

1.01 SECTION INCLUDES

- .1 Shop drawings
- .2 Product data, test reports, certificates.
- .3 Manufacturer's instructions and field reports
- .4 Samples

1.02 DEFINITIONS

- .1 Action Submittals: Written and graphic information and physical samples that require Contract Administrator's responsive action. Unless specifically noted otherwise in individual section, the following are considered Action Submittals:
 - .1 Product Data
 - .2 Shop Drawings
 - .3 Samples
 - .4 Closeout Submittals
- .2 Informational Submittals: Written and graphic information and physical samples that do not require Contract Administrator's responsive action. Submittals may be rejected for not complying with requirements. Unless specifically noted otherwise in individual section, the following are considered Informational Submittals:
 - .1 Certificates
 - .2 Maintenance Data
 - .3 Material Safety Data Sheets (MSDS)
 - .4 Test and Inspection Reports
 - .5 Manufacturer's Instructions

1.03 ADMINISTRATIVE

- .1 Submit to Contract Administrator 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 Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
 - .6 Notify Contract Administrator, 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 are coordinated.
 - .8 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator review of submittals.
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- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator 's review.
- .10 Keep one reviewed copy of each submission on site.
- .11 Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Contract Administrator's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - .1 Submittals that are received by the Contract Administrator after [1:00 pm] on working days will be considered as have been received on the next working day.
 - .2 Initial Review: Allow five <5> working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Contract Administrator will advise Contractor when a submittal being processed must be delayed for coordination.
 - .3 Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - .4 Resubmittal Review: Allow five working days for review of each resubmittal.

1.04 SUBMITTAL SCHEDULE

- .1 Submittal Schedule: Submit, as an Action Submittal, a list of submittals, arranged in chronological order by dates required by construction progress schedule. Include time required for review when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Contract Administrator and additional time for handling and reviewing submittals required by those corrections.
- .2 Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction progress schedule.
 - .1 Initial Submittal: Submit for review concurrently with the Construction Progress Schedule utilizing the Critical Path Method (CPM). Include submittals required during the first 60 days of the project. List those submittals required to maintain orderly progress of the Work and those required early.
 - .1 Allow five working days for Consultant review of submittal schedule.
 - .2 Format: Arrange the following information in a tabular format:
 - .1 Scheduled date for first submittal.
 - .2 Specification Section number and title.
 - .3 Submittal Category: Action; Informational.
 - .4 Name of Subcontractor.
 - .5 Description of the Work covered.
 - .6 Scheduled date for Contract Administrator's final release or approval scheduled dates.
 - .8 Scheduled start date of the relevant activity or event.
 - .9 Scheduled finish date of the relevant activity or event.
 - .10 Activity or event number.
 - .2 Final (Revised) Submittal: Submit within 14 days of initial submittal.
 - .1 Submit revised submittal schedule to reflect Consultant review comments and changes in current status and timing for submittals.

- .3 Progress Submittals: Submit updated Submittal Schedule at monthly intervals to coincide with project meetings.

1.05 SHOP DRAWINGS AND PRODUCT DATA

- .1 Submit shop drawings for Contract Administrator's review.
 - .2 This review by the Contract Administrator is for the sole purpose of ascertaining conformance with the general concept of the scope of work. This review shall not mean that the Contract Administrator approves the content inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of their responsibilities for errors or omissions in the shop drawings or of their responsibility for meeting all requirements of the contract documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades.
 - .3 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.
 - .4 Shop drawings that do not include the stamp, date, and signature of the person responsible for reviewing the shop drawings before submittal to the Contract Administrator, will be rejected and returned without being examined.
 - .5 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or registered in Province of Manitoba, Canada and who holds a "certificate of authorization" from the EGM, where specifically requested in the specifications. Shop drawings not bearing the required Engineer's seal will be rejected and returned without being examined.
 - .6 Indicate materials, methods of construction and explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .7 Adjustments made on shop drawings by the Contract Administrator are not intended to change the Contract Price. If it is deemed that such adjustments affect the value of Work, state such in writing to the Contract Administrator prior to proceeding with fabrication or the Work.
 - .8 Make changes in shop drawings that the Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify the Contract Administrator in writing of any revisions other than those requested.
 - .9 Accompany submissions with transmittal letter, containing:
 - .1 date,
 - .2 project title and number,
 - .3 contractor's name and address,
 - .4 identification and quantity of each shop drawing, product data, and samples, and
 - .5 other pertinent data.
 - .10 Submissions include:
 - .1 Date and revision dates
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- .2 Project title and number
 - .3 Name and address of:
 - .1 Subcontractor,
 - .2 Supplier, and
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Layout, showing dimensions, including identified field dimensions, and clearances
 - .2 Setting details
 - .3 Capacities
 - .4 Performance characteristics
 - .5 Standards
 - .6 Operating weight
 - .7 Relationship to adjacent work and
 - .8 Other
 - .12 Submit one digital file in Adobe PDF file format of the following submittals:
 - .1 Shop drawings for each requirement requested in specification sections and as the Contract Administrator may reasonably request.
 - .2 Product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
 - .3 Test reports for requirements requested in specification Sections and as requested by Contract Administrator.
 - .1 Report signed by authorized official of testing laboratory
 - .2 Testing must have been within three years of date of contract award for project.
 - .4 Certificates for requirements requested in specification Sections and as requested by Contract Administrator.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract, complete with project name.
 - .5 Manufacturers' instructions for requirements requested in specification Sections and as requested by Contract Administrator.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and material safety data sheets concerning impedances, hazards and safety precautions.
 - .6 Manufacturer's field reports for requirements requested in specification Sections and as requested by Contract Administrator.
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- .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.
- .13 If upon review by the Contract Administrator, no errors or omissions in compliance with the Contract Documents are discovered or if only minor corrections are made, copies will be returned, and Work may proceed. If, however, shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .14 No extension of Contract Time will be allowed for delays in the Work which may be caused for Contract Administrator 's rejection of shop drawings.
- .15 Shop drawings, which contain deviations from the Contract Documents which are not presented to the Contract Administrator in writing will be rejected and returned without being examined.

1.06 SAMPLES

- .1 Submit for review samples for each requirement requested in specification sections and as the Contract Administrator may request.
- .2 Label samples as to identify material, manufacturer, make/model number, origin and intended use in the Work.
- .3 Deliver samples prepaid to Contract Administrator 's business address or as directed.
- .4 Notify the Contract Administrator in writing, at the time of submission of deviations in samples from requirements of Contract Documents.
- .5 Adjustments made on samples by the Contract Administrator are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Contract Administrator prior to proceeding with the Work.
- .6 Make changes in samples that the Contract Administrator may require, consistent with Contract Documents.

1.07 CERTIFICATES AND TRANSCRIPTS

- .1 Prior to commencement of the Work, provide evidence of compliance with worker's compensation legislation at the place of the Work, including payments due thereunder.
- .2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

1.01 REFERENCE STANDARDS

- .1 Canadian Standards Association:
 - .1 CAN/CSA-Z317.2, Special Requirements for Heating, Ventilation and Air Conditioning (HVAC) Systems in Health Care Facilities.
 - .2 CAN/CSA-Z317.10, Handling of Waste Materials in Health Care Facilities and Veterinary Health Care Facilities.
 - .3 CAN/CSA-Z317.13, Infection Control during Construction, Renovation, and Maintenance of Health Care Facilities.

1.02 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .4 Remove waste materials and debris from the site at regularly scheduled times or dispose of as otherwise directed by the Consultant. Do not burn or bury waste materials or debris on site.
- .5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

1.03 MATERIALS

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

1.04 CLEANING DURING CONSTRUCTION

- .1 Provide on-site containers for collection of waste materials, and debris.
- .2 Dispose of waste materials and debris off site at regularly scheduled intervals.
- .3 Maintain the Work in tidy condition, free from accumulation of waste products and debris.
- .4 Clean interior areas prior to start of finish work; maintain areas free of dust and other contaminants during finishing operations.

1.05 FINAL CLEANING

- .1 Refer to General Conditions.
 - .2 When the Work is complete, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris and leave the Work clean and suitable for occupancy by the City.
 - .3 Leave the work 'broom clean' before the inspection process commences.
 - .4 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel or baked enamel. Replace broken, scratched or disfigured glass.
 - .5 Clean lighting reflectors, lenses, and other lighting surfaces.
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- .6 Remove stains, spots, marks, and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls and floors.
- .7 Vacuum clean and dust building interiors, behind grilles, louvers and screens.
- .8 Wax, seal, shampoo, or prepare floor finishes as recommended by the manufacturer.
- .9 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .10 Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment.
- .11 Inspect finishes, fitments and equipment and ensure proper workmanship and operation.
- .12 Broom clean and wash exterior walks, steps and platforms.
- .13 Broom clean parking lots, pads and paving accessible to vehicle traffic.
- .14 Remove dirt and other disfigurations from exterior surfaces.
- .15 Clean and sweep roofs, gutters, areaways, sunken wells.
- .16 Sweep and wash clean paved areas. Rake clean other surfaces of grounds.

1.06 SNOW REMOVAL

- .1 If required, provide snow removal at Substantial Performance of the Work.
- .2 Clean snow from surfaces accessible to pedestrians and vehicles such as parking lots, pads and paving, sidewalks and pathways, steps, platforms and decks.
- .3 Only temporary stockpiling of snow during removal process is permitted. Promptly remove stockpiled snow from site.

END OF SECTION

Part 1 General

1.01 SECTION INCLUDES

- .1 Requirements for waste management goals, waste management plan and waste management plan implementation.

1.02 RELATED REQUIREMENTS

- .1 Section 02 82 00.01 - Asbestos Abatement Requirements Type 1 Work Procedures: For waste management and disposal for hazardous or designated materials.
- .2 Section 02 82 00 .02 - Asbestos Abatement Requirements Type 2 Work Procedures: For waste management and disposal requirements for hazardous or designated materials.
- .3 Section 02 82 00 .03 - Asbestos Abatement Requirements Type 3 Work Procedures: For waste management and disposal requirements for hazardous or designated materials.

1.03 DEFINITIONS

- .1 Construction Waste: Solid wastes such as building materials, packaging and rubble resulting from construction, paving and infrastructure.
- .2 Dangerous Goods: Product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
- .3 Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- .4 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.
- .5 Hazardous Waste: Hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .6 Recyclable Waste: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- .7 Recycling Facility: A business that specializes in collecting, handling, processing, distributing, or remanufacturing waste materials generated by new construction projects, into products or materials that can be used for this project or by others.
- .8 Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- .9 Salvage and Reuse: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.04 SUSTAINABILITY OBJECTIVES

- .1 The Contractor shall use all means available to divert the greatest extent practical and economically feasible, construction waste from landfills and incinerators. Develop and implement a demolition waste management plan.
 - .2 Establish waste diversion goals for the project by identifying at least five materials both structural and non-structural targeted for diversion.
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- .3 Provide the names of the recycling facilities where the material will be taken and how the recycling facility will process the material.
- .4 Collect and record on-going waste diversion rates (landfill and recycled) weights to provide a final waste diversion report.

1.05 ACTION SUBMITTALS

- .1 Submit draft waste management plan to the Contract Administrator prior to project start up meeting.

