



TRANSMITTAL
LETTER

Change 1 to Pub. 111
PennDOT Publication No. 111

DATE
January 6, 1977

SUBJECT:

Traffic Standards - Signing - TC - 7700 Series

INFORMATION AND SPECIAL INSTRUCTIONS:

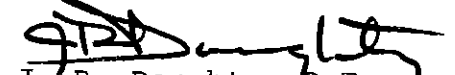
Attached is an additional issue of PennDOT Construction Standards covering the erection of traffic signs, sign supports, overhead sign support structures, sign lighting and other traffic appurtenances. This particular issue is part of the TC-7718 group covering steel overhead sign support structures, spans 120 feet to 200 feet, with or without catwalks.

Direct any questions concerning these standards to Mr. J. R. Doughty, P.E., Director, Bureau of Traffic Engineering, Pennsylvania Department of Transportation, Room 1014, Transportation and Safety Building, Harrisburg, Pennsylvania 17120, Telephone number (717)-787-3620.

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APPROVED FOR ISSUANCE BY:


J. R. Doughty, P.E.
Director
Bureau of Traffic Engr.

INFORMATIONAL NOTES

THESE NOTES MUST BE READ BEFORE USING THESE STANDARDS.

THESE STANDARDS SHALL BE USED FOR OVERHEAD STRUCTURES, SUBJECT TO LIMITATIONS AS SHOWN. THEY SHALL BE USED AS THE BASIS FOR THE PREPARATION OF STRUCTURE LAYOUTS AND CONTRACT PLANS. DETAILS SHOWN ON THESE STANDARDS NEED NOT BE COPIED, FOR REFERENCE TO THESE STANDARDS ON OVERHEAD SIGN STRUCTURE CONTRACT PLANS WILL BE PERMITTED, PROVIDING COORDINATING INFORMATION IS SHOWN ON THE CONTRACT PLANS.

DESIGN COMPUTATIONS ARE NOT REQUIRED FOR ANY PORTION OF A STRUCTURE FOR WHICH THE INFORMATION IS TAKEN DIRECTLY FROM THE DESIGN TABLES CONTAINED IN THESE STANDARDS, PROVIDING THE RESTRICTIONS RELATING TO THESE DESIGN TABLES ARE NOT EXCEEDED.

GENERAL DESIGN INSTRUCTIONS

DESIGN TABLES INCLUDED IN THESE STANDARDS WERE DEVELOPED USING A COMPUTER PROGRAM AND ARE BASED ON THE DESIGN CRITERIA SHOWN ON THIS SHEET.

TOWERS SHALL BE SET AS FAR FROM EDGE OF ROADWAY PAVEMENT AS CROSS SECTION GEOMETRICS AND/OR RIGHT OF WAY WILL PERMIT, WITH THE MAXIMUM DISTANCE TO CENTERLINE OF TOWER EQUAL TO 30 FEET. GUARD RAIL PROTECTION SHALL BE PROVIDED FOR ALL TOWERS, REGARDLESS OF DISTANCE OF SETBACK.

TOP OF FOUNDATION PEDESTAL SHALL BE SET A MINIMUM ABOVE SURROUNDING TERRAIN TO MINIMIZE HAZARD EFFECT OF CONCRETE PEDESTAL ABOVE GRADE TOP OF FOUNDATION FOOTING TO BE SET A MINIMUM OF 2'-6" BELOW TOP OF PEDESTAL WITH A 1'-0" MINIMUM COVER MAINTAINED OVER FOOTING AT ALL POINTS. CARE SHALL BE TAKEN TO ATTEMPT TO KEEP TOP OF FOOTINGS BELOW BOTTOM OF GUARD RAIL POSTS THAT MIGHT BE IN AREA OF FOOTING OR FREE OF ANY OTHER OBSTRUCTING UNIT SUCH AS A STORM SEWER. IF IT BECOMES NECESSARY TO LOWER A FOOTING TO THE EXTENT THAT THE HEIGHT OF PEDESTAL IS GREATER THAN 7 FEET, THE SCOPE OF THE DESIGN TABLES HAS BEEN EXCEEDED AND IT WILL BE NECESSARY TO DESIGN A FOUNDATION PEDESTAL AND FOOTING FOR THIS SPECIAL CONDITION.

THE TRUSS, SIGNS, LIGHT FIXTURES (AND CATWALK, IF USED) SHALL BE SET TO AN ELEVATION THAT WILL PROVIDE 17'-6" MINIMUM VERTICAL CLEAR ABOVE THE HIGHEST POINT OF THE ENTIRE WIDTH OF THE ROADWAY PAVEMENT AND SHOULDERS PASSING UNDER THE STRUCTURE. GENERALLY THE BOTTOM OF ALL SIGNS ON A STRUCTURE SHALL BE SET TO THE SAME ELEVATION. IN THE CASE OF A STRUCTURE SPANNING DUAL ROADWAYS, WHERE THE DIFFERENCE IN ELEVATION BETWEEN THE HIGHEST POINT ON EACH DUAL ROADWAY IS GREATER THAN 2'-6", THE BOTTOM OF ALL SIGNS OVER EACH DUAL ROADWAY SHALL BE SET TO THE SAME ELEVATION, WITH THE ELEVATION DIFFERENCE OF BOTTOM OF SIGNS OVER EACH ROADWAY BEING EQUAL TO THE DIFFERENCE IN ELEVATION BETWEEN THE HIGHEST POINT ON EACH DUAL ROADWAY.

THE TRUSS SHALL BE SET TO AN ELEVATION THAT PLACES THE CENTER OF THE TRUSS AT MID-HEIGHT OF THE DEEPEST SIGN OR A MAXIMUM OF 6 FEET ABOVE THE BOTTOM OF THE SIGNS. IN THE INSTANCES WHERE THE ULTIMATE SIGN AREA CRITERIA IS TO BE USED, SET THE TRUSS TO AN ELEVATION THAT PLACES THE CENTER OF THE TRUSS AT 6 FEET ABOVE THE BOTTOM OF THE SIGNS. IN THE INSTANCES WHERE THE STRUCTURE IS SPANNING DUAL ROADWAYS WITH ELEVATION DIFFERENCES GREATER THAN 2'-6", AS DESCRIBED PREVIOUSLY, SET THE TRUSS TO AN ELEVATION THAT PLACES THE CENTER OF THE TRUSS AT 8'-6" ABOVE THE BOTTOM OF THE SIGNS OVER THE LOWER ROADWAY.

THE DESIGN SIGN AREA TO BE USED FOR SELECTING MEMBER SIZES FOR EACH STRUCTURE SHALL BE DETERMINED FROM ONE OF THE FOLLOWING TWO CONDITIONS. THE FIRST CONDITION IS THE ACTUAL SIGN AREA TO BE PLACED ON THE STRUCTURE AT THE TIME OF ITS CONSTRUCTION. THE SECOND CONDITION IS FOR AN ULTIMATE SIGN AREA EQUAL TO THE WIDTH OF ROADWAY PAVEMENT UNDER THE STRUCTURE TIMES 12 FEET. THE TRAFFIC ENGINEER SHALL SPECIFY WHEN THE ULTIMATE SIGN AREA IS TO BE USED FOR DESIGN OF STRUCTURE. THE DESIGN SIGN AREA SHALL BE THE SIGN AREA COMPUTED FROM EITHER OF THE PREVIOUSLY DEFINED CONDITIONS, ROUNDED TO THE NEXT HIGHER AREA SHOWN IN THE DESIGN TABLES.

TOWER MEMBER SIZES, FOUNDATION PEDESTALS AND FOOTINGS SHALL BE SELECTED FROM THE APPROPRIATE DESIGN HEIGHT IN THE DESIGN TABLES. THERE ARE THREE DESIGN HEIGHTS (THE DIMENSION FROM TOP OF FOUNDATION PEDESTAL TO THE CENTER OF THE TRUSS) VARYING IN 5 FOOT INCREMENTS FROM 23 FEET TO 33 FEET. USE AS THE DESIGN HEIGHT, THE HEIGHT IN THE DESIGN TABLE NEXT LARGER THAN THE ACTUAL DIMENSION FROM THE TOP OF FOUNDATION PEDESTAL TO THE CENTER OF THE TRUSS.

OVERHEAD SIGN STRUCTURES MAY BE CONSTRUCTED WITH OR WITHOUT CATWALK. THE TRAFFIC ENGINEER SHALL SPECIFY WHEN A CATWALK IS TO BE INCLUDED AS PART OF THE STRUCTURE.

DESIGN CRITERIA

DESIGN SPECIFICATIONS - DESIGN REQUIREMENTS OF 1975 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS EXCEPT AS NOTED HEREIN.

WIND SPEED - 80 MILES PER HOUR.

COEFFICIENT FOR HEIGHT ABOVE GROUND = 1.00

SHAPE COEFFICIENT - TRUSS CHORDS = 2.86
TRUSS WEBS = 2.06
SIGN = 1.19
CATWALK = 2.86
TOWER = 2.86

CONCRETE - $f'_c = 3,000$ P.S.I.

REINFORCEMENT BARS - $f_s = 20,000$ P.S.I.

STRUCTURAL STEEL - $F_y = 36,000$ P.S.I.

FATIGUE LOADING USED EQUALS $0.71 \times$ WIND LOADING DUE TO DESIGN WIND PRESSURE. FATIGUE STRENGTH EQUALS 100 PER CENT OF ALLOWABLE STRESS RANGE CONSIDERING 2,000,000 CYCLES OF LOADING.

MAXIMUM FOUNDATION BEARING PRESSURE - 1.5 TONS PER SQ.FT.

LOCATION OF RESULTANT CENTER OF PRESSURE UNDER FOOTING - WITHIN MIDDLE ONE-HALF OF FOOTING DIMENSION PERPENDICULAR TO CENTER OF TRUSS AND WITHIN MIDDLE ONE-THIRD OF FOOTING DIMENSION PERPENDICULAR TO CENTER OF TOWER.

