PART 1 GENERAL

1.1 DESCRIPTION OF WORK

.1 The Work is to supply all labour and material necessary for and incidental to the completion of the Work as described in the Contract Documents. LEED Silver is targeted for the new Addition portion only; refer to Section 01 47 15 for requirements.

1.2 CONTRACT DOCUMENTS

.1 The Work shall be executed in conformance with the tender drawings and specifications, which are to form a part of the contract documents. The drawings and specifications complement each other; what is called for in either is considered a part of the Contract.

.2 The arrangement and compilation of drawings and specifications under several sections and divisions is purely arbitrary, and is intended to help relate and to clarify the Work and shall be interpreted as a whole. The Contractor is responsible to arrange and coordinate the supply of all necessary materials and labour as described.

.3 In the event of discrepancy between the drawings and the specifications, or between different parts of the drawings, or different parts of the specifications the Contractor shall assume the product, material, or method, which is more costly, unless such conflict is resolved by Addendum.

.4 The Contractor is responsible for the delivery of a completely weatherproof building. If for any reason, the Contractor questions the weather tightness of any portion of the building as drawn or specified, he shall clearly state, in writing, to the Contract Administrator prior to performing that portion of the Work. Failure to do so will not relieve the Contractor from any subsequent remedial action necessary to weatherproof the building, including paying for the same.

1.4 WORK BY THE CITY

.1 Unless otherwise noted, items which may be executed during or after completion of Work of this Contract, and which is specifically excluded from this Contract, are:

.1 Arranging for telephone and/or cable TV service.

.2 Furniture

END OF SECTION

SPECIFICATION

Issued for Construction

Date: 2016, July 15

Project No. 2014.66 Bid Opportunity No. 645-2016

PRAIRIE
ARCHITECTS INC.
Creating Sustainable Futures

Part 1 GENERAL

1.1 PRECONSTRUCTION MEETING

.1 Within fifteen (15) days after Contract award, the Contractor shall request a meeting of parties in contract to discuss and confirm administrative procedures and responsibilities. The City, Contract Administrator, Contractor, major Subcontractor(s), field inspectors and supervisors should be in attendance.

.2 The Contractor shall establish a time and location for each meeting and notify attendees a minimum of 5 days before the meeting.

.3 Agenda to include the following:

- Introduction of all official representatives to be involved in the Work
- Review project sustainable goals and targets
- Communication protocol for all administrative procedures including PCNs, change orders, change directives, progress claims, shop drawing submissions, etc.
- LEED requirements
  - Waste reports to be submitted in conjunction with progress claims, failure do so could result in delay of payment
  - Trade submittals to be submitted prior to trade arriving on site
  - Building flush to be included in schedule
  - Commissioning to be included in schedule
- Inspection and testing agencies
- Construction schedule, major milestones, and long delivery items
- Construction and site issues including temporary facilities, offices, storage sheds, utilities, parking, and security.
- Interim and Final Occupancy by The City
- City provided products or services.
- Submission of Bonding and Insurance
- Project Record drawings, Take-over procedures Maintenance manuals and warranties

.4 The Contract Administrator will chair this first meeting, record the minutes, and circulate those minutes to all attending parties and other affected parties, within 7 days of the meeting.

1.2 PROGRESS SITE MEETINGS

.1 During the course of the Work, the Contractor shall schedule monthly site meetings.

.2 These meetings are intended to keep the Contract Administrator, Contractor, Subcontractors, and The City, up to date on project development and site progress, and are not intended to replace or supplement other meetings that the Contractor needs to co-ordinate the work of sub-trades.

.3 The Contractor shall notify all parties' a minimum of 7 days, prior to meetings and shall provide an appropriate space for meetings to occur.

.4 The Contractor, the Contract Administrator, SubContractor(s), and The City need to attend; major subcontractors may attend when required by the Contractor. Representatives attending meetings shall be qualified and authorized to act on behalf of the party being represented.

.5 The Contractor shall chair these meetings, record the minutes, and circulate these minutes to all attending parties and affected parties, not in attendance, within 7 days of each meeting.

.6 Agenda to include the following:

- Review & approval of minutes of previous meeting
- Review of Work progress since previous meeting
- Site observations, problems, conflicts, or any problems which impede the construction schedule
- Review of off-site fabrication or delivery schedules
- Corrective procedures to regain project schedule
- Revisions and updates to construction schedule
- Review submittal schedules: expedite as required
- Review LEED sustainability progress and compliance
- Maintenance of quality standards

- Review pending changes, substitutions, or any proposed changes for affect on construction schedule and completion date
- Estimated progress and schedule for the next period
- Any other related business
- Confirm next meeting date

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Documentation during Construction Progress

1.2 RELATED SECTIONS

.1 Section 01 32 18 – Construction Progress Schedules

.2 Section 01 33 00 – Submittal Procedures

.3 Section 01 47 15 – LEED Sustainable Requirements

1.3 PROGRESS PHOTOGRAPHS

.1 Digital Photographs: Submit an electronic file or a CD disk copy of colour digital photographs in [*.jpg] format, with a minimum 4 megapixel resolution. Photos shall be clear, sharp, and in focus.

.2 Identification: Title each monthly submission with Project Name, Project number, and submission date. Clearly organize groups of photos into separate file folders labelled clearly by “date taken” and within each folder, number each photo individually. Label key photos by subject matter using key words.

.3 Number of Viewpoints: sufficient to fully communicate construction overall progress, as well as construction materials, details, issues, questions, etc.

.4 Submittal frequency: Each month along with the progress claim.

.5 Key milestones: During excavation, framing, and prior to backfilling of underground services, closing in floors, walls, or ceiling areas which conceal services and insulation, and as requested by the Contract Administrator, including at the following milestones:

.1 Excavation
.2 Substructure
.3 Superstructure
.4 Building closed-in and weatherproofed
.5 Interior finishing and fitting, mechanical, and electrical work
.6 Substantial Performance
.7 Total Performance

1.4 DEMONSTRATION AND TRAINING VIDEO

.1 Submit colour video tapes/files in digital or VHS format of: the full training and demonstration session regarding all mechanical and electrical equipment testing and commissioning, prior to the date of Total Performance.

END OF SECTION

Part 1 GENERAL

1.1 PRECEDENCE

.1 Division 1 Sections take precedence over technical specification sections in other Divisions of this Specification.

1.2 DEFINITIONS

.1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart). A graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally, Bar Chart should be derived from Microsoft Project commercially available computerized project management system.

.3 Baseline: Original approved drawings (for Project Work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five-day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: Number of Work periods (not including holidays or other nonWorking periods) required to complete an activity or other Project element. Usually expressed as Workdays or Workweeks.

.6 Master Plan: A summary-level schedule that identifies major activities and key milestones.

.7 Milestone: A significant event in Project, usually completion of major deliverable.

.8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: Overall system operated by Contract Administrator to enable monitoring of project Work in relation to established milestones.

1.3 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 Working days, to allow for progress reporting.

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

1.4 SUBMITTALS

.1 Submit to Contract Administrator within 15 Working days of Award of Contract, a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.2 Submit Project Schedule to Contract Administrator within 5 Working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

.1 Completion of project milestones (interim targets) shown on the Project Schedule:

.1 Excavation
.2 Substructure
.3 Superstructure
.4 Building closed-in and weatherproofed
.5 Interior finishing and fitting, mechanical, and electrical Work
.6 Substantial Performance
.7 Total Performance

1.6 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Contract Administrator will review and return revised schedules within 5 Working days.

.3 Revise impractical schedule and resubmit within 5 Working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.
.2 Shop Drawings, Samples.
.3 Permits.
.4 Mobilization.

.5 Excavation.
.6 Backfill.
.7 Building footings.
.8 Slab on grade.
.9 Structural Steel.
.10 Siding and Roofing.
.11 Interior Architecture (Walls, Floors and Ceiling).
.12 Plumbing.
.13 Lighting.
.14 Electrical.
.15 Piping.
.16 Controls.
.17 Heating, Ventilating, and Air Conditioning.
.18 MillWork.
.19 Fire Systems.
.20 Testing and Commissioning.
.21 Supplied equipment long delivery items.
.22 Engineer supplied equipment required dates.

1.8 PROJECT SCHEDULE REPORTING

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

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

1.9 PROJECT MEETINGS

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

.2 Weather related delays and their remedial measures will be discussed and negotiated.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates and transcripts.

1.2 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 78 00 - Closeout Submittals.

1.3 ADMINISTRATIVE

.1 For review by Contract Administrator, provide all submittals listed in this Section. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed 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 shall be 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’s review of submittals.

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

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

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data, which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Allow 7 working days for Contract Administrator’s review of each submission.

.4 Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

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

.6 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 sample.

.5 Other pertinent data.

.7 Submissions shall include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor’s authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.8 After Contract Administrator's review, distribute copies.

.9 Submit only digital PDF copy of product data sheets, brochures, and of detailed shop drawings for products specified and indicated on the drawings. Delete any information not applicable to this project. Supplement standard manufacturer's information with more information and details that are specific to this project. Digital submittal must still comply with shop drawings procedures and must have the General Contractors review stamp.

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

1.5 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Contract Administrator's business address.

.3 Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

.6 Make changes in samples which Contract Administrator may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 CERTIFICATES AND TRANSCRIPTS

.1 Submit transcription of insurance immediately after award of Contract.

1.7 CONSTRUCTION PHOTOGRAPHS

.1 Provide photographs of the Site and the construction on a regular basis, prior to, and during the construction period, including the following:

.1 Existing adjacent buildings and Site features

.2 Existing and new underground services and foundations/structures

.3 Exterior and interior views of construction at each major stage

.4 Of certain views or relationships to help communicate specific issues to the Contract Administrator.

.2 Frequency:

.1 Daily during excavation, trenching, and backfiling of the Site or buried services

.2 Weekly during and at completion of building demolition

.3 Weekly during and at completion of excavation and foundation work

.4 Biweekly during the normal course of construction

.5 At specific locations, along specific gridlines, and when requested by the Contract Administrator

.6 Just prior to Substantial Performance.

.3 Communication

.1 Unless otherwise noted, email construction photographs in JPEG format to the Contract Administrator at the frequency noted above, and when requested by the Contract Administrator. If the file size or quantity of photographs becomes large, copy files to a CD or DVD, labelled with the Project Name, Project location, Subject matter, and Date that photos were taken. Submit to the Contract Administrator for review.

END OF SECTION

Part 1 GENERAL

1.1 PRECEDENCE

.1 Division 1 Sections take precedence over Sections in other Divisions.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 41 00 - Regulatory Requirements.

1.3 REFERENCES, latest editions

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

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

.3 Material Safety Data Sheets (MSDS).

.4 Manitoba Workplace Safety and Health Act

1.4 SUBMITTALS

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

.2 Submit Site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 15 - Sustainable Requirements.

1.5 GENERAL REQUIREMENTS

.1 Develop a written Health and Safety Plan for this project based on hazard assessment prior to beginning Site Work and continue to implement, maintain, and enforce plan until final demobilization from the Site. Health and Safety Plan must address project Specifications.

.2 Contract Administrator may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

.3 Volatile Products and Waste
- .1 Store flammable or combustible liquids or gases used on the construction Site in ULC approved containers.
- .2 Store volatile wastes in covered metal containers, and remove from premises daily.
- .3 Provide adequate ventilation during use of volatile or noxious substances.

.4 Overloading

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

.5 False Work

.1 Design and construct false Work in accordance with CSA S269.1, latest edition.

