OREGON DEPARTMENT OF TRANSPORTATION TECHNICAL SERVICES

Geo/Environmental BULLETIN

SUBJECT	FINAL NUMBER	EFFECTIVE DATE	VALIDATION DATE	SUPERSEDES or RESCINDS
Temporary Water Management (TWM) Plans Drafting Guidance	GE14-01(B)	06/01/2014	05/22/2019	
	WEB LINK(S) https://www.oregon.gov/ODOT/Engineering/Pages/Technical-Guidance.aspx			
TOPIC/PROGRAM Contract Plans Development Guide-TWM	APPROVED SIGNATURE Original signed by: Susan Haupt State Environmental Manager			

PURPOSE

The intent of this bulletin is to provide guidance on developing contract plans for Temporary Water Management (TWM) projects. The CAD and drafting standards outlined in this document are used in the creation of TWM concept plan sheets for contract plans. This bulletin, along with ODOT's MicroStation Engineering Workspace, provides users with the necessary TWM CAD Standards.

GUIDANCE

At such time this information is transferred to the GHE CAD Manual, this bulletin will be rescinded and any further additions to TWM CAD standards will appear on ODOT's Engineering Workspace and in future updates of the GHE CAD Manual.

ODOT's Engineering Workspace

ODOT's MicroStation Engineering Workspace contains discipline specific cad elements such as levels, line styles, cell libraries, seed files, etc. Provided in the Workspace are the necessary tools for accessing these items in the preparation of a TWM concept plan sheet. The Workspace contains the most accurate up-to-date standards available for ODOT's engineering disciplines.

Plan Sheet Standards

The sheet setup and layout of a TWM concept plan follows the basic rules of standard ODOT Roadway plans development by incorporating standard text styles, naming conventions, sheet border, titleblock, etc. Refer to chapters 1-4 of the new CPM for general plans development information. Guidance specific to TWM concept plans development is contained further in this bulletin.

DEFINITIONS

CPM – The Contract Plans Manual (CPM), currently in development, presents the policies, procedures, methods, and standards for developing and preparing final contract plans for ODOT Highway Projects. The CPM is intended to provide accurate

and complete guidance in accordance with current established CAD and drafting standards.

GHE CAD Manual – The Geo, Hydro and Environmental (GHE) CAD Manual is currently in development and is intended to guide users in the use of CAD and drafting tools, policies, procedures, and methods established for preparing final GHE discipline-specific contract plans. The GHE CAD Manual is to be used in conjunction with ODOT's Contract Plans Manual (CPM) in the preparation of ODOT's contract plans.

Disciplines to be covered by the GHE CAD Manual are:
Geotechnical Data, Retaining Walls, Sound Walls, Landslide Correction, Material Sources/Disposal Sites, Rock Fall Mitigation, HazMat, Stormwater, Culverts, Fish Passage, Temporary Water Management, Bank Protection, Waterway Enhancement, Roadside Development/Wetlands and Erosion Control.

Workspace - A CAD Workspace is a customized drafting environment in which MicroStation can be set up for specific purposes. ODOT's MicroStation Engineering Workspace consists of "components" and "configuration files" containing the standard tools needed for the design and drafting of various discipline specific products.

TWM - Temporary Water Management is water control and treatment implemented during active construction or repair of facilities in the riparian zone, such as bridges, culverts, embankments, fish passage measures, and streambed restorations. These control and treatment measures are temporary. They are usually installed just before construction and removed immediately after construction is complete.

Full Isolation - Full isolation is implemented when work will occur from bank to bank of a stream. Barriers are placed upstream and downstream of the work area and span the width of the active channel. The barriers keep streamflow out of the work area while a temporary bypass system reroutes the water around the work area.

Partial Isolation – Partial isolation is implemented when work will occur along or near the bank of a stream. Barriers are placed next to and along the bank to establish a work area. Partial isolation allows for flow conditions to continue through the non-isolated channel.

BACKGROUND/REFERENCE

This is the first set of CAD standards for TWM concept plans development. This Technical Bulletin is in conjunction with the TWM CAD standards provided in the engineering workspace and the TWM chapter (18) of the Hydraulics Manual. These CAD and drafting standards provide users with the necessary tools to prepare a TWM concept plan in accordance with the design standards set forth in the Hydraulics Manual. Having these standards gives all project development staff (including consultant staff), the same tools for developing plans; ensuring statewide consistency.

EXPLANATION

Described in the following pages are the TWM CAD and Drafting standards, their use and location. Basic instructions for the set up and completion of a TWM concept plan, plus a drawing check list and example drawings, are included in this bulletin. Standard cells are accessed in the cell library (TWM.cel), and in the seed file (seed_TWM.dgn). Standard custom line styles and other items are accessed in the ODOT MicroStation workspace. The standards are available to ODOT MicroStation users and through a download to consultants at: http://www.oregon.gov/ODOT/EAST/Pages/ODOT-Workspace.aspx

Cell Library

The TWM cell library (TWM.cel) contains individual cell drawings used on TWM concept plan sheets. These cells range from plan view symbols, to details that can be modified for individual projects, plus standard notes, construction notes, and sheet and drawing view titles.

Workspace Tools

The TWM CAD tools access cells from the TWM cell library, and include custom linestyles, discipline specific levels and a seed file used for TWM concept plans.