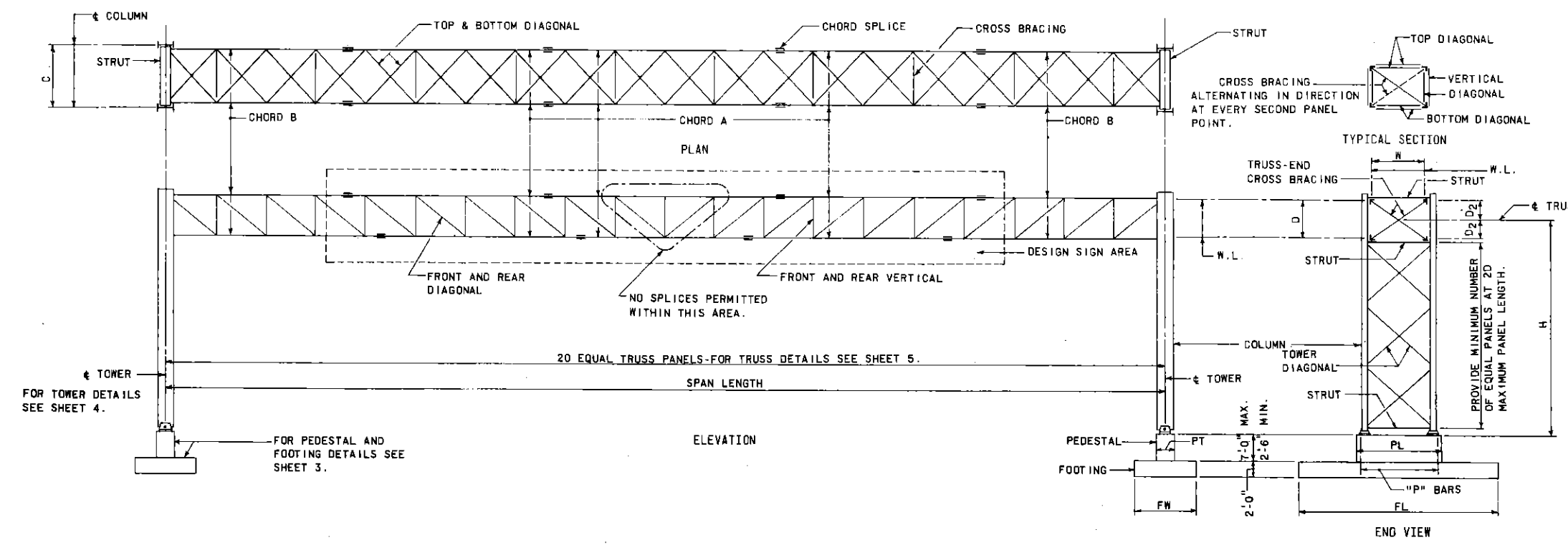
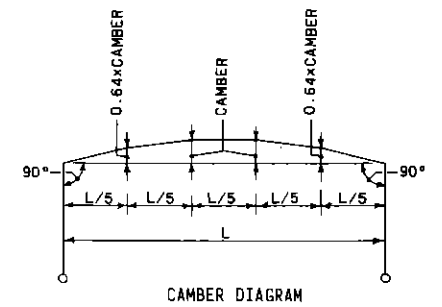
DEAD LOAD AND WIND LOAD RESULTING FROM CATWALK HAVE BEEN INCLUDED IN THE DESIGNS SHOWN IN TABLES ON SHEET 2.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
STEEL SPANS GREATER THAN 120 FEET
GENERAL INFORMATION
DESIGN INSTRUCTIONS AND CRITERIA

Recommended <i>B. K. Kish</i> Chief Bridge Engineer	Recommended <i>10/23/76</i> <i>James O. Wilson</i> Director, Bureau of Traffic Engineering	Approved <i>10/22/76</i> <i>James O. Wilson</i> Deputy Chief Highway Engineer	Sheet 1 OF 1 TC-7718
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DESIGN SPAN FT.	WxD FT.	DESIGN SIGN AREA SQ. FT.	TRUSS MEMBERS							CAMBER IN.	TOWER MEMBERS			FOUNDATION PEDESTAL			FOOTING TYPE			DESIGN SIGN AREA SQ. FT.	DESIGN SPAN FT.			
			CHORDS		DIAGONALS		VERTICALS		CROSS BRACING			DIAGONALS	STRUTS	PLxPT FT.	NUMBER OF "P" BARS AND SIZE			H=23 FT.	H=28 FT.			H=33 FT.		
			A	B	FRONT & REAR	TOP & BOTTOM	FRONT & REAR	INTERIOR	END		23 FT.				28 FT.	33 FT.	H=23 FT.						H=28 FT.	H=33 FT.
130	7x5.25	300	L6x6x $\frac{1}{2}$	L6x6x $\frac{1}{2}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	3.56	W24x68	W24x68	W24x68	L4x4x $\frac{5}{8}$	C15x33.9	11x2.25	16#4	16#4	16#4	720	722	724	300	130
		700	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$							W24x68	W24x68	W24x76				16#4	16#4	16#5	821	824	727	700	
		1100	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$								W24x76	W24x76	W24x84				16#4	16#5	16#5	922	826	730	
140	7x5.25	300	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$						4.19	W24x68	W24x68	W24x76				16#4	16#4	16#4	720	722	724	300	140
		700	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$							W24x76	W24x76	W24x84				16#4	16#4	16#5	821	824	728	700	
		1100	L6x6x $\frac{3}{4}$	L6x6x $\frac{3}{8}$							W24x84	W24x84	W27x94		11x2.25		16#5	16#5	16#5	923	826	731	1100	
150	8x6.0	300	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$						4.31	W24x68	W24x68	W24x76			12x2.25	16#4	16#4	16#4	720	723	725	300	150
		700	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$							W24x76	W24x76	W24x84				16#4	16#4	16#5	822	824	728	700	
		1100	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$							W24x84	W24x84	W27x94				16#5	16#5	16#5	923	826	731	1100	
160	8x6.0	300	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$						4.69	W24x68	W24x76	W24x76				16#4	16#4	16#4	819	723	725	300	160
		700	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$							W24x76	W27x84	W27x94				16#4	16#4	16#5	822	825	827	700	
		1100	L6x6x $\frac{3}{8}$	L6x6x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$						W27x84	W27x94	W27x102				16#5	16#5	16#5	923	926	928	1100	
170	9x6.75	300	L6x6x $\frac{3}{4}$	L6x6x $\frac{1}{2}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$					4.81	W24x68	W24x76	W24x76			13x2.25	17#4	17#4	17#4	720	723	725	300	170
		700	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$						W24x76	W27x84	W27x94				17#4	17#4	17#5	921	825	827	700	
		1100	L6x6x1	L6x6x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{3}{8}$						W27x84	W27x94	W27x102				17#4	17#5	17#5	1022	926	928	1100	
180	9x6.75	300	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$					5.44	W24x76	W27x84	W27x94				17#4	17#4	17#4	820	822	824	300	180
		700	L6x6x1	L6x6x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{3}{8}$						W27x84	W27x94	W27x102				17#4	17#4	17#5	921	825	827	700	
		1100	L8x8x $\frac{3}{4}$	L8x8x $\frac{5}{8}$	L4x4x $\frac{3}{8}$			L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$			W27x102	W27x114	W30x124				17#5	17#5	17#5	1022	926	928	1100	
190	10x7.5	300	L6x6x $\frac{3}{8}$	L6x6x $\frac{1}{2}$						5.63	W24x76	W27x84	W27x94			14x2.25	18#4	18#4	18#4	820	823	825	300	190
		700	L6x6x1	L6x6x $\frac{3}{8}$							W27x94	W27x94	W27x102				18#4	18#4	18#5	921	924	827	700	
		1100	L8x8x $\frac{3}{4}$	L8x8x $\frac{5}{8}$							W27x102	W27x102	W27x114				18#5	18#5	18#5	1022	926	928	1100	
200	10x7.5	300	L6x6x1	L6x6x $\frac{3}{8}$						6.31	W27x84	W27x94	W27x102				18#4	18#4	18#4	919	823	825	300	200
		700	L8x8x $\frac{3}{4}$	L8x8x $\frac{5}{8}$							W27x94	W27x102	W27x114				18#4	18#5	18#5	922	925	927	700	
		1100	L8x8x $\frac{3}{4}$	L8x8x $\frac{5}{8}$	L4x4x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L4x4x $\frac{3}{8}$	L4x4x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$		W27x114	W30x116	W30x116				18#5	18#5	18#5	1122	1026	1028	1100	
200	10x7.5	1500	L8x8x $\frac{7}{8}$	L8x8x $\frac{5}{8}$	L4x4x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	L4x4x $\frac{3}{8}$	L4x4x $\frac{3}{8}$	L3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$		W30x116	W30x124	W30x124	L4x4x $\frac{5}{8}$	C15x33.9	14x2.25	18#5	18#5	18#5	1124	1028	1030	1500	



NOTES:

FOR GENERAL INFORMATION, DESIGN INSTRUCTIONS AND CRITERIA SEE SHEET 1.

FOR GENERAL NOTES SEE SHEET 3.

FOOTING TYPE DENOTES SIZE OF FOOTING. FOR EXAMPLE, TYPE 825 IS A FOOTING 8' (FW) x 25' (FL).

W.L. DENOTES WORKING LINE.

SEE TOWER ELEVATION ON SHEET 4 FOR METHOD OF COMPUTING DIMENSION C.

