

**CONTRACTOR SCOPE OF WORK
VA MEDICAL CENTER PROVIDENCE, RI
650-312**

Testing Services for Expand Supply Processing and Distribution

1. GENERAL:

The Department of Veterans Affairs (VA) proposes to construct an addition to expand Building No. 1 at the Providence VA Medical Center, 830 Chalkstone Ave., Providence RI 02908. The construction contract is to be awarded in April 2016.

It is the intent of the Department of Veterans Affairs, Facilities Management Section (FMS) to obtain inspection and testing services for this project. The project will be procured under NAICS Code 541330 – Engineering Services.

The U.S. Department of Veterans Affairs, Facility Management Service (FMS) is seeking contractors who can provide professional on-site inspection and testing services, and laboratory testing services for the construction of the proposed building addition in accordance with the project plans and specifications, the specifications contained herein, and the Federal Acquisition Regulations. **The period of performance will be eighteen (30) months for the Construction and Warranty phase from NTP or award date.**

VA Project Manager **Richard H. Pointon, RA** Telephone # **401-459-4760 x 1542**

2. PROJECT SCOPE OF WORK:

Third-party inspection and testing services are required for the construction of the proposed addition with a construction cost of between \$7,000,000.00 to \$10,000,000.00.

The inspection and testing firm and proposed team shall be familiar with VA construction practices, materials and construction standards.

The inspection and testing firm shall provide professional services to include all labor, transportation, materials, apparatus, tools, equipment, expenses and fees related to the work necessary to fully complete all inspection and testing tasks required by the project documents.

After award, but prior to the start of any field or office work which may incur charges to the VA, the inspection and testing contractor shall contact the VA Project Manager to review proposed methods and plans for execution and completion of the work and to review infection control procedures, interim life safety procedures, needed permits and the Building Contractor's site-specific safety plan.

- 2.1 See Specification Sections 01 45 29 for a description of the work, and types and frequency of tests and inspections to be conducted. The inspection and testing contractor will be given advance notice by 12:00 PM the previous workday and shall provide services at the site by 7 AM the next work day.

A rate sheet is attached that provides a listing of anticipated tests and services with estimated quantities for each line item.

3. SELECTION CRITERIA

Corporate Requirements:

- 3.1 Location – Offeror shall have an office within 100 miles of Providence, RI.
- 3.2 Experience -- Firms shall demonstrate specific relevant experience in construction inspection and testing services for a minimum of five projects completed within the past five year, each with a construction dollar value in excess of \$2.5 million. For each project provide the following information:
 - A. Project title, location and brief description including the building use (Medical Facility, etc.).
 - B. Project owner, name, and telephone number of owner's contact person.
 - C. Project Design Architect and Engineers (consultants if utilized) and name and telephone number of contact person(s).
 - D. Project Prime Contractor and Major Subcontractors with name and telephone number of contact person(s).
 - E. Project Statistics including start and completion dates for design and construction, cost, square footage, number of levels and any awards received.
- 3.3 Personnel Requirements
 - A. General - Offeror must address and demonstrate the specialized experience and technical competence of the inspection and testing team members in each discipline. The individuals listed in the offeror's proposal shall be the individuals who perform the work. Resumes, personnel data forms or personnel qualification statements must be submitted showing the staff has the required training and experience, and is capable of performing the required inspection and testing tasks. Offeror's proposal shall demonstrate the firm has completed inspection and testing services for construction projects of similar scope and schedule.
 - B. Professional Qualifications –Team members shall have the certifications required by the project specifications.

4. SUBMITTALS

Prior to commencing any work, the Contractor shall submit to and receive approval of the VAMC Providence, RI for the following:

- 4.1 Certification from the Contractor per Section 1.3-A of Specification 01 45 29.

During construction the Contractor shall provide/submit to the VA, in addition to and or in conjunction with the requirements of the project specifications, the following;

- 4.2 Construction inspection reports for each site visit, and laboratory test results/reports

- A. Submit all inspection reports from previous week by the close of business on Tuesday of the following week.
 - 1. For any work not meeting the requirements of the project specifications and/or documents, immediately notify the VA Project Manager both verbally and with written explanation of the irregularity via e-mail.
- B. Submit laboratory reports/reports indicating materials do not meet the requirements of the project specifications and/or documents within 3 business days.
 - 1. For any materials not meeting the requirements of the project specifications and/or documents, immediately notify the VA Project Manager both verbally and with written explanation of the irregularity via e-mail.
- C. Provide updated inspection checklist showing testing and inspection services completed to date on the first day of each month.