Seed File

The TWM seed file (Seed_TWM.dgn) is located with other seed files in the workspace. The file contains a ready-made plan sheet (template), which includes a standard sheet border and titleblock. The sheet is placed at an x and y coordinate location of 0,0; using the lower left corner of the yellow plot border as the cell origin. The purpose of this seed file is to provide a working template for quick, easy preparation of TWM concept plans.

The seed drawing provides the general layout required and the elements to be included in every TWM concept plan.
Standard plan sheet elements are:

- Fish Screen Sump detail.
- Sandbag footprint detail.
- Set of construction notes for Full Isolation projects.
- Set of construction notes for Partial Isolation projects.
- Standard General Notes.
- Estimated Discharge table.
- Plan View title.
- Section View title.

Several “notes to drafter”, explaining the use of certain components in the template, are included. (These notes are construction elements so will not print but should be deleted prior to project completion).

Levels
Two levels are typically used for TWM concept plan sheet elements (other than the plan view).
They are;
level P_HY_DESIGN_GENERAL is used for detail line work, and
level P_HY_DESIGN_GENERALTX is used for text, dimension lines, leader lines and table border lines.
Retain the level structure of the referenced plan view and profile/cross section files.

Sheet Number Conventions
See Chapter 2 of the CPM

File Naming Conventions
See the ODOT ProjectWise User Manual

Example Drawings
See Appendix A of this bulletin for example plan sheets. Appendix A contains a Full Isolation design plan and a Partial Isolation design plan. These example drawings are also available in DGN format for use as templates. The template drawings are located on the Drafting page of the Geo-Environmental Section website at:
http://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Drafting.aspx

Refer to the Hydraulics Manual for the required components of each type of Isolation design.

Design Base Map Setup
To create a design base map for TWM, reference into a separate design file the current project files for topography and right-of-way. Add the proposed road design, bridge, culvert, fish passage, or stream bank restoration designs as needed. Add TWM design elements using the custom linestyles and cell drawings available in the workspace.

Plan Sheet Development
TWM concept plan sheets should reference the project roadway base mapping, and bridge or hydraulic information if available. This keeps plan graphic elements consistent throughout the entire plan set and prevents reproducing work unnecessarily. The drafter and/or designer assigned to the project should set up the base for TWM concept plan sheets to include existing topographic features, right-of-way information and proposed project design elements required for the TWM concept plan, plus the TWM design.

TWM concept plan sheets also contain construction notes, describing location of work to be performed, and bid item names, plus quantities. General notes about design and material standards, plus any work-related information about the site that contractors may need to know, are included. The “Estimated Discharge” table should be filled in with data provided by the project engineer or designer. The standard Width-to-Height Ratio Sandbag Barrier detail, cross section/s and additional details are also included

and can be placed on a second sheet if needed. For sheet layout use the seed_TWM.dgn and include these standard items.
(See the Plans Check List section of this bulletin for all items to be included).

Plan Sheet Complete
In preparing a TWM concept plan drawing for review by the Engineer of Record, complete the following.

1. Delete the set of isolation construction notes that do not apply to the project.
2. Delete the notes to drafter.
3. Complete the title block information to match rest of project
4. Reference in a plan view design.
5. Add cross section/s and details (use second sheet if needed).
6. Delete unused items from the legend.
7. Add status stamp or “V” number.

Plans Check List
The following is a check list of items to include on TWM concept plans. For a list of typical design components, see the Hydraulics Manual, 18.6 Design Procedure, Step 8a – Coordinate TWM Concept Plan Drafting.

- ☐ Border, title block, sheet title, sheet number
- ☐ Title block information completed
- ☐ Professional of record stamp
- ☐ ODOT logo
- ☐ “V” number or project status stamp
- ☐ Plan with north arrow
- ☐ Existing roadway
- ☐ Existing structure (bridge, culvert, etc.)
- ☐ Existing utilities
- ☐ Structure number in label of existing and proposed structures
- ☐ Waterway
- ☐ Top of bank
- ☐ Ordinary high water line
- ☐ Right-of-way lines
- ☐ Temporary construction easements
- ☐ Construction limits
- ☐ Limits of isolation
- ☐ Proposed roadway/or structure
- ☐ Proposed TWM design elements
- ☐ Cross section/s (use InRoads, or modify a generic section detail)
- ☐ Barrier detail (Sandbag footprint detail or other)
- ☐ Fish Screen Sump detail
- ☐ Details (project specific)
- ☐ TWM discharge table

- ☐ Construction notes
- ☐ General notes
- ☐ Notes (other)

Printing
Refer to the ODOT MicroStation V8i SS4 User Guide for step by step instructions on printing plan sheets. Locate the latest version of the guide at: http://www.oregon.gov/ODOT/EAST/Pages/ODOT-Workspace.aspx.

RESPONSIBILITIES

Plan preparation is a team effort requiring regular coordination between the design engineer and the drafter. The design engineer is responsible for the content and constructability of the design. The drafter is responsible for the presentation of those ideas on the plans in a format that is consistent with statewide standards.

ODOT's Senior Hydraulic Engineer is the owner of the TWM CAD standards. They review, recommend and approve the CAD and Drafting standards for TWM concept plans development.

The Geo/Environmental Section Drafting Standards Program Leader is responsible for approving, developing, and maintaining the CAD and Drafting standards, and also providing accessibility to the standards.

Anyone preparing TWM concept plans for ODOT will use these standards.

ACTION REQUIRED

Implementation of the guidance identified in this document shall be performed by anyone developing Contract Plans for ODOT projects.

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APPENDIX A:

Example drawings of TWM concept plans for a Full Isolation design and a Partial Isolation design.