

9.0 Construction Plan & Profile and Construction Notes

9.1 Control

The purpose of the roadway construction plans portion of the contract plans is to exhibit the necessary horizontal and vertical information to locate and build the new roadway and related design. The roadway construction plans typically include the construction alignment, right-of-way, existing topography, new roadway construction including drainage and utilities, and sometimes, removal plans. Depending on how detailed and complex the design information is, everything may be included on “combined” construction plans, or divided onto “separated” plans, to maintain clarity. See Table 9-1 for the division of information onto the “separated” types of construction plans.

Although the construction plans are developed by the Roadway Designers and Drafters, two types of reference file basemaps needed for the construction plans are usually developed by other units at ODOT. The survey unit develops the existing topographic basemap and the Right-of-Way Engineering Unit produces the right-of-way basemaps.

Coordination efforts should occur in the preliminary phases of the project between the Roadway Designer and the Survey Unit to develop the existing topographic basemap CAD file to a level of detail that will meet the project needs through the final submittal.

The Roadway Designer should also coordinate with the Right-of-Way Engineering Unit as the right-of-way basemap is developed. The existing right-of-way information is generated by the Right-of-Way Engineering Unit from the surveyed field data, recovery survey of found monuments, existing right-of-way record drawings and descriptions and the topographic basemap. The Right-of-Way Engineering Unit is responsible to provide this information to the Roadway Designer or Drafter in a CAD file containing the existing right-of-way basemap.

After the roadway design has been well established, the Roadway Designer is responsible to make the design basemap CAD file available to the Right-of-Way Designer or Drafter, for right-of-way acquisition to be determined. This file should contain the proposed centerline alignment and proposed cut and fill limits of construction. At this time, the Right-of-Way Engineering Unit begins acquisition procedures and delineation of a final right-of-way line, which should be provided in an updated CAD file to the Roadway Designer.

Note: For information on developing basemaps, see Section 2.6, Volume 1.

Note: For information on seed files, see Section 2.5, Volume 1.

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9.1 Control (Cont'd)

The right-of-way file is developed by the Right-of-Way Engineering Unit to their own standards that vary from the Roadway Design Unit standards. Right-of-Way Engineering uses their own cell library, RW.CEL, located in the ODOT workspace:

Internal ODOT staff	http://sodata3\odot_space\standards\cell
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

They also access the *ODOT Menu*, which contains a right-of-way menu developed by the Right-of-Way Engineering Unit. The **only manipulations** to the right-of-way file, once it has been released by the Right-of-Way Engineering Unit, are the moving of text to avoid conflicts with text or graphics in other reference files or the working file, and moving an element to a different level for display purposes. The right of way centerline is shown on the roadway construction plans if it is different from the construction centerline and new right-of-way is being purchased, based on the right-of-way centerline. If the right-of-way centerline is to be shown, P.I. data should be removed, and the centerline and associated text are changed to the appropriate weight, etc. It is **very important** to maintain the established right-of-way linework on its coordinate base because it is recorded as legal documentation. It is the responsibility of the Road Engineer to verify that the latest version of the R/W file is being used, as revisions are made often during the plans process.

The construction plans, including plan sheets, profiles and construction notes are produced by the Roadway Designers and Drafters. The Roadway Designer is responsible for developing the design in the proposed design basemap CAD file. The designer is also responsible for providing sketches or redlines of any design revisions and additions to the drafter as the project progresses.

Throughout the development of the project, it is the responsibility of the drafter to maintain ODOT drafting standards as set forth here, in the *Contract Plans Development Guide*.

Review of the contract plans is accomplished at the preliminary, advance and final submittal stages by a designated Roadway Design Team leader. The Roadway Engineer's registration seal and signature are placed on all sheets.

9.2 Development

The Project Designer and Drafter should begin development of the construction plans using the following appropriate steps.

Tip

To make the (**only manipulations** as described, right) modifications to the right-of-way file for inclusion into the roadway contract plans, use the *Right-of-Way* section of the *ODOT Menu*. See Appendix "C".

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9.2.1 Sheet Setup

Filenames

Filename extensions for the roadway construction plan sheet are:

Plan - “.PL_”

Note - “.NT_”

Plan-profile - “.PP_”

Full profile - “.PF_”

Note: For file naming conventions, see Section 2.4, Volume 1.

Tip

Step 3 may have been completed as part of another section of the contract plans. If it has, use it here and go on to Step 4.

Note: For information on title block text, see Section 2.8, Volume 1.

Note: For information on reference files, see Section 2.3, Volume 1.

Use the following steps to begin development of the “combined” construction plans or the “separated” alignment, general construction, drainage and utilities or removal plans. Additional steps for each specific type of sheet can be found in Sections 9.2.2 through 9.2.7.

Steps 1 - 8	All construction sheets including plans, construction notes, and profiles
Step 9	“Combined” construction plan sheets only
Step 10	“Separated” construction plan sheets
Steps 11 - 13	All construction plan and plan-profile sheets

Step 1 — Create an “Active File”

Create a new MicroStation™ file from the seed file named SEED2D.DGN or SEED3D.DGN found at:

Internal ODOT staff	http://sdata3\ODOT_space\standards\seed\
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

and name it KEYNUF.PL1, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “F” represents that this file is part of the final contract plans, and “.PL1” is the appropriate extension for the first file of Plan sheets. This is your **active file**. Subsequent plan sheets should be named “.PL2”, “.PL3,” etc.

Step 2 — Add sheet borders

Enter ODOT’s proprietary software, “Plotypus,” to automatically place borders (*File/Plotypus*). “Plotypus” automatically creates the borders at a pre-designated location in the design file. Choose the intended scale and sheet size, placing up to ten borders per design file. See Appendix D, “A Quickguide To Plotypus,” for more information on placing borders.

Step 3 — Create the Project Title and “V” Number Reference File

Create a new MicroStation™ file from the seed file named SEEDV8.NAM found at:

Internal ODOT staff	http://sdata3\ODOT_space\standards\seed\
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

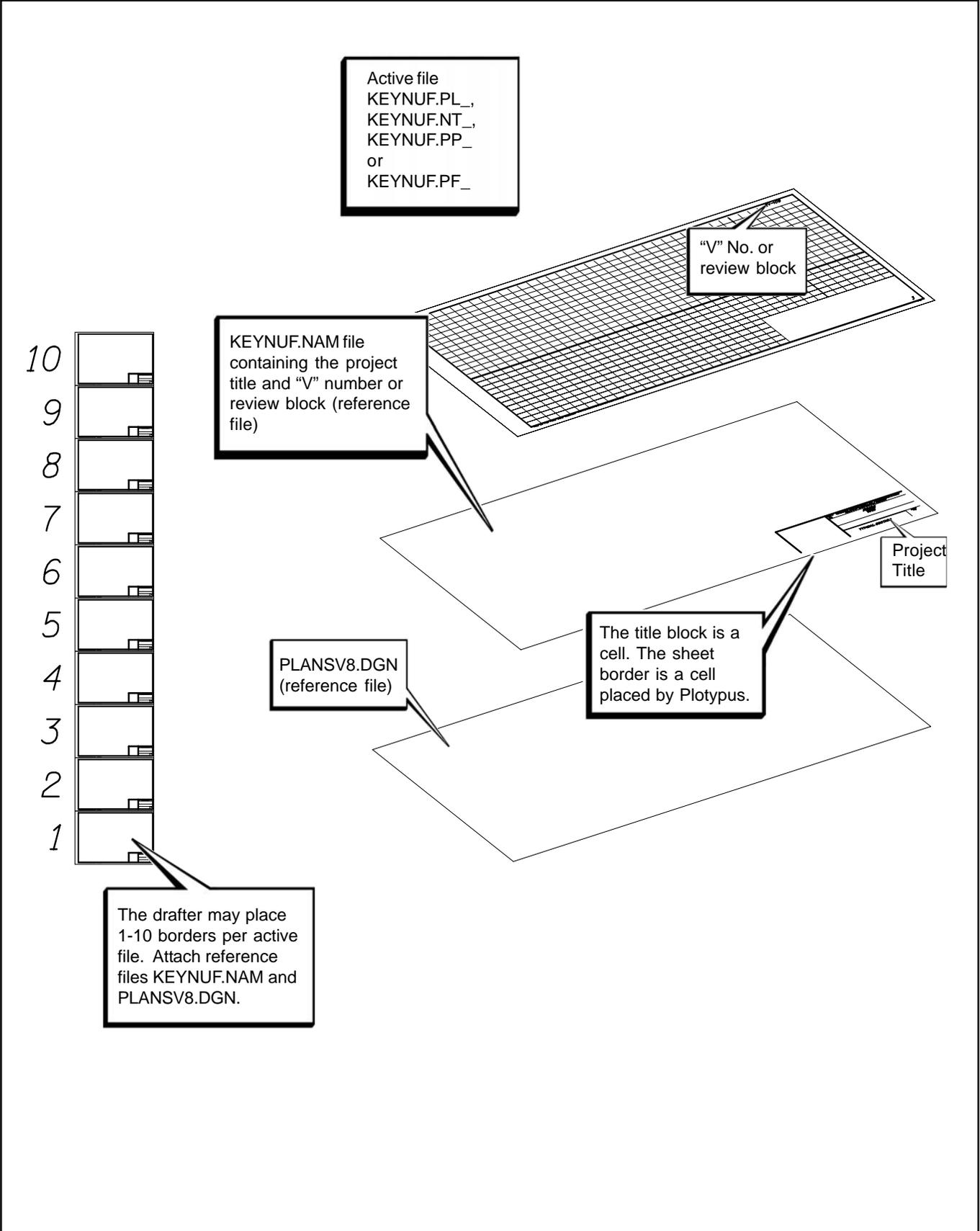
and name it KEYNUF.NAM, where “KEYNU” represents your project key number (to be filled in by you), “F” represents that this file is part of the final contract plans, and “.NAM” represents that this generic file is for the project title information. For example, a new file name might be 01234F.NAM.

Title block text is provided in two scales within SEEDV8.NAM for convenient editing.

Edit the project title text in the appropriate place within the title block. When the contract plans are complete and ready to be advertised for bid, the “V” number

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Figure 9-1 Reference Files - Construction Plans



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9.2.1 Sheet Setup (Cont'd)

Note: For examples of section text and boundary lines, see Section 9, Volume 2.

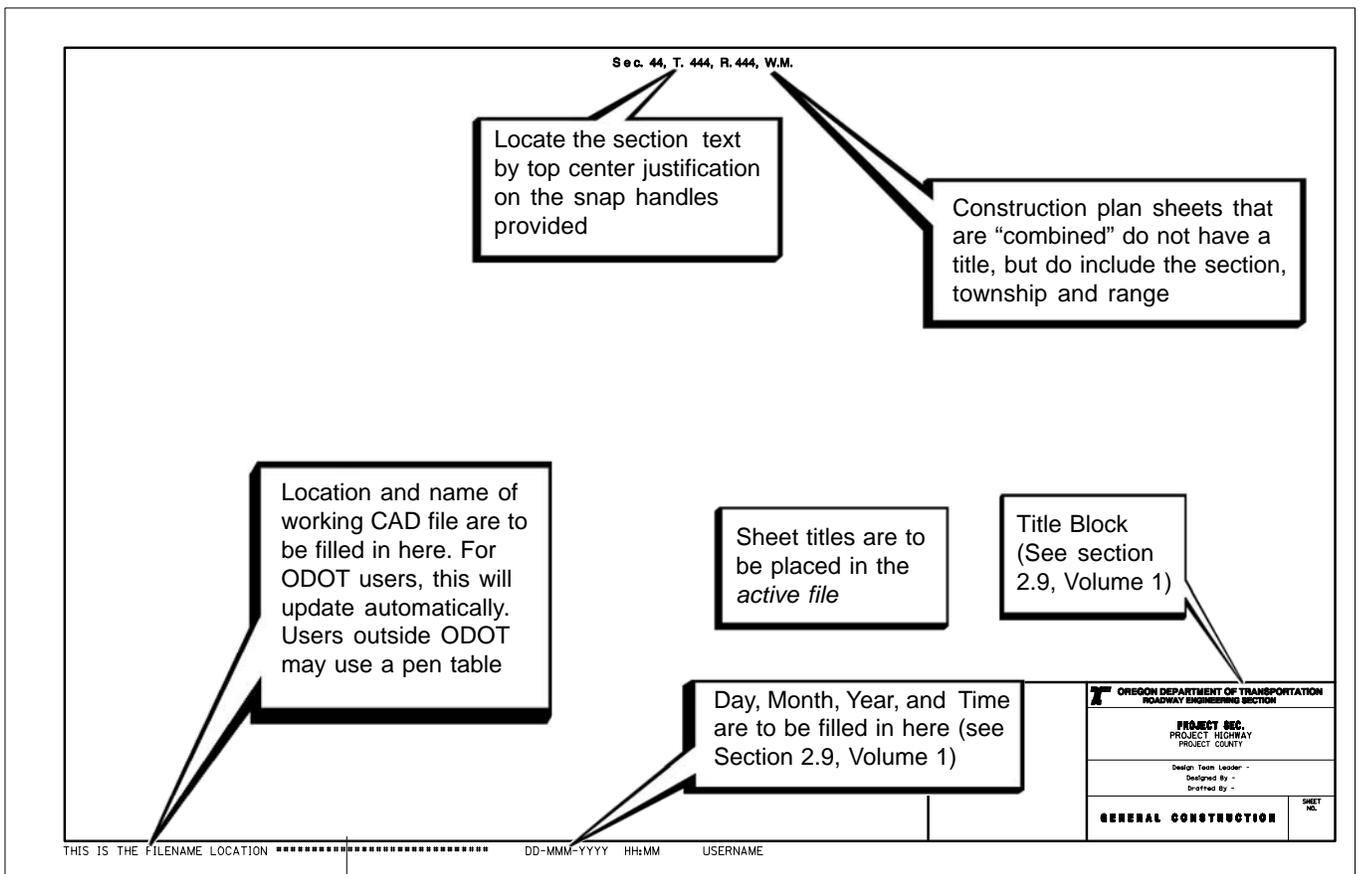
Note: For standard font, size, level, and color, see Section 9, Volume 2.

will be added to this file in the upper right hand corner of each plan sheet. For preliminary, advance and final review submittals, the appropriate block shall be placed here rather than the “V” number (from the cell library ODOT.cel).

Step 4 — Attach Reference Files

Open the new active file created in Step 1. Attach KEYNUF.NAM as a reference file and assign a logical name as appropriate for your plan sheet. Attach PLANSV8.DGN as a reference file. Its default location is below the borders as stacked by Plotypus.

Figure 9-2 Sheet Titles - Combined Construction Plan Sheet



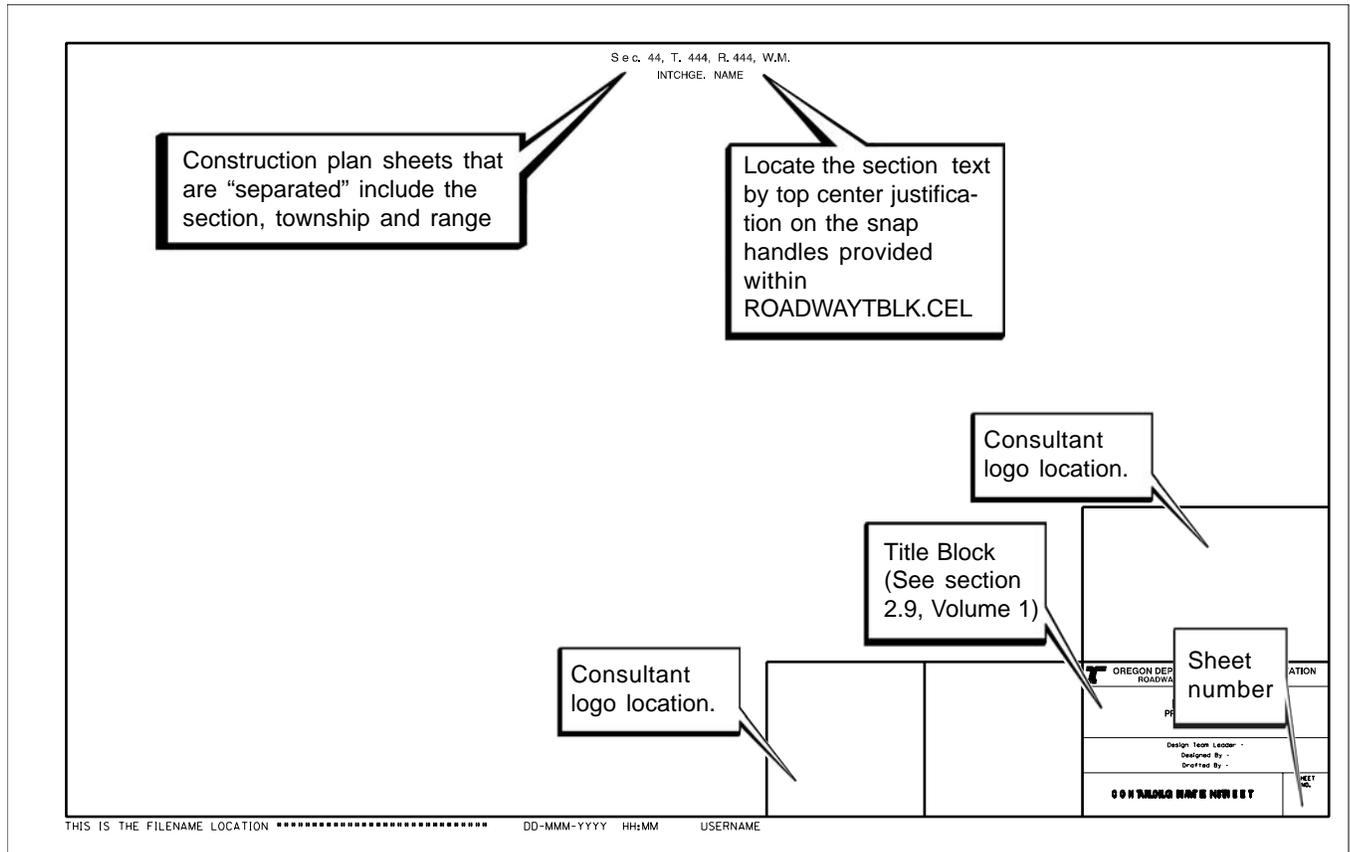
Note: For examples of titles on construction plan sheets, see Section 9, Volume 2.

Step 5 — Add Sheet Numbers

While in the *active file*, add the appropriate sheet numbers, snapping to the point provided in the space. The active file should now have blank pipe data sheets with the title blocks filled.

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Figure 9-3 Sheet Titles - Separated Alignment, General Construction, Drainage and Utilities and Removal Plan Sheets



Note: For information on preparing basemaps for use as reference files on roadway plans, see Basemaps, Section 2.6, Volume 1.

Note: For information on creating clip boundaries, See Section 2.7, Volume 1.

9.2.1 Sheet Setup (Cont'd)

Step 6 — Add Professional Engineer Stamp

While in the *active file*, add the Professional Engineer's Stamp cell for the appropriate person signing the plans, snapping the cell to the point provided.

Step 7 — Sheet Information

The location, name and date of the *active file* are to appear in the lower left corner of the sheet as shown in Figure 9-2. For ODOT users, this will update automatically. Users outside ODOT must use an appropriate pen table.

