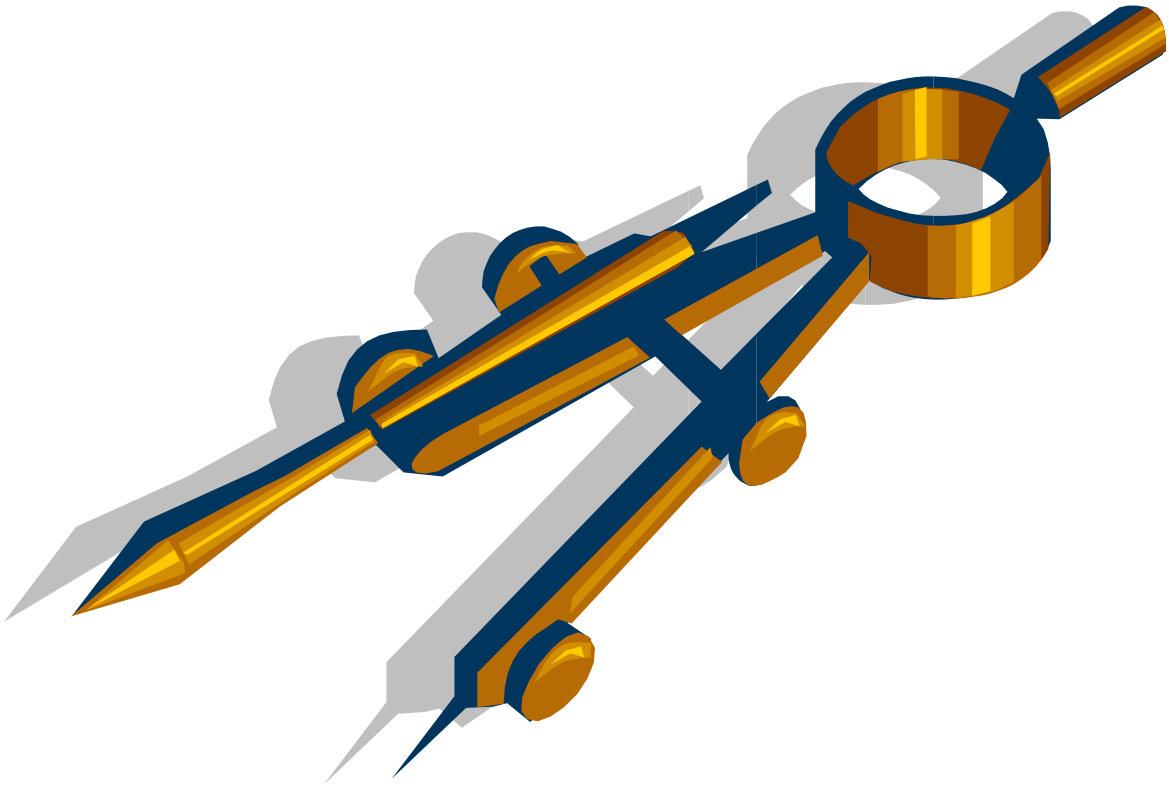
City of Wenatchee

RECORD DRAWING REQUIREMENTS

Revised July 2019



City of Wenatchee

Purpose

The purpose of this document is to outline the minimum standards and requirements the City of Wenatchee will accept for Record Drawing submissions. The following Construction Record Drawing requirements are intended to provide a minimum guide to the surveyor, engineer of record, and construction supervisors and should be used along with good engineering practices as the type of project and situation warrants. These requirements should complement, but do not supersede any other City construction/ plan requirements.

The City of Wenatchee requires construction record documentation before project closeout and acceptance. Developers, engineers and contractors need to be aware of the following requirements in order to satisfy this documentation requirement. Good on-site records must be maintained to ensure accuracy.

Record Drawing Requirements

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 30 days to complete this process from the date that you are notified to submit record drawings.

The City of Wenatchee uses *Washington State APWA General Special Provisions (GSP) (March 8, 2013) section 1-05.18* to define basic requirements for Record Drawings. These are the requirements for the "Gold Set" of record drawings.

