SECTION  – quality control

1. General
   1. GENERAL requirements
      1. Related Requirements Specified Elsewhere:
         1. Inspections and testing required by the laws, ordinances, rules, and regulations of authorities having jurisdiction:
            1. General Conditions of the Contract.
         2. Verification by certification that specified products meet requirements of reference standards:
            1. In applicable Sections of the Specification.
         3. Testing, balancing, and adjusting of equipment:
            1. In applicable mechanical and electrical Sections of the Specification.
         4. Cutting and Patching:
            1. Section 01 31 13 – Project Coordination.
         5. Submission of Inspection and Testing Reports:
            1. Section 01 33 00 – Submittal Procedures.
   2. TOLERANCES FOR INSTALLATION OF WORK
      1. Unless acceptable tolerances are otherwise specified in a Section or a reference standard or are otherwise required for proper functioning of equipment, site services, and mechanical and electrical systems:
         1. "plumb and level" shall mean plumb or level within 3mm in 3048mm (1/8" in 10').
         2. "square" shall mean not in excess of 10 seconds lesser or greater than 90 degrees.
         3. "straight" shall mean within 3mm (1/8") under a 3048mm (10') long straight edge.
   3. CONSTRUCTION REVIEW
      1. The Consultant and his sub-consultants may carry out construction review during the progress of the work. The Consultant's general review during construction, and inspection and testing by independent inspection and testing companies reporting to the Consultant, are both undertaken to inform the Owner of the Contractor's performance and shall in no way augment the Contractor's quality control or relieve him of contractual responsibility.
   4. QUALITY CONTROL
      1. Bring to the attention of the Consultant any defects in the work or departures from the Contract Documents which may occur during construction. The Consultant will decide upon corrective action and state his recommendations in writing.
      2. The Consultant may appoint and direct inspection and testing companies to review completed work in addition to inspection and testing specified for inclusion in the work under Source and Field Quality Control in other Sections.
   5. INSPECTION AND TESTING
      1. Owner will, with recommendations of Consultant, appoint Testing and Inspection Companies, representing, reporting and responsible to Owner through Consultant for testing services except for the following which shall be Contractor’s responsibility:
         1. Inspection and testing required by laws, ordinances, codes, rules, regulations, plan approval authorities, other legally constituted authority and/or by authorities having jurisdictions,
         2. Inspection and testing required by Contract Documents specified to be carried out by Contractor,
         3. Inspection and testing performed exclusively for Contractor's convenience.
         4. Additional testing required because of changes in materials, proportions of mixes requested by Contractor and Subcontractors as well as any extra testing of materials occasioned by lack of identification or by their failure to meet Specification requirements.
         5. Testing of structure or elements including load testing,
         6. Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment, and systems.
         7. Mill tests and certificates of compliance.
      2. Source and Field Quality Control Specified in Other Sections:
         1. This Section includes requirements for performance of inspection and testing specified under Source Quality Control and Field Quality Control in other Sections of the Specification.
         2. Do not include in work of this Section responsibilities and procedures that relate solely to an inspection and testing company's function under the direction of the Owner and that are specified in another Section which is paid for directly by the Owner. Such information is included in this Section for only the Contractor's information.
      3. Do not limit responsibility for ensuring that products and execution of the work meet Contract requirements and inspection and testing required to this end, to specified inspection and testing.
      4. Payment for Inspection and Testing Services:
         1. Payment for specified inspection and testing will be made by the Contractor, as required by each applicable Section.
         2. Payment for reinspection and retesting of defective and rejected work shall be made by the Owner and back-charged to the Contractor.
         3. Contractor to engage approved company(s) for inspections and tests for additional inspections and tests as may be performed for the Contractor's own purposes and convenience. Include cost of this inspection and testing in the Stipulated Price Contract.
         4. Include cost in the Stipulated Price Contract for tests of reinforcing steel for which no mill tests are submitted.
   6. INSPECTION AND TESTING SERVICES AND REFERENCE STANDARDS
      1. Qualifications of Inspection and Testing Companies:
         1. Companies engaged for inspection and testing shall provide equipment, methods of recording and evaluation, and knowledgeable personnel to conduct tests precisely as specified in reference standards.
         2. If requested, submit affidavits and copies of certificates of calibration made by an accredited calibrator to verify that testing equipment was calibrated, and its accuracy ensured within the previous twelve months.
         3. Inspection and testing of concrete and concrete materials will be carried out by a CSA Certified testing laboratory to CSA A283, for review in accordance with CSA A23.1/A23.2.
      2. Reference Standards:
         1. Perform inspection and testing in accordance with standards quoted and as required by procedures described in specified reference standards that are applicable to the work being inspected and tested.