END OF SECTION

Part 1 GENERAL

1.1 FIRE DEPARTMENT BRIEFING

.1 The City will coordinate arrangements with local fire department and Contractor for briefing on fire safety at a pre-construction conference before work is commenced.

1.2 REPORTING FIRES

.1 All workers to be briefed on and know locations of nearest fire alarm box and telephone, including emergency phone number.

.2 Report immediately all fire incidents to applicable Fire Department.

.3 Person initiating call regarding fire alarm condition shall remain at Site to direct Fire Department to scene of fire.

.4 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

1.3 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm system shall not be:

.1 obstructed;

.2 shut-off; and

.3 left inactive at end of working day or shift without authorization from The City.

.2 Fire hydrants, standpipes and hose systems shall not be used for other than fire-fighting purposes unless authorized by The City.

1.4 FIRE EXTINGUISHERS

.1 Supply fire extinguishers to protect Work in progress and Contractor's physical plant on Site.

1.5 BLOCKAGE OF ROADWAYS

.1 Do not block roadways, without written permission of local authority. This includes violation of overhead clearances, erecting of barricades and digging of trenches.

1.6 SMOKING PRECAUTIONS

.1 Smoking is not permitted on the Site.

.2 Smoke only in designated locations.

.3 Observe smoking regulations at all times.

1.7 RUBBISH AND WASTE MATERIALS

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Burning of rubbish is prohibited.

.3 Removal: Remove all rubbish from Site at end of workday or shift or as directed.

.4 Storage:

.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and dispose of in accordance with local authority requirements.

1.8 FLAMMABLE AND COMBUSTIBLE LIQUIDS

.1 Handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.

.2 Flammable and combustible liquids such as gasoline, kerosene and naphtha shall be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing ULC or Factory Mutual seal of approval. Storage of

quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires permission of The City.

.3 Transfer of flammable and combustible liquids is prohibited within building.

.4 Transfer of flammable and combustible liquids shall not be carried out in vicinity of open flames or any type of heat-producing devices.

.5 Flammable liquids having a flash point below 38° C such as naphtha or gasoline shall not be used as solvents or cleaning agents.

.6 Flammable and combustible waste liquids, for disposal, shall be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Fire Department is to be notified when disposal is required.

1.9 HAZARDOUS SUBSTANCES

1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, shall be in accordance with National Fire Code of Canada.

1.10 HOT WORK

.1 Notify The City when “hot work” is undertaken for Work involving welding, burning, or use of blow torches and salamanders in buildings or facilities.

.2 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the Representative. Contractors are responsible for providing fire watch service for Work on a scale established and in conjunction with The City.

.3 Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation shall be assured and all sources of ignition are to be eliminated.

1.11 QUESTIONS AND/OR CLARIFICATION

Direct any questions or clarification on Fire Safety, in addition to the above requirements, to The City.

Part 2 PRODUCTS

Not used.

Part 3 EXECUTION

Not used.

END OF SECTION

Part 1 GENERAL

1.1 DEFINITIONS

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 FIRES

.1 Fires and burning of rubbish on Site not permitted.

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

1.3 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on Site.

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

1.4 DRAINAGE

.1 Follow erosion and sediment control plan that identifies type and location of erosion and sediment controls to be provided as per section 31 25 13. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sedimentations control plan.

.3 Provide temporary drainage and pumping as necessary to keep excavations and Site free from water.

.4 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.6 Provide erosion and sediment controls as per attached settlement pond; provide control of Site material as per attached parking lot excavation requirements.

1.5 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on Site and adjacent properties where indicated.

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

.3 Protect roots of designated trees to drip line during excavation and Site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Contract Administrator.

1.6 POLLUTION CONTROL

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

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area, by providing temporary enclosures.

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

1.7 HISTORICAL / ARCHAEOLOGICAL CONTROL

.1 Where historical, archaeological, cultural, and/or biological implications are known to impact the Site or project, or are discovered during construction, the Contractor shall comply with any procedures identified to deal with these issues in a respectful way.

1.8 COMPLIANCE

.1 Comply with all applicable Federal, Provincial or Municipal environmental laws, by-laws, permits, and other regulations.

.2 If notified of any non-compliance, the Contractor shall stop work until corrective action has been taken to the satisfaction of the related authority. No time extensions or equitable adjustments to the Contract will be granted to the Contractor for such delays.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with the current edition of the National Building Code of Canada (NBC), including Manitoba amendments up to Tender closing date, and other applicable provincial and local codes. Where conflicts or discrepancies arise, the more stringent requirements will apply.

.2 Meet or exceed the requirements of:

.1 Contract documents.

.2 Specified standards, codes, and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work and immediately notify the Contract Administrator.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work and notify the Contract Administrator.

.3 Mould: stop work immediately when material resembling mould is encountered during demolition work and notify the Contract Administrator.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws. No smoking is permitted in the building or within 50 feet of any structures on site.

END OF SECTION

PART 1 GENERAL

1.1 ASSOCIATIONS

.1 AA - Aluminum Association, 900 19th Street N.W., Washington, D.C., U.S.A. 20006 URL http://www.aluminum.org

.2 AASHTO - American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, D.C., U.S.A. 20001 URL http://www.aashto.org

.3 ACEC Association of Consulting Engineers of Canada,130 Albert Street, Ottawa, ON. K1P 5G4 URL http://www.acec.ca

.4 AHA - American Hardboard Association, 1210W Northwest Hwy., Palatine, Illinois, U.S.A. 60067 URL : http://www.areat.com

.5 AITC - American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, Colorado, U.S.A. 80112 URL http://www.aitc-glulam.org

.6 AMCA - Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, Illinois, U.S.A. 60004-1893 URL http://www.amca.org

.7 ANSI - American National Standards Institute, 11 West 42nd Street, New York, New York, U.S.A. 10036 URL http://www.ansi.org

.8 APA - The Engineered Wood Association, P.O. Box 11700, Tacoma, Washington, U.S.A. 98411-0700 URL http://www.apawood.org

.9 API - American Petroleum Institute,1220 L St. Northwest, Washington, D.C., U.S.A. 20005-4070 URL http://www.api.org

.10 ARI - Air Conditioning and Refrigeration Institute, 4301 North Fairfax Drive, Suite 425, Arlington, Virginia, U.S.A. 22203 URL http://www.ari.org

.11 ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, Georgia, U.S.A. 30329 URL http://www.ashrae.org

.12 ASME - American Society of Mechanical Engineers, United Engineering Centre, Three Park Avenue, New York, New York, U.S.A. 10016-5990 URL http://www.asme.org

.13 ASPT Association for Asphalt Paving Technologists, 400 Selby Avenue, Suite 1, St. Paul, MN 55102 U.S.A. URL http://www.asphalt.org

.14 ASTM - American Society for Testing and Materials, 100 Barr Harbor Drive West, Conshohocken, Pennsylvania 19428-2959 URL http://www.astm.org

.15 AWCI - Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600, Falls Church, UA, U.S.A. 22046 URL http://www.awci.org

.16 AWMAC - Architectural Woodwork Manufacturers Association of Canada, 516 4 Street West, High River, Alberta T1V 1B6 URL http://www.awmac.com

.17 AWPA - American Wire Producer's Association, 6232 Roudsby, Alexandria, VA U.S.A. 22315-5285 URL http://www.awpa.org

.18 AWPA - American Wood Preservers' Association, P.O. Box 5690, Grandbury Texas, U.S.A. 76049-0690 URL http://www.awap.com

.19 AWS - American Welding Society, 550 N.W. LeJeune Road, Miami, Florida U.S.A. 33126 URL http://www.amweld.org

.20 AWWA - American Water Works Association, 6666 W. Quincy Avenue, Denver, Colorado, U.S.A. 80235 URL http://www.awwa.org

.21 CCA Canadian Construction Association,75 Albert St., Suite 400 Ottawa, Ontario, K1P 5E7 URL http://www.cca-acc.com

.22 CITC Canadian Institute of Timber Construction, 200 Cooper Street, Ottawa, Ontario K2P 0G1

.23 CFFM - Canadian Forces Fire Marshal, 101 Colonel By Drive, 8NT MGen George R. Pearkes Bldg., Ottawa, Ontario K1A 0K2

.24 CGA - Canadian Gas Association, 20 Eglinton Avenue West, Suite 1305, Toronto, Ontario M4R 1K8 URL http://www.cga.ca

.25 CGSB - Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 1G6 URL http://w3.pwgsc.gc.ca/cgsb

.26 CISC - Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, Ontario M2J 4G8 URL http://www.buildingweb.com/CISC

.27 CLA - Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, Ontario, K1N 8C7 URL http://www.cla.ca.ca

.28 CNLA - Canadian Nursery Landscape Association, RR #4, Stn. Main, 7856 Fifth Street, Milton, Ontario. L9T 2X8 URL http://www.canadanursery.com

.29 CRCA - Canadian Roofing Contractors Association, 155 Queen Street, Suite 130C, Ottawa, Ontario K1P 6L1 URL http://www.roofingcanada.com

.30 CSA - Canadian Standards Association International, 178 Rexdale Blvd., Toronto, Ontario M9W 1R3 URL http://www.csa-international.org

.31 CSC - Construction Specifications Canada, 100 Lombard Street, Suite 200, Toronto, Ontario M5C 1M3 URL http://www.csc-dcc.ca

.32 CSDFMA - Canadian Steel Door and Frame Manufacturing Association One Yonge Street, Suite 1400, Toronto, Ontario M5E 1J9

.33 CSPI - Corrugated Steel Pipe Institute, 201 Consumers Road, Suite 306, Willowdale, Ontario M2J 4G8

.34 CSSBI - Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cssbi.ca

.35 CUFCA Canadian Urethane Foam Contractor's Association

.36 CWC - Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, Ontario K1J 9B8 URL http://www.cwc.ca

.37 EC - Environment Canada, Conservation and Protection, Ottawa, Ontario KIA 0H3 URL http://www.ec.gc.ca

.38 EEMAC - Electrical and Electronic Manufacturers' Association of Canada, 5800 Explorer Drive, Suite 200, Mississauga, Ontario L4W 5K9 URL http://www.electrofed.ca

.39 EIMA EIFS Industry Manufacturer's Association, 3000 Corporate Center Drive, Suite 270, Morrow, Georgia U.S.A. 30260 URL http://www.eifsfacts.com

.40 FCC - Fire Commissioner of Canada, Place du Portage, Phase II, 165 rue Hotel de Ville, Hull Quebec K1A 0J2 URL http://www.hrdc-drhc.gc.ca

.41 IEEE - Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, New York U.S.A. 10017 URL http://www.ieee.org

.42 MPI - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6 URL http://www.paintinfo.com

.43 MSS - Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, Virginia U.S.A.22180

.44 NAAMM - National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 1000, Chicago, Illinois U.S.A. 60603 URL http://www.naamm.org

.45 NABA - National Air Barrier Association, 400-283 Bannatyne Avenue, Winnipeg, Manitoba R3B 3B2

.46 NEMA - National Electrical Manufacturers Association,1300 N. 17th Street, Suite 1847, Rosslyn, Virginia 22209 URL http://www.nema.org

.47 NFPA - National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101Quincy, Massachusetts, U.S.A. 02269-9101 URL http://www.nfpa.org

.48 NFSA - National Fire Sprinkler Association, 40 Jon Barrett Road, P.O. Box 1000, Patterson, New York, U.S.A. 12563 URL http://www.nfsa.org

.49 NHLA - National Hardwood Lumber Association, P.O. Box 34518, Memphis, Tennessee, U.S.A 38184-0518 URL http://www.natlhardwood.org

.50 NLGA - National Lumber Grades Authority, 406 First Capital Place, New Westminster, B.C. V3M 6G2

.51 NRC - National Research Council, Montreal Road, Ottawa, Ontario K1A 0S2 URL http://www.nrc.gc.ca

.52 NSPE National Society of Professional Engineers, 1420 King Street, Alexandria, VA U.S.A. 22314-2794 URL http://www.nspe.org

.53 QPL - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 1G6 URL http://www.pwgsc.gc.ca/cgsb

.54 RAIC Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, Ontario, K1N 5M3 URL http://www.raic.org

.55 SCC - Standards Council of Canada, 200 Albert Street, Suite 2000, Ottawa, Ontario K1P 6N7 URL http://www.scc.ca

.56 SSPC - The Society for Protective Coatings, 40 24th Street, Pittsburgh, Pennsylvania 15222-4656 URL http://www.sspc.org

.57 TPI - Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI, U.S.A. 53719 URL http://www.tpinst.org

.58 UL - Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, Illinois, U.S.A. 60062 URL http://www.ul.com

.59 ULC - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, Ontario M1R 3A9 URL http://www.ulc.ca

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Inspection, testing, administrative, and enforcement requirements.

