Public Works and Government Services Canada

Travaux Publics et Services Gouvernmentaux Canada

Specification

Victoria, BC
William Head
Institution

FIRE HYDRANT REPLACEMENT

Requisition No. EZ899-172460

Project No. R.082511.001
October 2016

APPROVED BY:

Regional Manager AES — Date: 2016-12-12

Construction Safety Coordinator — Date: 2016.11.08

TENDER:

Project Manager — Date: 2016-12-12

Public Works and Government Services Canada - Pacific Region
BC/Yukon Division Real Property Services
800 Burrard St Vancouver, BC V6Z 2V8

SPECIFICATIONS – DIVISION 1 TO 32

LIST OF DRAWINGS

C01	KEY PLAN
C02	HYDRANT LOCATION PLAN – WEST
C03	DETAILS HYDRANT LOCATION PLAN – EAST DETAILS

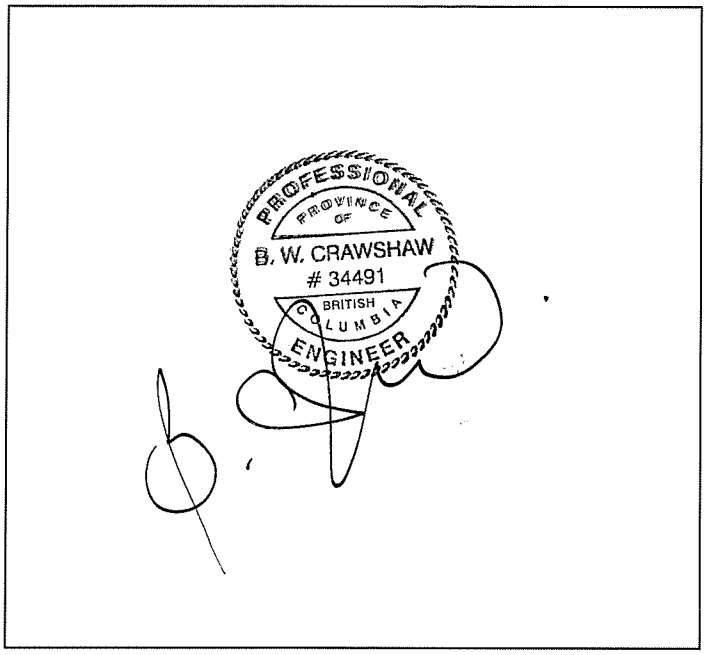
END OF SECTION

SPECIFICATIONS – DIVISION 1 TO 32

END OF SECTION

ENGINEERS SEAL & SIGNATURE

Seal/Signature/Date



END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract generally consists of removal and replacement of fire hydrants and installation of valves.

1.3 OCCUPANCY

.1 The site and buildings will be occupied during the Work.

.2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate CSC usage of premises, where applicable.

1.4 CONTRACTOR'S USE OF PREMISES

.1 Contractor will have access to the site as necessary to complete the Work.

.2 Contractor will be responsible for securing the site if the contractor fails to complete the project in the specified time.

.3 Access to areas inside Institutions is controlled by the Departmental Representative.

1.5 DOCUMENT REQURIED

.1 Maintain at job site, one copy each document as follows, where applicable:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Change Orders.
- .5 Other Modifications to Contract.
- .6 Field Test Reports.
- .7 Copy of Approved Work Schedule.
- .8 Health and Safety Plan and Other Safety Related Documents.
- .9 Environmental Protection Plan, relevant environmental permits and other environmental related documents.
- .10 Other documents as specified.

Part 2 Work Restrictions

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Where security is reduced by work provide temporary means to maintain security.

.3 Accept liability for damage and safety of equipment.

.4 Construct barriers in accordance with Part 10, "Temporary Barriers and Enclosures".

.5 Security Requirements: refer to Section 01 14 10 – Security Requirements.

.6 Hours of work:

.1 Perform work during, and in, accordance with applicable Municipal bylaws. Work may be performed on weekends and holidays, with minimum forty-eight (48) hours advance notice and approval of the Departmental Representative. Arrange with Departmental Representative at each work site when after-hours work, is required due to schedule slippage. Provide schedule for prior approval of Departmental Representative.

.7 Access into Institution:

.1 Vehicle access will be restricted during the inmate "Count at breakfast, lunch and dinner hours. Confirm "count" times with Departmental Representative. Delay may occur when entering and exiting the Institution with vehicles during "count" times and due to security situations and heavy traffic.

.2 A Construction Escort will be provided by the Departmental representative, at no cost to the Contractor. Notify Departmental Representative minimum 48 hours in advance of when Construction Escort is required.

Part 3 Construction Work Schedule

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within twelve (12) weeks from the date of such notification.

.2 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Certificate and Final Certificate as defined times of completion are of essence of this contract.

.3 Submittals:

.1 Refer to Section 01 33 00 Submittal Procedures.

.4 Project Scheduling Reporting:

.1 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

.5 Project Meetings:

.1 Discuss Project Schedule at bi-weekly site meetings, identify activates that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price.

After approval by Departmental Representative cost breakdown will be used as basis for progress payments.

Part 4 Health and Safety

.1 Specified in Section 01 35 33 – Health and Safety Requirements.

Part 5 Erosion and Sedimentation Control Measures

.1 Specified in Section 01 57 14 – Erosion and Sedimentation Control Measures

Part 6 Regulatory Requirements

6.1 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBCC2015) including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

Part 7 Quality Control

7.1 INSPECTION

.1 Give timely notice requesting inspection if Work is designated for special test, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.2 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.

.3 Departmental Representative may order any 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, Departmental Representative shall pay cost of examination and replacement.

7.2 REJECTED WORK

.1 Removed defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

Part 8 Temporary Utilities

8.1 TEMPORARY VENTILATION

.1 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during abatement and demolition.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will be not result in harmful exposure to persons.

.4 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.2 Maintain strict supervision of operation of temporary ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

8.2 TEMPORARY POWER AND LIGHT

.1 Existing electrical power and lighting may be used for abatement and demolition purposes at no extra cost as directed by the Departmental Representative, provided that electrical components used for temporary power are replaced when damaged. Provide own electrical lines from source.

8.3 TEMPORARY COMMUNICIATION FACILITIES

.1 Conform to Section 01 14 10 Security Requirements.

8.4 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

Part 9 Construction Facilities

9.1 LIFTING EQUIPMENT

.1 Where required, provide, operate and maintain lifting equipment and manpower required for moving of heavy products.

9.2 SITE STORAGE/LOADING

.1 Confine work and operations of employees to areas specified in Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load, or permit to load, any part of Work with a weight or force that will endanger the Work.

9.3 CONSTRUCTION PARKING

.1 Parking space is within main parking area outside of gate.

9.4 CONTRACTOR'S SITE OFFICE

.1 Provide office as required to accommodate Contractor's operations.

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location in accordance with WorkSafeBC requirements.

9.5 EQUIPMENT AND TOOLS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable secure lock box for storage of tools and materials.

9.6 SANITARY FACILITIES

.1 Contractor to provide their own sanitary facilities.

9.7 CONSTRUCTION SIGNS

.1 If signage is requested, format, location and quantity of site signs and notices to be approved by Departmental Representative.

.2 Signs and notices for safety or instruction to be in English language, or commonly understood graphic symbols.

.3 Maintain signboards, signs and notices for duration of project. Remove and dispose of signs off site when directed by Departmental Representative.

.4 Remove signs from site at completion of project or as directed by Departmental Representative.

Part 10 Temporary Barriers and Enclosures

10.1 ENCLOSURE OF WORK AREA

.1 Protect work sites in accordance with WorkSafeBC requirements, Departmental Representative direction, and Section 01 56 00 – Temporary Barriers and Enclosures.

.2 Provide lighted barricades and cones to demarcate construction area.

.3 Backfill all excavated areas at the end of each work day.

Part 11 Cleaning

11.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative.

.3 Provide on-site containers for collection of waste materials and debris.

.4 Provide and use clearly marked separate bins for recycling. Refer to Section 01 74 21 – Demolition Waste Management and Disposal.

.5 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.6 Provide adequate ventilation during use of volatile or noxious substances.

.7 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet newly painted surfaces nor contaminate building systems.

11.2 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 Remove waste products from site.

.4 Ensure work sites are in the same, or better, conditions when work is complete.

Part 12 Closeout Procedures

12.1 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Conduct an inspection of Work with all subcontractors, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection, and upon completion of any necessary corrections.

.3 Upon satisfactory completion of Contractor's Inspection, request Departmental Representative's Inspection.

12.2 INSPECTION

.1 Departmental Representative, Consultant and Contractor will perform inspection of Work to identify obvious defects of deficiencies. Contractor shall correct Work accordingly.

12.3 COMPLETION

.1 Submit written certificate that the following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Work is complete and ready for Final Inspection.

12.4 FINAL INSPECTION

.1 When items noted above are completed, request final inspection of Work by Departmental Representative. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract generally consists of hydrant / fire hose cabinet relocation, removal and replacement of the fire hydrants, removal and replacement of the fire hose cabinets.

1.3 CONTRACT METHOD

.1 Conduct Work under stipulated price (lump sum) contract.

.2 Relations and responsibilities between Contractor and subcontracts are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:

.1 Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Owner.

.2 Purchase and maintain liability insurance to protect from claims for not less than limits of liability which Contractor is required to provide to Owner.

1.4 WORK BY OTHERS

.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.

.2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant in writing, any defects which may interfere with proper execution of Work.

1.5 EXISTING SERVICES

.1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Carry our work at times as directed by governing authorities with minimum disturbance to vehicular traffic.

.3 Provide alternative routes for vehicular traffic, as required.

.4 Temporary services to maintain critical building and tenant systems are not required.

.5 Provide adequate bridging over trenches which cress sidewalks or roads to permit normal traffic.

.6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.7 As part of demolition, all services are to be capped off at property line (where possible) in manner approved by authorities having jurisdiction.

.8 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.9 Although power may be provided by the site the Contractor must plan to provide power to be self-sufficient, if necessary.

.10 Although potable water may be provided by the site the Contractor must plan to supply potable water to be self-sufficient, if necessary.

.11 Site will allow for access to the existing sewer but the Contractor must plan for pumping out the system when necessary.

.12 Portable washroom facilities must be supplied by the Contractor.

1.6 DOCUMENT REQURIED

.1 Maintain at job site, one copy each document as follows:

- .1 Contract Drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed Shope Drawings.
- .5 List of Outstanding Shop Drawings.
- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Environmental Protection Plan, relevant environmental permits and other environmental related documents.
- .12 Other documents as specified.

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 Security Requirements: Section 01 14 10.

1.2 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including runways, and ramps in accordance with relevant municipal, provincial and other regulations, if necessary.

1.3 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building as required to facilitate the Work, and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Portable washroom facilities must be supplied by the Contractor.

.5 Closures: protect work temporarily until permanent enclosures are completed.

1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to site operations, occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.5 EXISTING SERVICES

.1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 72 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Maximum continuous interruption is 4 hours.

.3 Provide for pedestrian and vehicular traffic.

1.6 SPECIAL REQUIREMENTS

.1 Carry out noise generating Work in accordance with applicable Municipal bylaws.

.2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.3 Keep within limits of work and avenues of ingress and egress.

.4 Deliver materials between 7:00 to 16:00 unless otherwise approved by Departmental Representative.

1.7 SECURITY

.1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

.2 Security clearances:

.1 Personnel employed on this project will be subject to security check as outlined in Section 01 14 10 – Security Requirements. Obtain clearance, as instructed, for each individual who will require to enter premises.

.2 Obtain requisite clearance, as instructed, for each individual required to enter premises.

.3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

.4 Contractor's personnel will require satisfactory RCMP initiated security screening in order to complete Work in premises and on site.

.3 Security escort:

.1 Personnel employed on this project must be escorted when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.

.2 Submit an escort request to Departmental Representative at least 14 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.

.3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 24 hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.

.4 Calculation of costs will be based on average hourly rate of security officer for minimum of 8 hours per day for late service request and of 4 hours for late cancellations.

1.8 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. Smoking is not permitted.

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 abatement and demolition 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 DEFINITION

.1 "Contraband" means:

.1 an intoxicant, including alcoholic beverages, drugs and narcotics,

.2 a weapon or 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,

.3 an explosive or a bomb or a component thereof,

.4 currency over any applicable prescribed limit, $ 25.00, and

.5 any item not described in paragraphs (a) to (d) that could jeopardize the security of the Penitentiary of 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 tolls required for the abatement/demolition project.

.4 "CSC" means Correctional Service Canada.

.5 "Director" means Director or Warden of the Institution as applicable or their representative.

.6 "Departmental Representative" means Departmental Representative, Warden or Superintendent of the Institution as applicable.

.7 "Abatement/demolition employees" means persons working for the general contractor, the sub-contractors, equipment operators, material supplies, testing and inspection companies and regulatory agencies. Workers 18 years or younger are not permitted within Institution.

.8 "Perimeter" means the fenced or walled area, as indicated in the contract documents, that the contractor will be allowed to work. This area may or may not be isolated from the security area of the institution. Limits to be confirmed at abatement/demolition start-up meeting.

.9 "Construction zone" means the area, as indicated in the contract documents, that the contractor will be allowed to work". This area may or may not be isolated from the security area of the institution. Limits to be confirmed at construction start-up meeting.

.1 Construction zone for this contract includes the project location at William Head Correctional Institution.

1.3 PRELIMINARY PROCEEDINGS

.1 At abatement/demolition start-up meeting:

.1 Discuss the nature and extend of all activities involved in the Project.

.2 Establish mutually acceptable security procedures in accordance with the instruction and the institution's particular requirements.

.2 The contractor's responsibilities:

.1 Ensure that all abatement/demolition 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 abatement/demolition employees.

