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 sight of day will permit, with the minimum distance to centerline of tower equal to 30 feet. Towers shall be protected by guidewall, or other suitable means, depending upon site conditions.

Top of foundation pedestal shall be set a maximum above surrounding terrain to minimize hazard effect of concrete pedestal above grade. Top of foundation pedestal with a 1/8" minimum cover maintained under footing at all points. Care shall be taken to attempt to avoid top of footing below bottom of guide wall posts that might be in area of footing or free of any other obstructing unit such as a storm sewer. It becomes necessary to lower a footing to the extent that the height of pedestal is greater than 7 feet. The slope 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 (if used) shall be set to an elevation that will place the highest point of the entire width of 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 2.5', the bottom of all signs over each dual roadway shall be set to the 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 on a minimum 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 8 feet above the bottom of the signs. In the instances where spanning dual roadways with elevation differences greater than 2.5', as a previously determined, set the truss to an elevation that places the center of the truss at 6 feet 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 for 7 feet. The traffic member shall specify when the ultimate sign area exceeds the design sign area. The design sign area shall be the sign area computed from either of the previously defined conditions, rounded to the next higher hundred square feet.

The loading type to be used for each structure shall be determined by computing the location of the center of gravity of the sign area, actual or ultimate area condition. If the location of the center of gravity of the sign area is located between 0.25 span length and 0.50 span length, loading type 1 shall be used for the design of the structure. If the location of the center of gravity of the sign area is located between 0.75 span length and the span and the previously defined limits, loading type 3 shall be used for the design of the structure.

Tower member sizes, foundation pedestals and footings shall be selected from the appropriate design height in the design tables. These are four design heights the dimension from top of foundation pedestal to the top of the sign varying in 5 foot increments from 18 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 tower.

Overhead sign structures may be constructed with or without catwalks. The traffic member shall specify when a catwalk is to be included as part of the structure.

DESIGN CRITERIA

DESIGN SPECIFICATIONS - Design requirements of AASHTO standards specifications for structural, supports for highway signs, luminaries and traffic signals.

BROOKS - 85 MILES PER HOUR

CURITY FACTOR FOR HEIGHT ABOVE GROUND = 1.00

SHAPE COEFFICIENT - TRUSS CHORD = 1.95

TRUSS WEB = 2.25

SIGN = 1.00

CATWALK = 3.85

TOWER = 1.85

CONCRETE - f = 20,000 P.S.I.

REINFORCEMENT BARS - f = 60,000 P.S.I.

STRUCTURAL STEEL - PIPE AND TUBES - f = 35,000 P.S.I.

OTHERS - f = 35,000 P.S.I.

MAXIMUM FOUNDATION BEARING PRESSURE - 1 TON PER SQ. FT.

LOCATION OF RESULTANT CENTER OF PRESSURE UNDER FOOTING - WITHIN NORMAL ONE-FOURTH OF THE DISTANCE PERPENDICULAR TO CENTER OF TRUSS AND WITHIN NORMAL THREE-FOURTHS OF FOOTING DIMENSION PERPENDICULAR TO CENTER OF TRUSS.

DEAD LOAD AND WIND LOAD RESULTING FROM CATALYMS HAVE BEEN INCLUDED IN THE DESIGN SHOWN IN TABLES IN SHEETS 2-3,4,5 & 6.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY SERVICES
OVERHEAD SIGN STRUCTURES
STEEL SPANS
GENERAL INFORMATION
DESIGN INSTRUCTIONS AND CRITERIA

[Signature]
[Date]
No. 2-100
TC-711
### Truss Members

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### Tower Members

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### Foundation Pedestal

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### Footing Type

- 3500: 3500-4000
- 4000: 4000-4500
- 4500: 4500-5000
- 5000: 5000-5500
- 5500: 5500-6000

**NOTE:**

For general design instructions, see Sheet 1.

For general notes, see Sheet 8.

End splices in the truss may be added or eliminated at the designer's discretion. For ease of the manufacturer, all end splices may be extended toward the lighter chord material to the designated location.

**FOOTING TYPE DESIGN NOTES:**

- Size of footing: For example, type B 6" is a footing 6" x 6" x 6" (ft).

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**Commonwealth of Pennsylvania**

**Department of Transportation**

**Bureau of Bridge Services**

**Overhead Sign Structures**

**Steel Spans**

**Design Tables**

- Loading Type: 50', 60', 70', 75' Spans

**Recommended Span Tables**

- 25', 30', 35', 40' (not shown)

**End Conditions**

- Steel Spans

**Elevation**

- For Pedestal and Footing Details, see Sheet 8.

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<table>
<thead>
<tr>
<th>FOOTING TYPE</th>
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**NOTES:**

FOR GENERAL DESIGN INSTRUCTIONS, SEE SHEET 1.

FOR GENERAL NOTES, SEE SHEET 9.

FOR ADDITIONAL NOTES AND DESIGN INFORMATION, SEE SHEET 2.

FOOTING TYPE DENOTES SIZE OF FOOTING. FOR EXAMPLE, TYPE 916 IS A FOOTING 20 FT (6.09 M) DIAMETER.
### Commonwealth of Pennsylvania
**Department of Transportation**

**Bureau of Highway Services**

**OVERHEAD SIGN STRUCTURES**

**STEEL SPANS**

**DESIGN TABLES**

**LOADING TYPE**: 50', 60', 70', 80' AND 90' SPANS

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**Footprint Type**

**For general design instructions, see sheet 1.**

**For general notes, see sheet 6.**

**One or more splice(s) in the truss may be added or eliminated at the option of the Contractor:**

- The addition or elimination of splice(s) in the truss shall be done at or near the splice location.

- Footprint Type sizes of footing, for example, Type B16 is a footing 16" (406.4mm) (ft.)

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**End View**

**Elevation**

**For Pedestal and footing details, see sheet 6.**

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**Commonwealth of Pennsylvania**

**Department of Transportation**

**Bureau of Highway Services**

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**Engineer**

**Engineer**

**Engineer**

**Boymen**

**TC 7117**
<table>
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<th>TRUSS MEMBERS</th>
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**Notes:**
- For general design instructions, see Sheet 1.
- For general notes, see Sheet 2.
- For additional notes and design information, see Sheet 4.

**FOOTING TYPE**
- Includes size and footing. For example, type 900 is a footing of (48 in.) x (36 in.).

**Commonwealth of Pennsylvania**
**DEPARTMENT OF TRANSPORTATION**
**BUREAU OF HIGHWAY SERVICES**
**OVERHEAD SIGN STRUCTURES**
**STEEL SPANS**
**DESIGN TABLES**
**LOADING TYPE 2**

**Steel Bridge**
- Overall Height
- Overall Width

**TC 77 17**

**By Res.**