SPLICES MAY BE RELOCATED, ADDED OR ELIMINATED WITH APPROVAL OF THE TRAFFIC ENGINEER. RELATIVE LOCATIONS OF SPLICES IN TOP AND BOTTOM CHORDS SHALL BE MAINTAINED AS INDICATED IN THESE STANDARDS. CHORD A SIZES SHALL BE EXTENDED TOWARD TOWERS, IF A SPLICE IS RELOCATED NEARER TO TOWER THAN SHOWN IN THESE STANDARDS.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
STEEL SPANS GREATER THAN 120 FEET

DESIGN TABLES

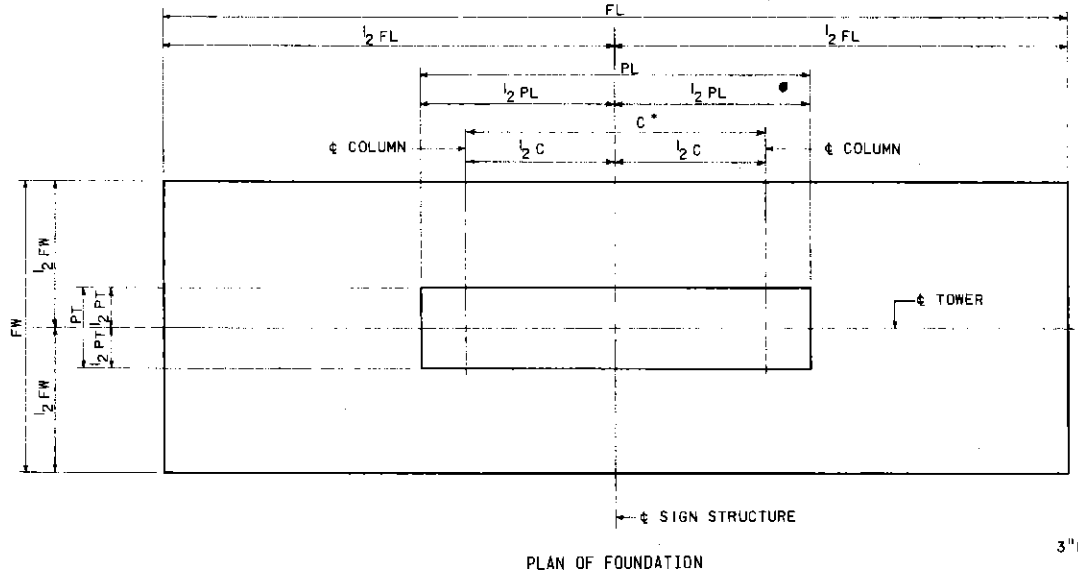
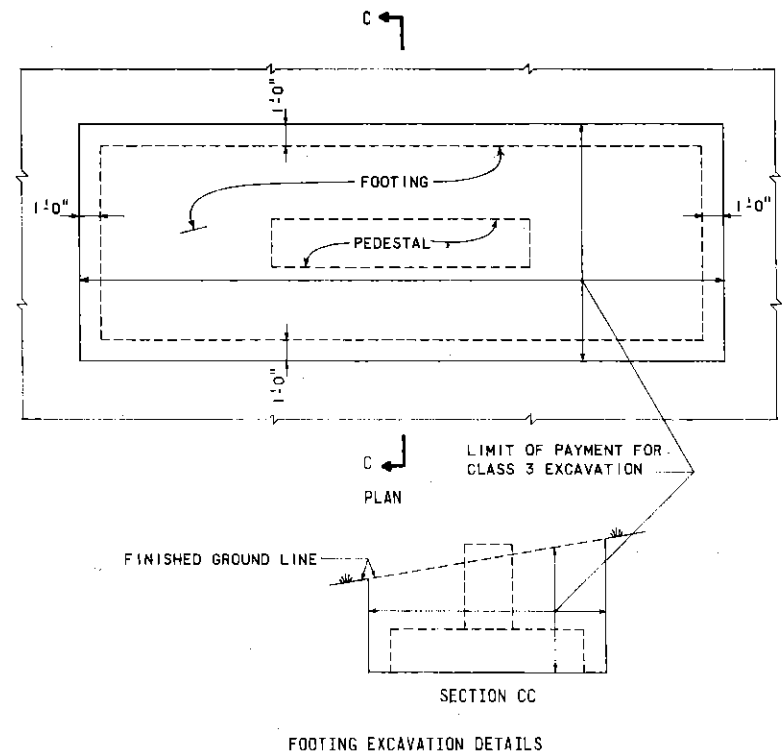
Recommended <i>B. K. K...</i> Chief Bridge Engineer	Recommended <i>J. B. W...</i> Director, Bureau of Traffic Engineering	Approved <i>J. B. W...</i> Deputy Chief Highway Engineer	Sheet 2 of 7 TC-771
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TYPE	FOOTING		VOL. CU. YD.	REINFORCEMENT				WEIGHT LBS.
	FW	FL		"LB"	"LT"	"SB"	"ST"	
720	7'-0"	20'-0"	10.4	9#5	9#4	20#4	20#4	481
722	7'-0"	22'-0"	11.4	9#6	8#5	22#4	22#4	670
723	7'-0"	23'-0"	11.9	9#6	8#6	23#4	23#4	784
724	7'-0"	24'-0"	12.4	8#7	8#6	24#4	24#4	885
725	7'-0"	25'-0"	13.0	9#7	9#6	25#4	25#4	1010
727	7'-0"	27'-0"	14.0	9#8	7#8	27#4	27#4	1380
728	7'-0"	28'-0"	14.5	9#8	7#8	28#4	28#4	1432
730	7'-0"	30'-0"	15.6	9#9	9#8	30#4	30#4	1888
731	7'-0"	31'-0"	16.1	8#10	8#9	31#4	31#4	2166
819	8'-0"	19'-0"	11.3	8#5	8#4	19#4	19#4	450
820	8'-0"	20'-0"	11.9	8#5	8#4	20#4	20#4	474
821	8'-0"	21'-0"	12.4	9#6	9#5	21#4	21#4	689
822	8'-0"	22'-0"	13.0	10#6	9#5	22#4	22#4	754
823	8'-0"	23'-0"	13.6	8#7	8#6	23#4	23#4	879
824	8'-0"	24'-0"	14.2	10#7	10#6	24#4	24#4	1085
825	8'-0"	25'-0"	14.8	10#7	10#6	25#4	25#4	1131
826	8'-0"	26'-0"	15.4	10#8	10#7	26#4	26#4	1477
827	8'-0"	27'-0"	16.0	10#8	10#7	27#4	27#4	1534
919	9'-0"	19'-0"	12.7	9#4	9#4	19#4	19#4	445
921	9'-0"	21'-0"	14.0	9#6	9#5	21#4	21#4	717
922	9'-0"	22'-0"	14.7	10#7	10#6	22#4	22#4	1023
923	9'-0"	23'-0"	15.3	11#7	11#6	23#4	23#4	1151
924	9'-0"	24'-0"	16.0	9#7	9#6	24#4	24#4	1033
925	9'-0"	25'-0"	16.7	10#7	9#6	25#4	25#4	1127
926	9'-0"	26'-0"	17.3	11#8	11#7	26#4	26#4	1632
927	9'-0"	27'-0"	18.0	10#8	10#7	28#4	28#4	1582
928	9'-0"	28'-0"	18.7	11#9	9#9	37#4	30#4	2270
930	9'-0"	30'-0"	20.0	13#9	10#9	39#4	30#4	2720
1022	10'-0"	22'-0"	16.3	12#6	12#5	24#4	22#4	959
1024	10'-0"	24'-0"	17.8	10#8	10#7	28#4	25#4	1458
1025	10'-0"	25'-0"	18.5	12#7	11#6	29#4	25#4	1362
1026	10'-0"	26'-0"	19.3	10#8	10#7	31#4	27#4	1585
1027	10'-0"	27'-0"	20.0	11#9	10#8	29#4	30#4	2091
1028	10'-0"	28'-0"	20.7	11#9	10#8	33#4	33#4	2200
1030	10'-0"	30'-0"	22.2	11#10	11#9	33#4	37#4	2966
1122	11'-0"	22'-0"	17.9	11#7	11#5	30#4	26#4	1135
1123	11'-0"	23'-0"	18.7	13#7	11#7	33#4	30#4	1561
1124	11'-0"	24'-0"	19.6	12#7	12#6	31#4	30#4	1442

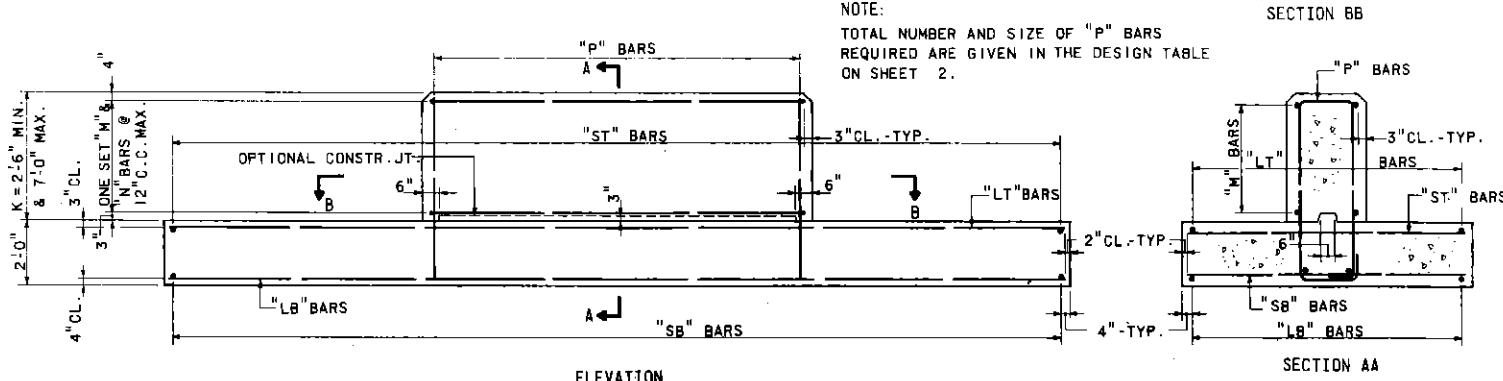
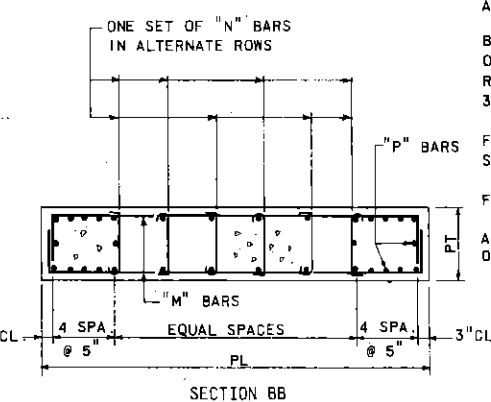
PLxPT (FT.)	VOL. (CU.YD.)	HORIZONTAL REINFORCEMENT						WEIGHT PER SET A (LBS.)
		#4 BARS TYPE "M"			#4 BARS TYPE "N"			
		LENGTH	A	B	LENGTH	C	NO.	
11x2.25	0.92K	13'-6"	10'-6"	1'-6"	2'-11"	1'-9"	4	26
12x2.25	1.00K	14'-6"	11'-6"	1'-6"	2'-11"	1'-9"	4	27
13x2.25	1.08K	15'-6"	12'-6"	1'-6"	2'-11"	1'-9"	4	29
14x2.25	1.17K	16'-6"	13'-6"	1'-6"	2'-11"	1'-9"	5	32

VERTICAL REINFORCEMENT			
TYPE OF "P" BARS			
BAR SIZE	WEIGHT LB./FT.	A	LENGTH
4	0.668	8"	2(A+B+C)
5	1.043	10"	
6	1.502	1'-0"	
7	2.044	1'-2"	

ONE SET INCLUDES 2 "M" BARS AND NO. OF "N" BARS SHOWN IN TABLE.



