

12.0 Roadside Development

Reference

For additional information, refer to the Roadside Development Design manual at <ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Environmental/Procedural Manuals/Roadside Development/Roadside Development Design Manual.pdf>

12.1 Control

The contract documents for Roadside Development include: Modernization, Revegetation, Enhancement, and Wetland Mitigation. This work is the responsibility of the ODOT Roadside Development Program located in Salem. This program will assist with the oversight of contracts with professional services consultants (contractors) to provide landscape architecture services.

The purpose of roadside development work is to preserve Public Safety, comply with Legal Statutes, and practice Environmental Stewardship. The roadside facility should help to integrate the roadway facility into the surrounding natural and cultural corridor. Roadside Development work includes mitigation (impact avoidance or minimization), compensation (replacing impacted functions), and enhancement (creation or improvement of a desirable function).

Contract documents are typically prepared for preservation, clearing, grubbing, grading, pedestrian facilities, wetland and water quality facilities, planting, and irrigation designs. Coordination between the Roadway Designer, the Roadside Development Program Coordinator and the Landscape Architect consultant must occur throughout the various phases of project development.

Project information may come from a number of sources, including:

- Project Team Leader – The team leader will provide project budgets, schedules, permit information and general project objectives.
- Regional Environmental Coordinator – The REC will provide direction on specific Class 2 project issues such as: environmental constraints or opportunities, visual resources, neighbor committees, permits etc.
- Roadway Designer – The Roadway Designer, as part of Roadway Engineering is the primary source of base map information for Roadside Development work. Two types of files are developed by other units and used as reference files to Roadway maps. The topographic and existing conditions information, which are developed by the Survey Unit, and the right-of-way base maps that are developed by the Right-of-Way Engineering Unit.

Common Roadway Design information includes:

- Project narrative
- Preliminary roadway alignment and construction strip maps
- Existing terrain surfaces, contours, profiles and cross sections
- Size, general type and location of existing vegetation
- Excavation and embankment limits (slope lines)
- Existing and proposed utility locations

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12.1 Control (Cont'd)

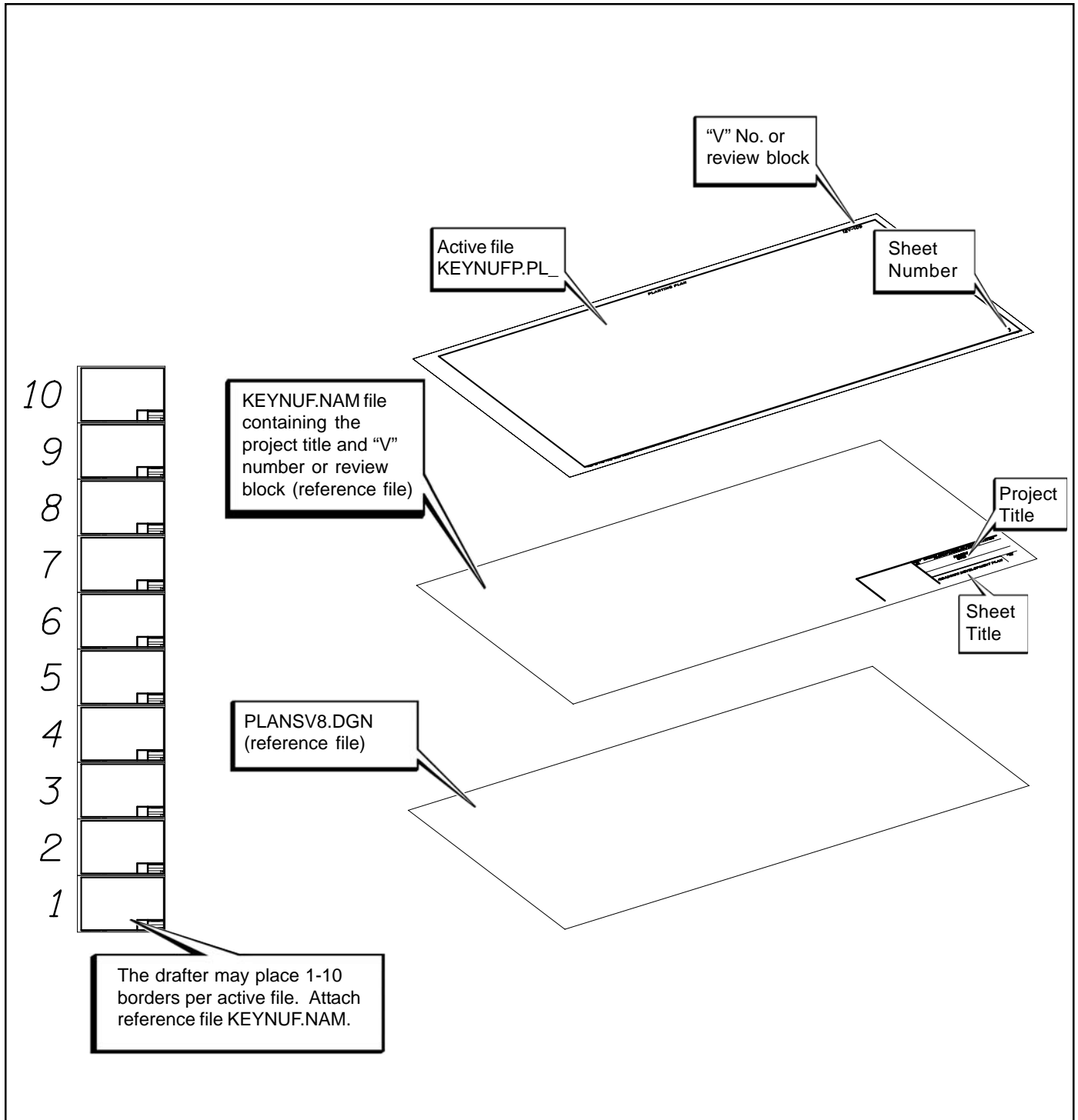
- Existing topsoil depth and location(s)
 - Vehicle Recovery Area (Clear Zone) requirements
 - Preliminary and final right-of-way, including easements
 - Vision clearance (sight lines) requirements for motorists, traffic signs and signals, bicyclists and pedestrians.
- Project Specifications Writer - Is responsible for assembling the drawings for distribution to reviewers at Preliminary Design, Advanced Plans, and Final Plans, Specifications and Estimate (PS&E) milestone submittals. At the Advance and Final PS&E submittals, the distribution includes Specifications and Cost Estimates.
 - Environmental Project Manager - Is responsible for overseeing the consultants development of the Biological Opinions (BO), Biological Assessments (BA), Environmental Impact Statement (EIS) or Environmental Assessment (EA) documents for each project. These documents will produce the following information, which may affect the project roadside development:
 - Draft and final environmental documents
 - Significant environmental mitigation and/or constraints (Wetland Specialists)
 - Types, area coverage and location of existing invasive weeds (Project Biologist may also contribute information)
 - Existing biology and flora including rare or endangered species (Biologists)
 - Cultural or historic artifacts (Cultural Specialists)
 - Stakeholder or community agreements
 - Agency permits and agreements
 - Visual management criteria
 - Wetland delineation impact reports, often with schematic designs (Wetland Specialists)
 - District Maintenance Manager (DM) - Is responsible for roadside maintenance work, including mowing, ditch cleaning, vegetation maintenance, and weed/pest control.
 - District Landscape Crew Supervisor – Is responsible for overseeing the maintenance of the roadside vegetation, irrigation systems, wetlands, water quality facilities, riparian habitat maintenance, and invasive plant control using an Integrated Pest Management program.

