CITY OF CARMEL WATER UTILITY
Developer Installed Water Mains
Check List

1) The Developer will submit two (2) sets of preliminary plans for the proposed development so the City of Carmel Water Utility can determine the main location and sizing, location of hydrants, service lines and valves to conform to the City of Carmel Water Utility's standards and specifications.

2) Developer will provide plans that conform to the City of Carmel Water Utility's standards for main extensions. In general, the City of Carmel Water Utility will respond within ten (10) business days.

3) Contractors shall call City of Carmel Water Utility for an on-site pre-construction meeting before work begins. Contractor must have approved plans on-site and all materials to be used must be approved by a City of Carmel Water Utility inspector.

4) Contractor will allow inspection by City of Carmel Water Utility inspectors during the construction of the water main extension and will honor the City of Carmel Water Utility's request for field changes in main extensions related to location, workmanship and materials as they relate to City of Carmel Water Utility standards and specifications.

*All Ductile Iron water mains shall be bedded in **sand,** from the bottom of the trench to 12" above the pipe.
***Blue Reflective Warning Tape** must be installed 18" above all water mains. **Tracer wire** must be installed with all water main laid in Carmel.

5) The Contractor will have water main extensions pressure tested per City of Carmel Utility specifications and witnessed by City of Carmel Water Utility's inspector.*

6) The Contractor will conduct the disinfection of water main extension, with direct supervision by a City of Carmel Water Utility Operator. **The Contractor will also be responsible for the de-chlorination of the water flushed off during disinfection process.**

7) Only after the water main extension passes the City of Carmel Water Utility's laboratory testing, and two (2) sets of AS-BUILT plans (One Electronic Copy) have been turned in to the City of Carmel Water Utility, will the water be turned on by the City of Carmel Water Utility.

5) *The developer's contractor shall be billed for all bacteriological lab services.

Revised 03/05/07

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 shoulcd 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

CITY OF CARMEL WATER UTILITY
PIPE INSTALLATION

All work shall be in the best practices of the water utility industry and the American Water Works Association, and in accordance with all applicable Federal, State, and local codes and regulations.

Furthermore:

1) Any damage done to the City of Carmel Water Utility's system by the Contractor/Developer or his affiliates shall immediately be repaired, to the satisfaction and direction of the City of Carmel Water Utility by the Contractor/Developer at his own expense.

2) Should the Contractor/Developer propose to depart from the specifications contained herein, he shall submit samples and/or specifications of such alternatives to the City of Carmel Water Utility before proceeding.

3) No work shall be performed under conditions which in the opinion of the City of Carmel Water Utility would adversely affect the quality of the finished job.

4) The Contractor/Developer shall conduct his work so as not to interfere with the present operation of the existing City of Carmel Water Utility's water/sanitary sewer system. If any work interference is encountered between the City of Carmel Water Utility and the Contractor/Developer, the City of Carmel Water Utility will receive priority in scheduling.