CHANGE 1

CHANGE 8

INFORMATIONAL NOTES

- READ THESE NOTES BEFORE USING THESE STANDARDS.
- USE THESE STANDARDS FOR OVERHEAD SIGN STRUCTURES SUBJECT TO LIMITATIONS AS SHOWN. USE THESE STANDARDS AS A BASIS FOR THE PREPARATION OF STRUCTURE LAYOUTS AND CONTRACT DRAWINGS. REFERENCE TO THESE STANDARDS ON OVERHEAD SIGN STRUCTURES PLANS IS PROHIBITED.
- THE DESIGNER MUST PROVIDE THE INFORMATION OBTAINED FROM THE DESIGN TABLES ON THE CONTRACT DRAWINGS. THE DESIGNER MUST PROVIDE THE SIGN AREA, STRUCTURE HEIGHT, AND SIGN LOCATION USED TO OBTAIN MEMBER SIZES FROM THE DESIGN TABLES ON THE CONTRACT DRAWINGS.
- DESIGN COMPUTATIONS ARE REQUIRED FOR ANY PORTION OF A STRUCTURE FOR WHICH THE INFORMATION IS NOT TAKEN DIRECTLY FROM THE DESIGN TABLES CONTAINED IN THESE STANDARDS. DO NOT VIOLATE CRITERIA USED FOR THE DEVELOPMENT OF THESE DESIGN TABLES.
- ALL SIGN SUPPORTS LOCATED WITHIN THE CLEAR ZONE MUST BE SHIELDED WITH A CRASHWORTHY BARRIER, SEE TABLE A, BC-744M, SHEET 2.
- AVOID BRIDGE-MOUNTED SIGN STRUCTURES WHENEVER POSSIBLE. IF AVOIDANCE IS NOT POSSIBLE, THE STRUCTURE SHOULD BE LOCATED AS CLOSE TO A PIER SUPPORT AS IS PRACTICAL. THE AFFECTED BRIDGE COMPONENTS SHALL BE DESIGNED TO CARRY THE ADDITIONAL LOADS DUE TO THE WEIGHT OF THE SIGN STRUCTURE AND THE LOADINGS APPLIED TO SIGN STRUCTURE. IF A BARRIER IS USED OR IS REQUIRED, THE SIGN STRUCTURE SHALL BE LOCATED JUST BEYOND THE DESIGN DEFLECTION DISTANCE OF THE BARRIER.

INFORMATION CONTAINED IN THE DESIGN TABLES

- DESIGN TABLES INCLUDED IN THIS STANDARD WERE DEVELOPED USING A COMPUTER PROGRAM AND ARE BASED ON THE DESIGN CRITERIA SHOWN ON THIS SHEET.
- THE SPAN RANGE INCLUDED IN THIS STANDARD IS AS FOLLOWS:

  BD-644M: TWO-POST TRI-CHORD TRUSS, SPANS FROM 60' TO 100'.
  FOUR-POST TRI-CHORD TRUSS, SPANS 60' TO 200'.

- THE DESIGN TABLES INCLUDE MEMBER SIZES FOR THE STRUCTURES FOR VARIOUS COMBINATIONS OF DESIGN HEIGHT, SPAN LENGTH, AND SIGN AREA. THEY ALSO INCLUDE SPREAD FOOTING DESIGNS. ALTERNATE CAISSON FOUNDATIONS ARE PERMITTED FOR TWO-POST STRUCTURES WHERE SITE CONDITIONS DO NOT ALLOW FOR THE SPREAD FOOTING. DESIGN COMPUTATIONS ARE REQUIRED TO DETERMINE THE REQUIRED CAISSON EMBEDMENT AND REINFORCEMENT. THE DESIGN COMPUTATION MUST BE SUBMITTED TO THE DISTRICT BRIDGE ENGINEER FOR REVIEW AND APPROVAL AND THE CORRESPONDING INFORMATION SHOWN ON THE CONTRACT DRAWINGS. THE CORRESPONDING FABRICATION AND CONSTRUCTION DETAILS ARE CONTAINED ON STANDARD DRAWING BC-744M.
- THE FOLLOWING CRITERIA WERE USED TO DEVELOP THE DESIGN TABLES IN THIS STANDARD. DEVIATION FROM ANY OF THESE ASSUMPTIONS REQUIRE THE DESIGNER TO VERIFY THE DETAILS INCLUDED IN BD-644M AND BC-744M.
  - -DESIGN TABLES MEET THE FATIGUE REQUIREMENTS FOR FATIGUE CATEGORY II.
  - -STRUCTURES WERE DESIGNED ASSUMING THE SIGN PANELS AND LUMINAIRES BEING MOUNTED ON ONLY ONE SIDE OF THE TRUSS.
  - -LUMINAIRES AND SUPPORT ARM WEIGHT OF 400 LBS AND WIND AREA OF 9.92 SF (FOR BOTH TRUCK GUST AND NORMAL WIND LOADS).
  - -CATWALKS WERE NOT CONSIDERED FOR THESE STRUCTURES. DESIGNER MUST CHECK STRUCTURES FOR CATWALKS WHEN REQUIRED BY DISTRICT ENGINEER.
  - -HEIGHT ABOVE GROUND FOR NORMAL WIND PRESSURE CALCULATION WAS ASSUMED TO BE 33 FT.
  - -TRAFFIC DESIGN SPEED OF 70 MPH WAS USED FOR TRUCK GUST LOAD CALCULATION.
  - -SOIL FRICTION COEFFICIENT OF TAN(30°) 0.58 WAS USED FOR SLIDING RESISTANCE.

GENERAL NOTES

1. PROVIDE 3-INCH CONCRETE COVER ON REINFORCEMENT BARS, EXCEPT AS NOTED.
2. USE CLASS A CEMENT CONCRETE f'c = 3000 PSI IN PEDESTALS, FOOTINGS AND CAISSONS.
3. PROVIDE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A615 FOR CONCRETE REINFORCEMENT. DO NOT WELD REINFORCING STEEL BARS.
4. RAKE-FINISH ALL HORIZONTAL CONSTRUCTION JOINTS, EXCEPT AS INDICATED.
5. VERIFY ALL DIMENSIONS AND GEOMETRY OF THE EXISTING STRUCTURES IN THE FIELD AS NECESSARY FOR PROPER FIT OF THE PROPOSED CONSTRUCTION.
6. CHAMFER EXPOSED CONCRETE EDGES 1 INCH BY 1 INCH.
7. ALL DIMENSIONS SHOWN ARE HORIZONTAL, EXCEPT AS NOTED.
8. DIMENSIONS ARE BASED ON A NORMAL TEMPERATURE OF 68 DEGREES F.
9. SPREAD FOOTINGS AND CAISSONS MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.
10. GALVANIZE ALL STRUCTURAL STEEL, BOLTS, NUTS & WASHERS IN ACCORDANCE WITH PUB. 408, UNLESS STAINLESS STEEL OR OTHERWISE INDICATED.
11. PIPE DIAMETERS SHOWN UP TO AND INCLUDING 12 INCHES ARE NOMINAL DIAMETERS. PIPE DIAMETERS SHOWN FROM 14 INCHES AND UP ARE ACTUAL DIAMETERS.
12. USE STANDARD SIZE HOLE. THE STANDARD HOLE DIAMETER FOR BOLTS SMALLER THAN 1" DIAMETER SHALL BE THE NOMINAL DIAMETER OF THE BOLT PLUS 1/16". FOR BOLTS 1" DIAMETER AND LARGER, THE DIAMETER OF EACH STANDARD HOLE SHALL BE THE NOMINAL DIAMETER OF THE BOLT PLUS 1/8".
13. CLEAR DISTANCE BETWEEN BOLT HOLES OR BETWEEN THE BOLT HOLE AND THE END OF THE MEMBER IN THE DIRECTION OF THE APPLIED BEARING FORCE SHALL BE AS DETAILED IN BC-744M. IF THESE MINIMUMS ARE NOT PROVIDED, BOLT BEARING MUST BE CHECKED.
14. PROVIDE ANCHOR BOLT HOLES 1/4" LARGER THAN BOLT DIAMETER.
15. ANCHOR BOLTS WERE DESIGNED AND DETAILED IN ACCORDANCE WITH ACI 318-14 AND AISC DESIGN GUIDE 1, 2ND EDITION. A MINIMUM EMBEDMENT LENGTH OF 20 ANCHOR BOLT DIAMETERS MUST BE PROVIDED.
16. PROVIDE DOUBLE NUTS AND WASHER FOR EACH ANCHOR BOLT.
17. STEEL MEMBER COMPONENTS WITH THICKNESSES GREATER THAN 1/2" REQUIRE CHARPY V-NOTCH TESTING AND ARE DESIGNATED ON THE PLANS BY (CVN). PROVIDE STEEL CONFORMING TO THE CVN REQUIREMENTS FOR ZONE 2, LOAD PATH REDUNDANT MEMBER AS GIVEN IN THE AASHTO MATERIAL SPECIFICATIONS.
18. ONE TEST BORING SHALL BE PROVIDED AT EACH DRILLED CAISSON FOUNDATION LOCATION.

DESIGN CRITERIA FOR PENNDOT SIGN STRUCTURES

- DEAD LOADS — PENNDOT STD. DWGS. (U.N.O.) *

SIGN PANELS	TC-8701E OR TC-8701S
LIGHT FIXTURES	BC-744M, SHT. 12
SIGN SUPPORT BEAM	BC-744M, SHT. 8
COLUMNS, STRUTS	CALCULATED INTERNALLY WITHIN PROGRAM

- EXTERNAL LOADS — AASHTO LRFD SIGN

BASIC WIND SPEED	STR/EXT 120 MPH (1700 YR MRI)
SERVICE WIND SPEED	SER 76 MPH (10 YR MRI)
LIVE LOAD (CATWALKS ONLY)	500 LBS (AASHTO LRFD SIGN 3.6)
MEAN WIND SPEED	FAT 11.2 MPH

- GROUP LOADS — AASHTO LRFD SIGN 3.4
- STEEL CRITERIA — AASHTO LRFD SIGN

SECTION PROPERTIES FOR TUBULAR SHAPES	APPENDIX B, TABLE B.2.1
COMBINED FORCE INTERACTIONS	5.12
FATIGUE REQUIREMENTS (FATIGUE CATEGORY II)	SECTION 11
ALLOWABLE DEFLECTION	10.4
PERMANENT CAMBER	10.5
STRUCTURAL STEEL DESIGN	SECTION 5

- BOLT CRITERIA — AASHTO LRFD BRIDGES (U.N.O.)

SLIP-CRITICAL BOLT	6.13.2.8
BOLT PRYING ACTION	6.13.2.10.4
COMBINED BOLT SHEAR AND TENSION	6.13.2.11
ANCHOR BOLT DESIGN	SEE NOTE 15

- CONCRETE CRITERIA — AASHTO LRFD BRIDGES & ACI 318-14

BEARING RESISTANCE	5.6.5
SHEAR RESISTANCE OF FOOTINGS	5.7.1.4
SHEAR RESISTANCE OF CONCRETE	5.7.1
SLENDERNESS OF COLUMNS	5.6.4.3
MINIMUM REINF. OF FLEXURAL MEMBERS	DM-4, D5.6.3.3
SPACING LIMITS FOR REINFORCEMENT	DM-4, D5.10.3
MINIMUM CONCRETE COVER	DM-4, D5.10.1
TORSION	5.7.2.1
COLUMN DESIGN (PEDESTALS)	5.6.4

- SPREAD FOOTINGS ON SOIL

MAXIMUM FACTORED BEARING RESISTANCE	3 TONS PER SQUARE FOOT
MINIMUM AREA IN BEARING	75% (STRENGTH) 95% (SERVICE)
UNIT WEIGHT OF SOIL	100 POUNDS PER CUBIC FOOT
PRESSURES FOR ECCENTRICALLY LOADED FOOTINGS	DM-4, D10.6.1.4
SLIDING RESISTANCE	DM-4, D10.6.3.4

- DRILLED CAISSONS — DM-4, SECTION 10.8

MAXIMUM DESIGN LATERAL DISPLACEMENT	0.5"
ANALYSES	PENNDOT COM624 OR L-PILE

- SEISMIC DESIGN CRITERIA

SEISMIC LOADS WERE NOT CONSIDERED IN THE DEVELOPMENT OF THIS STANDARD. THE DESIGNER MUST CHECK THE ADEQUACY OF THESE STANDARDS WHEN SEISMIC LOADS ARE TO BE CONSIDERED.

