Drainage Plan Standards

Instructions

Disclaimer: The following information is not an exhaustive list and may be modified by staff at any time. This document is intended only as a guide. Please consult with City of Redmond staff if further instruction and/or clarification is necessary.

☐ All plans must be submitted in a searchable PDF format (non-scanned).
☐ The plans shall be drawn to an engineering scale of 1” = 20’.
☐ The Drainage Plan shall be prepared by a professional licensed in the State of Washington.
☐ Contact information including name, address, phone number and e-mail address of the applicant, owner, developer, building, surveyor, engineer(s), architect, landscape architect, arborist and any other professionals involved in the creation of the plans shall be shown on each applicable plan sheet with contact information for all parties provided on the cover sheet.
☐ The plans shall include north arrow and scale bar.

Standard Information

☐ Easements – public and/or private easements shown on the plans with dimensions labeled.
☐ Offsite areas draining on site generally do not need to be controlled but, must be safely conveyed around or through the site.
☐ Design pipe slope – 0.25% minimum and 20% maximum. Minimum pipe size 12” for public storm drain system and 6” minimum for private systems.
☐ Pipe data – pipe length, diameter, and slope labeled.
☐ Show water and sewer facilities (screened back).
☐ Horizontal clearance – Show and label required clearance to all other utilities and structures and 8 feet from trees (street trees may be closer than 8’ with root barrier). See Stormwater Technical Notebook 8.4.4 for horizontal clearance requirements and Stormwater Technical Notebook 8.4.10 for horizontal tree clearance requirements.
☐ Vertical clearance – Show and label crossing utilities. Provide vertical clearance in tables on plans. 1-foot minimum vertical clearance based on pipe outside diameter, see Stormwater Technical Notebook 8.4.5 for vertical clearance requirements.
☐ Rockeries/retaining walls – Shall not cross storm pipes. Storm pipes shall not be located within the 1H:1V plane from the bottom of the wall or wall footing. Any crossing of a wall shall be perpendicular to the wall and special construction techniques including steel casings may be required. No rockeries allowed over roof or footing drains.
☐ Structure Spacing – Maximum spacing 300 feet for pipes less than 30-inch diameter with velocity greater than 3 FPS. See Stormwater Technical Notebook 8.5.2 for structure spacing.
☐ Public easements shall be 20 feet in width. No obstructions allowed in easements. See Stormwater Technical Notebook 8.6.8.1 for more information.
☐ Private easements shall be 15 feet in width. No obstructions allowed in easements. See Stormwater Technical Notebook 8.6.8.2 for more information.
☐ Footing/foundation/roof drains shall be connected to the storm drain system (shown as stubbed to lots only for plats). Minimum drain size per Stormwater Technical Notebook 8.4.2.
☐ Profiles
  ✓ Horizontal scale shall be at 1” = 20’
  ✓ Vertical scale shall be at 1” = 5’
  ✓ Other utilities – labeled and designated size and type
  ✓ Profile grades – show and label existing and proposed grades
  ✓ Pipe profile information – show invert and top of pipe, label pipe length, diameter, and design slope
  ✓ Drop structures only allowed per approval of Stormwater Engineer. See Standard Detail
  ✓ Utility crossings – all crossings must be shown, label utility type, line size, invert of utility and storm lines and calculated vertical clearance between pipes based on pipe outside diameter. See Stormwater Technical Notebook 8.4.5 for allowed vertical clearance
  ✓ Perpendicular utility crossings

Amended 06/22/2023
### Underground Detention
- Detention volume – show volume required and volume provided. (Calculations must match proposed facility)
- Inverts – show for all pipes entering and leaving control structure and vault. Pipes entering vault shall enter the vault perpendicular to the wall.
- Setback a minimum of 10 feet from structures, buildings, footings, easement boundaries, and property lines, or a distance equal to the depth to the bottom of the facility, whichever is greater.
- Setback 50 feet from the top of any slope greater than 15%.
- Maintenance vehicle access required to both ends of detention tanks. Required to all entries to vaults (including one near control structure) and other appurtenances. See Stormwater Technical Notebook 8.6.9.1 for maintenance access requirements.
- Label ownership of underground detention.
- Detention tanks shall pass pressure tests. See additional information in Stormwater Technical Notebook 2.9.3.5.

### Infiltration
- Subgrade infiltration rates from testing methods specified in the 2014 SWMMWW Manual, Volume V.
- For infiltration ponds, at least two tests must be conducted or one test for every 5,000 square feet of infiltration system bottom area and for infiltration trenches at least two tests must be conducted or one test for every 200 feet of trench length.
- Subsurface explorations (test holes or pits) to a depth below the base of the infiltration facility of at least 5 times the maximum design depth of ponded water proposed for the facility, but not less than 10 feet below the base.
- Continuous sampling (representative samples from each soil type and/or unity) to a depth below the base of the infiltration facility of 2.5 times the maximum design ponded water depth, but not less than 10 feet.
- Infiltration facilities design based on infiltration rates provided in Geotechnical Report. Provide measured and design infiltration rates.
- Provide average seasonal high groundwater elevation on the plans, cross sections, and detail.
- Show 5-foot vertical separation between bottom of infiltration facility and average seasonal high groundwater elevation or bedrock. Separation may be reduced to 3 feet with approved mounding analysis.
- Setbacks. See Stormwater Technical Notebook 8.6.11 for infiltration setback requirements.
  - Minimum 8 feet from infiltration pipes to trees.
  - Minimum 10 feet from NGPE and property line.
  - Minimum 10 feet from rockeries and retaining walls.
- Infiltration systems may not be located in an area previously used as temporary sediment facility.

### Biofiltration Swale Treatment Facilities (see 2014 SWMMWW, Volume V, Chapter 9)
- Minimum length of 100-feet.
- Channel stability check is required.
- Maintenance access along with a work area adjacent to the facility to support maintenance activities is required.
- Provisions are required for the 100-year overflow path.
- Minimum 10-foot horizontal setback from other utilities, buildings, and trees.

### Combined Detention and Wetpool Facilities
- Setback a minimum of 10 feet from structures, easement boundaries, and property lines, or a distance equal to the depth to the bottom of the facility, whichever is greater.
- Setback 50 feet from the top of any slope greater than 15%.
- Pond interior slope must be a maximum of 3H:1V (preferred), 2H:1V below surface is acceptable.
- Multi-celled pond with a minimum of two cells.
- Pond length to width ratio 3:1 minimum.
- Emergency overflow for an open pond shall be separate from pond outlet.
- Label ownership of combined detention and wetpool facility.

### Bioretention Facilities
- Setback a minimum of 10 feet from structures, easement boundaries, and property lines, or a distance equal to the depth to the bottom of the facility, whichever is greater.

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✓ Setback 50 feet from the top of any slope greater than 15%
✓ Facility shall not be located within one-quarter mile of Lake Sammamish
✓ Bioretention with underdrains shall not be allowed if the underdrains discharge to pipes or streams that ultimately drain to Lake Sammamish
✓ Bioretention mix designs per City of Redmond Standard Specifications
✓ Overflow pathway for safe discharge to a public or private stormwater system
✓ Field testing shall indicate potential bioretention sites have a measured native soil infiltration rate of 0.30 inches per hour or greater