



CITY OF REDMOND
Engineering Department

716 SW Evergreen Ave
Redmond, OR 97756-0100

(541) 504-2002

Fax: (541) 923-4035

info@ci.redmond.or.us

www.ci.redmond.or.us

STAFF REPORT

DATE: April 12, 2011
To: Mayor and Council Members
THROUGH: David Brandt, City Manager
FROM: Mike Caccavano, City Engineer
SUBJECT: Public Works Standards and Specifications Update

MEETS COUNCIL GOAL: #2 Preserve and Enhance the City's Infrastructure

REPORT IN BRIEF: The Public Works Standards and Specifications have been updated to reflect changes in construction methods and materials, to meet current regulations and to insure that infrastructure investments are made with the goal of providing a long lifespan.

BACKGROUND: The City of Redmond Standards and Specifications were last updated in 2003. The 2003 version is currently modified with Special Provisions to City bid documents and conditions to development reviews, but an update is needed especially for projects not undertaken by the City. In the past, a Standards and Specifications Committee was formed because there was significant interest from the development community. We advertised for committee members and contacted people that might have an interest, but were unable to recruit more than two members. With the City Manager's input, we modified the approval process to first seek a recommendation from the Planning Commission, then bring the update to the City Council for approval.

A work session with the Planning Commission was conducted on February 1 to review and discuss the proposed changes. The Planning Commission held a public hearing on March 1 and made the decision to recommend approval. The two standards and specifications committee members informally reviewed the update. We also with the Central Oregon Builders Association to get input from the development community.

DISCUSSION: The general organization of the 2010 Standards and Specifications is essentially the same as the 2003 version with five major sections; Development Provisions, Design Standards, General Conditions, Standard Specifications and Standard Drawings. There are five divisions in the Standard Specifications; Trenches, Streets and Related Work, Sewer Facilities, Water Facilities and Structures.

Many changes were made with input from the divisions of Public Works. Some of the more significant changes include:

- Revisions to meet current design standards for roads, storm drains, sewers, water lines and pump stations
- Clarification of development provisions to reflect current policies

- Incorporation of sidewalk and ramp standards and drawings that meet U.S Access Board public right of way guidelines for accessibility
- Adoption of the Central Oregon Stormwater Manual
- Increased pavement and base rock thickness to provide 20-year lifespan and expand maintenance options
- Requirement for ductile iron waterline to improve longevity and locate ability

The attached summary document lists the more significant changes to the standards and specifications. A full version of the standards and specifications is available on the City website.

A significant change is the reference to American Public Works Association (APWA) Standards. Before 2003, Oregon APWA had a separate set of specifications for municipal construction. They have since been combined with the ODOT standards to make the Oregon Standard Specifications for Construction. We considered adopting all of the Oregon Standard Specifications, but they can be cumbersome for a local jurisdiction. Instead, we refer to them as necessary particularly in areas that are not covered by the City specifications and where it is preferable to use readily available materials.

FISCAL IMPACT: There are impacts to initial construction cost that are offset by increased infrastructure lifespan, improved performance and reduced maintenance expense.

OPTIONS: The Standards and Specifications Update will be brought back to the City Council for approval at a future meeting.

STAFF RECOMMENDATION AND SUGGESTED MOTION:

No action is necessary at this time.

Respectfully submitted,

Michael P. Caccavano, City Engineer

SUMMARY OF SIGNIFICANT CHANGES

STANDARD SPECIFICATIONS: Major changes to the five divisions of the Standard Specifications are as follows:

Division I Trenches: This section covers types of backfill, allowable and unacceptable backfill materials, pipe bedding requirements, trench width and minimum cover. Major changes include a tightening up of the backfill material specifications, inclusion of bore specifications and an increase in the minimum depth of water and sewer pipes. A more detailed revision summary follows:

101.2.01 Bedding and Pipe Zone: Material samples and testing required for bedding.

101.2.02 Trench Backfill: Pumice, cinders or any material with compacted density less than 80 pcf not allowed as trench foundation or Class B backfill. A limit on the amount of very fine particles is included for Class B backfill. Class C backfill now includes ¾"-0" granular material. A limit on the amount of large sizes is included for Class A backfill to allow compaction testing. Cement treated base specifications changed to match ODOT specifications. Controlled low strength material specifications added (matching ODOT specifications)

101.3.05 Compaction Testing: Added section

Division II Streets and Related Work: This section has 13 subsections covering everything from mobilization to earthwork, paving, concrete walks to landscaping. Major changes include a tightening up of traffic control requirements, matching current ODOT asphalt paving specifications, placing asphalt patching in a new separate section, insuring that driveways and sidewalks meet ADA requirements, adding a new section for signing and striping and updating the landscaping section to reflect current materials usage. A more detailed revision summary follows:

202.3.00 Temporary Traffic Control: Added blue business access markers and signs. Extended closure notice from 24 to 48 hours. Added requirement to provide a traversable surface during non-working hours.

205.2.01 Watering Material: Added requirement for water metering and backflow prevention

206.3.03 Subgrade Geotextile Stabilization: Added section to comply with Oregon Standard Specifications for Construction

211.2.01 Asphalt Concrete Pavement Materials: Changed to match Oregon Standard Specifications for Construction. Removed Class B, C and D and replaced with Level 1, 2 and 3.

211.2.02 Asphalt Concrete Pavement Aggregates: Changed to match Oregon Standard Specifications for Construction.

211.2.03 Reclaimed Asphalt Pavement Material: Added section.

211.2.04 Asphalt Concrete Pavement Asphalt Cement and Additives: Changed to match Oregon Standard Specifications for Construction.

211.2.07 Asphalt Concrete Pavement Mix Type and Broad band Limits: Added section to match Oregon Standard Specifications for Construction.

211.2.07 Asphalt Concrete Pavement Job Mix Formula: Added section to match Oregon Standard Specifications for Construction.

211.3.16B Asphalt Concrete Pavement Longitudinal Joints: Added section

212.2.04 Asphalt Concrete Patching Temporary Cold Mix AC Patches: Added section to match Oregon Standard Specifications for Construction.

212.3.05 Asphalt Concrete Patching Sealing Patch Edges: Added sealing and signing requirement for patch edges

213.3.04 Curbs and Gutters Expansion Joints: Added requirement for joints at driveways

213.3.04 Curbs and Gutters Control Joints: Changed joint spacing from 10 to 15 feet and added 1/3 depth requirement

214.4.01 Driveways and Approaches: Added requirement for multi-family driveways to meet commercial driveway standards. Increased spacing between driveway and intersection from 20 to 30 feet.

217 Signing and Striping: Added section to match Oregon Standard Specifications for Construction.

221 Landscaping: Revised to match current standards and materials

Division III Sewer Facilities: This section covers gravity sewer piping, fittings and manholes as well as pressure sewers and pump stations. Storm sewers were lumped in with the sanitary sewers in the 2003 version. Storm sewer pipe and structures are separated out in the 2010 version. There are many sanitary sewer revisions including more detailed pipe and fitting specifications, standards for meeting pipe design slope and alignment, requirements for more rigid pipe repair sleeves, corrected pipe test requirements, and a complete rewrite of the pump station section to reference current standards and materials. Storm drain changes include allowing sewer pipe (ASTM D3034 and F679) for storm drains with sufficient cover rather than only allowing water class pipe (AWWA C900), adding a separate drywell section and referencing the Central Oregon Stormwater Manual. A more detailed revision summary follows:

303.2.04A(2)(h): Added standards for pressure sewer fittings

303.3.01 Pipe and Fittings (Sanitary Sewer) Line and Grade: Added variance allowance for line and grade

303.3.05I and J Pipe and Fittings (Sanitary Sewer) Jointing: Added requirement for rigid pipe couplers rather than flexible

303.3.06 Pipe and Fittings (Sanitary Sewer) Deflection at Joints: Added variance maximum for invert elevations at joints

303.3.07E Pipe and Fittings (Sanitary Sewer) Lines Not Passing Required Testing: Described requirements for corrective action

303.3.09D Pipe and Fittings (Sanitary Sewer) Hydrostatic Testing Procedure: Added allowable leakage table appropriate for gravity sewer testing

303.3.11 Pipe and Fittings (Sanitary Sewer) CCTV Inspection: Expanded conditions that must be met before inspection. Listed deficiencies requiring correction. Added warranty inspection correction requirements.

