

PART 1 - GENERAL

<u>1.1 Related Sections</u>	.1	Section 01 00 10 - General Instructions.
	.2	Section 01 33 00 - Submittal Procedures.
	.3	Section 01 35 29.06 - Health and Safety Requirements.
	.4	Section 01 74 21 - Construction Waste Management And Disposal.
	.5	Section 01 78 10 - Closeout Submittals.
	.6	Section 21 05 01 - Common Work Results - Mechanical.
	.7	Section 23 05 05 - Installation of Pipework.
	.8	Section 23 05 22 - Valves - Bronze.
<u>1.2 References</u>	.1	American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME).
	.1	ANSI/ASME B16.15-2006, Cast Bronze Threaded Fittings: Classes 125 and 250.
	.2	ANSI/ASME B16.22-2001(R2005) - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
	.3	ANSI/ASME B16.18-2001(R2005) Cast Copper Alloy Solder Joint Pressure Fittings.
	.2	American Society for Testing and Materials International, (ASTM).
	.1	ASTM B306-02, Standard Specification for Copper Drainage Tube (DWV).
	.2	ASTM B 32-08, Specification for Solder Metal.
	.3	ASTM F1545-97(R2003, Standard Specification for Plastic-Lined Ferrous Metal Pipe, Fittings, and Flanges.
	.4	ASTM B88-03, Standard Specification for Seamless Copper Water Tube.
	.3	Canadian Standards Association (CSA International).
	.1	CAN/CSA B125-01, Plumbing Fittings.
	.4	National Plumbing Code of Canada - 2005.
<u>1.3 Quality Assurance</u>	.1	Health and Safety:
	.1	Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements

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| <u>1.4 Submittals</u>                     | .1 | Submittals in accordance with Section 01 33 00 - Submittal Procedures.   |
|   | .2 | Submit data for following:   |
|   | .1 | Pipes.   |
|   | .2 | Fittings.  |
|   |    |  |
| <u>1.5 Closeout Submittals</u>            | .1 | Provide maintenance data for incorporation into manual specified in Section 01 78 10 - Closeout Submittals.            |
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| <u>1.6 Waste Management and Disposal</u>  | .1 | Separate and recycle waste materials in accordance with Section 01 74 21 - Construction Waste Management and Disposal. |
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| <u>1.7 Delivery, Storage and Handling</u> | .1 | While delivering materials to site follow requirements of Section 21 05 01 - Common Work Results - Mechanical.         |

## PART 2 - PRODUCTS

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| <u>2.1 Piping</u>      | .1 | Domestic cold and recirculation systems.   |
|                        | .1 | Above ground: copper tube, hard drawn, type L: to ASTM B 88M.  |
|                        |    |  |
| <u>2.2 Fittings</u>    | .1 | Cast copper, solder type: to ANSI/ASME B16.18.   |
|                        | .2 | Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.   |
|                        | .3 | Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.   |
|                        |    |  |
| <u>2.3 Joints</u>      | .1 | Solder: 95/5 containing less than 0.2% lead.   |
|                        | .2 | Teflon tape: for threaded joints.  |
|                        | .3 | Dielectric connections between dissimilar metals: dielectric fitting to ASTM F1545, complete with thermoplastic liner. |
|                        |    |  |
| <u>2.4 Gate Valves</u> | .1 | To Section 23 05 23 - Valves - Bronze.   |
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2.5 Globe Valves .1 To Section 23 05 23 - Valves - Bronze.

2.6 Swing Check Valves .1 To Section 23 05 23 - Valves - Bronze.

2.7 Ball Valves .1 To Section 23 05 23 - Valves - Bronze.

### PART 3 - EXECUTION

3.1 Installation .1 Install in accordance with National Plumbing Code and local authority having jurisdiction.

.2 Install pipe work in accordance with Section 23 05 05 - Installation of Pipework, supplemented as specified herein.

