Part 1 General

1.1 SUMMARY

.1 Division 01 – General Requirements.

.2 Specification Section 21 05 01 – Common Work Results for Mechanical.

.3 Related Sections:

.1 Section 23 31 13 01 – Metal Ducts – Low Pressure to 500 Pa.

1.2 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS):

.1 Material Safety Data Sheets (MSDS).

.2 Sheet Metal and Air Conditioning Contractor's National Association (SMACNA):

.1 SMACNA HVAC Air Duct Leakage Test Manual, 1985.

1.3 SUBMITTALS

.1 Make submittals in accordance with Division 01 – General Requirements.

.2 Co-ordinate submittal requirements and provide submittals in accordance with Division 01 – General Requirements.

.3 Test Reports: submit certified test reports from approved testing agency indicating compliance with specifications for specified performance characteristics and physical properties. Include pressure test information and results as follows:

.1 Submit proposed report form and test report format to Engineer for approval at least one month before proposed date of first series of tests. Do not start tests until approval received in writing from Engineer.

.2 Prepare report of results and submit to Engineer within 24 hours of completion of tests. Include:

.1 Schematic of entire system.

.2 Schematic of section under test showing test site.

.3 Required and achieved static pressures.

.4 Orifice differential pressure at test sites.

.5 Permissible and actual leakage flow rate (L/s) for test sites.

.6 Witnessed certification of results.

.3 Include test reports in final TAB report.

1.4 QUALITY ASSURANCE

.1 Pre-Installation Meetings:

.1 Convene pre-installation meeting one week prior to beginning on-site installations in accordance with Division 01 – General Requirements:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building sub-trades.

.4 Review manufacturer's installation instructions and warranty requirements.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Division 01 – General Requirements.

.3 Sustainable Requirements:

.1 Construction requirements: in accordance with Division 01 – General Requirements.

.2 Verification: contractor's verification in accordance with Division 01 – General Requirements.

1.5 TESTING AGENCY

.1 TAB Contractor on this project.

Part 2 Products

2.1 TEST INSTRUMENTS

.1 Test apparatus to include:

.1 Fan capable of producing required static pressure.

.2 Duct section with calibrated orifice plate mounted and accurately located pressure taps.

.3 Flow measuring instrument compatible with the orifice plate.

.4 Calibration curves for orifice plates used.

.5 Flexible duct for connecting to ductwork under test.

.6 Smoke bombs for visual inspections.

.2 Test apparatus: accurate to within +/- 3% of flow rate and pressure.

.3 Submit details of test instruments to be used to Engineer at least one month before anticipated start date.

.4 Test instruments: calibrated and certificate of calibration deposited with Departmental representative and Engineer no more than 28 days before start of tests.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 TEST PROCEDURES

.1 Maximum lengths of ducts to be tested consistent with capacity of test equipment.

.2 Section of duct to be tested to include:

.1 Fittings, branch ducts, tap-ins.

.3 Repeat tests until specified pressures are attained. Bear costs for repairs and repetition to tests.

.4 Base partial system leakage calculations on SMACNA HVAC Air Duct Leakage Test Manual.

.5 Seal leaks that can be heard or felt, regardless of their contribution to total leakage.

3.3 SITE TOLERANCES

.1 System leakage tolerances specified are stated as percentage of total flow rate handled by system. Pro-rate specified system leakage tolerances. Leakage for sections of duct systems: not to exceed total allowable leakage.

.2 Leakage tests on following systems not to exceed specified leakage rates:

.1 Small duct systems up to 250 Pa: leakage 2%.

.2 Large low pressure duct systems up to 500 Pa: leakage 2%.

.3 Evaluation of test results to use surface area of duct and pressure in duct as basic parameters.

3.4 TESTING

.1 Test ducts before installation of insulation or other forms of concealment.

.2 Test after seals have cured.

.3 Test when ambient temperature will not affect effectiveness of seals, and gaskets.

3.5 FIELD QUALITY CONTROL

.1 Verification requirements in accordance with Division 01 – General Requirements.

.2 Performance Verification:

.1 Engineer to witness tests and to verify reported results.

.2 To be certified by same TAB agency on this project.

3.6 CLEANING

.1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION