINGLE OR MULTIPLE PIECES. MAINTAIN 6" MIN. FROM JOINT(S) TO CONNECTION.



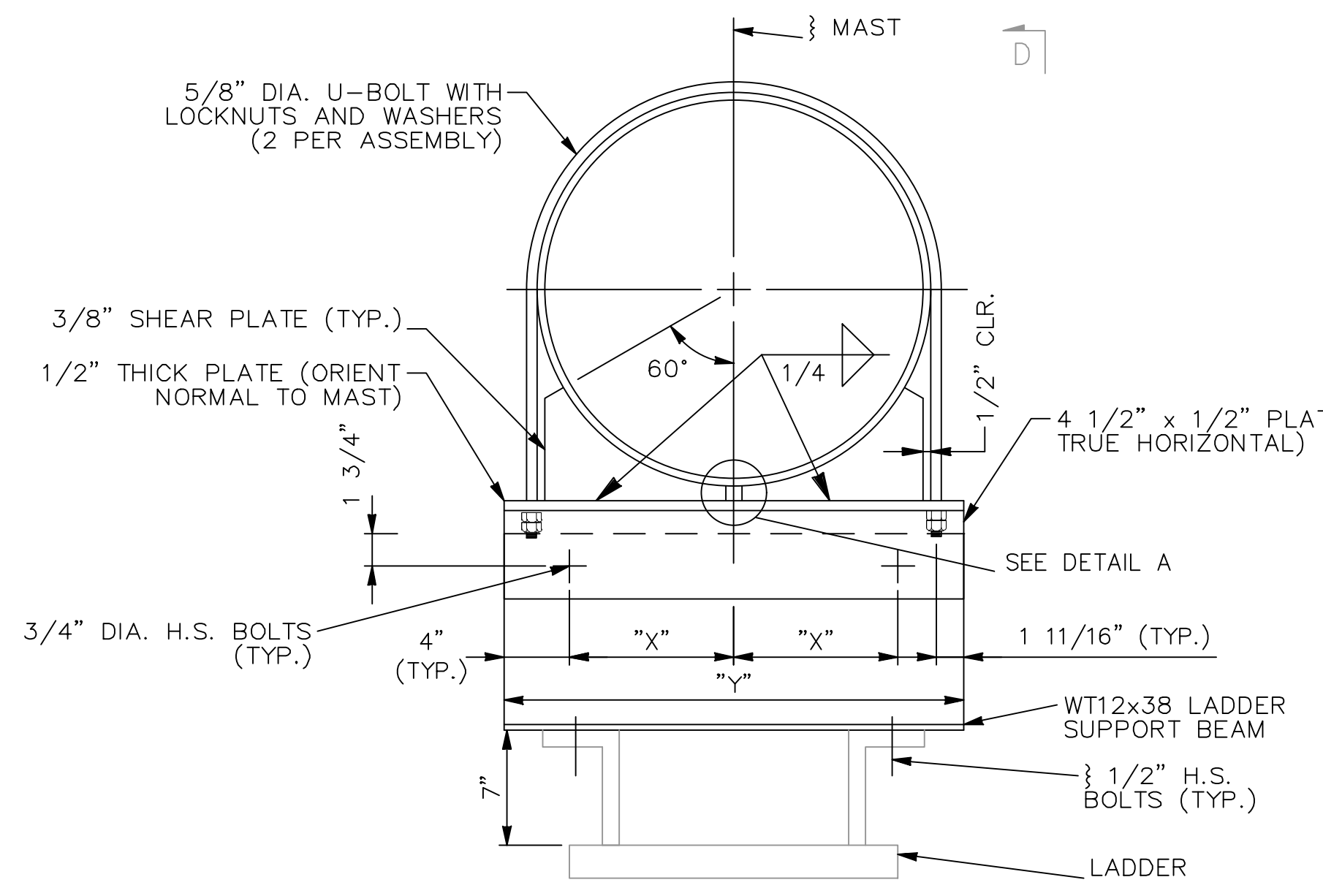
RECOMMENDED: OCTOBER 14, 2015
Gary L. Johnson
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
[Signature]
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
FOR DYNAMIC MESSAGE SIGNS
WALKWAY SUPPORT DETAILS**

**PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING**

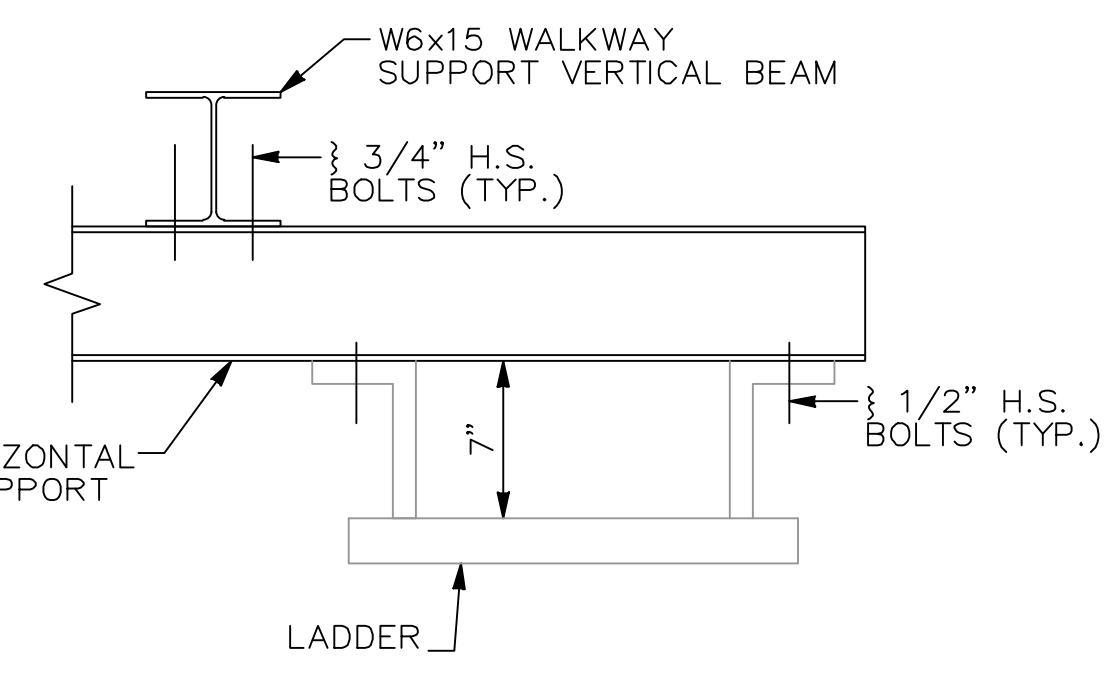
FILE NAME: PTS750-9.DWG SHEET 9 OF 12
 DRAWING TYPE: 5A

