

CITY OF CARMEL WATER UTILITY
MINIMUM STANDARDS FOR DRAWINGS FOR
DEVELOPER INSTALLED WATER SYSTEMS

1. Design drawings shall have a north arrow and the drawing scale indicated. The name of the development as well as the name and address of the Developer and Engineer will be shown on the drawings. Site elevation information will be shown when dictated by site/pipe route topography which will allow adequate assessment of the main being installed. Drawings will show the location, size and type of existing sanitary sewers, storm drains, water mains, culverts, power lines, gas lines and other existing surface structures. Drawings will also illustrate the layout, type and size of proposed utilities and structures such as water mains, water service lines, sanitary laterals and mains, storm mains, culverts, other drainage structures, street improvements, gas and power lines. Drawings shall have a separate sheet showing the water and sanitary sewer plan. Include detail sheet for water and sanitary sewer.
2. Include an overall location and key map for the entire project.
3. The minimum specific requirements for items shown on water main drawings is as follows:
 - a) R-O-W width, centerline of road and Street Name.
 - b) Back of curb with dimension.
 - c) Dedicated exclusive or drainage and utility easements. (Installation on public R-O-W is typically not allowed.
 - d) Property lines, lot numbers, and house numbers.
 - e) Length, type, size, class or pressure rating of water main must be shown.
 - f) Location and dimension to main within easement and relative to back of curb and R-O-W.
 - g) Depth of cover over main.
 - h) Show all fittings, fire hydrants, valves and other appurtenances along with method of restraint.
 - i) Crossings beneath existing streets must be shown as open cut or bore per local and state requirements. Crossings made by boring shall have a detail showing casing size, type wall thickness, length and location of the proposed casing in conformance with the City of Carmel Water and Wastewater's standard detail. A profile detail shall be included.
 - j) Stream crossings must show type of material used beneath the waterway and the floodway. D.I. restrained joint pipe will be required beneath the waterway. Casing shall be used where needed. City of Carmel Utilities will determine when casing is needed
 - k) Where 10-foot horizontal separation and 18-inch vertical separation cannot be maintained between water lines and sanitary and/or storm sewers, the location must be identified on the water line drawings for review and approval by the City

of Carmel Utilities and Indiana Department of Environmental Management at the time water or wastewater main drawings are submitted for review. Generic details which allow the field contractor to install water and sewer mains closer than these separations “as needed” will not be allowed.

- 4) Exclusive or utility and drainage easement (U.D.E.) along with necessary access easement will be provided for main installation. The minimum width of easements required shall be as stated below. Due to specific site constraints, the Company may require wider easements than stated.
 - a) Exclusive or U.D.E. - 20 feet wide
 - b) Access Easement - 20 feet wide
- 5) Entire project should be one drawing, if not it must have corresponding match lines.
- 6) Water Service line size and location shall be shown for each lot.

Final As-built Submission Format

At project completion, as-builts must have all corrections made and submitted in the following digital and paper formats:

- Files must be submitted on a cd-rom in a jewel case labeled with Engineering Company name, project name, and date the cd was burned w/o using file compression in AutoCad version 2004 or earlier format. There should be one drawing labeled as water features with only water pertinent information.
- Certified as-builts shall accurately reflect all field design. As-builts must be stamped “field verified” and signed by the developers registered professional engineer or land surveyor.
- Disc file names shall be clearly labeled and easily identifiable to all users.
- Projection shall be referenced to nad83, Indiana State Plane Coordinate System, East Zone, using U.S. Survey Feet and per Hamilton County datum.
- All pertinent drawing elements will reside in the primary drawing file. There shall be no cells, nodes, blocks, or reference files attached to the drawing.
- Tie into section corners in the Indiana State Plane Coordinate System to insure proper orientation.
- All underground fittings shall be marked with lath or p.v.c pipe and identification for g.p.s. capturing.
- Must show measurements between all fittings with each fitting identified, and water mains identified by size and material
- Service line measurements from property line to service line must be shown

- The as-builts, both paper and digital, must be revised to show the exact location of all water mains, laterals constructed, hydrants, valves, service lines & fittings as installed with measurements from a permanent structure (e.g. fire hydrant)
- After installation, actual point coordinate locations for all hydrants, valves, fittings, etc. shall be captured using Survey Grade G.P.S. unit.
- Please visit City of Carmel Specs to view full set of requirements.
<http://www.ci.carmel.in.us/services/wateroperations/waterops.html>

It is important to have as-builts submitted correctly to avoid delays in any future projects.

Should you have any questions, please feel free to contact Steve Cook at 733-2855.

CARMEL WATER: POINT FEATURE LOCATION CAPTURE STANDARDS:

After installation of the water distribution system in a new development, actual point coordinate locations (X,Y) of the following features must be captured: hydrants, valves, tees, bends, reducers, and fittings. Subsurface features such as tees, bends, reducers, and fittings must have their coordinate locations either captured prior to burial, marked by stake protruding from the surface to be captured after burial, or other method to be approved by Carmel Water Dept. Surface features such as hydrants and valves can be captured post-installation. File format for final delivery should be .dwg, .dgn, or .shp file on cd-rom **2 copies** (can be included with digital As-Built submission). Point symbolgy must not include cells. Points will be attributed with feature type. Feature coordinates must be referenced to NAD83, Indiana State Plane Coordinate System, East Zone, using U.S. Survey Feet. Locations must be accurate to within 1 foot of actual earth location