Upon completion of project testing and inspection services required by the project documents, and before submitting invoice for final payment, provide the following in addition and or conjunction to the requirements of the project specifications the following:

- 4.3 A letter signed by the Contractor's Project Manager addressed to the VA Project Manager indicating that all required inspections and tests have been completed, that all test results have been provided to the VA, and a summary of the required inspections and tests.
- 4.4 Compiled hard copies of the Inspection Reports and Laboratory Inspection reports.
- 4.5 Electronic copies of the compiled Inspection Reports and Laboratory Inspection reports.

5. PROPOSED SCHEDULE:

Work shall commence upon receipt of a Notice to Proceed from the government.

6. WORK LOCATION AND RESTRICTIONS:

The work site location is at Building No. 1 located on the Providence VA Medical Center campus, 830 Chalkstone Ave, Providence, RI. The building addition will be located adjacent to the Surgical Suite in the A wing.

Work shall be performed primarily between 7:00 AM to 4:30 PM Monday through Friday, however work may be required outside of these hours (holidays excepted), including weekends, unless other times are arranged in advance and approved in writing by the Project Manager. When the Building Contractor's work interferes with hospital functions, such as when work produces excessive noise, odors, dust, utility service interruptions, or other interferences with normal hospital operations that cannot be contained within the area of work, the Building Contractor shall perform said work at other than normal hours and as directed by the Project Manager. When this occurs, inspection and testing services shall be provided at the other than normal hours as well.

7. PARKING:

Parking is rigidly controlled throughout the Medical Center. Parking of privately-owned vehicles

by contractor personnel is prohibited on the hospital campus and is only allowed at the Davis Park location off Chalkstone Avenue. Parking in designated patient parking areas is strictly prohibited. Parking on grass is also prohibited. Parking for equipment necessary to perform the work will be authorized in advance of starting the project. Parking passes will be issued by the VA Police. Parking by contractors will be regulated in accordance with Providence VA Medical Center Policy Memorandum 07B-3 entitled Registration of Privately Owned Vehicles (Appendix A).

8. STORAGE OF EQUIPMENT & MATERIALS:

The inspection and testing contractor shall arrange with the Project Manager for allocation of required workspace, if needed, in addition to the storage of equipment and material to be used for this project, if space is available. Storage space is very limited and there is no guarantee that space will be available for storage of equipment and material, and the inspection and testing contractor shall anticipate the need to remove equipment and material from the campus on a daily basis. There are no exclusive areas within the campus that can be designated as storage areas for this project or contractor's storage needs.

9. DEBRIS CONTROL AND REMOVAL

The inspection and testing contractor shall be required to actively police the work site in order to control the accumulation and inadvertent dispersal of waste materials and debris associated with their work. The inspection and testing contractor shall remove waste materials and debris from the campus at any point in time when the waste materials and debris poses an obstacle, undue nuisance or hazard to patients, employees, or other contractors. Waste materials and debris shall be removed from the campus at the end of each work day at a minimum. All waste material and debris shall be removed off the site by the inspection and testing contractor and shall be disposed of in accordance with applicable State and Federal regulations.

10. PROJECT SAFETY:

All site workers who perform any activity or serve any function on the project site shall have completed the 10-hour or 30-hour OSHA Construction Safety course and other relevant competency training. Contractor shall submit training records of all such employees for approval before the start of work.

All site workers are required to attend a 1-hour VA safety briefing before the employee will be allowed to commence with any work activities on VA property.

11. INTERIM LIFE SAFETY PROTECTION MEASURES:

The Building Contractor participated with the VA in the preparation of an interim life safety measures and fire protection plan that will be implemented during construction of this project. At a minimum, the testing and inspection contractor shall comply with the following requirements of the interim life safety measures and fire protection plan:

- 11.1 Inspection contractor's testing and supplies or equipment shall not obstruct egress or exit paths from the building or work area, and shall not pose an obstacle to emergency personnel and services.

