

**FY 2019/2020 QC Category No. 5**  
**STATEWIDE INSPECTION**  
**GUIDELIST**  
**Drainage**

**GENERAL**

1. All precast structures are stamped with approved Quality Control Manager Stamp. Plant stamps can be found at the following link:  
<http://www.fdot.gov/materials/quality/programs/qualitycontrol/plantstamps/index.shtm>
2. Trench is de-watered as necessary. [Spec. 125-8]
3. For 12" or larger OD pipe, ensure pipe trench backfill materials and compaction according to the 4 zones specified. [Spec. 125-8.3]
4. Trench is wide and deep enough for adequate working room. [Spec. 125-4]
5. Material not classified as suitable backfill material is removed to a depth of 4 inches below the bottom of the pipe elevation. Rock, boulders or other hard, lumpy, or unyielding material are removed to a depth of 12 inches below the bottom of pipes and box culverts elevations. [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. Heavy construction equipment is not permitted to cross over culverts or pipes until the backfill material has been placed and compacted to the finished earthwork grade or an elevation 4 ft. above the crown pipe or culvert. [Spec. 125-8]
9. The Contractor backfills using granular material in accordance with the specifications and after approval by the Engineer. [Spec 125-8.3.4]

**BOX CULVERTS**

10. For box culverts over which pavement is 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 FM1-T099 [Spec 125-8.2 and 125-9.2]
11. Cut back is achieved for tie in length on culvert extensions. [Index 400- 289]
12. Form removal performed per Contract documents and with prior consent from the Engineer.. [Spec.400-14]

13. Do not begin backfilling against any masonry or concrete abutment, wingwall, or culvert until permission is given by the Engineer, and in no case until the concrete has been in place 7 days or until the specified 28 day compressive strength occurs. [Spec. 125-8]
14. Reinforcing Steel and Fiber is tied, spaced, and supported correctly, and meets material requirements as stated in the contract documents. [Spec.415-5, 931 & 932]
15. Ensure proper curing on all concrete surfaces. [Spec.400-16]
16. Cast bottom slab and set prior to forming walls. [Spec.400-7.14]
17. With walls in excess of 6 ft. high, let concrete set at least 12 hrs. prior to casting the top. [Spec. 400-7.14]
18. Any construction joints in the wing-walls to be horizontal and below ground level. [Spec. 400-7]
19. For box culverts, ensure underdrain and weep holes are provided in accordance with the Standard Plans. [Spec. 400-6 and Index 400-289]

#### ***PIPE CULVERTS AND STORM SEWERS***

20. Excavate to 12 Inches below the bottom of pipe, allow sufficient width for working room. [Spec. 125-4]
21. Pipe is set to proper Line and Grade before backfilling [Spec.430-4]
22. Obtain a minimum Quality Control Density. [Spec. 125-9]
23. Lots don't exceed 500 ft. unless authorized by the Engineer [Spec. 125-8.1]
24. Run QC and Verification Proctor tests with a minimum frequency of one test per soil type [Spec. 125-9]
25. If VT or IV Density tests fail, retest within a 5' radius and follow procedure as designated in contract documents. [Spec. 120-10.4]
26. Cover height is in accordance with the minimum and maximum. [Drainage Manual]
27. Concrete pipe joints meet the allowable gap requirements and gaskets are checked and lubricated. [Spec. 430-7]
28. 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 (2PSI) and is leaking, the joint is not soil tight. [Spec. 430-4 and Index 430-001]
29. Inspect bituminous coating on metal pipe to ensure proper coating. [Spec. 430-4]

30. Plastic and metal pipe are inspected to verify that the nominal pipe deflection does not exceed 5% of diameter. [Spec. 430-9]
31. Side-drain Mitered End Sections (M.E.S.) are constructed per Index 430-022 and cross drain M.E.S. are checked for steel in toe wall per Index 430-021. [Index 430-021 and 430-022]
32. 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 to the required grade. [Spec. 125-4]

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

33. Undercutting the trench when required per contract documents. [Spec. 125-8]
34. Suitable material is used for backfill where organic or plastic material is undercut. [Spec. 125-8, Index 120-001 and 120-002]
35. A minimum of two pieces of gasket material for each elliptical concrete pipe joint. [Spec. 942-2]
36. The near-contact surfaces of the pipe joints are free from air holes, chips, laitance, spalled concrete, and other defects. [Spec. 449-5.4]
37. 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)
38. The Contractor compacts pipes separately from the structure. Lift numbers are identified correctly. [Earthwork Records System Procedure]
39. For pipe 48 inches or less, provide the Engineer a video DVD and report. A high-quality 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***

40. Inverts are properly constructed. [Index 425-001]
41. Hand built manholes are built round, using approved bricks and cemented properly. [Spec. 949 and Index 425-001]
42. Pipes entering the structure are properly sealed. [Spec. 430-4]

### ***UNDERDRAINS***

43. Install underdrains in accordance with the contract documents. [Spec. 440 and Index 440-001].

44. Construct underdrain inspection boxes in accordance with contract documents. [Spec. 440-4 and Index 440-002]
45. The pipe is perforated with no open joints in the pipe system. [Spec.440-1]
46. 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]
47. Install French drains in accordance with the contract documents. [Spec. 443 and Index 443-001]
48. Coarse aggregates used meet specified gradation requirements [Spec. 901-1.4]