.2 Tests and mix designs.

.3 Mock-ups.

.4 Mill tests.

.5 Equipment/system adjusting and balancing.

1.2 RELATED SECTIONS

.1 Section 01 42 00 - References

.2 Section 01 78 00 - Closeout Submittals

1.3 INSPECTION

.1 Allow the Contract Administrator access to the Work. If part of Work is being prepared at off-site locations, allow access to such Work upon request.

.2 Give sufficient notice of 48 hours minimum when testing, inspections, and critical observations of the Work are required, in order to maintain the construction schedule.

.3 If the Contractor covers or permits Work to be covered which requires testing, inspections or critical observations before these have been done, the Contractor will uncover such Work until such testing, inspections, and observations have been satisfactorily completed and will then make good to cover this Work again.

.4 If any portion of the Work is suspected to not be in accordance with the Contract Documents, the Contract Administrator may ask for any part of the Work to be examined. Upon examination, if such work is found to be not in accordance with the Contract Documents, the Contractor shall be responsible to correct this Work and pay for the cost of this examination and correction. If such Work is found to be in accordance with the Contract Documents, the Contract Administrator will pay for the cost of examination and replacement.

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Independent inspection/testing agencies may be engaged by The City, for the purpose of inspecting and/or testing portions of the Work, through the cash allowances specified.

.2 The engagement of such inspection/testing agencies does not relax the Contractor’s responsibility to perform the Work in accordance with the Contract Documents.

.3 If any defects in the Work are discovered during inspection and/or testing, the testing/inspection agency and the Contract Administrator will propose corrective measures. The Contractor shall be responsible to perform these corrective measures at no extra cost, as well as any related costs for retesting and re-inspection.

1.5 ACCESS TO WORK

.1 The Contractor shall allow and coordinate access to the Work for these inspection/testing agencies.

.2 The Contractor shall provide reasonable facilities for such access.

1.6 PROCEDURES

.1 The Contractor shall notify the inspection/testing agency and the Contract Administrator, 48 hours in advance of any required tests, so that attendance arrangements can be made.

.2 Present samples, materials, and or mock-ups as required for inspections/testing, as specified, and with reasonable promptness, so as not to cause a delay in the Work.

.3 Provide sufficient labour and facilities to properly inspect/test the Work on site, as required.

1.7 REJECTED WORK

.1 If any portion of the Work is discovered to be defective in any way and is rejected by the inspection/testing agency and the Contract Administrator, the Contractor shall remove such Work and replace it with Work that is in accordance with the Contract Documents, at no extra cost. Make good any other Work that is damaged by such removals or replacement, in a prompt manner.

.2 If it is not expedient to correct such defective Work in the opinion of the Contract Administrator, the Contract Administrator will determine a value for the difference between the defective Work performed and that called for by the Contract Documents, and The City may choose to deduct this value from the Contract Price.

1.8 REPORTS

.1 Submit a copy of all inspection/test reports to the Contract Administrator in PDF format.

.2 The Contractor shall distribute a copy to any affected Subcontractors related to the Work that was inspected or tested.

1.9 TESTS AND MIX DESIGNS

.1 Upon request, the Contractor shall provide test results and mix designs specified to the Contract Administrator.

.2 The Contract Administrator may review the cost of extra tests and/or mix designs beyond those specified, to determine if they are reimbursable.

1.10 MOCK-UPS

.1 Review the Work of all sections specified to have mock-ups

.2 Prepare specified mock-ups for the Contract Administrator’s review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work.

.3 Failure to prepare mock-ups in sufficient time is not reason enough to request an extension of Contract Time and any such claim will not be allowed.

.4 Mock-ups may remain as part of the Work, only if they are reviewed and accepted by the Contract Administrator.

.5 If not intended to remain as part of the Work, the Contractor shall remove the mock-up once it has been reviewed and accepted by the Contract Administrator.

1.11 MILL TESTS

.1 Submit mill test certificates as specified.

1.12 EQUIPMENT AND SYSTEMS

.1 The Contractor shall submit all adjustment reports and air balancing reports for mechanical, electrical, and building equipment systems, in a timely manner for review by the Contract Administrator, prior to incorporation into the Building Manuals.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 This Section includes specific environmental and sustainable development requirements for building materials, products and systems needed to ensure that this project complies with green design processes and clients' sustainable development plan. The sustainable requirements are based on LEED (Leadership in Energy & Environmental Design) as classified by Canada Green Building Council (CaGBC).

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 31 25 13 – Erosion and Sediment Control

1.3 REFERENCES

.1 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

.1 ASHRAE 52.2-[1999], Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size or latest.

.2 Canadian Standards Association (CSA International)

.1 CSA-S478-95(R2001), Guideline on Durability of Buildings or latest

.3 Sheet Metal and Air Conditioning National Contractors Association (SMACNA)

.1 SMACNA IAQ Guideline for Occupied Buildings Under Construction, 1995 or latest.

.4 South Coast Air Quality Management District (SCAQMD)

.1 SCAQMD Rule #1168, Adhesives & Sealants

.2 SCAQMD Rule #1113, Architectural Coatings

.5 Green Seal

.1 Green Seal Standard GS-11, Paints

.2 Green Seal Standard GC-03, Anti-Corrosive Paints

.6 Canada Green Building Council (CaGBC)

.1 LEED Canada-NC 2009 Reference Guide

1.4 DEFINITIONS, ABBREVIATIONS, ACRONYMS

.1 CaGBC: Canada Green Building Council, URL: www.cagbc.org

.2 LEED: Leadership In Energy and Environmental Design.

.3 VOC: Volatile Organic Compounds.

.4 Rapidly Renewable Materials - Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

.5 Regionally Manufactured Materials - Materials or products that have been extracted, harvested, recovered and processed within 800km by truck (or 2400km by rail) of the final manufacturing Site. The final manufacturing site must be within 800km/2400km of the project Site.

.6 Regionally Extracted, Harvested, or Recovered Materials - Materials that are extracted, harvested, or recovered and manufactured within a radius of 500 miles from Site.

.7 Recycled Content - Percentage by weight of constituents that have been recovered or otherwise diverted from solid waste stream, either during manufacturing process (preconsumer), or after consumer use (post-consumer).

1. Post-consumer material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of product, which can no longer be used for its intended purpose.

2. Pre-consumer material is defined as material diverted from waste stream during manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process capable of being reclaimed within same process that generated it.

3. Spills and scraps from original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of same product are not recycled materials.

4. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.5 SUBMITTALS

.1 All submittals pertaining to LEED must be sent electronically to the Sustainable Buildings Coordinator as referenced on Project Contact sheet in this manual. **LEED Silver certification pertains to the ADDITION ONLY**. **All materials to be used for the addition should be tracked separately and submitted separately through construction in its entirety**. Please see Schedule E for LEED project Boundary. Note that **all exterior landscaping work is included in the LEED project boundary and minor work around addition openings**. All other submittals for work in accordance with Section 01 33 00 - Submittal Procedures.

.2 LEED Product Information Forms (PIFs)- See Schedule A

.1 Product Information Forms and back-up documentation must be submitted by all trades for all materials used on the project prior to installation or use (excluding mechanical and electrical equipment).

.2 All material costs are to be submitted to the Contractor and/or LEED Coordinator for the documentation required for all Material & Resources credits.

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

.4 Back-up documentation is required to verify all claims submitted on the PIF. This can include, but is not limited to, Material Safety Data Sheets (MSDS), Technical Data Sheets (TDS), and Letters from Manufacturers. For example, MSDSs must verify VOC content in g/L for all paints, coatings, adhesives and sealants.

.5 PIFs for concrete used on the project must be submitted with a letter from concrete supplier certifying the reduction in Portland cement from Base Mix to

Actual SCM Mix (Supplementary Cementing Materials calculations). See Schedule B for the Concrete Mix Form. Submission can take place after concrete has been used to ensure all quantities/material costs are accurate.

.6 Proof of rail transport is required for any regional materials shipped by rail.

.7 It is the responsibility of the contractor to collect PIFs from all trades and sub-trades and ensure only approved products are being used on Site.

.3 Construction Schedule

.1 Submit schedule of construction in accordance with Section 01 33 00 - Submittal Procedures, prior to start of work, in coordination with scheduling requirements, including:

.1 Sequence of finish applications and allowances for curing times.

.2 Identification of finish types. See Table A in Section 3.4.1 of this document.

.3 Schedule and duration of proposed temporary ventilation if project is pursuing the building flush option for EQ3.2. If project is pursuing Indoor Air Quality testing instead, show 1 day necessary for testing on construction schedule after all interior finishes are complete and prior to any occupants and/or furniture moving in.

.4 Delivery schedules of manufactured materials which are anticipated to off-gas in timely manner, which will allow for airing of those materials prior to their scheduled installation.

.5 Indicate and schedule commissioning procedures and temporary usages of building mechanical systems, identifying types of filtration and schedule for filter replacement.

.4 IAQ Management Plan

.1 Submit Indoor Air Quality (IAQ) Management Plan to the Sustainable Buildings Coordinator prior to building being enclosed, for construction and preoccupancy phases of building. The plan should include a description of how measures listed in Part 3 EXECUTION 3.4 of this section will be incorporated into construction procedures. For the pre-occupancy building flush Path 1 or 2, contractor is to submit calculations for length of time required to flush the building with installed ventilation system (14,000ft^3 of outdoor air/ft^2 of building space is required). If supplemental fans will be used to speed up the flushing time, please include those in calculations and a diagram of where they will be placed.

.5 Erosion & Sedimentation Control Plan

.1 Submit an Erosion & Sedimentation Control Plan prior to construction commencing based on methods and procedures specified in Section 31 25 13- Erosion and Sediment Control.

.6 Construction Waste Management and Disposal

.1 Waste Recovery Workplan (see Section 01 74 21- Construction/Demolition Waste Management and Disposal) to be submitted within three weeks of construction start to Sustainable Buildings Coordinator.

.2 Waste Recovery Inventory Form (see Section 01 74 21 – Construction/Demolition Waste Management and Disposal) to be submitted monthly with back-up documentation throughout the project as well as a final summary to be submitted at the completion of the project.

