Oregon Department of Transportation

ODOT CAD Manual

Delivery & Operations Division | Engineering & Technical Services Branch

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Oregon Department of Transportation

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Acknowledgement

This document is the work product of the Statewide CAD Standards Committee. The Committee is the technical owner of the content. The sub-team of the Statewide CAD Standards Committee known as the Core Team has the stewardship responsibility to keep the content up-to-date and communicate changes to the users of this manual.

Suggested modifications to this document can be made to the Senior Standards Engineer in the Traffic-Roadway Section, Roadway Engineering Unit. This position chairs the Statewide CAD Standards Committee.

I am pleased to share the ODOT CAD Manual as the foundational document for drafting in general and specifically for use on ODOT public work projects.

Steven B. Cooley, PE

ODOT Chief Engineer

Engineering and Technical Services Branch Manager

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Section 101 Foreword

The Oregon Department of Transportation (ODOT) presents the ODOT CAD Manual (OCM) which includes the procedures, methods, and standards for developing and preparing final ODOT contract plans. It also provides the standards used in the preparation of these plans using Computer Aided Design (CAD) in MicroStation format. ODOT staff, consultants, and outside agency personnel are to use the OCM to prepare ODOT contract plans.

ODOT staff and consulting engineer staff working on ODOT projects will perform road design services and contract plan production using ODOT's current version of Bentley MicroStation and companion design software.

This publication contains information, instructions and examples common to all disciplines and provides the foundation on which the plan set is developed. Specific discipline instructions are contained in the discipline specific CAD manuals.

Updates to this manual are an ongoing process and revisions are issued as required.

Section 102 Overview

ODOT and its consultants rely on CAD systems to produce contract plans. The CAD system is an integral part of the process as projects move from project development to final contract plans to construction. CAD files are often shared between many different internal and external design and construction staff. Consistency and uniformity of CAD files, contract plans, and other products greatly enhances productivity and quality. This is achieved through standardization of the process and products.

Contract plans, specifications, and estimates (PS&E) are the final documents required for the advertisement of a project. The PS&E package is submitted to ODOT for review prior to bid advertisement and award of the construction contract. Because the plans and special provisions must set forth the work in a clear and concise manner to avoid misinterpretation, it is important to follow the instruction in this manual.

The OCM provides up-to-date multi-discipline standards in one document so that uniform contract plans can be prepared by ODOT staff, consultants, and outside agency personnel.

Section 103 Current Restrictions

Currently, ODOT does not produce contract plans in color. While MicroStation uses color graphics, ODOT coverts these to black and white graphics. ODOT has not developed color standards for printed medium.

Other than using the ODOT pen tables, gray scaling is not allowed. In general, "off the shelf" gray scale features do not produce acceptable results. While many of these features produce acceptable on-screen results, the printed result is not readable or too washed out.

Photo images or aerial photos used as background are usually in color. When printed as black and white, the detail of the image is often lost. Background images are not allowed at this time.

Section 104 References

ODOT Discipline Specific CAD Manuals

Menu of CAD Manuals

Oregon Standard Drawings & Oregon Standard Details

Oregon Standard Drawings and Oregon Standard Details

Oregon Standard Specifications for Highway Construction

Oregon Standard Specifications for Construction

General Drafting Standards 200

Section 201 Introduction

To find the location of MicroStationV8i "Task Tab" items in MicroStation CONNECT, use the ribbon search in the upper right of your CONNECT file.

This part of the ODOT CAD Manual (OCM) contains the general drafting styles. To ensure consistency across the different disciplines, these drafting styles are to be used throughout ODOT plan sets.

Specific discipline plan sheets are to follow both the instructions given in the OCM and instructions given in the discipline-specific CAD manual. By following the drafting style instructions during creation of plan sets, plan reviews of plans can be more focused on the technical content and not the drafting style. This cannot be overstated, that consistent CAD work that follows the instructions results in plan sets that are easier to review and construct.

Section 202 Orthographic Drawing (Multi-view)

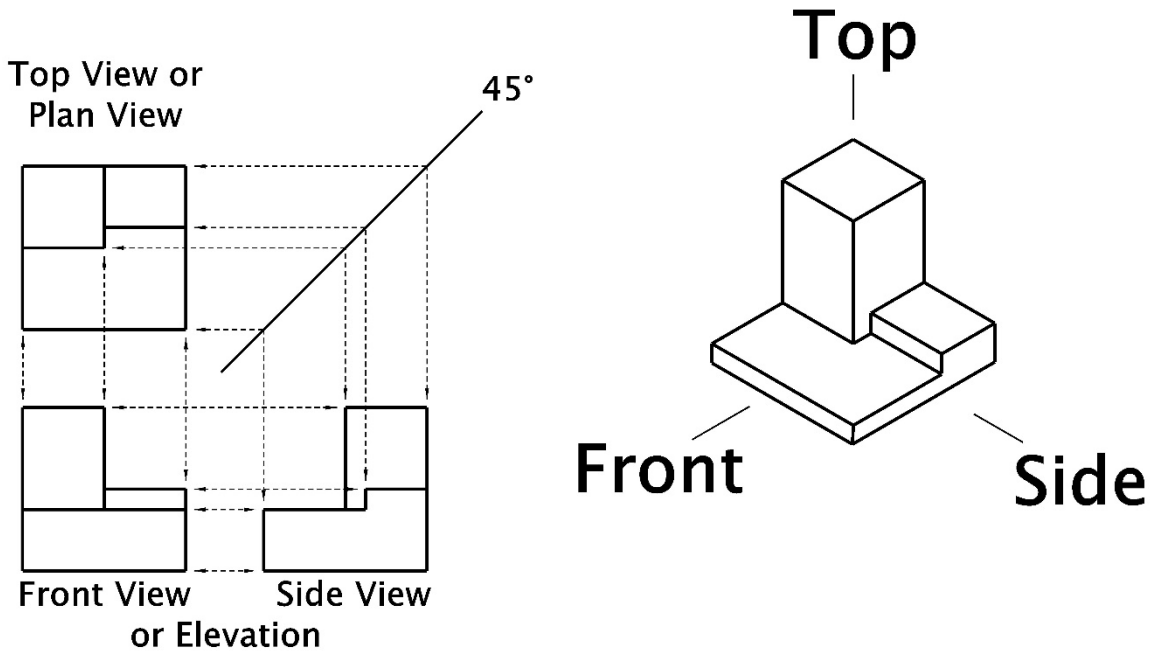
Basic to engineering drawings is an understanding of the basic rules of orthographic drawing and how it is accomplished.

Figure 202-1 shows the basics of orthographic drawing. An orthographic drawing is intended to project key points from one view to another view, so it is important to maintain the relationship between each of the views.

A drawing does not always need all of the views shown in Figure 202-1. For example, a top view and front view might be all that is required. Take care to ensure that the views are kept in alignment with each other so that projections can be made.

Orthographic drawing is commonly used for details in ODOT plans.

Figure 202-1 Example of Orthographic Drawing



Section 203 Sections

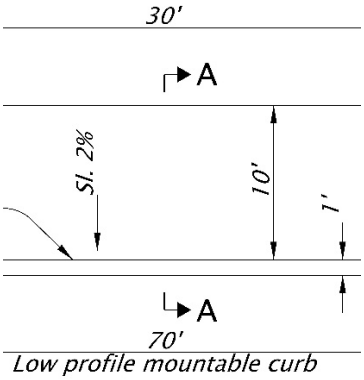
If showing just the external surfaces doesn't provide enough detail about a specific item, the designer can choose to also provide section views. Sectioning the article is required to show the features inside of the article. Sectioning is "cutting" a plane through the article and showing an elevation view that is viewed in a specific direction.

Sectioning requires a plan view with section lines indicating the cutting plane and the direction that the section is viewed, and the section view, which is shown as an elevation (side view) along the cutting plane.

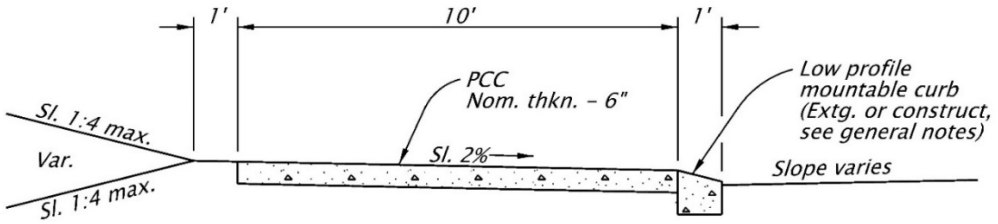
In Figure 203-1, the A-A plane is shown on the plan view and the direction the section is viewed. The arrows on the section line show that the article will be viewed to the right. The curb face that is shown in plan view will be rotated 90° and appearing on the right side of section A-A.

Section A-A shows the thickness of the pullout material and direction of the surface slope.

Figure 203-1 Examples of Sections



PLAN



SECTION A–A

Section 204 General Plan Layout

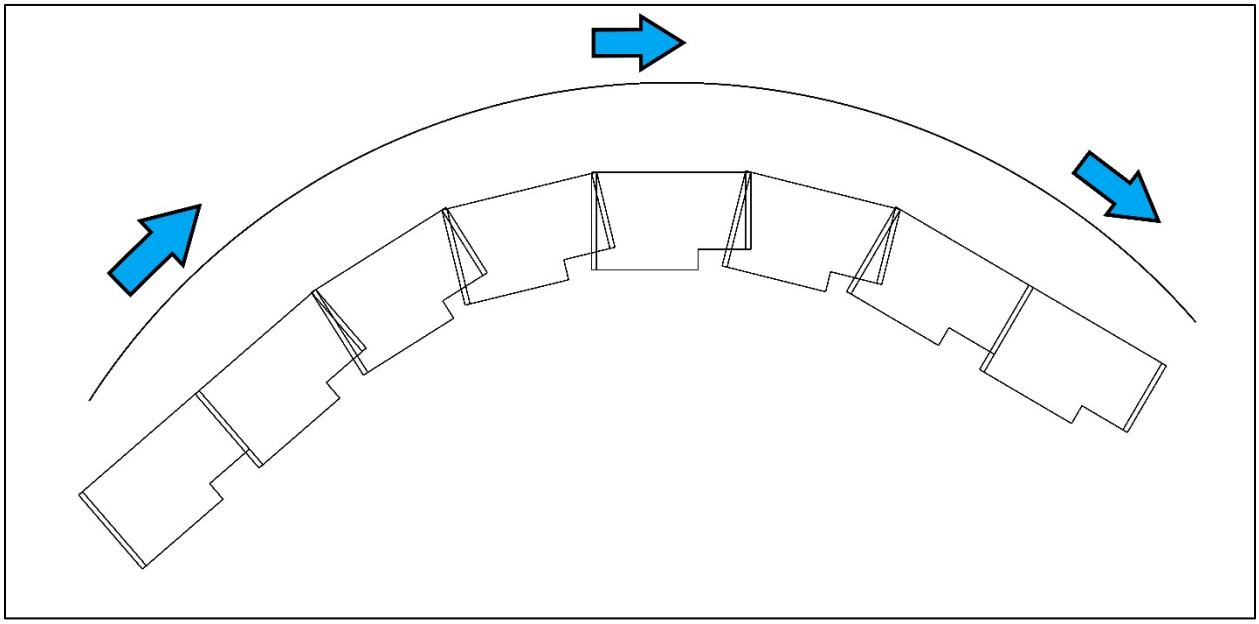
Plans within each Major Category series (see Part 400) are to follow these basic rules for how the sheets progress within the series.

The plan view area is to progress from low station numbers to high station numbers. The station number can be either an Engineer's station or the highway mile point. The stations need to be arranged so that they increase in value from the left side to the right side of the plan sheet. The north arrow will provide the orientation of the cardinal (N, S, E, & W) directions. The plan sheet can be oriented so that the north arrow points toward the bottom of the sheet. Every construction plan view sheet has a north arrow on the sheet.

Within a Major Category series, there might be non-continuous work areas. These work locations still follow the rule and are shown from lower station to higher station along the project area. The full set of plans need to flow in the same direction.

Figure 204-1 shows the direction that all plan sheets should flow for an example project area. The blue arrows represent the direction of stations, from lowest number to highest number.

Figure 204-1 Plan Sheet Directional Layout



Section 205 Dimensions

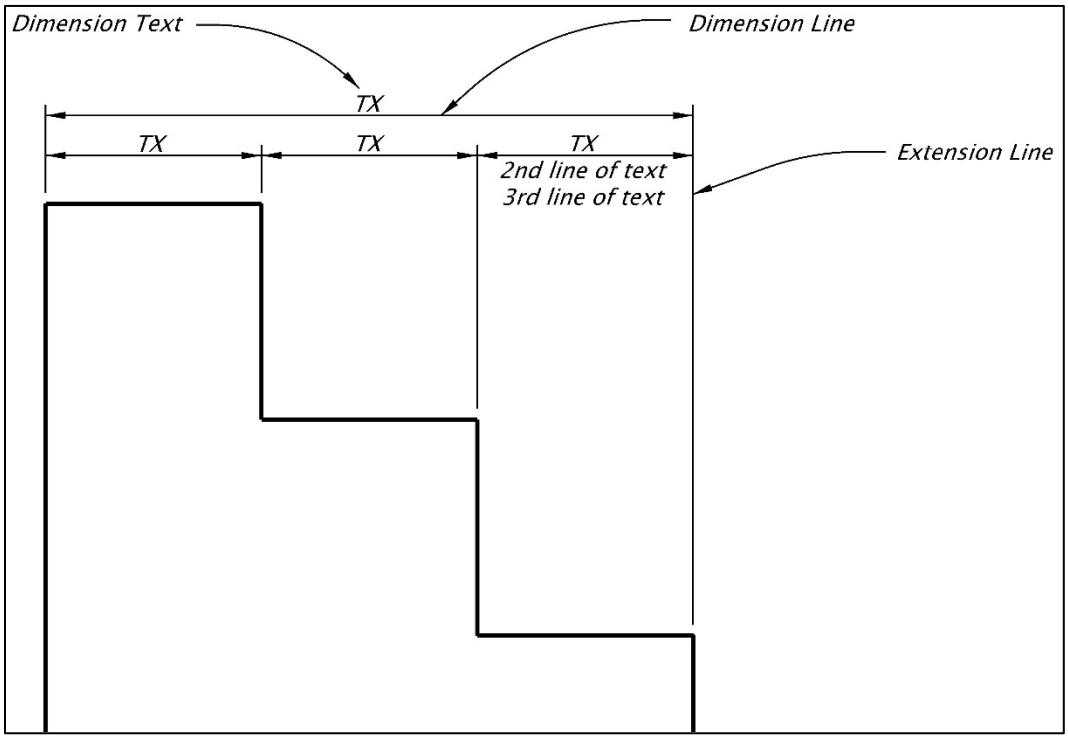
Dimensioning items in details or sections is an art form, but there are rules that need to be followed. As with any one rule, there are times when it just doesn't work, but these are rare occasions. The guidance shown herein will work for almost all situations and therefore needs to be followed.

ODOT uses both stacked fractions and non-stacked fractions based on the discipline. Consult the discipline specific CAD manual for which faction style to use.

Dimensioning has specific components, they are extension lines, dimension lines, and dimension text. Extension lines extend from the article at key points. The dimension lines are generally shown between and perpendicular to the extension lines. Single line dimension text is placed above the dimension line near the midpoint of the line. For multiple line dimension text, the first line is placed above the dimension line with the remaining text below the dimension line.

Dimension arrows are a ratio of 1:3 and measure 3' x 9' at inch 100' scale.

Figure 205-1 Display of Dimensioning Components



The longest dimension is the furthest away from the article, with smaller dimension lines closer to the article. It is best practice to fully dimension an article and not leave space that must be calculated or scaled.

In Figure 205-1, the inside dimensions are fully across the article and will sum to make the outside dimension. In the design and construction of the article, there are fewer errors introduced when the article is fully dimensioned. In addition, if there is a dimension error, it is easy to find and correct.

Figure 205-2 Examples of Dimensions

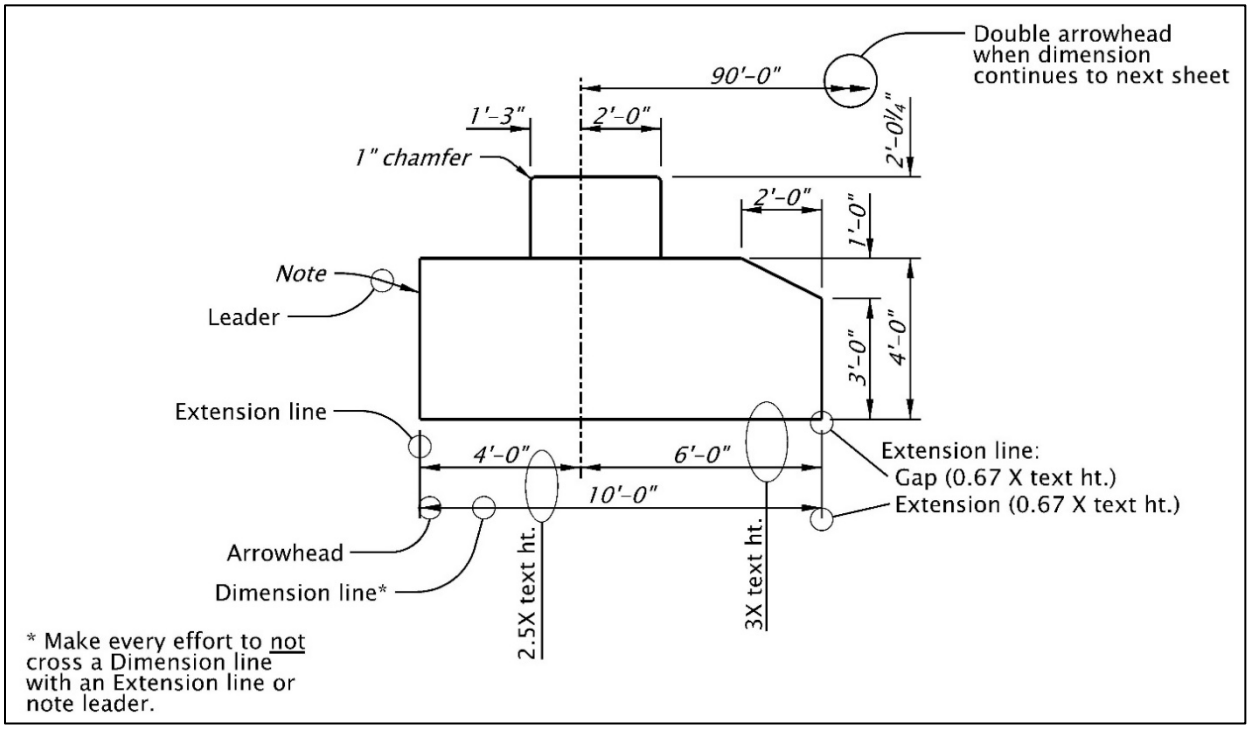


Figure 205-2 illustrates some of the dimensioning rules that are to be followed regardless of the discipline.

The gap between the article and the start of the extension line is approximately 0.67 multiplied by the text height. The extension line extends the same amount beyond the last dimension line. These distances can be approximate, but they need to be consistent throughout the plans.

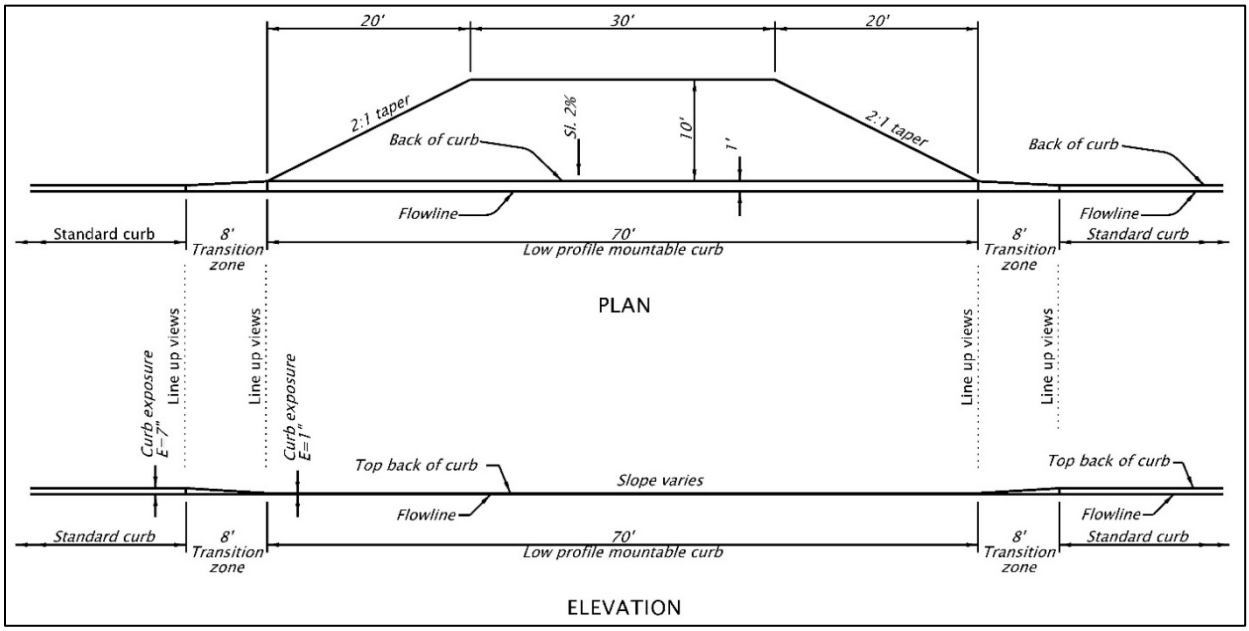
Use a double arrowhead when the dimension continues off of the plan sheet.

The distance between the article and the first dimension line is the text height multiplied by 3, unless extra room is needed for leaders and notes. When additional dimensions are required along the same edge of the article, the distance between dimension lines is the text height

multiplied by 2.5. The distance between the text and the dimension line is approximately the text height multiplied by 0.25 the text height.

Figure 205-3 shows a maintenance pad dimensioned both in plan view and in elevation view. The views line up and are drawn proportionally.

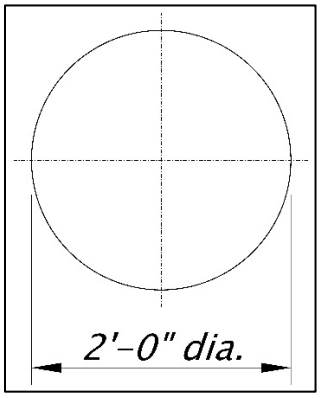
Figure 205-3 Dimensions in Plan and Elevation View



Dimensioning Curved Shapes

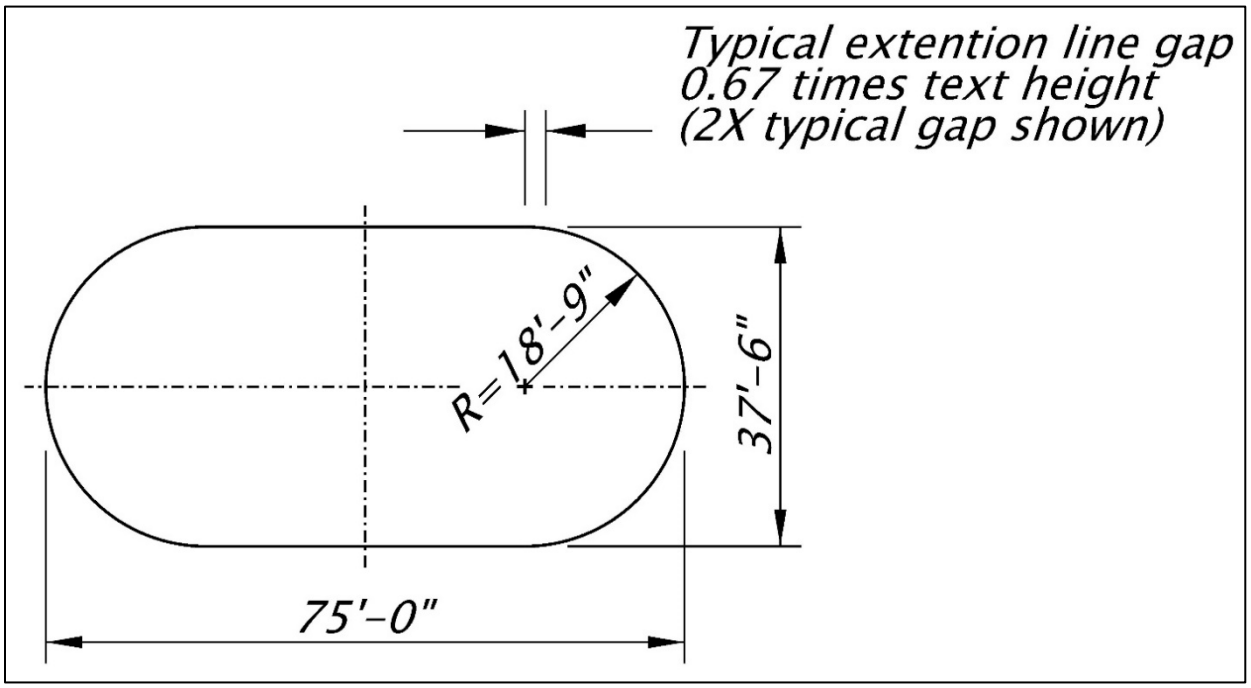
Circles and curved surfaces are also dimensioned within a set of plans. The diameter, the full distance across a circle through the center point, is dimensioned generally along the X axis (horizontal) or the Y axis (vertical). The axis lines are drawn with a dash-dot line style 4, which denotes the center line, and extend beyond the outside edge of the circle by a distance of 0.67 multiplied by the dimension text height. The extension line gap needs to be further away from article than the normal distance to show a gap off of the curved article. Figure 205-4 shows the extension lines gap that is twice the normal distance away from the X axis line.

Figure 205-4 Example of a Circle with the Diameter Dimensioned



The distance between the circle and the dimension line is the text height multiplied by 3, and is measured at the intersection point of the Y axis and the circle edge.

Figure 205-5 Example of Dimensioning a Radius Arc.



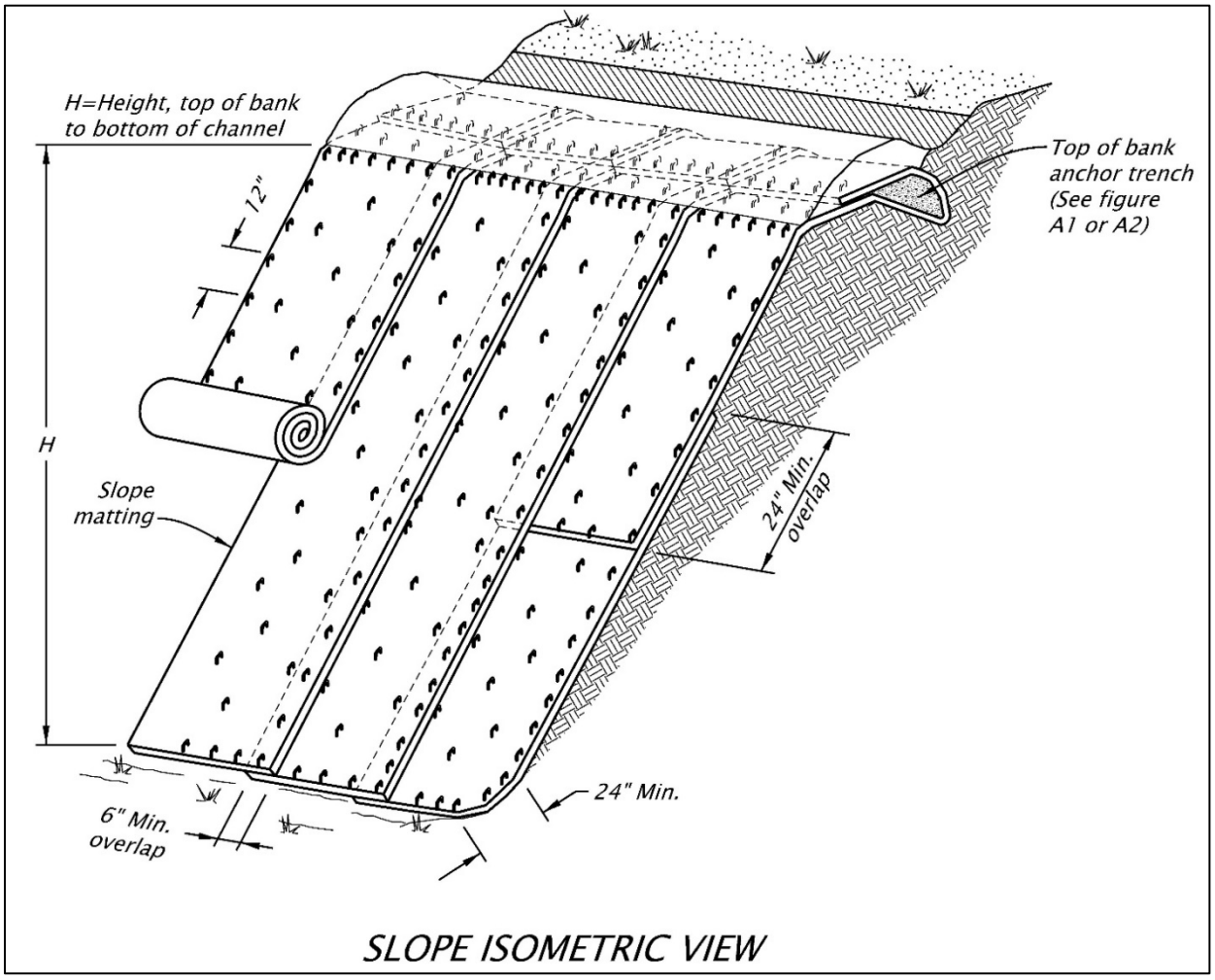
The radius of an arc is typically dimensioned from the radius point to the edge of the article as shown in Figure 205-5. The X axis line is broken to allow clear space for the dimension text to be placed at a distance of 0.25 multiplied by the text height above the radius dimension line. The radius point is indicated with short, intersecting lines on the X and Y axis. These lines are 0.5 times the text height in length.

The extension line gap is increased enough to be visibly off of the arc. Begin with the typical gap width measuring from the intersection of the tangent line with the arc and then increase as required.

Dimensioning Isometric Views

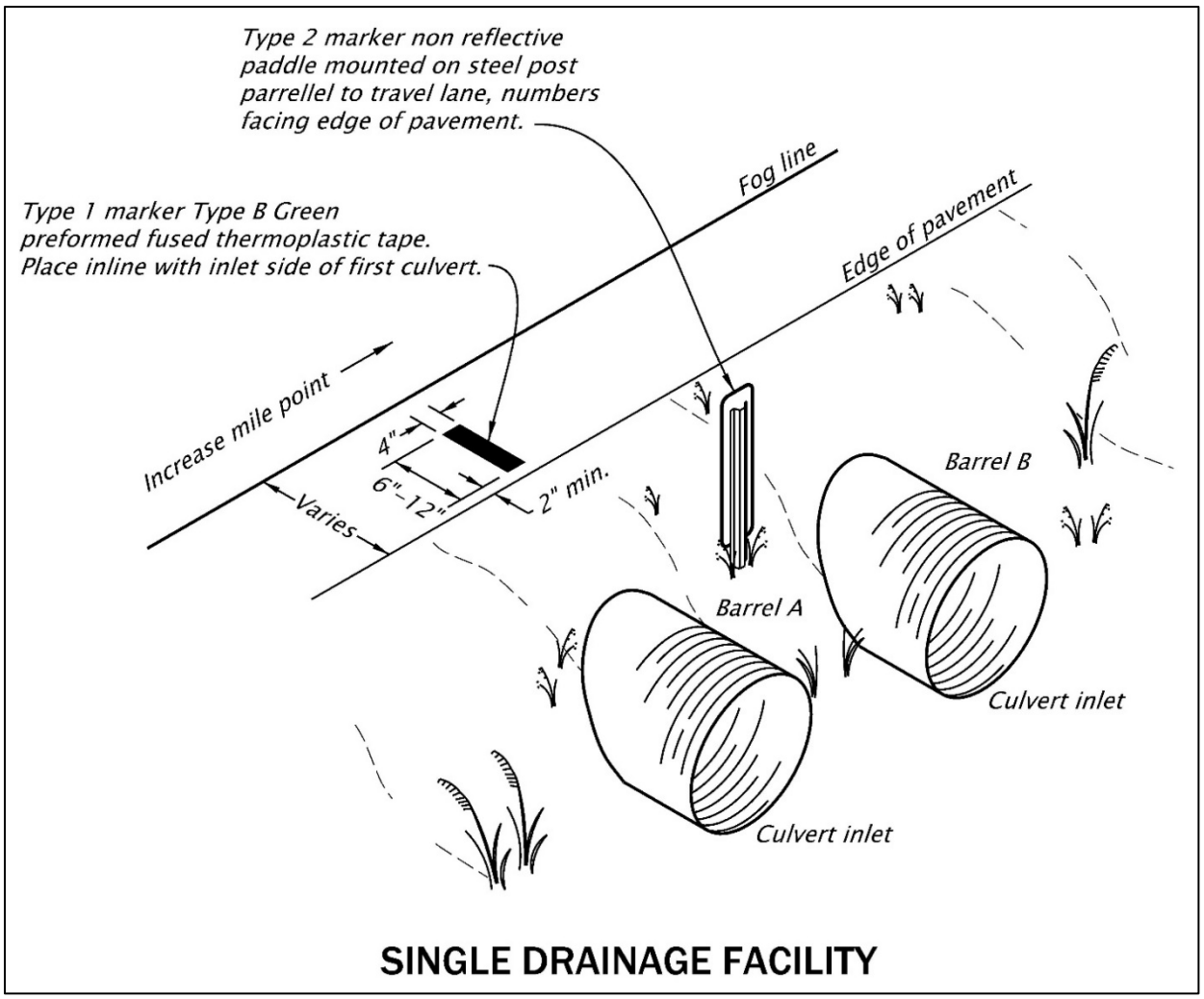
Isometric view is a 3 dimensional view that allows 3 views of an article to be seen in one view. Specifically the Top or Plan view, Front or Elevation view, and the Side or Elevation view are all shown together. This type of drawing allows for more information to be shown in a compact view.

