



Water Distribution System Extension or Modification Check Sheet

To be completed by the City of Concord

Project Name:

Reviewer:

Project Number:

Review Date:

Preliminary Review

Appropriate plans submitted?

- Engineering plans shall consist of legible prints having black, blue, or brown lines on a white background suitable for microfilming.
- Engineering plans shall be submitted on 24-inch by 36-inch sheets with the approved City border and logo.
- Ensure the plans provide:
 - (A) the general title of the set of drawings and prints;
 - (B) the specific title of each sheet;
 - (C) the date;
 - (D) the scales used (City of Concord requires 1"=40' horizontal and 1"=4' vertical scales);
 - (E) a general location map of the project area;
 - (F) a plan view of all proposed water and sanitary sewer lines
 - (G) a center-of-pipe profile view of all proposed sanitary sewer lines.
 - (H) a center-of-pipe profile view of all waterlines with diameters greater than 12 inches
 - (I) plan and profile views (when required) for respective portions of pipe on the same plan sheet
 - (J) street names, State Road numbers, and waterbody names
 - (K) locations of all existing utilities
 - (L) a note of caution for underground utilities
- Ensure the plans identify elevation control markers and monuments
- Ensure all wells and natural features within 200 feet of the project area are shown on the plans.
- Ensure the plans include water and sewer utility line stationing. Utility stationing shall be separate from roadway stationing.

Engineer stamped, signed, and dated plans, calculations, etc.?

- Ensure that the design documents are not stamped with any label indicating the project is not a final design. Check the revision box on the drawing sheets for preliminary-type statements. *Memorandum to DENR from PE Board dated 9/21/93 approved the statement "Final-Not Released for Construction"*
- Ensure that the same engineer has signed, sealed, and dated the application and all plan sheets and the front page of all calculations, with the exception of items designed by specialty disciplines (i.e., architectural, structural, plumbing, and electrical plans). If not, an explanation and/or authorization is required.
- Ensure that all pertinent PEs have active licenses by checking the N.C. Professional Engineer's Board web site www.ncbels.org (The PE number must be six digits; Use a leading 0 when needed.).
- If the PE seal number does not show up on the website database, call the PE Board for verification (919) 881-2293

- Appropriate utility right-of-way/easement shown and recorded?
 - Ensure existing and proposed rights-of-way/easements are shown
 - Ensure that the right-of-way/easement is at least 20 feet wide. If the diameter of the pipe is greater than 36 inches or is proposed to be buried at least 9 feet, require a 30-foot right-of-way/easement. Water distribution and wastewater collection lines not located in a road right-of-way shall be centered within a public right-of-way.
 - Ensure that rights-of-way/easements for the proposed project are dedicated to the City and are recorded.
 - Ensure all setbacks are shown on the plans.
 - All portions of the right-of-way/easement shall be accessible by City maintenance crews and shall be passable by City vehicles during a 25-year storm event.
 - No portion of the right-of-way/easement shall exceed a 4:1 slope.

- 100-year flood plain/wetlands identified?
 - Ensure that the 100-year flood elevation is identified for the entire project area. A letter signed/sealed from the P.E. or a licensed surveyor that states that the entire project area is located outside of the 100-year flood zone, is acceptable.

- Other agency permits applied for?
 - Ensure that applicant has received or is working to obtain a soil erosion and sedimentation control permit if the project disturbs more than one acre of land or involves another land-intensive activity (i.e., open trenching across a river).
 - Ensure that the applicant has received or is working to obtain the appropriate nationwide and/or wetlands permits if the project impacts wetlands or involves stream crossings.

Water Extensions

- Correct Water Pipe Materials?
 - Distribution mains shall be ductile iron or plastic materials designed for potable water system service.
 - The pressure rating class of the pipe shall be in excess of the maximum design pressure within that section of the water distribution system. The quality of pipe to be used shall be stated in the project specifications.

- WSACC and City of Concord standards noted?
 - All details and design to be WSACC or City of Concord standard and shown on each sheet.
 - Ensure details for borings, encasements, open cuts, etc. are shown.

- Daily flow volume calculated correctly?
 - Ensure the proposed service connection(s) meets the daily flow requirements specified by the regulation.

- Water mains sized correctly?
 - Water mains shall be sized to meet the requirements of the Concord Regional Water Resources Policy Manual or performance calculations for flows and pressures stamped, signed, and dated by a PE must be submitted.
 - Water mains shall not be less than two-inch standard nominal diameter. Acceptable sizes are 2, 6, 8, 12-inches or larger.
 - Fire hydrants shall not be installed on water mains of less than six inches diameter or on water mains not designed to carry fire protection flows.
 - Ensure no more than 20 residences (or the equivalent demand of 20 residences) is connected to a two-inch diameter water line, unless the line is looped. A looped two-inch main shall serve no more than 40 residences (or the equivalent water demand of 40 residences).
 - Two-inch diameter mains shall not exceed 1000 feet in length.

- Proposed dead-end water mains?
 - A hydrant or a valve of adequate size for flushing shall be installed at the terminal end of dead-end lines.

- Vertical buffers met?
 - Ensure proposed grade allows water mains to be buried to a depth below the frostline or to a depth sufficient to provide a minimum of 30 inches cover, whichever is greater.
 - Ensure all crossings meet minimum spacing requirements.
 - Ensure ferrous material is used where minimums are not met.
 - Ensure a note on required separation of water and sewer shown on plans.
 - Minimum vertical separation of 2 feet between water line and any maintenance obstruction.
 - Ensure required separation noted when design provides only the minimum separation.

- Horizontal buffers met?
 - Mains to be 6 feet from back of curb or 5 feet front of curb if approved individually
 - Ensure water mains are properly spaced laterally from existing or proposed utilities etc.
 - Ensure a note on required separation of water and sewer is shown on plans.
 - Minimum horizontal separation of 5 feet between water line and any maintenance obstruction.
 - Ensure required separation noted when design provides only the minimum separation.

- Correct valves shown?
 - Ensure valves are shown on all branches from feeder mains and between mains and hydrants as follows:
 - (1) three valves at X (crosses),
 - (2) two valves at T's (tees), and
 - (3) one valve on single hydrant branch.

- Adequate fire hydrants shown?
 - Ensure no two hydrants are to be shut off at a time.
 - Ensure all fire hydrants are 5 ¼" valve seat type.
 - Ensure only 3-way hydrants with steamer connections are shown.
 - Fire hydrant spacing shall not be greater than 1,000 ft.
 - All fire hydrants are to be minimum of 50 feet from the protected structure.
 - Fire hydrant legs greater than 100 ft. are not permitted.
 - Fire hydrant coverage shall not exceed 500 ft. pull path length to the remote point of any structure.
 - All fire protection mains, hydrants, meters and other appurtenances shall be designed to provide the required fire flows and pressures at the hydraulically most difficult hydrant.

- Ensure fire hydrants are readily visible.
 - Hydrants shall be within 6 feet of the curb in the City
 - Hydrants shall be located at the edge of the right-of-way in rural areas.

- Backflow devices specified?
 - City standard DCVA backflow device and vault specified and detailed.
 - City standard RPZ backflow device and vault specified and detailed.

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