



Metropolitan Sewerage District

OF BUNCOMBE COUNTY, NORTH CAROLINA

PROJECT NAME _____

PROJECT NUMBER _____

PUBLIC GRAVITY COLLECTION SYSTEM
PLAN SHEET CHECKLIST FOR SUBMITTAL WITH APPLICATION
for
NON-DISCHARGE PERMIT

Plan Requirements:

_____ **1. Plans consist of Cover Sheet(s), Plan-Profile Sheet(s) and Detail Sheet(s).**

_____ **2. Each Sheet:**

- _____ a) Has a Title Block with:
 - _____ 1) The project name consistent with the Project Name on the Application.
 - _____ 2) The engineer's job number, sheet number, date, revision dates, scale, Drawn By, and MSD Project Number as issued on allocation approval.
- _____ b) Has been signed, sealed, and dated by a North Carolina licensed Professional Engineer.
- _____ c) Sheet size: 24" x 36" in electronic format.

_____ **3. Cover Sheet(s):**

- _____ a) Indicate the name, address, email address, and phone number of the developer/owner and the engineer.
- _____ b) Vicinity map at not less than 1"=2000' with North Arrow.
- _____ c) Overall Utility Plan with sheet index, including manhole numbers.
- _____ d) Symbols Legend.
- _____ e) Topography - Minimum USGS with drainage area to actual low points of boundary indicating zoning by types and acreage of each.
- _____ f) MSD Project Number as issued on allocation approval.
- _____ g) Survey sheet attached.

_____ **4. Plan-Profile Sheet(s):**

- _____ a) North Arrow on plans.
- _____ b) At a scale of not less than 1"=50' horizontal and 1"=10' vertical.
- _____ c) Plan and profile views run in same direction (left to right) upstream with profile directly beneath corresponding plan view.
- _____ d) All existing utility poles and existing underground utilities with sizes and materials are shown with faded or thin lines. All locations, elevations, and inverts were determined by field survey. Existing utilities include tie-in manhole and the next

downstream manhole with MSD manhole numbers. MSD GIS shall not be used for design.

_____ e) All proposed utility poles and underground utilities with sizes are shown with bold or shaded lines.

_____ f) Proposed Manholes:

_____ 1) Top and invert elevations shown to mean sea level datum (NAVD 88) in accordance with MSD Design Criteria.

_____ 2) Within the 100-year storm flood plain are two feet higher than the flood elevation or have been provided with a sealed locking cover and vent as required to the higher elevation, and have been indicated on the plan, profile, and data sheet.

_____ 3) Drop connections have been indicated as such on both the plan and profile sheets and have been used where the "Invert-in" is greater than 2.50 feet (30-inches) higher than "Invert-out". Both "invert-in's" displayed for drop connections.

_____ 4) Spacing is 425 feet or less.

_____ 5) Stationing is shown on the plan and profile along centerline of sewer and at each manhole in the profile view. Begin stationing at connection manhole. Branching lines should reset stationing.

_____ 6) Angle of flow is noted at each manhole.

_____ 7) At the connecting/existing manhole, add the note: "*Manhole to be cored and booted to accept new 8-inch connection with the invert constructed in a U-shaped, sweeping manner.*"

_____ 8) Manhole invert drops are a minimum of 0.20 ft for standard 8-inch lines.

_____ g) Proposed Lines:

_____ 1) Lines to be publicly maintained are a minimum of 8-inches in diameter (with the exception of service lines within public rights-of-way and/or easements) and have been sized in accordance with MSD Design Criteria.

_____ 2) Are ductile iron and indicated on the plan, profile, and data sheet where:

_____ a) Less than 3 feet of cover is available.

_____ b) Less than 18 inches of vertical clearance is available between sewer line and any other utility (including stormwater).

_____ c) Sewer crosses over water lines, or where less than 18 inches of vertical clearance water over sewer is available, or where 10 feet of horizontal separation between water and sewer cannot be maintained.

_____ d) Slopes are greater than 20%, or velocities require DIP.

_____ e) Where traffic loadings or depth require additional strength.

_____ f) Where minimum vertical and horizontal separations from other utilities cannot be met.

_____ g) At creek crossings. See Minimum Design Criteria for more detail pertaining to stream crossings.

_____ h) Where 50 feet of separation between sewer and streams classified WS (Except WS-1 or WS-V), B, ORW, HQW cannot be met. See Minimum Design Criteria for additional information.

_____ 3) Are 100 feet from any water supply (public or private) including any WS-1 waters or Class-I or Class-II impounded reservoirs used as a source of drinking water. If this minimum separation cannot be maintained, ferrous (DIP) sewer pipe

with joints equivalent to public water supply design standards shall be used. The minimum separation regardless of pipe material shall not be less than 25 feet from a private well or 50 feet from a public water supply well. See Minimum Design Criteria.

