

RECORD DRAWING REQUIREMENTS

Effective July 2015

APPROVED FOR USE



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City Engineer

Date

Purpose

The purpose of this document is to outline the minimum standards and requirements the City of Redmond will accept for Record Drawing submissions. Plan preparers should review this information prior to beginning and submitting any drawings to the City to ensure that the eventual record drawing format, datum and content will meet City standards. You will have 4 ½ months to complete this process from the date that you are notified to submit record drawings. If the record drawings are not completed in a timely manner the record drawing cash deposit may be forfeited.

Submittal Requirements

The preparer will be notified when to start each phase below.

- **Phase I - Engineering Review**
 - one full size “Gold Set” of plans (original contractor’s “red-line” markup)
 - one full size set of prints, 22” x 34” (original City approved construction drawings)
- **Phase II - GIS Review** (after receiving approval from engineering review)
 - CD with one composite DWG file (AutoCAD 2013 file format or earlier)
 - Completed “Digital Submittal Checklist” (Appendix A)
 - one full size set of prints, 22” x 34”
- **Phase III - Final Submittal** (after receiving approval of the preliminary record drawings)
 - one full size set of prints, 22” x 34” Mylars
 - one full size sets of prints, 22” x 34”
 - three half size bond set of prints, 11” x 17”

Datum Requirements

The datum will be recorded on the cover sheet and shall read exactly as follows:

Horizontal datum: Washington State Plane North, NAD 83 (91-HARN)

Vertical datum: Vertical: NAVD 88

AutoCAD drawings are to be drafted utilizing this datum for insertion into the City’s GIS system. In addition, tie the project to two (2) City of Redmond Horizontal Control Monuments and two (2) City of Redmond Vertical Control Datum benchmarks. For Horizontal Control information, please contact Development Engineering at (425) 556-2876 or come to the 2nd floor of City Hall. Vertical Control Survey information can be found at <http://gis.redmond.gov/vertical/vertical.aspx#/MapView>.

Drawing Standards

See Appendix B for additional requirements

A. Record drawings shall be accurate, clean, clear and easily readable. In congested areas, additional blow-up details will be required for readability.

Drawing Standards (continued)

B. The record drawings must be prepared and certified by a Professional Engineer and/or Professional Land Surveyor currently licensed in the State of Washington. Their stamp and signature must be on each sheet.

C. The following wording must be shown on each page and must appear as shown: "RECORD DRAWING"

D. The City of Redmond's six-digit record drawing number shall be in the lower right corner of each sheet in sequential order starting with the project index number on the cover sheet.

E. Provide flow direction arrows on utility systems and manhole numbers when applicable. Manhole numbers are assigned by City staff.

F. The digital drawing shall match paper drawing; the record drawings shall match the AutoCAD file.

G. AutoCAD drawing shall be one composite file in model space. Include all third-party files in the composite such as: street lighting and conduit etc. No reference files and no locked or frozen layers will be accepted. Include only one composite DWG file on each CD per submittal. *Tip: when "binding" reference files into the current drawing use the INSERT option, then EXPLODE the block reference that was created during the bind.*

H. Submitted record drawing will be denied if more than one DWG file is on the submitted CD.

I. Do not alter, modify, or erase original approved construction drawing text. Show changes in invert elevations, dimensions, notes, etc. by lining out the original text and placing the new information near it.

J. Items or sheets not built shall be put on a "Not Built" (NBLT) layer and crossed out. The NBLT layer shall be included in the composite DWG file.

K. Record drawings shall include the "As-Built" certification block.

Record drawing submittal address

Mailing:

Development Engineering and Construction/MS:2SPL
City of Redmond
PO Box 97010
Redmond, WA 98073-9710

Walk-in:

Development Engineering and Construction
2nd Floor Redmond City Hall
15670 NE 85th Street
Redmond, WA 98052

Submittal Process

Refer to *Development Services Record Drawing Process* for complete information on the submittal and review process.

Refer to the *CIP Record Drawing Submittal Process* for complete information on the submittal and review process.

APPENDIX A: Digital Record Drawing Submittal Checklist

IMPORTANT: Please submit this checklist with your digital CAD file of the approved Record Drawing.