Step 8 — Turn Levels On or Off

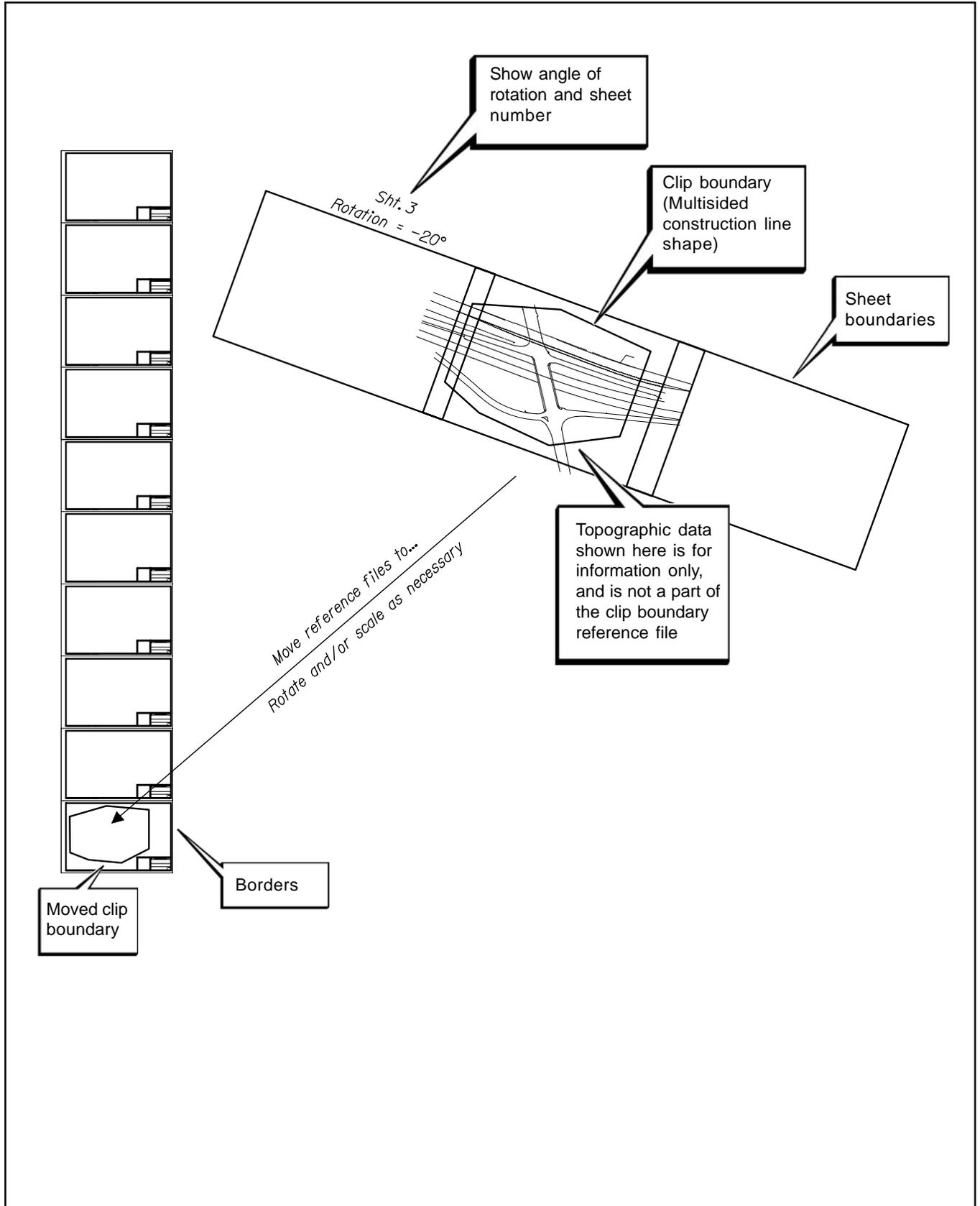
While in the active file, turn the appropriate levels on or off in the attached reference files. See Tables 9-1 through 9-5.

Step 9 — Add Titles to "Combined" Construction Plan Sheets

While in the *active file*, add the section, township and range at the top of the plan or plan-profile sheet and the name of the city or interchange, which are appropriate for the project. If **more than one section** is represented on the plan sheet,

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Figure 9-4 Attach and Modify Reference Files



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9.2.1 Sheet Setup (Cont'd)

Step 10 — Add Items

Add text and other project specific items as necessary. See the check list at the end of this section for a list of typically required items.

Note: For standard font, size, level, and color, see Section 9, Volume 2.

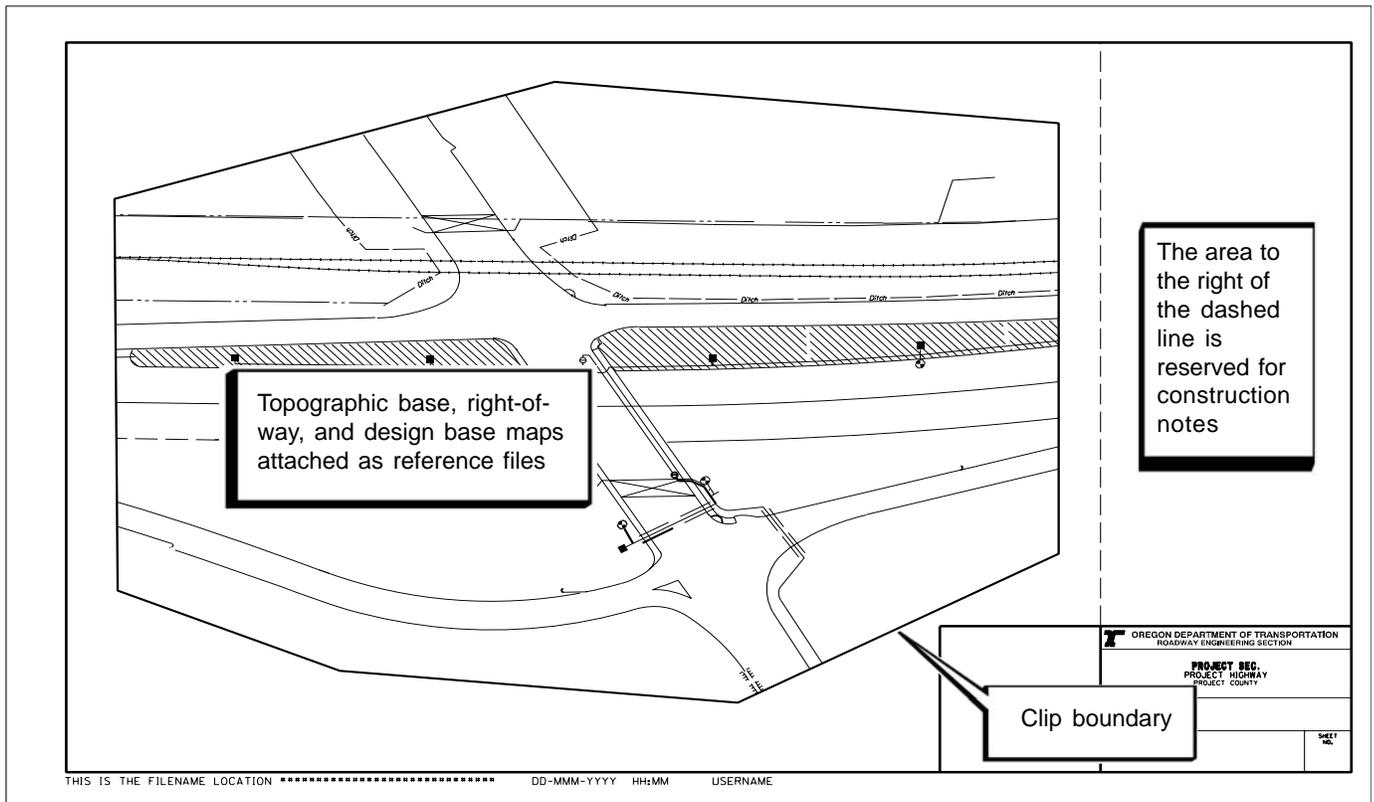
Note: For a detailed list of element attributes and levels, see the Level Standards, Table 2-3 and 2-4, Volume 1.

There are some general items that are found on every type of construction plan sheet, combined, alignment, general construction, drainage and utilities, and removal. Figures 9-6 and 9-7 give some guidelines for these items.

See sections 9.2.3 through 9.2.8, for each specific type of construction plan that may be included in the development of the “combined” construction plans:

Alignment.....9.2.3
 General Construction.....9.2.4
 Drainage and Utilities.....9.2.5
 Removal.....9.2.6
 Construction Notes.....9.2.7
 Profiles.....9.2.8

Figure 9-5 Completed Attached Reference Files



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9.2.1 Sheet Setup (Cont'd)

the section data is labeled in the plan portion of the sheet instead of at the top of the sheet. The section text is oriented with its associated boundary line on the plan view. Add the sheet number in the title block. See Figure 9-2.

Step 11 — Add Titles to “Separated” Construction Plan Sheets

While in the *active file*, add titles at the top of the plan or plan-profile sheet, and a sheet number in the title block, as illustrated in Figure 9-3, which are appropriate for the project and for the type of plan sheet you are creating. Most titles can be found in the “Cache” (PLANSV8.DGN) and copied and edited.

Step 12 — Attach Base Maps

Attach the appropriate existing topographic base map, right-of-way file and design base as reference files. Manipulate these files to the same parameters (move, rotate, scale, and clip boundary) that you used for the clip boundary file for the same plan sheet.

9.2.2 “Combined” Construction Plans

To continue to develop construction plans with “combined” information, use the following steps.

Step 13 -- Turn Levels On or Off

While in the *active file*, turn the appropriate levels on or off in the attached basemap reference files. Table 9-1 lists the items for “combined” plans that include all of the alignment, construction, drainage and utility, and removal information. Use the MicroStation™ command “save settings” to maintain the levels turned on and off.

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Table 9-1 “Combined” Construction Plan Levels

"COMBINED" CONSTRUCTION PLANS		
BASE MAP REFERENCE FILE	SHOW	DO NOT SHOW
Existing Topography	Existing topography, existing drainage, existing utilities	Descriptive text, point numbers
Design Base	Construction centerline, curve data, new construction, travel lanes, new drainage, new utilities	Descriptive text, point numbers
R/W	R/W dimensions and lines	Miscellaneous text, point numbers

Note: For alignment plan examples, see Section 9, Volume 2.

9.2.3 Alignment Plans

The alignment plans display the construction centerline and data, right-of-way lines and data, and existing topography. Drainage and utilities are not shown on the alignment plans. Also, generally not shown are new construction items such as approaches. To continue to develop construction plans with alignment information, use the following steps.

Step 8 — Turn Levels On or Off

While in the *active file*, turn the appropriate levels on or off in the attached basemap reference files. For a guideline of levels to turn off for alignment plans, see Table 9-2.

Step 9 — Add Items

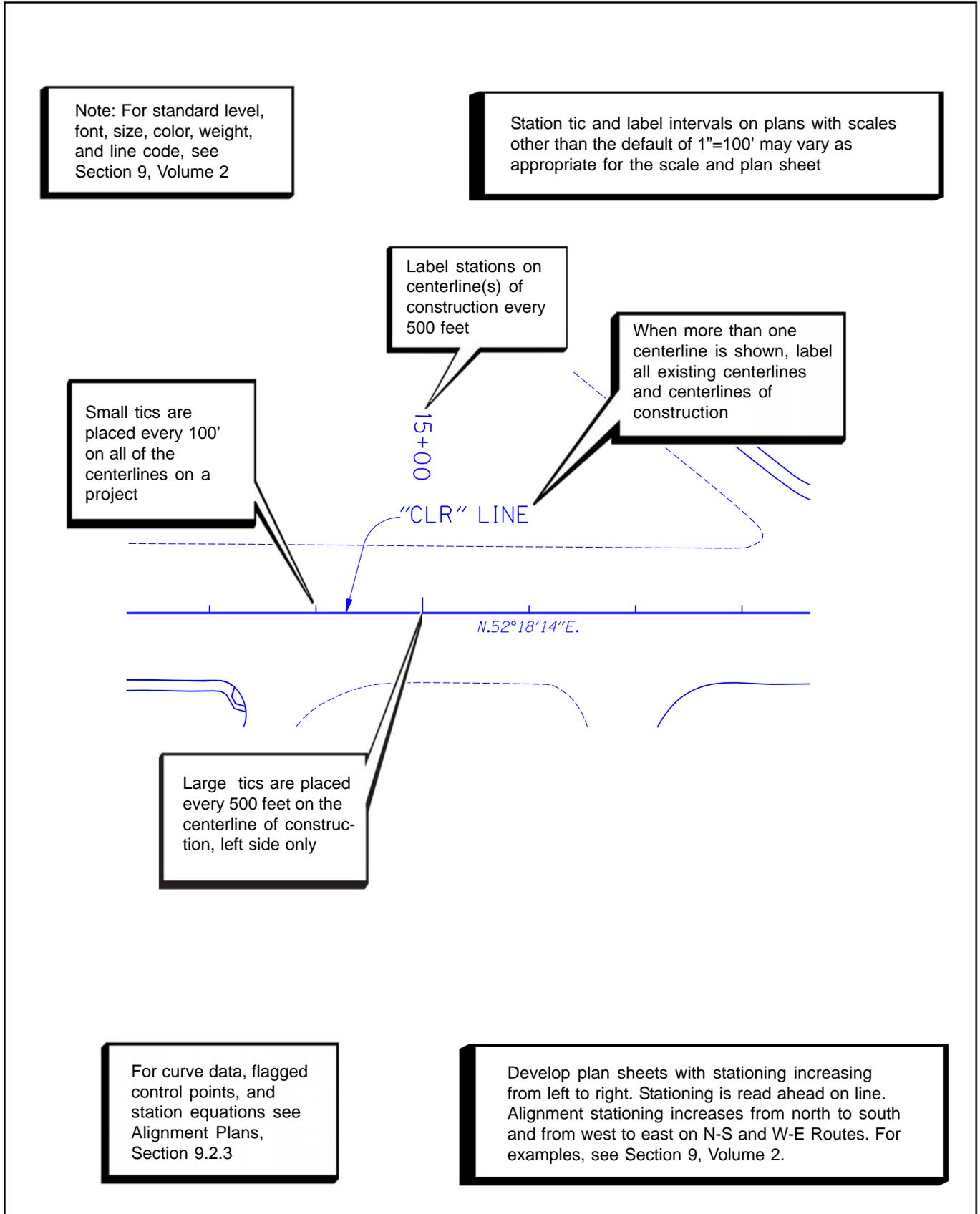
Add text and other project specific items as necessary, as shown in Figures 9-8 through 9-15. See the check list at the end of this section for a list of typically required items.

Table 9-2 Alignment Plan Levels

ALIGNMENT PLANS		
BASEMAP REFERENCE FILE	SHOW	DO NOT SHOW
Existing Topography	Existing topography	Existing drainage, existing utilities, descriptive text, point numbers
Design Base	Construction centerline, curve data, new edge of pavement	New drainage, travel lanes, new utilities, most new construction, descriptive text, point numbers
R/W	R/W dimensions and text	Miscellaneous text, point numbers

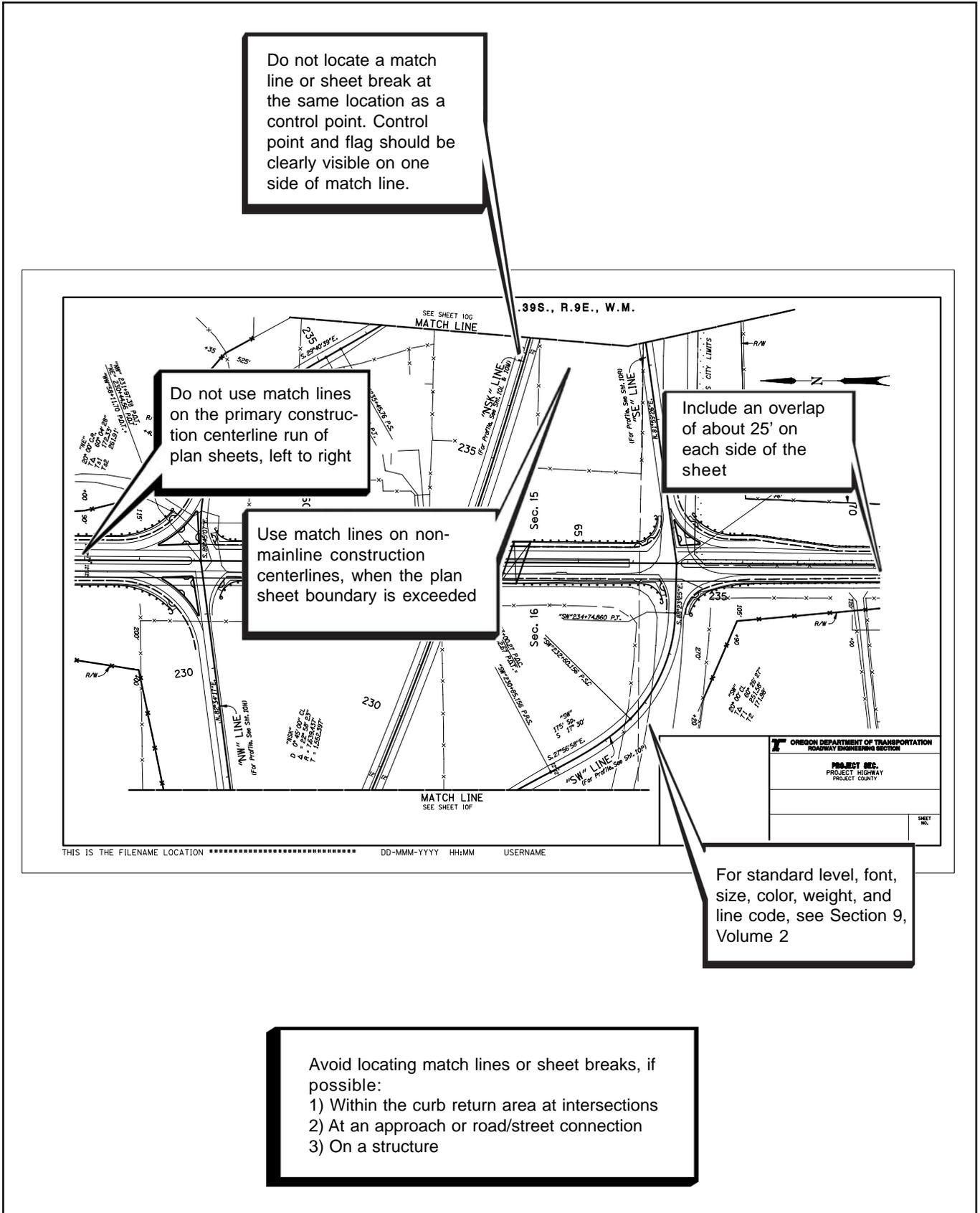
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Figure 9-6 Basic Horizontal Alignment Items



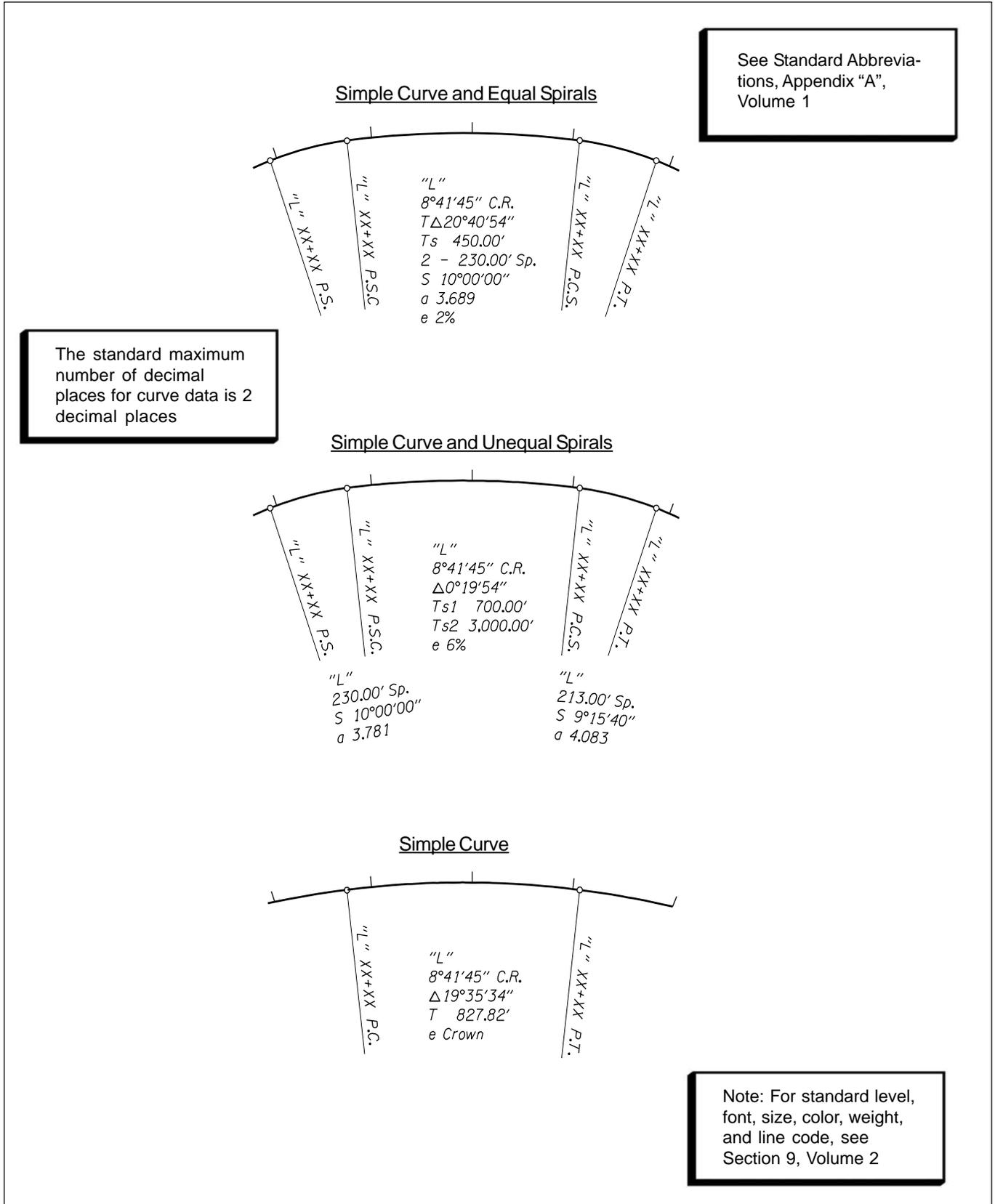
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Figure 9-7 Match Lines



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Figure 9-8 Curve Data and Flagged Control Points