* LEGEND:

- AASHTO LRFD SIGN: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS"
- AASHTO LRFD BRIDGES: AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- DM-4: PENNSYLVANIA DEPARTMENT OF TRANSPORTATION, DESIGN MANUAL PART 4, STRUCTURES
- U.N.O.: UNLESS NOTED OTHERWISE
- ACI: AMERICAN CONCRETE INSTITUTE - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE WITH COMMENTARY (ACI 318-14).
- CVN: CHARPY V-NOTCH.
- AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION - DESIGN GUIDE 1, BASE PLATE AND ANCHOR ROD DESIGN, 2ND EDITION

CONSTRUCTION GENERAL NOTES

- MATERIALS AND WORK:

  PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH THE CURRENT VERSIONS OF THE PENNSYLVANIA DEPARTMENT OF TRANSPORTATION PUBLICATION 408, AASHTO/AWS WELDING CODE D1.5, CONTRACT SPECIAL PROVISIONS, AND AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS". USE AASHTO/AWS D1.1 FOR WELDING NOT COVERED IN AASHTO/AWS D1.5.

- PROVIDE STRUCTURAL STEEL CONFORMING TO THE FOLLOWING:

  COLUMNS & PIPE STRUTS: SEE PUBLICATION 408, SECTION 948.2.

  ANGLES, SHAPES, AND PLATES: AASHTO M270, GRADE 36 OR 50
  ASTM A709, GRADE 36 OR 50

- ALTERNATE PRESS-BREAK MEMBERS:

  ALTERNATE PRESS-BREAK MEMBERS MUST HAVE THE EQUIVALENT STRENGTH OF THE MEMBER THEY ARE REPLACING. EQUIVALENT RADIUS FOR PRESS-BREAK MEMBERS IS MEASURED FROM THE CENTER OF THE MEMBER TO THE MID-POINT OF ANY CHORD OF THE MEMBER. MINIMUM THICKNESS OF PRESS-BREAK MEMBERS TO BE 5/16". PENNDOT'S SIGN STRUCTURE PROGRAM OR AN APPROVED FINITE ELEMENT ANALYSIS COMPUTER PROGRAM MUST BE RUN TO VERIFY THE ADEQUACY OF PRESS-BREAK MEMBERS FOR STRENGTH AND FATIGUE. PRESS-BREAK MEMBERS ARE PERMITTED AS AN ALTERNATE ONLY FOR COLUMNS. PRESS-BREAK MEMBERS ARE NOT PERMITTED FOR STRUTS.

- PROVIDE BOLTS CONFORMING TO THE FOLLOWING:

  ANCHOR BOLTS: ASTM F1554, GRADE 55 PER PUBLICATION 408 SECTION 1105.02(c)3.

  BOLTS: ASTM F3125, GRADE A325 H.S. BOLTS EXCEPT AS NOTED

- DESIGN SPECIFICATIONS:

  AASHTO "LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", 1ST EDITION, 2015 WITH CURRENT INTERIMS (UNLESS NOTED OTHERWISE); AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, PENNDOT DESIGN MANUAL - PART 4, DECEMBER 2019 EDITION

- ALL FILLET WELDS SHOWN ARE MINIMUM SIZE UNLESS NOTED OTHERWISE.

NOTES TO DESIGNER

- ANY PIPE SIZE OTHER THAN THAT SHOWN ON THE STANDARD IS A PROJECT SPECIFIC DESIGN. DESIGNER MUST ENSURE THE AVAILABILITY OF THE SELECTED PIPE SIZES. THE DESIGNER MUST SEND THE DOCUMENT OF AVAILABLE PIPE SIZES TO THE CHIEF BRIDGE ENGINEER PRIOR TO PS&E SUBMITTAL. THE DESIGNER DOCUMENTS THAT AN INVENTORY OF PIPE IS AVAILABLE AND/OR THE MANUFACTURER PIPE ROLLING SCHEDULE IS COMPATIBLE WITH THE CONSTRUCTION SCHEDULE. IN GENERAL, 30" DIAMETER PIPE IS MORE READILY AVAILABLE THAN 24" OR 26" DIAMETER PIPE WITH WALL THICKNESS GREATER THAN 1/2".
- PLACE THE FOLLOWING NOTE ON CONTRACT DRAWINGS - "PROVIDE MATERIALS AND PERFORM WORK IN ACCORDANCE WITH SPECIFICATIONS, PUBLICATION 408 - (INDICATE YEAR AND CHANGE NUMBER), AASHTO/AWS D1.5, BRIDGE WELDING CODE AND CONTRACT SPECIAL PROVISIONS. USE AASHTO/AWS D1.1 FOR WELDING NOT COVERED IN AASHTO/AWS D1.5".
- CHANGEABLE MESSAGE SIGNS (CMS) ARE PROHIBITED ON 2-POST AND 4-POST TRI-CHORD STRUCTURE TYPES AS PRESENTED IN THESE STANDARDS.
- DURING THE REVIEW PROCESS OF THE SHOP DRAWINGS, CALLING FOR "VERIFICATION" OF AN ITEM, SIZE, DIMENSION, WELD, OR ANY DETAIL IS INSUFFICIENT. SUCH DETAILS AND/OR CORRECTIONS SHALL BE NOTED ON THE SHOP DRAWINGS BY THE REVIEWING AUTHORITY. ANY DISCREPANCIES OF QUESTIONS SHALL BE REFERRED TO PENNDOT FOR REVIEW AND RESOLUTION.
- IF CONTRACT DRAWINGS INDICATE A "SCALE" THEN ALL DETAILS, LAYOUTS OF SIGN PANELS/BOXES, SIGN/WALKWAY SUPPORTS, HANDRAILS AND ALL ITEMS RELATED TO THE STRUCTURE SHALL BE DEPICTED PER "SCALE" SHOWN.

REFERENCE DRAWINGS

TC-8700C	SPACING CHARTS/DIRECT APPLIED LETTERS, NUMERALS, & ARROWS
TC-8701D	SIGN DETAILS/FREEWAY AND EXPRESSWAY GUIDE SIGNS
TC-8701E	EXTRUDED ALUMINUM CHANNEL SIGN
TC-8701S	FLAT SHEET ALUMINUM SIGNS WITH EXTRUDED ALUMINUM STIFFENERS
TC-8715	SIGN LIGHTING
BC-736M	REINFORCEMENT BAR FABRICATION DETAILS
BC-744M	OVERHEAD SIGN STRUCTURE - TWO POST AND FOUR POST TRICHORD TRUSS SPANS FROM 60 FT TO 200 FT
RC-11M	CLASSIFICATION OF EARTHWORK FOR STRUCTURES
RC-51M	TYPE 31 STRONG POST GUIDE RAIL
RC-53M	TYPE 2 WEAK POST GUIDE RAIL
RC-54M	BARRIER PLACEMENT AT OBSTRUCTIONS
RC-58M	SINGLE FACE CONCRETE BARRIER

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BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES

2 POST AND 4 POST TRI-CHORD TRUSS SPANS FROM 60' TO 200'

NOTES AND DESIGN CRITERIA

RECOMMENDED JUL. 10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL. 10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

SHT. 1 OF 10

BD-644M

HOW TO USE THE DESIGN TABLES

SETTING SUBSTRUCTURE ELEVATIONS

- SET THE TOP OF THE PEDESTAL OR CAISSON ELEVATION APPROXIMATELY 6 INCHES ABOVE THE HIGHEST SURROUNDING FINISHED GRADE ELEVATION.
- SET THE TOP OF FOOTING ELEVATION SO THAT A MINIMUM 2'-0" COVER IS PROVIDED OVER THE FOOTING AT ALL LOCATIONS.

POSITIONING OF SIGN PANELS AND SIGN STRUCTURE

- SEE THE FOLLOWING DIAGRAMS FOR ADDITIONAL INSTRUCTIONS FOR POSITIONING THE SIGN PANELS AND SIGN STRUCTURE.
- THE TRAFFIC ENGINEER SETS THE DESIGN SIGN AREA USING ONE OF THE FOLLOWING OPTIONS:

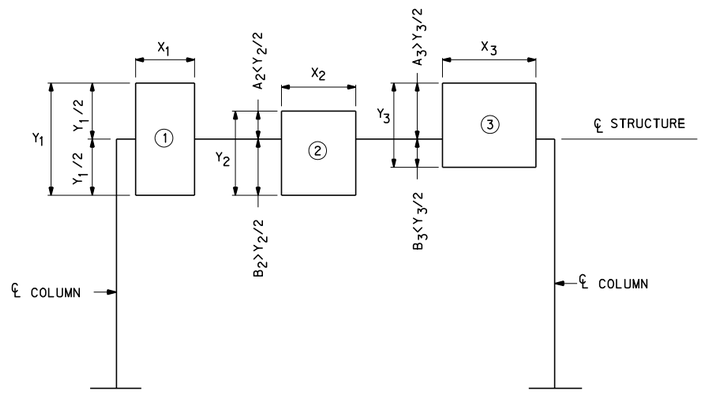
  1. THE ACTUAL SIGN AREA TO BE PLACED ON THE STRUCTURE AT THE TIME OF CONSTRUCTION.
  2. THE ACTUAL SIGN AREA INCREASED BY 25%, BASED ON THE PROBABILITY OF SIGNS BEING ADDED OR INCREASED IN SIZE. (RURAL HIGHWAY DEFINITION OF "DESIGN SIGN AREA").
  3. THE ACTUAL SIGN AREA INCREASED BY 50%, BASED ON THE PROBABILITY OF SIGNS BEING ADDED OR INCREASED IN SIZE. (URBAN HIGHWAY DEFINITION OF "DESIGN SIGN AREA").
  4. THE SIGN AREA CALCULATED FOR MULTIPLE SIGN PANELS AS DESCRIBED BELOW.

- THE DESIGN SIGN AREA WILL BE ROUNDED UP TO THE NEXT HIGHEST INCREMENT OF SIGN AREA SHOWN IN THE DESIGN TABLES. CLEARLY SHOW THE DESIGN AREA USED ON THE DESIGN PLANS FOR FUTURE REFERENCE.
- WHEN MULTIPLE SIGN PANELS ARE PLACED ON ONE STRUCTURE AND ONE OR MORE OF THE SIGN PANELS IS NOT CENTERED IN THE VERTICAL DIRECTION, COMPUTE THE DESIGN SIGN AREA IN THE FOLLOWING MANNER:

  THE SIGN AREA FOR ANY SIGN PANEL CENTERED IN THE VERTICAL DIRECTION IS (X) x (Y)

  THE SIGN AREA FOR ANY SIGN PANEL OFF-CENTER IN THE VERTICAL DIRECTION IS (X) x (B) x 2 WHEN B>A OR (X) x (A) x 2 WHEN A>B.

  EXAMPLE:
  AREA OF SIGN NO. 1 = $(X_1) \times (Y_1)$
  AREA OF SIGN NO. 2 = $(X_2) \times (B_2) \times 2$
  AREA OF SIGN NO. 3 = $(X_3) \times (A_3) \times 2$

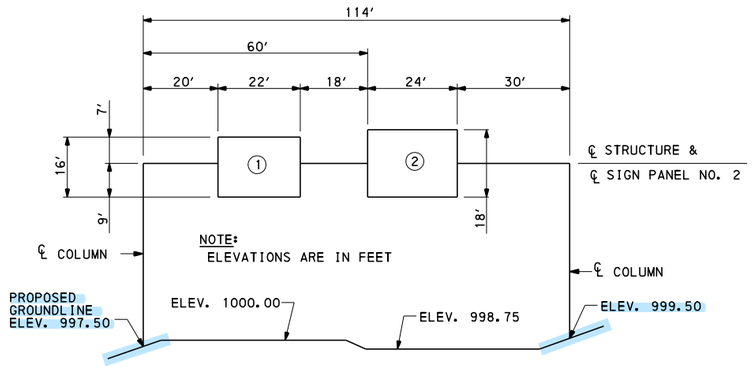


A = DISTANCE FROM ℄ STRUCTURE TO TOP OF SIGN
B = DISTANCE FROM ℄ STRUCTURE TO BOTTOM OF SIGN

DESIGN AREA OF SIGN NO. 1 = $X_1 Y_1$
DESIGN AREA OF SIGN NO. 2 = $(X_2 B_2) \times 2$
DESIGN AREA OF SIGN NO. 3 = $(X_3 A_3) \times 2$

