State of New Jersey

Department of Transportation

GENERAL DESIGN CRITERIA AND STANDARD DRAWINGS FOR OVERHEAD AND CANTILEVER SIGN SUPPORT STRUCTURES

2007

GENERAL NOTES

A. DESIGN CRITERIA

DESIGN SPECIFICATIONS

2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS WITH CURRENT INTERIM.

NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL, CURRENT EDITION.

DESIGN LOADS

DESIGN WIND VELOCITY ---- 80 MPH; (ABOVE AASHTO SPECIFICATIONS APPENDIX C)
DESIGN ICE LOAD ---------- 3 PSF

FATIGUE LOADS

ALL STRUCTURAL DETAILS HAVE BEEN ANALYZED AGAINST FATIGUE CATEGORY II IMPORTANCE FACTOR VALUES AS DESIGNATED IN THE ABOVE AASHTO SPECIFICATIONS.

VARIABLE MESSAGE SIGN (VMS) STRUCTURES

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL WHEN FURNISHING SUPPORT STRUCTURES FOR VARIABLE MESSAGE SIGNS (VMS).

CONCRETE DESIGN STRESSES

SPECIFIED COMPRESSIVE STRENGTH (f'c) (CLASS B) ---- 3,000 PSI
EXTREME FIBER COMPRESSIVE STRESS (fc) ---------- 1,200 PSI

REINFORCEMENT STEEL DESIGN STRESS

YIELD STRENGTH (fy) (A615, GRADE 60) ---- 60 KSI
TENSILE STRESS (fs) ---- 24 KSI

STRUCTURAL STEEL DESIGN STRENGTHS

YIELD STRENGTH (Fy): PIPES (A53, TYPE S OR TYPE E, GRADE B) ---- 35 KSI (MIN.) *
(API 5L, GRADE B) ---- REFER TO API SPECIFICATIONS

* FABRICATORS ARE ADVISED THAT REPAIRS TO THE MATERIALS WILL NOT BE PERMITTED. IF TEARING, CRACKING OR ANY DEFECT OCCURS, THE MATERIAL WILL BE REQUIRED TO BE REPLACED.

FOUNDATIONS

MAXIMUM FOUNDATION DESIGN BEARING PRESSURE ---- 2.5 KSF
FOOTINGS ARE DESIGNED SUCH THAT A MINIMUM OF 75 PERCENT OF THE FOOTING IS ALWAYS IN CONTACT; A MAXIMUM OF 25 PERCENT OF THE FOOTING IS IN UPLIFT.

BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KIPS.

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION DESIGN CRITERIA.

CAMBER

PERMANENT CAMBER EQUAL TO L/1000 HAS BEEN PROVIDED IN ADDITION TO THE DEAD LOAD CAMBER.

B. MATERIALS

I. STEEL

STEEL PIPE SHALL BE CERTIFIED BY MILL TEST REPORT TO MEET ASTM SPECIFICATION A53, TYPE E OR S, GRADE B WITH THE EXCEPTION THAT API 5L, GRADE B MAY BE USED WHEN THE SPECIFIED WALL THICKNESS IS GREATER THAN ⅛". ONLY ELECTRICAL RESISTANCE WELDED (ERW) MANUFACTURED SINGLE SEAM PIPE IS PERMITTED. HOWEVER, WHEN THE REQUIRED PIPE SIZE IS GREATER THAN 24", DOUBLE SEAM PIPE MAY BE USED. A MILL TEST REPORT MUST BE PROVIDED, CERTIFIED AND SIGNED BY THE PIPE MANUFACTURER, CONTAINING PHYSICAL AND CHEMICAL PROPERTIES AND THE MANUFACTURING PROCESS USED TO PRODUCE THE PIPE.

ALL OTHER STEEL SHALL CONFORM TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR GRADE 50. ALL SPECIFIED STEEL PLATES SHALL MEET SUPPLEMENTARY REQUIREMENTS FOR NOTCH TOUGHNESS (CHARPY TESTING, ZONE #2).

UPON COMPLETION OF FABRICATION, THE FABRICATOR SHALL PROVIDE A NOTARIZED CERTIFICATION OF COMPLIANCE AS PER THE REQUIREMENT OF THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, INCLUDING A LEGIBLE COPY OF ALL MILL TEST REPORTS FOR MATERIALS INCORPORATED INTO THE WORK. ALSO, A COPY OF QC REPORTS SHALL BE PROVIED.

STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM SPECIFICATION F1554, GRADE 36 OR 55. THE ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C.

CHORD SPLICE ASSEMBLY FASTENERS SHALL BE HIGH STRENGTH STEEL BOLTS CONFORMING TO ASTM SPECIFICATION A325 AND SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C. ALL OTHER FASTENERS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320, GRADE B8, CLASS 1.

CAPS FOR THE ENDS OF CHORDS AND TOPS OF POSTS SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123.

WELDING OF STEEL SHALL BE AS SPECIFIED IN AWS D1.1, CURRENT EDITION, AND IN THE NJDOT STANDARD SPECIFICATIONS.

AFTER COMPLETE FABRICATION, EACH STEEL SECTION SHALL BE HOT DIP GALVANIZED ACCORDING TO THE REQUIREMENTS OF ASTM SPECIFICATION A123, AND AS MODIFIED BY THE NJDOT STANDARD SPECIFICATIONS. A SINGLE DIP GALVANIZING PROCESS IS PREFERRED IF SIZE PERMITS.

REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR CRITERIA ON FURNISHING MATERIALS OTHER THAN SPECIFIED ABOVE.

II. ALUMINUM

ALUMINUM SHALL CONFORM TO THE ASTM SPECIFICATIONS AND ALLOYS LISTED BELOW:

APPLICATION	ASTM SPECIFICATION	ASTM ALLOY
ROLLED OR EXTRUDED SHAPES	B308	6061 - T6
PLATES	B209	6061 - T6
DRAWN SEAMLESS TUBES	B210	6061 - T6
EXTRUDED TUBES	B221	6061 - T6

WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2, CURRENT EDITION, AND IN THE NJDOT STANDARD SPECIFICATIONS.

III. REINFORCEMENT STEEL

ALL REINFORCEMENT STEEL SHALL BE ASTM A615, GRADE 60.

IV. CONCRETE

ALL CONCRETE SHALL BE "CLASS B" AS DEFINED IN THE NJDOT STANDRAD SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED BY THE DESIGNER.

V. SIGN LIGHTING

WHEN NECESSARY, AN APPROVED SIGN LIGHTING SYSTEM MAY BE USED AND THE DETAILS OF THE SYSTEM SHALL BE PROVIDED WITH THE WORKING DRAWING SUBMISSION. NJDOT TRAFFIC SIGNAL AND SAFETY ENGINEERING SHOULD BE CONTACTED FOR REQUIREMENTS REGARDING THE PROVISION OF SIGN LIGHTING OR REFLECTORIZED SIGN PANELS ON PROJECT TO PROJECT BASIS.

VI. SIGN PANEL AND LIGHTING SYSTEM SUPPORTS

SIGN HANGERS SHALL BE ALUMINUM OR STEEL. LUMINAIRE SUPPORTS SHALL BE ALUMINUM OR STEEL. THE STEEL SHALL CONFORM TO ASTM A709 GRADE 36 OR GRADE 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123. STEEL SURFACES SHALL BE PREVENTED FROM COMING INTO CONTACT WITH ALUMINUM SURFACES BY MEANS OF APPROVED PADS PLACED BETWEEN THE DISSIMILAR METALS. PADS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A240, TYPE 304 OR APPROVED EQUAL. CONNECTING U BOLTS SHALL BE STAINLESS STEEL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS. INSTALLATION OF SIGN LIGHTING SYSTEM SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

THE PROVISION OF MAINTENANCE WALKWAYS IS NOT REQUIRED.

INSTRUCTIONS FOR DESIGNERS

STEP #1: PREPARE A SIGN SUPPORT LOCATION PLAN AND ELEVATION VIEW FOR EACH STRUCTURE.

STEP #2: ENTER THE SIGN SUPPORT NUMBER AND STATION IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. OH-D2 OF THE CONTRACT PLANS.

STEP #3: DETERMINE THE TRUSS SPAN LENGTH AND HEIGHT OF THE STRUCTURE USING SIGN STRUCTURE DRG. OH-G2. RECORD THE ACTUAL TRUSS SPAN LENGTH IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. OH-D2 OF THE CONTRACT PLANS. ROUND THIS NUMBER TO THE NEXT HIGHER LISTED SPAN LENGTH. IF THE TRUSS SPAN LENGTH IS OVER 165'-0", PROCEED TO STEP #17.

STEP #4: DETERMINE THE SIGN DESIGN LENGTH USING SIGN STRUCTURE DRG. OH-G2. DIVIDE THE SIGN DESIGN LENGTH BY THE TRUSS SPAN LENGTH DETERMINED IN STEP #3 TO OBTAIN THE PERCENT SIGN DESIGN LENGTH. USE THE NEXT HIGHER PERCENT FROM THOSE LISTED (40%, 60%, 70%, OR 80%). IF THE PERCENT IS MORE THAN 80, PROCEED TO STEP #5. OTHERWISE, SKIP TO STEP #6.

STEP #5: TO SELECT A STANDARD DESIGN, DIVIDE THE SIGN DESIGN LENGTH BY 80% AND ROUND THIS NUMBER TO THE NEXT HIGHER LISTED SPAN LENGTH. IF THE NUMBER IS LESS THAN 165'-0", RETURN TO STEP #4. OTHERWISE, PROCEED TO STEP #17.

STEP #6: HAVING OBTAINED THE TRUSS SPAN LENGTH (FROM STEP #3 OR STEP #5) AND THE PERCENT SIGN DESIGN LENGTH (FROM STEP #4), SELECT THE TRUSS SIZE AND THE TRUSS ELEMENT SIZES (I.E., CHORDS, DIAGONALS, AND STRUTS) USING THE APPROPRIATE DESIGN TABLES ON SIGN STRUCTURE DRGS. OH-G3 AND OH-G4. RECORD THE DATA IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRGS. OH-D2 OF THE CONTRACT PLANS.

STEP #7: WITH THE TRUSS SPAN LENGTH KNOWN, DETERMINE THE MAXIMUM CAMBER REQUIRED FOR THE TRUSS FROM THE CAMBER TABLE SHOWN ON SIGN STRUCTURE DRG. OH-G3. RECORD THIS CAMBER IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. OH-D2 OF THE CONTRACT DRAWINGS.

STEP #8: WITH THE HEIGHT OF THE STRUCTURE OBTAINED IN STEP #3 AND USING THE ELEVATION OF THE BOTTOM OF BASE PLATE, DETERMINE THE ELEVATION OF THE CENTER LINE OF THE TRUSS AND THE DESIGN HEIGHT OF THE TOWERS. IF THE TOWERS ARE MORE THAN 40'-0", SKIP TO STEP #17. OTHERWISE, SELECT THE NEXT HIGHER NUMBER FROM THOSE LISTED (25, 30, OR 40 FEET). USING THE SAME TABLE USED IN STEP #6, SELECT THE SIZES OF THE TOWER ELEMENTS (I.E., SHAFTS, DIAGONALS, AND STRUTS). RECORD THE DATA IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. OH-D2 OF THE CONTRACT DRAWINGS.

STEP #9: CHECK AVAILABILITY OF SHAPES SELECTED IN STEPS #6 AND #8.

STEP #10: USING SOIL TEST AND SOIL BORING INFORMATION, DETERMINE THE ALLOWABLE SOIL PRESSURE AND THE REQUIRED DEPTH OF FOOTINGS.

STEP #11: DETERMINE THE PEDESTAL HEIGHT. IF THE PEDESTAL HEIGHT IS BETWEEN 4'-0" AND 6'-0", PROCEED TO STEP #12. OTHERWISE, SKIP TO STEP #17. THE PREFERRED PEDESTAL HEIGHT OF 4'-6" IS TO BE USED WHENEVER POSSIBLE. WHEN USING A BARRIER PEDESTAL, THE "COVERED" HEIGHT MUST BE 3'-0". OTHERWISE, SKIP TO STEP # 17

STEP #12: DETERMINE THE REQUIRED FOOTING SIZES USING THE DESIGN TABLES ON SIGN STRUCTURE DRGS. OH-G3 AND OH-G4. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. OH-D3 OF THE CONTRACT PLANS.

STEP #13: DETERMINE THE REQUIRED FOOTING DESIGN DATA USING SIGN STRUCTURE DRG. OH-G6. RECORD THIS DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. OH-D3 OF THE CONTRACT PLANS. IF THE ALLOWABLE SOIL PRESSURE IS GREATER THAN 2.5 KSF, SKIP TO STEP #15. OTHERWISE, PROCEED TO STEP #14.

STEP #14: SELECT THE NUMBER OF CAST-IN-PLACE CONCRETE PILES NEEDED TO SUPPORT THE STRUCTURE USING SIGN STRUCTURE DRG. OH-G6. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. OH-D3 OF THE CONTRACT PLANS.

STEP #15: DETERMINE WHETHER A PEDESTAL OR BARRIER PEDESTAL IS TO BE USED FOR THE FOUNDATION. SELECT ALL PEDESTAL OR BARRIER PEDESTAL DATA FROM SIGN STRUCTURE DRG. OH-G5. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. OH-D3 OF THE CONTRACT PLANS.

STEP #16: THE DESIGN OF THE OVERHEAD SIGN SUPPORT STRUCTURE IS COMPLETE. DISREGARD STEP #17.

STEP #17: THE PARAMETERS OF THE SIGN SUPPORT STRUCTURE EXCEED THE RESTRICTIONS RELATED TO THESE STANDARD DESIGN TABLES. DESIGN THE SIGN SUPPORT STRUCTURE ON AN INDIVIDUAL BASIS.

INDEX OF DRAWINGS

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

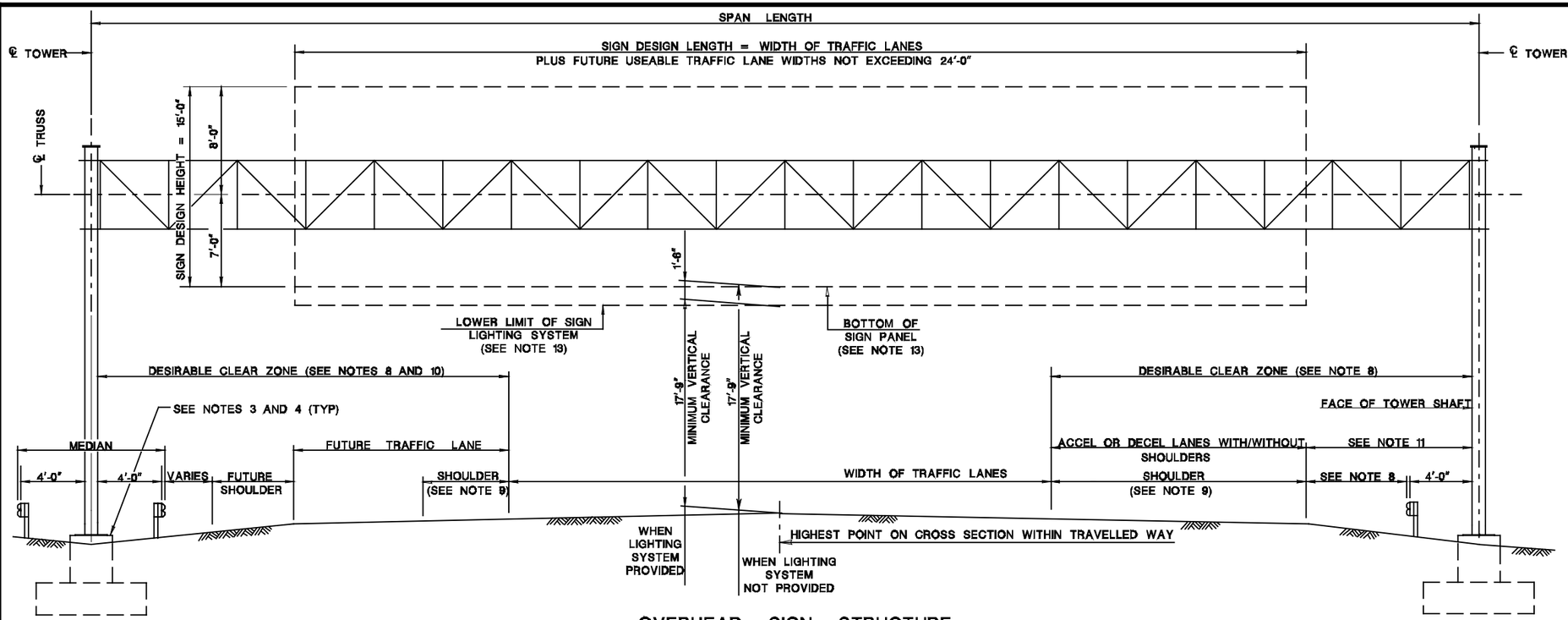
OVERHEAD SIGN SUPPORT STANDARDS

GENERAL INFORMATION

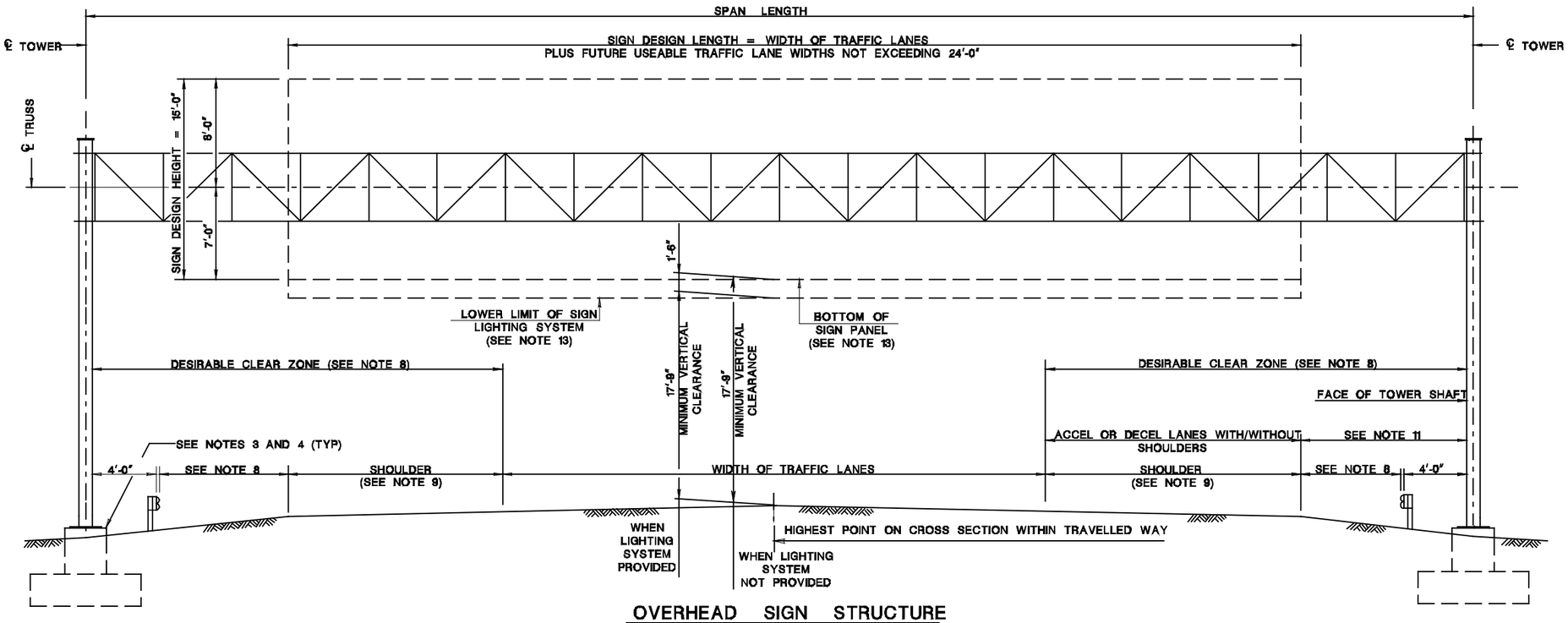
SCALE : NONE

1
6

BDC07S-05 - ORIGINAL SHEET



OVERHEAD SIGN STRUCTURE
DIVIDED HIGHWAY SYSTEMS



OVERHEAD SIGN STRUCTURE
NONDIVIDED HIGHWAY SYSTEM AND RAMPS

NOTES:

1. THE BOTTOM EDGE OF ALL SIGN PANELS SHALL BE LEVEL AND AT THE SAME ELEVATION.
2. THE TOP EDGE OF ALL SIGN PANELS SHALL PROJECT NOT LESS THAN 6" ABOVE THE TOP OF THE TOP CHORD. THE SIGN PANEL SIZES AND LOCATIONS SHALL BE VERIFIED AND APPROVED BY THE DESIGNER.
3. TOP OF PEDESTALS SHALL BE SET 4" ABOVE THE FINISHED GROUND LINE.
4. THE ELEVATION OF THE BOTTOM OF THE TOWER SHAFT BASE PLATES SHALL BE SET AT (ANCHOR BOLT DIA. + 1") ABOVE TOP OF PEDESTAL OR TOP OF BARRIER PEDESTAL (SEE SIGN STRUCTURE DRG. OH-D8).
5. THE TRUSS SHALL BE A FOUR-CHORD, BOX SHAPED TRUSS.
6. UNLESS OTHERWISE SPECIFIED, THE LUMINAIRE SUPPORTS SHALL BE PROVIDED CONTINUOUSLY FOR THE ENTIRE SIGN DESIGN LENGTH. THE NEED FOR LUMINAIRE SUPPORTS SHALL BE VERIFIED AS PART OF THE PRELIMINARY SUBMISSION.
7. IF THE TOWER FOUNDATION IS WITHIN THE CLEAR ZONE, IT SHALL BE PROTECTED BY GUIDE RAIL, BARRIER OR OTHER SUITABLE MEANS, DEPENDING ON SITE CONDITIONS.
8. SEE NJDOT ROADWAY DESIGN MANUAL FOR CLEAR ZONE CRITERIA AND FOR GUIDE RAIL OFFSET CRITERIA.
9. SHOULDER IS NOT TO BE INCLUDED IN THE SIGN DESIGN LENGTH UNLESS THE SHOULDER IS WITHIN AN AREA PRESCRIBED AS A FUTURE USEABLE TRAFFIC LANE.
10. IF MEDIAN IS LESS THAN 5'-0" WIDE, PLACE THE CENTERLINE OF TOWER AT THE CENTERLINE OF MEDIAN.
11. THIS DIMENSION SHALL NOT BE LESS THAN 1'-0" GREATER THAN THE MINIMUM CLEARANCE REQUIRED FOR OVERPASS STRUCTURES.
12. LEFT AND RIGHT TOWERS ARE DEFINED LOOKING UPSTATION.
13. THE 17'-9" MINIMUM VERTICAL UNDERCLEARANCE SHALL BE PROVIDED TO THE BOTTOM OF SIGN LIGHTING SYSTEM, OR TO THE BOTTOM OF SIGN PANEL WHEN LIGHTING SYSTEM IS NOT PROVIDED.

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

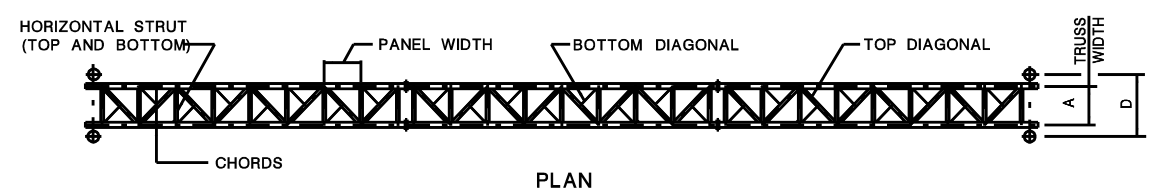
OVERHEAD SIGN SUPPORT STANDARDS

GENERAL CRITERIA

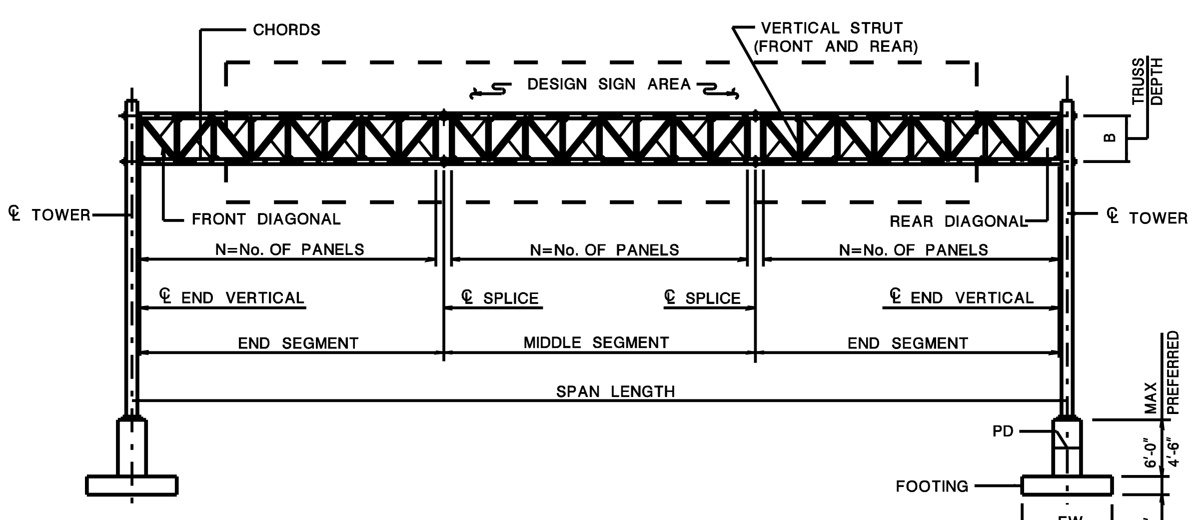
SCALE : NONE

SPAN LENGTH (FT)	SIGN LENGTH (%)	TRUSS SIZE	TRUSS MEMBERS: CHORDS O.D.xTHICK (IN)	TRUSS MEMBERS: DIAGONALS O.D.xTHICK (IN)	TRUSS MEMBERS: STRUTS O.D.xTHICK (IN)	TRUSS MEMBERS: END STRUTS O.D.xTHICK (IN)	TOWER MEMBERS H = 25 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 25 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS H = 30 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 30 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS H = 40 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 40 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS: STRUTS O.D.xTHICK (IN)
45	40	4' (WIDTH) x 4' (DEPTH)	3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	3.500 x .300
	60		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	12.750 x .375	3.500 x .300	3.500 x .300
	70		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	3.500 x .300
	80		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	3.500 x .300
55	40		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	3.500 x .300
	60		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	3.500 x .300
	70		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	3.500 x .300
	80		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	16.000 x .375	5.563 x .258	3.500 x .300
65	40		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	12.750 x .375	3.500 x .300	3.500 x .300
	60		3.500 x .216	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	16.000 x .375	5.563 x .258	3.500 x .300
	70		4.000 x .226	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	16.000 x .375	5.563 x .258	3.500 x .300
	80		4.000 x .226	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	16.000 x .375	5.563 x .258	3.500 x .300
75	40		4.000 x .226	2.875 x .203	2.875 x .203	3.500 x .216	10.750 x .365	3.500 x .300	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	3.500 x .300
	60		4.500 x .237	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	16.000 x .375	5.563 x .258	3.500 x .300
	70		4.500 x .237	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .375	5.563 x .258	16.000 x .375	5.563 x .258	3.500 x .300
	80		4.500 x .237	2.875 x .203	2.875 x .203	3.500 x .216	12.750 x .375	3.500 x .300	14.000 x .500	5.563 x .258	16.000 x .500	5.563 x .258	3.500 x .300

SPAN LENGTH (FT)	SIGN LENGTH (%)	FOOTINGS H=25 FT: FLxFW (FT)	FOOTINGS H=30 FT: FLxFW (FT)	FOOTINGS H=40 FT: FLxFW (FT)	PEDESTALS H=25 FT: PD (FT)	PEDESTALS H=25 FT: VERT REBARS No. & SIZE	PEDESTALS H=30 FT: PD (FT)	PEDESTALS H=30 FT: VERT REBARS No. & SIZE	PEDESTALS H=40 FT: PD (FT)	PEDESTALS H=40 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 25 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 25 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 30 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 30 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 40 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 40 FT: VERT REBARS No. & SIZE	AXB TRUSS SIZE
45	40	15 x 7	16 x 7	16 x 8	3.00	10-#19	3.00	11-#19	3.25	12-#19	9 x 2.50	31-#13	9 x 2.50	31-#13	9 x 2.50	31-#13	4' (WIDTH) x 4' (DEPTH)
	60	15 x 7	16 x 8	18 x 8	3.00	9-#22	3.25	13-#19	3.25	14-#19	9 x 2.50	31-#13	9 x 2.50	23-#16	9 x 2.50	26-#16	
	70	16 x 7	16 x 8	19 x 8	3.00	9-#22	3.25	13-#19	3.50	11-#22	9 x 2.50	23-#16	9 x 2.50	26-#16	10 x 2.75	28-#16	
	80	16 x 8	18 x 8	19 x 8	3.00	10-#22	3.25	10-#22	3.50	11-#22	9 x 2.50	23-#16	9 x 2.50	26-#16	10 x 2.75	28-#16	
55	40	15 x 7	16 x 7	16 x 8	3.00	11-#19	3.00	12-#19	3.25	13-#19	9 x 2.50	31-#13	9 x 2.50	31-#13	9 x 2.50	24-#16	
	60	16 x 7	18 x 8	19 x 8	3.00	9-#22	3.25	10-#22	3.50	11-#22	9 x 2.50	23-#16	9 x 2.50	26-#16	10 x 2.75	28-#16	
	70	16 x 8	18 x 8	19 x 9	3.00	10-#22	3.25	11-#22	3.50	12-#22	9 x 2.50	26-#16	9 x 2.50	29-#16	10 x 2.75	30-#16	
	80	18 x 8	19 x 9	20 x 9	3.25	10-#22	3.50	11-#22	3.75	12-#22	9 x 2.50	26-#16	10 x 2.75	29-#16	10 x 3.00	32-#16	
65	40	16 x 7	16 x 8	19 x 8	3.00	9-#22	3.25	9-#22	3.25	10-#22	9 x 2.50	31-#13	9 x 2.50	35-#13	9 x 2.50	26-#16	
	60	16 x 8	18 x 9	20 x 9	3.00	10-#22	3.25	11-#22	3.75	12-#22	9 x 2.50	26-#16	9 x 2.50	29-#16	10 x 3.00	30-#16	
	70	18 x 8	19 x 9	20 x 10	3.25	10-#22	3.50	11-#22	3.75	12-#22	9 x 2.50	26-#16	10 x 2.75	30-#16	10 x 3.00	32-#16	
	80	18 x 9	20 x 9	21 x 10	3.25	11-#22	3.50	12-#22	3.75	13-#22	9 x 2.50	29-#16	10 x 2.75	30-#16	10 x 3.00	26-#19	
75	40	16 x 7	16 x 8	19 x 8	3.00	9-#22	3.25	10-#22	3.50	11-#22	9 x 2.50	23-#16	9 x 2.50	23-#16	10 x 2.75	28-#16	
	60	18 x 8	19 x 8	21 x 9	3.25	10-#22	3.50	11-#22	3.75	12-#22	9 x 2.50	26-#16	10 x 2.75	30-#16	10 x 3.00	32-#16	
	70	19 x 8	20 x 9	21 x 10	3.25	11-#22	3.50	12-#22	3.75	13-#22	9 x 2.50	29-#16	10 x 2.75	32-#16	10 x 3.00	26-#19	
	80	19 x 9	20 x 10	22 x 10	3.25	12-#22	3.50	10-#25	3.75	11-#25	9 x 2.50	31-#16	10 x 2.75	32-#16	10 x 3.00	28-#19	



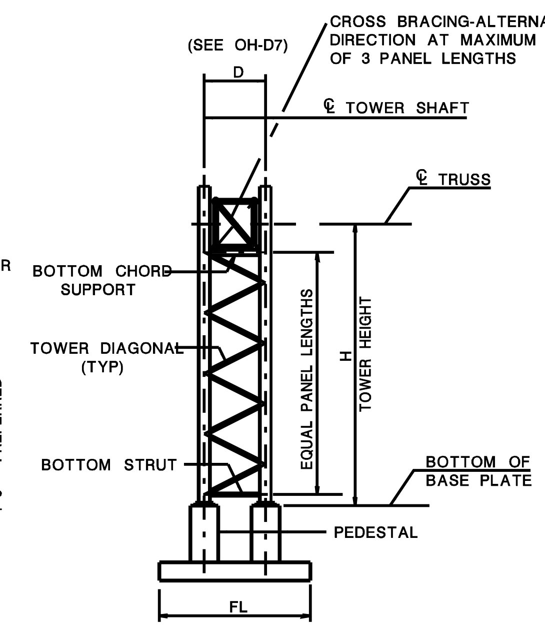
PLAN



ELEVATION

NOTES:

1. THE NUMBER OF SPLICES AND PANELS SHOWN IN THE TABLE ARE OPTIONAL. ONE OR MORE SPLICES IN THE TRUSS MAY BE ADDED OR ELIMINATED AT THE OPTION OF THE FABRICATOR. THE FABRICATOR MUST MAINTAIN A TRUSS UNIT LENGTH WHICH CAN BE GALVANIZED IN ONE PIECE. A MINIMUM OF ONE SPLICE IS REQUIRED FOR OBTAINING CAMBER.
2. END STRUTS ARE DEFINED AS THE TWO HORIZONTAL AND TWO VERTICAL STRUTS LOCATED IMMEDIATELY ADJACENT TO THE TOWERS (SEE DRG. OH-D5).
3. $\% \text{ SIGN LENGTH} = \dfrac{\text{SIGN DESIGN LENGTH}}{\text{SPAN LENGTH}} \times 100$



END VIEW

SUGGESTED STEEL TRUSS UNITS: No. OF ACTUAL SPAN FROM (FT)	No. OF ACTUAL SPAN TO (FT)	DESIGN SPAN (FT)	No. OF SPLICES No.	No. OF SEGMENTS END	No. OF SEGMENTS MIDDLE	No. OF PANELS EACH SEGMENT No.	No. OF PANELS TOTAL No.	ALTERNATIVE: No. OF SPLICES No.	No. OF SEGMENTS END	No. OF SEGMENTS MIDDLE	No. OF TOTAL PANELS MIN No.	No. OF TOTAL PANELS MAX No.
--	45	45	1	2	0	6	12	1	2	0	10	14
45	55	55	1	2	0	7	14	1	2	0	12	18
55	65	65	2	2	1	5	15	1	2	0	14	22
65	75	75	2	2	1	6	18	1	2	0	16	24
75	85	85	2	2	1	7	21	1	2	0	18	28
85	95	95	3	2	2	6	24	2	2	1	20	30
95	105	105	3	2	2	6	24	2	2	1	22	33
105	115	115	3	2	2	7	28	2	2	1	25	37
115	125	125	4	2	3	6	30	2	2	1	27	40
125	135	135	4	2	3	6	30	2	2	1	29	43
135	145	145	4	2	3	7	35	3	2	2	31	46
145	155	155	5	2	4	6	36	3	2	2	33	49
155	165	165	5	2	4	6	36	3	2	2	35	53