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Figure 9-9 Bearings

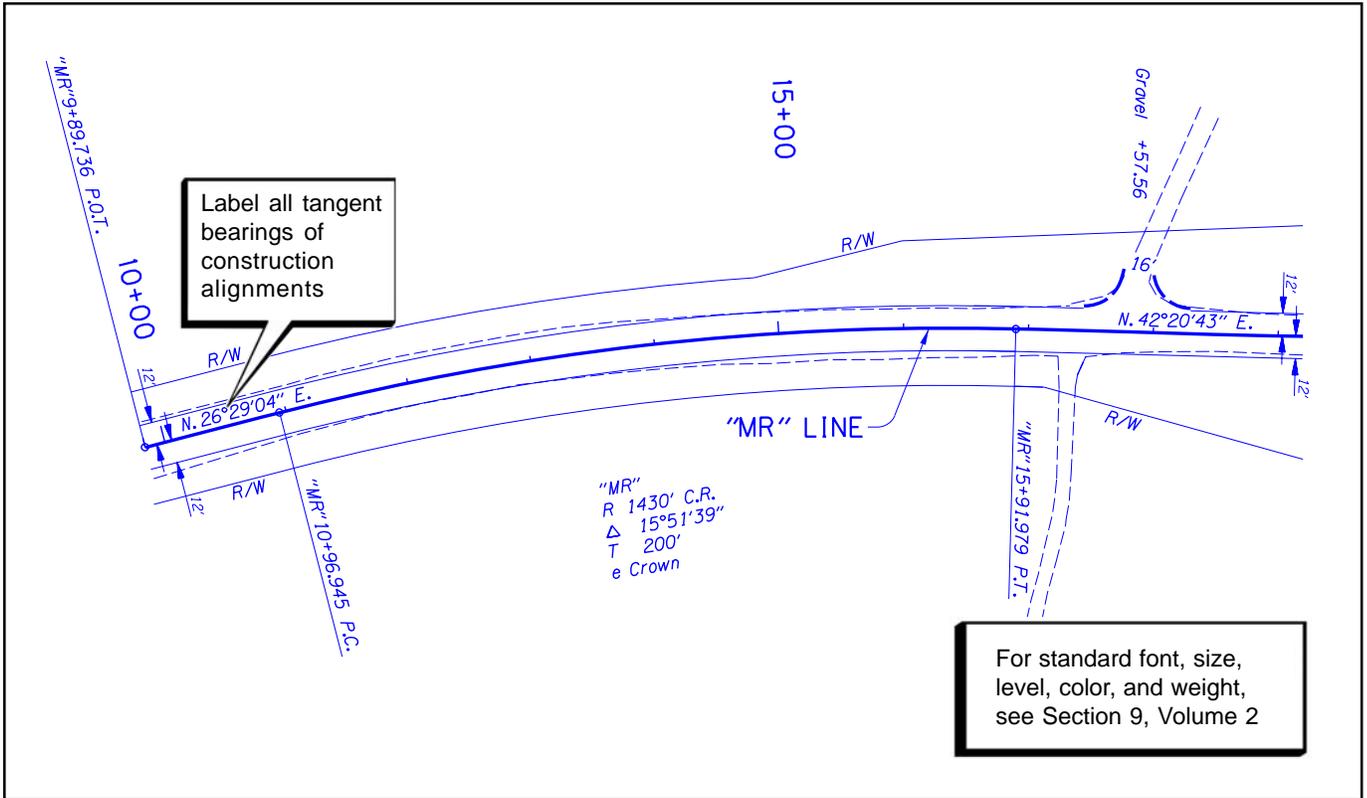
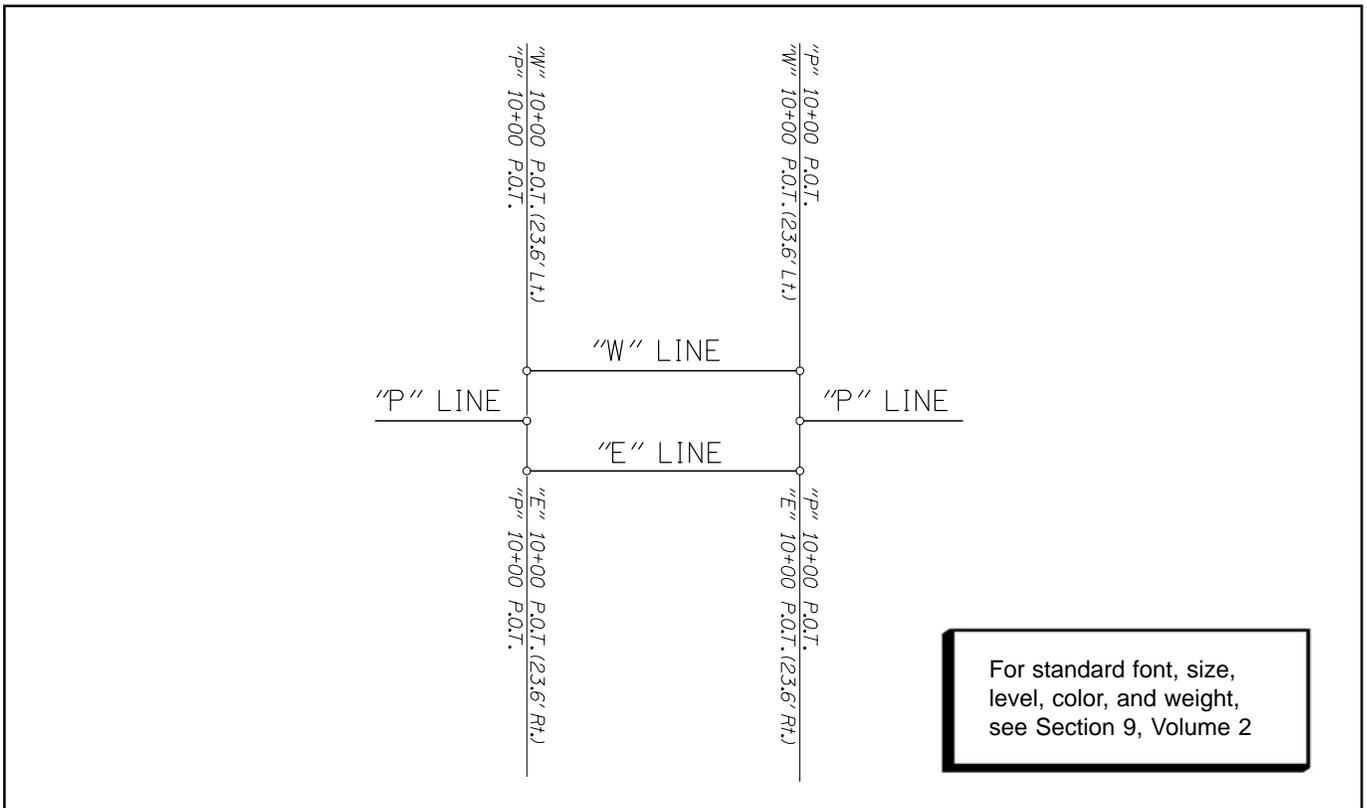


Figure 9-10 Alignment Horizontal Offset

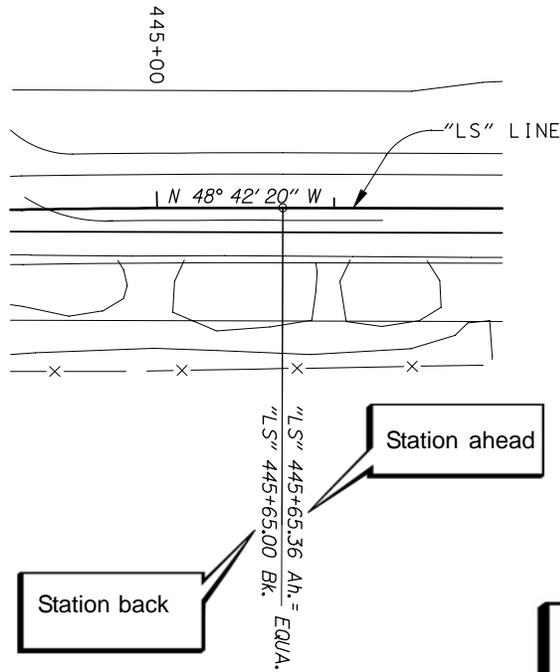


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Figure 9-11 Station Equations

A station equation indicates a gap, realignment, or intersection of the horizontal centerline stationing. The equation states the mathematical relationship of the centerline stationing **back** "Bk." or before the point of equation and the stationing **ahead** "Ah." or after the point of equation.

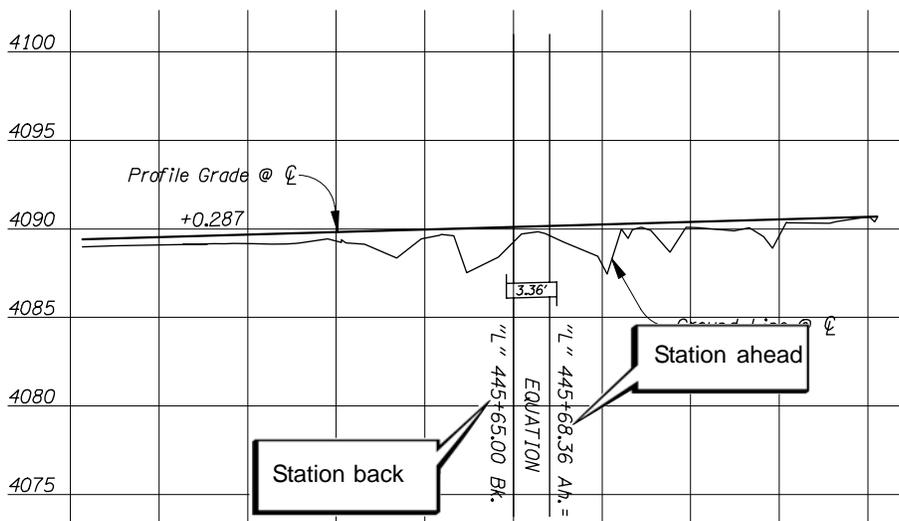
Plan View



The station equation is shown in both the plan and profile views

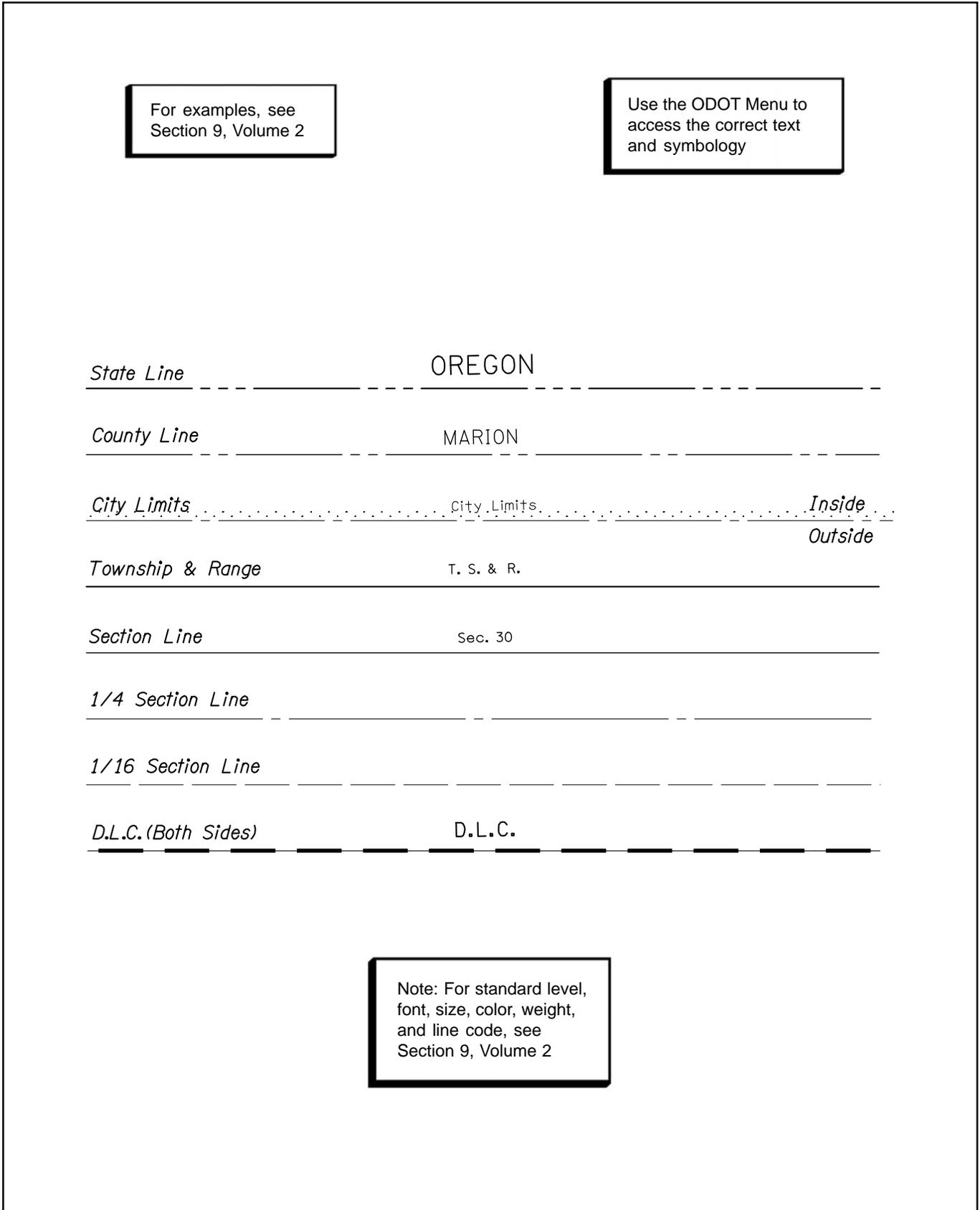
Note: For standard level, font, size, color, weight, and line code, see Section 9, Volume 2

Profile



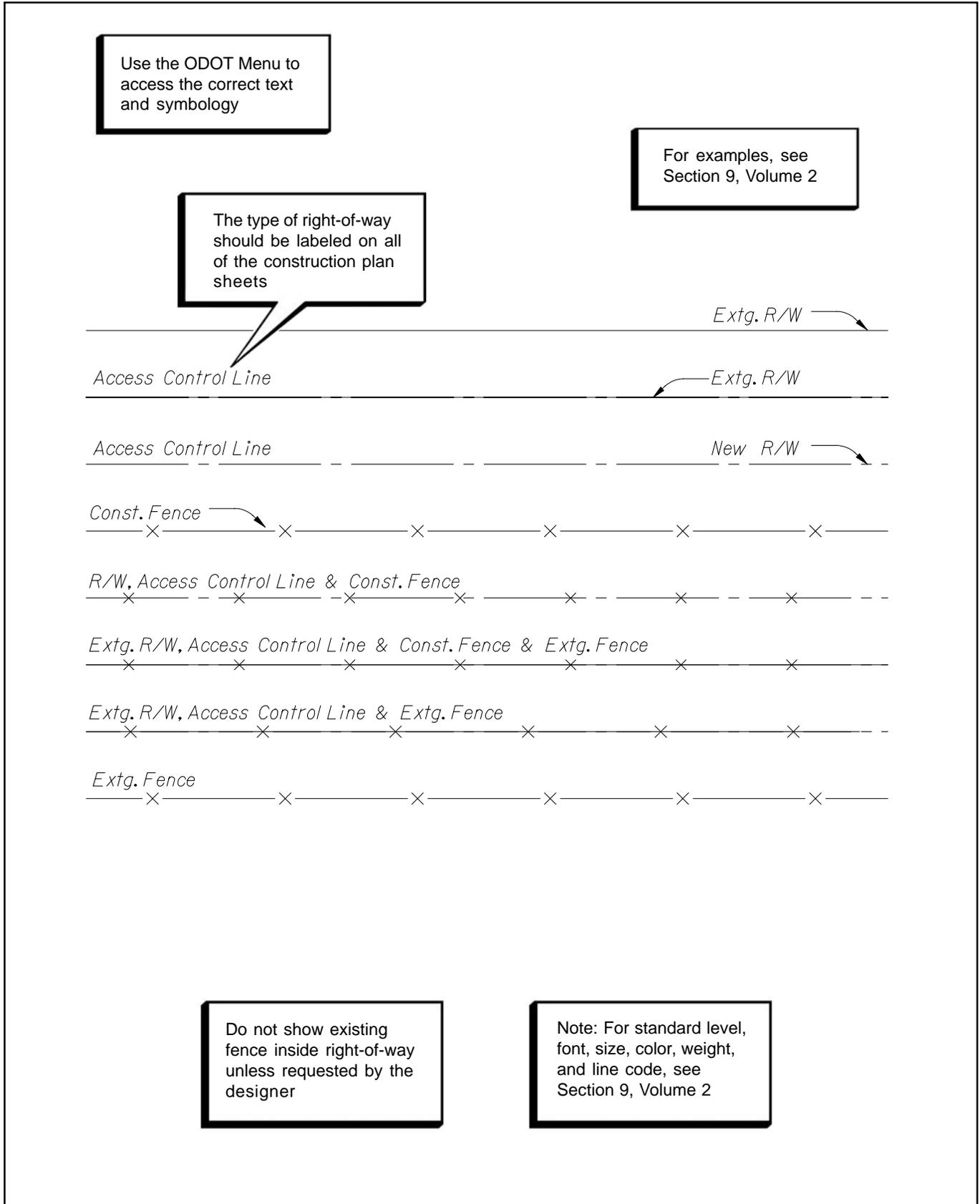
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Figure 9-12 Government Boundaries



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Figure 9-13 Existing Right-of-Way, Construct Right-of-Way, and Access Control



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Figure 9-14 Access Control

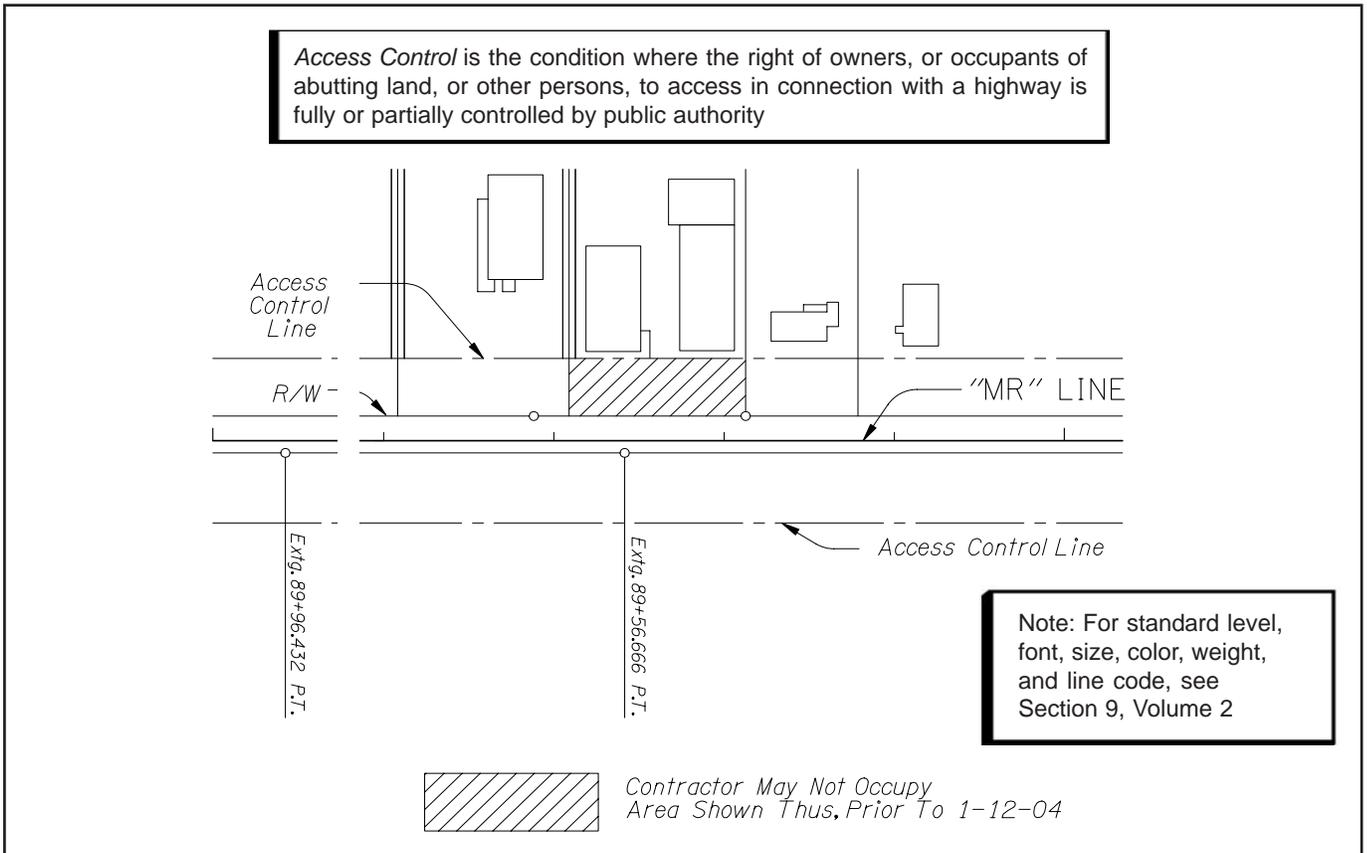
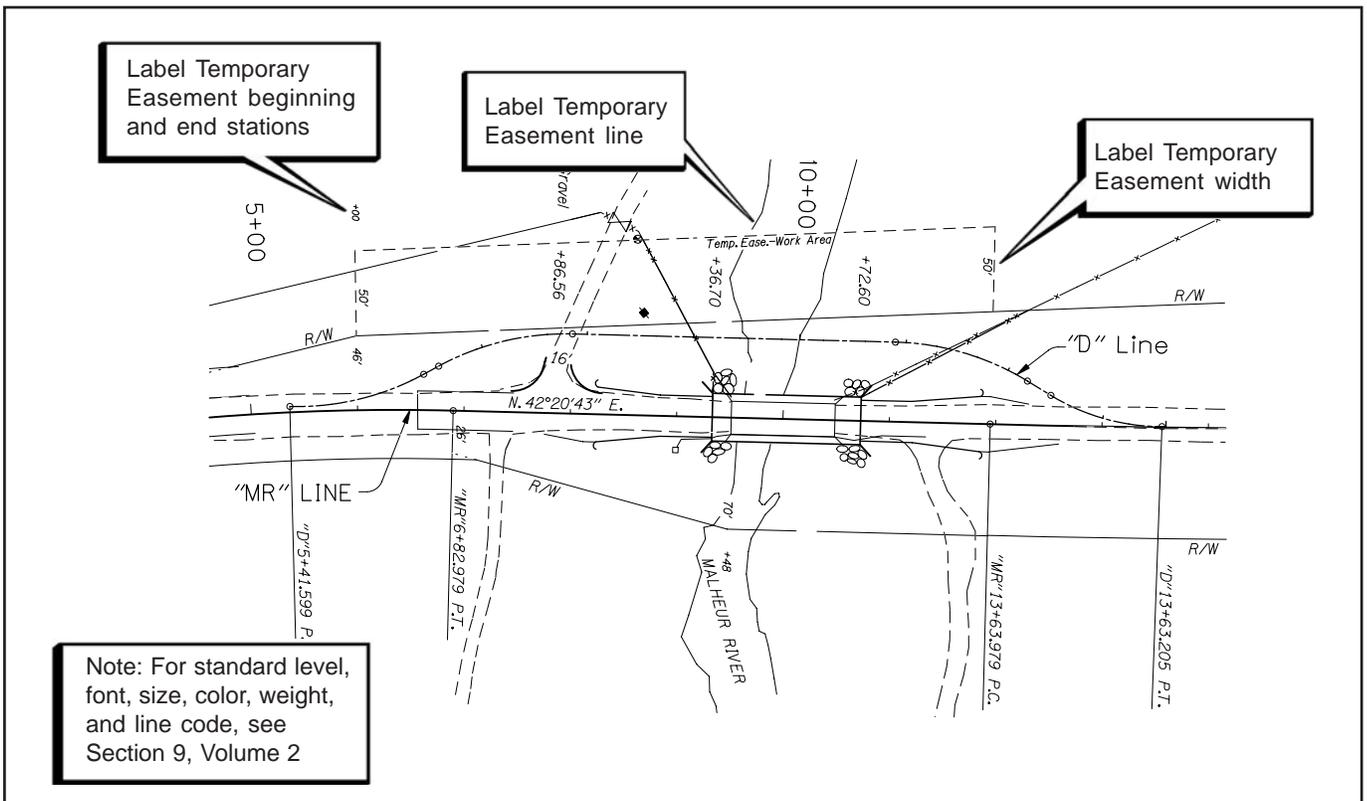