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12.1 Control (Cont'd)

- Bridge Engineer - Is responsible for bridge, footing, abutments, large drainage features, retaining structures, and noise walls.

Figure 12-1 Reference Files - Roadside Development



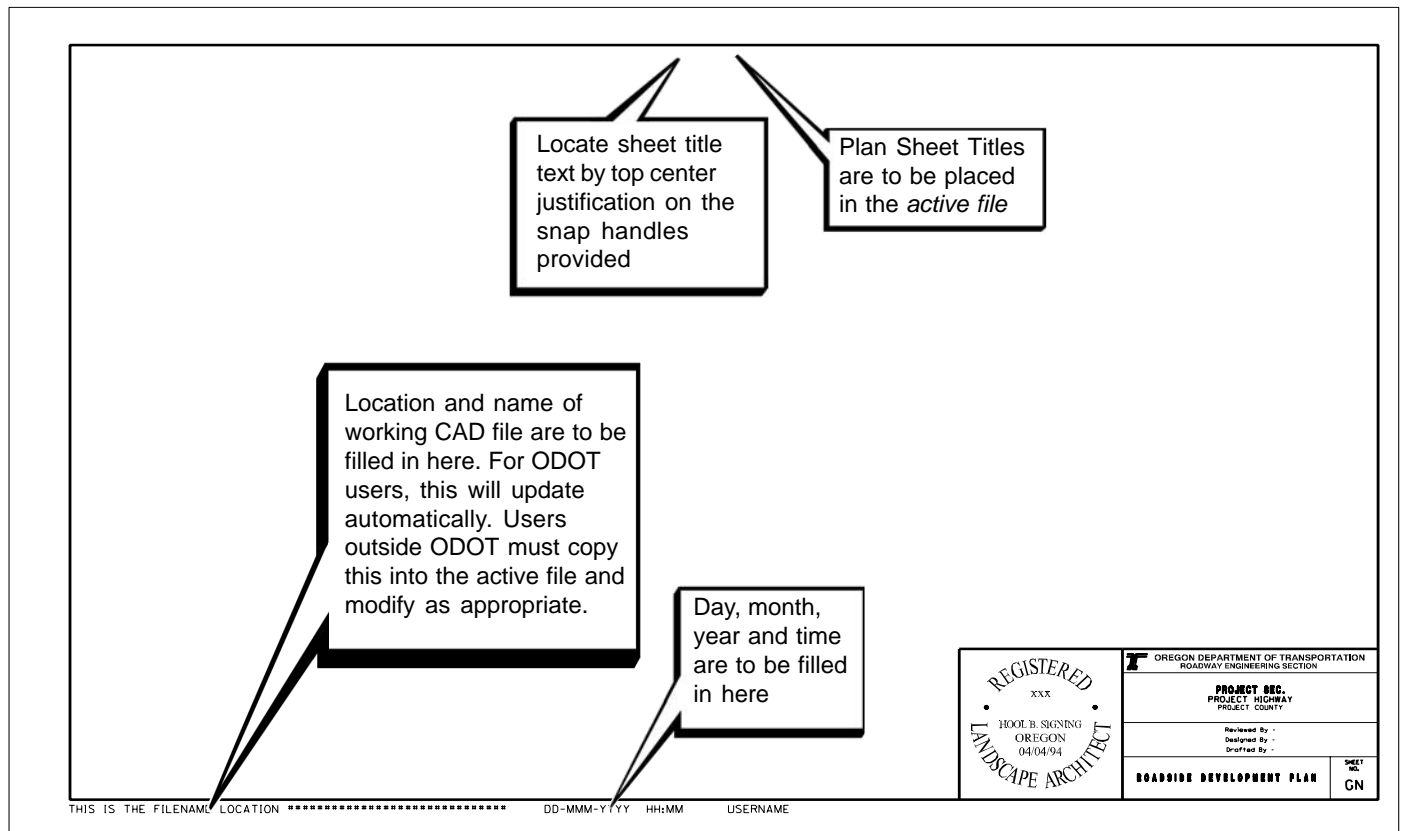
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Tip
 PLAN SHEET TITLES
 are provided in
 Landscape.cel.