Project Name: _____

Redmond Drawing Number: _____

Please fill out the contact information for the person who drafted the CAD drawing that can answer questions about the digital CAD file:

Name: _____

Company: _____

Phone: _____

Email: _____

Digital Submittal Specifications: (please initial and date each item below as completed)

_____ **Single CAD Drawing**

AutoCAD drawing shall be one composite file in model space. Include all third-party files in the composite such as: street lighting and conduit etc. No reference files and no locked or frozen layers will be accepted. Include only one composite DWG file on each CD per submittal. *Tip: when "binding" reference files into the current drawing use the INSERT option, then EXPLODE the block reference that was created during the bind.*

_____ **File is in the following Coordinate System:**

____ Horizontal: Washington State Plane North, NAD 83 (91-HARN)

____ Vertical Datum: NAVD 88

____ Survey Feet

_____ **CAD Format**

____ AutoCAD 2013 DWG or earlier

_____ **Label CD/DVD with:**

____ Project Name

____ Record Drawing Number

____ Company Name

____ Contact Name

____ Contact Phone Number

_____ **Checklist completed and included with CD**

Digital CAD Layer/Level Documentation

Site Plan CAD Drawing File Name (example:RedmondCityHall.dwg):

Feature Groups	Digital CAD Layer Name or Level Number
New Stormwater Drainage/Mgt and annotation	
Existing Stormwater Drainage/Mgt and annotation	
New Natural Resource and annotation	
Existing Natural Resource and annotation	
New Wellhead Protection and Annotation	
Existing Wellhead Protection and Annotation	
New Water System and annotation	
Existing Water System and annotation	
New Sanitary Sewer and annotation	
Existing Sanitary Sewer and annotation	
Other Utilities and Easements	
Telecommunications	
Demolition/Abandonment	
New Transportation and annotation	
Existing Transportation and annotation	
New Buildings and annotation	
Existing Buildings and annotation	
Parcels and annotation	
Landscaping	
Not Built (NBLT)	

Features to be included on approved record drawing digital submittal:

NOTE: Detailed Description of Special Features included in Appendix B

Stormwater Management:

Pipes
Catch basins
Manholes
Inlets
Culverts
Underdrains
Vaults
Ponds
Biofilters/Swales/ Ditches
Infiltration Systems/French Drains
Other Drainage Features (as appropriate)

Natural Resources:

Streams
Wetlands

Wellhead Protection:

Monitoring Wells

Water System:

Pipes and Fittings
Valves
Hydrants

Water System continued:

Service Lines
Meters
PRV
Fire System
Private Fire Pipe
Monitoring Stations
Backflow Devices
Easements
Water Pipe Tie-in

Sanitary Sewer:

Manholes
Pipes and Fittings
Side Sewer
Valves
Sewer pipe Manhole Additions
Cleanouts
Grease Interceptors/Oil Water Separators
Easements
Pump Stations

Other Utilities and Easements:

Other Utilities
Easements

Telecommunications:

Antennas
Radio Equipment
Cables

Demolition/Abandonment

Transportation:

Pavement
Curb and Gutter
Driveways
Channelization
Signage
Sidewalk
Street Lighting
Traffic Signals
Monument Cases
Conduit
Junction Boxes

Landscaping:

Irrigation
Trees/Plantings

Not Built (NBLT):

Crossouts

APPENDIX B: Specific Feature Requirements

Record Drawings must show accurate locations of storm, sewer, water mains, other water appurtenances, structures, conduits, power poles, light standards, vaults, width of streets, sidewalks, landscaping areas, building footprints, channelization and pavement markings, property lines, easements, etc.

The following is a partial list of the tolerance limits and construction features to be incorporated into the Record Drawings.

Tolerance Limits:

- Surveyed sewer and storm water elevations includes: pipe invert elevations, top of casting manholes, inlets, etc..... ±0.01 feet
- Surveyed water elevations..... ±0.25 feet
- Horizontal and vertical alignment..... ±0.10 feet

The following requirements provide a minimum guide to the engineer of record and should be used along with good engineering practices and shall be field verified and/or surveyed as outlined.