- SET THE STRUCTURE TO AN ELEVATION THAT PLACES THE CENTER OF THE STRUCTURE AT THE MID-HEIGHT OF THE DEEPEST SIGN OR A MAXIMUM OF 9'-3" ABOVE THE BOTTOM OF THE SIGN PANEL. (SIGN HEIGHT INCLUDES "EXIT PANEL" SIGN IF PRESENT.)
- SET THE STRUCTURE, SIGN PANELS, AND LUMINAIRES TO AN ELEVATION THAT WILL PROVIDE A MINIMUM OF 17'-6" VERTICAL CLEARANCE ABOVE THE HIGHEST POINT OF THE ENTIRE ROADWAY WIDTH (INCLUDING THE ROADWAY PAVEMENT AND SHOULDERS) PASSING UNDER THE STRUCTURE. SET THE BOTTOM OF ALL SIGN PANELS TO GENERALLY THE SAME ELEVATION. IN THE CASE OF A STRUCTURE SPANNING DUAL ROADWAYS WHERE THE DIFFERENCE IN ELEVATIONS OF THE HIGHEST POINT ON EACH ROADWAY IS GREATER THAN 2'-6", SET THE BOTTOM OF ALL SIGN PANELS OVER EACH ROADWAY TO THE SAME VERTICAL CLEARANCE.
- WHEN THE MAXIMUM SIGN HEIGHT IS USED FOR DESIGN, SET THE STRUCTURE TO AN ELEVATION THAT PLACES THE CENTER OF THE STRUCTURE AT 9'-3" ABOVE THE BOTTOM OF THE SIGN PANELS. WHEN THE STRUCTURE SPANS DUAL ROADWAYS WITH THE DIFFERENCE IN HIGH POINT ELEVATIONS GREATER THAN 2'-6", SET THE STRUCTURE TO AN ELEVATION THAT PLACES THE CENTER OF THE STRUCTURE AT 9'-3" ABOVE THE BOTTOM OF THE SIGN PANELS OVER THE UPPER ROADWAY.
- FOR ILLUSTRATIVE EXAMPLES OF HOW TO POSITION SIGN PANELS AND SIGN STRUCTURES, SEE CASES A-F ON THE NEXT SHEET.
- DESIGNS FOR ALL SIGNS PRESENTED IN THE TABLES IN BD-644M, ALLOW FOR THE LOCATION OF THE CENTROID OF SIGN AREA TO BE LOCATED HORIZONTALLY ANYWHERE ALONG THE LENGTH OF THE SIGN STRUCTURE.
- THE DESIGN SPAN LENGTH SHALL BE THE ACTUAL DISTANCE BETWEEN CENTERLINE OF COLUMNS ROUNDED UP TO THE NEXT HIGHEST INCREMENT OF SPAN LENGTH SHOWN IN THE DESIGN TABLES.
- THE DESIGN POST HEIGHT SHALL BE THE ACTUAL MAXIMUM HEIGHT FROM THE TOP OF LOWER BASE PLATE TO CENTER OF TRUSS ROUNDED UP TO THE NEXT HIGHEST INCREMENT OF POST HEIGHT SHOWN IN THE DESIGN TABLES.

EXAMPLE TO SHOW PROCEDURE FOR SELECTING SIGN AREA, SPAN LENGTH, & POST HEIGHT



- Δ ELEV. = 1000.00 - 998.75 = 1.25 < 2'-6"
  $Y_1 = 16'$, $Y_2 = 18'$ } $Y_1 < Y_2$ — USE CASE B
- SET BOTTOM OF EACH SIGN PANEL AT SAME ELEVATION
  ELEV. 1000.00 + 17'-6" + 1'-9" = 1019.25
  [1'-9" = BOTTOM OF LUMINAIRE SUPPORT TO BOTTOM OF SIGN PANEL]
- SET ℄ STRUCTURE AT ℄ OF SIGN PANEL NO. 2
  ELEV. 1019.25 + 18'/2 = 1028.25
- ACTUAL SPAN LENGTH = 114' → USE: 120'
- DESIGN COLUMN HEIGHT (H):
  H = 1028.25 - 997.50 - 0.50' = 30.25' → USE H = OVER 24' TO 33'
  [0.50' = MINIMUM HEIGHT OF PEDESTAL ABOVE GRADE]
- ℄ SIGN TO BOTTOM OF CATWALK IS 9'-0" + 1'-8⅞" = 10'-8⅞"
- ½ STRUCTURE DEPTH IS 2'-7½". THEREFORE FROM THE DESIGN TABLES, IT IS DETERMINED THAT THE TOTAL STRUCTURE DEPTH IS 5'-3"
- BECAUSE SIGN PANEL NO. 1 IS NOT CENTERED VERTICALLY ON THE STRUCTURE, THE DESIGN AREAS ARE COMPUTED AS FOLLOWS:
  A_1 = 22' x 9' x 2 = 396.0 SF
  A_2 = 24' x 18' = 432.0 SF
  828.0 SF
  → USE 830.0 SF

COMMONWEALTH OF PENNSYLVANIA
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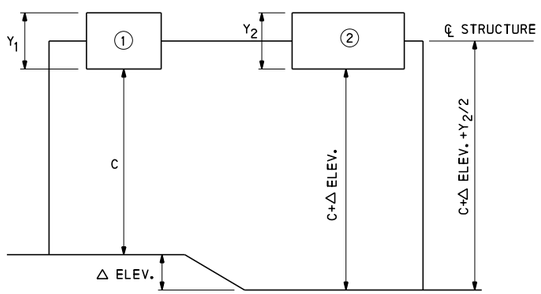
OVERHEAD SIGN STRUCTURES
2 POST AND 4 POST TRI-CHORD TRUSS
SPANS FROM 60' TO 200'

DESIGN INSTRUCTIONS

RECOMMENDED JUL. 10, 2025	RECOMMENDED JUL. 10, 2025	SHT. 2 OF 10
CHIEF BRIDGE ENGINEER	CHIEF EXECUTIVE, HIGHWAY ADMIN.	BD-644M



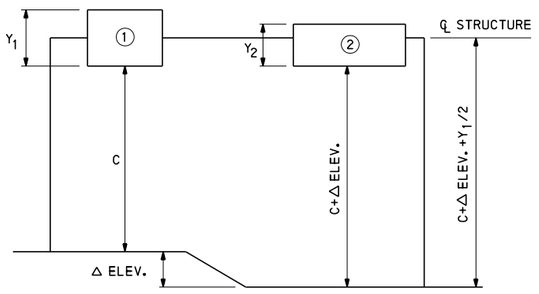
CASE A

$Y_1 = Y_2$

Δ ELEV. ≤ 2′-6"

SET BOTTOMS OF SIGN PANELS AT SAME ELEVATION.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANELS UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.



CASE C

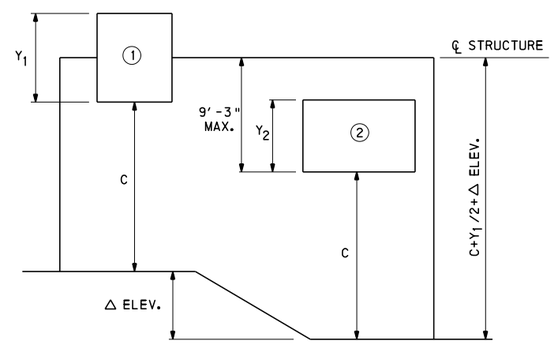
$Y_1 \geq Y_2$

Δ ELEV. ≤ 2′-6"

SET BOTTOMS OF SIGN PANELS AT SAME ELEVATION.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANEL NO. 1 UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.

THIS CASE IS APPLICABLE FOR ALL COMBINATIONS OF Y_1 AND Y_2 WHERE $Y_1 \geq Y_2$.



CASE E

$Y_1 \geq Y_2$

Δ ELEV. > 2′-6"

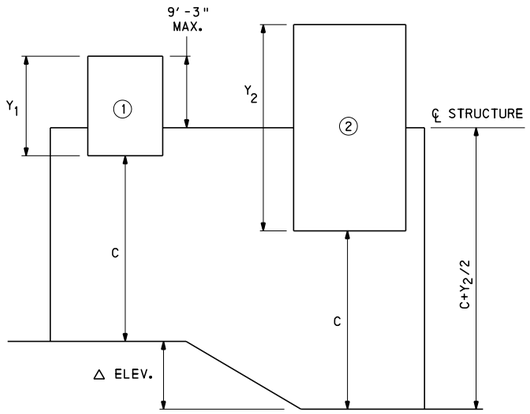
SET BOTTOM OF EACH SIGN PANEL TO SAME VERTICAL CLEARANCE.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANEL NO. 1 UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.

THIS CASE IS APPLICABLE FOR THE FOLLOWING COMBINATIONS OF Δ ELEV. AND Y_2 WHERE $Y_1 \geq Y_2$:

Δ ELEV.	$Y_{1,2}$
3′-0"	6′-0" TO 12′-6"
4′-0"	6′-0" 10′-6"
5′-0"	6′-0" TO 8′-6"
6′-0"	6′-0" TO 6′-6"
6′-3"	6′-0"

WHEN $Y_{1,2}$ EXCEEDS THE RANGE SHOWN IN THE ABOVE TABLE FOR A PARTICULAR VALUE OF Δ ELEV., THIS CASE DOES NOT APPLY. USE EITHER 1) SEPARATE STRUCTURES, OR 2) A SPECIAL DESIGN.



CASE F

$Y_1 < Y_2$

Δ ELEV. > 2′-6"

SET BOTTOM OF EACH SIGN PANEL TO SAME VERTICAL CLEARANCE.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANEL NO. 2 UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.

THIS CASE IS APPLICABLE FOR THE FOLLOWING COMBINATIONS OF Δ ELEV., Y_1, AND Y_2 WHERE $Y_1 < Y_2$:

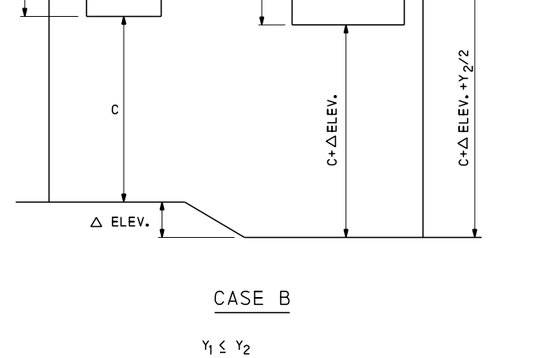
Δ ELEV.	LIMITS OF Y_1 AND Y_2
3′-0"	$2Y_1 - Y_2 \leq$ 12′-6"
4′-0"	$2Y_1 - Y_2 \leq$ 10′-6"
5′-0"	$2Y_1 - Y_2 \leq$ 8′-6"
6′-0"	$2Y_1 - Y_2 \leq$ 6′-6"
7′-0"	$2Y_1 - Y_2 \leq$ 4′-6"

GENERAL EQUATION FOR CASE F:

$$2(\Delta \text{ELEV.}) + 2(Y_1) - Y_2 \leq 18'\text{-}6"$$

IF THE PARAMETERS OF THE GENERAL EQUATION ARE EXCEEDED, ONE OF THE FOLLOWING STEPS IS REQUIRED:

1) RESET ℄ STRUCTURE SO THAT PARAMETERS ARE MET
2) USE SEPARATE STRUCTURES
3) USE A SPECIAL DESIGN
4) IN ALL CASES, THE MINIMUM VERTICAL CLEARANCE OF 17′-6" MUST BE MAINTAINED



CASE B

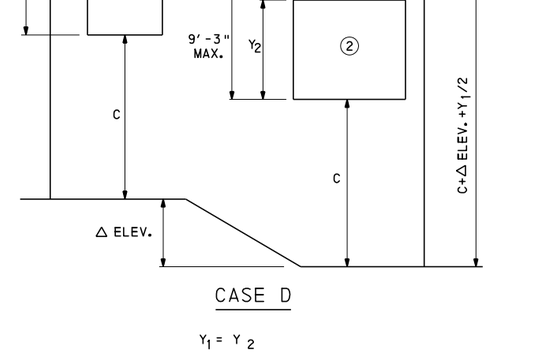
$Y_1 \leq Y_2$

Δ ELEV. ≤ 2′-6"

SET BOTTOMS OF SIGN PANELS AT SAME ELEVATION.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANEL NO. 2 UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.

THIS CASE IS APPLICABLE FOR ALL COMBINATIONS OF Y_1 AND Y_2 WHERE $Y_1 \leq Y_2$.



CASE D

$Y_1 = Y_2$

Δ ELEV. > 2′-6"

SET BOTTOM OF EACH SIGN PANEL TO SAME VERTICAL CLEARANCE.

SET ℄ OF STRUCTURE AT ℄ OF SIGN PANEL NO. 1 UNLESS STRUCTURE DEPTH GOVERNS VERTICAL CLEARANCE. IN THIS CASE, RESET ℄ STRUCTURE TO OBTAIN ADEQUATE CLEARANCE.