12.1 Control (Cont'd)

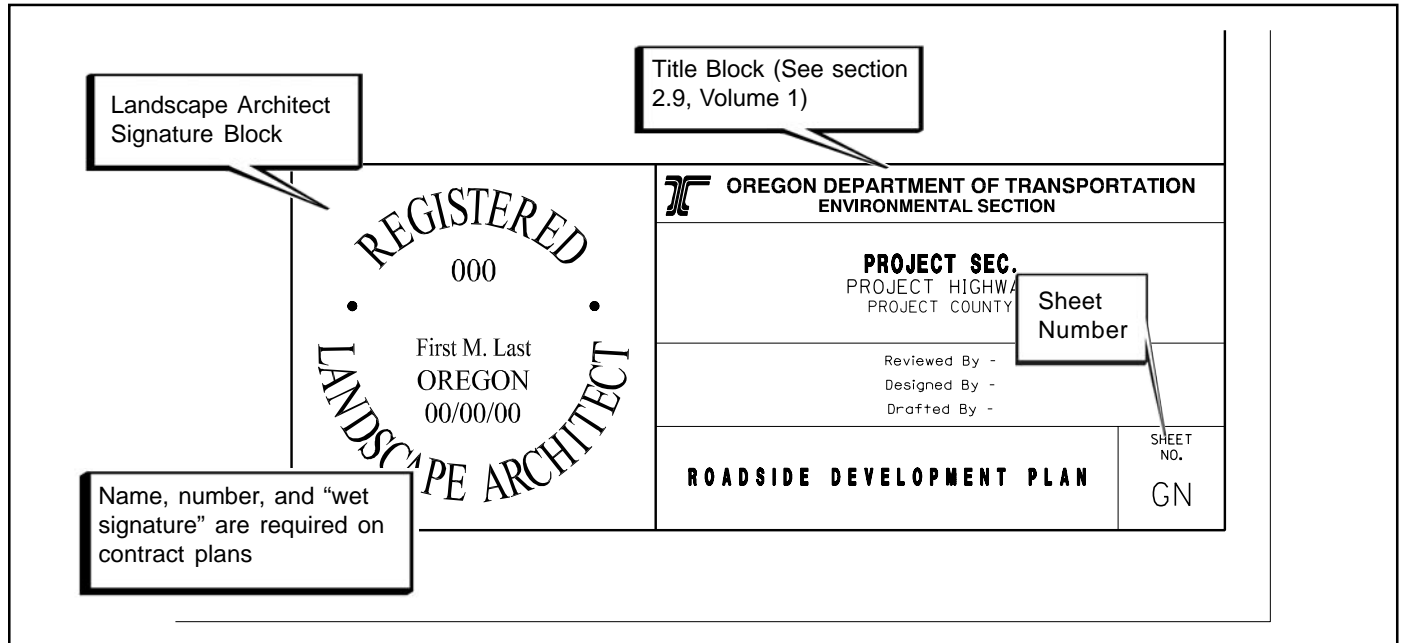
- Region Geologist - Is responsible for routine soil testing for structural purposes. May also assist with the testing of soil samples for horticultural properties.
- Maintenance information
- Geo/Hydro Features Designer - If responsible for temporary and permanent erosion control, it is important to coordinate the following with all others involved in the project design:
 - Design of water quality features including detention facilities, ditches, and water quality swales
 - Seeding and mulching
 - Erosion control features such as matting, riprap, bioengineering and other slope protection devices.

Figure 12-2 Sheet Titles - Roadside Development



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Figure 12-3 Signature Block - Roadside Development



12.1 Control (Cont'd)

- Transportation Inventory/GIS Mapping Unit of the Transportation Data Section can provide aerial photo mosaics
- Roadway section in conjunction with the Scenic Byways and Cultural/Visual Resources Program Coordinators are responsible for visual or scenic considerations.
- Region Permit Specialist/Permits Group/local agency - Is responsible for providing Local, State and Federal code requirements for specific projects.

Roadside Development typical details should be referenced, without modification, for use in the preliminary and final contract plan development. The procedure for retrieving and copying the electronic typical detail files into the roadside development documents is the same as recommended by other design sections.

ODOT may review the Roadside Development plans prepared by consultants as part of the contract plans at preliminary, advance, and final review submittals.