CAMBER

SPAN LENGTH (FT)	REQUIRED CAMBER (IN)
45	1 ¼
55	1 ½
65	2
75	2 ¾
85	2 ¾
95	3
105	3 ¾
115	4 ¼
125	5 ¼
135	5 ⅝
145	7
155	7 ¾
165	9

THIS PLATE FOR DESIGN INFORMATION ONLY.
DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STANDARDS DESIGN TABLES

STEEL TRUSSES AND STEEL TOWERS (SPAN LENGTH 45'-0" TO 75'-0")

PENDING
09/10/2015

SCALE : NONE

3 / 6

SPAN LENGTH (FT)	SIGN LENGTH (%)	TRUSS SIZE	TRUSS MEMBERS: CHORDS O.D.xTHICK (IN)	TRUSS MEMBERS: DIAGONALS O.D.xTHICK (IN)	TRUSS MEMBERS: STRUTS O.D.xTHICK (IN)	TRUSS MEMBERS: END STRUTS O.D.xTHICK (IN)	TOWER MEMBERS H = 25 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 25 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS H = 30 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 30 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS H = 40 FT: SHAFT O.D.xTHICK (IN)	TOWER MEMBERS H = 40 FT: DIAGONAL O.D.xTHICK (IN)	TOWER MEMBERS: STRUTS O.D.xTHICK (IN)
85	40	4' (WIDTH) x 5' (DEPTH)	4.500x.237	2.875x.203	2.875x.203	3.500x.216	10.750x.365	3.500x.300	12.750x.375	3.500x.300	14.000x.375	5.563x.258	3.500x.300
	60		5.563x.258	2.875x.203	2.875x.203	3.500x.216	12.750x.375	3.500x.300	14.000x.375	5.563x.258	16.000x.375	5.563x.258	3.500x.300
	70		5.563x.258	2.875x.203	2.875x.203	3.500x.216	12.750x.375	3.500x.300	16.000x.375	5.563x.258	16.000x.500	5.563x.258	3.500x.300
	80		5.563x.258	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	3.500x.300
95	40		5.563x.258	2.875x.203	2.875x.203	3.500x.216	12.750x.375	3.500x.300	12.750x.375	3.500x.300	16.000x.375	5.563x.258	3.500x.300
	60		5.563x.258	2.875x.203	2.875x.203	3.500x.216	12.750x.375	3.500x.300	16.000x.375	5.563x.258	16.000x.500	5.563x.258	3.500x.300
	70		6.625x.280	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	3.500x.300
	80		6.625x.280	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	3.500x.300
105	40		5.563x.258	2.875x.203	2.875x.203	3.500x.216	12.750x.375	3.500x.300	14.000x.375	5.563x.258	16.000x.375	5.563x.258	3.500x.300
	60		6.625x.280	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	5.563x.258
	70		6.625x.280	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	80		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
115	40		6.625x.280	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	14.000x.375	5.563x.258	16.000x.375	5.563x.258	5.563x.258
	60		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	18.000x.375	6.625x.280	5.563x.258
	70		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	80		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
125	40		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	5.563x.258
	60		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	70		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	80		8.625x.322	2.875x.203	2.875x.203	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
135	40		8.625x.322	2.875x.203	2.875x.203	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	5.563x.258
	60		10.750x.365	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	70		10.750x.365	2.875x.203	2.875x.203	3.500x.216	14.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
	80		10.750x.365	2.875x.203	2.875x.203	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
145	40		10.750x.365	3.500x.216	3.500x.216	3.500x.216	14.000x.375	5.563x.258	16.000x.375	5.563x.258	16.000x.500	5.563x.258	5.563x.258
	60		10.750x.365	3.500x.216	3.500x.216	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	70		10.750x.365	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
	80		10.750x.365	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
155	40		10.750x.365	3.500x.216	3.500x.216	3.500x.216	14.000x.375	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	60		12.750x.375	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
	70		12.750x.375	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
	80		12.750x.375	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	20.000x.500	6.625x.280	24.000x.500	6.625x.280	5.563x.258
165	40		12.750x.375	3.500x.216	3.500x.216	3.500x.216	14.000x.500	5.563x.258	16.000x.500	5.563x.258	18.000x.500	6.625x.280	5.563x.258
	60		12.750x.375	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	20.000x.500	6.625x.280	5.563x.258
	70		14.000x.375	3.500x.216	3.500x.216	3.500x.216	16.000x.500	5.563x.258	18.000x.500	6.625x.280	24.000x.500	6.625x.280	5.563x.258
	80		14.000x.375	3.500x.216	3.500x.216	3.500x.216	18.000x.500	6.625x.280	20.000x.500	6.625x.280	24.000x.500	6.625x.280	5.563x.258

SPAN LENGTH (FT)	SIGN LENGTH (%)	FOOTINGS H = 25 FT: FLxFW (FT)	FOOTINGS H = 30 FT: FLxFW (FT)	FOOTINGS H = 40 FT: FLxFW (FT)	PEDESTALS H = 25 FT: PD (FT)	PEDESTALS H = 25 FT: VERT REBARS No. & SIZE	PEDESTALS H = 30 FT: PD (FT)	PEDESTALS H = 30 FT: VERT REBARS No. & SIZE	PEDESTALS H = 40 FT: PD (FT)	PEDESTALS H = 40 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 25 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 25 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 30 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 30 FT: VERT REBARS No. & SIZE	BARRIER PEDESTALS H = 40 FT: BLxBWT (FT)	BARRIER PEDESTALS H = 40 FT: VERT REBARS No. & SIZE	TRUSS SIZE	SIGN LENGTH (%)	SPAN LENGTH (FT)
85	40	16 x 8	18 x 8	20 x 9	3.00	10-#22	3.25	10-#22	3.50	11-#22	9 x 2.50	23-#16	9 x 2.50	26-#16	10 x 2.75	30-#16	4' (WIDTH) x 5' (DEPTH)	40	85
	60	19 x 8	20 x 9	21 x 9	3.25	11-#22	3.50	12-#22	3.75	10-#25	9 x 2.50	29-#16	10 x 2.75	30-#16	10 x 3.00	23-#19		60	
	70	20 x 9	20 x 10	22 x 10	3.25	12-#22	3.75	10-#25	3.75	11-#25	9 x 2.50	31-#16	10 x 3.00	32-#16	10 x 3.00	26-#19		70	
	80	21 x 9	21 x 10	23 x 10	3.50	12-#22	3.75	11-#25	3.75	12-#25	10 x 2.75	32-#16	10 x 3.00	35-#16	10 x 3.00	28-#19		80	
95	40	18 x 8	19 x 9	21 x 9	3.25	10-#22	3.25	11-#22	3.75	12-#25	9 x 2.50	26-#16	9 x 2.50	29-#16	10 x 3.00	23-#19		40	95
	60	19 x 9	20 x 10	22 x 10	3.25	11-#22	3.75	10-#25	3.75	11-#25	9 x 2.50	31-#16	10 x 3.00	32-#16	10 x 3.00	26-#19		60	
	70	20 x 9	21 x 10	23 x 10	3.50	12-#22	3.75	10-#25	3.75	12-#25	10 x 2.75	32-#16	10 x 3.00	26-#19	10 x 3.00	28-#19		70	
	80	21 x 10	22 x 10	24 x 11	3.50	10-#25	3.75	11-#25	4.00	12-#25	10 x 2.75	25-#19	10 x 3.00	28-#19	11 x 3.25	29-#19		80	
105	40	18 x 9	19 x 9	21 x 9	3.25	10-#22	3.50	11-#22	3.75	12-#22	9 x 2.50	26-#16	10 x 2.75	30-#16	10 x 3.00	23-#19		40	105
	60	20 x 9	21 x 10	23 x 10	3.50	12-#22	3.75	10-#25	3.75	12-#25	10 x 2.75	21-#19	10 x 3.00	25-#19	10 x 3.00	28-#19		60	
	70	21 x 10	21 x 11	23 x 11	3.50	10-#25	3.75	11-#25	4.00	12-#25	10 x 2.75	25-#19	10 x 3.00	28-#19	11 x 3.25	29-#19		70	
	80	22 x 10	22 x 11	24 x 11	3.50	10-#25	3.75	12-#25	4.00	13-#25	10 x 2.75	26-#19	10 x 3.00	31-#19	11 x 3.25	33-#19		80	
115	40	19 x 9	20 x 9	21 x 10	3.50	10-#22	3.50	12-#22	3.75	10-#25	10 x 2.75	30-#16	10 x 2.75	30-#16	10 x 3.00	23-#19		40	115
	60	20 x 10	21 x 10	23 x 11	3.50	12-#22	3.75	10-#25	4.00	12-#25	10 x 2.75	23-#19	10 x 3.00	26-#19	11 x 3.25	28-#19		60	
	70	21 x 10	22 x 11	24 x 11	3.50	10-#25	3.75	11-#25	4.00	13-#25	10 x 2.75	26-#19	10 x 3.00	28-#19	11 x 3.25	33-#19		70	
	80	22 x 10	23 x 11	25 x 11	3.50	11-#25	3.75	13-#25	4.00	15-#25	10 x 2.75	28-#19	10 x 3.00	31-#19	11 x 3.25	25-#22		80	
125	40	20 x 9	20 x 10	22 x 10	3.50	11-#22	3.75	12-#22	3.75	10-#25	10 x 2.75	30-#16	10 x 3.00	23-#19	10 x 3.00	26-#19		40	125
	60	21 x 10	23 x 10	24 x 11	3.50	10-#25	3.75	11-#25	4.00	12-#25	10 x 2.75	25-#19	10 x 3.00	28-#19	11 x 3.25	29-#19		60	
	70	22 x 10	23 x 11	25 x 11	3.50	11-#25	3.75	12-#25	4.00	14-#25	10 x 2.75	28-#19	10 x 3.00	31-#19	11 x 3.25	33-#19		70	
	80	23 x 10	24 x 11	25 x 12	3.75	11-#25	4.00	13-#25	4.25	15-#25	10 x 3.00	28-#19	11 x 3.25	32-#19	11 x 4.00	25-#22		80	
135	40	20 x 10	21 x 10	22 x 11	3.50	11-#22	3.75	10-#25	3.75	11-#25	10 x 2.75	30-#16	10 x 3.00	23-#19	10 x 3.00	27-#19		40	135
	60	22 x 10	23 x 11	25 x 11	3.50	10-#25	3.75	12-#25	4.00	13-#25	10 x 2.75	27-#19	10 x 3.00	31-#19	11 x 3.25	33-#19		60	
	70	22 x 11	24 x 11	25 x 12	3.50	11-#25	4.00	12-#25	4.25	14-#25	10 x 2.75	28-#19	11 x 3.25	31-#19	11 x 4.00	25-#22		70	
	80	23 x 11	25 x 11	26 x 12	3.75	12-#25	4.00	14-#25	4.25	15-#25	10 x 3.00	31-#19	11 x 3.25	32-#19	11 x 4.00	27-#22		80	
145	40	20 x 10	22 x 10	23 x 11	3.50	11-#22	3.75	10-#25	3.75	11-#25	10 x 2.75	21-#19	10 x 3.00	25-#19	10 x 3.00	28-#19		40	145
	60	23 x 10	24 x 11	25 x 12	3.50	11-#25	3.75	13-#25	4.00	14-#25	10 x 2.75	28-#19	10 x 3.00	31-#19	11 x 3.25	25-#22		60	
	70	23 x 11	24 x 12	26 x 12	3.75	11-#25	4.00	13-#25	4.25	15-#25	10 x 3.00	28-#19	11 x 3.25	32-#19	11 x 4.00	27-#22		70	
	80	24 x 11	24 x 12	27 x 12	3.75	12-#25	4.00	14-#25	4.25	13-#29	10 x 3.00	31-#19	11 x 3.25	35-#19	11 x 4.00	29-#22		80	
155	40	21 x 10	22 x 10	23 x 11	3.50	12-#22	3.75	10-#25	4.00	11-#25	10 x 2.75	23-#19	10 x 3.00	27-#19	11 x 3.25	28-#19		40	155
	60	23 x 10	24 x 11	26 x 12	3.75	11-#25	4.00	12-#25	4.25	14-#25	10 x 3.00	28-#19	11 x 3.25	32-#19	11 x 4.00	25-#22		60	
	70	23 x 11	24 x 12	27 x 12	3.75	12-#25	4.00	14-#25	4.25	15-#25	10 x 3.00	23-#22	11 x 3.25	35-#19	11 x 4.00	27-#22		70	
	80	24 x 11	25 x 12	27 x 13	3.75	13-#25	4.25	14-#25	4.75	13-#29	10 x 3.00	25-#22	11 x 4.00	27-#22	11.5 x 4.00	30-#22		80	
165	40	21 x 10	23 x 10	24 x 11	3.50	12-#25	3.75	10-#25	4.00	12-#25	10 x 2.75	25-#19	10 x 3.00	28-#19	11 x 3.25	29-#19		40	165
	60	23 x 11	24 x 12	27 x 12	3.75	11-#25	4.00	13-#25	4.25	15-#25	10 x 3.00	28-#19	11 x 3.25	32-#19	11 x 4.00	27-#22		60	
	70	24 x 11	24 x 13	27 x 13	3.75	13-#25	4.00	15-#25	4.75	15-#25	10 x 3.00	25-#22	11 x 3.25	35-#19	11.5 x 4.00	30-#22		70	
	80	24 x 12	24 x 13	27 x 13	4.00	13-#25	4.25	12-#25	4.75	14-#29	11 x 3.25	25-#22	11 x 4.00	27-#22	11.5 x 4.00	32-#22		80	

NOTE:
END STRUTS ARE DEFINED AS THE TWO HORIZONTAL AND TWO VERTICAL STRUTS LOCATED IMMEDIATELY ADJACENT TO THE TOWERS (SEE DRG. OH-D5).

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STANDARDS DESIGN TABLES

STEEL TRUSSES AND STEEL TOWERS (SPAN LENGTH 85'-0" TO 165'-0")

SCALE : NONE

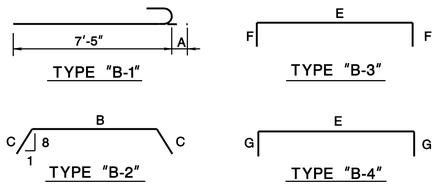
BARRIER PEDESTAL REINFORCEMENT

BARRIER SIZE BLxBWT (FT)	VOL OF CONC (C.Y.)	HORIZONTAL BARS #13 BAR, TYPE "B-2" No.	B	C	LENGTH	#13 BAR, TYPE "B-3" No.	E	F	LENGTH	#13 BAR, TYPE "B-4" No.	E	G	LENGTH	WEIGHT TOTAL (LBS)
9 x 2.50	7.1	10	2'-0"	1'-0"	4'-0"	8	5'-8"	2'-2"	10'-0"	8	5'-8"	2'-8"	11'-0"	139
10 x 2.75	8.5	11	2'-3"	1'-0"	4'-3"	8	6'-4"	2'-4"	11'-0"	8	6'-4"	2'-9"	11'-10"	153
10 x 3.00	9.0	11	2'-6"	1'-0"	4'-6"	8	6'-4"	2'-5"	11'-2"	8	6'-4"	2'-10"	12'-0"	158
11 x 3.25	10.6	12	2'-9"	1'-0"	4'-9"	8	7'-0"	2'-7"	12'-2"	8	7'-0"	2'-11"	12'-10"	172
11 x 4.00	12.4	12	3'-6"	1'-0"	5'-6"	8	7'-0"	2'-11"	12'-10"	8	7'-0"	3'-4"	13'-8"	185
11.5 x 4.00	13.0	13	3'-6"	1'-0"	5'-6"	8	7'-4"	2'-11"	13'-2"	8	7'-4"	3'-4"	14'-0"	192

VERTICAL "B-1" BARS

SIZE	A (IN)	LENGTH	WEIGHT (LBS)
#13	6	7'-11"	5.290
#16	7	8'-0"	8.377
#19	8	8'-1"	12.125
#22	10	8'-3"	16.976

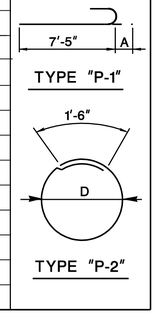
BAR SHAPES



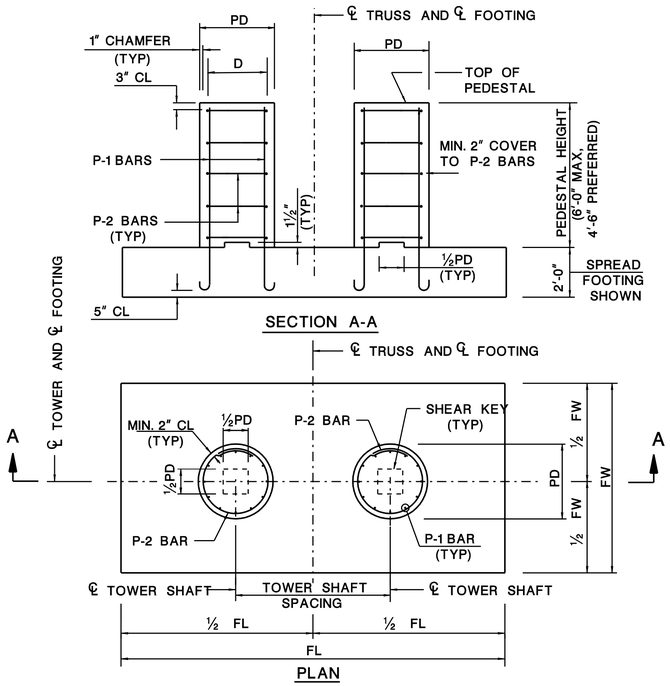
PEDESTAL REINFORCEMENT

PEDESTAL DIAMETER PD (FT)	VOL OF CONC (C.Y.)	VERTICAL BARS TYPE "P-1" SIZE (NOTE 9)	A	LENGTH	WEIGHT (LBS)	HORIZ BARS 7-#13 BARS, TYPE "P-2" (MAX. SPACING 12") D	LENGTH	WEIGHT (LBS)
3'-0"	1.6	#19	0'-8"	8'-1"	11.9	2'-8"	10'-0"	46.7
3'-0"	1.6	#22	0'-10"	8'-3"	16.8	2'-8"	10'-0"	46.7
3'-3"	1.8	#19	0'-8"	8'-1"	11.9	3'-0" *	11'-0"	51.6
3'-3"	1.8	#22	0'-10"	8'-3"	16.8	3'-0" *	11'-0"	51.6
3'-6"	2.1	#22	0'-10"	8'-3"	16.8	3'-2"	11'-6"	53.8
3'-6"	2.1	#25	0'-11"	8'-4"	22.3	3'-2"	11'-6"	53.8
3'-9"	2.5	#22	0'-10"	8'-3"	16.8	3'-4"	12'-0"	56.2
3'-9"	2.5	#25	0'-11"	8'-4"	22.3	3'-4"	12'-0"	56.2
4'-0"	2.8	#25	0'-11"	8'-4"	22.3	3'-8"	13'-0"	61.1
4'-3"	3.2	#25	0'-11"	8'-4"	22.3	4'-0" *	14'-1"	65.9
4'-3"	3.2	#29	1'-3"	8'-8"	29.3	4'-0" *	14'-1"	65.9
4'-9"	3.9	#25	0'-11"	8'-4"	22.3	4'-4"	15'-1"	70.8
4'-9"	3.9	#29	1'-3"	8'-8"	29.3	4'-4"	15'-1"	70.8

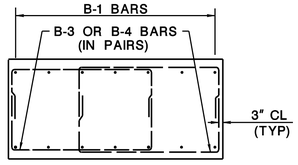
BAR SHAPES



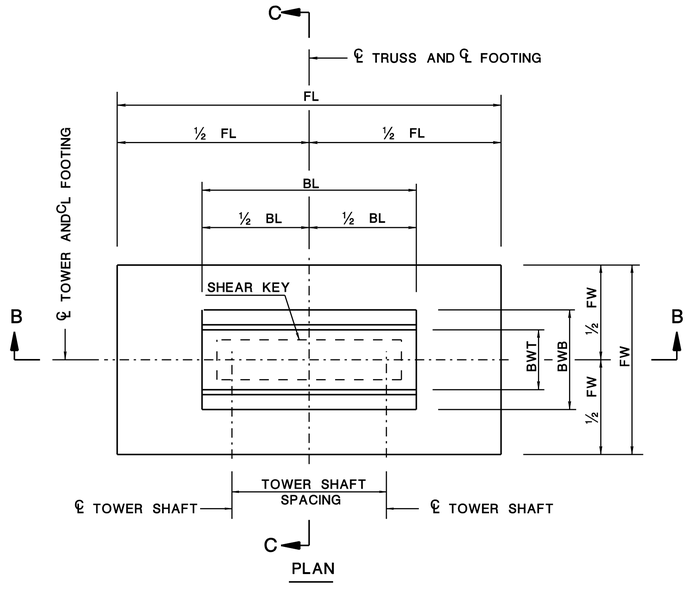
* HORIZONTAL BAR DIAMETER (D) SHALL BE ADJUSTED TO PROVIDE A MIN. 2" CONCRETE COVER.

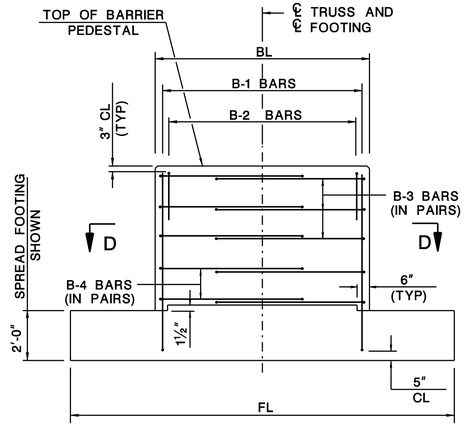


PEDESTAL DETAILS

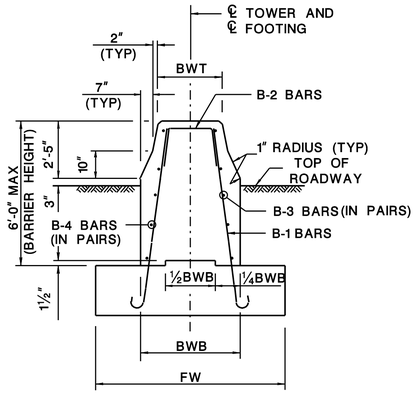


SECTION D-D





SECTION B-B



SECTION C-C

BARRIER PEDESTAL DETAILS

NOTES:

1. FOUNDATION DESIGN CONFORMS TO THE 2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SECTION 13. REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION DESIGN CRITERIA.
2. FOR PEDESTAL AND BARRIER PEDESTAL DIMENSIONS AND REINFORCEMENT, SEE DESIGN TABLES ON SIGN STRUCTURE DRGS. OH-G3 AND OH-G4.
3. ALL REINFORCEMENT IN PEDESTALS AND BARRIER PEDESTALS SHALL BE CORROSION PROTECTED.
4. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1"x 1" UNLESS NOTED OTHERWISE.
5. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWING OR AUTHORIZED BY THE RE. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS AND SHALL BE SECURELY WIRED TOGETHER.
6. LENGTH OF BARS SHOWN IN TABLE ALREADY CONSIDER BENDS. DIMENSIONS DESCRIBED IN BAR SHAPES TABLE ARE OUT-TO-OUT OF BAR.
7. CONCRETE VOLUMES AND REINFORCEMENT SHOWN IN TABLES ARE FOR A 6'-0" HIGH PEDESTAL OR 6'-0" HIGH BARRIER PEDESTAL.
8. WEIGHT SHOWN IN TABLE FOR B-1 AND P-1 BARS IS FOR ONE BAR ONLY. TOTAL WEIGHT OF BARS TO BE DETERMINED BY THE DESIGNER.
9. REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR CLARIFICATION OF REINFORCEMENT STEEL DESIGNATION.

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STANDARDS

PEDESTAL AND BARRIER PEDESTAL DESIGN TABLES AND DETAILS

SCALE : NONE

5
6

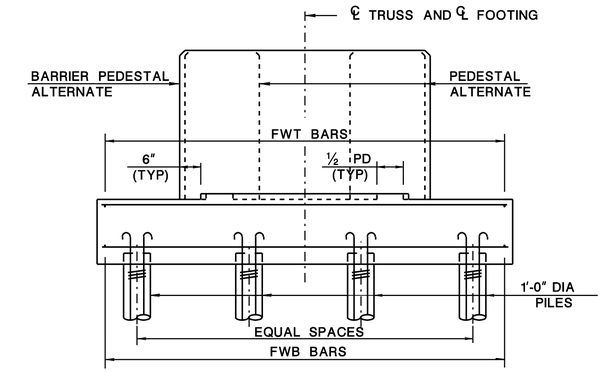
BDC09b-02 – Diameter and Cover of Pedestals Adjusted
BDC07b-02 – ORIGINAL SHEET

SPREAD FOOTINGS			PILE FOOTINGS					FOOTING REINFORCEMENT				
SIZE FLxFW	CONCRETE VOLUME	EXCAV * VOLUME	CONCRETE VOLUME	EXCAV ** VOLUME	No.OF PILES IN ROW		TOTAL	No. AND SIZE OF BARS				TOTAL WEIGHT
(FT)	(C.Y.)	(C.Y.)	(C.Y.)	(C.Y.)	"X" LONG	"Y" TRANS	No.	FLB	FWB	FLT	FWT	(LBS)
15 x 7	7.8	37.9	9.8	40.3	4	3	12	6-#16	11-#16	6-#16	11-#16	342.6
16 x 7	8.3	40.3	10.4	42.8	4	3	12	8-#16	11-#16	6-#16	11-#16	384.5
16 x 8	9.5	45.3	11.9	48.1	4	3	12	10-#16	12-#16	6-#16	12-#16	465.4
18 x 8	10.7	50.7	13.4	53.9	5	3	15	12-#16	13-#16	6-#16	13-#16	546.1
18 x 9	12.0	56.3	15.0	59.8	5	3	15	13-#16	13-#16	7-#16	13-#16	605.2
19 x 8	11.3	53.3	14.1	56.6	5	3	15	10-#19	13-#16	7-#16	14-#16	635.4
19 x 9	12.7	59.2	15.9	62.9	5	3	15	12-#19	13-#16	7-#16	14-#16	714.3
20 x 9	13.3	62.2	16.6	66.1	5	3	15	13-#19	14-#16	8-#16	14-#16	793.2
20 x 10	14.8	68.4	18.5	72.7	5	3	15	13-#19	14-#16	8-#16	14-#16	817.3
21 x 9	14.0	65.2	17.5	69.3	5	3	15	14-#19	15-#16	9-#16	15-#16	910.5
21 x 10	15.6	71.7	19.5	76.2	5	3	15	17-#19	15-#16	10-#16	15-#16	1,052.7
21 x 11	17.1	78.3	21.4	83.2	5	4	20	18-#19	16-#16	10-#16	15-#16	1,120.8
22 x 10	16.3	75.0	20.4	79.7	5	3	15	15-#22	16-#16	8-#19	15-#16	1,238.8
22 x 11	17.9	81.8	22.4	86.9	5	4	20	16-#22	18-#16	8-#19	15-#16	1,331.4
23 x 10	17.0	78.2	21.3	83.1	5	4	20	17-#22	16-#16	9-#19	16-#16	1,410.1
23 x 11	18.7	85.3	23.4	90.6	5	4	20	19-#22	20-#16	9-#19	16-#16	1,573.2
24 x 11	19.6	88.9	24.5	94.5	5	4	20	22-#22	20-#16	12-#19	17-#16	1,928.2
24 x 12	21.3	96.3	26.6	102.3	5	4	20	22-#22	23-#16	12-#19	17-#16	1,994.7
24 x 13	23.1	103.7	28.9	110.2	6	4	24	24-#22	28-#16	13-#19	17-#16	2,265.5
25 x 11	20.4	92.4	25.5	98.2	5	4	20	21-#22	19-#16	13-#19	18-#16	1,966.3
25 x 12	22.2	100.1	27.8	106.4	5	4	20	19-#25	23-#16	13-#19	18-#16	2,240.1
26 x 12	23.1	104.0	28.9	110.5	6	4	24	19-#25	22-#16	14-#19	18-#16	2,325.0
27 x 12	24.0	107.9	30.3	114.6	6	4	24	21-#25	23-#16	15-#19	19-#16	2,590.0
27 x 13	26.0	116.1	32.5	123.4	6	4	24	24-#25	31-#16	16-#19	19-#16	3,023.0

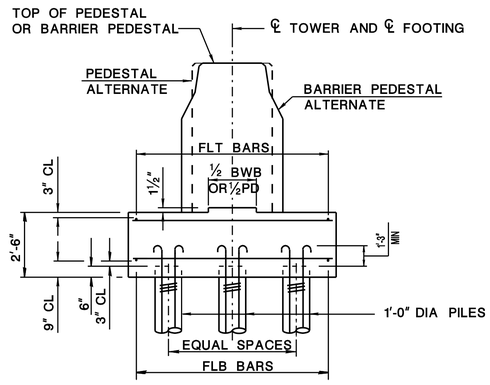
* SPREAD FOOTING EXCAVATION VOLUME BASED ON 8'-0" TOTAL DEPTH OF EXCAVATION.
** PILE FOOTING EXCAVATION VOLUME BASED ON 8'-6" TOTAL DEPTH OF EXCAVATION.

LEGEND:

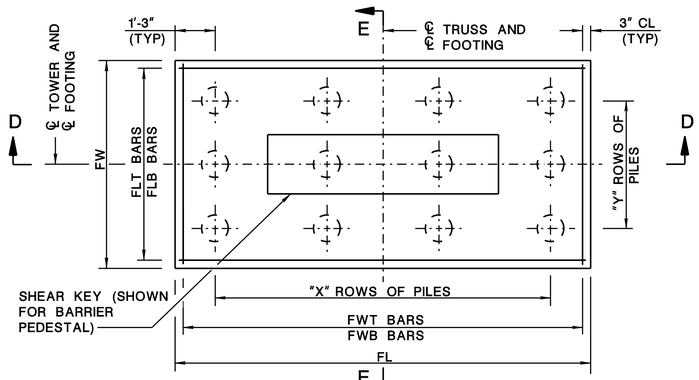
FL : FOOTING LENGTH
FW : FOOTING WIDTH
FLB : No. AND SIZE OF BOTTOM BARS IN DIRECTION FL
FWB : No. AND SIZE OF BOTTOM BARS IN DIRECTION FW
FLT : No. AND SIZE OF TOP BARS IN DIRECTION FL
FWT : No. AND SIZE OF TOP BARS IN DIRECTION FW
PD : PEDESTAL DIAMETER
BWT : BARRIER WIDTH AT TOP



SECTION D-D



SECTION E-E

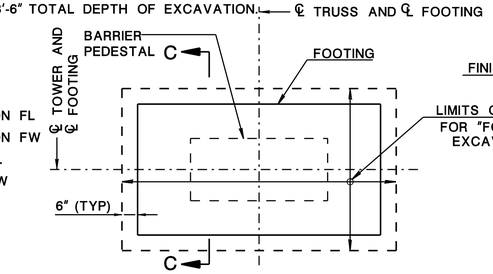


PLAN

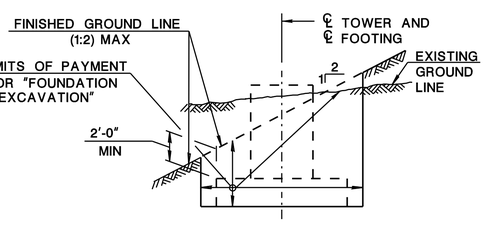
PILE FOOTING DETAILS

NOTES:

1. FOUNDATION DESIGN CONFORMS TO THE 2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRE AND TRAFFIC SIGNALS, SECTION 13.
2. FOR FOOTING DIMENSIONS, SEE DESIGN TABLES ON SIGN STRUCTURE DRGS. OH-G3 AND OH-G4.
3. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWINGS OR AUTHORIZED BY THE RE. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS AND SHALL BE SECURELY WIRED TOGETHER.
4. PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KIPS.
5. THE CASING OF THE CAST-IN-PLACE CONCRETE PILES SHALL BE LEFT IN PLACE AND IS DESIGNED TO RESIST BOTH DIRECT COMPRESSION AND BENDING. THE THICKNESS OF THE CASING SHALL BE NOT LESS THAN 3 / 16".
6. THE LONGITUDINAL REINFORCING STEEL OF THE CAST-IN-PLACE CONCRETE PILES SHALL BE A MINIMUM OF 6-#16 BARS AND SHALL EXTEND THROUGH THE UPPER THIRD OF THE PILE OR 15'-0" DOWN INTO THE CASING, WHICHEVER IS GREATER, AND EMBEDDED INTO THE FOOTING WITH STANDARD HOOKS AS SHOWN.
7. THE SPIRAL REINFORCING FOR THE CAST-IN-PLACE CONCRETE PILES SHALL BE #13 REBARS AND SHALL EXTEND THROUGH THE UPPER THIRD OF THE PILE OR 15'-0" DOWN FROM THE TOP OF CASING, WHICHEVER IS GREATER.
8. ALTERNATE FOUNDATION DESIGNS MAY BE CONSIDERED BY THE DESIGNER WHERE APPROPRIATE. LOADS FOR THE DESIGN OF NON-STANDARD FOUNDATIONS ARE AVAILABLE IN THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL.