1.4 CONTRACTOR EMPLOYEES

.1 Submit to the Departmental Representative a list of the names with date of birth of all employees to be employed on the abatement/demolition site and a security clearance form for each employee.

.2 Allow 10 working days for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at this institution except as approved otherwise.

.3 The Departmental Representative may require that facial photopgraphs may be taken of abatement/demolition employees and these photographs may be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Departmental Representative may require that these Photo ID cards be provided for all adatement/demolition workers. ID cards will then be left at the designated entrance to be picked up upon arrival at the Institution and be displayed prominently on the abatement/demolition employees clothing at all times while employees are in the institution.

.4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.

.5 Any person employed on the abatement/demolition 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.

.4 Are 18 years old or younger.

1.5 VEHICLES

.1 All unattended vehicles on CSC property must have windows closed; fuel caps locked and doors and trunks locked and keys removed. The keys must be securely in the possession of the owner or an employee of the company that owns the vehicle.

.2 The Departmental Representative may limit at any time the number and type of vehicles allowed within the Institution.

1.6 PARKING

.1 The parking areas(s) to be used by abatement/demolition employees will be designated by the Departmental Representative. Parking in other locations will be prohibited and vehicles may be subject to removal.

1.7 SHIPMENTS

.1 To avoid confusion with the Institution's own shipments, address all shipments of project material, equipment and tools in the Contractor's name and have a representative on site to receive any deliveries or shipments. CSC or PWGSC staff will NOT accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

1.8 TELEPHONES

.1 The installation of telephones, facsimile machines and computers with Internet connections is not permitted within the Institution perimeter unless prior approved by the Director.

.2 The Director 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, PDAs, telephone used as 2-way radios are not permitted within the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.

.4 The Director may approve but limit the use of 2-way radios.

1.9 WORK HOURS

.1 Work hours within the Institution are: conform to Division 1.

.2 Work is not permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven 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 Director.

1.10 OVERTIME WORK

.1 Provide 48 hours advance notice to Director for all work to be performed after normal working hours of the Institution. Notify Director immediately if emergency work is

required, such as to complete a concrete pour or make the construction site safe and secure.

1.11 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 by the Institution.

.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. Secure and lock scaffolding when not erected and when erected Secure in a manner agreed upon with the Institution designate.

.6 Report all missing or lost tools or equipment immediately to the Departmental Representative/Director.

.7 The Director 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 work day or shift upon entering and exiting the Institution.

.2 At any time when contractor is on Institution property.

.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 one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day. Maintain up to date inventory of all used blades/cartridges.

.9 If propane or natural gas is used for heating the construction, the institution will require that the contractor supervise the construction site during non-working hours.

1.12 KEYS

.1 Security Hardware Keys.

.1 Arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).

.2 The SMO will provide a receipt to the Contractor for security hardware keys.

.3 Provide a copy of the receipt to the Departmental Representative.

.2 Other Keys

.1 Use standard construction cylinders for locks for his use during the construction period.

.2 Issue instructions to 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.

.4 Upon putting operational security keys into use, the PWGSC construction escort will obtain these keys as they are required from the 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 PWGSC construction escort.

1.13 SECURITY HARDWARE

.1 Turn over all removed security hardware to the Director of the Institution for disposal or for safekeeping until required for reinstallation.

1.14 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside correctional facilities or outdoors within the perimeter of a correctional facility and persons must not possess unauthorized smoking items within the perimeter of a correctional facility.

.2 Persons 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 permitted outside the perimeter of a correctional facility in an area designated by the Director.

1.15 PRESCRIPTION DRUGS

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

1.16 CONTRABAND

.1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on the work site.

.2 The discovery of contraband on the abatement/demolition site and the identification of the person(s) responsible for the contraband shall be reported immediately of the Departmental Representative.

.3 Contractors should be vigilant with both their staff and the staff of the 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 project.

.4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and supplies or employees of these will result in the immediate cancellations of the security clearances for the driver of the vehicle.

1.17 SEARCHES

.1 All vehicles and persons entering institutional property may be subject to search.

.2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband, he 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.

1.18 Access to and Removal from Institutional Property

.1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Director.

1.19 Movement of Vehicles

.1 Construction vehicles are not to leave the Institution until an inmate count is completed. Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:

.1 AM: 0745 hrs. to 1100 hrs.

.2 PM: 1300hrs. to 1530 hrs.

.2 The contractor will advise the Director twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.

.3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or PWGSC construction escorts working under the authority of the Director.

.4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.

.5 Vehicles will be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the Institution. Arrange with Director for parking of contractor's vehicles at minimum security Institutions.

.6 Private vehicles of construction employees will not be allowed within the security wall or fence of medium or maximum security Institutions without the authorization of the Director.

.7 With the approval of the Director, 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 Director may require that the equipment be secured with a chain and padlock to another solid object.

1.20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

.1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.

.2 However, notwithstanding paragraph above, the Director 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 or PWGSC Construction Escort Officer.

.3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the Institution cafeteria and dining room.

1.21 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.

1.22 STOPPAGE OF WORK

.1 The Departmental Representative may request at any time that the contractor, his employees, sub-contractors and their employees not enter or leave the work site immediately due to 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.

1.23 CONTACT WITH INMATES

.1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with 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 security clearance revoked.

.2 Digital cameras (or any other type) are not allowed on CSC property.

.3 Notwithstanding the above paragraph, if the director approves of the use of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

1.24 COMPLETION OF CONSTRUCTION PROJECT

.1 Upon completion of the construction project or, when applicable, the takeover of the 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 RELATED SECTIONS

.1 N/A

1.2 ADMINISTRATIVE

.1 Project meetings will be scheduled and administered throughout the progress of the work at the call of Department Representative.

.2 Meeting minutes will be recorded by the Contractor and distributed by Departmental Representative, if required.

.3 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Departmental Representative will schedule a pre-commencement meeting.

.2 Departmental Representative and Contractor will be in attendance.

.3 Agenda to include:

- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work: in accordance with schedule stipulated in Contract Documents.
- .3 Schedule of submission. Submit submittals in accordance with Section 01 33 00 Submittal Procedures.
- .4 Delivery schedule of specified equipment in accordance.
- .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .6 Owner provided products.
- .7 Monthly progress claims, administrative procedures, photographs, hold backs.
- .8 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 Progress meetings will be held. Departmental Representative will schedule the meetings and arrange for a meeting location.

.2 Contractor involved in Work, Departmental Representative and Consultant (if required) are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Departmental Representative will chair the meeting, and distribute meeting minutes. Contractor will record the meeting minutes and provide within 5 business days.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Corrective measures and procedures to regain projected schedule.
.6 Revision to construction schedule.
.7 Progress schedule, during succeeding work period.
.8 Review submittal schedules: expedite as required.
.9 Maintenance of quality standards.
.10 Review proposed changes for effect on construction schedule and on completion date.
.11 Other business.

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 N/A

1.2 REFERENCES

.1 Design drawing William Head Institution - Fire Hydrant Replacement REV 2.

1.3 ADMINISTRATIVE

.1 Submit to Departmental Representative 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, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated 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.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.4 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 Allow 10 days for Departmental Representative's review of each submission.

.3 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.4 After Departmental Representative's review, distribute copies.

.5 Submit 6 prints and an electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.6 Submit 6 copies and an electronic copy of product data sheet or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will be prepared due to standardized manufacture of product.

.7 Shop drawings, if required, are to be stamped by a Professional Engineer (P. Eng.) registered in the province of Work.

.8 Delete information not applicable to project.

.9 Supplement standard information to provide details applicable to project.

.10 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copies of colour digital photography in "jpg" format, standard resolution as directed by Departmental Representative.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Viewpoints and their location as determined by Departmental Representative.

.4 Frequency of photographic documentation: as directed by Departmental Representative.

.1 Upon completion of Work, and as directed by Departmental Representative.

1.6 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board (WorkSafeBC) status.

.2 Submit transcription of insurance immediately after award of 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 RELATED REQUIREMENTS

.1 Submittals procedures: Section 01 33 00

1.2 REFERENCES

.1 Government of Canada.

- .1 Canada Labour Code - Part II
- .2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC):

- .1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 The Canadian Electric Code (as amended)

.4 Canadian Standards Association (CSA) as amended:

- .1 CSA Z797-2009 Code of Practice for Access Scaffold
- .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes
- .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
- .4 CSA Z1006-10 Management of Work in Confined Spaces.
- .5 CSA Z462- Workplace Electrical Safety Standard

.5 National Fire Code of Canada 2010 (as amended)

- .1 Part 5 – Hazardous Processes and Operations and Division B as applicable and required.

.6 American National Standards Institute (ANSI):

- .1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.7 Province of British Columbia:

- .1 Workers Compensation Act Part 3-Occupational Health and Safety.
- .2 Occupational Health and Safety Regulations

1.3 WORKER'S COMPENSATION BOARD COVERAGE

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.5 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review, in accordance with Section 01 33 00.

.2 Work effected by submittal shall not proceed until review is complete.

.3 Submit the following:

- .1 Site Specific Health and Safety Plan.
- .2 Results of Site Specific Safety Hazard Assessment.
- .3 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
- .4 Copies of incident and accident reports.
- .5 Complete set of current Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
- .6 Emergency Procedures.

.4 The Departmental Representative will review the Contractor's Site Specific Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Site Specific Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

- .1 Be construed to imply approval by the Departmental Representative.
- .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
- .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract.

.2 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.

.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.

1.7 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator:

.1 Be responsible for completing all health and safety training and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

.2 Be responsible for implementing, revising, daily enforcing, and monitoring the Site Specific Health and Safety Plan.

.3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

.2 Secure site at night time [or provide security guard] as deemed necessary to protect site against entry.

1.9 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Multi-employer work site.

.2 Federal employees and general public

1.10 UTILITY CLEARANCES

.1 The Contractor is solely responsible for all utility detection and clearances prior to starting the work.

.2 The Contractor will not rely solely upon the Reference Drawings or other information provided for

1.11 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provisions of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.12 WORK PERMITS

.1 Obtain speciality permits related to project before start of work.

1.13 FILING OF NOTICE

.1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.

.2 Provide copies of all notices to the Departmental Representative.

1.14 HEALTH AND SAFETY PLAN

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

.3 Definition of responsibilities for project safety/organization chart for project.

.4 General safety rules for project.

.5 Job-specific safe work procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 Occupational Health and Safety communications and record keeping procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work.

.4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.5 Departmental Representative's review: the review of Site Specific Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Site Specific Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.15 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

- .1 Designated personnel from own company.
- .2 Regulatory agencies applicable to work and as per legislated regulations.
- .3 Local emergency resources.
- .4 Departmental Representative.

.2 Include the following provisions in the emergency procedures:

- .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
- .2 Evacuate all workers safely.
- .3 Check and confirm the safe evacuation of all workers.
- .4 Notify the fire department or other emergency responders.
- .5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
- .6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

- .1 Work at high angles.
- .2 Work in confined spaces or where there is a risk of entrapment.
- .3 Work with hazardous substances.
- .4 Underground work.
- .5 Work on, over, under and adjacent to water.
- .6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

1.16 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00.

.2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.

.3 The contractor shall ensure that the product is applied as per manufacturers recommendations.

.4 The contractor shall ensure that only pre-approved products are brought onto the work site in an adequate quantity to complete the work.

1.17 ASBESTOS HAZARD

.1 Carry out any activities involving asbestos in accordance with applicable Provincial / Territorial Regulations.

1.18 REMOVAL OF LEAD-CONTAINING PAINTS

.1 All paints containing TCLP lead concentrations above 5 ppm are classified as hazardous.

.2 Carry out demolition activities involving lead-containing paints in accordance with applicable Provincial / Territorial Regulations.

1.19 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.

.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.20 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

.3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.21 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.22 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1- 1975 (R2003).

1.23 CONFINED SPACES

.1 Carry out work in confined spaces in compliance with Provincial / Territorial Regulations.

1.24 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.25 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

.3 Portable gas and diesel fuel tanks are not permitted on most federal work sites. Approval from the DR is required prior to any gas or diesel tank being brought onto the work site.

1.26 FIRE PROTECTION AND ALARM SYSTEM

.1 Fire protection and alarm systems shall not be:

.1 Obstructed.

.2 Shut off.

.3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms

1.27 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.28 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:

.1 Site Specific Health and Safety Plan.

.2 Sequence of work.

.3 Emergency procedures.

.4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.

.5 Notice of Project.

.6 Floor plans or site plans.

.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.

.8 Workplace Hazardous Materials Information System (WHMIS) documents.

.9 Material Safety Data Sheets (MSDS).

.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.29 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.30 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 REFERENCES

.1 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.

.2 Reference Standards:

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008 Stipulated Price Contract.

.2 U.S. Environmental Protection Agency (EPA)/Office of Water

.1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

.2 EPA General Construction Permit (GCP) 2012.

1.3 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 the hydrants and valves and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety.

.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.

.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.6 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.6 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.7 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.8 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.9 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.10 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.11 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.12 Waste Water Management Plan identifying methods and procedures for management or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.13 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.14 Pesticide treatment plan to be included and updated, as required.

1.4 FIRES

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

.2 Where fires or burning is permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved.

.1 Restore, clean and return to new condition stained or damaged work.

.3 Provide supervision, attendance and fire protection measures as directed.

1.5 DRAINAGE

.1 Refer to Section 01 57 14 Erosion and Sedimentation Control Measures.

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties as indicated.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas designated by Departmental Representative.

1.7 WORK ADJACENT TO WATERWAYS

.1 Construction equipment to be operated on land only.

.2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.

.3 Waterways to be kept free of excavated fill, waste material and debris.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Blasting is allowed only above water and 100 m minimum from indicated spawning beds.

