

SPECIFICATION FOR

**JVJ04 – WATERLINE REPLACEMENT
21450-21-3754093**

JOYCEVILLE INSTITUTION

3766 HWY 15
Kingston ON
K0H 1Y0

'ISSUED FOR TENDER

August 2021

Prepared for:

CORRECTIONAL SERVICE CANADA

445 Union Street
Kingston, ON
K7L 4Y8

Prepared by:

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JLR No.: 31203

PART 1 - GENERAL

1.1 ADMINISTRATIVE

- .1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit 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.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings and product data in units as indicated on Contract Drawings.
- .4 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .5 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Verify field measurements and affected adjacent Work is coordinated.
- .7 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .9 Keep one (1) reviewed copy of each submission on site.

1.2 DOCUMENTATION REQUIRED

- .1 Prior to construction start, submit the following:
 - .1 An executed construction contract.
 - .2 Performance Bond(s) and Labour and Material Bond(s).
 - .3 Proof of liability insurance, with provisions preventing unilateral cancellation, and with the names of the Owner(s) and Consultant(s) listed as additional insured.
 - .4 Proof that a building permit or applicable clearances from authorities having jurisdiction, has been issued.
 - .5 Copy of 'Notice of Project' to Ontario Ministry of Labour.
 - .6 Certificate of good standing from the Worker's Compensation Board.
 - .7 Copy of company health and safety policies complete with names of employees and subcontractor employees.
 - .8 Construction schedule.
 - .9 Copy of criminal background check of all employees working on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts,

- brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings as described in each specification section.
 - .3 Do not proceed with any component of the Work nor provide Products without reviewed shop drawings being accepted and returned to the Contractor. Should Work commence, or Products be supplied prior to Contractor's receipt of reviewed shop drawings, the Contractor shall be liable for all corrections and costs incurred.
 - .4 Submit where indicated, shop drawings stamped and signed by professional engineer registered or licensed in of Ontario, Canada.
 - .5 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .6 The Consultant will review and return each shop drawing submission in accordance with the schedule agreed upon, or, in absence of such schedule, with reasonable promptness.
 - .7 Adjustments made on shop drawings by Consultant are not intended to change Contract Price or Contract Time. If adjustments affect value of Work or the construction schedule, state such in writing to Consultant prior to proceeding with Work.
 - .8 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
 - .9 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents. Shop drawings submitted without the Contractor's executed stamp of review, will not be considered and will be returned to the Contractor for review and re-submission.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .10 Should the Consultant deem the Contractor has not complied with the requirements of this section,

the Contractor shall be held fully responsible for all delays in the Work to the same extent as if no shop drawings or details had been submitted for that section of the Work.

- .11 After Consultant's review, distribute copies.
- .12 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .13 Submit one (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- .14 Submit one (1) electronic copy of test reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
- .15 Submit one (1) electronic copy of certificates for requirements requested in specification Sections and as requested by Consultant.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .16 Submit one (1) electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .17 Submit one (1) electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .18 Submit one (1) electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .19 If upon review by the Consultant, no errors or omissions are discovered or if only minor corrections are made, one (1) electronic copy stamped by the Consultant complete with appropriate comments where applicable will be returned electronically in PDF format and fabrication and installation of Work may proceed. If shop drawings are rejected, one (1) electronic copy stamped by the Consultant complete with appropriate comments where applicable will be returned electronically in PDF format and resubmission procedure indicated above, shall be repeated prior to fabrication and installation of Work.

1.4 CERTIFICATES AND TRANSCRIPTS

- .1 Prior to commencing work on site, and with each application for progress payment, submit Workplace Safety Insurance Board Certificate (WSIB) of good standing.
- .2 Prior to commencing work on site submit:

- .1 Certificate of General Liability Insurance.
- .2 Certificate of "All Risk" Property and Boiler Insurance.

1.5 BUILDING PERMIT

- .1 Obtain and pay for building permit as required.
- .2 Prior to commencing work on site:
 - .1 Provide copies of the required approved permits to CSC and the Consultant.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 PURPOSE

- .1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

1.2 DEFINITIONS

- .1 "Contraband" means:
 - .1 An intoxicant, including alcoholic beverages, drugs and narcotics.
 - .2 Tobacco or associated tobacco products.
 - .3 An igniting device, lighter or matches.
 - .4 A weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization.
 - .5 An explosive or a bomb or a component thereof.
 - .6 Currency over any applicable prescribed limit, \$25 when possessed by an inmate, visitor or contractor without prior authorization.
 - .7 Any item not described in paragraphs 1.2.1.1 to 1.2.1.6 that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking and related Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Project Authority" means, Director, Warden or Superintendent of the Institution as applicable.
- .6 "Construction Employees" means persons working for the General Contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies..
- .7 "Departmental Representative" means the project manager from Correctional Services Canada.
- .8 "Perimeter" means the fenced or walled area of the Institution that restrains the movement of the inmates.
- .9 "Construction Limits" means the area as shown on the contract drawings that the Contractor will be allowed to work. This area may or may not be isolated from the security area of the Institution.

