

Chapter 23

Signing and Pavement Marking Plans

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Chapter 23

Signing and Pavement Marking Plans

23.1 General

Signing and pavement marking plans are usually a component set of plans. Projects with minor signing and pavement markings may include these features on sheets in the roadway plan set or detailed on roadway sheets. When prepared as component plans, they must be assembled as a separate plans set complete with a key sheet, tabulation of quantities and all other signing and pavement marking sheets. When prepared as component plans, number the sheets consecutively with the sheet numbers prefixed by the letter "S".

Assemble the Signing and Pavement Marking Plans as follows:

1. Key Sheet
2. Tabulation of Quantities
3. General Notes (if required)
4. Plan Sheets
5. Guide Sign worksheet (if required)
6. Overhead Sign Cross Section Sheet (if required)
7. Overhead Sign Support Design (if required)
8. Foundation Details (if required)
9. Boring Data Sheets (if required)

Modification for Non-Conventional Projects:

Delete item number 2 above.

In addition, the signing and pavement marking plans may contain sheets which were prepared separately (perhaps by a sub-consultant) and incorporated into the signing and pavement marking plans early in the design process (prior to the establishment of sheet numbering). As an option, these may be identified with the following prefixes and placed at the end of the numbered sequence of the signing and pavement marking plans:

GS-# Soil Survey and Report of Core Borings normally associated with the signing and pavement marking plans set (including miscellaneous structures but excluding bridges and walls)

The requirements in Chapter 7 of Volume 1 will be followed in the selection of the permanent pavement marking materials to be used on projects.

23.2 Key Sheet

The key sheet is the first sheet in the set and is prepared on a standard key sheet format as described in **Chapter 3** of this Volume. Contract plans set information, location map and length of project box are not required on this sheet when shown on the lead key sheet. Show the index of signing and pavement marking plans on the left side of the sheet.

Other data, including name, consultant contract number, vendor number, and certificate of authorization number of the firm (when plans are prepared by a consultant) must be shown as described in **Chapter 3** of this Volume.

Place the name and address of the Delegated Engineer for shop drawing reviews on the right side of the sheet.

23.3 Signature Sheet

See **Chapter 3** of this Volume for Signature Sheet requirements.

23.4 Tabulation of Quantities and Pay Item Notes

Prepare the tabulation of quantities sheet using the standard plan format showing quantities, standard sign numbers, pay item numbers (except for pavement markings pay items) and size of sign for all pay items. The sign size and standard sign number is not required if shown in the plans sheets. List pay items in numerical order and tabulate quantities per sheet or by station. When the number of pay item numbers to be used exceeds one page, the additional sheet is to be numbered using a suffix (i.e. 3 and 3A, 4 and 4a, etc.). Provisions must be made to show the original and final quantities.

On contracts with multiple Financial Project ID's or federal aid and nonfederal aid quantities, provisions must be made to tabulate and summarize their respective quantities.

Show pay item notes on the tabulation of quantities sheet.

For pay item 710-90 (Painted Pavement Markings (Final Surface) Lump Sum), the Signing and Pavement Marking tabulation of quantities sheet should show the detailed description of the pay item and the quantities for each pay item EXCEPT in lieu of the pay item number substitute an "*" in the Bid Item Number Column (see **Exhibit 23-1**).

23.4.1 Standard Notes

Add the following note at the bottom of the Tabulation of Quantities sheet:

* These quantities are paid for under Painted Pavement Markings (Final Surface), Lump Sum - Item No. 710-90. The quantities shown are for one application; see **Specification 710** for the number of applications required.

Modification for Non-Conventional Projects:

Delete **PPM 23.4**

23.5 General Notes

General notes pertaining to signing and pavement markings may be shown on a separate plan format sheet. Place this sheet behind the tabulation of quantities sheet(s) in the plans assembly. On minor projects, general notes may be placed on the tabulation of quantities sheet.

Modification for Non-Conventional Projects:

Delete *PPM* 23.5 replace with the following:

23.5 General Notes

Signing and pavement marking general notes may be placed on a separate general notes sheet, or if space permits, placed on the first plan sheet. If used, place the general notes sheet behind the key sheet.