1.8 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where directed by Departmental Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 HISTORICAL/ARCHAEOLOGICAL CONTROL

.1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

1.10 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative 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

.1 Not Used.

Part 3 Execution

3.1 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Bury rubbish and waste materials on site where directed after receipt of written approval from Departmental Representative.

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 N/A

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-M1978(R2003), Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

.3 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations.

.2 Provide as required by governing authorities.

1.5 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.6 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.7 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.8 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

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 provide the general requirements for control of erosion and sediment.

.2 It is not intended that this section identify all and/or specific requirements.

.3 This section must be read in conjunction and interpreted simultaneously with all sections and Drawings pertinent to the Work of this Contract.

1.2 EROSION AND SEDIMENTATION CONTROL OBJECTIVES

.1 Erosion and Sedimentation Control (ESC) objectives are as follow:

.1 Minimize the disturbance of existing vegetation and soil on the site.

.2 Prevent the loss of soil from the site (including topsoil stockpiled for reuse) resulting from storm water runoff, wind erosion and construction activities.

.3 Prevent the sedimentation of or discharge of sediment to creeks, streams, ditches, drainage courses or other receiving waters.

.4 Prevent pollution of the air with dust and particulate matter.

1.3 DESCRIPTION OF WORK

.1 Contractor to prepare an erosion and sediment control plan in accordance with this section, and submit to the consultant for review a minimum of 10 days prior to start of work.

.2 Temporary Erosion and Sediment Control: includes the installation and maintenance of temporary structural control measures as required or specified to reduce or eliminate the erosion of soil and transport of sediment. This may include, but not be limited to, silt fences, ditch checks, sediment basins, erosion control blankets, stabilized construction entrance, temporary diversions, inlet protection, sediment traps, slope drains, wheel wash and detention tanks.

.3 Dust Control: includes the management of operations and the application of water or dust palliatives in order to reduce or eliminate the spread of dust from the site.

.4 Conduct site activities so as to not compromise installed ESC measures and facilities.

.5 Install additional ESC measures and facilities as required for Work that is not covered by ESC measures and facilities already in place.

.6 Monitor the condition of the ESC facilities and measures and maintain ESC facilities and measures in proper operating condition. The site and buildings will be occupied during the Work.

Part 2 Products

2.1 Materials

.1 Silt fence:

.1 Manufactured from woven geotextile material with a shiny to smooth surface texture designed to reduce velocity of run-off to point that suspended particles settle out due to reduction of hydraulic energy.

.2 The geotextile shall be free of any treatment or coating which might adversely alter its physical properties after installation.

.3 Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled or tagged to provide product identification sufficient for inventory and quality control purposes.

.4 Minimum Requirements:

Property	Test Method	Geotextile Requirements
Maximum Post Spacing (m)	ASTM D 4632	2
Elongation	ASTM D 4632	<50%
Grab Strength (N)	ASTM D 4632	
Machine Direction		550
X-Machine Direction		450
Permittivity (sec^{-1})		0.05
Apparent Opening Size (mm)		0.60 max. avg. roll value
Ultraviolet Stability (% retained strength)		70% after 500 hrs. of exposure
Above values are "Minimum Average Roll Values" on the weaker principal direction.		

.5 Apply in accordance with manufacturer's instructions and recommended rates.

.2 Mulching:

.1 Organic Mulches shall be free of disease and noxious weeds.

.2 Pine needles, compost of straw manure and peat moss not be permitted.

.3 Chemical mulches complete with tackifier shall be applied in accordance with manufacturer's instructions and application rates suitable to slope and soil conditions.

.3 Chemical Mulching:

.1 Minimum Requirements

Property	Test Method	Minimum Value
Water Holding Capacity	ASTM D 7367	1200 %
Functional Longevity	ASTM D 5338	Up to 3 months

Ecotoxicity	EPA 2021.0	96-hr LC50 > 100%
Biodegradability	ASTM D5338	100%

.4 Check Dams:

.1 Rip Rap

.1 Hard durable quarry stone with relative density (formally specific gravity) not less than 2.65, free from seams, cracks or other structural defects, to meet the following grain size distribution:

Class of Rip Rap (kg)	**Nominal Thickness of Rip Rap (mm)**	**Rock Gradation Percentage Smaller Than Given Rock Mass (kg)**		
		15%	50%	85%
10	350	1	10	30
25	450	2.5	25	75

.2 Approximate average dimensions shall be:

Class of Rip Rap (kg)	**Approximate Average Dimension (mm)**		
	15%	50%	85%
10	90	195	280
25	120	260	380

.2 Manufactured:

.1 Minimum Requirements

Property	**Manufactured Berm**
Porosity	35-40%
Length	1 m
Height	0.225 m

.2 Product must be approved by Departmental Representative.

.5 Water:

.1 Apply water to the construction site as appropriate to reduce or eliminate the spread of dust outside of the project limits.

.2 Apply water at the rate of 4 to 8 liters per m2 of roadbed and disturbed areas.

.3 Provide all necessary equipment and materials for dust control and maintenance.

Part 3 Construction Work Schedule

3.1 GENERAL

.1 Install and maintain erosion and sediment control facilities and measures in accordance with Erosion and Sediment Control plan prepared by the Contractor's Environmental Consultant.

.2 Minimize the amount of disturbed land that is susceptible to erosion. Ensure that areas outside the limits of construction are clearly defined and protected for all construction activities.

.3 Install erosion control facilities and measures at the earliest practical time and within one day after soil is disturbed;

.4 Provide immediate permanent or temporary measures to prevent discharge of sediment to creeks, streams, drainage courses, ditches or other receiving waters.

.5 Install the appropriate erosion and sediment control measures in accordance with sequence of construction approved for the Work. Schedule and perform clearing, stripping and grubbing operations so that grading operations and permanent erosion control features can follow immediately thereafter.

.6 Monitor erosion and sediment control facilities and measures on a weekly basis and immediately following a significant rain event. If a facility or measure has been reduced in capacity by 50 percent or more, restore such facility or measure to original condition within a schedule approved by the Departmental Representative.

.7 A significant rain event equates to a precipitation event that meets or exceeds 25mm of total rainfall depth within a 24 hour period as measured at the rain gauge nearest to the project site.

.8 If sediment is deposited outside the limits of the site, remove the sediment from the location(s) in which it is deposited within 24 hours of the occurrence. Commence work immediately upon official notification of acceptance of offer and complete the work within six (6) weeks from the date of such notification.

.9 Mechanically sweep (NOT FLUSH) roadways or haul routes to the site on a daily basis and the conclusion of and provide dust control measures.

3.2 SILT CONTROL MEASURES

.1 Silt Fences

- .1 Place silt barrier in a manner that will intercept runoff at or close to right angles to flow.
- .2 Position posts in manner such that fence fabric remains naturally taut. Posts to always be positioned downstream.
- .3 Where silt fence is placed within or at the bottom of slope, turn the ends of the silt fence slightly upslope in "J" configuration to ensure flow does not bypass end of silt fence.

3.3 STABILITY MEASURES

.1 Mulching

- .1 Apply mulching strictly in accordance with manufacturer's instructions.
- .2 Install as required by Erosion and Sediment Control Plan prepared by Contractor's Environmental Consultant.

3.4 CLEAN-UP & REMOVAL

.1 Upon complete of the Work, when erosion and sedimentation controls are no longer required, as determined by the Departmental Representative, remove all such temporary erosion and sedimentation controls and clean up and restore areas.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 N/A

1.2 REFERENCES

.1 N/A

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Departmental Representative or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.

.3 Clear snow and ice from access to building, if necessary.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Dispose of waste materials and debris off site.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.4 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 all waste products and debris.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. 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 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.8 Clean and sweep areaways and sunken wells.

.9 Sweep and wash clean paved areas.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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 WASTE MANAGEMENT GOALS

.1 Prior to start of Work conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.

.2 PWGSC's Waste Management Goal 75 percent of total Project Waste to be diverted from landfill sites. Provide Departmental Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.3 Accomplish maximum control of solid construction waste.

.4 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.

.3 Demolition Waste Audit (DWA): relates to actual waste generated from project.

.4 Inert Fill: inert waste - exclusively asphalt and concrete.

.5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate Condition: refers to waste sorted into individual types.

.12 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

.13 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

.14 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.15 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.3 DOCUMENTS

.1 Maintain at job site, one copy of following documents:

.1 Waste Reduction Workplan.

1.4 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Prepare and submit following prior to project start-up:

.1 Submit 2 copies of completed Waste Reduction Workplan (WRW).

.3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.

.1 Failure to submit could result in hold back of final payment.

.2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.

.3 For each material reused, sold or recycled from project, include amount quantities by number, type and size of items and the destination.

.4 For each material land filled or incinerated from project, include amount quantities by number, type and size of material and identity of landfill, incinerator or transfer station.

1.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials listed.
.2 Schedule for deconstruction/disassembly.
.3 Location.
.4 Protection.
.5 Clear labelling of storage areas.
.6 Details on materials handling and removal procedures.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 Describe management of waste.

.5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.

.6 Post WRW or summary where workers at site are able to review content.

.7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.

.8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.

.2 Unless specified otherwise, materials for removal do not become Contractor's property.

.3 Protect surface drainage, mechanical and electrical from damage and blockage.

1.7 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, mineral spirits, oil or paint thinner into waterways, storm, or sanitary sewers.

1.8 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises.

.2 Maintain security measures as per Section 01 14 10 – Security Requirements.

1.9 SCHEDULING

.1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 APPLICATION

.1 Do Work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING

.1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 REFERENCES

.1 N/A

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

- .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
  - .2 Request Departmental Representative/Consultant's inspection.
- .2 Departmental Representative/Consultant's Inspection:
  - .1 Departmental Representative/Consultant and Contractor to inspect Work and identify defects and deficiencies.
  - .2 Contractor to correct Work as directed.
- .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, and fully operational.
  - .4 Underground/Aboveground storage tank inspection documentation, registration, forms, decommissioning and removal in accordance with CEPA SOR/2008-197, if applicable.
  - .5 Work: complete and ready for final inspection.
- .4 Final Inspection:
  - .1 When completion tasks are done, request final inspection of Work by Departmental Representative, Consultant, and Contractor.
  - .2 When Work incomplete according to Departmental Representative and Consultant, complete outstanding items and request re-inspection.
- .5 Final Payment:
  - .1 When Departmental Representative and Consultant consider final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

1.4 FINAL CLEANING

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

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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 Section 01 33 00 – Submittal Procedures

.2 Section 01 35 33 – Health and Safety

.3 Section 01 74 11 – Cleaning

1.2 REFERENCES

.1 Reports:

.1 "FIRE HYDRANT REPLACEMENT HAZMAT ASSESSMENT – SITE REVIEW REPORT, FIRE HYDRANT REPLACMENT PROJECT – CSC WILLIAM HEAD", issued November 21, 2016, prepared by Stantec for Public Works Government Services Canada (further referred to herein as the "Fire Hydrant Assessment Report") – attached in the Appendix of the Project Specifications.

.2 Definitions:

.1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.4 Hazardous Building Material: component of a building or structure that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when altered, disturbed or removed during maintenance, renovation or demolition.

.3 Reference Standards:

.1 Canadian Environmental Protection Act,1999 (CEPA 1999)

.1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).

.2 Department of Justice Canada (Jus)

.1 Transportation of Dangerous Goods Act, 1992 (TDG Act) [1992], (c. 34).

.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

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

.1 Material Safety Data Sheets (MSDS).

.4 National Research Council Canada Institute for Research in Construction (NRC-IRC)

.1 National Fire Code of Canada (2010).

.5 WorkSafe BC

.1 British Columbia's Occupational Health and Safety Regulation (BC Reg. 296/97, including amendments to date of work)

.2 "Lead-Containing Paints and Coatings; Preventing Exposure in the Construction Industry", 2011

.3 "Safe Work Practices for Handling Asbestos" (2012)

.6 British Columbia Hazardous Waste Regulation (BC Reg. 63/88)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data for hazardous materials to be used by the Contractor to complete the Work:

.1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.

.3 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.

.4 Construction/Demolition Waste Management:

.1 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating percentage of construction/demolition wastes were recycled or salvaged

.5 Low-Emitting Materials: submit listing of adhesives and sealants used, comply with VOC and chemical component limits or restrictions requirements.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle hazardous materials to be used by the Contractor to complete the Work in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver hazardous materials to be used by the Contractor to site in original factory packaging, labelled with manufacturer's name and address.

.3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.4 Storage and Handling Requirements:

.1 Co-ordinate storage of hazardous materials to be used by the Contractor to complete the Work with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.

.1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

.2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.

.7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.

.9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

.1 Store hazardous materials and wastes in closed and sealed containers.

.2 Label containers of hazardous materials and wastes in accordance with WHMIS.

.3 Store hazardous materials and wastes in containers compatible with that material or waste.

.4 Segregate incompatible materials and wastes.

.5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.

.6 Store hazardous materials and wastes in secure storage area with controlled access.

.7 Maintain clear egress from storage area.

.8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.

.9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.

.10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

.11 When hazardous waste is generated on site:

.1 Co-ordinate transportation and disposal with Departmental Representative.

.2 Comply with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.

.3 Use licensed carrier authorized by provincial authorities to accept subject material.

.4 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide photocopy of shipping documents and waste manifests to Departmental Representative.

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Departmental Representative.

.9 Report discharge, emission, or escape of hazardous materials immediately to Departmental Representative and appropriate provincial authority. Take reasonable measures to control release.

.12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.13 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

Part 2 Products

2.1 MATERIALS

.1 Description:

.1 Bring on site only quantities hazardous material required to perform Work.

.2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 HAZARDOUS MATERIALS ABATEMENT

.1 Scope of Abatement Activities.