Figure 9-15 Temporary Easement



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Note: For general construction plan examples, see Section 9, Volume 2.

9.2.4 General Construction Plans

The general construction plans display all of the new construction and travel lanes, but do not display the new drainage and utilities. The construction centerline is shown, but not the curve data. Also shown are the right-of-way lines and existing topography. To continue to develop the general construction plans, use the following steps.

Step 8 — Turn Levels On or Off

While in the *active file*, turn the appropriate levels on or off in the attached basemap reference files. For a guideline of items to turn off for general construction plans, see Table 9-3. Use the MicroStation™ command “save settings” to maintain the levels on and off.

Step 9 — Add Items

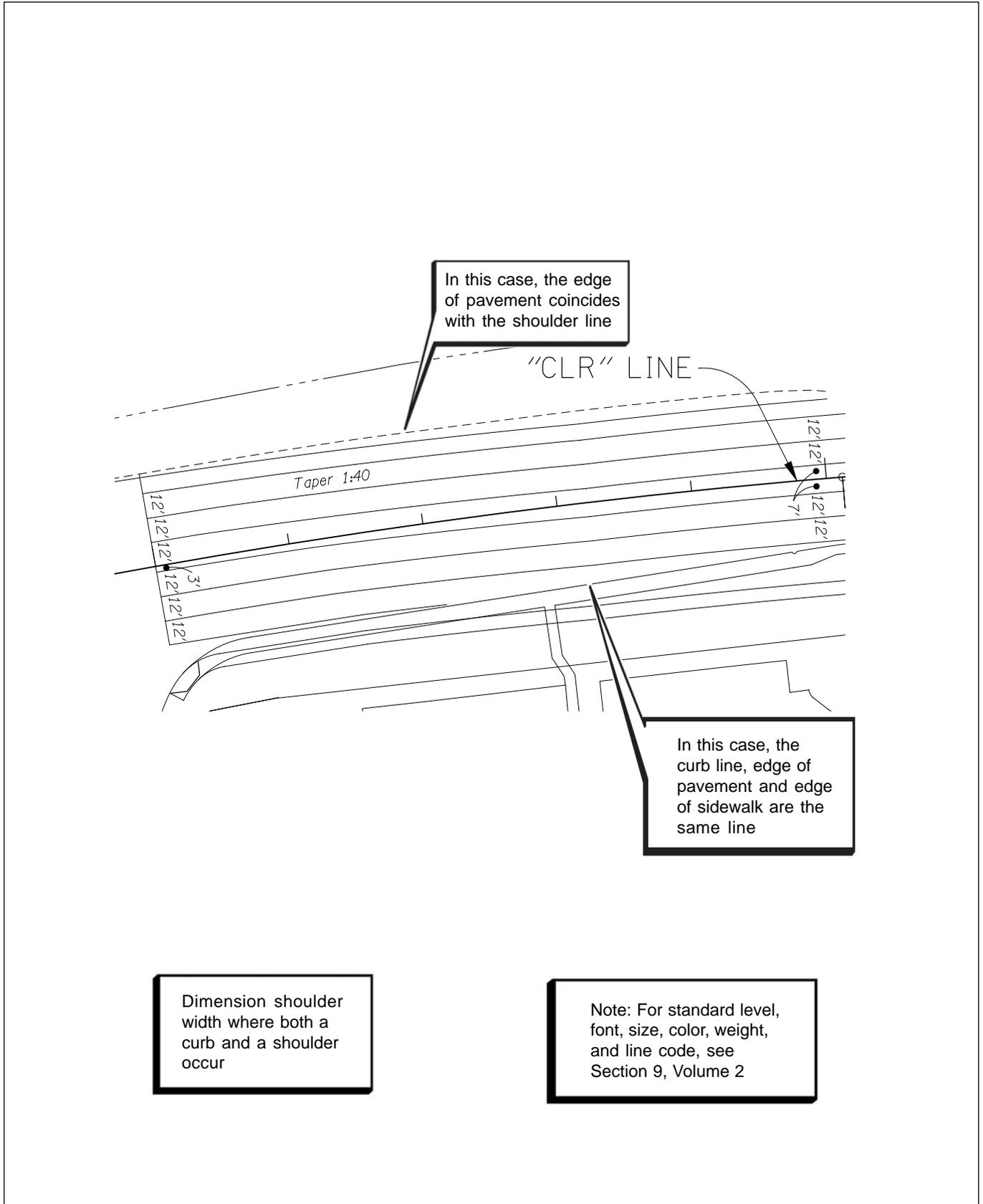
Add text and other project specific items as necessary, as shown in Figures 9-16 through 9-22. See the check list at the end of this section for a list of typically required items.

Table 9-3 General Construction Plan Levels

GENERAL CONSTRUCTION PLANS		
BASEMAP REFERENCE FILE	SHOW	DO NOT SHOW
Existing Topography	Existing topography	Existing drainage, existing utilities, descriptive text, point numbers
Design Base	Construction centerline, most new construction, travel lanes	New drainage, new utilities, curve data, descriptive text, point numbers
R/W	R/W lines	R/W dimensions, miscellaneous text, point numbers

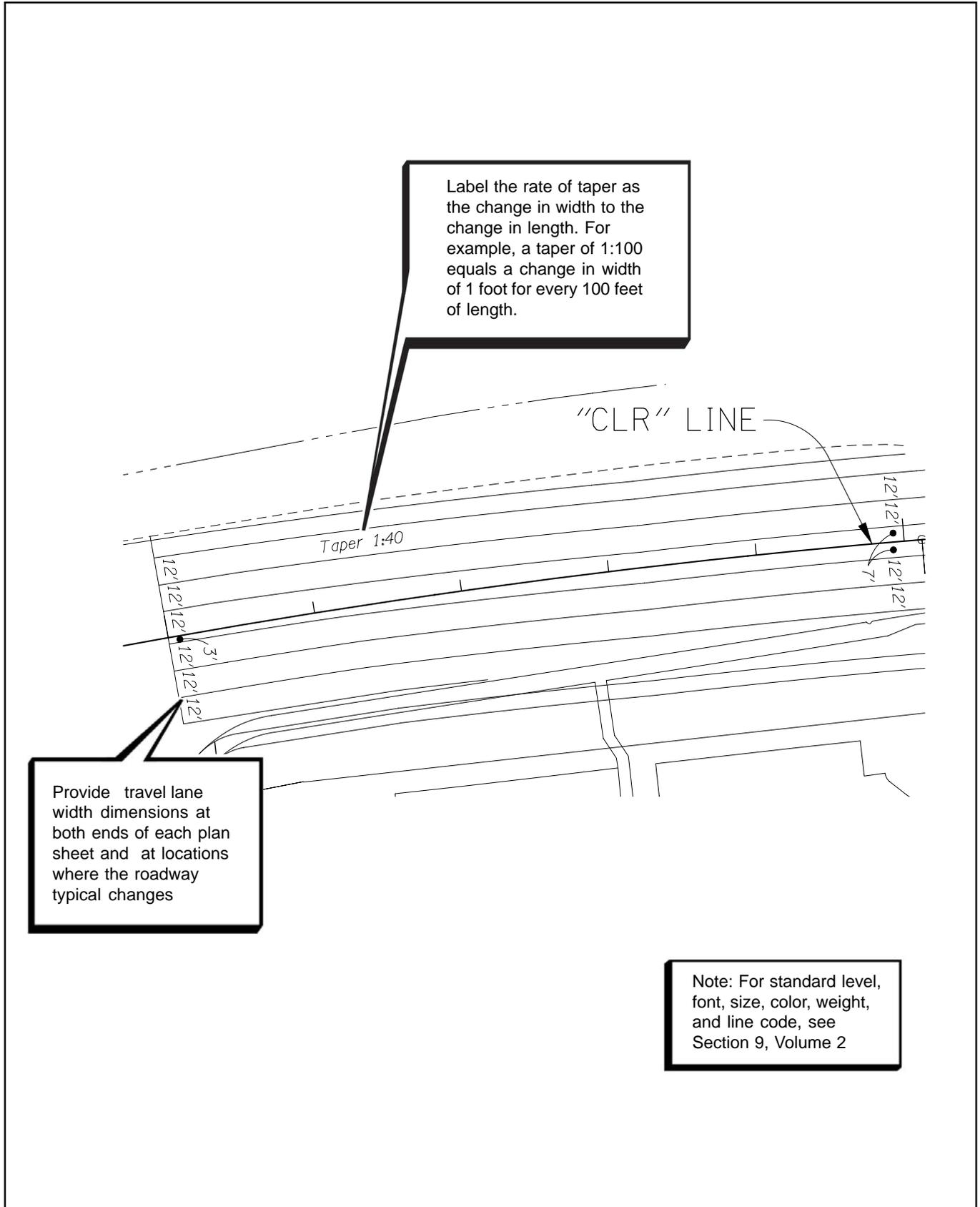
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Figure 9-16 Edge of Pavement and Curbs



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Figure 9-17 Travel Lanes and Tapers



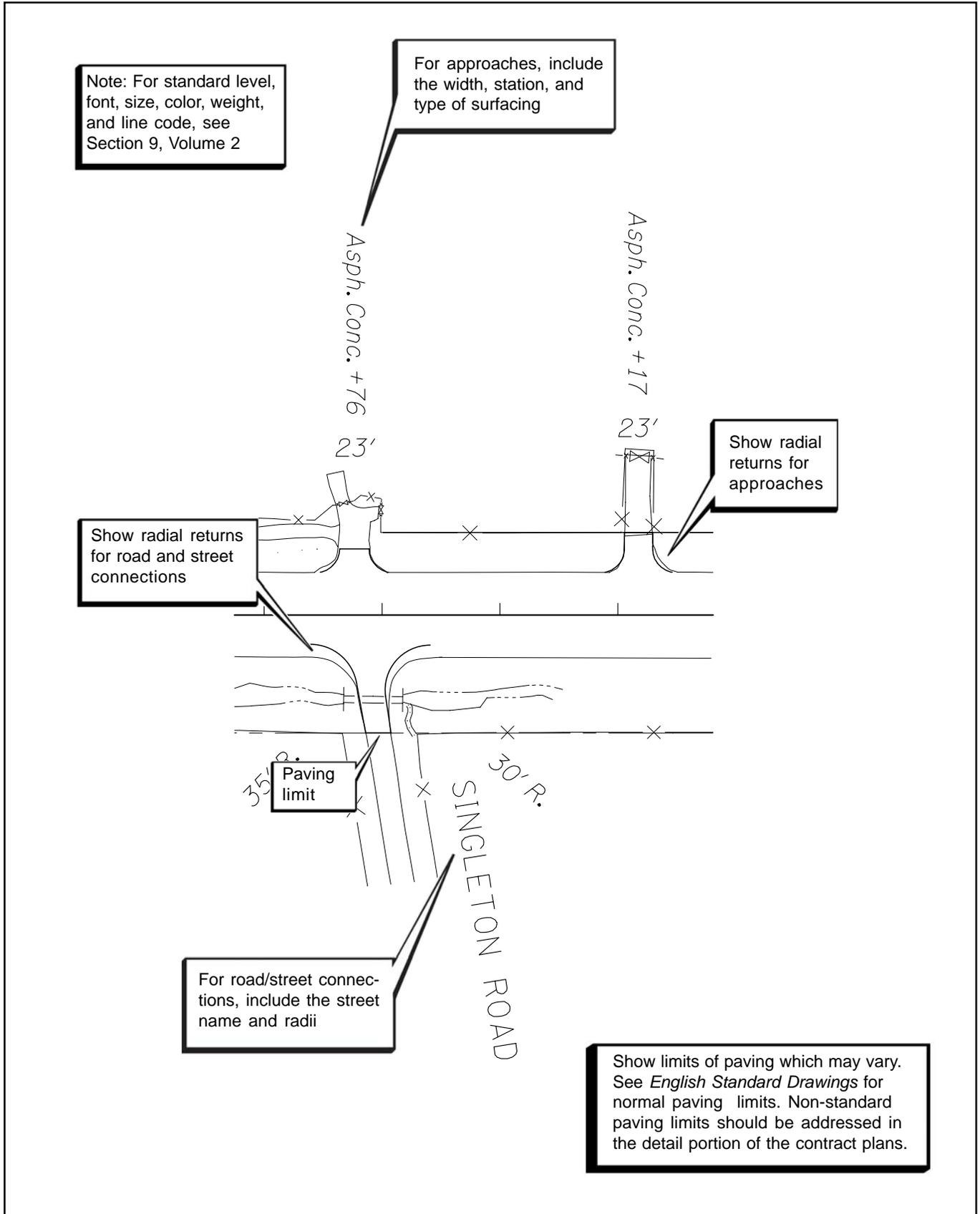
Label the rate of taper as the change in width to the change in length. For example, a taper of 1:100 equals a change in width of 1 foot for every 100 feet of length.

Provide travel lane width dimensions at both ends of each plan sheet and at locations where the roadway typical changes

Note: For standard level, font, size, color, weight, and line code, see Section 9, Volume 2

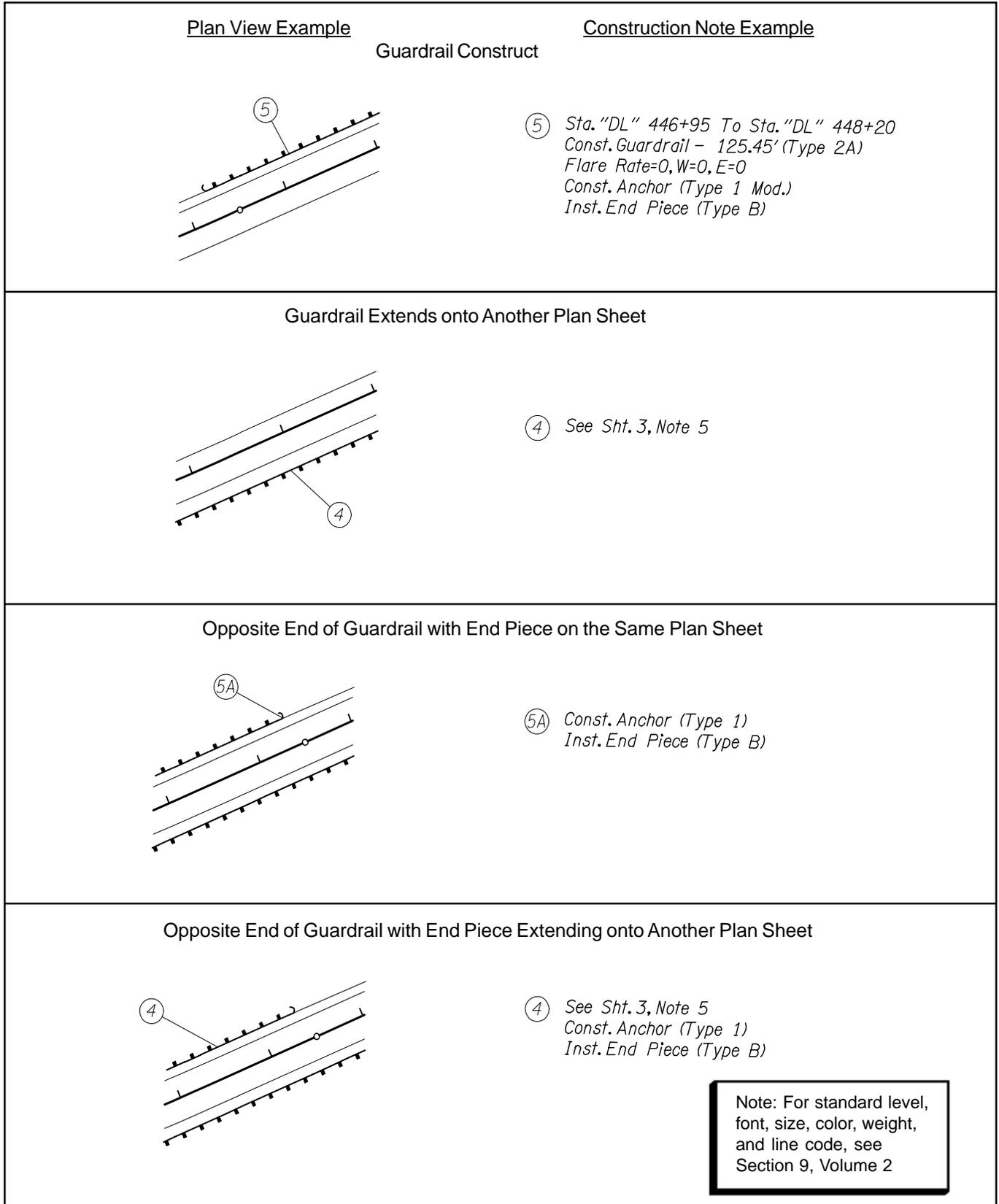
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Figure 9-18 Approaches and Road/Street Connections



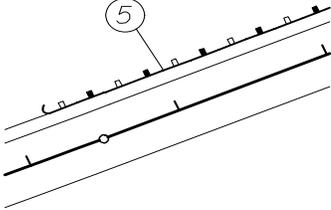
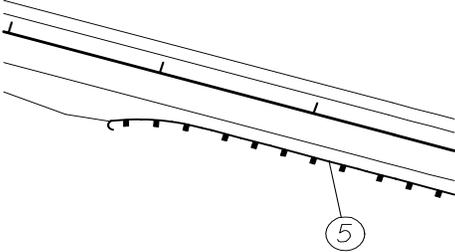
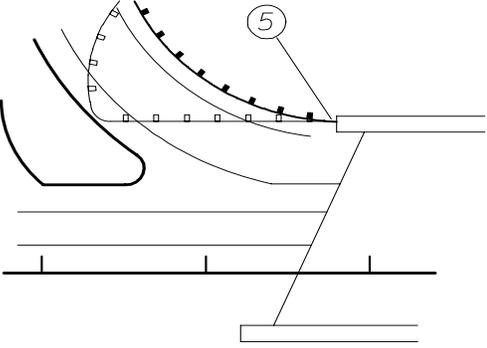
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Figure 9-19 Guardrail