Figure 205-6 Example of drawing in isometric view.



When dimensions are shown in isometric view, the dimensions are shown normal to the plane they are referencing. Care must be taken to show the dimension in the correct plane and, on more complex drawings, it can be easy to mistakenly show in the dimension on an incorrect plane.

Figure 205-7 Isometric dimensions



It is important to limit the number of dimensions on an isometric view to keep the drawing clear and easy to read. When there are many dimensions in each plane, it is better to present the drawing in traditional orthographic views.

Section 206 Leaders

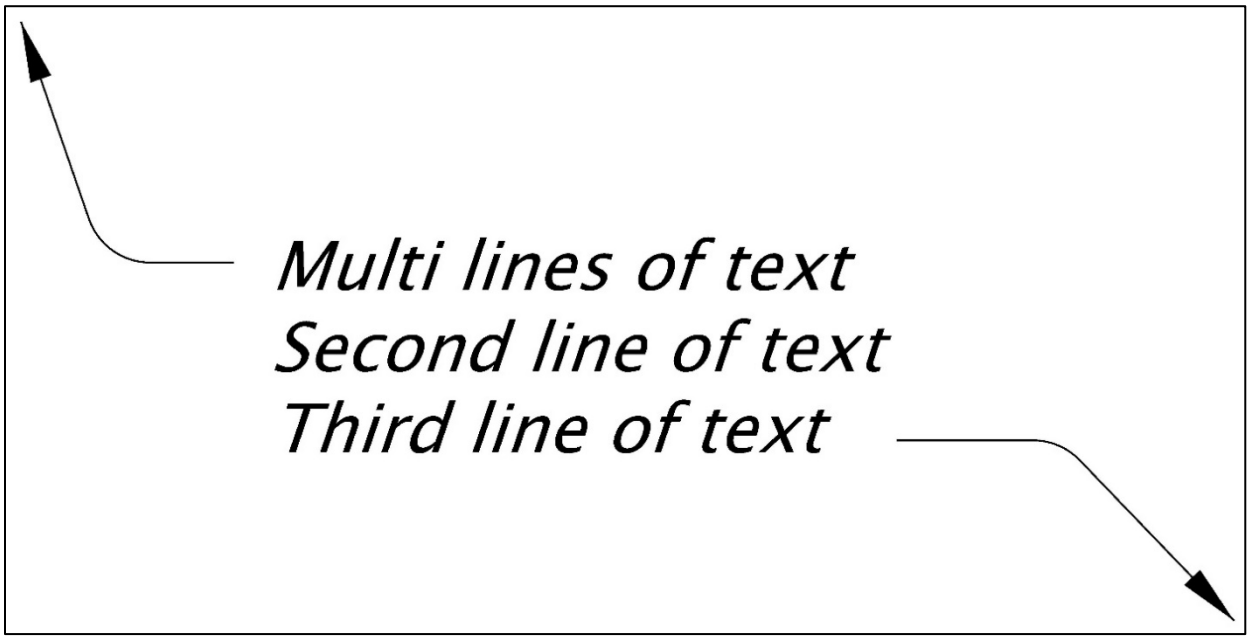
When text is used to label or add additional information about a specific area on the drawing, leaders are used to point at the article where text applies. The leader can start from the left of the text or the right of the text depending on where the terminal of the leader is located.

For multi-line text, if the leader starts on the left side of the text, the leader needs to be in alignment with the first line of text. If the leader starts on the right side of the text, the leader needs to be in alignment with the last line of text.

Leader lines are curved and are placed in a way that is pleasing to the eye. The general components are a short, horizontal line from the note text, followed by a small radius fillet curve between the horizontal line and the directional line.

Angle leader lines are not to be used on ODOT plan sheets.

Figure 206-1 Multi-line text leader location



Section 207 Scaled Details

It is best practice to develop details in true scale so that the article is drawn proportionally. The detail will convey the intended results when it appears in correct proportions. Major Categories that typically show a scale with the details are G - Geotechnical, H - Hydraulic, and J – Bridge.

Once the article is developed, it can be enlarged or reduced to best show on a plan sheet. In some cases, for clarity of details, the article shown on the plan sheet might no longer be in a standard scale such as 1”=5’ or ¼”=1’. When this occurs the use of “Scale: No Scale” is used for plans that typically show a scale on the details.

There are instances when a generic detail is developed that cannot be drawn to exact proportions. One example is Tree Root Wad Placement for fish habitat. The root wads are of various sizes, and the stream channel is unknown for the standard detail. When a detail like this is being developed, show “Not To Scale” as it was not developed proportionally.

In review, “Scale: No Scale” means the detail shown is not in a standard scale, but is proportionally shown. “Not To Scale” means the detail was not developed proportionally.

Annotation Scale Bars are found using the ribbon search. The auto fill units are based on the file scale.

Section 208 Detail Titles

Titles of details have a hierarchy that is shown by size and text style. The hierarchy is limited to each plan sheet. There are 3 levels of detail titles: Primary title, Secondary Title, and Minor Title.

Figure 208-1 Detail Titles

As an example of how these titles might be used, the Primary Title is used for the main title of the detail. The Secondary Title is used to label plan view or elevation or label a section view. The Minor Title would label an enlarged view.

Figure 208-2 Detail Titles in Use

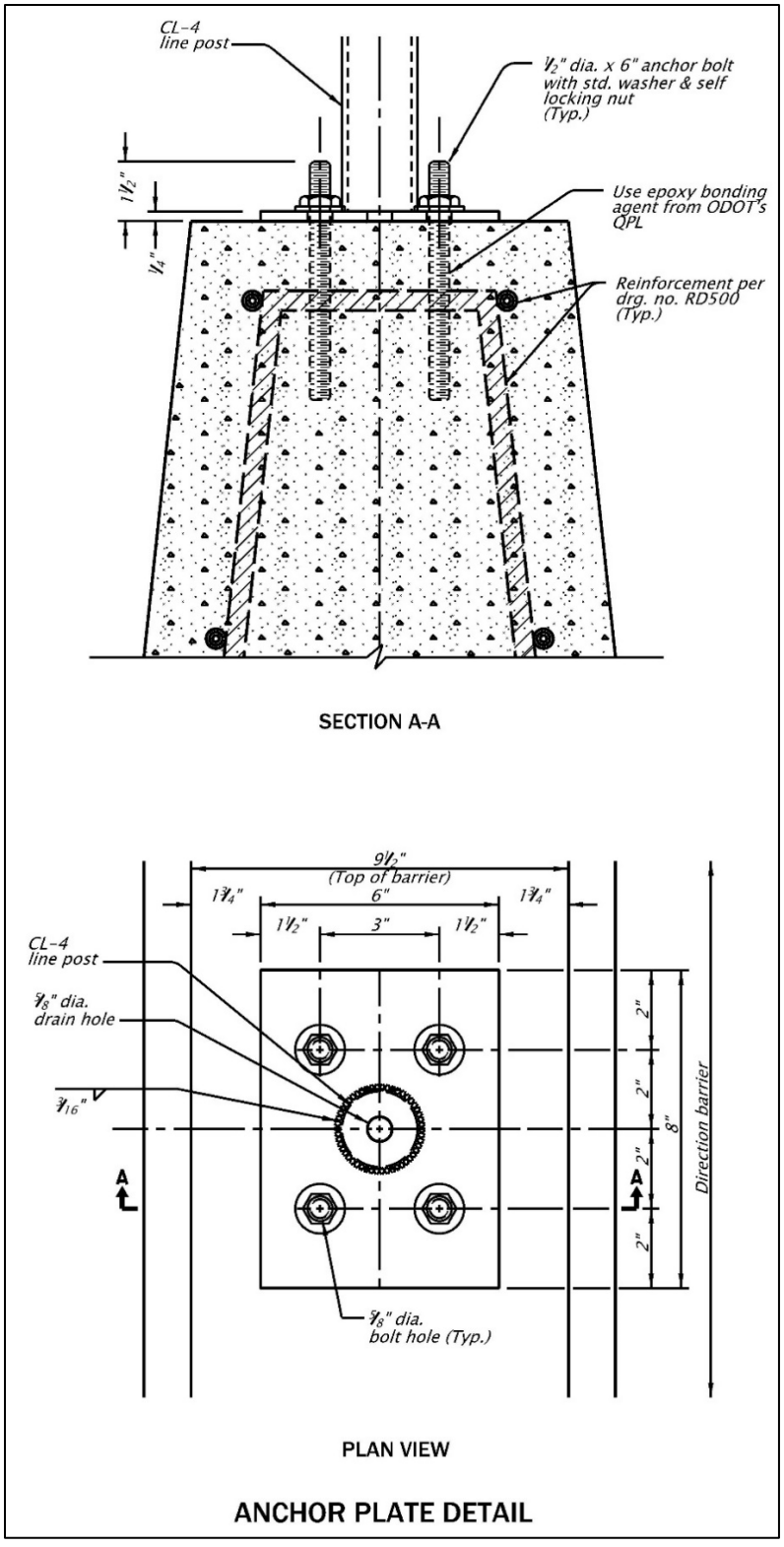


Figure 208-2 shows the use of the primary detail title for the title "Anchor Plate Detail" and the secondary detail titles for "Plan View" and "Section A-A". Both the Plan View and the Section A-A View are each a subset of the Anchor Plate Detail. This hierarchy is shown with the use of the appropriate detail titles.

The use of detail titles help clearly define one detail from another. The hierarchy maintains that the subordinate views are subsets of the main detail. Only use the number of levels that are needed for any one detail. There should not be any instance where more than three levels are needed in any one detail.

Detail titles can be found using the ribbon search.

Plans Development Business Process 300

Section 301 Introduction

To find the location of MicroStationV8i "Task Tab" items in MicroStation CONNECT, use the ribbon search in the upper right of your CONNECT file.

ODOT uses ProjectWise as the corporate database for project development. This part provides a basic overview of how plan sheets are developed within the ProjectWise environment, as developed by ODOT. This chapter is not intended to replace the ProjectWise user guides that are available, but does provide a specific overview of the plan sheet development process.

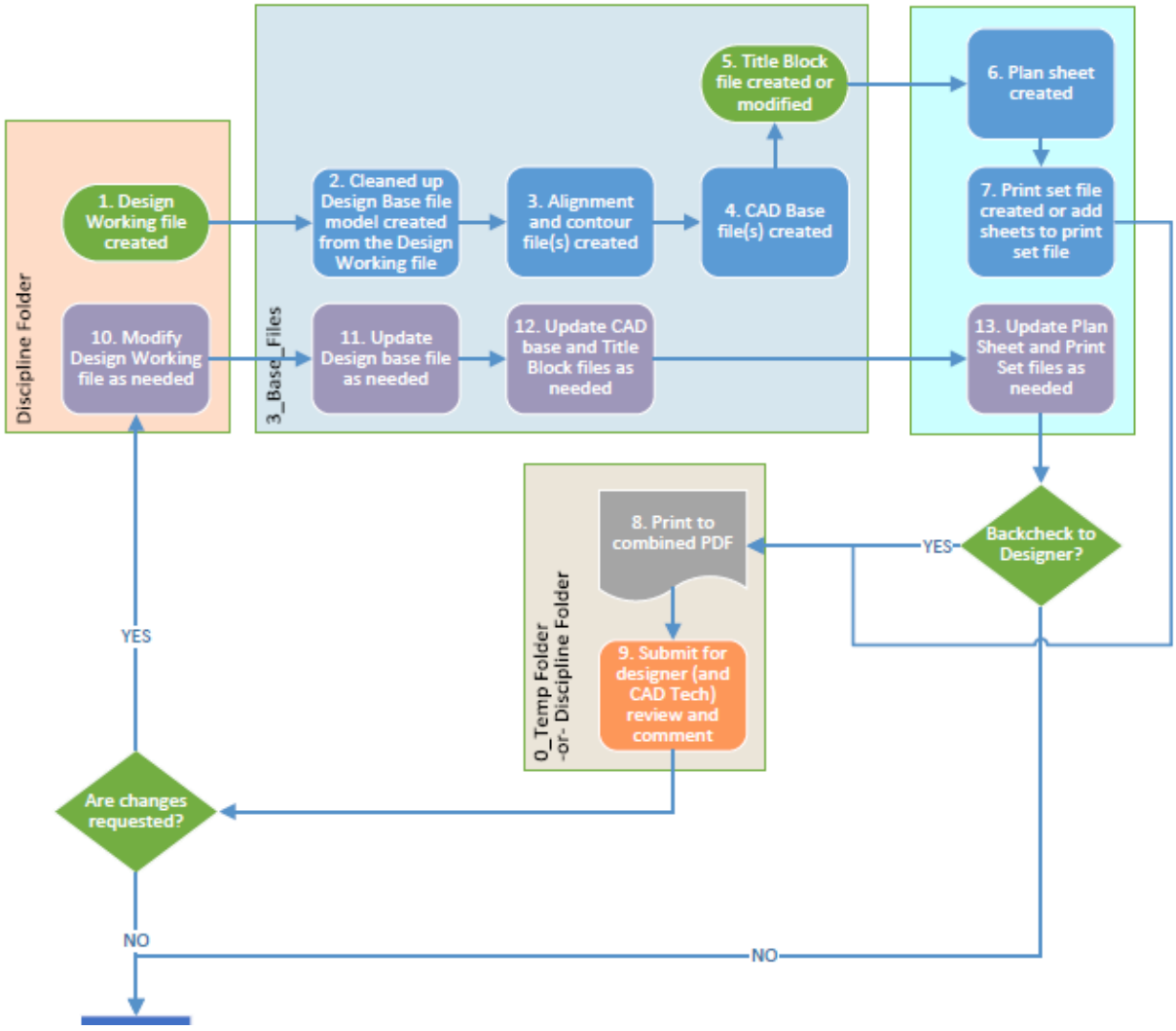
A flow chart will show how the files move through the process and which folders should contain the design (DGN) and CAD (DGN) files. It is understood that the CAD Technician functions might be performed by a designer, but those functions will be called out as "CAD Tech" in a generic sense.

Section 302 shows the plan sheet development is shown in flowchart format, and Section 303 provides a description of each step shown in the flowcharts. The numbering in the flowchart corresponds to the numbered description of each step.

Section 302 Business Process Chart

The following chart shows the plan sheet development within the ProjectWise environment. ProjectWise folder names are shown vertically on the lower left of the different color groups.

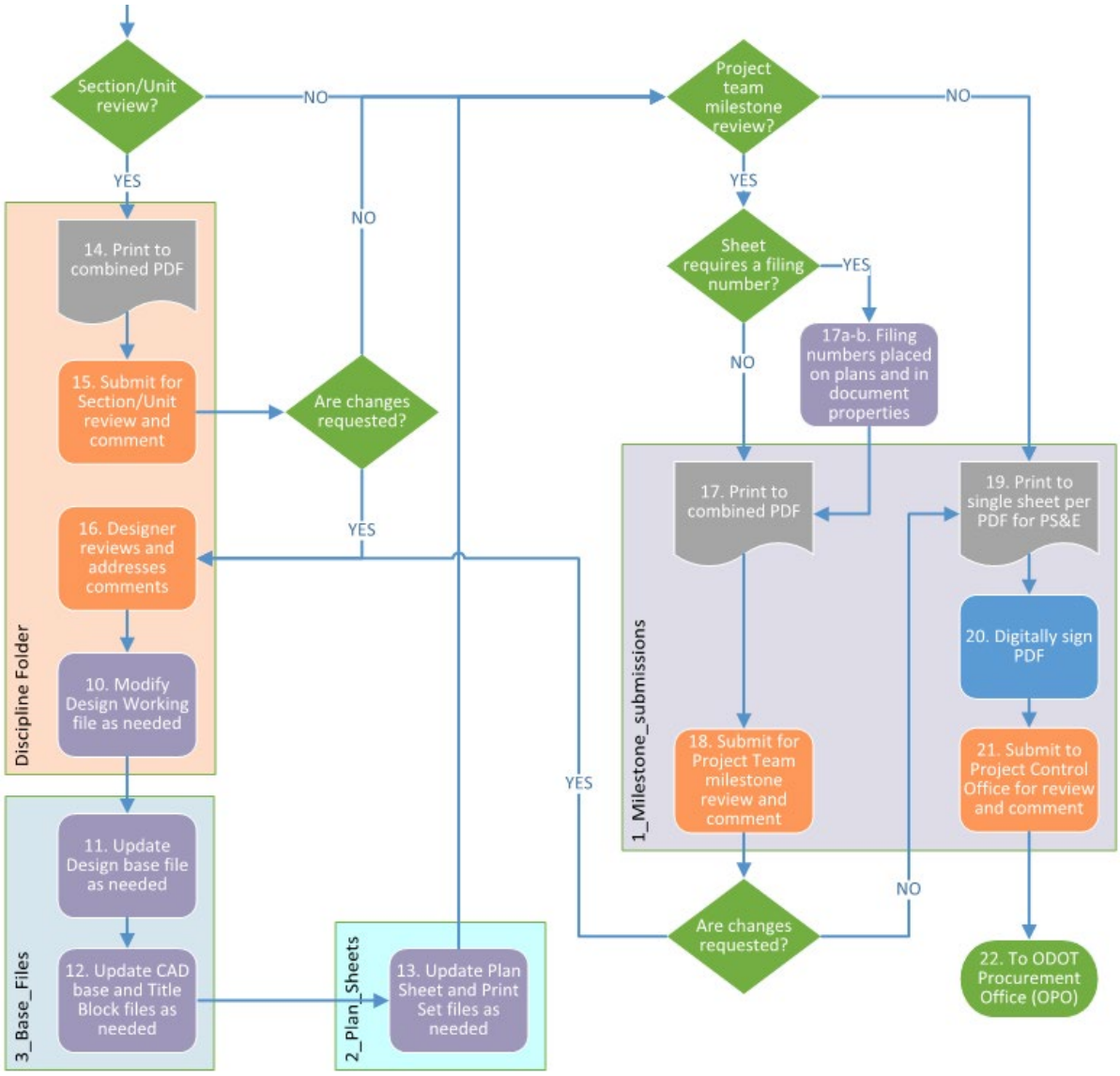
Figure 302-1 Generic Project Plans Development Flowchart Part 1 of 2



(Continued on next page)

Figure 302-2 Generic Project Plans Development Flowchart Part 2 of 2

(Continued from previous page)



Section 303 Business Process Annotated

For the annotated discussion, the term "CAD Tech" means Computer Aided Drafting Technician. The numbers below correspond to the numbers in figures 302-1 and 302-2.

1. Design Working file is created by a Designer in the *Discipline* folder appropriate to the file content.
    a. Usually a MicroStation DGN is used for design, but a design working file may be a PDF mark-up or scanned image.
    b. Use required naming convention.
    c. Graphics within the design working file are not referenced by other disciplines or in plan sheets.
    d. Reference or link to sources in the *3_Base_Files* folder. Do not copy.
2. Design Base file is created, modified, or updated by a Designer or CAD Tech in the *3_Base_Files* folder.
    a. MicroStation DGN is used by other disciplines for design and referenced into plan sheets.
    b. Use the required naming convention.
    c. Graphics within the design base file comply with ODOT standards for levels and symbology.
    d. If multiple models are used, model naming standards are followed and information is added to the document description detailing the content of the file.
    e. Model names (include logical name in model properties; use "exist" in the logical name to grey-shade at printing):
        i. Default or Default-3D (contains no graphics)
        ii. <originid>_Design
        iii. BaseMap (created by Survey for existing topography)
        iv. RW Base (created by Survey for preliminary Right of Way)
        v. RW Design (Right of Way Section's models are pre-created in the seed file)
3. Alignment base file created or modified by the Roadway Designer or CAD Tech and contour base file created or modified by Survey in the *3_Base_Files* folder.

a. MicroStation DGN used by other disciplines and referenced into plan sheets.

b. Use the required naming convention.

c. Alignment model names, as appropriate (include logical name in model properties):

   i. Default or Default-3D (contains no graphics)

   ii. AlignmentInch<Scale> (e.g. AlignmentInch100)

   iii. Alignment1to<Scale Ratio> (e.g. Alignment1to128)

d. Contour modelnames (contour labels are annotation and masking text, so they may be used for multiple scales):

   i. <Exist, Design, Final, Merged>ContoursInch40

   ii. <Exist, Design, Final, Merged>ContoursInch100

   iii. <Exist, Design, Final, Merged>ContoursInch200

e. Graphics comply with ODOT standards for levels and symbology.

f. No references from other sources should be attached.

4. CAD Base file(s) created or modified in the *3_Base_Files* folder (optional).

   a. MicroStation DGN created by a CAD Tech references files from various sources in the *3_Base_Files folder*.

   b. Excel or Word documents created or modified by Designer or CAD Tech when linked to graphics in the plan sheet file.

   c. Use the required naming convention.

   d. DGN contains MicroStation models with a combination of elements and reference files for use in plan sheets.

   e. Model names (include logical name in model properties; use “exist” in the logical name to greyshade at printing):

      i. Default or Default-3D (contains no graphics)

      ii. <originid>_Plan

      iii. <originid>_Elevation

      iv. <originid>_Profile

      v. <originid>_Section

      vi. <originid>_Text

      vii. <originid>_TypicalSections

viii. <originid>_BaseRefs *(references files from other disciplines and contains construction elements and named fences)*

5. Title Block information file usually created by the Roadway CAD Tech in the *3_Base_Files* folder.
    a. MicroStation DGN (seed_titleblock.dgn).
    b. Use the required naming convention.
    c. Can be modified by any discipline as required. (See Part 500 for specific details).
    d. Base model contains the data common to all sheets.
    e. Contains models for each section of the plans which references the Base model. A section may require multiple models, such as a J series model for each bridge or when there are multiple people working on part of the same sheet series.
    f. May be created by another discipline if there is no Roadway CAD Tech involved.
6. Plan Sheet file(s) created or modified by CAD Tech in the *2_Plan_Sheets* folder.
    a. Use the required naming convention.
    b. See the appropriate discipline specific manual for guidance regarding the use of one sheet per file, one sheet per model using the sheet number for the model name, or multiple sheets per model using the sheet title for the model name (e.g. "Typical_Sections") and may include the sheet number range. Include a meaningful model description summarizing the model contents.
        i. Default model or Default-3D model contains no graphics.
    c. Reference the applicable title block file model with live nesting set to a depth of one to display the Base model.
    d. Reference files from various disciplines in the *3_Base_Files* folder directly or use a CAD Base file with live nesting set to the required depth.
    e. Plan sheet file may contain notes with leaders, dimensions, legends, tables, and other note text.
    f. Contains data specific to the sheet, such as the sheet number and filing numbers.
    g. May contain linked graphics from a Word or Excel document.
7. Print set (PSET) file are created or sheets are added by CAD Tech in the *2_Plan_Sheets* folder.
    a. Use required naming convention.
    b. Project team, including the CAD Tech, determines the use of one print set for the entire project or separate print set files for each sheet series. Very large projects may have multiple print set files for a single sheet series.

c. Each discipline is responsible for their entries into the print set. The print set should be tested to ensure they print properly.

d. Each discipline will print PDFs and provide a link to the team member responsible for assembly and submittal in the appropriate *1_Milestone_submissions* sub-folder. In general, the team member that is responsible for assembly is from the Roadway discipline. When separate PDFs are generated for PS&E, each discipline is responsible for their own sheets in the *6_PSnE* folder.

8. Print combined PDF for review (folder location varies).
    a. If the PDF for designer review is to be deleted, it should be stored in the *0_Temp* folder.
    b. If the PDF for designer review is to be maintained after the design is completed, it is to be stored in the *Discipline* folder.
        i. If external user access is required, it must be stored in the *0_Temp* folder until design completion and then moved into the *Discipline* folder.
        ii. Use the required naming convention.
    c. Section/Unit review PDF is stored in the applicable *Discipline* folder.
        i. Use the required naming convention.
9. Designer (and CAD Tech) reviews plan sheet PDF and makes comments as required.
10. The Designer makes edits to the Design Working file as required.
11. The Designer or CAD Tech updates the Design base file as required, and forwards applicable comments to CAD Tech.
12. CAD Tech updates the CAD base and title block as needed.
13. CAD Tech updates the Plan Sheets and the Print Set file(s) as needed.
14. Print combined PDF for Section/Unit quality review.
15. Section/Unit performs the quality review process and returns the comments to the Designer.
16. The Designer reviews and addresses the comments. Return to step nos. 10 through 13.
17. Print combined PDF for Project Team milestone review.
    a. Preliminary Plans milestone – Acquire Bridge Data System (BDS) structure number for structures and insert the number into the title block and the ProjectWise document properties.

b. Final Plans milestone – Acquire appropriate filing system numbers for Traffic and ITS sheets and insert the numbers into the title block. Acquire BDS drawing numbers for structure sheets and insert the numbers into the title block.

18. Project Team reviews plan sheets and returns the comments to the Designer. Return to step no. 16.
19. Print a single PDF per sheet for the PS&E submittal (see step no. 7d).
    a. Use the required naming convention.
20. PS&E PDF files are digitally signed by Designer. (For more detailed requirements, see the Phase Gate Delivery Manual.)
21. The digitally signed PDF files are submitted to the Project Control Office for review and comments are returned to the Designer. Return to step no. 16.
22. The digitally signed PDF files are submitted to ODOT Procurement Office (OPO). See the appropriate manual for guidance regarding further processes for drawings requiring Bridge, Traffic, or ITS filing numbers.

Plan Sheet Numbering and Seed Files 400

Section 401 Plan Sheet Sequence and Sheet Numbering

ODOT Contract Plans are arranged, numbered, and titled in a specific order. It is important to note that the ODOT plan sheet number is different from the drawing number, which is an internal filing number. The method for numbering plan sheets depends on the type of the plan sheet. Plan sheets types are broken out into separate series depending on the major category of work (see Table 401-1).

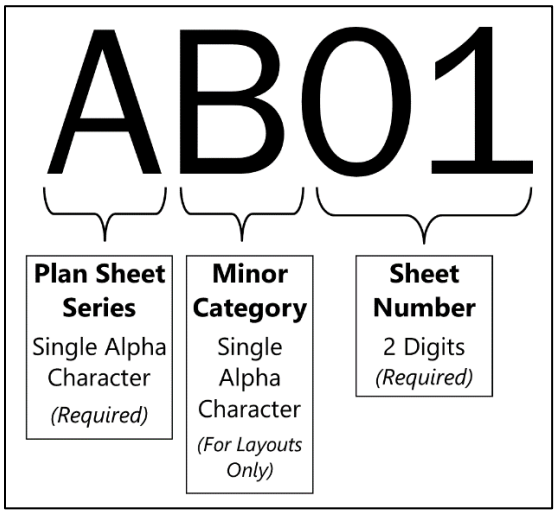
Table 401-1 Plan Sheet Series

Plan Sheet Series	Major Category
A	Title Sheet
B	Roadway Details
C	Roadway Construction (main line)
D	Roadway Construction (match line alignments)
E	Traffic Control
F	Roadside Development / Erosion Control / Wetland Mitigation
G	Geotechnical
H	Hydraulic
J	Bridge
K	Intelligent Transportation Systems
L	Signs
M	Signals
N	Automatic Traffic Recorder
P	Illumination
Q	Permanent Pavement Markings
R-Z	Outside Agency plans

Note: The letters “I” and “O” are not used for plan sheet series to avoid being mistaken for the numbers 1 and 0.

If a project does not include a specific major category in the plan set, that letter series is left out of the plans. For example, if a project does not include any bridge plans, then there are no “J” series plan sheet numbers in the project plan set.

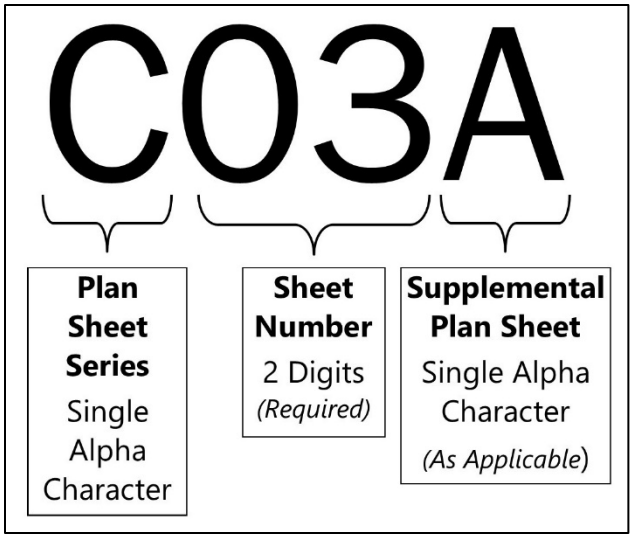
Figure 401-2 Plan Sheet Numbering ("A" Series)



For plan title sheets ("A" series), plan sheet numbers are composed of the following components (see Figure 401-2 and Table 401-8 for further guidance on plan sheet numbering):

1. A single alpha character "A" at the beginning of the plan sheet number
2. A sequential two-digit numeric value after the alpha character for title sheet and index
3. Add a minor alpha character for any layout sheets

Figure 401-3 Plan Sheet Numbering ("C" and "D" Series)



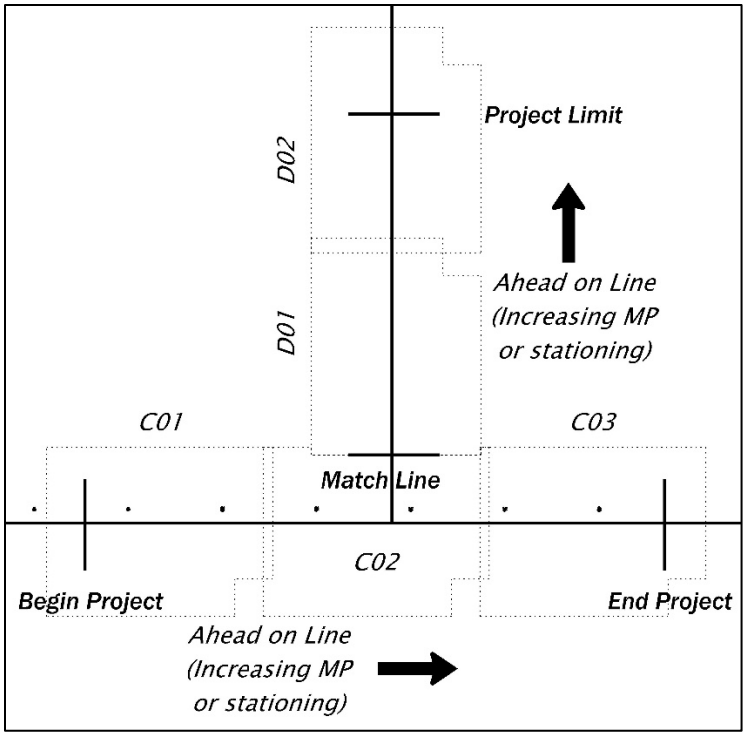
For roadway plan sheets ("C" and "D" series plan sheets), plan sheet numbers are composed of the following components (see Figure 401-3 and Table 401-8 for further guidance on plan sheet numbering):

1. A single Alpha character "C" or "D" at the beginning of the plan sheet number.
2. A sequential two-digit numeric value after the alpha character.
3. An optional alpha character at the end of the plan sheet number. This character is used to designate a supplemental plan sheet, when applicable.

"C" series plan sheets are used when the plan sheets follow the mainline of the roadway. The two-digit digit numeric value in a "C" series plan sheet number increases ahead on station (in the direction of increasing stationing or milepoint) following the main alignment. For example, C01 would show roadway construction beginning at the lowest stationing along the main alignment, and C02, C03, etc. in order would show roadway construction in the direction of increasing stationing along the main alignment. See Figure 401-4.