.3 Documentation showing all landfill, salvage and recycling rates for all construction waste in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal (e.g. weigh-bills, invoices)

.4 List of all reused building elements including statements from suppliers/contractors stating salvaged or refurbished status of materials.

.7 LEED Letter Templates

.1 Templates will be provided to the Contractor (or appropriate signing authority) near completion of the project for them to sign, print, and return to the Sustainable Buildings Coordinator for the CaGBC LEED Submission.

.8 Chain-of-Custody Documentation for all FSC-Certified Wood

.1 All vendor invoices for permanently installed wood products (including at a minimum millwork, framing, flooring, sub-flooring, wood doors, and finishes) purchased by the project contractor and subcontractors will need to be submitted to the SBC. Each vendor invoice must conform to the following requirements:

.1 Each wood product (or aggregate value of identical wood products) must be identified on a line-item basis

.2 FSC products must be identified as such on a line-item basis

.3 The dollar value of each line item must be shown

.4 The vendor's COC certificate number must be shown on any invoice that includes FSC products.

.9 Additional LEED documentation to be provided to the Sustainable Buildings Coordinator throughout the project:

.1 Any documentation deemed necessary by the Sustainable Buildings Coordinator for the LEED submission. This can include, but is not limited to, photographs, narratives, explanations, and letters from manufacturers.

Part 3 EXECUTION

The following are a series of criteria that are required for compliance with LEED Green Building standards. The Sustainable Buildings Coordinator will work with the contractor to assist with compliance and offer guidance to completing the tasks. The following is a summary of topic areas covered under the LEED system:

3.1 LEED PROJECT SIGNAGE

.1 Contractor will provide signage indicating to all trades that the project is a LEED Registered project and identify which measures/ plans are in effect (i.e. the following but no limited to; Indoor Air Quality Management Plan, Construction Waste Management and Disposal, Erosion and Sedimentation Control Plan). Indicate that all trades on Site are to comply with the guidelines set forth in those credit requirements, and list a contact person on Site to contact for more information pertaining to LEED compliance on Site.

3.2 EROSION AND SEDIMENTATION CONTROL

.1 Follow methods and procedures specified in Section 31 25 13 – Erosion and Sediment Control and photograph measures taken.

3.3 REDUCING SITE DISTURBANCES

.1 When building is to be on previously undeveloped Site comply with following requirements:

.1 Avoid major alterations to sensitive topography, vegetation and wildlife habitat in areas indicated.

.2 Create traffic patterns that cause minimum Site disruptions, as per Consultant's approval.

.3 Limit all Site disturbance to the following parameters: 12m beyond the building perimeter, 3m beyond surface walkways, patios, surface parking, and utilities less than 300mm in diameter, 4.5m beyond primary roadways curbs and main utility branches, 7.5m beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields that require additional staging areas to limit compaction in the constructed area.

.2 Minimize disturbances to watershed using Site water management measures to ensure that watersheds and groundwater will be preserved.

3.4 GENERAL BUILDING DESIGN

.1 Green design facilitation is used on this project to support green design integration and the LEED certification process.

.1 Sustainable Buildings Coordinator/Green design facilitator provided by Prairie Architects.

3.5 INDOOR AIR QUALITY

.1 Construction IAQ Management Plan

.1 Develop and implement Indoor Air Quality (IAQ) Management Plan for construction and preoccupancy phases of building as follows:

.1 During construction: meet or exceed minimum requirements of SMACNA IAQ Guideline for Occupied Buildings under Construction.

.1 Protection of HVAC system during construction to control pollutant sources, and interrupt pathways for contamination (cover ducts).

.2 Scheduling/Sequencing of materials installation to ensure materials with potential for short-term off-gassing (e.g. paints, millwork, wood finishes) are installed prior to soft, absorptive materials (e.g. carpet, acoustic tiles).

.3 Pathway Interruption: Erect appropriate noise and dust barriers where demolition or construction procedures are to occur adjacent to occupied space.

.4 Source Control: Use only low or “zero” VOC products approved by SBC on project (allowable VOC levels are in section 3.6 below). All compoSite wood will be free of added urea-formaldehyde. Products should be sealed when not in use.

.5 Housekeeping: Maintain a cleanly Site.

.2 Protect stored on-Site or installed absorptive materials from moisture damage.

.3 Replace filtration media immediately prior to occupancy.

.1 Filtration media: in accordance with ASHRAE 52.2, Minimum Efficiency Reporting Value (MERV) of 8.

.4 Conduct building flush-out with new filtration media or indoor air quality testing after construction ends and prior to occupancy as per LEED Canada Reference Guide.

.2 Environmental Tobacco Smoke (ETS) Control

.1 Smoking will not be permitted in building.

3.6 GENERAL CONSTRUCTION MATERIALS/PRACTICES

.1 Materials and Resources

.1 Use uncontaminated demolition materials for fill and hardcore and/or granular base.

.2 Fill materials that are brought to Site from regional sources (800km by truck) are to be submitted to the Sustainable Buildings Coordinator with cost and extraction location in order for the materials to be included in MR5 Regional Materials.

.2 Construction Waste Management

.1 Follow recommendations and requirements of this projects construction, renovation and demolition (CRD) waste management plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 All projects will be targeting a 75% diversion of waste from landfills unless otherwise stated.

.3 All materials leaving the Site must be documented by weight. This includes waste produced and removed by individual trades.

.3 Durability

.1 Follow the Building Durability Plan and principles of CSA S478-95 or latest.

3.7 PAINTS, STAINS, AND VARNISHES

.1 Architectural paints and coatings applied to interior walls and ceilings must not exceed the volatile organic compound (VOC) content limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993 (See table below)

.2 Clear wood finishes, floor coatings, stains, primers, and shellacs applied to interior elements must not exceed the VOC content limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, rules in effect on January 1, 2004.

PRODUCT TYPE	REFERENCE STANDARD	VOC LIMIT (g/L MINUS WATER)
Interior Flat Coating or Primer	Green Seal GS-11, 1993	50
Interior Non-Flat Coating or Primer	Green Seal GS-11, 1993	150

Anti-Corrosive/Anti-Rust Paint	Green Seal GC-03, 2nd Edition, 1997	250
Clear Wood Finishes: Lacquer	SCAQMD Rule 1113, 2004	550
Clear Wood Finishes: Sanding Sealers	SCAQMD Rule 1113, 2004	350
Clear Wood Finishes: Varnish	SCAQMD Rule 1113, 2004	350
Clear Brushing Lacquer	SCAQMD Rule 1113, 2004	680
Floor Coatings	SCAQMD Rule 1113, 2004	100
Sealers and Undercoaters	SCAQMD Rule 1113, 2004	200
Shellac: Clear	SCAQMD Rule 1113, 2004	730
Shellac: Pigmented	SCAQMD Rule 1113, 2004	550
Stain	SCAQMD Rule 1113, 2004	250
Concrete-Curing Compounds	SCAQMD Rule 1113, 2004	350
Japans/Faux Finishing Coatings	SCAQMD Rule 1113, 2004	350
MagneSite Cement Coatings	SCAQMD Rule 1113, 2004	450
Pigmented Lacquer	SCAQMD Rule 1113, 2004	550
Waterproofing Sealers	SCAQMD Rule 1113, 2004	250
Waterproofing Concrete/Masonry Sealers	SCAQMD Rule 1113, 2004	400
Wood Preservatives	SCAQMD Rule 1113, 2004	350
Low-Solids Coatings	SCAQMD Rule 1113, 2004	120*
*Note: VOC levels for Low-Solids Coatings are measured in grams of VOC per litre of material, including water.		

.3 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed VOC content limit of 250 g/L established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997

COATING TYPE	(g/L) MINUS WATER
Gloss	250
Semi-Gloss	250

Flat	250

3.8 SEALANTS, ADHESIVES AND COMPOUNDS

.1 Use adhesive and sealant products that meet or exceed VOC limits established by SCAQMD Rule #1168.

ARCHITECTURAL APPLICATIONS	VOC LIMIT (g/L less water)	SPECIALTY APPLICATIONS	VOC LIMIT (g/L less water)
Indoor Carpet Adhesive	50	PVC Welding	510
Carpet Pad Adhesives	50	CPVC Welding	490
Wood Flooring Adhesives	100	ABS Welding	325
Rubber Floor Adhesives	60	Plastic Cement Welding	250
Subfloor Adhesives	50	Adhesive Primer for Plastic	550
Ceramic Tile Adhesives	65	Contact Adhesive	80
VCT & Asphalt Adhesives	50	Special Purpose Contact Adhesive	250
Drywall & Panel Adhesives	50	Structural Wood Member Adhesive	140
Cove Base Adhesives	50	Sheet Applied Rubber Lining Operations	850
Multipurpose Construction Adhesive	70	Top & Trim Adhesives	250
Structural Glazing Adhesives	100		

SUBSTRATE SPECIFIC APPLICATIONS	VOC LIMIT (g/L less water)	SEALANTS	VOC LIMIT (g/L less water)
Metal to Metal	30	Architectural	250
Plastic Foams	50	Nonmembrane Roof	300
Porous materials (except wood)	50	Roadway	250
Wood	30	Single-Ply roof membrane	450

Fibreglass	80	Other (include duct sealants)	420
SEALANT PRIMERS			
Architectural, nonporous	250		
Architectural, porous	775		
Other	750		

.2 Aerosol Adhesives must comply with Green Seal Standard for Commercial Adhesives GS-36 requirements in effect October 19, 2000.

AEROSOL ADHESIVES:	VOC WEIGHT (g/L MINUS WATER)
General Purpose mist spray	65% VOCs by weight
General Purpose web spray	55% VOCs by weight
Special purpose aerosol adhesives (all Types)	70% VOCs by weight

Schedule A: LEED Product Information Form

PRAIRIE ARCHITECTS INC.
Creating Sustainable Futures

LEED Product Information Form

GENERAL INFORMATION

Company Submitting:

Product Name:

Manufacturer:

Total Material Cost (no labour): $

*Please attach all required supporting documentation to this form

RECYCLED CONTENT

% Post-Consumer Recycled Content: %

% Post-Industrial/Pre-Consumer Recycled Content: %

Must provide documentation from manufacturer (product literature, letter, etc.) stating these numbers.

REGIONAL MATERIAL

Please indicate where the product is extracted from:

Please indicate where the product is manfuctured:

What is the distance from extraction site to manufacture site? km

Shipped by (circle one): RAIL TRUCK

What is the distance of shipment from manufacturere to project site? km

Shipped by (circle one): RAIL TRUCK

To Qualify: If shipped by rail/truck the distance must be less than 2400/800 km

If the product meets these requirements, provide documentation showing travel distance and proof of rail transport if applicable.

LOW-EMITTING MATERIALS

Is this material an adhesive, sealant, paint or coating? YES NO

If yes, then what is the VOC level in grams/litre? g/L

Provide documentation from the manufacturer (MSDS, product literature, etc) stating VOC level.

Is this material a composite wood product? YES NO

If yes, then does it contain added urea-formaldehyde? YES NO

Provide documentation from the manufacturer stating urea-formaldehyde status.

RESOURCE REUSE

Is this product a salvaged material? YES NO

If yes, where is the product from?

Provide statement from provider of material that material was salvaged.

RAPIDLY RENEWABLE MATERIALS

Is this product made with rapidly renewable materials (harvested within a 10-year cycle)?

YES NO

If yes, please provide documentation stating rapidly renewable status.