23.6 Plan Sheets

23.6.1 Format and Scale

The plan sheets are to be prepared on a standard plan format. The scale should be such that all details are clear and legible. See the requirements of **Section 10.1** of this Volume as a guide. For simple projects, or sections of a project, "stacking" multiple plans on one sheet is generally permitted if clarity and legibility are maintained. Stationing is to progress from left to right and multiple plan views stacked from top to bottom.

Place a north arrow and scale at a point of maximum visibility on the sheet. If two plans are "stacked" on one sheet, then show a north arrow and scale on each plan portion.

Typical drawings may be used on rural projects with long sections of roadway that show only edge and lane delineation lines. Detail sheets should be used to depict markings at intersections. Signs may be tabulated to indicate location and disposition.

23.6.2 Required Information

The basic information pertaining to roadway geometrics and project limits required on the signing and pavement marking plan sheets is the same as that required on the plan portion of the plan-profile sheets (**Chapter 10** of this Volume). Topography and construction details need not be shown. Show sign placement when there are utilities, drainage, lighting, sidewalks, driveways, and landscape feature conflicts.

Clearly show and label permanent pavement markings specifying width, color and spacing. Indicate begin and end pavement marking stations including offsets, or begin pavement marking station including offset and the total length of roadway pavement marking. The location of raised pavement markers and delineators must be clearly shown and indicated by specifying the type, color, spacing, and limits of application by stations.

All regulatory, warning and directional signs must be shown at the proper locations. Show each sign face in close proximity to its respective sign with a leader line connecting the sign location and sign face. Orient each sign face on the plan sheet to be read as viewed from the direction of travel along the roadway. Indicate the location of all signs by station or milepost.

Indicate for each sign the pay item number, sign size, standard designation, or assigned number if nonstandard.

Modification for Non-Conventional Projects:

Delete the last sentence and replace with the following:

Indicate for each sign the sign size, standard designation, or assigned number if nonstandard.

Any signs to be mounted on signal span wires should be shown and listed on the signalization plan for illustration and placement purposes. Sign details should be included on the signing plans.

23.7 Guide Sign Worksheet

Show the sign face, with the complete message layout with legend spacing (vertical and horizontal), margins, border widths, and corner radii on the guide sign worksheet.

For multi-support roadside signs, cross sections are not required in the plans set, but the support data (size and average length) for each sign must be tabulated on the guide sign worksheet.

This sheet should be prepared on the standard plan sheet format to any convenient scale that will preserve clarity and legibility. The number of signs that may be shown on a single sheet depends on the sign size and complexity. The format of the sheet is flexible as long as the information listed above is shown. Output from the Transoft *GuidSign* Program, or a similar format may be used.

23.8 Sign Supports

23.8.1 Multi-Post Signs

Standard foundations for multi-post signs are provided in the *Design Standards*. These foundations are based on the sign support size. However, the post size and length are not included in the *Design Standards* and must be included as a part of the design and shown in the plans.

23.8.2 Overhead Sign Cross Section and Support Structure

The sign cross section sheet shows the location of overhead sign(s) in cross section. A standard profile format should be utilized. Show and fully dimension the cross section of the roadway at the sign location. The recommended scale for the cross section is 1" = 10' horizontally and vertically.

For overhead signs, the design of the support truss, columns and foundations, along with the boring data information, must be included in the signing and marking plans. The "Cantilever Sign Structures Data Table" and the "Span Sign Structures Data Table" work in conjunction with *Index Nos. 11310* and *11320* of the *Design Standards*. These tables include the information noted above and should be completed by the Structures Design Engineer of Record and inserted as a sheet in the plans.

A computer program for the design of overhead cantilever sign structures and a program for the design of overhead span sign structures are available. The programs were developed by the Structures Design Office and may be downloaded from the Structures Design web site.

The design of the attachment system for signs mounted on bridge structures is the responsibility of the Structures Design Engineer of Record. Include the design of the attachment system in the structures plans if bridge work is included in the project. If bridge work is not in the project, place the design details in the signing and pavement marking plans.

23.9 Typical Pavement Marking Sheet

For simple projects, or sections of a project, it may be possible to show signing and pavement marking plan details schematically using straight-line format with station limits and typical markings. Show and identify all signs at their graphic location on the straight-line diagram. Show and label pavement markings on a typical marking plan. Include all necessary details for special areas (median crossovers, turn lanes, etc.).

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