1-05.18 Record Drawings
(March 8, 2013 APWA GSP)

The Contractor shall maintain one set of full size plans for Record Drawings, updated with clear and accurate red-lined field revisions on a daily basis, and within 2 business days after receipt of information that a change in Work has occurred. The Contractor shall not conceal any work until the required information is recorded.

This Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as Record Drawings. These Record Drawings shall be kept on site at the Contractor's field office, and shall be available for review by the Contracting Agency and the Utility purveyor at all times.

The preparation and upkeep of the Record Drawings is to be the assigned responsibility of a single, experienced, and qualified individual. The quality of the Record Drawings, in terms of accuracy, clarity, and completeness, is to be adequate to allow the Engineer to modify the computer-aided drafting (CAD) Drawings to produce a complete set of Record Drawings for the City of Wenatchee.

The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

- Actual dimensions, arrangement, and materials used when different than shown in the Plans.
- Changes made by Change Order or Field Order.
- Changes made by the Contractor.
- Accurate locations of storm sewer, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping areas, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

If the Contract calls for the Contracting Agency to do all surveying and staking, the Contracting Agency will provide the elevations at the tolerances the City of Wenatchee requires for the Record Drawings.

When the Contract calls for the Contractor to do the surveying/staking, the applicable tolerance limits include, but are not limited to the following:

	Vertical	Horizontal
As-built sanitary & storm invert and grate elevations	± 0.01 foot	± 0.01 foot
As-built monumentation	± 0.001 foot	± 0.001 foot
As-built waterlines, inverts, valves, hydrants	± 0.10 foot	± 0.10 foot
As-built ponds/swales/water features	± 0.10 foot	± 0.10 foot
As-built buildings (fin. Floor elev.)	± 0.01 foot	± 0.10 foot
As-built gas lines, power, TV, Tel, Com	± 0.10 foot	± 0.10 foot
As-built signs, signals, etc.	N/A	± 0.10 foot

Making Entries on the Record Drawings:

- Use erasable colored pencil (not ink) for all markings on the Record Drawings, conforming to the following color code:
- Additions - Red
- Deletions - Green
- Comments - Blue
- Dimensions - Graphite
- Provide the applicable reference for all entries, such as the change order number, the request for information (RFI) number, or the approved shop drawing number.
- Date all entries.
- Clearly identify all items in the entry with notes similar to those in the Contract Drawings (such as pipe symbols, centerline elevations, materials, pipe joint abbreviations, etc.).

When the City Inspector determines that the project is substantially complete, you, henceforth referred to as *The Preparer*, will be notified to initiate the Record Drawing process. Please refer to the Digital Record Drawing Submittal Requirements (Appendix A) for submittal expectations and drawing requirements.

See CAD Drafting \ GIS Requirements for Record Drawing Submittals (Appendix C) for additional requirements.

Submittal Requirements

The preparer will be notified when to start each phase.

Phase I - City Review

For Development and Capital Improvement Projects with New Infrastructure:

- CD\DVD or through FTP with one composite DWG file (AutoCAD Civil 3D 2018 file format or earlier) using City of Wenatchee CAD template, 22"x34" on CD\DVD or through FTP
- PDF "Gold Set" of plans (original contractor's "red-line" markup)
    - A standalone PDF must be created for each Record Drawing plan sheet
- Completed "Digital Submittal Checklist" (Appendix A)
- CD\DVD must be labeled, and the PDF and DWG(s) (and all related files) must use the naming convention below:
    - City Project number (YYXX format), or
    - Development Project per Civil Permit number (YYYY-XXX format), or
    - City Permit number in (YYYY-XXX format)
- Statements of Substantial Compliance Requirements (Appendix A), signed and dated
- Certified statement of the full cost of the project using Public Works Cost Statement
- The original signed City of Wenatchee Easement Form, signed and recorded
- The Deed of Conveyance for all project improvements which are to be accepted by the City for maintenance

For Capital Improvement Projects (CIP):