.1 Abatement shall be conducted to handle, alter, remove and/or dispose of hazardous building materials as identified in the Fire Hydrant Assessment Report in accordance with applicable regulations, guidelines, standards and/or best practices for such work, where such identified hazardous building materials will be impacted (handled, altered, damaged, removed) by the Work.

.2 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of hazardous materials that will be impacted by the Work of this contract, and such that appropriate plans and budgets can be included in their overall bid.

.3 The listing below is a summary of the identified hazardous building material categories and associated removal and disposal regulations, guidelines and/or standards.

.1 Lead and Lead-Containing Paints (LCPs)

.1 Refer to the Fire Hydrant Assessment Report for identities and locations of LCPs that may require disturbance during the Work.

.2 Actions that will disturb materials coated with LCPs are to be conducted in accordance with the requirements of the 2011 WorkSafe BC publication "Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry", keeping airborne exposure to lead dust to less than the 8-hour Occupational Exposure Limit (OEL) for lead of 0.05 milligram per cubic metre (mg/m^3).

.3 Although LCPs and items coated with LCPs will be disturbed and/or removed for disposal during the Work, unless deemed necessary through risk assessment or cost analysis conducted by the Contractor, comprehensive removal of LCPs from items or surfaces is not expected to be required during the Work.

.1 Refer to the provisions of the 2012 WorkSafe BC publication "Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry" for removal of LCPs from surfaces before any welding and torch-cutting, should the Contractor plan to use such methods to complete the Work.

.1 Contractor will be responsible for verification testing of surfaces where LCPs have been removed. Confirmation of acceptable results is to be provided to the Departmental Representative for review before proceeding with any welding or torch-cutting on surfaces where LCPs were present.

.4 Waste transportation to be conducted in accordance with BC Reg. 63/88 and the Federal Transportation of Dangerous Goods Regulation.

.5 Waste disposal to be conducted in accordance with BC Reg. 63/88.

.2 Asbestos-Containing Materials (ACMs)

.1 No suspected ACMs were identified in the Fire Hydrant Assessment Report.

.2 ACMs may still be present as internal or sub surface components of the fire hydrants.

.3 Notify Departmental Representative of suspected ACM discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Department Representative.

.3 Silica

.1 Silica is expected to be present in concrete foundations and barriers around hose cabinets, where present.

.2 When silica-containing materials are to be disturbed and/or removed, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (Cristobalite and Quartz – each 0.025 mg/m^3). This would include, but not be limited to, the following:

.1 Providing workers with respiratory protection

.2 Wetting the surface of the materials, use of water or dust suppressing agents to prevent dust emissions

.3 Providing workers with facilities to properly wash prior to exiting the work area.

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning. 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 Waste Management: separate waste materials for reuse and recycling.

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.

.3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.

.4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

.6 Dispose of hazardous wastes in timely fashion in accordance with applicable federal and provincial regulations.

.7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

.8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:

.1 Hazardous wastes recycled in manner constituting disposal.

.2 Hazardous waste burned for energy recovery.

.3 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

Part 1 General

1.1 SCOPE OF WORK

.1 This section relates to civil concrete work, relevant to external concrete slabs and cast-in-place concrete associated with subsurface utility works.

1.2 RELATED REQUIREMENTS

.1 Section 33 11 16 – Site Water Utility Distribution Piping

1.3 REFERENCES

.1 ASTM International

- .1 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- .2 ASTM D260-86(2001), Standard Specification for Boiled Linseed Oil.
- .3 ASTM D1751[04, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-19.24-M90, Multicomponent, Chemical-Curing Sealing Compound.

.3 CSA International

- .1 CSA-A23.1/A23.2-2004, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CSA A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .3 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5 QUALITY ASSURANCE

.1 Provide to Departmental Representative, 4 weeks minimum prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

- .1 Quality Control Plan: provide written report to Departmental Representative verifying compliance that concrete in place meets performance requirements. The Quality Control Plan is to include details of the sampling and testing of concrete in compliance with CSA-A23.1. The results of all testing are to be furnished to the Departmental Representative.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Alternative 1 - Performance: to CSA A23.1/A23.2, and as described in MIXES of PART 2 - PRODUCTS.

2.2 PERFORMANCE CRITERIA

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established by Departmental Representative and provide verification of compliance as described in PART 1 - QUALITY ASSURANCE.

2.3 MATERIALS

.1 Cement: to CSA A3001.

.2 Water: to CSA A23.1/A23.2.

.3 Premoulded joint filler:

.1 Bituminous impregnated fibreboard: to ASTM D1751.

.4 Joint sealer/filler: grey to CAN/CGSB-19.24, Type 1, Class B.

.5 Sealer: boiled linseed oil to ASTM D260, mixed with mineral spirits 1:1 proprietary poly-siloxane resin blend.

.6 Supplementary and other concrete materials: to CSA A23.1/A23.2.

2.4 MIXES

.1 Alternative 1 - Performance Method for specifying concrete: to meet Departmental Representative performance criteria to CSA A23.1/A23.2.

.1 Ensure concrete supplier meets performance criteria as established below, and provide verification of compliance as described in PART 3.8 – FIELD QUALITY CONTROL.

.2 Intended application: Surface slabs and exposed site concrete

.1 Uniformity and workability: free of surface blemishes, loss of mortar, colour variations, segregation.

.2 Durability and class of exposure: C-2.

.3 Compressive strength at 28 days: 32 MPa minimum.

.4 Nominal maximum aggregate size 20 mm.

.3 Intended application: Subsurface civil works.

.1 Uniformity and workability: free of loss of mortar, segregation.

.2 Durability and class of exposure: C-4.

.3 Compressive strength at 28 days: 25 MPa minimum.

.4 Nominal maximum aggregate size 28mm.

.5 For cast-in-place manhole bases achieve reduced permeability in the long term.

.4 Concrete supplier's certification required.

.5 Provide quality management plan to ensure verification of concrete quality to specified performance.

Part 3 Execution

3.1 PREPARATION

.1 Provide Departmental Representative 24 hours notice before each concrete pour.

.2 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.

.3 Protect previous Work from staining.

.4 Clean and remove stains prior to application of concrete finishes.

3.2 INSTALLATION/APPLICATION

.1 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2.

.2 Sleeves and inserts:

.1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in.

.2 Sleeves and openings greater than 100 mm x 100 mm not indicated, must be reviewed by Departmental Representative.

3.3 FINISHES

.1 Formed surfaces exposed to view: in accordance with CSA A23.1/A23.2, unless specified otherwise.

.2 Surface slabs and exposed site concrete:

.1 Screed to plane surfaces and using aluminum, magnesium or wood floats.

.2 Provide round edges and joint spacings using standard tools.

.3 Trowel smooth to provide lightly brushed non-slip finish, unless specified otherwise.

3.4 CONTROL JOINTS

.1 Form control joints in slabs on grade at locations indicated, to CSA A23.1/A23.2 and install specified joint sealer/filler.

3.5 EXPANSION AND ISOLATION JOINTS

.1 Install premoulded joint filler in expansion and isolation joints full depth of slab flush with finished surface to CSA A23.1/A23.2.

3.6 CURING

.1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and to CSA A23.1/A23.2.

3.7 SEALING APPLICATION

.1 Surface slabs: After curing is complete, apply poly-siloxane resin blend sealer at 4 m^2/L.

3.8 FIELD QUALITY CONTROL

.1 Concrete testing: to CSA A23.1/A23.2 by independent testing laboratory. Accelerated test methods will apply.

3.9 CLEANING

.1 Use trigger operated spray nozzles for water hoses.

.2 Designate cleaning area for tools to limit water use and runoff.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 33 11 16 – Site Water Utility Distribution Piping

1.2 REFERENCES

.1 ASTM International

- .1 ASTM C88, Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- .2 ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregate.
- .3 ASTM C117, Test Method for Material Finer than 0.075 Sieve in Mineral Aggregates by Washing.
- .4 ASTM D1557, Specification for Test Methods for Aggregate Mixtures using 10 lb (4.54 kg) Rammer and 18 inch (457mm) drop.
- .5 ASTM D698, Standard Test Methods for Density Relations of Soils and Soil Aggregate Mixtures using 2.49 kg Tammer and 304.8mm Drop.

.2 Canadian Standards Association (CSA International)

- .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

1.3 SCOPE OF WORK

.1 General site clearing, grubbing and topsoil stripping.

.2 Civil Engineering cut, fill, trenching and grading work exceeding 1 m beyond the building footprint inclusive of:

- .1 Excavating, trenching and backfill for utility services and buried installations.
- .2 General site grading.
- .3 Topsoil restoration in re-graded landscaped areas.
- .4 Sub-grading below paved areas.

.3 Exclusions to scope of this specification:

- .1 Eathworks inside a perimeter drawn 1 m beyond the building and foundations footprint.

1.4 REGULATIONS

.1 Shore and brace excavations, protect slopes and banks and perform all work in accordance with Provincial and Municipal regulations whichever is more stringent.

.2 Do not begin backfilling or filling operations until material has been approved for use by the Departmental Representative.

.3 Not later than 48 hours before backfilling or filling with approved materials, notify the Departmental Representative so that compaction tests can be carried out be designated testing agency.

.4 Before commencing work, conduct, with the Departmental Representative, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

1.5 TESTS AND INSPECTIONS

.1 The contractor shall retain, at his own cost, the services of an independent and certified testing agency to undertake soil and granular material tests at the following minimum frequencies / intervals:

.1 Sieve Analysis prior to commencing and 1 every 200 tonnes on:

.1 All materials referred to in item 2.1 of this Section 31 00 99 (Earthworks for Minor Works)

.2 Modified Proctor Analysis on all materials for which density tests are specified below, prior to commencing and 1 every 200 tonnes.

.3 Density tests on places and compacted soils and granular materials, for which the results are to be expressed as a percentage of Modified Proctor Density, as follows:

.1 Stripped and compacted subgrade: Density tests at 1 per 500 m^2 or part thereof.

.2 Compacted fill below paved areas and sidewalk: Density tests at 1 per 500 m^2 or part thereof.

.3 Base and sub-base granular: Density tests at 1 per 500 m^2 or part therefore. Note: for all other specification details for bas and sub-base granular material please refer to Section 32 12 16.02 – Asphalt Paving for Building Sites.

.4 Compacted trench backfill (trenches up to 1.5m depth): Density tests at 1 per 30 lin.m or part thereof; just below road subgrade.

.5 Compacted trench backfill (trenches exceeding 1.5m depth): Density tests at 2 per 30 lin.m or part thereof; one at half height and one just below road subgrade.

.2 The Contractor shall cooperate with the Departmental Representative in the selection of test samples. Copies of the test results shall be forwarded to Departmental Representative.

.3 The Contractor is responsible for ensuring all materials meet specifications. Where initial tests fail and subsequent testing is deemed necessary by the Departmental Representative, the cost of the subsequent testing will be the responsibility of the Contractor.

.4 In addition to sample testing, the Contractor will undertake proof rolling of subgrade, subbase and base granular surfaces as required and in the presence of the Departmental Representative and / or the Geotechnical Consultant, for which a minimum of 48 hours notice shall be provided by the Contractor.

1.6 BURIED SERVICE

.1 Buried services:

.1 Before commencing work verify location of buried services on, and adjacent to, work sites.

.2 Contact utilities, Municipality, BC One Call, Public Works and Government Services Canada, and a utility locate company to help identify locations of underground services.

.3 Conduct Ground Penetrating Radar (GPR) in all areas of excavation to identify location and approximate depth of services.

.4 Conduct a "Hydro-Vac" excavation of all utilities identified on the design drawings and by way of the GPR investigation.

.1 Conduct a survey and record vertical and horizontal location in UTM-10 NAD 86 coordinates and geodetic elevation format.

.2 Record the diameter of piping, width and depth of concrete ducting, and size of structures.

.3 Submit points list of survey to Departmental Representative in text format.

.5 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services.

.6 Remove obsolete buried services within 2 m of foundations: cap cut offs.

.7 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.8 Prior to beginning excavation Work, notify applicable Departmental Representative to establish location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during Work.

.9 Confirm locations of buried utilities by careful test excavations or soil hydrovac methods.

.10 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.

.11 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.

.12 Record location of maintained, re-routed and abandoned underground lines.

.13 Confirm locations of recent excavations adjacent to area of excavation.

1.7 PROTECTION

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to the Departmental Representative's approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect all active buried services. Assume all services to be active unless:

.1 Stated otherwise in contract documents;

.2 Confirmed otherwise by contractor's own investigations in consultation with Departmental Representative.

.6 Repair at contractor's own cost damage to existing structures or services resulting from the contractor's failure to locate and protect.

.7 Avoid mixing excavated materials. Protect the condition and suitability of native soil and topsoil materials stockpiled for re-use.

Part 2 Products

2.1 MATERIALS

.1 Imported granular material to be composed of inert, durable material, reasonably uniform in quality and free from soft or disintegrated particles. In absence of satisfactory performance records over a five year period for particular source of material, soundness, to be tested according to ASTM test procedure C-88 or latest revised issue. Maximum weight average losses for course and fine aggregates to be 30% when magnesium sulphate is used after five cycles.

.2 Imported crushed granular material when tested according to ASTM C-136 and ASTM C-117, or latest revised issue, to have a generally uniform gradation, conform to following sieve grading and have one or more fractured faces. Determination of the Ministry of Transportation and Highways' Specification I-11, Fracture Count for Coarse Aggregate, Method "A", which determines fractures faces by count. The Plasticity Index for crushed gravel to not exceed 6.0.

.3 Native material to be workable soil free of organic or foreign matter; any material obtained within limits of Contract may be deemed native material for purposes of payment if it is approved by the Departmental Representative. Native material is not acceptable if it is impracticable to control its water content or compact to specified density.

