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**SHAFFER & HINES, INC.**

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WATER PROTECTION PROGRAM

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*"Equal Opportunity Employer"*

June 1, 2015

Mr. Byron Shaw, P.E.

**MISSOURI DEPARTMENT OF NATURAL RESOURCES**

P.O. Box 176

Jefferson City, Missouri 65102

**RE: City of Nixa Missouri**

**Standard Specifications for Sewer Main Construction**

Dear Byron:

In response to your March 26, 2015 review letter please find two revised copies of the "Standard Specifications for Sewer Main Construction," for the City of Nixa. I have also included a third copy with the specific changes which were made highlighted in red.

You will note that the City's specification format includes excavation and trenching and both water and sewer specifications. I have removed the waterline portion from this submittal (Section 25-21 through Section 25-29) as these specifications have been previously submitted it to DNR's Public Drinking Water Program and an approval has been received.

Please note the following responses which are presented in the same order as your comment letter.

**REQUIREMENTS**

1. Note the specifications and details have been signed sealed and dated.
2. Section 25-30 A. 12. has been revised to include steep slope protection.
3. Section 25-30 A. 10. has been revised to incorporate curvilinear alignment of sewers.
4. Section 25-30 A. 11. has been revised to indicate that ledge rock, boulders, and large stones shall be removed to provide a minimum clearance of four inches below and on each side of all pipes.

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5. Section 25-30 A. 12. has been revised to address the bedding, haunching, and initial backfill of plastic pipe and composite pipe.
6. Section 25-30 A. 12. has been revised to indicate that debris, frozen material, large clods, stones, organic matter, or other unstable materials shall not be used for final backfill within two feet of the top of the pipe.
7. Section 25-32 C. 5. has been revised to reflect that the deflection test shall be performed without mechanical pulling devices.
8. Section 25-32 C.5. has been revised to require that the mandrel have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe to be tested and the mandrel must have nine or more odd number of flutes or points.
9. The City of Nixa currently does not allow outside drop type manholes. All manholes are to be inside drop type manholes.
10. Section 25-31 2. has been revised to indicate that when using precast manholes, drop connections for inside drop type manholes must not enter the manhole at a joint.
11. The City of Nixa currently does not allow outside drop type manholes.
12. Section 25-31 L. has been revised to incorporate the bench requirements of manholes.
13. Section 25-31 M. has been revised to provide corrosion protection for manholes.
14. Section 25-31 N. has been revised to indicate that manholes shall be located so they do not interfere with the free discharge of flood flows of a stream.
15. Section 25-30 A. 17. and Section 25-30 C. 13. have been revised to require appropriate construction materials for stream crossings.
16. Section 25-30 A. 17. and Section 25-30 C. 13. have been revised to address the siltation and erosion with stream crossings.
17. Section 25-30 A. 18. and Section 25-30 C. 14. have been revised to incorporate aerial stream crossing requirements.

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18. Section 25-30 A. 15. (PVC), Section 25-30 C. 15. (Force Mains) and Section 25-30 E. 13. (D.I.P.) have been revised to clarify that the protection of water supplies applies to all sewer pipe.
19. Section 25-30 A. 16. C. has been revised to require the sewer to be pressure tested to 150 pounds per square inch.
20. Enclosed please find Article V and appropriate details for your review.
21. Please note that Part II-Section 25-90 B. of the specification booklet has been revised to define a losing stream as “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. Please note that Part IV-Section 25-111 of the specification booklet has been revised to indicate:  
  
“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.”

## **RECOMMENDATIONS**

1. Section 25-30 A. 14. has been revised to require high velocity protection of pipes.
2. Section 25-30 A. 17. and Section 25-30 B. 4. has been revised to address a saddle type connection for existing sewers and proposed service connections.
3. Section 25-32 C. 2. has been revised to limit the exfiltration rate of 100 gallons per inch of pipe diameter per mile per day.
4. Section 25-32 C. 4. has been revised to limit the infiltration rate of 100 gallons per inch of pipe diameter per mile per day.
5. Section 25-31 G. has been revised to address watertight or bolt down manhole cover requirements.
6. Section 25-32 C. 3. has been revised to include ASTM C1244 for vacuum testing of manholes..

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7. Section 25-32 C. 2. has been revised to include ASTM C969 for exfiltration testing of manholes.
8. Section 25-31 O. has been revised to indicate that "Manholes should be located at least ten feet horizontally from any existing or proposed water main."
9. Please find attached applicable City standard details.

Please review the enclosed sewer line specifications for compliance with the regulations and upon approval by your department it is the intent of the City of Nixa to adopt these specifications by ordinance.

If you have any questions please feel free to contact me at (417) 725-4663 or [gs@shafferhines.com](mailto:gs@shafferhines.com).

Sincerely;

**SHAFFER & HINES, INC.  
CONSULTING ENGINEERS**

Gary W. Shaffer, P.E.

c: Mr. Doug Colvin, Public Works File