THIS CASE IS APPLICABLE FOR THE FOLLOWING COMBINATIONS OF Δ ELEV. AND $Y_{1,2}$:

Δ ELEV.	$Y_{1,2}$
3′-0"	6′-0" TO 12′-6"
4′-0"	6′-0" TO 10′-6"
5′-0"	6′-0" TO 8′-6"
6′-0"	6′-0" TO 6′-6"
6′-3"	6′-0"

WHEN $Y_{1,2}$ EXCEEDS THE RANGE SHOWN IN THE ABOVE TABLE FOR A PARTICULAR VALUE OF Δ ELEV., THIS CASE DOES NOT APPLY. USE EITHER 1) SEPARATE STRUCTURES, OR 2) A SPECIAL DESIGN.

NOTE:

C IS VERTICAL CLEARANCE FROM ROADWAY TO BOTTOM OF STRUCTURE, SIGN PANEL, OR LUMINAIRE.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES
2 POST AND 4 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 200′

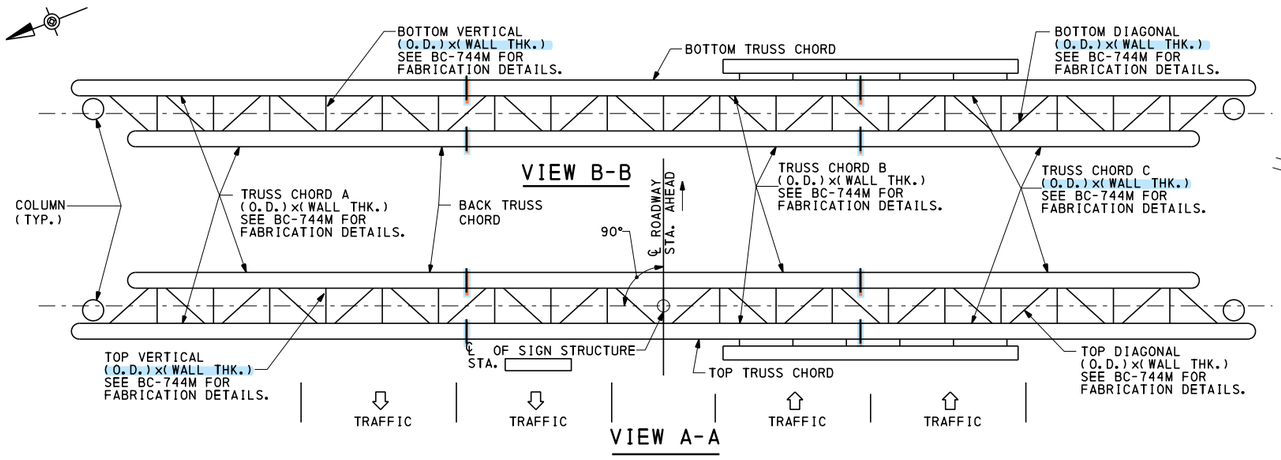
INSTRUCTIONS FOR USE OF DESIGN TABLES

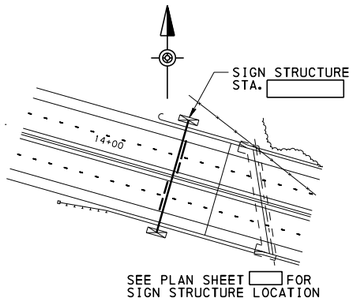
RECOMMENDED JUL. 10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL. 10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

SHT. 3 OF 10

BD-644M



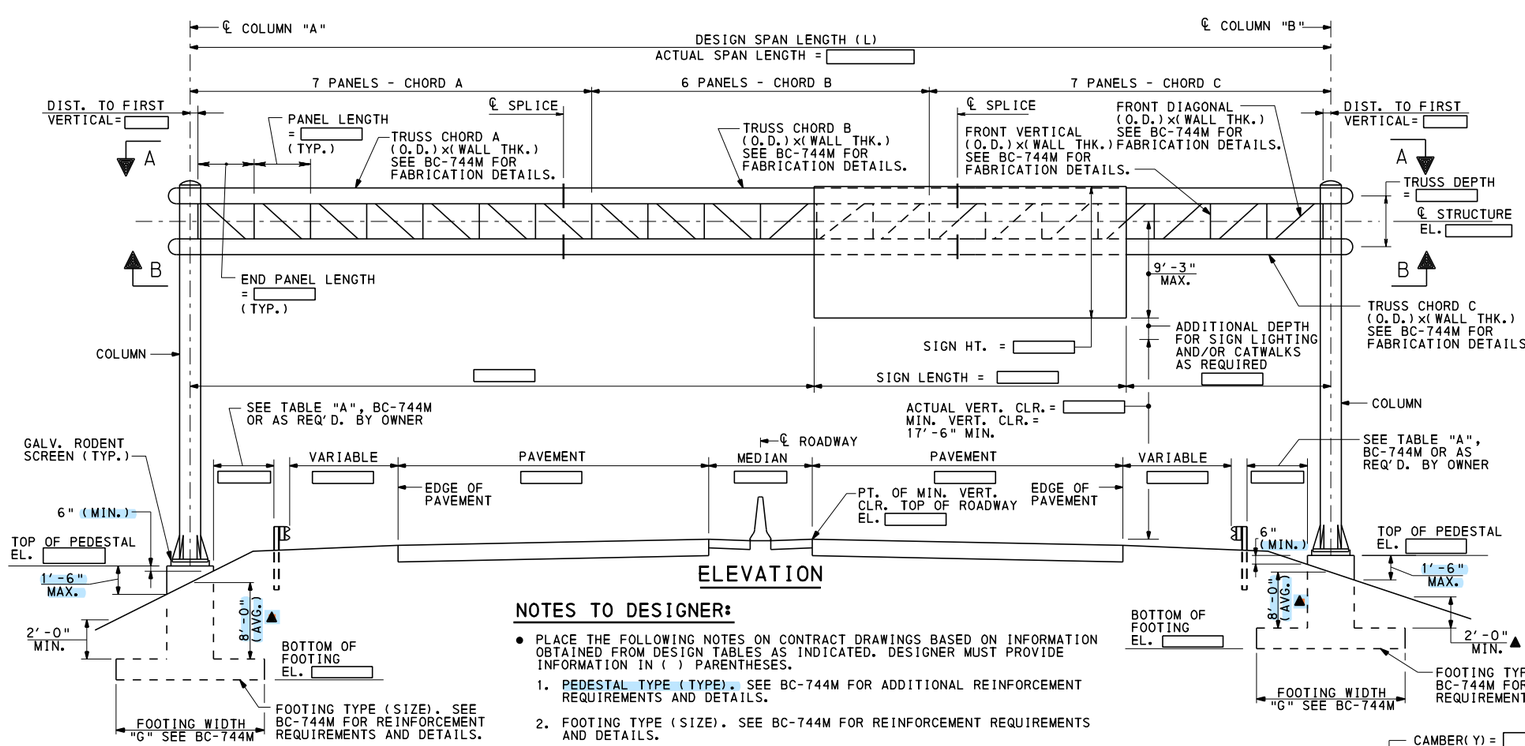


LOCATION PLAN

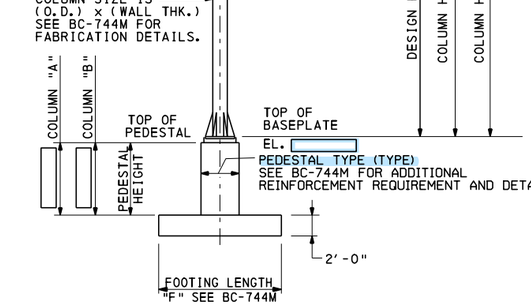
DESIGN CRITERIA

DESIGN SIGN AREA (A) =	
DESIGN SPAN LENGTH (L) =	
DESIGN HEIGHT (H) =	
FATIGUE CATEGORY=	

NOTE:
DESIGN FOR ACTUAL, ACTUAL INCREASED BY 25%, OR ACTUAL INCREASED BY 50% SIGN AREA.
(DESIGNER TO INDICATE CONTROLLING CONDITION)



ELEVATION



END VIEW

TABLE OF ESTIMATED QUANTITIES

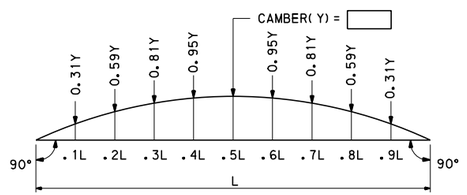
ITEM NO.	ITEM	UNIT	QUANTITY
*	STEEL SIGN STRUCTURE	LBS	
0000-0000	STRUCTURE MOUNTED SIGNS	SF	
0000-0000	CLASS 3 EXCAVATION	CY	
0000-0000	CLASS A CEMENT CONCRETE	CY	
0000-0000	REINFORCEMENT BARS	LBS	

* ITEMS SHOWN FOR INFORMATION ONLY, INCLUDED IN LUMP SUM ITEM NO. 0000 - 0000

NOTES TO DESIGNER:

- PLACE THE FOLLOWING NOTES ON CONTRACT DRAWINGS BASED ON INFORMATION OBTAINED FROM DESIGN TABLES AS INDICATED. DESIGNER MUST PROVIDE INFORMATION IN ( ) PARENTHESES.
  1. PEDESTAL TYPE (TYPE). SEE BC-744M FOR ADDITIONAL REINFORCEMENT REQUIREMENTS AND DETAILS.
  2. FOOTING TYPE (SIZE). SEE BC-744M FOR REINFORCEMENT REQUIREMENTS AND DETAILS.
  3. COLUMN SIZE IS (O.D.) x (WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
  4. TRUSS CHORD A (O.D.) x (WALL THK.), TRUSS CHORD B (O.D.) x (WALL THK.), AND TRUSS CHORD C (O.D.) x (WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
  5. FRONT DIAGONALS (O.D.)x(WALL THK.) AND FRONT VERTICALS (O.D.)x(WALL THK.); TOP DIAGONALS (O.D.)x(WALL THK.) AND TOP VERTICALS (O.D.)x(WALL THK.); BOTTOM DIAGONALS (O.D.)x(WALL THK.) AND BOTTOM VERTICALS (O.D.)x(WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
- PLACE CAMBER DIAGRAM ON CONTRACT DRAWINGS AND SPECIFY REQUIRED CAMBER FROM CAMBER TABLE.
- PROVIDE DIMENSIONS AND ELEVATIONS BASED ON ACTUAL STRUCTURE CONFIGURATION AS REQUIRED. SAMPLE INDICATES MINIMUM REQUIRED INFORMATION WITH ☐
- DESIGNER TO PROVIDE DIMENSIONS ON CONTRACT DRAWINGS.

▲ FOUNDATIONS PRESCRIBED IN THE DESIGN TABLES ON THIS STANDARD ARE BASED ON AN AVERAGE FILL HEIGHT OF 8 FT. DESIGNER MUST CHECK ADEQUACY OF FOOTINGS WITH AN AVERAGE FILL HEIGHT LESS THAN 8 FT. DESIGNER MUST CHECK THE ADEQUACY OF PEDESTALS WITH AN AVERAGE FILL HEIGHT GREATER THAN 8 FT.