1.06 INFORMATIONAL SUBMITTALS

- .1 Waste Reduction Progress Reports: Submit a monthly report to the Contract Coordinator and include the following information:
 - .1 Material category.
 - .2 Generation point of waste.
 - .3 Total quantity of waste in tons (tonnes)
 - .4 Quantity of waste salvaged, both estimated and actual in tons (tonnes).
 - .5 Quantity of waste recycled, both estimated and actual in tons (tonnes).
 - .6 Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
 - .7 Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- .2 Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- .3 Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- .4 Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.07 WASTE MANAGEMENT PLAN

- .1 General: Develop a waste management plan according to requirements in this Section and Sections 02 82 00.01, 02 82 00.02, and 02 82 00.03. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume but use same units of measure throughout waste management plan.
 - .2 Goals: Establish waste diversion goals for the project by identifying at least five materials targeted for diversion.
 - .3 Waste: Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work.
 - .4 Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
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- .1 Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
- .2 Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
- .3 Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.
- .5 Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1.08 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Contract Administrator.
- .2 Unless specified otherwise, materials for removal do not become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.
- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Contract Administrator.
- .7 Protect surface drainage, storm sewers, sanitary sewers, and utility services from damage and blockage.

1.09 SCHEDULING

- .1 Coordinate work with other activities at site to ensure timely and orderly progress of the work.

Part 2 Products

2.01 NOT USED

- .1 Not Used.

Part 3 Execution

3.01 PREPARATION

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

3.02 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of adjacent property owners and public roadways.

- .2 Maintain security measures established by the City.
- .3 Provide temporary security measures as approved by Contract Administrator.

3.03 WASTE MANAGEMENT PLAN IMPLEMENTATION

- .1 Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- .2 Minimize waste disposal to landfills, employ processes that ensure the generation of as little waste as possible, including the prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors, as well as minimizing over packaging and poor quantity estimating.
- .3 Of the inevitable waste that is generated, as many of the waste materials as economically feasible are to be salvaged for reuse and or recycled. However, the Contractor is to abide by any direction from Contract Authority regarding recyclable waste. Use of waste disposal in landfills or incinerators is to be minimized.
- .4 Provide and pay for the proper disposal and salvage of construction materials and waste.
- .5 Provide completely enclosed garbage containers.
- .6 Use only brokerage, storage, transfer and disposal facilities licensed by authorities having jurisdiction for the recycling and disposal of waste material.
- .7 Material Handling Procedures: Prevent contamination of material to be recycled and salvaged, and handle material consistent with requirements for acceptance by designated facilities; where space permits, source separation is recommended; where material must be co-mingled, they must be taken to a processing facility for separation off site.
- .8 Manager: Designate an on-site party responsible for instructing workers and overseeing and documenting results of the waste management plan for Project.
- .9 Distribution: Distribute copies of the waste management plan to the Job Site Foreman, each Subcontractor, and the Contract Administrator.
- .10 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by parties at appropriate stages of Project.
- .11 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
- .12 Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.
- .13 Application for Progress Payments: Submit with each Application for Progress Payment a Summary of Waste Generated by the Project:
 - .1 Failure to submit information shall render Application for Payment incomplete and delay Progress Payment.
 - .2 Submit summary on a form acceptable to the City containing the following information:
 - .1 Amount in tonnes or cubic metres (tons or cubic yards) of material land filled from the Project.

- .2 Identity of the landfill, and total amount of tipping fees paid at the landfill, and.
- .3 Total disposal cost. Include manifests, weight tickets, receipt, and invoices.
- .4 Each material recycled, reused, or salvaged from the Project.
- .5 Amount tonnes or cubic metres (tons or cubic yards).
- .6 Date removed from the job site, the receiving party, and the transportation cost.
- .7 Amount of any money paid or received for the recycled or salvaged material.
- .8 Net total cost or savings of salvage or recycling each material.
- .3 Attach manifests, weight tickets, receipts, and invoices.

3.04 DISPOSAL OF WASTE

- .1 Burying of rubbish and waste materials is prohibited unless approved by the Contract Authority.
- .2 Disposal of waste volatile materials, mineral spirits, oil, paint thinner, into waterways, storm, or sanitary sewers is prohibited.

3.05 CLEANING

- .1 Remove tools and waste materials on completion of work, 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.

3.06 SPECIAL PROGRAMS

- .1 Be responsible for final implementation of programs involving tax credits or rebates or similar incentives related to recycling, if applicable to the Project.
- .2 Revenues or other savings obtained for recycling or returns to accrue to the City.
- .3 Obtain information packets relevant to all of the above listed programs prior to starting work on the Project, and confirm facility's ability to accept waste from Project.
- .4 Document work methods, recycled materials, alternate disposal methods that qualify for tax credits, rebates, and other savings under programs listed by authority having jurisdiction.

END OF SECTION

Part 1 General

1.01 REFERENCES

- .1 Refer to the following information (further referred to herein as the “Assessment Reports”), attached in the Appendix of the Specifications, for information pertaining to hazardous building materials that have been identified and may require disturbance during the Work:
 - .1 City of Winnipeg “Asbestos Inventory Control” for the Public Safety Building and the Civic Centre Car Park (inspection date April 9, 2018, and associated drawings).
 - .1 Note that information for the Public Safety Building is included here, as the information regarding some portions of the Civic Centre Car Park (including, but not limited to the information for the “parkade basement”) is included with the overall information for the Public Safety Building.
 - .2 Stantec Consulting Ltd. Appendix: Readyng the Lands of the Former Public Safety Building and Civic Centre Car Park for Redevelopment – 151 & 171 Princess Street. September 5, 2018.

1.02 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 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 Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either Dangerous Goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .4 Hazardous Waste: any Hazardous Material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .5 Workplace Hazardous Materials Information System (WHMIS): Canada-wide system designed to give employers and workers information about Hazardous Materials used in workplace. Under WHMIS, information on Hazardous Materials is provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.

1.03 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 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .3 National Research Council Canada Institute for Research in Construction (NRC-IRC)
 - .1 National Fire Code of Canada 2015.
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- .4 Department of Justice Canada
 - .1 Transportation of Dangerous Goods Act (TDG Act) 1999, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).
 - .5 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB Reg. 217/2006).
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
 - .3 Manitoba's The Dangerous Goods Handling and Transportation Act 195/2015.
 - .6 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.
 - .7 City of Winnipeg Requirements.
 - .8 Government of Canada
 - .1 The Federal Transportation of Dangerous Goods Regulation (SOR/2001-286).
 - .2 The Federal PCB Regulations (SOR/2008-273).
 - .3 The Federal Halocarbons Regulation (July 2003).
 - .9 Canadian Construction Association
 - .1 Standard Construction Document CCA 82 "Mould Guidelines for the Canadian Construction Industry" (2004 – further referred to herein as "CCA 82").

1.04 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit to Contract Administrator current Material Safety Data Sheet (MSDS) for each Hazardous Material required prior to bringing Hazardous Material on site.

1.05 DELIVERY, STORAGE, AND HANDLING

- .1 Co-ordinate storage of Hazardous Materials with Contract Administrator 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 current National Fire Code of Canada 2015 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 Contract Administrator.
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- .5 Transfer of flammable and combustible liquids is prohibited within buildings.
 - .6 Do not transfer of flammable and combustible liquids in vicinity of open flames or heat-producing devices.
 - .7 Do not use flammable liquids having flash point below 38 degrees C, such as naphtha or gasoline as solvents or cleaning agents.
 - .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 not mixed.
 - .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 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .12 Report spills or accidents immediately to Contract Administrator. Submit a written spill report to Contract Administrator within 24 hours of incident.

1.06 TRANSPORTATION

- .1 Transport Hazardous Materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
 - .2 If Hazardous Waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Contract Administrator.
 - .2 Ensure compliance 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 Prior to shipping material obtain written notice from intended Hazardous Waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
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- .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
- .6 Ensure that trained personnel handle, offer for transport, or transport Dangerous Goods.
- .7 Provide photocopy of shipping documents and waste manifests to Contract Administrator.
- .8 Track receipt of completed manifest from consignee after shipping Dangerous Goods. Provide a photocopy of completed manifest to Contract Administrator.
- .9 Report discharge, emission, or escape of Hazardous Materials immediately to Contract Administrator and appropriate provincial authority. Take reasonable measures to control release.

1.07 EXISTING CONDITIONS

- .1 Reports and information pertaining to Hazardous Building Materials present within the building that may be handled, removed, or otherwise disturbed and disposed of during the Work are included in the Appendix.
- .2 Notify Contract Administrator of suspected Hazardous Building Material discovered during Work and not apparent from drawings, specifications, or reports pertaining to the Work. Do not disturb such material pending instructions from Contract Administrator.

Part 2 Products

2.01 MATERIALS

- .1 Only bring on site quantity of Hazardous Materials 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

3.01 HAZARDOUS MATERIALS ABATEMENT

- .1 Scope of abatement activities for Hazardous Building Materials (other than asbestos, and lead, which are specified elsewhere in the tender documents), is summarized below, in general form.
 - .1 Abatement shall be conducted to handle, alter, remove and/or dispose of Hazardous Building Materials as identified in the Assessment Reports and summarized below in accordance with applicable regulations, guidelines, standards and/or best practices for such work.
 - .2 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of Hazardous Building Materials that require removal and disposal.
 - .1 Work of this project will involve removal of all Hazardous Building Materials as summarized herein.
 - .3 The listing below is a summary of the Hazardous Building Material categories that have been presumed as present (other than asbestos and lead, which are specified elsewhere in the tender documents), along with the associated removal and disposal regulations, guidelines and/or standards.
 - .1 Polychlorinated Biphenyls (PCBs)

