

**FY 2015/2016 QC Category No. 5**  
**STATEWIDE INSPECTION GUIDELIST**  
**Drainage**

**GENERAL**

1. All precast structures are stamped with approved Quality Control Manager Stamp.
2. Trench is de-watered as necessary. [Spec. 125-8]
3. For 15" or larger OD pipe, insure pipe trench backfill materials and compaction according to the 4 zones specified [Spec. 125-8]
4. Trench is wide and deep enough for compactors. [Spec. 125-4]
5. Material not classified as suitable backfill material is removed to a depth of 4 inches. [Spec. 125-4]
6. Proper bedding is provided. [Spec. 125-8]
7. Trench box or shore protection is used when excavation is in excess of 5 ft. or more. [Spec. 125-1]
8. Sediment basins are constructed in accordance with Index. [Index 101]
9. Heavy construction equipment is not permitted to cross over culverts or pipes until the backfill material has been placed and compacted to an elevation 4 ft above the crown pipe or culvert. [Spec. 125-8]
10. The Contractor backfills using granular material in accordance with the specifications and after approval by the Engineer. [Spec 125-8.3.4]

**BOX CULVERTS**

11. For box culverts over which pavement are to be constructed, compact around the structure to an elevation not less than 12" above the top of the structure. Compact to a density not less than 100% of the maximum density as determined by AASHTO T99, Method C. [Spec 125-8.2 and 125-9.2]
12. Cut back is achieved for tie in length on culvert extensions. [Index 289]
13. Form removal performed per Contract documents. [Spec. 400-14]
14. Do not begin backfilling against any masonry until permission is given by the Engineer or concrete has been in place 7 days. [Spec. 125-8]
15. Reinforcing Steel is tied and supported correctly. [Spec. 415-5]

16. Insure proper curing on all concrete surfaces. [Spec. 400-16]

17. Cast bottom slab and set prior to forming walls. [Spec. 400-7]

**BOX CULVERTS... continued**

18. With walls of at least 6 ft. high, let concrete set at least 12 hrs. prior to casting the top. [Spec. 400-7]

19. Any construction joints in the wing-walls to be horizontal and below ground level. [Spec. 400-7]

20. For box culverts over 5 ft high, have weep holes been installed [Spec. 400-6]

**PIPE CULVERTS AND STORM SEWERS**

21. Excavate to bottom of pipe, allow sufficient width for working room. [Spec. 125-4]

22. Pipe is set to proper Line and Grade before backfilling [Spec. 430-4]

23. Obtain a minimum Quality Control Density. [Spec. 125-9]

24. Lots don't exceed 500 ft. [Spec. 125-8]

25. Run QC and Verification Proctor tests with a minimum frequency of one test per soil type [Spec. 125-9]

26. If Density tests fail, retest within a 5' radius. [Spec. 125-10]

27. Cover height is in accordance with the minimum and maximum. [Index 205]

28. Concrete pipe joints meet the allowable gap requirements and gaskets are checked and lubricated. [Spec. 430-7.2]

29. Pipe joints are wrapped with a filter fabric jacket as required. Ensure that if the joint is less than 4.6 feet below the water table and is leaking, the joint is not soil tight. [Spec. 430-4 and Index 280]

30. Inspect bituminous coating on metal pipe to ensure proper coating. [Spec. 430-4]

31. Plastic and metal pipe larger than 36 in. in diameter are tested to verify that the nominal pipe deflection does not exceed 5% of diameter. [Spec. 430-4]

32. Side-drain Mitered End Section (M.E.S.) aprons are constructed per Index 273 and cross drain M.E.S. aprons are checked for steel in toe wall per Index 272. [Index 272 and 273]

33. When pipe is placed above the original ground line elevation, embankment is placed and compacted to at least 2 ft. above the top of proposed pipe and to a width of at least four pipe diameters prior to excavation of the trench. [Spec. 125-4]

### ***PIPE CULVERTS AND STORM SEWERS... continued***

34. Undercutting the trench is completed when required. [Spec. 125-8]
35. Suitable material is used to backfill to a point 12 in. above the bottom of the pipe in undercut sections. [Spec. 125-8]
36. A minimum of two pieces of gasket material for each joint. [Spec. 942-2]
37. The contact surfaces of the pipe joints are free from air holes, chips and spalled concrete. [Spec. 449-5.4]
38. There is a passing test on the first dry lift of the pipe, one on each side of the pipe. (Earthwork Records System Procedure 2.3)
39. The Contractor compact pipes separately from the structure. Lift numbers are identified correctly. [Earthwork Records System Procedure]
40. For pipe 48 inches or less, provide the Engineer a video DVD and report. A high video must be provided. This requirement may be waived by the Project administrator only for side drains and cross drains which are short enough to fully inspect from each end of the pipe. [Spec. 430-4.8]

### ***INLETS, MANHOLES, END WALLS***

41. Inverts are properly constructed. [Index 201]
42. Hand built manholes are built round, using approved bricks and cemented properly. [Spec. 949 and Index 201]
43. Pipes entering the structure are properly sealed. [Spec. 430-4]

### ***UNDERDRAINS***

44. Install underdrains per plan and/or Index 500. [Spec. 440 and Index 286].
45. Construct underdrain inspection boxes in accord with plans and design standards [Spec. 440-4, Index 245]
46. The pipe is perforated with no open joints in the pipe system. [Spec. 440-1]
47. The filter material is placed and compacted around the pipe for the full width of the trench in layers not exceeding 6 in. [Spec. 440-5]
48. Install French drains in accord with spec. & design standards. [Spec. 443, Index 285]
49. Coarse aggregates used meet specified gradation requirements [Spec. 901-1.4]