

SECTION 01410 - TESTING LABORATORY SERVICES

PART 1: GENERAL

1.01 SCOPE
A. Perform all work required for Testing Laboratory Services as indicated on the drawings and specified herein.
B. Related information or work specified elsewhere in the Project Manual includes, but is not limited to, the following:
1. General and Supplementary Conditions of the Contract
2. Civil Drawings and Specifications
3. Section 02200 - Earthwork
4. Section 02510 - Asphaltic Concrete Pavement
5. Section 02511 - Portland Cement Concrete Pmt.
6. Section 02525 - Concrete Curbs

1.02 REQUIREMENTS AND CODES

A. The following specifications are minimum requirements and shall govern except all local, state and/or federal codes and ordinances shall govern when their requirements are in excess of those specified herein.
B. Comply with provisions of standards referenced in this section or other sections of the Project Manual.

1.03 LABORATORY SELECTION

An independent testing laboratory and related Engineers shall be retained by the Owner to inspect and test the materials and methods of construction as hereinafter specified or otherwise directed by the Engineers or Owner for compliance with the requirements of the Contract Documents and to perform such other specialized technical services as may be required by the Engineers or Owner.

1.04 QUALITY ASSURANCE

A. The testing laboratory shall meet the basic requirements of ASTM E-329 'Standard of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction'.

1. The testing laboratory is only required to have testing facilities for work included in this project.
2. Testing machines shall have been calibrated at intervals not exceeding 12 months by devices of accuracy traceable to the National Bureau of Standards.

1.05 SUBMITTALS

One (1) copy of all laboratory and field test reports, inspections and/or certifications shall be issued directly from the laboratory to the each the Contractor, Engineer and Owner.

1.06 JOB CONDITIONS

A. The testing laboratory and/or Engineers are not authorized to revoke, alter, relax, enlarge, or release any requirement of the Contract Documents or Subsurface Investigation Report nor to approve or accept any portion of the work.
B. When it appears that the material furnished or work performed by the Contractor fails to fulfill Contract Document requirements, the laboratory and/or Engineer shall promptly direct the attention of the Owner and Contractor to such deficiencies.

1.07 CONTRACTOR'S RESPONSIBILITIES

A. The use of laboratory services shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the Contract Documents.
B. To facilitate testing services, the Contractor shall coordinate all testing and inspection activities with the laboratory and:
1. Advise the laboratory, Engineers and inspectors, sufficiently in advance of the operations to allow for completion of tests and for the assignment of personnel.
2. Provide and maintain for the sole use of the laboratory an area and adequate facilities for safe storage & proper curing of such test specimens which must remain on the project site prior to testing.
3. Furnish copies of mill test reports for such materials as may be required in the Project Manual.

PART 2: REQUIRED TESTING AND INSPECTIONS

2.01 SITE AND BUILDING EXCAVATION AND BACKFILLING

A. The Soils Laboratory shall analyze all native or imported fill and backfill material and top soil proposed for use to determine the suitability for use and compliance with the Contract Documents.
1. Fill and backfill material shall be examined as to soil classification and tested to determine the Plasticity Index, optimum moisture content and dry density.
B. The number of tests performed shall be at the discretion of the Soils Engineer, except that the number of field tests performed shall not be less than the minimum described below.
1. Within trench excavations provide one (1) test for every 500 cubic yards of fill or backfill or for every 100 lineal feet of trench.
C. Submit one (1) copy of all soil analyses and test results to Contractor, Engineer and Owner.

2.02 PAVING

A. An independent testing laboratory and Field Engineer meeting the requirements, sampling and testing procedures of the American Association of State Highway and Transportation Officials (AASHTO) and American Society for Testing Materials (ASTM) shall observe the paving installation and test for compliance with the requirements of the Contract Documents.
B. Aggregate base course shall be tested for compliance with specified physical requirements and sieve analysis. Installation shall be observed for compacted thickness, cross section and grade. Field density tests shall be conducted to determine optimum moisture content and percent of compaction.
1. Conduct loading tests in the presence of representatives of the Engineer and Owner in accordance with Chapter 20 of ACI 318.
G. Submit one (1) copy of all reports, certificates and test results to the Engineer, Owner and Contractor.
1. Concrete Test Reports must include the following minimum information:
a. Store name and Number and Location
b. Specified Mix Design and Strength in PSI

