



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

DEPARTMENT OF NATURAL RESOURCES

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CERTIFIED MAIL: 7009 2250 0000 0886 5929
RETURN RECEIPT REQUESTED

March 26, 2015

Mr. Doug Colvin, Public Works Director
City of Nixa
1010 N. Eaglecrest
Nixa, MO 65714

RE: City of Nixa – City of Nixa Technical Specifications and Drawings, Standard Sewer Specifications and Details Comments

Dear Mr. Colvin:

The Department of Natural Resources' Water Protection Program has finalized the review of the city of Nixa Technical Specifications and Drawings received February 26, 2015. 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 city of Nixa Technical Specifications and Drawings 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). Please sign, seal, and date the revised specifications and details.
2. Provide steep slope protection in accordance with 10 CSR 20-8.120(5)(D)6.
3. Incorporate curvilinear alignment of sewers consistent with 10 CSR 20-8.120(5)(E)2.
4. "Ledge rock, boulders, and large stones shall be removed to provide a minimum clearance of four inches (4") (10 cm) below and on each side of all pipe(s)", per 10 CSR 20-8.120(5)(H)2.C.

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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. "The [deflection] test shall be performed without mechanical pulling devices", per 10 CSR 20-8.120(5)(H)5.C. Part 25-32.C.5. does not specifically require pulling the mandrel by non-mechanical means. Incorporate this requirement.
8. 10 CSR 8.120(5)(H)5.C requires the mandrel to have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe to be tested. In addition, the mandrel must have nine or more odd number of flutes or points. Include these requirements for deflecting testing.
9. Address outside drop manholes or include a detail in accordance with 10 CSR 8.120(6)(B)2.
10. "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.
11. "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.
12. Incorporate the bench requirements of manholes according to 10 CSR 20-8.120(6)(E).
13. Provide corrosion protection for manholes consistent with 10 CSR 20-8.120(6)(H).
14. 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.
15. Provide the appropriate construction materials for stream crossings in accordance with 10 CSR 20-8.120(8)(B)1.
16. Address the siltation and erosion with stream crossings according to 10 CSR 20-8.120(8)(B)2.
17. Incorporate the aerial stream crossings requirements consistent with 10 CSR 20-8.120(9).

18. The protection of water supplies applies to all types of piping. However, Part 25-30.A.13. is under the header of polyvinyl chloride (PVC) pipe. Clarify that the protection of water supplies applies to all sewer pipe in accordance with 10 CSR 20-8.120(10).
19. Part 25-30.A.13.C. states that the sewer to be equal to water pipe and pressure tested. 10 CSR 20-8.120(10)(C)1.B. requires the sewer to be pressure tested to 150 pounds per square inch (psi). Include this minimum value for pressure testing.
20. Department staff located the Nixa Technical Specification Booklet and Drawings online at www.nixa.com/index.aspx?page=91. Please include Article V and the appropriate details for department review in the revised specifications.
21. Page 123 of the Nixa Technical Specification Booklet provides a definition of a losing stream. The department proposes the following definition, which is consistent with 10 CSR 20-2.010(36) and 10 CSR 20-7.015(1)(B)3:

A losing stream is a surface stream which loses 30 percent or more of its flow through natural processes such as permeable geologic materials into an aquifer.

22. Page 164 of the Nixa Technical Specifications Booklet requires a land disturbance permit from the Nixa Public Works Department. In addition, a land disturbance permit from the department is required when activity affects one acre or more. Please include the following information in the land disturbance permit requirements:

10 CSR 20-6.200 requires land disturbance activities of one acre or more to obtain a Missouri State Operating Permit to discharge stormwater. The permit requires Best Management Practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits may only be obtained by means of the department's ePermitting system available online at www.dnr.mo.gov/env/wpp/epermit/help.htm. See www.dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

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. For existing sewers and proposed service connections, a saddle type connection should be used in those instances in accordance with 10 CSR 20-8.120(5)(I)2.
3. Part 25-32.C.2. 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.
4. Part 25-32.C.4. of the specifications state an infiltration 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.
5. The addition of a watertight or bolt down manhole cover is recommended consistent with 10 CSR 20-8.120(6)(F)4.
6. The provided specifications address vacuum testing of manholes, but do not provide the appropriate ASTM. ASTM C1244 is recommended in accordance with 10 CSR 20-8.120(6)(G)1.
7. The provided specifications address exfiltration testing of manholes, but do not provide the appropriate ASTM. ASTM C969 is recommended in accordance with 10 CSR 20-8.120(6)(G)2.
8. "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.
9. Details can clearly demonstrate what the expectation is in certain instances often better than a narrative. The following details are a suggested addition:
 - a. Standard manhole outside drop;
 - b. Shallow manhole;
 - c. Doghouse manhole;
 - d. Stream crossing; and
 - e. Aerial crossing.

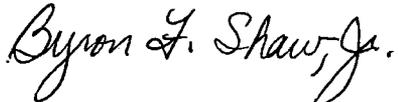
Construction, installation, expansion or modification of any collection system or wastewater treatment facility is prohibited until a construction permit is issued by the department, per 10 CSR 20-6.010(4)(A).

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If you have any questions concerning this matter, 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. Thank you.

Sincerely,

WATER PROTECTION PROGRAM



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

BFS:ecc

c: Mr. Gary Shaffer, P.E., Shaffer & Hines, Inc.
Southwest Regional Office
Mr. Refaat Mefrakis, P.E., Water Protection Program, Engineering Section
Mrs. Emily Carpenter, Water Protection Program, Financial Assistance Center