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- .1 Should a material suspected to contain PCBs become uncovered during Work activities (i.e., dielectric fluids, hydraulic fluids), 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 PCBs are present.
 - .2 PCB-containing items identified for removal and disposal should be handled, transported, stored and disposed of in accordance with the following:
 - .1 The transportation and disposal requirements of MB Reg. 195/2015.
 - .2 The transportation requirements of the Federal Transportation of Dangerous Goods Regulation.
 - .3 The Federal PCB Regulations (SOR/2008-273).
 - .3 Although PCBs may also be present in other items in limited amounts as indicated in the Assessment Reports (e.g., plastics, molded rubber parts, applied dried paints, coatings or sealants, caulking, adhesives, paper, sound-deadening materials, insulation, or felt and fabric products such as gaskets), PCBs are not expected to be present in those materials in concentrations that would necessitate the requirement for PCB-specific handling procedures, separate removal and/or disposal considerations for renovation or demolition.
- .2 Mould
- .1 Mould and/or moisture-impacted building materials have not been identified, however, may potentially be encountered during work of the Project. If the potential presence of mould (expected to be small amounts) on building materials is identified, workers conducting removal of those materials should be notified of the potential presence of mould and should be provided with respiratory protection and/or other personal protective equipment as deemed necessary for the work that they will be conducting. Refer to CCA 82 for applicable PPE and procedures.
 - .1 If the moisture-impacted building materials are asbestos-containing materials or are coated with lead-containing paint, the provisions of the appropriate section for asbestos abatement or lead abatement will prevail and will be sufficient to protect workers and adjacent spaces from exposure to mould.
 - .2 If significant mould contamination is identified in concealed locations, an experienced mould abatement contractor may be required to assist with removal in accordance with applicable guidelines and standards for such work (e.g., CCA 82).
 - .3 Rodent or avian waste
 - .1 In the event that rodent or avian waste is encountered, clean-up should be conducted following standard procedures for protection against microbial contamination, including but not limited to the following:
 - .1 Wear rubber, latex, or vinyl gloves and an N95 disposable respirator (at a minimum).
 - .1 Note that if waste is in an area where asbestos abatement is being undertaken, respiratory protection and protective coveralls already employed will be sufficient.
 - .2 Spray the urine and droppings with a disinfectant or a mixture of bleach and water and let soak 5 minutes. The recommended concentration of bleach solution is 1 part
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- bleach to 10 parts water. When using a commercial disinfectant, following the manufacturer's instructions on the label for dilution and disinfection time.
- .3 Use disposable rags/cloths or paper towel to pick up the urine and droppings.
 - .4 Place the waste in a plastic bag and seal tightly. Place the full bag in a second plastic bag and seal.
 - .5 After the rodent droppings and urine have been removed, disinfect items that might have been contaminated by rodents or their urine and droppings.
 - .6 Remove gloves for disposal with other contaminated waste, and thoroughly wash hands with soap and water (or use a waterless alcohol-based hand rub when soap is not available, and hands are not visibly soiled).
- .4 Mercury
- .1 Removal of light fixtures is not required as part of this Contract.
 - .2 If removal of various light fixtures is necessary to facilitate other work, then:
 - .1 When mercury-containing items are removed (fluorescent light tubes), ensure all mercury waste is handled, stored and disposed of in accordance with the requirements the following:
 - .1 Transportation and disposal requirements of MB Reg. 195/2015.
 - .2 Transportation requirements of the Federal Transportation of Dangerous Goods Regulation.
 - .2 Precautions should be taken if workers may potentially be exposed to mercury or mercury vapours to ensure that worker exposure levels do not exceed the occupational exposure limit of applicable regulations This can be achieved by providing respiratory and skin protection applicable to the hazard and task to be completed.
- .5 Ozone-Depleting Substances (ODSs)
- .1 Building related cooling and refrigeration equipment suspected to be ODS-containing was not identified per the Assessment Reports.
- .6 Silica
- .1 When silica-containing materials are to be disturbed and/or removed (e.g., demolition of concrete slabs, masonry or concrete units, ceramic tiles, terrazzo flooring, acoustic ceiling tiles, etc.), ensure dust control measures are employed such that airborne silica dust concentrations do not exceed the exposure limit as stipulated by the COHSR and MB Reg. 217/2006 (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.

3.02 DISPOSAL

- .1 Dispose of Hazardous Waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

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- .2 Recycle Hazardous Wastes for which there are 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 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 Lead-acid battery recycling.
 - .4 Hazardous Wastes with economically recoverable precious metals.

3.03 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.

END OF SECTION

Part 1 General

1.01 SUMMARY

- .1 Refer to the following information (further referred to herein as the “Assessment Reports”), attached in the Appendix of the Specifications, for information pertaining to asbestos-containing materials (ACMs) that have been identified and may require disturbance during the Work:
 - .1 City of Winnipeg “Asbestos Inventory Control” for the Public Safety Building and the Civic Centre Car Park (inspection date April 9, 2018, and associated drawings).
 - .1 Note that information for the Public Safety Building is included here, as the information regarding some portions of the Civic Centre Car Park (including, but not limited to the information for the “parkade basement”) is included with the overall information for the Public Safety Building
 - .2 Stantec Consulting Ltd. Appendix: Readyng the Lands of the Former Public Safety Building and Civic Centre Car Park for Redevelopment – 151 & 171 Princess Street. September 5, 2018.
- .2 The Assessment Reports indicate that ACMs including, but not limited to, the following are present, all of which are to be removed for appropriate disposal as part of the Work.
 - .1 Brown mastic on metal duct work (Civic Centre Car Park or “parkade” basement).
 - .2 Black mastic on fibreglass pipe insulation (parkade basement)
 - .3 Insulation on ducts (parkade basement)
 - .4 Vinyl floor tiles (parkade basement)
 - .5 Plaster applied to walls and ceilings (parkade basement)
 - .6 Insulation on mechanical pipes (straights and fittings) throughout.
 - .7 Gaskets in flanges of mechanical pipes and systems throughout.
 - .8 Roofing material (asphalt; mastics) associated with the roof.
 - .9 Grey caulking on P1.
 - .10 White caulking on P4 North.
 - .11 Sealant on fascia on P8 (exterior).
 - .12 Insulation in fire-rated doors throughout.
- .3 Abatement shall be conducted to handle, alter, remove and/or dispose of all ACMs as identified in the Assessment Reports in accordance with applicable regulations, guidelines, standards and/or best practices for such work, including, but not limited to, the following:
 - .1 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work.
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
 - .2 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.
 - .3 City of Winnipeg Requirements.
- .4 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of ACMs that are to be removed.
- .5 Contractor is responsible to remove and dispose of sufficient wall, ceiling and/or other materials (where present and necessary) – whether or not they are asbestos-containing –

to expose and remove/dispose of concealed ACMs (e.g., mechanical insulation in wall or ceiling cavities).

- .6 Contractor is responsible to uncouple, detach or otherwise disconnect applicable joints in mechanical pipes and systems throughout to allow for removal of asbestos-containing gaskets.
- .7 Unless otherwise determined through risk assessment conducted by the Contractor's competent person, comply with requirements of this section when performing Work that would be considered "Type 1" asbestos abatement work as defined in the SAFE Work Manitoba 2017 "Guide for Asbestos Management" for tasks involving Non-Friable ACMs handled in conjunction with recognized control measures, including, but not limited to:
 - .1 Installing or removing Non-Friable products (that are in good condition) manufactured with ACMs without cutting, breaking, sanding or vibrating the materials including but not limited to materials such as gaskets, construction mastics, manufactured cement products, vinyl floor tiles, provided such materials are in a Non-Friable condition and are not rendered Friable by such work.
 - .2 Using non-powered hand tools designed to cut, drill or abrade a Non-Friable manufactured product containing asbestos, as long as water is used to control fibre release and waste products disposed of as an ACM.
 - .3 Cutting, grinding, drilling or sanding ACMs mentioned above with a power tool as long as the power tool is equipped with a HEPA filter. Water is used to control fibre release for the packaging of waste ACMs.
 - .4 The transportation or handling of ACM in asbestos waste containers.
 - .5 Working with Non-Friable flooring and cementitious ACMs; removing asbestos-containing flooring (for example vinyl asbestos floor tile), asbestos cement products, shingles and wallboard, asbestos-containing cementitious siding (millboard, wallboard or Transite) and asbestos cement piping.
 - .6 Deviation from the procedures outlined in this specification must be approved by the Contract Administrator prior to implementation.
 - .1 The Contractor may choose to combine tasks outlined in this specification section with other tasks being completed under more stringent procedures (e.g., Section 02 82 00.02 or Section 02 82 00.03 – Asbestos Abatement Requirements Type 2 and Type 3 Procedures), provided that the procedures of the more stringent section will prevail for all "combined" work.

1.02 SECTION INCLUDES

- .1 Requirements, applicable procedures and personal protective equipment to be utilized during abatement of ACMs of the types described herein.

1.03 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal
- .3 Section 02 82 00.02 - Asbestos Abatement Type 2 Precautions
- .4 Section 02 82 00.03 - Asbestos Abatement Type 3 Precautions

1.04 REFERENCE STANDARDS

- .1 Department of Justice Canada (Jus)
 - .7 Canadian Environmental Protection Act, 1999 (CEPA).
- .2 Transport Canada (TC)

- .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 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB 217/2006).
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
- .4 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.

1.05 DEFINITIONS

- .1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.
- .2 Asbestos-Containing Materials (ACMs): materials that contain asbestos in amounts as listed below, and are identified under Existing Conditions including fallen materials and settled dust:
 - .2 A friable material containing 0.1% or greater asbestos;
 - .3 A non-friable material containing 1.0% or greater asbestos; and
 - .4 All vermiculite insulation must be treated as an ACM.
- .3 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.
- .4 Competent Worker: in relation to specific work, means a worker who:
 - .1 Is qualified because of knowledge, training and experience to perform the work.
 - .2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.
 - .3 Has knowledge of all potential or actual danger to health or safety in the work.
- .5 Friable Material: means material that:
 - .1 When dry, can be crumbled, pulverized or powdered by hand pressure, or
 - .2 Is crumbled, pulverized or powdered.
- .6 HEPA Vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .7 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .8 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.
- .9 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.06 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit Provincial and/or local requirements for Notice of Project Form.
 - .3 Submit proof of Contractor's Asbestos Liability Insurance in accordance with D10.
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- .4 Submit proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.
- .5 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.
- .6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a Competent Worker in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.
- .7 Submit proof satisfactory to Contract Administrator that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.07 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.
- .2 Health and Safety:
 - .1 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.
 - .2 Safety Requirements: worker protection.
 - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
 - .1 Air purifying half-mask respirator with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator is to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.
 - .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the Contractor and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.

- .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
- .3 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.
- .4 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.
- .5 Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be supplied by the Contractor.
- .6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

1.08 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.
- .4 Separate and place in designated containers recyclable metal and plastic waste.
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .7 Fold up metal banding, flatten and place in designated area for metal recycling.
- .8 Disposal of asbestos waste generated by Work activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.
- .9 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.09 EXISTING CONDITIONS

- .1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are bound into this specification in the Appendix.
- .2 Notify Contract Administrator 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 Contract Administrator.

1.10 SCHEDULING

- .1 Hours of Work: perform work during normal working hours as indicated in Contract Documents.
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Part 2 **Products**

2.01 **MATERIALS**

- .1 Drop Sheets:
 - .1 Polyethylene: 0.15 mm thick.
 - .2 FR Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with Polyethylene.
- .2 Waste Containers: contain waste in two separate containers.
 - .1 Inner container: 0.15 mm thick sealable Polyethylene waste bag.
 - .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable Polyethylene bag.
 - .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.
- .3 Tape: fibreglass-reinforced duct tape suitable for sealing Polyethylene under both dry conditions and wet conditions using Amended Water.
- .4 Slow-drying sealer: non-staining, clear, water-dispersible type that remains tacky on surface for at least eight hours and designed for purpose of trapping residual asbestos fibres.