C. Asphaltic concrete mix shall be tested for asphalt cement content, gradation, Marshall stability, air voids and physical requirements. Engineer shall observe asphaltic concrete placement for number of lifts, excavation and compliance with indicated cross section and grade. Field density and extraction tests shall be conducted to determine percent of compaction.
1. Asphaltic mixture shall be tested in accordance with ASTM D-2172 or AASHTO T-164 & AASHTO T-30, such as testing agency employee)
2. Optimum asphalt cement shall be tested in accordance with the Marshall Method (or other AASHTO approved methods).
D. Testing laboratory and Engineer shall certify in writing that the aggregate base and asphaltic surface course have been installed in conformance with the Contract Documents.
1. Certification shall be accompanied by copies of aggregate and asphaltic concrete tests and analysis.
E. Portland Cement Concrete pavement shall be tested and inspected in accordance to Section 01410, 2.03 Concrete.
F. Obtain a minimum of two (2) cores from the complete pavement section (either asphaltic concrete or Portland Cement Concrete), including aggregate base course, for laboratory verification of the completed pavement construction. Core test report shall indicate depth of aggregate base course, Portland Cement Concrete, asphaltic concrete surface course, density of the aggregate base course, asphaltic concrete surface course, and asphaltic concrete extraction tests and Portland Cement Concrete strength tests. Location of pavement cores shall be indicated by the Engineer and the independent testing laboratory.
G. Submit one (1) copy of certification and test results to each the Contractor, Engineer and Owner.

2.03 CONCRETE

A. An independent testing laboratory meeting the requirements of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as used in Construction ASTM E-329 shall determine the quality of all aggregate and concrete for compliance with the Contract Documents.
B. The testing laboratory shall test all Portland Cement Concrete pavement. The laboratory personnel shall take the samples and adequately protect all samples during storage and transporting.
1. The testing laboratory shall perform the following:
a. Secure production samples of materials at place or stockpile during the course of the work & test for compliance with the Contract Documents.
b. Check batching and mixing operation for compliance with the Contract Documents.
c. Review the manufacturer's certificate or mill test for each shipment of cement and reinforcing steel and/or conduct laboratory tests or spot checks of these materials as received.
d. Mold and test concrete field cylinders as required.
C. Concrete materials shall be tested as follows:
1. Aggregate shall be tested in accordance with test requirements ASTM C-33.
2. Cement shall be tested in accordance with ASTM C-150. All cement used on the job shall be accompanied by a certificate, by testing agency, indicating compliance of cement to all tests.
3. Section 01410 - Testing Laboratory Service
4. Section 02200 - Earthwork

2.04 MORTAR TEST (if applicable)

A. An independent testing laboratory meeting the requirements of ASTM C-91 Compressive Strength and Water Retention of Mortars shall determine the quality of materials and strength of all mortar.
B. Three (3) mortar cylinders shall be taken for each 2,000 square feet of concrete unit masonry walls. One (1) cylinder shall be tested at seven (7) days and two (2) cylinders shall be tested at twenty-eight (28) days meeting the specified strength.
C. Three (3) grout cubes shall be taken for each 50 cubic yards of grout, or part thereof. One (1) cube shall be tested at seven (7) days and two (2) cubes shall be tested at eight (8) days with an average strength of the two meeting the specified strength.
D. Submit one (1) copy of the test reports each to the Engineer, Owner and Contractor.