"D" series plan sheets are used when match lines are used to show roadway construction features that are located off the mainline of the roadway and cannot be shown on the width of a single "C" series plan sheet along the mainline. Since "D" series plan show roadway construction features not located on the mainline alignment, the two-digit numeric value in the plan sheet number increases ahead on stationing (in the direction of increasing stationing or milepoint) along the roadway being shown on the plan sheet. See Figure 401-4.

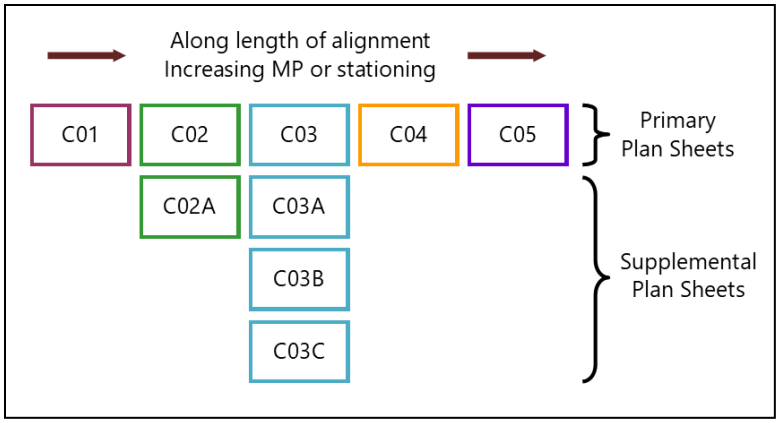
Figure 401-4 Roadway Plan Sheet Layout



For the roadway construction sheets in the "C" series the two-digit number is length along mainline and the letter is for depth in the specific plan sheet area.

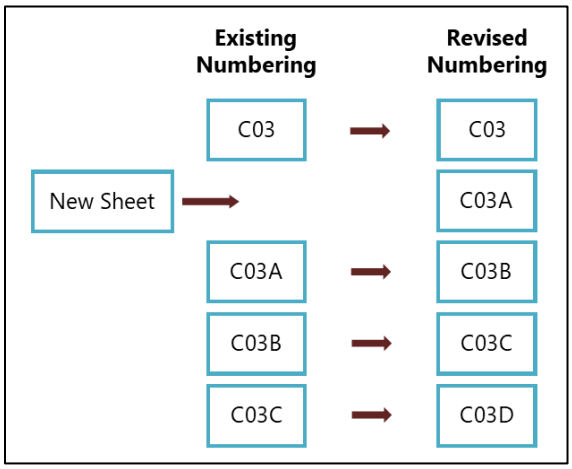
When multiple sheets overlay the same area in the "C" and "D" series, a sequential letter is added to each supplemental plan sheet. Supplemental plan sheets include general construction breakouts, general construction notes, drainage and utilities, drainage and utilities notes, profiles, and geotechnical data (see Table 401-8). For example: for a particular segment of mainline roadway, sheet C03 is the primary sheet and will show the roadway alignment, while sheet C03A, C03B, C03C, etc. are supplemental plan sheets and will show the profile, construction notes, drainage details, utilities, geotechnical data, etc.

Figure 401-5 Roadway Plan Sheet Structure



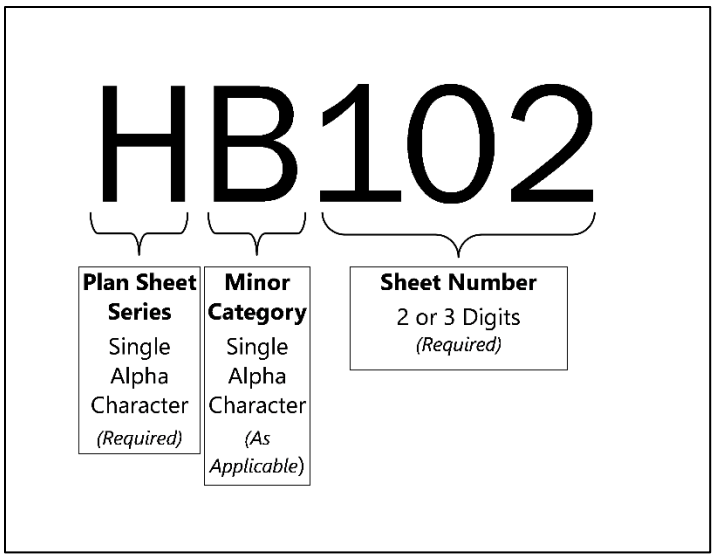
When a new sheet is added among existing sheets, renumber the sheets following the newly inserted sheet.

Figure 401-6 Adding New Roadway Plan Sheets



In rare cases when the project team is adding plan sheet after PS&E, and when renumbering plan sheets isn't possible due to time restraints, new plan sheets can be giving an additional alpha character at the end of the plan sheet number. For example, if a plan sheet needs to be added between sheet C03A and C03B, the new plan sheet can be given the number C03AB.

Figure 401-7 Standard Plan Sheet Numbering



Except for the plans sheets in the major categories of "Title Sheet" and "Roadway Construction" ("A", "C", and "D" series plan sheets), plan sheet numbers are composed of the following components (see Table 401-8 for further guidance on plan sheet numbering):

1. An alpha character at the beginning of the plan sheet number to define the plan sheet series and major category of work.
2. An optional second alpha character to designate a minor category of work, when applicable. Some of the minor category letters are fixed or static, while other minor categories will use the next consecutive letter within that major category, beginning with "A" (see Table 401-8).
3. A sequential two or three-digit numeric value after the alpha characters.

Three digit sheet numbers are used to further group plan sheets within a series. Retaining walls, which are in the "GB" series, can be used to demonstrate three-digit plan sheet numbering. When a project contains more than one retaining wall, it may be desirable to group the plan sheets by wall. To group the plan sheets using a 3-digit sheet number, the plan sheets assigned to wall #1 would be in the GB100s, the plan sheets assigned to wall #2 would be GB200s, etc. When the three-digit number is used for any plan sheets, all plan sheets within that series must use the 3-digit format. (For example: "G" series drawings in a plan set would all use either two-digit numbering or three-digit numbering, but not both.) When more than nine subgroups are needed, three-digit plan sheet numbers can be grouped as 100s, 150s, 200s, 250s, etc.

Place Geotechnical Data sheets with the structure(s) or feature(s) for which they are developed. For example, if a Geotechnical Data sheet is showing information for a bridge, the sheet goes with the bridge design sheets and is assigned a bridge sheet number. The same is true for other

structures (a retaining wall, a sign structure, a culvert, etc.), so Geotechnical Data sheets are included with the structure plan sheets if the information on the Geotechnical Data sheet relates to that structure. Per individual discipline guidance, place the Geotechnical Data sheets after the design profile, elevation, or longitudinal section sheets for the structures or features they are intended. For "C" and "D" series plan sheets, the Geotechnical Data sheet is a supplemental plan sheet and is placed before the profile sheet. When a roadway sheet has a plan and profile shown together on a single sheet, then the Geotechnical Data sheet is placed after that sheet.

The Geotechnical Data sheets will be assigned the same sheet numbering series as the discipline in which they are placed. Avoid duplication and overlap of geotechnical information (i.e. individual boreholes) on each Geotechnical Data sheet, or on multiple data sheets within one discipline. Note: Among multiple disciplines, duplication of geotechnical information may at times be necessary in order to provide all the information available for each structure/feature. Refer to the Geotechnical Data chapter of the GHE CAD Manual for guidance on the development of Geotechnical Data sheets. See the Geotechnical reporting chapter of the Geotechnical Design Manual for layout and content guidance.

The sheet title “Retaining Walls” is in the “GB” sheet number series. However, when the retaining wall is physically attached to a bridge or associated with a bridge, it is placed in the “J” series sheets. Likewise, the sheet title “Sound Walls” is in the “GC” sheet number series, but when a sound wall is physically attached to a bridge, it is placed in the “J” series sheets.

For “A” series, plan sheet numbering, see Table 401-8. "A" series can use an additional letter in the sheet number for grouping but is not required.

In the “A” series, the second letter is not static. "A" Series includes the title sheet, list of standard drawings, layout of roadway sheets, geotechnical data layout, and survey control information. See Part 500 for approved sheet title lists.

Table 401-8 "A" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
A##	A01	**Title Sheet**	Title sheet
A##	A02	**Title Sheet**	Title sheet index and list of standard drawings
A##	AB01	**Plan Sheet Layout**	Roadway plan sheet layout diagram
A##	AC01	**Geotechnical Data Layout**	Geotechnical data sheet layout diagram
A##	AD01	**Survey Control Data**	Survey control data

For "B" series plan sheet numbering, see Table 401-9.

In "B" series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. The series includes the typical sections, roadway details, curb ramp details and pipe data. See Part 500 for approved sheet title lists.

Table 401-9 "B" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
BA##	BA01	**Typical Sections**	Roadway typical sections
BA##	BA02	**Typical Sections**	[As needed]
BB##	BB01	**Details**	Roadway details
BB##	BB02	**Details**	[As needed]
BC##	BC01	**Curb Ramp Details**	Curb ramp details
BC##	BC02	**Curb Ramp Details**	[As needed]
BD##	BD01	**Pipe Data**	Pipe data table
BD##	BD02	**Pipe Data**	[As needed]

For "C" series plan sheet numbering, see Table 401-10.

In “C” series, the secondary letter is placed after the number, beginning on the second sheet of the series. The series includes alignments, general construction, general construction notes, drainage and utilities, drainage and utilities notes, profiles, and geotechnical data. See Part 500 for approved sheet title lists.

Table 401-10 "C" Series Plan Sheet Order and Numbering

Plan Sheet Along Mainline	Format	Sheet No.	Sheet Title	Includes
1st	C##	C01	**General Construction**	Combined sheet of alignment, plan view, drainage & utilities, and notes
2nd	C##	C02	**General Construction**	Combined sheet of alignment, plan view, drainage & utilities, and notes
	C##?	C02A	**General Construction Notes**	General construction sheet notes
3rd	C##?	C03A	**General Construction**	Sheet of plan view general construction items and notes
	C##?	C03B	**General Construction Notes**	Note sheet when notes will not fit on plan sheet
	C##?	C03C	**Drainage & Utilities**	Sheet of plain view drainage & utilities Items and notes
	C##?	C03D	**Drainage & Utilities Notes**	Note sheet when notes will not fit on plan sheet
	C##?	C03E	**Profile**	Profile view of vertical alignment and drainage items
	C##?	C03F	**Profile**	[As needed]
	C##?	C03G	**Geotechnical Data**	Subsurface information
	C##?	C03H	**Geotechnical Data**	[As needed]

For "D" series plan sheet numbering, see Table 401-11.

In the “D” series, the secondary letter is placed after the number, beginning on the second sheet in the series. The plan sheets are extensions to the "C" series plan sheets and show project features not located along the main alignment shown on the "C" series plan sheets. The series includes alignments, general construction, general construction notes, drainage and utilities, drainage and utilities notes, profiles, and geotechnical data. See Part 500 for approved sheet title lists.

Table 401-11 "D" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
D##	D01	**Alignment**	Sheet of alignment data
D##?	D01A	**General Construction**	Sheet of general construction items and notes
D##?	D01B	**Drainage & Utilities**	Sheet of plan view drainage & utilities Items and notes
D##?	D01C	**Profile**	Profile view of vertical alignment and drainage items
D##?	D01D	**Profile**	[As needed]

For "E" series plan sheet numbering, see Table 401-12.

In the “E” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects. The series includes details, sign placement, staging, detours, and temporary pedestrian access routes. See Part 500 for approved sheet title lists.

Table 401-12 "E" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
EA##	EA01	**Traffic Control Details**	General details for work zone
EA##	EA02	**Traffic Control Details**	[As needed]
EB##	EB01	**Traffic Control Detour Plan**	Detour signing if required
EB##	EB02	**Traffic Control Detour Plan**	[As needed]
EC##	EC01	**Traffic Control Plan**	Temporary Pedestrian access route
EC##	EC01	**Traffic Control Plan**	[As needed]
ED##	ED01	**Traffic Control Plan**	Stage construction sheets including cross sections
ED##	ED02	**Traffic Control Plan**	[As needed]
EE##	EE01	**Traffic Control Plan**	Stage construction sheets including cross sections
EE##	EE02	**Traffic Control Plan**	[As needed]

For "F" series plan sheet numbering, see Table 401-13.

In the “F” series, the second letter is fixed. Each subgroup uses the letter shown. The series includes roadside development, erosion and sediment control, and wetland mitigation. The roadside development sheets have eleven (11) different sheet titles available for use but all

roadside development sheets are numbered in the “FA” grouping. In Table 401-13, the Red numbers are optional. See Part 500 for approved sheet title lists.

Table 401-13 "F" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
FA##	FA101	**Roadside Development**	Plans and details
FA##	FA102	**Roadside Development**	[As needed]
FB##	FB101	**Erosion & Sediment Control**	Plans and details
FB##	FB102	**Erosion & Sediment Control**	[As needed]
FC##	FC101	**Wetland Mitigation**	Plans and details
FC##	FC102	**Wetland Mitigation**	[As needed]

For "G" series plan sheet numbering, see Table 401-14.

In the "G” series, the second letter is fixed. Each subgroup uses the letter shown. The series includes exploration location index, geotechnical data (when not applicable to a structure or feature), retaining walls, sound walls, rockfall mitigation, material sources, landslide correction, and hazardous material. The material sources sheets have eight (8) different sheet titles available for use but all material sources sheets are in the “GE”. In Table 401-14, the Red numbers are optional. See Part 500 for approved sheet title lists.

Table 401-14 "G" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
GA##	GA001	**Exploration Location Index**	[As needed]
GA##	GA002	**Geotechnical Data**	Plans and details
GB##	GB101	**Retaining Walls – Wall ##**	Plans and details (Use 3 digit sheet number to group plans sheets for individual walls – Wall 1 in GB100s, 2nd Wall in GB200s, etc.)
GB##	GB102	**Retaining Walls – Wall ##**	[As needed]
GB##	GB103	**Geotechnical Data**	Plans and details
GC##	GC001	**Sound Walls – Wall ##**	Plans and details
GC##	GC002	**Sound Walls – Wall ##**	[As needed]
GC##	GC003	**Geotechnical Data**	Plans and details
GD##	GD001	**Rockfall Mitigation**	Plans and details
GD##	GD002	**Rockfall Mitigation**	[As needed]
GE##	GE001	**Material Sources**	Plans and details
GE##	GE002	**Material Sources**	[As needed]
GF##	GF001	**Landslide Correction**	Plans and details
GF##	GF002	**Landslide Correction**	[As needed]
GF##	GG003	**Geotechnical Data**	Plans and details
GG##	GG001	**Hazardous Material**	Plans and details
GG##	GG002	**Hazardous Material**	[As needed]
GG##	GG003	**Geotechnical Data**	Plans and details

For "H" series plan sheet numbering, see Table 401-15.

In the “H” series, the second letter is fixed. Each subgroup uses the letter shown. The series includes stormwater, large culverts, geotechnical data, fish passage, temporary water management, bank protection, and waterway enhancement. The stormwater sheets have five (5) different sheet titles available for use but all stormwater sheets are in the “HA” grouping. In Table 401-15, the Red numbers are optional. See Part 500 for approved sheet title lists.

Table 401-15 "H" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
HA##	HA001	**Stormwater**	Plans and details
HA##	HA002	**Stormwater**	[As needed]
HB##	HB101	**Culverts**	Plans and details (Use 3 digit sheet number to group plan sheets for individual culverts – 1st culvert in HB100s, 2nd culvert in HB200s, etc.)
HB##	HB102	**Culverts**	[As needed]
HB##	HB103	**Geotechnical Data**	Plans and details
HC##	HC001	**Fish Passage**	Plans and details
HC##	HC002	**Fish Passage**	[As needed]
HD##	HD001	**Temporary Water Management**	Plans and details
HD##	HD002	**Temporary Water Management**	[As needed]
HE##	HE001	**Bank Protection**	Plans and details
HE##	HE002	**Bank Protection**	[As needed]
HF##	HF001	**Waterway Enhancement**	Plans and details
HF##	HF002	**Waterway Enhancement**	[As needed]

“I” not used so not confused with “1”. Never include the letter "I" in plan sheet number.

For "J" series plan sheet numbering, see Table 401-16.

In the “J” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects such as single span bridge project or multiple bridges overlay project types. The series includes general layout and index, substructure details, super structure details, plan and elevation, geotechnical data, stage construction details, miscellaneous details, cathodic protection, etc. In Table 401-16, the Red numbers are optional. See Part 500 for approved sheet title lists.

Table 401-16 "J" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
J##	J01	**Bridge**	Plans and details
J##	J02	**Bridge**	[As needed]

Multi-bridge project sub grouped by each bridge.

Format	Sheet No.	Sheet Title	Includes
JA##	JA002	**Bridge**	As needed]
JB##	JB001	**Bridge**	Second bridge plans and details
JB##	JB002	**Bridge**	[As needed]
JC##	JC001	**Bridge**	Third bridge plans and details
JC##	JC002	**Bridge**	[As needed]

For "K" series plan sheet numbering, see Table 401-17.

In the “K” series, the second letter is fixed. Each subgroup uses the letter shown. The series includes site plans, equipment details, and structure details. See Part 500 for approved sheet title lists.

Table 401-17 "K" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
KA##	KA01	**Intelligent Transportation Systems**	Site Plans
KA##	KA02	**Intelligent Transportation Systems**	[As needed]
KB##	KB01	**Intelligent Transportation Systems**	Equipment Details
KB##	KB02	**Intelligent Transportation Systems**	[As needed]
KC##	KC01	**Intelligent Transportation Systems**	Structure Details
KC##	KC02	**Intelligent Transportation Systems**	[As needed]

For "L" series plan sheet numbering, see Table 401-18.

In the “L” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects. The series includes Legend, General Notes, Signing Plan, Signing Details, Cantilever Details, Sign Bridge Details, and Butterfly Details. Subgroups will use the next consecutive letter for each location. The Geotechnical Data sheet will use the same second letter as the associated structure. See Part 500 for approved sheet title list.

Table 401-18 "L" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
LA##	LA01	**Sign Installation Plan**	Plans
LA##	LA02	**Sign Installation Plan**	[As needed]
LB##	LB01	**Sign Details**	Details
LB##	LB02	**Sign Details**	[As needed]
LC##	LC01	**Sign & Post Data Table**	Data tables
LC##	LC02	**Sign & Post Data Table**	[As needed]
LD##	LD01	**Cantilever Details**	Plans
LD##	LD02	**Geotechnical Data**	Plans
LE##	LE01	**Sign Bridge Details**	Plans
LE##	LE02	**Geotechnical Data**	Plans

For "M" series plan sheet numbering, see Table 401-19.

In the “M” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects. Series includes all of these sheet types: Details, Detector Plan, Existing Utilities, Fire Signal Plan, Flashing Beacon Plan, Interconnect Plan, Legend, Miscellaneous, Pedestrian Signal Plan, Railroad Preemption Plan, Ramp Meter Plan, Red Light Enforcement Plan, Removal Plan, Signal Plan, Temporary Detector Plan, Temporary Ramp Meter Plan, and Temporary Signal Plan. Generally group plans together in a single series by intersection. See Part 500 for approved sheet title list.

Table 401-19 "M" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
MA##	MA01	**Legend**	Legend
MB##	MB01	**Removal Plan**	[Plans for first intersection
MB##	MB02	**Temporary Signal Plan**	[As needed]
MB##	MB03	**Signal Plan**	[As needed]
MC##	MC01	**Signal Plan**	Plans for second intersection
MC##	MC02	**Detector Plan**	[As needed]

For "N" series plan sheet numbering, see Table 401-20

In the “N” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects Series includes plans, details, removal, relocation, replacement, and loop detection. See Part 500 for approved sheet title list.

Table 401-20 "N" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
NA##	NA01	**Automatic Traffic Recorder**	Plans
NA##	NA02	**Automatic Traffic Recorder**	[As needed]
NB##	NB01	**Automatic Traffic Recorder**	Details
NB##	NB02	**Automatic Traffic Recorder**	[As needed]

“O” not used so not confused with zero. Never include the letter "O" in a plan sheet number.

For "P" series plan sheet numbering, see Table 401-21

In the “P” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects. Series includes illumination plans, details, geotechnical data, and structures. See Part 50000 for approved sheet title list.

Table 401-21 "P" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
PA##	PA01	**Illumination Plan**	Plans
PA##	PA02	**Illumination Plan**	[As needed]
PB##	PB01	**Illumination Details**	Details
PB##	PB02	**Illumination Details**	[As needed]
PC##	PC01	**Wiring Diagram**	Wiring Diagram
PC##	PC02	**Wiring Diagram**	[As needed]

For "Q" series plan sheet numbering, see Table 401-22

In the “Q” series, the second letter is not static. Each subgroup uses the next consecutive letter, beginning with “A”. Subgrouping is not required for non-complex projects. Series includes permanent pavement marking plans. See Part 500 for approved sheet title list.

Table 401-22 "Q" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
QA##	QA01	**Pavement Marking Details**	Plans
QA##	QA02	**Pavement Marking Details**	[As needed]
QB##	QB01	**Pavement Marking Plan**	Details
QB##	QB02	**Pavement Marking Plan**	[As needed]
QC##	QC01	**Pavement Marking Removal Plan**	Wiring Diagram
QC##	QC02	**Pavement Marking Removal Plan**	[As needed]

For "R" through "Z" series plan sheet numbering, see Table 401-23

In the “R” series through the “Z” series, the second letter is not static. Each subgroup uses the next consecutive letter. Subgrouping is not required for non-complex projects.

Table 401-23 "R"-"Z" Series Plan Sheet Order and Numbering

Format	Sheet No.	Sheet Title	Includes
R-Z series plans		**Outside Agency Plans**	[As needed]

Section 402 Seed Files

The seed files are the basis for drafting a project. Some seed files are pre-configured with models and a cache reference file attached, ready to begin your project. A "Cache" is a MicroStation file which contains commonly used items. The cache may include text, cells, and other elements to quickly use in a specific type of plan sheet.

During new file creation, a seed file may be selected from the ODOT workspace and saved into the project folder using the Project Wise Document Naming Tool (See the ODOT Project Wise Use Manual).

There are eight (8) different seed files provided in the ODOT workspace for plan sheets. Specific information about which seed file to use for a particular type of plan sheet is shown in Table 402-1. Additional information about the seed files is given in Part 500.

Table 402-1 Seed Files

Seed File Name	Type of Sheet
seed_tse.dgn	Title Sheet
seed811tse.dgn	Title Sheet for 8 ½" x 11" sheets
Seed_OM.dgn	DFI plan sheet
Seed_TWM.dgn	Temporary Water Management Concept plan sheets
seed2d.dgn	General plan sheet 2D file
seed3d.dgn	General plan sheet 3D file
Seed_titleblock.dgn	Project name and sheet title file
seedRW2d,dgn	Right of Way map file

Section 403 File Naming Convention

See the ODOT ProjectWise User Manual (internal ODOT user link and external user link) the ProjectWise Document Name List in the Quick Guides and Manual Lists on the web pages for file naming convention and discipline-specific file names.

Plan Sheet Title Block 500

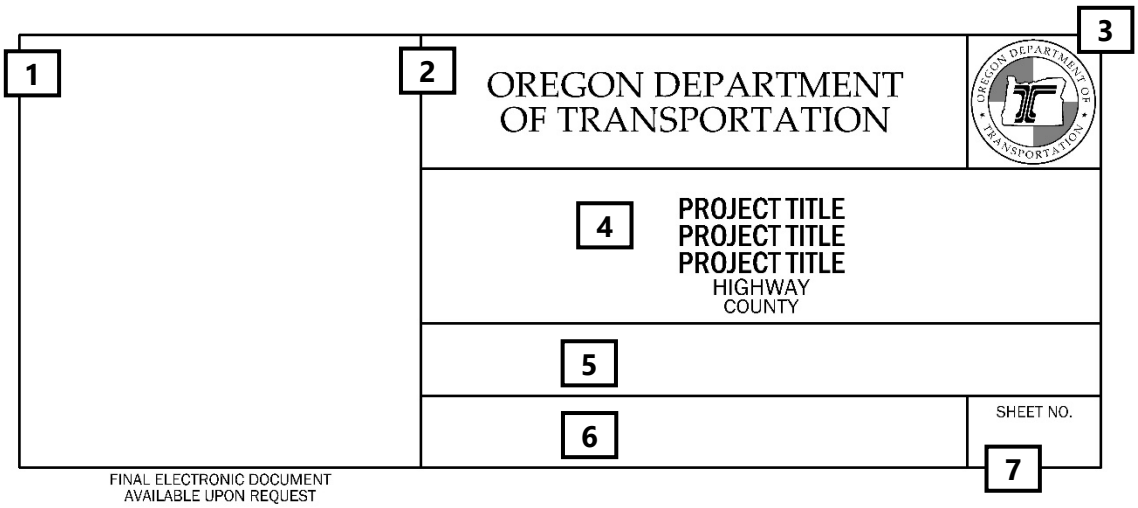
Section 501 Introduction

To find the location of MicroStationV8i "Task Tab" items in MicroStation CONNECT, use the ribbon search in the upper right of your CONNECT file.

Section 502 Title Block Overview

The ODOT title block will be used on all of the plan sheets. The basic ODOT title block is placed in the lower right corner of each plan sheet in a landscape orientation. When editing text in a cell, do not drop status on the cell. The text within a cell is editable and needs to retain the properties of the cell.

Figure 502-1 Standard Title Block



Each part of the title block is explained below.

1 Prior to the final plans milestone, place the status stamp cell in this box. For the status stamp cell, use the standard plan review milestones that corresponds to the milestone of the plans. Select a standard plan review milestone from the following list:

- Draft Design Acceptance Plans
- Design Acceptance Plans
- Preliminary Copy
- Advance Copy
- Final Review Plans

The status text is on level P_ODOT_PLAN_TBStatus. Use the Ribbon Search interface to find the status stamp by typing the milestone name. (DAP, Primary, Advance, or Final)

When the plans are finalized, remove all status stamp cells, and use the same box to place a cell for the professional of record's seal. Do no place more than one professional of record's seal on a single drawing. The digital signature on the professional of record's seal is applied to the PDF version of the final plans.

2 The words "Oregon Department of Transportation" are included in the rectangular area and on level P_ODOT_PLAN_TBCoNam. This text is to be used on all projects developed by ODOT staff.

When the design is completed by a consultant, place the consultant logo and business information in this rectangular area. Occasionally, teams will have members from both ODOT staff and consultant staff. When this occurs, include the information that corresponds to the professional of record (POR) for the design shown on the plan sheet. When the POR is ODOT staff, the "Oregon Department of Transportation" will be used. When the POR is consultant staff, the consultant logo will be used. Do not include the words "Oregon Department of Transportation" and the consultant logo and business information in the same rectangular area on a single plan sheet.

3 The ODOT logo is to appear on all projects using this title block in this location.

4 This is the area for the project title, highway name, and county name. Note that there is a construction line in the cell just above the project title to delineate the space requirement for the structure name to be added on bridge sheets. The structure name is on level P_ODOT_PLAN_TBBDSDwg. See the BDM Section 2 for details on the structure name.

The project title is to match the STIP project title when spoken. For example, “RD.” and “ROAD” are spoken the same when read aloud. The format for contract plans is all capital letters. Due to character limits, the words “Section” or “Project” might be left off the STIP name, but either “Section” or “Project” (or the abbreviation “Sec.” or “Proj.” if required by space limits) needs to be included on the plans. A section is defined as a continuous piece of roadway from one location to another. A project is defined as a single or multiple spot locations.

The highway name is followed by the word “Highway” or “Highways” as appropriate. “Various” is used when there are more than two state highway involved on the project.

The county name is followed by the word “County” or “Counties” as appropriate. “Various” is used when there are more than two counties involved on the project.

5 The names in the signature block can either be edited in the specific plan sheet model of the title block reference file when they are all the same in that series of plan sheets or the names can be placed in each of the plan sheet files.

Use “N/A” for the text “Name” when a specific project role is not used. The names are on level P_ODOT_PLAN_TeamNames. The cell is found using the ribbon search interface, using “member name”. Occasionally teams will have members from both ODOT staff and consultant staff. When this occurs, after the team member’s name, include in parentheses the name of the employer. Example: Sam Smith (Consultant) or June Jones (ODOT).

6 The sheet title is to use the standard titles that each discipline has developed.

See specific section of this chapter that references the plan sheet series for approved sheet title names.

7 See Part 400 for the specifics on sheet numbers. The text for each sheet number will need to be placed in the specific plan sheet file. The sheet number is on level P_ODOT_PLANTBShtDwgNo. The sheet number cell is found using the Ribbon Search Interface using “Sheet No” for search text.

Section 503 Plan Sheet Title Block Add-Ons

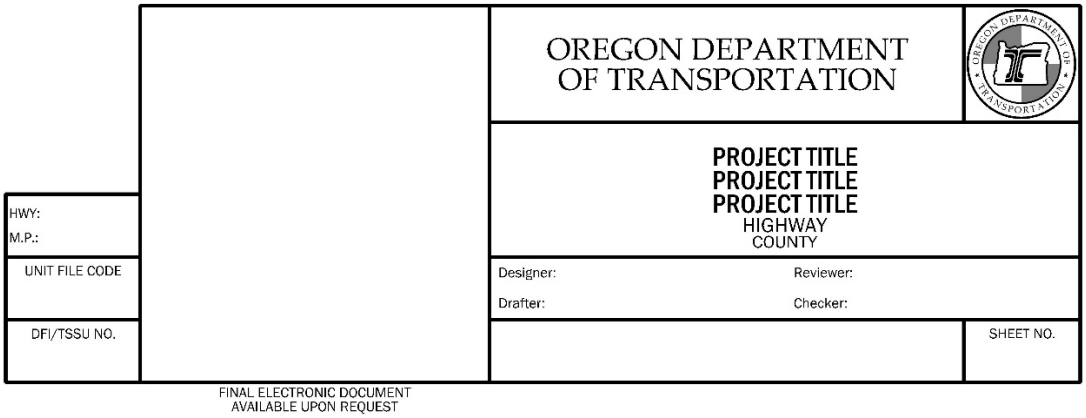
Additions to the basic title block are level controlled. These add-ons are for specific information required for internal ODOT filing of the drawings.

Traffic and Drainage Facilities

The add-on for traffic and drainage feature plan sheets is on level P_ODOT_PLAN_TBdfiTSSU. The boxes include information for the state highway number and mile point, the unit file code, and the Drainage Facility Identification (DFI) number or the Traffic Signal Services Unit (TSSU) asset identification number. The unit file code is the file number for Traffic, ITS, or ATR plan sheets. The cells to place the text are found using the Ribbon Search Interface, with the search text "unit file code" or "DFI".

Drainage facility plan sheets do not have unit file codes, so edit the unit file code to "N/A". Some traffic plan sheets will not have a TSSU number, so when this occurs, edit the DFI/TSSU No. to "N/A".

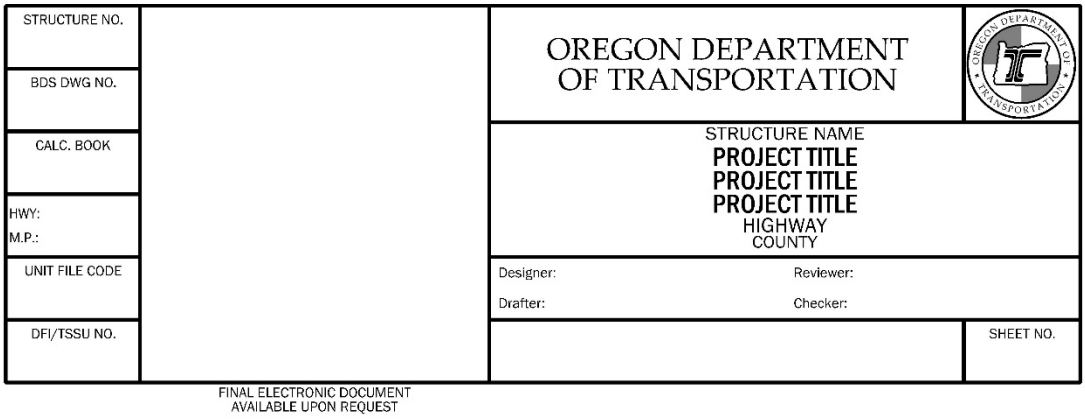
Figure 503-1 Traffic/Drainage Plan Sheet Title Block Add-on with No Structures



When there is a structure other than a bridge (such as a box culvert, major sign structure, etc.), three additional boxes are used, see Figure 503-3. The boxes are on level P_ODOT_Plan_TBStrBoxes. The text for the structure information in these boxes and the structure name text that is above the project title are all on level P_ODOT_PLAN_TBBDSDwg.