1.3 PRELIMINARY PROCEEDINGS

- .1 Prior to the commencement of work, the Contractor shall meet with the Project Authority or his/her representative to:
 - .1 Discuss the nature and extent of all activities involved in the Project. Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.

- .2 Contractor shall:
 - .1 Ensure that all Construction Employees are aware of the security requirements.
 - .2 Ensure that a copy of the security requirements is always prominently on display at the job site.
 - .3 Co-operate with institutional personnel in ensuring that security requirements are observed by all Construction Employees.
- .3 The Project Authority may require that facial photographs may be taken of Construction Employees and these photographs may be displayed at appropriate locations in the Institution or in an electronic database for identification purposes. The Project Authority may require that Photo ID cards be provided for all Construction Employees. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the Construction Employees' clothing at all time while Construction Employees are in the institution.
- .4 Construction Employees are to report to the Principal Entrance building anytime they enter or leave the institution.
- .5 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .6 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
 - .1 Appear to be under the influence of alcohol, drugs or narcotics.
 - .2 Behave in an unusual or disorderly manner.
 - .3 Are in possession of contraband.
- .7 Smoking is prohibited anywhere on CSC property.

1.4 VEHICLES

- .1 All unattended vehicles on CSC property shall have windows closed; doors and trunks shall be locked and keys removed. The keys shall be securely in the possession of the owner or an employee of the company that owns the vehicle.
- .2 Gas caps on all vehicles and motorized equipment shall be lockable.
- .3 The Project Authority may limit at any time the number and type of vehicles allowed within the institution.
- .4 Drivers of delivery vehicles for material required by the project will not require security clearances but must remain with their vehicle the entire time that the vehicle is in the Institution. The Project Authority will require that these vehicles be escorted by Institutional Staff or Commissionaires while in the Institution.
- .5 If the Project Authority permits trailers to be left inside the secure perimeter of the Institution, these trailer doors will be locked at all times. All windows will be securely locked when left unoccupied. All trailer windows shall be covered with expanded metal mesh. All storage trailers inside and outside the perimeter shall be locked when not in use.

1.5 PARKING

- .1 Parking area(s) to be used by Construction Employees will be designated by the Project Authority.

Parking in other location will be prohibited and vehicles may be subject to removal.

1.6 SHIPMENTS

- .1 All shipments of project material, equipment and tools shall be addressed in the Contractor's name to avoid confusion with the Institution's own shipments. The Contractor must have his/her own employees on site to receive any deliveries or shipments. CSC staff will NOT accept receipt of deliveries or shipments of any material, equipment or tools.

1.7 TELEPHONE

- .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the Institution unless prior approval of the Project Authority is received.
- .2 The Project Authority will ensure that approved telephones, facsimile machine and computers with internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an internet connection to unauthorized personnel.
- .3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, Blackberries, telephone used as 2-way radios, are not permitted within the Institution unless approved by the Project Authority. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.
- .4 The use of two way radios are not permitted.

1.8 WORK HOURS

- .1 Work hours within the Institution are: Monday to Friday, 07:30 hrs to 16:00 hrs.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Project Authority. A minimum of seven (7) days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Project Authority.

1.9 OVERTIME WORK

- .1 No overtime work will be allowed without permission of the Project Authority. Give a minimum forty-eight (48) hours advance notice when overtime work on the construction project is necessary and approved. If overtime work is required because of an emergency such as work to make the construction safe and secure, the Contractor shall advise the Project Authority as soon as this condition is known and follow the directions given by the Project Authority. Costs to the Crown for such events may be attributed to the Contractor.
- .2 When overtime work, weekend, or statutory holiday work is required and approved by the Project Authority staff members may be posted by the Project Authority or his/her designate, to maintain the security surveillance. The Departmental Representative may post extra staff for inspection of construction activities. The actual cost of this extra staff may be subject to reclamation by the Crown.

1.10 TOOLS AND EQUIPMENT

- .1 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required.
- .2 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.
- .3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.
- .4 Store all tools and equipment in approved secure locations.
- .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the Contractor. Scaffolding shall be secured and locked when not erected and when erected, will be secured in a manner agreed upon with the Institutional designate.
- .6 All missing or lost tools or equipment shall be reported immediately to the Project Authority.
- .7 The Project Authority will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
 - .1 At the beginning and conclusion of every construction project.
 - .2 Weekly, when the construction project extends longer than a one week period.
 - .3 The Contractor may be subject to random checks by security staff to ensure proper storage and security of tools throughout the project.
- .8 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The Contractor will be given at the beginning of the day, a quantity that will permit on day's work. Used blades/cartridges will be returned to the Project Authority's representative at the end of each day.
- .9 If propane or natural gas is used for heating the construction, the Institution will require that an employee of the Contractor supervise the construction site during non-working hours.
- .10 If torches or grinders are required tools to perform Work, Contractor must complete a Hot Work Permit as supplied by CSC. Completed original form(s) are copied and posted on the work site in a conspicuous location. Original documents are to remain with the Institutional Fire Chief.

1.11 KEYS

- .1 Keys:
 - .1 The Contractor will use standard construction cylinders for locks for his use during the construction period.
 - .2 The Contractor will issue instructions to his employees and sub-trades, as necessary to ensure safe custody, of the construction set of keys.
 - .3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:
 - .1 Prepare an operational keying schedule.
 - .2 Accept the operational keys and cylinders directly from the lock manufacturer.
 - .3 Arrange for removal and return of the construction cores and install the operational core in all locks.

- .2 Upon putting operational security keys into use, the CSC construction escort shall obtain these keys as they are required from the Security Maintenance Officer (SMO) and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the CSC construction escort.

1.12 PRESCRIPTION DRUGS

- .1 Employees of the Contractor who are required to take prescription drugs during the workday shall obtain approval of the Project Authority to bring a one day supply only into the Institution.

1.13 SMOKING RESTRICTIONS

- .1 Contractors and construction employees are not permitted to smoke inside correctional facilities or outdoors within the perimeter of a correctional facility and must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Contractors and construction employees who are in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist, will be directed to leave the institution.
- .3 Smoking is only permitted outside the perimeter of a correctional facility in an area to be designated by the Project Authority.

1.14 CONTRABAND

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on Institutional Property.
- .2 Discovery of Contraband on the construction site and the identification of the person(s) responsible for the Contraband shall be reported immediately to the Project Authority.
- .3 Contractors shall be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of Contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
- .4 Presence of arms and ammunition in vehicles of Contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

1.15 SEARCHES

- .1 All vehicles and persons entering Institutional property may be subject to search.
- .2 When the Project Authority suspects, on reasonable grounds, that an employee of the Contractor is in possession of Contraband or unauthorized items, he/she may order that person to be searched.
- .3 All employees entering the Institution may be subject to screening of personal effects for traces of

Contraband drug residue.

1.16 ACCESS TO AND REMOVAL FROM INSTITUTION PROPERTY

- .1 Construction personnel and commercial vehicles will not be admitted to the Institution after normal working hours, unless approved by the Project Authority.

1.17 MOVEMENT OF VEHICLES

- .1 Escorted commercial vehicles will not be allowed to enter or leave the Institution after normal working hours, unless approved by the Project Authority.
- .2 Construction vehicles shall not leave the Institution until an inmate count is completed.
- .3 The Contractor shall advise the Project Authority twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.
- .4 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC Staff or Commissionaires working under the authority of the Project Authority.
- .5 Commercial Vehicles will only be allowed access to Institutional property when their contents are certified by the Contractor or his/her representative as being strictly necessary to the execution of the construction project.
- .6 Vehicles shall be refused access to Institutional property if, in the opinion of the Project Authority, they contain any article which may jeopardize the security of the Institution.
- .7 Private vehicles of Construction Employees will not be allowed within the security wall or fence of medium or maximum security Institutions without the permission of the Project authority.
- .8 With prior approval of the Project authority, a vehicle may be used in the morning and evening to transport a group of employees to the work site. This vehicle will not remain within the institution the remainder of the day.
- .9 With the approval of the Project authority, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The project authority may require that the equipment be secured with a chain and padlock to another solid object.

1.18 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

- .1 Subject to the requirements of good security, the Project authority will permit the contractor and his/her employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Project authority may:
 - .1 Prohibit or restrict access to any part of the Institution.
 - .2 Require that in certain areas of the Institution, either during the entire construction project or at certain intervals, Construction Employees only be allowed access when accompanied by a member of the CSC security staff.

- .3 During the lunch and coffee/health breaks, all employees will remain within the construction site. Employees are not permitted to eat in the officer's lounge and dining room.

1.19 SURVEILLANCE AND INSPECTION

- .1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.
- .2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among Construction Employees and maintained throughout the construction project.

1.20 STOPPAGE OF WORK

- .1 The Project authority may request at any time that the Contractor, his/her employees, sub-contractors and their employees not enter or leave the work site immediately due to a security situation occurring within the Institution. The Contractor's site supervisor shall note the name of the staff member making the request and the time of the request and obey the order as quickly as possible.
- .2 The Contractor shall advise the Departmental Representative within 24 hours of this delay to the progress of the work.

1.21 CONTACT WITH INMATES

- .1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk to them, to receive objects from them or to give them objects. Any employee doing any of the above will be removed from the site and his/her security clearance revoked.

1.22 COMPLETION OF CONSTRUCTION PROJECT

- .1 Upon completion of the construction project, or when applicable, the takeover of facility, the Contractor shall remove all remaining construction material, tools and equipment that are not specified to remain in the Institution as part of the construction contract.