.3 Assemble piping using fittings manufactured to ANSI standards.

.4 Coordinate installation of electric heat trace cables for all pipe sections installed outside the building envelope.

.5 Coordinate connection to existing services. Be responsible for cost of repair of any damages to existing services. Provide sufficient (min. 96 hr) notice to Departmental Representative and obtain approval for connection to existing services.

.6 Review Section 23 65 10 - Condensers, Coolers and Cooling Towers, for data and information for make-up water piping connection requirements for pre-purchasing equipment.

3.2 Valves .1 Isolate branches with gate or ball valves.

.2 Install drain valves at the lowest point of the piping system. Extend drain lines and assure water disposal to closest storm or sanitary system without surface flooding.

3.3 Pressure Tests .1 Conform to requirements of Section 23 05 05 - Installation of Pipework.

.2 Test pressure: greater of 1½ times maximum system operating pressure or 860 kPa.

3.4 Flushing and  
Cleaning

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General:

- .1 Provide valved pipe takeoff to allow introduction and drainage of water for flushing.
- .2 The flush water shall be directed into sanitary sewer system.

PART 1 - GENERAL

<u>1.1 Related Sections</u>	.1	Section 01 00 10 - General Instructions.
	.2	Section 01 33 00 - Submittal Procedures.
	.3	Section 01 35 29.06 - Health and Safety Requirements.
	.4	Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
	.5	Section 01 78 00 - Closeout Submittals.
	.6	Section 21 05 01 - Common Work Results - Mechanical.
	.7	Section 23 05 05 - Installation of Pipework.
<u>1.2 References</u>	.1	American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME).
	.2	American Society for Testing and Materials International, (ASTM).
	.1	ASTM B306-2009, Standard Specification for Copper Drainage Tube (DWV).
	.2	ASTM B 32-08, Specification for Solder Metal.
	.3	ASTM C-564-2009a, Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
	.3	Canadian Standards Association (CSA International).
	.1	CAN/CSA B125.1-2005, Plumbing Fittings.
<u>1.3 Quality Assurance</u>	.2	CSA B70-06, Cast Iron Soil Pipe, Fittings and Meanings of Joining.
	.4	National Plumbing Code of Canada - 2010.
	.1	Health and Safety:
	.1	Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
	.1	Submittals in accordance with Section 01 33 00 - Submittal Procedures, and Section 21 05 01 - Common Work Results Mechanical.
	.2	Submit data for following:
	.1	Pipes.
<u>1.4 Submittals</u>	.2	Fittings.

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| <u>1.5 Closeout Submittals</u>            | .1 | Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.  |
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| <u>1.6 Waste Management and Disposal</u>  | .1 | Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal, and Section 21 05 01 Common Work Results Mechanical. |
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| <u>1.7 Delivery, Storage and Handling</u> | .1 | While delivering materials to site follow requirements of Section 01 00 10 - General Instructions and Section 21 05 01 - Common Work Results Mechanical.                               |

## PART 2 - PRODUCTS

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| <u>2.1 Copper Tube and Fittings</u>      | .1 | Above ground sanitary and vent to 63 mm or smaller.                         |
|  | .1 | Pipe:   |
|  | .1 | Copper DWV to ASTM B 306.   |
|  | .2 | Fittings:   |
|  | .1 | Cast brass: to CAN/CSA-B125.  |
|  | .2 | Wrought copper: to CAN/CSA-B125.  |
|  | .3 | Solder: tin-lead, 50:50, type 50A, to ASTM B 32.                            |
|  |    |   |
| <u>2.2 Cast Iron Piping and Fittings</u> | .1 | Above ground sanitary, storm and vent 75 mm or larger.                      |
|  | .1 | Pipe:   |
|  | .1 | Cast Iron with one layer of protective coating to: CAN/CSA-B70.             |
|  | .2 | Joints:   |
|  | .1 | Mechanical joints.  |
|  | .1 | Neoprene or butyl rubber compression gaskets: to ASTM C 564 or CAN/CSA-B70. |
|  | .2 | Stainless steel clamps.   |
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PART 3 - EXECUTION