Part 3 **Execution**

3.01 **PROCEDURES**

- .1 Asbestos abatement work is to be completed in general accordance with the requirements of the SAFE Work Manitoba 2017 "Guide for Asbestos Management". Where discrepancies exist between that document and these specifications, the more stringent will apply.
 - .2 Perform construction in accordance with the provisions of the applicable provincial occupational health and safety regulations.
 - .3 Notification to the City of Winnipeg and Manitoba Workplace Safety and Health to be completed prior to work resulting in the potential release of ACMs.
 - .4 If electrical isolations are conducted or become required during the work, then Lock Out Tag Out will be conducted in accordance with applicable regulations and The City's protocols. All affected persons will be notified, including The City's central control, as well as any facility staff, users or contractors present.
 - .5 Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages that are visible at access routes to Asbestos Work Area.
 - .1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.
 - .2 Use HEPA Vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.
 - .3 Do not use compressed air to clean up or remove dust from any surface.
 - .6 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.
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- .1 Use FR Polyethylene drop sheets over flooring such as carpeting that absorbs dust (or attic insulation if work is within ceiling spaces) and over flooring/surfaces in Asbestos Work Area where dust and contamination cannot otherwise be safely contained. Drop sheets are not to be reused.
- .7 Wet materials containing asbestos to be abraded, cut, drilled in localized areas, scraped or otherwise disturbed unless wetting creates hazard or causes damage.
 - .1 Use garden reservoir type low-velocity fine-mist Sprayer.
 - .2 Perform Work to reduce dust creation to lowest levels practicable.
 - .3 Contamination of surrounding areas indicated by visual inspection by the Contract Administrator will require complete enclosure and clean-up of affected areas.
- .8 Remove ACM ceiling tiles in-tact from support tracking (t-bar grid), where possible. Place into appropriate waste bag.
- .9 Frequently and at regular intervals during Work and immediately on completion of work:
 - .1 Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping (including t-bar grid from which ACM ceiling tiles are removed), and placed in a waste container; and
 - .2 Drop sheets to be wetted and placed in a waste container as soon as practicable.
- .10 Cleanup:
 - .1 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.
 - .2 Clean exterior of each waste-filled bag using damp cloths or HEPA Vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.
 - .3 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that the appropriate guidelines and regulations for asbestos disposal are followed.
 - .4 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA Vacuum.

3.02 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, if required, the City shall retain an independent, competent (as described in the SAFE Work Manitoba 2017 "Guide for Asbestos Management") third party to take air samples inside and outside of Asbestos Work Area in accordance with the recommendations set forth in the SAFE Work Manitoba 2017 "Guide for Asbestos Management".
 - .1 Air sample analysis will be conducted by Phase Contrast Microscopy (PCM) using the NIOSH 7400 method: Asbestos and Other Fibers by PCM for airborne asbestos exposure analysis as per regulatory guidelines.
 - .2 For area samples, the City requires a minimum of 1,283 litres of air to be collected, with detection limits of less than 0.03 fibres per cubic centimetre.
 - .3 Air sample results will be provided to the City, the Contractor and the Contract Administrator within 2-hours of sample collection.
 - .4 Analysis will be conducted by qualified persons or laboratories that take part in a documented QA/QC program for such analysis.

- .2 Contractor will be notified to Stop Work when airborne fibre measurements exceed 0.05 fibres/cubic centimetre, when PPE and protection factors are considered, and to correct procedures.
 - .1 Additional monitoring will be conducted, where possible, to verify procedural corrections were effective.
- .3 If air monitoring shows that areas outside Asbestos Work Area are contaminated as determined by the Contract Administrator, Contractor will be notified to maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract.
- .4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown and correction of deficiencies.
- .5 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .6 Contractor will be provided with authorization to remove enclosure structures upon receipt of acceptable air sample results.
 - .1 The City's air monitoring consultant will be responsible for contacting the appropriate building maintenance staff to turn the air back on once the monitoring has passed.

3.03 INSPECTION

- .7 Perform random inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation[s] from these requirements that have not been approved in writing by Contract Administrator may result in Work stoppage, at no cost to the City.
- .8 Contract Administrator may inspect Work for:
 - .1 Daily adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .9 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown.
 - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

Part 1 General

1.01 SUMMARY

- .1 Refer to the following information (further referred to herein as the “Assessment Reports”), attached in the Appendix of the Specifications, for information pertaining to asbestos-containing materials (ACMs) that have been identified and may require disturbance during the Work:
 - .1 City of Winnipeg “Asbestos Inventory Control” for the Public Safety Building and the Civic Centre Car Park (inspection date April 9, 2018, and associated drawings).
 - .1 Note that information for the Public Safety Building is included here, as the information regarding some portions of the Civic Centre Car Park (including, but not limited to the information for the “parkade basement”) is included with the overall information for the Public Safety Building
 - .2 Stantec Consulting Ltd. Appendix: Readyng the Lands of the Former Public Safety Building and Civic Centre Car Park for Redevelopment – 151 & 171 Princess Street. September 5, 2018.
- .2 The Assessment Reports indicate that ACMs including, but not limited to, the following are present, all of which are to be removed for appropriate disposal as part of the Work.
 - .1 Brown mastic on metal duct work (Civic Centre Car Park or “parkade” basement).
 - .2 Black mastic on fibreglass pipe insulation (parkade basement)
 - .3 Insulation on ducts (parkade basement)
 - .4 Vinyl floor tiles (parkade basement)
 - .5 Plaster applied to walls and ceilings (parkade basement)
 - .6 Insulation on mechanical pipes (straights and fittings) throughout.
 - .7 Gaskets in flanges of mechanical pipes and systems throughout.
 - .8 Roofing material (asphalt; mastics) associated with the roof.
 - .9 Grey caulking on P1.
 - .10 White caulking on P4 North.
 - .11 Sealant on fascia on P8 (exterior).
 - .12 Insulation in fire-rated doors throughout.
- .3 Abatement shall be conducted to handle, alter, remove and/or dispose of all ACMs as identified in the Assessment Reports in accordance with applicable regulations, guidelines, standards and/or best practices for such work, including, but not limited to, the following:
 - .1 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work.
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
 - .2 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.
 - .3 City of Winnipeg Requirements.
- .4 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of ACMs that are to be removed.
- .5 Contractor is responsible to remove and dispose of sufficient wall, ceiling and/or other materials (where present and necessary) – whether or not they are asbestos-containing – to

expose and remove/dispose of concealed ACMs (e.g., mechanical insulation in wall or ceiling cavities).

- .6 Contractor is responsible to uncouple, detach or otherwise disconnect applicable joints in mechanical pipes and systems throughout to allow for removal of asbestos-containing gaskets.
- .7 Unless otherwise determined through risk assessment conducted by the Contractor's Competent Worker, comply with requirements of this section when performing Work that would be considered "Type 2" asbestos abatement work as defined in the SAFE Work Manitoba 2017 "Guide for Asbestos Management" for tasks where it is expected that asbestos fibres may be released as a result of the work activity and work can be carried out in less than 3 hours, including, but not limited to:
 - .1 Using non-powered hand tools to cut, shape, drill or remove a Non-Friable manufactured ACM if water is not used to control fibre release.
 - .2 Removing part of a false-ceiling to gain access to a work area and where Friable ACM is, or is likely to be, lying on the surface of the false ceiling.
 - .3 Removal, encapsulating, enclosing or disturbance of a minor amount (less than 1 m²) of Friable ACM during the repair, alteration, maintenance, demolition or dismantling of a building, structure, machine, tool or equipment if the work is carried out in less than 3 hours.
 - .4 Removal of Non-Friable asbestos material (e.g., stucco finish) where the material must be cut, broken, or otherwise damaged and become Friable as a result of the removal process.
 - .5 Performing glove bag operations.
 - .6 Any other asbestos abatement work not mentioned in Type 1 or Type 3 that may result in the release of asbestos fibre as a result of the work activity, and that may cause a worker exposure in excess of the occupational exposure limit.
- .8 Deviation from the procedures outlined in this specification must be approved by the Contract Administrator prior to implementation.
 - .1 The Contractor may choose to combine tasks outlined in this specification section with other tasks being completed under more stringent procedures (e.g. Section 02 82 00.03 – Asbestos Abatement Requirements Type 3 Procedures), provided that the procedures of the more stringent section will prevail for all "combined" work.

1.02 SECTION INCLUDES

- .1 Requirements, applicable procedures and personal protective equipment to be utilized during abatement of ACMs as outlined herein.

1.03 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .3 Section 02 82 00.01 - Asbestos Abatement Type 1 Precautions
- .4 Section 02 82 00.03 - Asbestos Abatement Type 3 Precautions

1.04 REFERENCE STANDARDS

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).

- .2 Transport Canada (TC)
 - .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 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB 217/2006).
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
- .4 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.

1.05 DEFINITIONS

- .1 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.
- .2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.
- .3 Asbestos-Containing Materials (ACMs): materials that contain asbestos in amounts as listed below, and are identified under Existing Conditions including fallen materials and settled dust:
 - .1 A friable material containing 0.1% or greater asbestos;
 - .2 A non-friable material containing 1.0% or greater asbestos; and
 - .3 All vermiculite insulation must be treated as an ACM.
- .4 Asbestos Work Area: area where work takes place which will or may disturb ACMs.
- .5 Authorized Visitors: Contract Administrator, and representatives of regulatory agencies.
- .6 Competent Worker: in relation to specific work, means a worker who:
 - .1 Is qualified because of knowledge, training and experience to perform the work.
 - .2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.
 - .3 Has knowledge of all potential or actual danger to health or safety in the work.
- .7 Curtained Doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:
 - .1 Place two overlapping sheets of Polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
 - .2 Reinforce free edges of Polyethylene with duct tape and weight bottom edge to ensure proper closing.
 - .3 Overlap each Polyethylene sheet at openings not less than 1.5 m on each side.
- .8 DOP Test: testing method used to determine integrity of negative pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.
- .9 Friable Material: means material that:
 - .1 When dry, can be crumbled, pulverized or powdered by hand pressure, or

- .2 Is crumbled, pulverized or powdered.
- .10 HEPA Vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .11 Negative Pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.
 - .1 System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.
- .12 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .13 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

1.06 ACTION AND INFORMATIONALSUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.
- .3 Submit Provincial and/or local requirements for Notice of Project Form.
- .4 Submit proof of Contractor's Asbestos Liability Insurance.
- .5 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos-containing waste has been received and properly disposed.
- .6 Submit proof that all asbestos workers and/or supervisor have received appropriate training from a Competent Worker in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Instruction and training related to respirators includes, at minimum:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration.
- .8 Submit Worker's Compensation Board status and transcription of insurance.
- .9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:

- .1 Encapsulants.
- .2 Amended Water.
- .3 Slow drying sealer.
- .10 Submit proof satisfactory to Contract Administrator that employees have respirator fitting and testing. Workers must be fit tested with respirator that is personally issued.

1.07 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.
- .2 Health and Safety:
 - .1 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
 - .1 Full-facepiece powered, air purifying respirator with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.
 - .2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the Contractor and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn.
 - .3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
 - .4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

- .5 Ensure workers wash hands and face when leaving Asbestos Work Area.
- .6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
- .7 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
 - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.08 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.
- .4 Separate for reuse and recycling and place in designated containers steel, metal, and/or plastic waste.
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .7 Fold up metal banding, flatten and place in designated area for recycling.
- .8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.
- .9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

1.09 EXISTING CONDITIONS

- .1 Reports and information pertaining to ACMS to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification in the Appendix, and/or are available from the Contract Administrator.
- .2 Notify Contract Administrator 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 Contract Administrator.

1.10 SCHEDULING

- .1 Hours of Work: perform work during normal working hours as indicated in Contract Documents.

Part 2 Products

2.1 MATERIALS

- .1 Drop and Enclosure Sheets:
 - .1 Polyethylene: 0.15 mm thick.
 - .2 FR Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with Polyethylene.
- .2 Waste Containers: contain waste in two separate containers.
 - .1 Inner container: 0.15 mm thick sealable Polyethylene bag.
 - .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable Polyethylene bag.
 - .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.
- .3 Tape: tape suitable for sealing Polyethylene to surfaces under both dry and wet conditions using Amended Water.
- .4 Slow-drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
 - .1 Sealer: flame spread and smoke developed rating less than 50.
- .5 Encapsulant: penetrating type conforming to CAN/CGSB-1.205.

