

# **RECORD DRAWING REQUIREMENTS**

**Effective June 2017**

APPROVED FOR USE



\_\_\_\_\_  
David M. Paul, P.E.  
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” (Record 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 2<sup>nd</sup> 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. (Development projects only)
- L. Record Drawing submittal must include all sheets listed in approved construction plan sheet index.

## **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  
2<sup>nd</sup> Floor Redmond City Hall  
15670 NE 85<sup>th</sup> 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	
Temporary Shoring Wall/Soil Anchors	
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  
Service Lines  
Meters

#### Water System continued:

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

#### Temporary Shoring Wall/Soil Anchors

#### Transportation:

Pavement  
Curb Ramp Numbers  
Curb and Gutter  
Driveways  
Channelization  
Signage  
Sidewalk  
Street Lighting and Cabinets  
Traffic Signals and Cabinets  
Monument Cases  
Conduit  
Junction Boxes  
Loop Detectors

#### 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, temporary shoring wall/soil anchors, 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
<b>Pipes</b>	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.).
<b>Catch Basins, Manholes, Inlets</b>	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.).
<b>Culverts</b>	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.).
<b>Underdrains</b>	Pipe location, material, cleanout locations.	Not required.	Underdrains if moved 2 feet or more.	—	New information on plans (slope, length, diameter etc.).
<b>Other Drainage Features</b>	—	—	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
<b>Vaults</b>	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.).
<b>Ponds</b>	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.).
<b>Biofilter, Swales</b>	Length and width.	Inlet invert and outlet invert.	Biofilter/Swale if moved 2 feet or more.	—	—
<b>Infiltration system, French drains</b>	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
<b>Streams</b>	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.	—	—
<b>Wetlands</b>	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
<b>Monitoring Well</b>	Size (diameter of well) and state	Locations, cap elevation, and ground	Monitoring wells if moved

## 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
<b>Pipes and Fittings</b>	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"> <li>• Outside of ROW, every 100 feet</li> <li>• Within ROW, distance off centerline of road (use pipe locator for location)</li> </ul>	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.).
<b>Valves</b>	Size, type, valve manufacturer, depth of operating nut, length of valve nut extension used.	Horizontal location as follows: <ul style="list-style-type: none"> <li>• Gate Valve —center of valve (same as center of box)</li> <li>• Butterfly Valve — center of valve and box</li> <li>• Air &amp; Vacuum—center of meter box assembly, and center of stand pipe at post</li> <li>• Blow Off —center of meter box assemble</li> </ul>	Valve if moved 2 feet or more.	New information on plans (manufacturer, size, type etc.).
<b>Hydrants</b>	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).
<b>Service Lines</b>	Material, size, and locations.	Not required.	Service lines and setter, if moved 2 feet or more.	New information on plans (size, type, etc.).
<b>Meters</b>	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.).
<b>Pressure Reducing Valve</b>	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.).
<b>Fire System/Private fire pipe</b>	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.).
<b>Monitoring Stations</b>	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.).
<b>Backflow Devices—Interior to building</b>	Device brand, type, size, service line size, and location of drain.	—	—	—
<b>Easements</b>	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.
<b>Water Pipe Tie-in</b>	—	—	—	Show inverts and length of pipe from upstream and downstream valves or

## 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
<b>Manholes</b>	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.
<b>Pipes—Gravity Sewer Main</b>	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.).
<b>Pipe and Fittings—Force Main</b>	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"> <li>• Outside of ROW, every 100 feet</li> <li>• Within ROW, distance off centerline of road (use pipe locator for location)</li> </ul>	Pipe if moved 2 feet or more.	Slope based on record length and surveyed inverts.	New information (manufacturer, slope, length, diameter, etc.).
<b>Side Sewer—Plats</b>	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.
<b>Side Sewer—Commercial</b>	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.
<b>Valves</b>	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"> <li>• Gate Valve—center of valve (same as center of box)</li> <li>• Air &amp; Vacuum—center of meter box assemble and center of stand pipe at post</li> <li>• Blow Off—center of meter box assemble</li> </ul>	Valve if moved 2 feet or more.	—	New information on plans (manufacturer, size, type etc.).

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
<b>Sewer Pipe Manhole Additions (Tie in a manhole to existing pipe.)</b>	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.).
<b>Cleanouts</b>	Size.	Horizontal location of, and rim elevation at center of box.	Structure if moved 2 feet or more.	—	New information on plans.
<b>Grease Interceptor/Oil Water Separators</b>	Pipe materials, size and vault dimensions and size.	Horizontal locations of four corners of the vault.	—	—	Show vault dimensions and size, and pipe elevations.
<b>Easements</b>	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.
<b>Pump Station</b>	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
<b>Other Utilities</b>	Location and depth of all existing utilities encountered and new utilities constructed.	Not required.	—	Show utilities encountered and their depth.
<b>Easements</b>	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.

## Temporary Shoring Wall/Soil Anchors

Shoring systems utilizing soil anchors are temporary structures used to support excavations for the construction of retaining walls and building foundations. Record Drawings shall indicate all necessary information about the temporary shoring wall system to evaluate whether the constructed features were installed as designed. Record drawing information for the temporary shoring system, at a minimum should include, but not be limited to:

Feature	Field Verify	Survey	Redraw	Indicate
<b>Shoring Wall</b>	Size, type, location.	Horizontal wall alignment.	If moved for than 2 feet or more.	New information, horizontal location, top of wall elevation.
<b>Anchors</b>	Size, type, location.	Not required.	If moved 2 feet or more.	New information, horizontal location, top of wall elevation.

## 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 demolished or abandoned 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 abandonment only.

Feature	Field Verify	Survey	Redraw	Indicate
Demolition/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/Speed Humps	Material, depth, width, height.	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	Location.	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/Traffic Control Devices	Not required	Pole, traffic signal, 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/Cable	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.
Loop Detectors	Location.	Not required.	If moved 10 feet or more.	New information on plans.
ADA Ramps	Location and curb ramp number.	Not required.	If moved 10 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.).