END OF SECTION 01410

SECTION 02100 - SITE PREPARATION

PART 1: GENERAL

1.01 SCOPE
A. Perform all work required for the complete and satisfactory execution of all site preparation indicated on the drawings and specified herein.
B. Related information or work specified elsewhere in the Project Manual includes, but is not limited to, the following:
1. General and Supplementary Conditions of the Contract
2. Division 1 - As applicable
3. Section 01410 - Testing Laboratory Service
4. Section 02100 - Site Preparation
5. Section 02510 - Asphaltic Concrete Pavement
6. Section 02511 - Portland Cement Concrete Pavement
C. Description of Work
A. Unclassified Excavation: All required excavation within the construction limits, including grading, parking areas, and drives; the removal, proper utilization or disposal of all excavated material and the shaping and finishing of all site earthwork in conformity to the lines and grades as shown in the Plans and specified elsewhere.
D. EXISTING UTILITIES
A. The Plans show the approximate location of all known underground utility lines and structures. Where pipes, ducts and other structures are encountered in the excavation but are not shown on the Plans, immediately notify the Engineer and Owner.
E. INFORMATION NOT GUARANTEED
A. Information on the Drawings and in the Specifications relating to subsurface conditions, natural phenomena, and existing utilities and structures is furnished only for the information and convenience of the Contractor, and the accuracy or completeness of this information is not guaranteed.
B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be current. The Contractor shall report any discrepancies found in the field or with the plans and specifications to the Owner prior to commencing work. No additional compensation will be made for work performed after a discrepancy has been discovered but prior to its resolution.
F. REQUIREMENTS AND CODES
A. The following Specifications are minimum requirements and shall govern except all local, county, state, and/or federal codes and ordinances shall govern when their requirements are in excess of those specified herein.
G. SITE CONDITIONS
A. No improvements shall be installed until required testing has been done on all fill or backfill.
H. TESTING AND INSPECTION
A. The Contractor shall be responsible for coordinating and scheduling all testing activities required by other sections of the Project Drawings and Specifications.
I. SUBMITTALS
A. Submit the following samples to the Testing Laboratory:
1. Fill and Backfill for proposed storm sewer improvements.
B. Submit all Testing Lab results to Engineer, Owner, and Tenant.
J. PRODUCTS
A. Use only equipment that has been approved for this Project.
B. Grading Equipment: Furnish, operate and maintain such equipment as is necessary to produce uniform layers, section and smoothness of grade for compaction and drainage.
C. Compaction Equipment: Use sheepsfoot type rollers either tractor drawn or self propelled, rubber tired rollers, or other equipment capable of obtaining the requirements.
D. Dynamic Compaction: If desired by the Owner, perform Dynamic Compaction in accordance with the procedures and recommendations specified in the Geotechnical Report (when applicable).
K. SPRINKLING EQUIPMENT: Use tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
L. Miscellaneous Equipment: Scarifiers, disks, spike tooth or spike tooth harrows, earth hauling equipment, and other equipment must be suitable for construction of fills.
MATERIALS
A. Imported fill material used under pavements, shall consist of low plasticity material having a plasticity index (PI) between 5 and 15, a liquid limit less than 40, and containing a minimum of 15% fines (material passing the 200 sieve).
N. EXCAVATION
A. After knocking off tops of existing ridges in site to form uniform sections, excavate to lines, grades, and elevations indicated on the Plans for subsequent construction of slopes or pavement. Notify Engineer if unsatisfactory materials are encountered.
B. Inspect the subgrade for soft spots, and proof-roll as necessary to provide firm surface. All areas of cut and uncut areas to receive fill shall be tested by the Soils Engineer prior to placing fill or improvements.
C. Adequate grades shall be maintained during construction to allow proper drainage and to prevent interference or delay of the work.
D. All exposed subgrade beneath proposed pavement (not existing) shall be scarified to a depth of eight (8) inches and moisture conditioned and compacted to 95% density per standard proctor or at above optimum moisture content.
E. When wet excavation is encountered, the excavated area shall be de-watered and kept free of water. All saturated material shall be removed, filled with new material and tested before fill or improvements are placed.
O. DEBRIS, RUBBISH AND OTHER MATERIAL SHALL BE DISPOSED OF PROMPTLY AND SHALL NOT BE LEFT UNTIL FINAL CLEANUP OF SITE.