Part 3 Execution

3.01 PREPARATION

- .1 Asbestos abatement work is to be completed in general accordance with the requirements of the SAFE Work Manitoba 2017 "Guide for Asbestos Management". Where discrepancies exist between that document and these specifications, the more stringent will apply.
 - .2 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.
 - .3 Notification to Manitoba Workplace Safety and Health to be completed prior to work resulting in the potential release of ACMs.
 - .4 Work Areas:
 - .1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.
 - .1 Lock Out Tag Out will be conducted in accordance with applicable regulations and The City's protocols. All affected persons will be notified, including The City's central control, as well as any facility staff, users or contractors present.
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- .2 Clean proposed work areas using, where practicable, HEPA Vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA Vacuum equipment.
 - .3 The spread of dust from the work area to be prevented by:
 - .1 Using enclosures of Polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls.
 - .2 Using curtains of Polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.
 - .4 Put Negative Pressure system in operation and operate continuously from time first Polyethylene is installed to seal openings until final completion of work including final cleanup. The system to maintain a negative air pressure, relative to the area outside the enclosed area. Air is to be exhausted directly outdoors. The system to be inspected and maintained by a Competent Worker prior each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it to be replaced before the ventilation system is used.
 - .1 Negative air units are to be dioctyl phthalate (DOP) tested on-site, prior to installation/use, with test results provided to Contract Administrator for review.
 - .5 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with Polyethylene sheeting sealed with tape.
 - .6 Cover floor and wall surfaces with Polyethylene sheeting sealed with tape. Cover floors first so that Polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.
 - .7 Build Airlocks at entrances to and exits from work areas so that work areas are always closed off by one Curtained Doorway when workers enter or exit.
 - .8 At each access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used: "CAUTION ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".
 - .9 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Fire Commissioner of Canada and Provincial Fire Marshall Authority having jurisdiction.
 - .10 Where application of water is required for wetting asbestos containing materials, shut off electrical power, provide 24-volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
 - .11 After preparation of work areas and Decontamination Enclosure Systems, for the removal of all other ACMs, remove within work area and dispose of as contaminated waste in specified containers. Spray asbestos debris and immediate work area with Amended Water to reduce dust, as work progresses.
- .5 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:
 - .1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work area[s], with two Curtained Doorways, one to

- Shower Room and one to work area[s]. Install waste receptor, and storage facilities for workers' shoes and protective clothing to be reworn in work area[s]. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.
- .2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two Curtained Doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five workers. Provide constant supply of hot and cold or warm water. Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.
 - .3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two Curtained Doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .6 Container and Equipment Decontamination Enclosure System:
- .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.
 - .1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to Washroom. Equip Staging Area with Curtained Doorway to Washroom.
 - .2 Washroom: build Washroom between Staging Area and Holding Room with two Curtained Doorways, one to Staging Area and one to Holding Room. Provide high-pressure low-volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.
 - .3 Holding Room: build Holding Room between Washroom and Unloading Room, with two Curtained Doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used.
 - .4 Unloading Room: build Unloading Room between Holding Room and outside, with two Curtained Doorways, one to Holding Room and one to outside.
- .7 Construction of Decontamination Enclosures:
- .1 Build suitable framing for enclosures or use existing rooms where convenient, and line with Polyethylene sheeting sealed with tape.
 - .2 Build Curtained Doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .8 Maintenance of Enclosures:
- .1 Maintain enclosures in tidy condition.
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- .2 Ensure that barriers and Polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
- .3 Visually inspect enclosures at beginning of each working period.
- .4 Use smoke methods to test effectiveness of barriers when directed by Contract Administrator.
- .9 Do not begin Asbestos Abatement work until:
 - .1 Arrangements have been made for disposal of waste.
 - .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
 - .3 Work area[s] and decontamination enclosures are effectively segregated.
 - .4 Tools, equipment, and materials waste containers are on hand.
 - .5 Arrangements have been made for building security.
 - .6 Warning signs are displayed where access to contaminated areas is possible.
 - .7 Notifications have been completed and other preparatory steps have been taken.

3.02 SUPERVISION

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of ACMs.

3.03 PROCEDURES

- .1 Before removing asbestos:
 - .1 Prepare site.
 - .2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.
- .2 Remove saturated asbestos material in small amounts. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination area, and store in a holding area pending removal to Unloading Room and outside. Ensure that containers are removed from holding area by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of removal work, wire brush, HEPA Vacuum and/or wet-sponge surfaces from which asbestos has been removed to remove visible material.
- .5 Where Contract Administrator decides complete removal of ACM is impossible due to obstructions such as structural members or major service elements, and provides written direction, encapsulate material as follows:
 - .1 Apply penetrating type sealer to penetrate existing sprayed asbestos surfaces uniformly to substrate.

- .6 After removal of visible asbestos, and after encapsulating ACM impossible to remove, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA Vacuum followed by wet cleaning. After inspection by Contract Administrator apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of Negative Pressure units during this period.
- .7 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
- .8 Cleanup:
 - .1 Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA Vacuum or by damp mopping.
 - .2 Place dust and asbestos-containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.
 - .3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA Vacuum and place in second clean waste bag.
 - .4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.
 - .5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA Vacuum.

3.04 FINAL CLEANUP

- .1 Remove Polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos-containing particles observed during cleanup, immediately, using HEPA Vacuum equipment.
- .2 Place Polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .3 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.
- .4 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .5 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

3.05 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, The City shall retain an independent, competent (as described in the SAFE Work Manitoba 2017 "Guide for Asbestos Management") third party (further referred to herein as the "Hazmat Consultant") to take air samples inside and outside of Asbestos Work Area in accordance with the recommendations set forth in the SAFE Work Manitoba 2017 "Guide for Asbestos Management".
 - .1 Air sample analysis will be conducted by Phase Contrast Microscopy (PCM) using the NIOSH 7400 method: Asbestos and Other Fibers by PCM for airborne asbestos exposure analysis as per regulatory guidelines.
 - .1 For Type 2 work, and for post-abatement samples, The City requires a minimum of 3,850 litres of air to be collected, with detection limits of less than 0.01 fibres per cubic centimetre.
 - .2 For perimeter surveillance (area samples) outside a Type 2 enclosure or associated with glove bag asbestos removal, The City requires a minimum of 1,283 litres of air to be collected, with detection limits of less than 0.03 fibres per cubic centimetre
 - .3 When monitoring inside a Type 2 enclosure (occupational samples), to evaluate or demonstrate the efficacy of various control measures (wetting, respirators, air exchange, etc.) where the anticipated fibre concentration is at or slightly above 0.1 fibres per cubic centimetre, a minimum sample size of 400 litres of air will be collected.
 - .2 Air sample results will be provided to The City, the Contractor and the Contract Administrator within 2-hours of sample collection.
 - .3 Analysis will be conducted by qualified persons or laboratories that take part in a documented QA/QC program for such analysis.
- .2 Contractor will be notified to Stop Work when airborne fibre measurements exceed 0.05 fibres per cubic centimetre, when PPE and protection factors are considered, and to correct procedures.
 - .1 Additional monitoring will be conducted, where possible, to verify procedural corrections were effective.
- .3 If air monitoring shows that areas outside Asbestos Work Area are contaminated as determined by the Contract Administrator, Contractor will be notified to maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract.
- .4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown and correction of deficiencies.
- .5 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .6 Post-abatement testing must be completed.
 - .1 After Asbestos Work Area has passed visual inspection by Contractor and/or Contract Administrator and acceptable coat of lock-down agent has been applied to surfaces within enclosure by the Contractor, and appropriate setting period has passed, post-abatement air monitoring within Asbestos Work Area must be conducted.
 - .1 Final air monitoring results must show fibre levels of less than 0.01 fibres per cubic centimetre.

- .2 If air monitoring results show fibre levels in excess of 0.01 fibres per cubic centimetre, Contractor will re-clean work area and apply another acceptable coat of lock-down agent to surfaces, at no additional cost to Contract.
- .3 Repeat as necessary until fibre levels are less than 0.01 fibres per cubic centimetre, at no additional cost to Contract.
- .7 Photos, along with a description of the work are to be included in the Prep Inspection, Daily Interim, and Final Clearance Site Inspection Reports to be prepared by The City's air monitoring consultant.
- .8 Contractor will be provided with authorization to remove enclosure structures upon receipt of acceptable air sample results.
 - .1 The City's air monitoring consultant will be responsible for contacting the appropriate building maintenance staff to turn the air back on once the monitoring has passed.

3.06 INSPECTION

- .1 Perform random inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation[s] from these requirements that have not been approved in writing by Contract Administrator may result in Work stoppage, at no cost to the City.
- .2 Contract Administrator may inspect Work for:
 - .1 Daily adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown.
 - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

Part 1 General

1.01 SUMMARY

- .1 Refer to the following information (further referred to herein as the “Assessment Reports”), attached in the Appendix of the Specifications, for information pertaining to asbestos-containing materials (ACMs) that have been identified and may require disturbance during the Work:
 - .1 City of Winnipeg “Asbestos Inventory Control” for the Public Safety Building and the Civic Centre Car Park (inspection date April 9, 2018, and associated drawings).
 - .1 Note that information for the Public Safety Building is included here, as the information regarding some portions of the Civic Centre Car Park (including, but not limited to the information for the “parkade basement”) is included with the overall information for the Public Safety Building
 - .2 Stantec Consulting Ltd. Appendix: Readyng the Lands of the Former Public Safety Building and Civic Centre Car Park for Redevelopment – 151 & 171 Princess Street. September 5, 2018.
- .2 The Assessment Reports indicate that ACMs including, but not limited to, the following are present, all of which are to be removed for appropriate disposal as part of the Work.
 - .1 Brown mastic on metal duct work (Civic Centre Car Park or “parkade” basement).
 - .2 Black mastic on fibreglass pipe insulation (parkade basement)
 - .3 Insulation on ducts (parkade basement)
 - .4 Vinyl floor tiles (parkade basement)
 - .5 Plaster applied to walls and ceilings (parkade basement)
 - .6 Insulation on mechanical pipes (straights and fittings) throughout.
 - .7 Gaskets in flanges of mechanical pipes and systems throughout.
 - .8 Roofing material (asphalt; mastics) associated with the roof.
 - .9 Grey caulking on P1.
 - .10 White caulking on P4 North.
 - .11 Sealant on fascia on P8 (exterior).
 - .12 Insulation in fire-rated doors throughout.
- .3 Abatement shall be conducted to handle, alter, remove and/or dispose of all ACMs as identified in the Assessment Reports in accordance with applicable regulations, guidelines, standards and/or best practices for such work, including, but not limited to, the following:
 - .1 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work.
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
 - .2 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.
 - .3 City of Winnipeg Requirements.
- .4 Contractor is responsible for reviewing plans, specifications and reports such that they understand the locations and amounts of ACMs that are to be removed.
- .5 Contractor is responsible to remove and dispose of sufficient wall, ceiling and/or other materials (where present and necessary) – whether or not they are asbestos-containing – to expose and remove/dispose of concealed ACMs (e.g., mechanical insulation in wall or ceiling cavities).