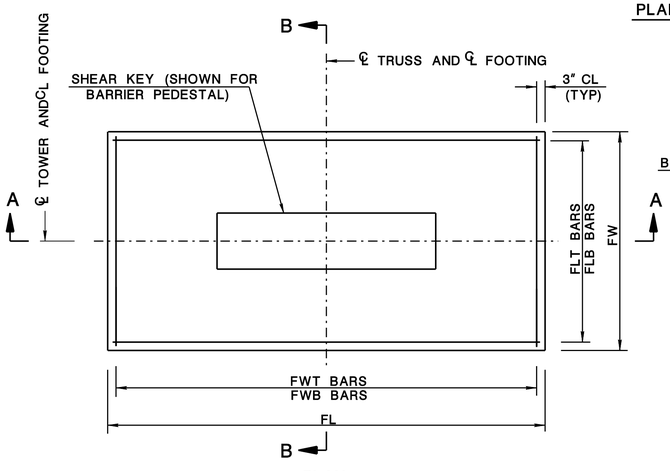


PLAN

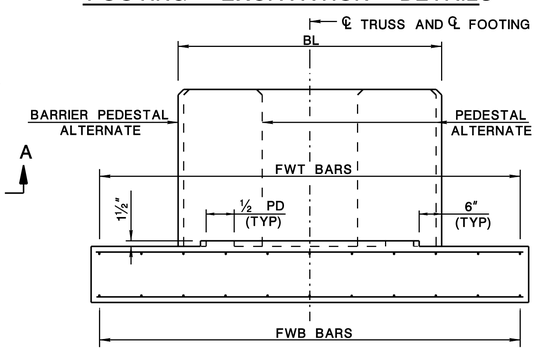


SECTION C-C

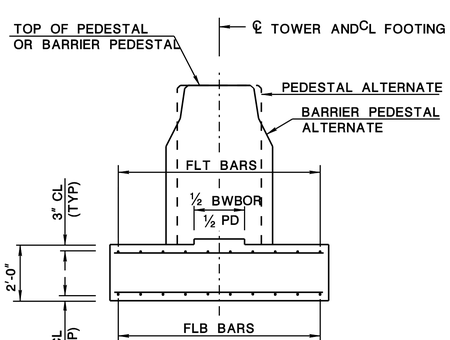
FOOTING EXCAVATION DETAILS



PLAN



SECTION A-A



SECTION B-B

SPREAD FOOTING DETAILS

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. OH-G6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

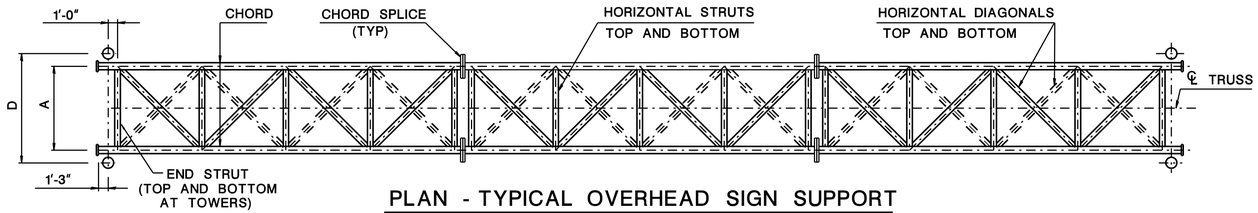
OVERHEAD SIGN SUPPORT STANDARDS

FOOTING DESIGN TABLES AND DETAILS

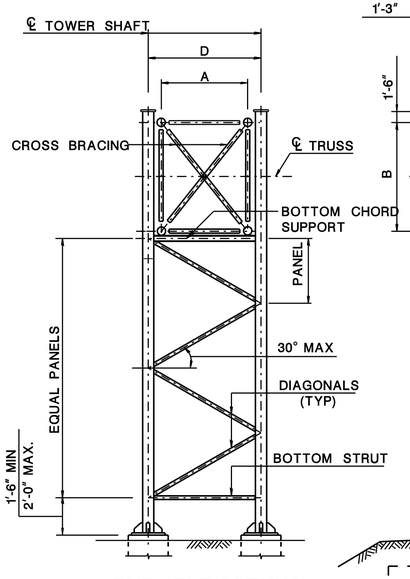
SCALE : NONE

6
6

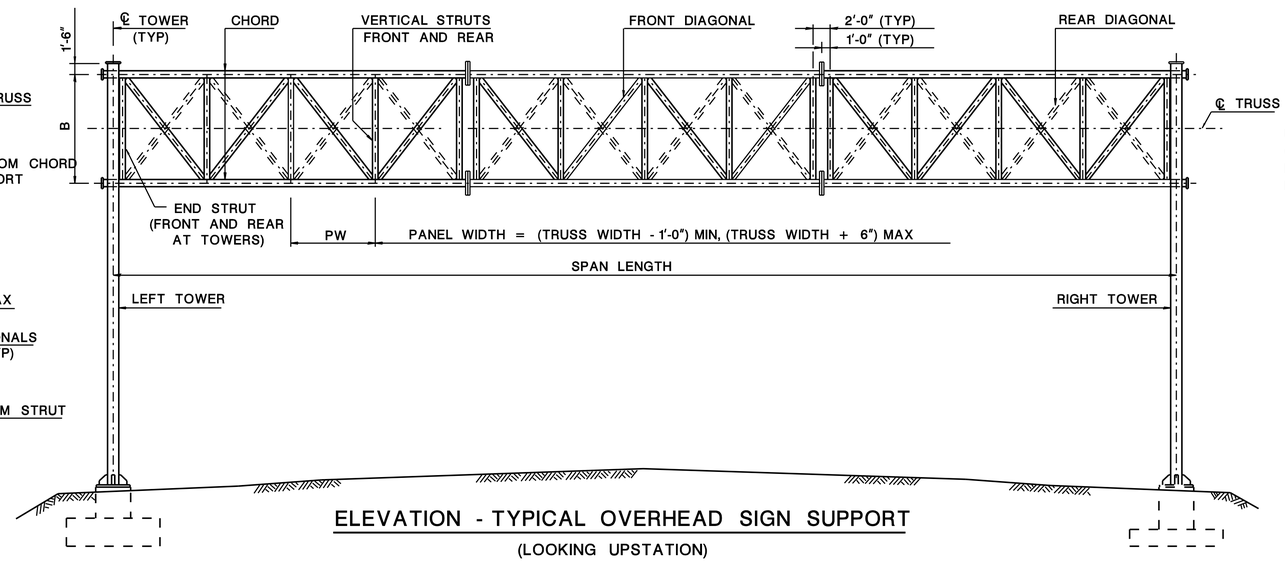
BDC08D-02 – Engineer Changed to RE
BDC07D-02 – ORIGINAL SHEET



PLAN - TYPICAL OVERHEAD SIGN SUPPORT



END ELEVATION



ELEVATION - TYPICAL OVERHEAD SIGN SUPPORT

(LOOKING UPSTATION)

INDEX OF DRAWINGS	
DRG NO.	DESCRIPTION
OH-D1	GENERAL NOTES, PLAN AND ELEVATIONS
OH-D2	SCHEDULE OF STRUCTURES
OH-D3	SCHEDULE OF FOUNDATIONS AND MISCELANEOUS DETAILS
OH-D4	FOUNDATION DETAILS
OH-D5	STEEL TRUSS DETAILS - SHEET 1
OH-D6	STEEL TRUSS DETAILS - SHEET 2
OH-D7	STEEL TOWER DETAILS
OH-D8	TOWER SHAFT BASE AND TRUSS SEAT DETAILS
OH-D9	SIGN AND LIGHTING SYSTEM SUPPORT DETAILS
OH-D10	TYPICAL ELECTRICAL DETAILS

GENERAL NOTES

A. DESIGN CRITERIA

DESIGN SPECIFICATIONS

2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS WITH CURRENT EDITION.

NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL, CURRENT EDITION.

DESIGN LOADS

DESIGN WIND VELOCITY ---- 80 MPH; (ABOVE AASHTO SPECIFICATIONS APPENDIX C)
DESIGN ICE LOAD ---------- 3 PSF

FATIGUE LOADS

ALL STRUCTURAL DETAILS HAVE BEEN ANALYZED AGAINST FATIGUE CATEGORY II IMPORTANCE FACTOR VALUES AS DESINATED IN THE ABOVE AASHTO SPECIFICATIONS.

VARIABLE MESSAGE SIGN (VMS) STRUCTURES

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL WHEN FURNISHING SUPPORT STRUCTURES FOR VARIABLE MESSAGE SIGNS (VMS).

CONCRETE DESIGN STRESSES

SPECIFIED COMPRESSIVE STRENGTH (f'c) (CLASS B) ---- 3,000 PSI
EXTREME FIBER COMPRESSIVE STRESS (fc) ---------- 1,200 PSI

REINFORCEMENT STEEL DESIGN STRESS

YIELD SYTRENGTH (fy) (A615, GRADE 60) ---- 60 KSI
TENSILE STRESS (fs) ---- 24 KSI

STRUCTURAL STEEL DESIGN STRENGTHS

YIELD STRENGTH (Fy)
PIPES (A53, TYPE S OR TYPE E, GRADE B) ---- 35 KSI (MIN.) *
API 5L, GRADE B ---- REFER TO API SPECIFICATIONS

* FABRICATORS ARE ADVISED THAT REPAIRS TO THE MATERIALS WILL NOT BE PERMITTED. IF TEARING, CRACKING OR ANY DEFECT OCCURS, THE MATERIAL WILL BE REQUIRED TO BE REPLACED.

FOUNDATIONS

MAXIMUM FOUNDATION DESIGN BEARING PRESSURE ---- 2.5 KSF
FOOTINGS ARE DESIGNED SUCH THAT A MINIMUM OF 75 PERCENT OF THE FOOTING IS ALWAYS IN CONTACT; A MAXIMUM OF 25 PERCENT OF THE FOOTING IS IN UPLIFT.

BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KIPS.

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION DESIGN CRITERIA.

CAMBER

PERMANENT CAMBER EQUAL TO L/1000 HAS BEEN PROVIDED IN ADDITION TO THE DEAD LOAD CAMBER.

B. MATERIALS

I. STEEL

STEEL PIPE SHALL BE CERTIFIED BY MILL TEST REPORT TO MEET ASTM SPECIFICATION A53, TYPE E OR S, GRADE B WITH THE EXCEPTION THAT API 5L, GRADE B MAY BE USED WHEN THE SPECIFIED WALL THICKNESS IS GREATER THAN ½". ONLY ELECTRICAL RESISTANCE WELDED (ERW) MANUFACTURED SINGLE SEAM PIPE IS PERMITTED. HOWEVER, WHEN THE REQUIRED PIPE SIZE IS GREATER THAN 24", DOUBLE SEAM PIPE MAY BE USED. A MILL TEST REPORT MUST BE PROVIDED, CERTIFIED AND SIGNED BY THE PIPE MANUFACTURER, CONTAINING PHYSICAL AND CHEMICAL PROPERTIES AND THE MANUFACTURING PROCESS USED TO PRODUCE THE PIPE.

ALL OTHER STEEL SHALL CONFORM TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR GRADE 50. ALL SPECIFIED STEEL PLATES SHALL MEET SUPPLEMENTARY REQUIREMENTS FOR NOTCH TOUGHNESS (CHARPY TESTING, ZONE #2).

UPON COMPLETION OF FABRICATION, THE FABRICATOR SHALL PROVIDE A NOTARIZED CERTIFICATION OF COMPLIANCE AS PER THE REQUIREMENT OF THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, INCLUDING A LEGIBLE COPY OF ALL MILL TEST REPORTS FOR MATERIALS INCORPORATED INTO THE WORK. ALSO, A COPY OF QC REPORTS SHALL BE PROVIDED.

STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM SPECIFICATION F1554, GRADE 36 OR 55. THE ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C.

CHORD SPLICE ASSEMBLY FASTENERS SHALL BE HIGH STRENGTH STEEL BOLTS CONFORMING TO ASTM SPECIFICATION A325 AND SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C. ALL OTHER FASTENERS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320, GRADE B8, CLASS 1.

CAPS FOR THE ENDS OF CHORDS AND TOPS OF POSTS SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123.

WELDING OF STEEL SHALL BE AS SPECIFIED IN AWS D1.1, CURRENT EDITION, AND THE NJDOT STANDARD SPECIFICATIONS.

AFTER COMPLETE FABRICATION, EACH STEEL SECTION SHALL BE HOT DIP GALVANIZED ACCORDING TO THE REQUIREMENTS OF ASTM SPECIFICATION A123, AND AS MODIFIED BY THE NJDOT STANDARD SPECIFICATIONS. A SINGLE DIP GALVANIZING PROCESS IS PREFERRED IF SIZE PERMITS.

REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR CRITERIA ON FURNISHING MATERIALS OTHER THAN SPECIFIED ABOVE.

II. ALUMINUM

ALUMINUM SHALL CONFORM TO THE ASTM SPECIFICATIONS AND ALLOYS LISTED BELOW:

APPLICATION	ASTM SPECIFICATION	ASTM ALLOY
ROLLED OR EXTRUDED SHAPES	B308	6061 - T6
PLATES	B209	6061 - T6
DRAWN SEAMLESS TUBES	B210	6061 - T6
EXTRUDED TUBES	B221	6061 - T6

WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2, CURRENT EDITION, AND THE NJDOT STANDARD SPECIFICATIONS.

THE SIGN PANEL SHALL BE INSTALLED LEVEL. THE CONTRACTOR MAY FIELD DRILL THE SIGN SUPPORTS AS REQUIRED TO ACHIEVE THIS.

III. REINFORCEMENT STEEL

ALL REINFORCEMENT STEEL SHALL BE ASTM A615, GRADE 60.

IV. CONCRETE

ALL CONCRETE SHALL BE "CLASS B" AS DEFINED IN THE NJDOT STANDARD SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED BY THE DESIGNER.

V. SIGN LIGHTING SYSTEM SUPPORTS

SIGN HANGERS SHALL BE ALUMINUM OR STEEL. LUMINAIRE SUPPORTS SHALL BE ALUMINUM OR STEEL. THE STEEL SHALL CONFORM TO ASTM A709 GRADE 36 OR GRADE 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123. STEEL SURFACES SHALL BE PREVENTED FROM COMING INTO CONTACT WITH ALUMINUM SURFACES BY MEANS OF APPROVED PADS PLACED BETWEEN THE DISSIMILAR METALS. PADS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A240, TYPE 304 OR APPROVED EQUAL. CONNECTING U BOLTS SHALL BE STAINLESS STEEL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS. INSTALLATION OF SIGN LIGHTING SYSTEM SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

STATE	FEDERAL PROJECT NO.
N.J.	

SIGN STRUCTURE DRG. OH-D1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
GENERAL NOTES, PLAN AND ELEVATIONS

ROUTE: SECTION:

SCALE : NONE

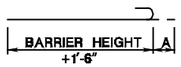
BRIDGE
SHEET NO.____ OF____

BDC08D-02 – Index OH-D9 Changed
BDC07D-02 – ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	

OVERHEAD SIGN SUPPORTS - SCHEDULE OF FOUNDATIONS

STRUCTURE No.	FOOTINGS													PEDESTALS (SEE NOTE 6)									BARRIER PEDESTALS																					TOTAL WEIGHT OF COR PROTECTED REBARS (LBS)	TOTAL WEIGHT OF ALL REBAR TYPES (LBS)	TOTAL VOLUME OF CONC (C.Y.)
	SIZE FLxFW (FT)	VOLUME				No. OF PILES IN ROW		PILE LGTH (FT)	REINFORCING BARS				WT OF RE-BARS (LBS)	SIZE PD (FT)	PED HT (FT)	VOL OF CONC (C.Y.)	REINFORCING BARS						WEIGHT OF COR PROTE-CTED REBARS (LBS)	SIZE BWT (FT)	BAR-RIER HT (FT)	BAR-RIER LGTH (FT)	VOL OF CONC (C.Y.)	REINFORCING BARS																WEIGHT OF COR PROTE-CTED REBARS (LBS)			
		CONCRETE		EXCAVATION					No. & SIZE								TYPE "P-1"			TYPE "P-2"					TYPE "B-1"			TYPE "B-2"				TYPE "B-3"				TYPE "B-4"										
		WITH PILES (C.Y.)	W/O PILES (C.Y.)	WITH PILES (C.Y.)	W/O PILES (C.Y.)	"X"	"Y"		FLB	FWB	FLT	FWT					No. & SIZE	A (FT-IN)	LGTH (FT-IN)	No. & SIZE	D (FT-IN)	LGTH (FT-IN)						No. & SIZE	A (FT-IN)	LGTH (FT-IN)	No. & SIZE	B (FT-IN)	C (FT-IN)	LGTH (FT-IN)	No. & SIZE	E (FT-IN)	F (FT-IN)	LGTH (FT-IN)	No. & SIZE	E (FT-IN)	G (FT-IN)	LGTH (FT-IN)						



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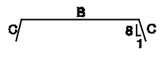

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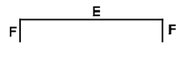

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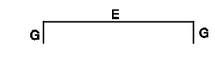
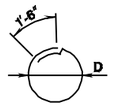


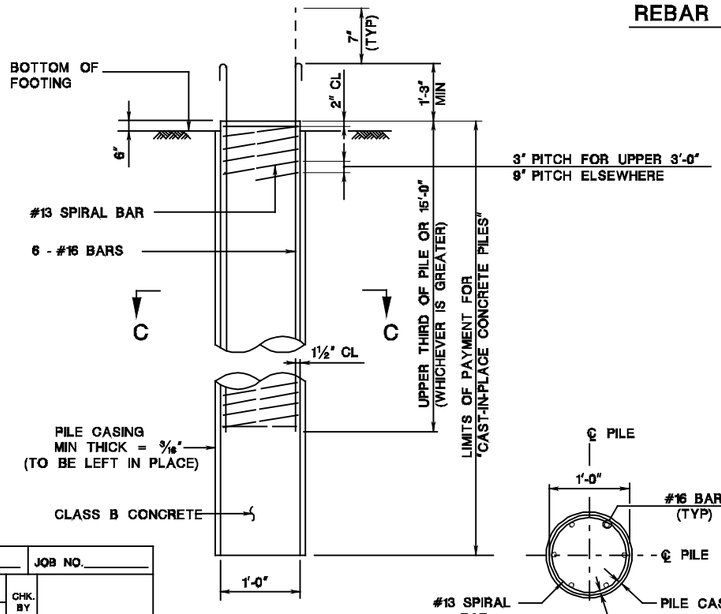
TYPE "B-4"

TYPE "P-1"

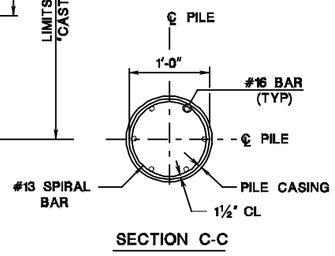


TYPE "P-2"

REBAR SHAPES

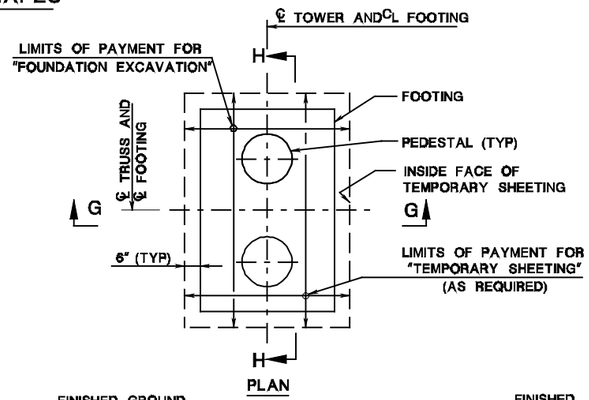


ELEVATION

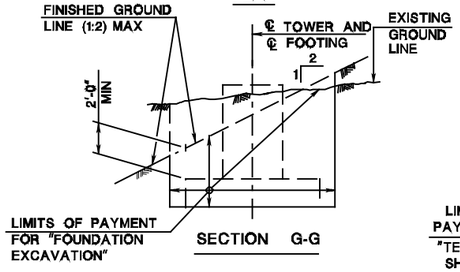


SECTION C-C

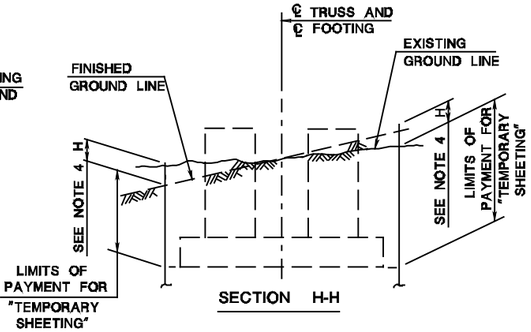
CAST-IN-PLACE CONCRETE PILE



PLAN



SECTION G-G



SECTION H-H

TEMPORARY SHEETING AND EXCAVATION DETAILS

NOTES:

1. BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES. ALL PILES SHALL BE 1'-0" IN DIAMETER OR EQUIVALENT AND SHALL HAVE A MINIMUM BEARING CAPACITY OF 50 KIPS. THE NUMBER AND SPACING OF PILES SHALL BE AS INDICATED ON SIGN STRUCTURE DRG. OH-D4.
2. APPROVED METAL SPACERS SHALL BE ATTACHED TO TOP AND BOTTOM SPIRALS TO ENSURE THAT THE REQUIRED CLEAR DISTANCE TO THE CASING IS MAINTAINED.
3. NO CONCRETE SHALL BE PLACED IN CAST-IN-PLACE PILES UNTIL AFTER ALL PILE CASINGS FOR THE FOOTING HAVE BEEN DRIVEN.
4. WHEN TEMPORARY SHEETING IS REQUIRED, H IS 3'-0" WHEN ADJACENT TO PEDESTRIAN OR VEHICULAR TRAFFIC AND 1'-0" MINIMUM FOR ALL OTHER CONDITIONS.
5. PAYMENT LIMITS FOR TEMPORARY SHEETING SHALL BE MEASURED FROM THE FINISHED GRADE LINE OR FROM THE EXISTING GROUND LINE, WHICHEVER IS LOWER.
6. QUANTITIES SHOWN ARE FOR BOTH PEDESTALS.

CONTROL SECTION	JOB NO.
DES. BY	CHK. BY
DWN. BY	CHK. BY
EST. BY	CHK. BY
SPECS. BY	
IN CHARGE OF	

BC(OTD-02 - ORIGINAL SHEET

SIGN STRUCTURE DRG. OH-D3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
SCHEDULE OF FOUNDATIONS AND MISCELLANEOUS DETAILS

ROUTE: SECTION

SCALE : NONE

BRIDGE SHEET NO. ____ OF ____

STATE	FEDERAL PROJECT NO.
N.J.	

OVERHEAD SIGN SUPPORTS (STEEL TRUSSES AND STEEL TOWERS)

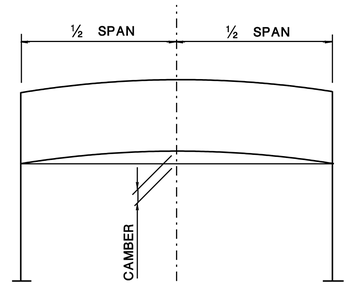
SIGN SUPPORTS		ELEVATIONS			SPAN LENGTH (FT)	TRUSSES							TOWERS			
STRUCTURE No.	STATION	℄ TRUSS	BOT OF BASE PLATE LEFT	BOT OF BASE PLATE RIGHT		A x B (FT)	CHORDS O.D.xTHICK (IN)	DIAGONALS O.D.xTHICK (IN)	STRUTS O.D.xTHICK (IN)	END STRUTS O.D.xTHICK (IN)	No. OF TRUSS UNITS	CAMBER (IN)	D (FT-IN)	SHAFTS O.D.xTHICK (IN)	DIAGONALS O.D.xTHICK (IN)	STRUTS O.D.xTHICK (IN)

NOTES:

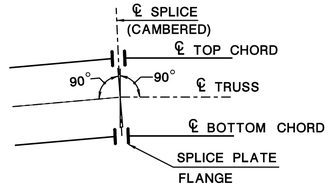
1. ALL ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION.
2. LEFT AND RIGHT TOWERS ARE DEFINED LOOKING UPSTATION.
3. THE NUMBER OF TRUSS UNITS SHOWN IN THE SCHEDULE OF STRUCTURES IS OPTIONAL. ALTERNATES MAY BE SUBMITTED TO THE RE FOR APPROVAL.
4. THE DIAGONALS ON EACH FACE OF THE TRUSS MUST FORM CONTINUOUS TRUSSING BETWEEN TOWERS (SEE TYPICAL PLAN AND ELEVATION VIEWS ON SIGN STRUCTURE DRG. OH-D1).

SUMMARY OF QUANTITIES

PAY ITEM NO.	STADARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY



CAMBER REQUIRED



CAMBER DETAIL

CAMBER NOTE:

CAMBER SHALL BE OBTAINED BY INCREASING THE TOP CHORD LENGTH AND DECREASING THE BOTTOM CHORD LENGTH AS SHOWN. CHORD SPLICE FLANGES SHALL BE SKEWED TO THE ANGLE SO OBTAINED BEFORE WELDING TO CHORDS. NO FORCE SHALL BE APPLIED IN PROVIDING CAMBER. AN ALTERNATE METHOD OF OBTAINING CAMBER MAY BE USED AS APPROVED BY THE RE.

CONTROL SECTION		JOB NO.	
DES. BY		CHK. BY	
DWN. BY			
EST. BY		CHK. BY	
SPECS. BY			

IN CHARGE OF

BDC09D-02 – Engineer Changed to RE
BDC07D-02 – ORIGINAL SHEET

SIGN STRUCTURE DRG. OH-D2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

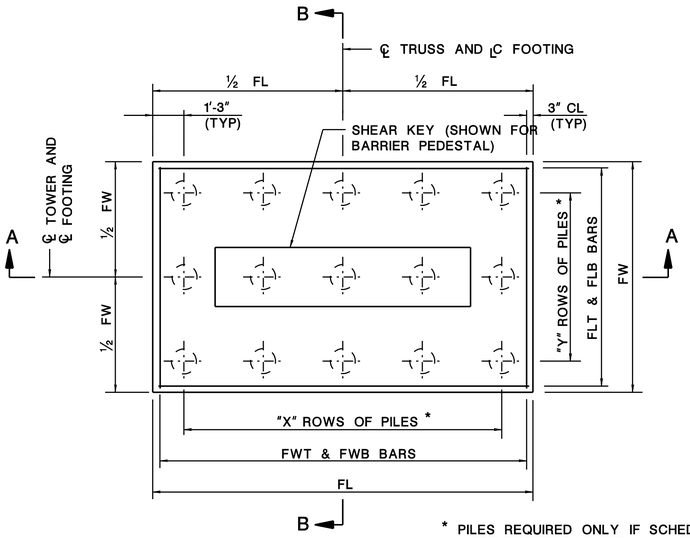
OVERHEAD SIGN SUPPORT STRUCTURES
SCHEDULE OF STRUCTURES

ROUTE: SECTION

SCALE : NONE

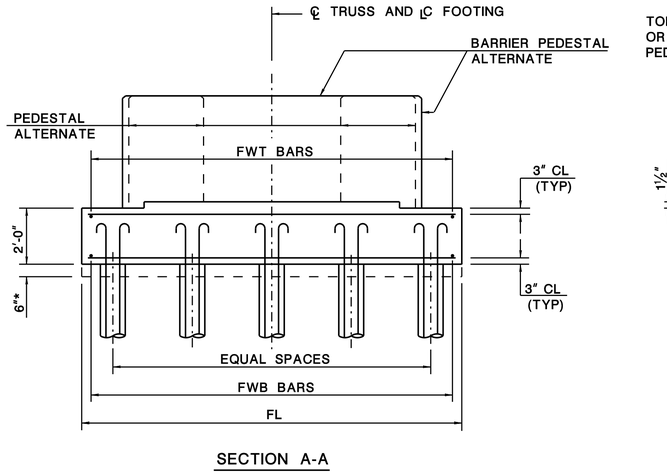
BRIDGE
SHEET NO. ____ OF ____

STATE	FEDERAL PROJECT NO.
N.J.	

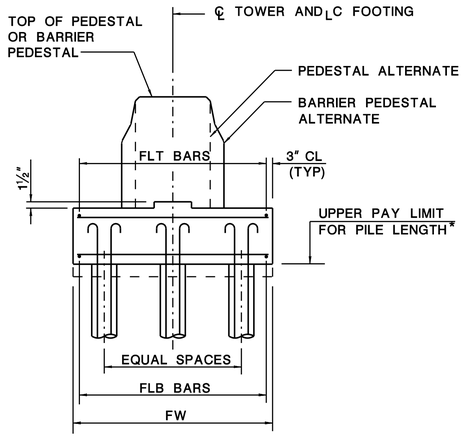


PLAN

* PILES REQUIRED ONLY IF SCHEDULED AS A CONTRACT PAY ITEM



SECTION A-A

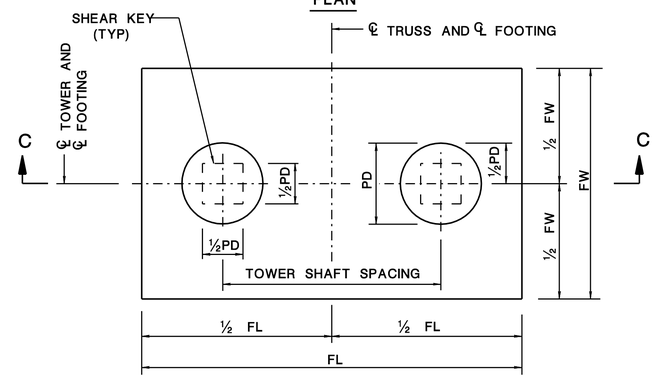


SECTION B-B

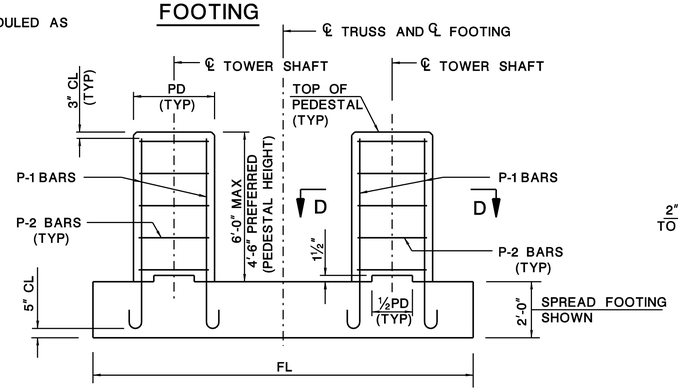
NOTES:

1. ALL REINFORCEMENT IN PEDESTALS OR BARRIER PEDESTALS SHALL BE CORROSION PROTECTED.
2. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1"x1" UNLESS NOTED OTHERWISE.
3. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWING OR AUTHORIZED BY THE RE. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS AND SHALL BE SECURELY WIRED TOGETHER.
4. FOR DETAILS OF CAST-IN-PLACE CONCRETE PILES, SEE SIGN STRUCTURE DRG. OH-D3..