The information provided in the boxes are the structure number, the Bridge Data System (BDS) drawing number, and the calculation book number. See the Bridge Design Manual (BDM) for structure naming and acquiring structure numbers and BDS Drawing numbers. See Part 100 for a link to the BDM. The cells to place the text are found using the Ribbon Search Interface, using the name of the box.

Figure 503-2 Traffic/Drainage Plan Sheet Title Block Add-on with Structures



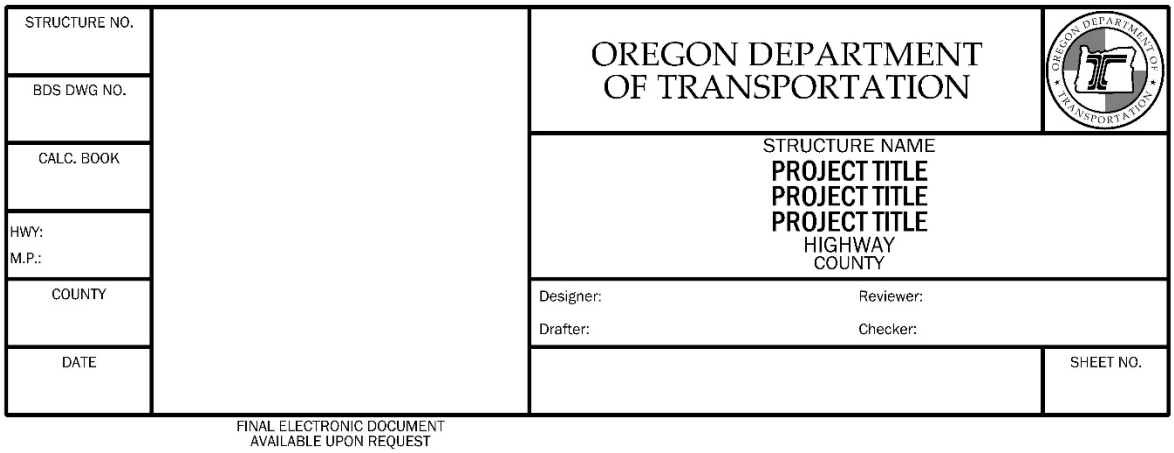
Bridge

For a bridge plan sheet there is a different configuration of the add-on boxes than for the other types of structures. Level P_ODOT_PLAN_TBStrBoxes contains the line work for all six add-on boxes required. Level P_ODOT_PLAN_TBBDSDwg contains the text for structure information. Level P_ODOT_PLAN_TBBgStrInfo contains the text in the bottom three add-on boxes.

The top three add-on boxes are specifically for the structure number, the BDS drawing number, and the calculation book number. The bottom three add-on boxes contain the state highway number and mile point of the structure, the specific county where the structure is located, and the month and year the PDF was created. The cells to place the text are found using the Ribbon Search Interface, using the box name.

Additionally, the name of the structure is to be included above the project title.

Figure 503-3 Bridge Plan Sheet Title Block Add-On

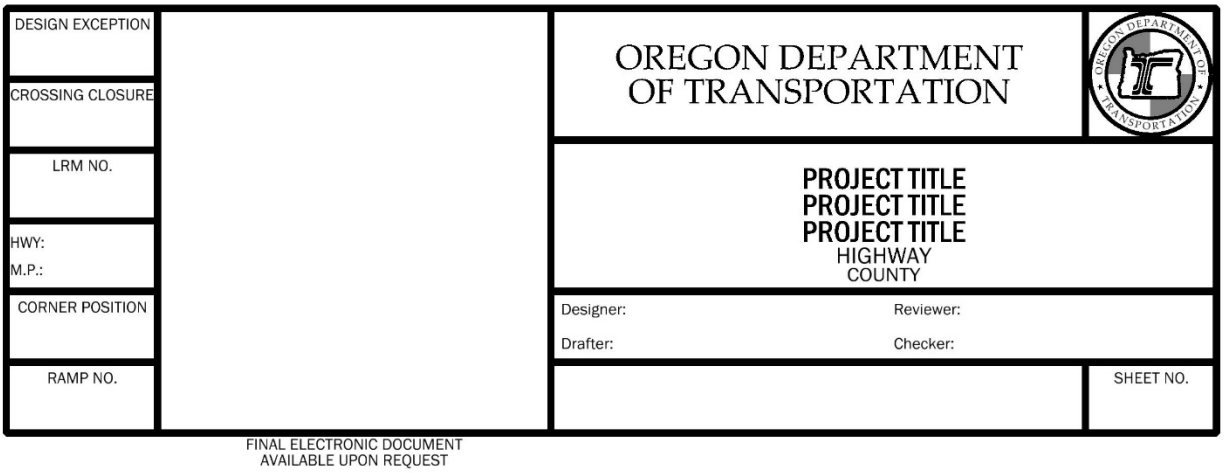


Curb Ramp Detail

For the curb ramp detail plan sheets, there is a different configuration for the add-on boxes. Level P_ODOT_PLAN_TBStrBoxes contains the line work for all six add-on boxes required. Level P_RDWY_PLAN_Detail contains the heading text for curb ramp information. Level P_RDWY_PLAN_DetailTx contains the text in the add-on boxes, except for the Hwy and MP information.

From top to bottom, the information added in the add-on boxes is the Design Exception Control Number in the box with the "Design Exception" heading. The designer will have this information after they have submitted the design exception. Next is the box with the heading "Crossing Closure". The Crossing Closure Order Number is filled in the box, otherwise "N/A" is used. The LRM No. of the intersection is entered in the third box from the top. The highway and milepoint are entered in the fourth box. In the fifth box from the top the corner position number is entered. In the sixth and final box the ramp number(s) are recorded.

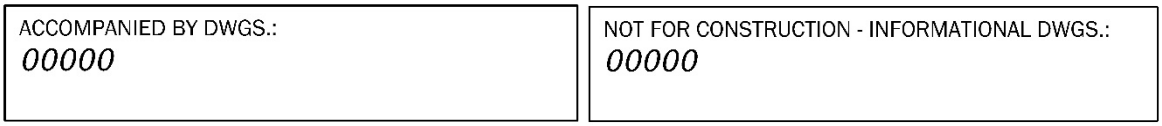
Figure 503-4 Curb Ramp Detail Plan Sheet Title Block Add-on



Section 504 Plan Sheet Title Block Floating Boxes

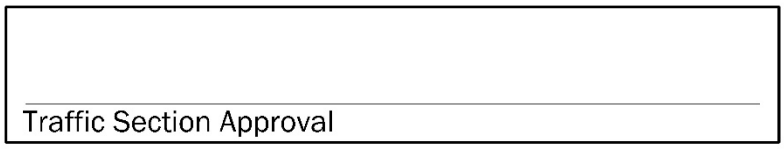
There are three cells that do not have specific locations, but can be placed just to the left of the add-on boxes or directly above the title block and to the right. These are found using the Ribbon Search Interface, using the name of the box. If these boxes do not fit into either of these locations because of the specific layout of the drawings or notes, it is permissible to use other locations on the plan sheet (typically near the title block or along the border in the lower right quadrant of the sheet).

Figure 504-1 Accompanied By and Not for Construction Floating Boxes



The "ACCOMPANIED BY DWGS.:" box is used for listing standard drawing numbers. The "NOT FOR CONSTRUCTION – INFORMATIONAL DWGS.:" box is used for only listing reference drawings, such as as-constructed drawings. Resize both the "ACCOMPANIED BY DWGS.:" and the "NOT FOR CONSTRUCTION – INFORMATIONAL DWGS.:" based upon the number of drawings included in the lists.

Figure 504-2 Traffic Section Approval Floating Box



The Traffic Section Approval box is used on traffic signal drawings. This is digitally signed by the delegate in the office of the State Traffic-Roadway Engineer.

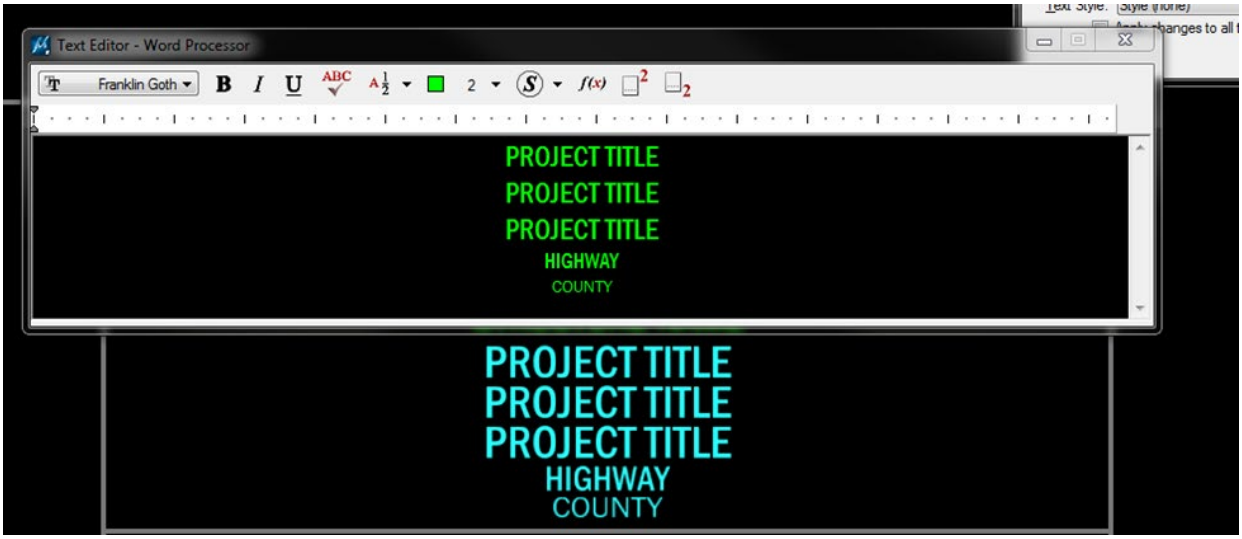
Section 505 Project Title Block Reference File Use

A project title block file can be created and referenced for each series of plan sheets on a single project. Using a project title block file eliminates the need to edit the title block information on each individual plan sheet and ensures a consistent title block on all plan sheets.

Step 1: Create a new project title block file using seed_titleblock.dgn as the seed file from the ODOT workspace. Name the file using the ProjectWise naming tool and place this file in the ProjectWise 3_Base_Files folder of the specific project.

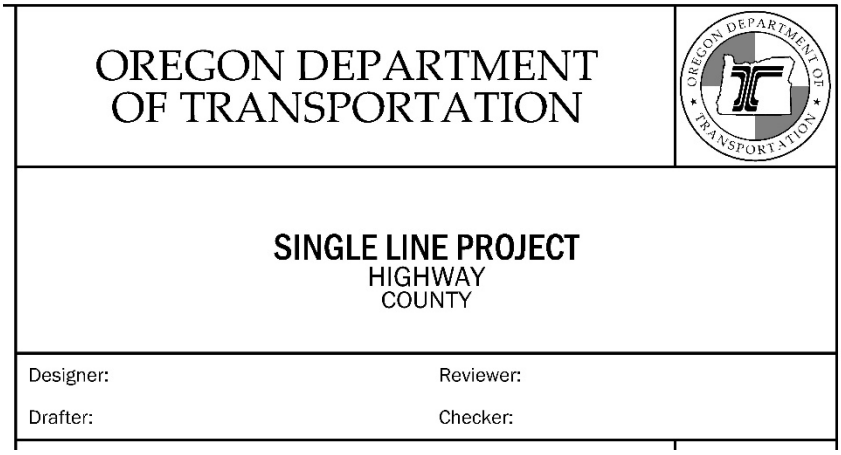
Step 2: Open the newly created project title block file in the 3_Base_Files folder. The file will open to the model named "Default". Open the "Base" model. Edit the project name, highway name, and county name. These items are in a single text node with a center-center justification. Each item is a different font and/or size, so you will need to be careful to edit a single group of text at a time so that the text node does not convert to a single font and size.

Figure 505-1 MicroStation Text Editor



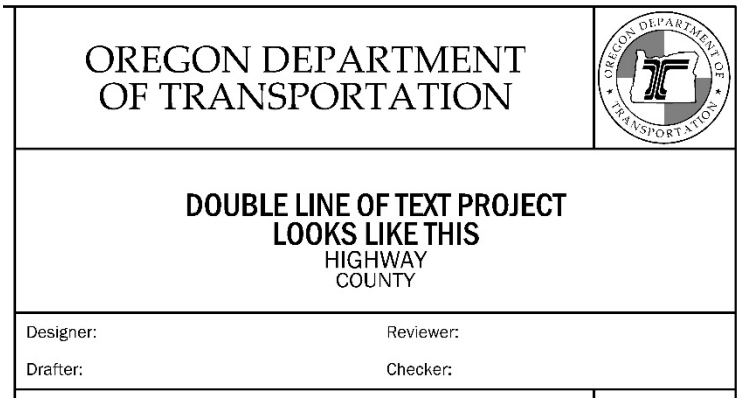
By selecting all the default text “PROJECT TITLE”, a single line can be edited to the text node. Longer project names need to be spaced such that they have a balanced appearance in the space provided, see Figure 505-3. The highway name is edited onto the line with the default text “HIGHWAY” and the county name is edited onto the line with the default text “COUNTY”.

Figure 505-2 Example of Single Line Project Name



A single line project will justify into the center of the space for the project information.

Figure 505-3 Example of Double Line Project Name



A double line project will appear in the center of the space for the project information.

Step 3: Create a new plan sheet file using seed2d.dgn and using the ProjectWise Naming Tool. Place this new file into the ProjectWise 2_Plan_Sheets folder of the specific project.

Step 4: Open the newly created plan sheet file. Set the scale being used for the plan sheet. Place a size B sheet border (11"X17") into the file. Attach the project title block file as a reference file from folder 3_Base_Files. When attaching the file, select the model corresponding with the plan sheet series (examples: A, B, C, D, etc.), and make sure that "Live Nesting" is turned on with a nesting depth of "1". There is a construction active point in the reference file that is to be used to move the reference file, see Figure 505-4. The active point matches the lower right cut line of the border. Move the reference file to the border and the title block for the plan sheet will be in place with the correct line work for the specific type of plan sheet, see Figure 505-5.

Figure 505-4 Active Point in Title Block Reference File

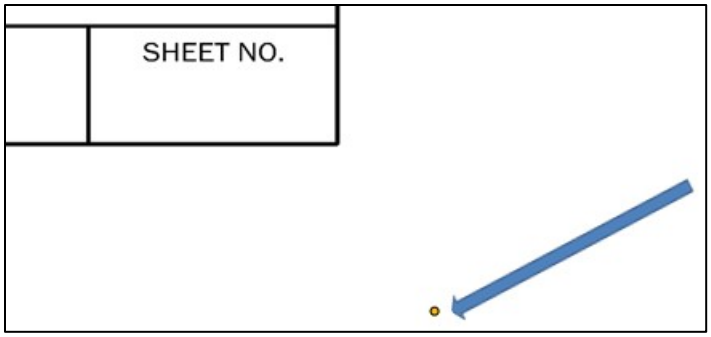
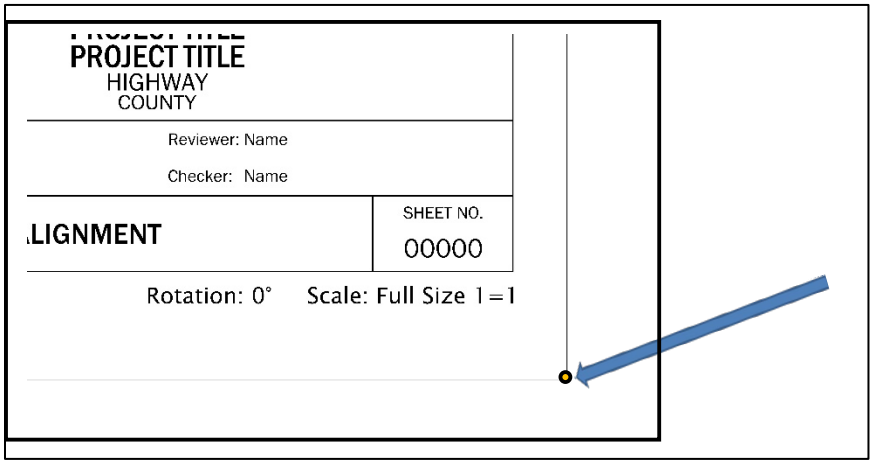


Figure 505-5 Title Block Reference File Moved to Overlay Plan Sheet Border.



Step 5: The title block text cells have been placed in each of the models for the specific sheet series. If each plan sheet requires unique text, delete the text cell from the referenced project title block file series model and place the unique text cell inside the specific sheet file. Outside of the title block border, there is another cell that lists the numbered levels that the approved sheet titles are on. The model for the N series plans does not have this extra cell.

V-Numbers

The V-Number cell is already placed in the "Base" model. The cell is on level 63. Turn on or off level 63 in the "Base" model reference file to control the V-Number appearance for specific sheet series. The V-Number text cell is found using the Ribbon Search Interface, using "V number"

Plan sheet series that use the V-Number are A-H and Q-Z. Local agency projects that do not intersect or touch the State Highway System do not receive a V-Number.

Use "Local System" in the V-Number location for local agency projects that are not on the state highway system.

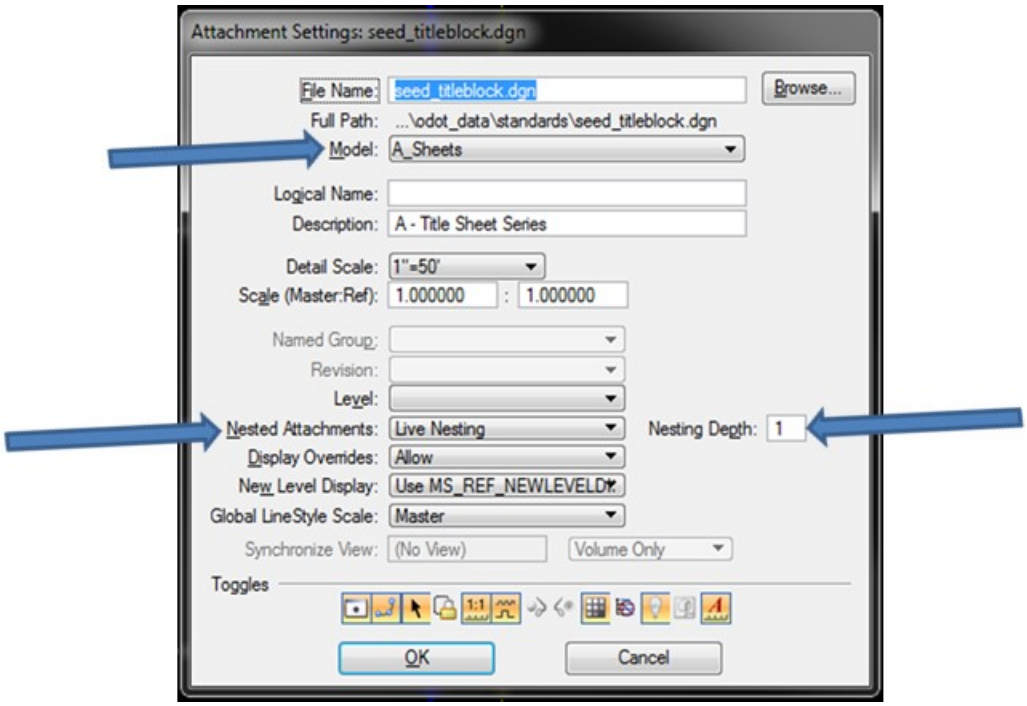
Section 506 Major Category “A” – Title Sheet

The “A” series sheets contains the title sheet and the plan sheet/standard drawing lists. In addition, this series might contain Roadway plan sheet layout, geotechnical layout or survey control data.

Use the seed file seed_tse.dgn to create the "A" series project title sheet file, then attach the project title block file as a reference file. The referenced project title block file is used for the title block in the lower right hand corner of the sheet.

The title sheet A01 and plan list sheet A02 are set up to use the title block reference file for the project title. When attaching the file, select the "A_Sheets" model, and turn on "Live Nesting" with a nesting depth of “1”.

Figure 506-1 Reference File Title Block Attachment Settings – "A" Series Plans



In the title sheet file, turn off level P_ODOT_Plan_TBProjectInfo. This turns off the generic project information in the title sheet file and allows the reference file project information to be clearly displayed.

Figure 506-2 Title Sheet Title Block

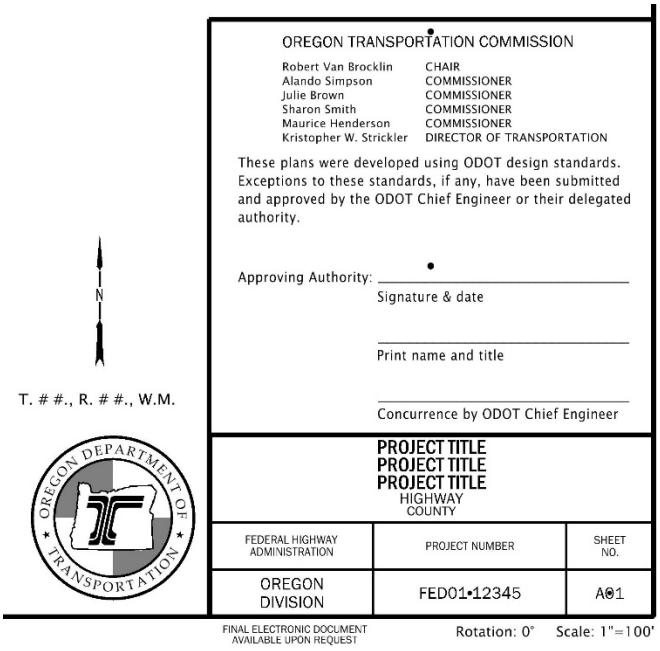
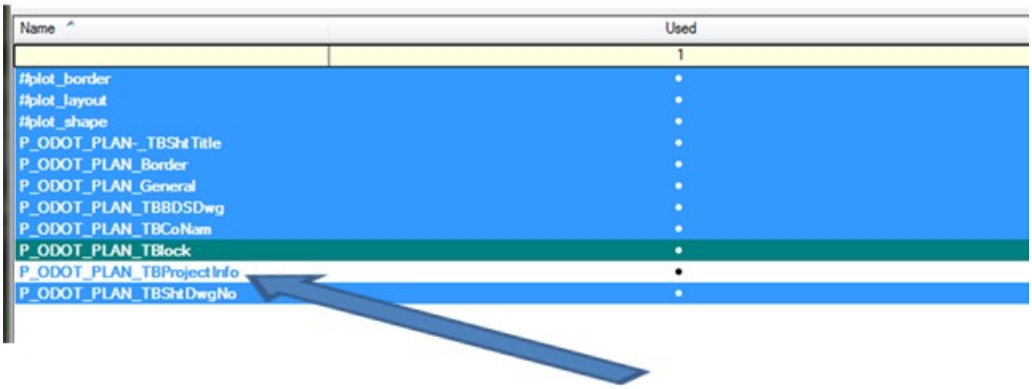


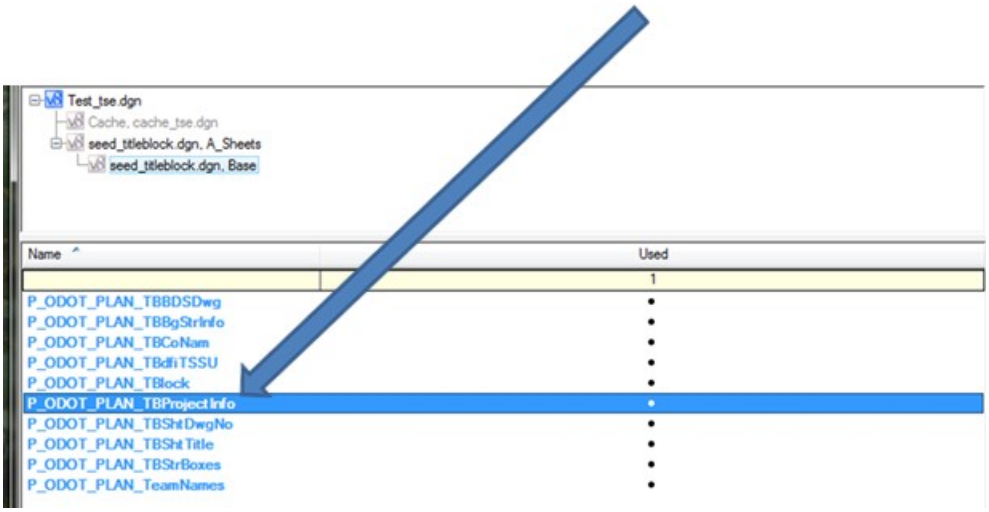
Figure 506-3 Title Sheet Level Control



In the title sheet file turn off the level that contains the generic project information.

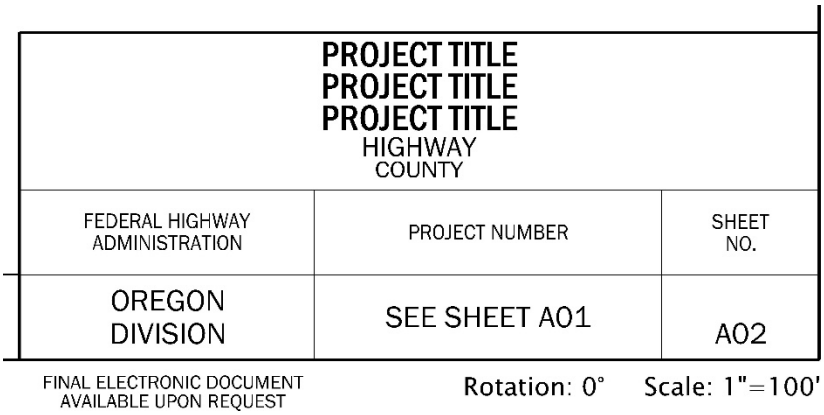
In the title block reference file for the model named base, only turn on the P_ODOT_Plan_TBProjectInfo level.

Figure 506-4 Reference File Level Control for Model Base



Follow the same process for sheet A02.

Figure 506-5 Plan Sheet A02 Title Block Example

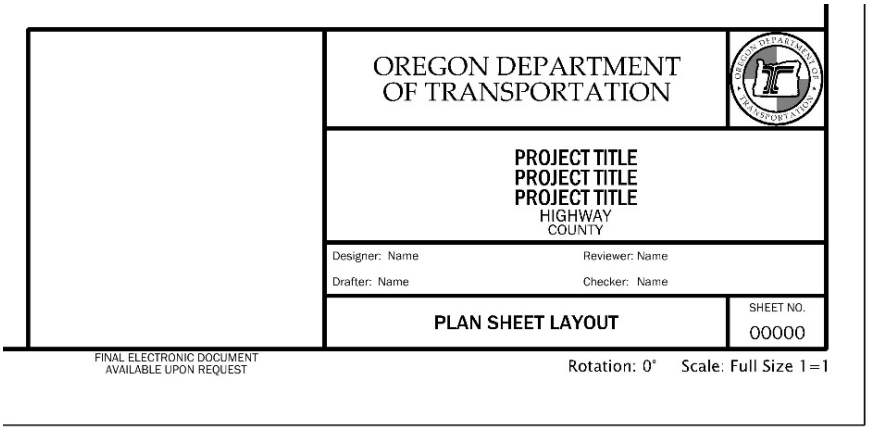


Sheets A01 and A02 (and additional index sheets for complex projects) do not have title block sheet names and use the federal title block. All other plan sheets use the standard ODOT title block and the standard sheet titles.

Other plans in the "A" series sheets use a plan sheet file with the title block reference file attached.

Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 506-6 Title Block for Other "A" Series Plan Sheets



For the "A" series sheets, the following sheet titles are available.

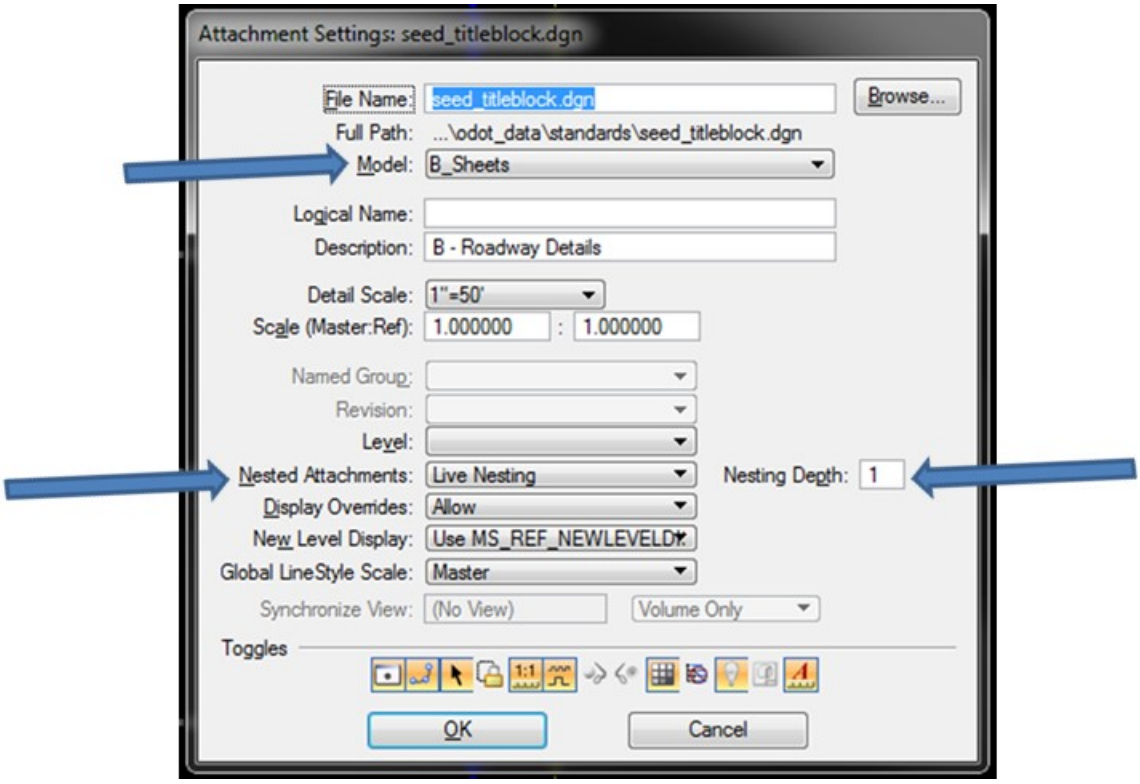
Table 506-7 Major Category "A" Sheet Titles

Level	Sheet Title
1	Plan Sheet Layout
2	Geotechnical Data Layout
3	Survey Control Data

Section 507 Major Category "B" – Roadway Details

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is attached for the title block in the lower right hand corner of the sheet border. Attach model B_Sheets with live nesting selected and the nesting depth set at "1".

Figure 507-1 Reference File Title Block Attachment Settings – "B" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 507-2 Title Block for "B" Series Plan Sheets

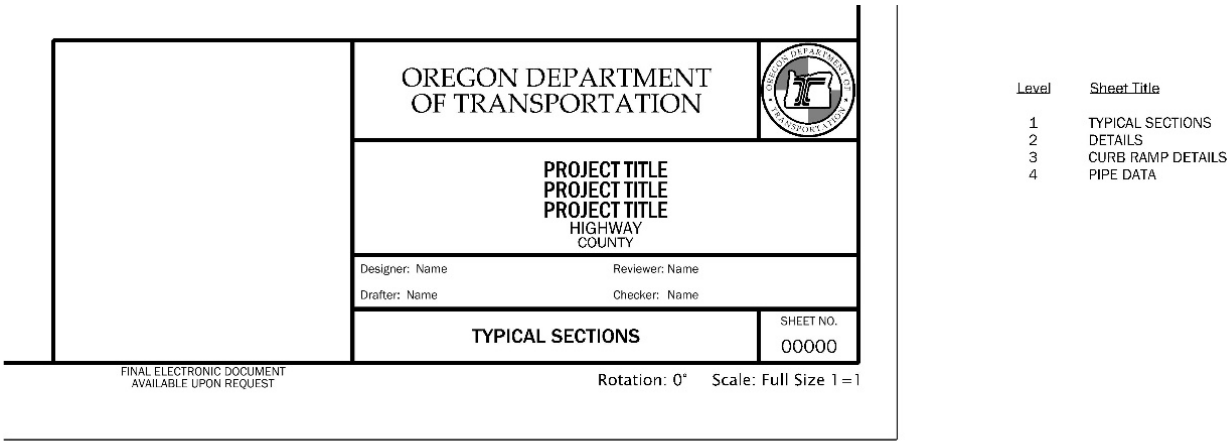


Table 507-3 below lists the available sheet titles for "B" series sheets.