Storm Drainage

Storm drainage features are intended to move rainwater runoff and/or groundwater. Record drawings shall indicate all necessary information about the storm drainage system to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for storm drainage, at minimum, should include, but not be limited to:

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
Pipes	Material and diameter.	Inverts and location of ends (not in structures).	Pipe if moved 2 feet or more.	Slope based on record length and surveyed inverts.	New information on plans (slope, length, diameter etc.).
Catch Basins, Manholes, Inlets	Size, type, cover type, throat, vane grate, etc.	Rim elevation, bottom elevation, and location of structure.	Structure if moved 2 feet or more.	—	New information on plans (size, type, etc.).
Culverts	Material, shape and size and indicate if flowline is undisturbed, exposed culvert material or filled with streambed sediment.	Location of ends, inverts of structure ends and inverts of stream.	Culvert if moved 2 feet or more.	Slope based on record length and surveyed inverts.	New information on plans (slope, length, diameter etc.).
Underdrains	Pipe location, material, cleanout locations.	Not required.	Underdrains if moved 2 feet or more.	—	New information on plans (slope, length, diameter etc.).
Other Drainage Features	—	—	Feature if moved 2 feet or more.	—	—

Stormwater Management

Stormwater Management features are intended to control the rate and/or quality of the rainwater runoff. Record drawings shall indicate all necessary information about the stormwater management system to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for stormwater management, at minimum, should include but not be limited to:

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
Vaults	Material, type, size, control systems (orifice size, weir dimensions).	Control structure location, control elevations (orifice inverts, weir elevations), bottom elevation, and access locations.	Structure if moved 2 feet or more.	—	New information on plans (control volume, control elevation, live storage volume, floor elevation, size, shape, etc.).
Ponds	Size and shape.	Control structure location, control elevations (orifice inverts, weir elevations), overflow elevation, bottom elevation, and water surface shape (spot locations around edge of water surface, enough to indicate shape/location—six shots minimum).	Pond if moved 10 feet or more.	Size based on water surface shape.	New information on plans (size, shape, etc.).
Biofilter, Swales	Length and width.	Inlet invert and outlet invert.	Biofilter/Swale if moved 2 feet or more.	—	—
Infiltration system, French drains	Material, size and pipe (size, type and diameter).	Inlet inverts and bottom elevation.	Feature if moved 2 feet or more.	—	—

Natural Resources

Natural Resources features are non-structural features that convey and/or hold water. Record drawings shall indicate all necessary information about the Natural Resources to evaluate whether the constructed features will be able to function as intended by the design.

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
Streams	Ordinary High Water Marks (both banks) of stream.	—	Streams Swale and Ordinary High Water Marks (both banks) of stream if moved 2 feet or more.	—	—
Wetlands	As needed to delineate for survey.	Boundary of created or modified wetlands.	Wetland if moved 10 feet or more.	Size based on wetland shape.	New information on plans (size, shape etc.).

Wellhead Protection

Wellhead protection features are systems that monitor groundwater. Record drawings shall indicate all necessary information about the natural resources to evaluate whether the constructed features will be able to function as intended by the design.

Feature	Field Verify	Survey	Redraw
Monitoring Well	Size (diameter of well) and state reference number.	Locations, cap elevation, and ground elevation (if different then cap elevation).	Monitoring wells if moved 2 feet or more.

Water System

Water system features are intended to move or hold potable water. Record drawings shall indicate all necessary information about the water system to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for the water system, at minimum, should include, but not be limited to:

Feature	Field Verify	Survey	Redraw	Indicate
Pipes and Fittings	Manufacturer, material, size, joint type, fitting. Distance between fittings (center of tees, crosses, and bends). Location of all inverts and utility crossings. Depth of pipes (verify during installation at every fitting and appurtenance).	Horizontal location of main <ul style="list-style-type: none"> • Outside of ROW, every 100 feet • Within ROW, distance off centerline of road (use pipe locator for location) 	Pipe if moved 2 feet or more horizontal or 0.5 feet or more vertically.	New information on plans (manufacturer, material, diameter, horizontal and vertical location of main, length between fittings, joint type, backfill material etc.).
Valves	Size, type, valve manufacturer, depth of operating nut, length of valve nut extension used.	Horizontal location as follows: <ul style="list-style-type: none"> • Gate Valve —center of valve (same as center of box) • Butterfly Valve — center of valve and box • Air & Vacuum—center of meter box assembly, and center of stand pipe at post • Blow Off —center of meter box assemble 	Valve if moved 2 feet or more.	New information on plans (manufacturer, size, type etc.).
Hydrants	Manufacturer and hydrant bury depth.	Horizontal location of hydrant (center of valve stem). Vertical elevation of safety flange.	Hydrant if moved 2 feet or more.	New information on plans (manufacturer, bury depth).
Service Lines	Material, size, and locations.	Not required.	Service lines and setter, if moved 2 feet or more.	New information on plans (size, type, etc.).
Meters	Type, size, vault or box and size.	Horizontal locations of center of box and four corners of vault.	Box or vault if moved 2 feet or more.	New information on plans (size, type, etc.).
Pressure Reducing Valve	Size, vault size, vault drain data.	Horizontal locations of relief pipe, catch basin, air vac stand pipe and four corners of vault.	Vault if moved 2 feet or more.	New information on plans (size, type, etc.).
Fire System/Private fire pipe	Materials, sizes, locations of pipe and appurtenances.	Horizontal locations of Post Indicator Valve (PIV), center of Fire Dept. Connection (FDC), and four corners of vault. All valves, connections to city mains.	Pipe, vault, PIV, and FDC if moved 2 feet or more.	New information on plans (size, type, etc.).
Monitoring Stations	Service line size, drain.	Horizontal locations of station (center), tap, and drain.	Station if moved 2 feet or more.	New information on plans (size, type, etc.).
Backflow Devices—Interior to building	Device brand, type, size, service line size, and location of drain.	—	—	—
Easements	Not required.	Coordinate easement area with all facilities to be included in easement. Plot easement legal description.	—	Show easement edges from surveyor's legal description and recording numbers.
Water Pipe Tie-in	—	—	—	Show inverts and length of pipe from upstream and downstream valves or fittings.

Sanitary Sewer

Sanitary sewer system features are intended to transport sanitary waste into a collection system. Record drawings shall indicate all necessary information about the sewer system to evaluate whether the constructed features will be able to function as intended by the design. At a minimum, record drawing information for sanitary sewer should include, but not be limited to:

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
Manholes	Manhole diameter, type, and manufacturer.	Horizontal locations of center of manhole, center of lid, and elevations of rim and all inverts.	—	—	Note all changes (manufacturer, type, etc.) and correct elevations.
Pipes—Gravity Sewer Main	Manufacturer, material, and size. Distance to each side sewer tee location from downstream manhole.	Horizontal length of pipe from center of manhole to center of manhole.	Pipe if moved 2 feet or more.	Slope based on record length and surveyed inverts.	New information (manufacturer, slope, length, diameter, etc.).
Pipe and Fittings—Force Main	Manufacturer, material, size, joint type, and fittings. Distance between fittings (center of tees, crosses, bends). Location of any invert and of any utility crossings. Depth of pipes (verify during installation at every fitting and appurtenance).	Horizontal location of main: <ul style="list-style-type: none"> • Outside of ROW, every 100 feet • Within ROW, distance off centerline of road (use pipe locator for location) 	Pipe if moved 2 feet or more.	Slope based on record length and surveyed inverts.	New information (manufacturer, slope, length, diameter, etc.).
Side Sewer—Plats	Material, size, and length of side sewer stub and side sewer 2x4 locations.	Locations of side sewer ends (marked by 2x4). Ground elevation at 2x4, length of exposed 2x4. Calculate side sewer invert elevation.	—	—	For all changes show side sewer tee station, length of stub and invert elevation.
Side Sewer—Commercial	Material, size, and length of side sewer stub and distance between each cleanout.	Horizontal location and ground elevation of all side sewer surface cleanouts.	—	—	Note all changes, show location and ground elevation of side sewer cleanouts.
Valves	Size, type, valve brand, depth of operating nut, length of valve nut extension used and manufacturer.	Horizontal location as follows: <ul style="list-style-type: none"> • Gate Valve—center of valve (same as center of box) • Air & Vacuum—center of meter box assemble and center of stand pipe at post • Blow Off—center of meter box assemble 	Valve if moved 2 feet or more.	—	New information on plans (manufacturer, size, type etc.).