- .6 Contractor is responsible to uncouple, detach or otherwise disconnect applicable joints in mechanical pipes and systems throughout to allow for removal of asbestos-containing gaskets.
- .7 Unless otherwise determined through risk assessment conducted by the Contractor's Competent Worker, comply with requirements of this section when performing Work that would be considered "Type 3" asbestos abatement work as defined in the SAFE Work Manitoba 2017 "Guide for Asbestos Management" for tasks where asbestos fibre is expected to be released because of the work activity, including, but not limited to:
 - .1 Removing, encapsulating, enclosing or disturbing friable ACM during the repair, alteration, maintenance, demolition, or dismantling of a building, structure, machine, tool or equipment, or part of it and where the job takes longer than 3 hours to complete. Work done in less than 3 hours can be conducted in accordance with Type 2 asbestos practice.
 - .2 Spray application of a sealant or encapsulant onto a friable ACM that is greater than one square metre (1 m²).
 - .3 Cleaning or removal of air-handling equipment, including rigid ducting, in a building that has, or previously had, sprayed-on asbestos fireproofing, thermal or acoustic insulation in the building, unless it can be shown that the air handling equipment has been effectively cleaned and cleared of the presence of asbestos.
 - .4 Repairing, altering or dismantling a boiler, furnace, kiln or similar device, or part thereof, where ACM has been used or applied.
 - .5 Repair, alteration or demolition of equipment made in part of refractory ACM.
 - .6 Grinding, cutting, drilling, sanding or scraping any ACMs involved in Type 1 work with a power tool not equipped with a HEPA filter.
 - .7 Demolishing, dismantling, altering or repairing any building or structure, or part of it, in which insulating ACM was used or in which asbestos products were manufactured.
 - .8 Dry removal of friable ACM when wet removal is not feasible as determined by a risk assessment and to be indicated on the notification to the director of Workplace Safety and Health.
- .8 Deviation from the procedures outlined in this specification must be approved by the Contract Administrator prior to implementation.

1.02 SECTION INCLUDES

- .1 Requirements for procedures and personal protective equipment to be utilized during abatement of ACMs as outlined herein.

1.03 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal
- .3 Section 02 82 00.01 - Asbestos Abatement Type 1 Precautions
- .4 Section 02 82 00.02 - Asbestos Abatement Type 2 Precautions

1.04 REFERENCE STANDARDS

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).

- .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
- .2 Transport Canada (TC)
 - .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 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB 217/2006).
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
- .4 SAFE Work Manitoba
 - .1 Guide for Asbestos Management, 2017.

1.05 DEFINITIONS

- .1 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two Curtained Doorways at least 2 m apart.
- .2 Amended Water: water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.
- .3 Asbestos-Containing Materials (ACMs): materials that contain asbestos in amounts as listed below, and are identified under Existing Conditions including fallen materials and settled dust:
 - .1 A friable material containing 0.1% or greater asbestos;
 - .2 A non-friable material containing 1.0% or greater asbestos; and
 - .3 All vermiculite insulation must be treated as an ACM.
- .4 Asbestos Work Areas: area where work takes place which will or may disturb ACMs.
- .5 Authorized Visitors: Contract Administrator, Consultant, and representatives of regulatory agencies.
- .6 Competent Worker: in relation to specific work, means a worker who:
 - .1 Is qualified because of knowledge, training and experience to perform the work.
 - .2 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.
 - .3 Has knowledge of all potential or actual danger to health or safety in the work.
- .7 Curtained Doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:
 - .1 Place two overlapping sheets of Polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
 - .2 Reinforce free edges of Polyethylene with duct tape and weight bottom edge to ensure proper closing.
 - .3 Overlap each Polyethylene sheet at openings not less than 1.5 m on each side.

- .8 DOP Test: testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.
- .9 Friable Material: means material that:
 - .1 When dry, can be crumbled, pulverized or powdered by hand pressure, or
 - .2 is crumbled, pulverized or powdered.
- .10 HEPA Vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .11 Negative Pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.
 - .1 System to maintain minimum pressure differential of 5 Pa relative to adjacent areas outside of work areas, be equipped with alarm to warn of system breakdown, and be equipped with instrument to continuously monitor and automatically record pressure differences.
- .12 Non-Friable Materials: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .13 Polyethylene sheeting sealed with tape: polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.
- .14 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

1.06 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.
- .3 Submit Provincial and/or local requirements for Notice of Project Form.
- .4 Submit proof of Contractor's Asbestos Liability Insurance.
- .5 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.
- .6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a Competent Worker in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing. Instruction and training related to respirators is to include, at a minimum:
 - .1 Fitting of equipment.

- .2 Inspection and maintenance of equipment.
- .3 Disinfecting of equipment.
- .4 Limitations of equipment.
- .7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration.
- .8 Submit Worker's Compensation Board status and transcription of insurance.
- .9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
 - .1 Encapsulants;
 - .2 Amended Water;
 - .3 Slow drying sealer.
- .10 Submit proof satisfactory to Contract Administrator that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.07 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
 - .1 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes, at a minimum:
 - .1 Full-facepiece powered air purifying respirator (PAPR) with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.
 - .2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the Contractor and worn by every worker who enters the work area, and the

protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn. Requirements for each worker:

- .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
 - .2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated work suits in receptacles for disposal with other asbestos-contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.
 - .3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If re-entering work area, follow procedures outlined in paragraphs above.
 - .4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.
- .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
 - .3 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.
 - .4 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
 - .5 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
 - .6 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
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- .2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.
- .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.08 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.
- .4 Separate for reuse and recycling and place in designated containers steel, metal, and plastic waste.
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .7 Fold up metal banding, flatten and place in designated area for recycling.
- .8 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.
- .9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.

1.09 EXISTING CONDITIONS

- .1 Reports and information pertaining to ACMS to be handled, removed, or otherwise disturbed and disposed of during the Work are attached in the Appendix.
- .2 Notify Contract Administrator 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 Contract Administrator.

1.10 SCHEDULING

- .1 Hours of Work: perform work during normal working hours as indicated in Contract Documents.

Part 2 Products

2.01 MATERIALS

- .1 Drop and Enclosure Sheets:
 - .1 Polyethylene: 0.15 mm thick.
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- .2 FR Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with Polyethylene.
- .2 Waste Containers: contain waste in two separate containers.
 - .1 Inner container: 0.15 mm thick sealable Polyethylene bag.
 - .2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable Polyethylene bag.
 - .3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.
- .3 Tape: tape suitable for sealing Polyethylene to surfaces under both dry and wet conditions using Amended Water.
- .4 Slow-drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
 - .1 Sealer: flame spread and smoke developed rating less than 50.
- .5 Encapsulant: penetrating type conforming to CAN/CGSB-1.205.

Part 3 Execution

3.01 PREPARATION

- .1 Asbestos abatement work is to be completed in general accordance with the requirements of the SAFE Work Manitoba 2017 "Guide for Asbestos Management". Where discrepancies exist between that document and these specifications, the more stringent will apply.
- .2 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.
- .3 Notification to Manitoba Workplace Safety and Health to be completed prior to work resulting in the potential release of ACMs.
- .4 Work Areas:
 - .1 Shut off and isolate air handling and ventilation systems to prevent fibre dispersal to other building areas during work phase. Conduct smoke tests to ensure that duct work is airtight. Seal and caulk joints and seams of active return air ducts within Asbestos Work Area.
 - .1 Lock Out Tag Out will be conducted in accordance with applicable regulations and The City's protocols. All affected persons will be notified, including The City's central control, as well as any facility staff, users or contractors present.
 - .2 Clean proposed work areas using, where practicable, HEPA Vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA Vacuum equipment.
 - .3 The spread of dust from the work area to be prevented by:
 - .1 Using enclosures of Polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one

- or more transparent window areas to allow observation of the entire work area from outside the enclosure), if the work area is not enclosed by walls.
- .2 Using curtains of Polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.
 - .4 Put Negative Pressure system in operation and operate continuously from time first Polyethylene is installed to seal openings until final completion of work including final cleanup. The system to maintain a negative air pressure, relative to the area outside the enclosed area. The system to be inspected and maintained by a Competent Worker prior each use to ensure that there is no air leakage, and if the filter is found to be damaged or defective, it to be replaced before the ventilation system is used.
 - .1 Negative air units are to be dioctyl phthalate (DOP) tested on-site, prior to installation/use, with test results provided to Contract Administrator for review.
 - .5 Seal off openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with Polyethylene sheeting sealed with tape.
 - .6 Cover floor and wall surfaces with Polyethylene sheeting sealed with tape. Cover floors first so that Polyethylene extends at least 300 mm up walls then cover walls to overlap floor sheeting.
 - .7 Build Airlocks at entrances to and exits from work areas so that work areas are always closed off by one Curtained Doorway when workers enter or exit.
 - .8 At each access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used: "CAUTION ASBESTOS HAZARD AREA (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".
 - .9 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Fire Commissioner of Canada and Provincial Fire Marshall Authority having jurisdiction.
 - .10 Where application of water is required for wetting ACMs, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
 - .11 After preparation of work areas and Decontamination Enclosure Systems, for the removal of all other ACMs, remove within work area and dispose of as contaminated waste in specified containers. Spray asbestos debris and immediate work area with Amended Water to reduce dust, as work progresses.
- .5 Worker Decontamination Enclosure System:
- .1 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows:
 - .1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work area[s], with two Curtained Doorways, one to Shower Room and one to work area[s]. Install waste receptor, and storage facilities for workers' shoes and protective clothing to be reworn in work area[s]. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.
 - .2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two Curtained Doorways, one to Clean Room and one to Equipment and Access Room. Provide one shower for every five

- workers. Provide constant supply of hot and cold or warm water. Provide piping and connect to water sources and drains. Pump waste water through 5 micrometre filter system before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.
- .3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two Curtained Doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .6 Container and Equipment Decontamination Enclosure System:
- .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Washroom, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, scaffolding, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable.
 - .1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to Washroom. Equip Staging Area with Curtained Doorway to Washroom.
 - .2 Washroom: build Washroom between Staging Area and Holding Room with two Curtained Doorways, one to Staging Area and one to Holding Room. Provide high-pressure low-volume sprays for washing of waste containers and equipment. Pump waste water through 5 micrometre filter system before directing into drains. Provide piping and connect to water sources and drains.
 - .3 Holding Room: build Holding Room between Washroom and Unloading Room, with two Curtained Doorways, one to Washroom and one to Unloading Room. Build Holding Room sized to accommodate at least two waste containers and largest item of equipment used.
 - .4 Unloading Room: build Unloading Room between Holding Room and outside, with two Curtained Doorways, one to Holding Room and one to outside.
- .7 Construction of Decontamination Enclosures:
- .1 Build suitable framing for enclosures or use existing rooms where convenient, and line with Polyethylene sheeting sealed with tape.
 - .2 Build Curtained Doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
- .8 Maintenance of Enclosures:
- .1 Maintain enclosures in tidy condition.
 - .2 Ensure that barriers and Polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
 - .3 Visually inspect enclosures at beginning of each working period.
 - .4 Use smoke methods to test effectiveness of barriers when directed by Contract Administrator.
- .9 Do not begin Asbestos Abatement work until:
- .1 Arrangements have been made for disposal of waste.
-

- .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
- .3 Work area[s] and decontamination enclosures are effectively segregated.
- .4 Tools, equipment, and materials waste containers are on hand.
- .5 Arrangements have been made for building security.
- .6 Warning signs are displayed where access to contaminated areas is possible.
- .7 Notifications have been completed and other preparatory steps have been taken.

