

TRAIL DEVELOPMENT HANDBOOK

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Acknowledgements

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INTRODUCTION

The City of Happy Valley Pedestrian System and Trail Master Plan provides a comprehensive plan for development of local pedestrian sidewalks, pedestrian paths, multi-use trails, and regional trail connections. The Plan was developed with input from a Citizens Working Group and a Technical Advisory Committee and received staff and public review before acceptance by the City Council. The plan is an element of the City's Transportation System Plan (TSP). Trail use policies are stated in the happy valley Pedestrian System and Trail Master Plan and Happy Valley Municipal Code to provide user information (hours of operation, allowed users) and natural resource protection. Implementation of the Plans benefit citizens and visitors to Happy Valley by providing a viable alternative to vehicular travel within and to locations connecting Happy Valley. The Trail Development System and Trail Handbook was developed as a supplement to the Pedestrian Master Plan to aid implementation by describing permit process and development options and expectations.

This Handbook describes the trail development process, general construction methods, basic standards and guidelines, and includes the Happy Valley Pedestrian Master Plan Map. The Handbook provides guidance on where and how pedestrian easements and public right-of-way dedications can be made voluntarily, thru public acquisition, or as part of the land development process.

The Handbook is offered to citizens and property owners interested in trail use and development and is offered to developers at the beginning of the permit process for land development. For developers, note that it is still the developer's responsibility that overall planning and design comply with the City's Comprehensive Plan and Land Development Code and design for construction comply with the City's Engineering Design and Standard Details Manual. This handbook was developed to be consistent with the current city code and TSP provisions.

For safety and enjoyment of use, pedestrian pathways only provide for pedestrian circulation. Multi-use trails accommodate pedestrians and bicycles handling more use while connecting targeted destinations.

PATH AND TRAIL SYSTEM FUNCTION AND CONSTRUCTION

This Handbook provides requirements, general recommendations, and representative cross-sections and descriptions to guide path and trail planning and design. To emphasize the distinction made in the Introduction, pathways only provide for pedestrian circulation. Multi-use trails accommodate pedestrians and bicycles. Pathways may be soft surfaced, (bark or crushed rock). Multi-use trails should be hard surfaced (concrete or asphalt). Pedestrian paths should have a maximum grade of fifteen (15) percent to twenty (20) percent. Multi-use trails should have a maximum grade of ten (10) percent.

In general, path and trail horizontal alignment should follow the contour of the terrain as much as possible. Vertical and horizontal alignments should not have abrupt changes as smooth transitions allow for more safe and enjoyable use. Lighting is not recommended for pedestrian paths. Multi-use trails may be lighted. Trail alignment, drainage, re-vegetation, buffering, signage, etc. are site specific design considerations.

The Happy Valley Development Code addresses screening, buffering, and tree protection requirements. Screening may be required when paths or trails are adjacent to residential development. These requirements vary dependant on site specific conditions and specific solutions may be addressed in the development approval process.

General guidelines for trail design and construction may include the following:

1. Switchbacks should be avoided if possible as they encourage cutting across and consequent erosion and increased maintenance.
2. Cross culverts should be used in place of water bars for drainage traversing paths or trails.
3. Cross culverts should be no smaller than 8 inches in diameter to help elevate plugging with debris.
4. Uphill cut-off ditches or swales are critical for sections of trails where runoff across the trail surface can be prevented
5. Steep grades and tripping hazards should be avoided for safety reasons and enjoyable functional use.
6. Grades over 10% should be limited to short sections of paths where there is no alternative for lesser grade.
7. Path and trail design and construction should allow for the least disturbance of natural vegetation possible.
8. Unless engineered walls are used, excavation should allow path and trail beds to be located on undisturbed subsoil, not fill.

THE APPROVAL PROCESS

Development of the City's path and trail transportation system is completed via the following actions:

Development Review Process

or

Acquisition of property by City (or other public agency)

or

Private land owner property donation

The majority of the transportation system, and in particular the path and trail system, is built as a part of the development review process. This process is outlined in Figure 1. Path and trail development is subject to a Type I review. If the path or trail is associated with a development proposal subject to higher review procedure, the higher review procedure shall apply. The Planning Director has the authority to waive Type I fees for path or trail development when it is found that the resulting development will provide broad, public benefit.

Generally, a Non-Exclusive Pedestrian Access and Trail Easement is placed over property encumbered by the path and trail system. This easement provides for public access, thereby providing a fully connected path and trail system throughout the City. A sample of the Non-Exclusive Pedestrian Access and Trail Easement is provided as Figure 2 within this Handbook.

Actual construction of a pedestrian path or multi-use trail may require building permits subsequent to the development review, acquisition, or donation process. Please check with the City's Building Department for further information. All paths and trails shall be built in accordance with the applicable City Standards.

City of Happy Valley Pedestrian Path & Multi-Use Path - Development Review Process

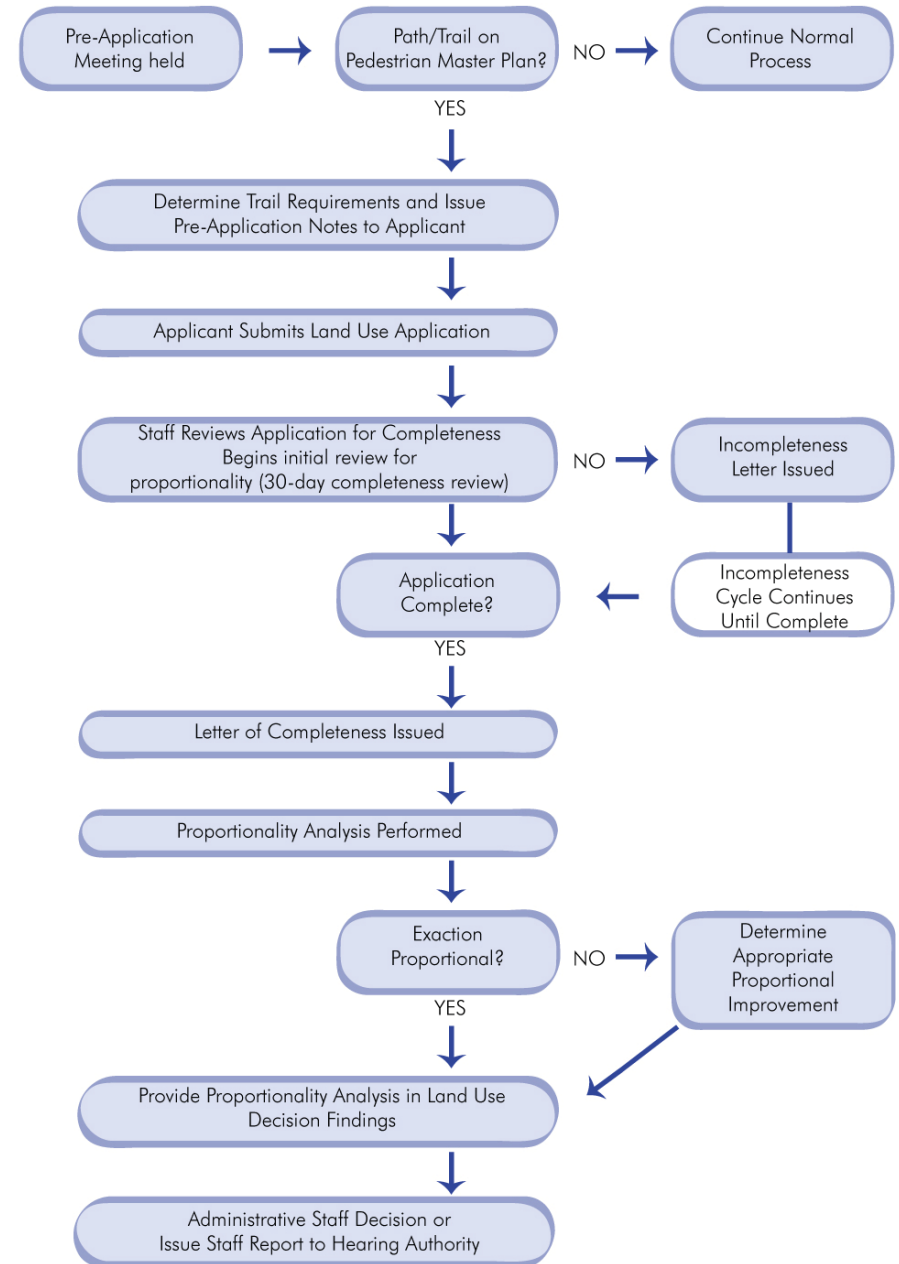


Figure 1. Approval Process

TRAIL MAINTENANCE & RESPONSIBILITY

After Recording Return To:

City of Happy Valley
16000 SE Misty Drive
Happy Valley, OR 97086

NON-EXCLUSIVE PEDESTRIAN ACCESS AND TRAIL EASEMENT

_____, Grantor, hereby conveys unto the City of Happy Valley, a municipal corporation, Grantee, their successors and assigns, a perpetual Non-Exclusive Pedestrian Access and Trail Easement for the purposes of constructing, maintaining, repairing, and replacing a pedestrian walkway and trail, and using the same for public access purposes in, upon and across real property located in Clackamas County, State of Oregon, described as follows:

See Exhibits "A" and "B" attached to and by reference made a part of this document

The Grantee shall have the right at any time hereafter to enter upon the above described real property for the purpose herinabove mentioned.

