

**Part 1        General**

**1.1            INSPECTION**

- .1      Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2      Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative, instructions or law of Place of Work.
- .3      If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4      Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

**1.2            ACCESS TO WORK**

- .1      Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2      Co-operate to provide reasonable facilities for such access.

**1.3            PROCEDURES**

- .1      Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2      Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3      Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.4            REJECTED WORK**

- .1      Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2      Make good other Contractor's work damaged by such removals or replacements promptly.

## **1.5 REPORTS**

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to manufacturer or fabricator of material being inspected or tested.

## **1.6 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

## **1.7 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations as specified in specific Section.
- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

## **1.8 MILL TESTS**

- .1 Submit mill test certificates as required of specification Sections.

## **1.9 FIELD TESTING**

- .1 Testing of at least two (2) typical assemblies will be carried out at the site, and costs related to these will be paid by the Client. Should the tested assemblies fail; the cost to re-test the wall assembly/curtain wall will be borne by the General Contractor. These tests shall be carried out on vertical curtain walls at the locations determined by the Architect at the appropriate time. One such test shall also include the perimeter of the curtain walls, the width of which exceeds by at least 300 mm the limits of these elements so as to verify the efficiency of the junctions with the other structures; Smoke tests in accordance with ASTM E1186 should also be carried out in order to determine the sources of infiltration, if any.
- .2 Unless otherwise indicated, field tests shall be conducted in accordance with the requirements of AAMA 501.1, 502 or 503, as applicable. If required by the test method, use a test chamber on the inside of the system being tested. Start testing only when the following conditions are met:
  - .1 The outdoor temperature is above 5 ° C;

- .2 The exterior cladding system is dry;
- .3 The exterior cladding system is completed where the test is to be carried out.
- .3 The tests shall be carried out at the earliest when 15% of the total work is completed and at the latest when 25% of the total work is completed.
- .4 Coordinate the tests with the laboratory at the places designated by the Architect, in order to allow these tests to be carried out no later than three (3) working days after written notice from the Architect.
- .5 Responsibilities of the Contractor:
  - .1 Coordinate the installation and testing of the exterior cladding. The Architect and the Laboratory Inspector will determine the locations of the completed coatings to be tested. Do not proceed with the installation of external coatings if unsatisfactory test results were produced before fault remedial measures were proposed and accepted.
  - .2 Inform the Architect and Laboratory Inspector before assembling and erecting the cladding system so that one of their representatives can be present during manufacture and erection.
  - .3 Provide sealed temporary fillings inside the mullions to prevent movement of air inside the mullions at the perimeter of the test assembly so that accurate air infiltration or exfiltration can be accurately measured through the wall of the test assembly.
  - .4 Provide a source of water that provides adequate pressure at the test site and connect it to the laboratory equipment for the infiltration test.
  - .5 Pay the cost of the tests required to re-check the unacceptable or corrected works.
  - .6 The Contractor shall also ensure that the laboratory performs the following:
    - .1 Install and relocate the test chamber and temporary seals to the test locations as required.
    - .2 Construct a portable test chamber, adequately reinforced to withstand the pressures required for testing. Make the test chamber of appropriate width, height and depth to the system being tested to be determined at the site (2 height bays, 1 vision and 1 eardrum x 2 bays width); The chamber must be sufficiently tight to withstand the pressures involved. Provide a viewing window of at least 600 x 600 mm and an access door of at least 600 x 750 mm placed 600 mm above the floor, complete with sealing gaskets, Air and compression type locking device. If necessary, a ceiling should also be provided for the test chamber.
    - .3 Seal all test chamber joints so that they are airtight. Seal between the structure and the cladding system at the perimeter of the test chamber during the test period. Submit shop drawings of sealing devices between the test chamber and the building structure,

- between the test chamber and the cladding, and between the structural framework of the building and the cladding.
- .4 Provide a reversible ventilator of adequate capacity, insulated from the test chamber, with supply duct to the chamber. Connect the sheath to the wall of the chamber facing the exterior cladding system. Seal the connection to the chamber and connect the fan to the power source.
  - .5 Provide flat-sided metal posts, rigidly anchored to the building structure, to serve as anchor points for laboratory measuring instruments. Remove studs and repair anchor points after completion of tests.
  - .6 Provide equipment and calibration in accordance with the requirements of AAMA 503.
  - .7 Provide an air flow meter for air infiltration and exfiltration testing.
  - .8 Provide the equipment and supports for spraying the water required for the water infiltration test.
  - .9 Provide the instruments on the test chamber envelope to measure the pressure difference between the test chamber and ambient air.
  - .10 Provide a continuous source of smoke to produce white smoke.
  - .11 Provide food coloring.
  - .12 Submit proposed instrumentation and test methodology.
  - .13 Provide test reports in accordance with the following requirements:
    - .1 Provide the Architect and the Client with four copies of the test report prepared by the laboratory and showing, for each test, the results obtained and the performances requested. Present the report in accordance with the requirements of AAMA 501.
    - .2 Give a minimum of 24 photos in .JPG format on CD ROM of each assembly during the tests taken according to the Architect's instructions.
- .6 Field testing – procedure:
- .1 The following tests shall be carried out in the presence of the Departmental Representative, and the Contractor:
    - .1 Vent the pressure in the chamber to the pressure indicated in the section dealing with airtightness performance requirements, and measure air infiltration. The maximum air infiltration must meet the requirements specified in the section dealing with air-tightness performance requirements.
    - .2 Smoke test according to ASTM E1186. Check smoke exfiltration at a static pressure difference of 75 Pa for a period of 15 minutes using a smoke bomb. There should be no significant exfiltration of smoke from the Architect's point of view.

- .3 Static pressure water infiltration test in accordance with the requirements of ASTM E1105.
  - .1 Check the water infiltration at a static pressure difference specified in the waterproof performance requirement. There should be no water infiltration.
  - .2 Measure and record the speed and direction of the wind outside during the tests.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**