.4 Granular Pipe Bedding and Surround Material

Crushed or graded gravels: to conform to following gradation:

	Percent Passing	
Sieve Designation	**Type 1***	**Type 2***
25.0mm	100	100
19.0mm	90 - 100	90 - 100
12.5mm	68 - 85	70 - 100
09.5mm	50 - 75	----------
4.75mm	25 - 50	40 - 70
2.36mm	10 - 35	24 - 52
1.18mm	6 - 26	15 - 38
0.600mm	3 - 17	6 - 27
0.300mm	----------	3 - 20
0.075mm	0 - 15	0 - 8

***Type 1:** standard gradation

***Type 2:** to be used only in dry trench conditions with Departmental Representative's prior approval.

.5 Below paved or gravel access areas trench backfill and general fill should consist of imported 75 mm minus sand or gravel with less than five percent fines (particles passing the 75 um diameter sieve), be substantially free of clay lumps, free of organic matter and other extraneous materials and meet the gradation requirements below.

	Percent Passing	
Sieve	**Pit Run Gravel**	**Pit Run Sand**
Designation		
300mm dia	(100)	
200mm dia	__ (100)	
100mm dia	__ (100)	
75.0mm	--- 100	
50.0mm	70 - 100	
25.0mm	50 - 100	
12.5mm	----------	100
4.75mm	22 - 100	35 - 100
2.36mm	10 - 85	20 - 70
1.18mm	----------	13 - 50
0.600mm	----------	8 - 35
0.300mm	----------	5 - 25
0.150mm	----------	2 - 15
0.075mm	2 - 8	0 - 6

.6 Approved native material used as trench backfill below unpaved areas in to be free of organic and foreign matter. Native material is not acceptable if it is impracticable to control its water content or compact to the specified density.

Part 3 Execution

3.1 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated and / or re-graded.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 CLEARING AND GRUBBING

.1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas to be excavated, covered with new construction or re-graded.

.2 Remove stumps and tree roots below footings, slabs, and paving, and to not less than 200 mm below finished grade elsewhere.

.3 Dispose of cleared and grubbed material off site daily to disposal area acceptable to authority having jurisdiction.

3.3 EXCAVATION

.1 Topsoil stripping:

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.

.2 Strip topsoil over areas to be excavated, areas to be covered by new construction, areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil.

.3 Topsoil to be stored for re-use in stockpiles not exceeding 1.5m high in location designated by the Departmental Representative.

.4 Should insufficient quantity of native topsoil be available for restoring landscaped areas, due to inappropriate handling or storage of topsoil by contractor, the contractor shall import the required balance at his own cost, ensuring imported materials is equal or better than native material.

.5 Avoid mixing topsoil with subsoil.

.2 Excavate as required to carry out work, in all materials met.

.1 Do not disturb soil or rock below bearing surfaces. Notify Departmental Representative when excavations are complete and obtain Departmental Representative's approval before proceeding further.

.2 If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work.

.3 Excavation taken below depths shown without Departmental Representative's written authorization to be filled with concrete of same strength as for footings at Contractor's expense.

.3 Temporary excavations for service trenches and building areas deeper than 1.2m requiring worker entry should be sloped/shored in accordance with Workers Compensation Boards regulations, or as directed on site by qualified professional engineer. Flatter cut slope inclinations may be required if heavy groundwater seepage is encountered or if the temporary excavations will be open during periods of high precipitation.

.4 Dewatering may be required, especially if the excavation is carried out during wet weather. The contractor should protect open excavations against flooding and damage from surface runoff. Select dewater methods based on site conditions and construction techniques, disposing of water in accordance with Environmental procedures via flocculation tanks, settling basins or other treatment facilities to remove suspended solids or other contaminants before discharging to storm sewers. Avoid discharge to permanent existing or proposed soakaways without written approval of the Departmental Representative.

.5 Excavate trenches to provide uniform continuous bearing and support for 100 mm thickness of pipe bedding material on solid and undisturbed ground. Trench widths below point 300 mm above pipe not to exceed diameter of pipe plus 600 mm.

.6 Excavate for paving to subgrade levels. In addition, remove topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

.7 For trench excavation, unless otherwise authorized by the Departmental Representative in writing, do not excavate more than 30m of trench in advance of installation operations and do not leave open more than 15m at the end of the day's operation.

.8 Keep excavated and stockpiled materials a safe distance away from edge of trench. Restrict vehicle operations directly adjacent to open trenches.

.9 Avoid mixing different excavated subsoils

3.4 BACKFILLING/FILLING

.1 Inspection: do not commence backfilling until fill material spaces to be filled have been inspected and approved by the Departmental Representative.

.2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.4 Compaction: place backfill / fill in uniform lifts not exceeding 150 mm and compact to following Modified Proctor densities in compliance with ASTM D1557. (All densities in compliance with ASTM D1557).

- .1 Below boulevards, easements and landscaped areas to minimum 90%.
- .2 Below and within 1:1 sloping zone of influence of ground-bearing structures, roads, driveways, shoulders, re-shaped ditches, parking areas, patios, paved areas and sidewalks to minimum 95%.
- .3 Use caution in pipe zone to ensure no damage to pipe.

.5 Under areas to be top-soiled: use compliant native material up to bottom of topsoil.

.6 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.

.7 Do not proceed with backfilling operations until Departmental Representative has inspected and approved installations.

.8 During backfilling / filling and compaction, compact each layer before placing succeeding layer.

.9 Backfilling around installations:

- .1 Place bedding and surround material as specified elsewhere.
- .2 Do not backfill around or over cast in place concrete within 24 hours after placing concrete.
- .3 Place layers simultaneously on both / all sides of installed work to equalize loading.

3.5 CONTAMINATED MATERIALS

.1 If contaminated materials are detected during excavation operations, immediately notify the Departmental Representative. Any contaminated materials to be disposed of using methods approved by the Departmental Representative.

3.6 GRADING

.1 Following clearing and topsoil stripping excavate to rough grade any areas requiring cut.

.2 Proof roll exposed sub-grade. Excavate soft spots encountered and backfill with permitted materials in maximum 150mnm lifts with compaction to specified density.

.3 Before placing fill in areas requiring fill, scarify surface to depth of 150mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.4 In areas requiring fill, raise elevations in permitted materials in maximum 150 mm lift with compaction to specified density.

.5 Employ the preceding operations to achieve rough grading to design elevations allowing for depth of pavement structure, topsoil or other surface treatment as indicated. Grade slopes to be consistent and smooth between finished spot elevations shown on drawings. Tolerance on sub-grade elevations is within 30 mm of design elevations but not uniformly high or low.

.6 Slope rough grade away from building at 2% minimum (unless indicated otherwise).

.7 Do not disturb soil within branch spread of trees and shrubs to remain.

3.7 RESTORATION – TOPSOILED AREAS

.1 Prepare subgrade as detailed above and verify that all grades are correct.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material to appropriately licensed off-site disposal areas.

.4 Coarse cultivate entire area which is to receive topsoil to a minimum depth of 150mm immediately before placing topsoil. Cross cultivate areas where equipment used for hauling and spreading has compacted soil.

.5 When subgrade accepted by Departmental Representative, commence placing topsoil.

.6 Place topsoil over prepared subgrade and allow to settle or compact by light rolling such that it is firm against deep footprints. Do not compact topsoil more than is necessary to meet this requirement.

.7 Ensure topsoil is moist (25% to 75% of filed capacity) but not wet when placed. And do not handle if frozen or so wet that its structure will be altered.

.8 Manually spread topsoil around trees, shrubs and obstacles.

.9 Fine grade topsoil after placing to specified elevations and contours. Re-grade rough spots and low areas to ensure positive surface drainage.

.10 Finish surface smooth, uniform, firm against deep footprinting with a fine loose surface texture. Grass seed restored and repaired topsoiled areas.

3.8 RESTORATION - GENERAL

.1 Upon completion of work, remove waste materials and debris, trim slopes and correct defects as directed by Departmental Representative.

.2 Reinstate pavement, sidewalks and grass-block areas in layers, materials, densities and to lines and elevations which existed before excavation, in all cases providing smooth transition to adjacent paved areas.

.3 Clean all affected surfaces.

.4 Scarify and loosen topsoil in areas used for storage, haulage, machinery and the like.

3.9 SHORTAGE AND SURPLUS

.1 Supply all necessary fill to meet backfilling and grading requirements.

.2 Dispose of surplus material off site.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation of water mains, hydrants, valves, valve boxes, and valve chambers, including service connections.

1.2 RELATED REQUIREMENTS

.1 Section 31 00 99 – Earthworks for Minor Works

.2 Section 03 30 00.01 – Cast-in-Place Concrete Short Form.

1.3 REFERENCES

.1 American National Standards Institute/American Water Works Association (ANSI/AWWA)

- .1 ANSI/AWWA B300, Standard for Hypochlorites.
- .2 ANSI/AWWA C500, Standard for Metal-Seated Gate Valves for Water Supply Service.(Includes Addendum C500a-95)
- .3 ANSI/AWWA C504, Standard for Rubber-Seated Butterfly Valves.
- .4 ANSI/AWWA C651, Standard for Disinfecting Water Mains.
- .5 ANSI/AWWA C800, Standard for Underground Service Line Valves and Fittings. (Also Included Collected Standards for Service Line Materials).
- .6 ANSI/AWWA C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 Inch through 12 Inch (100 mm - 300 mm), for Water Distribution.

.2 American Society for Testing and Materials International, (ASTM)

- .1 ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile.
- .2 ASTM B88M, Standard Specification for Seamless Copper Water Tube [Metric].
- .3 ASTM C117, Standard Test Methods for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- .4 ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
- .5 ASTM C478M, Standard Specification for Precast Reinforced Concrete Manhole Sections [Metric].
- .6 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft; (600 kN-m/m;)).
- .7 ASTM D2310, Standard Classification for Machine-Made "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe.
- .8 ASTM D2657, Standard Practice for Heat Fusion Joining of Polyolefin Pipe and Fittings.

.9 ASTM D2992, Standard Practice for Obtaining Hydrostatic or Pressure Design Basis for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fitting.

.10 ASTM D2996, Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe.

.11 ASTM F714, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter.

.12 ASTM C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

.3 CAN/CGSB-34.1, Pipe, Asbestos Cement, Pressure.

.4 CGSB 41-GP-25M, Pipe, Polyethylene, for the Transport of Liquids.

.4 CSA International

.1 CAN/CSA-A257 Series-M92(R1998), Standards for Concrete Pipe.

.2 CAN/CSA-A3000-98(April 2001), Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.3-98)).

.3 CAN/CSA-B137 Series-02, Thermoplastic Pressure Piping Compendium. (Consists of B137.0, B137.1, B137.2, B137.3, B137.4, B137.4.1, B137.5, B137.6, B137.8, B137.9, B137.10, B137.11 and B137.12).

.1 CAN/CSA-B137.1, Polyethylene Pipe, Tubing, and Fittings for Cold-Water Pressure Services.

.2 CAN/CSA-B137.3, Rigid Polyvinyl Chloride (PVC) Pipe for Pressure Applications.

.4 CAN/CSA-G30.18-M92(R1998), Billet Steel Bars for Concrete Reinforcement.

.5 CAN/CSA-G164-M92(1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.5 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 199 (CEPA)

.6 Transport Canada (TC)

.1 Transportation of Dangerous Good Act, 1992 (TDGA)

.7 The Mater Painters Institute (MP)

.1 Architectural Painting Specification Manual – March 1998 (R2002)

.8 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S520, Standard for Fire Hydrants.

.2 CAN/ULC-S543, Standard for Internal-Lug, Quick Connect Couplings for Fire Hose.

1.4 SUBMITTALS

.1 Submit in accordance with Section 01 01 50.

.2 Inform Departmental Representative of proposed source of bedding materials and provide access for sampling at least 4 weeks prior to commencing work, in addition to providing samples in accordance with Section 31 00 99 – Earthwork for Minor Works.

.3 Submit manufacturer's test data and certification that pipe materials meet requirements of this section 4 weeks prior to beginning work. Include manufacturer's drawings, information and shop drawings where pertinent.

.4 Pipe certification to be on pipe.

.5 Submit detailed scheduling of testing, disconnections and tie-ins coordinated with off-site works to negate / minimize water service interruptions. Servicing for two offsite sources to be maintained to all areas of institutions except as approved for tie-ins.

1.5 CLOSEOUT SUBMITTALS

.1 Provide record drawings, including directions for operating valves, check valves and air release valves, list of equipment required to operate valves, check valves and air release valves, details of pipe material, location of air vacuum release valves, hydrant details, maintenance and operating instructions in accordance with Section 01 01 50.

.1 Include top of pipe elevation, horizontal location of fittings and type, valves, valve boxes, valve chambers and hydrants, bends and fittings.

1.6 SCHEDULING OF WORK

.1 Schedule Work to minimize interruptions to existing services.

.2 Submit schedule of expected interruptions to the Departmental Representative for approval and adhere to interruption schedule as approved by Departmental Representative.

.3 Notify Departmental Representative minimum of 7 days in advance of interruption in service.

.4 Do not interrupt water service for more than 4 hours at any one time and schedule this period in consultation with the Departmental Representative. For domestic water service interruptions to inmate facilities, a standby alternate service shall be provided at the contractors' expense in advance of the interruption to be brought into services by the contractor at the discretion of the Departmental Representative.

.5 The Contractor's price include all impacts of the sequencing of the work, including but not limited to: time-related impacts, finding and operation of existing shut-off valves, temporary connections, installation of temporary shut off valves and temporary thrust restraint to allow for temporary thrust conditions.

.6 Notify fire department of planned or accidental interruption of water supply to hydrants.

.7 Provide 300mm x 300mm x 13mm plywood marker sign clearly stenciled "NOT IN SERVICE" on hydrant not in use.