Grantee agrees to hold Grantor harmless for all injury to person or property caused by Grantee's use of property for the purposes above described.

The Grantor, their heirs, successors, assigns or representatives shall not build, construct or maintain any building or other structures over and upon the above described Pedestrian Access and Trail Easement.

The true consideration for this conveyance is _____.

Dated this ____ day of _____, 20__

STATE OF OREGON, County of Clackamas
This instrument was acknowledged before me on _____, 20__,
By _____.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

SAMPLE

Notary Public – State of Oregon
My Commission Expires: _____

The City of Happy Valley has established an overall pedestrian system and trail master plan. Each segment has been identified or will be identified through future Development Review Process and maintained by the City, or most often by private development (home owner's association).

All pedestrian paths and trails will be maintained by a home owner's association unless:

1. Through the Development Review Process, it is negotiated that the City takes responsibility.
2. The path or trail is within a public right-of-way granted to the City for public use.

Figure 28 depicts an example maintenance agreement that may be incorporated and recorded in home owner's association rules.

Maintenance shall include maintaining the path or trail in the condition as constructed or as approved by the City. This should include maintaining City safety standards for public use, best management practices, and upgrading construction per construction life-cycle and changes in natural conditions. Volunteer and commercial maintenance shall be subject to City review and approval.

Figure 2. Trail Easement Agreement

After recording return to:

PEDESTRIAN PATH MAINTENANCE AGREEMENT

Whereas Lots __ through __, _____ (local file no.) recorded _____ 20__, in Clackamas County, Oregon, exclusively benefit from and are burdened by the pedestrian path that was dedicated as a public access easement shown on the recorded (Partition/Subdivision) Plat _____. A copy of that Plat that shows the location of the pedestrian path is attached hereto as "Exhibit A;"

Whereas the owners of Lots __ through __ (the "Lot Owners") wish to provide for the proper maintenance of the pedestrian path and to delegate authority for its maintenance:

Now, therefore, it is hereby agreed:

1. The Lot Owners shall meet at least once a year to review the condition of the pedestrian path and determine what maintenance may be necessary and how to pay for it.
2. In the event of a disagreement concerning maintenance obligations and payment, the owners shall agree upon an arbitrator who shall resolve such disagreement. If the owners cannot agree on an arbitrator, the presiding judge of the Circuit Court of the State of Oregon for the County of Clackamas shall appoint an arbitrator. The decision of the arbitrator shall be binding on the owners and the fee of the arbitrator shall be borne equally by the owners.
3. The cost of repairs shall be apportioned equally among the owners, regardless of frontage, location, or improvements. Notification of assessment shall be made within thirty (30) days after the annual review. The cost of repairs shall be added to any annual assessment attributable to the affected Lot. Lot Owners shall submit assessment payment within thirty (30) days after receipt. Failure to pay assessment after the due date, the assessment shall bear interest from the date of delinquency at the rate of 15 % per annum. Lot Owner shall be liable for interest and any collection costs, including attorney's fees, and such unpaid amounts shall become a lien on the affected Lot. If an affected owner causes improvements on the easement to be damaged, that owner shall be solely responsible for the entire cost of repairing the improvement to the satisfaction of the other benefitted owners within 30 calendar days of the damage.
4. The Lot Owners shall share equally in the liability of the pedestrian path.
5. The pedestrian path shall be kept free and clear for pedestrian access.
6. This obligations arising under this Agreement attach to the land and are binding upon the Lot Owners, their heirs, successors, and assigns.
7. Invalidation of any provisions of this Agreement by judgment or otherwise in no way effects any of the other provisions of this Agreement, which shall remain in full force and effect.
8. This Agreement may be amended with the written consent of not less than 75 percent of the Lot Owners.
9. A signed and notarized copy of this agreement shall be recorded with the deed for each of the affected Lots. However, failure to record the Agreement does not invalidate the Agreement.
10. This Agreement shall not become binding on the parties until at least ninety (90) percent of the affected Lot owners execute the Agreement.

In witness whereof, the parties to this Agreement have signed this Agreement on the date and year set forth below.

Name Date

State of Oregon
County of Clackamas

This instrument was acknowledged before me on _____, 20__ by

(Lot Owner) _____

Notary-Public, State of Oregon
My commission expires _____.

TYPICAL CROSS-SECTIONS

The following diagrammatic cross-sections are provided as guidelines for trail development. Site specific conditions vary requiring path and trail design for each segment of the Plan to likely require use of a combination of cross-sections. Planned path and trail segments are shown on the Pedestrian Master Plan. The Primary Pedestrian Loop will be developed as a multi-use trail. Other paths and trails are supporting segments of the Pedestrian Master Plan.



Figure 28. Maintenance Agreement

MULTI-USE TRAIL

Purpose:

- Provide hard surfaced trail for pedestrian and bicycle use.
- Provide hub loop and key spokes for highest priority City and regional trail linkage.

Where to Use:

- As identified in the Plan and/or for high priority use areas and connecting targeted destinations.

Guidelines:

- Trail should slope toward dominant drainage.
- Minimize clearing of natural vegetation.
- Downhill slope maximum 4:1 for 2 feet beyond shoulder and then to natural grade.

Surface Materials:

- Concrete or asphalt



Figure 3. Example of a Multi-Use Trail

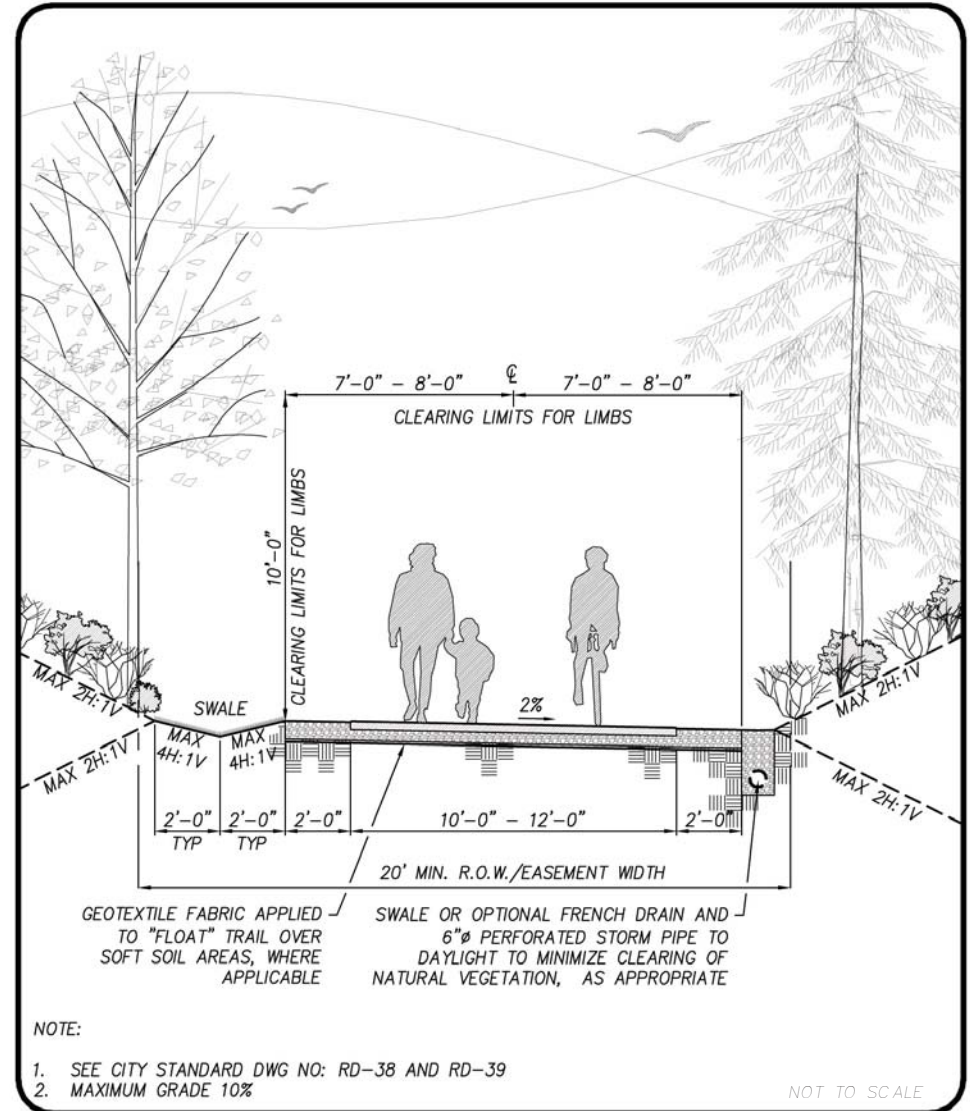


Figure 4. Multi-Use Trail Section

PEDESTRIAN PATH

Purpose:

- Provide soft or hard surfaced continuous pathways for pedestrian use.
- Provide neighborhood and community connectivity.

Where to Use:

- Park and open spaces areas.

Guidelines:

- Trail should slope toward dominant drainage.
- Minimize clearing of natural vegetation.
- Downhill slope maximum 4:1 for 2 feet beyond shoulder and then to natural grade..

Surface Materials:

- Asphalt, concrete, crushed rock, or bark.



Figure 5. Example of a Pedestrian Path

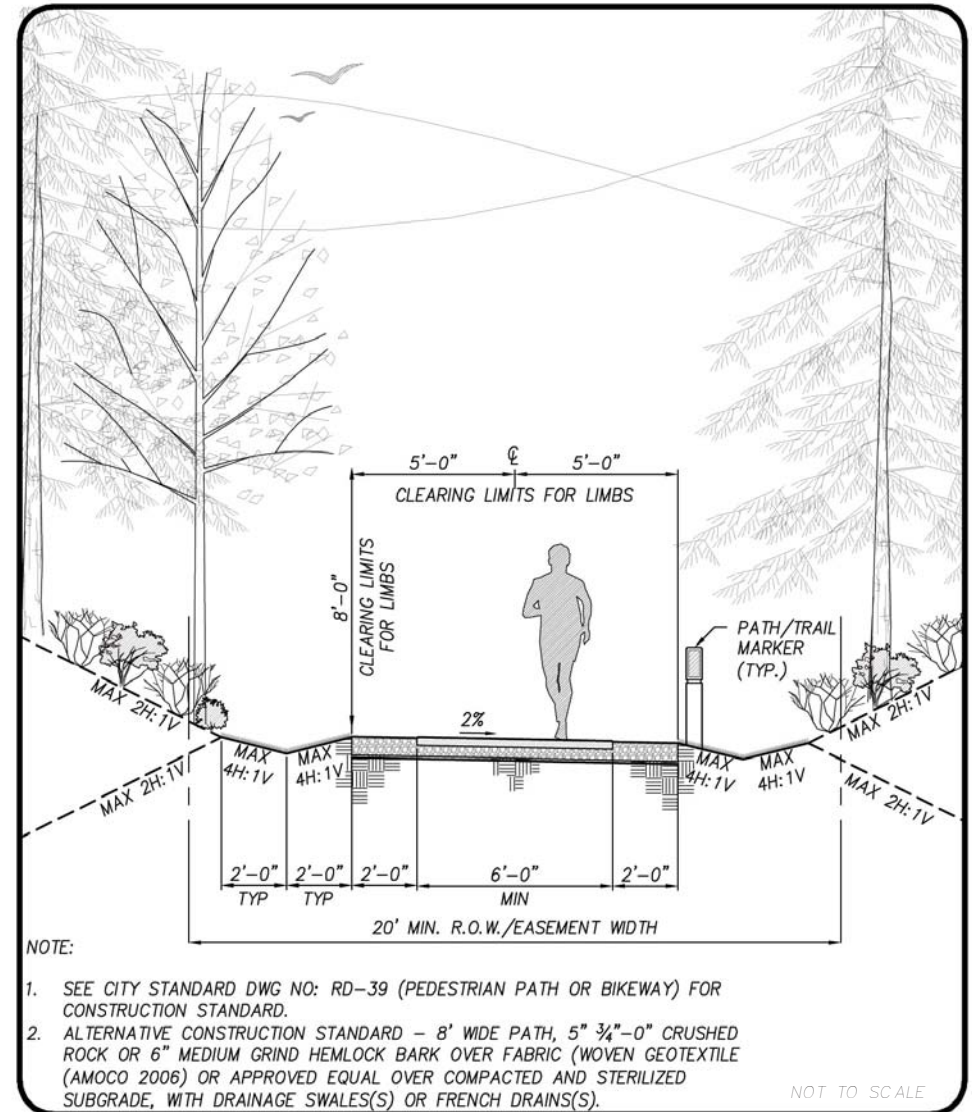


Figure 6. Pedestrian Path Section

UPHILL SIDE RETAINING WALL

Purpose:

- Allow path or trail in steep hillside areas where corridor width is minimal.

Where to Use:

- Steep side slope areas, especially for short distances.
- Areas where it is essential to protect maximum natural vegetation.

Guidelines:

- Path or trail slopes toward swale.
- Wall is engineered.
- Disturbance to natural vegetation is minimal.

Surface Materials:

- Concrete, rock, masonry unit wall.
- Concrete or asphalt surfacing.