12. MATERIAL & WORKMANSHIP QUALITY:

Inspection and testing services shall comply with all codes, standards, and recommendations of all Authorities Having Jurisdiction (AHJ). All work shall be done in a neat, orderly and professional manner according to the best trade practices and to the satisfaction of the Project Manager.

13. SECURITY:

All contractor personnel shall obtain a short-term identification badge issued by the Project Manager. Such badge shall be worn by the individual and prominently displayed at all times while on VA property. No employee of the contractor shall enter the project site without a valid identification badge issued by the VA. In order to obtain a short-term identification badge, contractor personnel shall present to the Project Manager a valid (non-expired) photo identification issued by a US federal, state or local government agency.

All contractor personnel are subject to inspection of personal effects when entering or leaving the project site.

14. PROPOSAL REQUIREMENTS:

General;

14.1 This is a Lowest Price Technically Acceptable (LPTA) solicitation, Award will be made to the lowest evaluated price proposal meeting or exceeding the acceptability standards for non-cost factors.

14.2 Technical and Cost proposals shall be received before the closing date and time of the solicitation. There will be no public opening of the proposals. Late offers will not be considered.

14.3 Offeror's that have the capability to perform this work are required to submit an original plus three (3) copies of their technical proposal and an original plus two (2) copies of their cost proposal. An electronic copy of the technical proposal should be submitted electronically on a CD. Submit information to:

Kathleen Koseoglu
Contract Specialist/Contracting Officer
VISN1 Contracting (90C) - VA Medical Center
830 Chalkstone Ave.
Providence, RI 02908

14.4 Technical and Cost sections of the Offerors proposal will be evaluated independently. The technical proposal shall be evaluated on a technically qualified or unqualified basis. Offeror shall separately bind each section. Each section must therefore be labeled with the Offeror's organization, business address, and VA

Project Number. Offerors shall affix their names and return addresses on their envelope/packaging.

14.5 The attached cost estimating form shall be used for submitting cost offers. Submit original and two copies with a bid guarantee as stipulated in the Section “Instructions, Conditions, and Notices to Offerors”:

14.6 Offeror shall submit a price for:

Construction Inspection and Testing Services – The offeror shall provide all labor, materials, instruments, supervision and professional services required to complete the scope of work in this solicitation for the construction inspection and testing of the building addition for Supply Processing and Distribution. The construction duration is estimated to be approximately 30 months.

15. INVOICING:

Invoice for services rendered on a monthly basis.

16. ATTACHMENTS:

Appendix A – Registration of Privately Owned Vehicles
Section 01 45 29 Testing Laboratory Services – Expand (SPD)
650-312 VAMC Providence – Inspection and Testing Price Estimate Form Blank.

APPENDIX A

**VA MEDICAL CENTER
PROVIDENCE, RHODE ISLAND**

**POLICY MEMORANDUM 07B-3
July 28, 2014 (07B)**

REGISTRATION OF PRIVATELY OWNED VEHICLES

1. PURPOSE

To provide for the registration of all staff members and contractor vehicles which are parked or operated on the Medical Center grounds. This program will allow VA Police Officers to identify the ownership of vehicles, monitor and control vehicle parking, enforce applicable traffic regulations and facilitate contact with the owners of vehicles when it is necessary and in the interest of safety, security and legitimate enforcement efforts.

2. POLICY

a. All staff members must register their vehicles with the VA Police Service within 48 hours after their reporting for duty at the Medical Center. Compliance with this policy is a condition of employment.

b. The registration process will include issuance of a numbered VA parking decal. This decal must be displayed on the inside, driver side, lower corner of the windshield or inside, center, of the windshield by the rear-view mirror. Decals may be displayed in any visible location on motorcycles.

3. DEFINITIONS

a. Staff - for the purpose of this policy, staff shall include all VA employees, non-compensated employees, medical residents and volunteers.

b. Contractor Supervisors - for the purpose of this policy, Contractor Supervisors include those individuals who represent a company, who is under contractual obligation to the government for services related to the maintenance and construction of the Medical Center's infrastructure. Supervisors are designated by project managers. Supervisors are allowed to park on site for the purpose of managing their assigned tasks. Those contractors not designated as supervisors will not park on property. Supervisors will ensure that their employees meet the requirements of this policy.

c. Contractors - for the purpose of this policy, contractors include those individuals employed by a company which is obligated by contract to the government for services related to the maintenance and construction of the Medical Center's infrastructure. Contractors are required to register their vehicles on property and maintain a valid parking permit with their vehicles. That permit will be displayed at all times. Contractors will not park on VA property; however, they may park in a designated area off property.