CAMBER DIAGRAM

NOTE: PRIOR TO SHIPMENT OF TRUSS STRUCTURE TO THE SITE, SHOP ASSEMBLE TRUSSES IN AN UPRIGHT POSITION AND CHECK TRUSS CAMBER.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES

2 POST TRI-CHORD TRUSS SPANS FROM 60' TO 100'

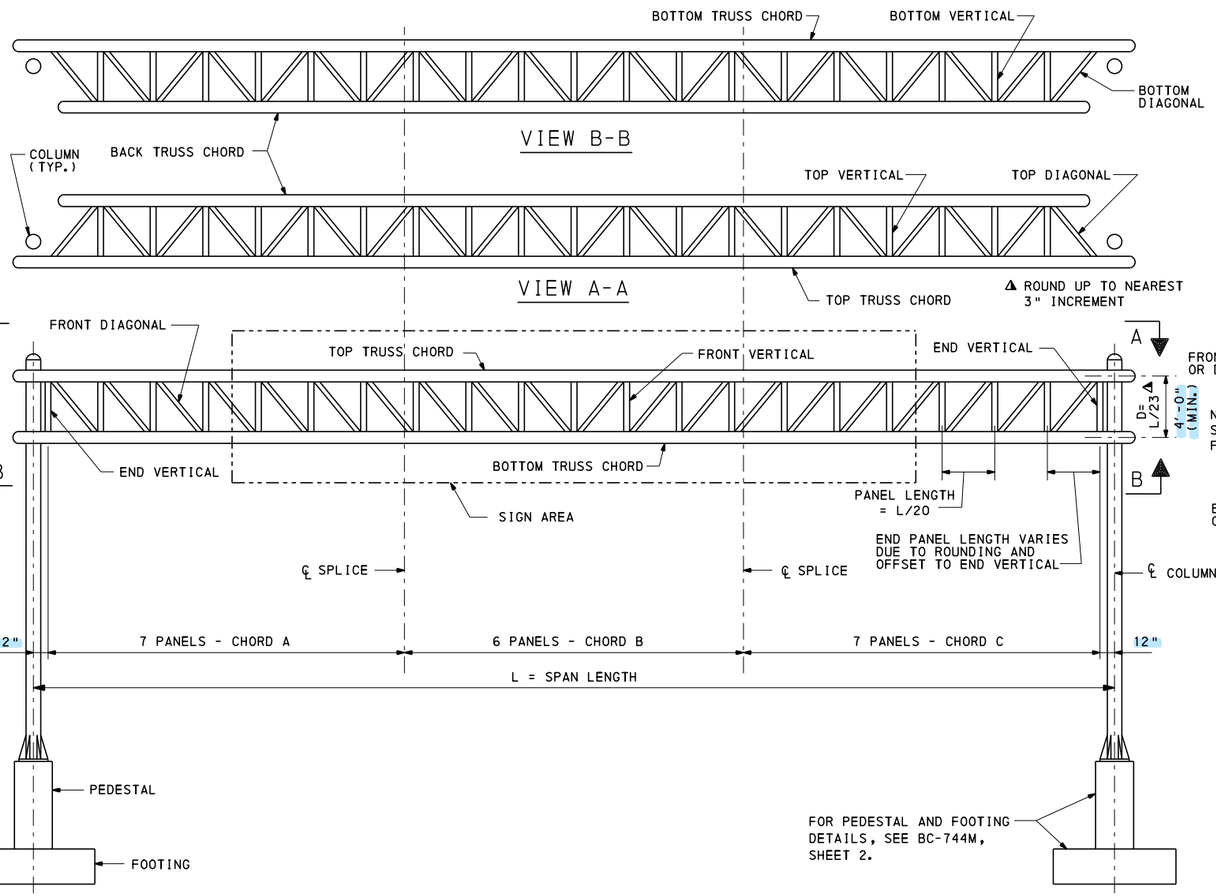
SAMPLE CONTRACT DRAWING

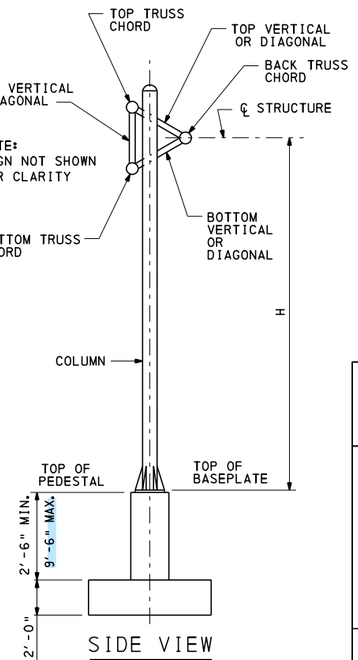
RECOMMENDED JUL. 10, 2025	RECOMMENDED JUL. 10, 2025	SHT. 4 OF 10
CHIEF BRIDGE ENGINEER	CHIEF EXECUTIVE, HIGHWAY ADMIN.	BD-644M

2 POST TRI-CHORD DESIGN TABLE

DESIGN SPAN (L)	SIGN AREA (SQ FT)	TRUSS MEMBERS							TOWER MEMBERS				FOUNDATION							
		CHORDS			DIAGONALS		VERTICALS		COLUMNS				PEDESTAL TYPE				FOOTING TYPE			
		A	B	C	FRONT	TOP & BOTTOM	FRONT	TOP & BOTTOM	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′
TO 60′	125	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	14x.437	18x.375	24x.375	FP1	FP2	FP2	FP4	0811	0911	0913	1013
	250	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	18x.375	20x.375	24x.375	FP2	FP2	FP3	FP4	0912	0914	1014	1115
	375	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.312	20x.375	24x.375	24x.500	FP2	FP3	FP4	FP4	1013	1015	1115	1216
	500	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	24x.375	24x.500		FP2	FP4	FP4		1015	1115	1216	
	625	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.375	24x.500		FP3	FP4	FP4		1115	1216	1218	
	750	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500	24x.562		FP4	FP4	FP4		1215	1218	1318	
	875	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500	24x.562		FP4	FP4	FP4		1216	1317	1320	
	1000	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1218	1319		
	1110	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1317	1418		
OVER 60′ TO 70′	175	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	16x.375	20x.375	24x.375	FP2	FP2	FP3	FP4	0911	0913	1013	1015
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	20x.375	24x.375	24x.500	FP2	FP3	FP4	FP4	0913	1014	1114	1116
	425	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	24x.375	24x.375	24x.562	FP2	FP4	FP4	FP4	1014	1114	1116	1217
	550	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.375	24x.500		FP3	FP4	FP4		1114	1117	1217	
	675	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.375	24x.562		FP3	FP4	FP4		1116	1217	1317	
	800	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1216	1317		
	925	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1218	1318		
	1050	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.562			FP4	FP4			1317	1418		
	1175	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.562			FP4	FP4			1319	1419		
	1295	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.500	24x.562			FP4	FP4			1320	1421		

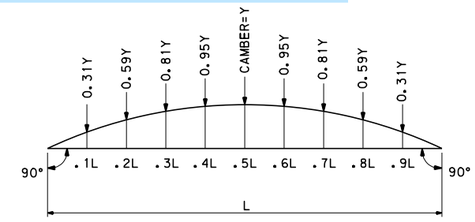
FOR CONTINUATION OF CHART, SEE SHEET 6





CAMBER TABLE

SPAN	CAMBER (IN)
60′-0"	1.500
70′-0"	1.875
80′-0"	2.250
90′-0"	2.750
100′-0"	3.125



CAMBER DIAGRAM

NOTES:

- FOR GENERAL NOTES, SEE SHEET 1.
- FOR GENERAL DESIGN INSTRUCTIONS, SEE SHEETS 2 AND 3.
- ONE OR MORE SPLICES IN THE TRUSS MAY BE ADDED OR ELIMINATED AT THE OPTION OF THE FABRICATOR. IN CASE OF THE ADDITION OR ELIMINATION OF SPLICES, THE HEAVIER CHORD MATERIAL MUST BE EXTENDED TOWARD THE LIGHTER CHORD MATERIAL TO THE DESIRED SPLICE LOCATION.
- "FOOTING TYPE" DESIGNATION INDICATES FOOTING WIDTH x LENGTH (FOR EXAMPLE, FOOTING TYPE 1214 INDICATES A FOOTING 12′-0" WIDE x 14′-0" LONG). SEE BC-744M, SHEET 2 FOR FOUNDATION DETAILS.
- "PEDESTAL TYPE" DESIGNATES ALL DETAILS FOR THE PEDESTALS. SEE BC-744M, SHEET 2.
- FOUNDATIONS PRESCRIBED IN THE DESIGN TABLES ON THIS STANDARD ARE BASED ON AN AVERAGE FILL HEIGHT OF 8 FT. DESIGNER MUST CHECK ADEQUACY OF FOOTINGS WITH AN AVERAGE FILL HEIGHT LESS THAN 8 FT. DESIGNER MUST CHECK THE ADEQUACY OF PEDESTALS WITH AN AVERAGE FILL HEIGHT GREATER THAN 8 FT.
- FOR STRUCTURAL DETAILS, SEE BC-744M.
- CVN REQUIRED FOR COLUMN AND CHORD WALL THICKNESSES EXCEEDING ½" (0.500").
- ALL MEMBER SIZES SHOWN IN DESIGN TABLES ARE PIPE NOMINAL SIZE X WALL THICKNESS AND ARE BASED ON ALL COMMERCIALLY AVAILABLE SECTIONS. CONTRACTOR MAY SUBSTITUTE THE NEXT THICKEST STANDARD SECTION IF A NON-STANDARD THICKNESS IS NOT AVAILABLE AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE GENERAL NOTE 11 ON SHEET 1.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES

2 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 100′

DESIGN TABLES

RECOMMENDED JUL.10, 2025	RECOMMENDED JUL.10, 2025	SHT. 5 OF 10
CHIEF BRIDGE ENGINEER	CHIEF EXECUTIVE, HIGHWAY ADMIN.	BD-644M

2 POST TRI-CHORD DESIGN TABLE (CONTINUED)

DESIGN SPAN (L)	SIGN AREA (SQ FT)	TRUSS MEMBERS							TOWER MEMBERS				FOUNDATION							
		CHORDS			DIAGONALS		VERTICALS		COLUMNS				PEDESTAL TYPE				FOOTING TYPE			
		A	B	C	FRONT	TOP & BOTTOM	FRONT	TOP & BOTTOM	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′
OVER 70′ TO 80′	150	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	16x.375	20x.312	24x.375	FP2	FP2	FP3	FP4	0812	0912	1013	1015
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	20x.375	24x.375	24x.500	FP2	FP3	FP4	FP4	0914	1014	1114	1117
	450	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	24x.375	24x.500		FP2	FP4	FP4		1015	1115	1217	
	600	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.375	24x.562		FP3	FP4	FP4		1115	1216	1218	
	750	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1216	1318		
	900	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1218	1318		
	1050	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.562			FP4	FP4			1317	1418		
	1480	6x.432	6x.432	6x.432	2.5x.203	2.5x.276	2.5x.203	2.5x.203	24x.500				FP4				1420			
OVER 80′ TO 90′	150	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	18x.312	20x.375	24x.375	FP2	FP2	FP3	FP4	0911	0913	1013	1114
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.312	20x.375	24x.375	24x.500	FP2	FP3	FP4	FP4	1013	1014	1115	1216
	450	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.312	24x.375	24x.500		FP3	FP4	FP4		1015	1116	1216	
	600	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.500	24x.562		FP3	FP4	FP4		1116	1216	1317	
	750	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1216	1317		
	900	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.562			FP4	FP4			1318	1319		
	1200	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.500				FP4				1320			
	1350	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.500				FP4				1419			
	1500	10x.365	10x.365	10x.365	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.562				FP4				1421			
OVER 90′ TO 100′	200	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.437	18x.375	24x.375	24x.375	FP2	FP2	FP4	FP4	0913	1013	1015	1115
	350	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	24x.375	24x.375	24x.562	FP2	FP4	FP4	FP4	1014	1114	1116	1217
	500	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	24x.375	24x.500		FP3	FP4	FP4		1115	1217	1217	
	650	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1216	1218		
	800	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.375	24x.500			FP4	FP4			1218	1318		
	1100	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.500				FP4				1319			
	1250	10x.365	10x.365	10x.365	2.5x.203	2.5x.203	2.5x.203	2.5x.203	24x.500				FP4				1418			
	1400	10x.365	10x.365	10x.365	2.5x.203	2.5x.276	2.5x.203	2.5x.203	24x.562				FP4				1420			

NOTE:

- FOR DESIGN TABLE NOTES, SEE SHEET 5.
- ALL MEMBER SIZES SHOWN IN DESIGN TABLES ARE PIPE NOMINAL SIZE X WALL THICKNESS AND ARE BASED ON ALL COMMERCIALLY AVAILABLE SECTIONS. CONTRACTOR MAY SUBSTITUTE THE NEXT THICKEST STANDARD SECTION IF A NON-STANDARD THICKNESS IS NOT AVAILABLE AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE GENERAL NOTE 11 ON SHEET 1.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

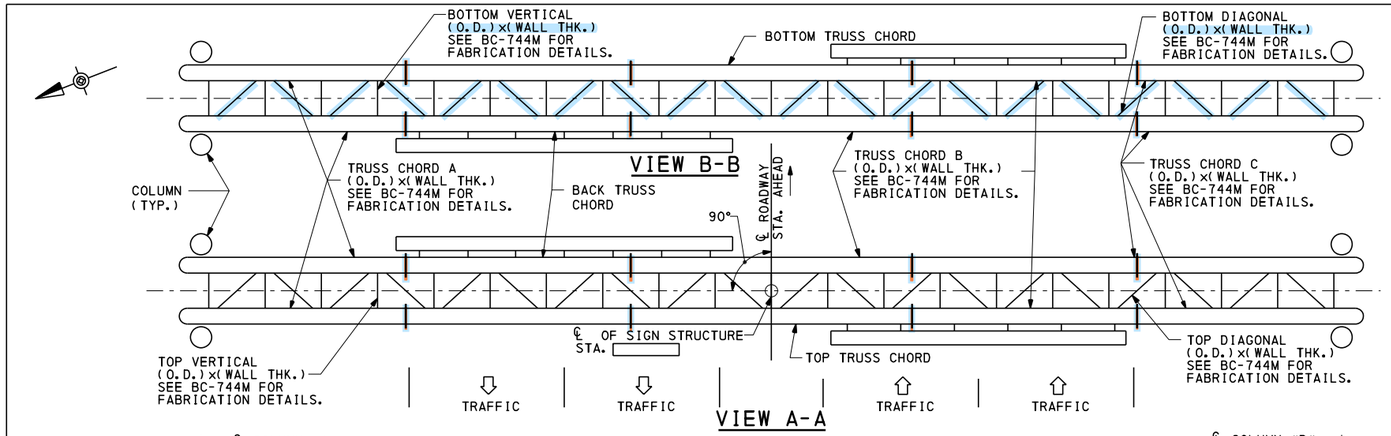
OVERHEAD SIGN STRUCTURES

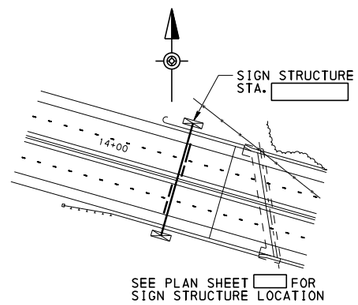
2 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 100′