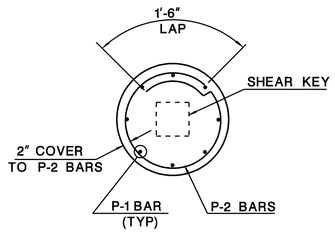
FOOTING



PLAN

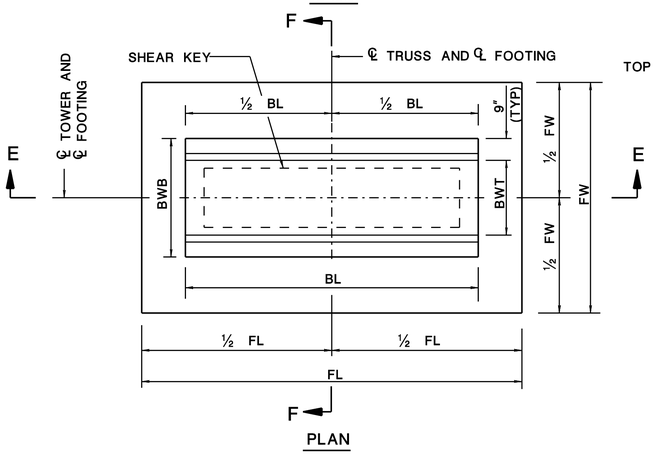


SECTION C-C

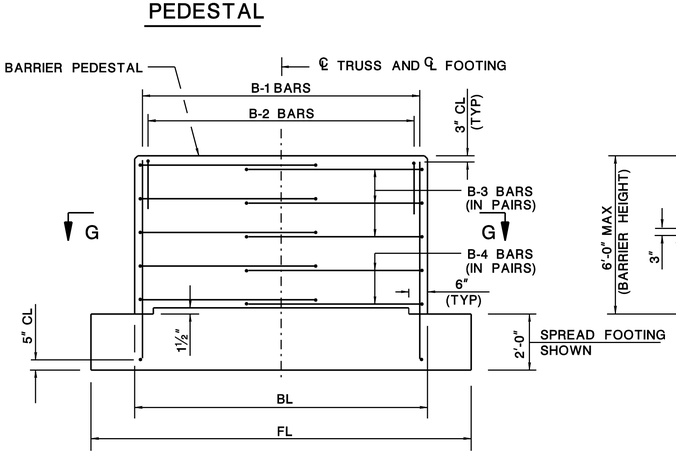


SECTION D-D

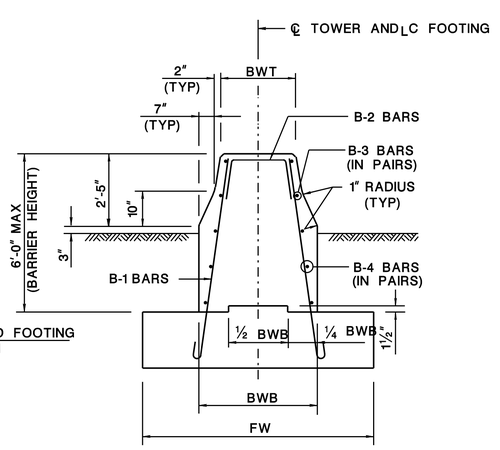
PEDESTAL



PLAN

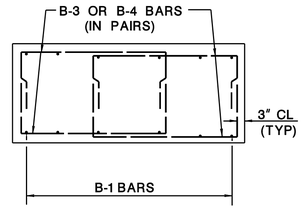


SECTION E-E



SECTION F-F

BARRIER PEDESTAL



SECTION G-G

SIGN STRUCTURE DRG. OH-D4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

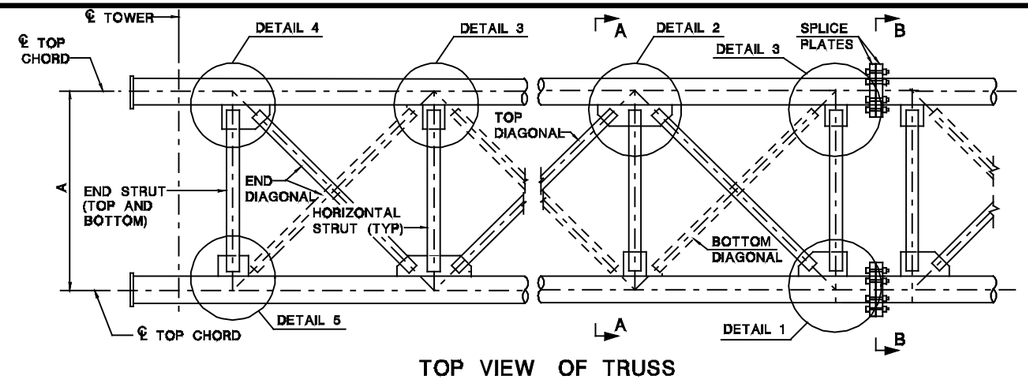
OVERHEAD SIGN SUPPORT STRUCTURES FOUNDATION DETAILS

ROUTE: SECTION

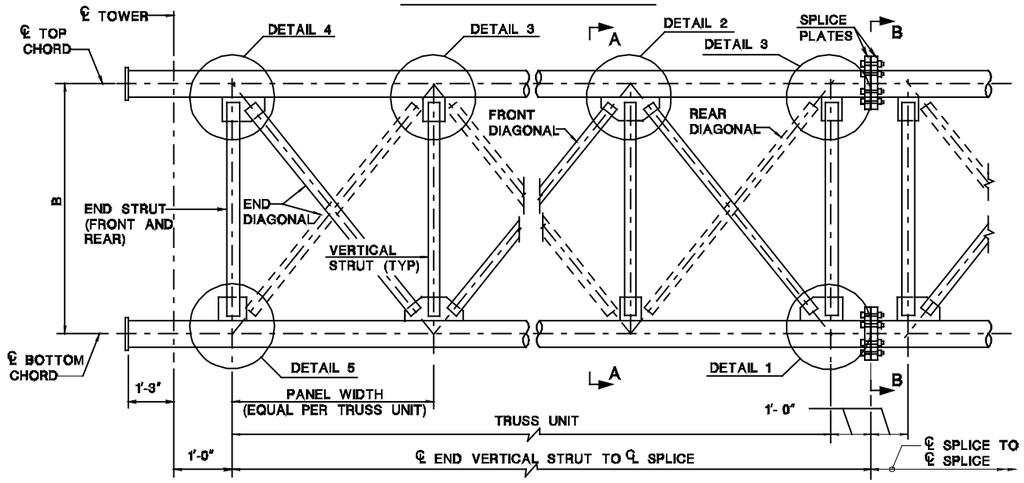
SCALE : NONE

BRIDGE
SHEET NO.____ OF____

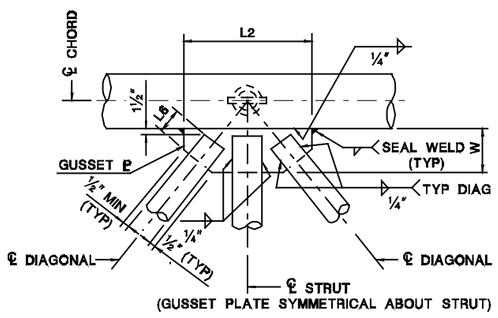
BDC08D-02 – Pedestal Concrete Cover Adjusted
BDC07D-02 – ORIGINAL SHEET



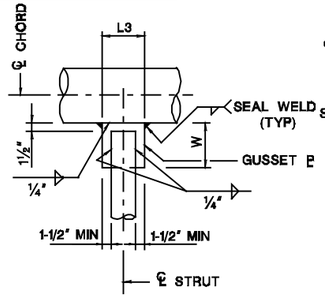
TOP VIEW OF TRUSS



FRONT VIEW OF TRUSS



DETAIL 2
(SEE COPE HOLE DETAIL)



DETAIL 3
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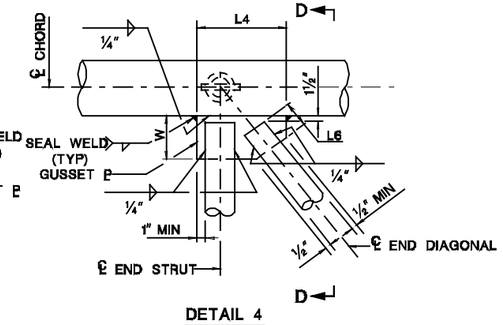
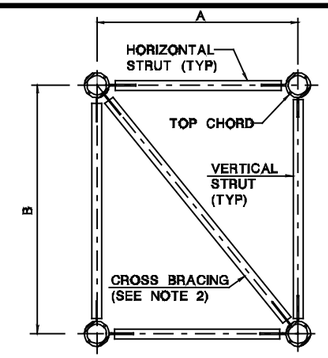
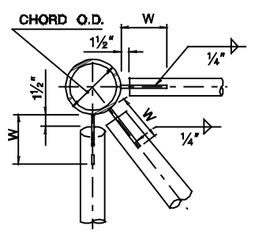


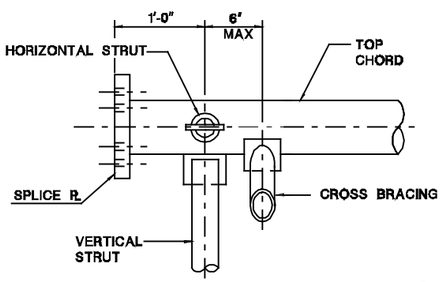
DETAIL 4
(END 'K' GUSSET)
(SEE COPE HOLE DETAIL)



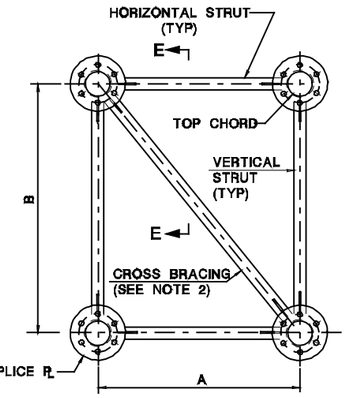
SECTION A-A



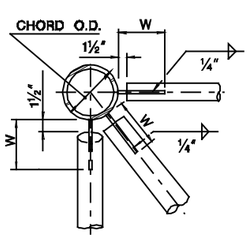
SECTION D-D



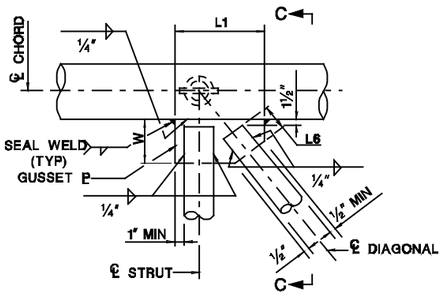
SECTION E-E



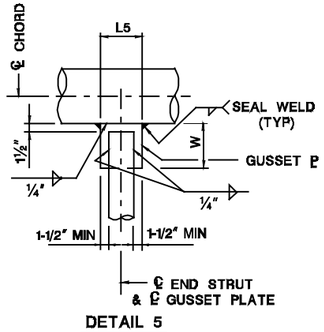
SECTION B-B



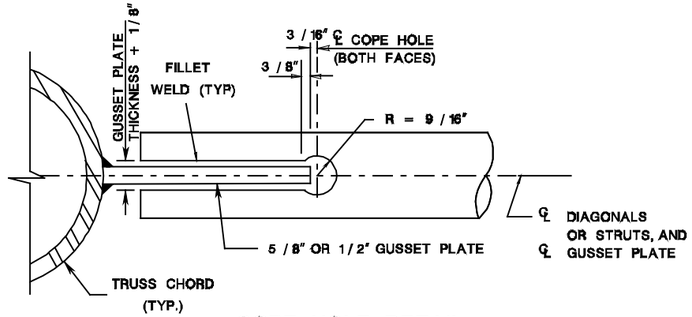
SECTION C-C



DETAIL 1 (SEE COPE HOLE DETAIL)



DETAIL 5
(END 'T' GUSSET)
(SEE COPE HOLE DETAIL)



COPE HOLE DETAIL

NOTE:

COPE HOLES TO BE PROVIDED AT BOTH ENDS AND BOTH FACES OF ALL STRUTS AND DIAGONALS.

TRUSS GUSSET PLATE DIMENSIONS

CHORD O.D. (IN)	PLATE THICKNESS	PLATE WIDTH W	"K" GUSSET MIN. L1	"K-T" GUSSET MIN. L2	"T" GUSSET MIN. L3	"END - K" GUSSET MIN. L4	"END - T" GUSSET MIN. L5	WELD LENGTH MIN. L6
3.500	½"	6½"	10"	1'-2"	6½"	10"	6½"	3½"
4.000	½"	6½"	10"	1'-2"	6½"	10"	6½"	3½"
4.500	½"	6½"	10"	1'-2"	6½"	10"	6½"	3½"
5.563	½"	6½"	10"	1'-2"	6½"	10"	6½"	3½"
6.625	⅝"	7"	10⅜"	1'-3"	6½"	1' - 0"	6½"	4"
8.625	⅝"	7½"	11¼"	1'-5"	6½"	1' - 0½"	6½"	4¾"
10.750	⅝"	8"	1'-0¼"	1'-7"	6½"	1' - 4"	6½"	5"
12.750	⅝"	8½"	1'-1"	1'-8½"	6½"	1' - 4"	6½"	5½"
14.000	⅝"	8½"	1'-1½"	1'-9½"	6½"	1' - 4½"	6½"	5½"

NOTES:

1. THE SIZE OF CROSS BRACING MEMBERS SHALL BE THE SAME AS THAT OF THE DIAGONALS. CROSS BRACING SHALL BE LOCATED AT THE ENDS OF EACH TRUSS UNIT AND SPACED AT EVERY THIRD PANEL MAXIMUM, ALTERNATING IN DIRECTION.
2. FOR CHORD CAP DETAILS, SEE SIGN STRUCTURE DRG. OH-D8.
3. FOR CHORD SPLICES, SEE SIGN STRUCTURE DRG. OH-D6.
4. THE LENGTHS SHOWN IN THE TABLE FOR THE TRUSS GUSSET PLATE ARE ABSOLUTE MINIMUM DIMENSIONS. THE ACTUAL DIMENSIONS REQUIRED WILL DEPEND ON THE PANEL DEPTH AND WIDTH USED.

STATE	FEDERAL PROJECT NO.
N.J.	

SIGN STRUCTURE DRG. OH-D5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
STEEL TRUSS DETAILS - SHEET 1

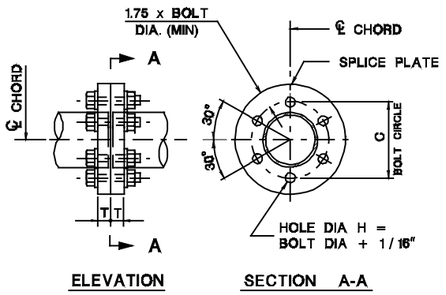
ROUTE: SECTION

SCALE : NONE

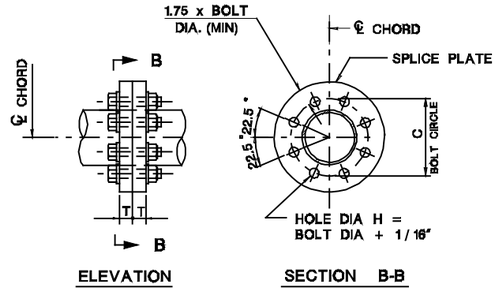
BRIDGE SHEET NO.____ OF____

BDC07D-05 - ORIGINAL SHEET

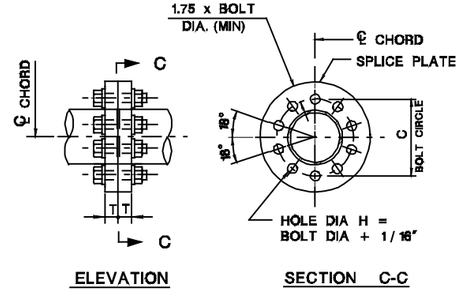
STATE	FEDERAL PROJECT NO.
N.J.	



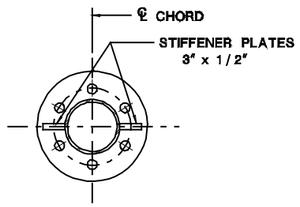
SIX-BOLT CHORD SPLICE DETAIL



EIGHT-BOLT CHORD SPLICE DETAIL

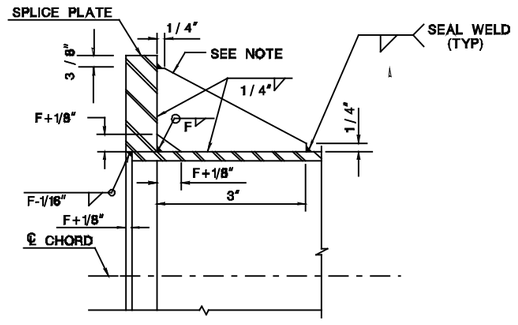


TEN-BOLT CHORD SPLICE DETAIL



CHORD SPLICE WITH STIFFENERS

(SIX-BOLT SPLICE SHOWN)



CHORD SPLICE WELD DETAIL

NOTES:

1. CHORD SPLICE STIFFENER PLATES ARE TO BE USED FOR CHORD SPLICES LOCATED AT MIDSPAN (CENTERLINE) OF TRUSS ONLY (i.e. 2-SEGMENT, 4-SEGMENT AND 6-SEGMENT SPANS). (SEE CHORD SPLICE ASSEMBLY WELD DETAIL FOR MORE INFORMATION).

2. CHORD SPLICE STIFFENER PLATES ARE SHOWN HORIZONTAL. STIFFENER PLATES MAY BE REPOSITIONED, AS NECESSARY, TO PROVIDE SUFFICIENT CLEARANCE FOR BOLTING OF THE SPLICE, BUT THEY SHALL ALWAYS BE POSITIONED OPPOSITE TO EACH OTHER AS SHOWN.

TRUSS CHORD SPLICES						
	SPLICE PLATES		SPLICE BOLTS			
CHORD O.D.xTHICK (IN)	THICKNESS T	WELD SIZE F	No. OF BOLTS	BOLT CIRCLE C	DIAMETER	BOLT TENSION (KIPS)
3.500x.216	1½"	¼"	6	6⅛"	¾"	28
4.000x.226	1½"	¼"	6	6⅝"	¾"	28
4.500x.237	1½"	¼"	6	7⅛"	¾"	28
5.563x.258	1½"	9/32"	6	9"	1"	51
6.625x.280	2"	9/32"	8	10⅛"	1"	51
8.625x.322	2"	5/16"	8	1'-1"	1¼"	71
10.750x.365	2"	11/32"	8	1'-4"	1½"	103
12.750x.375	2"	⅜"	10	1'-6"	1½"	103
14.000x.375	2"	⅜"	10	1'-7¼"	1½"	103

NOTES:

1. ASTM A325 SPLICE BOLTS SHALL BE HEAVY HEXAGON TYPE AND SHALL BE FURNISHED WITH HEAVY HEXAGON NUTS AND WASHERS.

2. THE THREADED PORTION OF THE SPLICE BOLTS SHALL BE EXCLUDED FROM THE SHEAR PLANE OF THE SPLICE.

3. THE PROVISIONS OF THE NJDOT STANDARD SPECIFICATIONS SHALL BE FOLLOWED IN FURNISHING THE REQUIRED CHORD SPLICE ASSEMBLY.

4. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR SPLICE BOLT TIGHTENING PROCEDURES. WHEN CALIBRATED WRENCHES ARE USED FOR BOLT INSTALLATION, THEY SHALL BE SET TO PROVIDE THE TENSION THAT IS SPECIFIED IN THE TABLE PROVIDED HEREIN.

SIGN STRUCTURE DRG. OH-D6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
STEEL TRUSS DETAILS - SHEET 2

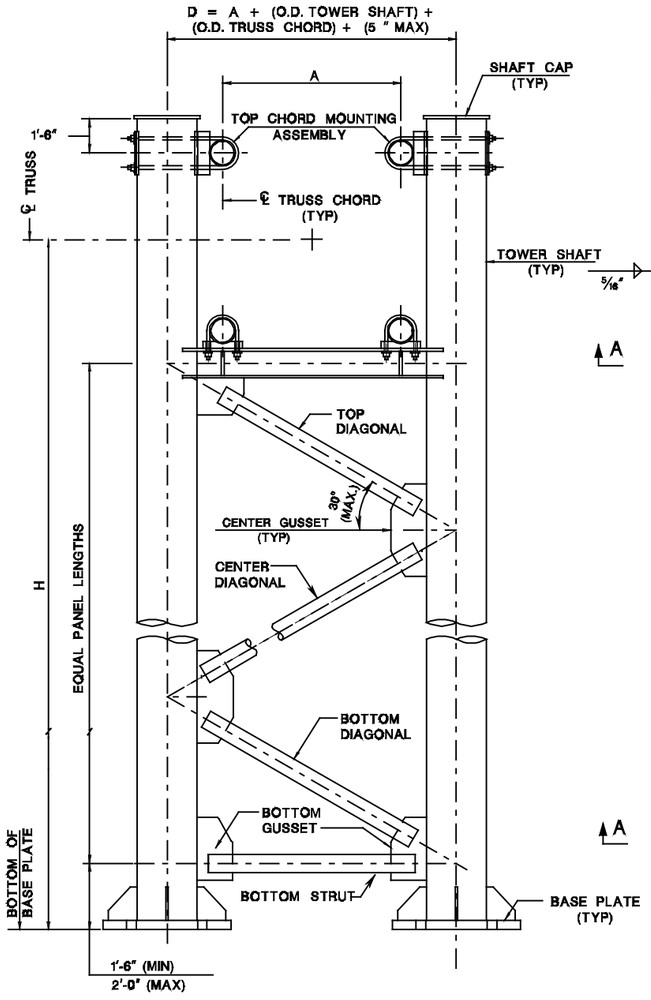
ROUTE: SECTION

SCALE : NONE

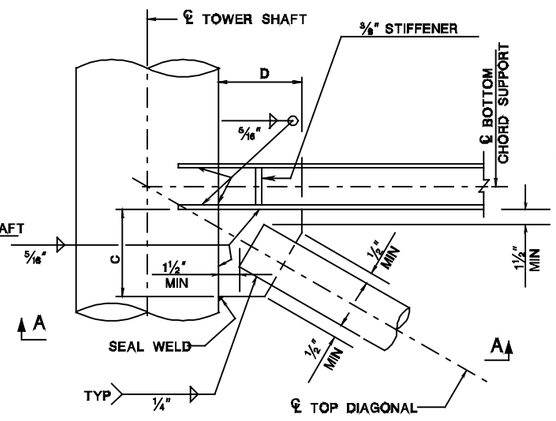
BRIDGE
SHEET NO.____ OF____

BDC07S-02 - ORIGINAL SHEET

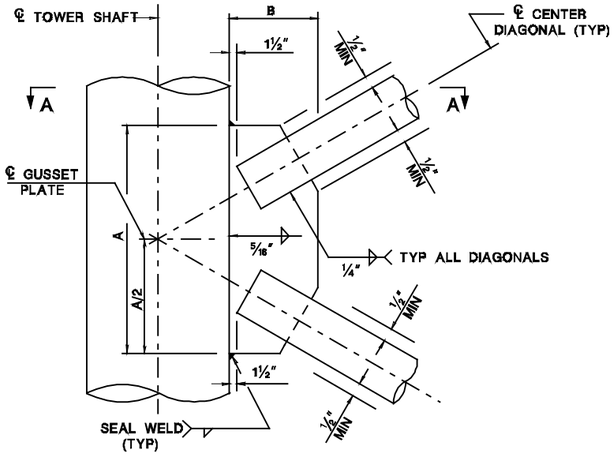
STATE	FEDERAL PROJECT NO.
N.J.	



TOWER ELEVATION

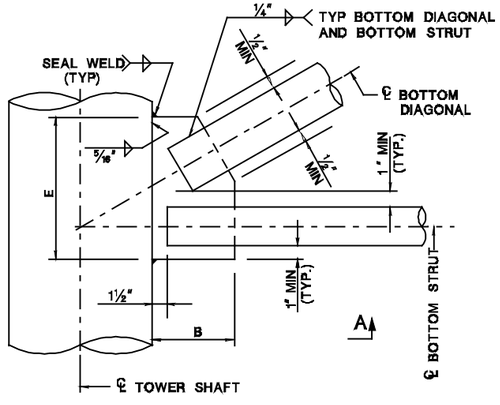


TOP GUSSET DETAIL

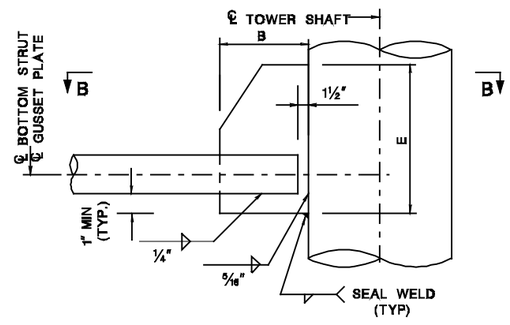


CENTER GUSSET DETAIL

⅞" GUSSET PLATES					
TOWER SHAFT O.D. (IN)	A (FT-IN) MIN.	B (IN) MIN.	C (IN) MIN.	D (IN) MIN.	E (IN) MIN.
10.750	1'-6"	7"	6¼"	12¼"	13"
12.750	1'-7½"	7¼"	7"	12¾"	13⅜"
14.000	1'-11"	9"	9½"	16"	17½"
16.000	2'-1⅝"	10¼"	11⅜"	16½"	17½"
18.000	2'-4"	11"	11⅜"	17¾"	19"
20.000	2' 5½"	11"	11⅜"	15½"	19"
24.000	2'-6½"	11"	12⅜"	15"	19"



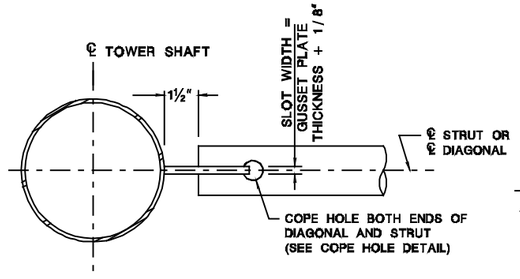
BOTTOM GUSSET DETAIL



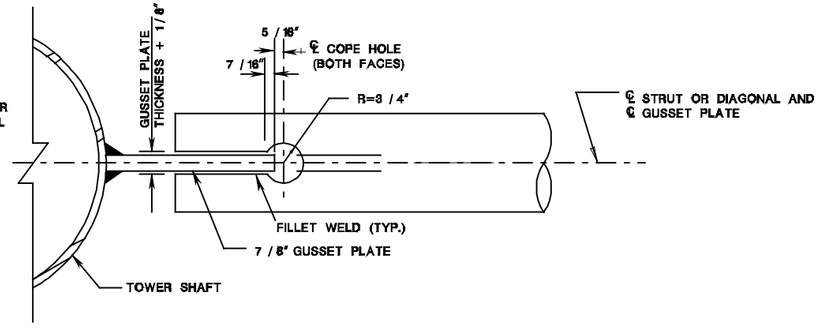
BOTTOM GUSSET DETAIL

NOTES:

1. FOR DETAILS OF THE SADDLE BLOCK, SEE SIGN STRUCTURE DRG. OH-D8.
2. FOR TOWER SHAFT CAP DETAILS, SEE SIGN STRUCTURE DRG. OH-D8.
3. FOR DETAILS OF TOP AND BOTTOM CHORD MOUNTING ASSEMBLIES, SEE SIGN STRUCTURE DRG. OH-D8.
4. COPE HOLES SHALL BE PROVIDED ON BOTH ENDS AND BOTH FACES OF ALL TUBULAR DIAGONALS AND BRACING MEMBERS.



SECTION A-A
(SECTION B-B OPPOSITE HAND)



COPE HOLE DETAIL

SIGN STRUCTURE DRG. OH-D7

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
STEEL TOWER DETAILS

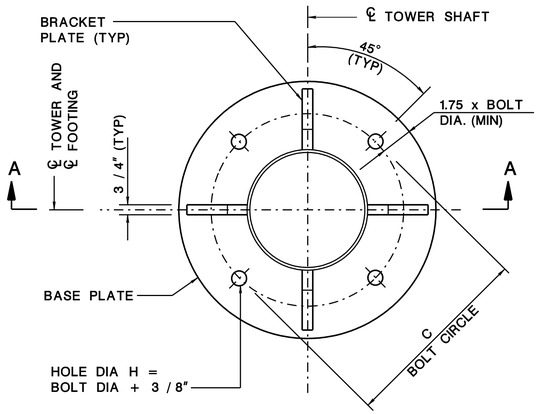
ROUTE: SECTION

SCALE : NONE

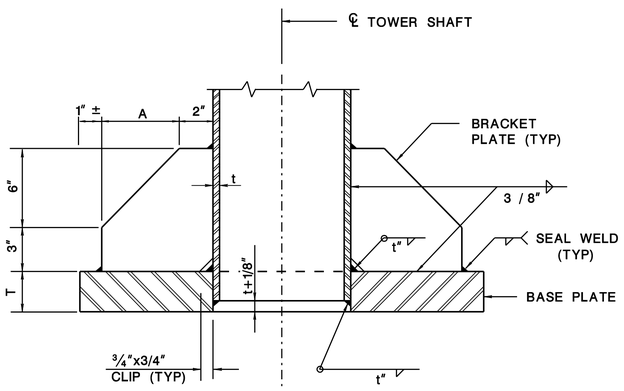
BRIDGE
SHEET NO. ____ OF ____

BC(OTD-02 - ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	

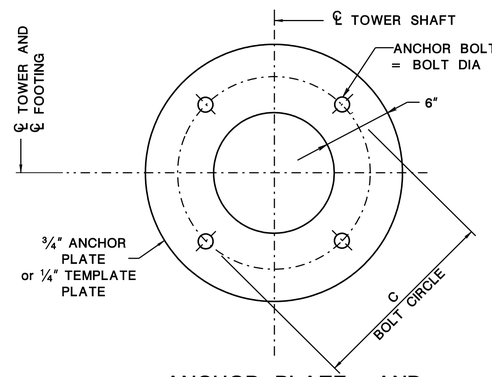


PLAN

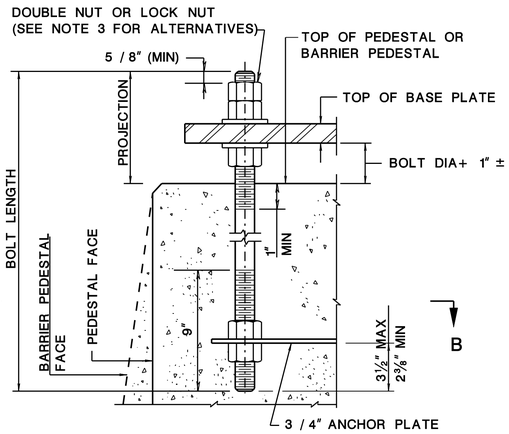


SECTION A-A

TOWER SHAFT BASE DETAIL



ANCHOR PLATE AND TEMPLATE PLATE DETAIL



ANCHOR BOLT DETAIL

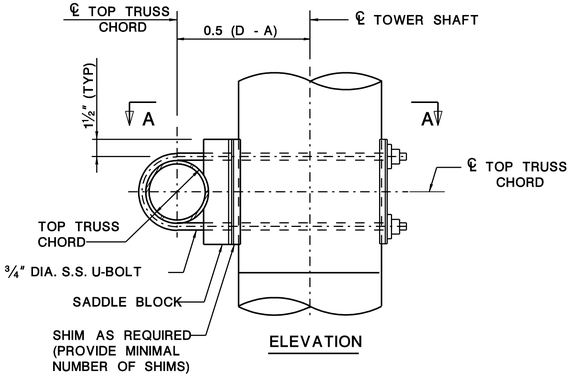
STEEL POST OR CHORD CAP DETAIL

NOTE: ALTERNATE CAP DETAILS MAY BE SUBMITTED TO THE RE FOR APPROVAL.

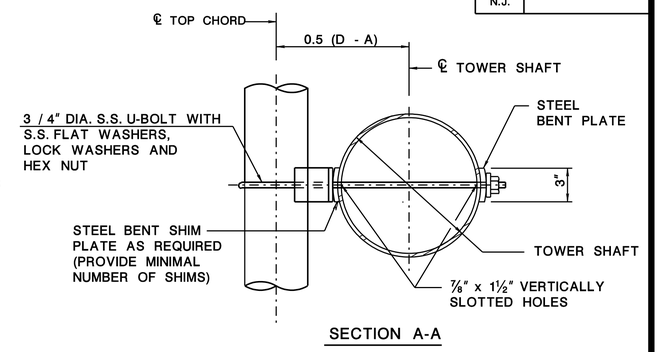
TOWER SHAFT BASE ASSEMBLY

TOWER SHAFT O.D.xTHICK (IN)	BASE PLATE	ANCHOR BOLTS				BRACKET PLATES
	THICKNESS T	BOLT CIRCLE C	SIZE DIAxLGTH	BOLT TENSION (KIPS)	PROJ*	A
10.750x.365	2"	1'-6¾"	2"X54"	87	10¾"	4½"
12.750x.375	2¼"	1'-8⅝"	2"X54"	87	10¾"	4½"
14.000x.375	2¼"	1'-9⅜"	2¾"X72"	172	13¼"	5½"
14.000x.500	2½"	1'-9⅜"	2¾"X72"	172	13¼"	5½"
16.000x.375	2½"	2'-1⅜"	2¾"X72"	172	13¼"	6½"
16.000x.500	2¾"	2'-1⅜"	2¾"X72"	172	13¼"	6½"
18.000x.375	2¾"	2'-4¾"	2¾"X72"	172	13¼"	7¼"
18.000x.500	2¾"	2'-4¾"	2¾"X72"	172	13¼"	7¼"
20.000x.500	3¼"	2'-8⅛"	3"X78"	208	14¾"	8½"
24.000x.500	3¼"	3'-2½"	3"X78"	208	14¾"	9½"

* PROJECTION LENGTH SHOWN IS BASED ON USING DOUBLE NUTS.

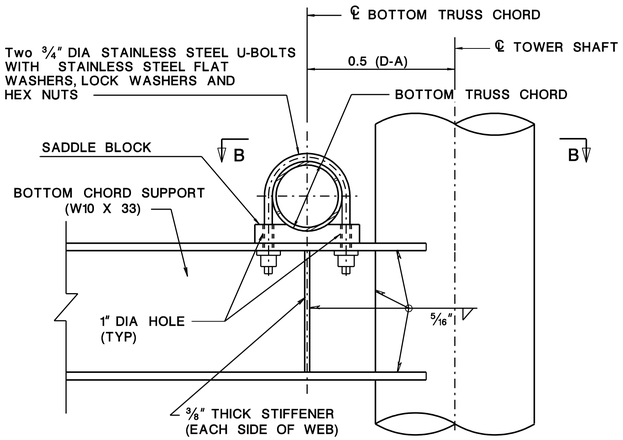


ELEVATION

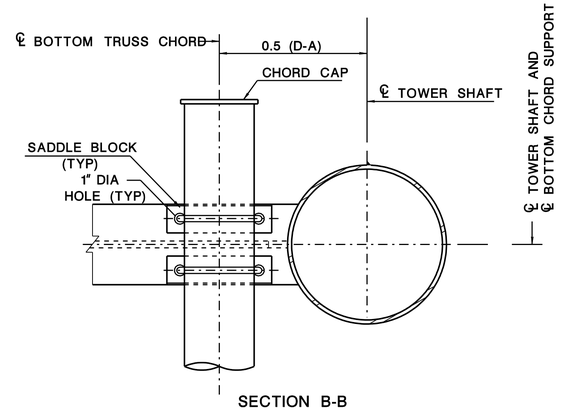


SECTION A-A

TOP CHORD MOUNTING ASSEMBLY DETAIL

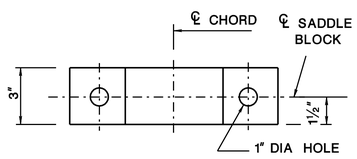


ELEVATION

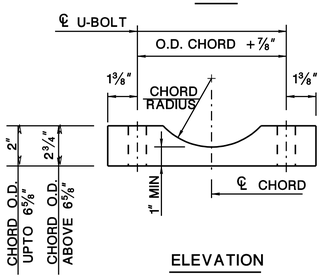


SECTION B-B

BOTTOM CHORD MOUNTING ASSEMBLY DETAIL



PLAN



ELEVATION

SADDLE BLOCK DETAIL

NOTES:

1. ANCHOR BOLTS SHALL BE PROVIDED WITH HEAVY HEXAGON NUTS AND TWO WASHERS AS SHOWN ON THE ANCHOR BOLT DETAIL.
2. ANCHOR BOLTS SHALL BE GALVANIZED AFTER THREADING.
3. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR ANCHOR BOLT TIGHTENING PROCEDURES. WHEN CALIBRATED WRENCHES ARE USED FOR BOLT INSTALLATION, THEY SHALL BE SET TO PROVIDE THE TENSION THAT IS SPECIFIED IN THE TABLE PROVIDED HEREIN.
4. 3 / 4" STAINLESS STEEL U-BOLTS SHALL HAVE THE THREADS EXCLUDED FROM THE SHEAR PLANE BETWEEN THE SADDLE BLOCK AND BOTTOM CHORD SUPPORT.

SIGN STRUCTURE DRG. OH-D8

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
TOWER SHAFT BASE AND TRUSS SEAT DETAILS

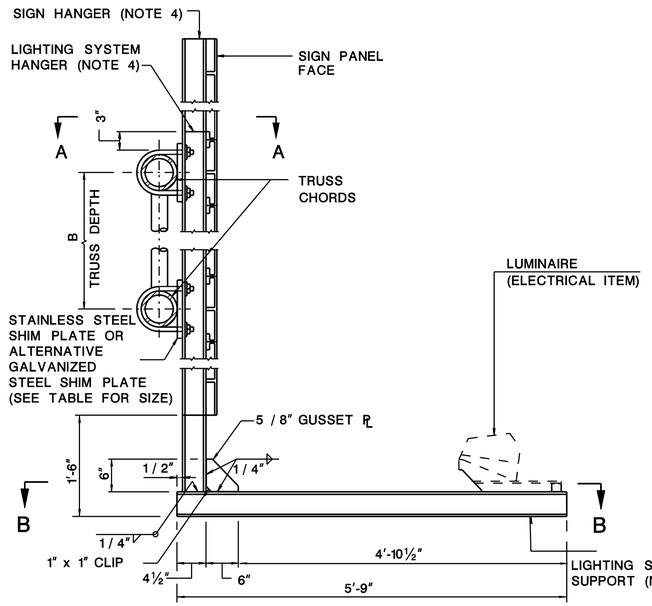
ROUTE: SECTION

SCALE : NONE

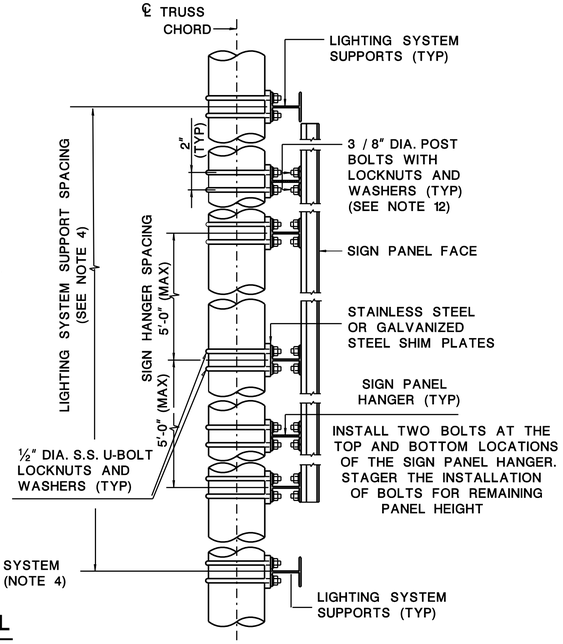
BRIDGE SHEET NO. ____ OF ____

BDC08D-02 – Engineer Changed to RE
BDC07D-02 – ORIGINAL SHEET

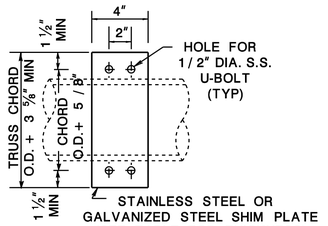
STATE	FEDERAL PROJECT NO.
N.J.	



