

PART 1 - GENERAL

1.1 GENERAL

- .1 Perform the Work included in these specifications and any accompanying drawings, by providing all supervision, labour, materials, supplies, construction tools, equipment and services, hoisting, transportation, receiving, handling, storage, and all other services and expenditures. Including those not specifically mentioned but which are necessary for a complete installation.

1.2 RELATED  
SECTIONS

- .1 Read this section in conjunction with and covers items common to all sections of Division 22.

1.3 RELATED WORK  
PERFORMED BY THIS  
SECTION

- .1 Welding:
  - .1 Have all welding performed by certified welders in accordance with the Provincial Labour Requirements and By-Laws of Nova Scotia.
- .2 Cutting and Patching:
  - .1 Cutting of all openings in concrete floors and walls and patching for mechanical work included in Division 22 will be the responsibility of Division 22, unless otherwise indicated on the architectural drawings.

1.4 FIXTURES AND  
FITTINGS

- .1 Equipment assemblies comprised of electro-mechanical components must be CSA approved where possible and bear the appropriate label. If the equipment in question is not CSA approved as an assembly, have the manufacturer arrange and pay for Spot approval and labelling of the equipment prior to installation.

1.5 EQUIPMENT  
INSTALLATION

- .1 Provide unions and flanges to permit equipment maintenance and disassembly and to minimize disturbance to piping systems without interfering with other equipment.

<u>1.5 EQUIPMENT INSTALLATION (Cont'd)</u>	.2	Provide means of access for servicing equipment including permanently lubricated lifetime bearings.
	.3	Pipe equipment drains to floor drains.
	.4	Install equipment, rectangular cleanouts and similar items parallel to or perpendicular to building lines.
<u>1.6 PIPE INSULATION</u>	.1	Provide pipe insulation as per Section 23 07 19.
<u>1.7 ANCHOR BOLTS AND TEMPLATES</u>	.1	Supply anchor bolts and templates for installation by others.
<u>1.8 TRIAL USAGE</u>	.1	Departmental Representative may use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
<u>1.9 PROTECTION OF OPENINGS</u>	.1	Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.
<u>1.10 EQUIPMENT SUPPORTS</u>	.1	Equipment supports supplied by equipment manufacturer: specified elsewhere in Division 22.
<u>1.11 ESCUTCHEONS</u>	.1	On pipes passing through walls, partitions, floors and ceilings in finished areas.
	.2	Chrome or nickel plated brass or Type 302 stainless steel, one piece type with set screws.
	.3	Outside diameter to cover opening or sleeve.
	.4	Inside diameter to fit around finished pipe.

1.12 TESTS

- .1 Give 24 hour written notice of date for tests.
- .2 Insulate or conceal work only after testing and approval by the Departmental Representative.
- .3 Conduct tests in presence of the Departmental Representative.
- .4 Bear costs including retesting and making good.
- .5 Piping:
  - .1 General: maintain test pressure without loss for 2 hours unless otherwise specified.
  - .2 Test drainage, waste and vent piping to the National Building Code, the Canadian Plumbing Code, and the authorities having jurisdiction.
  - .3 Test domestic hot and cold water piping at 1-1/2 times system operating pressure or minimum 862 kPa, whichever is greater.
- .6 Equipment: test as specified in relevant sections.
- .7 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.

1.13 ACCESS DOORS

- .1 Supply access doors to concealed plumbing equipment for operating, inspecting, adjusting and servicing.
- .2 Flush mounted 600mm x 600mm for body entry and 300mm x 300mm for hand entry unless otherwise noted. Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps. Provide fire-rated access doors where penetrating fire-rated construction. Maintain fire rating integrity of construction.
- .3 Material:
  - .1 Special areas only such as tiled surfaces: use stainless steel with #4 satin finish.
  - .2 Remaining areas: use prime coated steel.
  - .3 Nominal 1.897mm (14 ga.) material.
- .4 Installation:
  - .1 Locate so that concealed items are accessible.
  - .2 Locate so that hand or body entry (as applicable) is achieved.

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| <u>1.13 ACCESS DOORS<br/>(Cont'd)</u>                      | .4 | (Cont'd)<br>.3 Installation is specified in applicable sections.  |
| <br>   |    |   |
| <u>1.14 DIELECTRIC<br/>COUPLINGS</u>                       | .1 | General:<br>.1 To be compatible with and to suit pressure and temperature rating of piping system.<br>.2 Where pipes of dissimilar metals are joined.   |
|  | .2 | Pipes NPS 2 and under: isolating unions.  |
|  | .3 | Pipes NPS 2-1/2 and over: isolating flanges.  |
| <br>   |    |   |
| <u>1.15 DRAIN VALVES</u>                                   | .1 | Locate at low points and at section isolating valves unless otherwise specified.  |
|  | .2 | Minimum NPS 3/4 unless otherwise specified: bronze, ball valve with hose end male thread, complete with cap and chain.  |
|  | .3 | No water from any drain or relief valve shall discharge on the floor. Pipe drains to hub drains or funnel floor drains.   |
| <br>   |    |   |
| <u>1.16 OPERATING AND<br/>MAINTENANCE<br/>INSTRUCTIONS</u> | .1 | Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance. |
|  | .2 | Provide demonstrations and instructions in conjunction with the appropriate equipment manufacturers representatives.  |
|  | .3 | Use operation and maintenance manual, record drawings, audio visual aids, etc. as part of instruction materials.  |
|  | .4 | Arrange for instructions in maintenance and operating of the following equipment to be given by factory trained personnel and for the time period specified. The time specified does not include the time for start-up of systems and equipment:        |
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1.16 OPERATING AND  
MAINTENANCE  
INSTRUCTIONS  
(Cont'd)