DATE: OCTOBER 2015 **PTS-750**

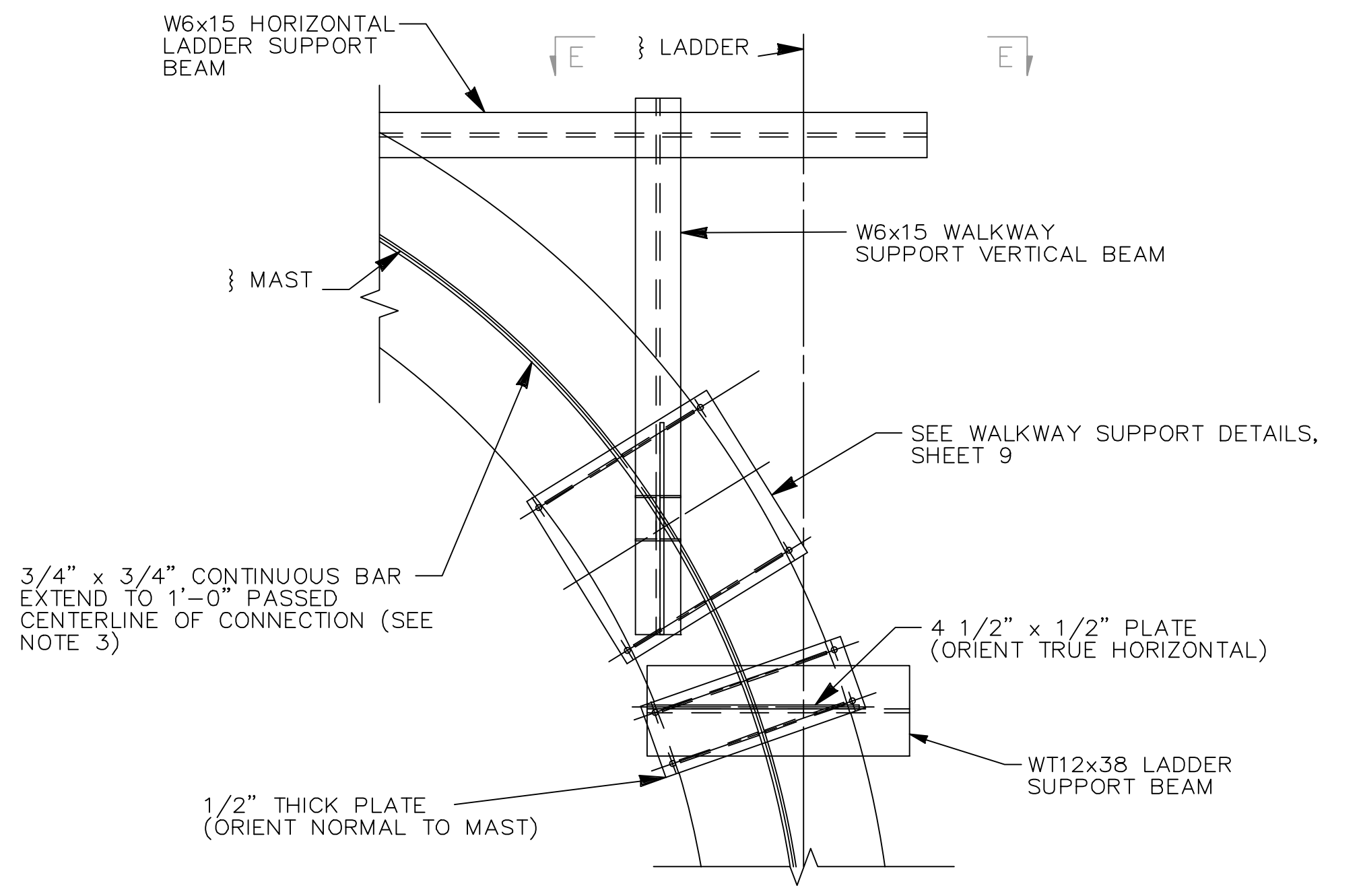


SECTION C-C
LADDER SUPPORT SECTION

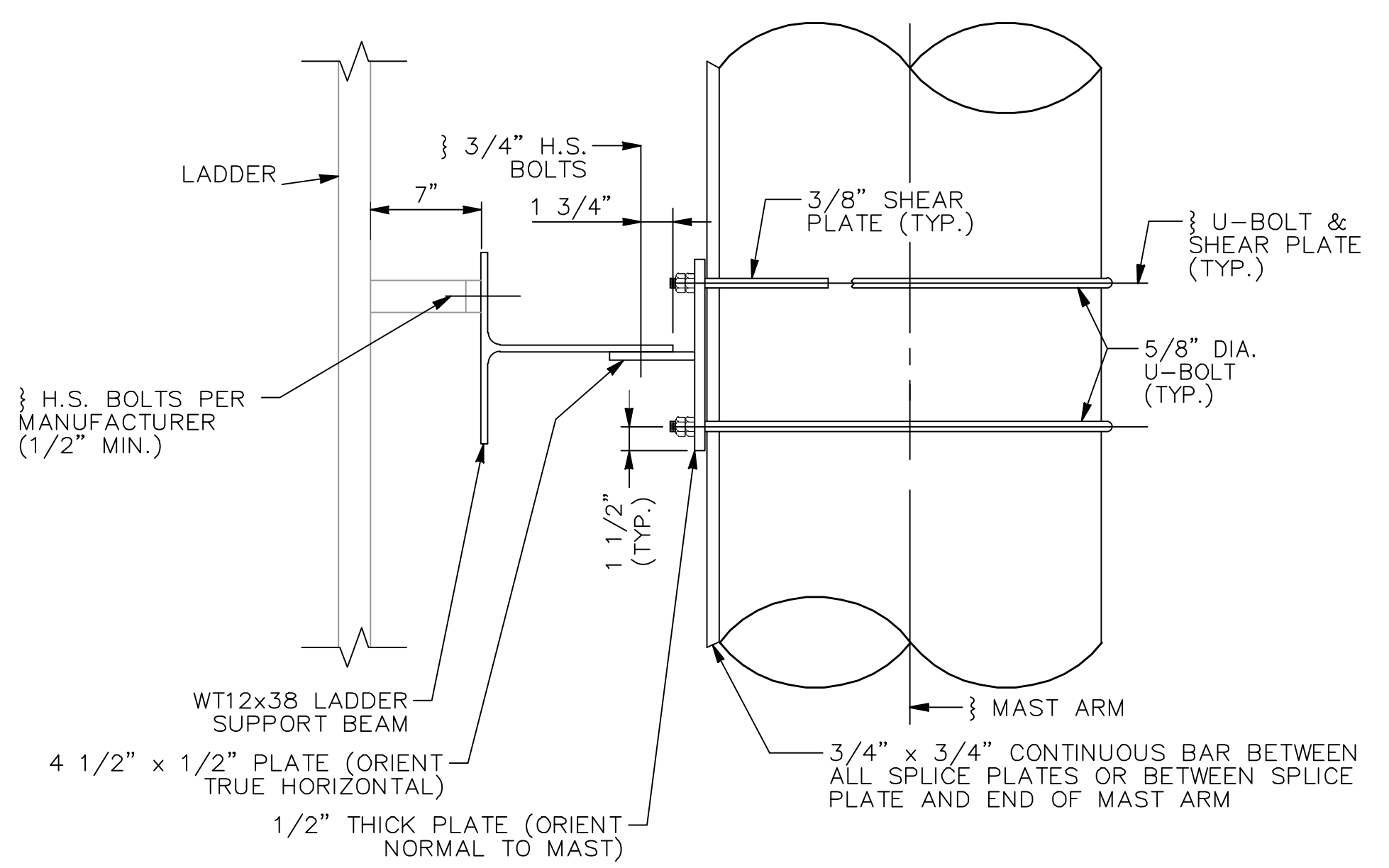
PIPE OUTSIDE DIAMETER	DISTANCE	
	"X"	"Y"
20"	8"	24"
24"	10"	28"



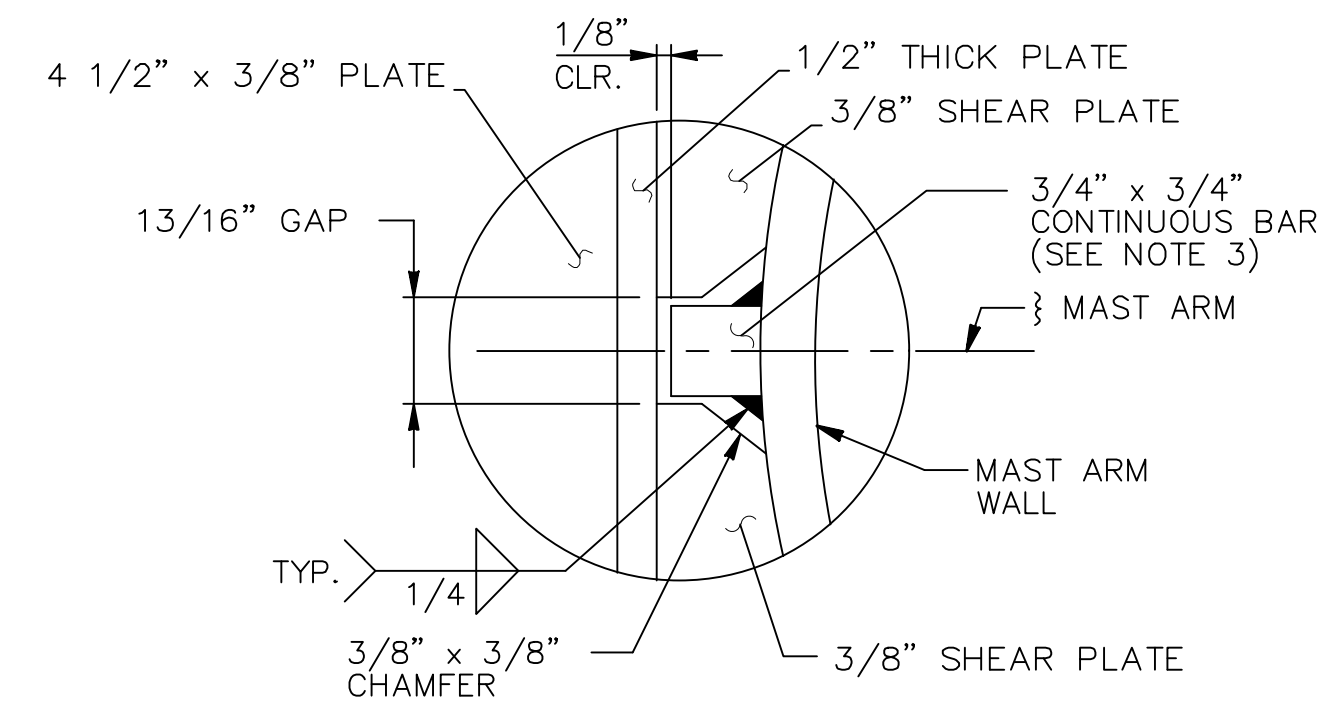
SECTION E-E



LADDER SUPPORT ELEVATION



SECTION D-D
LADDER SUPPORT PLAN

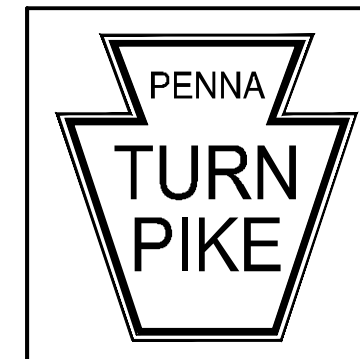


DETAIL A

LADDER SUPPORT BEAM TO MAST CONNECTION DETAILS
(FOR DETAILS NOT SHOWN OR NOTED, SEE SHEET 5)
(LADDER CAGE NOT SHOWN AND LADDER NOT SHOWN IN ELEVATION VIEW FOR CLARITY)

NOTES

- FOR GENERAL NOTES, SEE SHEET 1.
- LOCATE LADDER SUPPORT BEAMS BASED ON MANUFACTURER'S SPECIFICATIONS AND ALL APPLICABLE OSHA SPECIFICATIONS.
- PROVIDE BAR IN SINGLE OR MULTIPLE PIECES. MAINTAIN 6" MIN. FROM JOINT(S) TO CONNECTION.