TYPICAL LIGHTING SYSTEM SUPPORT DETAIL



SECTION A-A



TRUSS CHORD O.D. (IN)	SHIM PLATE THICKNESS* (MIN) (IN)
10.75	3 / 4
12.75	3 / 4
14.0	3 / 4

* FOR TRUSS CHORD SIZES NOT SHOWN, USE 1 / 4" MIN. SHIM PLATE THICKNESS (SEE NOTE 6)

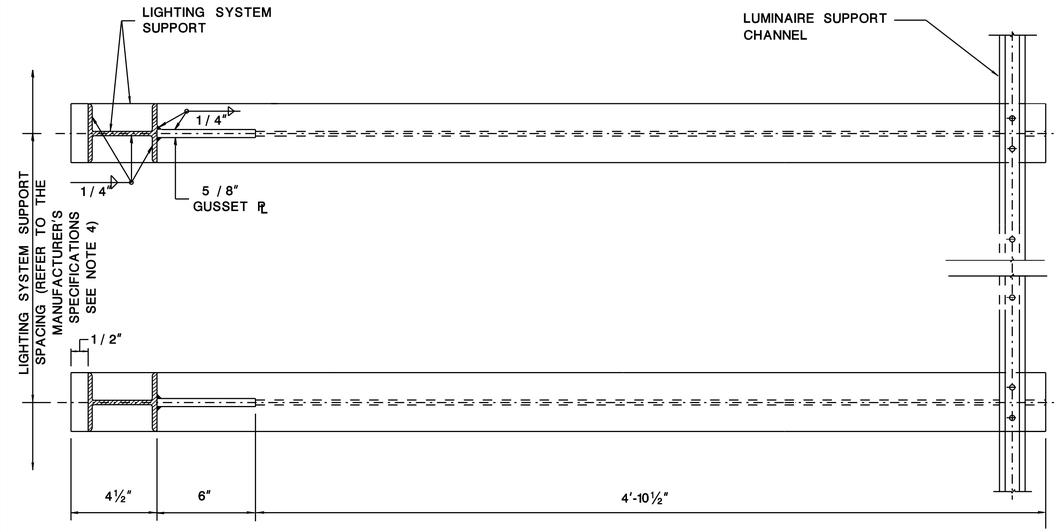
SHIM PLATE DETAIL

NOTES

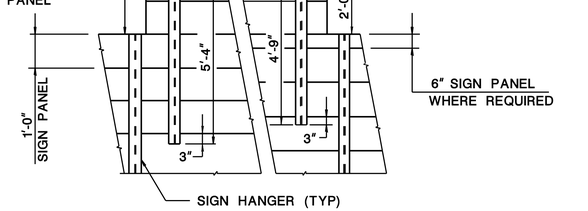
1. ALL ALUMINUM MATERIAL SHALL BE ALUMINUM ALLOY 6061-T6 UNLESS OTHERWISE NOTED.
2. ALL BOLTS, U-BOLTS, WASHERS AND NUTS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320 GRADE B8, CLASS 1 AND ASTM A194. STAINLESS STEEL SHIM PLATES SHALL CONFORM TO ASTM SPECIFICATION A167, TYPE 304, OR AS NOTED.
3. WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2 AND THE NJDOT STANDARD SPECIFICATIONS.
4. SIGN PANEL HANGERS SHALL BE ALUMINUM OR GALVANIZED STEEL: ALUMINUM I-BEAM (DEPTH = 4", WEB AND FLANGE THICKNESS = ¼", FLANGE WIDTH = 3½"); STEEL I-BEAM (W6x9). SIGN HANGER SPACING DESIGNED FOR 15'-0" MAXIMUM SIGN PANEL HEIGHT.

   LIGHTING SYSTEM SUPPORTS SHALL BE ALUMINUM OR GALVANIZED STEEL. THE SUPPORT MEMBER SIZE, SPACING, CONNECTION AND INSTALLATION SHALL ADHERE TO THE WORKING DRAWINGS BASED ON THE COORDINATION OF THE SIGN SUPPORT STRUCTURE FABRICATOR, LIGHTING SYSTEM MANUFACTURER AND DESIGN ENGINEER.

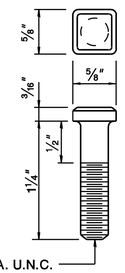
   WHEN THE SIGN HANGER AND LIGHTING SYSTEM SUPPORTS ARE PLANNED TO BE GALVANIZED STEEL, STAINLESS STEEL OR GALVANIZED SHIM PLATES ARE NOT NECESSARY.
5. SIGN HANGERS SHALL BE USED TO SUPPORT SIGN PANELS ONLY. THE SIGN LIGHTING SYSTEM SHALL BE INDEPENDENTLY SUPPORTED.
6. THE THICKNESSES OF THE SHIM PLATES MAY BE MODIFIED TO AVOID INTERFERENCE BETWEEN THE CHORD SPLICE PLATES AND THE SIGN PANELS.
7. LIGHTING SYSTEM SUPPORTS SHALL BE PROVIDED CONTINUOUSLY FOR THE ENTIRE SIGN DESIGN LENGTH UNLESS OTHERWISE SHOWN.
8. LIGHTING SYSTEM SUPPORT HANGERS SHALL PROJECT 3" MIN. ABOVE THE TOP OF THE TOP CHORD AND SHALL NOT SUPPORT SIGN PANELS, UNLESS OTHERWISE NOTED.
9. LENGTH OF SIGN HANGERS SHALL BE EQUAL TO THE SIGN PANEL HEIGHT. BEHIND AN EXIT PANEL, THE HANGERS SHALL BE EXTENDED TO THE TOP OF THE EXIT PANEL.
10. EXIT PANEL CONNECTION DETAIL SHOWN SHALL ALSO BE USED FOR THE ATTACHMENT OF NEW EXIT PANELS TO EXISTING SIGN PANELS.
11. SIGN PANELS SHALL NOT EXTEND MORE THAN 3'-0" BEYOND THE LAST SIGN HANGER.
12. FRICTION TYPE CLIPS OR SIMILAR DEVICES ARE NOT PERMITTED.



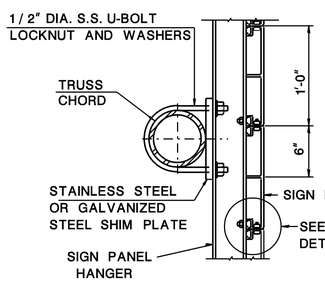
SECTION B-B



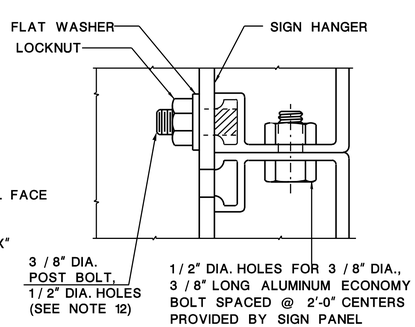
EXIT PANEL CONNECTION DETAIL



POST BOLT



SIGN PANEL CONNECTION DETAIL



DETAIL "X"

SIGN STRUCTURE DRG. OH-D9

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES SIGN AND LIGHTING SYSTEM SUPPORT DETAILS

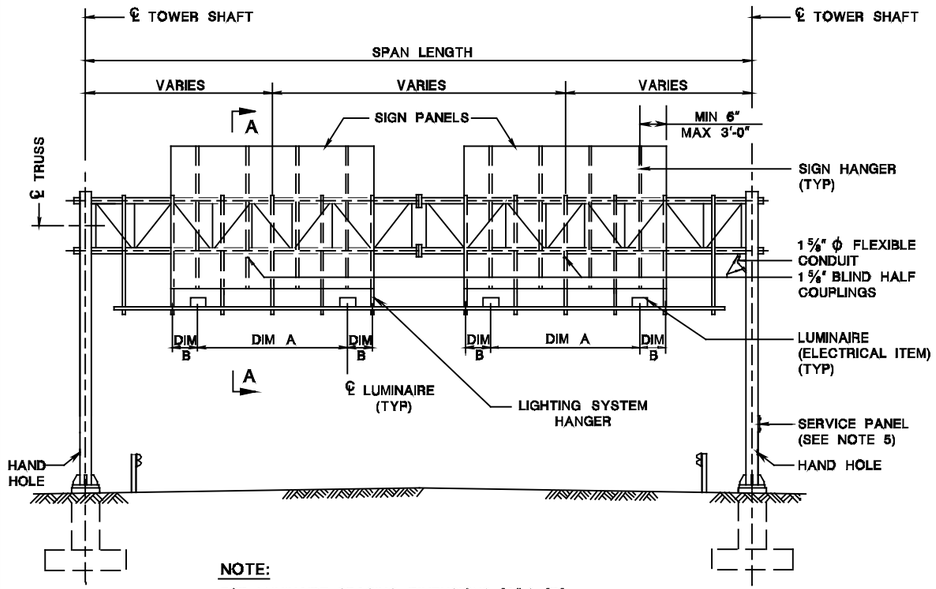
ROUTE: SECTION

SCALE : NONE

BRIDGE
SHEET NO. ____ OF ____

BDC09D-02 – Notes Revision
BDC07D-02 – ORIGINAL SHEET

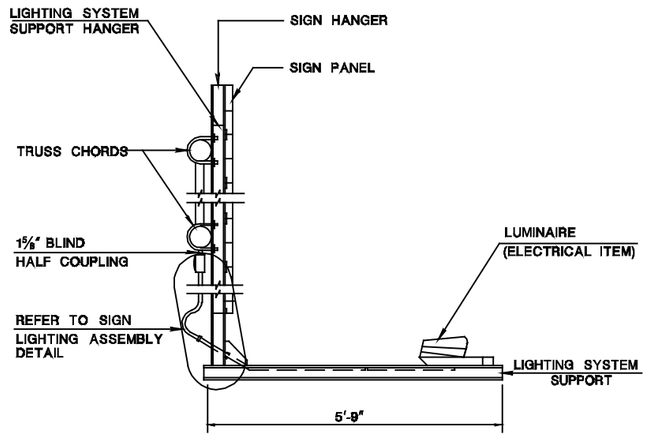
STATE	FEDERAL PROJECT NO.
N.J.	



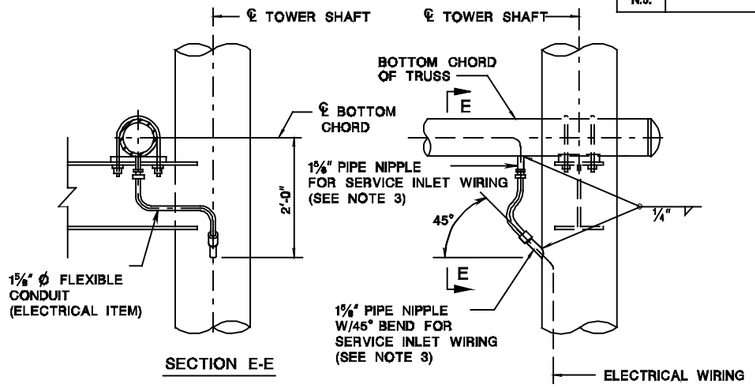
NOTE:

FOR LUMINAIRE SPACING DIMENSIONS "A" & "B" SEE SIGN LIGHTING ASSEMBLY DETAIL.

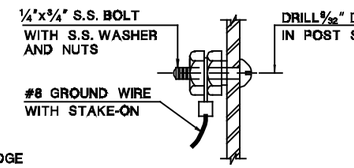
ELEVATION - TYPICAL OVERHEAD SIGN SUPPORT



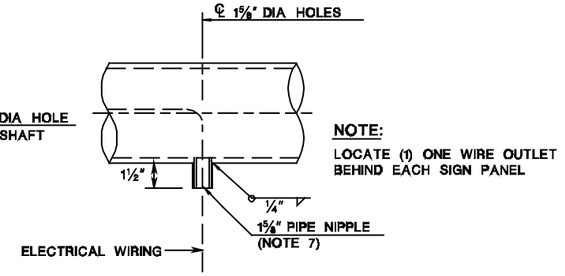
SECTION A-A



DETAILS OF WIRE OUTLETS



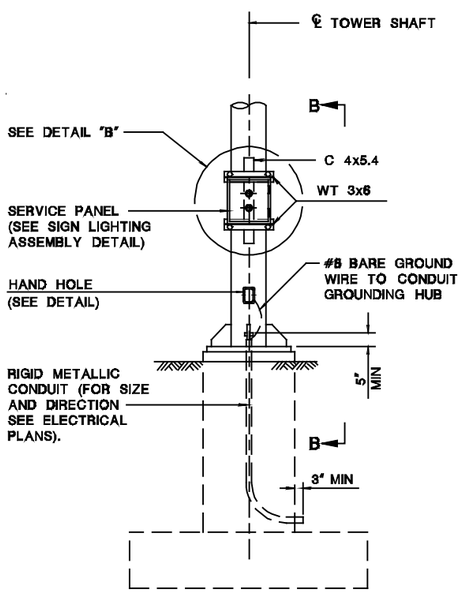
GROUND STUD



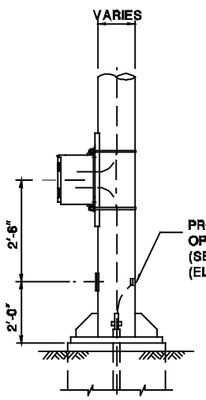
NOTE:

LOCATE (1) ONE WIRE OUTLET BEHIND EACH SIGN PANEL

DETAIL OF WIRE OUTLET ON TUBE



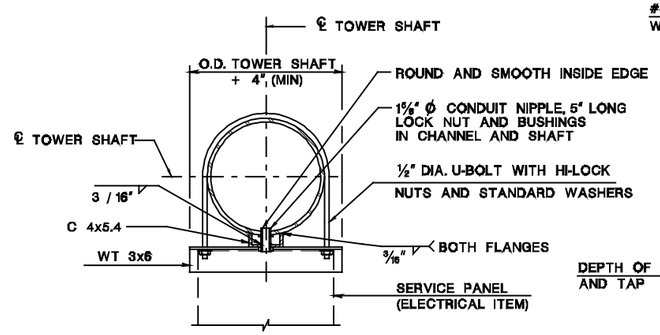
SIDE ELEVATION



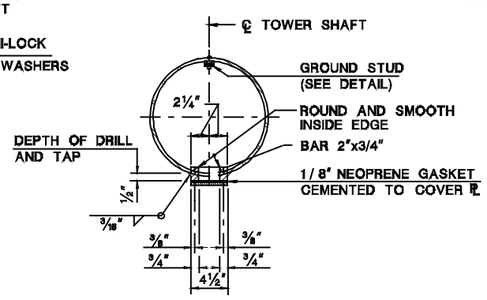
SECTION B-B

NOTE:

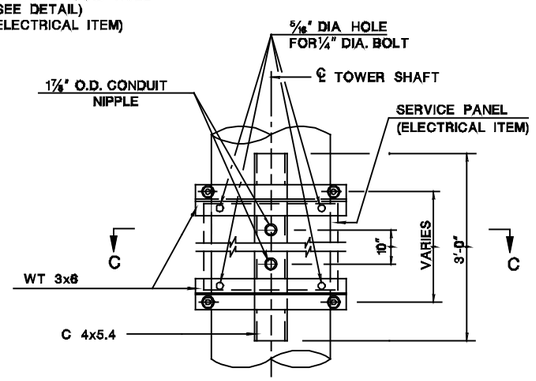
HAND HOLE AND GROUND STUD TO BE PROVIDED IN EACH TOWER SHAFT



SECTION C-C

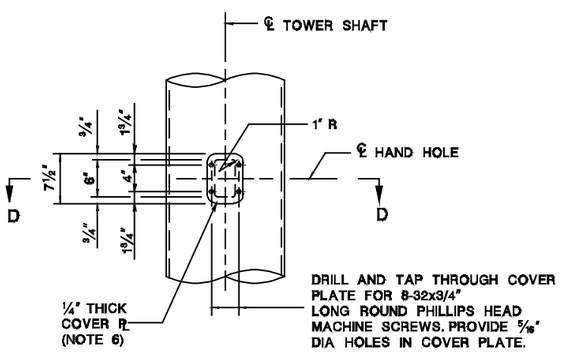


SECTION D-D



DETAIL "B"

TYPICAL SERVICE PANEL DETAIL AT SIGN STRUCTURE



HAND HOLE AND COVER DETAIL

NOTES:

1. WHEN SIGN LIGHTING IS REQUIRED, AN APPROVED SIGN LIGHTING SYSTEM SHALL BE PROVIDED.
2. ALL BOLTS TO BE INSTALLED WITH WASHERS, LOCKWASHERS AND NUTS. ALL HARDWARE SHALL BE STAINLESS STEEL CONFORMING TO ASTM A320, GRADE B8, CLASS 1.
3. 1 5/8" STANDARD PIPE NIPPLES SHALL BE OF APPROVED MATERIAL AND BE COMPATIBLE WITH THE MATERIAL TO WHICH THEY ARE WELDED.
4. IF REQUIRED, LUMINAIRE SUPPORT CHANNELS SHALL BE CONTINUOUS FROM HANGER TO HANGER. REFER TO THE MANUFACTURER'S SPECIFICATIONS.
5. SEE ELECTRICAL PLANS FOR LOCATION AND DIRECTION OF SERVICE PANEL, RIGID CONDUITS, AND FLEXIBLE CONDUITS.
6. HANDHOLES SHALL NOT BE ORIENTED TO THE SIDE OF THE ROADWAY.
7. NIPPLE SIZE SHALL NOT PROJECT BEYOND THICKNESS OF CHORD.

SIGN STRUCTURE DRG. OH-D10

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STRUCTURES
TYPICAL ELECTRICAL DETAILS

ROUTE: SECTION

SCALE : NONE

BRIDGE SHEET NO. ____ OF ____

BDC07S-02 - ORIGINAL SHEET

GENERAL NOTES

A. DESIGN CRITERIA

DESIGN SPECIFICATIONS

2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS WITH CURRENT INTERIM.

NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL, CURRENT EDITION.

DESIGN LOADS

DESIGN WIND VELOCITY ---- 80 MPH; (ABOVE AASHTO SPECIFICATIONS APPENDIX C)
DESIGN ICE LOAD ---------- 3 PSF

FATIGUE LOADS

ALL STRUCTURAL DETAILS HAVE BEEN ANALYZED AGAINST FATIGUE CATEGORY II IMPORTANCE FACTOR VALUES AS DESIGNATED IN THE AVOVE AASHTO SPECIFICATIONS.

VARIABLE MESSAGE SIGN (VMS) STRUCTURES

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL WHEN FURNISHING SUPPORT STRUCTURES FOR VARIABLE MESSAGE SIGNS (VMS).

CONCRETE DESIGN STRESSES

SPECIFIED COMPRESSIVE STRENGTH (f'c) (CLASS B) ---- 3,000 PSI
EXTREME FIBER COMPRESSIVE STRESS (fc) ---------- 1,200 PSI

REINFORCEMENT STEEL DESIGN STRESS

YIELD STRENGTH (fy) (A615, GRADE 60) ---- 60 KSI
TENSILE STRESS (fs) ---- 24 KSI

STRUCTURAL STEEL DESIGN STRENGTHS

YIELD STRENGTH (Fy)
PIPES (A53, TYPE S OR TYPE E, GRADE B) ---- 35 KSI (MIN.) *
(API 5L, GRADE B) ---- REFER TO API SPECIFICATIONS

* FABRICATORS ARE ADVISED THAT REPAIRS TO THE MATERIALS WILL NOT BE PERMITTED. IF TEARING CRACKING OR ANY DEFECT OCCURS, THE MATERIAL WILL BE REQUIRED TO BE REPLACED.

FOUNDATIONS

MAXIMUM FOUNDATION DESIGN BEARING PRESSURE ---- 2.5 KSF
FOOTINGS ARE DESIGNED SUCH THAT A MINIMUM OF 75 PERCENT OF THE FOOTING IS ALWAYS IN CONTACT; A MAXIMUM OF 25 PERCENT OF THE FOOTING IS IN UPLIFT.

BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KIPS.

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION DESIGN CRITERIA.

CAMBER

PERMANENT CAMBER EQUAL TO L/1000 HAS BEEN PROVIDED IN ADDITION TO THE DEAD LOAD CAMBER.

B. MATERIALS

I. STEEL

STEEL PIPE SHALL BE CERTIFIED BY MILL TEST REPORT TO MEET ASTM SPECIFICATION A53, TYPE E OR S, GRADE B WITH THE EXCEPTION THAT API 5L, GRADE B MAY BE USED WHEN THE SPECIFIED WALL THICKNESS IS GREATER THAN ½". ONLY ELECTRICAL RESISTANCE WELDED (ERW) MANUFACTURED SINGLE SEAM PIPE IS PERMITTED. HOWEVER, WHEN THE REQUIRED PIPE SIZE IS GREATER THAN 24", DOUBLE SEAM PIPE MAY BE USED. A MILL TEST REPORT MUST BE PROVIDED, CERTIFIED AND SIGNED BY THE PIPE MANUFACTURER, CONTAINING PHYSICAL AND CHEMICAL PROPERTIES AND THE MANUFACTURING PROCESS USED TO PRODUCE THE PIPE.

ALL OTHER STEEL SHALL CONFORM TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR GRADE 50. ALL SPECIFICIFIED STEEL PLATES SHALL MEET SUPPLEMENTARY REQUIREMENTS FOR NOTCH TOUGHNESS (CHARPY TESTING, ZONE #2)

UPON COMPLETION OF FABRICATION, THE FABRICATOR SHALL PROVIDE A NOTARIZED CERTIFICATION OF COMPLIANCE AS PER THE REQUIREMENT OF THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, INCLUDING A LEGIBLE COPY OF ALL MILL TEST REPORTS FOR MATERIALS INCORPORATED INTO THE WORK. ALSO, A COPY OF QC REPORTS SHALL BE PORVIDED.

STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM SPECIFICATION F1554, GRADE 36 OR 55. THE ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C.

CHORD SPLICE ASSEMBLY FASTENERS SHALL BE HIGH STRENGTH STEEL BOLTS CONFORMING TO ASTM SPECIFICATION A325 AND SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C. ALL OTHER FASTENERS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320, GRADE B8, CLASS 1.

CAPS FOR THE ENDS OF CHORDS AND TOPS OF POSTS SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A36 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123.

WELDING OF STEEL SHALL BE AS SPECIFIED IN AWS D1.1, CURRENT EDITION, AND IN THE NJDOT STANDARD SPECIFICATIONS.

AFTER COMPLETE FABRICATION, EACH STEEL SECTION SHALL BE HOT DIP GALVANIZED ACCORDING TO THE REQUIREMENTS OF ASTM SPECIFICATION A123, AS MODIFIED BY THE NJDOT STANDARD SPECIFICATIONS. A SINGLE DIP GALVANIZING PROCESS IS PREFERRED IF SIZE PERMITS.

REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR CRITERIA ON FURNISHING MATERIALS OTHER THAN SPECIFIED ABOVE.

II. ALUMINUM

ALUMINUM SHALL CONFORM TO THE ASTM SPECIFICATIONS AND ALLOYS LISTED BELOW:

APPLICATION	ASTM SPECIFICATION	ASTM ALLOY
ROLLED OR EXTRUDED SHAPES	B308	6061 - T6
PLATES	B209	6061 - T6
DRAWN SEAMLESS TUBES	B210	6061 - T6
EXTRUDED TUBES	B221	6061 - T6

WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2, CURRENT EDITION, AND IN THE NJDOT STANDARD SPECIFICATIONS.

III. REINFORCEMENT STEEL

ALL REINFORCEMENT STEEL SHALL BE ASTM A615, GRADE 60.

IV. CONCRETE

ALL CONCRETE SHALL BE "CLASS B" AS DEFINED IN THE NJDOT STANDARD SPECIFICATIONS, UNLESS OTHERWISE SPECIFIED BY THE DESIGNER.

V. SIGN LIGHTING

WHEN NECESSARY, AN APPROVED SIGN LIGHTING SYSTEM MAY BE USED AND THE DETAILS OF THE SYSTEM SHALL BE PROVIDED WITH WORKING DRAWING SUBMISSION. NJDOT TRAFFIC SIGNAL AND SAFETY ENGINEERING SHOULD BE CONTACTED FOR REQUIREMENTS REGARDING THE PROVISION OF SIGN LIGHTING OR REFLECTORIZED SIGN PANELS ON A PROJECT TO PROJECT BASIS.

VI. SIGN PANEL AND LIGHTING SYSTEM SUPPORTS

SIGN HANGERS SHALL BE ALUMINUM OR STEEL. LUMINAIRE SUPPORTS SHALL BE ALUMINUM OR STEEL. THE STEEL SHALL CONFORM TO ASTM A709 GRADE 36 OR GRADE 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123. STEEL SURFACES SHALL BE PREVENTED FROM COMING INTO CONTACT WITH ALUMINUM SURFACES BY MEANS OF APPROVED PADS PLACED BETWEEN THE DISSIMILAR METALS. PADS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A240, TYPE 304 OR APPROVED EQUAL. CONNECTING U BOLTS SHALL BE STAINLESS STEEL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS. INSTALLATION OF SIGN LIGHTING SYSTEM SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

THE PROVISION OF MAINTENANCE WALKWAY IS NOT REQUIRED.

INSTRUCTIONS FOR DESIGNERS

STEP #1: PREPARE A SIGN SUPPORT LOCATION PLAN AND ELEVATION VIEW FOR EACH STRUCTURE.

STEP #2: ENTER THE SIGN SUPPORT NUMBER AND STATION IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS.

STEP #3: DETERMINE THE TRUSS SPAN LENGTH AND HEIGHT OF THE STRUCTURE USING SIGN STRUCTURE DRG. CA-G2. RECORD THE ACTUAL TRUSS SPAN LENGTH IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS. ROUND THIS NUMBER TO THE NEXT HIGHER LISTED SPAN LENGTH. IF THE TRUSS SPAN LENGTH IS OVER 40'-0", PROCEED TO STEP #16.

STEP #4: DETERMINE THE SIGN DESIGN LENGTH USING SIGN STRUCTURE DRG. CA-G2. DIVIDE THE SIGN DESIGN LENGTH BY THE TRUSS SPAN LENGTH DETERMINED IN STEP #3 TO OBTAIN THE PERCENT SIGN DESIGN LENGTH. USE THE NEXT HIGHER PERCENT FROM THOSE LISTED (40%, 60%, 70%, OR 80%). IF THE PERCENT IS MORE THAN 80, PROCEED TO STEP #5. OTHERWISE, SKIP TO STEP #6.

STEP #5: TO SELECT A STANDARD DESIGN, DIVIDE THE SIGN DESIGN LENGTH BY 80% AND ROUND THIS NUMBER TO THE NEXT HIGHER LISTED SPAN LENGTH. IF THE NUMBER IS LESS THAN 40'-0", RETURN TO STEP #4. OTHERWISE, PROCEED TO STEP #16.

STEP #6: HAVING OBTAINED THE TRUSS SPAN LENGTH (FROM STEP #3 OR STEP #5) AND THE PERCENT SIGN DESIGN LENGTH (FROM STEP #4), SELECT THE TRUSS SIZE AND THE TRUSS ELEMENT SIZES (I.E., CHORDS, DIAGONALS, AND STRUTS) USING THE APPROPRIATE DESIGN TABLES ON SIGN STRUCTURE DRG. CA-G3. RECORD THE DATA IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS.

STEP #7: WITH THE HEIGHT OF THE STRUCTURE OBTAINED IN STEP #3 AND USING THE ELEVATION OF THE BOTTOM OF BASE PLATE, DETERMINE THE ELEVATION OF THE CENTER LINE OF THE TRUSS AND THE DESIGN HEIGHT OF THE POST. IF THE POST HEIGHT IS MORE THAN 40'-0", SKIP TO STEP #16. OTHERWISE, SELECT THE NEXT HIGHER NUMBER FROM THOSE LISTED (25, 30, OR 40 FEET). USING THE SAME TABLE USED IN STEP #6, SELECT THE SIZE OF THE POST (I.E., OUTSIDE DIAMETER AND THICKNESS). RECORD THE DATA IN THE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT DRAWINGS.

STEP #8: CHECK AVAILABILITY OF SHAPES SELECTED IN STEPS #6 AND #7.

STEP #9: USING SOIL TEST AND SOIL BORING INFORMATION, DETERMINE THE ALLOWABLE SOIL PRESSURE AND THE REQUIRED DEPTH OF FOOTINGS.

STEP #10: DETERMINE THE PEDESTAL HEIGHT. IF THE PEDESTAL HEIGHT IS BETWEEN 4'-0" AND 6'-0", PROCEED TO STEP #11. OTHERWISE, SKIP TO STEP #16. THE PREFERRED PEDESTAL HEIGHT OF 4'-6" IS TO BE USED WHENEVER POSSIBLE. WHEN USING A BARRIER PEDESTAL, THE "COVERED" HEIGHT MUST BE 3'-0". OTHERWISE, SKIP TO STEP # 16

STEP #11: DETERMINE THE REQUIRED FOOTING SIZES USING THE DESIGN TABLE ON SIGN STRUCTURE DRGS. CA-G3. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS.

STEP #12: DETERMINE THE REQUIRED FOOTING DESIGN DATA USING SIGN STRUCTURE DRG. CA-G5. RECORD THIS DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS. IF THE ALLOWABLE SOIL PRESSURE IS GREATER THAN 2.5 KSF, SKIP TO STEP #14. OTHERWISE, PROCEED TO STEP #13.

STEP #13: SELECT THE NUMBER OF CAST-IN-PLACE CONCRETE PILES NEEDED TO SUPPORT THE STRUCTURE USING SIGN STRUCTURE DRG. CA-G5. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS.

STEP #14: DETERMINE WHETHER A PEDESTAL OR BARRIER PEDESTAL IS TO BE USED FOR THE FOUNDATION. SELECT ALL PEDESTAL OR BARRIER PEDESTAL DATA FROM SIGN STRUCTURE DRG. CA-G4. RECORD THE DATA IN THE SIGN SUPPORT FOUNDATION TABLE ON SIGN STRUCTURE DRG. CA-D2 OF THE CONTRACT PLANS.

STEP #15: THE DESIGN OF THE CANTILEVER SIGN SUPPORT STRUCTURE IS COMPLETE. DISREGARD STEP #16.

STEP #16: THE PARAMETERS OF THE SIGN SUPPORT STRUCTURE EXCEED THE RESTRICTIONS RELATED TO THESE STANDARD DESIGN TABLES. DESIGN THE SIGN SUPPORT STRUCTURE ON AN INDIVIDUAL BASIS.