PART 2 – PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 – EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1- GENERAL

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Ontario
 - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990, c.0.1, as amended and O. Reg. 213/91 as amended - Updated 2005.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within five (5) business days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Details of COVID-19 procedures and protocols consistent with the current version of the Canadian Construction Associations COVID-19 standardized Protocols for All Canadian Construction Sites.
- .3 Submit two (2) copies of Contractor's authorized representative's work site health and safety inspection reports to consultant, as per their request.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Agree to install proper site separation and identification in order to necessary separation at all times throughout life of project.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with, CSC, Consultant and consultant prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 CSC
 - .2 Inmates

1.8 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 COMPLIANCE REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

1.11 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise owner and consultant and follow procedures in accordance with Acts and Regulations of Ontario having jurisdiction and advise Consultant verbally and in writing.

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Consultant.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by the CSC or by the Consultant.
- .2 Provide Consultant with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from CSC or Consultant.

1.16 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2- PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3- EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 01 33 00 Submittal Procedures
- .2 01 74 11 Cleaning

1.2 REFERENCES

- .1 Correctional Service of Canada (CSC):
 - .1 Energy and Water Conservation 318-2.

1.3 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for all substances that could potentially be release to the environment and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit WHMIS Safety Data Sheets (SDS) for all products.
- .3 Include in Environmental Protection Plan (EPP):
 - .1 Submit EPP at least (2) two weeks prior to mobilization.
 - .2 Name of person responsible for ensuring adherence to EPP.
 - .3 Submit a Site Work Plan (SWP) showing work areas for proposed activities in each portion of area and identifying areas of limited use or non-use.
 - .1 SWP to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .2 SWP to identify lay down areas, material to be stored in lay down areas and during of use of lay down areas.
 - .4 Submit a Spill Control Plan (SCP) including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .1 No fuel is to be stored on the project site.
 - .5 Submit a Solid Waste Disposal Plan (SWDP) for non-hazardous solid wastes identifying methods and locations for solid waste disposal including clearing debris.
 - .6 Submit a site-specific Contaminant Prevention Plan (CPP) identifying the proper procedures and actions to be implemented to prevent potentially or expected hazardous substances due to the presence of any hazardous substances within the project site. The intent of the CPP is to:
 - .1 Prevent introduction of designated substances (DS) into air, water, or ground;

- .2 Detail provisions for storage and handling of these materials in compliance with Federal, Provincial, and Municipal laws.
- .7 Submit a Wastewater Management Plan (WMP) identifying methods and procedures for management and discharge of waste waters which are directly derived from construction activities, such as clean-up water, disinfection water, hydrostatic test water, and water used in flushing of lines.
- .8 Submit a Solid Waste Disposal Plan (SWDP) for non-hazardous solid wastes identifying methods and locations for solid waste disposal including clearing debris.

1.5 FIRES

- .1 Fires and burning of rubbish on site is not permitted.

1.6 NOTIFICATION

- .1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial environmental laws and regulations or Municipal environmental bylaws, permits, and other elements of site-specific plans, such as SWDP and CPP as applicable.
- .2 Contractor after receipt of such notice, shall inform Consultant of proposed corrective action and take such action to obtain the approval of Consultant.
 - .1 Take action only after receipt of written approval by Consultant.
- .3 Consultant will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Bury rubbish and waste materials on site is not permitted unless approved in writing by DCC Representative.
- .3 Ensure storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Proceed with final cleaning upon completion and removal of surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

PART 1 - GENERAL

1.1 INSPECTION

- .1 Allow Owner and Consultant 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 Consultant 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 Consultant 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. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.2 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work.
- .2 Cooperate to provide reasonable facilities for such access.

1.3 PROCEDURES

- .1 Notify appropriate agency Consultant 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 Consultant 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 at no cost to the Owner.
- .3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be

determined by Consultant.

1.5 REPORTS

- .1 Submit one (1) electronic copy of inspection and test reports to Consultant.
- .2 Provide copies to subcontractor of work being inspected or tested.

1.6 MILL TESTS

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

1.7 TOLERANCES

- .1 Unless more stringent tolerances are required by a Section of the Specifications or a referenced standard, meet the following tolerances for installed Work:
 - .1 "plumb" shall mean plumb within 3 mm ($1/8$ ") in 3 m (10 ft.).
 - .2 "level" shall mean level within 3 mm ($1/8$ ") in 3 m (10 ft.).
 - .3 "square" shall mean not in excess of 10 seconds less or more than 90°.
 - .4 "straight" shall mean within 3 mm ($1/8$ ") in 3 m (10 ft.) under a 3 m (10 ft.) straight edge.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

PART 1- GENERAL

1.1 PROJECT CLEANLINES

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, [including]:
 - .1 That caused by Owner or other Contractors to the Owner approval.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Dispose of waste materials and debris off-site, in accordance with authorities having jurisdiction.
- .5 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors to Owner approval.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Division 1.
- .2 Sections:
 - .1 22 05 03 – Selective Demolition for Plumbing
 - .2 22 11 16 – Domestic Water Piping

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for valves and piping and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit drawings indicating:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
 - .2 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Certification of compliance to applicable codes.