Figure 7. Example of an Uphill Side Retaining Wall

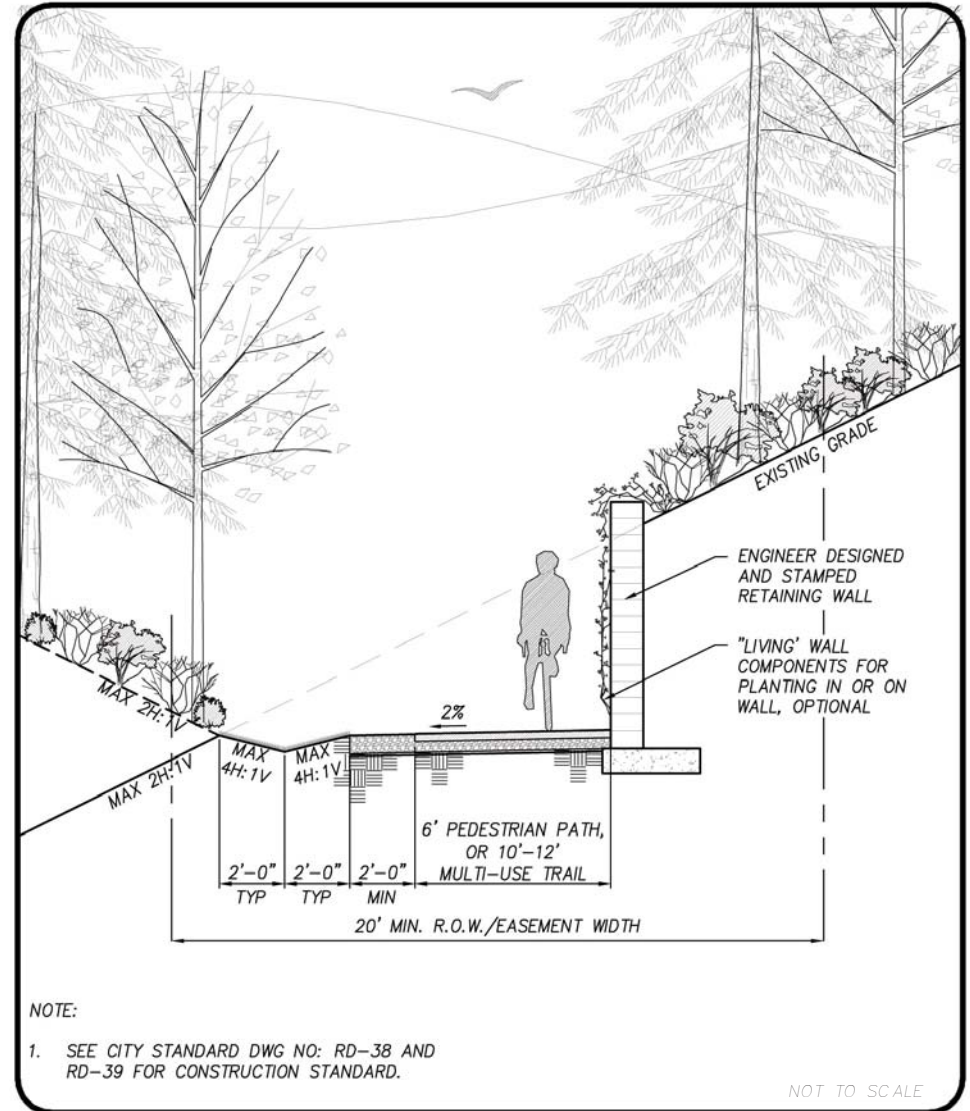


Figure 8. Uphill Side Retaining Wall Section

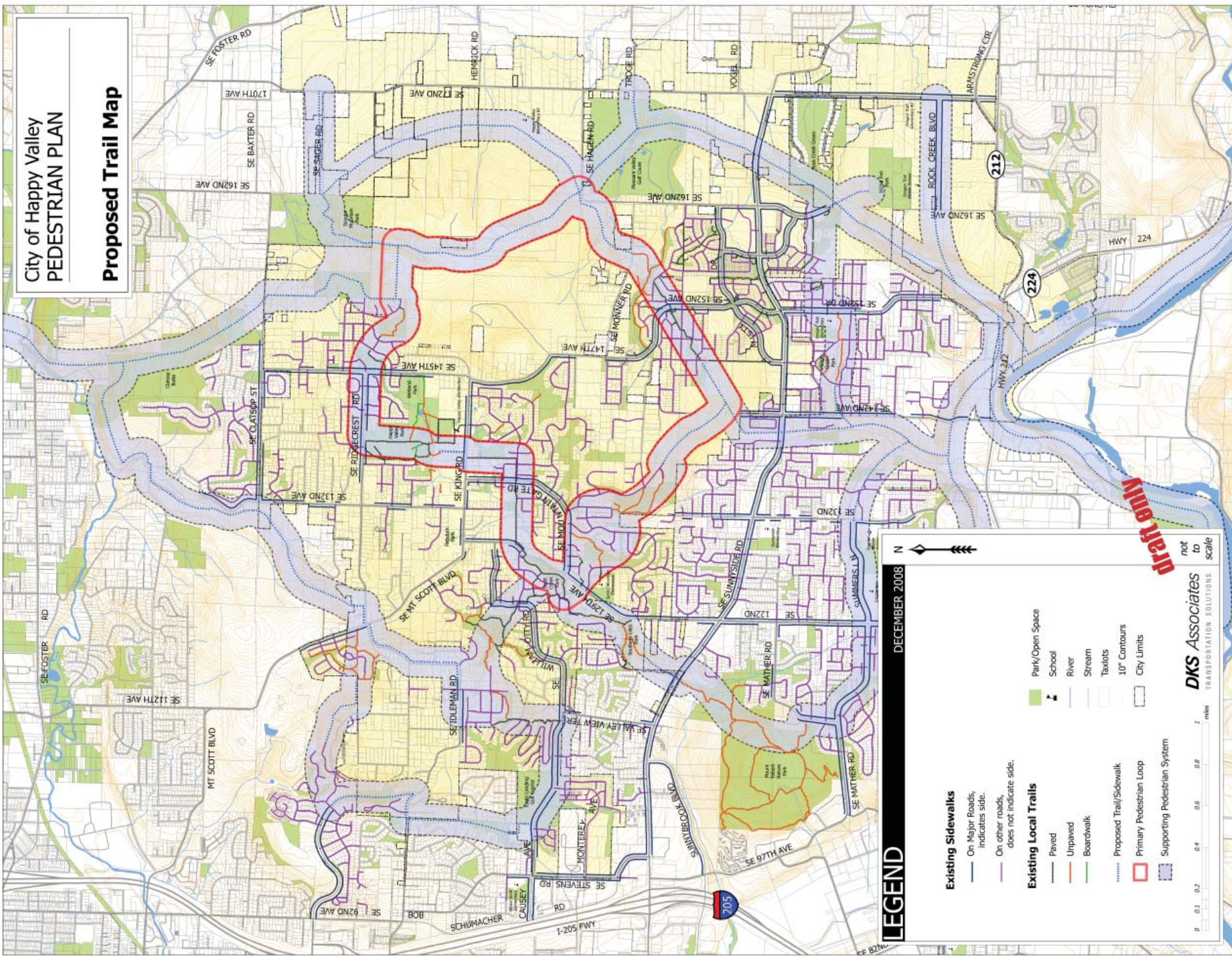


Figure 9. City of Happy Valley Pedestrian Plan - Proposed Trail Map
 Visit www.ci.happy-valley.or.us or the City of Happy Valley City Hall for full size map.

DOWNHILL SIDE RETAINING WALL

Purpose:

- Allow path or trail in steep hillside areas where corridor width is minimal.

Where to Use:

- Viewpoint areas.
- Short distance side slope areas where runoff can be cut off from the trail.

Guidelines:

- Path or trail slopes toward swale.
- Wall is engineered.
- Disturbance to natural vegetation is minimal.

Surface Materials:

- Concrete, rock, masonry unit wall.
- Concrete or asphalt surfacing.



Figure 10. Example of a Downhill Side Retaining Wall

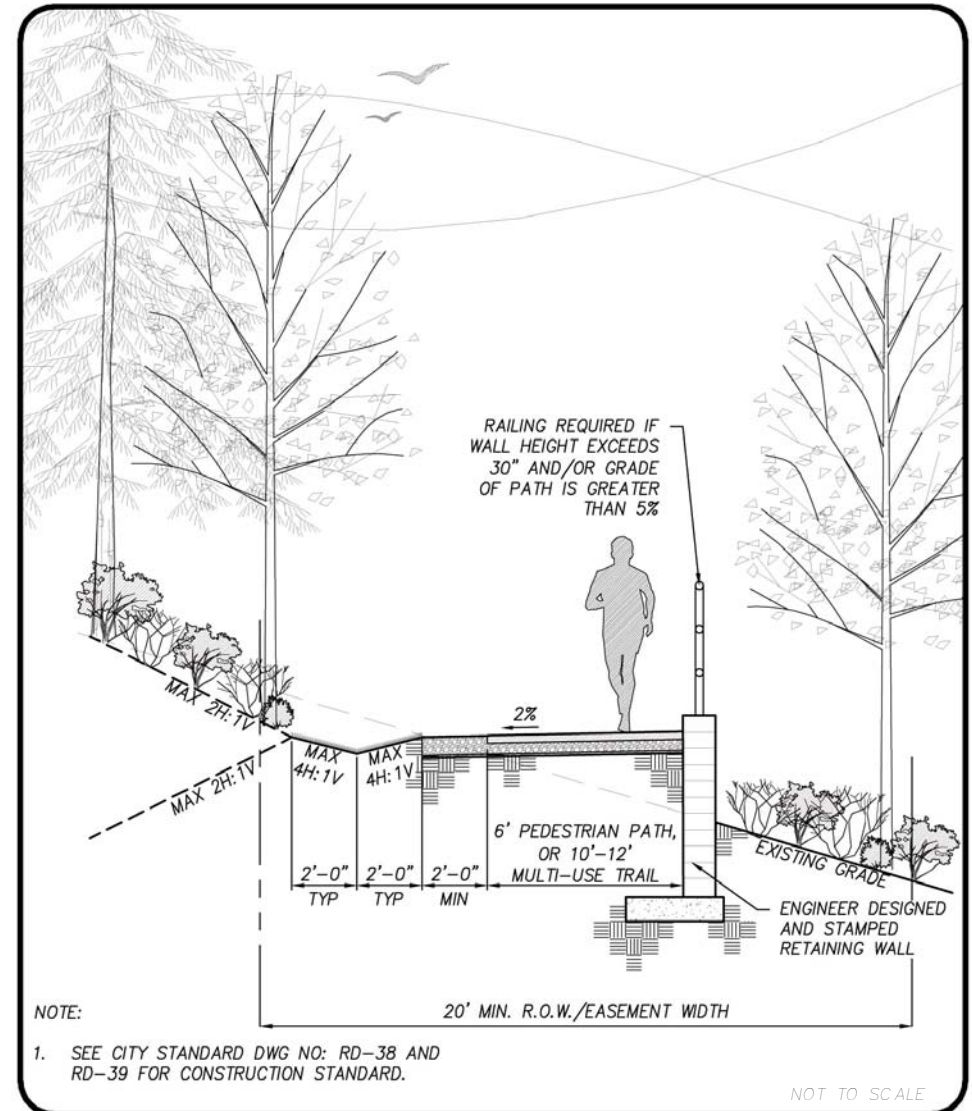


Figure 11. Downhill Side Retaining Wall Section

WIDENED SHOULDER - PATH OR TRAIL

Purpose:

- Provide path or trail associated with private street or existing non-standard street for short distances to fill gaps for continuous connectivity.