3.02 SUPERVISION

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of ACMs.

3.03 PROCEDURES

- .1 Before removing asbestos:
 - .1 Prepare site.
 - .2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.
- .2 Remove saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.
- .3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .4 After completion of removal work, wire brush, HEPA Vacuum and/or wet-sponge surfaces from which asbestos has been removed to remove visible material.
- .5 Where Contract Administrator decides complete removal of ACM is impossible due to obstructions such as structural members or major service elements, and provides written direction, encapsulate material as follows:
 - .1 Apply penetrating type sealer to penetrate existing sprayed asbestos surfaces uniformly to substrate.
- .6 After removal of visible asbestos, and after encapsulating ACM impossible to remove, wet clean entire work area including Equipment and Access Room, and equipment used in process. After 24 hour period to allow for dust settling, wet clean these areas and objects again. During this settling period no entry, activity, or ventilation will be permitted. After second 24 hour period under same conditions, clean these areas and objects again using HEPA Vacuum followed by wet cleaning. After inspection by Consultant apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry,

activity, ventilation, or disturbance other than operation of Negative Pressure units during this period.

- .7 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.
- .8 Cleanup:
 - .1 Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA Vacuum or by damp mopping.
 - .2 Place dust and asbestos-containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.
 - .3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA Vacuum and place in second clean waste bag.
 - .4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.
 - .5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA Vacuum.

3.04 FINAL CLEANUP

- .1 Remove Polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos-containing particles observed during cleanup, immediately, using HEPA Vacuum equipment.
- .2 Place Polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .3 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.
- .4 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .5 As work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is accompanied by Contractor's representative to ensure that dumping is done in accordance with governing regulations.

3.05 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, The City shall retain an independent, competent (as described in the SAFE Work Manitoba 2017 "Guide for Asbestos Management") third party (further referred to herein as the "Hazmat Consultant") to take air samples inside and outside of Asbestos Work Area in accordance with the recommendations set forth in the SAFE Work Manitoba 2017 "Guide for Asbestos Management".

- .1 Air sample analysis will be conducted by Phase Contrast Microscopy (PCM) using the NIOSH 7400 method: Asbestos and Other Fibers by PCM for airborne asbestos exposure analysis as per regulatory guidelines.
 - .2 For Type 3 work, and for post-abatement samples, The City requires a minimum of 3,850 litres of air to be collected, with detection limits of less than 0.01 fibres per cubic centimetre.
 - .3 For perimeter surveillance (area samples) outside a Type 3 enclosure The City requires a minimum of 1,283 litres of air to be collected, with detection limits of less than 0.03 fibres per cubic centimetre.
 - .4 When monitoring inside a Type 3 enclosure (occupational samples), to evaluate or demonstrate the efficacy of various control measures (wetting, respirators, air exchange, etc.) where the anticipated fibre concentration is at or slightly above 0.1 fibres per cubic centimetre, a minimum sample size of 400 litres of air will be collected.
 - .5 Random monitoring inside the hoarding is to be expected for all Type 3 work, to ensure dust levels are controlled.
 - .6 Air sample results will be provided to The City, the Contractor and the Contract Administrator within 2-hours of sample collection.
 - .7 Analysis will be conducted by qualified persons or laboratories that take part in a documented QA/QC program for such analysis.
- .2 Contractor will be notified to Stop Work when airborne fibre measurements exceed 0.05 fibres/cubic centimetre, when PPE and protection factors are considered, and to correct procedures.
 - .1 Additional monitoring will be conducted, where possible, to verify procedural corrections were effective.
 - .3 If air monitoring shows that areas outside Asbestos Work Area are contaminated as determined by the Contract Administrator, Contractor will be notified to maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract.
 - .4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown and correction of deficiencies.
 - .5 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
 - .6 Post-abatement testing must be completed.
 - .1 After Asbestos Work Area has passed visual inspection by Contractor and/or Contract Administrator and acceptable coat of lock-down agent has been applied to surfaces within enclosure by the Contractor, and appropriate setting period has passed, post-abatement air monitoring within Asbestos Work Area must be conducted.
 - .1 Final air monitoring results must show fibre levels of less than 0.01 fibres per cubic centimetre.
 - .2 If air monitoring results show fibre levels in excess of 0.01 fibres per cubic centimetre, Contractor will re-clean work area and apply another acceptable coat of lock-down agent to surfaces, at no additional cost to Contract.
 - .3 Repeat as necessary until fibre levels are less than 0.01 fibres per cubic centimetre, at no additional cost to Contract.

- .7 Photos, along with a description of the work are to be included in the Prep Inspection, Daily Interim, and Final Clearance Site Inspection Reports to be prepared by The City's air monitoring consultant.
- .8 Contractor will be provided with authorization to remove enclosure structures upon receipt of acceptable air sample results.
 - .1 The City's air monitoring consultant will be responsible for contacting the appropriate building maintenance staff to turn the air back on once the monitoring has passed.

3.06 INSPECTION

- .1 Perform random inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation[s] from these requirements that have not been approved in writing by Contract Administrator may result in Work stoppage, at no cost to the City.
- .2 Preliminary inspection of Type 3 containment is required by The City's air monitoring consultant prior to any contaminated work.
- .3 Contract Administrator may inspect Work for:
 - .1 Daily adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown.
 - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

1 General

1.1 SUMMARY

- .1 Refer to the following information (further referred to collectively herein as the “Assessment Reports”, referred to individually as indicated below), attached in the Appendix of the Specifications, for information pertaining to asbestos-containing materials (ACMs) that have been identified and may require disturbance during the Work:
 - .1 City of Winnipeg “Asbestos Inventory Control” for the Public Safety Building and the Civic Centre Car Park (inspection date April 9, 2018, and associated drawings).
 - .1 Note that information for the Public Safety Building is included here, as the information regarding some portions of the Civic Centre Car Park (including, but not limited to the information for the “parkade basement”) is included with the overall information for the Public Safety Building
 - .2 Stantec Consulting Ltd. Appendix: Readyng the Lands of the Former Public Safety Building and Civic Centre Car Park for Redevelopment – 151 & 171 Princess Street. September 5, 2018.
 - .3 SGS Galson analytical record for Login # L473424 dated March 14, 2019 (results pertaining to lead in surface samples collected by Wood within the former firing range area in the Civic Centre Car Park). This document, in combination with the drawing noted in 1.1.1.4 below is further referred to herein as the “Lead Report”.
 - .4 Drawing entitled “Shooting Range Lead Sampling”, which provides information to supplement the SGS Galson analytical record introduced above. This document, in combination with the analytical report in 1.1.1.3 above is further referred to herein as the “Lead Report”.
- .2 Comply with requirements of this Section when performing following Work:
 - .1 Removal/cleaning of lead-containing dust from all surfaces throughout the former shooting range within the City Centre Car Park to the extent required to allow for safe demolition of the area.
 - .1 Existing contamination levels and surfaces affected are indicated in the Lead Report.
 - .2 All surfaces throughout all rooms included in the sampling program undertaken as part of the Lead Report must be cleaned.
 - .2 Conducting work that will impact other lead-containing materials and lead-containing paints within the City Centre Car Park
 - .1 Per the Assessment Reports, paints throughout the structure are presumed to be lead-containing.
 - .2 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.
 - .3 Where LCPs are present on building materials not otherwise being disturbed to complete the Work of this project, abatement and/or removal of these materials is not required as part of the Work of this Contract.
 - .4 As indicated in the Assessment Reports, lead is also expected to be present in materials such as lead-acid batteries used in emergency lighting, older electrical wiring materials and sheathing, solder used on domestic water lines, solder used in bell fittings for cast iron pipes, solder used in electrical equipment, ceramic tile glaze and vent/pipe flashings.
 - .3 Removal of these materials is NOT included in the scope of this Contract.

1.2 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal
- .3 Section 02 81 01 – Hazardous Materials
- .4 Section 02 82 00.01 – Asbestos Abatement Type 1 Precautions
- .5 Section 02 82 00.02 - Asbestos Abatement Type 2 Precautions
- .6 Section 02 82 00.03 - Asbestos Abatement Type 3 Precautions

1.3 REFERENCES

- .1 All applicable national building codes, Canadian electrical codes and standards, fire and construction safety codes, shall be in effect during all aspects of this lead remediation project. In any situation where there are discrepancies between these specifications and others, the more stringent standard shall always apply. The following list has been included as a guide only; others may apply:
 - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999).
 - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
 - .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
 - .3 National Research Council Canada Institute for Research in Construction (NRC-IRC)
 - .1 National Fire Code of Canada 2015.
 - .4 Department of Justice Canada
 - .1 Transportation of Dangerous Goods Act (TDG Act) 1999, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).
 - .5 Government of Manitoba
 - .1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB Reg. 217/2006).
 - .2 Manitoba Hazardous Waste Regulation MR 55/2003.
 - .3 Manitoba's The Dangerous Goods Handling and Transportation Act 195/2015.
 - .6 City of Winnipeg Requirements.
 - .7 Government of Canada
 - .1 The Federal Transportation of Dangerous Goods Regulation (SOR/2001-286).

1.4 DEFINITIONS

- .1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
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- .2 Authorized Visitors: Contract Administrator or designated representative[s] and representatives of regulatory agencies.
- .3 Occupied Area: areas of building or work site that is outside Work Area.
- .4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .5 Airlock: ingress or egress system, without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 m apart.
- .6 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another. Typically constructed as follows:
 - .1 Place two overlapping polyethylene sheets over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway, and secure other sheet along opposite vertical side of doorway.
 - .2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.
 - .3 Overlap each polyethylene sheet at openings 1.5 m on each side.
- .7 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50% of the 8 hour time-weighted average (TWA) occupational exposure limit (OEL). TWA OEL for lead in Manitoba is 0.05 milligrams per cubic meter of air. Intermediate precautions for lead abatement are based on expected airborne lead concentrations greater than 50% of the OEL (> 0.025 milligrams per cubic meter of air) within Work Area.
- .8 Competent person: individuals capable of identifying existing lead hazards in workplace and taking corrective measures to eliminate them.
- .9 Lead Contamination: Dust/debris on vertical and/or horizontal surfaces that contains lead in concentrations greater than those indicated below, when determined through surface sampling and applicable laboratory analysis.