1.3 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for valves.
 - .1 Operation and maintenance manual approved by, and final copies deposited with, Consultant before final inspection.
 - .2 Operation data to include:
 - .1 Operation instruction for systems and component.
 - .3 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.
 - .4 Site records:
 - .1 CSC will provide 1 set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems.
 - .2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
 - .5 As-built drawings:
 - .1 Prior to start of Testing finalize production of as-built drawings.
 - .2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).
 - .3 Submit to Consultant for approval and make corrections as directed.

- .4 Perform testing using as-built drawings.
- .5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 35 13 – Special Project Procedures CSC and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect valves and piping from scratches.
 - .3 Replace defective or damaged materials with new.

PART 2- PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for hangar installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Consultant.
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.3 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Division 1.
- .2 Sections:
 - .1 22 05 00 – Common Work Results for Plumbing
 - .2 22 11 16 – Domestic Water Piping

1.2 SUMMARY

- .1 This Section includes requirements for selective demolition and removal of plumbing and related mechanical components and incidentals required to complete work described in this Section.

1.3 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA):
 - .1 CSA S350 M1980, Code of Practice for Safety in Demolition of Structures.

1.4 DEFINITIONS

- .1 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .2 Remove: Planned deconstruction and disassembly of mechanical items from existing construction taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.
- .3 Remove and Salvage: Detach items from existing construction and deliver them to CSC ready for reuse.
- .4 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- .5 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.
- .6 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Action Submittals: Provide the following in accordance with Section 01 33 00 - Submittal Procedures before starting work of this Section:

- .1 Construction Waste Management Plan (CWM Plan): Submit plan addressing demolition and disposal procedures as well as methods for reduction, reuse, or recycling of materials.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: Perform work of this Section in accordance with the following:
 - .1 Federal Workers' Compensation Service Compensation Boards/Commissions.
 - .2 Government of Canada, Labour Program: Workplace Safety.

1.7 SITE CONDITIONS

- .1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition at time of site examination before tendering.
- .2 Existing Hazardous Substances: Owner performed a hazardous substances assessment and it is not expected that hazardous substances will be encountered in the Work.
- .3 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in the Work; immediately notify Consultant if materials suspected of containing hazardous substances are encountered and perform the following activities:
 - .1 Hazardous substances will be as defined in the Hazardous Products Act.
 - .2 Stop work in the area of the suspected hazardous substances.
 - .3 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.
 - .4 Hazardous substances will be removed by CSC under a separate contract or as a change to the Work.
 - .5 Proceed only after written instructions have been received from Consultant.

PART 2 - PRODUCTS

2.1 DEBRIS MATERIALS

- .1 Material Ownership: Demolished materials become Contractor's property and will be removed from Project site; except for items indicated as being reused, salvaged, or otherwise indicated to remain at the area of work.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Existing Conditions: Visit site, thoroughly examine and become familiar with conditions that may affect the work of this Section before tendering the Bid; CSC will not consider claims for extras for work or materials necessary for proper execution and completion of the contract that could have been determined by a site visit.

3.2 PREPARATION

- .1 Protection of Existing Systems to Remain: Protect systems and components indicated to remain in place during selective demolition operations and as follows:
 - .1 Prevent movement and install bracing to prevent settlement or damage of adjacent services.
 - .2 Protect mechanical systems that must remain in operation.
- .2 Protection of Building Occupants: Sequence demolition work so that interference with the use of the building by the CSC and users is minimized and as follows:
 - .1 Prevent debris from endangering the safe access to and egress from occupied buildings.
 - .2 Notify CSC and cease operations where safety of occupants appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

3.3 EXECUTION

- .1 Demolition and Removal: Coordinate requirements of this Section as follows:
 - .1 Disconnect and cap mechanical services in accordance with requirements of local Authority Having Jurisdiction.
 - .2 Do not disrupt active or energized utilities without approval of the CSC.
 - .3 At end of each day's work, leave worksite in safe condition.
 - .4 Perform demolition work in a neat and workmanlike manner:
 - .1 Remove any tools or equipment after completion of work, and leave site clean and ready for subsequent renovation work.
 - .2 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.

3.4 CLOSEOUT ACTIVITIES

- .1 Demolition Waste Disposal: Arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle centre).