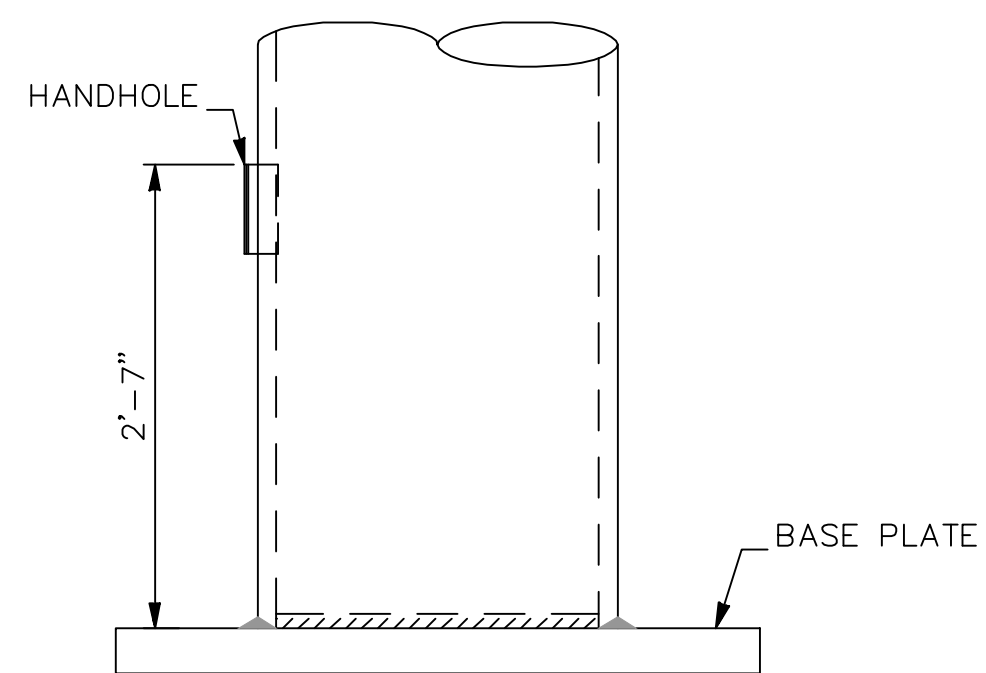


RECOMMENDED: OCTOBER 14, 2015
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
FOR DYNAMIC MESSAGE SIGNS
LADDER SUPPORT DETAILS**

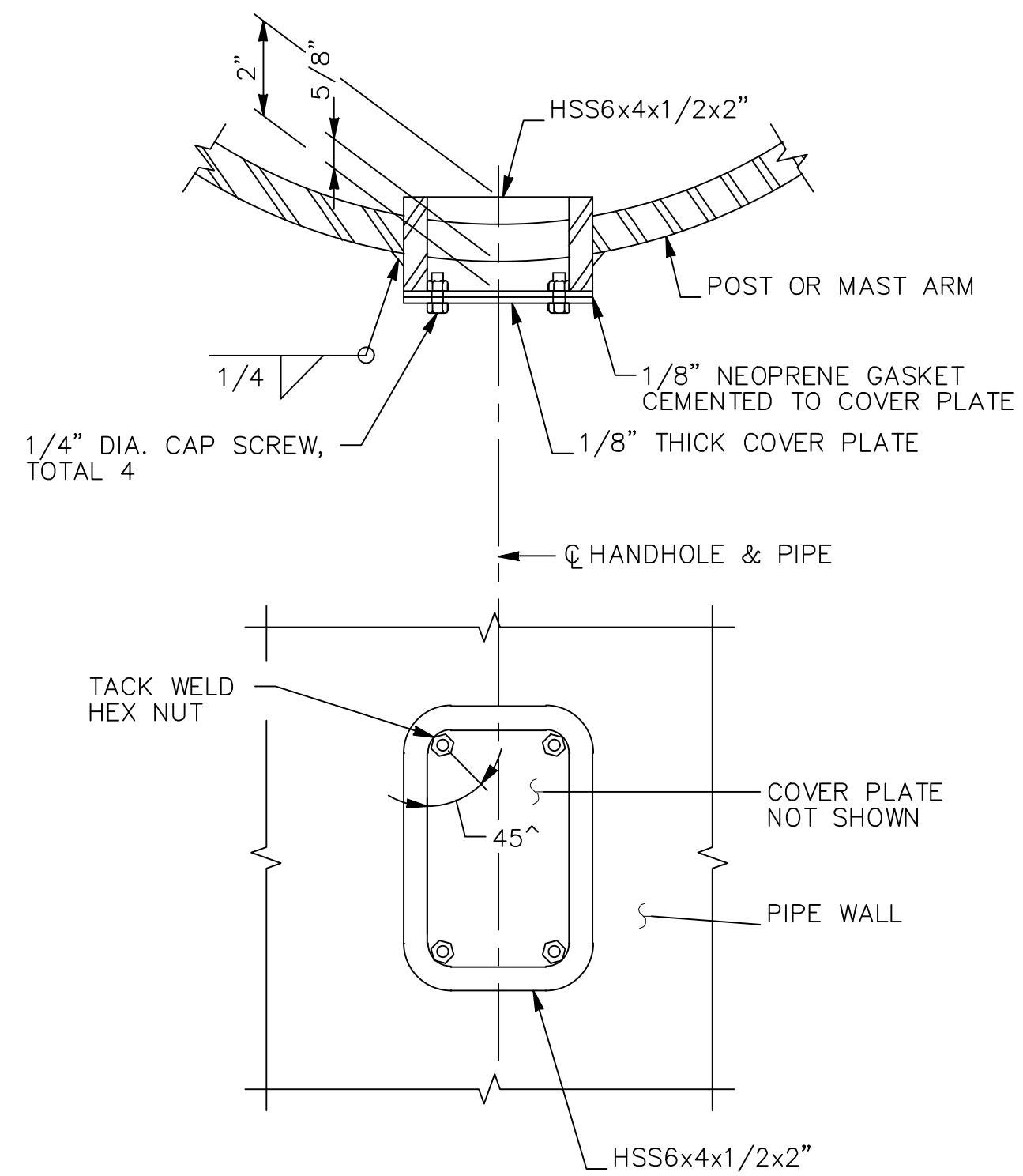
**PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING**