Where to Use:

- Established neighborhoods.
- Temporary accesses.
- Constrained right-of-way.
- Interim segments until re-development.

Guidelines:

- Minimize disturbance to natural vegetation.
- Maximum 2% cross section.
- Signage to restrict parking on path or trail.

Surface Materials:

- Asphalt



Figure 12. Example of a Widened shoulder with path

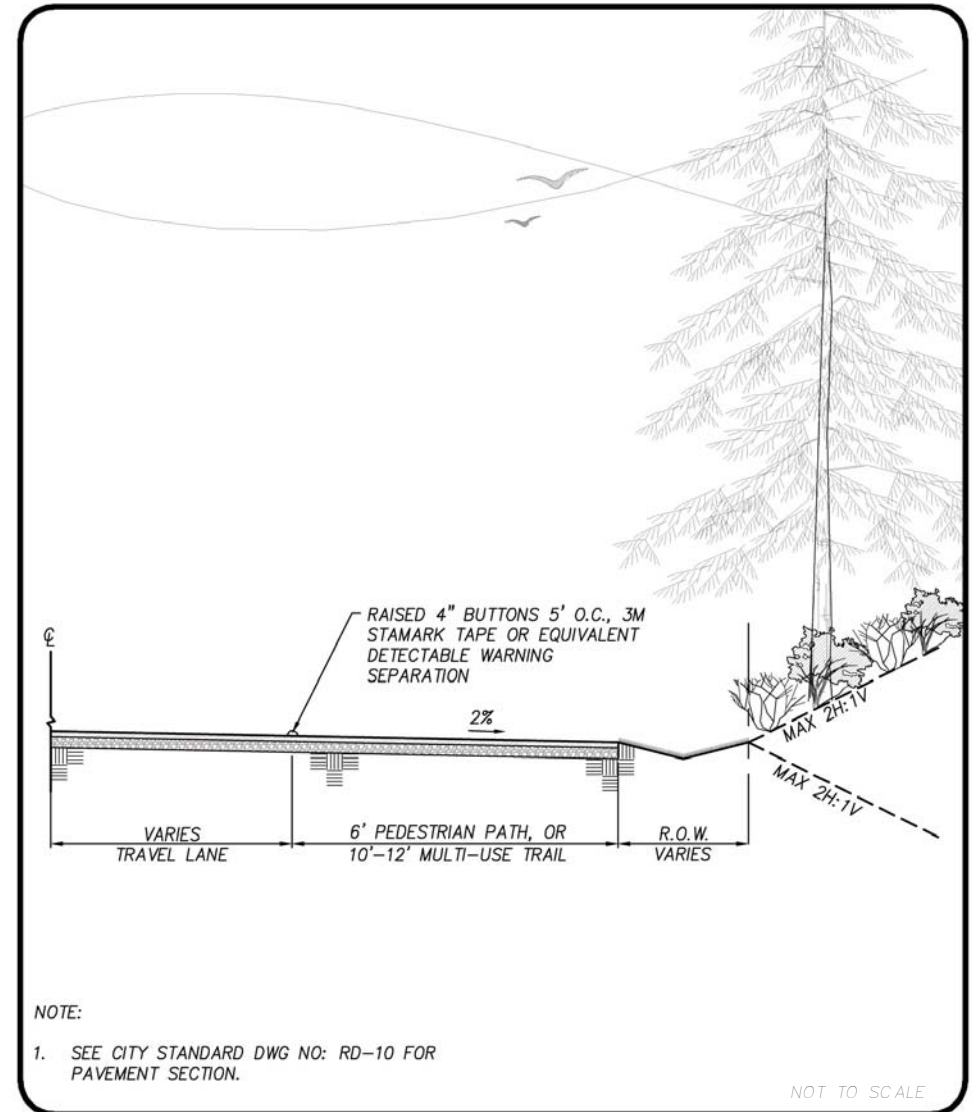


Figure 13. Widened Shoulder - Path or Trail Section

PATHWAY AT CURB

Purpose:

- Allow pedestrian path to parallel open space or natural areas where corridor width is narrow due to creek, steep slope, or other natural condition.

Where to Use:

- Natural areas where continuous soft surface pathway is appropriate.
- Along access ways within parks, natural areas, golf courses, etc.

Guidelines:

- Slope crushed rock pathway away from street.
- Slope bark pathway away from street.
- Minimize disturbance to natural vegetation.

Surface Materials:

- Crushed rock or bark surface.



Figure 14. Example of a Pathway at Curb

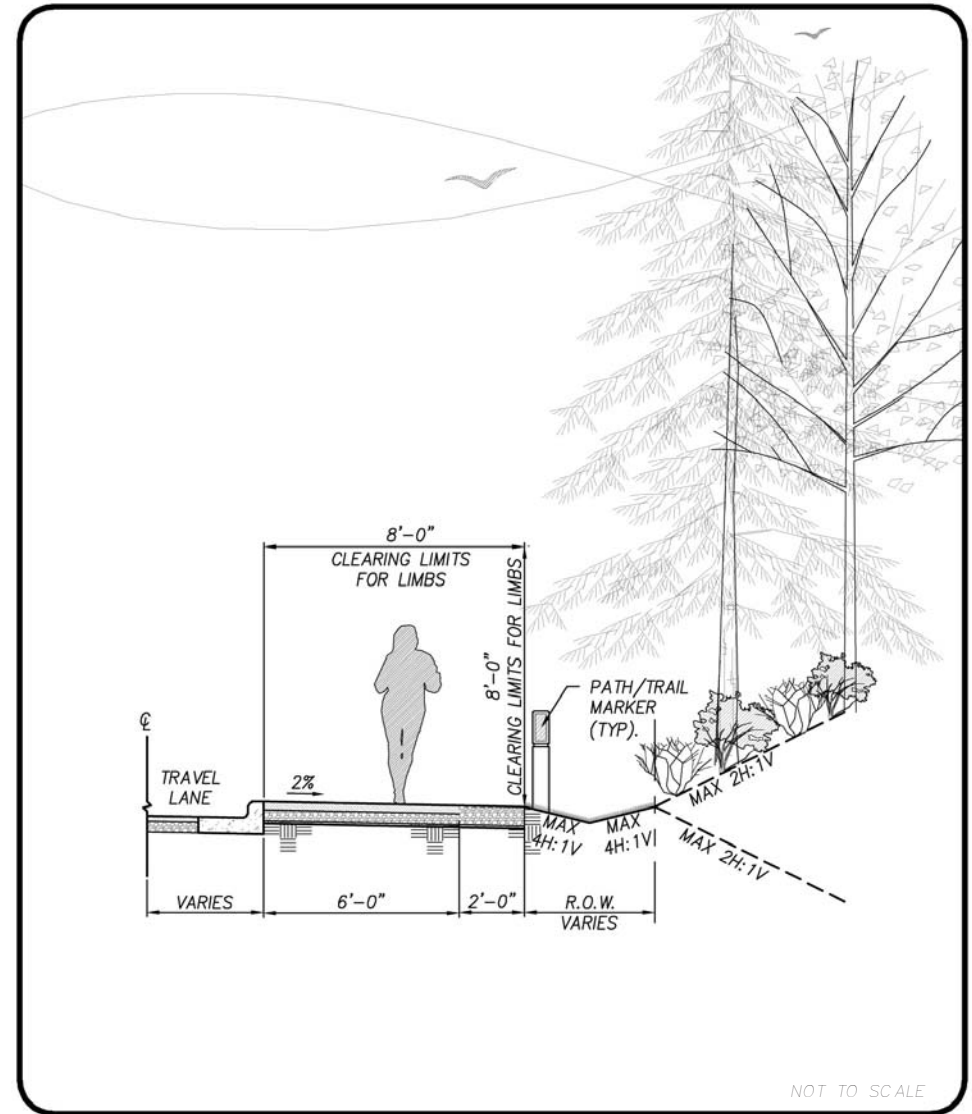


Figure 15. Pathway at Curb Section

PATHWAY AND PARKWAY STRIP

Purpose:

- Accommodate pathway or trail in linear corridors of varying width where development is not feasible or greenway corridor is acquired for connectivity.