1.02 DESCRIPTION OF WORK

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E. INFORMATION NOT GUARANTEED
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A. The following Specifications are minimum requirements and shall govern except all local, county, state, and/or federal codes and ordinances shall govern when their requirements are in excess of those specified herein.
G. SITE CONDITIONS
A. No improvements shall be installed until required testing has been done on all fill or backfill.
H. TESTING AND INSPECTION
A. The Contractor shall be responsible for coordinating and scheduling all testing activities required by other sections of the Project Drawings and Specifications.
I. SUBMITTALS
A. Submit the following samples to the Testing Laboratory:
1. Fill and Backfill for proposed storm sewer improvements.
B. Submit all Testing Lab results to Engineer, Owner, and Tenant.
J. PRODUCTS
A. Use only equipment that has been approved for this Project.
B. Grading Equipment: Furnish, operate and maintain such equipment as is necessary to produce uniform layers, section and smoothness of grade for compaction and drainage.
C. Compaction Equipment: Use sheepsfoot type rollers either tractor drawn or self propelled, rubber tired rollers, or other equipment capable of obtaining the requirements.
D. Dynamic Compaction: If desired by the Owner, perform Dynamic Compaction in accordance with the procedures and recommendations specified in the Geotechnical Report (when applicable).
K. SPRINKLING EQUIPMENT: Use tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
L. Miscellaneous Equipment: Scarifiers, disks, spike tooth or spike tooth harrows, earth hauling equipment, and other equipment must be suitable for construction of fills.
MATERIALS
A. Imported fill material used under pavements, shall consist of low plasticity material having a plasticity index (PI) between 5 and 15, a liquid limit less than 40, and containing a minimum of 15% fines (material passing the 200 sieve).
N. EXCAVATION
A. After knocking off tops of existing ridges in site to form uniform sections, excavate to lines, grades, and elevations indicated on the Plans for subsequent construction of slopes or pavement. Notify Engineer if unsatisfactory materials are encountered.
B. Inspect the subgrade for soft spots, and proof-roll as necessary to provide firm surface. All areas of cut and uncut areas to receive fill shall be tested by the Soils Engineer prior to placing fill or improvements.
C. Adequate grades shall be maintained during construction to allow proper drainage and to prevent interference or delay of the work.
D. All exposed subgrade beneath proposed pavement (not existing) shall be scarified to a depth of eight (8) inches and moisture conditioned and compacted to 95% density per standard proctor or at above optimum moisture content.
E. When wet excavation is encountered, the excavated area shall be de-watered and kept free of water. All saturated material shall be removed, filled with new material and tested before fill or improvements are placed.

1.10 PROTECTION OF EXISTING FEATURES

A. Do not interfere with use of public right-of-way. Maintain free and safe passage to and from.
B. Cease operations immediately and notify Engineer and Owner if safety of adjacent structures appears to be endangered. Take precautions to properly support structures. Do not resume operations until safety is restored.
C. Prevent movement, settlement or collapse of all adjacent structures, sidewalks, etc. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the Owner.
D. Dynamic Compaction: If desired by the Owner, perform Dynamic Compaction in accordance with the procedures and recommendations specified in the Geotechnical Report (when applicable).
E. SPRINKLING EQUIPMENT: Use tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
L. Miscellaneous Equipment: Scarifiers, disks, spike tooth or spike tooth harrows, earth hauling equipment, and other equipment must be suitable for construction of fills.
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D. All exposed subgrade beneath proposed pavement (not existing) shall be scarified to a depth of eight (8) inches and moisture conditioned and compacted to 95% density per standard proctor or at above optimum moisture content.
E. When wet excavation is encountered, the excavated area shall be de-watered and kept free of water. All saturated material shall be removed, filled with new material and tested before fill or improvements are placed.

1.11 MAINTAINING ACCESS

A. Do not close or obstruct public or private roadways without permits. Conduct operations with minimum interference to public or private roadways.
D. Dynamic Compaction: If desired by the Owner, perform Dynamic Compaction in accordance with the procedures and recommendations specified in the Geotechnical Report (when applicable).
E. SPRINKLING EQUIPMENT: Use tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to variable surface widths.
L. Miscellaneous Equipment: Scarifiers, disks, spike tooth or spike tooth harrows, earth hauling equipment, and other equipment must be suitable for construction of fills.
MATERIALS
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E. When wet excavation is encountered, the excavated area shall be de-watered and kept free of water. All saturated material shall be removed, filled with new material and tested before fill or improvements are placed.