- DWG files (AutoCAD Civil 3D 2018 file format or earlier), one DWG file per discipline (e.g. water utility, pavement, storm utility) on CD\DVD or through FTP
- PDF "Gold Set" of plans (original contractor's "red-line" markup)
    - A standalone PDF must be created for each Record Drawing plan sheet
- Completed "Digital Submittal Checklist" (Appendix A)
- CD\DVD must be labeled, the PDF file and the DWG (and all related files) must use the naming convention below:
    - City Project number (YYXX format)

The Engineering Division staff will compare the certified As-Built Drawing information with the accepted construction drawings. Initial Acceptance will be issued only if:

- The Record Drawing information demonstrates that the construction is in compliance with the design intent.
- The Record Drawings are certified by both a Registered Washington Professional Engineer

The City of Wenatchee will not accept printed materials. All records MUST BE in electronic format.

Once the Engineering Division have approved the record drawing PDFs, and the digital CAD file on CD\DVD or electronically through FTP, along with a completed Digital Submittal Checklist (Appendix A), the Geographic Information Systems (GIS) Division will review the record drawings for completeness. Comments or recommendations for changes or corrections from both the Engineering Division and GIS Division will be provided and returned to the preparer.

The preparer will make corrections and resubmit the digital CAD file on Compact Disc (CD) or electronically through FTP, along with a completed Digital Submittal Checklist (Appendix A). This process will continue until all comments have been addressed.

Phase II - Final Submittal

When the record drawings are approved by the GIS Division, the preparer will be notified that the record drawings are ready to be certified for final approval. The final record drawing submittal includes the following:

- One full size PDF, 22" x 34"
- One digital CAD file, prepared according to the Digital Submittal Checklist (Appendix A), Specific Feature Requirements (Appendix B) and CAD Drafting \ GIS Requirements for Record Drawing Submittals (Appendix C).
- Digital export of DWG file into GIS format, or Vector GIS file(s) (shapefile or geodatabase (preferred)) with fully populated attributes, prepared according to the Digital Submittal Checklist (Appendix A), Specific Feature Requirements (Appendix B) and CAD Drafting \ GIS Requirements (Appendix C). All applicable elements listed in Appendix B must be populated in the appropriate Feature attribute table as well as in call-outs in the DWG.

Electronic File Submittal Requirements

Upon approval of Construction Record Drawings, the City requires a digital submittal of approved plans in CAD, PDF and GIS formats.

<u>AutoCAD Civil 3D 2018 or earlier format</u>

- We recommend using the eTransmit tool within AutoCAD to bind and insert all external reference (*.xref) into a single package. Please only include the site/model (model space) information. Title blocks, engineer notes and Engineer/Surveyor Stamps are not needed and should not be included.

<u>GIS</u>

- Digital export of CAD file(s) in GIS format (shapefile or geodatabase(preferred)), or
- Vector layers (feature classes) in geodatabase format.

<u>PDF</u>

- Please combine all sheets into one PDF using the project name as the file name. The PDF should be an exact duplicate of the approved Construction Record Drawings.

Files can be transmitted electronically using the following methods:

City of Wenatchee FTP website

(Please coordinate with the PW GIS Division GISDepartment@wenatcheewa.gov for FTP site access)

Record drawing submittal address:

Mailing:
City of Wenatchee Public Works
Attn: Engineering Division
1350 McKittrick Street
Wenatchee, WA 98801

Walk-in:
City of Wenatchee Public Services Center
1350 McKittrick Street
Wenatchee, WA 98801

For questions:

For Development Projects:

Record Drawings Coordinator \ Engineering at (509) 888-3200.

For Capital Improvement Projects:

Contact your City of Wenatchee project manager directly.

APPENDIX A: Digital Record Drawing Submittal Checklist

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

Project Name:
Drawing Number:
Circle One: Original Plan Drawing Modified Plan Drawing As-built/As Constructed

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)

_____ **CAD Format**

____AutoCAD Civil 3D 2018 DWG or earlier, per CAD Drafting \ GIS Requirements for Record Drawing Submittals (Appendix C)

_____ **GIS Files & Format (Geodatabase)**

____ Separate Point, Line and Polygon shapefiles or feature classes
____ ArcMap version 10.6 or earlier, ArcGIS Pro version 2.1 or later; or exported as separated layers from CAD
____ Features' attributes entered into each attribute table, per Specific Feature Requirements (Appendix B)

