



## **Town of Pittsboro, North Carolina**

### **Department of Engineering**

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## **MATERIAL TESTING PROCEDURES**

**PURPOSE:** The purpose of this policy is to outline the Town's requirements for material testing laboratories, testing frequency and standards in addition to those defined elsewhere in the current Town of Pittsboro and NCDOT Standard Specifications and Details. This policy will apply to all projects with permits issued on or after January 1, 2016. In accordance with complete inspection and testing of all offsite improvements is required regardless of whether they are public or privately owned. Parking lots and their associated access ways are also to be inspected and tested for drainage plan, asphalt and base thickness conformance and markings.

**RESPONSIBILITY:** The Town of Pittsboro Engineer or designee **shall** ensure that all provisions of this procedure are followed.

### **POLICY/PROCEDURE:**

#### **Policies:**

1. Required materials sampling and testing shall be performed by a North Carolina certified geo-technologies/lab hired by the developer/owner or contractor. The lab must be certified by the Concrete & Cement Reference Laboratory (CCRL) for concrete testing and the American Material Reference Laboratory (AMRL) for all other types of testing.
2. The attached schedule of testing represents the minimum level of testing that the Town of Pittsboro will accept for the items of work that are normally performed under permit. The laboratory or Town Inspector may require additional testing to verify that materials and installations satisfy the specifications for the work. Failure to follow the minimum testing schedule may result in removal from non-acceptance of the material.
3. The testing firm and personnel who collect the samples and perform the tests shall be under the supervision of a Registered Professional Engineer in the State of North Carolina. Each technician shall be certified by the National Institute for Certification in Engineering Technologies (NICET) and American Concrete Institute (ACI) as an ACI Concrete Field Testing Technician. Field personnel shall be ATI and ACI certified to perform actual sampling or testing no later July 1, 2005 with exception to technician trainees. Technician trainees may perform sampling and/or testing under the direct supervision and observation of a technician who is NICET and ACI Field Technician. All lab technicians are required to carry a copy of the Town of Pittsboro schedule of minimum level testing requirements in the field along with the NICET and ACI certification card. Field technicians who fail to present this required documentation to an inspector may be asked to leave the project until such time as they can present their card to the inspector.

## Procedures:

1. Prior to starting any construction, the developer, contractor or laboratory shall supply the Town Inspector with schedule of the proposed testing and name of the approved laboratory that will perform the work. If proposed schedule or laboratory is deficient, the Town of Pittsboro will notify the developer, contractor or laboratory. Until the schedule is accepted by the Town work may not proceed until the deficiency is corrected.
2. During the course of the project, the developer, contractor or laboratory shall be in regular communication with the Town Inspection staff. At the Inspector's option, written test reports and/or verbal communication on the suitability of the testing results may be required daily or at an interval established by the Inspector. Should the testing firm determine that the materials being tested are not in conformance with applicable standards, the lab shall notify the developer, contractor **and Town of Pittsboro Inspector**. The developer or contractor shall take corrective action and the materials shall be retested.
3. At a minimum, testing results shall be bound and sealed by a Professional Engineer registered in the State of North Carolina. Bound or digital test result packets shall be submitted at the following intervals at a minimum:
  - a. Just prior to placing any concrete
  - b. Prior to request for Final Inspection

Construction will not proceed to the next step until the packets have been received and verified by the Town Inspector. If the Town Inspector has reason to require the testing or the data, then additional testing shall be performed to ensure that the work meets applicable specifications. Work that does not meet applicable specifications will be corrected and re-tested before proceeding to the next step of construction.

4. The following information shall be provided in the bound packets:
  - A. A cover letter including a statement indicating that it is the registrant's opinion that the material testing has been performed in accordance with the Town of Pittsboro and NCDOT latest approved standard specifications and schedule of testing that the materials were found to be in conformance with the applicable specifications and that test were performed in accordance with ASTM and AASHTO procedures.
  - B. A copy of the schedule of proposed testing modified to show the testing completed to date shall be included directly behind the letter
  - C. All pages in the bound packet shall be sequentially numbered and a table of contents provide.
  - D. Test locations should be identified by station number if not available, street name, lot number and/or tract number. When there is no lot or tract number, locate test by street name, station and direction in the drive lane (i.e. north bound, south bound, etc. or right or left of the monument line using the stationing on the approved plan.
  - E. Infrastructure test locations shall be identified using stationing number and street name from the approved plan stationing , indicating right or left of monument
  - F. All testing data shall be provided and the location of the sample indicated. Test results shall be organized by type of activity such as dry utilities, potable water, reclaim water, sanitary sewer, storm drain trenching, site backfill, sub-grade, "aggregate base, asphalt, cub & gutter, driveways, sidewalks etc.
  - G. For compaction, water consolidation testing needs to correspond with Town of Pittsboro (T.O.P.) and NCDOT trench depths of testing based on trench width. Mechanical compaction tests must be every foot lift. A minimum of 10% of the potable/reclaim water and sanitary sewer service line trenches must be tested. Location of these tests will be random as identified by the TOWN OF PITTSBORO INSPECTOR.