- 3.1 Installation .1 In accordance with Section 23 05 05 - Installation of Pipework.
- .2 Install in accordance with National Plumbing Code, Ontario Building Code and local authority having jurisdiction.
- .3 Ensure that roof drains are properly anchored, connected to system.
- .4 Review Section 23 65 10 - Condensers, Coolers and Cooling Towers, for data and information for drain piping connection requirements for pre-purchasing equipment.
- 3.2 Testing .1 Hydraulically test to verify grades and freedom from obstructions.

PART 1 - GENERAL

<u>1.1 Related Sections</u>	.1	Section 01 00 10 - General Instructions.
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	.4	Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
	.5	Section 01 78 00 - Closeout Submittals.
	.6	Section 21 05 01 - Common Work Results - Mechanical.
<u>1.2 References</u>	.1	American Society for Testing and Materials International (ASTM). .1 ASTM A126-04 (2009), Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings. .2 ASTM B 62-2009, Standard Specification for Composition Bronze or Ounce Metal Castings. .3 ASTM C117-04, Standard Test Method for Material Finer Than 75 UM(NO.200) Sieve in Mineral Aggregates by Washing. .4 ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
	.2	Canadian Standards Association (CSA International). .1 CSA-B64 Series-07, Backflow Preventers and Vacuum Breakers.
	.3	Health Canada/Workplace Hazardous Materials Information System (WHMIS). .1 Material Safety Data Sheets (MSDS).
	.4	Canadian General Standards Board (CAN/CGSB) .1 CAN/CGSB 8.1-88, Sieves, Testing, Woven Wire, Inch Series.
	.5	Plumbing and Drainage Institute (PDI). .1 PDI-WH201-92, Water Hammer Arresters Standard.
<u>1.3 Quality Assurance</u>	.1	Health and Safety: .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.
<u>1.4 Submittals</u>	.1	Submittals in accordance with Section 01 33 00 - Submittal Procedures, and Section 21 05 01 - Common Work Results Mechanical.
	.2	Product Data: .1 Submit manufacturer's printed product literature, specifications and data sheet for fixtures and equipment.



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| <u>1.5 Closeout Submittals</u>            | .1 | Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.  |
| <br>                                      |    |  |
| <u>1.6 Waste Management and Disposal</u>  | .1 | Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal, and Section 21 05 01 Common Work Results Mechanical. |
| <br>                                      |    |  |
| <u>1.7 Delivery, Storage and Handling</u> | .1 | While delivering materials to site follow requirements of Section 01 00 10 - General Instructions and Section 21 05 01 - Common Work Results Mechanical.                               |

## PART 2 - PRODUCTS

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|-------------------------|----|---|
| <u>2.1 Floor Drains</u> | .1 | Floor drains: to CSA B79.   |
|                         | .2 | FD-1: Mechanical Space:   |
|                         |    | .1 Floor drain 100 mm outlet with nickel bronze strainer: epoxy coated cast iron body with anchor flange, weepholes, nickel-bronze adjustable head strainer 150 mm dia. |

## PART 3 - EXECUTION

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| <u>3.1 Manufacturer's Instructions</u> | .1 | Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet. |
| <br>                                   |    |   |
| <u>3.2 Installation</u>                | .1 | Install in accordance with National Plumbing Code and Ontario Building Code and local authority having jurisdiction.  |
|  | .2 | Install in accordance with manufacturer's instructions and as specified.  |
|  | .3 | Provide 4 (four) only FD-1. This project includes replacement of existing FD and FD-1 installation only. Make sure drains are located in the lowest point of the floor.                   |
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3.3 Testing, Start-  
up and Adjusting

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General:

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Floor drains:

.1 Check security, accessibility, removeability of strainer and  
operation of primer.

.2 Clean out baskets.