4. MEMBERSHIP

None.

5. PROCEDURES

a. All staff members and contractor supervisors will complete the vehicle registration form at the time of initial employment or service and will report to the VA Police Service for issuance of a decal. Proof of a valid state vehicle registration and current motor vehicle insurance policy must be provided at the time of registration. Color coded and numbered decals will be issued as follows:

- (1) Staff Physicians, the Director and Associate Directors - RED.

(2) Employees - GREEN or Employees in Car Pool Program - BROWN.

(3) Volunteers - YELLOW.

(4) Temporary - BLACK.

(5) Contractor Supervisor - ORANGE (hanging style).

(6) Special Permit- As directed by Police Services.

b. All staff members who have previously registered their vehicles must re-register their vehicle each time any of the following occurs:

(1) Change of state registration plate number.

(2) Change of vehicle.

(3) Loss of decal (i.e., windshield replacement).

c. Vehicle decals are considered a controlled item and as such, must be returned to the VA Police upon completion of a staff member's employment or service at the Medical Center.

d. Handicapped parking spaces, located in all parking lots on Medical Center grounds, may be utilized by any staff member who has been issued a state or VA handicap placard. The placard must be displayed at all times while said vehicles are parked in a handicapped designated space.

(1) Requests for VA handicap placards will be submitted to the Chief of Police. The requesting employee will be referred to the Employee Health Clinician for determination of the extent of disability. The Employee Health Clinician will then forward this determination to the Chief of Police for determination of issuance or non-issuance of the placard.

(2) All VA handicap placards will be issued for a limited period of time. Long term disabilities will require issuance of a state handicap placard. VA handicap placards are considered a controlled item and as such, must be returned to the VA Police.

e. Vendors and contract staff for all services are required to obtain a temporary parking placard issued by either the Facilities Management Service or the Police Service.

6. RESPONSIBILITY

a. The Human Resources Management Service is responsible for instructing new employees as to this policy and the requirement to respond to the VA Police office to process a vehicle registration form.

b. Service Chiefs/Line Managers are responsible for instructing new volunteers as to this policy and the requirement to respond to the VA Police office to process a vehicle registration form.

c. The VA Police Service is responsible for issuance of all parking decals and placards and maintaining accurate records of all motor vehicles registered at the Medical Center.

d. The Employee Health Clinician is responsible for assisting the Chief of Police in determining a staff member's eligibility for issuance of a VA handicap placard for acute or episodic illnesses requiring short-term parking needs.

e. All staff members are responsible for compliance with this policy and notifying the VA Police Service of all incidences of lost, stolen or damaged decals.

7. REFERENCES

VA Handbook 0730 "Security and Law Enforcement Operations"

8. RESCISSIONS

Policy Memorandum 07B-03, Registration of Privately Owned Vehicles, dated May 10, 2013.

SUSAN A. MACKENZIE, PhD

Medical Center Director

Attachments: None

DISTRIBUTION: D

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies materials testing activities and inspection services required during project construction to be provided by a Testing Laboratory retained by Department of Veterans.

1.2 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Society for Testing and Materials (ASTM):
 - A325-10Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A490-12Standard Specification for Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
 - C31/C31M-10Standard Practice for Making and Curing Concrete Test Specimens in the Field
 - C33/C33M-11aStandard Specification for Concrete Aggregates
 - C39/C39M-12Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 - C109/C109M-11bStandard Test Method for Compressive Strength of Hydraulic Cement Mortars
 - C136-06Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
 - C138/C138M-10bStandard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
 - C140-12Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
 - C143/C143M-10aStandard Test Method for Slump of Hydraulic Cement Concrete
 - C172/C172M-10Standard Practice for Sampling Freshly Mixed Concrete
 - C173/C173M-10bStandard Test Method for Air Content of freshly Mixed Concrete by the Volumetric Method
 - C780-11Standard Test Method for Pre-construction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