Table 507-3 Major Category "B" Sheet Titles

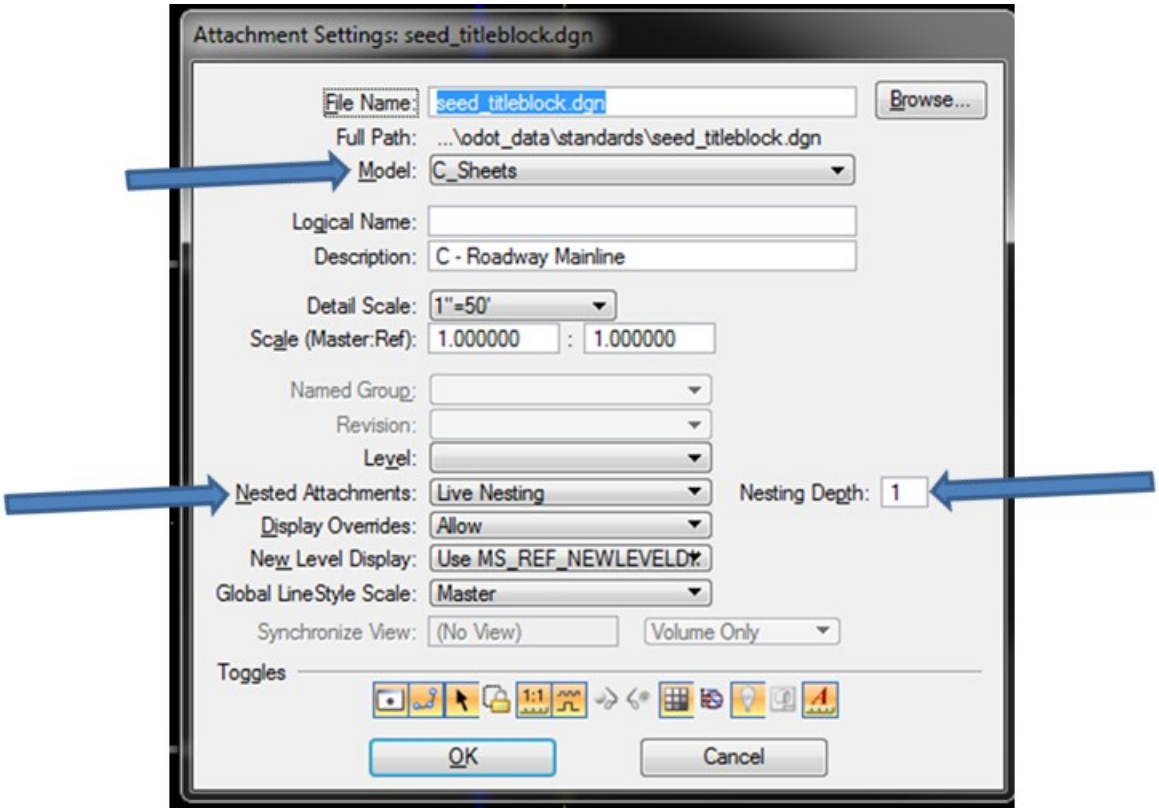
Level	Sheet Title
1	Typical Sections
2	Details
3	Curb Ramp Details
4	Pipe Data

Section 508 Major Category "C" – Roadway Plans

When using the seed file seed2d.dgn to create a plan sheet file, reference the project title block file for the title block. Place the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "C_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 508-1 Reference File Title Block Attachment Settings – "C" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 508-2 Title Block for "C" Series Plan Sheets

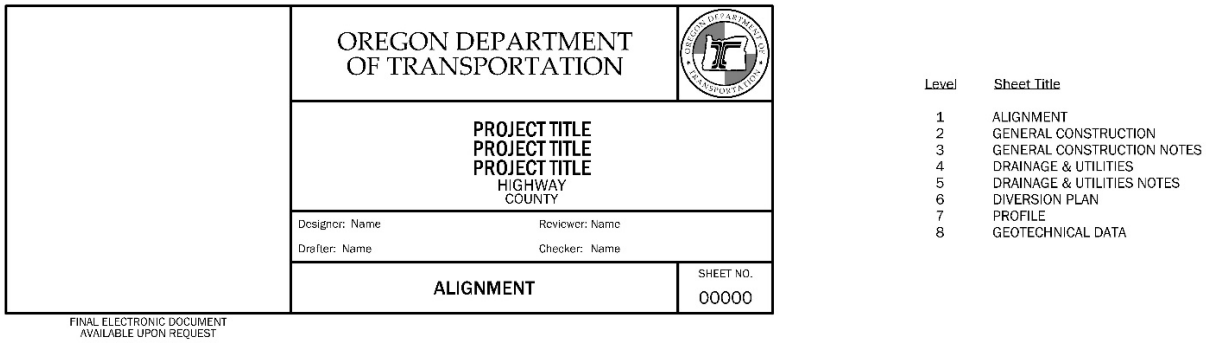


Table 508-3 below lists the available sheet titles for the "C" series sheets.

Table 508-3 Major Category "C" Sheet Titles

Level	Sheet Title
1	Alignment
2	General Construction
3	General Construction Notes
4	Drainage & Utilities
5	Drainage & Utilities Notes
6	Diversion Plan
7	Profile
8	Geotechnical Data

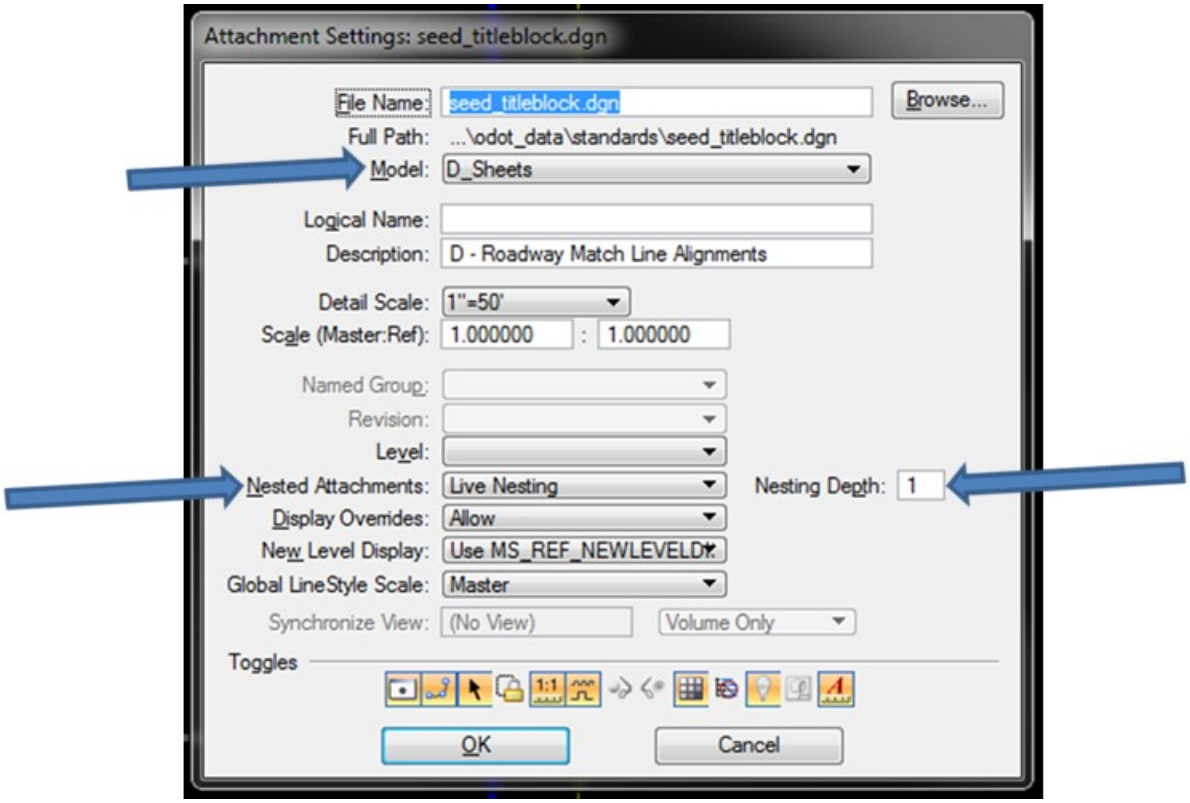
Section 509 Major Category "D" – Roadway Plans

The D series of plan sheets will only occur on projects that have match lines for an alignment that continues further than can be shown on a single plan sheet width.

When using the seed file seed2d.dgn to create a plan sheet file, reference the project title block file for the title block. Place the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "D_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 509-1 Reference File Title Block Attachment Settings – "D" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 509-2 Title Block for "D" Series Plan Sheets

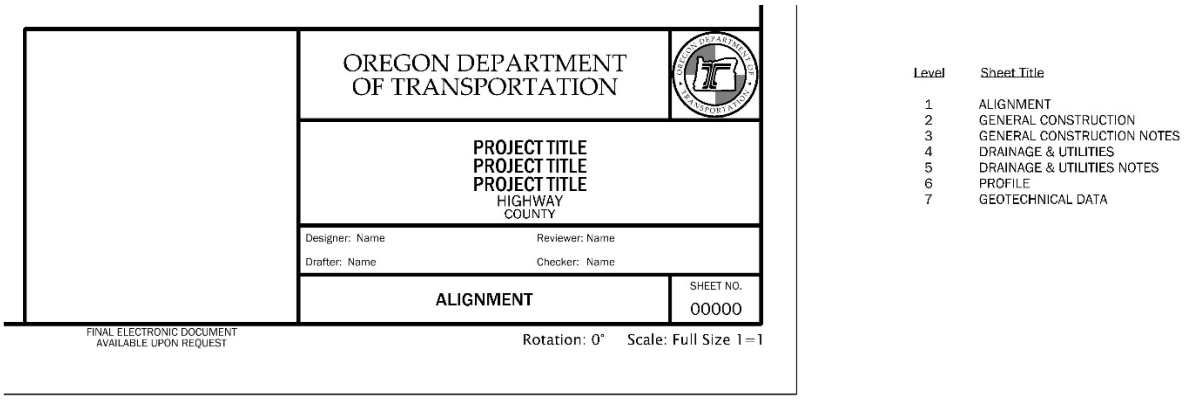


Table 509-3 below lists the available sheet titles for the "D" series sheets.

Table 509-3 Major Category "D" Sheet Titles

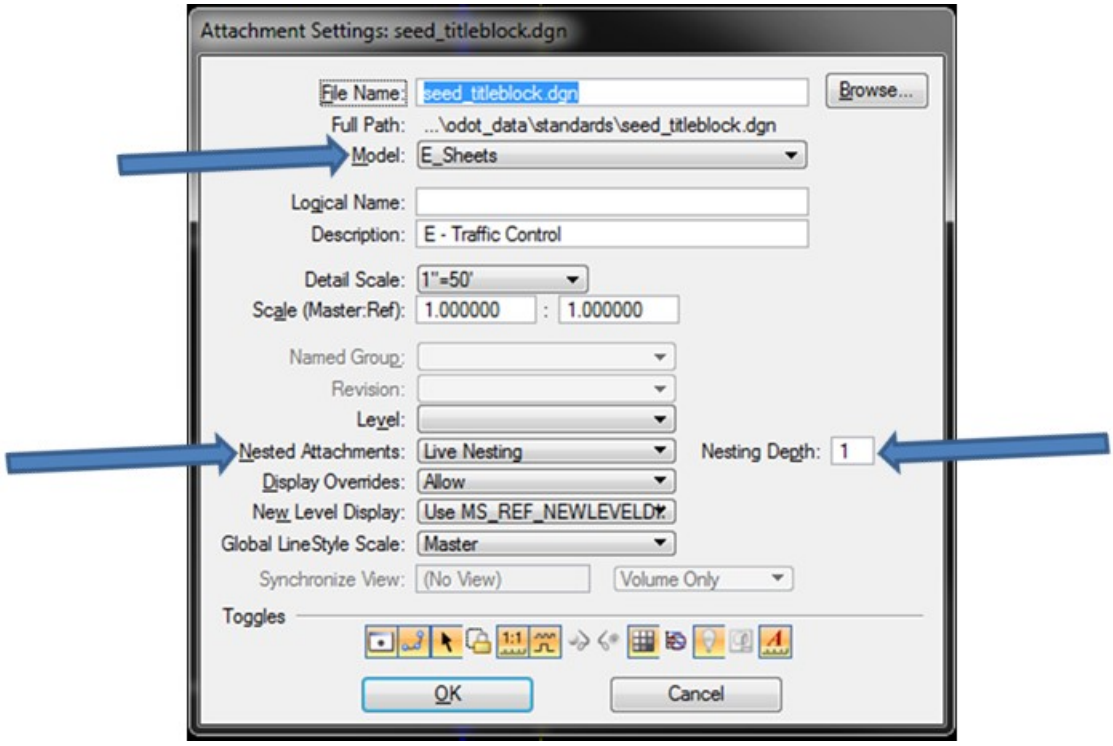
Level	Sheet Title
1	Alignment
2	General Construction
3	General Construction Notes
4	Drainage & Utilities
5	Drainage & Utilities Notes
6	Diversion Plan
7	Profile
8	Geotechnical Data

Section 510 Major Category "E" – Traffic Control

When using the seed file seed2d.dgn to create a plan sheet file, reference the project title block file for the title block. Place the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "E_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 510-1 Reference File Title Block Attachment Settings – "E" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 510-2 Title Block for "E" Series Plan Sheets

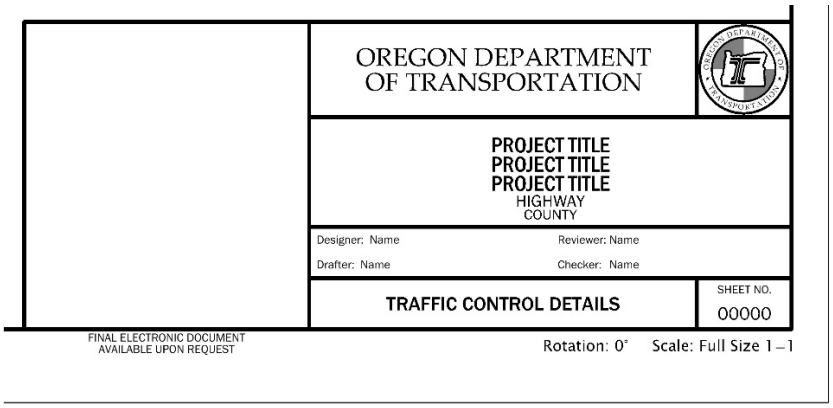


Table 510-3 below lists the available sheet titles for the "E" series sheets.

Table 510-3 Major Category "E" Sheet Titles

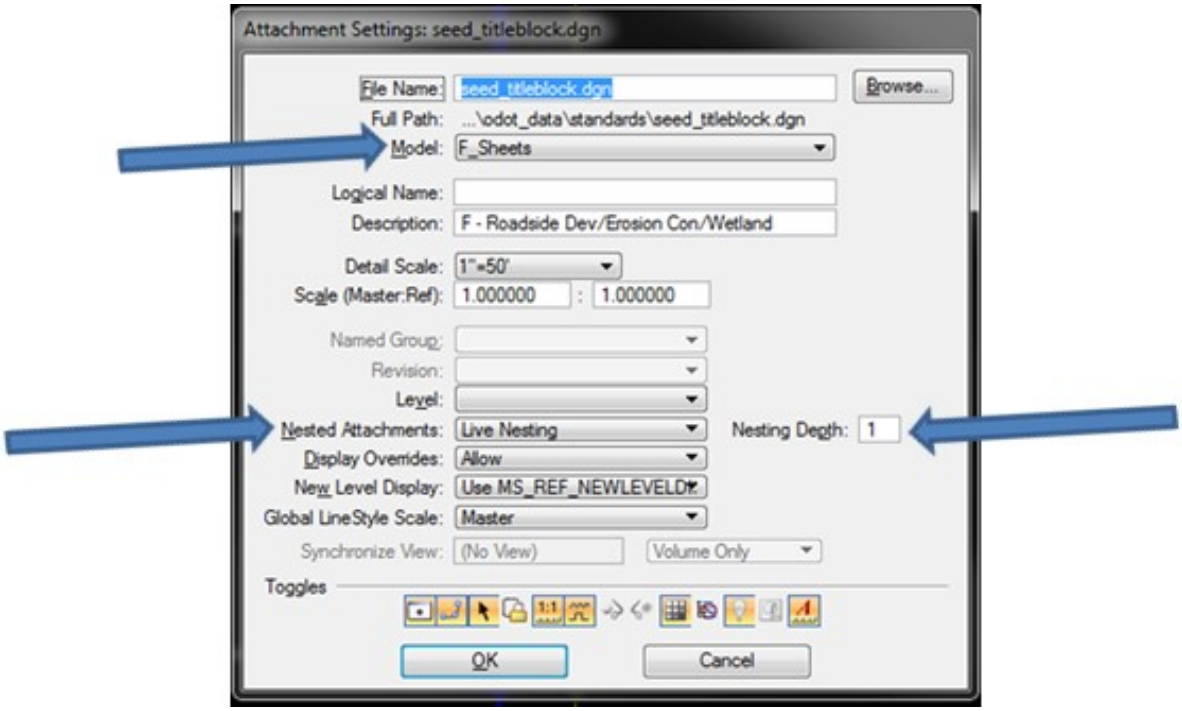
Level	Sheet Title
1	Traffic Control Details
2	Traffic Control Detour Plan
3	Traffic Control Plan

Section 511 Major Category "F" – Roadside Development/Erosion Control/Wetland Mitigation

When using the seed file seed2d.dgn to create a plan sheet file, reference the project title block file for the title block. Place the title block in the lower right hand corner of the sheet border.

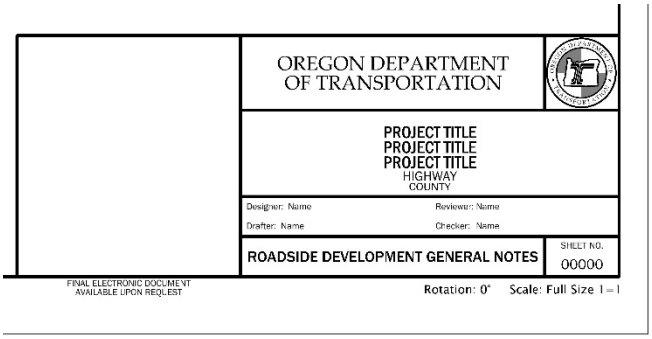
Attach the reference file, specifically the model "F_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 511-1 Reference File Title Block Attachment Settings – "F" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 511-2 Title Block for "F" Series Plan Sheets



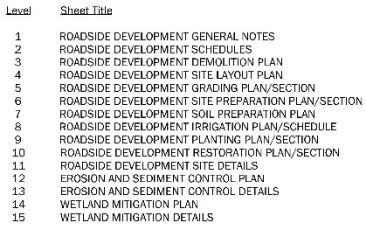


Table 511-3 below lists the available sheet titles for the "F" series sheets.

Table 511-3 Major Category "F" Sheet Titles

Level	Sheet Title
1	Roadside Development General Notes
2	Roadside Development Schedules
3	Roadside Development Demolition Plan
4	Roadside Development Site Layout Plan
5	Roadside Development Grading Plan / Section
6	Roadside Development Site Preparation Plan / Section
7	Roadside Development Soil Preparation Plan
8	Roadside Development Irrigation Plan / Schedule
9	Roadside Development Planting Plan / Section
10	Roadside Development Restoration Plan / Section
11	Roadside Development Site Details
12	Erosion and Sediment Control Plan
13	Erosion and Sediment Control Details
14	Wetland Mitigation Plan
15	Wetland Mitigation Details

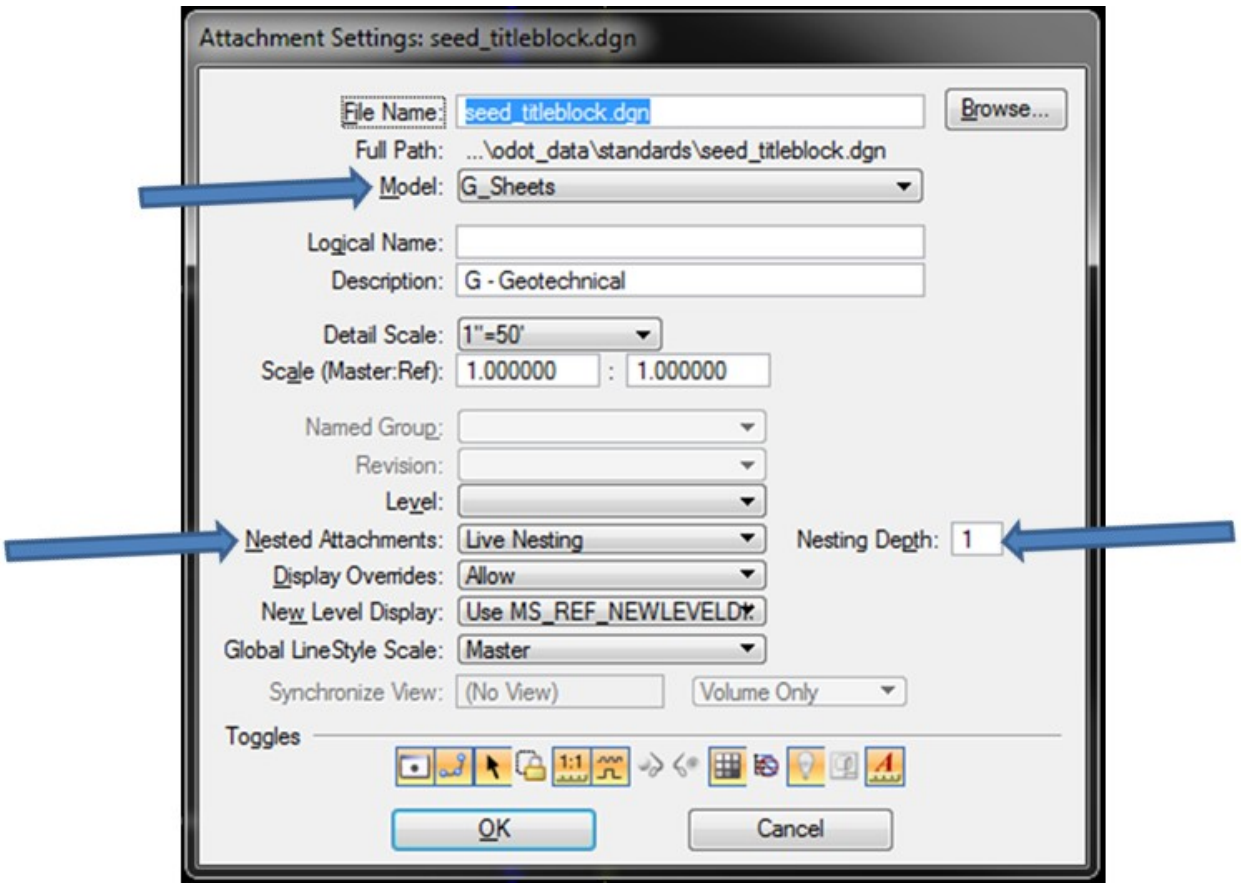
All sheet titles that begin with "Roadside Development" are in the "FA" sheet number series. The sheet titles "Erosion and Sediment Control" are in the "FB" sheet number series. Sheet titles "Wetland Mitigation" are in the "FC" sheet number series.

Section 512 Major Category "G" – Geotechnical

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

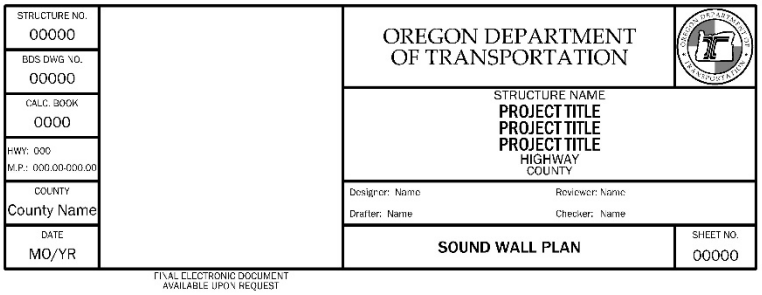
Attach the reference file, specifically the model "G_Sheets" with live nesting checked and the nesting depth set to one level deep.

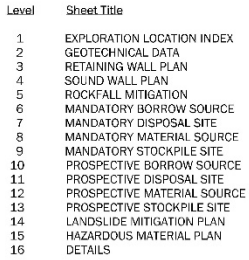
Figure 512-1 Reference File Title Block Attachment Settings – "G" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the additional structure location information and filing numbers are by default set on. If the particular plan sheet does not require this information, those add-on boxes and text may be turned off by using the levels in the reference file.

Figure 512-2 Title Block for “G” Series Plan Sheets





Level	Sheet Title
1	EXPLORATION LOCATION INDEX
2	GEOTECHNICAL DATA
3	RETAINING WALL PLAN
4	SOUND WALL PLAN
5	ROCKFALL MITIGATION
6	MANDATORY BORROW SOURCE
7	MANDATORY DISPOSAL SITE
8	MANDATORY MATERIAL SOURCE
9	MANDATORY STOCKPILE SITE
10	PROSPECTIVE BORROW SOURCE
11	PROSPECTIVE DISPOSAL SITE
12	PROSPECTIVE MATERIAL SOURCE
13	PROSPECTIVE STOCKPILE SITE
14	LANDSLIDE MITIGATION PLAN
15	HAZARDOUS MATERIAL PLAN
16	DETAILS

Table 512-3 below lists the available sheet titles for the “G” series sheets.

Table 512-3 Major Category “G” Sheet Titles

Level	Sheet Title
1	Exploration Location Index
2	Geotechnical Data
3	Retaining Wall Plan
4	Sound Wall Plan
5	Rock Slope Mitigation Plan
6	Mandatory Borrow Source
7	Mandatory Disposal Site
8	Mandatory Material Source
9	Mandatory Stockpile Site
10	Prospective Borrow Source
11	Prospective Disposal Site
12	Prospective Material Source
13	Prospective Stockpile Site
14	Landslide Mitigation Plan
15	Hazardous Material Plan
16	Details

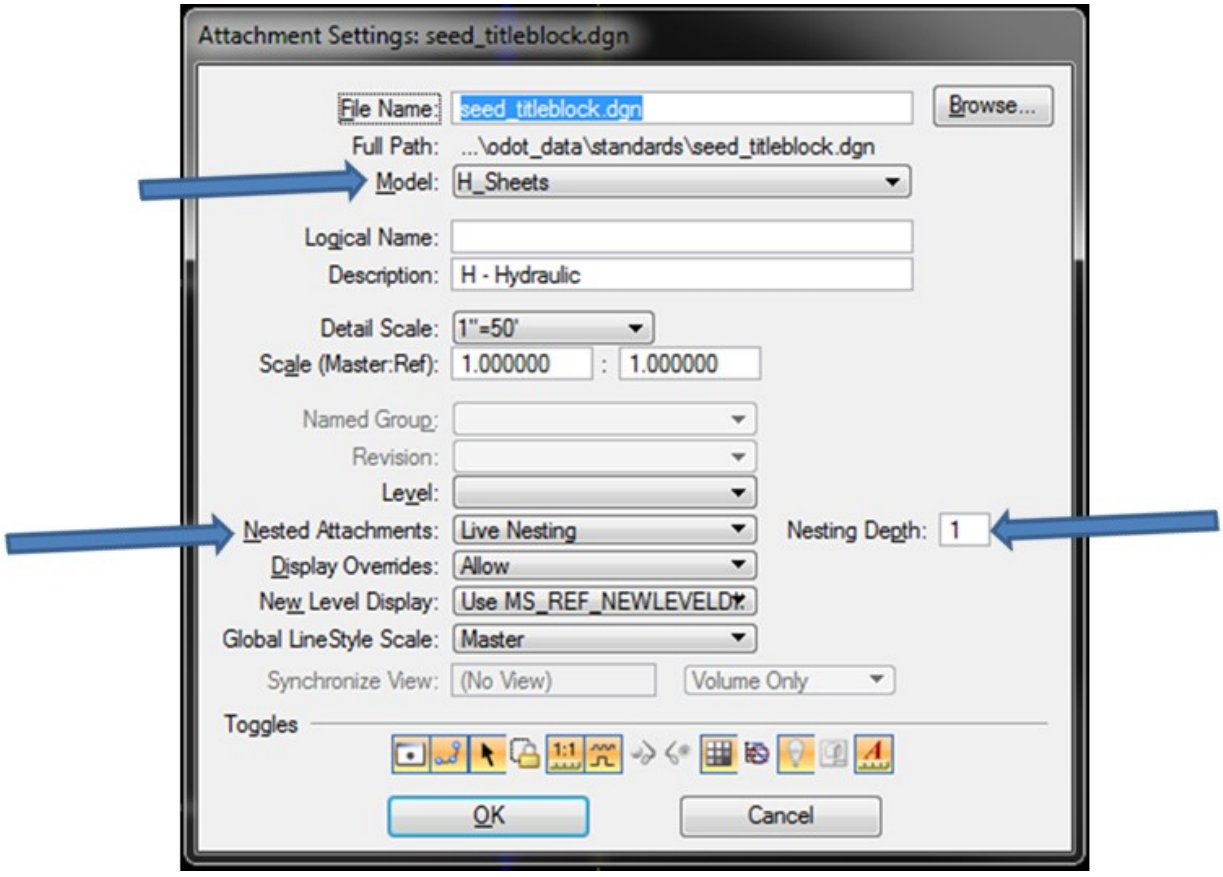
For plan sheet numbering within the "G" series plans sheets, see Part 400.

Section 513 Major Category "H" – Hydraulic

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "H_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 513-1 Reference File Title Block Attachment Settings – "H" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the additional structure location information and filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 513-2 Title Block for "H" Series Plan Sheets

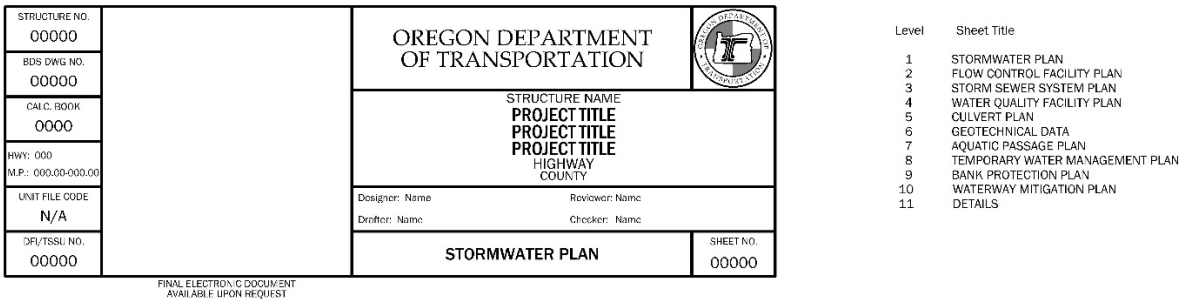


Table 513-3 below lists the available sheet titles for the "H" series sheets.