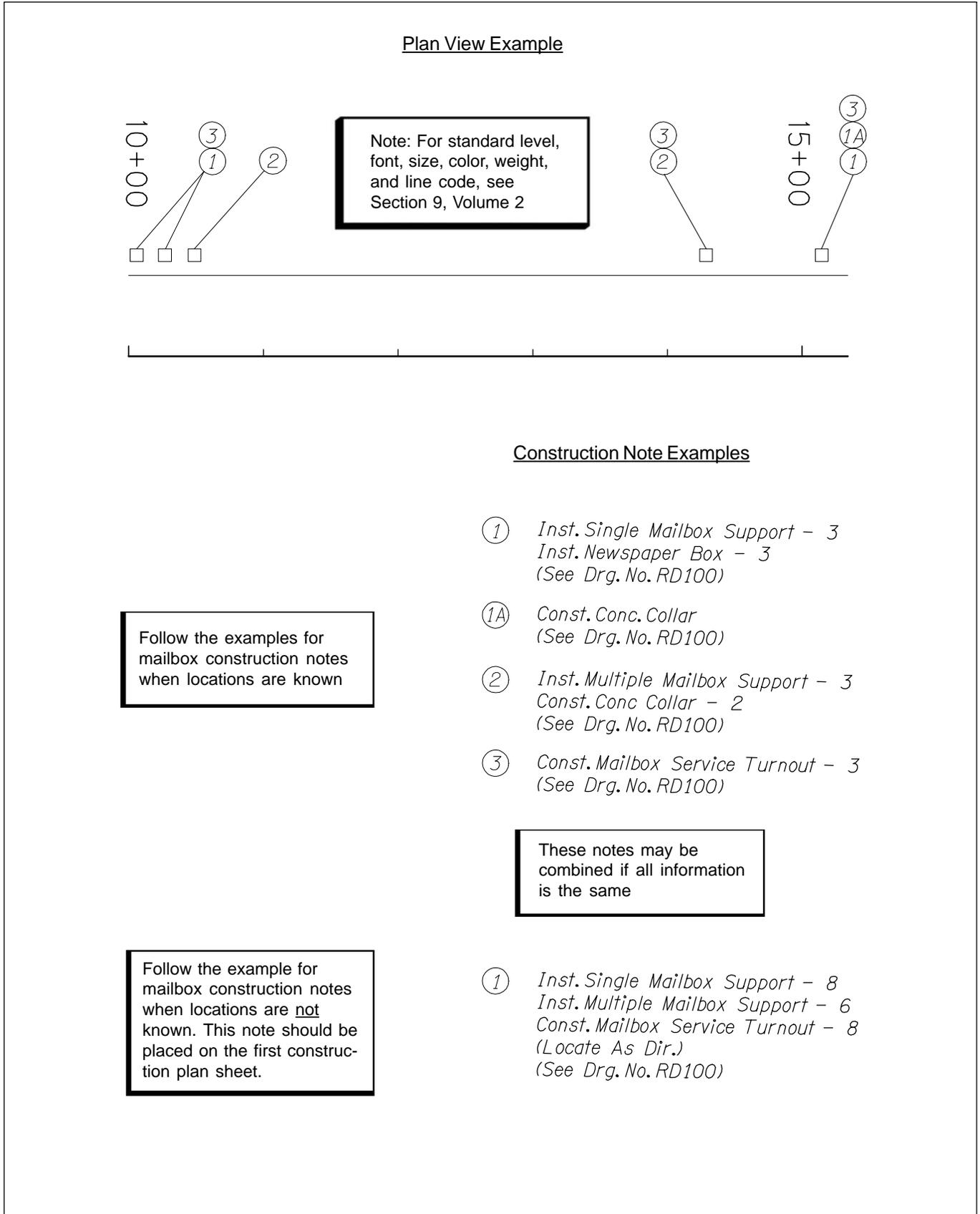
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Figure 9-20 Guardrail (Cont'd)

<u>Plan View Example</u>	<u>Construction Note Example</u>
Guardrail Removal and Construct at the Same Location	
	<p>⑤ <i>Sta. "DL" 446+95 To Sta. "DL" 448+20</i> <i>Remove Extg. Guardrail - 125.45'</i> <i>Const. Guardrail - 125.45' (Type 2A)</i> <i>Flare Rate=0, W=0, E=0</i> <i>Const. Anchor (Type 1 Mod.)</i> <i>Inst. End Piece (Type B)</i></p>
Guardrail Flare	
	<p>⑤ <i>Sta. "CR" 445+34 To Sta. "CR" 448+53</i> <i>Const. Guardrail - 306.25' (Type 2A)</i> <i>- 12.5' (Type 3)</i> <i>Const. Guardrail Transition</i> <i>Flare Rate=15:1, W=18.5', E=0</i></p>
Guardrail Connection	
	<p>⑤ <i>Sta. "CLR" 14+40 To Sta. "CLR" 15+02</i> <i>Const. Guardrail - 62.37' (Type 2A)</i> <i>Const. Guardrail Transition</i> <i>Flare Rate=0, W=0, E=0, R=45'</i> <i>Const. Guardrail Terminal, Flared</i> <i>(Or Non-Flared)</i></p>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Some guidelines for guardrail construction notes are:</p> <ol style="list-style-type: none"> 1. Guardrail notes are usually found on the first plan or construction note sheet that the guardrail appears. 2. List guardrail types in consecutive numerical order, i.e. 2A, 3, transition. 3. Treat median and shoulder barrier notes the same as guardrail notes. </div> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>Note: For standard level, font, size, color, weight, and line code, see Section 9, Volume 2</p> </div>	

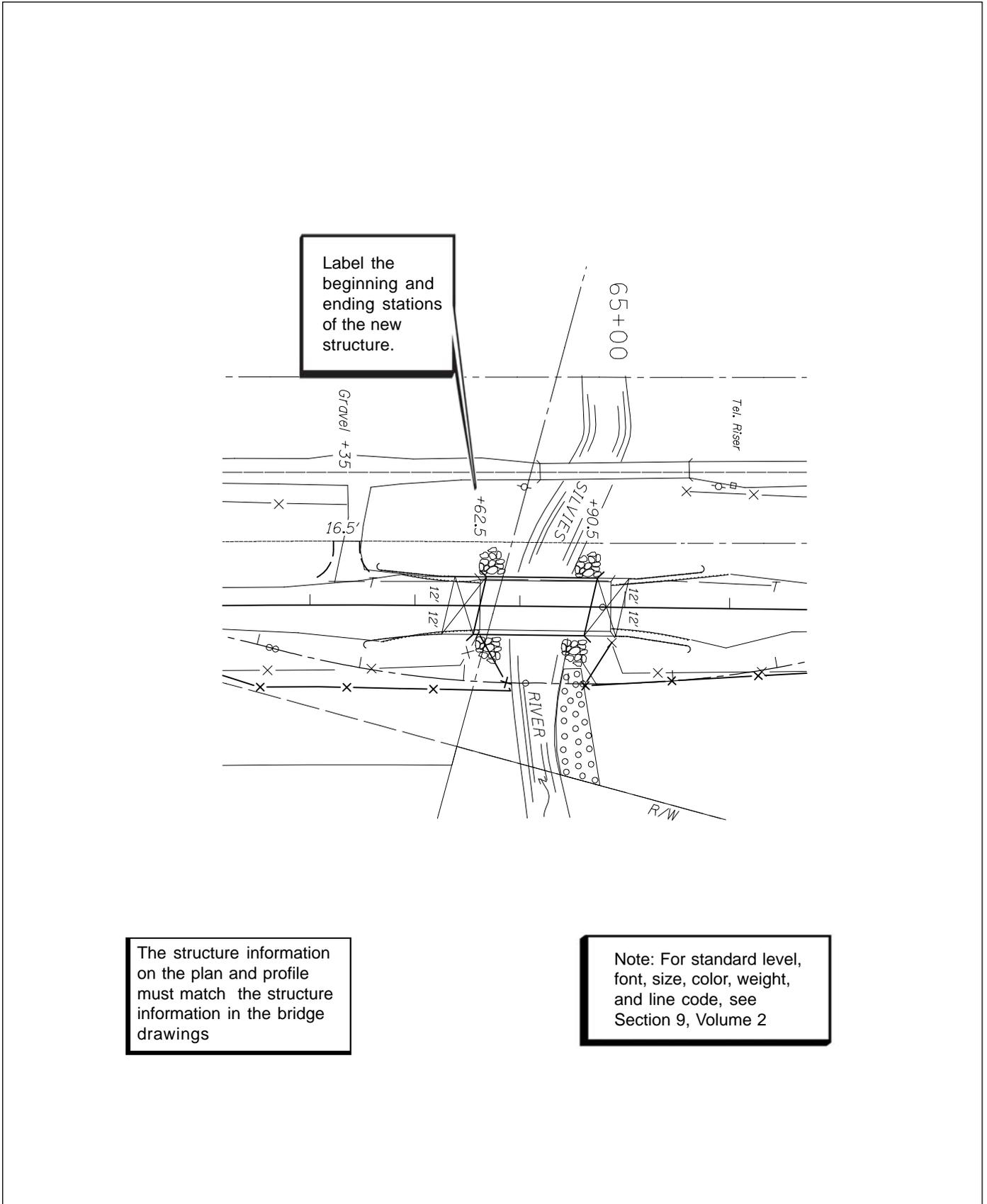
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Figure 9-21 Mailbox Installation



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Figure 9-22 Structures (Bridges, Box Culverts and Walls)



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Note: For drainage and utilities plan examples, see Section 9, Volume 2.

9.2.5 Drainage and Utilities Plans

The drainage and utilities plans display all of the new and existing drainage and utilities features, and applicable new construction, but do not display the travel lanes and curve data. Also shown are the right-of-way lines and existing topography. To continue to develop the drainage and utilities plans, use the following steps.

Step 10 — Turn Levels On or Off

While in the *active file*, turn the appropriate levels on or off in the attached basemap reference files. For a guideline of items to turn off for the drainage and utilities plans, see Table 9-4. Use the MicroStation™ command “save settings” to maintain the levels on and off.

Step 11 — Add Items

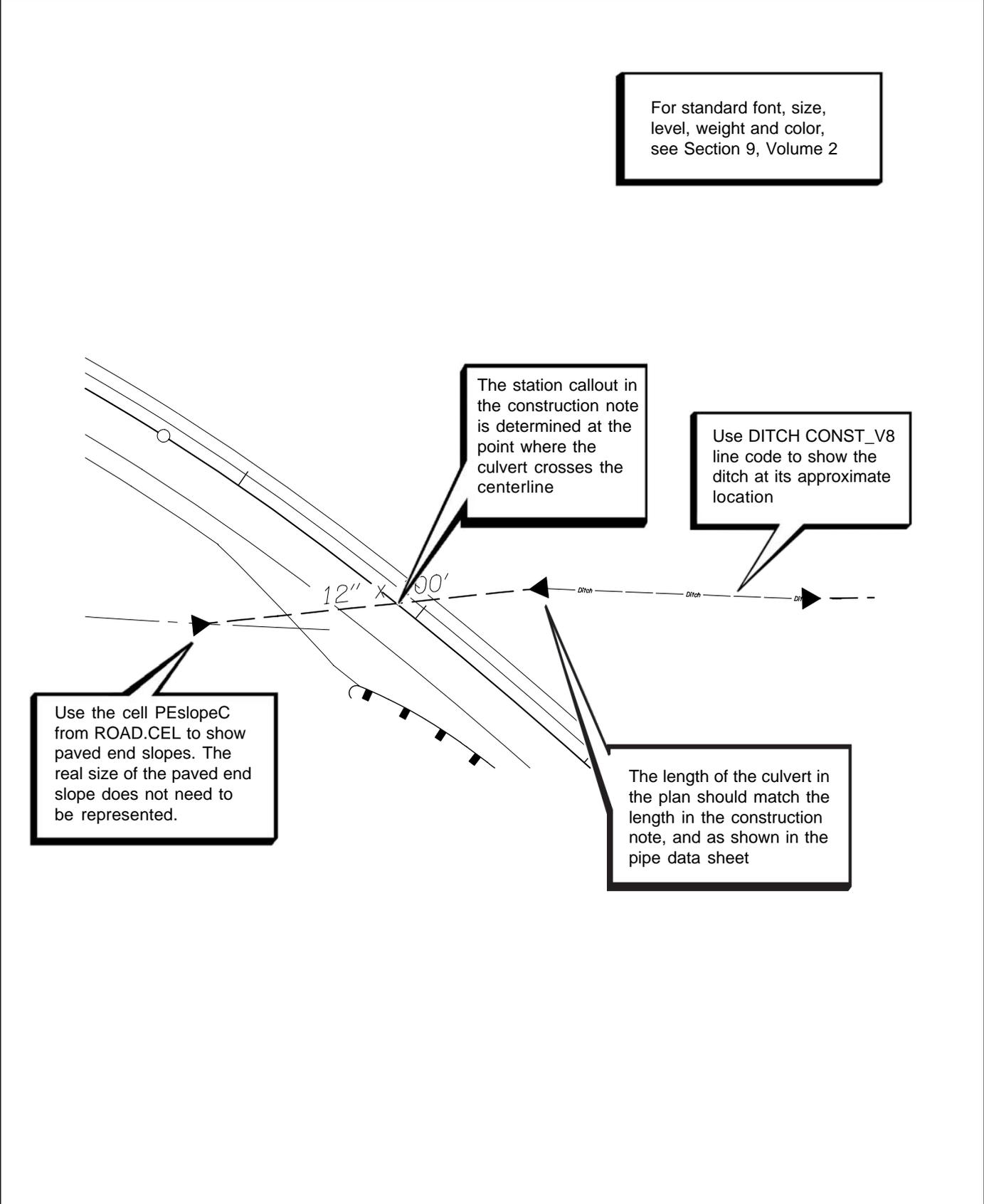
Add text and other project specific items as necessary, as shown in Figures 9-23 through 9-25. See the check list at the end of this section for a list of typically required items.

Table 9-4 Drainage and Utilities Plan Levels

DRAINAGE AND UTILITIES PLANS		
BASEMAP REFERENCE FILE	SHOW	DO NOT SHOW
Existing Topography	Existing drainage and utilities, curbs, most existing topography	Descriptive text, point numbers
Design Base	Construction centerline, new drainage and utilities, new curbs and barriers, drainage removal	Curve data, point numbers
R/W	R/W lines only	R/W dimensions, miscellaneous text, point numbers

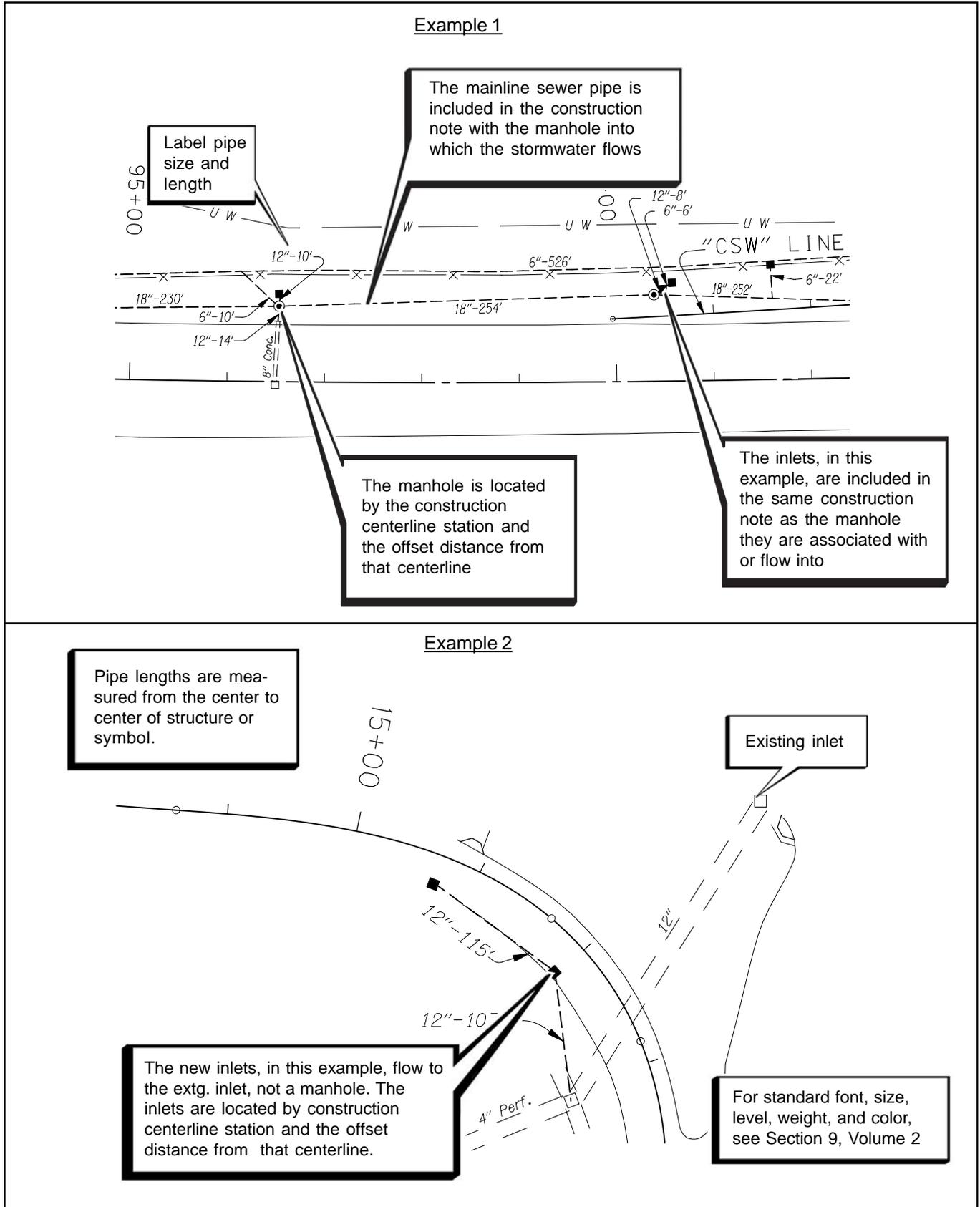
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Figure 9-23 Culverts



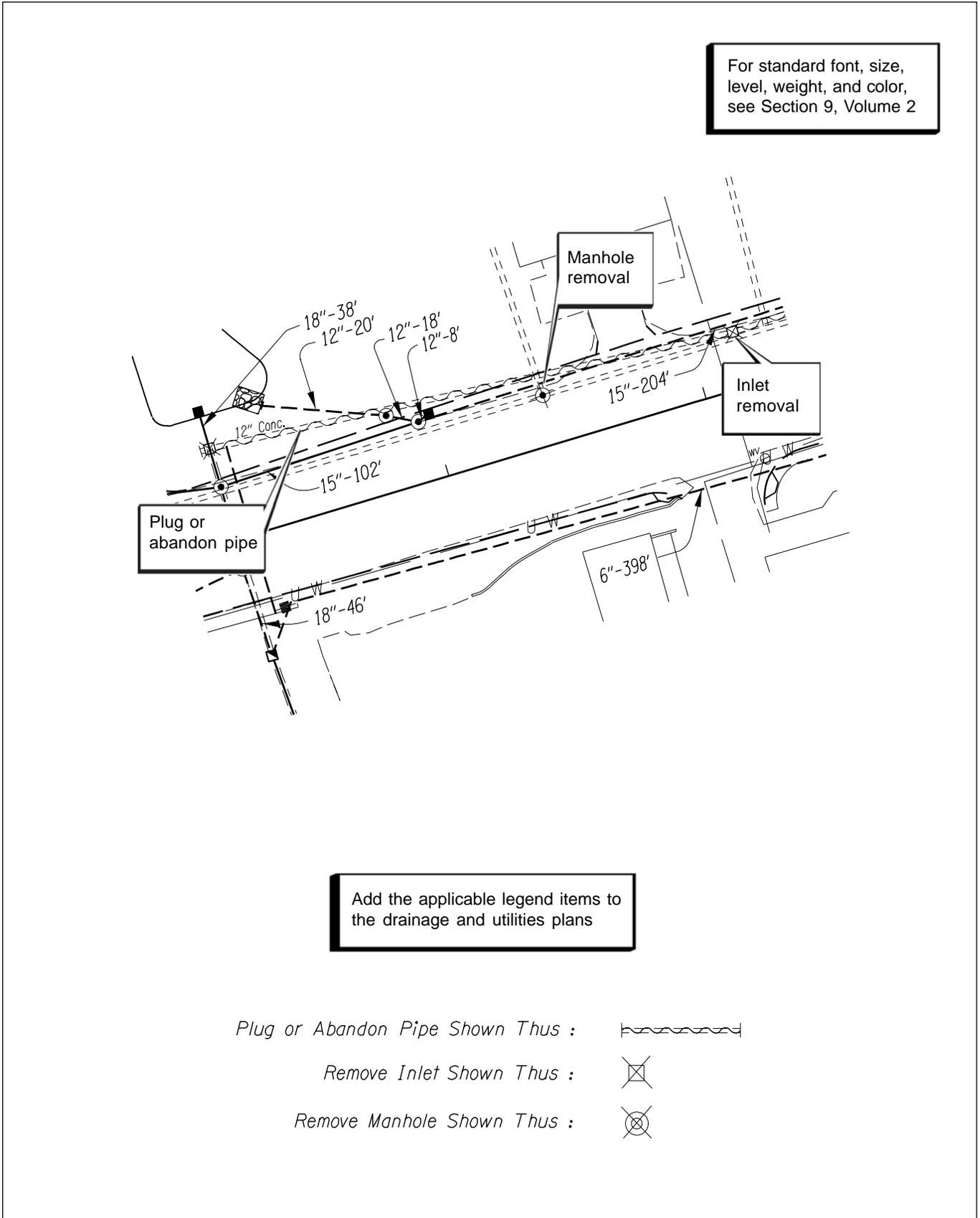
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Figure 9-24 Manholes, Inlets and Drainage Sewer Pipe



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Figure 9-25 Drainage and Utility Removal



For standard font, size, level, weight, and color, see Section 9, Volume 2

Add the applicable legend items to the drainage and utilities plans

- Plug or Abandon Pipe Shown Thus : 
- Remove Inlet Shown Thus : 
- Remove Manhole Shown Thus : 

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Note: For removal plan examples, see Section 9, Volume 2.

