

2023 ODOT Highway Design Manual

Revision Summary and Implementation Plan

In early August, ODOT published the January 2023 version of the ODOT Highway Design Manual (HDM). The updated version is available on the ODOT Highway Design Manual webpage at:

<https://www.oregon.gov/odot/Engineering/Pages/Hwy-Design-Manual.aspx>

The intent of this document is to summarize the changes from the 2012 version, explain the implementation process for the 2023 HDM, and define the process for future HDM updates.

Summary of Revisions

As part of the January 2023 update to the ODOT Highway Design Manual (HDM), ODOT significantly changed the structure of the document to improve ease of use for practitioners. In addition, the HDM is now a web-based and accessible document, and more consistent with the ODOT technical manual format being adopted by all technical disciplines. Due to the changes in structure between the 2012 HDM and the 2023 HDM, it is difficult to show all revisions in the text of the document. Most text in the January 2023 version of the Highway Design Manual was moved directly from the 2012 version. However, some sections have been revised and some contain a substantial amount of added text. The intent of this summary is to highlight the revisions and additions in the 2023 HDM. Since future updates will not change the structure of the HDM, changes will be shown as redlines on the document.

Overall, the HDM was restructured from 16 Chapters to 13 Parts. The 2023 HDM contains the following parts:

- Part 100 - Design Policies and Procedures
- Part 200 - Geometric Design and Context
- Part 300 - Cross Section Elements
- Part 400 - Roadside Design
- Part 500 - Intersection Design
- Part 600 - Interchanges and Grade Separations
- Part 700 - Public Transportation and Guidelines
- Part 800 - Pedestrian Design
- Part 900 - Bikeway Design
- Part 1000 - Design Exceptions
- Part 1100 - 3D Design
- Part 1200 - Other Technical Disciplines
- Part 1300 - Deliverables

Revisions included incorporating the content of other standalone technical documents and relevant technical bulletins. Guidance and standards from the following documents and technical bulletins were incorporated into the text of the 2023 HDM:

- **Blueprint for Urban Design (BUD) Volume 1** - The content of the Blueprint for Urban Design Volume 1 has been completely incorporated into the body of the 2023 HDM. The majority of content is now in Part 100, Part 200, and Part 300, with pedestrian-related information now in Part 800 and bicycle-related information now in Part 900.
- **ODOT ADA Curb Ramp Process** - The entire standalone document has been included as Appendix G to the HDM.
- **ODOT Technical Bulletins and Advisories:** - These documents are used to publish new policy, standards, and clarifications to existing standards between updates to technical manuals. Guidance and standards from the following bulletins and advisories were incorporated into the 2023 HDM, and the bulletins and advisory will be rescinded in the near future:
 - RD15-03(B) - Update to Design Exception Form
 - RD15-04(B) - Closing Medians on the Interstate and Non-Interstate Freeways
 - RD15-04(B) - Transition to Use of 31-Inch Midwest Guardrail System
 - RD16-01(B) - ADA Curb Ramp Design Exception Request Form and ADA Curb Ramp Guidance
 - RD16-03(B) - Travel Lane Alignment through Intersections
 - RD18-01(B) - Adjusting Guardrail Height
 - RD20-01(B) - Highway Design Manual - 1R and 3R Record of Decision and Updates and Clarifications to the 1R Standard

Some technical bulletins and advisories were not incorporated into this version of the HDM, and will remain in effect. The Roadway Unit intends to incorporate all remaining, and applicable, bulletins and advisories into the 2024 HDM.

In addition, the 2023 HDM contains new text that provides new or changed guidance and standards. The following parts contain the most significant revisions from the 2012 version of the HDM:

Part 200:

- Contents of Appendix J - Alignment Guide and Design Aids from the 2012 HDM were incorporated into the body of the HDM in Part 200.
- Discussion of the ODOT six urban contexts from the Blueprint for Urban Design are included in Part 200.
- Sections 203 through Section 208 cover roadway classification and the urban contexts.
- **Section 207.10 Speed, Context and Design** - Target Speed was added to the discussion about Design Speed, Posted Speed and Target Speed to help differentiate the concepts.

Part 300:

- Cross-section design criteria, including the urban design matrices, for the six urban contexts from the Blueprint for Urban design are included in Part 300 along with other design criteria from the 2012 HDM.
- **Section 304 Cross Section Realms** - Includes the BUD Cross-section Realms.
- **Section 305 Cross Section and Realm Design Guidance** - Includes the design criteria for the six urban contexts.