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

____Horizontal: Washington State Plane North, NAD 83 (2011)
____Vertical Datum: NAVD 88
____US Survey Feet

_____ **Label CD/DVD with:**

____Project Name
____Record Drawing Number –
City Project number in format YYXX, or
Development Project per Civil permit number YYYY-XXX
____Company Name
____Contact Name
____Contact Phone Number

_____ **Checklist completed, scanned and included with CD\DVD or via FTP**

Digital CAD Layer/Level Documentation

Site Plan CAD Drawing File Name *(example: MCKITTRICK-1350-asbuilt.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:

Stormwater Management: Pipes Catch basins Manholes Inlets Culverts Underdrains Vaults Ponds Biofilters/ Swales/ Ditches Infiltration Systems Other Drainage Features **Natural Resources:** Streams Wetlands **Wellhead Protection:** Monitoring Wells **Landscaping:** Irrigation Trees/Plantings	**Water System:** Pipes and Fittings Valves Hydrants Service Lines Meters PRV Fire System Private Fire Pipe Monitoring Stations Backflow Devices Easements Water Pipe Tie-in **Other Utilities & Easements** **Telecommunications:** Antennas Radio Equipment Cables Cabinets	**Temporary Shoring Wall/ Soil Anchors** **Transportation:** Pavement Curb Ramp Numbers Curb and Gutter Driveways Channelization Signage Sidewalk Street Lighting and Cabinets, conduits, Junction boxes Traffic Signals and Cabinets Monument Cases Conduit Junction Boxes Loop Detectors	**Sanitary Sewer:** Manholes Pipes and Fittings Side Sewer Valves Sewer pipe Manhole Additions Cleanouts Easements Pump Stations Meter chambers and controllers Grease Interceptors/ Oil Water Separators **Not Built (NBLT):** Crossouts **Demolition/ Abandonment**

Statements of Substantial Compliance Requirements

Engineer's and Surveyor's Statements of Substantial Compliance of the Record drawings is required on the cover sheet only and as follows:

Registered Washington Professional Engineer:

The responsible P.E. for the project shall state:

> Based upon review of and reliance on the field survey data and other pertinent data provided by _____ (Firm(s) or Surveyor), on _____(Date), and a final site investigation conducted on _____(Date), I hereby state that to the best of my knowledge, information and belief, it is my professional opinion that the facilities shown in these drawings were constructed in substantial compliance with the accepted Drainage Report and/or Construction Drawings and the Engineer's intent. This statement is based only on a review of the field survey data and a final site investigation.

Registered Washington Professional Land Surveyor:

A registered land surveyor in the State of Washington shall certify the as-built detention pond volumes at the design depths, outlet structure sizes and elevations, storm sewer sizes and invert elevations at inlets, manholes and discharge locations, representative open channel cross-sections, and dimensions of all the drainage structures. The surveyor shall also state:

> A Record Drawing field survey was conducted by _____(Surveyor), on _____(Dates). All items noted on these drawings with an "RD" indicate Record Drawing information based on said survey. Unless explicitly marked with an "RD" constructed condition should not be assumed.
>
> I, _____(Surveyor), hereby state that in my professional opinion the Record Drawing information shown on these plans accurately represents the improvements constructed.

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, sign locations, 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 waterelevations..... ±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. Invert elevations of pipes.	Structure if moved 2 feet or more.	—	New information on plans (size, type, etc.).
Culverts	Material, shape and size and indicate if flow line 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.).

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
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 storm water management system to evaluate whether the constructed features will be able to function as intended by the design. Record drawing information for storm water 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.	—	—
Retention/Detention Systems	Discharge control orifice size Roof drain connections	Storage elevation Overflow elevation and location.	Structure if moved 2 feet or more.	Volume of storage provided	New information on plans (control volume, control

	Bypass area (Emergency overflow) Stabilization/ erosion control				elevation, live storage volume, floor elevation, size, shape, etc.).
Infiltration system, French drains	Material, size and pipe (size, type and diameter).	Inlet inverts and bottom elevation.	Feature if moved 2 feet or more.	—	—

All storm drainage retention/detention systems shall include the following statement: "The storm drainage _____ (retention/detention) system has been constructed in conformance with the approved plans and is functioning as designed."