INDEX OF DRAWINGS

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. CA-G1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

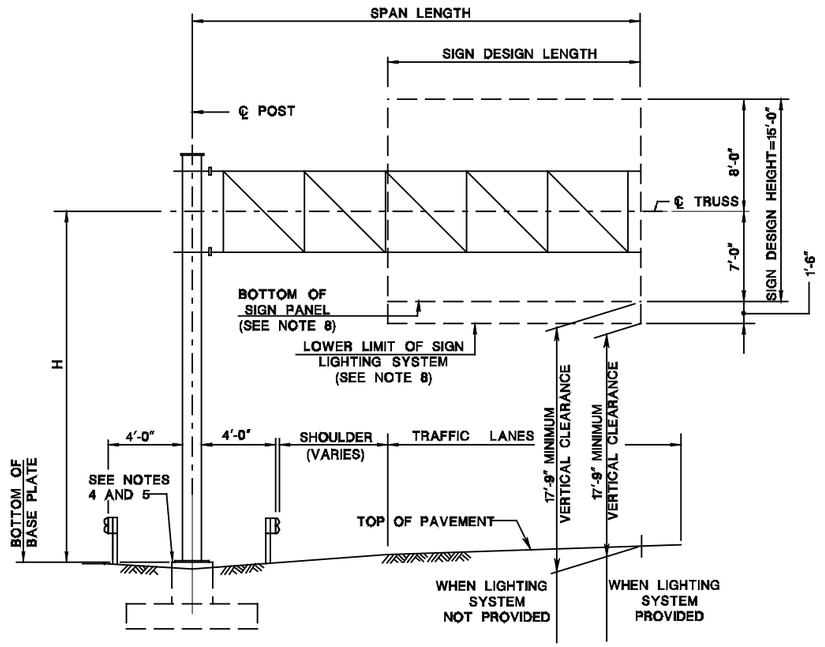
CANTILEVER SIGN SUPPORT STANDARDS

GENERAL INFORMATION

SCALE : NONE

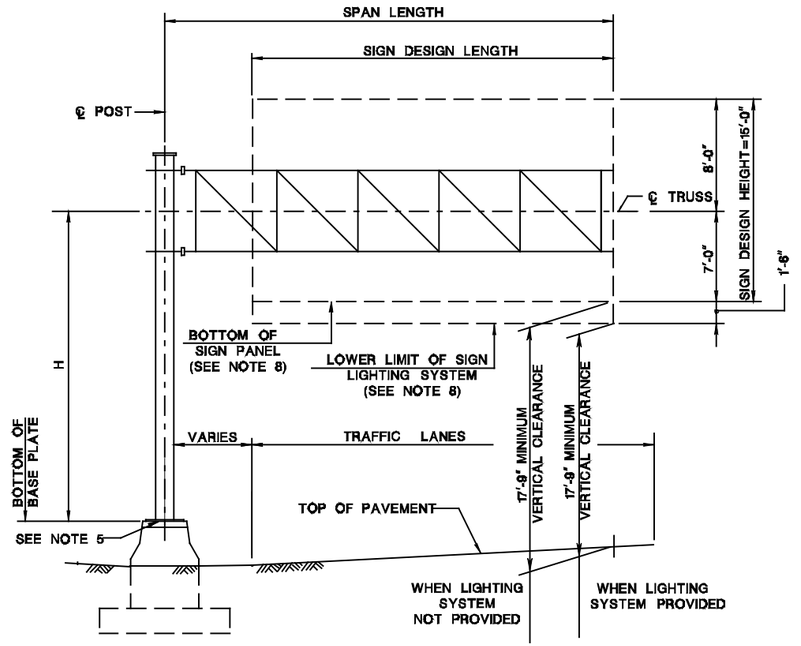
1
5

BC(ST)-02 - ORIGINAL SHEET



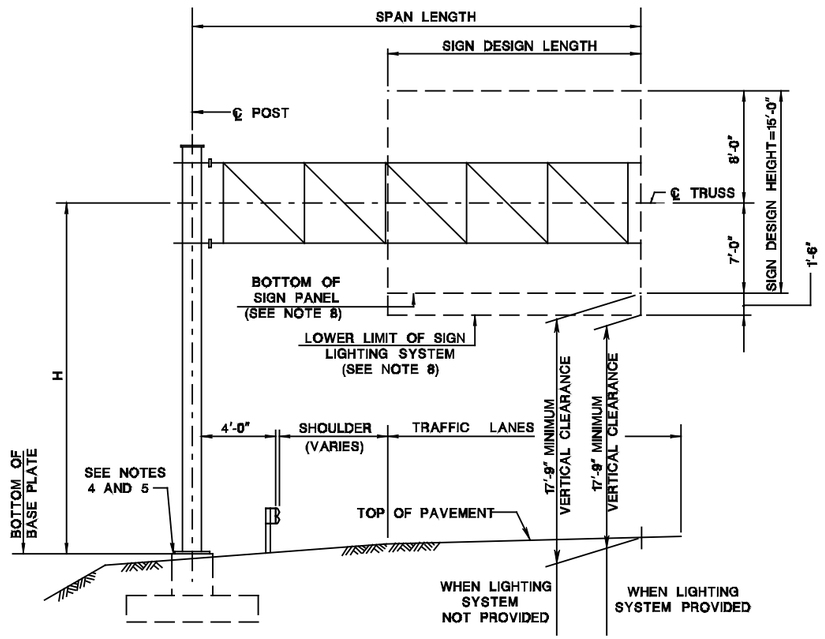
CANTILEVER SIGN STRUCTURE

DIVIDED HIGHWAY
PEDESTAL MOUNTED



CANTILEVER SIGN STRUCTURE

DIVIDED HIGHWAY
BARRIER MOUNTED



CANTILEVER SIGN STRUCTURE

NONDIVIDED HIGHWAY AND RAMPS
PEDESTAL MOUNTED

NOTES:

1. THE SIGN DESIGN LENGTH EXTENDS FROM THE END OF THE CANTILEVER TO THE EDGE OF THE USEABLE TRAFFIC LANES.
2. THE BOTTOM EDGE OF ALL SIGN PANELS SHALL BE LEVEL AND AT THE SAME ELEVATION.
3. THE TOP EDGE OF ALL SIGN PANELS SHALL PROJECT NOT LESS THAN 6" ABOVE THE TOP OF THE TOP CHORD. THE SIGN PANEL SIZES AND LOCATIONS SHALL BE VERIFIED AND APPROVED BY THE DESIGNER.
4. TOP OF PEDESTALS SHALL BE SET 4" ABOVE THE FINISHED GROUND LINE.
5. THE ELEVATION OF THE BOTTOM OF THE POST BASE PLATE SHALL BE SET AT (ANCHOR BOLT DIAMETER + 1") ABOVE TOP OF PEDESTAL OR TOP OF BARRIER PEDESTAL (SEE DRG CA-06).
6. THE TRUSS SHALL BE A TWO-CHORD PLANAR TRUSS.
7. IF THE POST FOUNDATION IS WITHIN THE CLEAR ZONE, IT SHALL BE PROTECTED BY GUIDE RAIL, BARRIER OR OTHER SUITABLE MEANS, DEPENDING UPON SITE CONDITIONS.
8. THE 17'-9" MINIMUM VERTICAL UNDERCLEARANCE SHALL BE PROVIDED TO THE BOTTOM OF SIGN LIGHTING SYSTEM, OR TO THE BOTTOM OF SIGN PANEL WHEN LIGHTING SYSTEM IS NOT PROVIDED.

THIS PLATE FOR DESIGN INFORMATION ONLY.
DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. CA-G2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STANDARDS

GENERAL CRITERIA

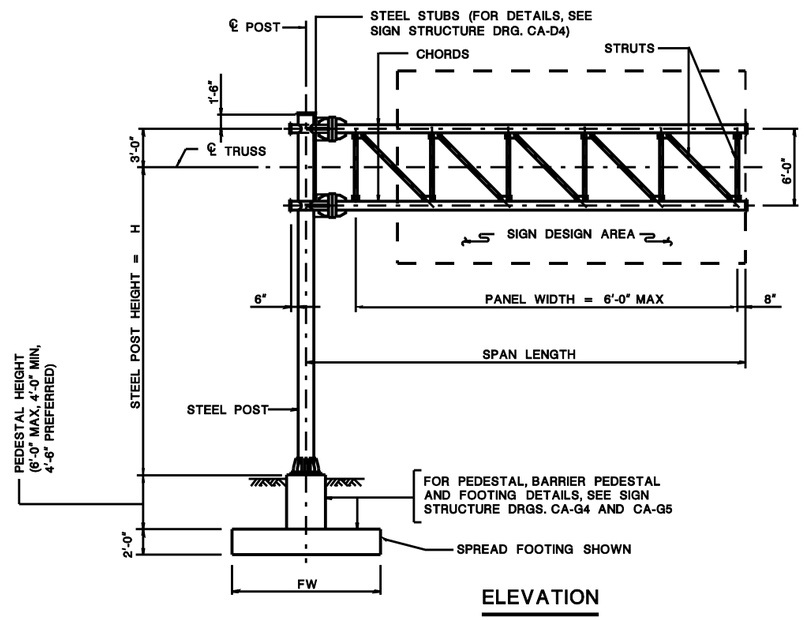
SCALE : NONE

BRIDGE SHEET NO.____ OF____

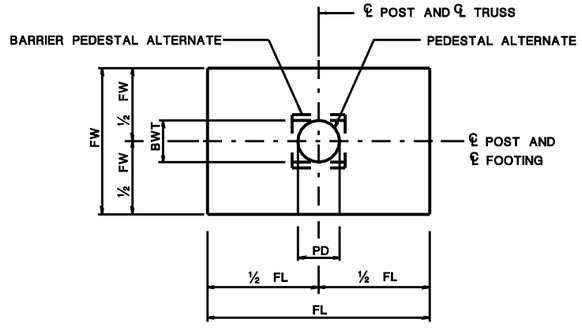
2
5

BC075-02 - ORIGINAL SHEET

SPAN LENGTH	SIGN LENGTH	STEEL TRUSS MEMBERS				STEEL POSTS			PEDESTALS						BARRIER PEDESTALS						FOOTINGS			SIGN LENGTH	SPAN LENGTH
						POST HEIGHT			H = 25 FT		H = 30 FT		H = 40 FT		H = 25 FT		H = 30 FT		H = 40 FT		H = 25 FT	H = 30 FT	H = 40 FT		
						H = 25FT	H = 30FT	H = 40FT																	
(FT)	(%)	CHORDS O.D.xTHICK (IN)	STRUTS O.D.xTHICK (IN)	STEEL STUBS O.D.xTHICK (IN)	CAMBER (IN)	O.D.xTHICK (IN)	O.D.xTHICK (IN)	O.D.xTHICK (IN)	PD (IN)	VERT REBARS No. & SIZE	PD (IN)	VERT REBARS No. & SIZE	PD (IN)	VERT REBARS No. & SIZE	BWT (IN)	VERT REBARS No. & SIZE	BWT (IN)	VERT REBARS No. & SIZE	BWT (IN)	VERT REBARS No. & SIZE	FLxFW	FLxFW	FLxFW	(%)	(FT)
20	40	8.625x.322	2.875x.276	8.625x.322	3½	14.000x.500	16.000x.500	18.000x.500	40	21-#25	42	23-#25	44	25-#25	40	21-#25	42	23-#25	44	25-#25	11′-6″x8′	11′-6″x8′	12′-6″x8′	40	20
	50	8.625x.500	2.875x.276	8.625x.500	3⅛	16.000x.500	16.000x.500	18.000x.500	42	23-#25	42	25-#25	44	27-#25	42	23-#25	42	25-#25	44	27-#25	11′-6″x8′	12′-6″x8′	13′x8′	50	
	60	8.625x.500	2.875x.276	8.625x.500	2¾	16.000x.500	18.000x.500	20.000x.500	42	24-#25	44	26-#25	46	29-#25	42	24-#25	44	26-#25	46	29-#25	12′-6″x8′	13′x8′	14′x10′	60	
	70	8.625x.500	2.875x.276	8.625x.500	2⅜	18.000x.500	18.000x.500	20.000x.500	44	26-#25	44	27-#25	46	30-#25	44	26-#25	44	27-#25	46	30-#25	13′x8′	13′x9′	14′x10′	70	
	80	8.625x.500	2.875x.276	8.625x.500	2	18.000x.500	20.000x.500	24.000x.500	44	27-#25	46	30-#25	48	33-#25	44	27-#25	46	30-#25	48	33-#25	13′x9′	14′x10′	15′x10′	80	
30	40	12.750x.375	3.500x.300	12.750x.375	6	20.000x.500	20.000x.500	24.000x.500	46	28-#25	46	30-#25	48	33-#25	46	28-#25	46	30-#25	48	33-#25	13′x9′	14′x9′	14′x10′	40	30
	50	12.750x.500	4.000x.318	12.750x.500	5½	20.000x.500	24.000x.500	24.000x.500	46	29-#25	48	33-#25	50	36-#25	46	29-#25	48	33-#25	50	36-#25	14′x9′	14′x10′	15′x10′-6″	50	
	60	12.750x.500	4.000x.318	12.750x.500	4¾	24.000x.500	24.000x.500	24.000x.500	48	31-#25	50	35-#25	50	37-#25	48	31-#25	50	35-#25	50	37-#25	14′x10′	15′x10′-6″	16′-6″x10′-6″	60	
	70	12.750x.500	4.000x.318	12.750x.500	4⅜	24.000x.500	24.000x.500	26.000x.500*	48*	31-#25	50*	36-#25	52*	41-#25	48*	31-#25	50*	36-#25	52*	41-#25	15′x10′	15′-6″x10′-6″	16′-6″x11′-6″	70	
	80	12.750x.500	4.000x.318	12.750x.500	3½	24.000x.500	26.000x.500*	26.000x.750*	50*	34-#25	52*	39-#25	52*	42-#25	50*	34-#25	52*	39-#25	52*	42-#25	15′x10′-6″	16′-6″x10′-6″	17′-6″x11′-6″	80	
40	40	18.000x.375	5.563x.375	18.000x.375	8	24.000x.500	26.000x.500*	26.000x.750*	50*	30-#25	52*	35-#25	52*	37-#25	50*	30-#25	52*	35-#25	52*	37-#25	15′x10′-6″	16′-6″x10′-6″	16′-6″x11′-6″	40	40
	50	18.000x.500	5.563x.375	18.000x.500	9	26.000x.500*	26.000x.750*	26.000x.750*	52*	33-#25	52*	35-#25	52*	37-#25	52*	33-#25	52*	35-#25	52*	37-#25	16′-6″x11′-6″	16′-6″x11′-6″	17′x12′-6″	50	
	60	18.000x.500	5.563x.375	18.000x.500	7½	26.000x.750*	26.000x.750*	26.000x.750*	52*	33-#25	52*	35-#25	52*	38-#25	52*	33-#25	52*	35-#25	52*	38-#25	16′-6″x11′-6″	17′x12′-6″	18′x12′-6″	60	
	70	18.000x.500	5.563x.375	18.000x.500	7½	26.000x.750*	26.000x.750*	26.000x.750*	52*	33-#25	52*	35-#25	52*	38-#25	52*	33-#25	52*	35-#25	52*	38-#25	17′x11′-6″	17′x12′-6″	18′x13′	70	
	80	18.000x.500	5.563x.375	18.000x.500	6⅝	26.000x.750*	26.000x.750*	26.000x.875* / 30.000x.625	52* 56	33-#25	52* 56	37-#25	52* 56	40-#25	52* 56	33-#25	52* 56	37-#25	52* 56	40-#25	17′x12′-6″	18′x12′-6″	19′x13′	80	
* ALTERNATIVE POSTS AND PEDESTALS (SEE NOTE 2)																									
30	70	12.750x.500	4.000x.318	12.750x.500	4⅜	24.000x.500	24.000x.500	30.000x.500	48	31-#25	50	36-#25	56	41-#25	48	31-#25	50	36-#25	56	41-#25	15′x10′	15′-6″x10′-6″	16′-6″x11′-6″	70	30
	80	12.750x.500	4.000x.318	12.750x.500	3½	24.000x.500	30.000x.500	30.000x.625	50	34-#25	56	39-#25	56	42-#25	50	34-#25	56	39-#25	56	42-#25	15′x10′-6″	16′-6″x10′-6″	17′-6″x11′-6″	80	
40	40	18.000x.375	5.563x.375	18.000x.375	8	24.000x.500	30.000x.500	30.000x.625	50	30-#25	56	35-#25	56	37-#25	50	30-#25	56	35-#25	56	37-#25	15′x10′-6″	16′-6″x10′-6″	16′-6″x11′-6″	40	40
	50	18.000x.500	5.563x.375	18.000x.500	9	30.000x.500	30.000x.625	30.000x.625	56	33-#25	56	35-#25	56	37-#25	56	33-#25	56	35-#25	56	37-#25	16′-6″x11′-6″	16′-6″x11′-6″	17′x12′-6″	50	
	60	18.000x.500	5.563x.375	18.000x.500	7½	30.000x.625	30.000x.625	30.000x.625	56	33-#25	56	35-#25	56	38-#25	56	33-#25	56	35-#25	56	38-#25	16′-6″x11′-6″	17′x12′-6″	18′x12′-6″	60	
	70	18.000x.500	5.563x.375	18.000x.500	7½	30.000x.625	30.000x.625	30.000x.625	56	33-#25	56	35-#25	56	38-#25	56	33-#25	56	35-#25	56	38-#25	17′x11′-6″	17′x12′-6″	18′x13′	70	
	80	18.000x.500	5.563x.375	18.000x.500	6⅝	30.000x.625	30.000x.625	30.000x.625	56	33-#25	56	37-#25	56	40-#25	56	33-#25	56	37-#25	56	40-#25	17′x12′-6″	18′x12′-6″	19′x13′	80	



ELEVATION



FOOTING PLAN

NOTE:

1. $\%\ \text{SIGN LENGTH} = \dfrac{\text{SIGN DESIGN LENGTH}}{\text{SPAN LENGTH}} \times 100$

2. DUE TO THE AVAILABILITY ISSUE OF 26″ O.D. STEEL POST SIZES, UNTIL FURTHER NOTICE FROM NJDOT THE DESIGNER IS ADVISED TO USE 30″ O.D. POST SIZES. ACCORDINGLY, THE BOLT CIRCLES (SHEET CA-D6), PEDESTALS AND BARRIER PEDESTALS (CA-G3 & CA-G4), POST-STUB CONNECTION CUTTING CURVATURE (CA-D4), AND ANY NECESSARY DETAILS SHALL TAKE 30″ O.D. POST SIZE INTO ACCOUNT.

THIS PLATE FOR DESIGN INFORMATION ONLY.
DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. CA-G3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STANDARDS
DESIGN TABLES

STEEL TRUSSES AND STEEL POSTS

PENDING
09/10/2015

SCALE : NONE
BRIDGE SHEET NO. ____ OF ____
3
5

BDC11D-06 - POST SIZE (26 vs. 30 INCHES)
BDC07D-02 - ORIGINAL SHEET

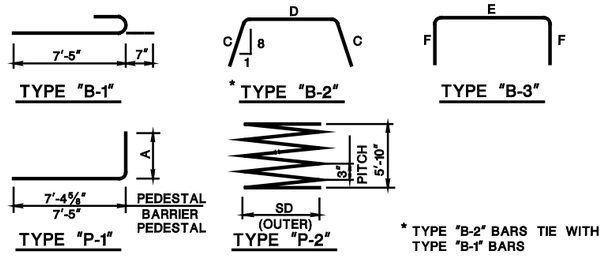
BARRIER PEDESTAL REINFORCEMENT

BARRIER TOP DIMENSION BWT (IN)	VOL OF CONC (C.Y.)	VERTICAL BARS TYPE "P-1" SIZE	A	LENGTH	WEIGHT (LBS)	SPIRAL BARS TYPE "P-2" SIZE	SD (IN)	LENGTH	WEIGHT (LBS)	STANDARD BARRIER REBARS #16 BAR, TYPE "B-1" LENGTH	No.	TOTAL LENGTH	WEIGHT (LBS)	#16 BAR, TYPE "B-2" D (IN)	C (IN)	LENGTH	No.	WEIGHT (LBS)	#16 BAR, TYPE "B-3" E (IN)	F (IN)	LENGTH	No.	WEIGHT (LBS)	WEIGHT SUB TOTAL (LBS)
40	4.5	#25	2'-4"	9'- 9"	25.8	#13	36	259'-9"	173.5	8'-0"	10	80'-0"	83.4	34	12	4'-8"	4	19.5	54	32	9'-8"	12	121.0	223.9
42	4.8	#25	2'-4"	9'- 9"	25.8	#13	38	274'-2"	183.2	8'-0"	10	80'-0"	83.4	36	12	4'-10"	4	20.2	56	33	10'-0"	12	125.2	228.8
44	5.2	#25	2'-4"	9'- 9"	25.8	#13	40	288'-7"	192.8	8'-0"	10	80'-0"	83.4	38	12	5'-0"	4	20.9	58	34	10'-4"	12	129.3	233.6
46	5.5	#25	2'-4"	9'- 9"	25.8	#13	42	303'-0"	202.4	8'-0"	10	80'-0"	83.4	40	12	5'-2"	4	21.6	60	35	10'-8"	12	133.5	238.5
48	5.9	#25	2'-4"	9'- 9"	25.8	#13	44	317'-6"	212.1	8'-0"	12	96'-0"	100.1	42	12	5'-4"	5	27.8	62	36	11'-0"	12	137.7	265.6
50	6.3	#25	2'-4"	9'- 9"	25.8	#13	46	331'-11"	221.7	8'-0"	12	96'-0"	100.1	44	12	5'-6"	5	28.7	64	37	11'-4"	12	141.9	270.7
52	6.7	#25	2'-4"	9'- 9"	25.8	#16	48	346'-4"	361.2	8'-0"	12	96'-0"	100.1	46	12	5'-8"	5	29.6	66	38	11'-8"	12	146.0	275.7
56	7.5	#25	2'-4"	9'- 9"	25.8	#16	52	375'-3"	380.4	8'-0"	12	96'-0"	100.1	50	12	6'-0"	5	31.4	70	38	12'-0"	12	154.3	285.8

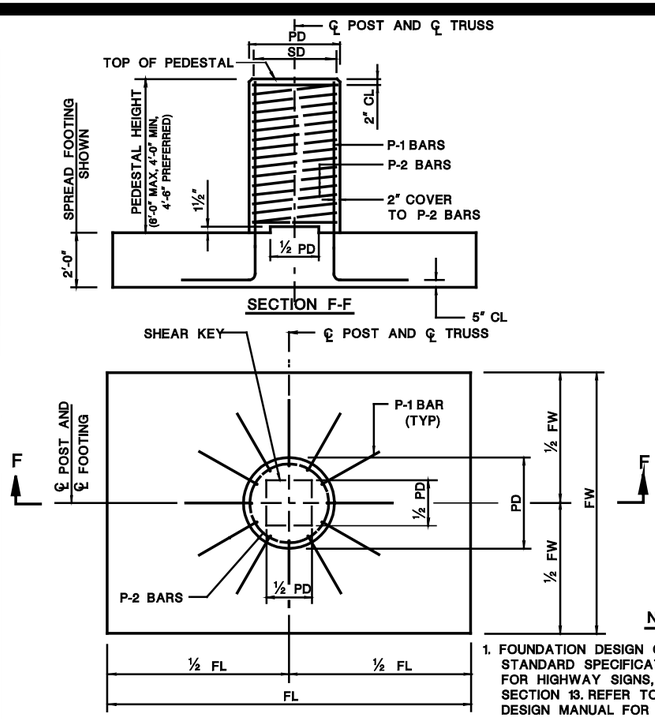
PEDESTAL REINFORCEMENT

PEDESTAL DIAMETER PD (IN)	VOL OF CONC (C.Y.)	VERTICAL BARS TYPE "P-1" SIZE (NOTE 9)	A	LENGTH	WEIGHT (LBS)	SPIRAL BARS TYPE "P-2" SIZE	SD (IN)	LENGTH	WEIGHT (LBS)
40	1.8	#25	2'-4"	9'-7⅝"	25.7	#13	36	259'-9"	173.5
42	2.1	#25	2'-4"	9'-7⅝"	25.7	#13	38	274'-2"	183.2
44	2.2	#25	2'-4"	9'-7⅝"	25.7	#13	40	288'-7"	192.8
46	2.5	#25	2'-4"	9'-7⅝"	25.7	#13	42	303'-0"	202.4
48	2.6	#25	2'-4"	9'-7⅝"	25.7	#13	44	317'-6"	212.1
50	2.9	#25	2'-4"	9'-7⅝"	25.7	#13	46	331'-11"	221.7
52	3.1	#25	2'-4"	9'-7⅝"	25.7	#16	48	346'-4"	361.2
56	3.7	#25	2'-4"	9'-7⅝"	25.7	#16	52	375'-3"	380.4

BAR SHAPES



* TYPE "B-2" BARS TIE WITH TYPE "B-1" BARS

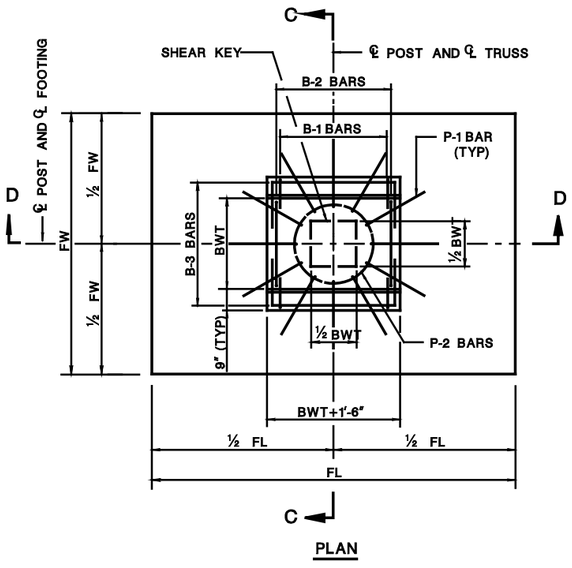


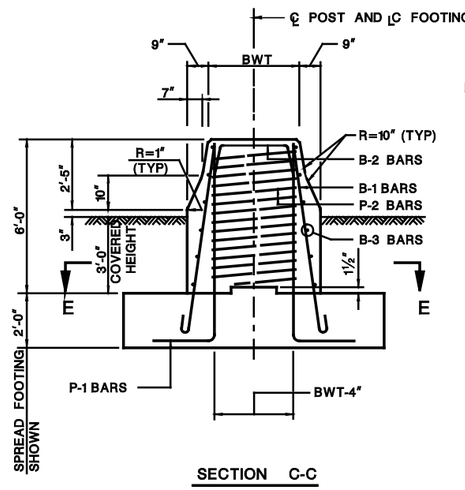
PEDESTAL DETAILS

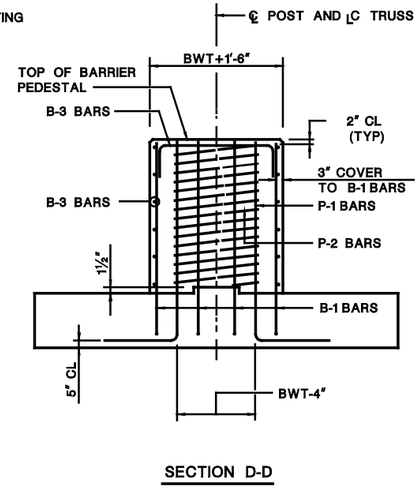
NOTES:

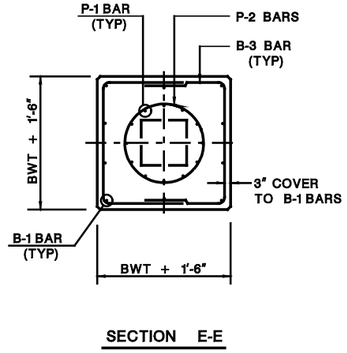
1. FOUNDATION DESIGN CONFORMS TO THE 2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SECTION 13. REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION CRITERIA.
2. FOR PEDESTAL AND BARRIER PEDESTAL DIMENSIONS AND REINFORCEMENT, SEE DESIGN TABLES ON DRG. CA-G3.
3. ALL REINFORCEMENT IN PEDESTALS AND BARRIER PEDESTALS SHALL BE CORROSION PROTECTED.
4. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1"x1" UNLESS NOTED OTHERWISE.
5. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWING OR AUTHORIZED BY THE RE. WHEN SPLINCING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS (48 DIAMETERS FOR SPIRAL BARS) AND SHALL BE SECURELY WIRED TOGETHER.
6. LENGTH OF BARS SHOWN IN TABLE ALREADY CONSIDER BENDS. DIMENSIONS DESCRIBED IN BAR SHAPES TABLE ARE OUT-TO-OUT OF BAR.
7. CONCRETE VOLUMES, AND LENGTH OF B-1, P-1 AND P-2 BARS SHOWN IN TABLE ARE FOR A 6'-0" HIGH PEDESTAL OR 6'-0" HIGH BARRIER PEDESTAL.
8. WEIGHT SHOWN IN TABLE FOR P-1 BARS IS FOR ONE BAR ONLY.
9. REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR CLARIFICATION OF REINFORCEMENT STEEL DESIGNATION.

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.









BARRIER PEDESTAL DETAILS

SIGN STRUCTURE DRG. CA-G4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

OVERHEAD SIGN SUPPORT STANDARDS

PEDESTAL AND BARRIER PEDESTAL DESIGN TABLE AND DETAILS

SCALE : NONE

BRIDGE SHEET NO. 4 OF 5

BDCTID-96 - POST SIZE (24 vs. 30 INCHES)
BDCMD-23 - Dia./Cover Adjusted, Title Block Revised
BDCTID-92 - ORIGINAL SHEET

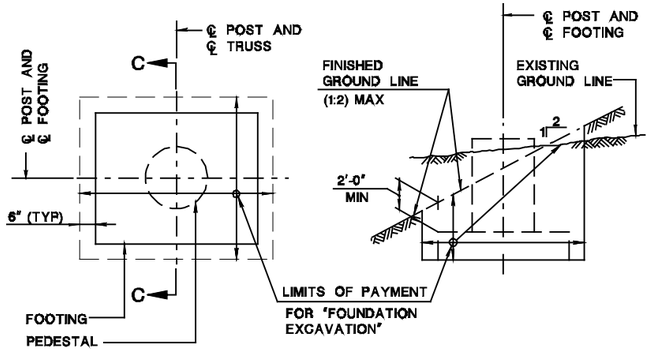
SPREAD FOOTINGS			PILE FOOTINGS					FOOTING REINFORCEMENT				
SIZE FLxFW	CONCRETE VOLUME	EXCAV* VOLUME	CONCRETE VOLUME	EXCAV** VOLUME	No. OF PILES IN ROW "X" LONG	"Y" TRANS	TOTAL	No. AND SIZE OF BARS				TOTAL WEIGHT
	(C.Y.)	(C.Y.)	(C.Y.)	(C.Y.)			No.	FLB	FWB	FLT	FWT	(LBS)
11'-6"X8'	6.8	33.3	8.5	35.4	4	3	12	10-#16	8-#16	6-#16	8-#16	317.5
12'-6"X8'	7.4	36.0	9.3	38.2	4	3	12	13-#16	9-#16	6-#16	9-#16	385.2
13'X8'	7.7	37.3	9.6	39.6	4	3	12	10-#19	9-#16	6-#19	9-#16	455.3
13'X9'	8.7	41.5	10.8	44.1	4	3	12	12-#19	9-#16	7-#19	9-#16	528.2
14'X9'	9.3	44.4	11.7	47.2	4	3	12	14-#19	10-#16	7-#19	10-#16	610.7
14'X10'	10.4	48.9	13.0	51.9	4	3	12	15-#19	10-#16	7-#19	10-#16	648.4
15'X10'	11.1	52.1	13.9	55.3	4	3	12	17-#19	11-#16	7-#19	11-#16	738.6
15'X10'-6"	11.7	54.5	14.6	57.9	4	4	16	19-#19	14-#16	8-#19	11-#16	854.7
15'-6"X10'-6"	12.1	56.2	15.1	59.7	4	4	16	15-#22	11-#19	8-#22	11-#19	1,056.7
16'-6"X10'-6"	12.8	59.6	15.3	63.3	4	4	16	17-#22	12-#19	8-#22	12-#19	1194.0
16'-6"X11'-6"	14.1	64.8	17.6	68.8	4	4	16	19-#22	13-#19	8-#22	12-#19	1306.0
17'X11'-6"	14.5	66.7	18.1	70.8	4	4	16	17-#25	13-#19	8-#25	12-#19	1,546.5
17'X12'-6"	15.7	72.0	19.7	76.5	4	4	16	18-#25	15-#19	9-#25	12-#19	1,703.5
18'X12'-6"	16.7	76.0	20.8	80.7	4	4	16	20-#25	15-#19	9-#25	13-#19	1,875.3
18'X13'	17.3	78.8	21.7	83.7	4	4	16	20-#25	17-#19	9-#25	13-#19	1,948.2
19'X13'	18.3	83.0	22.9	88.1	5	4	20	22-#25	17-#19	9-#25	13-#19	2,110.7

* SPREAD FOOTING EXCAVATION VOLUME BASED ON 8'-0" TOTAL DEPTH OF EXCAVATION.

** PILE FOOTING EXCAVATION VOLUME BASED ON 8'-6" TOTAL DEPTH OF EXCAVATION.

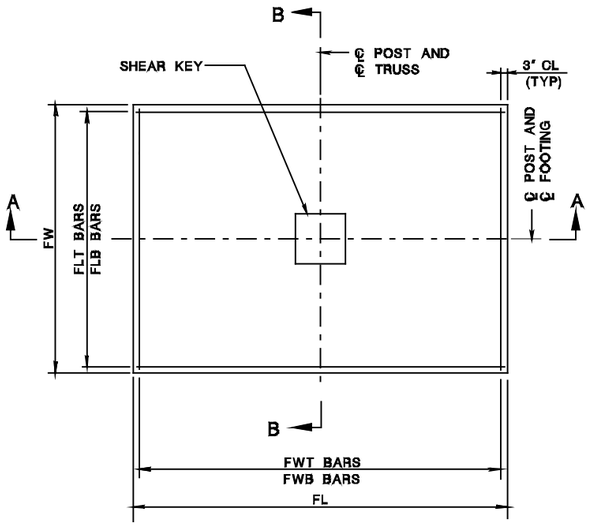
LEGEND:

FL : FOOTING LENGTH
FW : FOOTING WIDTH
FLB : No. AND SIZE OF BOTTOM BARS IN DIRECTION FL
FWB: No. AND SIZE OF BOTTOM BARS IN DIRECTION FW
FLT : No. AND SIZE OF TOP BARS IN DIRECTION FL
FWT: No. AND SIZE OF TOP BARS IN DIRECTION FW
PD : PEDESTAL DIAMETER
BWT: BARRIER WIDTH AT TOP

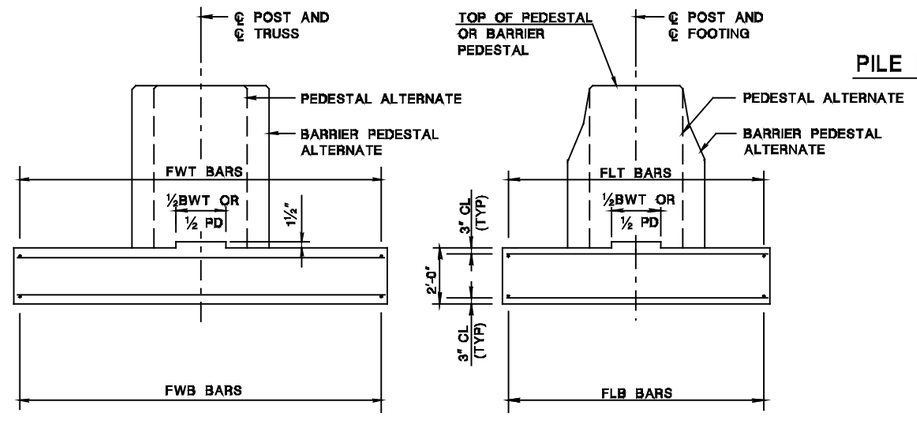


PLAN SECTION C-C

FOOTING EXCAVATION DETAILS

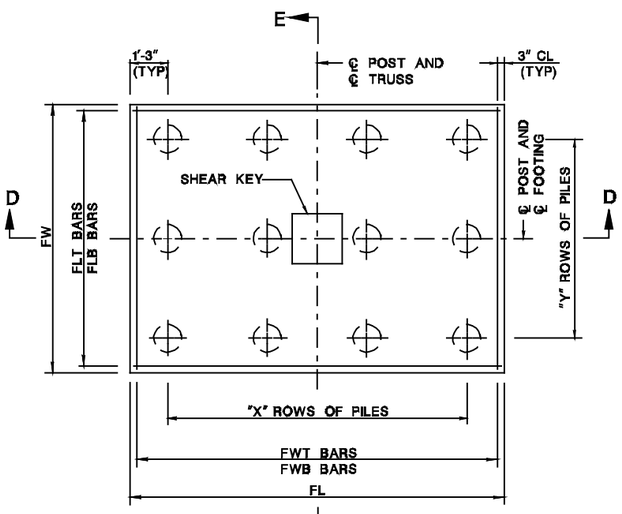


PLAN



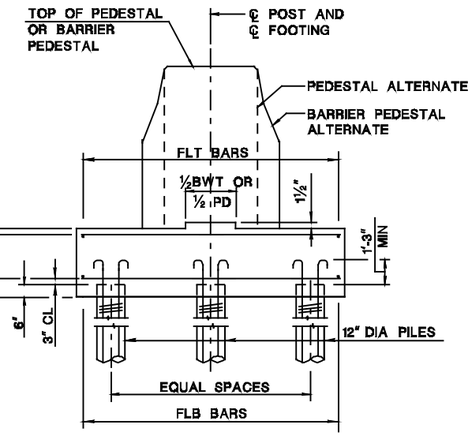
SECTION A-A SECTION B-B

SPREAD FOOTING DETAILS



PLAN

PILE FOOTING DETAILS



SECTION D-D SECTION E-E

NOTES:

1. FOUNDATION DESIGN CONFORMS TO THE 2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SECTION 13.
2. FOR FOOTING DIMENSIONS, SEE DESIGN TABLES ON SIGN STRUCTURE DRG. CA-G3.
3. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWING OR AUTHORIZED BY THE RE. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS AND SHALL BE SECURELY WIRED TOGETHER.
4. PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KSI.
5. THE CASING OF THE CAST-IN-PLACE CONCRETE PILES SHALL BE LEFT IN PLACE AND SHALL BE DESIGNED TO RESIST BOTH DIRECT COMPRESSION AND BENDING. THE THICKNESS OF THE CASING SHALL BE NOT LESS THAN 5/16".
6. THE LONGITUDINAL REINFORCING STEEL OF THE CAST-IN-PLACE CONCRETE PILES SHALL BE A MINIMUM OF 6-#16 BARS AND SHALL EXTEND THROUGH THE UPPER THIRD OF THE PILE OR 15'-0" DOWN INTO THE CASING, WHICHEVER IS GREATER, EMBEDDED INTO THE FOOTING WITH STANDARD HOOKS AS SHOWN.
7. THE SPIRAL REINFORCING FOR THE CAST-IN-PLACE CONCRETE PILES SHALL BE #13 BARS AND SHALL EXTEND THROUGH THE UPPER THIRD OF THE PILE OR 15'-0" DOWN FROM THE TOP OF THE CASING.
8. ALTERNATE FOUNDATION DESIGNS MAY BE CONSIDERED BY THE DESIGNER WHERE APPROPRIATE. LOADS FOR THE DESIGN OF NON-STANDARD FOUNDATIONS ARE AVAILABLE IN THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL.