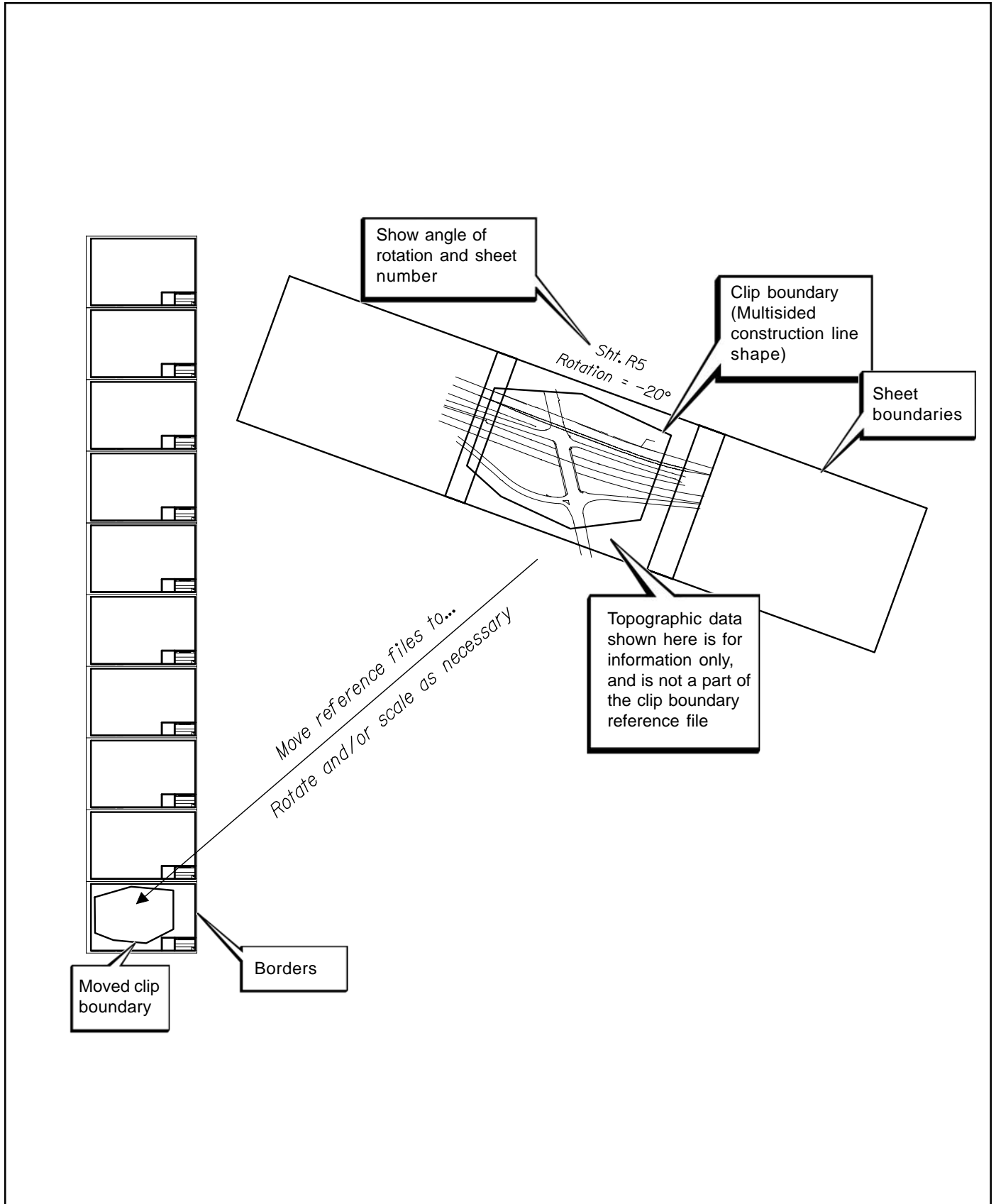
12.2 Development

The Roadside Development documents generally utilize the same drawing conventions as the Roadway Engineering Plans. Some flexibility in graphic symbolism for environmental and roadside development features may be necessary for clarity. Drawings placed within this section may include: site development plans, contour grading plans, planting plans, irrigation plans, and various supporting

*** Note**
 Contour grading may be included in the Roadway section of the contract plans, rather than the Roadside Development section. This will be decided by the Project Engineer.

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Figure 12-4 Attach and Modify Reference Files



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12.2 Development (Cont'd)

details, notes, and legends. If there are no Roadway Engineering Plan sheets created and available to copy and modify, produce plan and detail sheets using the following Steps.

12.2.1 Sheet Setup

Roadside Development sheets include any or all of the plan, detail and note sheets.

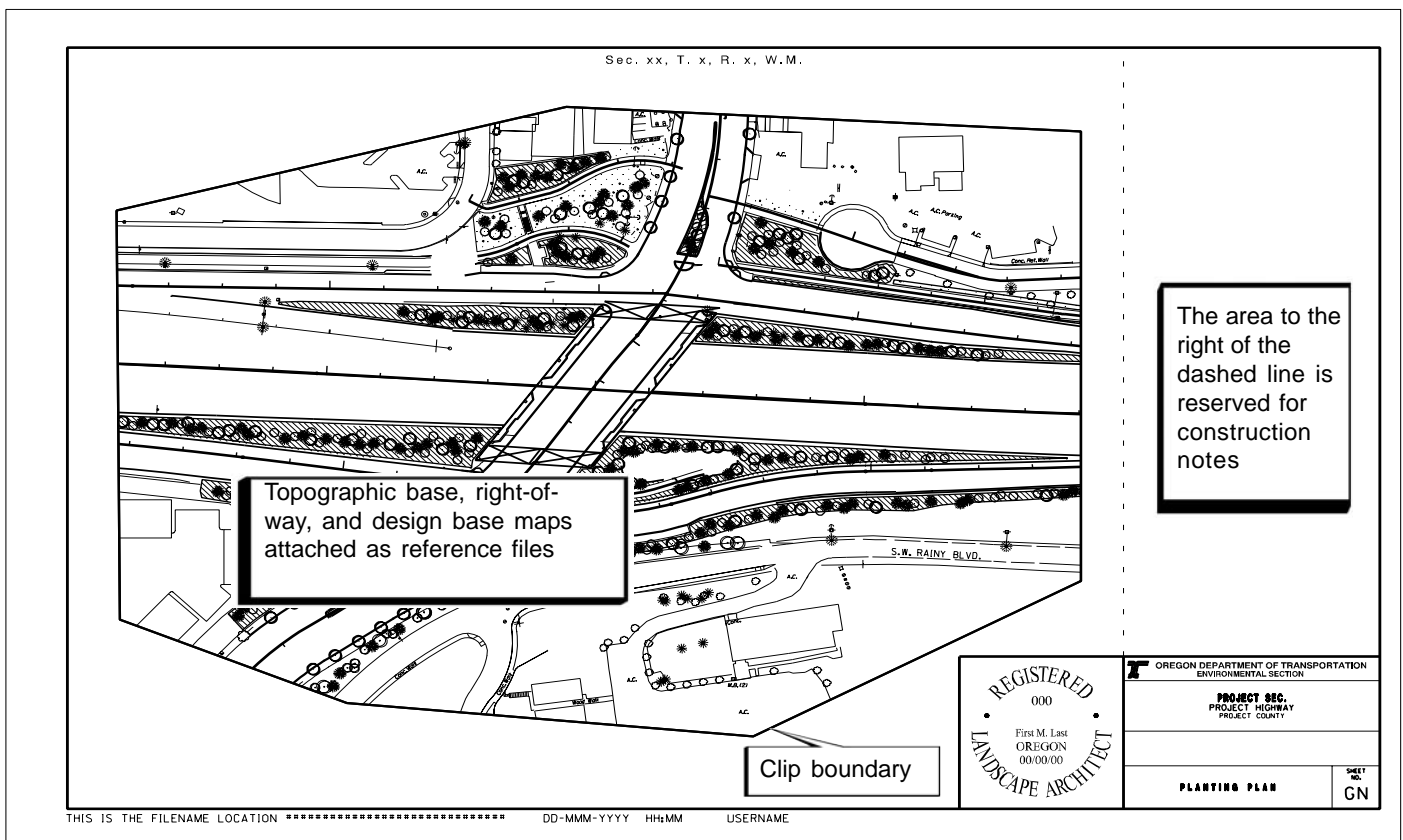
Step 1 — Create an “Active File”