*SEE TOWER ELEVATION ON SHEET 4 FOR VALUE OF C.



NOTE: TOTAL NUMBER AND SIZE OF "P" BARS REQUIRED ARE GIVEN IN THE DESIGN TABLE ON SHEET 2.

GENERAL NOTES:
 FOR GENERAL DESIGN INSTRUCTIONS SEE SHEET 1.
 MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH SPECIFICATION FORMS 408 AND 409.
 MATERIALS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
 STRUCTURAL SHAPES, BARS, PLATES, U-BOLTS, BENT BOLTS AND ANCHOR BOLTS A36
 NUTS FOR ANCHOR BOLTS A307
 H.S. BOLTS, NUTS AND WASHERS A325
 OTHER BOLTS A307
 REINFORCEMENT BARS A615, GRADE 40
 NUTS FOR ALL BOLTS EXCEPT ANCHOR BOLTS SHALL BE HI-LOK® NUTS, AS MANUFACTURED BY THE HI-SHEAR CORPORATION, 2600 SKYPARK DRIVE, TORRANCE, CALIFORNIA, 90509; OR APPROVED EQUAL. THE HI-LOK NUT SHALL HAVE UNC-2B COARSE THREADS. PART NUMBERS FOR HI-LOK NUTS ARE AS FOLLOWS:
 HI-LOK NUTS FOR H.S. BOLTS - CHL11
 HI-LOK NUTS FOR OTHER BOLTS - CHL21

ALL HI-LOK NUTS SHALL BE INSTALLED WITH IMPACT WRENCHES OR WITH STANDARD HAND CLOSED-END WRENCHES OR SOCKETS. DURING INSTALLATION, THE HI-LOK NUT SHALL BE TORQUED UNTIL ITS WRENCHING HEX SHEARS OFF UNDER THE APPLIED TORQUE. AT THIS POINT, THE NUT IS SET AND NO FURTHER FORCE SHALL BE APPLIED TO THE REMAINING PORTION OF THE NUT OR TO THE HEAD OF THE BOLT.

ALL STEEL MATERIALS EXCEPT HI-LOK NUTS SHALL BE GALVANIZED AFTER FABRICATION IS COMPLETE. HI-LOK NUTS ARE ZINC-PLATED FOR USE WITH BOLTS GALVANIZED PER ASTM A-153.

CLASS A CEMENT CONCRETE SHALL BE USED IN FOOTINGS AND IN FOUNDATION PEDESTALS.

EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 1"x1" EXCEPT AS NOTED.

MAXIMUM DESIGN FOUNDATION BEARING PRESSURE EQUALS 1.5 TONS PER SQUARE FOOT. THE FOOTING MAY BE ORDERED BY THE ENGINEER TO BE AT ANY ELEVATION OR OF ANY DIMENSIONS NECESSARY TO PROVIDE A PROPER FOUNDATION.

REINFORCEMENT BARS SHALL CONFORM TO THE DIMENSIONS SHOWN ON THE DRAWINGS AND WITHIN FABRICATING TOLERANCES AS SHOWN IN THE CURRENT MANUAL OF STANDARD PRACTICE FOR REINFORCED CONCRETE CONSTRUCTION AS PUBLISHED BY THE CONCRETE REINFORCING STEEL INSTITUTE.

BARS SHALL NOT BE SPLICED EXCEPT AS PROVIDED ON THESE DRAWINGS OR AUTHORIZED BY THE ENGINEER. WHEN SPLICING IS APPROVED, THE REINFORCEMENT BARS SHALL BE LAPPED FOR A LENGTH OF AT LEAST 30 DIAMETERS AND SHALL BE SECURELY WIRED TOGETHER.

FOR PEDESTAL DIMENSIONS AND REINFORCEMENT, AND FOOTING TYPE, SEE DESIGN TABLES ON SHEET 2

FOOTING SIZES SHOWN ARE MINIMUM REQUIRED FOR STABILITY.

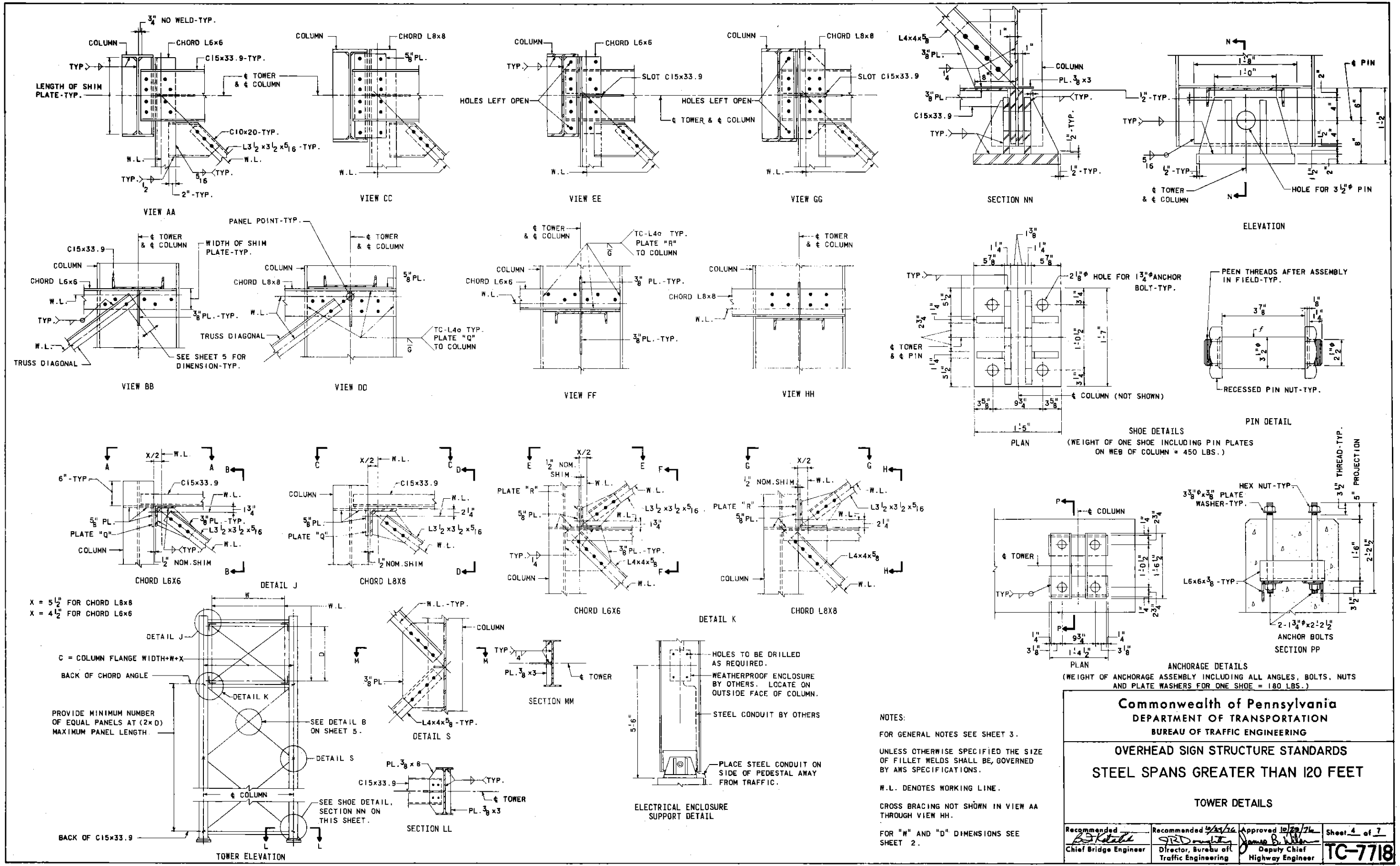
ALL BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" H.S. BOLTS UNLESS OTHERWISE NOTED.