FSC CERTIFIED WOOD

Is this product made with FSC-certified (Forest Stewardship Council) wood?

YES NO

If yes, please indicate the Chain-of-Custody (CoC) certificate number:

Provide documentation (the invoice from the supplier demonstrating FSC certification was purchased for the specific project) including the chain-of-custody certificate number and any FSC-Mix %'s.

If you have any questions regarding this requested information, please contact the LEED coordinator, Alara Matsyk alara@prairiearchitects.ca

Schedule B: Concrete Mix Form*

Mix No.	Base Mix Concrete Design Strength @28d (MPa)	Air-Entrained (Y/N)	Portland Cement Used* (kg/m3 of concrete)	Cost of Concrete ($/m3 of concrete)	Input Either**		Volume of Mix (m3 of concrete)
					% Cementitious materials in Concrete Mix (% by weight)	Cost of all cementitious materials ($/m3 of concrete)	

* electronic version to be provided for completion by concrete trade

Schedule C: LEED Project Scorecard

Refer to the attached LEED checklist. The LEED Checklist is showing targeted credits at the time of tender and has been provided as an overview of the project goals for reference only. Credits indicated in the Yes or Maybe column should be interpreted as credits being targeted on this project and information for inclusion of these credits has been included in Contract Documents. Information contained therein is non-binding, and is subject to change as the project progresses.

LEED Canada-NC 2009 Project Checklist

Seven Oaks Pool Addition

Yes	?	No			
56	7	47	**Project Totals** (pre-certification estimates)		110 Possible Points
			Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80 points and above		
Yes	?	No			
12	1	13	**Sustainable Sites**		26 Points
✓			Prereq 1	**Construction Activity Pollution Prevention**	Required
1			Credit 1	**Site Selection**	1
3		2	Credit 2	**Development Density and Community Connectivity**	3, 5
		1	Credit 3	**Brownfield Redevelopment**	1
6			Credit 4.1	**Alternative Transportation: Public Transportation Access**	3, 6
1			Credit 4.2	**Alternative Transportation: Bicycle Storage & Changing Rooms**	1
		3	Credit 4.3	**Alternative Transportation: Low-Emitting & Fuel-Efficient Vehicles**	3
		2	Credit 4.4	**Alternative Transportation: Parking Capacity**	2
		1	Credit 5.1	**Site Development: Protect and Restore habitat**	1
		1	Credit 5.2	**Site Development: Maximize Open Space**	1
	1		Credit 6.1	**Stormwater Design: Quantity Control**	1
		1	Credit 6.2	**Stormwater Design: Quality Control**	1
		1	Credit 7.1	**Heat Island Effect: Non-Roof**	1
		1	Credit 7.2	**Heat Island Effect: Roof**	1
1			Credit 8	**Light Pollution Reduction**	1
Yes	?	No			
8	0	2	**Water Efficiency**		10 Points
✓			Prereq 1	**Water Use Reduction**	Required
4			Credit 1	**Water Efficient Landscaping**	2, 4
		2	Credit 2	**Innovative Wastewater Technologies**	2
4			Credit 3	**Water Use Reduction**	2 - 4
Yes	?	No			
12	0	23	**Energy & Atmosphere**		35 Points
✓			Prereq 1	**Fundamental Commissioning of Building Energy Systems**	Required
✓			Prereq 2	**Minimum Energy Performance**	Required
✓			Prereq 3	**Fundamental Refrigerant Management**	Required
8		11	Credit 1	**Optimize Energy Performance**	1 - 19
		7	Credit 2	**On-Site Renewable Energy**	1 - 7
2			Credit 3	**Enhanced Commissioning**	2
2			Credit 4	**Enhanced Refrigerant Management**	2
		3	Credit 5	**Measurement and Verification**	3
		2	Credit 6	**Green Power**	2

Yes	?	No			
5	2	7	**Materials & Resources**		14 Points
✓			Prereq 1	**Storage and Collection of Recyclables**	Required
		3	Credit 1.1	**Building Reuse: Maintain Existing Walls, Floors, and Roof**	1 - 3
		1	Credit 1.2	**Building Reuse: Maintain Interior Non-Structural Elements**	1
2			Credit 2	**Construction Waste Management**	1 - 2
		2	Credit 3	**Materials Reuse**	1 - 2
1	1		Credit 4	**Recycled Content**	1 - 2
1	1		Credit 5	**Regional Materials**	1 - 2
		1	Credit 6	**Rapidly Renewable Materials**	1
1			Credit 7	**Certified Wood**	1

Yes	?	No			
11	2	2	**Indoor Environmental Quality**		15 Points
✓			Prereq 1	**Minimum Indoor Air Quality Performance**	Required
✓			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
1			Credit 1	**Outdoor Air Delivery Monitoring**	1
		1	Credit 2	**Increased Ventilation**	1
1			Credit 3.1	**Construction IAQ Management Plan: During Construction**	1
	1		Credit 3.2	**Construction IAQ Management Plan: Before Occupancy**	1
1			Credit 4.1	**Low-Emitting Materials: Adhesives and Sealants**	1
1			Credit 4.2	**Low-Emitting Materials: Paints and Coatings**	1
1			Credit 4.3	**Low-Emitting Materials: Flooring Systems**	1
1			Credit 4.4	**Low-Emitting Materials: Composite Wood and Agrifibre Products**	1
		1	Credit 5	**Indoor Chemical and Pollutant Source Control**	1
1			Credit 6.1	**Controllability of System: Lighting**	1
1			Credit 6.2	**Controllability of System: Thermal Comfort**	1
1			Credit 7.1	**Thermal Comfort: Design**	1
1			Credit 7.2	**Thermal Comfort: Verification**	1
	1		Credit 8.1	**Daylight and Views: Daylight**	1
1			Credit 8.2	**Daylight and Views: Views**	1

Yes	?	No			
4	2	0	**Innovation in Design**		6 Points
1			Credit 1.1	**Innovation in Design**	1
1			Credit 1.2	**Innovation in Design**	1
1			Credit 1.3	**Innovation in Design**	1
	1		Credit 1.4	**Innovation in Design**	1
	1		Credit 1.5	**Innovation in Design**	1
1			Credit 2	**LEED® Accredited Professional**	1

Yes	?	No			
4	0	0	**Regional Priority**		4 Points
1			Credit 1	**Durable Building**	1
1			Credit 2.1	**Regional Priority Credit**	1
1			Credit 2.2	**Regional Priority Credit**	1
1			Credit 2.3	**Regional Priority Credit**	1

Schedule D: LEED Credit Responsibilities Chart

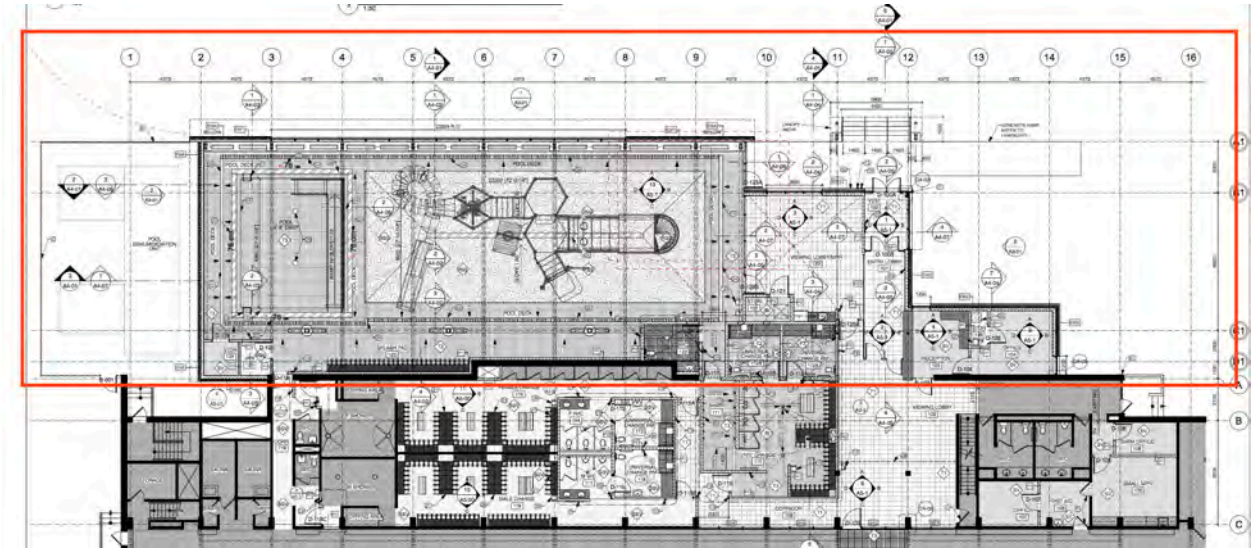
prairie architects inc.

LEED Project Responsibilities

P - Primary Responsibility
S - Secondary Responsibility

	LEED Credit or Prerequisite	Client/Owner/Developer	LEED Consultant	Architect	Mechanical Engineer	Electrical Engineer	Civil Engineer	Energy Modeler	Energy & Daylight Specialist	Landscape Architect	Contractor	Commissioning Authority	Building Science Professional	Pre-Design	Design/Construction Documents	Construction	Use and Operation
Sustainable Sites	SSpre1 Construction Activity Pollution Prevention		S								P						
	SSc1 Site Selection (1)	P	S														
	SSc2 Development Density & Community Connectivity (3,5)	S	P	S													
	SSc3 Brownfield Redevelopment (1)	S	P	S													
	SSc4.1 Alternative Transportation: Public Transportation Access (3,6)	S	P														
	SSc4.2 Alternative Transportation: Bicycle Storage & Change Rooms (1)	S	S	P						S							
	SSc4.3 Alternative Transportation: Low-Emitting & Fuel Efficient Vehicles (3)	S	P	S		S											
	SSc4.4 Alternative Transportation: Parking Capacity (2)	P	S	S													
	SSc5.1 Site Development: Protect or Restore Habitat (1)	S	S	S						P	P						
	SSc5.2 Site Development: Maximize Open Space (1)	S	S	S						P							
	SSc6.1 Stormwater Design: Quantity Control (1)		S		S		P			S							
	SSc6.2 Stormwater Design: Quality Control (1)		S		S		P			S							
	SSc7.1 Heat Island Effect: Non Roof (1)		S	S						P							
	SSc7.2 Heat Island Effect: Roof (1)		S	P													
	SSc8 Light Pollution Reduction (1)		S			P											
Water Efficiency	WEpre1 Water Use Reduction		S		P												
	WEc1 Water Efficient Landscaping (2,4)		S		S					P							
	WEc2 Innovative Wastewater Technologies (2)		S		P												
	WEc3 Water Use Reduction (2-4)		S		P												
Energy & Atmosphere	EApre1 Fundamental Commissioning of Building Energy Systems	S	S								S	P					
	EApre2 Minimum Energy Performance		S	S	S	S		P	S								
	EApre3 Fundamental Refrigerant Management		S		P												
	EAc1 Optimize Energy Performance (1-19)		S	S	S	S		P	S								
	EAc2 On-Site Renewable Energy (1-7)		S		S	P		S	S								
	EAc3 Enhanced Commissioning (2)	S	S								S	P					
	EAc4 Enhanced Refrigerant Management (2)		S		P												
	EAc5 Measurement & Verification (3)	S	S		P	S											
	EAc6 Green Power (2)	S	P					S									
Materials & Resources	MRpre1 Storage and Collection of Recyclables	P	S	S													
	MRc1.1 Building Reuse: Maintain Existing Walls, Floors, and Roof (1-3)	S	S	P													
	MRc1.2 Building Reuse: Maintain Interior Non-Structural Elements (1)	S	S	P													
	MRc2.1-2.2 Construction Waste Management (1-2)		S								P						
	MRc3 Materials Reuse (1-2)		S	P							S						
	MRc4 Recycled Content (1-2)		S	P							S						
	MRc5 Regional Materials (1-2)		S	P							S						
	MRc6 Rapidly Renewable Materials (1)		S	P							S						
	MRc7 Certified Wood (1)		S	P							S						
Indoor Environmental Quality	IEQpre1 Minimum IAQ Performance		S		P												
	IEQpre2 Environmental Tobacco Smoke Control	P	S	S													
	IEQc1 Outdoor Air Delivery Monitoring (1)		S		P												
	IEQc2 Increased Ventilation (1)		S		P												
	IEQc3.1 Construction IAQ Management Plan: During Construction (1)		S								P						
	IEQc3.2 Construction IAQ Management Plan: Before Occupancy (1)		S								P						
	IEQc4.1 Low-Emitting Materials: Adhesives and Sealants (1)		S	P							S						
	IEQc4.2 Low-Emitting Materials: Paints and Coatings (1)		S	P							S						
	IEQc4.3 Low-Emitting Materials: Flooring Systems (1)		S	P							S						
	IEQc4.4 Low-Emitting Materials: Composite Wood & Agrifibre Products (1)		S	P							S						
	IEQc5 Indoor Chemical and Pollutant Source Control (1)		S	P	S												
	IEQc6.1 Controllability of Systems: Lighting (1)		S			P											
	IEQc6.2 Controllability of Systems: Thermal Comfort (1)		S	S	P												
	IEQc7.1 Thermal Comfort: Design (1)		S		P												
	IEQc7.2 Thermal Comfort: Verification (1)	S	P		S												
	IEQc8.1 Daylight and Views: Daylight 75% of Spaces (1)		S	P													
	IEQc8.2 Daylight and Views: Views 90% of Spaces (1)		S	P													
Innovation & Regional Priority	IDc1.1-1.5 Innovation in Design (5)	S	P														
	IDc2 LEED Accredited Professional (1)		P														
	RPc1 Durable Building (1)		S	S								P					
	RPc2 Regional Priority Credit (1-3)		P														

