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1120.01 General

This chapter identifies those elements and features to be evaluated and potentially addressed during the course of a preservation project. The elements listed here may be in addition to the project need identified in the Project Summary or Basis of Design. See Sections [1120.02\(12\)](#) for P1 projects, or [1120.03\(1\)](#) for P2 and P3 Projects. Preservation projects may also provide opportunities for project partnering and retrofit options involving additional elements (for example see Section [1231.08](#)). In addition to the guidance in this chapter, preservation projects with total costs greater than \$500,000 will be analyzed and screened to determine whether the project will be required to incorporate the principles of Complete Streets. Projects requiring Complete Streets must complete a Basis of Design to address and document the Complete Street design requirements (geometric, cross section, intersection, etc.). Follow all guidance provided for that purpose (Chapter 1100 – 1106, and other relevant geometric design chapters).

Preservation projects are funded in three sub-program areas:

- Roadway Preservation (P1) projects preserve pavement structure, extend pavement service life, and restore the roadway for reasonably safe operations of the travel modes accommodated by the facility.
- Structures Preservation (P2) projects preserve the state's bridge network through cost-effective actions. There are numerous types of bridge preservation actions including: deck rehabilitation, seismic retrofit, painting steel bridges, scour repair, and others.
- Other Facilities (P3) projects preserve the function of guardrail and signing, major drainage, major electrical, unstable slopes, and other assets.

For required design elements in these programs see [Exhibit 1105-1](#).

Existing roadside safety devices (see Section [1600.01](#)) may remain in place unless a project scope specifically identifies it for replacement. Specific guidance for repair of certain existing devices is also provided (see Section [1120.02](#)). When a roadside safety device replacement is required, and a policy specific to the device is not found in this chapter (or in scoping instructions for P2 and P3 projects), apply the most recent standard described in Division 16 when selecting a replacement.

1120.02 Roadway Preservation (P1)

This section applies to features and design elements to be addressed on Roadway Preservation (P1) projects. See Section [1120.02\(13\)](#) for instructions on using the Basis of Design to document design elements that are changed by the project.

1120.02(1) Adjust Existing Features

Adjust existing features such as monuments, catch basins, drainage grates, and access covers that are affected by resurfacing.

Where drainage grates and gutter pans require adjustment or replacement, replace with designs that accommodate bicycle traffic (see Drainage Grates and Manhole Covers in [Chapter 1520](#)).

For guidance on existing curb see [Chapter 1239](#).

1120.02(2) ADA requirements

Address ADA requirements according to WSDOT policy (see [Chapter 1510](#) and any active project delivery memorandums or design memorandums).

1120.02(3) Cross slope lane

Rebuild the cross slope to a minimum 1.5% when the existing cross slope is flatter than 1.5% and the steeper slope is needed to provide adequate highway runoff. See [Chapter 1250](#) for more information about cross slope.

1120.02(4) Cross slope shoulder

When rebuilding the lane cross slope, evaluate shoulder cross slope in accordance with [Chapter 1250](#).

1120.02(5) Vertical clearance

Paving projects, seismic retrofit, and other project work can change the vertical clearances of structures. For preservation projects other than bridge replacement that have no widening on or under the bridge, the minimum structure clearance is 14.5 feet. Existing structures with a vertical clearance less than 14.5 feet require a Design Analysis.

If the vertical clearance of a structure will be changed by the project, use Sections [720.03\(5\)\(c\)](#) and [1020.03\(2\)](#) for vertical clearance requirements.

Include vertical clearance and any other changed geometrics in the Basis of Design, the Design Parameters sheets, and the Design Documentation Package.

See DM Section [720.03\(5\)\(c\)](#) for details about bridge clearances for existing structures and Section [1020.03\(2\)](#) for vertical clearance of overhead sign assemblies.

Contact the Commercial Vehicle Services Office when changes to vertical clearance are planned.

1120.02(6) Delineation

Install and replace delineation in accordance with [Chapter 1030](#) (this includes pavement markings, guideposts, and barrier delineation).

1120.02(7) Barrier and Terminal Heights

When the preservation project design, other than a chip seal or BST, will affect the elevation of the pavement adjacent to a guardrail, terminal, and/or transition, measure the height of those systems within the project limit and adjacent to pavement edges, curbs, or sidewalks prior to construction.

Measure the height to the top of the rail element from the outside paved shoulder edge when no curb is present, from the gutter line when guardrail is set above a curb, or from the sidewalk elevation if set behind a sidewalk. Guidance for this situation:

- When the height of existing Type 1 guardrail, crashworthy terminals, and/or transitions will fall outside the height range from 26.5" to 31" (26.5" to 30" for terminals) in the project's completed condition; the existing guardrail, terminals, and/or transitions must be adjusted to a minimum height of 28" up to a maximum height of 30". This includes buried terminals that slope down such that the guardrail height is reduced to less than 26.5-inches (measured in relation to a 10H:1V line extended from the breakpoint at edge of shoulder). See Section [1610.04\(3\)](#) for acceptable options to raise standard runs of guardrail, and Section [1610.04\(5\)](#) for raising guardrail terminals. Replace the Type 1 guardrail system with a Type 31 guardrail system if its height cannot be adjusted to fall within the specified range.
- When the height of existing Type 31 guardrail, crashworthy terminals, and/or transitions will fall outside the height range from 28" to 32" in the project's completed condition; the existing guardrail, terminals, and/or transitions must be adjusted to a height of 31". This includes buried terminals that slope down such that the guardrail height is reduced to less than 28-inches (measured in relation to a 10H:1V line extended from the breakpoint at edge of shoulder). See Section [1610.04\(3\)](#) for acceptable options to raise standard runs of guardrail, and Section [1610.04\(5\)](#) for raising guardrail terminals. Replace the existing Type 31 guardrail system with a new Type 31 guardrail system if its height cannot be adjusted to fall within the specified range.
- When non-crashworthy terminals need to be raised, replace them with crashworthy terminals. Provide replacement terminals in accordance with Section [1610.04\(5\)](#)(a or b). Non-crashworthy terminals and anchors that are effectively shielded by another barrier do not warrant replacement.
- When guardrail needs to be raised, evaluate the guardrail length of need in accordance with [Chapter 1610](#). Notify Region Program Management if the length of need extension will be longer than 250 feet. Extending length of need further than 250 feet is beyond the scope of the pavement preservation.
- Note that removal is an option if guardrail is no longer needed based on the guidance in [Chapter 1600](#) and [Chapter 1610](#). Document the location of removal and the reasoning for removal in the Design Documentation Package.
- When adjusting terminals that are equipped with CRT posts, the top-drilled holes in the posts need to be at the surface of the ground.
- When designing a pavement overlay in front of concrete barriers (Type 2, Type F, Single Slope), follow policy guidance shown Section [1610.06\(2\)](#) for allowable barrier minimum heights after the overlay.
- Contact HQ Bridge for allowable bridge barrier minimum heights resulting from a pavement overlay.

1120.02(8) Barrier Condition (New Section 2023)

Remove and replace existing barrier that has been determined to not be in serviceable condition (see Section [1610.03\(2\)](#)). If a roadside safety device within the project limits does not meet NCHRP 350 or MASH testing standards, then replace the device with a comparable MASH device. See Section [1610.03\(2\)](#).

1120.02(9) Barrier Removal or Replacement (New Section 2023)

When raising barrier height or addressing barrier condition per Sections [1120.02\(7\)](#) or [1120.02\(8\)](#), barrier removal is also an option if the barrier is no longer needed based on the guidance provided in [Chapter 1600](#) and [Chapter 1610](#). In the case of a decision to remove barrier, document the location of the barrier removal and the reasoning in the Design Documentation Package.

1120.02(10) Pavement Edge Treatment

Adding a pavement edge treatment is a low-cost feature to improve safety performance for errant vehicles that depart and try to reenter the roadway. A pavement edge treatment can also help maintain the structural integrity of the roadway and pavement performance at the edge of the roadway by resisting the start of pavement cracking and/or pavement raveling.

Where practicable, install a pavement edge treatment at locations where asphalt concrete pavement is applied to the outside edge of the existing pavement. Examples where pavement edge treatment may not be practicable include locations with roadside barrier and/or curb.

After installing the pavement edge treatment, trim shoulders with material that is graded back over the edge treatment and flush with the paved roadway surface.

Where the project does not affect the existing shoulder edge condition, such as during chip seal applications or “mill and fill” activities, and there is an existing vertical drop at the outside edge of the paved shoulder, apply crushed surfacing material to eliminate the edge and provide a smooth surface.

For more information about pavement edge treatment, contact the HQ Design Office, and visit the FHWA website at: www.fhwa.dot.gov/innovation/everydaycounts/edc-1/safetyedge.cfm

1120.02(11) Rumble Strips

Potential new rumble strip locations are identified using a benefit cost analysis performed by HQ Design. Refer to sections [1600.05\(1\)](#), [1600.05\(1\)\(b\)](#), and [1600.05\(1\)\(c\)](#) when notified by HQ that rumble strip installation or rehabilitation needs to be considered during scoping or design. These sections will also provide guidance on whether a low-noise design is appropriate for the location.

Bituminous Surface Treatment (BST or chip seal) applications have been observed to reduce the depth of rumble strip millings by approximately 1/8” per application. Although rumble strips have a minimum depth shown on the applicable standard plan during original installation, research has shown that a rumble strip minimum depth of ¼” can still be considered functional. Therefore, only re-install rumble strips when a pavement preservation project is anticipated to reduce the depth of a rumble strip to less than ¼” during the course of project activities (such as a BST application). Existing rumble strip depth may be determined by direct measurement or through BST history (contact the region Materials Engineer). When re-installing rumble strips, contact the region Materials Engineer to review options and determine the best approach to rumble strip re-installation and sequence. Methods for determining milling depth in the field, and reliably establishing route BST history are still in development. Contact your ASDE for more information.

1120.02(12) Horizontal Chain-Link Fence Rails (New Section 2023)

Replace or modify existing chain-link fence located within the Design Clear Zone per Section [1600.03\(2\)\(i\)](#).

1120.02(13) Documentation (P1)

For Roadway Preservation (P1) projects, use the Basis of Design and Design Parameter Sheets to document decisions when the project changes design elements that are not listed in Section [1120.02\(1\)](#) through [1120.02\(12\)](#).

1120.03 Structures Preservation (P2) and Other Facilities (P3)

For Structures Preservation (P2) and Other Facilities (P3) projects see the scoping instructions specific to the sub-program and type of work to determine the likely design elements to be addressed by the project. If there are questions about project scope or policy requirements, consult your Assistant State Design Engineer (ASDE).

1120.03(1) Documentation (P2 and P3)

See [Chapter 300](#) for documentation requirements. If the project changes a geometric design element, replaces an existing bridge, or installs a new bridge additional documentation may be required; contact your ASDE to discuss appropriate documentation.