FILE NAME: PTS750-10.DWG SHEET 10 OF 12
 DRAWING TYPE: 5A
 DATE: OCTOBER 2015 PTS-750

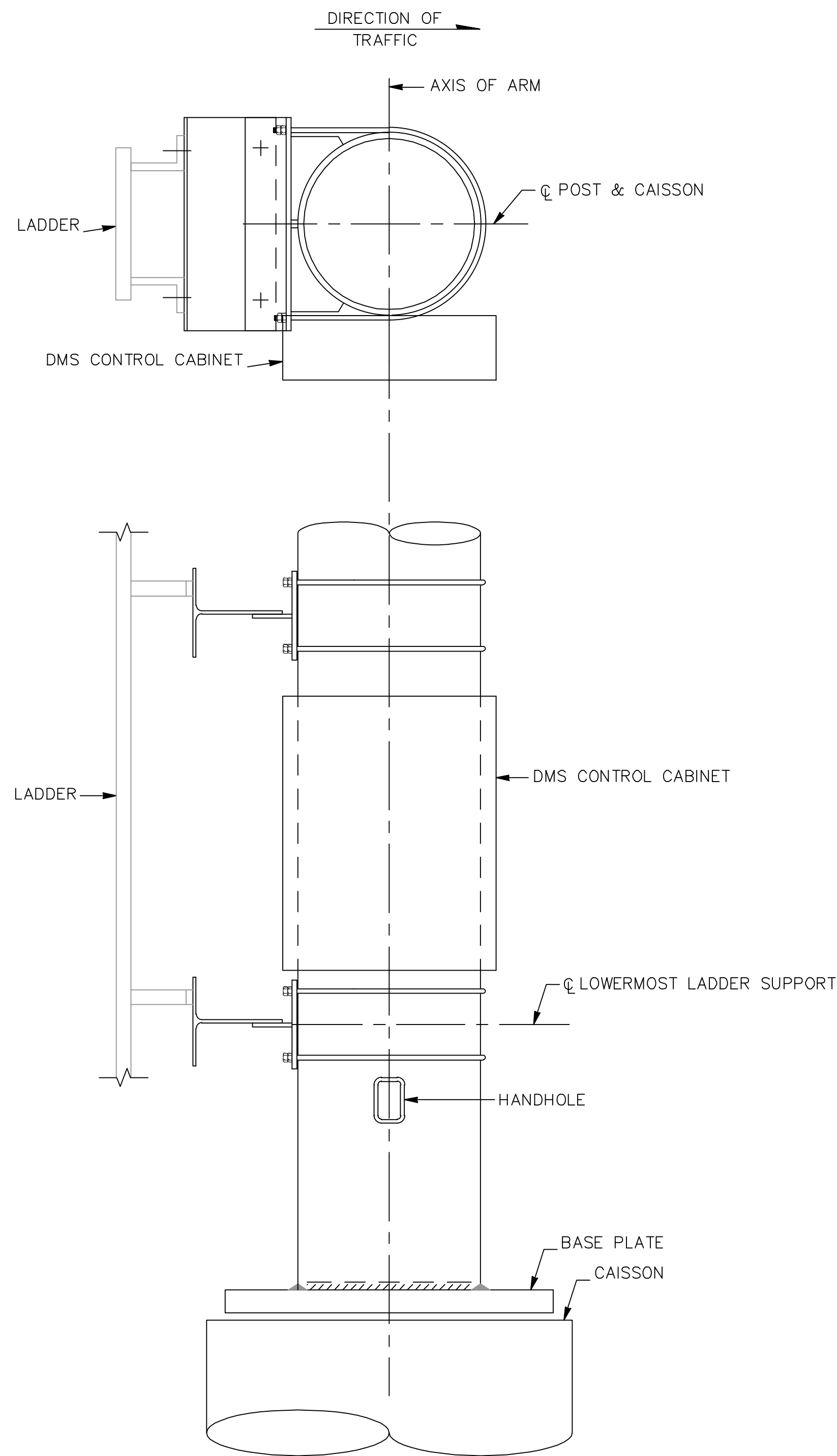


POST BASE ELEVATION

(FOR BASE PLATE DETAILS, SEE SHEET 4)



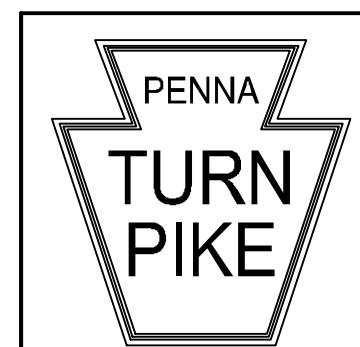
HANDHOLE AND COVER DETAILS



CABINET AND HANDHOLE ORIENTATION

NOTES

1. FOR CABINET MOUNTING, CONDUIT & CABLE PATH DETAILS, REFERENCE ITS 1201.
2. SPACE DMS CONTROL CABINET ATTACHMENTS TO AVOID LADDER SUPPORT BEAMS.
3. PREFERENCE IS TO INSTALL CABLES WITHIN HOLLOW STRUCTURE WHENEVER POSSIBLE. USE FABRICATED HOLES IN THE STRUCTURE WITH A WEATHERPROOF CONDUIT NIPPLE. DO NOT DRILL HOLES IN THE FIELD. SEAL ANY OPENING WITH APPROVED SEALANT. DO NOT WELD TO MONOPIPE STRUCTURE. DESIGN MUST BE APPROVED BY THE REPRESENTATIVE.