Commonwealth of Pennsylvania
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
 STEEL SPANS GREATER THAN 120 FEET

FOUNDATION DESIGN AND DETAILS

Recommended <i>B. Z. Kottel</i> Chief Bridge Engineer	Recommended <i>J. R. Doughty</i> Director, Bureau of Traffic Engineering	Approved 10/29/76 <i>James B. Wilson</i> Deputy Chief Highway Engineer	Sheet 3 of 7 TC-7718
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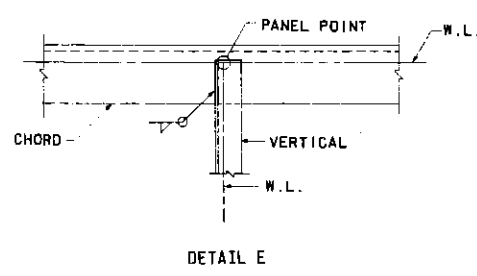
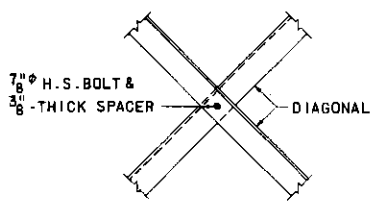
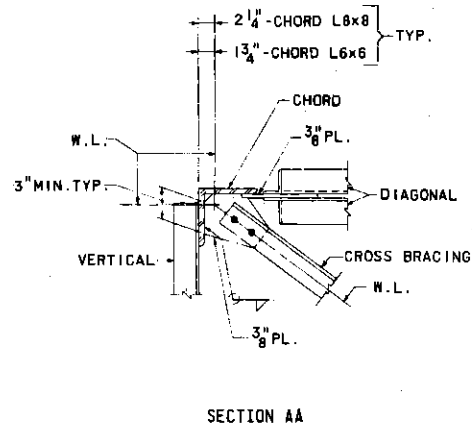
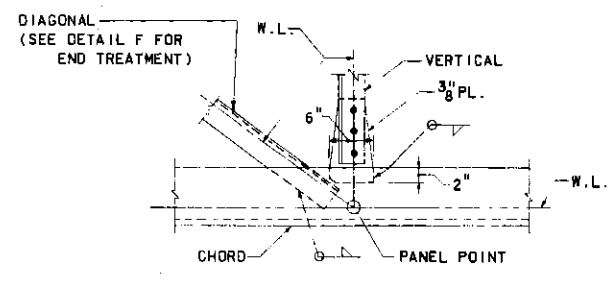
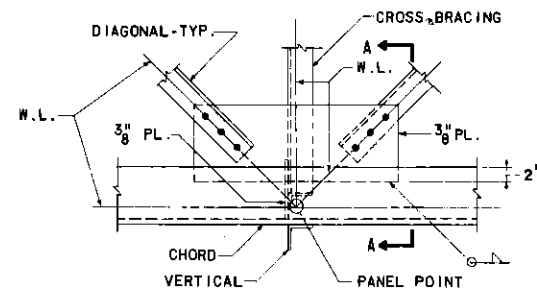
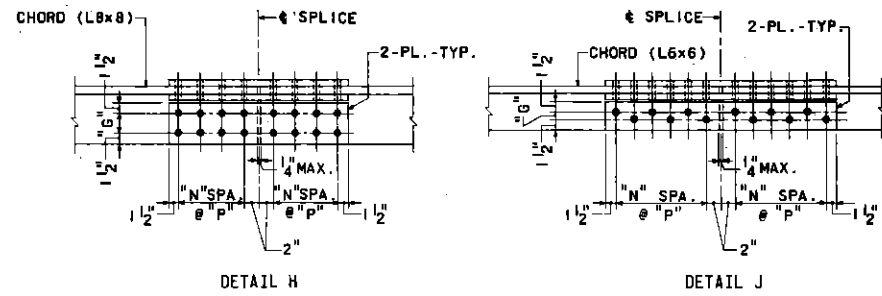
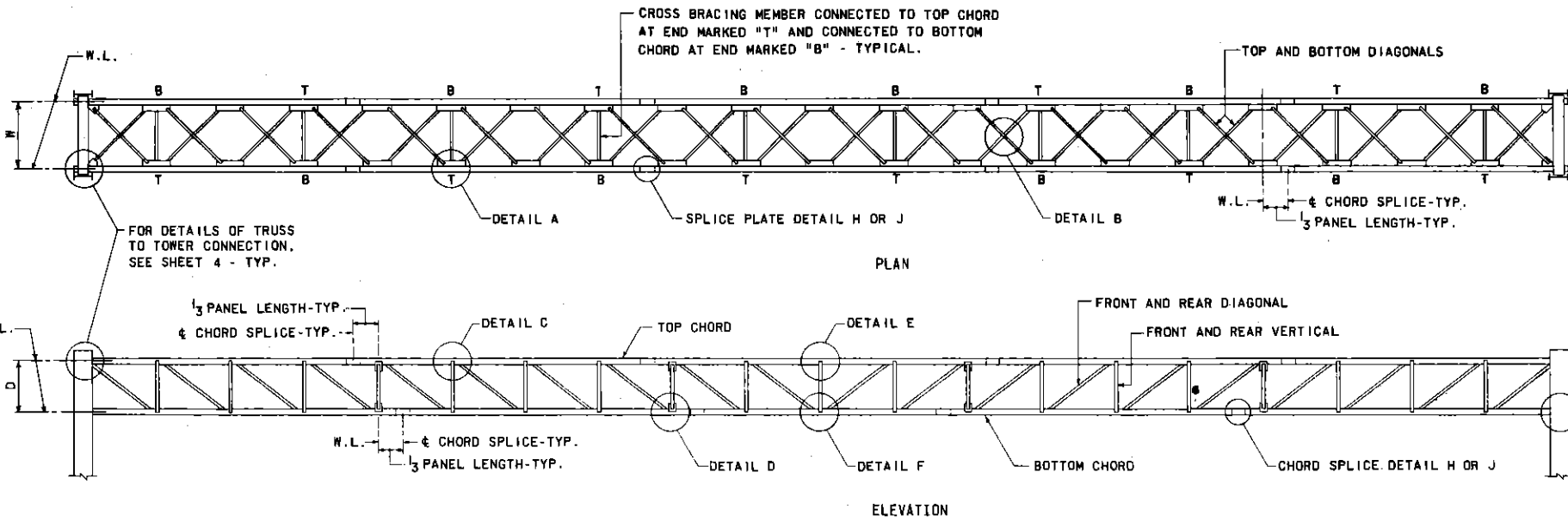
NOTES:
 FOR GENERAL NOTES SEE SHEET 3.
 UNLESS OTHERWISE SPECIFIED THE SIZE OF FILLET WELDS SHALL BE GOVERNED BY AWS SPECIFICATIONS.
 W.L. DENOTES WORKING LINE.
 CROSS BRACING NOT SHOWN IN VIEW AA THROUGH VIEW HH.
 FOR "M" AND "D" DIMENSIONS SEE SHEET 2.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

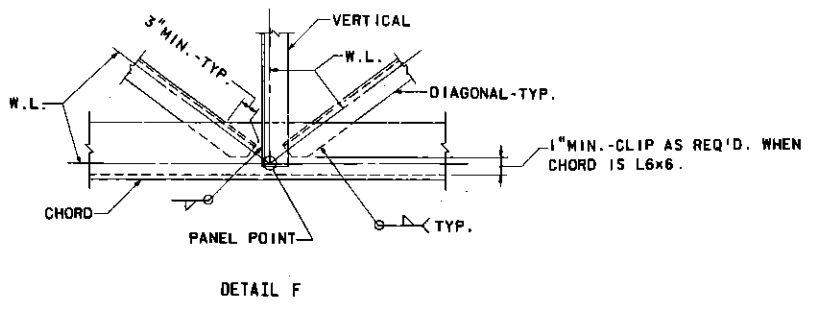
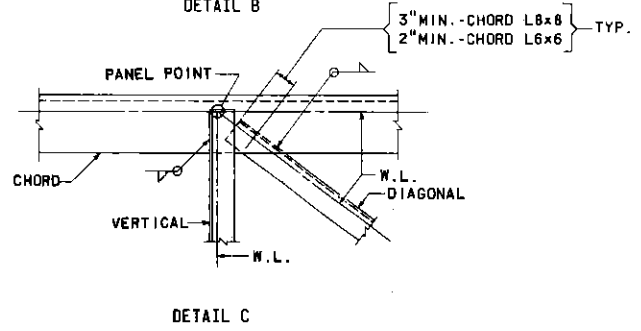
OVERHEAD SIGN STRUCTURE STANDARDS
STEEL SPANS GREATER THAN 120 FEET

TOWER DETAILS

Recommended <i>B. Katzev</i> Chief Bridge Engineer	Recommended <i>9/27/76</i> <i>J.R. Donahue</i> Director, Bureau of Traffic Engineering	Approved <i>10/29/76</i> <i>James B. Wilson</i> Deputy Chief Highway Engineer	Sheet 4 of 7 TC-7718
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NOTES:
 FOR GENERAL NOTES SEE SHEET 3.
 W.L. DENOTES WORKING LINE.
 UNLESS OTHERWISE SPECIFIED THE SIZE OF FILLET WELDS SHALL BE GOVERNED BY AWS SPECIFICATIONS.



NOTE:
 FOR MEMBERS NOT SHOWN IN DETAILS C, D, E & F - SEE DETAIL A.

MINIMUM CHORD SIZE AT SPLICE POINT.	SPLICE PLATES *		"G" (IN.)	"N" (IN.)	"P" (IN.)	WEIGHT Δ (LBS.)
	SIZE	NO. DETAIL				
L8x8x1/8	7/8 x 5 3/4	4 H	2 3/4	3	3	162
L8x8x1	3/4 x 5 3/4	4 H	2 3/4	3	3	142
L8x8x7/8	5/8 x 6	4 H	3	2	3	95
L8x8x3/4	5/8 x 6	4 H	3	2	3	96
L8x8x5/8	1/2 x 6	4 H	3	2	3	79
L6x6x1	3/4 x 4	4 J	1	5	2 1/2	123
L6x6x7/8	5/8 x 4 1/4	4 J	1 1/4	4	2 1/2	93
L6x6x3/4	1/2 x 4 1/2	4 J	1 1/2	4	2 1/4	81
L6x6x5/8	1/2 x 4 1/2	4 J	1 1/2	3	2 1/4	62
L6x6x9/16	1/2 x 4 1/2	4 J	1 1/2	3	2 1/4	62
L6x6x1/2	3/8 x 4 1/2	4 J	1 1/2	2	2 1/4	38

Δ INCLUDES WEIGHT OF SPLICE PLATES, H.S. BOLTS, HI-LOK NUTS AND WASHERS. DOES NOT INCLUDE WEIGHT OF FILL PLATES.

* PROVIDE FILL PLATES AS REQUIRED TO MAINTAIN THICKNESS OF LARGER CHORD.