C1019-11Standard Test Method for Sampling and Testing
Grout

C1064/C1064M-11Standard Test Method for Temperature of Freshly
Mixed Portland Cement Concrete

C1077-11cStandard Practice for Agencies Testing Concrete
and Concrete Aggregates for Use in Construction
and Criteria for Testing Agency Evaluation

D698-07e1Standard Test Methods for Laboratory Compaction
Characteristics of Soil Using Standard Effort

D1188-07e1Standard Test Method for Bulk Specific Gravity
and Density of Compacted Bituminous Mixtures
Using Coated Samples

D1556-07Standard Test Method for Density and Unit Weight
of Soil in Place by the Sand-Cone Method

D1557-09Standard Test Methods for Laboratory Compaction
Characteristics of Soil Using Modified Effort
(56,000ft lbf/ft³ (2,700 KNm/m³))

D2167-08)Standard Test Method for Density and Unit Weight
of Soil in Place by the Rubber Balloon Method

D3666-11Standard Specification for Minimum Requirements
for Agencies Testing and Inspecting Road and
Paving Materials

D3740-11Standard Practice for Minimum Requirements for
Agencies Engaged in Testing and/or Inspection
of Soil and Rock as used in Engineering Design
and Construction

D6938-10Standard Test Method for In-Place Density and
Water Content of Soil and Soil-Aggregate by
Nuclear Methods (Shallow Depth)

E164-08Standard Practice for Contact Ultrasonic Testing
of Weldments

E329-11cStandard Specification for Agencies Engaged in
Construction Inspection, Testing, or Special
Inspection

E543-09Standard Specification for Agencies Performing
Non-Destructive Testing

E605-93(R2011)Standard Test Methods for Thickness and Density
of Sprayed Fire Resistive Material (SFRM)
Applied to Structural Members

E709-08Standard Guide for Magnetic Particle Examination

E1155-96(R2008)Determining FF Floor Flatness and FL Floor
Levelness Numbers

C. American Welding Society (AWS):

D1.D1.1M-10Structural Welding Code-Steel

1.3 REQUIREMENTS:

- A. Accreditation Requirements: Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E329, C1077, D3666, D3740, A880, E543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office."
- B. Inspection and Testing: Testing laboratory shall inspect materials and workmanship and perform tests described herein and additional tests requested by Resident Engineer. When it appears materials furnished, or work performed by Contractor fail to meet construction contract requirements, Testing Laboratory shall direct attention of Resident Engineer to such failure.
- C. Written Reports: Testing laboratory shall submit test reports to Resident Engineer, Contractor, unless other arrangements are agreed to in writing by the Resident Engineer. Submit reports of tests that fail to meet construction contract requirements on colored paper.
- D. Verbal Reports: Give verbal notification to Resident Engineer immediately of any irregularity.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EARTHWORK:

- A. General: The Testing Laboratory shall provide qualified personnel, materials, equipment, and transportation as required to perform the services identified/required herein, within the agreed to schedule and/or time frame. The work to be performed shall be as identified herein and shall include but not be limited to the following:
1. Observe fill and subgrades during proof-rolling to evaluate suitability of surface material to receive fill or base course. Provide recommendations to the Resident Engineer regarding suitability or unsuitability of areas where proof-rolling was observed. Where unsuitable results are observed, witness excavation

- of unsuitable material and recommend to Resident Engineer extent of removal and replacement of unsuitable materials and observe proof-rolling of replaced areas until satisfactory results are obtained.
2. Provide full time observation of fill placement and compaction and field density testing in building areas and provide part time observation of fill placement and compaction and field density testing in pavement areas to verify that earthwork compaction obtained is in accordance with contract documents.
 3. Provide supervised geotechnical technician to inspect excavation, subsurface preparation, and backfill for structural fill.