- _____ 4) All streams and bodies of water located on subject parcel within 100 feet of proposed sewer extension shall be shown in Plan View and identified by classification type.
- _____ 5) Proposed sewer lines running parallel to streams, lakes, etc. have at least 10 feet of horizontal separation from stream bank. See Minimum Design Criteria for more information.
- _____ 6) Crossing or within 10 feet of other existing or proposed utilities have been shown in plan and profile views with horizontal and vertical clearances indicated.
- _____ 7) Where required horizontal separation from other utilities is not available, special provisions have been made and indicated on the plans for the protection of sewer maintenance personnel.
- _____ 8) Concrete anchors for ductile iron pipe have been shown on the plan and profile views when slopes are:
 - i. Between 20% and 35% at intervals not greater than 36 feet.
 - ii. Between 36% and 50% at intervals not greater than 24 feet.
 - iii. Greater than 50% at intervals not greater than 16 feet.
- _____ 9) That are to be bored have been indicated on the plan and profile views showing the type of pipe and casing, with the length.
- _____ 10) Road crossings indicate the type and width of pavement for main lines and service lines.
- _____ 11) Indicate the proposed pipe size, type, direction of flow and length between manholes in plan view to two decimal places.
- _____ 12) Indicate the proposed pipe size, material, length between manholes, and percent of grade in profile view to two decimal places.

h) Plan Views Indicate:

- _____ 1) Existing and proposed structures or lots to be served by gravity with existing or proposed floor elevations and locations. For vacant lots, a spot elevation near the center of the lot has been shown.
- _____ 2) Note existing and proposed structures or lots that cannot be served by gravity.
- _____ 3) At least one benchmark per sheet with location NAD83(2011), with mean sea level elevation (NAVD 88), and description.
- _____ 4) Flood limits of 100-year flood elevation.
- _____ 5) Street name/number designation, and NCDOT legal width public rights-of-way clearly shown and dimensioned. Location of work within NCDOT rights-of-way and distance to nearest intersection in feet.
- _____ 6) Location of work within railroad rights-of-way and distance to nearest intersection in feet.
- _____ 7) MSD Service Line Cleanouts (end of MSD maintenance):
 - i. Are located just within the MSD easement or public right-of-way.
 - ii. Are not located in roadways or parking lots (landscape islands, yards, and sidewalks preferred). If the first (MSD) cleanout must be in a paved area, an 18"x18"x 6" concrete pad must be specified around a traffic-rated cast iron cleanout box.

- _____ 8) By note:
- i. That the specifications and requirements of the Metropolitan Sewerage District supersede all others in the installation of the proposed extension.
 - ii. That the installation of the proposed sewer extension and all public sanitary sewer work associated with this project shall be performed by a NC Licensed Utility Contractor.
 - iii. That doghouse manholes are not allowed.
 - iv. That the permanent public (MSD) sanitary sewer easement shall be cleared and remain free of trees and permanent structures (including roof overhangs, retaining walls, foundations, etc.).

i) Right of Way Plan Additional Requirements:

- _____ 1) Current owner(s) of record of subject site, including deed book and page of title acquisition.
- _____ 2) Parcel Identification Number (PIN).
- _____ 3) Call-out and dimension all proposed easement areas for transfer to MSD in accordance with required easement width chart. This includes all areas whether on private property or within a public right-of-way. Existing easements should be identified.
- _____ 4) Boundary line information for subject site.
- _____ 5) Ownership (deed book/page of title acquisition) and boundary delineation for all off-site areas affected by the proposed sewer line easement.

j) Profile Views:

- _____ 1) Indicate the 100-year flood elevation in the end of the profile or a note to the effect that the project area is outside the 100-year flood plain.

5. Detail Sheet(s):

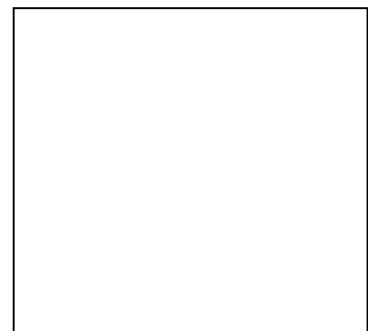
- _____ a) Details are in accordance with those approved by the District.
- _____ b) Details required by others have been indicated.
- _____ c) Details are clear and legible.

EXPLAIN ANY ITEMS NOT CHECKED. Provide additional sheets as necessary.

By signing and sealing this document, I certify that all checked requirements listed on this form have been completed, or addressed as noted above.

Engineer's Signature: _____

Date: _____



SEAL