END OF SECTION

PART 1- GENERAL

1.1 RELATED SECTIONS

- .1 Division 1.
- .2 Sections:
 - .1 22 05 00 – Common Work Results for Plumbing
 - .2 22 05 03 – Selective Demolition for Plumbing

1.2 REFERENCES

- .1 The following is a list of standards that may be utilized in this section. Unless specifically noted otherwise, the reference indicated shall be the latest standard adopted by the regulatory agency as of the tender date.
- .2 American Society of Mechanical Engineers International (ASME):
 - .1 ASME B16.15-13, Cast Copper Alloy Threaded Fittings, Classes 125 and 250.
 - .2 ASME B16.18-12, Cast Copper Alloy Solder Joint Pressure Fittings.
 - .3 ASME B16.22-13, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
 - .4 ASME B16.24-11, Cast Copper Alloy Pipe Flanges and Flanged Fittings: Class 150, 300, 400, 600, 900, 1500 and 2500.
 - .5 ASME B16.26-13, Cast Copper Alloy Fittings for Flared Copper Tubes.
 - .6 ASME B31.9-14, Building Services Piping.
 - .7 ASME B36.19M-04, Stainless Steel Pipe.
- .3 American Society for Testing and Materials International (ASTM):
 - .1 ASTM A 182/A 182M-16, Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
 - .2 ASTM A 269-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .4 ASTM A 312/A 312M-16, Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 - .5 ASTM A 351/A 351M-16, Castings, Austenitic, for Pressure Containing Parts.
 - .6 ASTM A 403/A 403M-16, Wrought Austenitic Stainless Steel Piping Fittings.
 - .7 ASTM A 536-84(2014), Standard Specification for Ductile Iron Castings.
 - .8 ASTM B 32-08(2014), Standard Specification for Solder Metal.
 - .9 ASTM B 42-15a, Seamless Copper Tube, Standard Sizes.
 - .10 ASTM B62-02, Standard Specification for Composition Bronze or Ounce Metal Castings
 - .11 ASTM B 88M-14, Standard Specification for Seamless Copper Water Tube (Metric).
- .4 American Water Works Association (ANSI)/(AWWA):
 - .1 AWWA C111/A21.11-12, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - .2 AWWA C550-13 Protective Interior Coatings for Valves and Hydrants.
- .5 CSA Group:
 - .1 CSA B242-05, Groove and Shoulder Type Mechanical Pipe Couplings.

- .6 National Sanitation Foundation (NSF):
 - .1 NSF/ANSI 61: Drinking Water System Components.
 - .2 NSF/ANSI 372: Technical Requirements.
- .7 Underwriters Laboratories of Canada (ULC):
 - .1 CAN/ULC S101-07, Fire Endurance Tests of Buildings Construction and Materials.
 - .2 CAN/ULC S102.2-10, Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.
 - .3 CAN/ULC S115-11, Standard Method of Fire Tests of Firestop.
- .8 Department of Justice Canada (Jus):
 - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).
- .9 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
 - .1 Material Safety Data Sheets (MSDS).
- .10 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS):
 - .1 MSS-SP-25-18, Standard marking system for valves, fittings, flanges, and unions.
 - .2 MSS-SP-70-06, Grey Iron Gate Valves, Flanged and Threaded Ends.
 - .3 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.
 - .4 MSS SP-139-14, Copper Alloy Gate, Globe, Angle, and Check Valves for Low Pressure/Low Temperature Plumbing Applications.
- .11 National Research Council (NRC):
 - .1 National Plumbing Code of Canada (NPC) 2015.
- .12 Transport Canada (TC):
 - .1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).
- .13 Correctional Service of Canada (CSC):
 - .1 Drinking Water Quality Management 318-10 (DWQM).
- .14 Health Canada:
 - .1 Canadian Drinking Water Guidelines.

1.3 INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide submittals for all pipe, valving, connections, hangars, support and any other components used within the temporary or permanent installations.
- .3 Provide a Disinfection and Flushing Plan including flushing, chlorination/disinfection and bacteriological sampling program at least (2) two weeks prior to commencing work.
- .4 Provide all sampling and laboratory results.

1.4 CLOSE OUT SUBMITTALS

- .1 Submit final site survey certificate certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.
- .2 Submit As-Built Drawings and Operation and Maintenance Manuals prior to substantial performance.

1.5 QUALITY ASSURANCE

- .1 Published equipment performance ratings for manufactured items to be based on physical tests carried out by the Manufacturer or an independent testing agency in accordance with accepted industry standards, or as specified. Conformance to codes and standards to be confirmed by an independent testing agency at supplier's cost if proper supporting evidence cannot be provided.
- .2 Provide valves of same manufacturer throughout, where possible.
- .3 Provide valves with manufacturer's name and pressure rating clearly marked on body in accordance with MSS-SP-25. Product shall carry valid CRN (Canadian Registration Number) issued by respective Provinces.