303.3.12 Pipe and Fittings (Sanitary Sewer) Mandrel Testing: Clarified testing requirements

304.2.05 Service Line Sewers: Insert Tee allowed for connecting to 18" and larger mains

305.2.01 Pipe and Fittings Storm Sewers: Allows ASTM D3034 and F679 pipe with cover greater than 24"

306.3.01B Manholes Pipe Connections: Requires bell end or rigid PVC couplings for flexible joint rather than flexible rubber couplings

307 Catch Basins and Inlets: Drywell information moved to a new section

310 Sewage Lift Station: This section has been completely rewritten to match current lift station standards. Since pumps and control availability may change, we are considering separating this section out as a Lift Station Manual to allow updating as needed.

Division IV Water: This section covers water distribution piping, fittings, meters, valves and hydrants. The most significant change requires ductile iron piping for water mains. PVC pipe will no longer be used. Other changes update fittings to current standards.

402.2 Water Pipe and Fittings: This section has been changed to require the use of ductile iron for water mains. PVC pipe may only be used to repair existing PVC pipe.

402.2.03 Pipe Restraint: Specifications have been added for gasket and external type joint restraint

402.2.11 Service Connection: Reference to the Water Service and Meter Installation Manual added. Specifications for saddle taps, direct taps and meter boxes have been added.

402.3.06F Chlorination: Maximum and minimum chlorine residual limits set.

402.3.06H Pressure Testing: A procedure for testing all newly installed valves has been added

402.3.08 Services: Separation distance between meters, requirement for upgrade of inadequate services and procedures for abandoning added

402.4.00 Water Pipe and Fittings: Pay items for services and testing and disinfections have been added

403.2.01 Resilient Seated Gate Valve: Approved manufacturers listed

403.2.02 Butterfly Valve: Approved manufacturers listed

403.2.08 Meters: Meters to be installed by City

404.2.01 Fire Hydrants: Fire hydrant models specified. Storz fittings required.

404.2.04 Geotextile: Geotextile specification added for protecting drain rock from contamination

Division V Structures: This section includes miscellaneous structures such as fences and irrigation facilities. Changes to this section were minor.

512 Fencing: Aluminum fencing material reference removed. Construction specification for removing and rebuilding fence added. Pay items for removing and rebuilding fence and for paying on a lump sum or incidental basis added.

GENERAL CONDITIONS: In addition to the five technical sections, the Standards and Specifications include General Conditions. These General Conditions cover many aspects of contracts for public improvements. Changes include a rewrite of the Insurance and Liability section to make sure that the City is covered by contractor insurance and update of references to Oregon Revised Statutes to reflect changes since 2003. Changes to this section were minor. Two of the more significant revisions are listed below:

104.3 Insurance and Liability: This sections was rewritten to comply with current Risk Management policies

111.3.03 Force Account Work: Rental rate reference changed to Rental Rate Blue Book

DESIGN STANDARDS: The design standards set parameters for design of infrastructure including street, stormwater, sewer and water and also list requirements for construction drawings. There were a number of significant changes to the Design Standards to match current state and federal standards.

Street Design:

- Minimum street slope has been increased from 0.5 to 1 percent unless approved by the City Engineer. This will improve storm drainage and avoid puddling.
- Americans with Disabilities Act guidelines have been incorporated into the standards to insure compliance. Requirement to provide ADA access to cluster mailboxes added.
- The American Association of State Highway and Transportation Officials (AASHTO) “Geometric Design of Highways and Streets” 2004 Edition is a national reference for street design used by most agencies. The latest version incorporates recent research that account for changes to vehicle design and driving. Design speeds, sight distance and curve design parameters have been modified to reflect the latest AASHTO version.