For **Planting Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

Internal ODOT staff http://SCDATA3\ODOT_space\standards\seed
 External <ftp://ftp.odot.state.or.us/isb/apeng/Microstation/Version8/>

and name it KEYNUFP.PL1, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “FP” represents that this

Figure 12-5 Completed Attached Reference Files



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12.2.1 Sheet Setup (Cont'd)

Note: For information on seed files, see Section 2.6, Volume 1.

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

file is part of the final planting plans, and “.GN1” is the appropriate extension for the first file of Plan sheets. This is your **active file**. Subsequent plan sheets should be named “.GN2”, “.GN3,” etc.

For **Irrigation Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

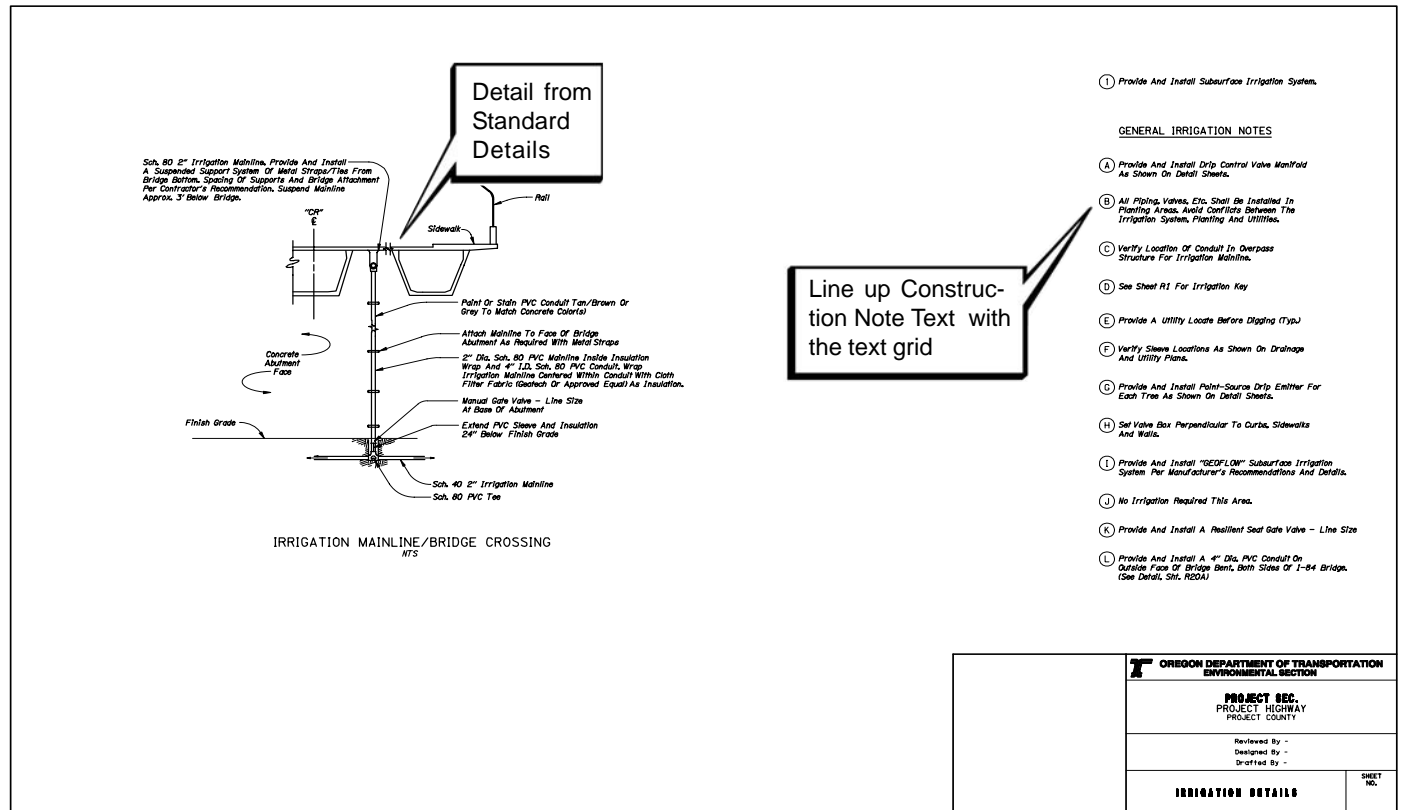
Internal ODOT staff http://SCDATA3\ODOT_space\standards\seed
 External <ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/>

and name it KEYNUIR.GN1, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “IR” represents that this file is part of the irrigation plans.