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 • 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.).
Water Main Blocking	Locations.	Not required.	Water Main Blocking, if moved 2 feet or more.	New information on plans (location, etc.).
Valves	Size, type, valve manufacturer, depth of operating nut, length of valve nut extension used.	Horizontal location as follows: • 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).
Blow-Offs	Material, size, and locations.	Not required.	Blow-Offs, if moved 2 feet or more.	New information on plans (size, type, etc.).

Feature	Field Verify	Survey	Redraw	Indicate
Restrainer Joints	Length, type, and locations	Not required.	Restrainer Joints, if moved 2 feet or more.	New information on plans (length, type, etc.).
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.).
Air and Vacuum Relief 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.).
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, Fire Sprinkler Connection, Private fire pipe	Materials, sizes, locations of pipe and appurtenances. Location of detector vault, service vault and service valve	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	Public and private; Locations and widths.	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.

TV Reports shall be given to the Project Engineer to verify by comparing TV reports to side sewer locations. Inspection Reports will be performed by City staff as part of inspection.

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: • 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	—	—	For all changes show side sewer tee station, length of stub and invert elevation.

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
		sewer 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: • 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.).
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	Public and private;	Coordinate easement area	—	—	Show easement edges from

Feature	Field Verify	Survey	Redraw	Recalculate	Indicate
	Locations and widths.	with all facilities to be included in easement. Plot easement legal description.			surveyor's legal description and recording numbers.
TV Report	—	—	—	—	
Pump Station	See Engineer.	See Engineer.	See Engineer.	See Engineer.	See Engineer.
Sewer Meter station	Manhole or vault, type of meter, or sensor, manufacturer, Controller cabinet, conduit, power supply	Horizontal locations of center of manhole, center of lid, controller cabinet and elevations of rim and all inverts.	Structure and/or cabinet if moved 2 feet or more.		Show vault dimensions and size, and pipe elevations.

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	Public and private; Locations and widths.	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

Shoring Wall	Size, type, location.	Horizontal wall alignment.	If moved for than 2 feet or more.	New information, horizontal location, top of wall elevation (remaining after project completion).
Anchors	Size, type, location, length of embedment, approximate angle.	Not required.	If moved 2 feet or more.	New information, horizontal location, vertical elevation. Length of embedment and angle

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.

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. elevations every 50 feet, if not standard crown	Not required.	If moved 2 feet or more.	New information on plans (type etc.).
Driveways	Location, width and type. slopes and curve data, if not standard	Not required.	If moved 2 feet or more.	New information on plans (type etc.).

Feature	Field Verify	Survey	Redraw	Indicate
	crown o Driveways – Locations, lengths, slopes and pavement type			
Channelization	Materials and layout. Locations and type	Not required.	If moved 2 feet or more.	New information on plans.
Signage	Location, size, and type. M.U.T.C.D. sign designation. install date and height to bottom of sign	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, Orientation, illumination type, Location of power supply and controller cabinet.	Pole and electrical service junction boxes, 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	Location, type, size, height and foundation depth	Pole, traffic signal, and electrical service cabinet locations.	If moved 2 feet or more.	New information on plans (manufacturer, size, type etc.).
Right-of-Way Monument Cases	Location and materials. (property monuments if a Plat)	Horizontal coordinates.	—	—
Conduit/Cable	Location, type, depth, materials, and size.	Not required.	If moved 2 feet or more.	New information on plans.
Service Cabinets and 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.
Center line	elevations every 50 feet slopes and vertical curve data	Not required.	If moved 10 feet or more.	New information on plans.

Feature	Field Verify	Survey	Redraw	Indicate
Illumination	Locations, type, height, arm length and foundation type/depth	Not required.	If moved 10 feet or more.	New information on plans.
Right-of-Way	Locations and widths	Not required.	If moved 10 feet or more.	New information on plans.
Right-of-Way Centerline	Not required.	Intersections to two closest intersections	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. (Required items are to be constructed and are not accepted as Not Built)

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.).