Schedule E: LEED Project Boundary



END OF SECTION

Part 1 GENERAL

1.1 RELATED WORK

.1 Division 3 - Concrete
.2 Section 06 10 00 – Rough Carpentry

1.2 REFERENCE STANDARDS (latest editions)

.1 Canadian Standards Association (CSA)
.2 CSA-0121 – Douglas Fir Plywood
.3 Master Painter's Institute (MPI) Architectural Painting Specification Manual
  .1 MPI Green Performance Standard GPS 1-08
.4 NLGA Standard Grading Rules for Canadian Lumber, latest edition and supplements

1.3 INSTALLATION TIMING

.1 Sign shall be complete and installed within 8 weeks of Contract award.

1.4 MAINTENANCE

.1 Maintain sign in good condition until Date of Substantial Performance.
.2 Report any damage to the sign to the Contract Administrator immediately, whether by own forces or by vandalism.
.3 After Substantial Performance, turn the sign face panels over to The City. Remove the superstructure from the Site; fill holes and finish grade to match adjacent.

Part 2 PRODUCTS

2.1 LUMBER MATERIALS

.1 Softwood, S4S, moisture content not greater than 19% at time of installation, in accordance with NLGA Standard Grading Rules for Canadian Lumber, latest edition and supplements.
.2 Framing, blocking: use S4S materials, SPF species, NLGA Construction Grade, No. 2 or better.
.2 Posts: pressure treated 89 x 89 posts x height required (3 minimum)
.3 All lumber shall be pressure preservative treated.

2.2 PANEL MATERIAL

.1 Douglas Fir Plywood panels to CSA 0121M: Medium density, overlaid one side, 1220 high x 2440 wide.

2.3 FASTENINGS AND HARDWARE

.1 Fastenings and hardware shall comply with Part 9 of MBC as supplemented by following requirements, except where specific type is indicated.
.2 Nails, spikes and staples to CSA B111, minimum requirements to MBC 9.23.3 except:
  .1 Use common spiral nails and spiral spikes, except where indicated otherwise.
  .2 Use hot-dip galvanized finish steel to CSA G164-M1981 for exterior Work, and for pressure-preservative treated lumber, except where indicated otherwise.
  .3 Use primer paint finish where installed on Site-exposed surfaces.
  .4 Bolts to be minimum 13mm (1/2") unless noted otherwise.

2.4 PAINTS AND PRESERVATIVES

.1 Surface applied wood preservative: Copper napthenate or pentachlorophenol base, water repellent.
.2 Paint background on sign shall be premium quality, 100% acrylic latex, flat sheen. 1 full coat exterior primer and 1 full coat exterior latex minimum, in accordance with Master Painter's Institute (MPI) Architectural Painting Specification Manual, Exterior Paint System 6.2A. Paint and primer shall comply with MPI Green Performance Standard GPS-1-08.
.3 Text, images, and logos shall be exterior grade vinyl: Signcal, or 3M Scotchcal.

2.5 GRAPHIC FILE

.1 The Contract Administrator will provide an electronic file with standardized font styles, font sizes, standardized colours, logos, and general sign layout, to the Contractor for use by the sign painting subcontractor.

2.6 SIGN PAINTING/PRINTING

.1 All sign painting and printing shall meet The City's graphic standards and shall be by a sign manufacturer experienced with The City's graphic standards.
.2 Acceptable sign manufacturers:
  .1 Belle-Fosh Signs: 60 Park Lane Avenue, Winnipeg, MB.
  .2 Contempra Signs: 407 McDermot Avenue, Winnipeg, MB.
  .3 Insight Architectural Signage: 450 Brooklyn Street, Winnipeg, MB.

Part 3 EXECUTION

3.1 WOOD FRAME CONSTRUCTION

.1 Comply with requirements of M.B.C.
.2 Construct of continuous pieces as much as possible, and to sizes as indicated on drawings and details.
.3 Treat all cut surfaces of wood material with wood preservative before assembly.
.4 Unless otherwise detailed, auger 3 equally spaced, 200 (8") diameter x 1830 (6') deep holes below finished grade. Set posts centered in holes, plumb and level, and to a depth of 1220 (4') below finished grade and brace temporarily. Place concrete into holes carefully around sides of posts, ensuring that concrete gets right to the bottom of the hole. Compact and slope top of concrete away from posts at grade.
.5 This sign and it's support posts may be integral with construction hoarding along the front of the property, if the support posts have the same pile support as described above, and upon acceptance by the Contract Administrator and The City.

3.2 SIGN DETAILS

.1 Locate sign in a prominent location facing prime street frontage, but with sufficient setback to minimize vandalism, as coordinated with the Contract Administrator and City. Sign may be relocated during construction to accommodate the Work, if need be.
.2 This sign shall consist of two panels, 1220 high x 2440 wide, placed one above the other with a 50 gap in between and with blocking between the posts for full support. The bottom edge of the sign shall be a minimum of 1220 above the finished grade.
.2 A sample electronic file showing artwork and layout will follow from the Contract Administrator and the sign shall generally consist of:
Top panel:
- Project name: "**SEVEN OAKS POOL RENOVATION AND ADDITION**"
- Name (and logo) of the City of Winnipeg and any other project funders
- An illustration of the project (from the Contract Administrator).

Bottom panel:

- Logos of the Contract Administrator to be as listed
- Logo of the Contractor.

.3 Locate the final sign to The City's satisfaction.

.4 Upon completion of project, remove sign and cut off support posts flush to top of pile below grade. Restore finished grade to match adjacent.

3.3 VERIFICATION OF GRAPHIC FILE/TEXT PROOF

.1 Prior to printing of sign, prepare a proof showing graphics and layout, and submit to Contract Administrator and The City for review.

.2 Do not print the final sign until after review and acceptance by Contract Administrator and The City.

3.4 SIGN REMOVAL

.1 Upon completion of the project or when requested by The City, remove the sign, posts, and foundations, in their entirety.

.2 Remediate grade to match surrounding conditions.

.3 Turn sign face panels over to The City.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Environmental Procedures

.2 Section 01 47 15 - LEED Requirements

.3 Section 01 52 00 - Construction Facilities

.4 Section 01 56 00 - Temporary Barriers and Enclosures

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities and controls, as required to execute the Work expeditiously.

.2 Remove such Work from the Site, after temporary use is complete.

1.3 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep any excavations and the Site free from standing water. Also refer to Section 31 25 13.

1.4 WATER SUPPLY

.1 The Contractor shall arrange for any required connections with appropriate utility companies, and pay for all related costs for temporary installation, maintenance and removal, including for temporary water supply when applicable.

1.5 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside the building must be vented directly outside or be of a non-flameless type. Solid fuel salamanders are not permitted.

.3 In enclosed areas, provide temporary heat and ventilation as required to:

.1 Facilitate progress of the Work.

.2 Protect the Work and any products against damp and cold.

.3 Prevent moisture condensation on surfaces.

.4 Provide ambient temperatures and normal humidity levels for storage, installation, and curing of materials.

.5 Provide adequate ventilation to meet the health regulations for a safe Work environment.

.4 Maintain temperatures to 10 degrees C minimum, in areas where construction is in progress.

.5 Ventilating:

.1 Prevent accumulation of dust, fumes, mist, vapour or gas, in occupied areas, during construction.

.2 Provide ventilation and exhaust system to prevent harmful accumulation of hazardous substances into any occupied areas and continue the operation of this system until any contaminants are removed.

.3 Dispose of exhaust in a manner that will not result in harmful exposure to any persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.6 The existing permanent heating system of the building may be used if the permission of The City is given in writing, however, the Contractor shall be responsible for any damage to this heating system, caused by construction processes. If the permanent building heating system is used during construction, after Substantial Performance, the Contractor shall replace any filters and clean any ducting, as required to leave this system in as good or better condition that it was before construction began.

.7 New building heating systems shall generally not be used as temporary heat during construction, since the warranties for such new systems will begin on the Date of Substantial Performance.

.8 Maintain strict supervision of temporary heating operation and ventilating equipment during construction, to:

.1 Conform to applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent gas-fired combustion units directly to the outside.

.9 The Contractor shall be responsible for any damage to the Work, as a result of not providing sufficient temporary heat and protection during construction.

1.6 TEMPORARY POWER AND LIGHT

.1 The Contractor shall provide and pay for temporary power during construction as required for temporary lighting and operation of power tools, to a maximum supply of 230 volts, 30 amps.

.2 The Contractor shall arrange for any required connections with appropriate utility companies, and pay for all related costs for temporary installation, maintenance and removal.

.3 Provide and maintain temporary lighting throughout and ensure that the level of illumination on all floors and stairs is not less than 162 lx.

.4 New permanent building power and lighting systems may be used during construction with the approval of the Contract Administrator, provided that product warranties are not affected. If used, the Contractor shall make good on any damage to these systems, which are caused by the construction. Lamps, which have been used for more than 3 months during construction, shall be replaced with new at Substantial Performance.

1.7 TEMPORARY COMMUNICATION FACILITIES

.1 The Contractor shall provide and pay for temporary telephone/fax hook up, cell phones, and equipment as required for their own use and Contract Administrator use during construction.

