Chapter 920 Vegetation

920.01 General

Roadside vegetation provides operational, environmental, and visual benefits to Washington's roadway users. Vegetation preservation and restoration is an integral part of roadside planning and design for the Washington State Department of Transportation (WSDOT). When a project disturbs a roadside segment, the Project Engineer is responsible for meeting the requirements of the roadside classification for that road segment. This may include working outside the actual disturbed area for buffering and blending into the surrounding landscape.

Consult with the region Landscape Architect early in the process for all projects involving revegetation. For regions without a Landscape Architect, contact the Headquarters (HQ) Roadside and Site Development Section.

920.02 References

(1) Design Guidance

Roadside Classification Plan, M 25-31, WSDOT

Roadside Manual, M 25-30, WSDOT

Standard Specifications for Road, Bridge, and Municipal Construction (Standard Specifications), M 41-10, WSDOT

(2) Supporting Information

Integrated Vegetation Management for Roadsides, WSDOT
www.wsdot.wa.gov/maintenance/vegetation/

Washington State Highway System Plan (HSP)
www.wsdot.wa.gov/planning/

920.03 Discussion

(1) Operational, Environmental, and Visual Functions of Roadside Vegetation

Roadside vegetation is used to:

- Prevent soil erosion.
- Enhance water quality.
- Provide for water storage and slow runoff.
- Absorb water from soils.

- Stabilize slopes.
- Absorb and store CO_2.
- Protect or restore wetlands and sensitive areas.
- Preserve and provide habitat.
- Prevent noxious weed infestation.
- Provide positive driver cues for guidance and navigation.
- Provide for corridor continuity.
- Screen glare and distractions.
- Buffer view of neighboring properties from the roadway.
- Buffer view of roadway by neighboring property owners.
- Preserve scenic views.
- Reduce driver monotony.
- Provide a transition between the transportation facility and adjacent land uses.
- Provide for a pleasing roadside experience.

920.04 Design Guidelines

(1) General

The type and extent of vegetation will vary depending on the roadside character classification of the road segment, approved treatment level of the project, affected roadside management zone, and planting environment. Select and maintain vegetation so it is compatible with Design Clear Zone criteria and the sight distances of drivers to signs and other vehicles and at intersections and curves.

Apply the following guidelines when designing roadside revegetation projects:

- Meet the requirements of the *Roadside Classification Plan.*
- Review roadside master plans and the State Highway System Plan for future projects and corridor goals.
- Design revegetation plans, including wetland mitigation sites and detention/ retention ponds, to be sustainable over time and to require a low level of maintenance.
- Design to reduce pesticide use.
- Select plants that are compatible with clear zone, sight distance, clear sight to signing, and headlight screening criteria.
- Evaluate the mature characteristics of plant species to be consistent with safety criteria. Consider size and extent of vegetation at maturity for sight distance, clear zone, and shading issues.
- Preserve existing desirable vegetation and topsoil to the maximum extent reasonable.
- Select plants that are adaptable to the site conditions. Choose native plants unless conditions warrant non-native species to be sustainable. (See the *Roadside Manual* for more information.)

- Consider stripping, stockpiling, and reapplying topsoil if construction will disturb topsoil. When this is not feasible, amend remaining soil to meet horticultural requirements, reduce compaction, and increase moisture retention.
- Consider design speeds in the selection and location of plants. For example, where traffic speeds are higher, include larger groupings of fewer species in the landscape. (In areas of increased speeds, a motorist's perception of detail along the roadside diminishes.)
- Accommodate existing and proposed utilities.
- When selecting vegetation, consider screening undesirable views, or consider allowing openings to reveal or maintain desirable views.
- Design roadsides, particularly areas under bridges, to reduce potential for homeless encampments. Keep clear lines of sight where this potential exists.

