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910.01 General

For Washington State Department of Transportation (WSDOT) projects, contour grading is an important element in achieving operational, environmental, and visual functions.

Contour grading plans are required when profiles and cross sections do not provide a complete picture. Examples include stream channel changes, interchanges, noise abatement berms, wetland mitigation sites, and detention/retention ponds. Contour grading plans show the subtle changes in grading that occur between cross sections and can allow for finer grading so the constructed earthform blends smoothly into the surrounding landscape. While engineered slopes define grades to meet engineering requirements, contours can be used to define a finished grade that will blend the facility into the surrounding landscape and meet the requirements of the *Roadside Classification Plan*.

A detention/retention pond can be designed and constructed to appear as if it were naturally formed. Contour grading plans facilitate this kind of earth sculpting. In addition, contour grading plans can be critical to wetland mitigation sites where inaccurate grading can leave a proposed mitigation site without access to a water source.

For more detailed information on grading for roadsides, see the *Roadside Manual*.

910.02 References

(1) Design Guidance

Roadside Classification Plan, M 25-31, WSDOT

Roadside Manual, M 25-30, WSDOT

Standard Plans for Road, Bridge and Municipal Construction (Standard Plans), M 21-01, WSDOT

910.03 Procedures

For design approval levels, see Chapter 300.

When contour grading plans are needed, consult the region or Headquarters (HQ) Roadside and Site Development offices.

Submit plans for contour grading on structures (such as lids) to the HQ Bridge and Structures Office for approval.

910.04 Recommendations

Consider the following factors when developing a contour grading plan:

- Balance of cut and fill within project limits.
- Preservation of existing desirable vegetation.
- Preservation of existing topsoil.
- Vehicle recovery areas.
- Sight distance.
- Pedestrian safety and security.
- Impacts to groundwater and surface water both on and off the right of way, including wetlands.
- Slope angle and potential soil erosion.
- Slope rounding.
- Drainage, including detention/retention functions.
- Surrounding landscape.
- Visual elements that blend with the adjacent landforms.
- Grading construction cost.
- The difficulty of establishing and stabilizing vegetation on slopes steeper than 2:H to 1:V.
- Soil properties and angle of repose.
- Maintenance access to drainage and traffic operational features.
- Maintenance requirements for slopes (slopes steeper than 3H:1V cannot be mowed).
- Access along fence lines or noise walls, if needed.
- Maximum allowable cut/fill next to a structure: minimum cover over a footing, maximum fill behind a wall or next to a pier.

Use a known stationing point or baseline as a starting point in drawing contours.

The recommended contour intervals are:

- 1 foot for highway plan drawings.
- 1 foot for noise wall berms, and pedestrian-related facilities.
- 0.5 foot for wetland mitigation sites, stream mitigation sites, and wetland bank sites. Include two or more cross sections done at a vertical exaggeration sufficient to communicate the design intent.

910.05 Documentation

For the list of documents required to be preserved in the Design Documentation Package and the Project File, see the Design Documentation Checklist:

 www.wsdot.wa.gov/design/projectdev/