Commonwealth of Pennsylvania
 DEPARTMENT OF TRANSPORTATION
 BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
 STEEL SPANS GREATER THAN 120 FEET

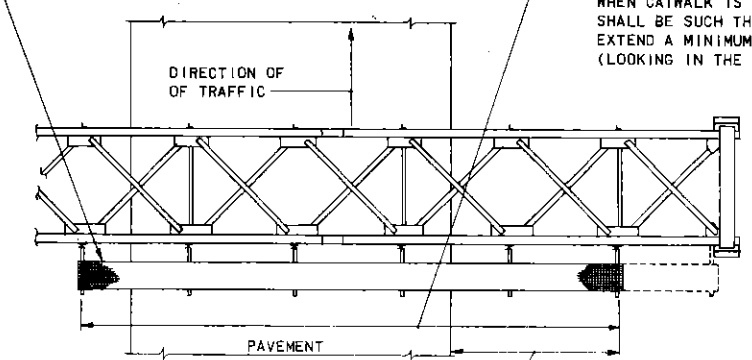
TRUSS DETAILS

Recommended <i>B.J. Kotick</i> Chief Bridge Engineer	Recommended <u>2/22/76</u> <i>GRD</i> Director, Bureau of Traffic Engineering	Approved <u>2/22/76</u> <i>James B. Wilson</i> Deputy Chief Highway Engineer	Sheet <u>5</u> of <u>7</u> TC-7718
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CATWALK MAY BE REQUIRED ON ONE OR BOTH SIDES OF THE TRUSS DEPENDING UPON WHETHER THERE IS ONE OR TWO-WAY TRAFFIC ON THE ROADWAY THAT THE SIGN STRUCTURE SPANS.

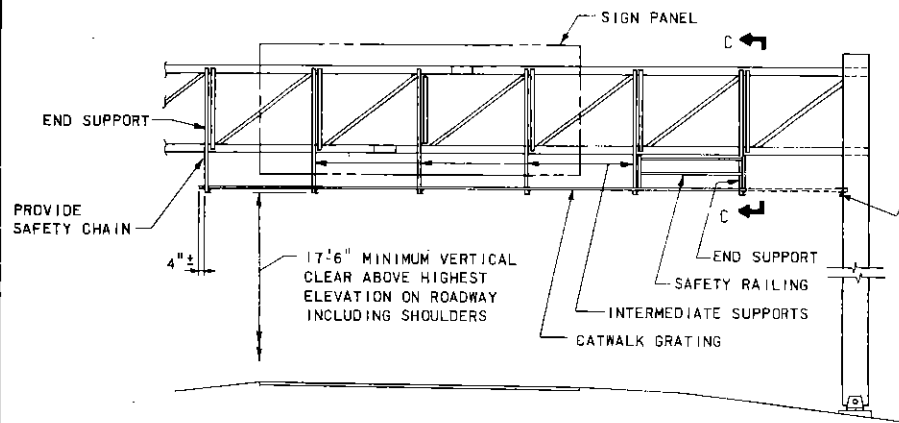
WHEN CATWALK IS ON ONE SIDE OF THE TRUSS ONLY, THE OVERALL LENGTH SHALL BE SUCH THAT THE END NEAREST THE LEFT EDGE OF ROADWAY (LOOKING IN DIRECTION OF TRAFFIC) EXTENDS A MINIMUM OF 4 FEET BEYOND THIS EDGE OF ROADWAY.

WHEN CATWALK IS ON BOTH SIDES OF TRUSS, THE OVERALL LENGTH SHALL BE SUCH THAT BOTH ENDS NEAREST THE CENTER OF THE SPAN EXTEND A MINIMUM OF 4 FEET BEYOND THE LEFT EDGES OF ROADWAY (LOOKING IN THE RESPECTIVE DIRECTIONS OF TRAFFIC).

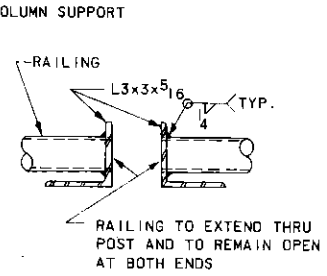


PLAN

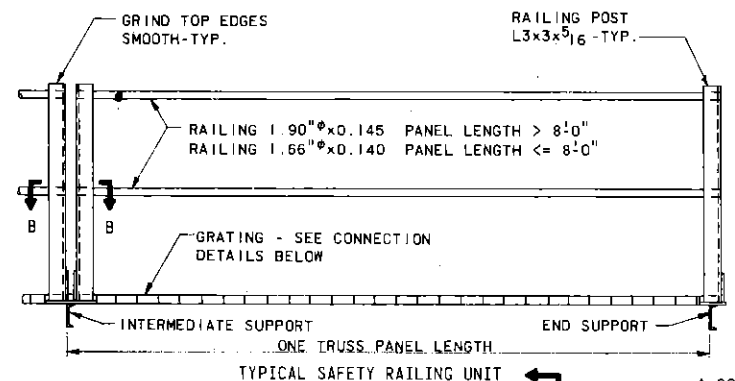
MINIMUM EXTENT OF CATWALK SHALL BE 15 FEET EXCEPT WHEN TOWER IS SET LESS THAN 17 FEET FROM EDGE OF ROADWAY. IN THIS CASE THE CATWALK SHALL EXTEND TO FACE OF THE COLUMN.



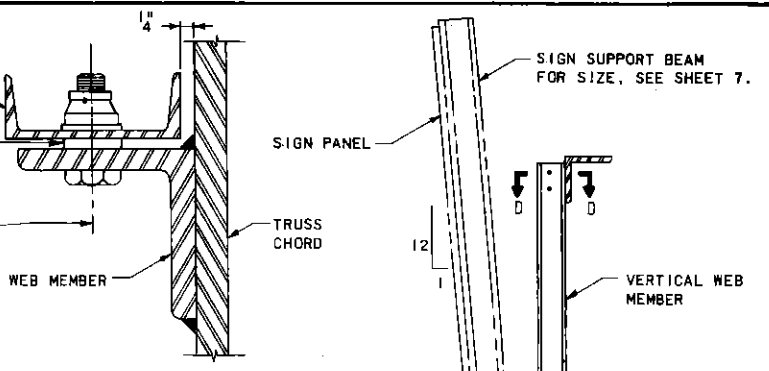
ELEVATION



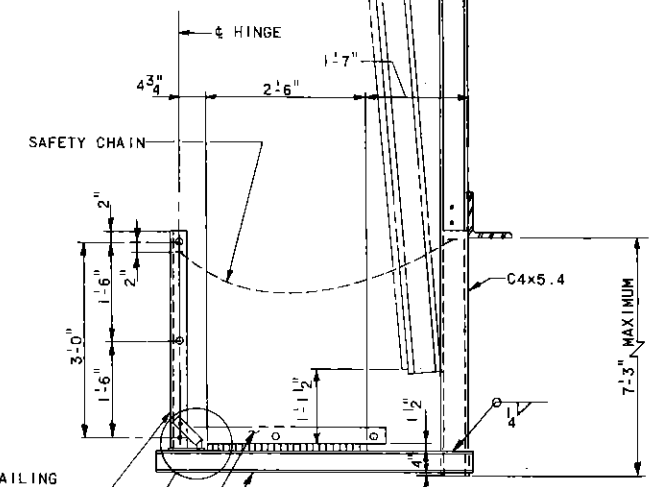
SECTION BB



TYPICAL SAFETY RAILING UNIT



SECTION DD



SECTION CC

NOTES:

FOR GENERAL NOTES, SEE SHEET 3.

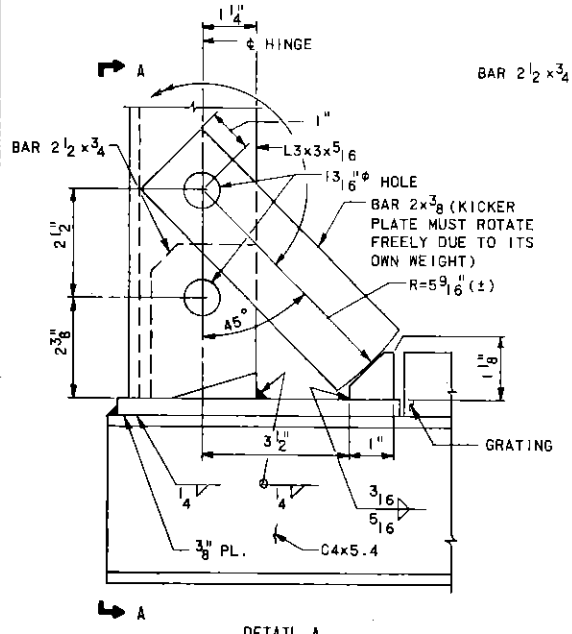
FOR USE OF CATWALK, SEE GENERAL DESIGN INSTRUCTIONS ON SHEET 1.

SPECIAL CARE SHOULD BE TAKEN TO INSURE THAT THE COMPLETED POST HINGE AND KICKER PLATE ASSEMBLY WILL HOLD THE SAFETY RAILING IN A STEADY MANNER, FREE OF WOBBLE WHILE IN THE RAISED POSITION. MAXIMUM ALLOWABLE DISPLACEMENT FROM VERTICAL AT TOP OF RAILING WHEN KICKER PLATES ARE IN JAM POSITION SHALL BE 1".

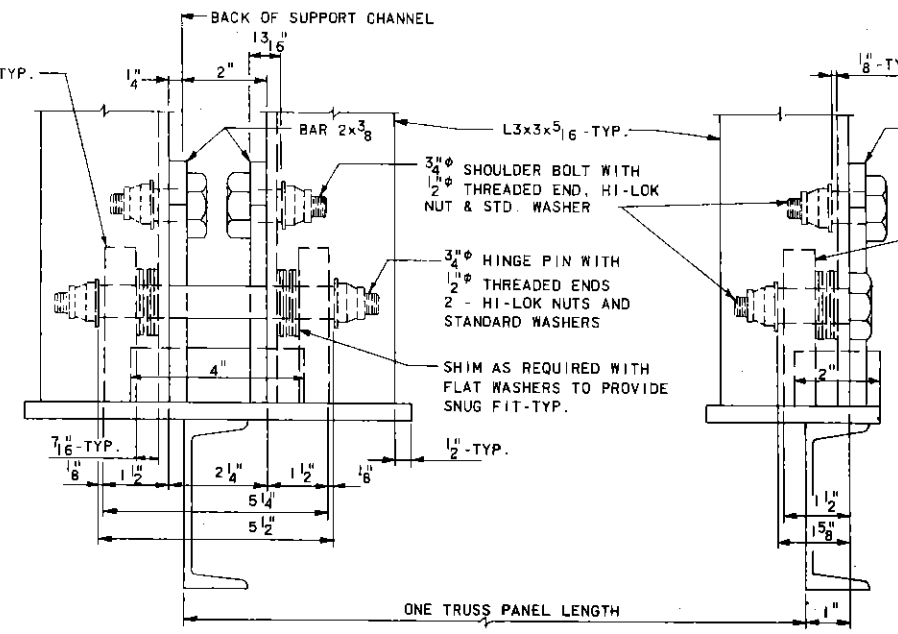
CATWALK GRATING TO BE CONTINUOUS (NO SPLICES) OVER AS MANY SUPPORTS AS PRACTICABLE, CONSISTENT WITH FABRICATION, EASE OF HANDLING AND ASSEMBLY.