   7. SUBMITTALS
      1. Submit inspection and testing reports in accordance with Section 01 33 00 – Submittal Procedures.
   8. RESPONSIBILITIES OF THE CONSULTANT
      1. The Contractor will submit a list of Inspection and Testing companies to the Consultant for his review.
      2. The Consultant and Contractor will direct inspection and testing companies in the type and extent of inspection and testing to be undertaken.
      3. The Consultant will receive submitted reports of inspections and tests for evaluation and will decide upon any actions that may be required.
      4. The Consultant will provide Drawings and Specifications required by inspection and testing companies.
   9. RESPONSIBILITIES OF THE CONTRACTOR
      1. Inspection and testing performed by firms engaged for Source and Field Quality Control specified in other Sections shall not relieve the Contractor from responsibility of performing his work in accordance with the Contract Documents.
      2. Provide access for inspection and testing personnel to work in progress and to fabricator's operations.
      3. Provide samples of materials to be tested in required quantities at locations testing is performed.
      4. Submit copies of mill test reports in accordance with Section 01 33 00 – Submittal Procedures.
      5. Provide labour and facilities:
         1. To facilitate inspections and tests.
         2. For storing of specimens at required temperature and free from vibration, in conformance with reference standard and inspection and testing company instructions.
         3. For obtaining, handling, and transporting of samples at site and plant.
      6. Notify Consultant, and inspection and testing company at least 48 hours before work to be inspected and tested commences.
      7. When it is discovered on inspection that work is proceeding with incorrect materials or methods, ensure that corrections are immediately made and that improperly completed work is replaced.
      8. Inspect all work done by subtrades prior to application of final cover materials i.e. pressure plates, drywall ceilings, concrete slab pours and the like.
   10. RESPONSIBILITIES OF INSPECTION AND TESTING COMPANIES
       1. Determine from Specifications and Drawings the extent of inspection and testing required for work of contract as directed by Consultant. Notify Consultant of any omissions or discrepancies in the work inspected and/or tested.
       2. Perform applicable inspection and testing described in the Specification and as may be additionally directed.
       3. Provide competent inspection and testing personnel when notified by the Contractor that applicable work is proceeding. Inspection personnel shall co-operate with the Consultant and Contractor to expedite the work.
       4. Inform the Consultant of intended scheduling of inspections and of each visit of inspection personnel to the work site and fabricator's operations.
       5. Notify the Consultant and Contractor of deficiencies and irregularities in work immediately they are observed in course of inspections and tests.
       6. Inspection and testing companies shall not perform or supervise any of the Contractor's work, and shall not authorize:
          1. Performance of work that is not in strict accordance with the Contract Documents.
          2. Approval or acceptance of any part of the work.
   11. INSPECTION AND TESTING PROCEDURES
       1. Perform specified inspection and testing only in accordance with specified reference standards, or as approved.
       2. Observe and report on compliance of work to requirements of Contract Documents.
       3. Ensure that inspectors are on site or at fabricator's operations for full duration of critical operations, and as otherwise required to determine that work is being performed in accordance with the Contract Documents.
       4. Identify samples.
       5. Identify sources of materials.
       6. Review and report on progress of work. Report on count of units fabricated and inspected at fabricator's operations.
       7. Observe and report on conditions of significance to work in progress at time of inspection or at fabricator's operations. Include where applicable and if critical to work in progress:
          1. Time and date of inspection.
          2. Temperature of air, materials, and adjacent surfaces.
          3. Humidity of air, and moisture content of materials and adjacent materials.
          4. Presence of sunlight, wind, rain, snow and other weather conditions.
       8. Include in reports all information critical to inspection and testing.
       9. Ensure that only materials from the work and intended for use therein are tested.
       10. Determine locations for work to be tested.
   12. DEFECTIVE WORK
       1. Where factual evidence exists, that defective workmanship has occurred or that work has been carried out incorporating defective materials, the Consultant may have tests, inspections or surveys performed, analytical calculation of structural strength made, and the like, in order to help determine whether the work must be replaced. Testing, retesting, inspections, or surveys carried out under these circumstances will be made at the Contractor's expense, regardless of their results, which may be such that, in the Consultant's opinion, the work may be acceptable.
       2. All testing shall be conducted in accordance with the requirements of the Consultant.
       3. Defective work discovered before expiration of the warranty period specified in the General Conditions of the Contract, as may be extended in this Specification, will be rejected, whether or not is has been previously inspected. If rejected, defective materials or work incorporating defective materials or workmanship shall be promptly removed and replaced or repaired to the satisfaction of the Consultant, at no expense to the Owner.
2. Products

Not Used

1. Execution

Not Used

END OF SECTION