9.2.6 Removal Plans

The removal plans display all of the removal items except for drainage and utilities removal, which is shown on the drainage and utilities plans. To continue to develop the removal plans use the following steps.

Step 10 — Turn Levels On or Off

While in the *active file*, turn the appropriate levels on or off in the attached basemap reference files. For a guideline of items to turn off for the removal plans, see Table 9-5. Use the MicroStation™ command “save settings” to maintain the levels on and off.

Step 11 — Add Items

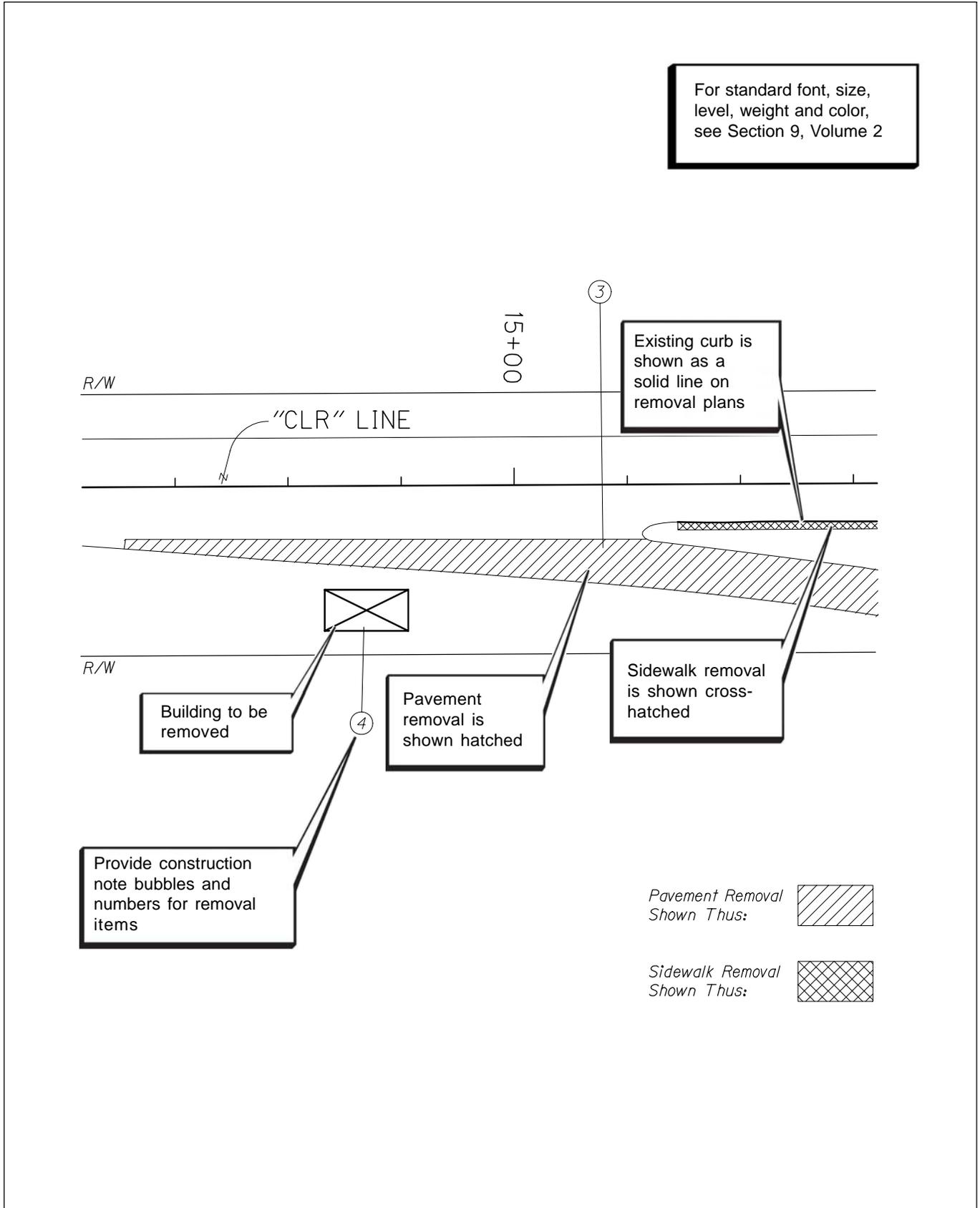
Add text and other project specific items as necessary. See the check list at the end of this section for a list of typically required items.

Table 9-5 Removal Plan Levels

REMOVAL PLANS		
BASEMAP REFERENCE FILE	SHOW	DO NOT SHOW
Existing Topography	Existing curbs, most existing topography	Descriptive text, point numbers
Design Base	Construction centerline, curb removal, pavement removal, sidewalk removal, building removal	New construction, new drainage, new utilities, travel landes, curve data, point numbers
R/W	R/W lines only	R/W dimensions, miscellaneous text, point numbers

9.0 Construction Plan & Profile and Construction Notes

Figure 9-26 Pavement, Sidewalk and Building Removal



9.0 Construction Plan & Profile and Construction Notes

Note: For construction note examples, see Section 9, Volume 2.

Note: For note margin levels in PLANSV8.DGN, see Section 2.9, Volume 1.

9.2.7 Construction Notes

The purpose of the construction notes is to describe the general information and location to build the new design. They can be located either on a plan sheet, plan-profile sheet or a separate construction note sheet. To begin development of the notes, Steps 1 - 4 in Section 9.2.1, Sheet Setup, should be followed before continuing on to the next steps, shown here.

If the construction notes are being added to a plan or plan-profile sheet, you will need to continue developing the plan portion of the sheets with Steps 5-10 in Section 9.2.1, Sheet Setup, before continuing with this section. If you are developing a construction note sheet, continue with the following steps. The note margin bar is a cell, located in ROAD.CEL.

Step 6 — Add a Sheet Number

Add the sheet number within the title block. See Figure 9-3. This text can be found in the “Cache” (PLANSV8.DGN) and copied and edited. A construction note sheet is generally numbered to correspond with the plan sheet with which it is associated. For example, a plan sheet numbered “6” would have a note sheet numbered “6A”.

Step 7 — Add Construction Notes

Add the construction notes to the *active file* at the margins and tic locations as shown in Figures 9-27 and 9-28.

General Information

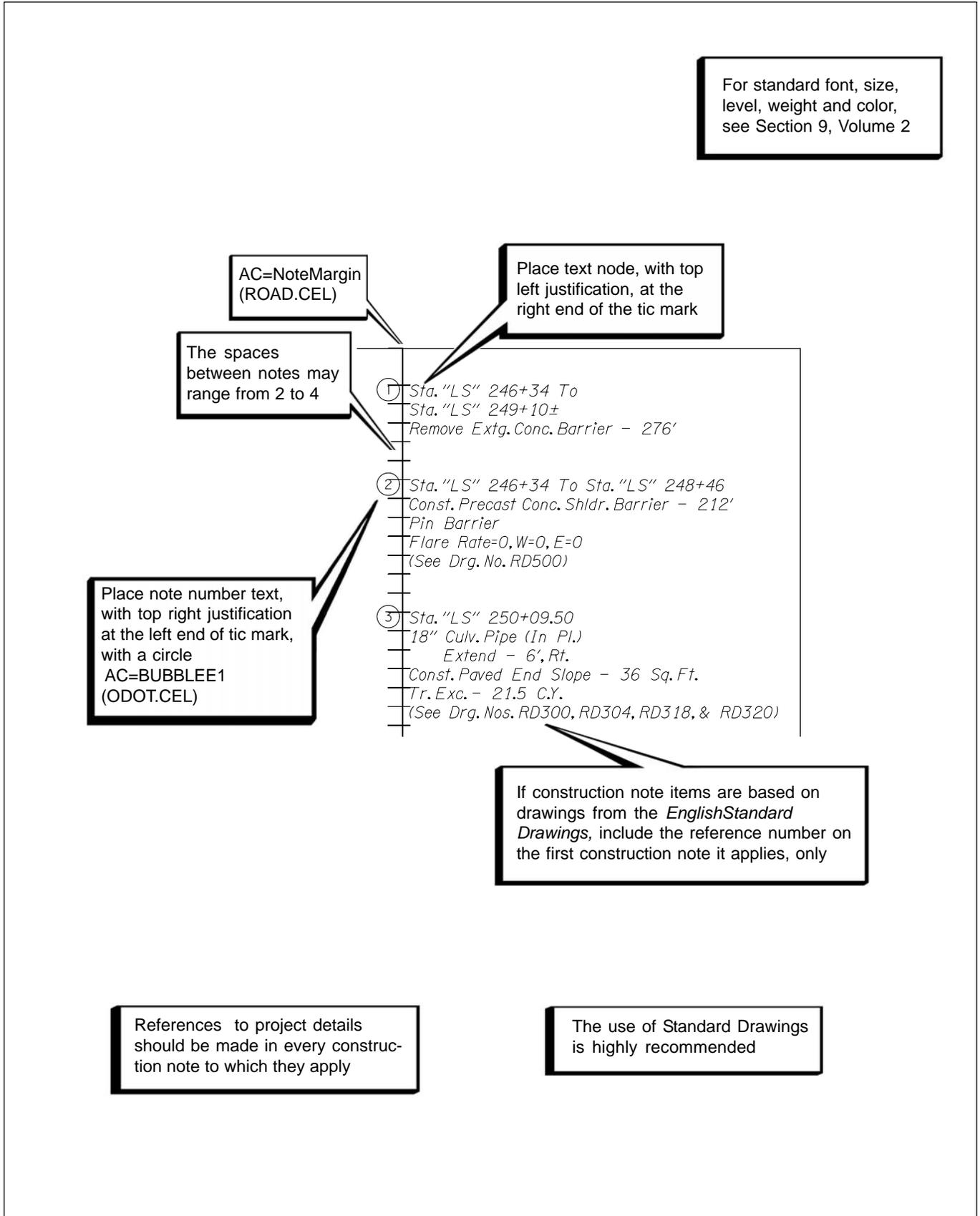
Construction notes should be listed in the same order that the items occur in the *Standard Specifications*. Notes added later can be placed at the end of the sequence. Within individual notes, a standard must be followed for order of construction note composition. General guidelines for construction note composition are:

1. All notes are to be written for single application.
2. Give removal item first, then construction item, except in the case of temporary installation, i.e. detours.
3. Place one space between words, after comma and period, and on either side of a hyphen. No space is required on either side of the equal sign.

See Standard Order of Construction Note Composition, later in this section.

9.0 Construction Plan & Profile and Construction Notes

Figure 9-27 Construction Note Placement and Information



9.0 Construction Plan & Profile and Construction Notes

Figure 9-28 Construction Note Placement and Information

The construction notes should be listed in the same order that the items occur in the *Standard Specifications*. Notes added late can be placed at the end to save time and effort.

Center the construction notes within the sheet

<p>1 See Sht. 9A, Note 12</p> <p>2 Const. Type "F" Curb Const. Curb End - 8</p> <p>3 Const. P.C. Conc. Walk</p> <p>4 Const. Conc. Sidewalk Ramp - 18</p> <p>5 Sta. "WW" 57+70, Rt. Const. "Type A" Mountable Conc. Island - 200 Sq. Ft. (See Drg. No. 2077A)</p> <p>6 Sta. "WW" 57+75, Lt. Const. "Type A" Mountable Conc. Island - 217 Sq. Ft.</p> <p>7 Bridge No. 17446 Const. Structure - 175' Roadway Width 58' With 7' Walk Lt. & Rt. And Retent. Frame at Bridge Ends (For Drg. Nos. See Sht. 1A)</p> <p>8 Sta. "WW" 61+00, Lt. Const. "Type A" Mountable Conc. Island - 90 Sq. Ft. (See Drg. Nos. 2077A, 2104)</p> <p>9 Note Removed From Plans</p> <p>10 Ditching of Old Roadway (For Details, See Sht. 2B-4)</p> <p>11 Sta. "WW" 58+37 To Sta. "WW" 61+77, Lt. Const. Guard Rail - 330' (Type 2A) Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor (Type 1 Mod.)</p> <p>12 Sta. "WW" 58+47 To Sta. "WW" 61+51, Rt. Const. Guard Rail - 327.5' (Type 2A) Const. Guard Rail - 12.5' (Type 3) Const. Guard Rail Transition Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C)</p> <p>13 Sta. "WW" 63+87 To Sta. "WW" 66+55, Rt. Const. Guard Rail - 300' (Type 2A) Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor (Type 1 Mod.)</p>	<p>14 Sta. "WW" 64+13 To Sta. "WW" 66+44, Lt. Const. Guard Rail - 212.5' (Type 2A) Const. Guard Rail - 12.5' (Type 3) Const. Guard Rail Transition Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor (Type 1 Mod.)</p> <p>15 Const. "Type 2" Fence</p> <p>16 Sta. "WW" 230+00 Bridge No. 18537 Const. 81'+59" Arch Pipe - 206' (See Drg. No. 53361)</p> <p>17 Sta. "WW" 59+50 To Sta. "WW" 61+50, Rt. "WW" 62+50 To "WW" 65+20, Rt. Const. Irrigation Ditch Dr. Exc. - 175' C.Y. (For Profile, See Sht. 107)</p> <p>18 Sta. "NSK" 230+50 Bridge No. 18526 Const. Double 8" x 4" R.C.B.C. - 100' (See Drg. No. 53360)</p> <p>19 Sta. "SW" 232+80 Double 48" Curb Pipe - 284' (In P.U.) Remove - 58' R.C. Extend - 180' L.T. Const. Paved End Slope Lt. & Rt. - 624 Sq. Ft. Tr. Exc. - 220' C.Y. (See Drg. No. 2123)</p> <p>20 Sta. "WW" 56+50 Const. Type "G-2" Inlet - 2 Inst. 12" Sew. Pipe - 228' Inst. Slip Joint Inst. Cleanout Gate Inst. Slope Anchors Const. Paved End Slope, Rt. - 23 Sq. Ft. Under Pmt. - 129' Tr. Exc. - 85' C.Y. (For Details, See Sht. 2B)</p> <p>21 Sta. 57+50 Const. Type "G-2" Inlet - 2 Inst. 12" Sew. Pipe - 176' Under Pmt. - 153' Tr. Exc. - 60' C.Y.</p> <p>22 Sta. "WW" 58+70 Const. Type "G-2" Inlet - 2 Inst. 12" Sew. Pipe - 32' Tr. Exc. - 20' C.Y.</p>	<p>23 Sta. "WW" 66+40, Rt. Const. Type "G-2" Inlet - 2 Inst. 12" Sew. Pipe - 130' Inst. Slip Joint Inst. Cleanout Gate Inst. Slope Anchors Const. Paved End Slope, Rt. - 23 Sq. Ft. Under Pmt. - 28' Tr. Exc. - 45' C.Y. (For Details, See Sht. 2B)</p> <p>24 Sta. "NE" 232+00 Inst. 24" Curb Pipe - 200' Const. Paved End Slope Lt. & Rt. - 76 Sq. Ft. Tr. Exc. - 120' C.Y.</p> <p>25 Const. Ditch Dr. Exc. - 800' C.Y. (For Details, See Sht. 2B-4 & 2D)</p> <p>26 Sta. "WW" 61+50 Inst. 24" Curb Pipe - 220' Const. Paved End Slope Lt. & Rt. - 76 Sq. Ft. Under Pmt. - 30' Tr. Exc. - 165' C.Y.</p> <p>27 Sta. "WW" 64+35 Inst. 24" Curb Pipe - 210' Const. Paved End Slope Lt. & Rt. - 76 Sq. Ft. Under Pmt. - 30' Tr. Exc. - 155' C.Y.</p> <p>28 Sta. "SE" 235+00 Inst. 24" Curb Pipe - 200' Const. Paved End Slope Lt. & Rt. - 76 Sq. Ft. Under Pmt. - 30' Tr. Exc. - 120' C.Y.</p> <p>29 Sta. "WW" 68+15 Inst. 24" Curb Pipe - 200' Const. Paved End Slope Lt. & Rt. - 76 Sq. Ft. Under Pmt. - 29' Tr. Exc. - 120' C.Y.</p> <p>30 See Sht. 9A, Note 22 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor (Type 1 Mod.)</p> <p>31 See Sht. 9A, Note 23 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor (Type 1 Mod.)</p>	<p>32 Sta. "WW" 67+00 To Sta. "WW" 72+50, Lt. Const. Guard Rail - 550' (Type 2A) Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C) Const. Anchor - 2 (Type 1 Mod.)</p> <p>33 Sta. "WW" 67+00 To Sta. "WW" 71+50, Rt. Const. Guard Rail - 450' (Type 2A) Flare Rate=0, W=0, E=0 Const. Anchor (Type 1) Inst. End Piece (Type C)</p> <p>34 Inst. 12" Sew. Pipe - 68' Tr. Exc. - 20' C.Y.</p>
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THIS IS THE FILENAME LOCATION ***** DD-MMM-YYYY HH:MM USERNAME

<p>OREGON DEPARTMENT OF TRANSPORTATION ROADWAY ENGINEERING SECTION</p>	
<p>PROJECT NO. _____ PROJECT HIGHWAY _____ PROJECT COUNTY _____</p>	
<p>Design Team Leader - _____ Designed By - _____ Checked By - _____</p>	
<p>CONSTRUCTION NOTES</p>	<p>SHEET NO. 10A</p>

Do not add note lines below the last tic

For guardrail and mailbox installation construction note examples, see Figures 9-19 through 9-21

9.0 Construction Plan & Profile and Construction Notes

9.2.7 Construction Notes (Cont'd)

The standard order of construction note composition is:

Sta. 00+00, Lt. or Rt.
 Sta. 00+00 To Sta. 00+00, Lt. or Rt.
 Const. Appr.
 Const. Street (Road) Conn.
 Remove (Abandon) Manhole
 Const. (Reconst., Adjust) Manhole
 Remove (Abandon) Inlet
 Adjust (Cap) Inlet
 Const. Type "G-2" Mod. Inlet
 Const. Precast Sump 10' Deep
 Remove Pipe
 30" Culv. Pipe - 38' (In Pl.)
 Remove End Sec. Lt. or Rt.
 Remove - 15' Lt. or Rt.
 Extend - 10' Lt. or Rt., 5' Depth
 Inst. 12" Sew. Pipe - 146'
 5' Depth
 Inst. 12" Sew. Pipe - 146'
 Inst. 5' Depth Lateral Sec. With Cleanout Gate
 Inst. 3 Piece 20° Elbow - 2
 Inst. Slip Joint
 Inst. Slope Anchor
 Const. Subgrade Cutoff Drain
 Const. Drainage Curb
 Const. Paved End Slope Lt. or Rt.
 Const. Loose Riprap (Class 50) - 90 Cu. Yd.
 Class 3300 -1.5 Conc. - 2.5 Cu.Yd.
 Reinf. - 350 K
 Drainage Geotextile, Type "?" - 65 Sq. Yd.
 Filter Blanket - 25 Cu.Yd.
 Gravel Drain Matl. - 16 Cu. Yd. Resurf.
 Tr. Resurf. - 35 S.Y.
 or
 Trench Resurf. - 35 S.Y.
 Trench - 75 Sq. Yd.
 Granular Backfill or Bedding Matl. - 30 Cu. Yd.
 Gen. Exc. - 30 Cu.Yd.
 Tr. Exc. - 50 Cu.Yd.
 Dt. Exc. - 24 Cu.Yd.
 Toe Tr. Exc. - 18 Cu.Yd.
 Const. Type CL-6 Fence
 (For Details, See Sht. xx)
 (For Drg. Nos., See Sht. 1)
 (Earthwork Incl. in Main Rdwy. Distr.)

Tip

As the line items shown here are only a partial list of those possible, the designer is allowed to decide proper order of note composition using this list as a guide. It is also suggested that the examples in Volume 2 be used in deciding note composition, in order to maintain some consistency on ODOT projects.

Note: For guardrail and mailbox installation construction note examples, see Figures 9-19 through 9-21.

9.0 Construction Plan & Profile and Construction Notes

9.2.8 Profiles

The vertical alignment of a roadway is the progression of elevations, typically along the construction centerline. The existing ground profile line (ground line) is shown as well as the profile of the proposed vertical construction centerline alignment on a profile grid. Also shown, within the profile grid, is the depth of the new construction, the location of existing subsurface features, and any new proposed subsurface features such as sewer pipes, drain pipes, manholes and inlets. The profile grid is either just below the plan on the same sheet or displayed separately on a full profile sheet. See Figure 9-31.

Note: For profile examples, see Section 9, Volume 2.

To begin development of the profiles, Steps 1 - 4 in Section 9.2.1, Sheet Setup, should be followed before continuing on to the next steps, shown here. If the profile is being added to a plan-profile sheet, you will need to continue developing the plan portion of the sheets with Steps 5-10 in Section 9.2.1, Sheet Setup, before continuing with this section. If you are developing a full profile sheet, continue with the following steps.

Step 5 — Add Sheet Number

Within your *active file*, add the sheet number in the title block. See Figure 9-3. This text can be found in the “Cache” (PLANSV8.DGN) and copied and edited. Turn the correct levels on or off to display the required profile grid.

Step 6 — Create Clip Boundaries

Copy the seed file, SEED2D.DGN, to a new file using the appropriate file naming convention. This file will be your clip boundaries reference file to be used in the creation of the profiles. Open the new clip boundaries file and create sheet boundaries using multisided shapes that fit your sheet breakout and scale. Normally, at 1”=50’ scale, this would be 1200 feet per single plan sheet. The station limits need to match the related plan station limits. On a plan-profile sheet, the profile should be aligned directly under the plan, by station.

Note: For file naming conventions, see Section 2.5, Volume 1.

Step 7 — Attach Clip Boundaries

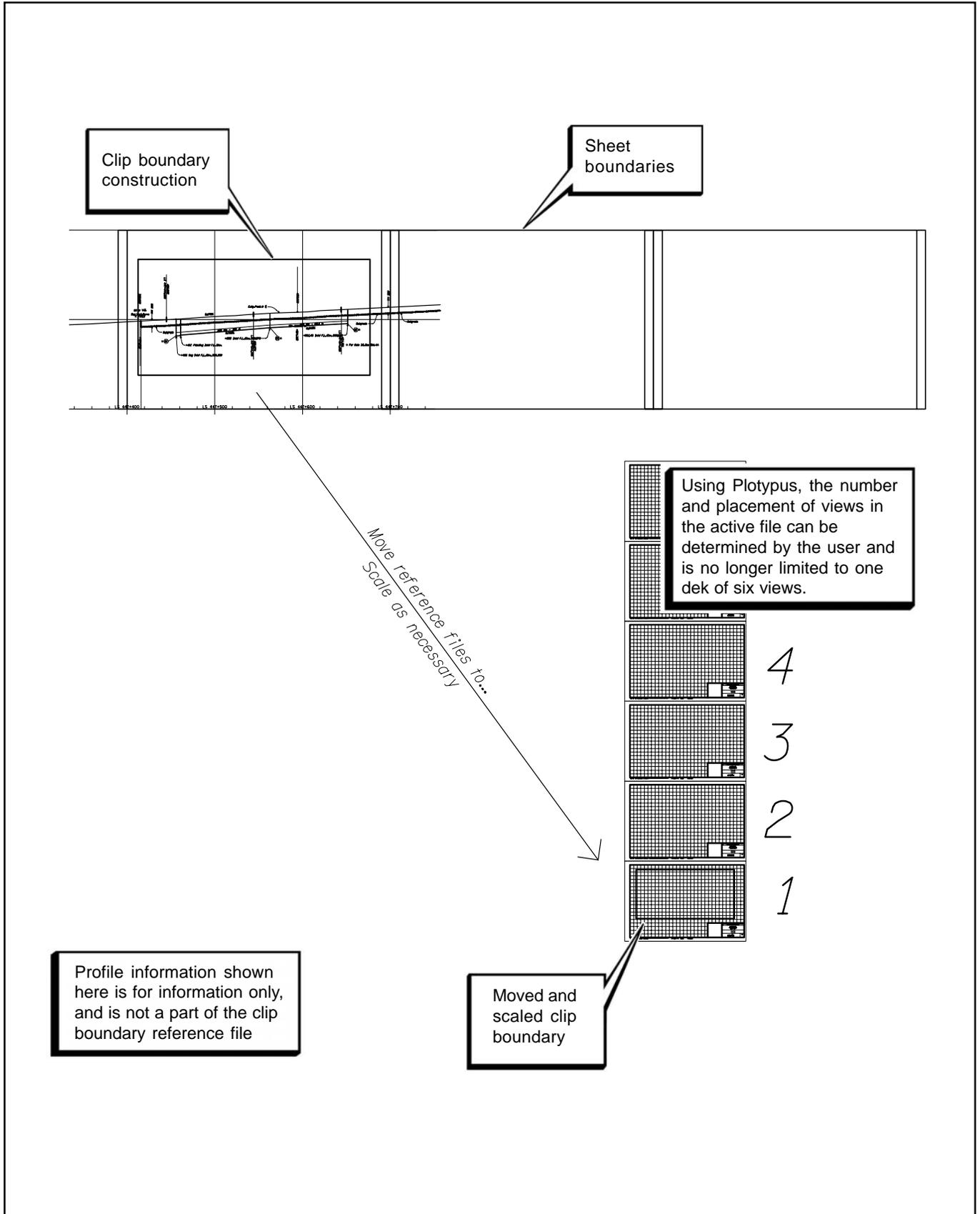
Open the *active file* and attach the clip boundaries file you created in the previous step. Scale and move the clip boundaries reference file so it fits properly within the borders of the first open plan-profile or profile sheet. Place a fence on the clip boundary shape you wish to show and clip the reference file objects. See Figure 9-29. Keep a record of the “move from” and “move to” points and the scale as you will need this information for the profile base reference file.

Note: For information on creating clip boundaries, See Section 2.8, Volume 1.

The horizontal scale of profile sheets is set by Plotypus. The vertical scale is a ratio of 10 to 1 with the horizontal scale. For every 10 feet measured horizontally, the vertical distance is 1 foot.

9.0 Construction Plan & Profile and Construction Notes

Figure 9-29 Attach and Modify Reference Files



9.0 Construction Plan & Profile and Construction Notes

9.2.8 Profiles (Cont'd)

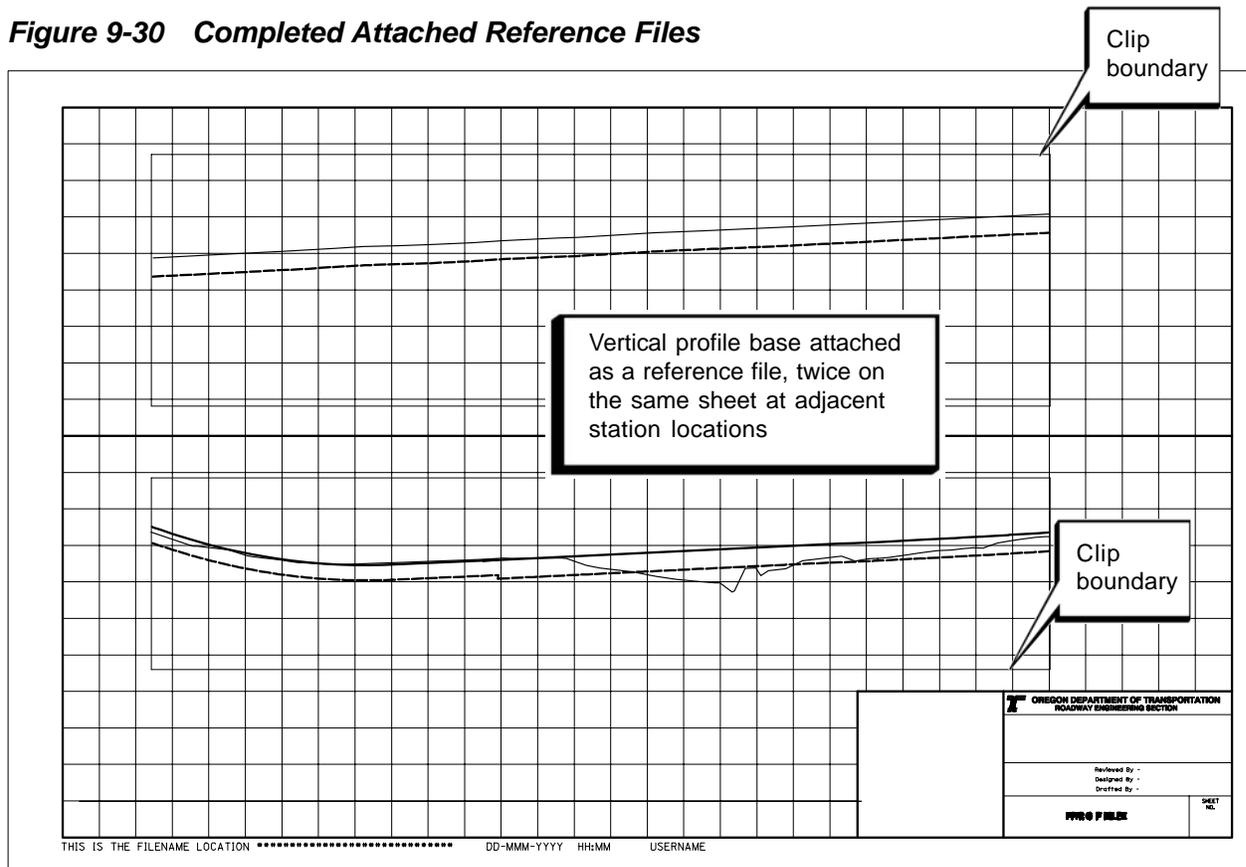
Step 8 — Attach Profile Base

Attach the appropriate vertical profile base, “KEYNUF.PRO”, as a reference file. Figure 9-30 represents a profile sheet with the vertical profile reference file attached correctly. Manipulate this file to the same parameters (move, scale, and clip boundary) that you used for the clip boundary file. Two profile “runs” are typical on full profile sheets, which requires an additional attachment of the profile base.

Step 9 — Add Items

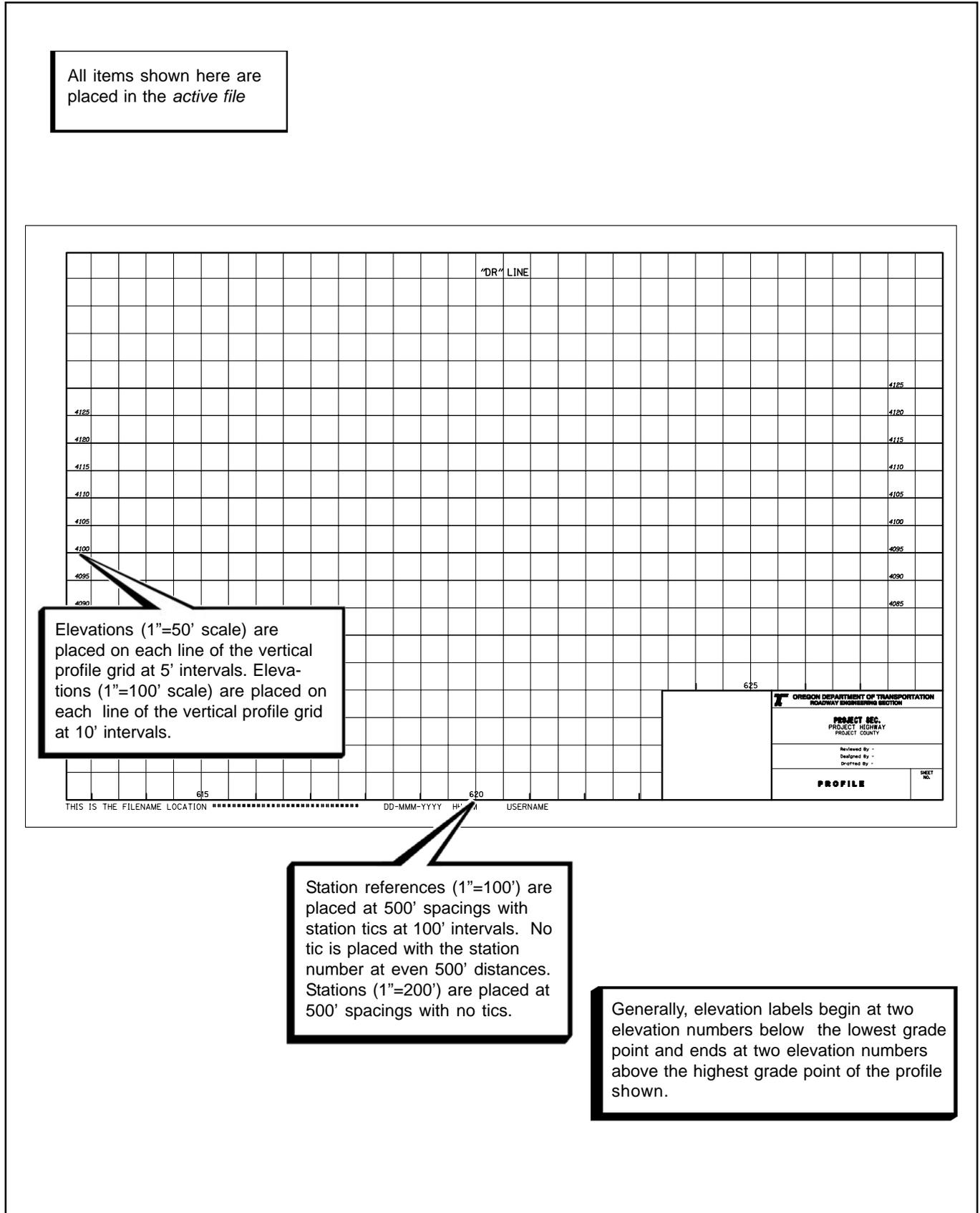
Add text and other project specific items as necessary to the *active file* or the profile base file. Generally, the items in Figures 9-31 and 9-38 are the only ones added to the *active file*. See the following Figures 9- 38 for information regarding specific items shown on the profiles. See the check list at the end of this section for a list of typically required items.

Figure 9-30 Completed Attached Reference Files



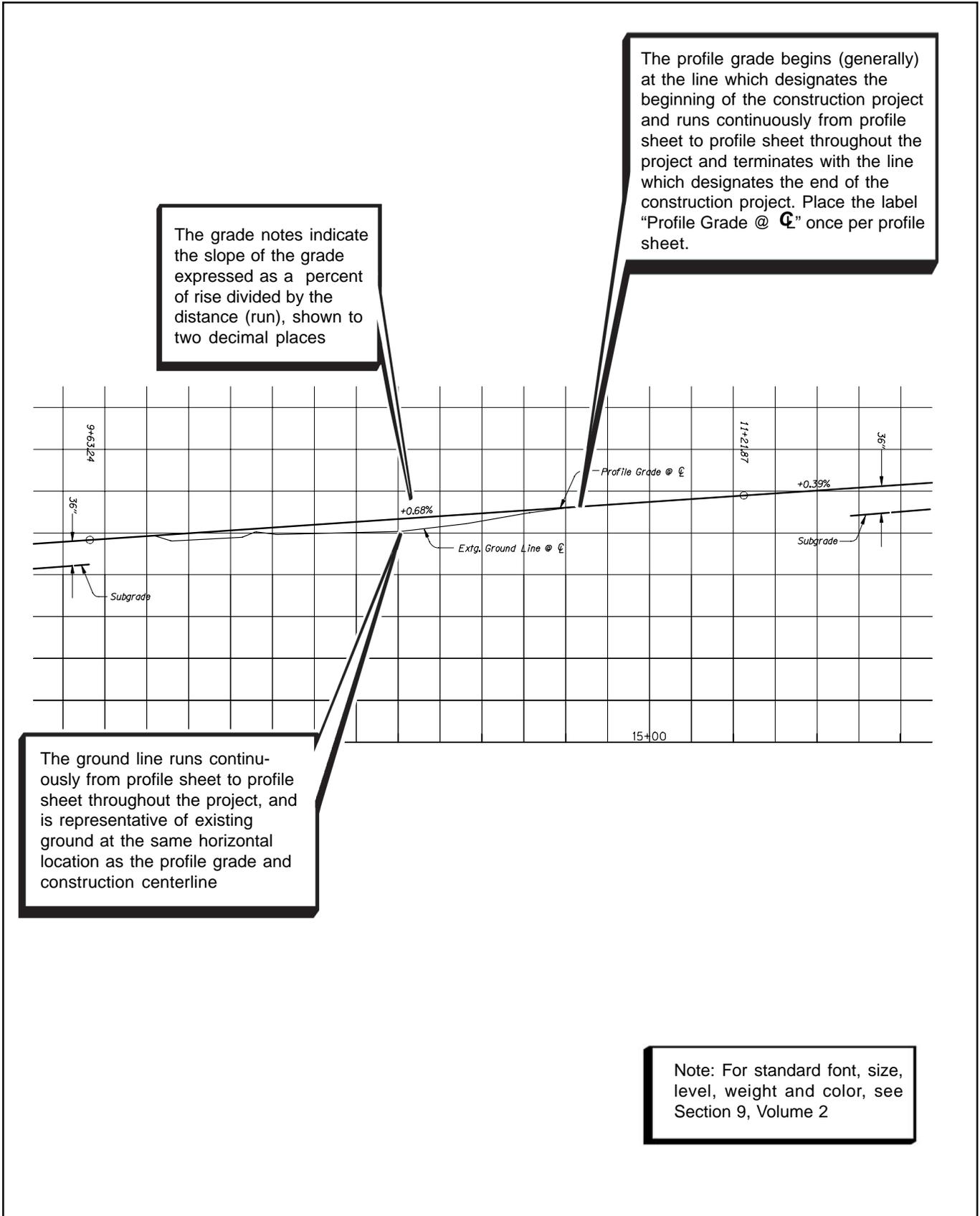
9.0 Construction Plan & Profile and Construction Notes

Figure 9-31 Basic Profile Sheet Item Placement



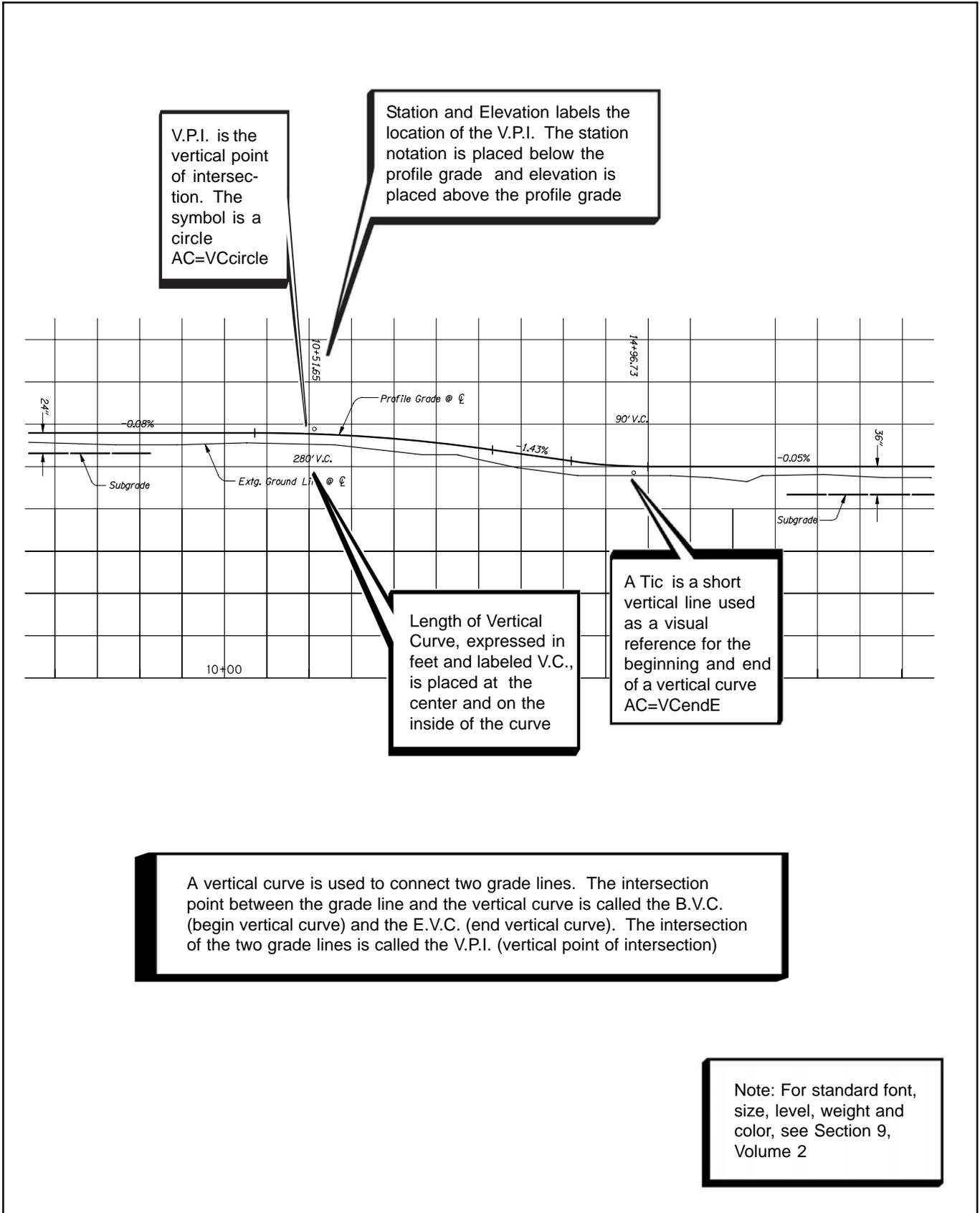
9.0 Construction Plan & Profile and Construction Notes