DESIGN TABLES

RECOMMENDED JUL.10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL.10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

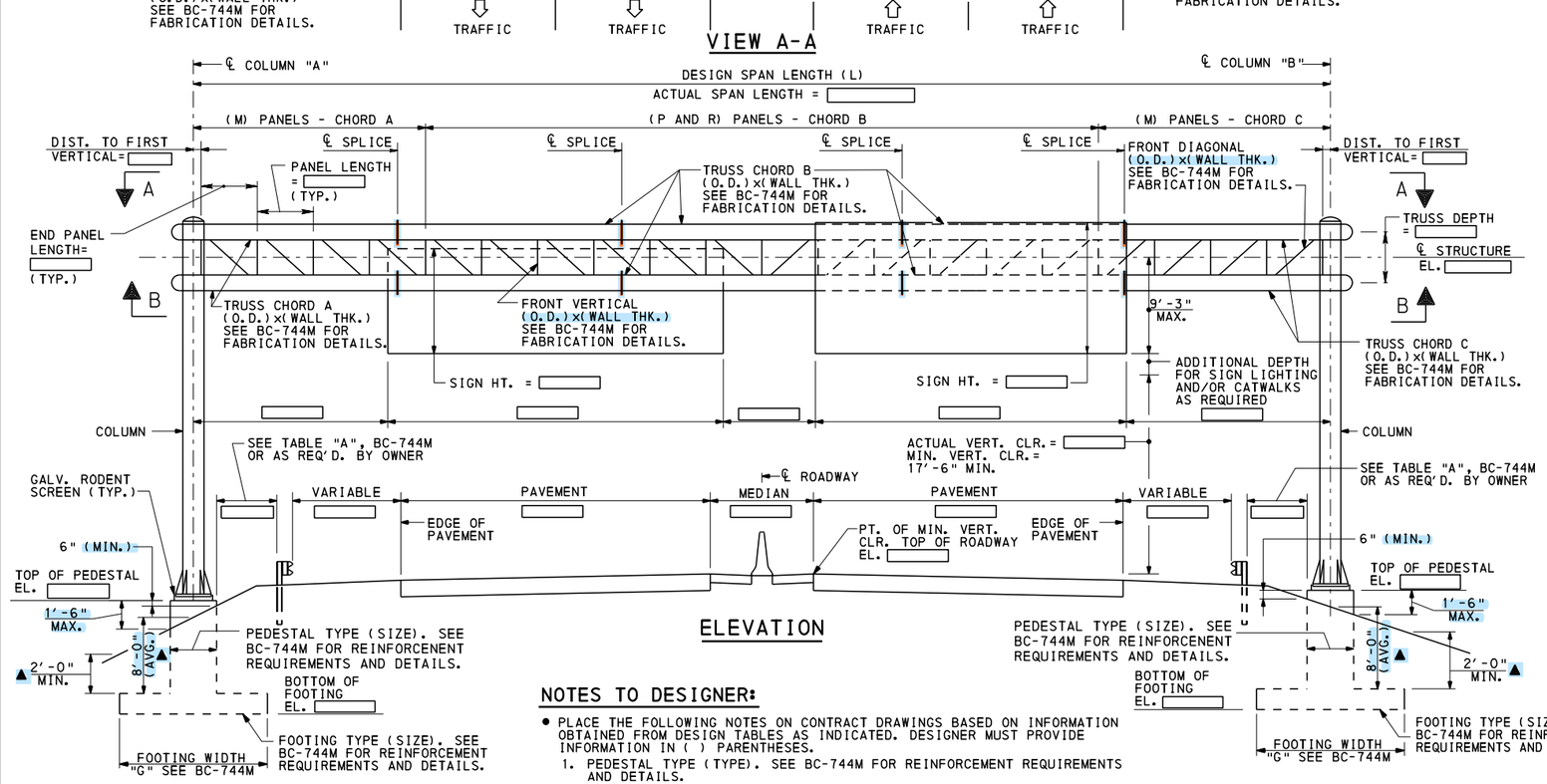




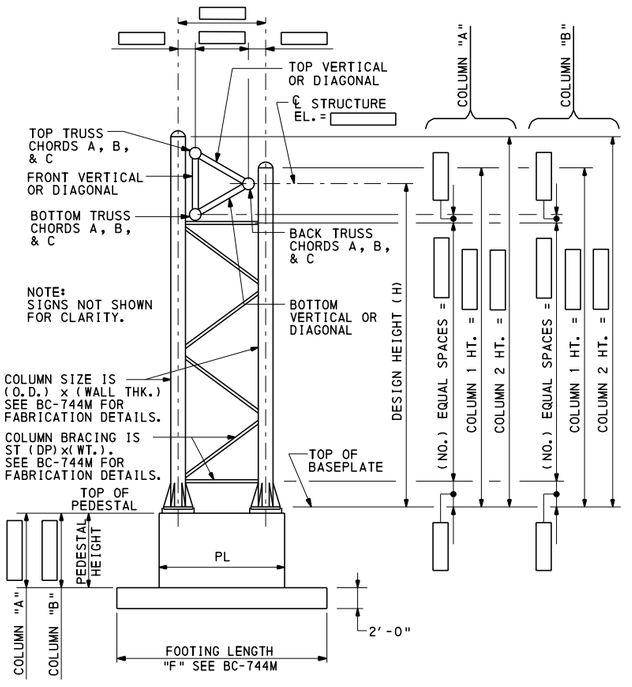
LOCATION PLAN

DESIGN CRITERA	
SIGN AREA (A) =	
SPAN LENGTH (L) =	
STRUCTURE HEIGHT (H) =	
FATIGUE CATEGORY=	

NOTE:
DESIGN FOR ACTUAL, ACTUAL INCREASED BY 25%, OR ACTUAL INCREASED BY 50% SIGN AREA.
(DESIGNER TO INDICATE CONTROLLING CONDITION)



ELEVATION



END VIEW

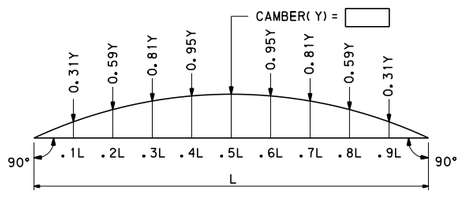
NOTES TO DESIGNER:

- PLACE THE FOLLOWING NOTES ON CONTRACT DRAWINGS BASED ON INFORMATION OBTAINED FROM DESIGN TABLES AS INDICATED. DESIGNER MUST PROVIDE INFORMATION IN ( ) PARENTHESES.
  1. PEDESTAL TYPE (TYPE). SEE BC-744M FOR REINFORCEMENT REQUIREMENTS AND DETAILS.
  2. FOOTING TYPE (SIZE). SEE BC-744M FOR REINFORCEMENT REQUIREMENTS AND DETAILS.
  3. COLUMN SIZE IS (O.D.) x (WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
  4. COLUMN BRACING IS ST (DP)x(WT.). SEE BC-744M FOR FABRICATION DETAILS.
  5. TRUSS CHORD A (O.D.) x (WALL THK.), TRUSS CHORD B (O.D.) x (W.THK.), AND TRUSS CHORD C (O.D.) x (WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
  6. FRONT DIAGONALS (O.D.)x(WALL THK.) AND FRONT VERTICALS (O.D.)x(WALL THK.); TOP DIAGONALS (O.D.)x(WALL THK.) AND TOP VERTICALS (O.D.)x(WALL THK.); BOTTOM DIAGONALS (O.D.)x(WALL THK.) AND BOTTOM VERTICALS (O.D.)x(WALL THK.). SEE BC-744M FOR FABRICATION DETAILS.
- PLACE CAMBER DIAGRAM ON CONTRACT DRAWINGS AND SPECIFY REQUIRED CAMBER FROM CAMBER TABLE.
- PROVIDE DIMENSIONS AND ELEVATIONS BASED ON ACTUAL STRUCTURE CONFIGURATION AS REQUIRED. SAMPLE INDICATES MINIMUM REQUIRED INFORMATION WITH ____
- DESIGNER TO PROVIDE DIMENSIONS ON CONTRACT DRAWINGS.
- ▲ FOUNDATIONS PRESCRIBED IN THE DESIGN TABLES ON THIS STANDARD ARE BASED ON AN AVERAGE FILL HEIGHT OF 8 FT. DESIGNER MUST CHECK ADEQUACY OF FOOTINGS WITH AN AVERAGE FILL HEIGHT LESS THAN 8 FT. DESIGNER MUST CHECK THE ADEQUACY OF PEDESTALS WITH AN AVERAGE FILL HEIGHT GREATER THAN 8 FT.

TABLE OF ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	QUANTITY
*	STEEL SIGN STRUCTURE	LBS	
0000-0000	STRUCTURE MOUNTED SIGNS	SF	
0000-0000	CLASS 3 EXCAVATION	CY	
0000-0000	CLASS A CEMENT CONCRETE	CY	
0000-0000	REINFORCEMENT BARS	LBS	

* ITEMS SHOWN FOR INFORMATION ONLY, INCLUDED IN LUMP SUM ITEM NO. 0000-0000.



CAMBER DIAGRAM

NOTE: PRIOR TO SHIPMENT OF TRUSS STRUCTURE TO THE SITE, SHOP ASSEMBLE TRUSSES IN AN UPRIGHT POSITION AND CHECK TRUSS CAMBER.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES

4 POST TRI-CHORD TRUSS
SPANS FROM 60' TO 200'

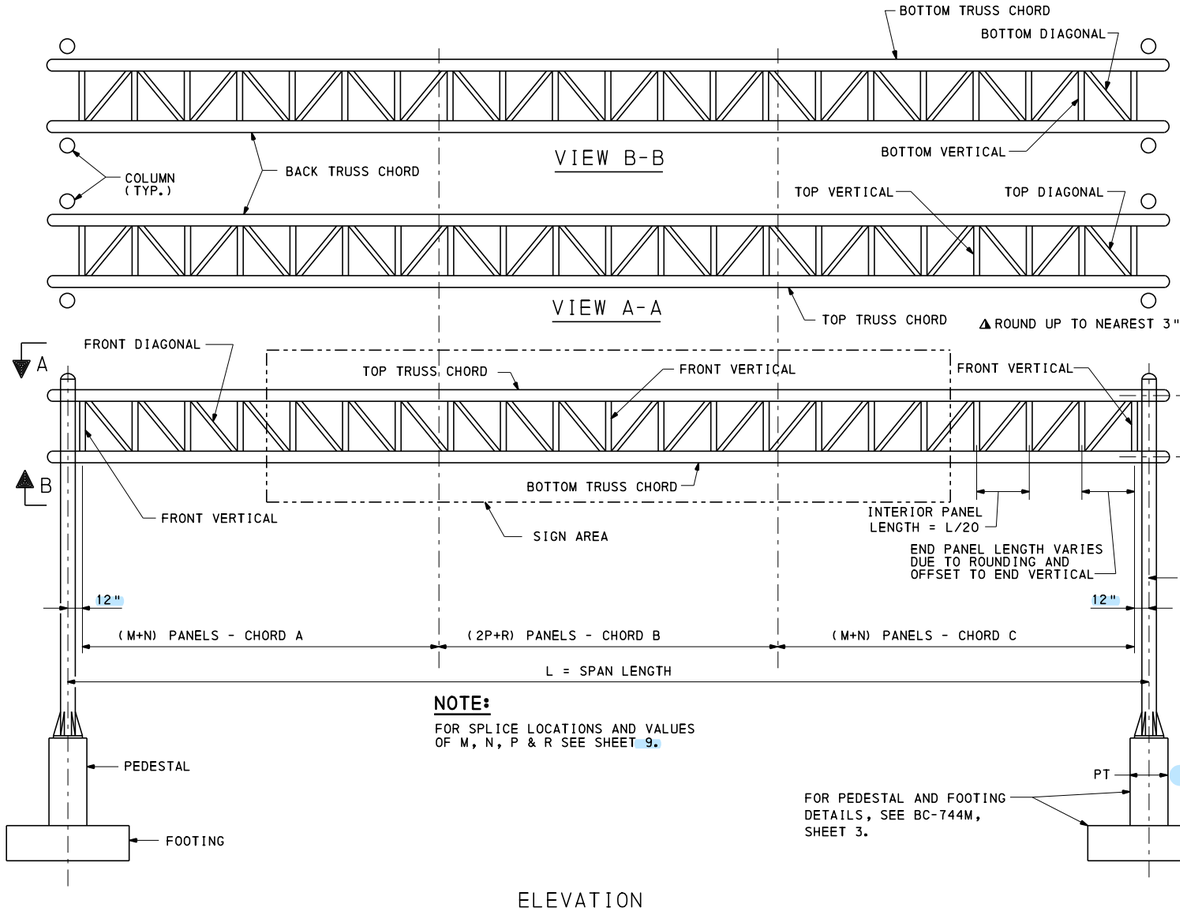
SAMPLE CONTRACT DRAWING

RECOMMENDED JUL. 10, 2025	RECOMMENDED JUL. 10, 2025	SHT. 7 OF 10
CHIEF BRIDGE ENGINEER	CHIEF EXECUTIVE, HIGHWAY ADMIN.	BD-644M