B. Testing Compaction:

1. Determine maximum density and optimum moisture content for each type of fill, backfill and subgrade material used, in compliance with ASTM D698 and/or ASTM D1557.
2. Make field density tests in accordance with the primary testing method following ASTM D6938 wherever possible. Field density tests utilizing ASTM D1556 or ASTM D2167 shall be utilized on a case by case basis only if there are problems with the validity of the results from the primary method due to specific site field conditions. Should the testing laboratory propose these alternative methods, they should provide satisfactory explanation to the Resident Engineer before the tests are conducted.
 - a. Building Slab Subgrade: At least one test of subgrade for every 185 m² (2000 square feet) of building slab, but in no case fewer than three tests. In each compacted fill layer, perform one test for every 185 m² (2000 square feet) of overlaying building slab, but in no case fewer than three tests.
 - b. Foundation Wall Backfill: One test per 30 m (100 feet) of each layer of compacted fill but in no case fewer than two tests.
 - c. Pavement Subgrade: One test for each 335 m² (400 square yards), but in no case fewer than two tests.
 - d. Curb, Gutter, and Sidewalk: One test for each 90 m (300 feet), but in no case fewer than two tests.
 - e. Trenches: One test at maximum 30 m (100 foot) intervals per 1200 mm (4 foot) of vertical lift and at changes in required density, but in no case fewer than two tests.
 - f. Footing Subgrade: At least one test for each layer of soil on which footings will be placed. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested subgrade when

acceptable to Resident Engineer. In each compacted fill layer below wall footings, perform one field density test for every 30 m (100 feet) of wall. Verify subgrade is level, all loose or disturbed soils have been removed, and correlate actual soil conditions observed with those indicated by test borings.

- C. Fill and Backfill Material Gradation: One test per stockpiled or in-place source material. Gradation of fill and backfill material shall be determined in accordance with ASTM C136.
- D. Testing for Footing Bearing Capacity: Evaluate if suitable bearing capacity material is encountered in footing subgrade.
- E. Testing Materials: Test suitability of on-site and off-site borrow as directed by Resident Engineer.

3.2 ASPHALT CONCRETE PAVING:

A. Aggregate Base Course:

- 1. Determine maximum density and optimum moisture content for aggregate base material in accordance with ASTM D1557, Method D.
- 2. Make a minimum of three field density tests on each day's final compaction on each aggregate course in accordance with ASTM D1556.
- 3. Sample and test aggregate as necessary to insure compliance with specification requirements for gradation, wear, and soundness as specified in the applicable state highway standards and specifications.

B. Asphalt Concrete:

- 1. Temperature: Check temperature of each load of asphalt concrete at mixing plant and at site of paving operation.
- 2. Density: Make a minimum of two field density tests in accordance with ASTM D1188 of asphalt base and surface course for each day's paving operation.

3.3 SITE WORK CONCRETE:

Test site work concrete including materials for concrete as required in Article CONCRETE of this section.

3.4 CONCRETE:

A. Field Inspection and Materials Testing:

- 1. Provide a technician at site of placement at all times to perform concrete sampling and testing.
- 2. Review the delivery tickets of the ready-mix concrete trucks arriving on-site. Notify the Contractor if the concrete cannot be placed within the specified time limits or if the type of concrete delivered is incorrect. Reject any loads that do not comply with the Specification requirements. Rejected loads are to be removed from the

- site at the Contractor's expense. Any rejected concrete that is placed will be subject to removal.
3. Take concrete samples at point of placement in accordance with ASTM C172. Mold and cure compression test cylinders in accordance with ASTM C31. Make at least three cylinders for each 40 m³ (50 cubic yards) or less of each concrete type, and at least three cylinders for any one day's pour for each concrete type. Label each cylinder with an identification number. Resident Engineer may require additional cylinders to be molded and cured under job conditions.
 4. Perform slump tests in accordance with ASTM C143. Test the first truck each day, and every time test cylinders are made. Test pumped concrete at the hopper and at the discharge end of the hose at the beginning of each day's pumping operations to determine change in slump.
 5. Determine the air content of concrete per ASTM C173. For concrete required to be air-entrained, test the first truck and every 20 m³ (25 cubic yards) thereafter each day. For concrete not required to be air-entrained, test every 80 m³ (100 cubic yards) at random. For pumped concrete, initially test concrete at both the hopper and the discharge end of the hose to determine change in air content.
 6. If slump or air content fall outside specified limits, make another test immediately from another portion of same batch.
 7. Perform unit weight tests in compliance with ASTM C138 for normal weight concrete and ASTM C567 for lightweight concrete. Test the first truck and each time cylinders are made.
 8. Notify laboratory technician at batch plant of mix irregularities and request materials and proportioning check.
 9. Verify that specified mixing has been accomplished.
 10. Environmental Conditions: Determine the temperature per ASTM C1064 for each truckload of concrete during hot weather and cold weather concreting operations:
 - a. When ambient air temperature falls below 4.4 degrees C (40 degrees F), record maximum and minimum air temperatures in each 24 hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.
 - b. When ambient air temperature rises above 29.4 degrees C (85 degrees F), record maximum and minimum air temperature in each 24 hour period; record minimum relative humidity; record maximum wind velocity; record maximum temperature of surface of hardened concrete.