Part 2 Products

2.1 PIPE, JOINTS AND FITTINGS

.1 Pipe: Re-use existing as per contract drawings. Replace elastomeric gasket and/couplings.

.2 Fittings:

.1 Cast iron fittings: to ANSI/AWWA C100/A21.10, and for pipe diameters larger than NPS4 cement mortar lined to ANSI/AWWA C104/A21.4. All mechanically restrained fittings shall be provided with integral tip lugs. Weld on lugs are unacceptable.

.2 Flange gaskets shall be 3.175 mm thick manufactured from natural rubber with lead tip and a layer of cotton on both sides.

.3 Tie rods, bolts and nuts shall conform to the requirements of ASTM specifications for steel bridges and buildings, serial designation A-7. All bolts shall have American Standard course screw threads with a Class 2 free fit. Rolled threads are unacceptable. Joint restraint devices for PVC water main to be Underwriter Laboratories of Canada (UL) or Factory Mutual (FM) approved.

.4 Thrust blocks shall be used at all directional change fittings; elbows, tees, dead ends etc.

2.2 VALVES

.1 Valves to open clockwise.

.2 Gate valves:

.1 To ANSI/AWWA C509

.2 Standard iron body

.3 Mounted wedge valves with non-rising stems,

.4 Suitable for 1 Pa with mechanical or flanges joints.

.5 31mm square operating nut.

2.3 HYDRANTS

.1 Fire hydrants shall all be of the same make and model and shall conform to the latest version of AWWA C502 with the following features.

.1 Compression style

.2 Left hand opening (CCW)

.3 2 – 63.5 mm (2 ½") hose nozzles BC standard fire thread and one 100mm (4") Storz nozzle c/w thread-on cap.

.4 Inlet shall be 150mm hub and lugs.

.5 Self-Draining.

.6 Operating nut shall be 41.28mm I1 9/16") pentagon.

.7 Hydrants shall be rated for working pressure of 1207 kpa (175psi)

2.4 PIPE BEDDING AND SURROUND MATERIAL

.1 Pipe bedding and surround material per Section 31 00 99 – Earthwork for Minor Works.

.2 Concrete mixes and materials required for bedding cradles, encasement, supports, thrust blocks: to Section 03 30 00.01 - Cast-in-Place Concrete Short Form.

2.5 BACKFILL MATERIAL

.1 Backfill material per Section 31 00 99 – Earthwork for Minor Works.

2.6 PIPE DISINFECTION

.1 Sodium hypochlorite to ANSI/AWWA B300 to disinfect water mains.

.2 Undertake disinfection of water mains in accordance with ANSI/AWWA C651.

Part 3 Execution

3.1 PREPARATION

.1 Clean pipes, fittings, valves, hydrants, and appurtenances of accumulated debris and water before installation.

.1 Inspect materials for defects to approval of Departmental Representative.

.2 Remove defective materials from site.

3.2 TRENCHING

.1 Do trenching work in accordance with Section 31 00 99 – Earthworks for Minor Works.

.2 Trench depth to provide cover of not less than 1.0 m from finished grade.

.3 Trench alignment and depth require Departmental Representative's approval prior to placing bedding material and pipe.

3.3 CONCRETE BEDDING AND ENCASEMENT

.1 Do concrete work in accordance with Section 03 30 00.01 - Cast-in-Place Concrete Short Form.

.2 Where concrete encasement of pipes is required, trench to be trimmed to accept minimum 150 mm concrete surround.

.3 Pipe may be positioned on concrete blocks to facilitate placing of concrete. When necessary, rigidly anchor or weight pipe to prevent flotation when concrete is placed.

.4 Do not backfill over concrete within 24 hours after placing.

.5 Pipe joints to be spaced so that encased section of pipe does not span across joints or extend to within 300mm of joints.

3.4 GRANULAR BEDDING

.1 Place granular bedding material in uniform layers not exceeding 150 mm compacted thickness to depth as indicated.

.2 Do not place material in frozen condition.

.3 Shape bed true to grade to provide continuous uniform bearing surface for pipe.

.4 Shape transverse depressions in bedding as required to suit joints.

.5 Compact each layer full width of bed to 95% of corrected maximum dry density.

.6 Fill authorized or unauthorized excavation below design elevation of bottom of specified bedding in accordance with Section 31 00 99 – Earthwork for Minor Works.

3.5 PIPE INSTALLATION

.1 Lay pipes to ANSI/AWWA C600 and manufacturer's standard instructions and specifications. Do not use blocks except as specified / permitted elsewhere in contract documents.

.2 Join pipes in accordance with ANSI/AWWA C600 and manufacturer's recommendations.

.3 Bevel or taper ends of PVC pipe to match fittings.

.4 Handle pipe by methods recommended by pipe manufacturer. Do not use chains or cables passed through pipe bore so that weight of pipe bears on pipe ends.

.5 Lay pipes on prepared bed, true to line and grade.

- .1 Ensure barrel of each pipe is in contact with shaped bed throughout its full length.
- .2 Take up and replace defective pipe.
- .3 Correct pipe which is not in true alignment or grade or pipe which shows differential settlement after installation greater than 10 mm in 3 m.

.6 Face socket ends of pipe in direction of laying. For mains on grade of 2% or greater, face socket ends up-grade.

.7 Do not exceed permissible deflection at joints as recommended by pipe manufacturer.

.8 Keep jointing materials and installed pipe free of dirt and water and other foreign materials.

- .1 Whenever work is stopped, install a removable watertight bulkhead at open end of last pipe laid to prevent entry of foreign materials.

.9 Position and join pipes with equipment and methods approved by Departmental Representative

.10 Cut pipes in approved manner as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.

.11 Align pipes before jointing.

.12 Install gaskets to manufacturer's recommendations. Support pipes with hand slings or crane as required to minimize lateral pressure on gasket and maintain concentricity until gasket is properly positioned.

.13 Avoid displacing gasket or contaminating with dirt or other foreign material.

.1 Remove disturbed or contaminated gaskets.

.2 Clean, lubricate and replace before jointing is attempted again.

.14 Complete each joint before laying next length of pipe.

.15 Minimize deflection after joint has been made.

.16 Apply sufficient pressure in making joints to ensure that joint is completed to manufacturer's recommendations.

.17 Ensure completed joints are restrained by compacting bedding material alongside and over installed pipes or as otherwise approved by Departmental Representative

.18 When stoppage of work occurs, block pipes in an approved manner to prevent creep during down time.

.19 Recheck plastic pipe joints assembled above ground after placing in trench to ensure that no movement of joint has taken place.

.20 Do not lay pipe on frozen bedding.

.21 Do hydrostatic and leakage test and have results approved by Departmental Representative before surrounding and covering joints and fittings with granular material.

.22 Backfill remainder of trench.

3.6 VALVE INSTALLATION

.1 Install valves to manufacturer's recommendations at locations as indicated.

.2 Support valves located in valve boxes or valve chambers by means of bedding same as adjacent pipe. Maximum length of pipe on each end of valve shall be 1 m. Valves not to be supported by pipe.

.3 Install underground post-type indicator valves as indicated.

3.7 HYDRANTS

.1 Install hydrants at locations as indicated. Install hydrants in accordance with AWWA M17.

.2 Install 150 mm gate valve and cast iron valve box on hydrant service leads as indicated.

.3 Set hydrants plumb, with hose outlets parallel with edge of pavement or curb line, with pumper connection facing roadway and with body flange set at elevation of 50 mm above final grade, or 50mm above top of adjacent barrier curb (whichever is higher).

.4 Place concrete thrust blocks as indicated and specified ensuring that drain holes are unobstructed.

.5 To provide proper draining for each hydrant standpipe , excavate pit measuring not less than 1 x 1 x 0.5 m deep and backfill with coarse gravel or crushed stone to level 150 mm above drain holes.

.6 Place appropriate sign on installed hydrants indicating whether or not they are in service during construction.

.7 Paint all hydrants and hose cabinets with identification numbers. Location, colour and size of identification number must be approved by the Departmental Representative.

3.8 THRUST BLOCKS AND RESTRAINED JOINTS

.1 For thrust blocks: do concrete Work in accordance with Section 03 30 00.01 – Cast-in-Place Concrete Short Form. Place heavy gauge polythene sheet between pipe fitting and concrete.

.2 Place concrete thrust blocks between valves, tees, plugs, caps, bends, changes in pipe diameter, reducers, hydrants and fittings and undisturbed ground as indicated or as directed by Departmental Representative.

.3 Valves shall be anchored to a block of concrete.

.4 Anchors that restrain upward forces or forces in a direction in which no suitable undisturbed bearing surface is available shall consist of inverted U-bars at the joint being restrained set in the concrete of the thrust block. Thrust blocks in this application shall be of that mass or weight required to restrain the forces involved.

.5 Keep joints and couplings free of concrete.

.6 Minimum size of thrust blocks shall meet or exceed a face area of 1m x 0.5m.

.7 Do not backfill over concrete within 24 hours after placing.

.8 For restrained joints: only use restrained joints approved by Departmental Representative.

3.9 HYDROSTATIC AND LEAKAGE TESTING

.1 Do tests in accordance with ANSI/AWWA C603.

.2 Provide labour, equipment and materials required to perform hydrostatic and leakage tests hereinafter described.

.3 Notify Departmental Representative at least 48 hours in advance of proposed tests.

.1 Perform tests in presence of Departmental Representative.

.4 Where section of system is provided with concrete thrust blocks, conduct tests at least 5 days after placing concrete or 2 days if high early strength concrete is used.

.5 Test pipeline in sections not exceeding 365 m in length, unless otherwise authorized by Departmental Representative.

.6 Upon completion of pipe laying and after Departmental Representative has inspected Work in place, surround and cover pipes between joints with approved granular material placed to dimensions indicated.

.7 Leave hydrants, valves, joints and fittings exposed.

.8 When testing is done during freezing weather, protect hydrants, valves, joints and fittings from freezing.

.9 Strut and brace caps, bends, tees, and valves, to prevent movement when test pressure is applied.

.10 Open valves.

.11 Expel air from main by slowly filling main with potable water.

- .1 Install corporation stops at high points in main where no air-vacuum release valves are installed.
- .2 Remove stops after satisfactory completion of test and seal holes with plugs.

.12 Fill asbestos cement pipe and concrete pipe at least 24 hours before testing to allow water absorption by pipe material.

.13 Thoroughly examine exposed parts and correct for leakage as necessary.

.14 Apply hydrostatic test pressure of 1380 kPa minimum based on elevation of lowest point in main and corrected to elevation of test gauge, for period of 1 hour.

.15 Examine exposed pipe, joints, fittings and appurtenances while system is under pressure.

.16 Remove joints, fittings and appurtenances found defective and replace with new sound material and make watertight.

.17 Repeat hydrostatic test until defects have been corrected.

.18 Apply leakage test pressure of 690 kPa minimum after complete backfilling of trench, based on elevation of lowest point in main and corrected to elevation of gauge, for period of 2 hours.

.19 Define leakage as amount of water supplied from water storage tank in order to maintain test pressure for 2 hours.

.20 Do not exceed allowable leakage of 1.079 L/day/km/mm of pipe, including lateral connections.

.21 Locate and repair defects if leakage is greater than amount specified.

.22 Repeat test until leakage is within specified allowance for full length of water main.

3.10 PIPE SURROUND

.1 Upon completion of pipe laying and after Departmental Representative has inspected Work in place, surround and cover pipes as indicated.

.2 Hand place surround material in uniform layers not exceeding 150 mm compacted thickness as indicated.

.1 Do not dump material within 2 m of pipe.

.3 Place layers uniformly and simultaneously on each side of pipe.

.4 Do not place material in frozen condition.

.5 Compact each layer from pipe invert to mid height of pipe to at least 95% of corrected maximum dry density.

.6 Compact each layer from mid height of pipe to underside of backfill to at least 90% of corrected maximum dry density.

3.11 BACKFILL

.1 Backfill and compact per Section 31 00 99 – Earthworks for Minor Works.

3.12 HYDRANT FLOW TESTS

.1 Conduct flow tests on every hydrant to determine fire flows prior to painting hydrant caps and ports.

3.13 PAINTING OF HYDRANTS

.1 After installation, paint hydrants red.

.2 After hydrant flow tests, paint caps white and ports black to meet colour selections of adjacent municipality.

3.14 FLUSHING AND DISINFECTING

.1 Flushing and disinfecting operations: witnessed by Departmental Representative carried out by specialist contractor.

.1 Notify Departmental Representative at least 4 days in advance of proposed date when disinfecting operations will begin.

.2 Flush water mains through available outlets with a sufficient flow of potable water to produce velocity of 1.5 m/s, within pipe for minimum 10 minutes, or until foreign materials have been removed and flushed water is clear.

.3 Flushing flows as follows:

Pipe Size NPS	Flow (L/s) Minimum
6 and below	38

Pipe Size NPS	Flow (L/s) Minimum
8	75
10	115
12	150

.4 Provide connections and pumps for flushing as required.

.5 Open and close valves, hydrants and service connections to ensure thorough flushing.

.6 When flushing has been completed to Departmental Representative approval, introduce strong solution of chlorine as approved by Departmental Representative into water main and ensure that it is distributed throughout entire system.

.7 Disinfect water mains to AWWA C651-86. This shall be done by a specialist contractor OR the contractor shall perform the treatment process under the supervision of an agency fully qualified in this work. A report shall be submitted outlining the treatment parameters upon completion of the water treatment. Pot type feeders shall be used on closed systems; and pump type feeders (with attendant agitators, level controls, etc.) shall be used in open systems. Ensure that chlorine disinfectant does not enter existing water mains during the disinfection procedures.

.8 Rate of chlorine application to be proportional to rate of water entering pipe.

.9 Chlorine application to be close to point of filling water main and to occur at same time.

.10 Operate valves, hydrants and appurtenances while main contains chlorine solution.

