

**SECTION 01 45 23**

**INSPECTION AND MATERIALS TESTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. CONTRACTOR shall provide such equipment and facilities as are required for conducting field tests and for collecting and forwarding samples. No materials or equipment represented by samples are to be used until tests, if required, have been made and the materials or equipment are found to be acceptable. Any product which becomes unfit for use after approval thereof shall not be incorporated into the WORK.

**1.02 OWNER'S RESPONSIBILITIES**

- A. OWNER will provide any inspection and testing services not provided by the CONTRACTOR as required by the CONTRACT DOCUMENTS.
- B. Testing:
  - 1. Tests will be made by an accredited testing laboratory selected by OWNER.
  - 2. Except as otherwise provided, sampling and testing of all materials and the laboratory methods and testing equipment will be in accordance with the latest standards and methods of the ASTM and the AASHTO.
- C. OWNER will be responsible for and will pay costs in connection with the following testing of materials in place:
  - 1. Soils compaction.
  - 2. Trench backfill.
  - 3. Pipe and structural bedding.
  - 4. Materials delivered to the site, not otherwise required by the SPECIFICATIONS.
  - 5. Concrete and grout.
  - 6. Pavement.

**1.03 CONTRACTOR'S RESPONSIBILITIES**

- A. CONTRACTOR shall provide, at CONTRACTOR's expense, the testing and inspection services required by the CONTRACT DOCUMENTS.
- B. CONTRACTOR shall be responsible for and shall pay all costs in connection with testing required for the following materials:
  - 1. Concrete manholes.

2. Concrete materials and mix designs.
  3. Design of asphalt mixtures.
  4. Gradation for embedment, fill, and backfill materials.
  5. All performance and field testing specifically called for by the SPECIFICATIONS.
- C. Retesting for WORK or materials found defective or unsatisfactory, including tests covered in section above entitled "OWNER's Responsibilities".

#### 1.04 SUBMITTALS

- A. Written reports of tests and engineering data furnished by CONTRACTOR for ENGINEER's review of materials and equipment proposed to be used in the WORK shall be submitted as specified for SHOP DRAWINGS.
- B. The testing laboratory retained by OWNER will furnish three (3) copies of a written report of each test performed by laboratory personnel in the field or laboratory.
1. Two (2) copies of each test report will be transmitted to ENGINEER and one (1) copy to CONTRACTOR within ten (10) days after each test is completed.

#### 1.05 INSPECTION AND TESTING

- A. General:
1. OWNER, through its assigned RESIDENT ENGINEER and/or ENGINEER will inspect the WORK as the WORK progresses.
  2. The purpose of the inspection activity is to determine on an on-going basis whether or not CONTRACTOR's WORK is adequate to provide the product as well as the quality of product for OWNER.
  3. WORK will be compared to DRAWINGS and SPECIFICATIONS and supplemental DRAWINGS and SPECIFICATIONS to determine whether WORK or any part of WORK is defective. WORK will also be measured against the standard of quality implied by CONTRACTOR's warranty. Should the appearance and performance of any element of the WORK fail to conform to standards of the trade for such WORK, that WORK may be declared defective.
  4. All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.
  5. Where additional or specific information concerning testing methods, sample sizes, etc., is required, such information is included under the applicable sections of the SPECIFICATIONS. Any modification of, or elaboration on, these test procedures which may be included for specific materials under their respective sections in the SPECIFICATIONS shall take precedence over the procedures contained within this SPECIFICATION.

6. If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction require any WORK specifically to be inspected, tested, or approved by someone other than CONTRACTOR, CONTRACTOR shall give OWNER timely notice of readiness. CONTRACTOR shall then furnish OWNER the required certificates of inspection, testing, or approval.
7. Inspections, tests, or approvals shall not relieve CONTRACTOR from its obligation to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS and to also inspect CONTRACTOR's own WORK.

B. Access to WORK:

1. OWNER, ENGINEER, and their representatives shall at all times have access to the WORK.
2. Authorized representatives and agents of any participating Federal, State, or Local agency shall be permitted to inspect all WORK, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. CONTRACTOR shall provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.
3. If any WORK is covered contrary to the written instructions of ENGINEER or OWNER it shall, if requested by ENGINEER or OWNER, be uncovered for observation and replaced at CONTRACTOR's expense.
4. Covered Work:
  - a. If ENGINEER or OWNER considers it necessary or advisable that covered WORK be inspected or tested by others, CONTRACTOR, at ENGINEER's or OWNER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing, as ENGINEER or OWNER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment.
  - b. If it is found that such WORK is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing, and of satisfactory reconstruction.
  - c. If such WORK is not found to be defective, CONTRACTOR shall be allowed an increase in the AGREEMENT PRICE or an extension of the AGREEMENT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction; and an appropriate AMENDMENT shall be issued.

C. Observable Defects:

1. Observable defects are those that are discoverable by routine testing and inspection procedures or by implementing special tests as required or implied by the SPECIFICATIONS.

2. Defects discovered by this inspection process shall be repaired or removed by CONTRACTOR as these are identified.

D. Latent Defects:

1. Materials and equipment incorporated into the WORK may have, or as a result of the construction process, may develop hidden defects known as latent defects.
2. CONTRACTOR shall guarantee that such latent defects, when discovered, shall be remedied at no extra cost to OWNER.

E. Correction of WORK:

1. Retest:
  - a. Should the WORK fail to meet the requirements of any SPECIFICATION, as determined by testing performed by OWNER, CONTRACTOR shall take steps to meet the requirements and OWNER will then retest to determine compliance with the SPECIFICATIONS.
  - b. CONTRACTOR shall be responsible for the cost of the retest and such cost shall be deducted from progress payment to CONTRACTOR.
2. CONTRACTOR shall promptly remove from the premises all WORK rejected by ENGINEER or OWNER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to OWNER and shall bear the expense of making good all WORK of other contractors destroyed or damaged by such removal or replacement.
3. All removal and replacement WORK shall be done at CONTRACTOR's expense. If CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, OWNER may remove such WORK and store the materials at the expense of CONTRACTOR.

**PART 2 PRODUCTS (NOT APPLICABLE)**

**PART 3 EXECUTION (NOT APPLICABLE)**

**END OF SECTION**