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1060.01 General

During the design phase, evaluate worker fall protection issues related to eventual maintenance and operations activities that will be required in the final, constructed configuration, determined through consultation with responsible region and HQ maintenance, landscape restoration and/or monitoring, and other WSDOT staff that require long term access to a site (see Chapter 301). Examples of activities to include in this evaluation include routine facility upkeep, debris removal, and planting maintenance. Although it provides advantages to those engaged in maintenance activities, it is often not feasible to eliminate, through design, situations where workers will be in close proximity to the kind of drops or steep slopes described in WAC 296-880. Therefore, evaluate the need for, and the feasibility of, permanent passive systems, such as physical barriers, rails, and covers. Where installation of a passive system is not practicable, provide permanent anchors that workers can use in combination with personal fall restraint or fall arrest systems.

1060.02 Design Criteria

Design and install permanent fall protection in accordance with WAC 296-880-20005 and 40005 under the following conditions:

- along constructed features within the project limits that are a vertical face or steep slope, defined as one upon which normal footing cannot be maintained without the use of devices due to the pitch of the surface, weather conditions, or surface material (normally 3H:1V and steeper unless more detailed information can be documented), and
- where maintenance, operations, or environmental staff have indicated that there will be regular, periodic, or sporadic maintenance or operations activities required during the service life of the installation, and
- where staff are engaged in these activities and are subject to a potential fall 4 feet or more, and access to the top of the feature is intended solely for the use of maintenance, operations or environmental personnel.

Note that if the location is intended to be used by the public, provide fall protection in accordance with Chapter 1510, Pedestrian Facilities instead.

1060.02(1) Fall Protection Treatment Selection for Vertical Faces

For vertical faces that meet the above conditions, install a fall protection rail (referred to as a “guardrail system” in WAC 296-880-40005). Where a fall protection rail is not feasible, or maintenance, operations, or environmental personnel have indicated that a fall protection rail is not desired because of the nature of the work or site-specific conditions, provide permanent anchorage points instead.

A permanent anchorage point is defined as a secure point of attachment for lifelines, lanyards, or deceleration devices which is capable of withstanding the forces specified in WAC 296-880-40020; examples include vehicle barriers, or features designed and installed to serve specifically as anchorages. In situations where it's determined that neither fall protection rail nor permanent anchorage point(s) are feasible, then installation of permanent fall protection is not required, and instead temporary fall protection measures will be provided in the future each time worker activity is performed.

1060.02(2) Fall Protection Treatment Selection for Steep Slopes

At the top of steep slopes that will require staff to perform ongoing maintenance, determine whether there are any locations for which temporary fall protection measures will be insufficient or are infeasible. If so, install permanent anchorage points (as defined above) that are located and designed to serve the ongoing maintenance activity.

1060.03 Design Solutions

Allowable fall rail systems are:

- Wire rope railing with top and intermediate rails of ½-inch-diameter steel wire rope, or
- Steel pipe railing with 1½-inch nominal outside diameter pipe as posts and top and intermediate rails, or
- A custom chain link fence design, or
- Concrete traffic barrier as an extension of the height of the retaining wall.

Design fall protection rail to be 42 inches high, plus or minus 3 inches, measured from the top of the finished grade, and capable of withstanding a 200 lb force applied at the top of the system, from any direction, while allowing no more than the maximum deflection provided in WAC 296-880-40005(g)(ii). Except for traffic barrier designs, provide an intermediate cable or rail halfway between the top rail and the finished grade, a toe board with a minimum height of 4 inches, and post spacing no more than 8 feet on center. A toe board may be omitted if persons are not expected to be working or passing below the rail. Fabricate permanent fall protection rail systems using galvanized steel and locate them no further than 3 feet from the protected edge. Where a rail system is co-located with a vehicle barrier, locate the system outside the deflection distance for the barrier shown in Exhibit 1610-3.

Where it's been established that anchorages are required, determined anchor point locations and project specific designs in consultation with region and/or landscape maintenance staff, HQ Bridge, and HQ Geotechnical Offices to develop project specific designs. Contact the HQ Bridge and Structures Office for design details for any retrofit to an existing retaining wall and for any attachments to a new retaining wall.

Refer to the WSDOT Construction Manual for more information about the process for determining the need for fall protection during project construction.

1060.04 Documentation

When fall protection is required, per guidance in this chapter, document the decisions associated with guidance in this chapter.

1060.05 References

Washington Administrative Code 296-880