.11 Flush line to remove chlorine solution after 24 hours.

.12 Measure chlorine residuals at extreme end of pipe-line being tested.

.13 Perform bacteriological tests on water main, after chlorine solution has been flushed out.

- .1 Take samples daily for minimum of 2 days.
- .2 Should contamination remain or recur during this period, repeat disinfecting procedure.
- .3 Specialist contractor to submit certified copy of test results.

.14 Take water samples at hydrants and service connections, in suitable sequence, to test for chlorine residual.

.15 After adequate chlorine residual not less than 50 ppm has been obtained leave system charged with chlorine solution for 24 hours. Take further samples to ensure that there is still not less than 1] ppm of chlorine residual remaining throughout system.

3.15 COMMISSIONING

.1 Test hydrants and record the following values.

- .1 Flow at 20 psi
- .2 Guage hydrant static pressure
- .3 Guage hydrant residual pressure

3.16 SURFACE RESTORATION

.1 After installing and backfilling over water mains, restore surface as specified elsewhere.

END OF SECTION

WILLIAM HEAD INSTITUTION
FIRE HYDRANT REPLACEMENT

APPENDIX A

FIRE HYDRANT REPLACEMENT HAZMAT ASSESSMENT

SITE REVIEW REPORT

Stantec

FIRE HYDRANT REPLACEMENT HAZMAT ASSESSMENT – SITE REVIEW REPORT

Project:	**FIRE HYDRANT REPLACEMENT PROJECT – CSC WILLIAM HEAD INSTITUTION**		
Client:	Public Works Government Services Canada	***Stantec Project #:***	123220745
Stantec Site Assessor:	Keith Irwin	***Date of Site Visit:***	November 10, 2016
Location:	CSC William Head Insitiution, Victoria, BC	***Issue Date:***	November 21, 2016

BACKGROUND

Stantec was retained by Public Works Government Services Canada on behalf of Correctional Services Canada to provide a hazardous materials assessment pertaining to the fire hydrant replacement project (the Project) planned for the William Head Institution (subject facility).

The purpose of the site review was to assess for hazardous materials, particularly asbestos-containing materials (ACMs) and lead-containing paints (LCPs), that may require special handling and/or disposal practices in accordance with the requirements of the *Canada Labour Code, Part II* (Canada Labour Code) and the current version of British Columbia's *Occupational Health and Safety Regulation* (BC Reg. 296/97), during the Project.

STANDARDS, SCOPE AND METHODOLOGY

Applicable standards for each hazardous material considered during this assessment are summarized below, along with the scope and methodology completed pertaining to those materials, during this assessment.

- Asbestos
  - The presence of asbestos in federal workplaces, and pertaining to federally regulated workers is governed by the Canada Labour Code. The presence of asbestos in the workplace in British Columbia pertaining to provincially regulated workers is governed by BC Reg. 296/97. As both federally regulated workers and provincially regulated workers (e.g., contractors) are expected to carry out work activities associated with the Project, and as the provincial regulations are generally more prescriptive pertaining to asbestos (and generally include the requirements noted in the Canada Labour Code), this assessment was conducted to meet the requirements of BC Reg. 296/97.
  - According to the current version of BC Reg. 296/97, ACM means any material containing at least 0.5% asbestos, or vermiculite insulation with any asbestos.
  - Each fire hydrant was visually assessed for the presence of suspected ACMs.
    - The fire hydrants were NOT disassembled to check for internal components that may contain asbestos (e.g. gaskets and sealants).
    - Sub surface components of the fire hydrants were NOT accessed as part of this assessment.

- Lead
  - Exposure to lead is governed by the Canada Labour Code for federal workers, and by BC Reg. 296/97 for provincially regulated workers. According to both regulations, the Occupational Exposure Limit for lead is 0.05 milligram per cubic metre (mg/m^3).
  - According to the WorkSafeBC manual titled *Lead-Containing Paint and Coatings: Preventing Exposure in the Construction Industry* (BC Lead Guideline), "...the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit". As the exposure limit for lead that is referenced in both federal and provincial regulations is the same, Stantec will reference this value (600 mg/kg, equivalent to 600 ppm) in defining paints as "lead-containing".
  - Samples of potential LCPs were collected from major paint applications on each fire hydrant. The sampling of paint applications involved the collection of paint chip samples of paint layers to the substrate, where possible. Samples collected were submitted to EMSL for analysis of total lead content using EPA Method SW 846 3050B*/7000B. EMSL's analytical laboratory is also accredited by the AIHA Environmental Lead Laboratory Approval Program (ELLAP).
- Other hazardous building materials
  - Although unlikely to be present in building materials that would be impacted by the Project, visual assessment was also completed for other building materials that may pose occupational health and safety hazards when disturbed and/or may require special handling/disposal, such as equipment with polychlorinated biphenyls (PCBs), equipment with mercury, equipment with ozone-depleting substances (ODSs) and materials containing silica.

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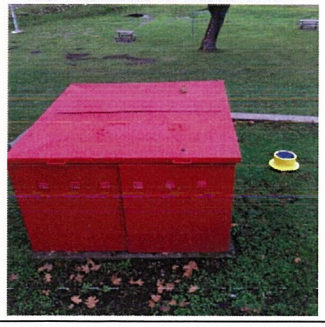
SITE REVIEW RESULTS

The table below summarizes the findings of the assessment and sampling activities undertaken.

Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 1		No fire hydrant inside.	N/A	N/A
		Red paint on fire hose cabinet.	34-P-01	<210 ppm Not considered to be an LCP
Fire Hydrant # 2		Red paint on fire hydrant.	I-P-01	39,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	I-P-02	380 ppm Not considered to be an LCP
Fire Hydrant # 3	No Photo	Red paint on fire hydrant.	H-P-01	33,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	H-P-02	<250 ppm Not considered to be an LCP
Fire Hydrant # 4		Red paint on fire hydrant.	G-P-01	16,000 ppm **identified LCP**

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 5		Red paint on fire hydrant.	F-P-01	560 ppm Not considered to be an LCP
Fire Hydrant # 6		Red paint on fire hydrant.	4-P-01	30,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	4-P-02	4,200 ppm **Identified LCP**
Fire Hydrant # 7	No Photo	Red paint on fire hydrant.	5-P-01	31,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	5-P-02	1,500 ppm **Identified LCP**
Fire Hydrant # 8	No Photo	Red paint on fire hydrant.	6-P-01	31,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	6-P-02	430 ppm Not considered to be an LCP
Fire Hydrant # 9		Red paint on fire hydrant.	7-P-01	32,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	7-P-02	260 ppm Not considered to be an LCP

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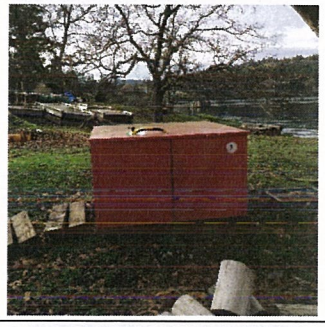
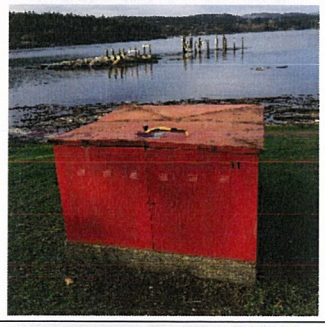
Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 10		Red paint on fire hydrant.	8-P-01	22,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	8-P-02	450 ppm Not considered to be an LCP
Fire Hydrant # 11		Red paint on fire hydrant.	9-P-01	43,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	9-P-02	<240 ppm Not considered to be an LCP
Fire Hydrant # 12		Red paint on fire hydrant.	11-P-01	27,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	11-P-02	7,700 ppm **Identified LCP**
Fire Hydrant # 13		Red paint on fire hydrant.	12-P-01	45,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	12-P-02	8,900 ppm **Identified LCP**

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 14		Red paint on fire hydrant.	13-P-01	25,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	13-P-02	520 ppm Not considered to be an LCP
Fire Hydrant # 15		Red paint on fire hydrant.	B-P-01	12,000 ppm **Identified LCP**
Storage Cabinet		Red paint on fire hose cabinet.	14-P-01	1,200 ppm **Identified LCP**
Fire Hydrant # 16		Red paint on fire hydrant.	A-P-01	83,000 ppm **Identified LCP**
		White paint on fire hydrant.	A-P-02	9,000 ppm **Identified LCP**

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 17		Red paint on fire hydrant.	X-P-01	31,000 ppm **Identified LCP**
		White paint on fire hydrant.	X-P-02	13,000 ppm **Identified LCP**
Fire Hydrant # 18		Red paint on fire hydrant.	15-P-01	46,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	15-P-02	670 ppm **Identified LCP**
Fire Hydrant # 19		Red paint on fire hydrant.	16-P-01	7,600 ppm **Identified LCP**
		Red paint on fire hose cabinet.	16-P-02	<370 ppm Not considered to be an LCP
Fire Hydrant # 20		Red paint on fire hydrant.	W-P-01	39,000 ppm **Identified LCP**

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 21		Red paint on fire hydrant.	17-P-01	49,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	17-P-02	<200 ppm Not considered to be an LCP
Fire Hydrant # 22		Red paint on fire hydrant.	18-P-01	45,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	18-P-02	17,000 ppm **Identified LCP**
Fire Hydrant # 23		Red paint on fire hydrant.	20-P-01	58,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	20-P-02	210 ppm Not considered to be an LCP
Fire Hydrant # 24		Red paint on fire hydrant.	C-P-01	36,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	C-P-02	120 ppm Not considered to be an LCP

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 25	No Photo	Red paint on fire hydrant.	D-P-01	47,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	D-P-02	<120 ppm Not considered to be an LCP
Fire Hydrant # 26		Red paint on fire hydrant.	22-P-01	44,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	22-P-02	170 ppm Not considered to be an LCP
Fire Hydrant # 27		Red paint on fire hydrant.	E-P-01	51,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	E-P-02	540 ppm Not considered to be an LCP
Fire Hydrant # 28		Red paint on fire hydrant.	24-P-01	38,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	24-P-02	<90 ppm Not considered to be an LCP
Fire Hydrant # 29	No Photo	Red paint on fire hydrant.	25-P-01	30,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	25-P-02	<330 ppm Not considered to be an LCP

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 30		Red paint on fire hydrant.	27-P-01	20,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	27-P-02	<190 ppm Not considered to be an LCP
Fire Hydrant # 31		Red paint on fire hydrant.	26-P-01	22,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	26-P-02	180 ppm Not considered to be an LCP
Fire Hydrant # 32		Red paint on fire hydrant.	28-P-01	12,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	28-P-02	<120 ppm Not considered to be an LCP
Fire Hydrant # 33	No Photo	Red paint on fire hydrant.	Orchard Valley-P-01	23,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	Orchard Valley-P-02	170 ppm Not considered to be an LCP
Fire Hydrant # 34	No Photo	Red paint on fire hydrant.	Hillside-P-01	16,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	Hillside-P-02	4,500 ppm **Identified LCP**

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Location	Photo	Hazardous Materials Observations	Samples collected?	Analytical Results
Fire Hydrant # 35		Red paint on fire hydrant.	31-P-01	14,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	31-P-02	<160 ppm Not considered to be an LCP
Fire Hydrant # 36		Red paint on fire hydrant.	3-P-01	16,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	3-P-02	14,000 ppm **Identified LCP**
Fire Hydrant # 37		Red paint on fire hydrant.	33-P-01	15,000 ppm **Identified LCP**
		Red paint on fire hose cabinet.	33-P-02	<350 ppm Not considered to be an LCP
NOTE: Highlighting indicates confirmed LCP.				

The certificates of analysis for the samples submitted as part of this project, as provided by EMSL, are attached to this document, for reference along with a site plan showing the location of each hydrant.

The following should also be noted regarding other potential hazardous building materials:

- No suspected ACMs were observed during the site review. Suspected ACMs may still be present as internal or sub surface components of the fire hydrants.

- Silica is expected to be present in concrete foundations and barriers around hose cabinets, where present.
- No other suspected hazardous building materials (e.g., PCB-containing equipment, mercury-containing equipment, equipment with ozone-depleting substances, mould-impacted building materials) were observed during the site review.

RECOMMENDATIONS

Based on the results of site review and associated sampling conducted as outlined above and on our understanding of the Project requirements, the following recommendations are provided:

- Asbestos
  - Should a material suspected to contain asbestos fibres become uncovered during the Project, all work in the areas that may disturb the material should be stopped. Samples of the suspect material should be submitted for laboratory analysis to determine if asbestos fibres are present. Confirmed ACMs should be handled in accordance with the requirements of BC Reg. 296/97 and the BC Asbestos Guide.
  - Ensure asbestos containing waste, if generated, is handled, stored, and disposed of in accordance with the requirements of the Federal *Transportation of Dangerous Goods Regulation* and the *British Columbia Hazardous Waste Regulation* (BC Reg. 63/88).
- Lead
  - If LCPs are to be disturbed and/or removed during the Project, ensure compliance with the following:
    - The exposure protection requirements of the BC Reg. 296/97, including the provisions of the BC Lead Guideline
    - The disposal requirements of BC Reg. 63/88
    - The transportation requirements of the Federal *Transportation of Dangerous Goods Regulation*.
  - Corrective action or remedial work on paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Airborne lead dust or fumes should not exceed the Canada Labour Code/BC Reg. 296/97 8-hour Occupational Exposure Limit of 0.05 mg/m^3 during the removal of paints and products containing any concentration of lead. The use of personal protective equipment is recommended to reduce the potential for over-exposure to lead dust. This can be achieved by:
    - Providing workers with protective clothing and PPE or devices as necessary to protect the worker against the hazards to which the worker may be exposed
    - Providing workers with adequate and training in the care and use of clothing, equipment or device before wearing or using it
    - Wetting the surface of the materials to prevent dust emissions
    - Providing workers with washing facilities with clean water, soap and individual towels to properly wash prior to exiting the work area.