For **Wetland Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

Internal ODOT staff http://SCDATA3\ODOT_space\standards\seed
 External <ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/>

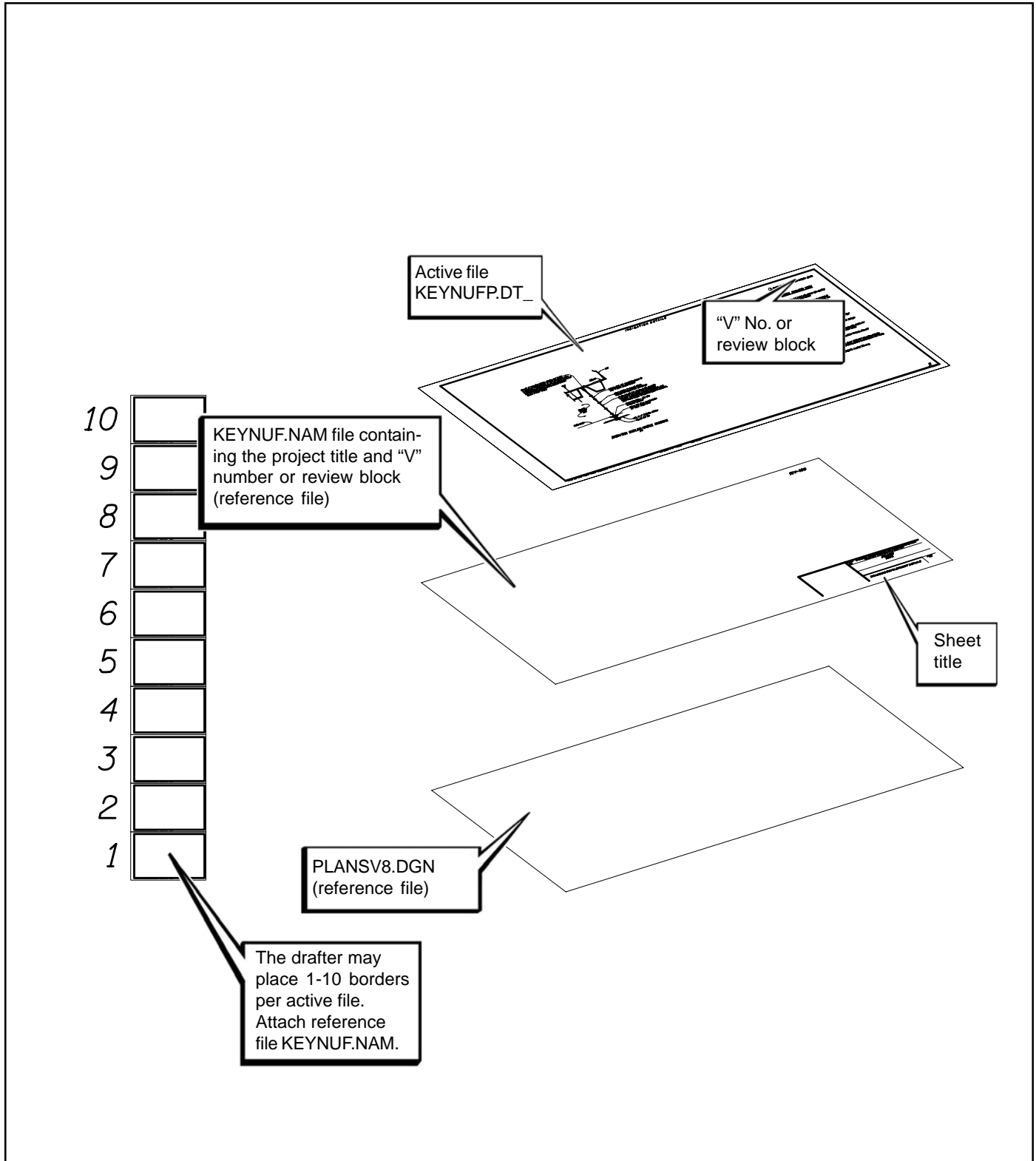
Figure 12-6 Detail and Note Sheet - Roadside Development



THIS IS THE FILENAME LOCATION ***** DD-MMM-YYYY HH:MM USERNAME

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Figure 12-7 Detail and Note Reference Layering - Roadside Development



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12.2.1 Sheet Setup (Cont'd)

and name it KEYNUWET.GN1, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “WET” represents that this file is part of the wetland plans.

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://SCDATA3\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.

Note: For information about title block text, see Section 2.9, Volume 1.

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 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.

Step 5 — Add Sheet Titles and Numbers

While in the *active file*, add the title “ROADSIDE DEVELOPMENT DETAILS” or “ROADSIDE DEVELOPMENT PLAN” in the title block by turning on Level 49 or 50 in the KEYNUF.NAM reference file created in Step 3. See Figure 2-7 for a listing of the sheet titles and the levels on which they can be found.

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12.2.1 Sheet Setup (Cont'd)

The following is a list of acceptable sheet titles:

IRRIGATION DETAILS
PLANTING DETAILS
SITE DEVELOPMENT PLAN
CONTOUR GRADING PLAN
WETLAND MITIGATION DEVELOPMENT PLAN
IRRIGATION PLAN
PLANTING PLAN

While in the *active file*, add the appropriate sheet numbers, snapping to the point provided in the space.

Step 6 — Add the Professional of Record's Stamp

While in the *active file*, add the Professional of Record'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 12-2. For ODOT users, this will update automatically. Users outside ODOT must use an appropriate pen table.

For the majority of projects, Roadway Engineering Plan sheets will already have been created and are available to copy and modify. The plan sheet files will be renamed to Roadside Development naming conventions. Base files will already be attached as reference files. The advantages of this method are that the Roadside Drafter will be able to:

- Begin work on plan sheets that are already set up
- Use Roadway design files as reference files which can be easily updated
- Turn off levels in base files that are not needed
- Maintain selected elements while deleting others on the same level

When Roadside Engineering Plan sheets are available, produce plan sheets using the following procedures.

Step 1 — Download Roadway Engineering files

Download the existing base map, right-of-way, Roadway design files, cross section files, typicals, and all keynuf.pl* files.