RECOMMENDED: OCTOBER 14, 2015
Gayle S. [Signature]
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
[Signature]
 CHIEF ENGINEER

**MONOPIPE SIGN STRUCTURES
 FOR DYNAMIC MESSAGE SIGNS
 MISCELLANEOUS DETAILS**

**PENNSYLVANIA TURNPIKE COMMISSION
 STANDARD DRAWING**

FILE NAME: \$FILES\$
 DRAWING TYPE: 5A

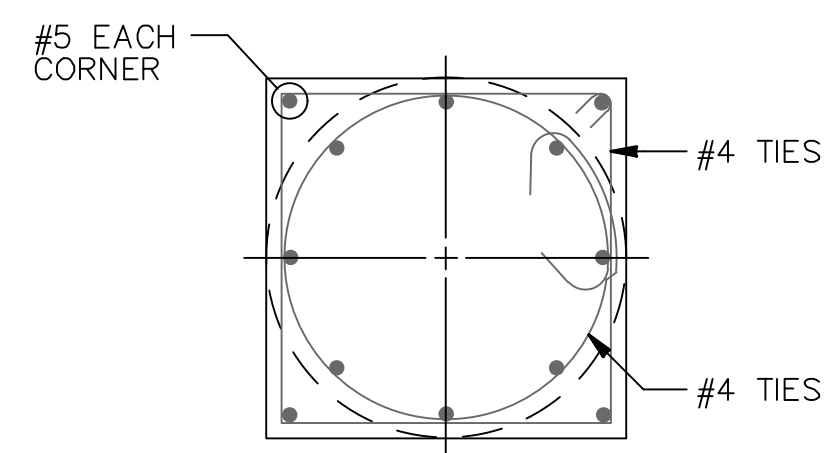
SHEET 11 OF 12

DATE: OCTOBER 2015

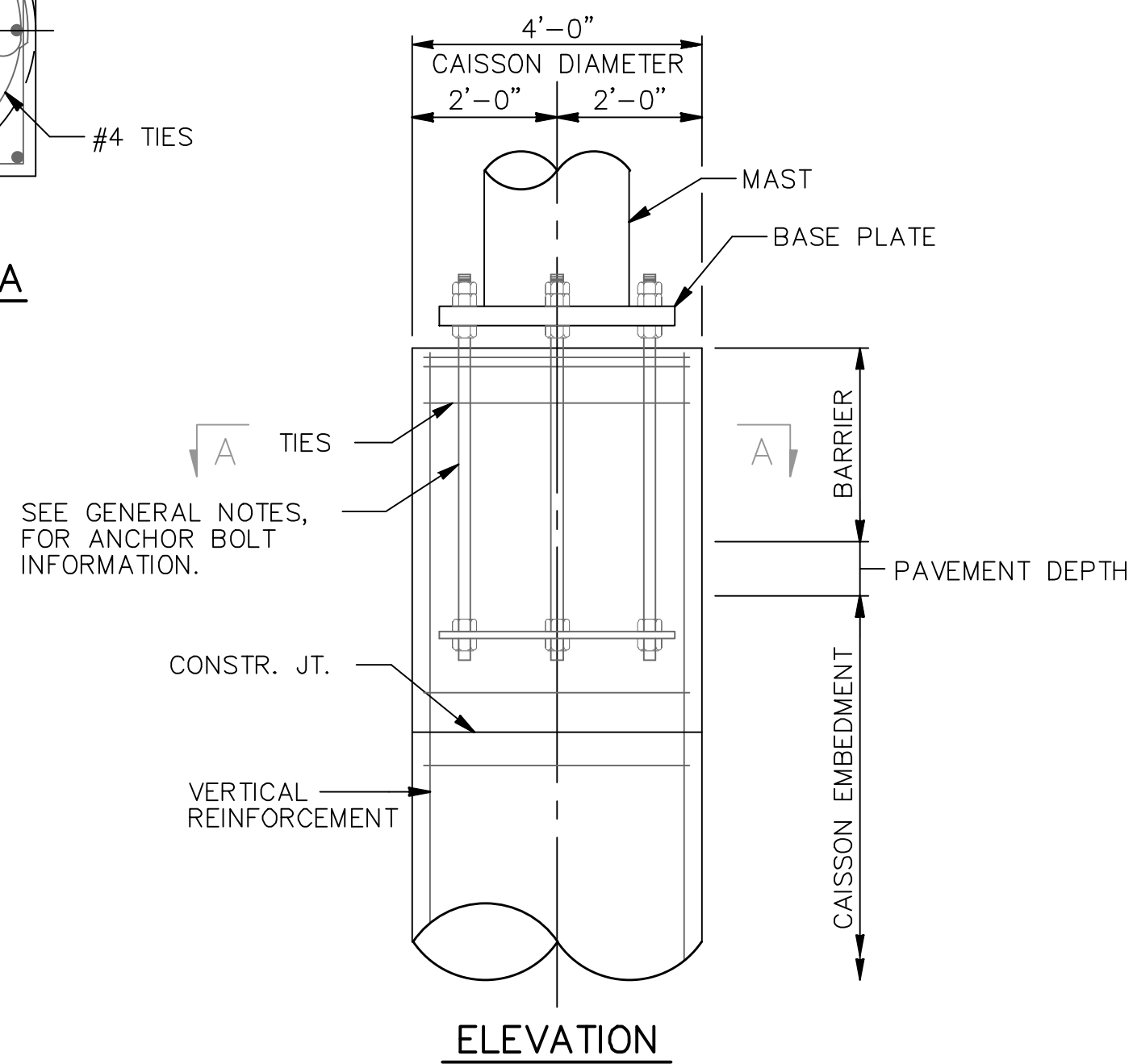
PTS-750

CAISSON COMPONENT SELECTION TABLE									
SPAN (FEET)	SHAFT DIAMETER (INCHES)	BELL DIAMETER (INCHES)	SOIL	EMBEDMENT (FEET)				VERT. REINF.	
				8:1	4:1	2:1	1.5:1	NO.	SIZE
60	42	—	C	18.0	19.5	21.0	21.5	11	NO. 8
	—	—	G	17.0	18.0	20.5	*		
	48	—	C	17.5	18.5	20.5	21.5	11	NO. 8
80	54	—	C	17.0	18.0	20.0	*		
	—	—	G	17.0	18.0	20.5	*		
	42	48	C	20.0	21.0	22.5	24.0	13	NO. 8
100	—	—	C	18.5	19.5	21.5	*		
	—	—	G	18.0	19.0	21.5	*		
	48	—	C	19.0	20.5	22.5	23.5	13	NO. 8
120	54	—	C	18.0	19.0	21.5	*		