4 POST TRI-CHORD DESIGN TABLE

DESIGN SPAN (L)	SIGN AREA (SQ FT)	TRUSS MEMBERS							TOWER MEMBERS								FOUNDATION							
		CHORDS			DIAGONALS		VERTICALS		H TO 12′		H OVER 12′ TO 18′		H OVER 18′ TO 24′		H OVER 24′ TO 33′		PEDESTAL TYPE				FOOTING TYPE			
		A	B	C	FRONT	TOP & BOTTOM	FRONT	TOP & BOTTOM	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′
TO 60′	125	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2x4.75	12x.330	2.5x5	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0811	0812	0913	1014
	250	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2.5x5	12x.330	3x6.25	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0912	0914	1014	1115
	375	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.330	3x6.25	14x.375	3x6.25	16x.375	3x8.625	24x.375	4x9.2	FP109	FP210	FP210	FP411	0914	1014	1115	1216
	500	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	3x6.25	16x.375	3x8.625	18x.375	4x9.2	24x.375	4x9.2	FP109	FP210	FP210	FP411	1014	1115	1216	1317
	625	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	16x.375	4x9.2	18x.375	4x9.2	24x.375	4x9.2	FP210	FP210	FP210	FP411	1114	1117	1218	1319
	750	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	18x.375	4x9.2	20x.375	4x9.2	24x.375	4x11.5	FP210	FP210	FP311	FP411	1116	1217	1318	1419
	875	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	3x8.625	18x.375	4x9.2	24x.375	5x12.7	24x.500	4x11.5	FP210	FP210	FP411	FP411	1216	1317	1320	1421
	1000	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP411	FP411	1217	1318	1419	1521
	1100	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	3x8.625	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP411	FP411	1218	1319	1420	1523
OVER 60′ TO 70′	175	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2x4.75	12x.330	2.5x5	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0812	0912	1014	1114
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	3x6.25	12x.375	3x6.25	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0913	1014	1015	1117
	425	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.330	3x6.25	14x.375	3x8.625	16x.375	3x8.625	24x.375	4x9.2	FP109	FP210	FP210	FP411	1014	1115	1116	1218
	550	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	3x8.625	16x.375	4x9.2	18x.375	4x9.2	24x.375	4x9.2	FP109	FP210	FP210	FP411	1115	1116	1217	1318
	675	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	18x.375	4x9.2	20x.375	4x9.2	24x.375	4x11.5	FP210	FP210	FP311	FP411	1115	1217	1317	1420
	800	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	18x.375	4x9.2	20x.375	5x12.7	24x.500	4x11.5	FP210	FP210	FP311	FP411	1117	1218	1319	1420
	925	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP411	FP411	1217	1318	1418	1520
	1050	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP411	FP411	1218	1319	1420	1522
	1175	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	20x.375	4x11.5	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP411	FP411	1317	1418	1519	1524
	1295	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	24x.375	4x11.5	24x.500	5x12.7	24x.562	5x12.7	FP210	FP411	FP411	FP411	1318	1419	1521	1526

FOR CONTINUATION OF CHART, SEE SHEETS 9 AND 10.

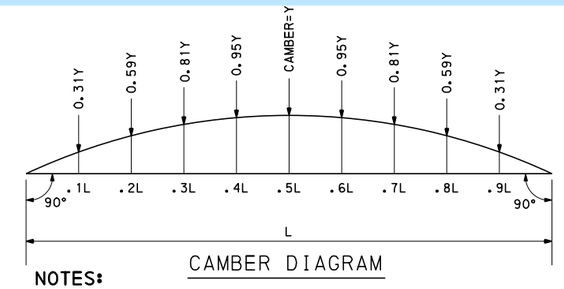


NOTE:
FOR SPLICE LOCATIONS AND VALUES OF M, N, P & R SEE SHEET 9.

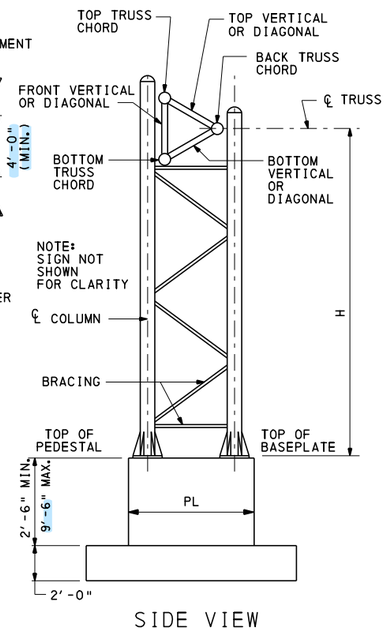
⚠ ROUND UP TO NEAREST 3" INCREMENT

$D = \frac{L}{23}$ (MIN. 4′-0")

CAMBER TABLE	
SPAN	CAMBER (IN)
60′-0"	1.500
70′-0"	1.875
80′-0"	2.375
90′-0"	2.875
100′-0"	3.125
120′-0"	4.000
140′-0"	4.625
160′-0"	5.625
180′-0"	6.375
200′-0"	7.375



CAMBER DIAGRAM



SIDE VIEW

NOTES:

- FOR GENERAL NOTES, SEE SHEET 1.
- FOR GENERAL DESIGN INSTRUCTIONS, SEE SHEETS 2 AND 3.
- ONE OR MORE SPLICES IN THE TRUSS MAY BE ADDED OR ELIMINATED AT THE OPTION OF THE FABRICATOR. IN CASE OF THE ADDITION OR ELIMINATION OF SPLICES, THE HEAVIER CHORD MATERIAL MUST BE EXTENDED TOWARD THE LIGHTER CHORD MATERIAL TO THE DESIRED SPLICE LOCATION.
- "FOOTING TYPE" DESIGNATION INDICATES FOOTING WIDTH x LENGTH (FOR EXAMPLE, FOOTING TYPE 0912 INDICATES A FOOTING 9′-0" WIDE x 12′-0" LONG). SEE BC-744M, SHEET 3 FOR FOUNDATION DETAILS.
- "PEDESTAL TYPE" DESIGNATES ALL DETAILS FOR THE PEDESTALS. SEE BC-744M, SHEET 3.
- FOUNDATIONS PRESCRIBED IN THE DESIGN TABLES ON THIS STANDARD ARE BASED ON AN AVERAGE FILL HEIGHT OF 8 FT. DESIGNER MUST CHECK ADEQUACY OF FOOTINGS WITH AN AVERAGE FILL HEIGHT LESS THAN 8 FT. DESIGNER MUST CHECK THE ADEQUACY OF PEDESTALS WITH AN AVERAGE FILL HEIGHT GREATER THAN 8 FT.
- FOR STRUCTURAL DETAILS, SEE BC-744M.
- CVN REQUIRED FOR COLUMN AND CHORD WALL THICKNESSES EXCEEDING ½" (0.500").
- ALL MEMBER SIZES SHOWN IN DESIGN TABLES ARE PIPE NOMINAL SIZE X WALL THICKNESS AND ARE BASED ON ALL COMMERCIALLY AVAILABLE SECTIONS. CONTRACTOR MAY SUBSTITUTE THE NEXT THICKEST STANDARD SECTION IF A NON-STANDARD THICKNESS IS NOT AVAILABLE AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE GENERAL NOTE 11 ON SHEET 1.
- TOWER BRACING MEMBERS ARE ST SHAPES, UNLESS NOTED OTHERWISE. SECTION DESIGNATION INDICATES MEMBER DEPTH (DP) x WEIGHT PER FOOT (WT).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES
4 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 200′

DESIGN TABLES

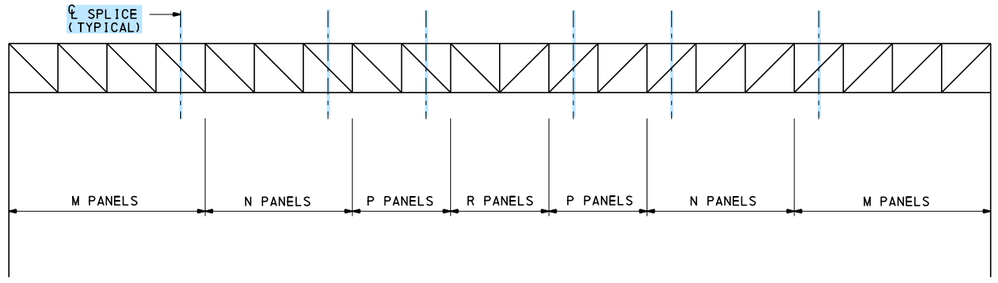
RECOMMENDED JUL.10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL.10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