1.8 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during construction, as required by any applicable insurance companies, Codes, regulations, and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on Site.

1.9 SECURITY

.1 The Contractor shall ensure that the Site is completely secure, locked, and not accessible to the public, during nights, weekends, and non-Work periods, during construction.

.2 Provide plywood covers to all windows after installation and as necessary, prior to Substantial Performance.

END OF SECTION

PART 1 General

1.1 SECTION INCLUDES

.1 Construction aids

.2 Office and sheds

.3 Construction Parking

.4 Project identification

1.2 RELATED SECTIONS

.1 Section 01 56 00 - Temporary Barriers and Enclosures

1.3 REFERENCES

.1 Canadian Standards Association (CSA), latest edition.

.1 CAN3-A23.1/A23.2, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete

.2 CSA-0121-M, Douglas Fir Plywood

.3 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment

1.4 INSTALLATION AND REMOVAL

.1 The Contractor shall submit a site plan indicating proposed locations of: construction area(s) to be separated by temporary fencing, construction trailers, construction access roads, and type of construction fencing.

.2 Identify areas with special treatment to prevent the tracking of mud onto nearby streets.

.3 Indicate the location of supplemental or other staging areas.

.4 Provide the required construction facilities in order to execute the Work expeditiously.

.5 Remove such Work from the Site, after use is complete.

1.5 SCAFFOLDING

.1 Provide and maintain scaffolding as required for the Work.

1.6 SITE STORAGE/LOADING

.1 Confine all construction operations only to designated construction areas and coordinate products to be delivered and stored on the Site, in an organized fashion.

.2 Do not load any part of the Work with a weight or a force that may endanger the Work.

1.7 CONSTRUCTION PARKING

.1 Construction parking may be permitted on the Site only when: it is feasible, it does not disrupt performance of the Work, and if approved by The City. The Contractor shall be repair any damage to the Site, caused by this use.

.2 Provide and maintain adequate and controlled construction access to the Site.

.3 Provide snow removal on the Site during construction, when applicable.

1.8 OFFICES

.1 Provide a heated, Site trailer for Contractor use and Site meeting use.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain lockable, weatherproof sheds for storage of tools, equipment and materials, in a clean and orderly condition.

.2 Locate materials and products on Site in a manner to cause the least interference with construction activities.

1.10 SANITARY FACILITIES

.1 Provide proper sanitary facilities for persons on Site, in accordance with all applicable regulations.

.2 Post all applicable health notices and take any precautions as required by local health authorities. Keep the Site and premises in a sanitary condition at all times.

.3 Once the permanent building water and drain connections are connected, cover and protect these connections after they have been tested. These permanent facilities may generally not be used as the sanitary facilities during construction, without written approval from the Contract Administrator.

1.11 CONSTRUCTION SIGNAGE

.1 Other than the designated project signage and construction safety signage, miscellaneous signage and advertisements are not permitted to be posted on the Site without the consent of the Contract Administrator.

1.12 MOBILIZATION AREA

.1 When applicable, coordinate with local authorities having jurisdiction and pay temporary use or closure of adjacent sidewalks, lanes, public right-of-ways, or private lands, as required for the execution of the Work.

END OF SECTION

PART 1 GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB), latest edition.

.1 CGSB 1.59, Alkyd Exterior Gloss Enamel

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

.2 Canadian Standards Association (CSA International), latest edition

.1 CSA-O121-M, Douglas Fir Plywood

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary barriers and enclosures, as required to execute the Work expeditiously.

.2 Remove all such Work from the Site, after use is complete.

1.3 DUST TIGHT SCREENS

.1 Provide dust tight screens to help localize any dust-generating activities, for the protection of workers, the public, and any finished areas.

.2 Maintain and relocate such protection as necessary during construction.

1.4 ACCESS

.1 Provide and maintain safe access and circulation on public roads/sidewalks and on construction roads/walkways, as required during construction.

.2 If portion(s) of the Site or building are to be regularly occupied during construction, provide a clearly labeled, defined, and secure barrier between all occupied areas and all construction areas, to help restrict noise, dust, and access.

1.5 FIRE ROUTES

.1 Maintain proper access to the Site/building for emergency vehicles as well as proper egress/exiting out of the building.

1.6 PROTECTION OF BUILDING FINISHES

.1 Protect all completed and partially completed building finishes and equipment during the Work, with the use of screens, covers, hoardings, and other materials. The Contractor shall be responsible for any damage incurred, due to the lack of improper protection provided.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Product quality, availability, storage, handling, protection, and transportation

.2 Manufacturer's instructions

.3 Quality of Work

.4 Existing facilities

1.2 RELATED SECTIONS

.1 Section 01 42 00 - References

.2 Section 01 45 00 - Quality Control

1.3 REFERENCE STANDARDS

.1 Conform to all applicable standards listed in Section 01 42 00, latest edition.

.2 If the conformance of any product or system is questionable relative to these standards, the Contract Administrator reserves the right to have such products or systems verified or tested to prove or disprove their conformance.

.3 The cost for such testing may be paid by The City in the event of conformance and by the Contractor in the event of non-conformance.

1.4 QUALITY

.1 Products, materials, equipment and articles (referred to as “Products”) incorporated in the Work shall be new and not damaged or defective, and of the best quality (conforming to the Contract Documents) for the purpose intended. Upon request, the Contractor shall furnish evidence as to the type, source, and quality of Products to be supplied.

.2 Defective products shall be rejected and replaced prior to Total Completion of the Work. Removal and replacement of any defective products is at the Contractor’s expense, including any related delays.

.3 Should a dispute arise as to the quality or fitness of any product, the Contract Administrator will evaluate the information provided and make a fair ruling relative to the requirements of the Contract Documents.

.4 The Contractor shall maintain a uniformity of manufacture and quality for each alike ‘product’, throughout the building.

.5 Permanent labels, trademarks, and nameplates, on products are generally not acceptable in prominent locations, except when required for operation or when located in Service rooms.

1.5 AVAILABILITY

.1 Immediately upon signing the Construction Contract, the Contractor shall review all product delivery requirements and anticipate foreseeable delays in the supply of any

products. If such delays are foreseeable, notify the Contract Administrator immediately, in order that substitutions or other remedial actions may be considered in ample time, to prevent delays in the Work.

.2 In the event of failure to notify the Contract Administrator at the commencement of Work of such potential delay, and should this subsequently cause a delay in the Work, the Contract Administrator reserves the right to substitute a more readily available product of similar quality/character, at no increase in Contract Price or Contract Time.

1.6 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in a manner to prevent damage, deterioration, and soiling, in accordance with each manufacturer's instructions.

.2 Store packaged or bundled products in original, undamaged packaging with the manufacturer's labels and instructions intact. Do not remove products from packaging or bundling, until required in the Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 When used for grout or mortar materials, keep sand clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace any damaged products at own expense and to the satisfaction of the Contract Administrator.

.9 Touch-up any damaged factory finishes to the Contract Administrator’s satisfaction or replace immediately. Use factory touch-up materials to match to the original manufacturer. Do not paint over name-plates.

1.7 TRANSPORTATION

.1 Pay for all transportation costs of products required in the Work, including any transportation costs arranged with and furnished by The City, of such products.

1.8 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise specified, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from each manufacturer.

.2 Notify the Contract Administrator of any conflict between the specifications and the manufacturer's instructions, in writing, so the Contract Administrator may review and establish a course of action.

.3 Improper installation or erection of products due to non-compliance with these requirements shall mean removal and replacement of these products, at no increase in Contract Price or Contract Time.

1.9 QUALITY OF WORK

.1 Ensure that the quality of the Work is of the highest standard and that workers are experienced and skilled in their respective duties. Immediately notify the Contract Administrator if and when conditions are impractical to produce the required results.

.2 Do not employ anyone unskilled in their respective duties. The Contractor shall dimiss from the site any workers deemed to be incompetent or careless.

.3 If the standard or fitness level of the quality of the Work are disputed, the Contract Administrator shall make a final judgement, relative to the Contract Documents.

1.10 CO-ORDINATION

.1 Obtain the cooperation of all workers in the Work; maintain efficient supervision to ensure this.

.2 Be responsible for the coordination and placement of openings, sleeves and accessories.

1.11 CONCEALMENT

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls, and ceilings, except where indicated otherwise. Advise the Contract Administrator of any potential conflicts, prior to the construction of such Work.

1.12 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of the Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Remedial work shall be done by specialists familiar with the products affected and shall be done in a manner, which causes no damage or risk to any other part of the Work.

1.13 LOCATION OF FIXTURES

.1 Carefully coordinate the location of fixtures, outlets, and mechanical/electrical items to the parts of the Work that they impact. Immediately inform the Contract Administrator of any conflicting conditions.

1.14 FASTENINGS

.1 Unless otherwise noted, provide metal fastenings/accessories to match the texture, colour, and finish of related Products.

.2 Use non-corrosive hot dip galvanized steel fasteners/anchors for securing exterior Work, unless stainless steel or other material are specified. Prevent electrolytic action between dissimilar metals and materials.

.3 Space anchors within individual load limits or shear capacities and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.4 Keep exposed fastenings to a minimum, space evenly, and install neatly.

.5 Fastenings which cause spalling or cracking of the material to which they are anchored to, are not acceptable.

1.15 FASTENINGS - EQUIPMENT

.1 Use fasteners of standard commercial sizes and patterns, suitable for the material and the finish.

.2 In service areas, hexagon head fasteners are permitted, unless otherwise specified. Use No. 316 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond the nut.

.4 Use plain type washers on equipment, sheet metal, and soft gasket lock-type washers, where vibrations may occur. Use resilient washers with stainless steel.

1.16 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of any part of building. Do not cut, drill, or sleeve any load-bearing structural member, unless specifically indicated, without written approval of the Contract Administrator.

1.17 EXISTING UTILITIES

.1 Protect, relocate, or maintain all existing active services and utilities, as required for the Work.

.2 When breaking into or connecting to existing services or utilities, execute this Work at non-peak times as coordinated with the local authorities having jurisdiction, and with The City, to provide minimal disturbance to the Work, to building occupants, and to pedestrian and vehicular traffic. Cap off service lines in an appropriate manner. Stake and record the locations of all permanently capped services accurately and promptly on the Project Record set.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Existing survey control points, property lines, and property limits.

1.2 QUALIFICATIONS OF SURVEYOR

.1 A qualified, registered land surveyor, who is licensed to practice in the province of the Place of Work.

1.3 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on the drawings.

.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Contract Administrator.

.4 Report to Contract Administrator when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

.1 Establish two permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill and topsoil placement and landscaping features.

.4 Stake slopes and berms.

.5 Establish pipe invert elevations.

.6 Stake batter boards for foundations.

.7 Establish foundation column locations and floor elevations.

.8 Establish lines and levels for mechanical and electrical work.

1.5 EXISTING SERVICES

.1 Before commencing the Work, establish location and extent of service lines in area of Work and notify Contract Administrator of findings.

.2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Contract Administrator.

1.6 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Contract Administrator of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Contract Administrator.

1.7 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of the Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

1.8 SUBMITTALS

.1 Submit name and address of Surveyor to Contract Administrator. On request of Contract Administrator, submit documentation to verify accuracy of field engineering work.

.2 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.9 SUBSURFACE CONDITIONS

.1 Promptly notify Contract Administrator in writing if subsurface conditions at the Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Contract Administrator determine that conditions do differ materially, instructions will be issued for changes in the Work as provided in Changes and Change Orders.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 All related cutting and patching as required for completion of the Work.