WELDED-TYPE GRATING SHALL HAVE 1 1/2 x 1/8 BEARING BARS @ 13 1/16 CENTERS AND 1/2 x 3/16 CROSS BARS @ 4" CENTERS. WEARING SURFACES OF ALL BARS SHALL BE SERRATED.

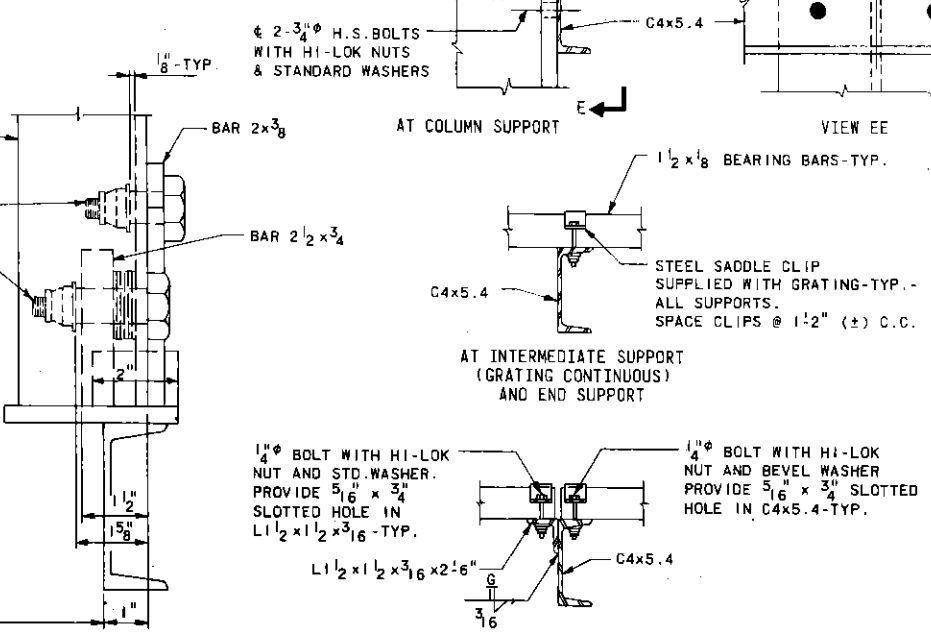
PROVIDE 3 CLIPS EVENLY SPACED AT EACH GRATING SUPPORT.



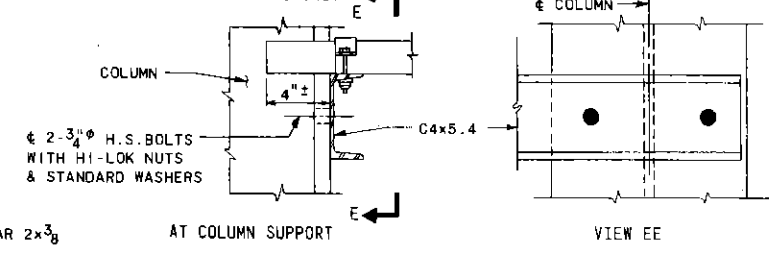
DETAIL A



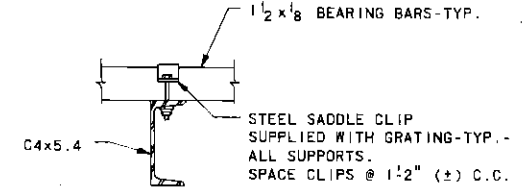
VIEW AA AT INTERMEDIATE SUPPORT



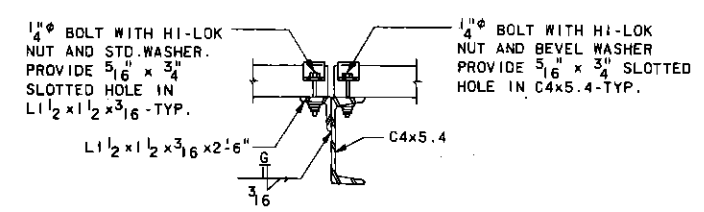
VIEW AA AT END SUPPORT



AT COLUMN SUPPORT



AT INTERMEDIATE SUPPORT (GRATING CONTINUOUS) AND END SUPPORT

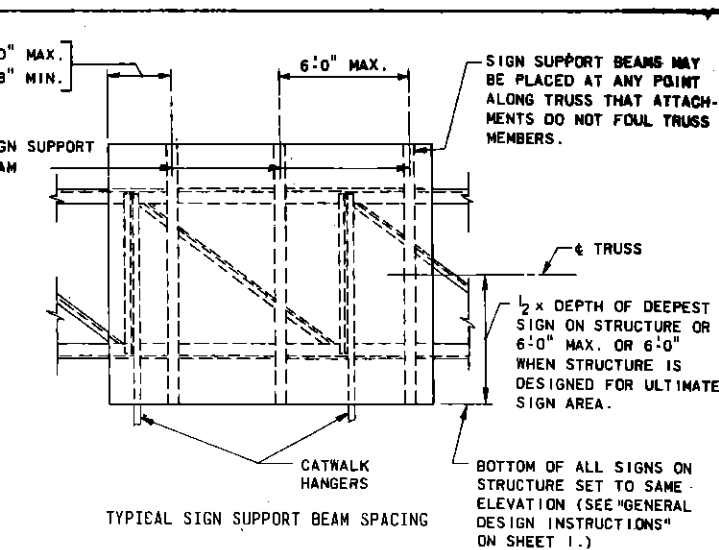
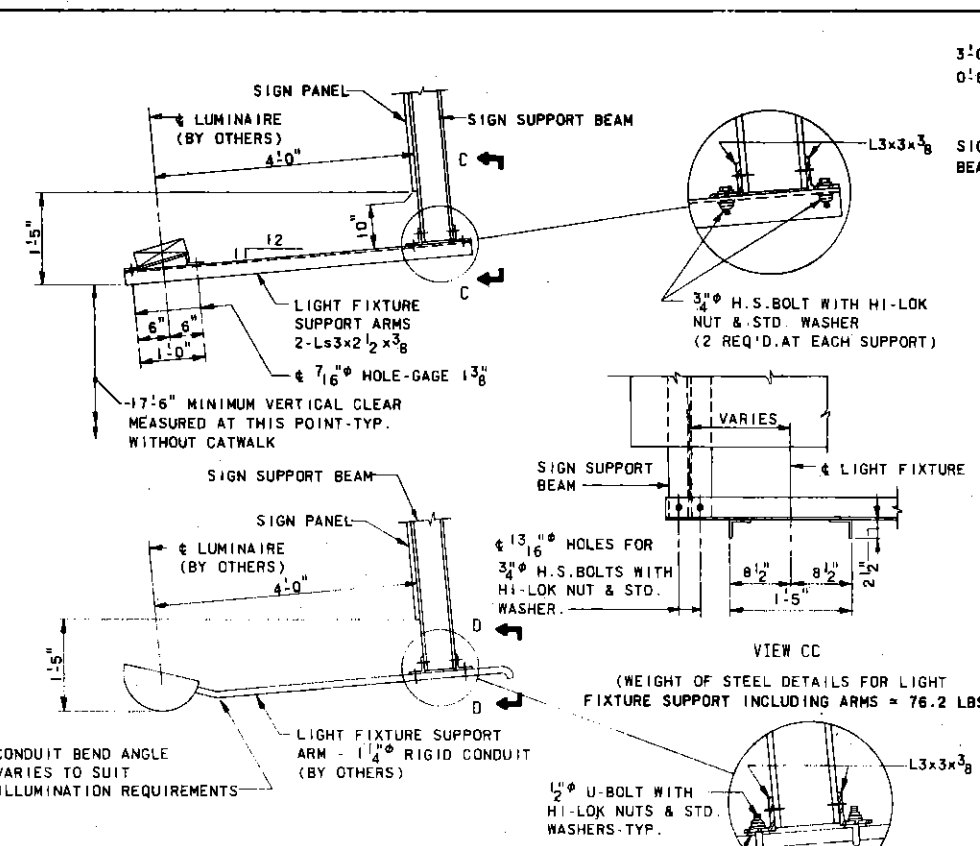
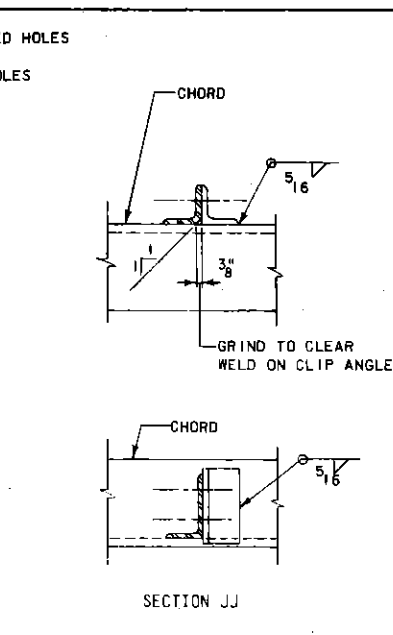
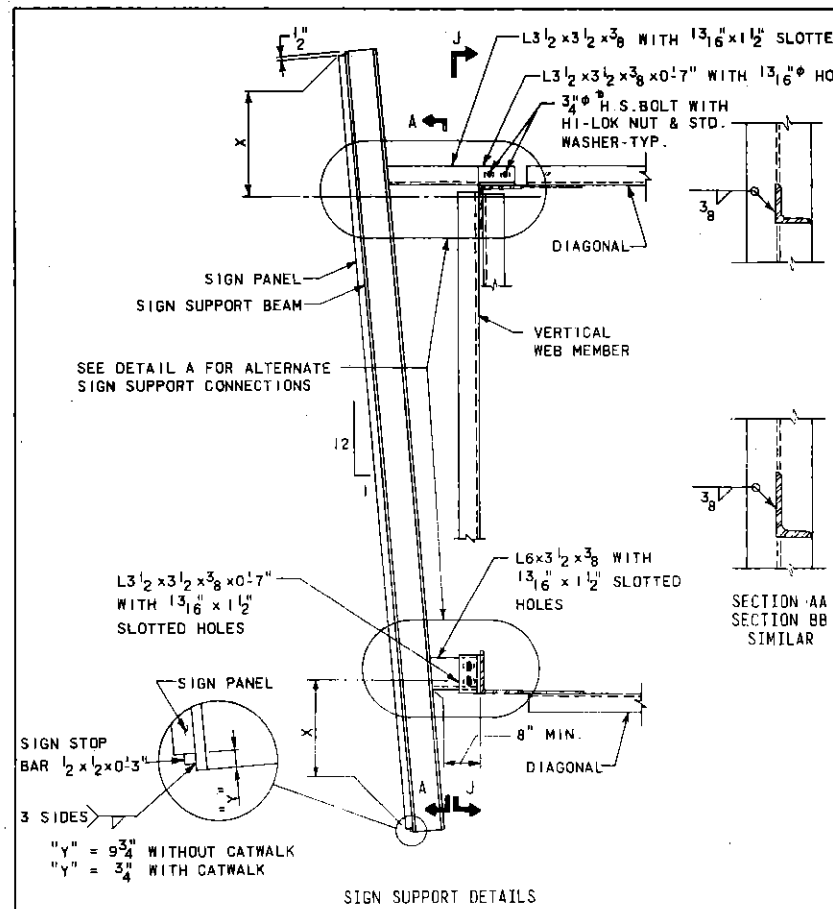