PART 2 – PRODUCTS

2.1 PIPING

- .1 Copper (\leq NPS 2 pipe sizes)
 - .1 Pipe:
 - .1 Above ground:
 - .1 Copper tube, hard drawn, Type K: to ASTM B 88M.
 - .2 Buried or embedded:
 - .1 Copper tube, soft annealed, Type K: to ASTM B 88M, in long lengths and with no buried joints.
 - .2 Fittings:
 - .1 Bronze pipe flanges and flanged fittings, Class 150: to ANSI/ASME B16.24.
 - .2 Cast bronze threaded fittings, Class 125: to ANSI/ASME B16.15.
 - .3 Cast copper, solder type: to ANSI/ASME B16.18.
 - .4 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
 - .5 NPS 1 ½ and smaller:
 - .6 Wrought copper to ANSI/ASME B16.22 or cast copper to ANSI/ASME B16.18; with stainless steel internal components and EPDM seals. Suitable for operating pressure to 1380 kPa.
 - .7 NPS 1 and larger:
 - .8 ANSI/ASME B16.18 or ANSI/ASME B16.22 roll grooved to CSA B242.
 - .3 Joints:
 - .1 Rubber gaskets, latex-free, 1.6 mm thick: to AWWA C111.
 - .2 Bolts, nuts, hex head and washers: to ASTM A 307, heavy series.
 - .3 Solder: 95/5, tin copper alloy: to ASTM B32.
 - .4 Teflon tape: for threaded joints.
 - .5 Grooved couplings: designed with angle bolt pads to provide rigid joint, complete with EPDM gasket to NSF 61
 - .6 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

- .2 Stainless Steel (>NPS 2 pipe sizes)
 - .1 Pipe:
 - .1 Stainless steel pipe, 304L, Schedule 40 or greater: to ASME B36.19M and ASTM A312 / A312M.
 - .2 Stainless steel tube, 304L: to ASME B16.9 and ASTM A269.c
 - .1 Under 40mm, schedule 40: to ASTM A312, and ASME B36.19
 - .2 40mm – 200mm, Wall Thickness = 2.0mm (14 gauge)
 - .3 250mm – 300mm, Wall Thickness = 3.2mm (11 gauge)
 - .4 350mm – 450mm, Wall Thickness = 3.6mm (10 gauge)
 - .5 500mm – 600mm, Wall Thickness = 4.7mm (3/16")
 - .6 750mm – 1500mm, Wall Thickness = 6.3mm (1/4")
 - .3 Pipe to be pickled and passivated to ASTM A380. Installation to CSA B31.9.
 - .2 Fittings:
 - .1 Stainless steel butt weld pipe fittings to: ASME B16.9 and ASTM A403 / A403M.
 - .2 Stainless steel threaded fittings to: ASTM A182 / A182M or ASRM A351 / A351M.
 - .3 Stainless steel flanges
 - .1 40mm and smaller: Class 150, Raised Face, Forged Stainless Steel to: ASMA B16.5 and ASTM A182 / A182M or AWWA C228.
 - .2 Larger than 40mm: Class 150, pressed neck or rolled angle type with backing flange to: ASMA B16.5 and ASTM A182 / A182M or AWWA C228.
 - .4 Fittings to be 304L
 - .5 Fittings to be pickled and passivated to ASTM A380. Installation to CSA B31.9.
 - .3 Fasteners:
 - .1 Stainless Steel Hex Bolts, ASTM A193 Grade B8, Class 1.
 - .2 Stainless Steel Nut Heads, ASRM A194, Grade 8.
 - .4 Gaskets:
 - .1 1.6mm Ring or Full Face.

2.2 GATE VALVES

- .1 NPS 2 and under, soldered or screwed:
 - .1 Non-Rising stem: to MSS-SP-139, Class 125, 860 kPa, ASTM B62 or B584 bronze body, screw-in bonnet, solid wedge disc.
 - .2 NSF 61/372 Certified.
 - .3 Aluminum or carbon steel round ridged handle with PVC coated contact surface. Zinc plated or stainless steel handle nut.
 - .4 Specified Product Kitz.
 - .5 Alternate Manufacturers:
 - .1 Toyo.
 - .2 Conbraco.
 - .3 Nibco.
- .2 NPS 2½ and larger, flanged, lead-free:
 - .1 Non-rising stem class 125, 860 kPa. AWWA C515 Body, Bolted Bonnet, resilient wedge ASME B16.1 Flat-Faced Flanges.
 - .2 Min 10 mil fusion bonded epoxy coating inside and out in accordance with AWWA C550.
 - .3 Valve to be NSF 61/372 certified.
 - .4 Temperature range 0-100 C (32-212 F).
 - .5 Specified Product: MSA W series.
 - .6 Alternate Manufacturer.

- .1 Nibco.
- .2 Mueller.

2.3 TEMPORARY WATER PIPING

- .1 Installation to be determined by the installing contractor in accordance with the National Plumbing code.
- .2 Protect equipment and system openings from dirt, dust and other foreign materials during temporary usage. Cover all pipe and equipment openings.

2.4 INSULATION AND JACKETING

- .1 All new water piping to be provided with 40mm mineral fibre insulation c/w aluminum embossed alloy, 0.5 mm thick, protective liner factory attached to interior surface.
- .2 Pre-molded mineral fibre insulation to TIAC type IP-6. Sectional type 900 mm lengths to CAN/CGSB-51.9-92.
- .3 Fittings: preformed to suit pipe fittings.
- .4 Conductivity: 0.036 W/m°C @ 38°C per ASTM C335.
- .5 Fastenings: 18 ga. stainless steel wire on stainless steel banding.