- .4 (Cont'd)
- .1 Instruction shall be given on the operation and maintenance of all mechanical components including but not limited to pumps, fixtures and domestic hot water system. The instruction period must be for a period of not less than two (2) working days. The Contractor and the Instructors shall review for an additional 90 days after the acceptance of the building by the Departmental Representative.
- .2 Where more detailed instructions for some equipment or systems are called for in other sections of the specifications, those sections of the specifications take precedence over this section.

1.17 OPERATION AND  
MAINTENANCE MANUAL

- .1 Provide operation and maintenance data for incorporation into manual.
- .2 Operation and maintenance manual to be approved by and final copies deposited with the Departmental Representative before final inspection.
- .3 Operation data to include:
- .1 Description of each system and its controls.
- .2 Operation instruction for each system and each component.
- .3 Description of actions to be taken in event of equipment failure.
- .4 Maintenance data to include:
- .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
- .2 Data to include schedules of tasks, frequency, tools required and task time.
- .5 Performance data to include:
- .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
- .2 Equipment performance verification test results.
- .3 Special performance data as specified elsewhere.
- .6 Approvals:

1.17 OPERATION AND  
MAINTENANCE MANUAL  
(Cont'd)

- .6 (Cont'd)
  - .1 Submit three (3) copies of draft Operation and Maintenance Manual to the Departmental Representative for approval. Submission of individual data will not be accepted unless so directed by the Departmental Representative.
  - .2 Make changes as required and re-submit as directed by the Departmental Representative.
- .7 Additional data: Prepare and insert into operation and maintenance manual when need for same becomes apparent during demonstrations and instructions specified above.

1.18 SHOP DRAWINGS  
AND PRODUCT DATA

- .1 Shop drawings and product data to show:
  - .1 Mounting arrangements.
  - .2 Operating and maintenance clearances. (eg. access door swing spaces).
- .2 Accompany shop drawings and product data with:
  - .1 Detailed drawings of bases, supports, and anchor bolts.
  - .2 Points of operation on performance curves.
  - .3 Manufacturer to certify as to current model production.
  - .4 Certification of compliance to applicable codes.

1.19 CLEANING

- .1 Clean interior and exterior of all systems including strainers.
- .2 In preparation for final acceptance, clean and refurbish all equipment and leave in operating condition.

1.20 DRAWINGS

- .1 The Drawings:
  - .1 Are not intended to show structural details or architectural features.
  - .2 Are not to be scaled.

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- 1.20 DRAWINGS  
(Cont'd)
- .1 (Cont'd)  
.3 Except were dimensioned, indicate general plumbing layouts only. Because of the small scale of the Plumbing Drawings, it is not possible to show all offsets, fittings and accessories which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves and accessories which are required to meet site conditions.
- .2 Provide field drawings to indicate relative position of various services when required by the Departmental Representative.
- 1.21 RECORD  
DRAWINGS
- .1 Refer to Section 01 78 00.
- 1.22 WARRANTIES
- .1 Make good all defects other than normal wear and tear during the life of the warranty period. Warrant all work and installed equipment to work quietly and satisfactorily and to accomplish the work for which it was installed during the life of the warranty. At any time during this period, make any necessary changes and adjustments, or replacements, to accomplish this at no additional cost to the project.
- .2 Submit written extended Warranties in Maintenance Manual.
- 1.23 PERMITS AND  
REGULATIONS
- .1 Obtain and pay for any permits required by local codes and regulations and arrange for inspections applicable to the Contractor responsibilities.
- .2 Furnish all additional materials or labour required to conform to any of these rules and regulations at no additional cost to the project.
- 1.24 ELECTRICAL
- .1 Electrical work to conform to Division 26.
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GC Co-Working Site  
Pilot Program at  
BIO Facility  
1 Challenger Drive  
Project No. R.101402.002

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COMMON WORK  
RESULTS FOR  
PLUMBING

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PART 2 - PRODUCTS

2.1 NOT USED .1 Not applicable.

PART 3 - EXECUTION

3.1 NOT USED .1 Not applicable.