AT INTERMEDIATE SUPPORT (GRATING BROKEN) GRATING CONNECTION DETAILS

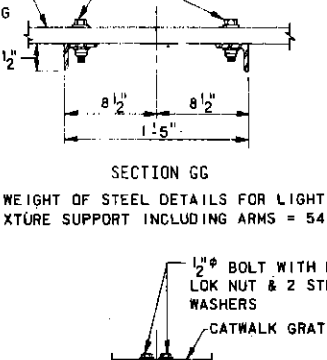
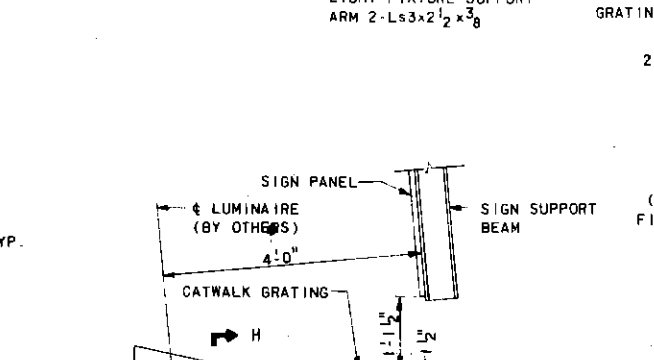
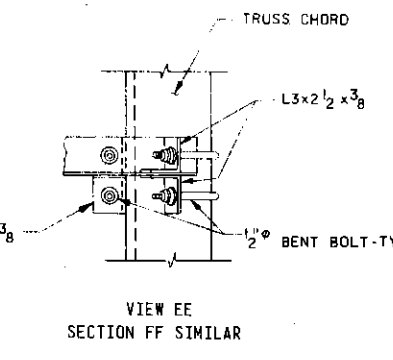
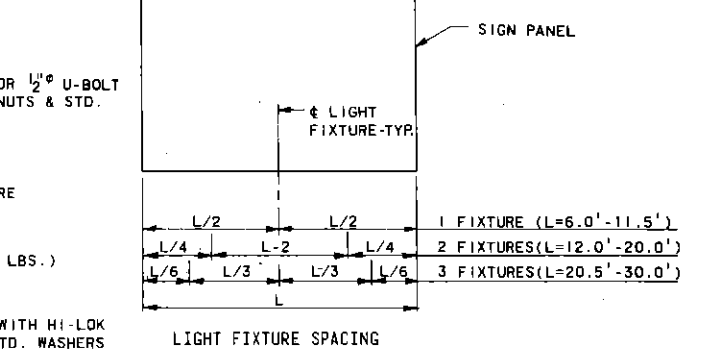
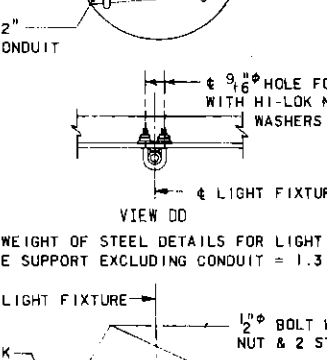
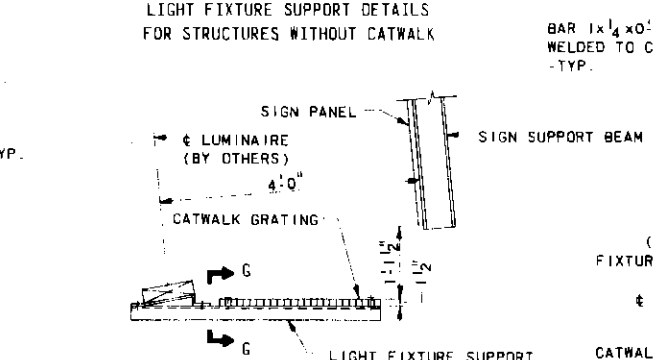
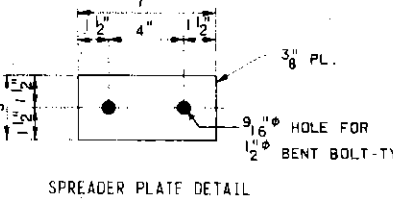
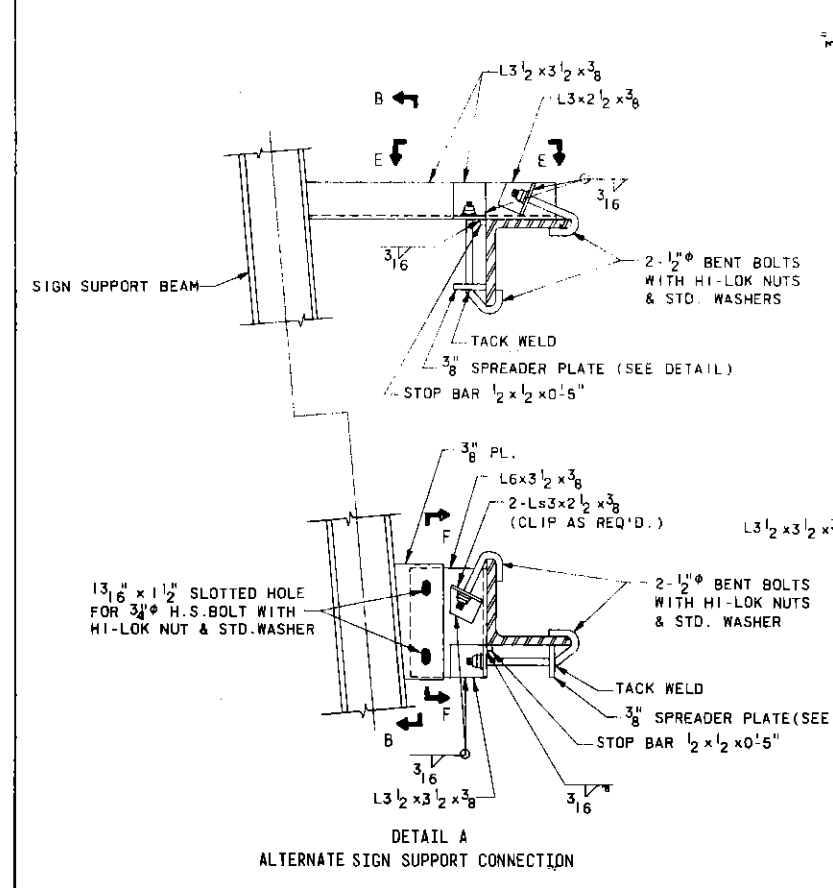
Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
STEEL SPANS GREATER THAN 120 FEET
CATWALK DETAILS

Recommended <i>B. H. H. H.</i> Chief Bridge Engineer	Recommended <i>G. B. D. W.</i> Director, Bureau of Traffic Engineering	Approved <i>J. D. W.</i> Deputy Chief Highway Engineer	Sheet 6 of 7 TC-7718
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SIGN SUPPORT BEAM	
X	SIZE
0 TO 6'-6"	W6x8.5
6'-6" (+) TO 7'-6"	W6x12.0
7'-6" (+) TO 8'-6"	W6x15.5



NOTES:

FOR GENERAL NOTES SEE SHEET 3.

LIGHT FIXTURES SHALL BE "WALLPACK" LUMINAIRES AS MANUFACTURED BY HOLOPHANE COMPANY, INC. OR MERCURY VAPOR TYPE LUMINAIRES AS MANUFACTURED BY CROUSE HINDS COMPANY OR APPROVED EQUAL.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF TRAFFIC ENGINEERING

OVERHEAD SIGN STRUCTURE STANDARDS
STEEL SPANS GREATER THAN 120 FEET

SIGN SUPPORT DETAILS
LIGHT FIXTURE SUPPORT DETAILS

Recommended <i>B. J. Kobl</i> Chief Bridge Engineer	Recommended 10/27/76 <i>J. R. D...</i> Director, Bureau of Traffic Engineering	Approved 10/29/76 <i>James B. Wilson</i> Deputy Chief Highway Engineer	Sheet 7 of 7 TC-7718
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