- **Section 306 Bicycle Facility Selection** - This section is an introduction to the Bicycle Facility Selection Process with reference to the full process in Part 900.
- **Section 307 Pedestrian Crossing Locations** - Includes the BUD discussion for Pedestrian Crossing Locations.

Part 500:

- **Section 506.4 Travel Lane Alignment** - Technical Bulletin RD16-03(B) for Travel Lane Alignment through Intersections was added to this section.
- **Section 509 Modern Roundabouts:**
 - Table 500-4 Roundabout Inscribed Diameters has been updated to include more current practices. Information about Low Profile Mountable Curb has been added and updated with reference to Standard Drawing RD170.
 - Added Section 509.18 Roundabouts near Rail Crossings.
 - Added Section 509.19 Roundabout Metering.

Part 600 - Contents of Appendix J - Alignment Guide and Design Aids from the 2012 HDM were incorporated into the body of the HDM.

Part 800 - Concepts and terms from the Blueprint for Urban Design, *Main Street... when a highway runs through it: A Handbook for Oregon Communities*, and Oregon's Bicycle and Pedestrian Design Guide Appendix L were integrated into the part. Expanded content on pedestrian needs in relation to accessibility in walkways, curb ramps, shared used paths, and pedestrian crossings of streets and railways was added.

- **Section 801 Introduction** - Entirely new section introduces definitions, terms, font key, and acronyms for use in the manual related to pedestrian design.
- **Section 802 Approval Processes** - Entirely new section discussing the Urban Design Concurrence Document, ODOT ADA Curb Ramp Process, ODOT CQCR Process, and Crosswalk Determination and Closure Processes.
- **Section 805 Pedestrian Needs** - New section discussing pedestrian considerations including those with various disabilities covered by the Federal Laws ADA and ABA.
- **Section 810 Walkways** - Merged material from the various existing documents and concepts from the BUD describing the Pedestrian Realm and standards applied for the various zones and attributes of the walkway.
- **Section 815 Curb Ramps** - Entirely new section incorporating curb ramp design terms, standards, and guidance for various curb ramp system configurations.
- **Section 820 Building Ramps** - Revised content to separate criteria for ramp design that effect public entrances to establishments adjacent to the public street right of way.
- **Section 830, 835, 840** - Reorganized and expanded material related to pedestrian crossings including the median, enhanced crossing treatments, bikeways, and railroad pedestrian crossing design requirements.
- **Section 845 and 850** - Reorganized and expanded material for the shared use path and trail design accessibility requirements and considerations for design of the different facilities.

Part 900 - New language has been incorporated into several sections in Part 900. The following list summarizes the significant additions to the part:

- **Section 912 Oregon Statutory Requirements** - Expanded text from 2012 HDM section 2.3 (bike bill) and adds transportation planning rule as mentioned in Appendix C of BUD. The 2023 HDM adds a new requirement (also in Part 1000) for design exceptions related to the statute ORS 366.514, which requires documentation about public involvement input received and ODOT responses. If the project did not include public involvement, the alternative documentation is a letter from an organization that represents bicycle and pedestrian needs and ODOT responses to the letter. The section also adds description about the types of work that trigger the requirements of the statute to provide accommodation for pedestrians and bicycles.
- **Section 922 Design Users** - Entirely new section introduces typologies of cyclists per research.
- **Section 924 – Design Speed** - This section clarifies that the Region Roadway Manager selects the bikeway design speed and provides more guidance on selecting an appropriate bikeway design speed.
- **Section 930 Bikeway Networks** - Entirely new section discusses the role of an ODOT highway in a bikeway network.
- **Section 940 Bikeway Tiers** - Added explanation that changes the way that cycle tracks were defined in the 2012 HDM to the way they are defined in the BUD and in the 2023 HDM.
- **Section 941 Urban Bikeway Selection Process** - This section elaborates on the process in the BUD by providing a step-by-step overview of the process and by providing content in the new sections 922 and 930. Table 900-8 replaces 2012 HDM Table 13-1 as the minimum bikeway requirement.
- **Section 943 The Bike Lane Zone** - This section clarifies the different bike lane width requirements between Tier 1 versus Tier 2 facilities.
- **Section 944 The Sidewalk Buffer Zone** - New section that talks about separating pedestrians from bikes in separated bike lanes.
- **Section 945 The Street Buffer Zone** - New section that talks about the street buffer for separated bike lanes.
- **Section 953 Protected Intersections** - New section that provides some design principles and layouts for this type of intersection design.
- **Section 964 Stopping Sight Distance, Section 965 Horizontal Alignment, & Section 966 Vertical Alignment** - The 2012 HDM just referenced the AASHTO Bike Guide. The design standard is now in the 2023 HDM.
- **Section 993 Parking Other Micro Mobility Devices** - New section.
- **Section 994 Bike and Scooter Share Station** - New section.
- **Section 995 Trailhead Design** - New section.