Table 513-3 Major Category "H" Sheet Titles

Level	Sheet Title
1	Stormwater Plan
2	Flow Control Facility Plan
3	Storm Sewer System Plan
4	Water Quality Facility Plan
5	Culvert Plan
6	Geotechnical Data
7	Aquatic Passage Plan
8	Temporary Water Management Plan
9	Bank Protection Plan
10	Waterway Mitigation Plan
11	Details

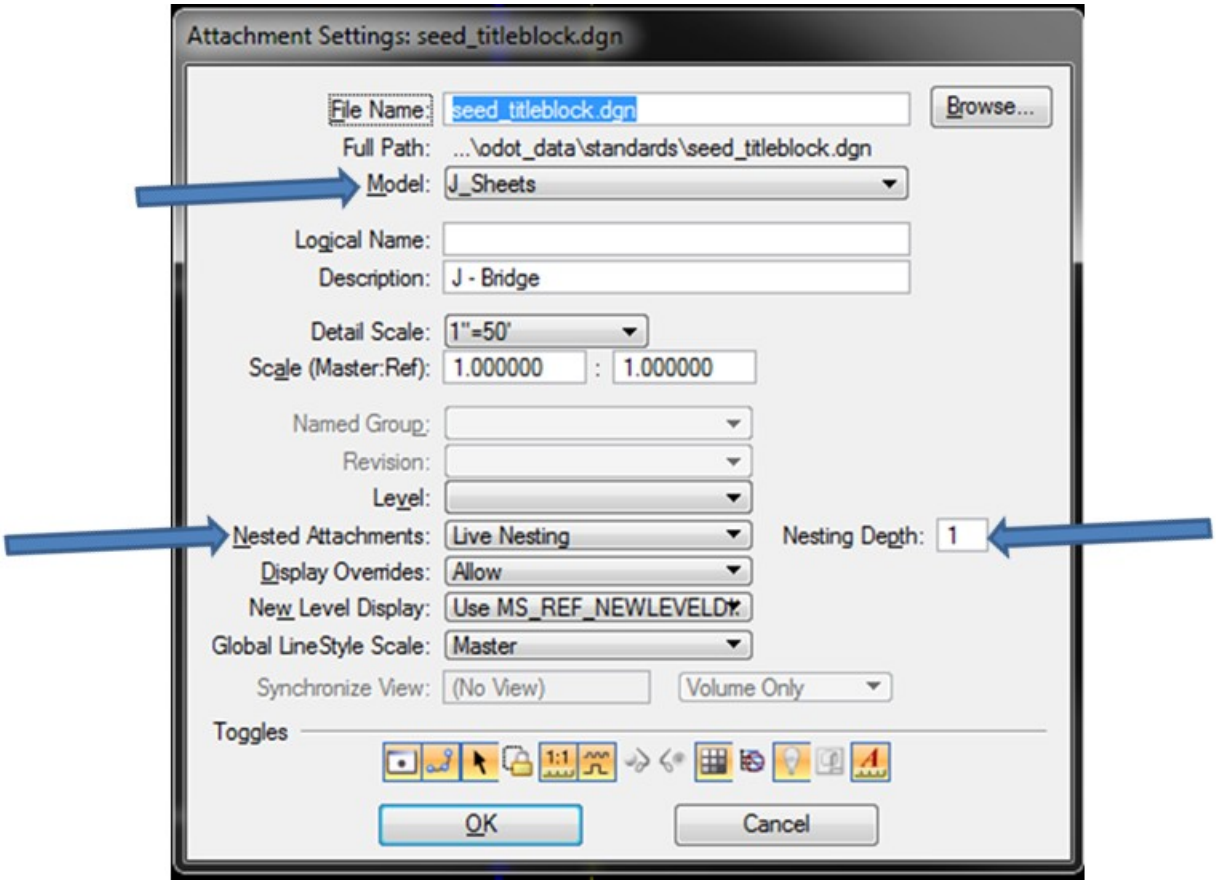
The sheet title on levels 1-4 are in the "HA" sheet number series. The sheet title "Culvert Plan" is in the "HB" sheet number series. The sheet title "Aquatic Passage Plan" is in the "HC" sheet number series. The sheet title "Temporary Water Management Plan" is in the "HD" sheet number series. The sheet title "Bank Protection Plan" is in the "HE" sheet number series. The sheet title "Waterway Mitigation Plan" is in the "HF" sheet number series. The sheet title "Details" are in the "HG" sheet number series. The Geotechnical Data sheets are in the series with the item the data is associated.

Section 514 Major Category "J" – Bridge

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

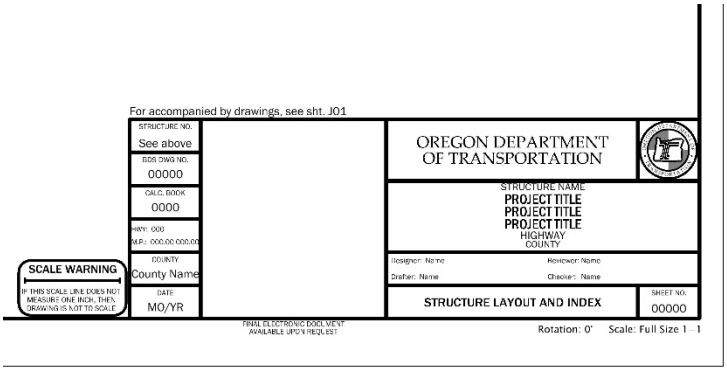
Attach the reference file, specifically the model "J_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 514-1 Reference File Title Block Attachment Settings – "J" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the structure location information and filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 514-2 Title Block for "J" Series Plan Sheets



Level	Sheet Title
1	STRUCTURE LAYOUT AND INDEX
2	PLAN AND ELEVATION
3	GENERAL NOTES
4	CONSTRUCTION SEQUENCE
5	GEOTECHNICAL DATA
6	STAGING
7	FOOTING PLAN AND DETAILS
8	DECK PLAN
9	TYPICAL DECK SECTION
10	STEEL FRAMING PLAN
11	GIRDER PLAN AND ELEVATION
12	GIRDER SCHEDULE
13	GIRDER DETAILS
14	CROSSBEAM PLAN AND DETAILS
15	CROSS FRAME DETAILS
16	BENT -#- PLAN AND ELEVATION
17	BENT -#- DETAILS
18	COLUMN DETAILS
19	SEISMIC DETAILS
20	BEARING DETAILS
21	JOINT DETAILS
22	WINGWALL DETAILS
23	END PANEL DETAILS
24	EXCAVATION AND BACKFILL DETAILS
25	CONCRETE POUR SCHEDULE
26	CONCRETE FINISH DIAGRAM
27	BRIDGE RAIL DETAILS
28	PROTECTIVE SCREENING DETAILS
29	MISCELLANEOUS DETAILS
30	DRAINAGE DETAILS
31	UTILITY DETAILS
32	ITS DETAILS
33	SIGNING DETAILS
34	SIGNAL DETAILS
35	ILLUMINATION DETAILS
36	SOUNDWALL DETAILS
37	ARCHITECTURAL TREATMENT DETAILS
38	PAINTING DETAILS
39	CATHODIC PROTECTION DETAILS
40	TEMPORARY CONCRETE BARRIER DETAILS

Table 514-3 below lists the available sheet titles for the "J" series sheets. Additional sheet title names beyond this list might be needed. When titles beyond what is listed are used, follow the direction given in the Bridge CAD Manual.

Table 514-3 Major Category "J" Sheet Titles

Level	Sheet Title
1	Structure Layout And Index
2	Plan And Elevation
3	General Notes
4	Construction Sequence
5	Geotechnical Data
6	Staging
7	Footing Plan And Details
8	Deck Plan
9	Typical Deck Section
10	Steel Framing Plan
11	Girder Plan And Elevation
12	Girder Schedule
13	Girder Details
14	Crossbeam Plan And Details
15	Cross Frame Details
16	Bent # Plan And Elevation
17	Bent # Details
18	Column Details
19	Seismic Details
20	Bearing Details
21	Joint Details
22	Wingwall Details

Level	Sheet Title
23	End Panel Details
24	Excavation And Backfill Details
25	Concrete Pour Schedule
26	Concrete Finish Diagram
27	Bridge Rail Details
28	Protective Screening Details
29	Miscellaneous Details
30	Drainage Details
31	Utility Details
32	ITS Details
33	Signing Details
34	Signal Details
35	Illumination Details
36	Soundwall Details
37	Architectural Treatment Details
38	Painting Details
39	Cathodic Protection Details
40	Temporary Concrete Barrier Details

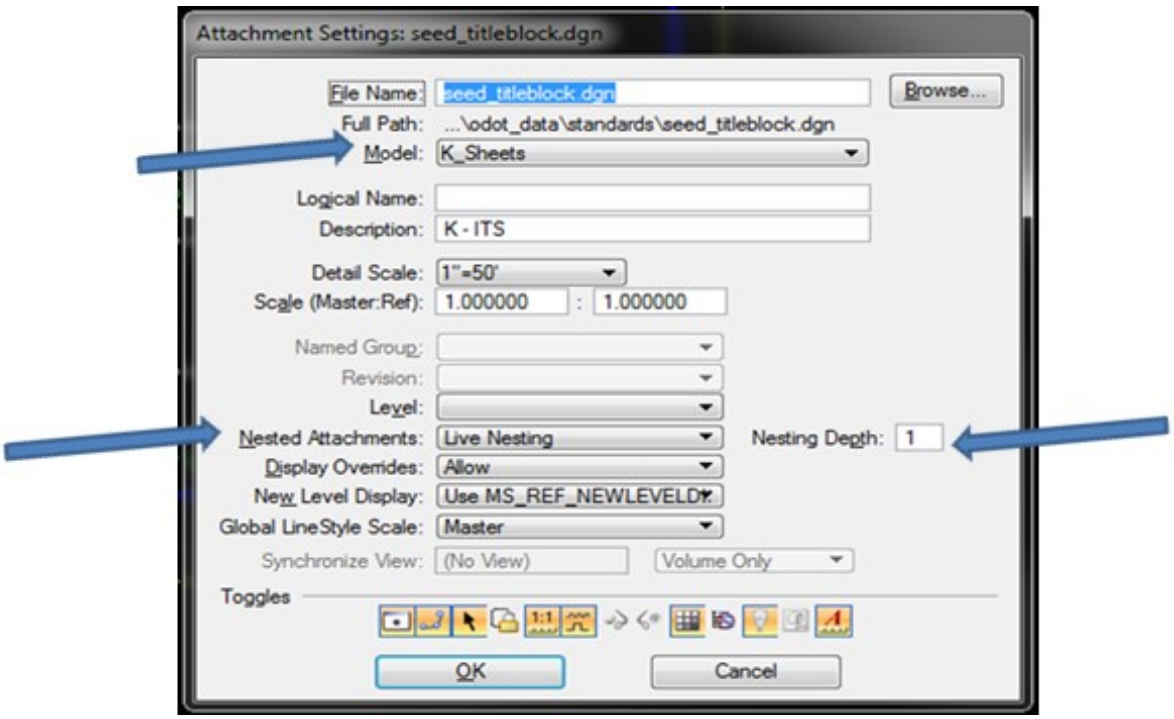
Note: Only include retaining wall or sound wall drawings in the "J" series when the wall is physically attached to the bridge or associated with the bridge. For example, an MSE wall around a bridge abutment.

Section 515 Major Category "K" – ITS

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "K_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 515-1 Reference File Title Block Attachment Settings – "K" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the Traffic filling numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes may be turned off by using the levels in the reference file.

Figure 515-2 Title Block for "K" Series Plan Sheets

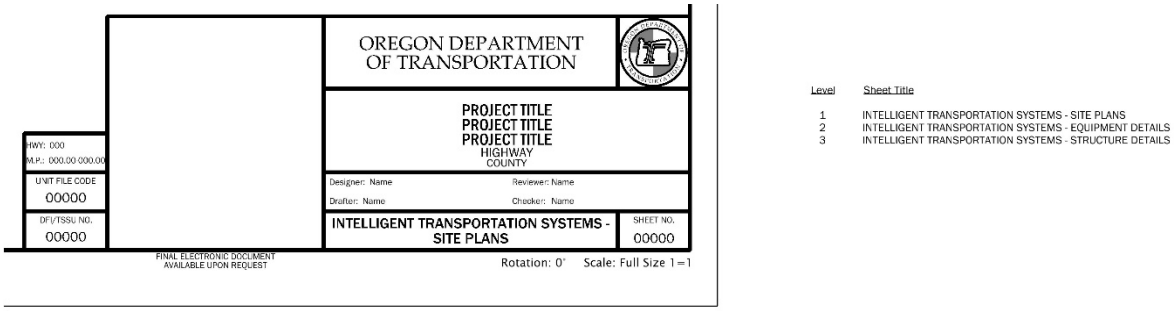


Table 515-3 below lists the available sheet titles for the "K" series sheets.

Table 515-3 Major Category "K" Sheet Titles

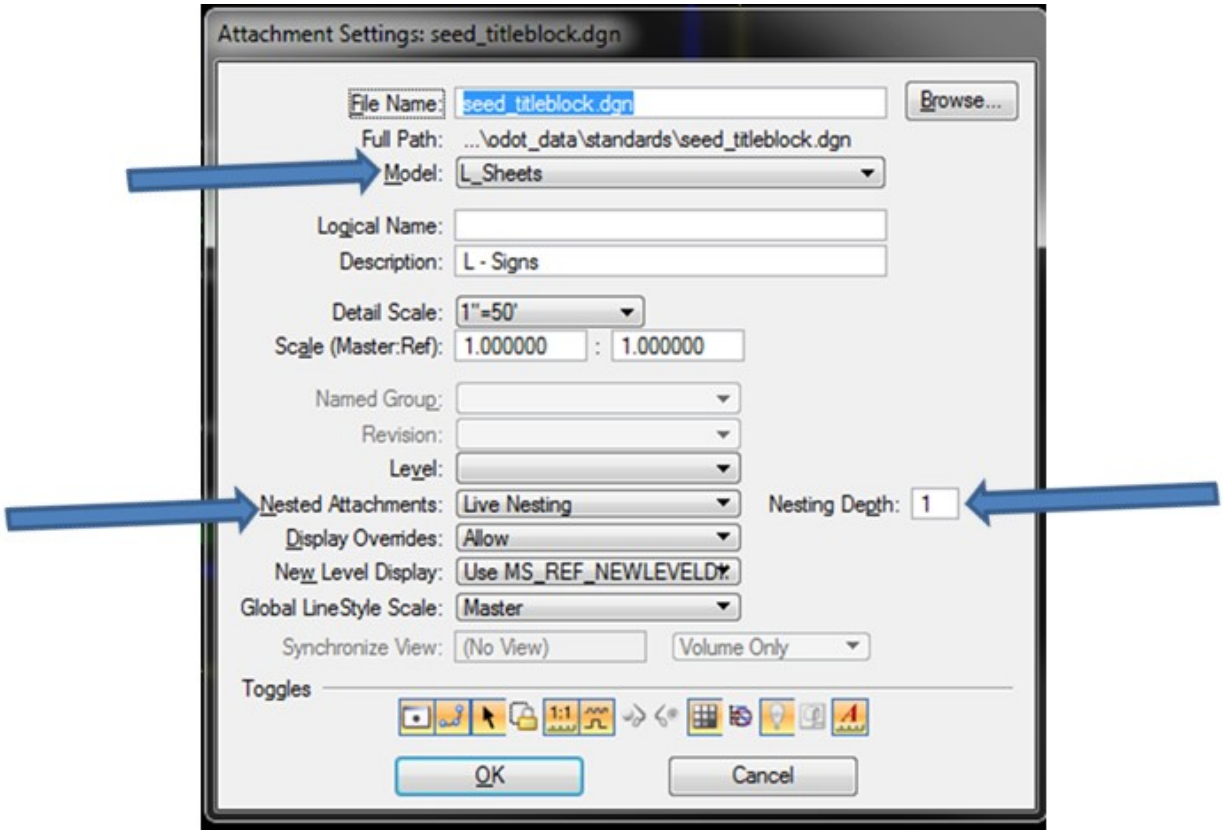
Level	Sheet Title
1	Intelligent Transportation Systems – Site Plan
2	Intelligent Transportation Systems – Equipment Details
3	Intelligent Transportation Systems – Structure Details

Section 516 Major Category "L" – Signs

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "L_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 516-1 Reference File Title Block Attachment Settings – "L" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

The add-on boxes for the Traffic filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 516-2 Title Block for "L" Series Plan Sheets

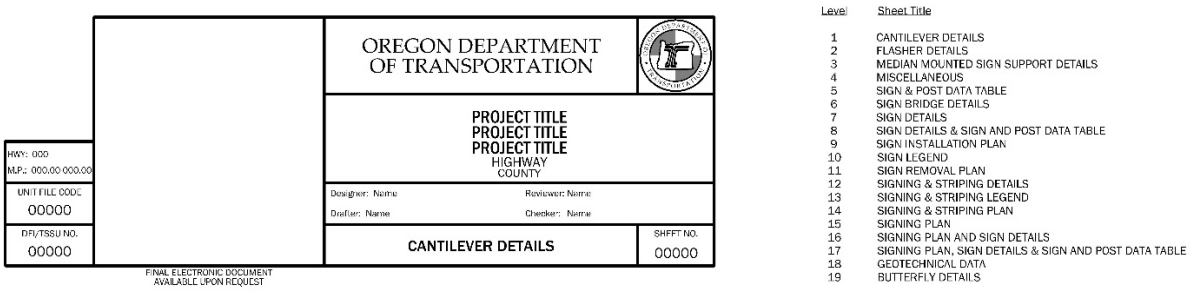


Table 516-3 below lists the available sheet titles for the "L" series sheets.

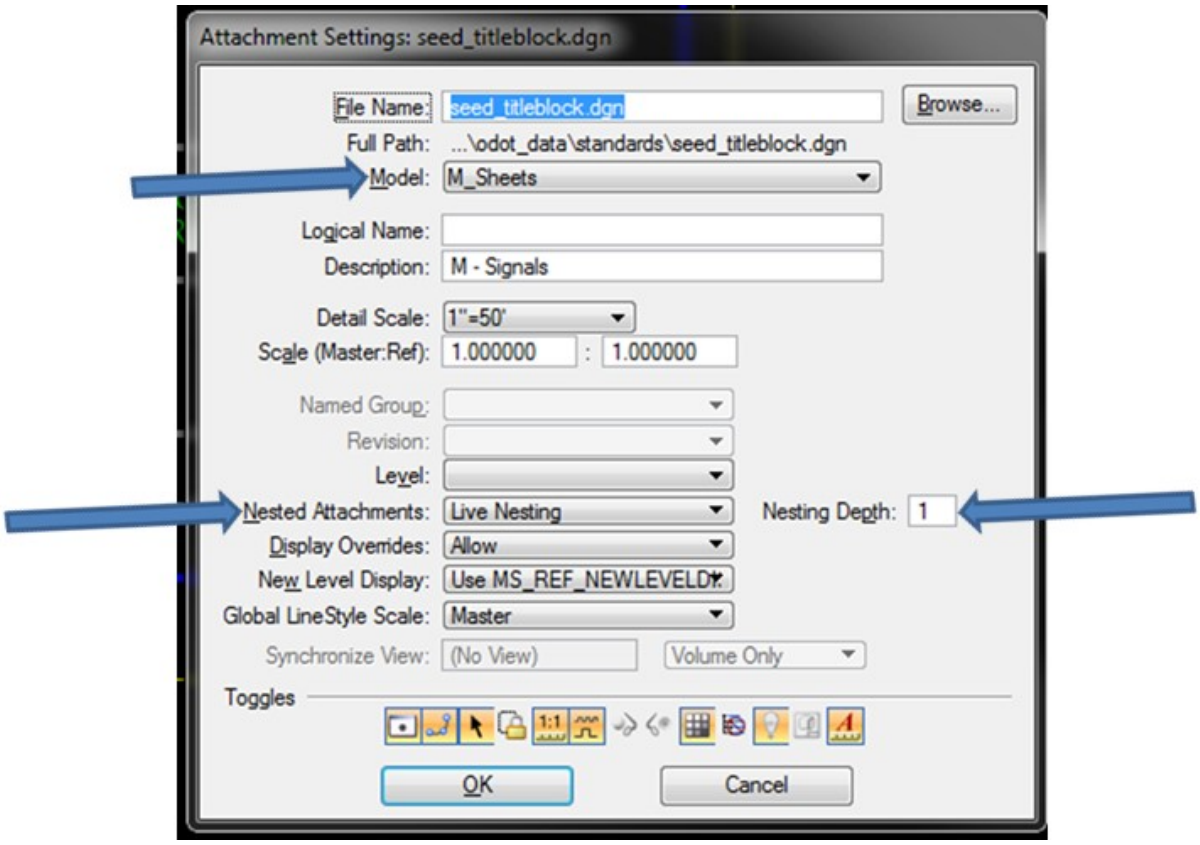
Table 516-3 Major Category "L" Sheet Titles

Level	Sheet Title
1	Cantilever Details
2	Flasher Details
3	Median Mounted Sign Support Details
4	Miscellaneous
5	Sign & Post Data Table
6	Sign Bridge Details
7	Sign Details
8	Sign Details & Sign And Post Data Table
9	Sign Installation Plan
10	Sign Legend
11	Sign Removal Plan
12	Signing & Striping Details
13	Signing & Striping Legend
14	Signing & Striping Plan
15	Signing Plan
16	Signing Plan And Signing Details
17	Signing Plan, Sign Details & Sign And Post Data Table
18	Geotechnical Data
19	Butterfly Details

Section 517 Major Category "M" – Signals

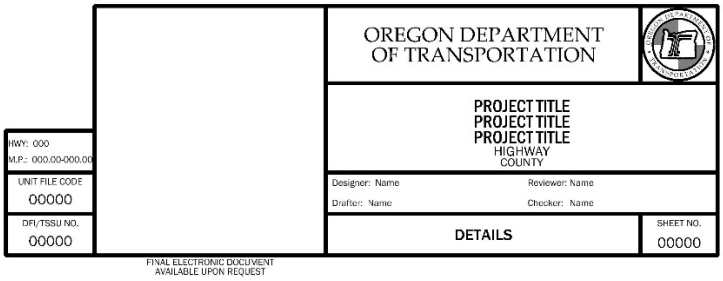
Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border. Attach the reference file, specifically the model "M_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 517-1 Reference File Title Block Attachment Settings – "M" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the Traffic filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 517-2 Title Block for "M" Series Plan Sheets



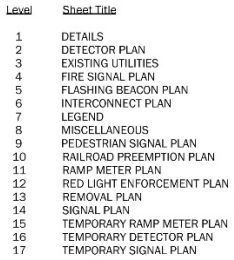


Table 517-3 below lists the available sheet titles for the "M" series sheets.

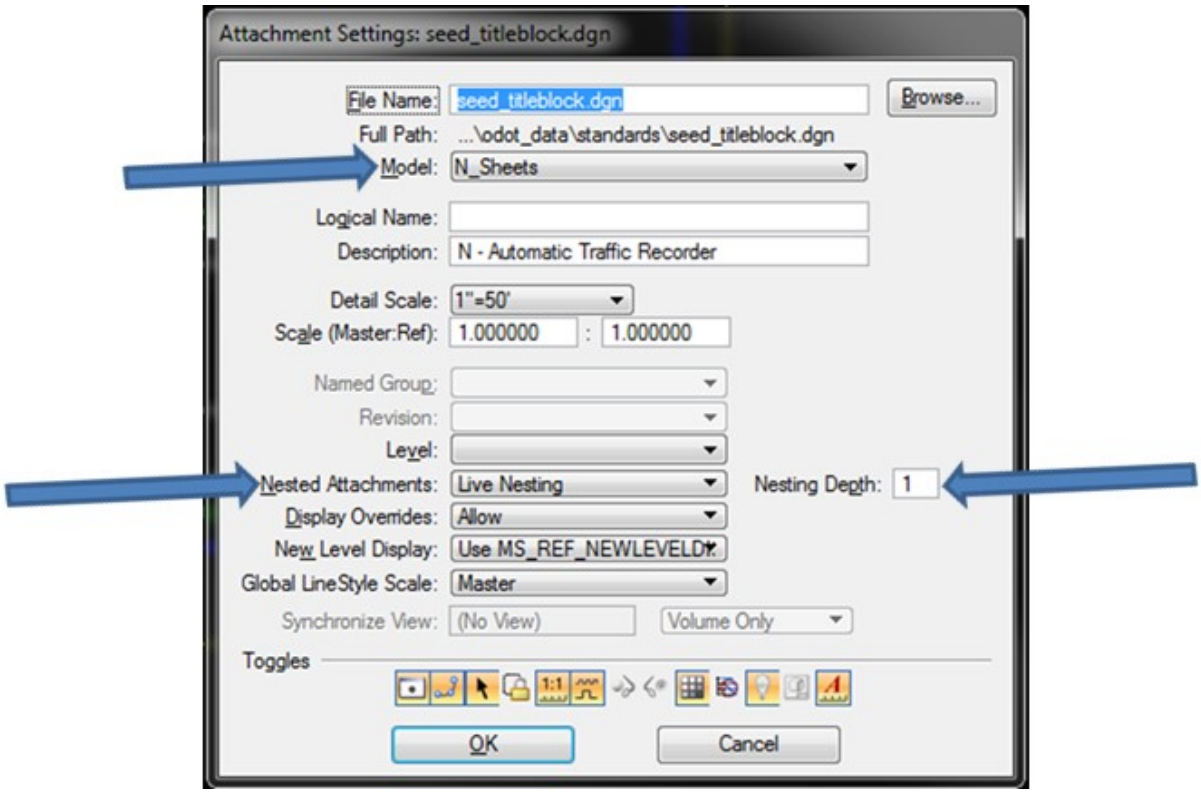
Table 517-3 Major Category "M" Sheet Titles

Level	Sheet Title
1	Details
2	Detector Plan
3	Existing Utilities
4	Fire Signal Plan
5	Flashing Beacon Plan
6	Interconnect Plan
7	Legend
8	Miscellaneous
9	Pedestrian Signal Plan
10	Railroad Preemption Plan
11	Ramp Meter Plan
12	Red Light Enforcement Plan
13	Removal Plan
14	Signal Plan
15	Temporary Ramp Meter Plan
16	Temporary Detector Plan
17	Temporary Signal Plan

Section 518 Major Category "N" – ATR

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border. Attach the reference file, specifically the model "N_Sheets" with live nesting checked and the nesting depth set to one level deep.

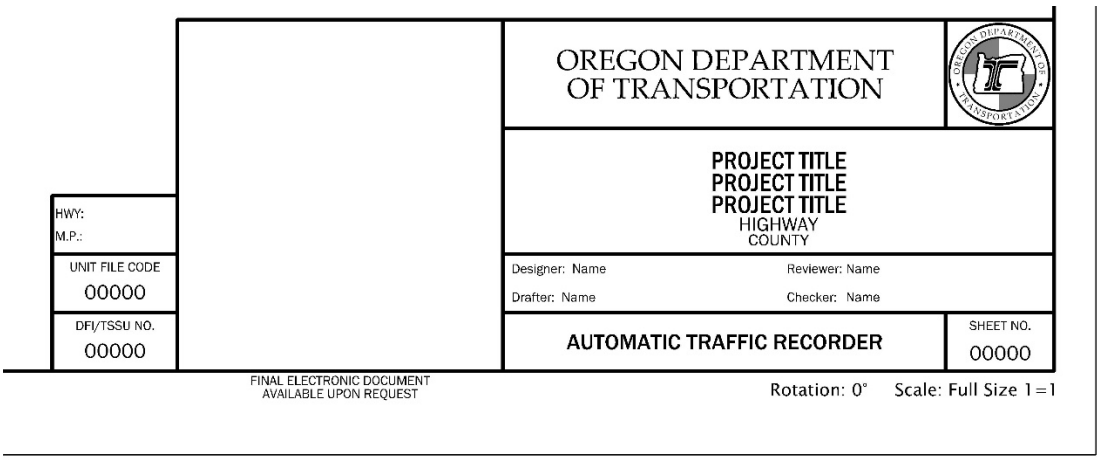
Figure 518-1 Reference File Title Block Attachment Settings – "N" Series Plans



The “N” series of sheets uses one title “Automatic Traffic Recorder” that is in the model “N_Sheets” in the title block reference file.

The add-on boxes for the Traffic filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 518-2 Title Block for “N” Series Plan Sheets

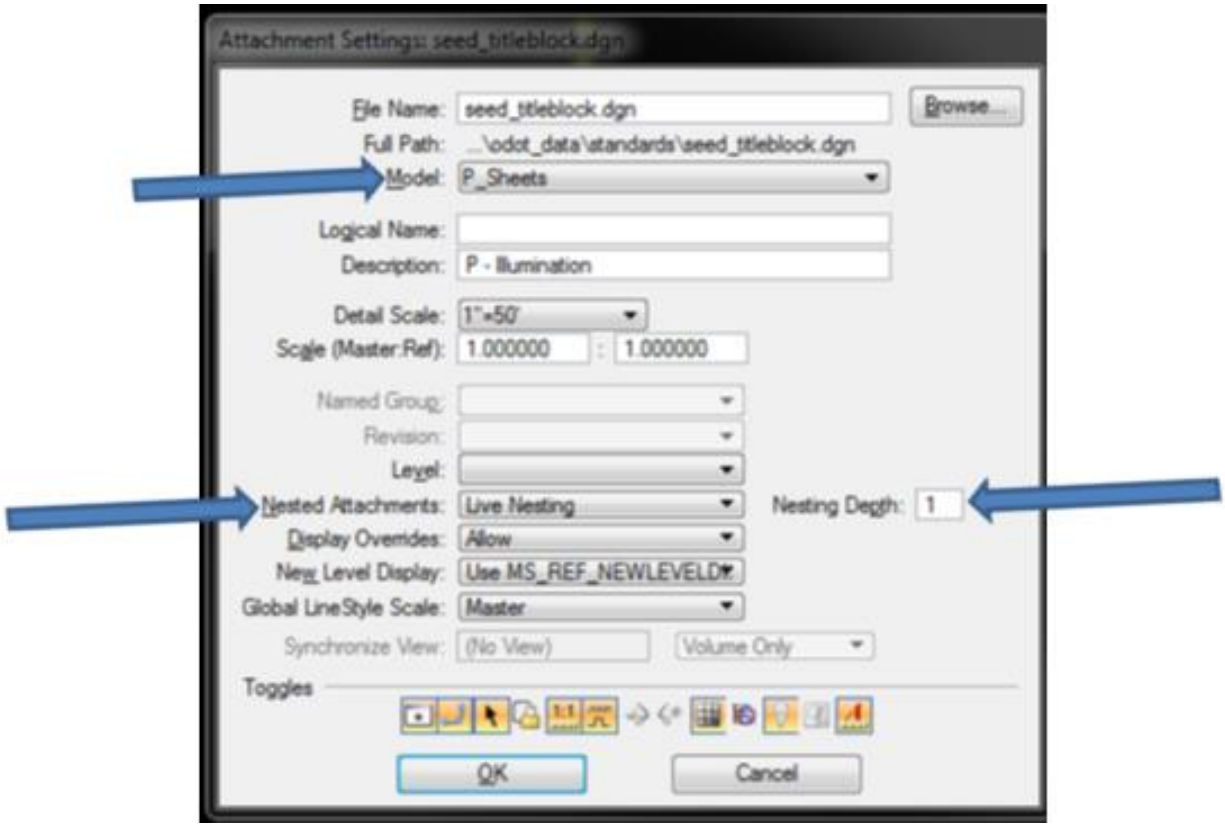


Section 519 Major Category "P" – Illumination

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

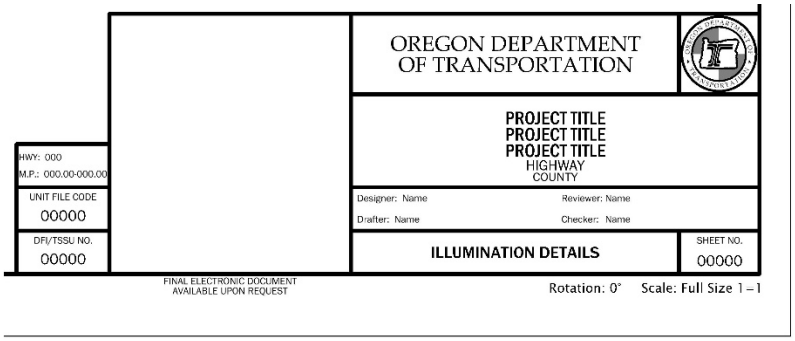
Attach the reference file, specifically the model "P_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 519-1 Reference File Title Block Attachment Settings – "P" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block. The add-on boxes for the Traffic filing numbers are by default set on. If the particular plan sheet does not require this information, the add-on boxes and text may be turned off by using the levels in the reference file.

Figure 519-2 Title Block for "P" Series Plan Sheets



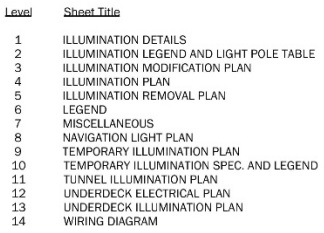


Table 519-3 below lists the available sheet titles for the "P" series sheets.