5. In addition to the bound submittals discussed in item 3, "CABC/ABC" quality and density test results and concrete cylinder test results shall be provided to the Town Inspector for verification following completion of the concrete and "CABC/ABC" placement and before placement of asphaltic concrete.

**TOWN OF PITTSBORO  
SCHEDULE OF TESTS  
REPRESENTS THE MINIMUM LEVEL OF TESTING**

TABLE 1 –ACCEPTANCE SAMPLING GUIDE FOR ABC AND ASPHLT			
MATERIAL	TYPE OF TEST(S) REQUIRE	SAMPLING POINT	MINIMUM SAMPLING FREQUENCY
Aggregate base * (ABC)	Proctor Density	Roadway, pipe bedding, if applicable backfill	At start of production, then as material changes
	Compaction	Roadway, pipe bedding, if applicable backfill	One (1) per 450' increment per lift or per lane pass or (500 SQYD)
	Gradation, PI	Roadway, pipe bedding, if applicable backfill	One (1) per project or one (1) 1000 tons or fraction thereof
Hot In-Place asphaltic concrete	Oil content**	Sample in-place	One (1) per day of one (1) per 1000 tons or fraction thereof
Hot In-place asphaltic concrete	Mix design properties		One (1) sample per days production
	Density/thickness & core	Roadway	One (1) per 650' increment per lift per lane pass (800 SQYD)
Remarks: ** At the direction of the Town Inspector, asphalt deficient in oil content will be 50' on both sides of failed section. The results of these two (2) cores will be averaged with the original test results.			

TABLE 2 –ACCEPTANCE SAMPLING GUIDE FOR CONCRETE			
MATERIAL	TYPE OF TEST(S) REQUIRE	SAMPLING POINT	MINIMUM SAMPLING FREQUENCY
Concrete flat work, C.I.P., and structural	Compressive strength	At discharge	One (1) set of four (4) cylinders per 50 cu.yds or one (1) per shift
	Slump, time & temperature	At discharge	One (1) per set of cylinders
Structural precast & re-bar	Certification	Project	One (1) per 100 LF of item. RE-bar size and heat number
Lean mix concrete (slurry)	Compressive strength	At discharge	One (1) set of four (4) cylinders per shift

Remarks: \*\* Concrete specification for time is 90 minutes and temperature is 90°  
 The Town Inspector on an as need basis may require additional test (s)

**TABLE 3 –ACCEPTANCE SAMPLING GUIDE FOR SOIL**

<b>MATERIAL</b>	<b>TYPE OF TEST(S) REQUIRE</b>	<b>MINIMUM SAMPLING FREQUENCY</b>
Soil or Trench backfill	Proctor Density	One (1) per soil type
	Compaction	One (1) per 450' increments per lift
Subgrade	Compaction	One (1) per 450' increment per lift or per lane pass or (500 SQYD)
	Gradation, PI	One (1) per soil type
Manholes and laterals/service lines	Compaction	One (1) per structure, pipe, lateral/service trench at various lifts *
Minimum of 10% of potable/reclaim, sanitary/storm sewer laterals/services	Compaction	Lateral/service line trenches at various lifts
Roadway excavation, embankments	Proctor density	One (1) sample per soil type
	Compaction	One (1) per 100 cu.yds)
	Gradation, PI	One (1) per soil type
Fill construction	Compaction	One (1) per 450' increment per lane pass, per 8" lift (800 sqyds)

**Remarks:**

All test to be taken in place.

All compaction failures will be re-tested using a "SANDCONE" method. Any results failure will be re-worked before any re-test are performed.

The "nuclear gauge" shall be used for any ±#4 material to obtain Max Proctor Density

The Town inspector on as needed basis may require additional tests.

\*In addition, minimum of one (1) test every 5' of trench depth per structure or fraction thereof.