

Pump Stations and Force Mains Submittal Common Problems List

5/31/06

COMMON PROBLEMS

(This is not a cookbook recipe for preparing pump station and force main plans and specifications (P&S) for submittal to EPD, but is a list of the common problems we see that have to be resolved. By avoiding these problems, we hope to reduce the length of time it takes to get consensus between the submitter and EPD on what constitutes acceptable pump station and force main P&S.)

1. If publicly owned, the project is not consistent with the Department of Community Affairs-approved Service Delivery Strategy for the area.
2. If privately owned, an acceptable trust indenture with a local government has not been provided.
3. P&S not signed and sealed by an engineer registered in the State of Georgia.
4. Satisfactory Sanitary Sewer Extension Submittal (SSES) form not furnished.
5. SSES incomplete, unsigned, or inconsistent.
6. Certification of treatment capacity and Erosion and Sedimentation (E&S) control not provided.
7. Certification that the pump station, force main, sewer and structures tributary to it will not be built in a landfill not furnished.
8. Pump station (PS) and force main (FM) owner not defined.
9. Flow estimate inaccurate or not in accordance with industry standards.
10. BOD loading estimate inaccurate or not in accordance with industry standards.
11. Receiving WPCP has capacity and/or compliance issues.
12. Satisfactory Report of Technical Review not furnished from authority having jurisdiction showing erosion and sedimentation control measures are adequate.
13. E&S control plans and specifications not provided.
14. Requirement to start E&S controls with the initiation of land disturbing activities not included.
15. Wetlands not addressed and/or information related to the USACOE not provided showing the wetlands work is being done to meet their requirements.
16. FM does not cross stream at near-90 degree angle.
17. Stream buffer variance appears required and is not addressed.
18. P&S not finished and/or missing the work of a discipline such as civil or electrical.
19. Documents not checked and revised prior to submittal. (EPD cannot provide QA/QC.)
20. FM profile not provided.
21. Piping not shown in adequate detail (elevation, size, material, industry standard specification, etc.).

22. Insufficient pipe details provided for items such as stream crossings, jack and bore, air release valves, valve pits, and tie-ins. Details inadequate or not in accordance with standard industry practices.
23. Specifications are not project-specific or contain information for other, unrelated work.
24. Utilities Locators (Utilities Protection, Inc., "Call Before You Dig", 800-282-7411) not called out in the plans or in the specifications.
25. Topographic map showing 100-year flood plain, PS location, FM route, streams, drainage swales, wetlands and other features not provided.
26. 100-year flood plain elevation not identified.
27. PS and equipment located within the 100-year flood plain.
28. PS not enclosed in security fence or security fencing not specified and detailed.
29. PS not accessible by vehicular traffic.
30. Plans views not provided with north arrow.
31. Drawings not to scale or the scale is not called out.
32. Clearing and grubbing not addressed.
33. Dewatering not addressed.
34. Bedding material not defined or not defined in accordance with industry standards.
35. Specified materials are not referenced to industry standards.
36. Specifications do not prohibit the spill of sewage during construction and testing to grade, trench, or waters of the State.
37. Appurtenances such as valves, pipe supports, wall sleeves, tie-in boots, etc., not specified.
38. Work not required to be done in accordance with OSHA standards.
39. Site appears subject to Karst topography or swelling clays and supporting information from a registered geologist indicating the site is suitable has not been furnished.
40. Information demonstrating that the receiving sewer has adequate capacity to accept the project flow not provided.
41. FM and potable water lines not separated 10 feet horizontally and/or 18 inches vertically, with the water line on top
42. FM velocity is under 2 FPS or over 10 FPS.
43. FM not provided with thrust restraint.
44. Thrust blocking not specified or detailed.
45. FM materials and/or coatings with suitable corrosion resistance not specified.
46. Deep-buried FM not constructed of high strength material.
47. Stream crossings not constructed of high strength material such as ductile iron pipe.
48. Aerial crossings not provided with concrete piers, or pier design not furnished.
49. Aerial crossing bottom of pipe set below the 50-year flood elevation.
50. Buried stream crossings not protected by a casing, concrete encasement, riprap, or other.
51. High loading areas such as traffic crossings not protected by a casing and/or high strength pipe material.
52. Tie-in of FM to the existing sewer not detailed.
53. FM high points not provided with air/vacuum release valves (ARV), ARVs not specified, or ARV pit not detailed.
54. Receiving manhole not coated for corrosion protection.

55. Requirement to take up and relay pipe disturbed after installation not included.
56. Burial depth is less than 36 inches above the top of pipe.
57. Locator tape and detector wire not required and/or specified for non-metallic pipe.
58. Plastic pipe not bedded per ASTM D 2321.
59. Ductile iron pipe not bedded per ASTM D 2321, AWWA C150, ASTM C 12, or other industry standards.
60. FM laid directly on undisturbed earth (example: Class D bedding, ASTM C 12).
61. Bedding details not adequate or not in accordance with industry standards.
62. Bedding, haunching and backfill material not specified or not in accordance with industry standards.
63. Compaction not specified.
64. Mandrel test not specified for non-metallic pipe, or not required a minimum of 30 days after the completion of construction.
65. Acceptable mandrel deflection not limited to 5%.
66. FM not high-pressure tested per AWWA C600, C605, or other industry standards.
67. Wetwells not vacuum tested per ASTM C 1244 or not hydraulically tested to leak less than ¼ inch of level over 24 hours.
68. Wetwell not adequately sized for pump cycle time and to prevent odors from septic sewage.
69. Pump head calculation not correct.
70. System curve not furnished.
71. Pump unable to pass a 3-inch solid.
72. Wetwell buoyancy calculation not furnished.
73. Wetwell floor not adequately sloped to prevent deposition.
74. Each pump discharge not provided with a tight-closing check valve and isolation valve, or valves not located in a separate valve pit.
75. Valve pit not provided with a drain back to the wetwell.
76. PS not provided with a potable water hosebibb, protected by a backflow preventer.
77. Unable to access, maintain and remove pumps and valves.
78. Pump station cannot pump peak flow with the largest installed unit out of service.
79. Dry pits not ventilated.
80. Ventilation and electrical ratings not in accordance with NFPA 820.
81. PS not provided with back-up power.
82. Loss of primary electrical feed not alarmed.
83. Single or three-phase voltage monitor with output relay not provided.
84. Fused disconnect not furnished on main power feed.
85. Electrical cables and conduits not sealed vapor tight at the wetwell and/or control box to prevent corrosion of electrical devices.
86. Pumping units not alternated automatically.
87. Lights not provided for nighttime access.
88. Hydraulic surge protection not addressed where needed.
89. Site restoration not addressed or not specified to industry standards.