APPENDIX C: CAD Drafting \ GIS Requirements for Record Drawing Submittals

General Requirements:

- Record drawings shall be accurate, clean, clear and easily readable. In congested areas, additional blow-up details will be required for readability.
- 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 the cover sheet.
- Record Drawing submittal must include all sheets listed in approved construction plan sheet index.
- The Record Drawing Index is on first page of the drawing set.
- The Record Drawing numbers are organized in sequential order on each sheet.
- Record drawings shall include the "As-Built" certification block.
- The CAD file and the plans must match.
- Provide flow direction arrows on utility systems and manhole numbers when applicable.
- 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.
- A North Arrow on each sheet.
- Scale bar on each sheet (and any scaled detail).

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 (2011)
    - Vertical datum: NAVD 88 US Foot

Electronic Submittals:

- CAD: The City of Wenatchee is currently using AutoCAD Civil 3D 2018
    - Xref file (External reference files) = these are other files that are linked to the main drawing such as other drawings and images.
    - *.ctb files = this is the color settings file. This defines the layers and line weights on the drawings PDF file of the complete drawing.
    - No reference files and no locked or frozen layers will be accepted.
      ***Tip**: when "binding" reference files into the current drawing use the INSERT option, then EXPLODE the block reference that was created during the bind.*
- GIS: The City of Wenatchee is currently using Esri ArcGIS 10.6 and ArcGIS Pro 2.3
    - Single geodatabase containing separate feature classes per feature type or layer (see Appendix B for Feature Specific layers) with fully populated attribute table.

- Fully populated FGDC metadata is not required, but helpful to include in the geodatabase.

Layout Management:

- All elements should be created in Model space. GIS software does not draw features created in Paper Space.
- Geo-referenced utility linework shall be drawn and classified to ensure smooth export of linework into GIS.
- For Development Projects Only: CAD drawings MUST USE City of Wenatchee Public Works CAD template.

CAD Drafting Guidelines:

- Layering Designations in CAD Files must be separated and delineated for storm facilities (separate layers for pipes, catch basins and other structures), water utilities, sanitary sewer utilities, buildings, pavement edges, sidewalks, curb ramps, water bodies, wetlands, poles, trees, property lines, ROW boundaries, luminaires, signs, pavement markings, traffic signals, barriers, handrails, guard rails, landscape areas and fences. See Specific Feature Requirements (Appendix B).

  For Capital Improvement Projects (CIP): one DWG per discipline (water utilities, pavement, electrical, etc.) with classified layers.

  For Development Projects: single composite DWG.

- All lines should be snapped and closed.
- Annotation should be defined by annotation layers.
- Drawings shall be purged of empty, unused, or non-essential drawing data.
- Drawings should be in full scale format (1ft =1ft).
- Drawing shall be in model space.

GIS Digitization Guidelines:

- All lines should be segmented at appurtenances and natural breaks.
- All endpoints should be snapped to other continuous lines.
- All endpoints should be snapped, and in typical alignment (typ. 90 or 45 degrees), to surveyed point features.
- Multipart polygons are allowed, if they cannot reasonably be separated without changing the intent of the design.
- All storm and sewer lines must be drawn to show Flow Direction.
- All data projected into the approved Datum and Projection.

- Recommend using Esri Data Reviewer or other Data Quality tools to ensure features meet common topology rules.
- All GIS features, dimensions and locations must match CAD drawing(s) and PDF(s).

Datum \ Survey Info:

- Horizontally referenced to WA State Plane Coordinates, North Zone, NAD 83 (GCS 4601) in US Survey Feet Vertically referenced to NAVD 1988, US survey feet.
- Provide eastings and northings for existing and new monuments and benchmarks in the coordinate system referenced, as an embedded or separate table.
- 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 Wenatchee horizontal control monuments and two (2) City of Wenatchee vertical control datum benchmarks.

  For Horizontal and Vertical Control Survey information, please contact the Engineering Division at (509) 888-3200 or come to the Public Services Center (PSC) 1350 McKittrick Street, Wenatchee, WA 98001.