	—	—	G	18.0	19.0	21.5	*		
	48	54	C	24.5	25.5	29.5	32.0	17	NO. 8
140	—	—	G	21.5	23.0	25.5	*		
	—	—	C	23.5	24.5	27.5	30.5	17	NO. 8
	—	—	G	21.5	22.5	25.5	*		
160	60	—	C	23.0	24.5	27.0	29.0	17	NO. 8
	—	—	G	21.0	22.5	25.0	*		
	48	60	C	28.5	30.5	36.0	38.5	20	NO. 8
180	—	—	G	24.0	25.0	28.5	*		
	54	60	C	27.0	28.0	33.0	35.5	20	NO. 8
	—	—	G	23.5	24.5	28.0	*		
200	60	—	C	26.0	27.0	31.0	35.0	20	NO. 8
	—	—	G	23.0	24.5	27.5	*		
	48	66	C	32.0	36.0	41.5	51.0	25	NO. 8
220	—	—	G	27.0	28.5	32.5	*		
	60	66	C	31.5	33.5	39.5	42.5	24	NO. 8
	—	—	G	26.5	28.0	31.5	*		
240	66	—	C	30.5	32.0	37.5	42.0	24	NO. 8
	—	—	G	26.0	27.5	31.0	*		
	60	80	C	43.0	52.5	*	*	33	NO. 8
260	—	—	G	33.5	35.5	43.0	*		
	66	80	C	40.0	45.5	52.5	*	32	NO. 8
	—	—	G	32.0	34.0	39.0	*		
280	72	80	C	38.0	42.5	50.5	54.5	35	NO. 8
	—	—	G	31.5	33.5	37.5	*		

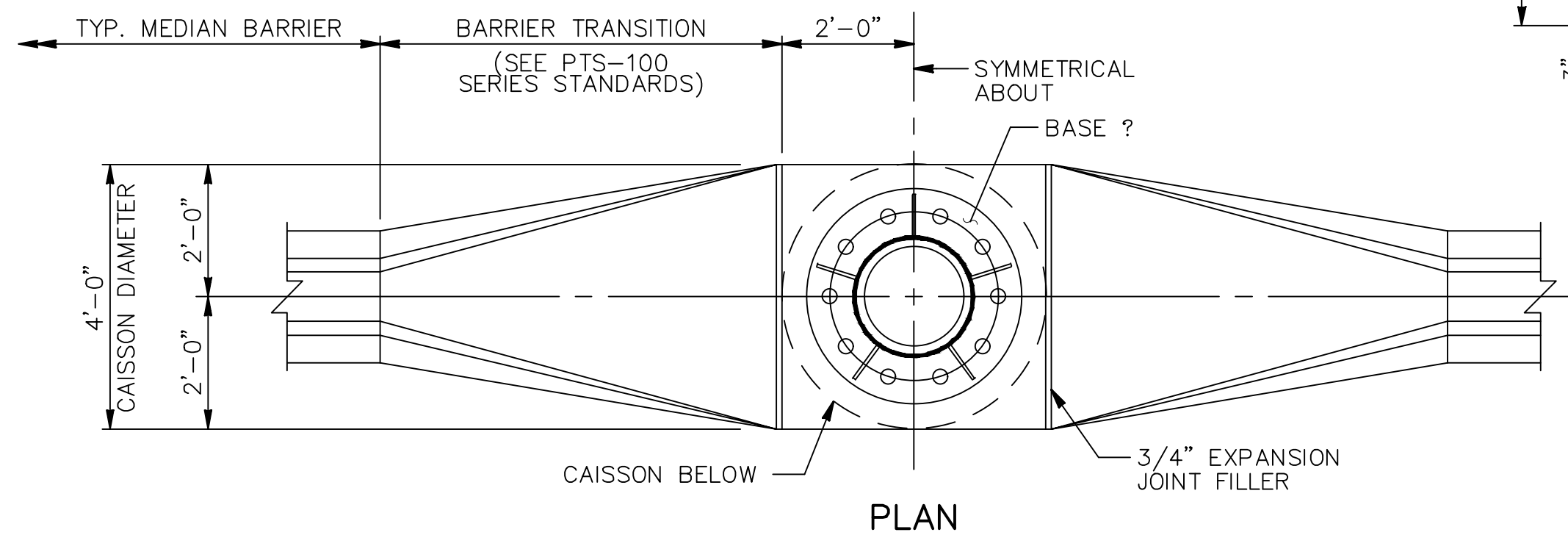
* INSTALLATION NOT ALLOWED FOR THIS COMBINATION OF GROUND SLOPE AND CAISSON DIAMETER