Table 519-3 Major Category "P" Sheet Titles

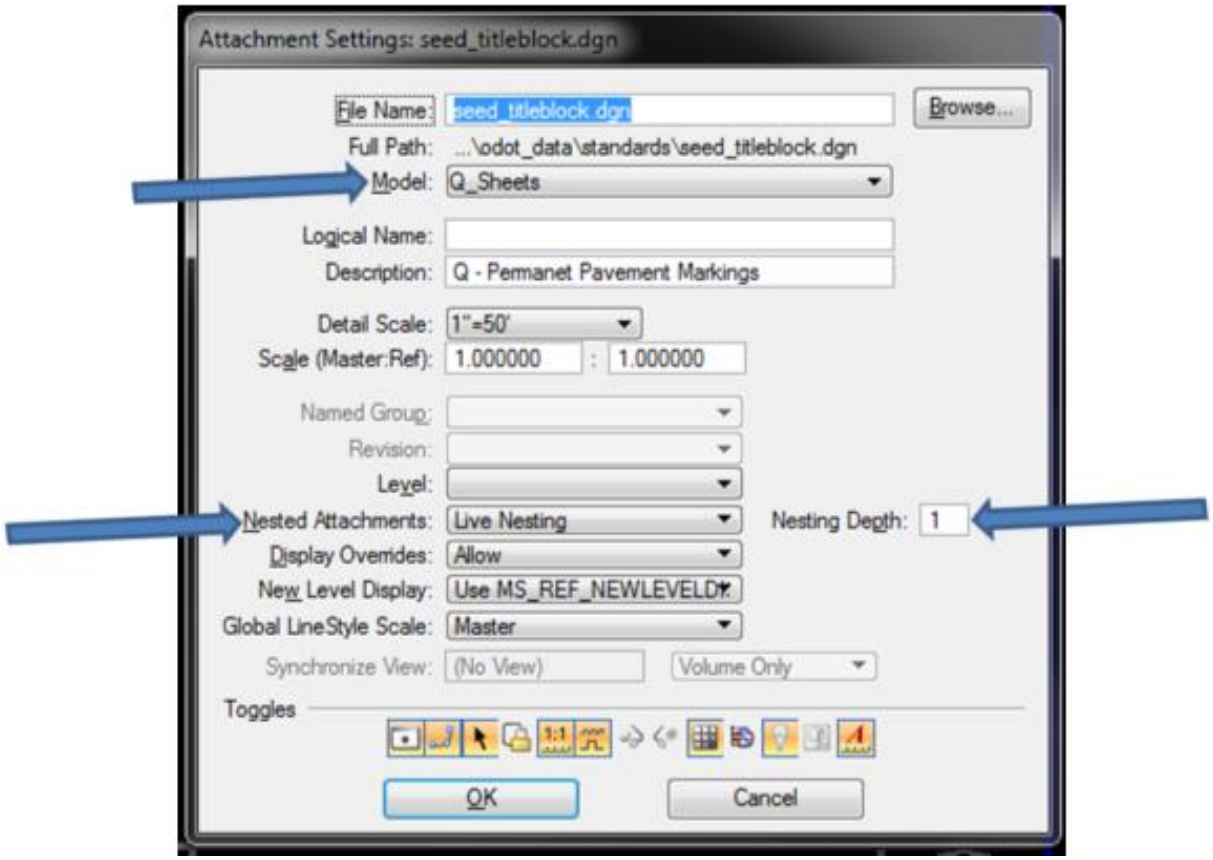
Level	Sheet Title
1	Illumination Details
2	Illumination Legend And Light Pole Table
3	Illumination Modification Plan
4	Illumination Plan
5	Illumination Removal Plan
6	Legend
7	Miscellaneous
8	Navigation Light Plan
9	Temporary Illumination Plan
10	Temporary Illumination Spec. And Legend
11	Tunnel Illumination Plan
12	Underdeck Electrical Plan
13	Underdeck Illumination Plan
14	Wiring Diagram

Section 520 Major Category "Q" – Permanent Pavement Markings

Using the seed file seed2d.dgn to create a plan sheet file, the project title block reference file is used for the title block in the lower right hand corner of the sheet border.

Attach the reference file, specifically the model "Q_Sheets" with live nesting checked and the nesting depth set to one level deep.

Figure 520-1 Reference File Title Block Attachment Settings – "Q" Series Plans



Sheet titles are on numbered levels with a list of titles and level numbers available to the right of the title block.

Figure 520-2 Title Block for "Q" Series Plan Sheets

Table 520-3 below lists the available sheet titles for the "Q" series sheets.

Table 520-3 Major Category "Q" Sheet Titles

Level	Sheet Title
1	Pavement Marking Plan
2	Pavement Marking Details
3	Pavement Marking Removal Plan

Digital Plans 600

Section 601 Introduction

To find the location of MicroStationV8i "Task Tab" items in MicroStation CONNECT, use the ribbon search in the upper right of your CONNECT file.

Digital plans are formatted plans that do not have a physical component. The plans can be printed for review, but they are not intended to be used in the physical form. When printing plans, it is important to designate the plan with the appropriate status stamp in the title block, according to Section 501. The final format of a digital set of plans is a PDF file for each plan sheet. The PDF files utilize a digital signature by the professional of record (POR) similar to a physical seal and signature on a Mylar plan sheet. The image of the POR's seal is placed in the native format of the plan sheet, typically for ODOT projects this will be in a MicroStation file. The digital signature will be a part of the PDF file.

Section 602 Plan Sheet Files

For information on the title sheet, see the Roadway CAD Manual.

Plan sheets will utilize the title block as outlined in Part 500 of this manual. For milestone reviews, a single combined PDF can be used. When PS&E plans are created for the project, each plan sheet will be in a single PDF file. This allows replacement of updated plan sheets without affecting the digital signatures on other plan sheets.

Final unsigned plan sheets are placed into the ProjectWise milestone folder STIP_Projects/K#####/Design/1_Milestone_Submission/5_Final for final review.

After the final review is complete and corrections are made, create a single plan sheet PDF file for each individual plan sheet. Place the individual files in the STIP_Projects/K#####/Design/1_Milestone_Submissions/6_PSnE folder.

Digital signature fields are then added to the PDF plans sheets for the POR seal, Structural Details Checked, Traffic Details Checked, and Traffic Section Approval.

Section 603 Digital Signature Placement

Plan sheets

For information about digital signatures on the title sheet, see the Roadway CAD Manual.

Final plan sheet PDFs requires a digital signature field to be placed in each location where a digital signature will be used, and prior to anyone digitally signing the PDF.

Plan sheets will be digitally signed:

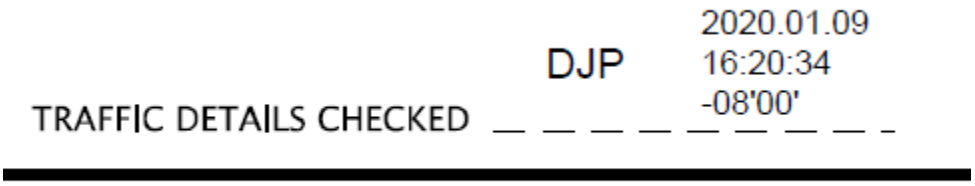
- In the title block area of the plan set
- In the Traffic Section Approval box for traffic signals, and
- As required:
    - On the "STRUCTURAL DETAILS CHECKED" line in the upper left corner of Roadway plans
    - On the “TRAFFIC DETAILS CHECKED” line in the upper left corner of Roadway plans

The "STRUCTURAL DETAILS CHECKED" cell is placed outside of the drawing border and near the upper left corner of the roadway plans (see Figure 603-1). The roadway plans that use this cell will generally be the typical sections, details, and mainline plan sheets. See the Roadway CAD Manual for more information.

Figure 603-1 Structural Details Checked

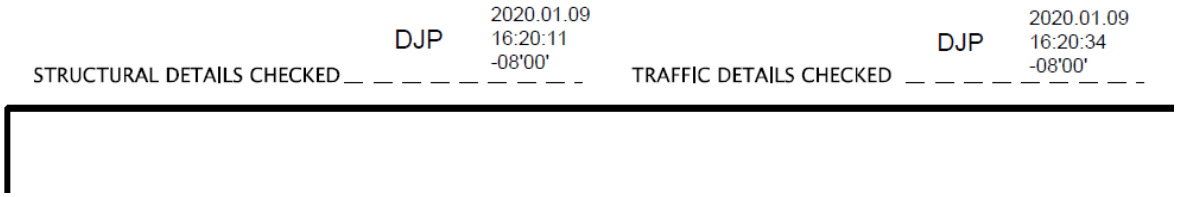
The "TRAFFIC DETAILS CHECKED" cell is placed outside of the drawing border and near the upper left corner of the roadway plans (See Figure 603-2). The roadway plans that use this cell will generally be curb ramp detail sheets. See the Roadway CAD Manual for more information.

Figure 603-2 Traffic Details Checked



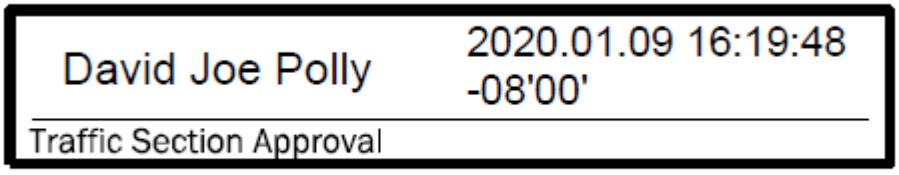
Occasionally both "STRUCTURAL DETAILS CHECKED" and "TRAFFIC DETAILS CHECKED" cells will need to be on one plan sheet. Two cells were created to allow for placement side by side outside the border and near the upper left corner of the sheet (see Figure 603-3).

Figure 603-3 Both Structural Details Checked and Traffic Details Checked



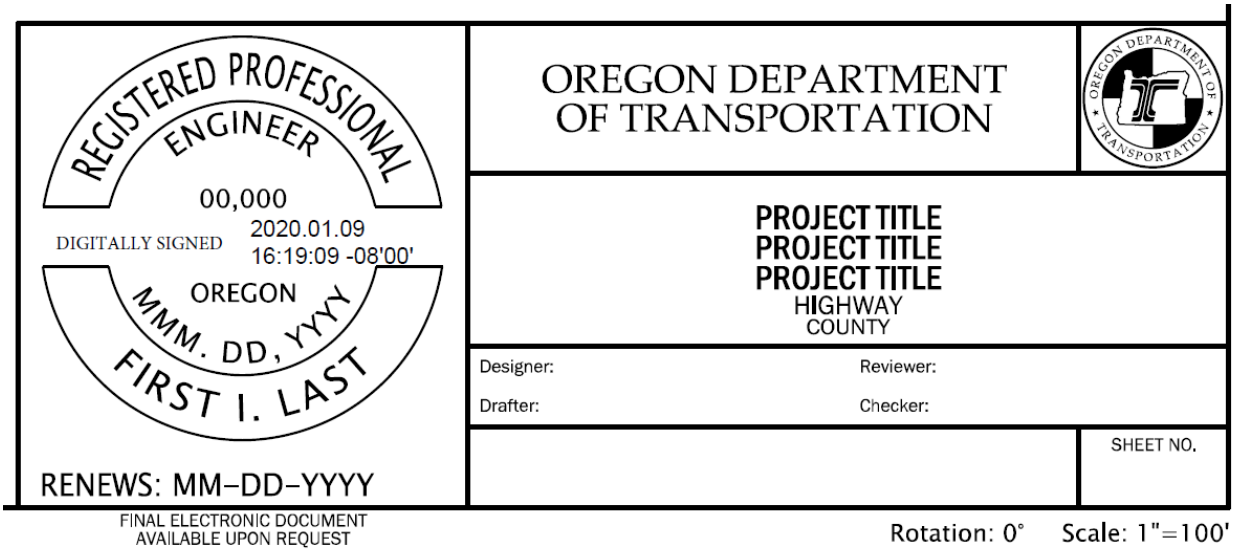
Traffic Signal plans (M series plan sheets) have an approval box that is added to each sheet for digital signature of the State Traffic-Roadway Engineer or their designee (see Figure 603-4).

Figure 603-4 Traffic Section Approval Box



Plan sheet title blocks, except for the title sheet and index sheets, has a box to place the POR's seal and apply a digital signature.

Figure 603-5 Standard ODOT Plan Sheet Title Block



Depending on where a digital signature is being applied, the style of signature will vary. Digital signatures will be a full name, initials or the words DIGITALLY SIGNED, according to the following:

- Use the initials style signature for the “Structural Details Checked” and the “Traffic Details Checked” area.
- Use the full name style signature for the Traffic Section Approval on signal plans.
- Type in the names of the Designer, Reviewer, Drafter, and Checker in the MicroStation file. Use N/A when there is not a separate Checker for the plan sheet. These names are not digital signatures.
- Use the words DIGITALLY SIGNED style signature over the professional seal in the stamping location. The POR’s seal is placed in the MicroStation file.

Special Provisions

The special provisions will contain a stamping page that lists the sections of the special provision that each professional is responsible for. The digital signature will use the words "DIGITALLY SIGNED" over an image of the professional seal in the appropriate location on the signature sheet. The image of the professional seal is placed in the Word document prior to creating the PDF file. The digital signature is applied to the PDF file.

Section 604 PS&E Submittal

All of the digitally signed plan sheets in PDF format and digitally signed special provisions in PDF format are placed in the ProjectWise folder K#####/2_Design/1_Milestone_Submissions/6_PSnE.

Section 605 Addendum

Plan sheets created for addendum letters will use the same file name format as the PS&E plans sheets with the addition of "_AD##" to the end of the file name, where ## is the addendum letter number. As an example, a new sheet added to a set of plans in addendum letter 3 would have a PDF file name format of k#####_SheetNo_AD03.pdf.

Adding the "_AD##" to the format, make it easy to see specific addendum sheets and this preserves the original file. The addendum letter number is assigned by the project specification writer.

Construction Note Composition 700

Section 701 Introduction

Construction notes are instructions to the contractor to help convey the building of the highway facility. Construction notes are unique to each discipline in their format and appearance on the sheets. This part of the manual is to assist in the composition of the more common construction note formats that are used in a single set of highway construction plans in Oregon.

Section 702 General Rules

The following general rules apply to all plan sheets. Further examples are shown later in Section 703

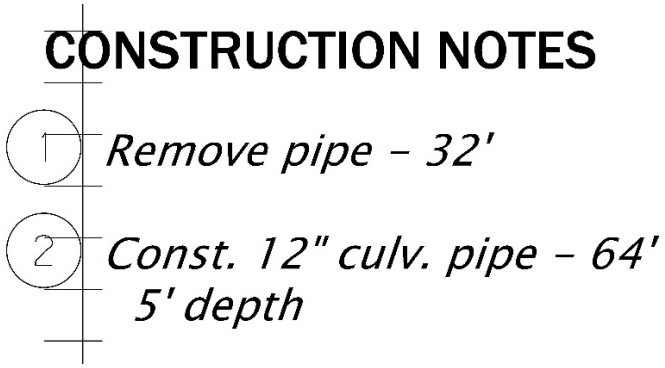
Basic Construction Note Order within the Note

Begin the construction note with the location of the item by station and offset. Then list removal/abandon items before listing the new construction items.

Titles

Construction notes use different title names based on the discipline. For various traffic plans, the title is “LEGEND” as this explains the callouts along the plan view. For structures that include a construction sequence, the title is “CONSTRUCTION SEQUENCE”. The most common title is “CONSTRUCTION NOTES”. All of these titles use the Detail Title Minor text attributes for the title text.

Figure 702-1 Example of General Construction Note Title.



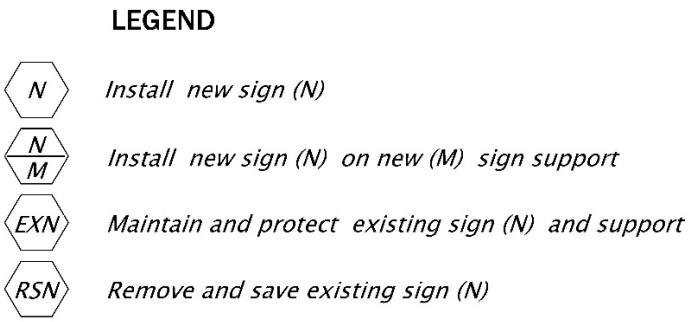
When the construction notes are placed using the note margin line, also known as the note ladder, the construction note title needs to be placed at the top of the ladder on the left side of the tick line. The construction note title justification will need to be changed to upper left justification to be able to snap place the title.

The first note bubble is snap placed on the left side of the third tick of the ladder. The numbers in the note bubble are preset with a justification of center top on the number.

The text for the construction note is snap placed on the right side of the third tick on the ladder. The note text is preset with the justification on the top left of the note.

The note margin ladder element class is set to construction. By using the plans pen table, the elements that have a construction class instead of a primary class will not print. Because of the class being set to construction, the note margin lines are to be left in the file.

Figure 702-2 Example of Sign Legend Title



Combining Items in Notes

Do not combine different types of items into one note. For example, do not combine a culvert note with a guardrail note. Do combine items that are constructed together. For example, drainage structures and connecting sewer pipes are combined together in one note.

Referencing Standard Drawings or Other Plan Sheets

The first time that an item is shown in the plans, reference all standard drawing numbers that pertain to the item in the construction note. When that specific item is repeated in the plans you do not have to reference the standard drawing(s) again. Some standard drawings have multiple types or options of an item or multiple items on a single drawing. Each time that a new specific item in the standard drawing is shown in the plans, that same standard drawing is referenced again.

When a reference to a detail sheet is used with an item, the detail sheet is listed in the construction note every time that item is shown in the plans.

Table 702-3 Reference Examples

Type of reference	**Example**
Standard drawing	*(See dwg. no. RD???)*
Detail	*(For details, see sht. BB??)*
Both detail and standard drawing	*(For details, see sht. BB??)* *(See dwg. nos. RD???, RD???)*

Referencing Across Plan Sheets within a Discipline

Some disciplines contain multiple major categories as such they maintain more control over the specific sheet numbers and are able to make references to specific sheet numbers.

When an item (i.e. median barrier) is shown on more than one sheet, on the first sheet show what is being done to the item on the complete run plus what is only on that sheet.

Figure 702-4 Example of Construction Note of Item on First Sheet

	Example note	Remarks
9	*Sta. "NB"137+98 to Sta. "NB" 142+10.5*	
	Remove extg. conc. median barrier – 412.5'	All Sheets
	Const. conc. median barrier – 412.5'	All Sheets
	Const. terminal, flared 20:1	First Sheet
	(See dwg. nos. RD500 & RD510)	

On the second sheet, show what is being done to the item on the complete run plus what is only on that sheet. Do not show quantities for the complete run item, just what is on that sheet.

Figure 702-5 Example of Construction Note of Item on Second Sheet

	Example note	Remarks
2	*See sht. C04, note 9*	
	Remove extg. conc. median barrier	All sheets, no quantity
	Const. conc. median barrier	All sheets, no quantity
	Const. terminal, flared 20:1	Second or last sheet

Referencing Across Disciplines

When the reference is made to another discipline's plan sheet, the reference is made to the index sheet. Typically, this will be sheet number A02. The reference will include the major category name to help the user find the correct plan sheet number.

(For sht. nos., see sht. A02, Signals)

Because the discipline making the reference is not in control of the sheet numbers within another discipline, the reference is made to the index sheet to help prevent last minute errors from occurring in the reference.

Construct or Install Usage

When an item needs to be assembled on site, use "Const.", otherwise use "Inst." to begin the instruction to the contractor.

Section 703 Note Examples

Unless specifically noted in the remarks, examples are shown for the plan sheet series A, B, C, D, and F. See specific disciple manuals for greater detail on plan sheet note format.

Example Note	Remarks
APPROACH	
Const. appr. *(See dwg. no. RD715)*	Approach stations not needed, if they are shown on the plans.
Pave appr.	
ACCESS ROAD	
Const. access road *(For details, see sht. BB??)*	Access Road stations not needed, if they are shown on the plans.

Example Note	Remarks
BARRIER	
Sta. "L" 123+45 to Sta. "L" 123+45, Lt. *Remove extg. conc. median barrier – ?'* *Remove earth mound – ? cu. yd.* *Remove pvmt.* *Const. conc. median barrier – ?'* *Const. tall conc. median barrier – ?'* *Const. conc. shldr. barrier – ?'* *Const. single slope conc. barrier – ?'* *Const. precast conc. narrow base shldr. barrier –?'* *with scuppers left open (As directed)* *Anchor barrier* *Const. cast-in-place transition to curb* *Const. transition to standard conc. barrier* *Const. tall conc. barrier transition to standard conc. barrier* *Flare rate= ?, E= ?'* *Const. conc. barrier terminal* *Const. trailing end terminal* *Const. conc. barrier transition to bridge rail* *Const. guardrail connection to conc. barrier* *Const. conc. barrier to curb transition* *Const. single slope barrier to standard conc. barrier* *Connect to guardrail* *Const. conc. barrier around median obstacle* *Const. tall conc. barrier around median obstacle* *Bury barrier in backslope* *Bury tall barrier in backslope* *(For details, see sht. BB??)* *(See dwg. nos. RD500, RD???)*	Include line designation "L" when present. Add reflectorized if required. Add cast-in-place if required Example: *Const. cast-in-place median barrier – 100' Reflectorized* Indents are 2 spaces. Use "text wrapping" for additional note information. "W" value only shown on guardrail. See general information for RD500 series. Indents are 2 spaces. Use "text wrapping" for additional note information.
Sta. "L" 123+45 to Sta. "L" 123+45, Lt. or Rt. *Remove extg. conc. median barrier – ?'* *Const. conc. median barrier – ?'* *with scuppers left open (As directed)* *Const. terminal, flared*	
Sta. "L" 123+45 to Sta. "L" 123+45, Lt. or Rt. *Remove extg. conc. shldr barrier – ?'* *Const. conc. shldr barrier – ?'* *Const. terminal, flared*	

Example Note	Remarks
BARRIER, CONT.	
Sta. "L" 123+45 to Sta. "L" 123+45 *Apply epoxy coating to extg. conc. median &* *extg. conc. shldr. barrier – ?'*	Indents are 2 spaces. Use "text wrapping" for additional note information.
BEACON	
Inst. flashing beacon *(For sht. nos., see sht. A02, Signals)*	Requires approved signal plan sheets. See the ODOT Signal Design and Drafting Manual for further guidance preparing any signal plans.
BIKEWAY	
Const. bikeway	Normally shown under typical sections with alignments.
BOLLARD	
Inst. bollard – ? *(For details, see sht. BB??)*	
BOX CULVERT	
Const. ?" x ?" R.C.B.C. – ?' *(For sht. nos., see sht. A02, Hydraulic)*	Culvert 72" and greater base dimension will have a structure number. Requires Hydraulic plan sheets. See the Hydraulic CAD Manual for further guidance preparing any box culvert plans.
BRIDGE	
Structure no. 00000 *Const. structure – ?'* *Rdwy. width ?' with ?' walk, Lt.* *and reinf. panel at bridge ends* *(For sht. nos., see sht. A02, Bridge)*	For new structure. Indents are 2 spaces. Use "text wrapping" for additional note information. Requires bridge plan sheets. See the Bridge CAD Manual for further guidance preparing any bridge plans.
Structure no. 00000 *Sta. "L" 123+45 to Sta. "L" 123+45* *Const. reinf. panel at bridge end – ?* *(For sht. nos., see sht. A02, Bridge)*	For existing structure. Requires bridge plan sheets. See the Bridge CAD Manual for further guidance preparing any bridge plans.
BUS PAD	
Sta. "L" 123+45 to Sta. "L" 123+45 , Lt. or Rt. *Const. plain conc. undowelled pvmt. – ? sq. ft.*	

Example Note	Remarks
CATTLE GUARD	
Const. cattle guard *Const. painted cattle guard* *(See dwg. nos. RD110 & BR175)*	
CATTLE PASS	
Const. cattle pass *(For details, see sht. BB??)* *(See dwg. no. RD110)*	
CATV UTILITIES	
Inst. TV cable (By others) *Inst. TV cable riser (By others)*	
CHANNEL CHANGE	
Const. channel change *?' bottom, 1:? slopes* *Gen. exc. – ? cu. yd.* *(For details, see sheet. BB??)*	Earthwork quantity can be shown in earthwork bracket, if not included in construction note.
CONDUIT	
Inst. ?" culv. pipe – ?' (Conduit) *?' depth*	Not for electrical services.
CONNECTION	
Const. street connection	Street connection stations not needed, if they are shown on the plans. Counted as road approach for quantities.

Example Note	Remarks
CULVERT PIPE	
Inst. ?" culv. pipe – ?' *?' depth* *FL lt. – ???.??'* *FL rt. – ???.??'* *Trench resurfacing – ?? Sq. Yd.* *Inst. ?" culv. pipe – ?' (Conduit) ?' depth* *FL lt. – ???.??'* *FL rt. – ???.??'* *Trench resurfacing – ?? Sq. Yd.* *Inst. safety ends section – ?* *Const. sloped end, lt. or rt.* *Const. paved end slope, lt. or rt. – ? Sq. Ft.* *(See dwg. nos. RD3?? & RD3??)*	List pipe from smallest diameter to largest diameter. Include flow line elevations when not shown on the plan view or on the profile view. For culverts that are parallel with the alignment, right and left are determined by a perpendicular line from the alignment to the center of the pipe. The ends of the pipe will be right and left from perpendicular line that goes away from the alignment. Any culvert 6′ and greater dia. must have a bridge structure number. Culverts 6′ to 19′ are part of the "H" series sheets. Use the term "Conduit" when the pipe will carry another culvert or other item (non-electrical). Place end treatment after the install note to indicate which pipe has what end treatment. Reference standard drawings for end sections (safety or sloped) and fill height tables. Indents are 2 spaces. Use "text wrapping" for additional note information.
CURB	
Const. curb and gutter *Const. low profile mountable curb* *Const. standard curb* *Const. mountable curb and gutter – ?" width* *Const. mountable curb* *Const. monolithic curb and sidewalk* *Const. PCC drainage curb* *Const. asph. conc. drainage curb* *Const. curb ending – ?* *Const. valley gutter* *Const. curb transition* *(For details, see sht. BB??)* *(See dwg. no. RD700)*	Do not show a length for runs of curb. Do not shows curb height in the note; show this on the typical sections.

Example Note	Remarks
CURB RAMP	
Const. curb ramp, [Curb ramp type] *Inst. [radial] [Color] truncated domes* *on [Surface Type] surface – ?? sq.ft.* *[Surface Material] surfacing, [snow zone]* *Ramp # – [Intersection Condition Type]* *(For details, see sht. BB??)* *(See dwg. nos. RD900, RD9??, RD9?? & RD9??)*	Curb ramp type - perpendicular, parallel, combination, cut-through, end of walk, blended transition, or unique. Radial - Include if used Color - safety yellow, safety red, or natural patina (Safety red and natural patina require DE approval). Surface type - new, existing, or temporary. Surface material - PCC, asphalt, wood, unit paver, or metal. Snow zone - Include if used Intersection Condition Type SU - Signalized Uncontrolled SY – Stop / Yield MB – Midblock crossing (Designer to provide Intersection Condition Type) For additional information see RD900 series. NOTE: DE approval for colors other than safety yellow and for snow zone. Indents are 2 spaces. Use “text wrapping” for additional note information.
DETOUR AND ONSITE DIVERSION	
Const. detour structure – ?’ *Rdwy. width – ?’* *Const. detour* *Const. temp. approach* *Const. temp. conc. barrier* *Remove detour structure* *Remove detour* *Remove temp. approach* *Remove temp. conc. barrier* *(For sht. nos., see sht. A02, Traffic Control)*	Specification refers to both detour and onsite diversions as detours.
DIKE	
Const. dike	

Example Note	Remarks
DITCH (OR IRRIGATION DITCH)	
Const. ditch *?' flat bottom, 1:? slopes* *"V" bottom, 1:? slopes* *Dt. exc. – ? cu. yd.* *(For details, see sht. BB??)*	
DRAINAGE (GENERAL ORDER OF DRAINAGE NOTE)	
Sta. "L" 123+45, ?' Lt. or Rt. *Sta. "L" 123+45, ?' Lt. or Rt.* *Remove manhole* *Abandon manhole* *Const. manhole* *Const. manhole with inlet* *Const. manhole ?" dia.* *Const. manhole ?" dia. with inlet* *Const. diversion manhole* *Const. shallow manhole* *Const. water quality manhole* *Major adjust manhole* *Minor adjust manhole* *Manhole rim el. – ???.??'* *FL in – ???.??' (N 18")* *FL in – ???.??' (W 12")* *FL out – ???.??' (SE 18")* *Remove inlet* *Abandon inlet* *Adjust inlet* *Cap inlet* *Const. type "?" inlet* *Const. precast basin, ?' deep* *Connect to extg. storm sew. pipe* *Connect to extg. inlet* *Connect to extg. manhole* *Const. ??" sump* *Adjust sump*	Provide the offset distance for manholes and inlets. Provide flow line elevation and rim elevation in the construction note when elevations are not shown on plan view or profile view. Manhole type to match bid item. Indents are 2 spaces. Use "text wrapping" for additional note information. Flow line elevations of the pipes include a general direction of pipe to establish which pipe goes with the elevation. Include elevations when not shown in plan view or profile view. Or san. sew. pipe as required.

Example Note	Remarks
DRAINAGE CONT.	
Remove pipe – ?' *?" culv. pipe – ?' (In pl.)* *Remove end section, Lt. or Rt.* *Remove – ?' Lt.* *– ?' Rt.* *Extend – ?' Lt., ?' depth, FL ???.??'* *– ?' Rt., ?' depth, FL ???.??* *Inst. ?" drain pipe – ?'* *?' depth, sl. ?.?%* *Inst. 12" culv. pipe – ?'* *?' depth, sl. ?.?%* *Inst. 18" culv. pipe – ?'* *?' depth* *FL lt. –* *Inst. 4" culv. pipe – ?' (Conduit)* *?' depth, sl. ?.?%* *Inst. 12" storm sew. pipe – ?'* *?' depth, sl. ?.?%* *Inst. 18" storm sew. pipe – ?'* *?' depth, sl. ?.?%*	List smallest diameter first, in kind. Include all pipes flowing into a M.H. or inlet in one note. Include exiting pipe only if it is the outfall for the storm sewer system Depths are listed to maximum depth to flow line. 5 feet 10 feet 20 feet or over 20 feet Or san. sew. pipe as required. Indents are 2 spaces. Use "text wrapping" for additional note information. Include slopes and/or flow line elevations when not shown in plan view or profile view. Include flow line elevations with pipe if not given with the manhole.
Inst. 6" irrigation pipe – ?' *?' depth, sl. ?.?%* *Inst. 12" siphon pipe – ?'* *?' depth, sl. ?.?%* *Inst. surface drain pipe* *Inst. safety end section – ?* *Inst. lateral section with cleanout gate* *Inst. 3 piece ? ° elbow – ?* *Inst. slip joint* *Inst. slope anchor* *Const. longitudinal edge drain* *Const. longitudinal edge drain outlet to inlet* *Inst. culv. ID marker, Type ?* *DFI no. Dxxxxx* *MP xxx.xx*	Indents are 2 spaces. Use "text wrapping" for additional note information. ID marker Type 1 or 2. Use for culvert 48" or less when not on "H" series sheet. Indents are 2 spaces. Use "text wrapping" for additional note information.

Example Note	Remarks
DRAINAGE CONT.	
Const. sloped end *Const. subgrade cutoff drain* *Const. paved end slope, Lt. & Rt.* *Const. loose riprap (Class ?) – ? cu. yd.* *Drainage geotextile type "?"* *Filter blanket – ? cu. yd.* *Gravel drain matl. – ? cu. yd.* *Trench resurf. – ? sq. yd.* *Granular backfill matl. – ? cu. yd.* *Bedding matl. – ? cu. yd.* *Tr. exc. – ? cu. yd.* *(For details, see sht. BB??)* *(See dwg. nos. RD300, RD?)*	See RD300 series for general information.
DRAINAGE NOTE EXAMPLES	
Sta. "L" 123+45, Rt. *?" CMP (In pl.)* *Sawcut pipe end to match embankment slope* *Const. loose riprap (Class ?) – ? cu. yd.* *As directed*	Indents are 2 spaces. Use "text wrapping" for additional note information.
Sta. "L" 123+45, Rt. *Inlet (In pl., ?' deep)* *Adjust conc. inlet, rim el. – ???.??'* *Extra aggr. shldr. rock around inlet – ? cu. yd.* *(For details, see sht. BB??)*	

Example Note	Remarks
DRAINAGE NOTE EXAMPLES CONT	
Sta. "L" 123+45, Rt. *Inst. ??" culv. pipe – ?'* *?' depth, end treatment 1:? slopes* *FL rt. – ???.??'* *FL lt. – ???.??'* *Material –* *?" x ?" lock seem aluminum corrugated circular pipe – ?" thkn. with polymeric coating* *or* *?" x ?" welded or lock seem steel corrugated circular pipe – ?" thkn. uncoated* *or* *?" x ?" x ?" corrugated aluminum spiral rib pipe – ?" thkn. with polymeric coating* *or* *?" x ?" x ?" corrugated steel spiral rib pipe – ?" thkn. uncoated* *or* *Class IV precast concrete pipe or HDPE pipe (See dwg. nos. RD300, & RD???)*	When no pipe data sheet is provided. See RD300 series for general information. Include flow line elevations when not shown on plan view or profile view. Indents are 2 spaces. Use "text wrapping" for additional note information. List all pipe materials that apply.
DRIVEWAY	
Const. asph. conc. dwy. type "A–1" *Const. PCC dwy. type "A"* *Const. PCC dwy., option (A–N)* *Const. PCC dwy., option (A–N) modified* *Const. asph. conc. connection* *(For details, see sht. BB??)* *(See dwg. nos. RD715, RD???)*	Driveways stations not needed if they are shown on the plans. See RD700 series for general information.
ELECTRICAL UTILITIES	
Inst. elec. meter (By others) *Inst. elec. transformer (By others)* *Inst. elec. vault (By others)*	

Example Notes	Remarks
EROSION CONTROL	
Const. aggregate construction entrance *Const. inlet protection (Type ?)* *Const. check dam* *Const. sediment fence* *Inst. sediment barrier (Type ?)* *Const. sediment barrier (Type ?)* *Inst. plastic sheeting* *Inst. compost/topsoil blend* *Inst. sediment mat* *Const. sediment fence* *Const. diversion dike/swale* *Const. temp. sediment trap* *Const. turbidity barrier* *Const. temp. scour hole* *Const. temp. slope drain* *Const. temp. drainage curb* *Const. tire wash facility* *(See dwg. nos. RD1000 & RD????)*	Generally, notes are covered by Erosion Control Plans. See ecV8_cache.dgn Specify type as needed. Use "F" series for plan sheet numbering. See RD1000 series for general information.
FENCE	
Sta. "L" 123+45 to Sta. "L" 123+45, Lt. *Const. type 2 fence* *Const. type 2 fence on barrier* *(See dwg. nos. RD810, RD815 & RD820)* *Const. temp. pedestrian fence* *Remove temp. pedestrian fence* *Const. temp. orange plastic mesh delineation fence* *Remove temp. orange plastic mesh delineation fence*	Only show stationing not quantity. See RD800 series for general information. Indents are 2 spaces. Use "text wrapping" for additional note information.
FIRE HYDRANT	
Sta. "L" 123+45, Lt. *Inst. fire hydrant (By others)* *Relocate fire hydrant (By others)*	May require offset and grade data.
FRONTAGE ROAD	
Const. frontage road	Frontage road stations not needed if they are shown on the typical sections.