Stormwater:

- A new section has been added for stormwater design
- The Central Oregon Stormwater Manual is referenced for design standards and Redmond special provisions to the stormwater manual are provided
- The 50-year rainfall event is designated as the design storm. This is not a change, but it is different from the Central Oregon Stormwater Manual which designates a 25-year design storm
- Rainfall intensity-duration-frequency curves developed in 2008 for Redmond are included
- Swale, pond, drywell and other stormwater facility testing requirements are clarified

Sewer:

- Requirements for all weather access to sewer facilities are included
- Sampling manhole and grease interceptor standards have been added

Water:

- Residential, commercial and industrial fire flow requirements have been added
- Reference to the City of Redmond “Water Service and Meter Installation Manual” is included
- Standards for thrust restraint are provided including bell or gasket joint restraint

Utilities:

- Cutting recently constructed street prohibitions are spelled out
- Trench backfill reference is included
- Railroad crossing specifications have been moved from the design standards to the specifications

Irrigation:

- Irrigation pipe materials are limited to water class pipe

Drawings:

- Detailed designs of ADA ramps are required
- Stormwater requirements are provided
- Sewer drawings must show sampling manholes and grease interceptors where required
- A construction cost estimate must be submitted

DEVELOPMENT PROVISIONS: Development provisions cover both private and public improvements. There were changes throughout this section to reflect current policy for design and review.

01 Introduction:

- The standards are applied to both public and private work
- Public Work Improvements are separated out as a subsection

03 To and Through Requirement:

- Renamed Public Facility Requirement and definition expanded
- Cash payment equal to value of improvements required when construction is not practical
- City to determine whether construction is not practical

04.1 Plans and Specifications-General

- Storm drainage added to list of required plans
- Added requirement for support documentation such as fire flow analysis and storm drainage report

04.2 Review Plan

- Reduced number of plan sets required for review from 3 to 2
- Added requirement for storm drainage report
- Added DEQ review of UIC storm drainage facilities
- Added opportunity for review meeting of redlined plans

04.3 Final Plan

- Spelled out requirement for 2 sets of final plans
- Added requirement to submit all necessary electronic files for complete plan set
- Detailed the duration of the plan approval, process for extension and situations where plans approval is voided

04.4 Engineering Fees

- Included a new section describing the development review and construction plan review fee process

04.6 Plan Revisions

- Included change order review fee (fee approved by Council several years ago)
- Reduced number of copies required from 6 to 4
- Added requirement for submittal of change order drawings in electronic format

04.7 Final Plat

- Expanded on requirements for approval of the final plat
- Added requirement for recording plat or easements when infrastructure may be adversely affected by not recording

05 Agreements

- Explained requirement for agreements in more detail

06 Insurance

- Public works bond requirement threshold increased from \$50,000 to \$100,000

07 Easements and Permits

- Provide list of exhibits required with easement
- Referred to easement templates on City website
- Added requirement for recording easements prior to construction if they impact other property or infrastructure is identified in Public Facilities Plan.

08 Performance and Payment Bonds

- Separated into public and private sections
- Added requirement for construction schedule and completion date with private contract performance bonds

09 Warranty

- Included video inspection of sanitary and storm systems prior to expiration of warranty period
- Require warranty initiation within 30 days of project acceptance
- Provide additional detail on warranty coverage

10 Public Notification

- Added requirement for direct contact, door hanger, website, newspaper, radio and variable message sign public notification of construction interruptions to services.