THIS PLATE FOR DESIGN INFORMATION ONLY. DO NOT INCLUDE IN CONTRACT PLANS.

SIGN STRUCTURE DRG. CA-G5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STANDARDS

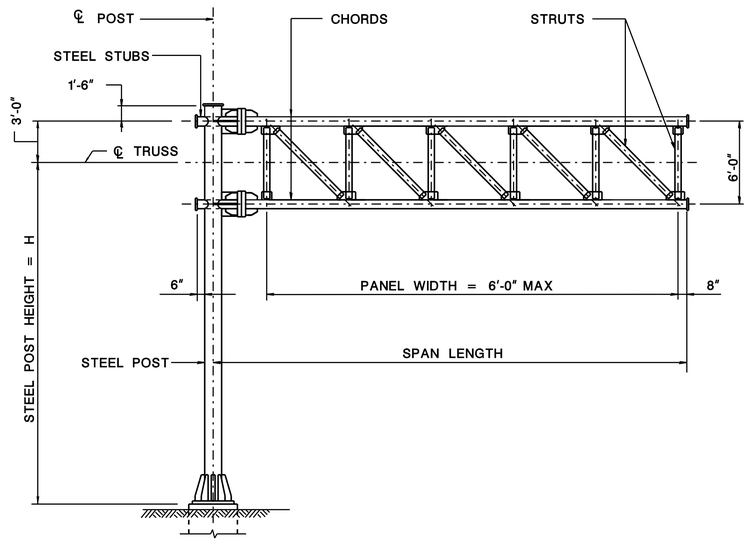
FOOTING DESIGN TABLES AND DETAILS

SCALE : NONE

BRIDGE SHEET NO. 5 OF 5

BDC07D-03 - ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	



ELEVATION - TYPICAL CANTILEVER SIGN SUPPORT

(LOOKING UPSTATION)

SUMMARY OF QUANTITIES

PAY ITEM NO.	STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY
		CLEARING SITE, STRUCTURE	LUMP SUM	
		FOUNDATION EXCAVATION	C.Y.	
		TEMPORARY SHEETING	S.F.	
		CONCRETE IN STRUCTURES, FOOTINGS	C.Y.	
		REINFORCEMENT STEEL IN STRUCTURES	LB	

CONTROL SECTION		JOB NO.	
DES. BY		CHK. BY	
DWN. BY			
EST. BY		CHK. BY	
SPECS. BY			

IN CHARGE OF

BDC09D-02 – Index CA-D7 Changed
BDC07D-02 – ORIGINAL SHEET

GENERAL NOTES

A. DESIGN CRITERIA

DESIGN SPECIFICATIONS

2001 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS WITH CURRENT INTERIM.

NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL, CURRENT EDITION.

DESIGN LOADS

DESIGN WIND VELOCITY ---- 80 MPH; (ABOVE AASHTO SPECIFICATIONS APPENDIX C)
DESIGN ICE LOAD ---------- 3 PSF

FATIGUE LOADS

ALL STRUCTURAL DETAILS HAVE BEEN ANALYZED AGAINST FATIGUE CATEGORY II IMPORTANCE FACTOR VALUES AS DESIGNATED IN THE ABOVE AASHTO DPECIFICATIONS.

VARIABLE MESSAGE SIGN (VMS) STRUCTURES

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL WHEN FURNISHING SUPPORT STRUCTURES FOR VARIABLE MESSAGE SIGNS (VMS).

CONCRETE DESIGN STRESSES

SPECIFIED COMPRESSIVE STRENGTH (f'c) (CLASS B) ---- 3,000 PSI
EXTREME FIBER COMPRESSIVE STRESS (fc) ---------- 1,200 PSI

REINFORCEMENT STEEL DESIGN STRESS

YIELD STRENGTH (fy) (A615, GRADE 60) ---- 60 KSI
TENSILE STRESS (fs) ---- 24 KSI

STRUCTURAL STEEL DESIGN STRENGTHS

YIELD STRENGTH (Fy)
PIPES (A53, TYPE S OR TYPE E, GRADE B) ---- 35 KSI (MIN.) *
(API 5L, GRADE B) ---- REFER TO API SPECIFICATIONS

* FABRICATORS ARE ADVISED THAT REPAIRS TO THE MATERIALS WILL NOT BE PERMITTED. IF TEARING, CRACKING OR ANY DEFECT OCCURS, THE MATERIAL WILL BE REQUIRED TO BE REPLACED.

FOUNDATIONS

MAXIMUM FOUNDATION DESIGN BEARING PRESSURE ---- 2.5 KSF
FOOTINGS ARE DESIGNED SUCH THAT A MINIMUM OF 75 PERCENT OF THE FOOTING IS ALWAYS IN CONTACT; A MAXIMUM OF 25 PERCENT OF THE FOOTING IS IN UPLIFT.

BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES WITH A MINIMUM BEARING CAPACITY EQUAL TO 50 KIPS.

REFER TO THE NJDOT BRIDGES AND STRUCTURES DESIGN MANUAL FOR ALTERNATE FOUNDATION DESIGN CRITERIA.

CAMBER

PERMANENT CAMBER EQUAL TO L/1000 HAS BEEN PROVIDED IN ADDITION TO THE DEAD LOAD CAMBER.

B. MATERIALS

I. STEEL

STEEL PIPE SHALL BE CERTIFIED BY MILL TEST REPORT TO MEET ASTM SPECIFICATION A53, TYPE E OR S, GRADE B WITH THE EXCEPTION THAT API 5L, GRADE B MAY BE USED WHEN THE SPECIFIED WALL THICKNESS IS GREATER THAN ½". ONLY ELECTRICAL RESISTANCE WELDED (ERW) MANUFACTURED SINGLE SEAM PIPE IS PERMITTED. HOWEVER, WHEN THE REQUIRED PIPE SIZE IS GREATER THAN 24", DOUBLE SEAM PIPE MAY BE USED. A MILL TEST REPORT MUST BE PROVIDED, CERTIFIED AND SIGNED BY THE PIPE MANUFACTURER, CONTAINING PHYSICAL AND CHEMICAL PROPERTIES AND THE MANUFACTURING PROCESS USED TO PRODUCE THE PIPE.

ALL OTHER STEEL SHALL CONFORM TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR GRADE 50. ALL SPECIFIED STEEL PLATES SHALL MEET SUPPLEMENTARY REQUIREMENTS FOR NOTCH TOUGHNESS (CHARPY TESTING, ZONE #2)

UPON COMPLETION OF FABRICATION, THE FABRICATOR SHALL PROVIDE A NOTARIZED CERTIFICATION OF COMPLIANCE AS PER THE REQUIREMENT OF THE NJDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, INCLUDING A LEGIBLE COPY OF ALL MILL TEST REPORTS FOR MATERIALS INCORPORATED INTO THE WORK. ALSO, A COPY OF QC REPORTS SHALL BE PROVIDED.

STEEL ANCHOR BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM SPECIFICATION F1554, GRADE 36 OR 55. THE ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C.

CHORD SPLICE ASSEMBLY FASTENERS SHALL BE HIGH STRENGTH STEEL CONFORMING TO ASTM SPECIFICATION A325 AND SHALL BE HOT DIP GALVANIZED AS PER ASTM SPECIFICATION A153, CLASS C. ALL OTHER FASTENERS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320, GRADE B8, CLASS 1.

CAPS FOR THE ENDS OF CHORDS AND TOPS OF POSTS SHALL BE STEEL BOLTS CONFORMING TO ASTM SPECIFICATION A709 (AASHTO M270) GRADE 36 OR 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATION A123.

WELDING OF STEEL SHALL BE AS SPECIFIED IN AWS D1.1, CURRENT EDITION, AND THE NJDOT STANDARD SPECIFICATIONS.

AFTER COMPLETE FABRICATION, EACH STEEL SECTION SHALL BE HOT DIP GALVANIZED ACCORDING TO THE REQUIREMENTS OF ASTM SPECIFICATION A123, AND AS MODIFIED BY THE NJDOT STANDARD SPECIFICATIONS. A SINGLE DIP GALVANIZING PROCESS IS PREFERRED IF SIZE PERMITS.

REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR CRITERIA ON FURNISHING MATERIALS OTHER THAN SPECIFIED ABOVE.

II. ALUMINUM

ALUMINUM SHALL CONFORM TO THE ASTM SPECIFICATIONS AND ALLOYS LISTED BELOW:

APPLICATION	ASTM SPECIFICATION	ASTM ALLOY
ROLLED OR EXTRUDED SHAPES	B308	6061 - T6
PLATES	B209	6061 - T6
DRAWN SEAMLESS TUBES	B210	6061 - T6
EXTRUDED TUBES	B221	6061 - T6

WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2, CURRENT EDITION, AND THE NJDOT STANDARD SPECIFICATIONS.

THE SIGN PANEL SHALL BE INSTALLED LEVEL. THE CONTRACTOR MAY FIELD DRILL THE SIGN SUPPORTS AS REQUIRED TO ACHIEVE THIS.

III. REINFORCEMENT STEEL

ALL REINFORCEMENT STEEL SHALL BE ASTM A615, GRADE 60.

IV. CONCRETE

ALL CONCRETE SHALL BE "CLASS B" AS DEFINED IN THE NJDOT STANDARD SPECIFICATIONS UNLESS OTHERWISE SPECIFIED BY THE DESIGNER.

V. SIGN LIGHTING SYSTEM SUPPORTS

SIGN HANGERS SHALL BE ALUMINUM OR STEEL. LUMINAIRE SUPPORTS SHALL BE ALUMINUM OR STEEL. THE STEEL SHALL CONFORM TO ASTM A709 GRADE 36 OR GRADE 50 AND SHALL BE HOT DIP GALVANIZED IN ACCORANCE WITH ASTM SPECIFICATION A123. STEEL SURFACES SHALL BE PREVENTED FROM COMING INTO CONTACT WITH ALUMINUM SURFACES BY MEANS OF APPROVED PADS PLACED BETWEEN THE DISSIMILAR METALS. PADS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A240, TYPE 304 OR APPROVED EQUAL. CONNECTING U BOLTS SHALL BE STAINLESS STEEL CONFORMING TO THE NJDOT STANDARD SPECIFICATIONS. INSTALLATION OF SIGN LIGHTING SYSTEM SHALL BE ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

INDEX OF DRAWINGS

SIGN STRUCTURE DRG. CA-D1

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES GENERAL NOTES AND ELEVATION

ROUTE: SECTION:

SCALE : NONE

BRIDGE
SHEET NO. ____ OF ____

STATE	FEDERAL PROJECT NO.
N.J.	

CANTILEVER SIGN SUPPORTS - SCHEDULE OF STRUCTURES

SIGN SUPPORTS			ELEVATIONS		SPAN LENGTH (FT)	PANEL WIDTH PW (FT)	STEEL TRUSS				STEEL POST		
STRUCTURE No.	GO Nos.	STATION	℄ TRUSS	BOTTOM OF BASE PLATE			CHORDS O.D.xTHICK (IN)	STRUTS O.D.xTHICK (IN)	STEEL STUBS O.D.xTHICK (IN)	CAMBER (IN)	H = 25 FT O.D.xTHICK (IN)	H = 30 FT O.D.xTHICK (IN)	H = 40 FT O.D.xTHICK (IN)

NOTE:

ALL ELEVATIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO FABRICATION AND CONSTRUCTION.

CANTILEVER SIGN SUPPORTS - SCHEDULE OF FOUNDATIONS

STRUCTURE No.	FOOTING														PEDESTAL											BARRIER PEDESTAL																				TOTAL WT OF COR. PROT. RE-BARS (LBS)	TOTAL WEIGHT OF ALL REBAR TYPES (LBS)	TOTAL VOLUME OF CONC (C.Y.)
	SIZE FLxFW (FT)	ELEV BOT OF FTG (FT)	VOLUME				No. OF PILES IN ROW		PILE LGTH (FT)	REINFORCING BARS				WT OF RE-BARS (LBS)	SIZE PD (IN)	PED HT (FT)	ELEV TOP OF PED (FT)	VOL OF CONC (C.Y.)	VERT REBARS			SPIRAL REBARS			WT OF COR. PROT. RE-BARS (LBS)	SIZE BWT (FT)	BAR-RIER HT (FT)	ELEV TOP OF BARR (FT)	VOL OF CONC (C.Y.)	VERT REBARS		SPIRAL REBARS			STANDARD BARRIER REBARS										WT OF COR. PROT. RE-BARS (LBS)			
			CONCRETE		EXCAVATION					No. & SIZE									TYPE "P-1"			TYPE "P-2"								TYPE "P-1"		TYPE "P-2"			TYPE "B-1"		TYPE "B-2"				TYPE "B-3"							
			WITH PILES (C.Y.)	W/O PILES (C.Y.)	WITH PILES (C.Y.)	W/O PILES (C.Y.)	"X"	"Y"		FLB	FWB	FLT	FWT						No. & SIZE	A	LGTH	No. & SIZE	SD (IN)	LGTH						No. & SIZE	LGTH	No. & SIZE	SD (IN)	LGTH	No. & SIZE	LGTH	No. & SIZE	D (IN)	C (IN)	LGTH	No. & SIZE	E (IN)	F (IN)	LGTH				

TYPE "B-1" TYPE "B-2" TYPE "B-3" TYPE "P-1" TYPE "P-2"

REBAR SHAPES

CONTROL SECTION	________	JOB NO.________	
DES. BY		CHK. BY	
DWN. BY			
EST. BY		CHK. BY	
SPECS. BY			
IN CHARGE OF________________			

BDC07D-02 - ORIGINAL SHEET

SIGN STRUCTURE DRG. CA-D2

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

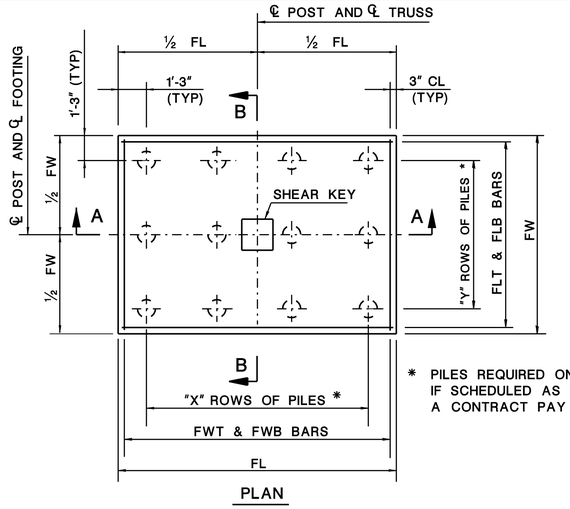
CANTILEVER SIGN SUPPORT STRUCTURES
STRUCTURE AND FOUNDATION SCHEDULES

ROUTE: SECTION

SCALE : NONE

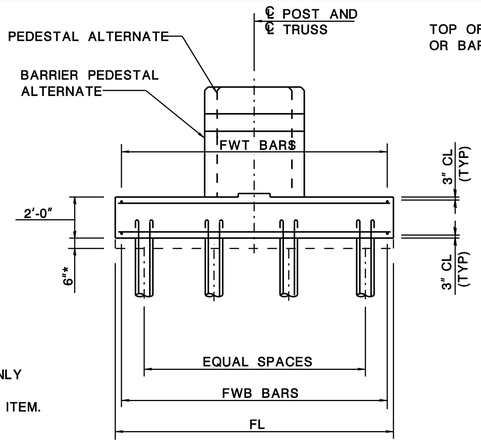
BRIDGE SHEET NO.____ OF____

STATE	FEDERAL PROJECT NO.
N.J.	

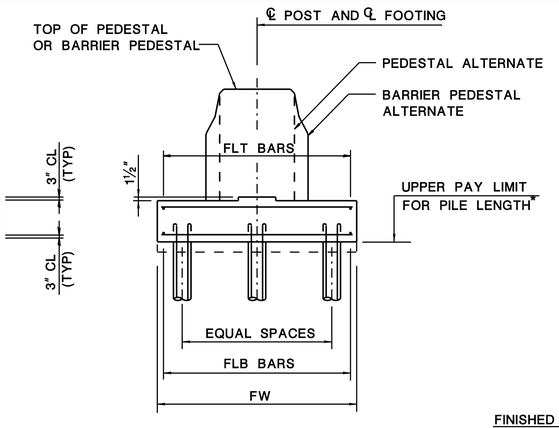


PLAN

* PILES REQUIRED ONLY IF SCHEDULED AS A CONTRACT PAY ITEM.

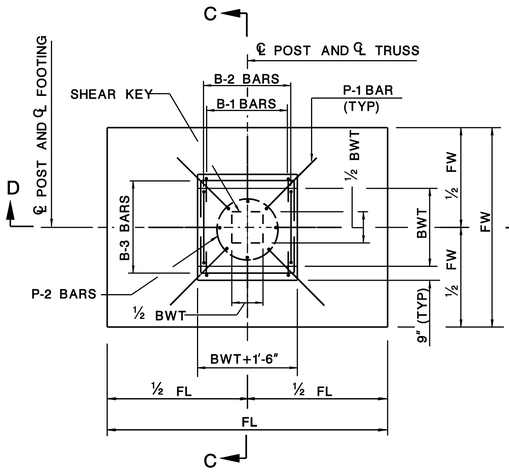


SECTION A-A

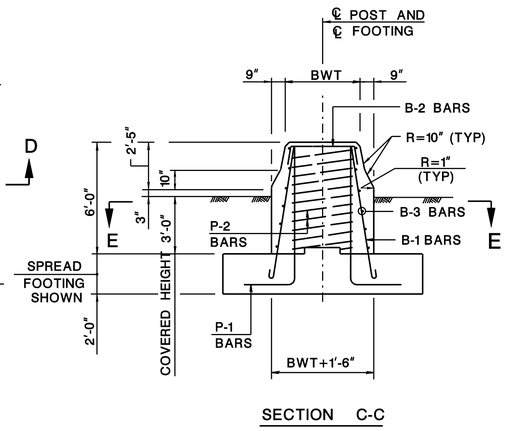


SECTION B-B

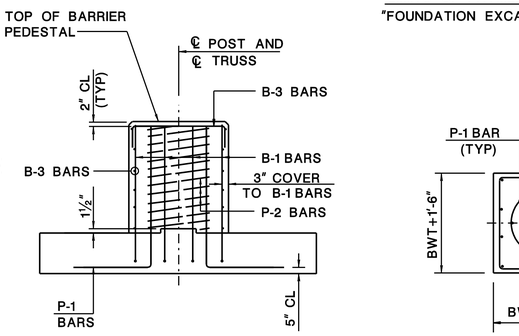
FOOTING



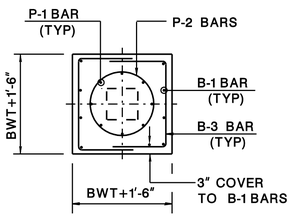
PLAN



SECTION C-C

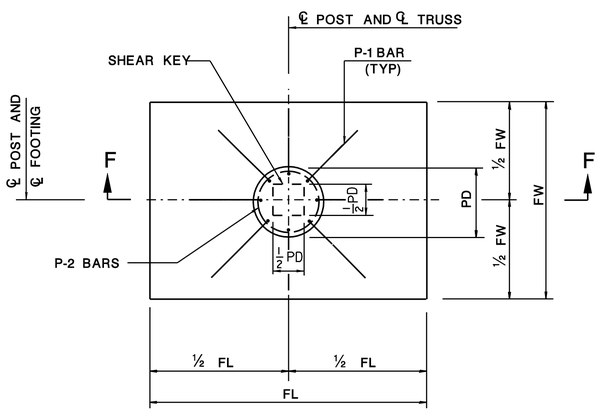


SECTION D-D

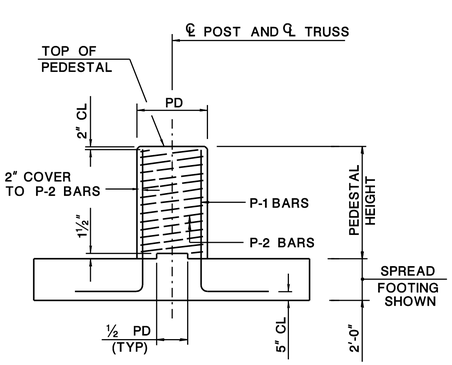


SECTION E-E

BARRIER PEDESTAL

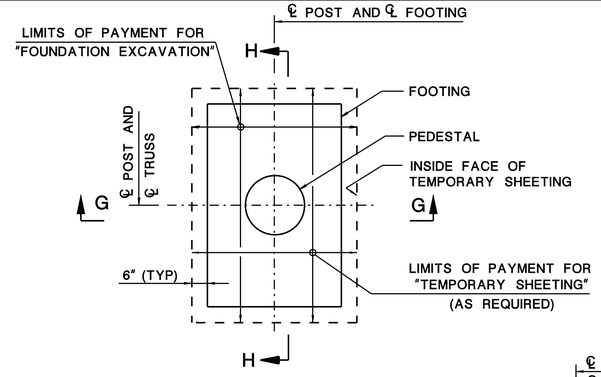


PLAN

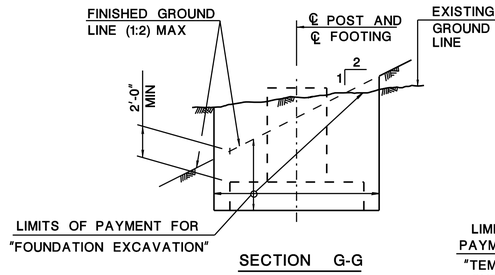


SECTION F-F

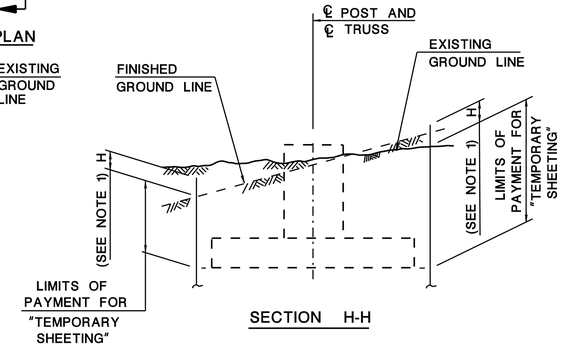
PEDESTAL



PLAN



SECTION G-G



SECTION H-H

TEMPORARY SHEETING AND EXCAVATION DETAILS

NOTES:

1. WHEN TEMPORARY SHEETING IS REQUIRED, H IS 3'-0" WHEN ADJACENT TO PEDESTRIAN OR VEHICULAR TRAFFIC AND 1'-0" MINIMUM FOR ALL OTHER CONDITIONS.
2. PAYMENT LIMITS FOR TEMPORARY SHEETING SHALL BE MEASURED FROM THE FINISHED GRADE LINE OR FROM THE EXISTING GROUND LINE, WHICHEVER IS LOWER.
3. EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1"X1" UNLESS NOTED OTHERWISE.
4. BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THIS DRAWING OR AUTHORIZED BY THE RE. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 36 DIAMETERS (48 DIAMETERS FOR SPIRAL BARS) AND SHALL BE SECURELY WIRED TOGETHER.
5. FOR DETAILS OF CAST-IN-PLACE CONCRETE PILES, SEE SIGN STRUCTURE DRG. CA-D6.
6. ALL REINFORCEMENT IN PEDESTALS AND BARRIER PEDESTALS SHALL BE CORROSION PROTECTED.

SIGN STRUCTURE DRG. CA-D3

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES FOUNDATION DETAILS

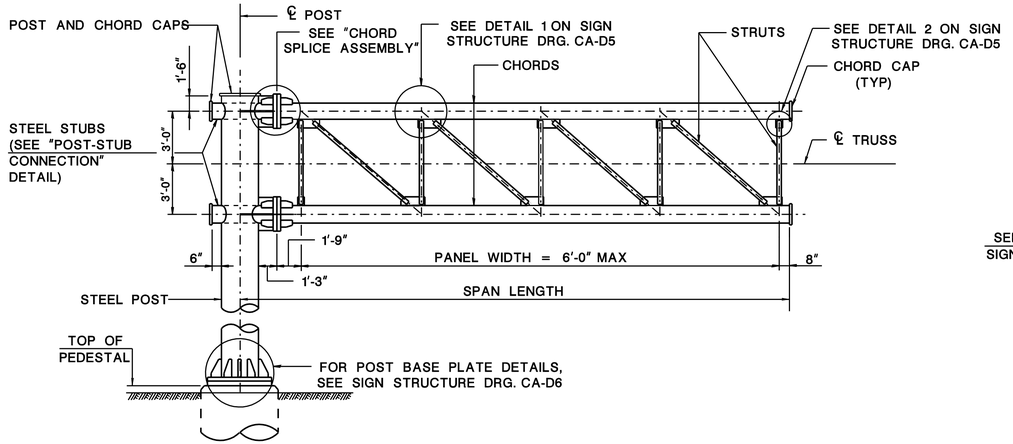
ROUTE: SECTION

SCALE : NONE

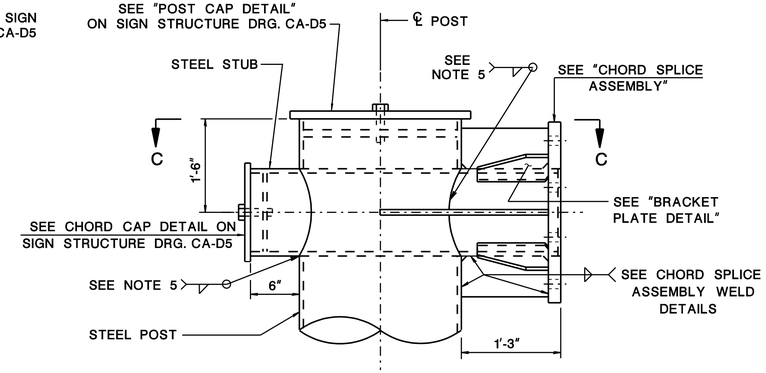
BRIDGE SHEET NO. ____ OF ____

BDC08D-02 – Pedestal Cover Adjusted
BDC07D-02 – ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	

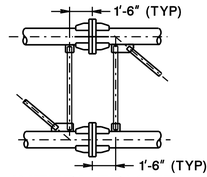


ELEVATION -TYPICAL CANTILEVER SIGN SUPPORT



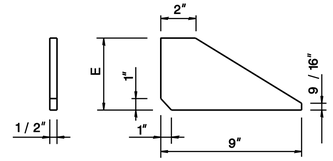
POST-STUB CONNECTION

(TWELVE-BOLT SPLICE SHOWN)

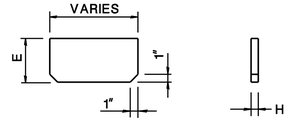


INTERMEDIATE SPLICE DETAIL

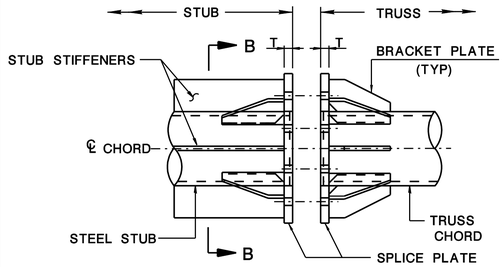
(SEE NOTE No. 4)

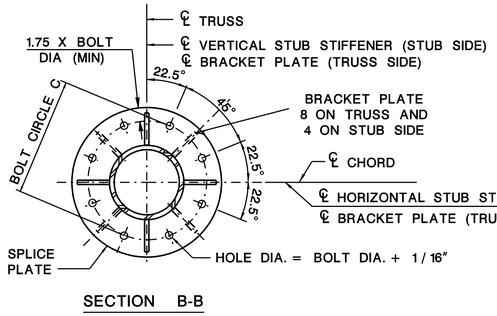


BRACKET PLATE DETAIL

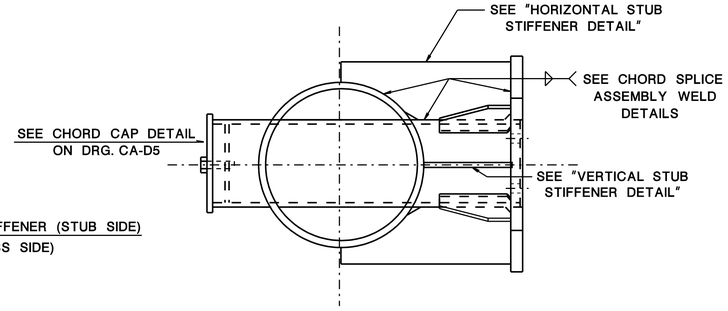


VERTICAL STUB STIFFENER DETAIL

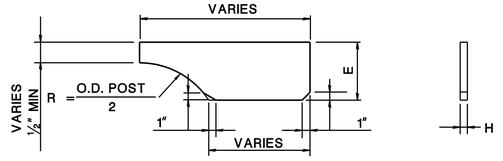




SECTION B-B

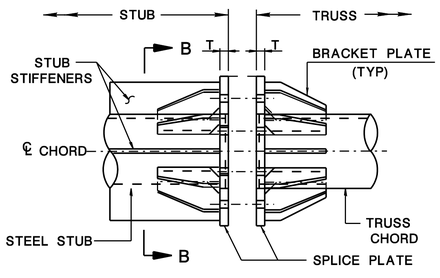


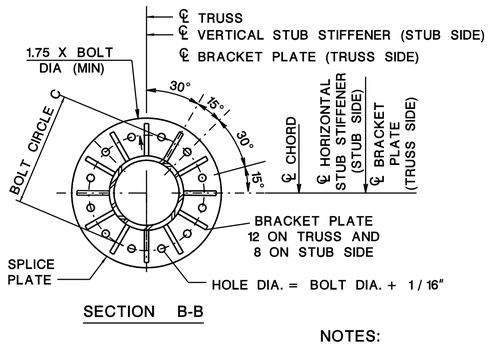
SECTION C - C



HORIZONTAL STUB STIFFENER DETAIL

CHORD SPLICE ASSEMBLY - EIGHT-BOLT

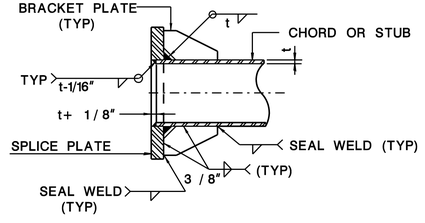




SECTION B-B

TRUSS CHORD SPLICE ASSEMBLY							
	SPLICE PLATES	STUB STIFFENER PLATES		SPLICE BOLTS			
CHORD O.D.xTHICK (IN)	THICKNESS T (IN)	E (IN)	H (IN)	No. OF BOLTS	BOLT CIRCLE C (IN)	DIAMETER (IN)	BOLT TENSION (KIPS)
8.625x.322	1½	4¾	5 / 8	8	16	1	51.0
8.625x.500	1½	4¾	5 / 8	8	16	1	51.0
12.750x.375	1½	6½	5 / 8	12	23	1⅛	56.0
12.750x.500	1½	6½	5 / 8	12	23	1⅛	56.0
18.000x.375	2¼	6	5 / 8	12	27	1½	103.0
18.0002x.500	2¼	6	3 / 4	12	27	1½	103.0

CHORD SPLICE ASSEMBLY - TWELVE-BOLT



CHORD SPLICE ASSEMBLY WELD DETAIL

NOTES:

1. BOLT HOLES IN SPLICE PLATES SHALL BE DRILLED TO 1 / 16" LARGER THAN THE BOLT SIZE SPECIFIED, UNLESS OTHERWISE NOTED BY THE DESIGNER.
2. ASTM A325 SPLICE BOLTS SHALL BE HEAVY HEXAGON TYPE AND SHALL BE FURNISHED WITH HEAVY HEXAGON NUTS AND WASHERS.
3. THE THREADED PORTION OF THE SPLICE BOLTS SHALL BE EXCLUDED FROM THE SHEAR PLANE OF THE SPLICE.
4. CHORD INTERMEDIATE SPLICING WILL NOT BE PERMITTED UNLESS AUTHORIZED BY THE RE. WHEN INTERMEDIATE SPLICING IS AUTHORIZED, THE SPLICE SHALL BE AS SHOWN ON THE INTERMEDIATE SPLICE DETAIL AND AS PER CHORD SPLICE ASSEMBLY TABLE ON THIS SHEET.
5. IF FILLET WELD SIZE IS NOT SHOWN ON DETAILS, THE WELD SIZE SHALL BE THE SAME AS THE THICKNESS OF THE THINNER PART BEING JOINED.
6. FOR THE OUTSIDE DIAMETER (O.D.) OF THE STEEL STUB PIPE SEE SCHEDULE OF STRUCTURES ON SIGN STRUCTURE DRG. CA-D2.
7. THE PROVISIONS OF THE NJDOT STANDARD SPECIFICATIONS SHALL BE FOLLOWED IN FURNISHING THE REQUIRED SPLICE ASSEMBLY.
8. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR THE SPLICE BOLT TIGHTENING PROCEDURES. WHEN CALIBRATED WRENCHES ARE USED FOR BOLT INSTALLATION, THEY SHALL BE SET TO PROVIDE A TENSION THAT IS SPECIFIED IN THE TABLE ABOVE.
9. HORIZONTAL AND VERTICAL STUB STIFFENER PLATE DIMENSIONS MAY BE VARIED TO ACCOUNT FOR CAMBER (SEE CAMBER DETAIL ON SIGN STRUCTURE DRG. CA-D5).

