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 at 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 included, providing coordination information is shown on the contract plans.

DESIGN CONCEPTS 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. Minimum clearances for sign support structures were determined using the computer program. Figures shown on these tables shall be used for the design of all sign structures, regardless of distance of setback, except as noted herein.

Design shall be set as far from edge of roadway as cross section geometry permits and or sight of sky will permit, with the maximum distance to centerline of structure equal to 50 feet. Guide rail protection shall be provided for all tones, regardless of distance of setback.

Top of foundation pedestal shall be set a maximum above surrounding terrain to minimize adverse effect of concrete pedestal above grade. Top of foundation footing to be set a maximum of 3 ft below top of pedestal. Pedestal height shall be selected to provide a minimum of 2 ft between bottom of sign and grade. The bottom of sign shall be at least 7 ft. The scope of the design tables has been expanded 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 it's minimum vertical clear above the highest point of the entire roof 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 points on each dual roadway is greater than 2 ft, 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 points 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 8 feet above the bottom of the sign. In the instances where the ultimate sign area criteria is to be used, the truss to an elevation that places the center of the truss at 6 feet above the bottom of the sign. In the instances where the structure is spanning dual roadways with elevation differences between the roadways exceeding 2 ft, the truss shall be set 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 area area shall be used to select number sizes for each structure shall be determined from one of the following two conditions:

1. The larger of the actual sign area is 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 the pavement under the structure times 15 feet. The traffic engineer shall specify when the ultimate sign area is to be used. For design of structures, the design area shall be the sign area computed on the previously defined conditions, rounded to the next higher area shown in the design tables. Taper, member sizes, foundation pedestals and footings shall be selected from the appropriate design height in the design tables. There are three pedestal sizes available. Pedestal, to the center of the truss varying in 5 foot increments from 25 feet to 33 feet. Use as the design height, the height in the design shall be 3 foot larger than the actual dimension from the top of foundation pedestal to the center of the structure.

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 1970 AASHTO standards specifications for structural supports for overhead signs, luminaires and traffic signals except as noted herein, wind speed - 80 miles per hour.

Coefficient for height above ground = 1.00

Shake coefficient - truss chords = 0.40

Truss web = 0.40

Catwalk = 2.00

Towers = 2.00

Concrete = 1.00

Reinforcement bars = 12.00 P.S.I.

Structural steel = 56.00 P.S.I.

Fatigue loading used equals 0.71 + 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 Highway Services

OVERHEAD SIGN STRUCTURES

STEEL SPANS GREATER THAN 120 FEET

GENERAL INFORMATION

DESIGN CRITERIA

Recommended = recommended = recommended

Recommended = recommended

Engineer

Engineer

Chief Bridge

Intrastate Division

Engineer

TC-7718

BY: ME5
# Design Specifications

## Truss Members

<table>
<thead>
<tr>
<th>Design</th>
<th>Span</th>
<th>Chords</th>
<th>Diagonals</th>
<th>Verticals</th>
<th>Cross Bracing</th>
<th>Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22 ft</td>
<td>28 ft</td>
<td>33 ft</td>
<td>33 ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>22 ft</td>
<td>28 ft</td>
<td>33 ft</td>
<td>33 ft</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Tower Members

<table>
<thead>
<tr>
<th>Design</th>
<th>Span</th>
<th>Number of Struts</th>
<th>Plant Ft.</th>
<th>H=22 ft</th>
<th>H=28 ft</th>
<th>H=33 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22 ft</td>
<td>28 ft</td>
<td>33 ft</td>
<td>33 ft</td>
<td>33 ft</td>
<td></td>
</tr>
</tbody>
</table>

### Footing Type

<table>
<thead>
<tr>
<th>Design Sign Area</th>
<th>Span</th>
</tr>
</thead>
</table>

## 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 625 is a footing 6' x 6' x 25 ft (123). G.L. denotes working line.
- See tower elevation on Sheet 4 for method of computing dimension B.
- Chords may be relocated, sized, or eliminated with approval of the Traffic Engineer. Relative locations of splices in top and bottom chord shall be maintained as indicated in these standards. Chord A size shall be selected toward tower than shown in these standards.

Commonwealth of Pennsylvania
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY SERVICES
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY SERVICES

# Steel Spans Greater Than 120 Feet

## Design Tables

| Overhead Sign Structures | Steel Spans Greater Than 120 Feet |

---

*Recommended by:* [Traffic Engineer], [Works Operations Division Engineer]

*TC-771B*