Street Design Standards

STREET DESIGN STANDARDS MATRIX

The following matrix lists the parameters, locations where each parameter influence features of . This street design standards matrix will guide streetscape design for the Outer Powell Blvd Conceptual Design Plan. ODOT also has a process for design exceptions to the standards as a means of ensuring good engineering judgment where constraints don't allow standard designs.

| Parameter | Conceptual Design | Criteria | Basis of Design |
|--|--|---|---|
| Design and Posted Speed • Posted Speed • 85 th Percentile Speed | | Posted $35 \text{ mph} - \text{to } 136^{\text{th}} \text{ Ave}$ $40 \text{ mph} - 136^{\text{th}} \text{ to end}$ $85^{\text{th}} \text{ percentile speed}$ $39 \text{ mph } @ 164^{\text{th}} (1996)$ | AASHTO Green book and ODOT Highway Design Manual |
| Sight Distance • Stopping Sight Distance | Signal visibility. Tree limb. | Stopping sight distance for 40 mph design speed is 305', with adjustments for uphill and downhill grades | AASHTO Green book and ODOT Highway Design Manual |
| Intersection Sight Distance | Crash history is the primary indicator of adequate intersection sight distance at existing driveways and minor cross streets. | Varies with vehicle acceleration characteristics and intersection geometry All intersections are signalized or side street stop controlled | |
| Design Vehicle | Generally a single universal design vehicle is assumed, but might vary with unique circumstances. Assumptions about how the design vehicle is maneuvered vary with circumstances. See "Design Vehicle Turning" | Minimum: SU-30 trucks at minor cross street intersections and driveways. Interstate trucks at major arterial intersections | Portland Transportation System Plan |

Street Design Standards Matrix

| Parameter | Conceptual Design Plan Applications | Criteria | Basis of Design |
|--|--|--|---|
| Design Vehicle | | WB -67 | Highway Design Manual |
| Lane Widths Through Lanes Left Turn Lanes Right Turn Lanes | Maintain existing lane widths. | 12' 12' 14' | AASHTO Green book and ODOT Highway Design Manual. Standard Plan- RD215 and RD222 |
| Cross Slope | Walking surfaces should be relatively level. | The preferred cross slope for the entire paved sidewalk corridor is 1:50. If a greater slope is anticipated because of unusual topographic or existing conditions, the design should maintain the preferred slope of 1:50 within the entire Through Pedestrian Zone, if possible. | Portland Pedestrian Design Guide |
| • At gutters | Gutter line curbs already existed. | Optimum curb exposure is 6" above the gutter line. Curb's base extends down to subgrade | ODOT Highway Design Manual |
| • On islands | Mimic the curbs used on the new islands between the Ross Island Bridge and SE 50 th . | Island curb's base extends down 2-3" below the pavement surface | |
| Corner Curb Returns | Most curb returns already exist. Consider changing a curb return radii if it addresses a verifiable problem. Make sure an increased corner radius and its sidewalk fits in the available right-of-way. | Evidence of damaged curbs and sidewalks | AASHTO Green book and ODOT Highway Design Manual |

| Parameter | Conceptual Design Plan Applications | Criteria | Basis of Design |
|------------------------------------|--|---------------------------|--------------------|
| Design Vehicle | Generally: | AASHTO turning | AASHTO Green |
| Turning | Left turns must be made | templates | book and ODOT |
| Turns at major | into the receiving lanes | | Highway Design |
| intersections | without encroaching on | Auto-Turn | Manual |
| | the cross street's | (Microstation/AutoCad) | |
| | opposing lanes. | | |
| | Right turns must be made | | |
| | without oncroaching on | | |
| | the cross streets opposing | | |
| | lanes | | |
| • Turns from | iunes. | | |
| minor streets | Right turns must be made | | |
| and driveways | without encroaching on | | |
| 5 | Powell's opposing lanes. | | |
| • Turns to minor | | | |
| streets and | Turns may use the entire | | |
| driveways | width of the minor street | | |
| Length of Transition | The desirable transition | Satisfy the standard when | Standard Plan |
| and Tapers for Left | lengths for maneuvering | possible, otherwise | RD215 or |
| Turn Lanes | he satisfied on Powell | when pacessary | AASHTO p. 852 |
| | Existing striping does not | when necessary. | |
| | satisfy desirable | | |
| | standards. | | |
| Access spacing | | 275' OHP District | Title 17.28.110 of |
| Public Street | Existing cross street and | 325' | the Portland City |
| • Driveway | driveway access can be | | Code and Portland |
| | modified by applying | Driveways on corner lots | Standard |
| | and modian barriers | the corner | Construction |
| | Access to private | | specs |
| | property is rarely denied. | Vehicles must be able to | |
| | but occasionally limited. | enter and exit driveways | |
| | | in a forward motion. | |
| | | | |
| | | ODOT and PDOT have | |
| | | standard design drawings | |
| Stacking Lane | Lett-turn lanes should be | Turn lanes should be able | Synchro capacity |
| (IT I and lengths) | accommodate all but the | longest queues of a | anarysis |
| (LI Lane lenguis) | longest queues | typical day | |
| | | | |
| | | | |