Roadway geometrics will also affect the type and extent of vegetation in specific locations. The maximum allowable diameter of trees within the Design Clear Zone is 4 inches, measured at 6 inches above the ground when the tree has matured. Consider limiting vegetation diameters on the outside of curves beyond the Design Clear Zone. (See the *Roadside Manual* for more information.)

(2) Existing Vegetation

Design and construct within the roadside to retain desirable existing vegetation, reduce impacts on desirable existing vegetation, and restore damaged desirable vegetation where impacts occur. Also:

- Protect desirable existing vegetation wherever possible.
- Delineate trees that are to remain within the construction zone, and provide adequate protection of the root zone (extending from the tree trunk to a minimum of 3 feet beyond the drip line).
- Encourage desirable vegetation by using revegetation techniques to prevent or preclude the establishment of undesirable vegetation. (For more information on vegetation management, see: www.wsdot.wa.gov/maintenance/vegetation/.)
- Limit clearing and grubbing (especially grubbing) to the least area possible.

Selectively remove vegetation to:

- Remove dead and diseased trees when they may be a risk (including those outside the clear zone).
- Maintain clear zone and sight distance.
- Increase solar exposure and reduce accident rates, if analysis shows that removing vegetation will improve safety.
- Open up desirable views.
- Encourage understory development.
- Encourage individual tree growth.
- Prevent plant encroachment on adjacent properties.
- Ensure long-term plant viability.

Refer to the *Roadside Manual* for more information.

(3) Plant Material Selection

Select plants that are not invasive (not having the potential to spread onto roadways, ditches, and adjacent lands).

Base plant material selection on the following:

- Functional needs of the roadside.
- Native species are first priority unless non-native species would be more sustainable (urban areas or sites) or better serve the intended function.
- Maintenance requirements.
- Site analysis and conditions expected after construction.
- Horticultural requirements.
- Plant availability.
- Plant success rates in the field.
- Plant cost.
- Traffic speed.

The *Roadside Manual* provides more detailed guidelines on plant selection, sizing, and location.

(4) Planting Area Preparation

The planting area should be appropriately prepared to achieve successful restoration of vegetation. Soils should be ripped or cultivated to eliminate compaction. Decompaction and the increase of organic content will improve air and water movement through the soil and improve growth and survival of restored plants.

Soil treatments (such as incorporation of soil amendments into the soil layer and surface mulching) will improve the success rate of revegetation after highway construction activities have removed or disturbed the original topsoil. Woody native plants will grow faster and require less weed control through the combined use of compost and bark mulch.

- Use soil amendments based on the soil analysis done for the project. Soil amendments will enhance the soil's moisture-holding capacity. Coordinate soil testing through the Horticulturist or Landscape Architect at the HQ Roadside and Site Development Section.
- Use surface mulches to conserve soil moisture and moderate soil temperatures. Mulches also help keep weeds from competing with desirable plants for water and nutrients, and they provide organic matter and nutrients to the soil.
- Use of inorganic fertilizers should be avoided. If organic fertilizers are used, check with the local Maintenance or Environmental Office or the local jurisdiction for any restrictions on fertilizer use, such as those in well-head protection areas or restricted watershed areas.

(5) Irrigation

Permanent irrigation systems are only to be used in urban or semiurban areas where vegetation is surrounded by paved surfaces or does not have available groundwater. Use temporary systems to establish vegetation when needed. If irrigation is required, see Chapter 930 for design guidelines and the *Roadside Manual* for more detail.

(6) Establishment of Vegetation

Most WSDOT projects have 1- to 3-year plant establishment periods. Wetland mitigation projects often include additional years of monitoring and plant establishment to ensure mitigation standards of success (defined in the permit conditions) are met. The goal of plant establishment is to promote a healthy, stable plant community and achieve reasonable aerial coverage prior to WSDOT Maintenance taking over the responsibility and associated costs.

Weed control is necessary for plant establishment success. Include funding for weed control in the project budget to cover the full plant establishment period. The duration of this period is dependent upon plant and permit requirements.

920.05 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/