Figure 9-32 Vertical Alignment Item Placement



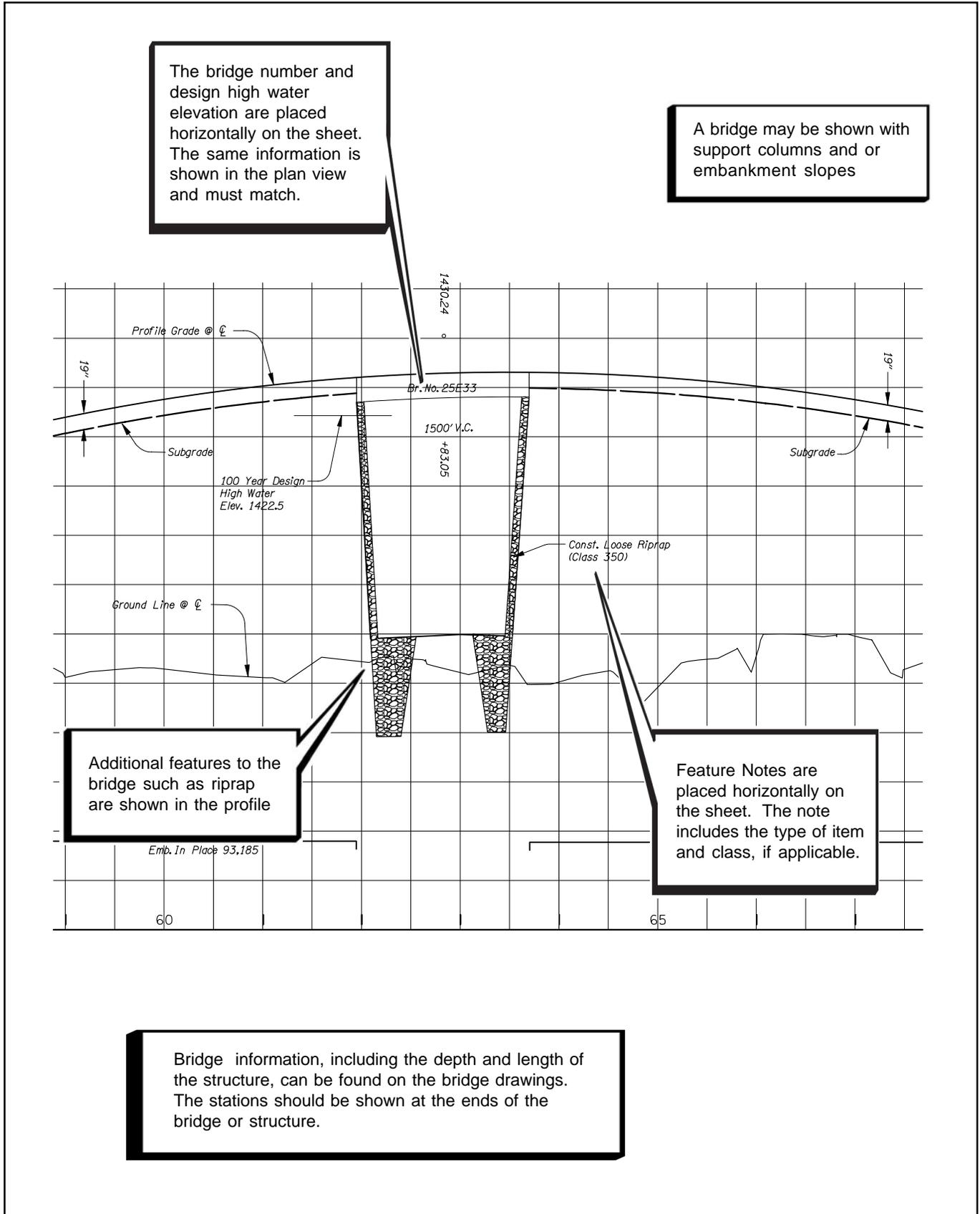
9.0 Construction Plan & Profile and Construction Notes

Figure 9-33 Vertical Curves and Data Item Placement



9.0 Construction Plan & Profile and Construction Notes

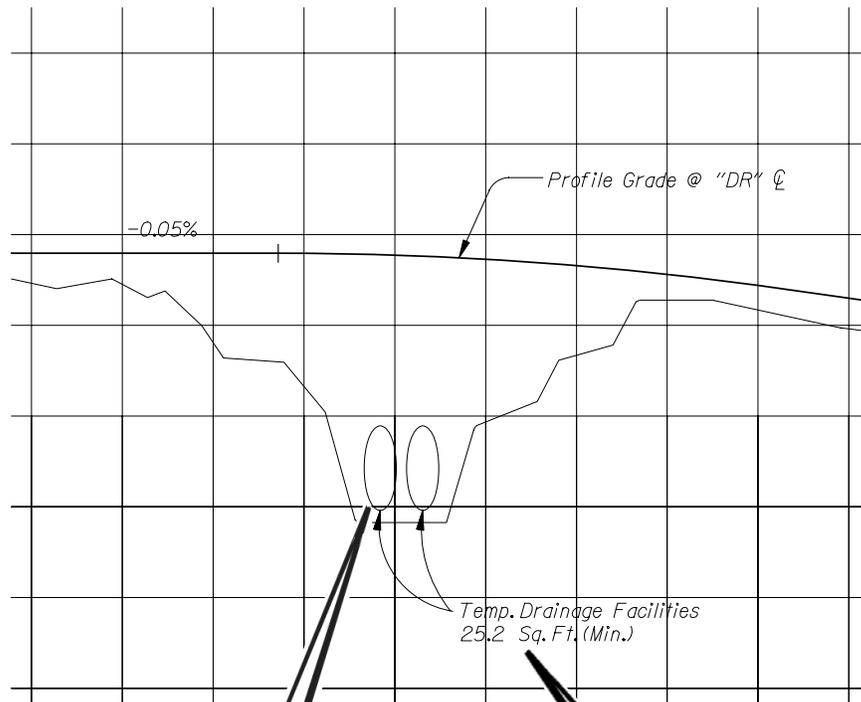
Figure 9- 34 Structures Item Placement



9.0 Construction Plan & Profile and Construction Notes

Figure 9-35 Box Culverts and Drainage Facilities

Note: For standard font, size, level, weight and color, see Section 9, Volume 2



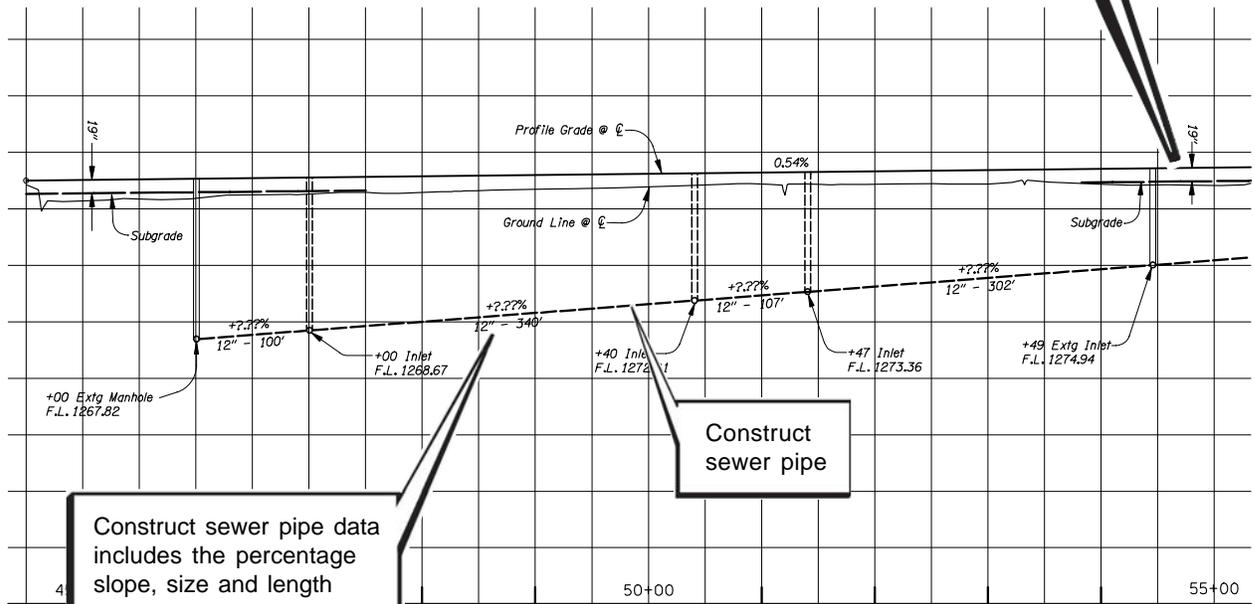
Reinforced Concrete Box Culvert, Drainage Facilities, etc.: As these features are generally at an angle, usually perpendicular to the roadway profile grade, a cross section of the box culvert or drainage facility is shown, at an exaggerated vertical scale

The drainage feature or structure note is placed horizontally on the sheet. The note includes the structure type and size

9.0 Construction Plan & Profile and Construction Notes

Figure 9-36 Sub-Surface Features

The subgrade is measured from the profile grade line to the bottom of the subgrade. The dimension and label are placed twice on each profile sheet, once at the beginning of the profile run and again at the end of the profile run. The depth should be shown in inches read ahead on line. If the area is short in total length only one label on one profile sheet is required.



Construct sewer pipe data includes the percentage slope, size and length

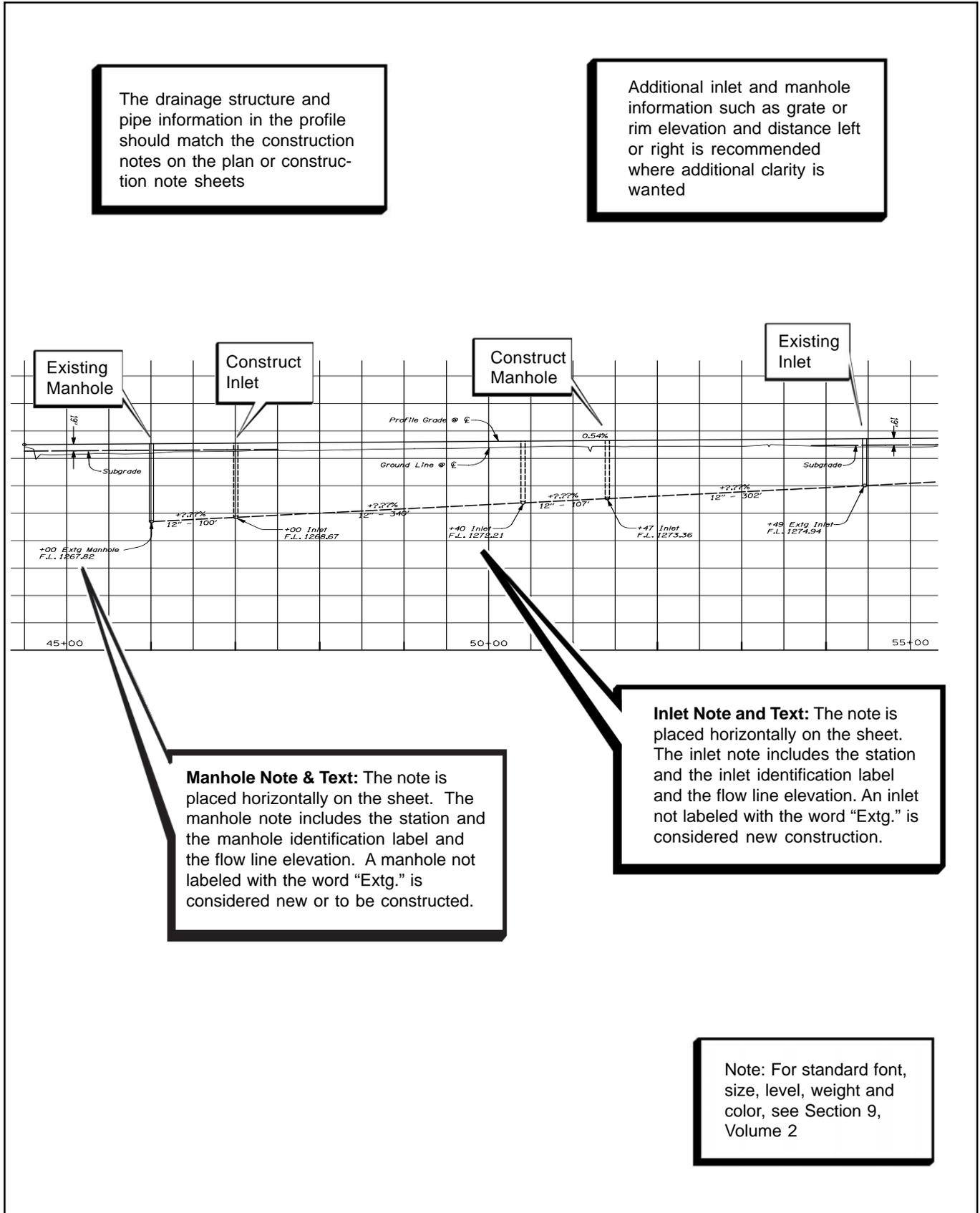
Construct sewer pipe

Other common sub-surface features not shown here are: Existing sewer and drain pipes, construct drain pipe and existing and construct ditch lines. All of these items can be accessed through the *ODOT Menu - FD Plans - Profiles*.

Note: For standard font, size, level, weight and color, see Section 9, Volume 2

9.0 Construction Plan & Profile and Construction Notes

Figure 9-37 Manholes and Inlets Item Placement



9.0 Construction Plan & Profile and Construction Notes

9.3 Coordination With Specifications & Special Provisions

The section numbers that correspond with the Construction plans, located in the *Standard Specifications for Highway Construction, ODOT*, can be located in various parts and may include the following sections:

Note: For additional information on special provisions, see Section 16, Volume 1.

9.3.1 Alignment

Section 00170 -- Legal Relations and Responsibilities

9.3.2 General Construction

Section 01030 - Seeding

Section 01050 - Fences

Section 01070 - Mailbox Supports

Section 02820 - Metal Guardrail

Section 03010 - Fencing Materials

9.3.3 Drainage and Utilities

Section 00240 - Temporary Drainage Facilities

Section 00405 - Trench Excavation, Bedding and Backfill

Section 00420 - Salvaging Pipe

Section 00430 - Subsurface Drains

Section 00435 - Wick Drains

Section 00440 - Minor Structure Concrete

Section 00445 - Culvert, Siphon, Sewer and Irrigation Pipe

Section 00450 - Structural Plate Pipe, Pipe Arch and Arch

Section 00460 - Paved Culvert End Slopes

Section 00470 - Manholes and Inlets

Section 00475 - Drain Wells

Section 00480 - Drainage Curbs

Section 00490 - Adjustment of Manholes, Inlets, and Boxes

Section 02410 - Concrete and Plastic Pipe

Section 02420 - Metal Pipe

Section 02430 - Structural Plate Pipe

Section 02440 - Joint Materials

Section 02450 - Manholes and Inlets

9.3.4 Removal

Section 00310 -- Removal of Structures and Obstructions

9.3.5 Profiles

Section 00330 - Earthwork

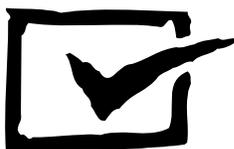
9.0 Construction Plan & Profile and Construction Notes

9.4 Checklist

The roadway construction plan, profile and construction note sheets that are included in the contract plan documents should show any or all of the following:

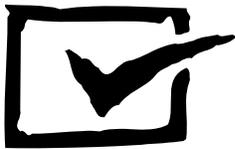
“Combined” Construction Plan Sheet

- Sheet number and “V” number
- North arrow
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Section, township, and range location and city or interchange (if applicable)
- Roadway construction centerlines with centerline names
- Centerline stations
- Centerline curve data and tangent bearings
- Flagged control points
- Station equations
- Centerline match lines when necessary
- Construction notes and note bubbles
- Right-of-way, access control, and easement lines
- Existing topography, drainage, and utilities
- Begin project and end of project notations
- New edge of pavement, curbs, medians, and sidewalk
- Offset dimensions at right-of-way line angle points
- New travel lanes, dimensions and tapers
- New approaches and street/road connections and information
- New guardrail and flares
- New mailboxes
- New structures (bridges, box culverts, and walls)
- New fences
- New culverts and pipes
- New manholes and inlets
- New utilities
- Removal symbology and legend
- Text read from bottom left (readable as traveling upstation along the centerline stationing)



9.0 Construction Plan & Profile and Construction Notes

9.4 Checklist (Cont'd)

Alignment Plan Sheet

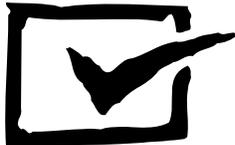
- Sheet title, sheet number and "V" number
- North arrow
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Section, township, and range location and city or interchange (if applicable)
- Roadway construction centerlines with centerline names
- Centerline stations
- Centerline curve data and tangent bearings
- Flagged control points
- Station equations
- Centerline match lines when necessary
- Right-of-way, access control, and easement lines
- Existing topography
- Begin and end of project notation
- New edge of pavement, curbs, medians, and sidewalk
- Offset dimensions at right-of-way line angle points
- New approaches and street/road connections
- New structures (bridges, box culverts, and walls)
- New fences
- Text read from bottom left (readable as traveling upstation along the centerline stationing)

9.0 Construction Plan & Profile and Construction Notes

9.4 Checklist (Cont'd)

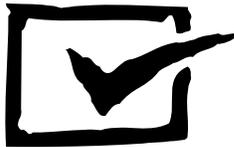
General Construction Plan Sheet

- Sheet title, sheet number and "V" number
- North arrow
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Section, township, and range location and city or interchange (if applicable)
- Roadway construction centerlines with centerline names
- Centerline stations
- Station equations
- Centerline match lines when necessary
- Construction notes and note bubbles
- Right-of-way, access control, and easement lines
- Existing Topography
- Begin and end of project notation
- New edge of pavement, curbs, medians, and sidewalk
- New travel lanes, dimensions and tapers
- New approaches and street/road connections and information
- New guardrail and flares
- New mailboxes
- New structures (bridges, box culverts, and walls)
- New fences
- Text read from bottom left (readable as traveling upstation along the centerline stationing)



9.0 Construction Plan & Profile and Construction Notes

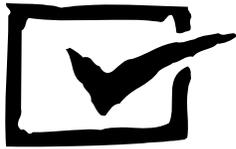
9.4 Checklist (Cont'd)

Drainage and Utilities Plan Sheet

- Sheet title, sheet number and "V" number
- North arrow
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Section, township, and range location and city or interchange (if applicable)
- Roadway construction centerlines with centerline names
- Centerline stations
- Station equations
- Centerline match lines when necessary
- Construction notes and note bubbles
- Right-of-way, access control, and easement lines
- Existing Topography, drainage, and utilities
- Begin and end of project notation
- New edge of pavement, curbs, medians, and sidewalk
- New Approaches and Street/Road Connections
- New structures (bridges, box culverts, and walls)
- New culverts and pipes
- New manholes and inlets
- New utilities
- Drainage removal symbology and legend
- Text read from bottom left (readable as traveling upstation along the centerline stationing)

9.0 Construction Plan & Profile and Construction Notes

9.4 Checklist (Cont'd)

Removal Plan Sheet

- Sheet title, sheet number and "V" number
- North arrow
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Section, township, and range location and city or interchange (if applicable)
- Roadway construction centerlines with centerline names
- Centerline stations
- Station equations
- Centerline match lines when necessary
- Construction notes and note bubbles
- Right-of-way, access control, and easement lines
- Existing topography
- Begin and end of project notation
- Removal symbology and legend
- Text read from bottom left (readable as traveling upstation along the centerline stationing)

9.0 Construction Plan & Profile and Construction Notes

9.4 Checklist (Cont'd)

Construction Note Sheet

- Sheet number and "V" number
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Construction notes and note bubbles

Profiles

- Sheet number and "V" number
- Standard ODOT English borders and title block
- Project title
- CAD file name and path
- Sheet titles (alignment name)
- Stations and elevations
- Existing ground line
- Profile grade and vertical alignment data
- Station equations
- Subgrade and dimensions
- Existing drainage pipes
- New drainage pipes
- Existing manholes and inlets
- Begin and end of project notation
- New manholes and inlets
- Design High Water Elevation
- New structures (bridges, box culverts)
- Earthwork Brackets
- Text read from bottom left (readable as traveling upstation along the centerline stationing)