| Parameter | Conceptual Design Plan Applications | Criteria | Basis of Design |
|---|--|--|--|
| Bike Lanes | Currently there are bike lanes on Powell | Minimum bike lane width: 5 ft Appropriate bike lane width on Powell given traffic speed and volume: 6 ft At intersections with dedicated Right Turn lane, add lanes are preferred. Drop lanes are not. | Portland Bicycle Master Plan During the update of the Bicycle Master Plan, the City is considering to increase the standard bike lane width to 6.5 ft. |
| Pedestrian and bicycle crossings | Locations of specially- treated crossings depend on the TSP, popularity, complexity, and safety history. Choice of treatment depends on conditions. | Each potential crossing should be evaluated as a unique case and treatment alternatives should be tailored accordingly. | Portland Transportation System Plan |
| Sidewalks along City Walkways * See sidewalk corridor diagram at end of document. | The back of the sidewalk is typically 12' from curb. The first 4' behind the curb could be concrete, street trees in tree wells or planting strip. | 12' minimum width Typically concrete, scored to match historic patterns | Portland Pedestrian Design Guide, Portland Transportation System Plan, and Portland Standard Construction Specs |
| Sidewalk Curb Ramps | Locate curb ramps at every intersection location where there is a crosswalk, whether or not the crosswalk is indicated with pavement markings. Ideally, there should be a separate curb ramp for each crosswalk at a corner, that is two ramps at most corners. At "T" and off set intersections, a curb ramp should be located at each end of the each legal crosswalk. | There are a number of factors that influence the number and design of curb ramps at a corner, including sidewalk width, corner radius, adjacent materials and crosswalk location. | Portland Pedestrian Design Guide |

| Parameter | Conceptual Design | Criteria | Basis of Design |
|--|--|---|--|
| Traffic Control | Plan Applications | Establish traffic control | Manual on |
| Traffic signing Pavement markings and | Satisfy ODOT standards | Manuals. | Control Devices and ODOT Traffic |
| stripingParking | City-managed to | Use materials and installation techniques to | Manual. A host of ODOT standard |
| management | ODOT's satisfaction City-managed to | satisfy the agency that will maintain/operate | drawings. |
| Traffic Signals | ODOT's satisfaction | each feature. | |
| Landscaping Private property Sidewalk area Median islands | n.a. | As individual properties develop, standard-width sidewalk and standard- spaced street trees are required. | Private property: Title 33 perimeter landscaping and building orientation requirements. |
| | | Median landscaping must | 1 |
| | | accommodate design sight distances. | Street tree spacing and species determined by City Forester. |
| Transit | Depends on each stop's | | TriMet |
| • Bus shelters | popularity. | | |
| Bus pull-outs Bus stop spacing Bus priority | Buses serve passengers from the right-most traffic lane Through moves from right-turn lanes, ITS features | | |
| Street Lighting | n.a. | Painted non galvanized | |
| | | 35'-40' steel poles with | |
| | | spaced 125' to 175' | |
| | | apart. | |

1. Curbs & Sidewalks

The Portland Pedestrian Design Guide, the Transportation System Plan and Standard Construction Specifications provide the definitions and guidelines for sidewalk corridors. The sidewalk corridor is the portion of the pedestrian system from the edge of the roadway to the edge of the right of way, generally along the sides of the street, between street corners. The sidewalk corridor functions to provide an environment for walking that is separated from vehicle movement. The curb provides that separation on improved streets. The purpose is to plan and complete a pedestrian network that increases the opportunities for walking to shopping and services, schools and parks, employment and transit.

City of Portland Bureau of Transportation Development Review requires an owner/applicant to dedicate and construct pedestrian corridors to the following standards as a condition of approval of land use proposals, land divisions, conditional uses, zone changes or for building permit approval.

The recommended curb height as called out in City Standard Construction Specifications is \pm -6". Grinding and repaving roadway surfaces may change the curb exposure by an inch or so for infill development.

The recommended pedestrian corridor for a designated City Walkway, not in a pedestrian district is 12' wide. That accommodates a 6'' wide curb, 4' furnishing zone/ planting strip, for elements such as street trees, signal poles, utility poles, street lights, controller boxes, hydrants, signs parking meters, driveway aprons, grates and hatch covers. The remaining 1.5' is the frontage zone which allows pedestrians a comfortable "shy" distance from the building fronts in areas where buildings are at the lot line or from elements such as fences and hedges on private property. The frontage zone may also accommodate elements that would normally be in a furnishing zone if none exists. For example, transit shelters and benches, signal and street lighting poles and controller boxes. Private temporary uses such as sidewalk cafes may occupy the frontage zone so long as the through pedestrian zone is maintained.

A 6' wide sidewalk, through pedestrian zone is recommended for designated City Walkways. The surface should be firm and stable, resistant to slipping and allow for ease of passage by people using canes, wheelchairs or other devices to assist mobility. Sidewalks are generally constructed of Portland cement concrete. The surface of concrete sidewalks should be scored to match historic patterns within a neighborhood or district where appropriate. The walking surfaces should be relatively level. The preferred cross slope for the entire paved sidewalk corridor is 1:50. Cross slope should not exceed 2% the design criteria for ADA.

Corner radii depend on several variables including but not limited to the width of adjacent sidewalk corridors, width and classification of adjacent streets, type of typical vehicle e.g. heavy truck or bus traffic and speed limits. They can range from 15' to 30'



Sidewalk Corridor Width Standards for City Walkways Per the Portland Pedestrian Design Guide