  - To avoid the inhalation of lead, it is essential to have the following control methods in place:
    - Engineering controls
    - Work practices and hygiene practices
    - Respirators and personal protective equipment
    - Training
  - The work tasks required and the ways in which lead-containing materials (including paints) will be impacted will determine the appropriate respirators, measures and procedures that should be followed to protect workers from lead exposure.
- Silica
  - When silica-containing materials are to be impacted by renovation/fire hydrant replacement activities, ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by BC Reg. 296/97 (0.025 mg/m^3 – more stringent than the Canada Labour Code provisions). This would include, but not be limited to, the following:
    - Providing workers with respiratory protection
    - Wetting the surface of the materials to prevent dust emissions
    - Providing workers with facilities to properly wash prior to exiting the work area
    - Providing dust control to mitigate the potential for demolition dust to escape from the work area into public and/or adjacent areas.

LIMITATIONS

In preparation of this report, Stantec used professional judgment based on experience. The work was conducted in accordance with generally accepted professional standards. Stantec relied on information gathered during the site investigation and laboratory analytical reports.

This report reflects the observations made within accessible and accessed areas of the subject facility that pertained to the fire hydrant replacement project only, and the results of analyses performed on the specific material sampled during the assessment. Analytical results reflect the sampled material at the specific sample locations.

This assessment was conducted pertaining only to the Project, and building materials expected to be disturbed by the Project. This assessment does not constitute a comprehensive hazardous materials assessment for the subject facility.

This report has been prepared for the exclusive use of Public Works Government Services Canada and Correctional Services Canada for the purpose of assessing general conditions within the subject facility associated with the Project. Any use that a third party makes of this report, or reliance on, or decisions to be made on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Project number: 123220745
Inspection date: November 10, 2016

CLOSING

If any conditions become apparent that differ significantly from our understanding of conditions as presented in this document, we request that we be notified immediately to reassess the information provided herein.

We trust that the document meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

STANTEC CONSULTING LTD.

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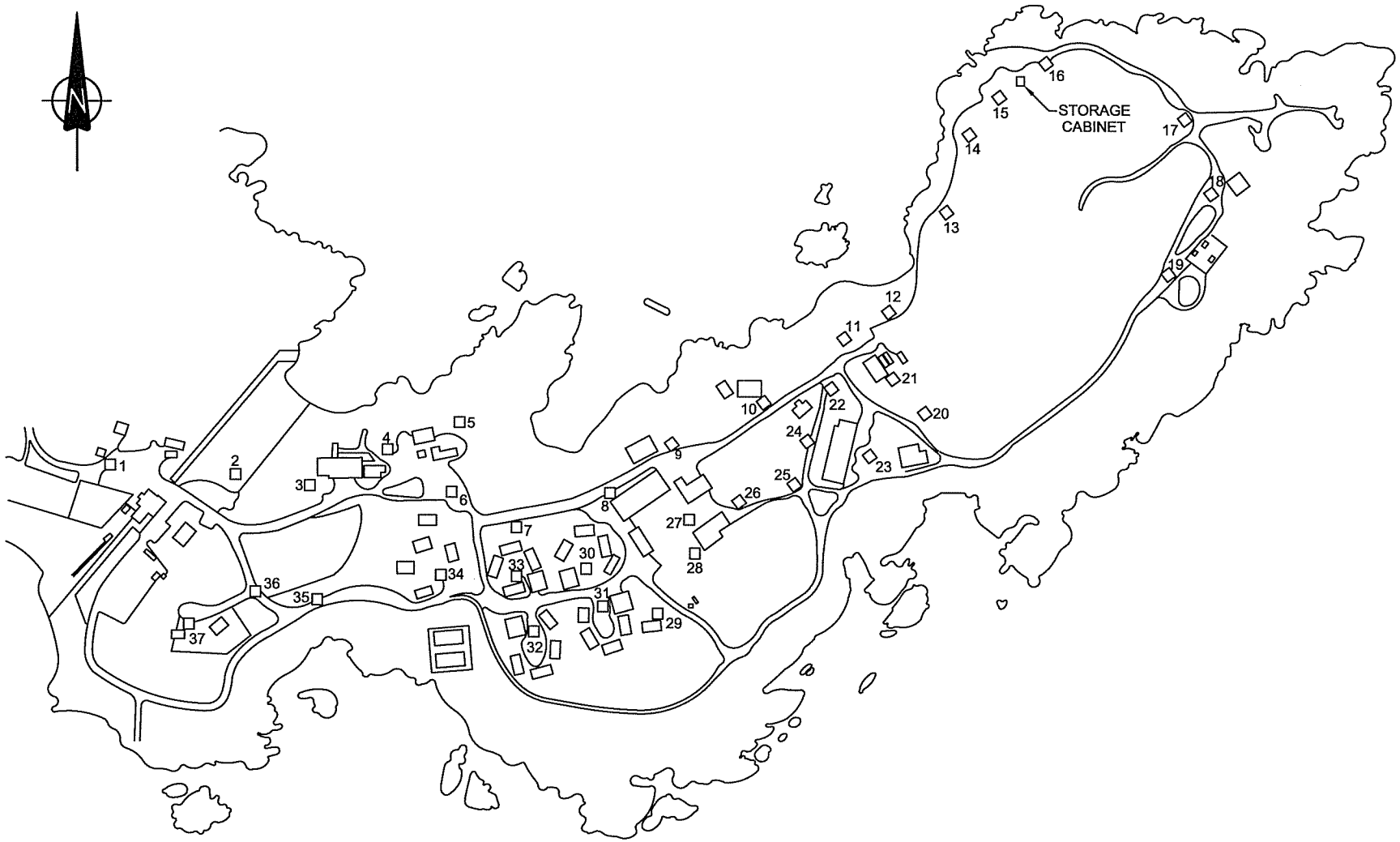
Attachments: Site Plan – 1 page
Suspected LCP Paint Chip Sample Analytical Record (EMSL) – 6 pages



NOTE: THIS DRAWING ILLUSTRATES SUPPORTING INFORMATION SPECIFIC TO A STANTEC CONSULTING LTD. REPORT AND MUST NOT BE USED FOR OTHER PURPOSES.

FLOOR PLAN SHOWING HAZARDOUS MATERIALS AND SAMPLE LOCATIONS

CSC WILLIAM HEAD INSTITUTION, VICTORIA, BC

Client: PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Project No.:	123220745
Scale:	N.T.S.
Date:	16/11/18
Dwn. By:	CD CS SL2016110551
App'd By:	TW

Dwg. No.: 1

Stantec

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EMSL Canada Or	551612322
CustomerID:	55JACQ30L
CustomerPO:	123220745
ProjectID:	

Attn: **Keith Irwin**
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500 - 4730 Kingsway
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Phone: (604) 412-3004
Fax:
Received: 11/16/16 12:52 PM
Collected:

Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
4-P-01	*551612322-0001*		11/16/2016	30000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
5-P-01	*551612322-0002*		11/16/2016	31000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
5-P-02	*551612322-0003*		11/16/2016	1500 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
6-P-01	*551612322-0004*		11/16/2016	31000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
6-P-02	*551612322-0005*		11/16/2016	430 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
7-P-02	*551612322-0006*		11/16/2016	260 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
8-P-01	*551612322-0007*		11/16/2016	22000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
8-P-02	*551612322-0008*		11/16/2016	450 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
9-P-01	*551612322-0009*		11/16/2016	43000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
11-P-01	*551612322-0010*		11/16/2016	27000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
11-P-02	*551612322-0011*		11/16/2016	7700 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
12-P-01	*551612322-0012*		11/16/2016	45000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
12-P-02	*551612322-0013*		11/16/2016	8900 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
13-P-01	*551612322-0014*		11/16/2016	25000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
13-P-02	*551612322-0015*		11/16/2016	520 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			

Rowena Fanto, Lead Supervisor
or other approved signatory

*Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.010 % wt based on the minimum sample weight per our SOP. Unless noted, results in this report are not blank corrected. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities. Samples received in good condition unless otherwise noted. "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. The QC data associated with the sample results included in this report meet the recovery and precision requirements unless specifically indicated otherwise. Definitions of modifications are available upon request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON A2LA Accredited Environmental Testing Cert #2845.08

Initial report from 11/17/2016 12:27:38

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CustomerPO:	123220745
ProjectID:	

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Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
15-P-02	*551612322-0016*		11/16/2016	670 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
16-P-01	*551612322-0017*		11/16/2016	7600 ppm
	Site: RED PAINT ON FIRE HYDRANT			
16-P-02	*551612322-0018*		11/16/2016	<370 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient sample to reach reporting limit.			
17-P-01	*551612322-0019*		11/16/2016	49000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
17-P-02	*551612322-0020*		11/17/2016	<200 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
18-P-01	*551612322-0021*		11/17/2016	45000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
18-P-02	*551612322-0022*		11/17/2016	17000 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
20-P-01	*551612322-0023*		11/17/2016	58000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
22-P-01	*551612322-0024*		11/17/2016	44000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
24-P-01	*551612322-0025*		11/17/2016	38000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
24-P-02	*551612322-0026*		11/17/2016	<90 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
25-P-01	*551612322-0027*		11/17/2016	30000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
25-P-02	*551612322-0028*		11/17/2016	<330 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
26-P-01	*551612322-0029*		11/17/2016	22000 ppm
	Site: RED PAINT ON FIRE HYDRANT			

Rowena Fanto, Lead Supervisor
or other approved signatory

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CustomerPO:	123220745
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Phone: (604) 412-3004
Fax:
Received: 11/16/16 12:52 PM
Collected:

Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
26-P-02	*551612322-0030*		11/17/2016	180 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
27-P-01	*551612322-0031*		11/17/2016	20000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
27-P-02	*551612322-0032*		11/17/2016	<190 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
31-P-01	*551612322-0033*		11/17/2016	14000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
31-P-02	*551612322-0034*		11/17/2016	<160 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
33-P-01	*551612322-0035*		11/17/2016	15000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
33-P-02	*551612322-0036*		11/17/2016	<350 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
X-P-01	*551612322-0037*		11/17/2016	31000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
A-P-01	*551612322-0038*		11/17/2016	83000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
C-P-01	*551612322-0039*		11/17/2016	36000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
C-P-02	*551612322-0040*		11/17/2016	120 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
D-P-01	*551612322-0041*		11/17/2016	47000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
D-P-02	*551612322-0042*		11/17/2016	<120 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
G-P-01	*551612322-0043*		11/17/2016	16000 ppm
	Site: RED PAINT ON FIRE HYDRANT			

Rowena Fanto, Lead Supervisor
or other approved signatory

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Received: 11/16/16 12:52 PM
Collected:

Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
H-P-01	*551612322-0044*		11/17/2016	33000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
H-P-02	*551612322-0045*		11/17/2016	<250 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient material to reach reporting limit			
ORCHARD VALLEY-P-02	*551612322-0046*		11/17/2016	170 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
HILLSIDE-P-01	*551612322-0047*		11/17/2016	16000 ppm
	Site: RED PAINT ON FIRE HYDRANT			

Rowena Fanto, Lead Supervisor
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CustomerPO:	123220745
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Fax:
Received: 11/15/16 10:11 AM
Collected:

Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
3-P-01	*551612262-0001*		11/15/2016	16000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
3-P-02	*551612262-0002*		11/15/2016	14000 ppm
	Site: YELLOW PAINT ON VALVES RISER CAP			
4-P-02	*551612262-0003*		11/15/2016	4200 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
7-P-01	*551612262-0004*		11/15/2016	32000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
9-P-02	*551612262-0005*		11/15/2016	<240 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient sample to reach reporting limit			
14-P-01	*551612262-0006*		11/15/2016	1200 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
15-P-01	*551612262-0007*		11/15/2016	46000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
20-P-02	*551612262-0008*		11/15/2016	210 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
22-P-02	*551612262-0009*		11/15/2016	170 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
28-P-01	*551612262-0010*		11/15/2016	12000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
28-P-02	*551612262-0011*		11/15/2016	<120 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient sample to reach reporting limit			
34-P-01	*551612262-0012*		11/15/2016	<210 ppm
	Site: RED PAINT ON FIRE HOSE CABINET Insufficient sample to reach reporting limit			
W-P-01	*551612262-0013*		11/15/2016	39000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
X-P-02	*551612262-0014*		11/15/2016	13000 ppm
	Site: WHITE PAINT ON FIRE HYDRANT			

Rowena Fanto, Lead Supervisor
or other approved signatory

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Report Amended: 11/16/2016 09:59:42 Replaces Report Amended: 11/16/2016 08:18:22. Reason Code: DataEntry-Other (see report comment)

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Project: **123220745**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client Sample Description	*Lab ID*	*Collected*	*Analyzed*	*Lead Concentration*
A-P-02	*551612262-0015*		11/16/2016	9000 ppm
	Site: WHITE PAINT ON FIRE HYDRANT			
B-P-01	*551612262-0016*		11/15/2016	12000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
E-P-01	*551612262-0017*		11/15/2016	51000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
E-P-02	*551612262-0018*		11/15/2016	540 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
F-P-01	*551612262-0019*		11/15/2016	560 ppm
	Site: RED PAINT ON FIRE HYDRANT			
I-P-01	*551612262-0020*		11/15/2016	39000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
I-P-02	*551612262-0021*		11/15/2016	380 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			
ORCHARD VALLEY-P-01	*551612262-0022*		11/15/2016	23000 ppm
	Site: RED PAINT ON FIRE HYDRANT			
HILLSIDE-P-02	*551612262-0023*		11/15/2016	4500 ppm
	Site: RED PAINT ON FIRE HOSE CABINET			

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