Step 2 — Copy and rename Roadway Engineering plan sheet and Titles

Copy and rename keynuf.pl1 to keunufp.GN1, keynuf.pl2 to keunufp.GN2, etc.

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Note: For additional information on special provisions, see Section 17, Volume 1.

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

12.2.1 Sheet Setup (Cont'd)

While in the *active file*, add the title “ROADSIDE DEVELOPMENT DETAILS” or “ROADSIDE DEVELOPMENT PLAN” in the title block by turning on Level 49 or 50 in the KEYNUFNAM reference file created in Step 3. See Figure 2-7 for a listing of the sheet titles and the levels on which they can be found.

Step 3 — Create a new planting, irrigation and wetland design file as needed

For **Planting Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

Internal ODOT staff	http://SCDATA3\ODOT_space\standards\seed
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

and name it KEYNUFP.DGN, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you) and “FP” represents that this file is part of the final planting plans.

For **Irrigation Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

Internal ODOT staff	http://SCDATA3\ODOT_space\standards\seed
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

and name it KEYNUIR.DGN, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “IR” represents that this file is part of the irrigation plans.

For **Wetland Plans**, create a new MicroStation™ file from the seed file named SEED3D.DGN found at:

Internal ODOT staff	http://SCDATA3\ODOT_space\standards\seed
External	ftp://ftp.odot.state.or.us/isb/appeng/Microstation/Version8/

and name it KEYNUWET.DGN, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), “WET” represents that this file is part of the wetland plans.

Step 4 — Attach Reference Files

Attach the Roadway design file, Right-of-Way, and existing topographic file to KEYNUFP.DGN. This allows the drafter to create the planting plan with no-

table features and the pertinent linework viewable as a guide to planting areas.

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Tip

As the project progresses, changes are frequently made to the Roadway design and Right-of-Way files. They often have significant impacts on Roadside Development areas. Attaching updated roadway reference files is the most expedient means of seeing areas that have been impacted.

Tip

There is no overlap on Roadside Development plan sheets.

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

12.2.1 Sheet Setup (Cont'd)

Step 5 — Attach the newly created planting plan design file

Copy the reference file attachment of the Roadway design in each plan sheet and rename it to the KEYNUFP.DGN created in Step 3. (This method utilizes the clip boundaries already in place.)

Step 6 — Adjust clipping boundaries

Roadway Design plan sheets overlap at each end of the sheet. Adjust the clipping boundaries on each Roadside Development plan sheet so that there is NO overlap.

12.2.2 Plan Sheet

Production of plan sheets includes site development, contour grading, planting, irrigation, wetland contour grading, and wetland planting. Creation of each of these types of plan sheets involves the same general procedures as follows:

Step 8 — Existing Base Map Modifications

Once the survey base has been finalized, copy and rename it to KEYNURDE.DGN, where “KEYNU” represents your project key number assigned by ODOT (to be filled in by you), and “RDE” represents that this file is the existing features map used in the Roadside Development plan set. Delete affected features that are within the proposed construction area such as embankments or cut areas, curb lines or new edge of pavement. Drawing should appear as though the roadway portion of the project has been completed. For example, remove existing vegetation, utility poles, fences, buildings and existing pavement, etc. that will be removed or relocated due to roadway construction.

Step 9 — Rename Reference File Attachments

In each of the Roadside Development plan sheets, rename the existing base map file name to KEYNURDE.DGN file created and modified in Step 8.

Step 10 — Add Design Features

Landscape design features should be added to the design base reference file at this time. See Figure 12-5. Construction note bubbles and associated text are placed on the .GN* series sheets as shown in Figure 12-6. See the checklist at the end of this section for a complete listing of required and suggested items.

12.2.3 Detail and Note Sheets

Production of detail and note sheets include: planting details, planting notes, irrigation details, irrigation notes, planting log, symbol key, irrigation zone chart,

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12.2.3 Detail and Note Sheets (Cont'd)

wetland typical sections, and wetland details. Building on steps 1 through 7, creation of each of these types of detail sheets involves the same general procedure as follows:

Step 10 — Add Items

Now that your *active file* is set up with plan sheet borders and titles as appropriate, you can import or create any project-specific detail information in this file, following the standards for element symbology as presented in Section 2 of Volume 1. See Figures 12-6 and 12-7.

- keynufp.dt1 designates a planting detail sheet including details, logs and tables
- keynuir.dt1 designates an irrigation detail sheet including details, logs and tables
- keynuwet.dt1 designates a wetland detail sheet including details, logs and tables

Following is a list of Roadside Development Details available at:

http://egov.oregon.gov/ODOT/HWY/ENGSERVICES/standard_details.shtml

12.2.4 General Information

Cell Library

The cell library used by the Landscape Architecture (Roadside Development) Program for specialized symbols such as trees, shrubs and irrigation symbols, is currently under development.

Text

Use the same fonts and sizes for the roadside development plans that are used for the rest of the road construction contract plan set. Using ODOT standard text fonts and sizes helps maintain visual consistency throughout the project plans.

Sheet Order and Numbering

All sheets within the Roadside Development section are to be numbered independently of the roadway or other plans. For the sheet numbering in the lower right corner of the title block, use an “GN” (i.e. GN1, GN2, GN3, et cetera). Planting and irrigation sheets for the same areas may be adjacent in the contract document set if so desired.

Note: For examples of Roadside Development details, see Section 12, Volume 2.

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12.2.4 General Information (Cont'd)

The order of roadside development plan sheets within a roadway contract plan set is as follows:

A. Details:

1. Bid Item Log
2. Plant List
3. Irrigation Details
4. Planting Details
5. Miscellaneous Construction Details
6. (Wetland) Mitigation Details

B. Plans:

1. Site Preservation Plan
2. Site Development Plan
3. Contour Grading Typical Section(s)
4. Contour Grading Plan
5. Wetland Mitigation Development Plan
6. Wetland Mitigation Typical Sections
7. Irrigation Plan
8. Planting Plan

Scale

Produce Roadside Development plans at the same scale as the road construction plans for clarity and graphic consistency. The most common plan scales used are 1"=100' and 1"=200'. There may be instances where graphic clarity requires other than the roadway scale to produce clear and readable plans, such as Wetland Plans. In Grading Plans, choose contour intervals that are appropriate to the scale of the plans and the density of the contours.