Where to Use:

- Generally paralleling streets.
- Generally paralleling stream corridors.

Guidelines:

- Slope pathway or trail to compliment general terrain or best for drainage.
- Vary parkway strip width for variety and to compliment natural features.
- Minimize disturbance to natural vegetation and natural features.

Surface Materials:

- Concrete or asphalt
- Crushed rock or bark



Figure 16. Example of a Pathway and Parkway Strip

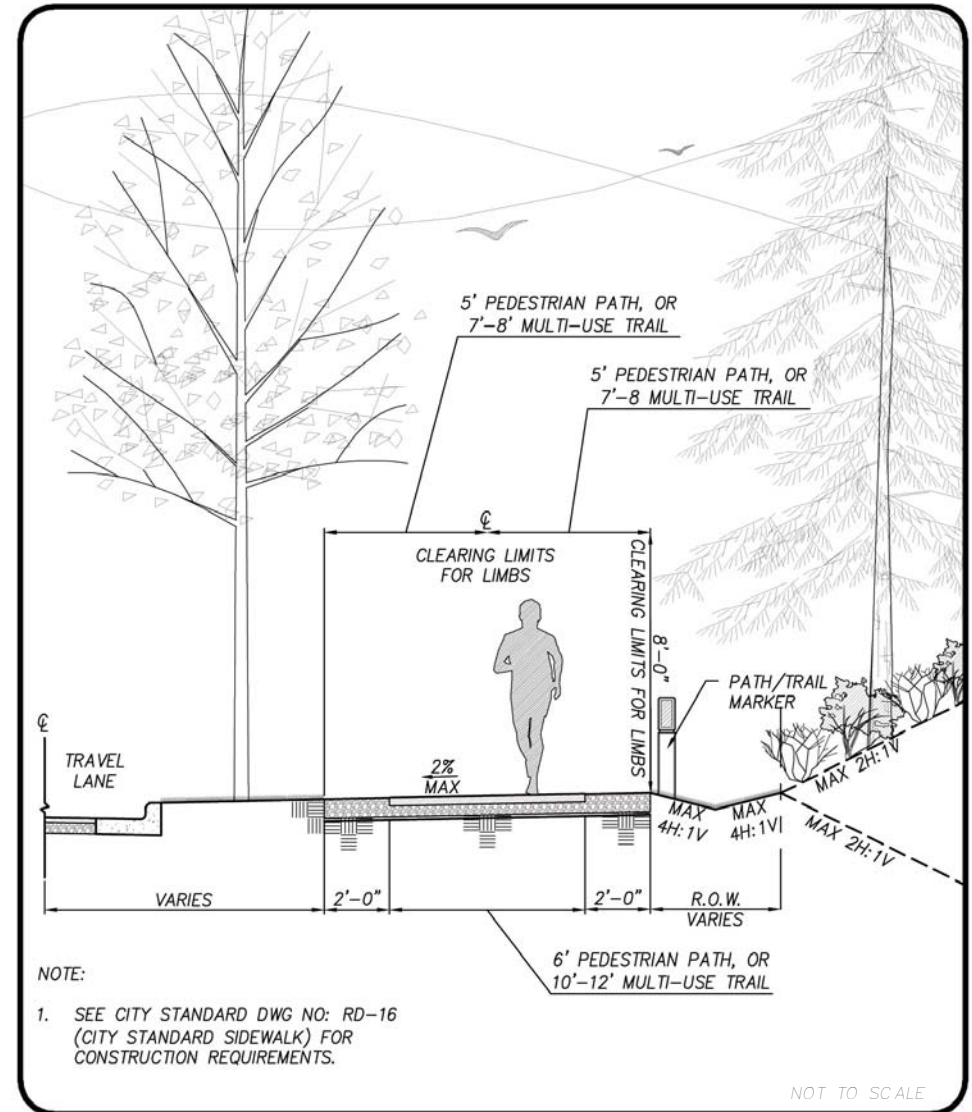


Figure 17. Pathway and Parkway Strip Section

BOULDER RETAINING WALL(S) MULTI-USE TRAIL

Purpose:

- Allow construction of trail for short distance in very steep cross slope condition.

Where to Use:

- Short distances.
- Narrow corridors.
- Where protection of existing natural vegetation is critical.

Guidelines:

- Engineered walls.
- Slope trail downhill.
- Provide minimum 2' shoulder on downhill side.
- Provide railing at top of downhill walls over 30" in height.

Wall Materials:

- Large dry stacked rock boulders or approved alternative.



Figure 18. Example of a Boulder Retaining Wall

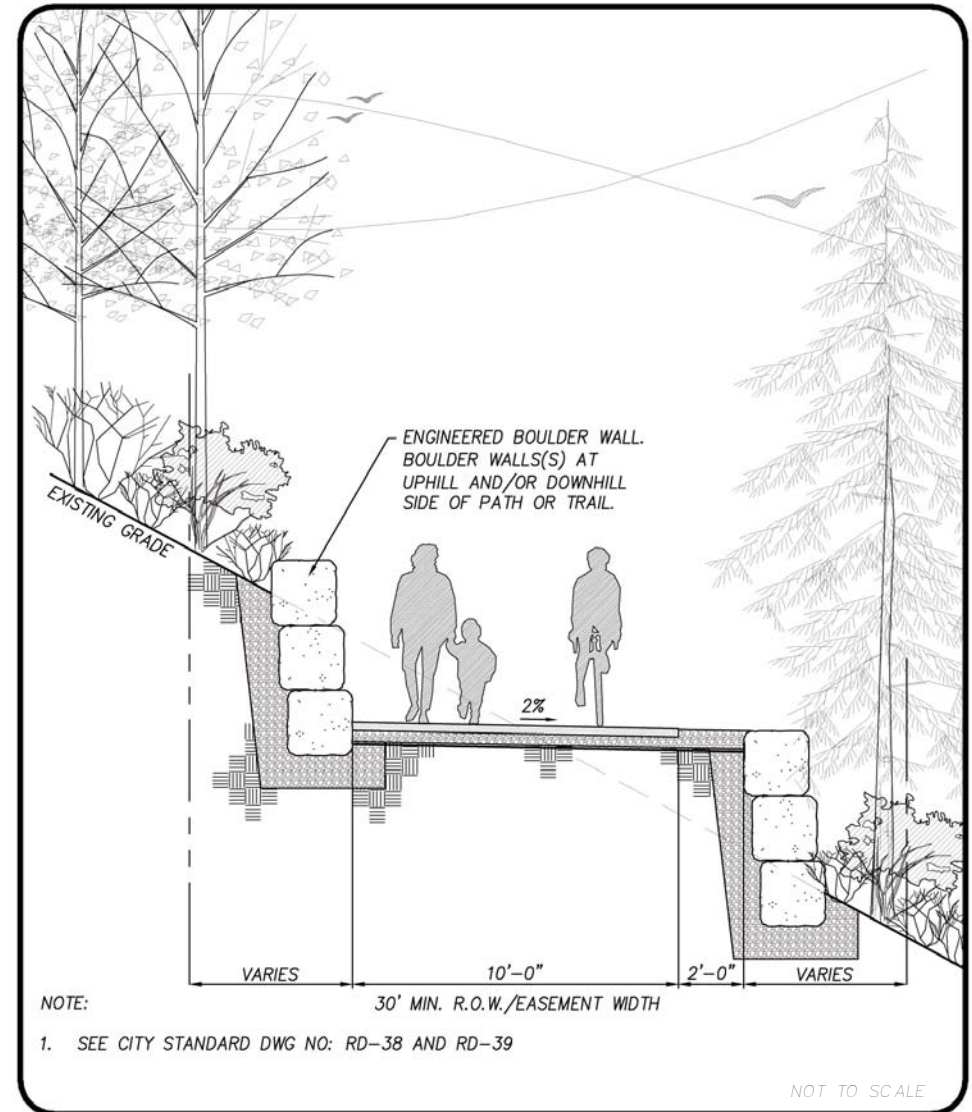


Figure 19. Boulder Retaining Wall Section

PATH/TRAIL CROSS DRAINAGE

Purpose:

- Provide cross drainage where swales or natural drainage will not reach natural drainage ways without crossing pathway or trail.