4 POST TRI-CHORD DESIGN TABLE (CONTINUED)

DESIGN SPAN (L)	SIGN AREA (SQ FT)	TRUSS MEMBERS							TOWER MEMBERS								FOUNDATION							
		CHORDS			DIAGONALS		VERTICALS		H TO 12′		H OVER 12′ TO 18′		H OVER 18′ TO 24′		H OVER 24′ TO 33′		PEDESTAL TYPE				FOOTING TYPE			
		A	B	C	FRONT	TOP & BOTTOM	FRONT	TOP & BOTTOM	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′
OVER 70′ TO 80′	150	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2x4.75	12x.330	2.5x5	16x.375	2.5x5	24x.375	4x9.2	FP109	FP109	FP210	FP411	0811	0912	0914	1015
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	3x6.25	12x.375	3x6.25	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0913	1014	1114	1117
	450	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	3x6.25	16x.375	3x8.625	18x.375	4x9.2	24x.375	4x9.2	FP109	FP210	FP210	FP411	1014	1115	1117	1218
	600	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	16x.375	4x9.2	20x.375	4x9.2	24x.375	4x11.5	FP210	FP210	FP311	FP411	1115	1117	1218	1319
	750	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	18x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	FP210	FP210	FP311	FP411	1117	1218	1319	1420
	900	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP412	FP412	1217	1318	1320	1520
	1050	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	20x.375	4x11.5	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP412	FP412	1218	1319	1420	1522
	1200	6x.432	6x.432	6x.432	2.5x.276	2.5x.276	2.5x.276	2.5x.276	18x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	24x.562	5x12.7	FP210	FP412	FP412	FP412	1318	1419	1520	1525
	1350	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	24x.562	5x12.7	FP311	FP412	FP412	FP412	1319	1420	1521	1527
	1480	6x.432	6x.432	6x.432	2.5x.276	2.5x.276	2.5x.276	2.5x.276	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7			FP311	FP412	FP412		1418	1519	1523	
OVER 80′ TO 90′	150	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2x4.75	12x.330	2.5x5	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP411	0812	0912	1013	1114
	300	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	3x6.25	14x.375	3x6.25	16x.375	3x8.625	24x.375	4x9.2	FP109	FP210	FP210	FP411	0913	1014	1115	1216
	450	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	3x6.25	16x.375	3x8.625	18x.375	4x9.2	24x.375	4x9.2	FP109	FP210	FP210	FP411	1014	1115	1117	1318
	600	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	16x.375	4x9.2	20x.375	4x9.2	24x.375	4x11.5	FP210	FP210	FP311	FP412	1115	1117	1218	1320
	750	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	18x.375	4x9.2	20x.375	4x9.2	24x.500	5x12.7	FP210	FP210	FP311	FP412	1117	1218	1319	1420
	900	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP412	FP412	1217	1318	1419	1521
	1050	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	24x.375	5x12.7	24x.375	5x12.7	24x.500	5x12.7	FP210	FP412	FP412	FP412	1318	1319	1420	1522
	1200	8x.406	8x.406	8x.406	2.5x.276	2.5x.276	2.5x.276	2.5x.276	18x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7	24x.562	5x12.7	FP210	FP412	FP412	FP412	1318	1419	1520	1525
	1350	8x.406	8x.406	8x.406	2.5x.276	2.5x.276	2.5x.276	2.5x.276	20x.375	4x9.2	24x.375	5x12.7	24x.500	5x12.7			FP311	FP412	FP412		1319	1420	1522	
	1500	8x.406	8x.406	8x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	20x.375	4x9.2	24x.375	5x12.7	24x.500	6x15.9			FP311	FP412	FP412		1419	1520	1525	
	1665	10x.365	10x.365	10x.365	2.5x.276	2.5x.276	2.5x.276	2.5x.276	24x.375	4x9.2	24x.500	5x12.7	24x.562	5x12.7			FP412	FP412	FP412		1420	1522	1526	
OVER 90′ TO 100′	200	4x.337	4x.337	4x.337	2.5x.203	2.5x.203	2.5x.203	2.5x.203	10x.365	2.5x5	12x.375	3x6.25	16x.375	3x6.25	24x.375	4x9.2	FP109	FP109	FP210	FP412	0912	0914	1014	1116
	350	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.330	3x6.25	14x.375	3x8.625	16x.375	3x8.625	24x.375	4x9.2	FP109	FP210	FP210	FP412	1013	1015	1116	1217
	500	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	3x8.625	16x.375	4x9.2	18x.375	5x12.7	24x.375	4x11.5	FP210	FP210	FP210	FP412	1115	1117	1217	1319
	650	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	4x9.2	18x.375	5x12.7	20x.375	5x12.7	24x.375	5x12.7	FP210	FP210	FP311	FP412	1116	1217	1318	1419
	800	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	4x9.2	20x.375	5x12.7	24x.375	5x12.7	24x.500	5x12.7	FP210	FP311	FP412	FP412	1217	1318	1320	1421
	950	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x9.2	20x.375	5x12.7	20x.500	5x12.7	24x.500	6x15.9	FP211	FP311	FP311	FP412	1218	1319	1420	1522
	1100	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	4x11.5	24x.375	5x12.7	24x.500	6x15.9	24x.562	6x15.9	FP211	FP412	FP412	FP412	1318	1320	1421	1524
	1250	8x.406	8x.406	8x.406	3x.300	3x.300	3x.300	3x.300	20x.375	5x12.7	24x.375	6x15.9	24x.500	6x15.9	24x.562	6x15.9	FP311	FP412	FP412	FP412	1320	1420	1521	1527
	1400	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	20x.375	4x11.5	24x.375	6x15.9	24x.500	6x15.9			FP311	FP412	FP412		1419	1520	1524	
	1550	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.375	5x12.7	24x.500	6x15.9	24x.500	6x15.9			FP412	FP412	FP412		1421	1521	1526	
	1700	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	20x.500	4x11.5	24x.500	6x15.9	24x.562	5x17.5			FP311	FP412	FP412		1421	1523	1528	
	1850	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	20x.500	4x11.5	24x.500	6x15.9	24x.562	5x17.5			FP311	FP412	FP412		1520	1525	1530	

FOR CONTINUATION OF CHART, SEE SHEET 10.



ACTUAL SPAN (FEET)	DESIGN SPAN (FEET)	NUMBER OF SPLICES	NO. OF PANELS			
			M	N**	P	R
UP TO 60	60	2	7	0	0	6
60+ TO 70	70	2	7	0	0	6
70+ TO 80	80	2	7	0	0	6
80+ TO 90	90	2	7	0	0	6
90+ TO 100	100	2	7	0	0	6
100+ TO 120	120	3	6	0	4	0
120+ TO 140	140	3	5	0	5	0
140+ TO 160	160	3	5	0	5	0
160+ TO 180	180	4	4	0	4	4
180+ TO 200	200	4	4	0	4	4

** N PANELS CAN BE USED IF SPANS OVER 200 FT ARE REQUIRED.

NOTES:

- FOR DESIGN TABLE NOTES, SEE SHEET 8.
- ALL MEMBER SIZES SHOWN IN DESIGN TABLES ARE PIPE NOMINAL SIZE X WALL THICKNESS AND ARE BASED ON ALL COMMERCIALLY AVAILABLE SECTIONS. CONTRACTOR MAY SUBSTITUTE THE NEXT THICKEST STANDARD SECTION IF A NON-STANDARD THICKNESS IS NOT AVAILABLE AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE GENERAL NOTE 11 ON SHEET 1.
- TOWER BRACING MEMBERS ARE ST SHAPES, UNLESS NOTED OTHERWISE. SECTION DESIGNATION INDICATES MEMBER DEPTH (DP) x WEIGHT PER FOOT (WT).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES
4 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 200′

DESIGN TABLE

RECOMMENDED JUL.10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL.10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

4 POST TRI-CHORD DESIGN TABLE (CONTINUED)

DESIGN SPAN (L)	SIGN AREA (SQ FT)	TRUSS MEMBERS							TOWER MEMBERS								FOUNDATION							
		CHORDS			DIAGONALS		VERTICALS		H TO 12′		H OVER 12′ TO 18′		H OVER 18′ TO 24′		H OVER 24′ TO 33′		PEDESTAL TYPE				FOOTING TYPE			
		A	B	C	FRONT	TOP & BOTTOM	FRONT	TOP & BOTTOM	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	COLUMN	BRACING	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′	H TO 12′	H OVER 12′ TO 18′	H OVER 18′ TO 24′	H OVER 24′ TO 33′
OVER 100′ TO 120′	300	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	4x9.2	14x.375	4x9.2	18x.375	4x9.2	24x.375	5x12.7	FP110	FP211	FP211	FP413	1013	1015	1116	1217
	600	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	5x12.7	18x.375	5x12.7	20x.375	5x12.7	24x.375	5x12.7	FP211	FP211	FP312	FP413	1116	1217	1318	1419
	900	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	5x12.7	20x.375	5x12.7	24x.375	6x15.9	24x.500	6x15.9	FP211	FP312	FP413	FP413	1218	1319	1420	1522
	1200	8x.500	8x.500	8x.406	2.5x.276	2.5x.276	2.5x.276	2.5x.276	24x.375	5x12.7	24x.375	6x15.9	24x.500	6x15.9			FP413	FP413	FP413		1420	1420	1521	
	1500	8x.500	8x.500	8x.500	2.5x.276	2.5x.276	2.5x.276	2.5x.276	24x.375	5x12.7	24x.500	6x15.9	24x.562	6x17.5			FP413	FP413	FP413		1421	1521	1525	
	1800	12x.406	12x.406	12x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.500	5x17.5	24x.500	6x17.5					FP413	FP413			1522	1525		
	2100	12x.406	12x.406	12x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.500	5x17.5	24x.562	6x17.5					FP413	FP413			1524	1529		
	2220	12x.406	12x.406	12x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.562	5x17.5	24x.562	6x17.5					FP413	FP413			1526	1530		
OVER 120′ TO 140′	300	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	12x.375	5x12.7	16x.375	5x12.7	18x.375	5x12.7	24x.375	5x12.7	FP111	FP212	FP212	FP413	1014	1115	1117	1218
	600	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	5x12.7	20x.375	5x12.7	24x.375	6x15.9	24x.500	6x15.9	FP212	FP313	FP413	FP413	1117	1218	1318	1420
	900	8x.406	8x.406	8x.406	2.5x.276	2.5x.276	2.5x.276	2.5x.276	20x.375	6x15.9	24x.375	6x15.9	24x.375	6x15.9	24x.562	6x20.4	FP313	FP414	FP414	FP414	1318	1320	1420	1522
	1200	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.375	6x15.9	24x.375	6x20.4	24x.500	6x20.4			FP414	FP414	FP414		1420	1521	1523	
	1500	12x.406	12x.406	12x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.500	6x17.5	24x.500	6x20.4					FP414	FP414			1521	1523		
	1800	12x.406	12x.406	12x.406	4x.237	4x.237	4x.237	4x.237	24x.562	6x17.5	24x.562	6x20.4					FP414	FP414			1525	1527		
	2100	10x.500	10x.500	10x.500	4x.237	4x.237	4x.237	4x.237	24x.562	6x17.5							FP414				1527			
	2220	10x.500	10x.500	10x.500	4x.237	4x.237	4x.237	4x.237	24x.562	6x17.5							FP414				1528			
OVER 140′ TO 160′	300	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	14x.375	5x12.7	16x.375	5x12.7	18x.375	5x12.7	24x.375	9x27.35	FP212	FP212	FP213	FP414	1015	1115	1216	1318
	600	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	5x12.7	20x.375	6x15.9	20x.500	9x27.35	24x.500	9x27.35	FP213	FP313	FP313	FP414	1216	1218	1319	1421
	900	10x.365	10x.365	10x.365	2.5x.276	2.5x.276	2.5x.276	2.5x.276	24x.375	5x12.7	24x.375	6x17.5	24x.500	9x27.35	24x.562	9x27.35	FP414	FP414	FP414	FP414	1319	1320	1421	1523
	1200	12x.375	12x.375	12x.375	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.500	6x15.9	24x.500	6x20.4	24x.562	9x27.35			FP415	FP415	FP415		1520	1521	1524	
	1500	12x.406	12x.406	12x.406	4x.237	4x.237	4x.237	4x.237	24x.562	6x17.5	24x.562	6x20.4					FP415	FP415			1524	1524		
	1800	12x.500	12x.500	12x.500	3.5x.318	3.5x.318	3.5x.318	3.5x.318	24x.562	6x17.5	24x.562	6x25					FP415	FP415			1525	1527		
OVER 160′ TO 180′	300	5x.375	5x.375	5x.375	2.5x.203	2.5x.203	2.5x.203	2.5x.203	16x.375	5x12.7	18x.375	5x12.7	20x.375	9x27.35	24x.375	9x27.35	FP213	FP213	FP314	FP415	1115	1116	1217	1318
	600	8x.406	8x.406	8x.406	2.5x.203	2.5x.203	2.5x.203	2.5x.203	20x.375	6x15.9	20x.375	6x15.9	20x.500	10x43	24x.500	10x43	FP314	FP314	FP314	FP415	1217	1318	1320	1421
	900	8x.500	8x.500	8x.500	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.375	6x15.9	24x.375	6x20.4	24x.500	10x43			FP415	FP415	FP415		1419	1420	1521	
	1200	12x.406	12x.406	12x.406	4x.237	4x.237	4x.237	4x.237	24x.500	6x20.4	24x.500	6x20.4					FP416	FP416			1521	1522		
	1500	12x.406	12x.406	12x.406	4x.237	4x.237	4x.237	4x.237	24x.562	6x20.4	24x.562	6x25					FP416	FP416			1525	1525		
OVER 180′ TO 200′	300	6x.432	6x.432	6x.432	2.5x.203	2.5x.203	2.5x.203	2.5x.203	18x.375	6x15.9	20x.375	6x20.4	24x.375	10x43	24x.500	10x43	FP214	FP315	FP416	FP416	1116	1117	1218	1319
	600	8x.406	8x.406	8x.406	2.5x.276	2.5x.276	2.5x.276	2.5x.276	24x.375	6x20.4	24x.375	10x43	24x.500	10x43	24x.562	10x43	FP416	FP416	FP416	FP416	1318	1318	1320	1520
	900	12x.406	12x.406	12x.406	3.5x.226	3.5x.226	3.5x.226	3.5x.226	24x.500	6x20.4	24x.500	10x43	24x.562	10x43			FP416	FP416	FP416		1421	1421	1522	
	1200	12x.406	12x.406	12x.406	4x.237	4x.237	4x.237	4x.237	24x.562	6x20.4	24x.562	10x43					FP416	FP416			1524	1523		

NOTES:

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- TOWER BRACING MEMBERS ARE ST SHAPES, UNLESS NOTED OTHERWISE. SECTION DESIGNATION INDICATES MEMBER DEPTH (DP) x WEIGHT PER FOOT (WT).

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF TRANSPORTATION
BUREAU OF BRIDGE

OVERHEAD SIGN STRUCTURES
4 POST TRI-CHORD TRUSS
SPANS FROM 60′ TO 200′

DESIGN TABLES

RECOMMENDED JUL.10, 2025
CHIEF BRIDGE ENGINEER

RECOMMENDED JUL.10, 2025
CHIEF EXECUTIVE, HIGHWAY ADMIN.

SHT. 10 OF 10

BD-644M