



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

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RETURN RECEIPT REQUESTED

February 24, 2015

Mr. Eric Seaman, P.E., Wastewater Division Director
City of Jefferson City
320 E. McCarty Street
Jefferson City, MO 65101

RE: City of Jefferson, MO – Standard Sanitary Sewer Specifications Revised April 2004,
Standard Sewer Specifications and Details Comments

Dear Mr. Seaman:

The Department of Natural Resources' Water Protection Program has finalized the review of the Standard Sanitary Sewer Specifications Revised April 2004 received on January 20, 2015 enclosed with the request for permit modifications (MO-0094846 and MO-0044300) to reinstate the approved sewer permit authority. We expect a response to the following requirements and recommendations below within 30 days receipt of this letter:

REQUIREMENTS:

The following items are required to be in compliance with 10 CSR 20-8. The Standard Sanitary Sewer Specifications Revised April 2004 must be updated to incorporate the following requirements.

1. The provided specifications and details were not signed, sealed, or dated by a Missouri professional engineer. Refer to 10 CSR 20-8.110(6)(A)2. and 10 CSR 20-8.110(7)(A). Include this requirement in your revised specifications and details.
2. Incorporate curvilinear alignment of sewers consistent with 10 CSR 20-8.120(5)(E)2.
3. Include a detail or description of a general trench in accordance with 10 CSR 8.120(5)(H)2.A. After a search on the www.jeffcitymo.org/publicworks/engineering.html webpage, Detail 30.01 would meet this requirement. Consider adding this detail to the revised specifications.

4. Part SS-4.3.f. of the specifications states, “[d]o not let water fill trench.” Expand this statement to incorporate the dewatering requirements of 10 CSR 20-8.120(5)(H)2.D.
5. Address the bedding, haunching, and initial backfill of plastic pipe and composite pipe according to 10 CSR 20-8.120(5)(H)3.C and 10 CSR 20-8.120(5)(H)3.D respectively.
6. “Debris, frozen material, large clods, stones, organic matter, or other unstable materials shall not be used for final backfill within two feet (2’) (0.6 m) of the top of the pipe”, per 10 CSR 8.120(5)(H)4.A. Include this requirement for final backfill.
7. Part SS-9.3.e. of the specifications states, “[g]ravity pipeline #f flexible materials shall also be tested by pulling a mandrel.” 10 CSR 8.120(5)(H)5.C. prohibits a mechanical pulling device. Revise this sentence to exclude mechanical pulling equipment.
8. “Service connections to the sewer main shall be watertight and not protrude into the sewer... All materials used to make service connections shall be compatible with each other and with the pipe materials to be joined and shall be corrosion proof”, per 10 CSR 8.120(5)(I)2. Incorporate these conditions into SS-4.9 of the specifications.
9. “When using precast manholes, drop connections must not enter the manhole at a joint,” per 10 CSR 20-8.120(6)(B)3. Include this requirement for all drop type manholes.
10. “Due to unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in concrete”, per 10 CSR 8.120(6)(B)4. Detail 50.02 depicts one-inch clean rock surrounding the pipe and concrete embedment to the springline of the elbow on the outside drop connection. Revise this detail to concrete encasement surrounding the entire drop connection.
11. Incorporate the bench requirements of manholes according to 10 CSR 20-8.120(6)(E).
12. Per 10 CSR 20-8.120(8)(A)3, manholes shall be located so they do not interfere with the free discharge of flood flows of a stream. Specify this requirement with stream crossings.
13. Provide the appropriate construction materials for stream crossings in accordance with 10 CSR 20-8.120(8)(B)1.
14. Address the siltation and erosion with stream crossings according to 10 CSR 20-8.120(8)(B)2.
15. Incorporate the aerial stream crossings requirements consistent with 10 CSR 20-8.120(9).

16. Per 10 CSR 8.120(10)(C)1.A., “[s]ewer mains shall be laid at least ten feet (10’) (3.0 m) horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a ten-foot (10’) (3.0 m) separation, the department may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one (1) side of the sewer and at an elevation so the bottom of the water main is at least eighteen inches (18”) (46 cm) above the top of the sewer.” Specify this horizontal distance and preferred deviation for the protection of water supplies.
17. “If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to one hundred fifty pounds per square inch (150 psi) (1,034 kPa) to assure watertightness”, per 10 CSR-8.120(10)(C)1.B. Incorporate this requirement for the protection of water supplies.
18. “The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade”, 10 CSR 8.120(10)(C)2.A. Part SS-2.5.b. of the specifications requires a vertical separation of force mains and water mains, but does not address gravity sewers. Clarify the vertical crossing requirement.
19. When it is impossible to obtain proper vertical separation, the sewer shall be designed to be equal to water pipe and pressure tested or continuously encased or enclosed to assure watertightness in accordance with 10 CSR 8.120(10)(C)2.B.(I) and 10 CSR 8.120(10)(C)2.B.(II). Revise the specifications to incorporate these crossing conditions.

RECOMMENDATIONS:

The department is providing the following recommendations to improve the provided standard specifications and details. These recommendations are not required actions, but will allow for a more well-rounded standard specifications and details.

1. Recommend the addition of high velocity protection of pipes in accordance with 10 CSR 20-8.120(5)(D)5.
2. Part SS-9.2.2.6. of the specifications state an exfiltration rate of 200 gallons per inch of pipe diameter per mile per day. 10 CSR 20-8.120(5)(I)4 recommends a leakage rate not exceeding 100 gallons per inch or pipe diameter per mile per day.

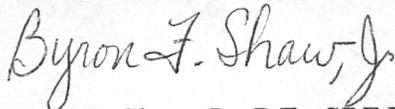
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3. The addition of a watertight or bolt down manhole cover is recommended consistent with 10 CSR 20-8.120(6)(F)4.
4. "Manholes should be located at least ten feet (10') (3.0 m) horizontally from any existing or proposed water main", per 10 CSR 20-8.120(10)(C)1.C. This is a recommended addition to protect drinking water supplies.
5. Details can clearly demonstrate what the expectation is in certain instances often better than a narrative. The following details are a suggested addition:
 - a. General trenching and bedding (Detail 30.01);
 - b. Doghouse manhole;
 - c. Manhole frame (Detail 1.01);
 - d. Lamphole installation (Detail 1.01);
 - e. Thrust block;
 - f. Stream crossing;
 - g. Aerial crossing; and
 - h. Horizontal and vertical water and sewer separation.

If you have any questions concerning the review of standard specifications and details, please contact Mrs. Emily Carpenter, of the Water Protection Program, at (573) 751-6569, emily.carpenter@dnr.mo.gov, or Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102-0176. For all other questions concerning the operating permit modification request, please contact Ms. Leasue Meyers, of the Water Protection Program, at (573) 751-7906 or leasue.meyers@dnr.mo.gov. Thank you.

Sincerely,

WATER PROTECTION PROGRAM



Byron F. Shaw, Jr., P.E., SRF Engineering Unit Chief
Financial Assistance Center

BFS:ecc

- c: Northeast Regional Office
Mr. Refaat Mefrakis, P.E., Water Protection Program, Engineering Section
Ms. Leasue Meyers, Water Protection Program, Engineering Section
Ms. Joan Doerhoff, Water Protection Program, Compliance and Enforcement Section
Mrs. Emily Carpenter, Water Protection Program, Financial Assistance Center