Part 1000:

- Updated and provided additional detail for the general design exception process.
- **Subsection 1003.5** - Expanded guidance for the general design exception process on local agency projects.

- Updated and provided additional detail for the curb ramp design exceptions process.

Part 1100 - Entire part has been rewritten with a focus on the 3D design and preparation of digital design handoff packages for bid and construction.

Part 1200:

- **Subsection 1204.3** - Additional guidance added to clarify the Rail Crossing Order process.
- **Section 1211 Hydraulics** - Entire section rewritten to align with current ODOT hydraulic design processes and standards.
- **Section 1212 Pavement** - Minor revisions to highlight the importance of engaging with Pavement Services Section early in the project development process.

Implementation of the 2023 Highway Design Manual

Use of the 2023 Highway Design Manual (HDM) is required on all projects with the Plans, Specifications and Estimates (PS&E) milestone on and after January 1, 2023. Projects that reach the PS&E milestone before January 1, 2023 may use the 2012 or 2023 Highway Design Manual.

What should the project do if the design has progressed beyond a point where a new standard can be incorporated?

For projects with PS&E scheduled shortly after the HDM implementation date, the ODOT Roadway Unit understands that it may not be possible to implement all changes to design standards without delaying the project. (Examples would be any standards changes that would require reworking right-of-way acquisition that is already in progress, or that would require a substantial amount of redesign that would significantly delay delivery of the project.)

How do I document that I was not able to incorporate a new design standard?

The **Design Exception Process** is an excellent way to document these circumstances when a project cannot adhere to a new design standard. ODOT Roadway Unit will work closely with project teams to evaluate when a standard cannot be met, and properly document the exception using the General and ADA Curb Ramp design exception processes.

New Highway Design Manual Update Process

ODOT is moving to an annual update schedule for the Highway Design Manual (HDM). This is a deviation from the longer update schedule prior to the 2023 HDM update. With the more frequent update schedule, it is important to clarify the way that updates will be developed and incorporated into future HDM versions.

Minor Revisions vs. Significant Revisions

An important item to clarify is how the Roadway Unit will develop and publish standards changes with varying degrees of impact on project design. The current practices for review and

implementation of both minor and significant revisions will not change, but the method of publication may change.

Minor revisions include clarification of existing standards or additional standards with minor effect on the design process. Depending on the level of urgency, changes with minor impact will either be published directly into the next HDM version or published via Technical Bulletin and later rolled into the next HDM version. Statutory changes are a good example of changes that may need urgent attention. Stakeholder review of minor revisions will remain the same, with formal reviews of the draft HDM or draft Technical Services bulletins.

Significant revisions are those that will result in standards changes that have a significant impact on design requirements or the project development process. Significant revisions are developed over a longer period with more extensive stakeholder input and opportunities for stakeholder review. An annual update cycle for the HDM allows for significant revisions to be published directly into the HDM instead of using interim technical bulletins or standalone documents. A recent example of a significant revision is the development and implementation of the Blueprint for Urban Design (BUD). Standards changes with substantial impacts to design, like the BUD, require far more stakeholder involvement during development.

In whole, the new process will be very similar to the existing process.

Changes to Standards Publishing Process



* Urgent updates may still requires publishing of standards updates via technical services bulletin.

An annual update schedule for the HDM does not change that stakeholders will still have the same opportunities to participate in development and review of revisions to standards. The main difference is

that more updates will be published directly into the HDM instead of into interim Technical Services Bulletins, then rolled into the next HDM revision at a later date. The result is a much quicker process for including design standards in the HDM and fewer design policy documents to consult when designing a project.