SECTION A-A



ELEVATION

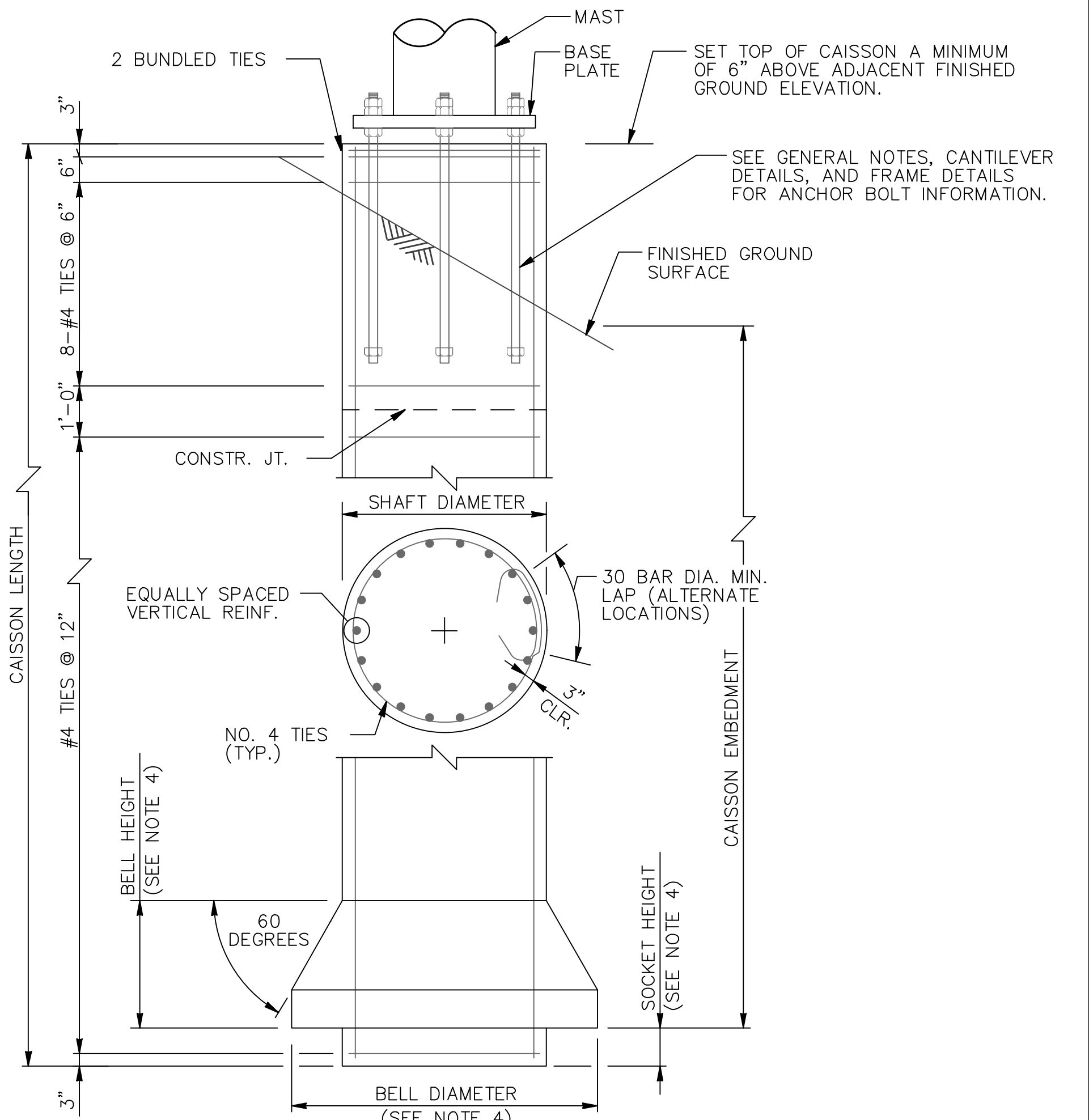


CAISSON FOUNDATION DETAILS
MEDIAN BARRIER INSTALLATION
(SEE ROADSIDE INSTALLATION FOR ADDITIONAL INFORMATION)

NOTES
FOR GENERAL NOTES, SEE SHEET 1.

CAISSON COMPONENT NOTES

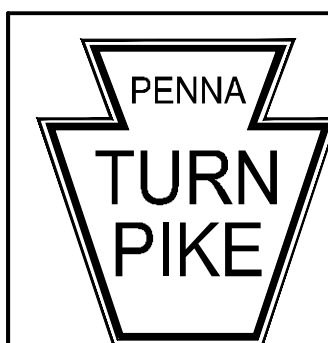
- C = COHESIVE SOIL
G = GRANULAR SOIL
- FOR SOIL DESCRIPTIONS, SEE DESIGN NOTES ON SHEET 1.



CAISSON FOUNDATION DETAILS
ROADSIDE INSTALLATION

CAISSON DRILLING AND
INSTALLATION NOTES

- CONTACT THE REPRESENTATIVE IF ANY OF THE FOLLOWING SOIL CONDITIONS ARE ENCOUNTERED DURING DRILLING:
 - THE SOIL HAS A HIGH ORGANIC CONTENT OR CONSISTS OF SATURATED SILT AND CLAY.
 - THE SITE WILL NOT SUPPORT THE WEIGHT OF THE DRILLING RIG.
 - THE FOUNDATION SOILS ARE NOT HOMOGENEOUS.
 - FIRM BEDROCK IS ENCOUNTERED.
- CONSTRUCT CAISSONS AGAINST UNDISTURBED EARTH OR IN PROPERLY COMPACTED EMBANKMENT.
- SUBMIT AN AS-BUILT SURVEY OF EACH CAISSON FOUNDATION TO THE REPRESENTATIVE THAT IDENTIFIES ANCHOR BOLT LOCATION, ANCHOR BOLT ORIENTATION, DISTANCE BETWEEN ANCHOR BOLT GROUPS (FOR FRAME STRUCTURES), TOP OF ANCHOR BOLT ELEVATIONS, TOP OF CAISSON ELEVATIONS, AND ADJACENT FINISHED GROUND ELEVATIONS. INCLUDE A COPY OF THE SURVEY NOTES. RECONCILE ANY DIFFERENCES BETWEEN SURVEY INFORMATION AND DATA ON THE APPROVED SHOP DRAWINGS. SUBMIT ALL PROPOSED ADJUSTMENTS OR MODIFICATIONS TO THE REPRESENTATIVE FOR APPROVAL.
- SUBMIT PROPOSED DRILLING EQUIPMENT TO THE REPRESENTATIVE FOR APPROVAL AND INCLUDE SOCKET AND BELL DIMENSIONS WHEN UTILIZED.



RECOMMENDED: OCTOBER 14, 2015
 ASSISTANT CHIEF ENGINEER - DESIGN
 APPROVED: OCTOBER 14, 2015
 CHIEF ENGINEER

MONOPIPE SIGN STRUCTURES
FOR DYNAMIC MESSAGE SIGNS
FOUNDATION TABLES & DETAILS

PENNSYLVANIA TURNPIKE COMMISSION
STANDARD DRAWING

FILE NAME: PTS750-12.DWG
DRAWING TYPE: 5A

DATE: OCTOBER 2015 SHEET 12 OF 12
PTS-750