Where to Use:

- Low points along path or trail.
- Where springs or seeps would keep path or trail wet or overtop.

Guidelines:

- Slope trail downhill or toward cutoff swale uphill per best local condition.

Drainage Materials:

- ADS corrugated black plastic drainage pipe or approved alternative.



Figure 20. Example of Path/Trail Cross Drainage

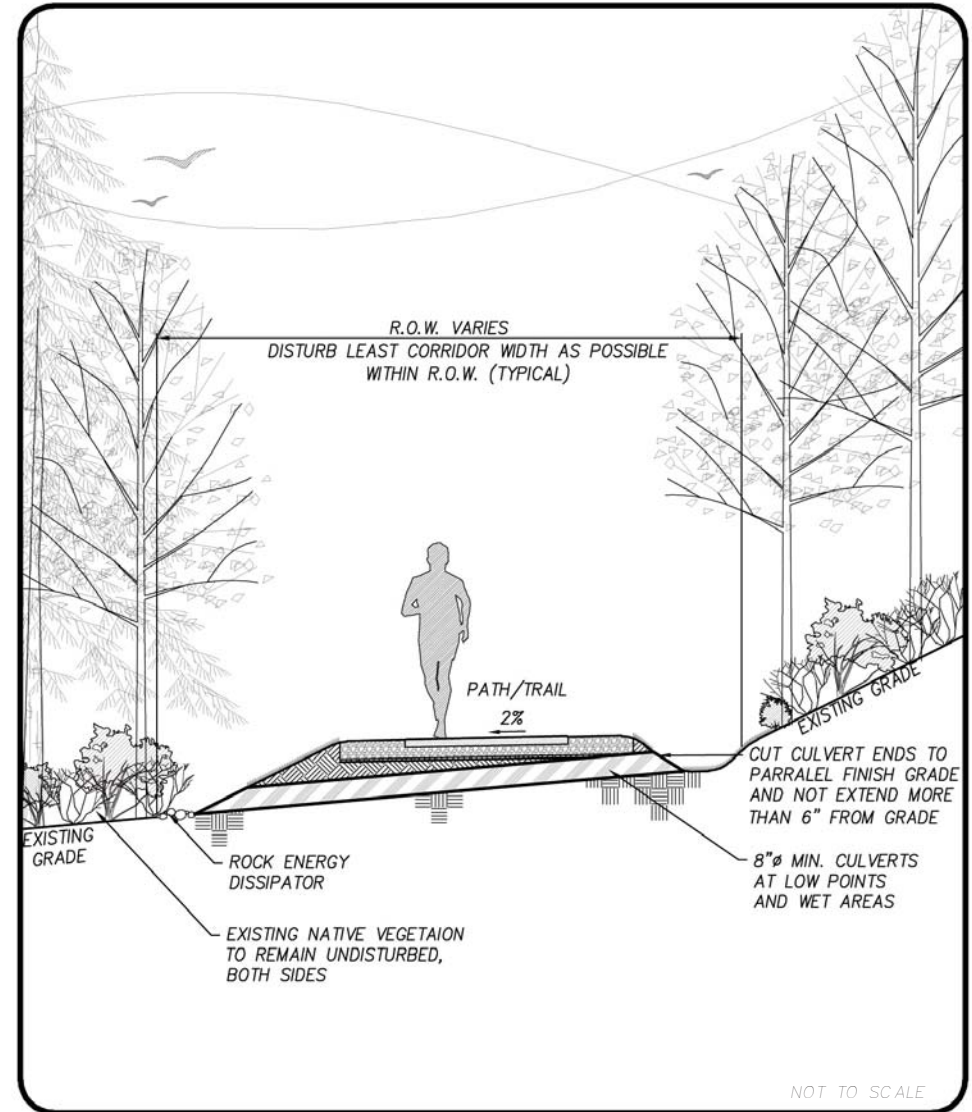


Figure 21. Path/Trail Cross Drainage Section

PATH/TRAIL POINT OF INTEREST

Purpose:

- Widened portion of path or trail for resting, viewing, education, or interpretation.

Where to Use:

- Viewpoints
- Location of natural feature(s).
- Strategic resting location.

Guidelines:

- Provide space and shape per conditions and purpose.
- Provide surface same as trail.
- Provide bench(s) and signing where appropriate.
- Minimize disturbance to natural vegetation.
- Plant disturbed areas, if any, with native vegetation.

Surface Materials:

- Concrete or asphalt
- Crushed rock or bark



Figure 22. Example of a Path/Trail Point of Interest

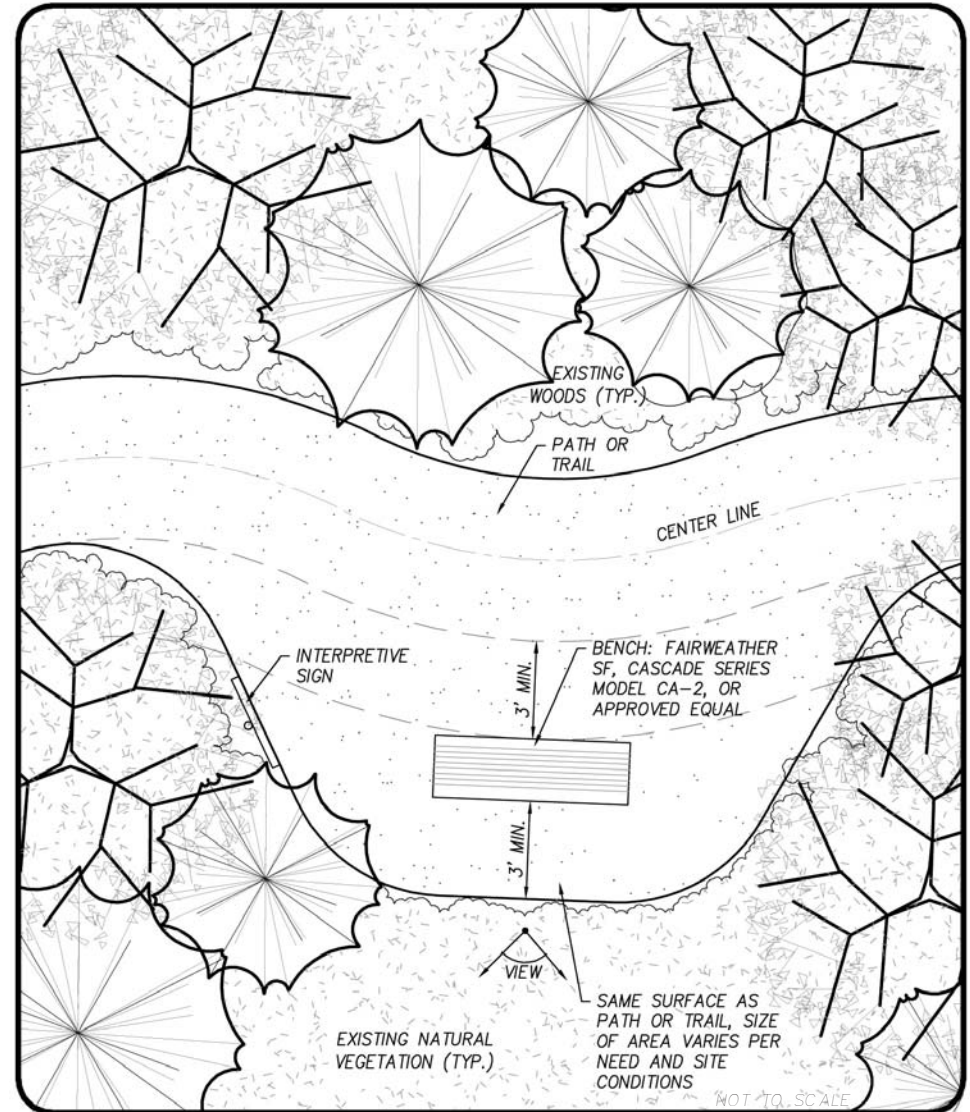


Figure 23. Path/Trail Point of Interest Section

PATH/TRAIL ACCESS

Purpose:

- Provide pathway and trail head access convenient and recognizable for users.