12 Pre-Construction Meeting

- Included regulatory requirements/approvals, easement and right of way requirements, city acceptance and warranty requirements in the meeting agenda
- Reduced requirement for photocopied plans from 6 to 4

14.1 Advanced Notification

- Added 72 hour advance notice requirement for video inspection

14.0 Inspection

- Added storm drain facility inspection requirements (14.2.07)
- Added striping layout inspection (14.2.11)
- Removed requirement for lamping the lines (14.3.07)
- Referred to OAR's for sag allowance in video inspected pipe

14.6 Subdivision Site Grading

- This section added to reflect Engineering Department inspection of site grading instituted in 2009
- Site grading and storm drainage inspections are detailed

18.2 Contractor's Responsibility for Utility Property and Services

- Added requirements for inspection of repairs to sewer and water lines

18.8 Blasting

- Added requirement for utility notification prior to blasting, inspection before and after blasting and responsibility for repair if damaged

18.10 Location of Excavated Materials

- Added erosion control requirements

18.12 Street Cleaning

- Added requirement to clean streets within 24 hours

18.13 Erosion and Sediment Control

- Added this section requirement erosion and sediment control in accordance with Central Oregon Stormwater Manual

19 Testing

- Added hydrostatic testing option for sanitary and storm sewers
- Added hydrostatic testing requirement for pressure sewers

22 Final Acceptance

- Added requirements for street light and postal box installation or paid contract
- Added requirement for documentation of private water, sewer and storm drain system
- Added requirement for certification of fill areas
- Required documentation of survey marker restoration

23 Site Grading and Drainage

- Added new section with standards for site grading and drainage plans, fees, inspection and acceptance

STANDARD DRAWINGS: All of the standard drawings were revised with new title blocks, corrections and updates. There are several new standard drawings. Major changes are noted below:

2-1 Typical Minimum Street Cross Section Dimensions: Increased pavement and aggregate depth. Local street asphalt depth increases from 2 to 3 inches and base rock from 6 to 8 inches for 20-year design life. Arterial and Collector asphalt thickness increases to 4 and 5 inches (from 3 inches) for 20-year design life and to provide ability to grind and inlay. Grind and inlay is less costly than pavement replacement and does not increase crown and reduce curb exposure as an overlay will. Drawing 2-1A Reduced Width Street revised to match Transportation System Plan and Development Code.

2-5 Concrete Curbs: Added 16 inch and rolled curb options.

2-6 Concrete Driveway Approach: Revised and provided three options to meet Public Right of Way Access Guidelines (PROWAG).

2-7 Typical ADA Ramp: Developed five alternative designs that meet PROWAG recommendations.

2-8 Typical Concrete Curb and Sidewalk: Changed standard sidewalk to property tight instead of curb tight.

2-9 Typical Concrete Joint Sections: Replacement for 2-11 specifies control and expansions joint requirements.

2-10 Typical Downtown Street Tree & Tree Well Installation: Revised to show concrete band supporting tree grate on all four sides. Eliminated pavers from main walking area to provide four foot wide concrete section. Showed irrigation pipe placement details. Added continuous concrete paver strip behind curb.

2-11 Typical Downtown Street Tree Grate: New detail.

2-13 Typical Downtown Street Tree Location: Increased spacing per City Arborist recommendation. Added requirement for selection from approved street tree list.

2-17 T Intersection Alignment Standard: Flattened slope to improve accessibility at pedestrian crossings.

2-18 Curb Drop Typical Section: New detail for cut through curb to stormwater swales.

2-19: Typical Detectable Warning Surface: New detail to meet ADA requirements.

3-2 Typical Sewer Service: Eliminated split sewer service to require individual service to each structure.

3-7 Standard Manhole Covers: New detail shows the hub on sewer manholes and stormwater message on storm manholes.

3-8 Standard Drywell: Added concrete cap over drain rock to prevent settlement.

3-14 Typical Storm Water Swale: New detail.

3-15 Sedimentation Manhole: New detail.

3-16 Typical Storm Water Detention Pond: New detail.

3-17: Storm Sewer Manhole: New detail.

3-18 Sampling Manhole: New detail.

4-5 to 4-7 Water Meters: Updated standard drawings and added drawings for 4, 6 and 8 inch meters.

4-20 Fire Service Vault: New detail.