PART 3- EXECUTION

3.1 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

- .1 Install in accordance with National Plumbing Code, ASME B31.9.
- .2 The design of pipe supporting elements is dependent on Contractor's pipe support design and controlled methods of installation and the physical characteristics, limitations and operating characteristics of the piping system. Provide pipe supporting elements to properly support piping system (pipe, fittings, valves, equipment, etc.) such that the piping system and pipe supporting elements are protected from excessive stress and distortion. Design the pipe supporting elements to carry the sum of all concurrently acting static and dynamic loads.
- .3 Install pipe work in accordance with Section 22 05 00 – Common Work Results for Plumbing, supplemented as specified herein.
- .4 Provide pre-manufactured mechanical snap-on bands for pipe labelling with flow direction labels for all new pipe. Install to ANSI / ASME A13.1.

- .5 Assemble piping using fittings manufactured to ANSI and Standard Council of Canada (SCC) standards.
- .6 Install cold water piping below and away from hot water and other hot piping so as to maintain temperature of cold water as low as possible.
- .7 Connect to fixtures and equipment in accordance with manufacturer's written instructions unless otherwise indicated.
- .8 Support piping in accordance with ASME B31.9, the Building Code and the manufacturer's requirements. Provide oversized supports for insulated piping.
- .9 Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.
- .10 Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment. Reducing bushings are not permitted.
- .11 Ream ends of pipes and tubes before fabrication.
- .12 Lay copper tubing so that it is not in contact with dissimilar metal or contact with hangers without protection.
- .13 Install dielectric couplings where joining dissimilar metals.
- .14 Make provision to protect water system from water hammer due to rapid operation of valves and fixtures.
- .15 Make provision for thermal expansion of piping system and building structure through use of expansion joints, expansion loops and bends.
- .16 Fire Stops: fire stops shall be installed when combustible piping penetrates aa fire rated assembly. The fire stops shall be factory produced and ULC listed for the appropriate size of hole and size of pipe. Fire stops shall consist of a steel collar, attached to the structure, enclosing sufficient intumescent fire stop sealant to expand and close the pipe opening in the event of a fire. Prior to installation of the fire stop the appropriate fire stopping of the interstitial space has been completed and an appropriate escutcheon plate has been installed.
- .17 Valves
 - .1 Isolate equipment, fixtures and branches with gate valves.
 - .2 Remove internal components of valve when soldering or brazing to prevent damage to internal components.
 - .3 Install isolation valves to isolate branch take-offs and supplies to individual grouped washrooms with NRS gate valves.
 - .4 Ensure valves are accessible for maintenance staff and are identified as to service.
 - .5 Provide hose bibs or sediment faucets for complete system drainage.

3.3 PRESSURE TESTS

- .1 Conform to requirements of Section 22 05 00 – Common Work Results for Plumbing.
- .2 Test pressure: greater of 1.2 times maximum system operating pressure or 860 kPa or to the requirements of the Consultant. Duration as specified in National Plumbing Code.

- .3 Isolate system components not designed for test pressure during testing.
- .4 Coordinate with consultant, the requirement of the Consultant to witness tests and inspect piping system.

3.4 FLUSHING AND CLEANING

- .1 Flush entire system for 8 h. Ensure outlets flushed for 2 hours. Let stand for 24 hours, then draw one sample off longest run. Submit to testing laboratory to verify that system meets the required standard. Let system flush for additional 2 hours, then draw off another sample for testing.
- .2 Flush and clean all piping to AWWA C651 or Ontario Watermain Disinfection Procedure.
- .3 Coordinate flushing and cleaning process with Consultant.

3.5 PRE-START-UP INSPECTIONS

- .1 Systems to be complete, prior to flushing, testing and start-up.
- .2 Verify that system can be completely drained.
- .3 Contractor to complete installation inspection, integrity (pressure, leak) tests and support system inspection of piping system before system is insulated or enclosed. Piping not to be covered until all inspection and testing deficiencies have been corrected and successful retesting has been completed.

3.6 DISINFECTION

- .1 Flush out, disinfect and rinse system to AWWA C651 or Ontario Watermain Disinfection Procedure.

3.7 START-UP

- .1 Timing: start up after:
 - .1 Pressure tests have been completed.
 - .2 Disinfection procedures have been completed.
 - .3 Certificate of static completion has been issued.
 - .4 Water treatment systems operational.
- .2 Provide continuous supervision during start-up.
- .3 Start-up procedures:
 - .1 Establish circulation and ensure that air is eliminated.
 - .2 Check pressurization to ensure proper operation and to prevent water hammer, flashing and/or cavitation.
 - .3 Check control, limit, safety devices for normal and safe operation.
- .4 Rectify start-up deficiencies.

3.8 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.

END OF SECTION



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