Plant Count Rounding

In creating tables on detail sheets, round off quantities whenever appropriate and practical (some quantities are not appropriate for rounding, such as spaced street trees). Adjust quantities on each sheet to balance the project totals indicated on the summary sheet of contract plans. For guidelines on rounding, see Table 12-1.

Roadside Construction Notes

The purpose of construction notes is to direct the Contractor to do work that can be measured and paid. Construction notes are numeric and should be limited to describing locations or station of work to be performed, bid item names (pay items), and quantities of work. Brief descriptors are added for clarification including reference to project details, typicals or templates if needed. These notes

Note: For further instruction on use of plan scale, see Section 2.5, Volume 1.

Note: For order of sheets and sheet numbering in the contract plans as a whole, see Table 2-1, Volume 1.

Note: For text standards within the contract plans, see plan scale, see Table 2-2, Volume 1.

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12.2.4 General Information (Cont'd)

may be located on either the right hand side of plan sheets or on separate note sheets. Construction notes placed on a separate sheet should face the plan sheet to which they refer. Construction note sheets are numbered to correspond with their associated plan sheets. For example, Roadside plan sheet “GN5” would be followed by construction note sheet “GN5A”. Construction notes should generally be listed in the order they will be constructed.

General Notes

The purpose of general notes is to give the Contractor work-related information about the site. They are not pay items. These alphabetical notes include such things as specific site conditions, project objectives, contractor responsibilities, dangers, contacts in case of emergencies, references, work limits, etc. General notes should reference information in the Specifications or Special Provisions, or clarify design intent. Do not contradict specifications or special provisions.

12.3 Coordination with Specifications and Special Provisions

The section numbers that correspond with the Roadside Development plans, located in the *Standard Specifications for Highway Construction, ODOT*, can be located in Part 01000 — Right-of-Way Development and Control, Part 01100 — Water Supply Systems, and Part 03000 — Materials (Roadside Development), and may include the following sections:

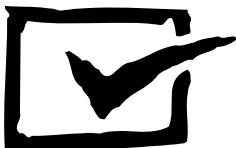
- Section 01030 - Seeding
- Section 01040 - Planting
- Section 01120 - Irrigation Systems

Table 12-1 Rounding Off Plant Quantities

No.	PLANT QUANTITY RANGE	ROUND OFF BY
1	0 To 25	1's
2	25 To 100	5's
3	100 To 1000	10's
4	1000 To 2000	50's
5	2000 Plus	100's

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Note: For additional information about standard details, see Sections 6.1 and 6.2, Volume 1.



12.4 Checklist

The three types of drawings most commonly included in Roadside Development plans are: plan sheets, detail sheets, and note sheets when necessary. Other sheets may include Typical Grading Sections, Planting Logs, and Irrigation Zone Charts. Each sheet may show any or all of the following:

Detail Sheet

- Sheet title, sheet number and “V” number
 - Detail titles
 - “No scale” text on each detail
 - Construction notes and flags as required
 - Detail general notes or sheet general notes when needed
 - Consultant title block with firm name, address and phone number
 - Landscape Architect registration seal with wet signature
-

Plan Sheet

- Sheet title, sheet number and “V” number
- North arrow
- Standard ODOT borders and title block
- Roadside Development sheet titles
- Section, township, and range location (usually not necessary when included on roadway construction plans in the same set)
- Major roadway construction centerlines with labels if shown on road construction plans
- Station points for any centerline shown (scale or scale bar not required)
- Right-of-way and easement lines
- Consultant title block with firm name, address and phone number
- Include “designed by”, “checked by”, and “drawn by” in the signature block (each sheet)
- Include Landscape Architect registration seal with wet signature (each sheet)
- Major existing and construction features, as required
- CAD file name and path. Add date and time of each plot if Plotypus is not utilized.

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12.4 Checklist (Cont'd)

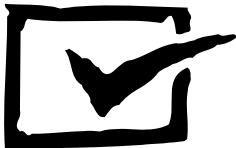
- General notes including maximum allowable
 - Manufacturer's name, model number and size for valves
 - Data to completely identify all valve requirements
 - Construction notes and note bubbles
-

Note Sheet

- Construction note bubble followed by notes
 - Notes showing bid item(s) and quantities
 - Note bubbles aligned above title block using text grid
-

Symbol Key / Legend Sheet

- Legend or symbol key title (use one style throughout a project)
 - Graphic symbols followed by name or short explanation
 - Notes needed for clarity of symbols or legend text
 - Applicable general plan sheet items
-

*Contour Grading Sheet*

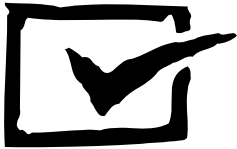
- Annotated Contour lines (proposed grades are solid, existing are dashed)
 - North arrow and scale bar
 - High points (H.P.) and low points (L.P.) identified by x's and elevation
 - Grading limits and areas to protect from grading outlined clearly
 - Legend
 - Typical cross sections (place on a separate sheet, if necessary)
 - Applicable general plan sheet items, including right-of-way
-

Bid Item Log and Plant List Sheet

- Bid Item Log title in border
- Plant List title in border
- All Roadside Development bid items with quantities (see Table 12-1 for rounding guidelines)
- Sheet number references with quantities for each bid item
- Applicable general plan sheet items

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12.4 Checklist (Cont'd)



Irrigation Zone Chart Sheet

- Title (usually "Irrigation Zone Chart")
- Table with data for each zone
- Zone number, size of valve, GPM flow rate