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
Sewer Pipe Manhole Additions (Tie in a manhole to existing pipe.)	Manhole diameter, type, and manufacturer.	Lengths, invert elevations.	—	Length of pipe from new and existing manholes.	Note all changes. Slope and new information on plans (manufacturer, diameter, type, etc.).
Cleanouts	Size.	Horizontal location of, and rim elevation at center of box.	Structure if moved 2 feet or more.	—	New information on plans.
Grease Interceptor/Oil Water Separators	Pipe materials, size and vault dimensions and size.	Horizontal locations of four corners of the vault.	—	—	Show vault dimensions and size, and pipe elevations.
Easements	Not required.	Coordinate easement area with all facilities to be included in easement. Plot easement legal description.	—	—	Show easement edges from surveyor's legal description and recording numbers.
Pump Station	See Engineer.	See Engineer.	See Engineer.	See Engineer.	See Engineer.

Other Utilities and Easements

Record drawings shall indicate all necessary information about other utilities and easements when encountered and/or new utilities constructed. Other utilities include but not limited to: communications, fiber, natural gas, and power. Record drawing information for other utilities and easements, at minimum, should include but not be limited to:

Feature	Field Verify	Survey	Recalculate	Indicate
Other Utilities	Location and depth of all existing utilities encountered and new utilities constructed.	Not required.	—	Show utilities encountered and their depth.
Easements	Not required.	Coordinate easement area with all facilities to be included in easement. Plot easement legal description.	—	Show easement edges from surveyor's legal description and recording numbers.

Telecommunications

Telecommunications features are cellular facilities including but not limited to: antennas, radio equipment, and cables. Record drawings shall indicate all necessary information about the cellular facilities to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for cellular facilities at minimum, should include but not be limited to:

Feature	Field Verify	Survey	Show
Antennas	Location.	Not required.	On record drawing.
Radio Equipment	Location.	Not required.	On record drawing.
Cables	Location.	Not required.	On record drawing.

Demolition/Abandonment

Place all features that are to be demolition or abandon on the Demolition/Abandonment CAD layer. New features shall not be added to Demolition/Abandonment CAD layer. Demolition/Abandonment CAD layer shall show features demolition or abandon only.

Feature	Field Verify	Survey	Redraw	Indicate
Demoliton/Abandon	—	If required.	—	—

Transportation

Transportation system features are intended to move vehicles/pedestrians etc. in a safe manner about the city. Record drawings shall indicate all necessary information about the transportation features to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for transportation, at minimum, should include but not be limited to:

Feature	Field Verify	Survey	Redraw	Indicate
Pavement	Material, depth, width.	Not required.	—	New information on plans.
Curb and Gutter	Location of face of curb and type.	Not required.	If moved 2 feet or more.	New information on plans (type etc.).
Driveways	Location, width and type.	Not required.	If moved 2 feet or more.	New information on plans (type etc.).
Channelization	Materials and layout.	Not required.	If moved 2 feet or more.	New information on plans.
Signage	Location, size, and type.	Not required.	If moved 2 feet or more.	New information on plans.
Sidewalk	Location, material, and width.	Not required.	If moved 2 feet or more.	New information on plans (type etc.).
Street Lighting	Not required.	Pole and electrical service cabinet locations.	If moved 2 feet or more.	New information on plans (pole material, wattage, height, arm length, luminaire type, lamp type, etc.).
Traffic Signals	Not required	Pole and electrical service cabinet locations.	If moved 2 feet or more.	New information on plans (manufacturer, size, type etc.).
Monument Cases	Location and materials.	Horizontal coordinates.	—	—
Conduit	Location, depth, materials, and size.	Not required.	If moved 2 feet or more.	New information on plans.
Junction Boxes	Location, type and conduit entrances.	Not required.	If moved 2 feet or more.	New information on plans.

Landscaping

Landscaping features are intended to enhance the natural environment. Record drawings shall indicate all necessary information about the landscaping to evaluate whether the constructed features will be able to function as intended by the design.

Feature	Field Verify	Survey	Indicate
Irrigation	Not required.	Not required.	Have entire irrigation system shown including meter.
Trees/Plantings	Not required.	Not required.	Note any plantings or trees that were not planted or retained.

Not Built (NBLT)

Do not alter, modify, or erase original approved construction drawing items or sheets. Items or sheets not built shall be crossed out and placed on NBLT CAD layer; new features will be added to appropriate CAD layer with updated annotation on record drawings. New features shall not be added to NBLT CAD layer. NBLT CAD layer shall show only proposed features not build.

Feature	Field Verify	Survey	Redraw	Indicate
Crossouts	Not built features.	If required.	Crossouts if moved 2 feet or more.	Crossouts with new information on plans (size, type, etc.).