Surface	Clearance Criteria	
	µg/100 cm ²	µg/ft ²
Exterior concrete and rough surfaces	86.1	800
Interior concrete, window troughs, rough surfaces	43	400
Interior window sills	26.9	250
Floors and other surfaces: Non-Residential	21.5	200

1.5 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of lead waste in accordance with requirements of authority having jurisdiction.
- .3 Provide Provincial requirements for Notice of Project Form, and provide a copy to the Contract Administrator.
- .4 Provide proof of Contractor's General and Environmental Liability Insurance.
- .5 Quality Control:
 - .1 Provide Contract Administrator copies of necessary permits for transportation and disposal of lead waste and proof that it has been received and properly disposed.
 - .2 Provide proof satisfactory to Contract Administrator that employees have had instruction on hazards of lead exposure, respirator use, dress, entry and exit from Work Area, and aspects of work procedures and protective measures. Minimum of one supervisor for every ten workers.
 - .3 Provide proof (certificates) that all equipment equipped with HEPA filters have been DOP tested on-site.
- .6 Product data:

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- .1 Provide documentation including Material Safety Data Sheets (MSDS) for chemicals or materials that the contractor wishes to use on-site, including, but not limited to:
 - .1 Encapsulants.
 - .2 Amended water.
 - .3 Slow drying sealer.

1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to lead paint, in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
 - .1 Perform construction occupational health and safety in accordance with all applicable regulations and guidelines.
 - .2 Safety Requirements: worker and visitor protection.
 - .1 Protective equipment and clothing to be worn by workers and visitors in Work Area includes:
 - .1 Properly fitted NIOSH approved respirator equipped with HEPA or P-100 filter cartridges with minimum assigned protection factor of 10 (half-mask or greater protection), acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas.
 - .2 Disposable type protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.
 - .3 Steel Toe safety boots (CSA approved)
 - .2 Requirements for workers:
 - .1 Put on respirator with new filters or reusable filters, clean coveralls and head covers in clean change room, before entering Work Area. Store other street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
 - .2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead-contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in Work Area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from Work Area or from Equipment and Access Room.
 - .3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not to use this system as means to leave or enter work area.
 - .3 Eating, drinking, chewing, and smoking are not permitted in Work Area.
 - .4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.
 - .5 Ensure workers wash hands and face when leaving Work Area.
 - .6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.

- .7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.
- .8 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to Work Areas.
 - .2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.
 - .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

1.7 WASTE AND MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with local municipal bylaws.
- .2 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .3 Disposal of lead waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of lead waste in sealed double thickness 6 mil bags or leak proof drums, or as required by the accepting facility/transportation regulations. Label containers with appropriate warning labels.
- .4 Provide manifests describing and listing waste created. Transport containers by approved means to licensed accepting facility.
- .5 Contractor is responsible for any waste characterization sampling/analysis that may be required (e.g., Toxicity Characteristic Leaching Procedure (TCLP) testing for lead) to support landfill disposal of waste.
 - .1 Records pertaining to waste characterization assessment/sampling/analysis are to be provided to the Contract Administrator prior to transporting the waste from site.

1.8 EXISTING CONDITIONS

- .1 Reports and information pertaining to assessment findings related to lead contamination (and other hazardous building materials in the work area, where applicable) that is to be removed, or otherwise disturbed and disposed of during this Project are attached to this specification package in the Appendix of the Specification.
- .2 Notify Contract Administrator of lead contamination or other potential hazardous building materials discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Contract Administrator.

1.1 SCHEDULING

- .1 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .2 Provide Contract Administrator with copies of notifications prior to start of Work.
- .3 Hours of Work: perform work during normal working hours as indicated in Contract Documents.

2 Products

2.1 MATERIALS

- .1 Polyethylene: 6 mil unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: 10 mil woven fibre reinforced fabric bonded both sides with polyethylene.

- .3 Tape: fibreglass-reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.
- .5 Lead waste containers: All lead waste is to be placed in small means of containment which meet the requirements for transporting leachable toxic waste, in accordance with government regulations. All packaged waste is to be appropriately labeled and handled in accordance with government regulations.
- .6 Label containers with pre-printed bilingual cautionary labels indicating "Warning Lead" clearly visible when ready for removal to disposal site.

3 Execution

3.1 SUPERVISION

- .1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or other handling of lead contamination.

3.1 PREPARATION

- .1 Shooting Range and adjacent areas that are contaminated with lead dust as indicated in the Lead Report:
 - .1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.
 - .2 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
 - .3 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.
 - .4 Seal off openings, corridors, doorways, windows, skylights, ducts, grilles, and diffusers, with polyethylene sheeting sealed with tape.
 - .5 Prevent the spread of dust from the Contact Work Area using measures appropriate to the work to be done and which are consistent with the requirements for a lead abatement operation. Erect a polyethylene enclosure around the Contract Work Area.
 - .6 Establish negative pressure in polyethylene enclosure as follows:
 - .1 Install and maintain HEPA filtered Negative Air Unit(s) sufficient to allow one complete air change every 15 minutes; and,
 - .2 Operate Negative Air Unit(s) continuously from time of Contract Administrator's authorization to proceed until acceptable clearance results have been achieved and have been verified in writing by the Contract Administrator.
 - .7 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:
 - .1 CAUTION LEAD HAZARD AREA (25 mm).
 - .2 NO UNAUTHORIZED ENTRY (19 mm).
 - .3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).
 - .4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).
 - .8 Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Authority having jurisdiction.

- .9 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.
- .10 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .2 Worker Decontamination Enclosure System:
 - .1 Worker Decontamination Enclosure System includes Equipment and Access Room and Clean Room, as follows:
 - .1 Equipment and Access Room: construct between exit and work areas, with two curtained doorways, one to the rest of suite, and one to work area. Install waste receptor and storage facilities for workers' shoes and protective clothing to be re-worn in work areas. Build large enough to accommodate specified facilities, equipment needed, and at least one worker allowing sufficient space to change comfortably.
 - .2 Clean Room: construct with curtained doorway to outside of enclosures. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly.
- .3 Construction of Decontamination Enclosures:
 - .1 Construct framing for enclosures or use existing rooms. Line enclosure with polyethylene sheeting and seal with tape, apply two layers of FR polyethylene on floor.
 - .2 Construct curtain doorways between enclosures so when people move through or waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.
 - .3 In the wash Station, install a wash sink with hot and cold water. Also provide disposable towels, a mirror and disposal containers for contaminated and non-contaminated waste.
- .4 Separation of Work Areas from Occupied Areas
 - .1 Barriers between Work Area and occupied area to be constructed as follows:
 - .1 Construct floor to ceiling with appropriate stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting, if necessary. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.
 - .2 Where plywood is used, cover plywood with polyethylene sheeting and sealed with duct tape.
- .5 Maintenance of Enclosures:
 - .1 Maintain enclosures in clean condition.
 - .2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.
 - .3 Visually inspect enclosures at beginning of each work day.
 - .4 Use smoke test method to test effectiveness of barriers and negative pressure as directed by Contract Administrator.

3.2 LEAD ABATEMENT

- .1 Disturbance to or removal of Lead-Containing Paints
 - .1 Actions that will disturb lead-containing materials (including paints and materials coated with LCPs) are to be conducted in accordance with of the current version of MB Reg. 217/2006, keeping airborne exposure to lead dust to less than an 8-

- hour Occupational Exposure Limit (OEL) for lead of 0.05 milligram per cubic metre (mg/m^3), which is referenced by both the COHSR and MB Reg. 217/2006.
- .1 In instances where LCPs are present on asbestos-containing materials, the provisions of the appropriate asbestos abatement specification sections are anticipated to be sufficient to protect workers and adjacent areas from exposure to lead during disturbance.
 - .2 The work tasks required and the ways in which lead-containing materials (including LCPs will be impacted will determine the appropriate respirators, measures and procedures that should be followed to protect workers from lead exposure. This is to be determined by the Contractor through their own Risk Assessment, and development of their own Safe Work Procedures.
 - .1 Risk Assessment and Safe Work Practice documentation for work that will involve removal of building materials coated with LCPs is to be provided to the Contract Administrator for review and approval, prior to implementation.
 - .2 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .2 Lead dust contamination removal:
- .1 Before beginning lead dust abatement work, remove visible dust from surfaces in the Contract Work Area where dust is likely to be disturbed during the course of the work. Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate. Do not use compressed air to clean up or remove dust from any surface.
 - .2 The cleanup of the lead contamination is to be executed in a systematic and orderly manner. The abatement workers will first vacuum and then wet wipe the surfaces to be cleaned. Used rags will be placed into a clear disposal bag and sealed with duct tape. The disposal bags will then be taken to a designated transfer area for appropriate disposal.
 - .3 Visually inspect the Contract Work Area at least once per day and on days when there are no shifts to ensure integrity of enclosures and barriers and functionality of negative air units.
 - .4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
 - .5 Wet clean work area including equipment and access room, and equipment used in process. After inspection by Contract Administrator, apply continuous coat of slow drying sealer to surfaces. Do not disturb work for 8 hours with no entry, activity, ventilation or disturbance during this period.
 - .6 After encapsulating lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

3.3 INSPECTION

- .1 Perform inspections to confirm compliance with specifications and governing authority requirements. Deviations from these requirements not approved in writing by Contract Administrator will result in work stoppage, at no cost to the City.
- .2 Contract Administrator or the City's other representative may inspect work for:
 - .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.

- .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When lead dust leakage from Work Area occurs, Contract Administrator or the City's consultant may order Work shutdown.
- .4 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.1 LEAD AIR SAMPLING – WORK AREAS

- .1 The City's consultant may, at the City's discretion, conduct periodic air sampling for lead, at their discretion, and as follows:
 - .1 At locations or on workers within the work area enclosure (occupational air samples), to assess whether the airborne lead concentrations to which workers are exposed and to evaluate whether appropriate levels of respiratory protection are being used.
 - .2 At locations outside of the work area enclosure (ambient air samples), to assess whether enclosure structures and entry/egress/decontamination procedures are effective in maintaining airborne lead concentrations within applicable limits outside of the enclosure.
 - .3 At locations inside of the work area, to assess airborne lead concentrations subsequent to work completion (clearance air samples)
- .2 Contractor is to make personnel available to wear occupational air sample pumps and media, as requested by the City's consultant.
- .3 Airborne lead concentrations shall not exceed the action level of 0.025 milligrams per cubic meter (TWA), when respiratory protection factors are considered, either within or adjacent to enclosure structures.
 - .1 If airborne lead concentrations are found to exceed applicable action levels or OEL through occupational, ambient or clearance air samples, the contractor will re-clean areas, upgrade dust control, upgrade respiratory protection or otherwise address the issue such that subsequent sampling will show acceptable airborne concentrations, all at no additional cost to the City.

3.2 LEAD SURFACE SAMPLING – WORK AREAS

- .1 From beginning of Work until completion of cleaning operations, at the discretion of the City, the City shall retain an independent, competent third party to take air samples inside and outside of lead abatement Work Area as follows:
 - .1 After Work Area has passed a visual inspection for cleanliness approved by the City's consultant and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed.
 - .2 The City's consultant will perform lead wipe sampling in Work Area.
 - .1 Final lead wipe sampling results from horizontal and vertical surfaces where lead contamination has been removed must show lead levels of less than the criteria indicated in paragraph 1.4.9 of this specification.
 - .2 If wipe sampling results show levels of lead in excess applicable criteria, Contractor is to re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.
 - .3 Repeat as necessary until clearance criteria are met.

3.3 FINAL CLEANUP AND DISPOSAL

- .1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
- .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .4 Clean-up Work Areas, Equipment and Access Room, and other contaminated enclosures.
- .5 Clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

END OF SECTION