Example Note	Remarks
GATE	
Sta. "L" 123+45, Lt. *Inst. ?' gate* *Inst. ?' locked gate* *Inst. ?' gateway* *(See dwg. nos. RD810 & RD820)*	See RD800 series for general information.
GEOTEXTILE	
Drainage geotextile type "?" – ? sq. yd. *Embankment geotextile – ? sq. yd.* *Riprap geotextile type "?" – ? sq. yd.* *Wall geotextile – ? sq. yd.* *Subgrade geotextile – ? sq. yd.* *Pavement overlay geotextile – ? sq. yd.*	Geotextile generally is included in other notes. These are examples of both stand-alone and inserted text format.
GUARDRAIL	
Sta. "L" 123+45 to Sta. "L" 123+45, Lt. *Remove extg. metal median barrier – ?'* *Remove extg. guardrail – ?'* *Adjust extg. guardrail – ?' (As directed)* *Const. cable guardrail system – ?'* *Const. metal median barrier – ?'* *Const. guardrail – ?' (Type 2A)* *Const. guardrail – ?' (Type 3)* *Const. Midwest Guardrail System – ?' (Type 2A)* *Const. Midwest Guardrail System – ?' (Type 3)* *W=?', E=?'* *Extra for ?' guardrail posts – ?* *Extra for ?' steel guardrail posts – ?* *Const. guardrail transition* *Const. 31" guardrail transition* *Const. anchor – ? (Type 1)* *Inst. end piece – ? (Type B)* *Const. guardrail conversion* *Const. guardrail terminal, flared – ?* *Test level ?* *Const. guardrail terminal, non-flared – ?* *Test level ?* *Const. guardrail to bridge transition – ?* *Const. 31" guardrail to bridge transition – ?* *(For details, see sht. BB??)* *(See dwg. nos. RD400 & RD???)*	Show radius on plan sheet, where appropriate. The generic guard rail systems are not MASH compliant and are shown for legacy purposes. Indents are 2 spaces. Use "text wrapping" for additional note information. Extra for long posts - ?' is length of post and ? is the quantity of posts Do not show a quantity if only 1. Use when converting guardrail height up or down Terminals do not require a height dimension in the note. See RD400 series for general information.

Example Note	Remarks
GUARDRAIL CONT	
Separate adjust and const. guardrail notes into two different note numbers.	
See sht. ?, note ? *Remove extg. guardrail* *Const. guardrail* *Const. guardrail to bridge rail*	Use this note on the complete run plus what is only on that sheet (see general information).
GUARDRAIL AND CONCRETE BARRIER	
Sta. "L" 123+45 to Sta. "L" 123+45, Rt. *Sta. "L" 123+45 to Sta. "L" 123+45, Lt.* *Remove extg. guardrail – ?'* *Const. conc. shldr. barrier – ?'*	These notes are generally included in other notes. These are examples of both stand alone and inserted text format.
Const. guardrail – ?' (Type 2A) *Const. guardrail – ?' (Type 3)* *W=?', E=?'* *Const. barrier to guardrail connection – ?* *Const. guardrail terminal, flared – ?* *Test level ?* *Const. guardrail terminal, non-flared – ?* *Test level ?* *(See dwg. no. RD530)*	W value is for guardrail only. Indents are 2 spaces. Use "text wrapping" for additional note information.
HANDRAIL	
Sta. "L" 123+45 to Sta. "L" 123+45 *Const. pedestrian handrail* *(For details, see sht. BB??)*	
IMPACT ATTENUATOR	
Const. impact attenuator *(For details, see sht. BB??)*	
INLET	
(See drainage note example)	
ISLAND & TRAFFIC SEPARATOR	
Const. Type "A" conc. island *Const. Type "C" conc. island* *Const. Type "CA" conc. Island* *(Lowered island design)* *(Cut through design)* *(See dwg. nos. RD705 & RD710)* *Const. Type "A" traffic separator* *Const. Tyoe "B" traffic separator* *Const. Type "C" traffic separator* *(See dwg. no. RD706)*	Indicate "(Mountable)" or "(Non-Mountable)". Indicate "(Mountable)" or "(Non-Mountable)".

Example Note	Remarks
IRRIGATION DITCH	
(See ditch note example)	
MAILBOX INSTALLATION	
Inst. single mailbox support – ? *Const. conc. collar* *(See dwg. nos. RD100 & RD101)* *Inst. multiple mailbox support – ?* *Const. conc. collar – ?* *Const. mailbox service turnout – ?*	These notes may be combined if all information is the same. Indents are 2 spaces. Use "text wrapping" for additional note information.
MANHOLE	
(See drainage note example)	
PAVEMENT REPAIR	
PCC pvmt. repair – ? sq. ft. *(For details, see sht. BB??)* *Const. full depth conc. pvmt. repair, shown thus:* *(For details, see sht. BB??)*	Show repair area with a pattern for item. Indents are 2 spaces. Use "text wrapping" for additional note information.
RAILROAD	
Const. R.R. crossing (By others) *Const. shoofly (By others)*	
RANDOM FILL	
Const. random fill – ? cu. yd.	
REMOVAL	
Remove curb *Remove sidewalk, shown thus:* *Remove curb & sidewalk, shown thus:* *Remove pvmt., shown thus:* *Remove building, shown thus:* *Remove wall*	Place hatching used for the item. Place building symbol  These notes are used for removal not part of general excavation area.
RETAINING WALL	
Structure no. 0000 *Sta. "L" 123+45 to Sta. "L" 123+45, Rt.* *Const. retaining wall* *(For sht. nos., see sht. A02, Geotechnical)*	Requires geotechnical plan sheets. See the Geotechnical CAD Manual for further guidance preparing any geotechnical plans.
RIPRAP	
Const. loose riprap (Class ?) – ? cu. yd.	
ROADSIDE DEVELOPMENT	
See RDSideV8_cache.dgn	

Example Note	Remarks
RUMBLE STRIPS	
Sta. "L" 123+45 to Sta. "L" 123+45 *Const. continuous rumble strips – ?'* *(For details, see shts. BB?? & BB??)*	
SEWER PIPE	
See Drainage Notes	
SIDEWALK	
Const. PCC (or asph. conc.) sidewalk *Setback – ?'* *Sidewalk scoring (If needed)* *Const. curb ramp, [Curb ramp type]* *Inst. [radial] [Color] truncated domes on* *[Surface Type] surface – X.X sq.ft.* *[Surface Material] surfacing, [snow zone]* *Ramp # – [Intersection Condition Type]* *PCC surfacing* *(For details, see sht. BB??)* *(See dwg. nos. RD725, RD9??)* *Const. stairway* *(See dwg. no. RD120)*	Surface treatment if applicable. See curb ramp note example. Indents are 2 spaces. Use "text wrapping" for additional note information. See RD700 series and RD900 series for general information.
SIGN SUPPORT	
Const. sign support & footing *(For sht. nos., see sht. A02, Signs)* *Sta. "L" 123+45, Lt. or Rt.* *Remove cantilever* *Const. cantilever* *(For sht. nos., see sht. A02, Signs)*	Requires sign plan sheets. See the Sign Design Manual for further guidance preparing any sign plans.
SIPHON AND SIPHON BOX	
Const. siphon box *Inst. ?" siphon pipe – ?'* *?' depth* *(See dwg. no. RD376)*	
SNOW FENCE	
Const. snow fence *Const. portable snow fence* *?' depth* *(See dwg. no. RD825)*	

Example Note	Remarks
SOUND WALL	
Structure no. 0000 *Sta. "L" 123+45 to Sta. "L" 123+45, Rt.* *Const. sound wall* *(For sht. nos., see sht. A02, Geotechnical)*	Requires geotechnical plan sheets. See the Geotechnical CAD Manual for further guidance preparing any geotechnical plans.
SUBSURFACE DRAIN PIPE	
See Drainage Notes	
SUMP	
See Drainage Notes	
TELEPHONE	
Utility work generally not shown on construction plans. *Work typically completed prior to construction of highway.*	
TEMPORARY CONNECTION	
Const. temp. connection *Remove extg. temp. connection* *(For details, see sht. BB??)*	
TRAFFIC SIGNAL	
Inst. traffic signal *(For sht. nos., see sht. A02, Signals)*	Requires approved signal plan sheets. See the ODOT Signal Design and Drafting Manual for further guidance preparing any signal plans.
WATER LINE	
Inst. ?" water line – ?' *?' depth* *Adjust water valve – ?* *Adjust water meter – ?* *Relocate water valve* *Relocate water meter* *Adjust water manhole* *adjust water vault* *(See dwgs. nos. RD2??)*	Normally by others See RD200 & RD300 series for general information

Example Note	Remarks
WATER QUALITY	
Const. water quality system *(For sht. nos., see sht. A02, Hydraulic)*	
WATER QUALITY SWALE	
Const. bio-swale *Exc. – ? cu. yd.* *(For details, see sheet BB??)*	
WET LANDS	
Const. wetlands *(For sht. nos., see sht. A02, Hydraulic)*	Requires wetland plan sheets. See the ODOT Environmental CAD Manual for further guidance preparing any wetland plans.

Standard Contract Plan Abbreviations 800

Section 801 Introduction

The approved abbreviations for contract plans are included in this Part of the manual. These are to be used by all disciplines within the plan set. It is important to keep consistent use of these abbreviations and not introduce variations of these approved abbreviations.

The ODOT CAD Standards Committee is the governing body for these abbreviations and approval is made by the Committee.

The format for the abbreviations are that acronyms are capital letters with no period following the capital letter and abbreviated words are lower case letters followed by a period. Proper names that are used in an abbreviation will begin with a capital letter. For example, the proper name Avenue is abbreviated as Ave.

Some words are abbreviated exactly the same as another word. The context where the abbreviation is used will determine the correct common word that is intended.

Table 801-1 Abbreviations

A	
Access Oregon Highways	AOH
additional	addl.
adjust, adjacent	adj.
aggregate	aggr.
ahead	ah.
alignment	ali.
Also Known As	a.k.a.
alternate	alt.
American Association of State Highway and Transportation Officials	AASHTO
American Concrete Institute	ACI
American Council of Engineering Companies of Oregon	ACEC
American Institute of Steel Construction	AISC
American Institute of Timber Construction	AITC
American Iron and Steel Institute	AISI
American National Standards Institute	ANSI
American Plywood Association	APA
American Public Work Association	APWA
American Railway Engineering Association	AREA
American Road and Transportation Builders Association	ARTBA

A Continued	
American Society for Testing and Materials	ASTM
American Society of Civil Engineers	ASCE
American Standard Code for Information Interchange (refers to files that are pure text)	ASCII
American Traffic Safety Service Association	ATSSA
American Welding Society	AWS
American Wood Products Association	AWPA
Americans with Disabilities Act	ADA
and (not in a sentence)	&
Angle Point	AP
Annual Average Daily Traffic	AADT
Applied Technology Council	ATC
approach	appr.
approved	appd.
approximate	approx.
Architectural and Engineering	A&E
Area Commission on Transportation	ACT
Area Management Team	AMT
Area of Potential Impact	API
asphalt	asph.

A Continued

Asphalt Concrete....AC
Asphalt Concrete Pavement....ACP
Asphalt-Treated Permeable Material....ATPM
Association of General Contractors of America....AGC
Association of Oregon Counties....AOC
at (not in a sentence)....@
Automatic Traffic Recorders....ATR
avenue....Ave.
average....ave.
Average Daily Traffic....ADT
Average Daily Truck Traffic....ADTT

B

back....bk.
backfill....bkfl.
backflow....bkflw.
bearing....brg.

Beginning Vertical Curve....BVC
Beginning Mile Point....BMP
Bench Mark....BM
Best Management Practice....BMP
between....btwn.
Bicycle Channelizing Device....BCD
Bid Analysis Management System....BAMS
bikeway....bkwy.
bottom....btm.
Bottom Face Curb....BFC
Bottom Of Slope....BOS

B Continued

boundary....bdry.
bridge....br.
building....bldg.
Bureau of Land Management (U.S. Dept. of Interior)....BLM
Burlington Northern Railroad....BNRR

C

canyon....cyn.
Cast-In-Place....CIP
Cathodic Protection....CP
center, centers....ctr.
Center of Gravity....CG
Center of Gravity of Strands....CGS
center to center....ctr.-ctr.
centered....ctrd.
Center Line....℄ or CL
Certified Engineering Geologist (registered)....CGE
change....chg.
channel....chnl.
clear....cl.
clearance....cl.
clear space....cl. sp.
coarse....crse.
Coastal Zone Management....CZM
Code of Federal Regulations....CFR
column....col.
Commercial Business District....CBD
communication....com.
compacted....comp.

C Continued

Complete Quadratic Combination (method of combining seismic forces or displacements) ..... CQC
compression ..... comp.
compressive ..... comp.
Computer Aided Drafting and Design ..... CAD
concrete ..... conc.
Concrete Control Technician ..... CCT
concrete pavement ..... PCC pvmt.
Concrete Reinforcing Steel Institute ..... CRSI
connection ..... conn.
construct ..... const.
continued ..... cont.
continuous ..... cont.
Continuous Two-Way Left Turn Lane, "Twiddle" ..... CTWLTL
Continuously Reinforced Concrete Pavement ..... CRCP
Continuously Operating Reference Station ..... CORS
Corrugated Metal Pipe ..... CMP
County ..... Co.
Counter Slope ..... CS
course ..... crse.
Court ..... Ct.
Creek ..... Cr.
crossing ..... Xing
cross-section ..... Xsec

C Continued

cubic feet ..... CF; cu. ft.; ft^3
Cubic Feet per Second ..... CFS
cubic inches ..... CI; cu. in.; in^3
cubic meters ..... CM; cu. m.; m^3
cubic millimeters ..... cu. mm.; mm^3
cubic yards ..... CY; cu. yd.; yd^3
Cross Slope ..... XS
crosswalk ..... xwalk
culvert ..... culv.
Curve Left CL
Curve Right ..... CR

D

Dead Load ..... DL
degrees, angular ..... ° or deg.
degrees, thermal ..... °C, °F
Department of Environmental Quality (Oregon) ..... DEQ
Department of Geology and Mineral Industries (Oregon) ..... DOGAMI
Department of Justice ..... DOJ
Department of Land Conservation and Development (Oregon) (formerly LCDC) ..... DLCD
Design Acceptance Plans ..... DAP
Design Acceptance Workshop ..... DAW
Design Hourly Volume ..... DHV

D continued

Design-Build ..... DB
diagonal(s) ..... diag.
diameter ..... dia. or Ø
diaphragm ..... diaph.
dimension ..... dim.
Direct Tension Indicator (load indicating washer for bolts) ..... DTI
Disadvantaged Business Enterprises ..... DBE
distribution ..... distr.
district ..... dist.
District Manager ..... DM
ditch ..... dt.

Division of State Lands (Oregon) ..... DSL
Doing Business As ..... DBA
double ..... dbl.

Draft Environmental Impact Statement ..... DEIS
drawing, drawings ..... dwg.
Drive ..... Dr.
Driver and Motor Vehicle Services Division ..... DMV
driveway ..... dwy.

E

each ..... ea.
easement ..... ease.
East ..... E
Eastbound ..... EB
East City Limits ..... ECL

E Continued

Easting ..... E
Edge of Pavement ..... EP
Edge of Shoulder ..... ES
electric ..... elec.
elevation ..... el.
embankment ..... emb.

End Vertical Curve ..... EVC
Endangered Species Act ..... ESA
Environmental Site Assessment ..... ESA
Ending Mile Point ..... EMP
Engineering and Contingencies (used in cost estimates) ..... E&C
Environmental Assessment ..... EA
Environmental Impact Statement ..... EIS
Environmental Protection Agency (U.S.) ..... EPA
equation ..... eq.

estimate(d) ..... est.
et alii or et alia (And Other Persons) ..... et al.
et uxor (And Wife) ..... et ux.

et vir (And Husband) ..... et vir
excavation ..... exc.
excluding ..... excl.
existing ..... extg.
extra ..... ex.
expansion ..... exp.
Expenditure Account ..... EA
exterior ..... ext.

F

Far Face (don't use for "fill face")....FF
Far Side....FS
Federal Aviation Administration....FAA
Federal Emergency Management Agency....FEMA
Federal Highway Administration (formerly BPR)....FHWA
Federal Transit Administration....FTA
Federal-Aid Highway Program....FHP
feet....ft.

Fiber Reinforced Polymer....FRP
figure, figures....fig.
Final Environmental Impact Statement....FEIS
Finding of No Significant Impact....FONSI
Finish Grade....FG
Fire Hydrant....FH
flange....flg.
Flood Insurance Studies (conducted by FHWA)....FIS
Flow Line....FL

foot....ft.

footing....ftg.
foot-kips....ft.-k.
foot-pounds....ft.-lbs.
forward....fwd.
foundation....fdtn.
freeway....frwy.
Frequently Asked Questions....FAQ

G

galvanized....galv.
Galvanized Steel Pipe....GSP
gauge....ga.
general....gen.

Geographic Information System....GIS

Geotechnical Design Manual....GDM
Global Positioning System....GPS
GLObal NAvigation Satellite System....GLONASS
Global Navigation Satellite System....GNSS
Government Land Office....GLO
grade....gr.

ground....grnd.
grubbing....gb.
guardrail....GR
gutter....gtr.
Gutter Slope....GS

H

hanger....hgr.
Headquarters....HQ
height....ht.
hexagon....hex.
hexagonal....hex.
High Density Polyethylene....HDPE
High Occupancy Vehicle....HOV
High Performance Concrete....HPC
High Strength....HS

H Continued

High Water ..... HW
High Water Mark ..... HWM
highway ..... hwy.
Highway Bridge Program (funding) ..... HBP
Highway Bridge Replacement (type of funding) ..... HBR
Highway Bridge Replacement and Rehabilitation (type of funding) ..... HBRR
Highway Capacity Manual ..... HCM
Highway Design Manual ..... HDM
Highway Safety Manual ..... HSM
Highway Safety Information System (FHWA data base) ..... HSIS
hook ..... hk.
horizontal ..... horiz.
hour(s) ..... hr.

I

illumination ..... ill.
in place ..... in pl.
Incentives / Disincentives ..... I/D
include ..... incl.
included ..... incl.
including ..... incl.
Independent Wire Rope Core (cables) ..... IWRC
Information Systems ..... IS
Information Technology ..... IT
Input/Output ..... I/O

I Continued

Inside Diameter ..... ID
Inside Radius ..... IR
install ..... inst.
Intelligent Transportation System ..... ITS
interchange ..... intchge.
Interchange Area Management Plan ..... IAMP
Inter-Governmental Agreement ..... IGA
intersection ..... int.
interior ..... int.
intermediate ..... interm.
irrigation ..... irrig.

J

joint ..... jt.
Joule (metric energy unit) ..... J
junction ..... jct.

K

Kelvin ..... K
key number ..... keynu.
kilo, one thousand ..... k
kilogram ..... kg
kilometer (1000 meters) ..... km
Kilometers per Hour ..... km/h, KPH
KiloNewton (metric force unit) ..... kN

K Continued

Kip (kilopound, 1000 pounds).....K
Kips per Square Foot.....KSF
Kips per Square Inch.....KSI

L

Landscape Architect (registered).....LA
lake.....lk.
Latex Modified Concrete.....LMC
Le Systeme International d'Unites (Metric System).....SI
League of Oregon Cities.....LOC
left.....lt.
Length of Curve.....L
level.....lv.
Level Area.....LA
Level of Service.....LOS
linear.....lin.
Linear feet.....LF
Live Load.....LL
Load Resistance Factor Design.....LRFD
Local Datum Plane Coordinate System.....LDPC
Low Distortion Projection.....LDP
location.....loc.
longitudinal.....longit.
loop.....lp.
Low Slump Dense Concrete.....LSDC
luminaire.....lum.

L Continued

Lump Sum..... LS

M

maintenance.....maint.
manhole..... MH
Manual on Uniform Traffic Control Devices.....MUTCD
manufactured.....mfd.
manufacturing.....mfg.
markers.....mkrs.
material.....matl.
Material Safety Data Sheet.....MSDS
maximum.....max.
Mean Sea Level.....MSL
Mechanically Stabilized Earth (retaining walls).....MSE
median.....med.
Mega, one million.....M
Megahertz (millions of cycles per second).....MHz
meter.....m
Metropolitan Planning Organization.....MPO
micro silica modified concrete.....MC
mile..... mi.
Milepoint, Milepost.....MP
milli, one thousandth.....m
millimeter.....mm
minimum.....min.
Minor Structure Concrete.....MSC

M Continued

minute or minutes ..... min.
miscellaneous ..... misc.
mixture ..... mix.
modified ..... mod.
Motor Carrier Transportation Division ..... MCTD
Mount or Mountain ..... Mt.
multiple ..... multi.

N

National Association of Corrosion Engineers ..... NACE
National Bridge Inspection Standards ..... NBIS
National Bridge Inventory ..... NBI
National Center for Earthquake Engineering Research (Buffalo, NY) ..... NCEER
National Cooperative Highway Research Program ..... NCHRP
National Environmental Protection Act of 1969 ..... NEPA
National Geodetic Vertical Datum (MSL = 0.0) ..... NGVD
National Highway Institute ..... NHI
National Highway Performance Program ..... NHPP
National Highway System ..... NHS
National Highway Traffic Safety Administration ..... NHTSA
National Oceanic and Atmospheric Administration (U.S. Dept. of Commerce) ..... NOAA

N Continued

Near Surface Mount ..... NSM
Newton (metric force unit) ..... N
nominal ..... nom.
normal ..... norm.
North ..... N
North American Datum ..... NAD
North American Vertical Datum 1988 ..... NAVD 88
North City Limits ..... NCL
Northbound ..... NB
Northeast ..... NE
Northing ..... N
Northwest ..... NW
Not to Scale ..... NTS
number ..... no.
number ..... nos.

O

Occupational Safety and Health Administration ..... OSHA
Oregon Standard Specifications for Construction ..... OSSC
ODOT's Transportation Volume Tables ..... TVT
On Center (center-to-center) ..... OC

O Continued

Operations	ops.
Oregon Administrative Rules	OAR
Oregon Bridge Inventory System	OBIS
Oregon Concrete & Aggregate Producers Association, Inc.	OCAPA
Oregon Coordinate Reference System	OCRS
Oregon Department of Fish and Wildlife	ODFW
Oregon Department of Transportation	ODOT
Oregon Emergency Response System	OERS
Oregon Highway Plan	OHP
Oregon Manual on Uniform Traffic Control Devices	OMUTCD
Oregon Motor Carrier Transportation Division	MCTD
Oregon Real-Time GNSS Network	ORGN
Oregon Revised Statutes	ORS
Oregon State Police	OSP
Oregon Transportation Commission	OTC
Original Ground	OG
out to out	o-o or out-out
Outside Diameter	OD
Outside Radius	OR
Overcrossing	Oxing.
Over height Vehicle Warning System	OVWS

P

page	p.
pages	pp.
park	prk.
Pascal, metric stress or pressure unit	Pa
Passenger Car Equivalents	PCE
pavement	pvmt.
peak	pk.
pedestrian	ped.
Pedestrian Accessible Route	PAR
Pedestrian Channelizing Device	PCD
perforated	perf.
permanent	perm.
phase	phs.
place	pl.
Plans, Specifications and Estimates	PS&E
plate	plt. or PL
point	pt.
point from circular curve to spiral	PCS
point from spiral to circular curve	PSC
point from tangent to spiral	PS
point of compound curve	PCC

P Continued

point from tangent to circular curve	PC
point of intersection	PI
point of reverse curve	PRC
point of tangency	PT
point of vertical intersection	PVI
point on horizontal curve	POC
point on spiral	POS
point on tangent	POT
point on vertical curve	PVC
Polymer-modified Concrete	PMC
Polytetrafluoroethylene (sliding surface for bearings)	TFE
polyvinyl chloride	PVC
Portable Variable Message Sign	PVMS
Portland Cement Association	PCA
Portland Cement Concrete	PCC
Portland Western Railroad	PWRR
Post-tensioned concrete	P/T
Post-Tensioning Institute	PTI
pound	lb.
pounds	lbs.
Pounds per Cubic Foot	PCF
Pounds per Square Foot	PSF
Pounds per Square Inch	PSI
Precast Concrete	P/C
Preliminary Engineering	PE
Pre-Qualification Request	PQR

P Continued

prestressed	prest.
Prestressed Concrete	PSC
Prestressed Concrete Institute	PCI
Prestressed Concrete Pipe	PCP
Price Agreement	PA
Professional Engineer (registered)	PE
Professional of Record	POR
profile	prof.
project	proj.
Project Control System (to be replaced by MSCS)	PCS
Project Development/Design Team (also PT for Project Team)	PDT
Project Leader	PL
Project Manager	PM
protection	prot.
Public Information	PI
Public Relations	PR
Public Utility Commission	PUC
Purchase Order	PO

Q

Qualified Products List	QPL
Quality Assurance	QA
Quality Control	QC
Quality Control Technician	QCT
quantity	qty.

R

radius	R
railroad	RR
Ramp Run Number	RRN
Range (surveying)	R.
Record of Decision	ROD
reference	ref.
Region Bridge Inspector	RBI
Regional Transportation Plan	RTP
Registered Geologist	RG
reinforce, reinforced, reinforcing, or reinforcement	reinf.
Reinforced Concrete	RC
Reinforced Concrete Box	RCB
Reinforced Concrete Box Beam	RCBB
Reinforced Concrete Box Culvert	RCBC
Reinforced Concrete Box Girder	RCBG
Reinforced Concrete Deck Girder	RCDG
Reinforced Concrete Pipe	RCP
reinstall	reinst.
replacement	replac.
Request for Information	RFI
Request for Proposal	RFP
Request for Qualifications	RFQ
required	reqd.
Research and Development	R&D
Resource Issues Group	RIG
Response Spectrum Analysis	RSA

R Continued

Resurfacing	1R
Resurfacing, Restoration and Rehabilitation	3R
Resurfacing, Restoration, Rehabilitation and Reconstruction	4R
retaining wall	ret. wall
reverse	rev.
revise	rev.
Revised Environmental Assessment	REA
right	rt.
Right-of-Way	R/W
River	R.
Road	Rd.
Roadside Weather Information Sign	RWIS
roadway	rdwy.
Root Mean Square (statistical average)	RMS

S

Safety Priority Index System	SPIS
salvage	salv.
sanitary	san.
seconds (angular)	"
seconds (time)	sec.
section (map location)	Sec.
section (of drawing)	sect.
Section (surveying)	S.
Section, Township and Range (surveying)	S.T.R.
segment	seg.

S Continued

Seismic Performance Category.....SPC
selected.....sel.
Semi-Tangent distant of a spiraled curve.....Ts

sewer.....sew.
sheet .....sht.
shoulder.....shldr.
sidewalk ..... sw. or walk
Silica Fume Concrete .....SFC
Silica Fume Latex-Modified Concrete.....SFLMC
Single Occupant Vehicle .....SOV
Single Trip Permit.....STP
Single Unit Truck.....SU
Slide In Bridge Construction.....SIBC
slope.....sl.

Soils and Rock Classification Manual (ODOT).....SRCM
South .....S
South City Limits .....SCL
Southbound .....SB
Southeast .....SE
Southern Pacific Railroad.....SPRR
Southwest .....SW
spaced .....spcd.
spaces .....spcs.
Special Transportation Area .....STA
specification .....spec.
spiral .....sp.

S Continued

splice.....spl.
springs.....spgs.
Square Root of the Sum of the Squares (method of combining seismic forces or displacements).....SRSS
square feet.....SF; sq. ft.; ft^2
square inches.....SI; sq. in.; in^2
square kilometer .....km^2
square meters.....SM; sq. m.; m^2
square millimeters.....sq. mm; mm^2
square yards..... SY; sq. yd.; yd^2
standard.....std.
Standard Penetration Test for soils .....SPT
State.....St.
State Historic Preservation Office .....SHPO
State Transportation Improvement Program.....STIP
Statement of Qualifications.....SOQ

station .....sta.
stiffener.....stiff.
stirrup .....stirr.
Stopping Sight Distance .....SSD
Storm Sewer .....SS
Strategic Highway Research Program.....SHRP
Street .....St.
strength .....str.
structural .....strl.
Structural Concrete .....SC

S Continued

structure....str.
Structure Inventory and Appraisal....SI&A
Sufficiency Rating....SR
support....supp.
surface....surf.
surfacing....surf.
symmetrical....sym.
Systeme Internationale
(International System of units)....SI

T

tangent (line)....tan.
Technical Advisory Committee....TAC
Technical Advisory Group....TAG
temporary....temp.
Temporary Pedestrian Accessible Route....TPAR
Temporary Sign Support....TSS
terrace....ter.
terrain....terr.
Test boring....TB
Test Hole....TH
Texas Transportation Institute....TTI
thick....thk.
thickness....thkn.
Thousand feet board measure....MFBM
Threatened and Endangered....T&E
Toe of Slope....TOS
Top Back Curb....TBC
Top Face....TF

T Continued

Top Face Curb....TFC
Top of Bank....TOB
Top of deck to streambed distance....DS
topography....topo.
Total Delta of Curve with Spiral(s)....TΔ
Township (surveying)....T.
Tracings To Specifications....TTS
Traffic Control Devices....TCD
Traffic Control Measures....TCM
Traffic Control Plan....TCP
Traffic Control Plans Engineer....TCPE
Traffic Control Supervisor....TCS
Traffic Management Plan....TMP
transportation....trans.
Transportation Demand Management....TDM
Transportation Growth Management....TGM
Transportation Impact Study....TIS
Transportation Improvement Plan....TIP
Transportation Research Board....TRB
Transportation System Plan....TSP
transverse....transv.
trench....tr.
Truck Mounted Impact Attenuator....TMA
Tube, Structural....TS
Turning Space....TS
Two-Way Left-Turn Lane....TWLTL
Type, Size and Location
(formerly called preliminary)....TS&L
typical....typ.

U

U.S. Army Corps of Engineers ..... CoE
U.S. Fish and Wildlife Service ..... USFWS
U.S. Forest Service (Dept. of Agriculture) ..... USFS
U.S. Reclamation Service ..... USRS
ultimate ..... ult.
Ultra High Performance Concrete ..... UHPC
undercrossing ..... Uxing
Uniform Building Code ..... UBC
Uniform Federal Accessibility Standards ..... UFAS
Union Pacific Railroad ..... UPRR
United States Coast and Geodetic Survey ..... USC&GS
United States Coast Guard ..... USCG
United States Department of Transportation ..... USDOT
United States Geological Survey ..... USGS
university ..... univ.
Urban Business Area ..... UBA
Urban Growth Boundary ..... UGB

V

variable ..... var.
Variable Message Sign ..... VMS
varies ..... var.

V Continued

various ..... var.
Vehicle Miles of Travel (Vehicle Miles Traveled) ..... VMT
vertical ..... vert.
vertical curve VC
volume ..... vol.
Volume to Capacity Ratio ..... v/c

W

Wearing Surface ..... WS
Weigh in Motion ..... WIM
weight ..... wt.
Welded Wire Fabric ..... WWF
Welded Wire Mesh ..... WWM
Welding Procedure Specifications ..... WPS
West ..... W
West City Limits ..... WCL
West Coast Lumber Inspection Bureau ..... WCLIB
Westbound ..... WB
Western Wood Products Association ..... WWPA
Willamette Meridian ..... W.M.
Wire Strand Core (cables) ..... WSC

X

Y

yard.....yd.

Z

ODOT provides a safe and reliable multimodal transportation system that connects people and helps Oregon's communities and economy thrive.

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