11. Inspect the reinforcing steel placement, including bar size, bar spacing, top and bottom concrete cover, proper tie into the chairs, and grade of steel prior to concrete placement. Submit detailed report of observations.
 12. Observe conveying, placement, and consolidation of concrete for conformance to specifications.
 13. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.
 14. Observe curing procedures for conformance with specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.
 15. Observe preparations for placement of concrete:
 - a. Inspect handling, conveying, and placing equipment, inspect vibrating and compaction equipment.
 - b. Inspect preparation of construction, expansion, and isolation joints.
 16. Observe preparations for protection from hot weather, cold weather, sun, and rain, and preparations for curing.
 17. Observe concrete mixing:
 - a. Monitor and record amount of water added at project site.
 - b. Observe minimum and maximum mixing times.
 18. Measure concrete flatwork for levelness and flatness as follows:
 - a. Perform Floor Tolerance Measurements F_F and F_L in accordance with ASTM E1155. Calculate the actual overall F- numbers using the inferior/superior area method.
 - b. Perform all floor tolerance measurements within 48 hours after slab installation and prior to removal of shoring and formwork.
 - c. Provide the Contractor and the Resident Engineer with the results of all profile tests, including a running tabulation of the overall F_F and F_L values for all slabs installed to date, within 72 hours after each slab installation.
 19. Other inspections:
 - a. Grouting under base plates.
 - b. Grouting anchor bolts and reinforcing steel in hardened concrete.
- B. Laboratory Tests of Field Samples:
1. Test compression test cylinders for strength in accordance with ASTM C39. For each test series, test one cylinder at 7 days and one cylinder at 28 days. Use remaining cylinder as a spare tested as directed by Resident Engineer. Compile laboratory test reports as follows: Compressive strength test shall be result of one cylinder, except when one cylinder shows evidence of improper sampling, molding

or testing, in which case it shall be discarded and strength of spare cylinder shall be used.

2. Furnish certified compression test reports (duplicate) to Resident Engineer. In test report, indicate the following information:
 - a. Cylinder identification number and date cast.
 - b. Specific location at which test samples were taken.
 - c. Type of concrete, slump, and percent air.
 - d. Compressive strength of concrete in MPa (psi).
 - e. Weight of lightweight structural concrete in kg/m³ (pounds per cubic foot).
 - f. Weather conditions during placing.
 - g. Temperature of concrete in each test cylinder when test cylinder was molded.
 - h. Maximum and minimum ambient temperature during placing.
 - i. Ambient temperature when concrete sample in test cylinder was taken.
 - j. Date delivered to laboratory and date tested.

3.5 MASONRY:

A. Mortar Tests:

1. Laboratory compressive strength test:
 - a. Comply with ASTM C780.
 - b. Obtain samples during or immediately after discharge from batch mixer.
 - c. Furnish molds with 50 mm (2 inch), 3 compartment gang cube.
 - d. Test one sample at 7 days and 2 samples at 28 days.
2. Two tests during first week of operation; one test per week after initial test until masonry completion.

B. Grout Tests:

1. Laboratory compressive strength test:
 - a. Comply with ASTM C1019.
 - b. Test one sample at 7 days and 2 samples at 28 days.
 - c. Perform test for each 230 m² (2500 square feet) of masonry.

C. Masonry Unit Tests:

1. Laboratory Compressive Strength Test:
 - a. Comply with ASTM C140.
 - b. Test 3 samples for project.

3.6 STRUCTURAL STEEL:

- A. General: Provide shop and field inspection and testing services to certify structural steel work is done in accordance with contract documents. Welding shall conform to AWS D1.1 Structural Welding Code.