Where to Use:

- Strategic locations along streets.
- In conjunction with trail head parking areas.

Guidelines:

- Provide obvious access for pathways and trails.
- Provide directional, regulatory, and/or interpretive signing as appropriate to location.
- Provide access control if necessary.

Materials:

- Concrete or asphalt
- Crushed rock or bark
- City standard bollard(s).
- Signing.



Figure 24. Example of Path/Trail Access

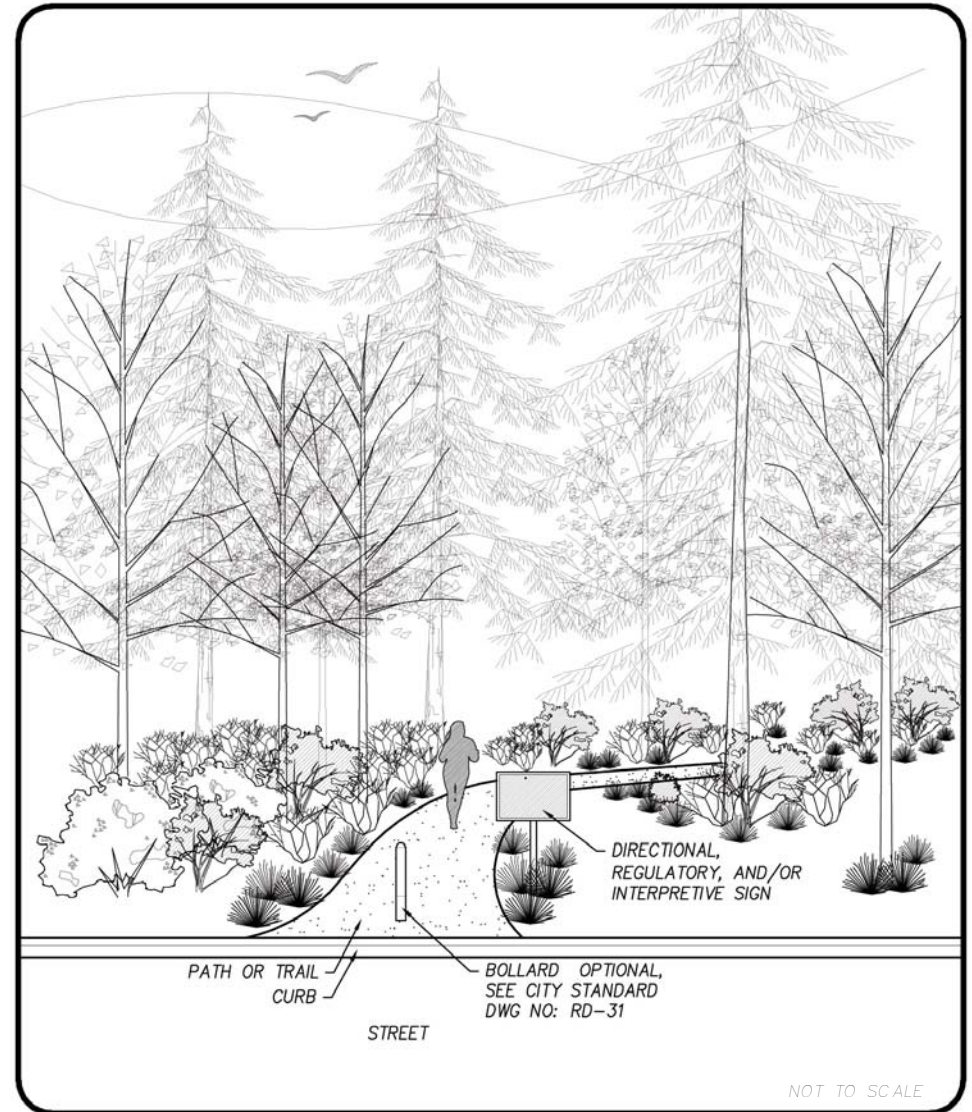


Figure 25. Path/Trail Access Section

MID-BLOCK CROSSINGS

Purpose:

- Provide safe path and trail crossing of streets

Where to Use:

- Anywhere in the City at mid-block where out of direction movement to an intersection is great enough to discourage use of the intersection crosswalk.

Guidelines:

- See City Standards for Mid-Block Crossings.

Materials:

- See City Standards for Mid-Block Crossings.



Figure 26. Example of a Mid-block Pedestrian Crossing

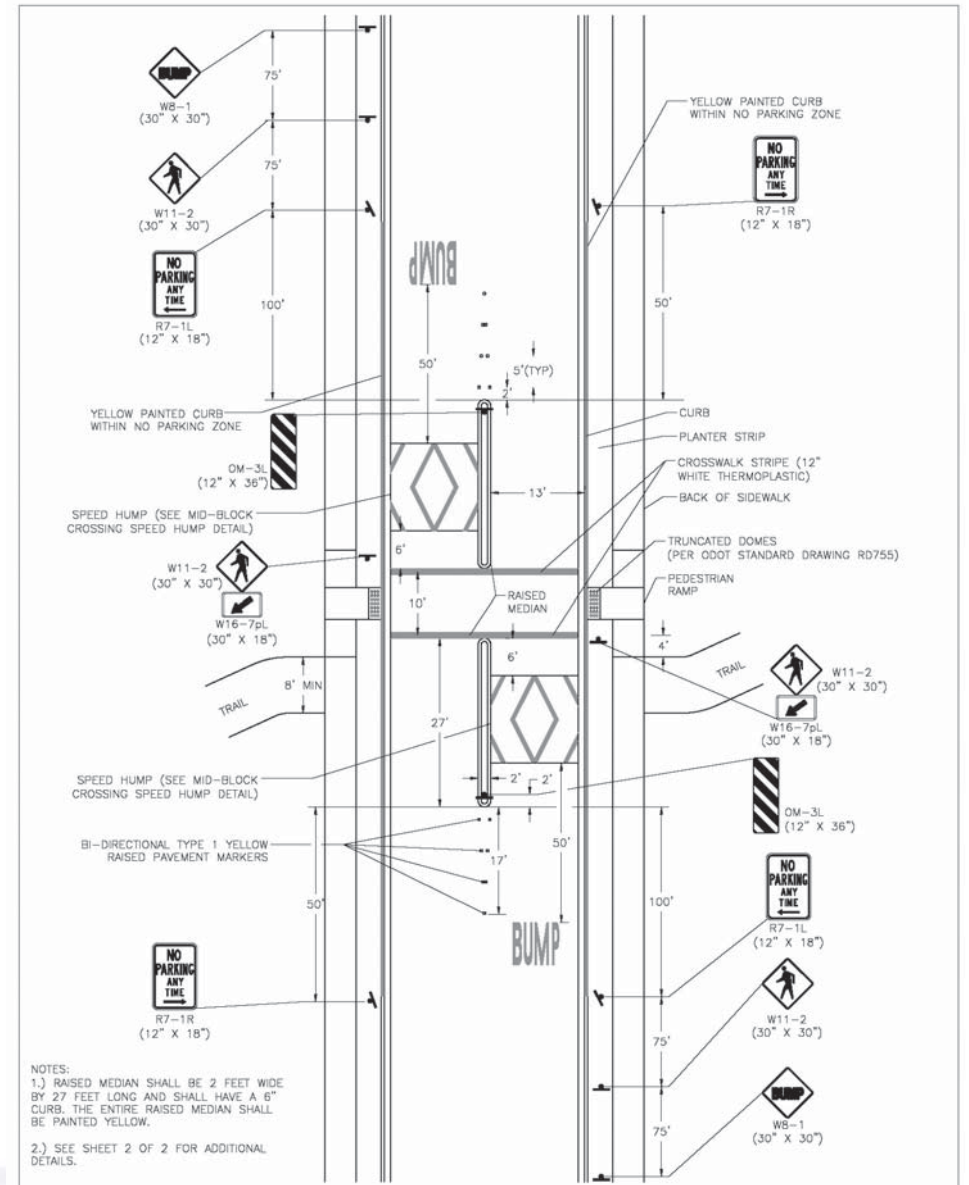


Figure 27. Mid-Block Pedestrian Crossing Detail for Local Street



QUESTIONS ?

Contact:

The City of Happy Valley
16000 SE Misty Drive
Happy Valley, OR 97086

Phone: (503) 783-3800
Fax: (503) 658-5174

www.ci.happy-valley.or.us