SIGN STRUCTURE DRG. CA-D4

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES TRUSS AND POST DETAILS - SHEET 1

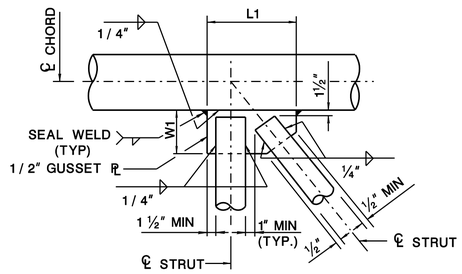
ROUTE: SECTION

SCALE : NONE

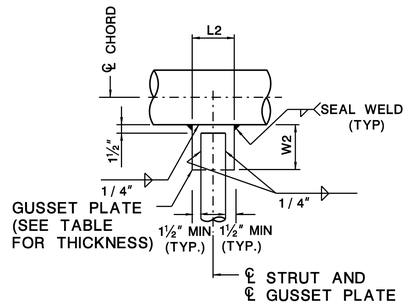
BRIDGE SHEET NO.____ OF____

BDCORD-02 – Engineer Changed to RE
BDCOTD-02 – ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	



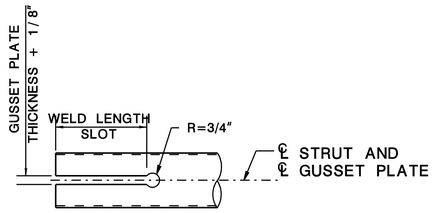
DETAIL 1
('K' GUSSET)



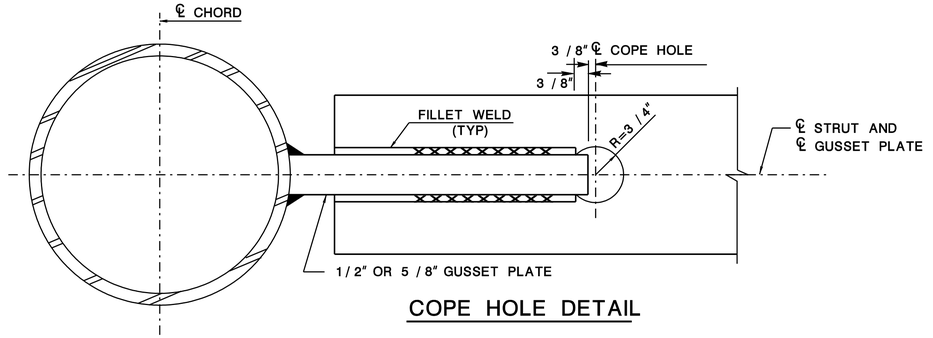
DETAIL 2
('T' GUSSET)

TRUSS GUSSET PLATES

CHORD O.D.xTHICK (IN)	'K' GUSSET		'T' GUSSET		THICK-NESS
	L1 (IN)	W1 (IN)	L2 (IN)	W2 (IN)	(IN)
8.625X.322	13½	6¼	6¼	6¼	½
8.625X.500	14½	6¼	6¼	6¼	½
12.750X.375	16½	7	7	7	⅝
12.750X.500	19½	7¾	10	7¼	⅝
18.000X.375	21½	9½	11	8¼	⅝
18.000X.500	24½	9½	15¾	9	⅝

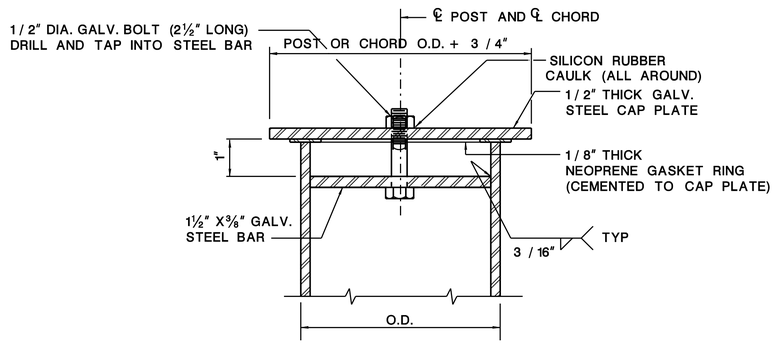


DETAIL A



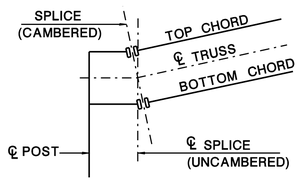
COPE HOLE DETAIL

NOTE:
COPE HOLES TO BE PROVIDED AT BOTH ENDS AND BOTH FACES OF ALL STRUTS.

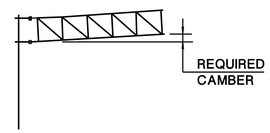


POST OR CHORD CAP DETAIL

NOTE: ALTERNATE CAP DETAILS MAY BE SUBMITTED TO THE RE FOR APPROVAL.



CAMBER DETAIL



CAMBER DIAGRAM

CAMBER NOTE:
CAMBER SHALL BE OBTAINED BY SHORTENING THE TOP CHORD STUB LENGTH AND LENGTHENING THE BOTTOM CHORD STUB LENGTH. CHORD SPLICE PLATES SHALL BE SKEWED ACCORDINGLY BEFORE WELDING TO CHORDS. NO FORCE SHALL BE APPLIED IN PROVIDING CAMBER. AN ALTERNATE METHOD OF OBTAINING CAMBER MAY BE USED AS APPROVED BY THE RE. FOR REQUIRED CAMBER, REFER TO DRG. CA-G3 AND SEE SCHEDULE OF STRUCTURES ON DRG. CA-D2.

BDC08D-02 – Engineer Changed to RE
BDC07D-02 – ORIGINAL SHEET

SIGN STRUCTURE DRG. CA-D5

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

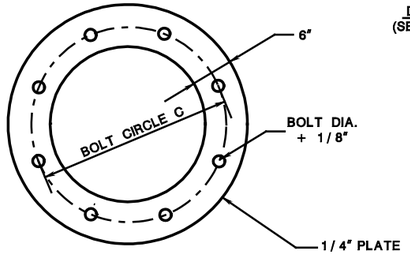
CANTILEVER SIGN SUPPORT STRUCTURES
TRUSS AND POST DETAILS - SHEET 2

ROUTE: SECTION

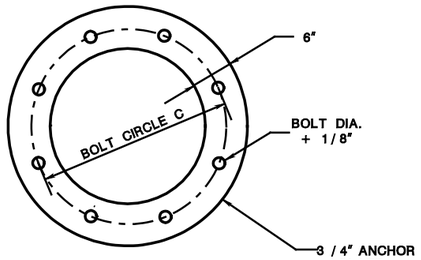
SCALE : NONE

BRIDGE
SHEET NO. ____ OF ____

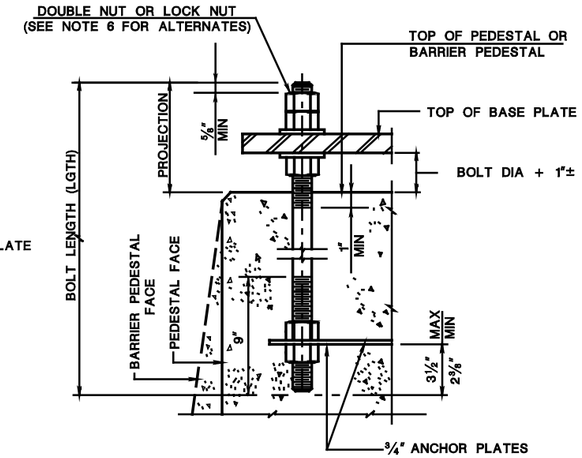
STATE	FEDERAL PROJECT NO.
N.J.	



TEMPLATE PLATE DETAIL



ANCHOR PLATE DETAIL

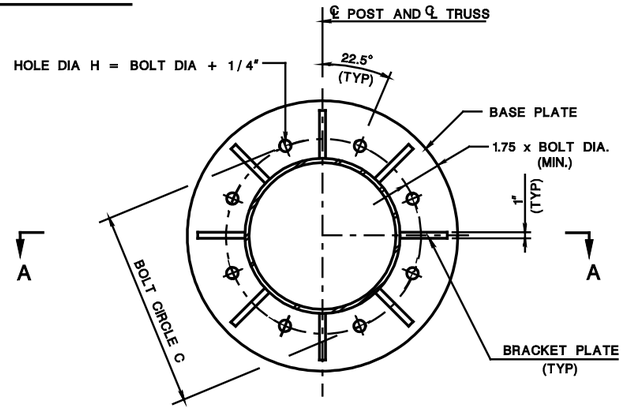


ANCHOR BOLT DETAIL

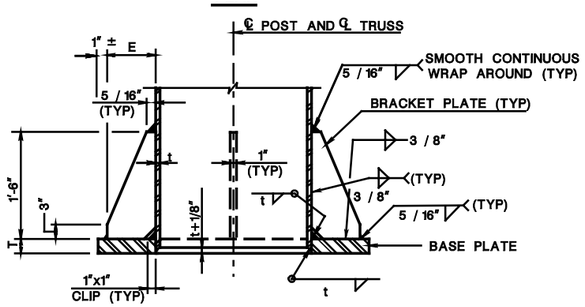
POST SHAFT BASE ASSEMBLY

POST O.D.xTHICK (IN)	BASE PLATE THICKNESS T (IN)	BRACKET PLATES E (IN)	ANCHOR BOLTS BOLT CIRCLE C (IN)	ANCHOR BOLTS SIZE DIAxLGTH (IN)	ANCHOR BOLTS BOLT TENSION (KIPS)	ANCHOR BOLTS PROJ* (MIN.) (IN)
14.000X.500	2	7	22	2¼X 57	113	11½
16.000X.500	2¾	7	24	2¼X 57	113	11½
18.000X.500	2¾	7	26	2¼X 57	113	11½
20.000X.500	2¾	7½	28	2½X 67	139	12½
24.000X.500	3	8	32	2¾X 72	172	13½
26.000X.500	3	10	36	3¼X 82	247	15
26.000X.750	3	10	36	3¼X 82	247	15
26.000X.875	3	10	36	3¼X 82	247	15
30.000x.500	3	10	40	3¼X 82	247	15
30.000X.625						

* PROJECTION LENGTH SHOWN IS BASED ON USING DOUBLE NUTS.

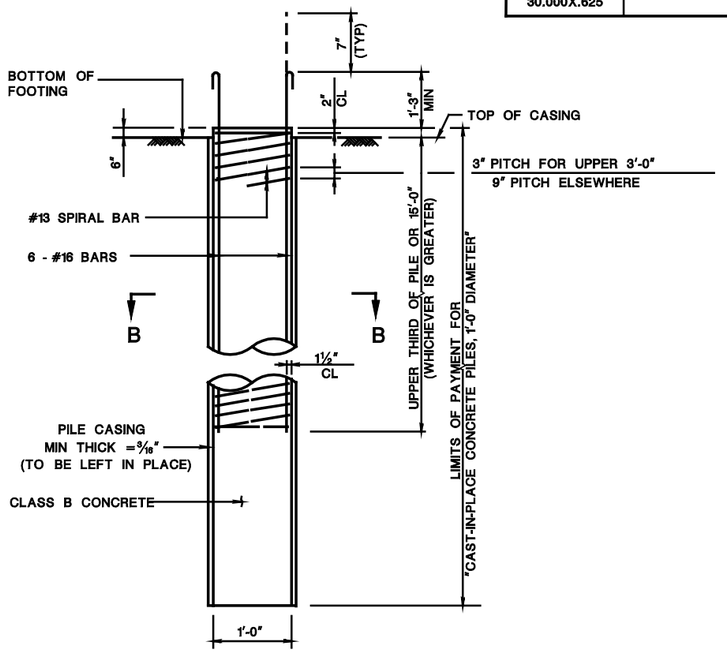


PLAN

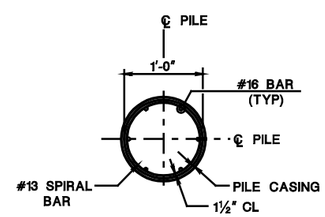


SECTION A-A

POST BASE PLATE DETAIL



ELEVATION



SECTION B-B

CAST-IN-PLACE CONCRETE PILE

NOTES:

1. BEARING PILES SHALL BE CAST-IN-PLACE CONCRETE PILES. ALL PILES SHALL BE 1'-0" IN DIAMETER OR EQUIVALENT AND SHALL HAVE A MINIMUM BEARING CAPACITY OF 50 KIPS. THE NUMBER AND SPACING OF PILES SHALL BE AS INDICATED ON SIGN STRUCTURE DRG. CA-D3.
2. APPROVED METAL SPACERS SHALL BE ATTACHED TO THE TOP AND BOTTOM SPIRALS TO ENSURE THAT THE REQUIRED CLEAR DISTANCE TO THE CASING IS MAINTAINED.
3. NO CONCRETE SHALL BE PLACED IN CAST-IN-PLACE PILES UNTIL AFTER ALL PILE CASINGS FOR THE FOOTING HAVE BEEN DRIVEN.
4. ANCHOR BOLTS SHALL BE PROVIDED WITH FIVE HEAVY HEXAGON NUTS AND TWO WASHERS AS SHOWN ON THE ANCHOR BOLT DETAIL.
5. ANCHOR BOLTS SHALL BE FULLY GALVANIZED AFTER THREADING.
6. REFER TO THE NJDOT STANDARD SPECIFICATIONS FOR ANCHOR BOLT TIGHTENING PROCEDURES. WHEN CALIBRATED WRENCHES ARE USED FOR BOLT INSTALLATION, THEY SHALL BE SET TO PROVIDE THE TENSION THAT IS SPECIFIED IN THE TABLE ABOVE.
7. TEMPLATE PLATE WITH NUTS ON BOTH SIDES SHALL BE USED TO MAINTAIN THE SPACING AND ALIGNMENT OF ANCHOR RODS.

SIGN STRUCTURE DRG. CA-D6

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES POST BASE AND FOUNDATION DETAILS

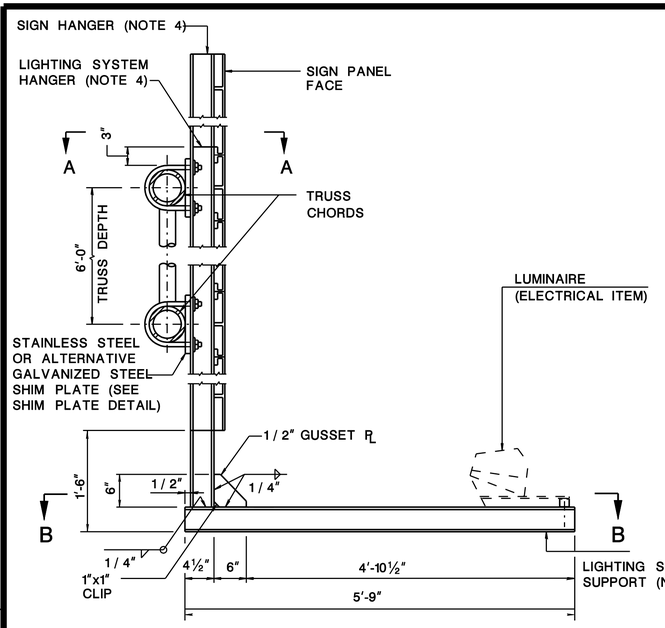
ROUTE: SECTION

SCALE : NONE

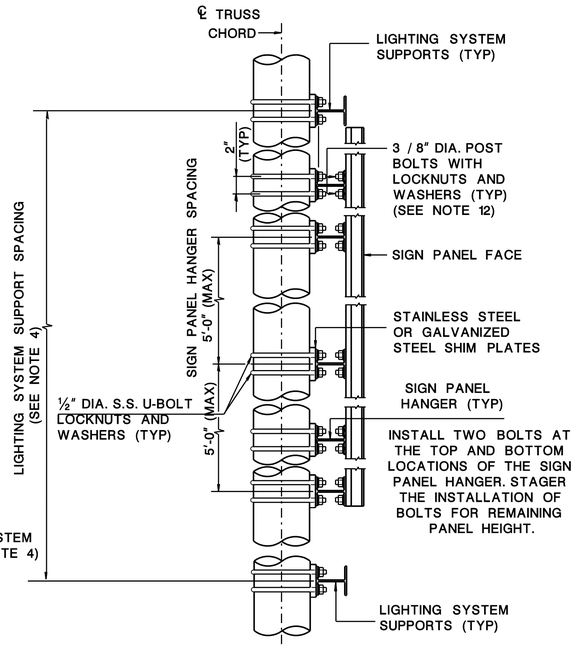
BRIDGE
SHEET NO. OF

BDC11D-04 POST SIZE (24 vs. 30 INCHES)
BDC11D-03 -- ORIGINAL SHEET

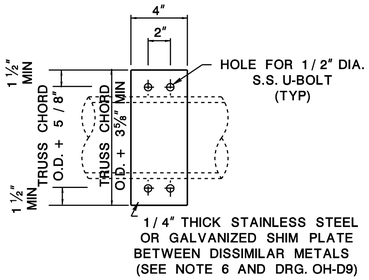
STATE	FEDERAL PROJECT NO.
N.J.	



TYPICAL LIGHTING SYSTEM SUPPORT DETAIL



SECTION A-A



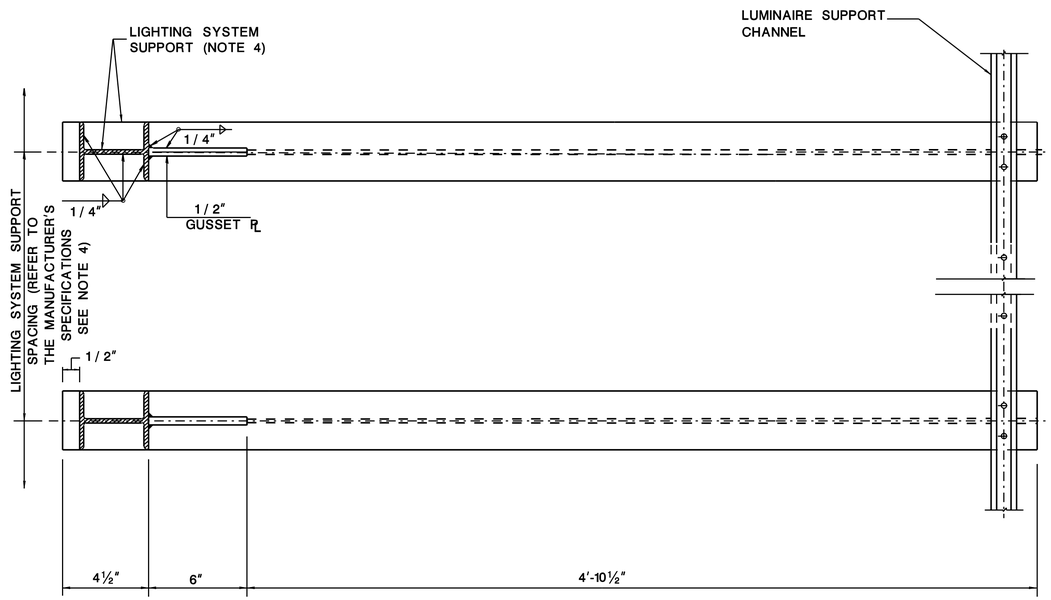
SHIM PLATE DETAIL

NOTES

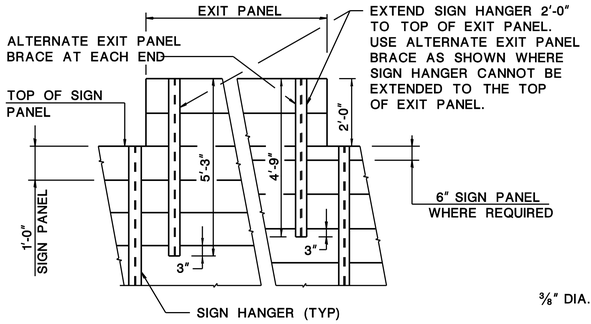
1. ALL ALUMINUM MATERIAL SHALL BE ALUMINUM ALLOY 6061-T6 UNLESS OTHERWISE NOTED.
2. ALL BOLTS, U-BOLTS, WASHERS AND NUTS SHALL BE STAINLESS STEEL CONFORMING TO ASTM SPECIFICATION A320 GRADE B8, CLASS 1 AND ASTM A194. STAINLESS STEEL SHIM PLATES SHALL CONFORM TO ASTM SPECIFICATION A167, TYPE 304, OR AS NOTED.
3. WELDING OF ALUMINUM SHALL BE AS SPECIFIED IN AWS D1.2 AND THE NJDOT STANDARD SPECIFICATIONS.
4. SIGN PANEL HANGER SHALL BE ALUMINUM OR GALVANIZED STEEL: ALUMINUM I-BEAM (DEPTH = 4", WEB AND FLANGE THICKNESS = ¼", FLANGE WIDTH = 3½"); STEEL I-BEAM (W6x9). SIGN HANGER SPACING DESIGNED FOR 15'-0" MAXIMUM SIGN PANEL HEIGHT.

   LIGHTING SYSTEM SUPPORTS SHALL BE ALUMINUM OR GALVANIZED STEEL. THE SUPPORT MEMBER SIZE, SPACING, CONNECTION AND INSTALLATION SHALL ADHERE TO THE WORKING DRAWINGS BASED ON THE COORDINATION OF THE SIGN SUPPORT STRUCTURE FABRICATOR, LIGHTING SYSTEM MANUFACTURER AND DESIGN ENGINEER.

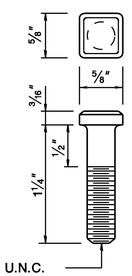
   WHEN THE SIGN HANGER AND LIGHTING SYSTEM SUPPORTS ARE PLANNED TO BE GALVANIZED STEEL, STAINLESS STEEL OR GALVANIZED SHIM PLATES ARE NOT NECESSARY.
5. SIGN HANGERS SHALL BE USED TO SUPPORT SIGN PANELS ONLY. THE SIGN LIGHTING SYSTEM SHALL BE INDEPENDENTLY SUPPORTED.
6. IF INTERMEDIATE TRUSS CHORD SPLICES ARE USED, THE THICKNESSES OF SHIM PLATES MUST BE INCREASED TO AVOID INTERFERENCE BETWEEN THE CHORD SPLICE PLATES AND THE SIGN PANELS.
7. LIGHTING SYSTEM SUPPORTS SHALL BE PROVIDED CONTINUOUSLY FOR THE ENTIRE SIGN DESIGN LENGTH UNLESS OTHERWISE SHOWN.
8. LIGHTING SYSTEM SUPPORT HANGERS SHALL PROJECT 3" ABOVE THE TOP OF THE TOP CHORD AND SHALL NOT SUPPORT SIGN PANELS, UNLESS OTHERWISE NOTED.
9. LENGTH OF SIGN HANGERS SHALL BE EQUAL TO THE SIGN PANEL HEIGHT. BEHIND AN EXIT PANEL, THE HANGERS SHALL BE EXTENDED TO THE TOP OF THE EXIT PANEL.
10. EXIT PANEL CONNECTION DETAIL SHOWN SHALL ALSO BE USED FOR THE ATTACHMENT OF NEW EXIT PANELS TO EXISTING SIGN PANELS.
11. SIGN PANELS SHALL NOT EXTEND MORE THAN 3'- 0" BEYOND THE LAST SIGN HANGER.
12. FRICTION TYPE CLIPS OR SIMILAR DEVICES ARE NOT PERMITTED.



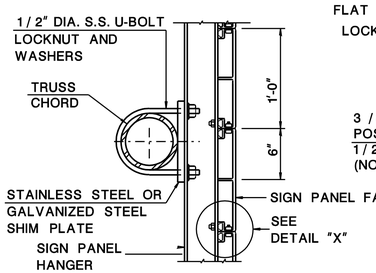
SECTION B-B



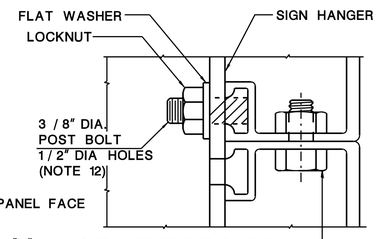
EXIT PANEL CONNECTION DETAIL



POST BOLT



SIGN PANEL CONNECTION DETAIL



DETAIL "X"

SIGN STRUCTURE DRG. CA-D7

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES SIGN AND LIGHTING SYSTEM DETAILS

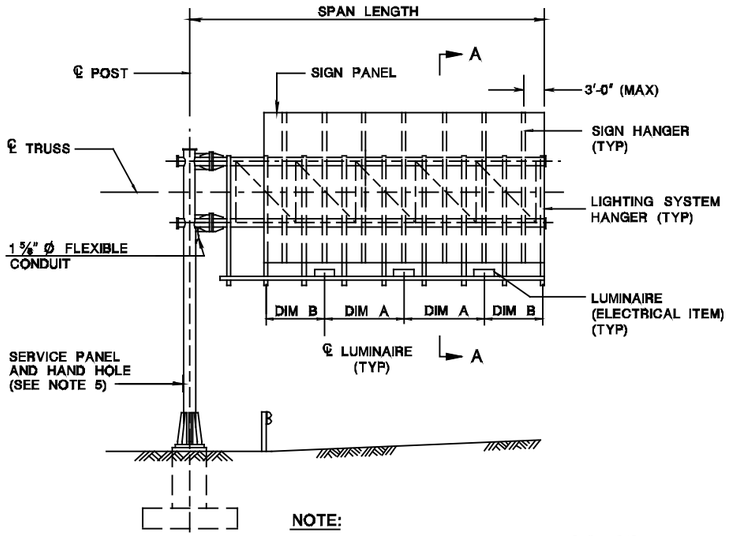
ROUTE: SECTION

SCALE : NONE

BRIDGE
SHEET NO.____ OF____

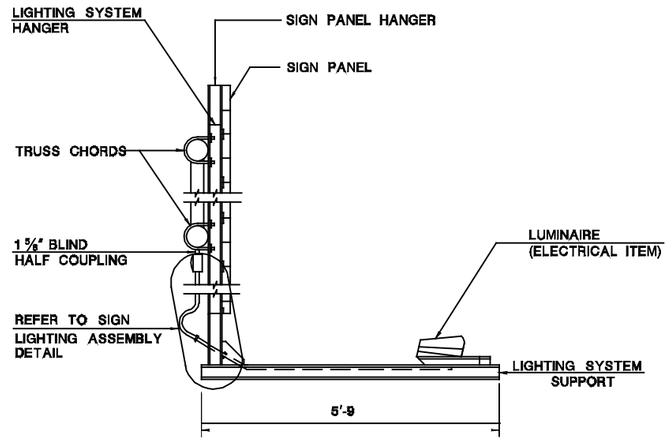
BDC08D-02 - Notes Revised; Detail Title Changed
BDC07D-02 - ORIGINAL SHEET

STATE	FEDERAL PROJECT NO.
N.J.	

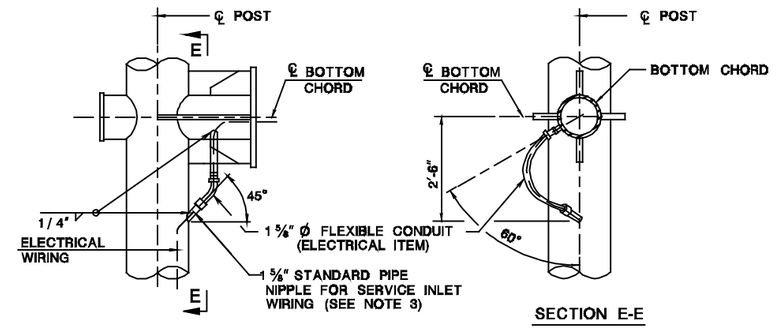


NOTE:
FOR LUMINAIRE SPACING DIMENSIONS "A" & "B" SEE SIGN LIGHTING ASSEMBLY DETAIL.

ELEVATION - TYPICAL CANTILEVER SIGN SUPPORT

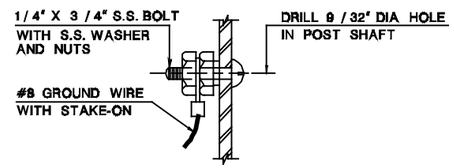


SECTION A-A

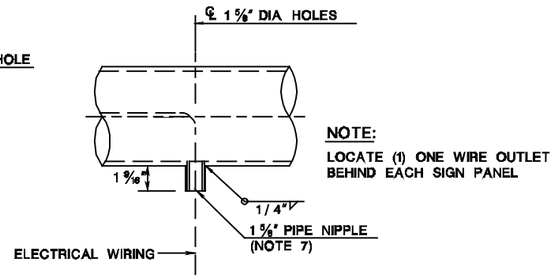


SECTION E-E

DETAILS OF WIRE OUTLETS

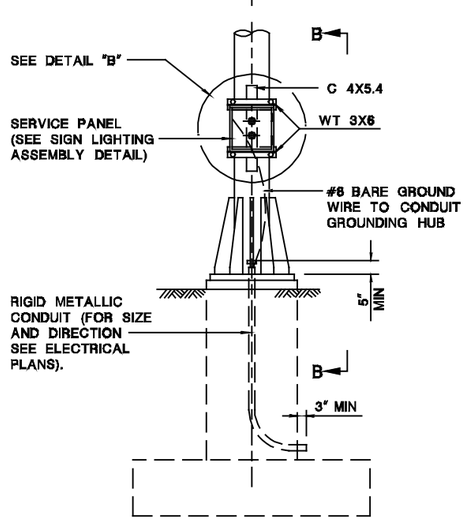


GROUND STUD

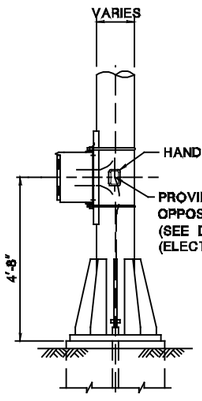


NOTE:
LOCATE (1) ONE WIRE OUTLET BEHIND EACH SIGN PANEL

DETAIL OF WIRE OUTLET ON TUBE

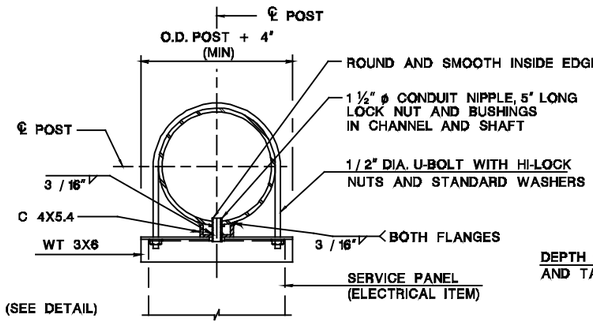


SIDE ELEVATION

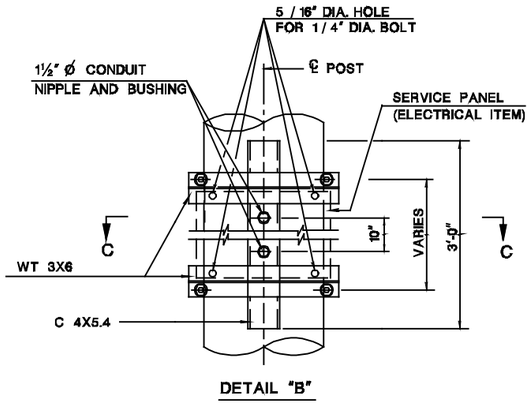


SECTION B-B

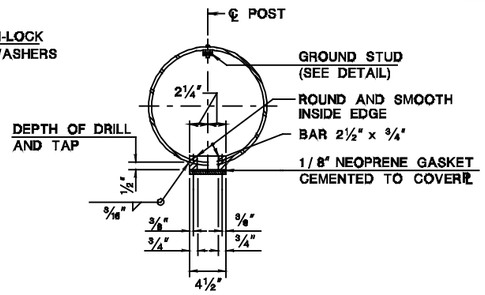
NOTE:
HAND HOLE AND GROUND STUD TO BE PROVIDED IN STEEL POST AT LOCATION OF RIGID METALLIC CONDUIT (SEE ELECTRICAL PLANS FOR LOCATION).



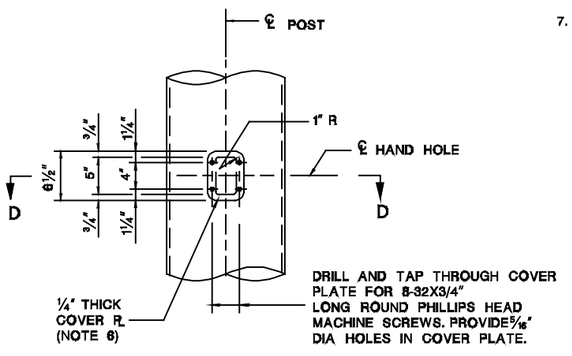
SECTION C-C



DETAIL "B"



SECTION D-D



HAND HOLE AND COVER DETAIL

TYPICAL SERVICE PANEL DETAIL AT SIGN STRUCTURE

NOTES:

1. WHEN SIGN LIGHTING IS REQUIRED, AN APPROVED SIGN LIGHTING SYSTEM SHALL BE PROVIDED.
2. ALL BOLTS TO BE INSTALLED WITH WASHERS, LOCKWASHERS AND NUTS. ALL HARDWARE SHALL BE STAINLESS STEEL CONFORMING TO ASTM A320, GRADE B8, CLASS 1.
3. 1 5/8" STANDARD PIPE NIPPLES SHALL BE OF APPROVED MATERIAL AND BE COMPATIBLE WITH THE MATERIAL TO WHICH THEY ARE WELDED.
4. IF REQUIRED, LIGHTING SYSTEM SUPPORT CHANNELS SHALL BE CONTINUOUS FROM HANGER TO HANGER. REFER TO THE MANUFACTURER'S SPECIFICATIONS.
5. SEE ELECTRICAL PLANS FOR LOCATION AND DIRECTION OF SERVICE PANEL, RIGID CONDUITS, AND FLEXIBLE CONDUITS.
6. HANDHOLES SHALL NOT BE ORIENTED TO THE SIDE OF THE ROADWAY.
7. NIPPLE SIZE SHALL NOT PROJECT BEYOND THICKNESS OF CHORD.

SIGN STRUCTURE DRG. CA-D8

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

CANTILEVER SIGN SUPPORT STRUCTURES
TYPICAL ELECTRICAL DETAILS

ROUTE: SECTION

SCALE : NONE

BRIDGE SHEET NO. ____ OF ____

BDC07S-02 - ORIGINAL SHEET