B. Prefabrication Inspection:

1. Review design and shop detail drawings for size, length, type and location of all welds to be made.
2. Approve welding procedure qualifications either by pre-qualification or by witnessing qualifications tests.
3. Approve welder qualifications by certification or retesting.
4. Approve procedure for control of distortion and shrinkage stresses.
5. Approve procedures for welding in accordance with applicable sections of AWS D1.1.

C. Fabrication and Erection:

1. Weld Inspection:

- a. Inspect welding equipment for capacity, maintenance and working condition.
- b. Verify specified electrodes and handling and storage of electrodes in accordance with AWS D1.1.
- c. Inspect preparation and assembly of materials to be welded for conformance with AWS D1.1.
- d. Inspect preheating and interpass temperatures for conformance with AWS D1.1.
- e. Measure 25 percent of fillet welds.
- f. Welding Magnetic Particle Testing: Test in accordance with ASTM E709 for a minimum of:
 - 1) 20 percent of all shear plate fillet welds at random, final pass only.
 - 2) 20 percent of all continuity plate and bracing gusset plate fillet welds, at random, final pass only.
 - 3) 100 percent of tension member fillet welds (i.e., hanger connection plates and other similar connections) for root and final passes.
 - 4) 20 percent of length of built-up column member partial penetration and fillet welds at random for root and final passes.
 - 5) 100 percent of length of built-up girder member partial penetration and fillet welds for root and final passes.
- g. Welding Ultrasonic Testing: Test in accordance with ASTM E164 and AWS D1.1 for 100 percent of all full penetration welds, braced and moment frame column splices, and a minimum of 20 percent of all other partial penetration column splices, at random.
- h. Verify that correction of rejected welds are made in accordance with AWS D1.1.

- i. Testing and inspection do not relieve the Contractor of the responsibility for providing materials and fabrication procedures in compliance with the specified requirements.
2. Bolt Inspection:
 - a. Inspect high-strength bolted connections in accordance AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts.
 - b. Slip-Critical Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in each connection in accordance with AISC Specifications for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
 - c. Fully Pre-tensioned Connections: Inspect 10 percent of bolts, but not less than 2 bolts, selected at random in 25 percent of connections in accordance with AISC Specification for Structural Joints Using ASTM A325 or A490 Bolts. Inspect all bolts in connection when one or more are rejected.
 - d. Bolts installed by turn-of-nut tightening may be inspected with calibrated wrench when visual inspection was not performed during tightening.
 - e. Snug Tight Connections: Inspect 10 percent of connections verifying that plies of connected elements have been brought into snug contact.
 - f. Inspect field erected assemblies; verify locations of structural steel for plumbness, level, and alignment.
- D. Submit inspection reports, record of welders and their certification, and identification, and instances of noncompliance to Resident Engineer.

3.7 STEEL DECKING:

- A. Provide field inspection of welds of metal deck to the supporting steel, and testing services to insure steel decking has been installed in accordance with contract documents and manufacturer's requirements.
- B. Qualification of Field Welding: Qualify welding processes and welding operators in accordance with "Welder Qualification" procedures of AWS D1.1. Refer to the "Plug Weld Qualification Procedure" in Part 3 "Field Quality Control."
- C. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

3.8 SPRAYED-ON FIREPROOFING:

- A. Provide field inspection and testing services to certify sprayed-on fireproofing has been applied in accordance with contract documents. Provide tests for each type of spray-applied fireproofing.

- B. Obtain a copy of approved submittals from Resident Engineer.
- C. Use approved installation in test areas as criteria for inspection of work.
- D. Test sprayed-on fireproofing for thickness and density in accordance with ASTM E605.
 - 1. Thickness gauge specified in ASTM E605 may be modified for pole extension so that overhead sprayed material can be reached from floor.
- E. Location of test areas for field tests as follows:
 - 1. Thickness: Select one bay per floor, or one bay for each 930 m² (10,000 square feet) of floor area, whichever provides for greater number of tests. Take thickness determinations from each of following locations: Metal deck, beam, and column.
 - 2. Density: Take density determinations from each floor, or one test from each 930 m² (10,000 square feet) of floor area, whichever provides for greater number of tests, from each of the following areas: Underside of metal deck, beam flanges, and beam web.
- F. Submit inspection reports, certification, and instances of noncompliance to Resident Engineer.

- - - E N D - - -