PART 2: PRODUCTS

NONE

PART 3: EXECUTION

3.01 CLEARING AND GRUBBING

A. The site shall be cleared of all vegetation, trees, stumps, roots, boulders, grasses, organic matter, debris and deleterious materials not designated by the Owner or indicated on the Plans to be preserved. All cleared and grubbed material shall be disposed of off-site by the Contractor. It is the intent of this specification to provide for the removal and disposal of all obstructions and objectionable materials not specifically provided for elsewhere on the Plans and in the Specifications.
B. Areas where organic fill is exposed due to clearing and grubbing shall be reported to and the organic fill is properly returned, if necessary. All returned organic fill shall be legally disposed of in a manner as required by local and state authorities.
C. Should the work be in violation of the Contract Documents or should there be a likelihood of the concrete having been frozen, the Contractor, if so directed by the Engineer or Owner shall, at his own expense, make loading tests. If the unit area or member under consideration fails to pass the loading test or shows signs of failure, it shall either be removed and rebuilt by the Contractor, or additional construction as directed by the Engineer or Owner as necessary to make the structure sound, shall be performed by the Contractor.
1. Conduct loading tests in the presence of representatives of the Engineer and Owner in accordance with Chapter 20 of ACI 318.
G. Submit one (1) copy of all reports, certificates and test results to the Engineer, Owner and Contractor.
1. Concrete Test Reports must include the following minimum information:
a. Store name and Number and Location
b. Specified Mix Design and Strength in PSI

3.02 TOPSOIL

A. Natural surface soil is very limited on this site, however, where existent in grassed areas shall be removed from the limits of the work and stockpiled in an area approved by the Owner and Engineer. The topsoil stockpiles shall be maintained in a confined area and protected from excessive erosion. Upon completion of all utilities and paving, replace topsoil on all unimproved areas within the limits of the work. Fine grade topsoil to final grade within a tolerance of #1.0.
B. Areas where organic fill is exposed due to clearing and grubbing shall be reported to and the organic fill is properly returned, if necessary. All returned organic fill shall be legally disposed of in a manner as required by local and state authorities.
C. Should the work be in violation of the Contract Documents or should there be a likelihood of the concrete having been frozen, the Contractor, if so directed by the Engineer or Owner shall, at his own expense, make loading tests. If the unit area or member under consideration fails to pass the loading test or shows signs of failure, it shall either be removed and rebuilt by the Contractor, or additional construction as directed by the Engineer or Owner as necessary to make the structure sound, shall be performed by the Contractor.
1. Conduct loading tests in the presence of representatives of the Engineer and Owner in accordance with Chapter 20 of ACI 318.
G. Submit one (1) copy of all reports, certificates and test results to the Engineer, Owner and Contractor.
1. Concrete Test Reports must include the following minimum information:
a. Store name and Number and Location
b. Specified Mix Design and Strength in PSI

3.03 DISPOSAL OF MATERIALS

A. Material resulting from the site preparation work and not scheduled to be salvaged and which is unsuitable for reuse on the project, shall become the property of the Contractor and shall be legally disposed of off-site in an approved disposal facility.
B. Debris, rubbish and other material shall be disposed of promptly and shall not be left until final cleanup of site.
END OF SECTION 02100

SECTION 02200 - EARTHWORK

PART 1: GENERAL

1.01 SCOPE

A. Perform all work required for the complete and satisfactory execution of all site preparation indicated on the drawings and specified herein.
B. Related information or work specified elsewhere in the Project Manual includes, but is not limited to, the following:
1. General and Supplementary Conditions of the Contract
2. Division 1 - As applicable
3. Section 01410 - Testing Laboratory Service
4. Section 02100 - Site Preparation
5. Section 02510 - Asphaltic Concrete Pavement
6. Section 02511 - Portland Cement Concrete Pavement
C. DESCRIPTION OF WORK
A. Unclassified Excavation: All required excavation within the construction limits, including grading, parking areas, and drives; the removal, proper utilization or disposal of all excavated material and the shaping and finishing of all site earthwork in conformity to the lines and grades as shown in the Plans and specified elsewhere.
D. EXISTING UTILITIES
A. The Plans show the approximate location of all known underground utility lines and