1.2 RELATED REQUIREMENTS

.1 Section 01 60 00.
.2 Coordinate any cutting and patching required by Work in other Sections.

1.3 SUBMITTALS

.1 In advance of cutting or alteration, submit written requests to Contract Administrator which affect:
  .1 Structural integrity of any element of the Work.
  .2 Exposed and moisture-resistant elements.
  .3 Efficiency, maintenance, or safety of any operational element.
  .4 Visual qualities of any exposed elements.
  .5 Work by The City or others.

.2 In written requests, include:
  .1 Identification of this project by name and address.
  .2 Location and description of affected work.
  .3 Statement of necessity for cutting or alteration.
  .4 Description of proposed work and products to be used.
  .5 Alternatives to cutting and patching.
  .6 Effect of work on The City and/or others.
  .7 Written permission of affected others.
  .8 Date and time that work will be executed.

Part 3 EXECUTION

3.1 GENERAL

.1 Execute cutting, fitting, and patching to complete the Work.
.2 Fit the several parts together, to integrate with other work.
.3 Uncover work to install ill-timed work.
.4 Remove and replace defective and non-conforming work.
.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical items.

3.2 INSPECTION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting & patching.
.2 After uncovering, inspect conditions affecting performance of work.
.3 Beginning of cutting or patching means acceptance of existing conditions.

3.3 PREPARATION

.1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
.2 Provide protection from elements for areas that may be exposed by uncovering work; maintain excavations free of water.

3.4 PERFORMANCE

.1 Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.

.2 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.3 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed without prior approval.

.4 Restore the Work with new products, in accordance with requirements of Contract Documents.

.5 Fit the Work smoke tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.6 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated material, full thickness of the construction element.

.7 Unless otherwise noted, refinish surfaces to match adjacent finishes: For continuous surfaces, refinish to nearest intersection; for an assembly, refinish the entire unit.

.8 Fit new materials to the existing conditions - jacking up, straightening or leveling of elements will not be permitted. Raising of floor or beam levels will be permitted for short periods of time and only to raise a member to allow the final level to be that of the existing.

.9 The existing building may generally not be level or plumb and the Contractor shall verify and make allowances to fit the Work discretely to the existing building.

END OF SECTION

Part 1 GENERAL

1.1 PROJECT CLEANLINESS

.1 Maintain the Work in tidy condition, free from accumulation of waste products and debris, as related to this Contract.

.2 Remove waste materials from the Site at regularly scheduled times, recycle, and dispose of properly as specified. Do not burn waste materials on site.

.3 Clear snow and ice to permit access to the Site and the Work; pile snow in designated areas only, as approved by The City.

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

.5 Provide on-site dump containers for the collection of waste materials and debris. Collect waste materials at the end of each working day and schedule regular pick-ups.

.6 Provide and use clearly-marked separate bins for recycling. Refer to Section 01 74 21.

.7 Clean interior areas prior to start of finishing work; maintain these areas to be free of dust and other contaminants during finishing operations.

.8 Store volatile or hazardous waste in specially-marked, covered metal containers, and remove from the premises at the end of each working day.

.9 Provide adequate ventilation during the use of volatile or noxious substances. The use of permanent building ventilation systems is not permitted for this purpose.

.10 Use only cleaning materials recommended by each manufacturer of the product to be cleaned, and as recommended by the cleaning product manufacturer.

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

.12 Replace ventilation and air conditioning filters on permanent building systems, if these systems were operational during construction.

1.2 FINAL CLEANING

.1 Prior to Substantial Performance, remove any surplus waste, products, tools, machinery, and equipment not required for performance of the remaining Work.

.2 Remove product stickers; clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and exposed mechanical and electrical fixtures. Replace broken, scratched, or disfigured glass.

.3 Remove stains, spots, marks and dirt from all decorative finishes including electrical and mechanical fixtures, furniture, walls, and floors.

.4 Clean lighting reflectors, lenses, and all other finished surfaces.

.5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.6 Wax, seal, shampoo or prepare floor finishes, as specified and as recommended by manufacturer.

.7 Inspect finishes, fitments, and equipment to ensure specified level of workmanship and operation. Clean equipment and fixtures to a sanitary condition; clean or replace filters in mechanical equipment as required.

.8 Remove debris and surplus materials from crawlspace areas, attic areas, and other accessible concealed spaces.

.9 Remove dirt and other disfiguration from exterior surfaces. Broom clean and wash exterior walks, steps and surfaces; rake sod and landscaped areas.

.10 Clean roof areas, gutters, downspouts, and drainage systems. Clean and sweep areaways and sunken wells.

.11 Sweep and wash clean paved areas, as applicable.

.12 Remove snow and ice from access roads and walkways to the building, as applicable.

.13 Remove the remainder waste/debris, and leave the Site clean and suitable for occupancy.

.14 Prior to the Total Performance, remove any surplus waste, products, tools, construction machinery and equipment.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Text, schedules and procedures for systematic Waste Management Program for construction, deconstruction, demolition, and renovation projects.

1.2 INTENT

.1 Minimize the amount of non-hazardous solid waste generated and maximize the reduction, reuse, and recycling of solid waste produced by the Work.

.2 Respect environmental regulations and prevent environmental pollution damage.

.3 Achieve MR c2: Implement a construction waste management plan to recycle and/or salvage construction and demolition waste.

.4 Waste Diversion Target: 75%, refer to Section 01 47 15.

1.3 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 47 15 – Sustainable Requirements

1.4 REFERENCES

.1 Canada Green Building Council (CaGBC)

.1 LEED Canada 2009 for Design and Construction - Leadership in Energy and Environmental Design Green Building Rating System Reference Guide.

1.5 DEFINITIONS

.1 **Waste Recovery Inventory Form (WRIF)** Schedule A: to be updated by the Contractor during construction, to track all materials and their individual weights, leaving the construction/de-construction site.

.2 **Construction Waste Management Plan (CWMP):** tp be completed by the Contractor to outline Waste Management procedures and ensure compliance with LEED requirements to achieve desired waste diversion target. Example shown in Schedule C.

.3 **Recyclable:** Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.

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

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

.6 **Reuse:** Repeated use of product in same form but not necessarily for same purpose. Reuse includes:

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

.8 **Returning:** reusable items including pallets or unused products to vendors.

.9 **Salvage:** Removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.10 **Source Separation:** Acts of keeping different types of waste materials separate beginning from first time they became waste.

.11 **Waste Management Coordinator (WMC):** person assigned by the Contractor, who is responsible for implementation of the CWMP during construction processes. Responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures. Submit WRIF (Schedule A) on a monthly basis with request for progress payment.

.2 Contractor to prepare CWMP in first few weeks of project start-up and submit to the LEED Coordinator.

.3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project including back up documentation

.4 Failure to submit any documentation could result in hold back of final payment.

.5 For each material landfilled, reused or recycled from project, include item, amount, and destination.

.6 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled or disposed of.

1.7 DOCUMENTS

.1 WASTE RECOVERY INVENTORY FORM (WRIF): SCHEDULE A

.1 Contractor to review WRIF and have ready for use prior to project start-up. WRIF should include but not be limited to:

.2 Date material left site

.3 Destination of materials

.4 Material description

.5 Volume or weight of materials

.6 WRIF to document all materials leaving the site for reuse, recycling or landfill.

.7 Weigh bills related to each line item must be submitted to LEED Coordinator on a monthly basis with completed forms.

.2 ALTERNATIVE TO WEIGH BILLS: SCHEDULE B

.1 Contractor to use when weigh bill is not available.

.3 CONSTRUCTION WASTE MANAGEMENT PLAN (CWMP)

.1 Contractor to prepare CWMP in first few weeks of project start-up.

.2 CWMP should include but not limited to:

.1 Types of waste/materials expected on the project.

.2 Proposed destination/end use of materials.

.3 Letters from end-use companies conifmring what is done with materials (except for landfill).

.3 Proposed deconstruction/disassembly techniques and sequencing [demolition projects].

.4 Schedule for deconstruction/disassembly [demolition projects].

.5 Proposed recycling centre location on site with details of labelling of storage areas.

.6 Details on materials handling and removal procedures.

.7 Detail how materials will be transported (i.e. Hauler or own forces).

.8 Identify materials that could pose problems for disposal/recycling.

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

.10 Identify opportunities for reduction, reuse, and recycling of materials.

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

.12 Contractor to review CWMP prior to project start-up and as project progresses.

.13 CWMP is to be followed for duration of project.

.14 Post CWMP where workers at site are able to review content.

1.8 STORAGE, HANDLING AND PROTECTION

.1 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials.

.2 Store, materials to be reused, recycled and salvaged in locations as directed by Waste Management Coordinator.

.3 Unless specified otherwise, materials for removal become Contractor's property.

.4 Protect, stockpile, store and catalogue salvaged items.

.5 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

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

.7 Separate and store materials produced during dismantling of structures in designated areas.

.8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.9 Separate and store materials produced during project in designated areas.

.10 Remove co-mingled materials to off-site processing facility for separation.

.11 Provide waybills for separated materials removed from site.

.12 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.9 WASTE DISPOSAL

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of liquid waste into waterways, storm, or sanitary sewers.

.3 Keep records of construction waste using Schedule B including:

.1 Number and size of bins.
.2 Waste type of each bin.
.3 Total tonnage generated.
.4 Tonnage reused or recycled.
.5 Reused or recycled waste destination.
.6 Weigh bills from all waste and recycling destinations

.4 Remove materials from deconstruction as deconstruction/disassembly work progresses.

.5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.10 USE OF SITE AND FACILITIES

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

.2 Maintain security measures established by existing facility.

1.11 SCHEDULING

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

2 PRODUCTS

2.1 NOT USED

Not Used.

3 EXECUTION

3.1 APPLICATION

.1 Do Work in compliance with the CWMP.

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

3.2 CLEANING

.1 Clean the Place of Work regularly in accordance with Section 01 74 00. Leave areas clean at the end of each day.

.2 Perform final cleaning at project completion and remove surplus waste, materials, rubbish, tools, and equipment in accordance with Section 01 74 00 and as follows:

.3 Remove recycling containers and bins from site and dispose of materials at appropriate facilities.

.4 Separate materials to be reused/recycled into specific collection bins.

3.3 DIVERSION OF MATERIALS

.1 From following list below, separate waste materials into separate piles or containers as coordinated by the Waste Management Coordinator, and in compliance with applicable fire regulations.

.2 Clearly label containers or stockpiles for each type of material.

.3 Provide instruction on disposal practices.

.4 On-site sale of materials is not permitted unless approved by The City.

3.4 SCHEDULES

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SCHEDULE A - WASTE RECOVERY INVENTORY FORM (WRIF)

Date of Shipment	Type of Waste	Receiving Facility	End-Use	Amount of Waste (specify units*)

*Units need to remain consistent throughout project.

SCHEDULE B – ALTERNATIVE TO WEIGH BILLS

{Insert Logo of your company}

Date:
Name:
Address:

Re: Removal of deconstruction materials

This is to verify that I have removed:
(weight and items) from the deconstruction of {name of building deconstructed}
and will be re-using it in the following manner:

_____

Signature

_____

Name (Please Print)

SCHEDULE C – CONSTRUCTION WASTE MANAGEMENT PLAN (CWMP)

Project name – Project Location
Construction Waste Management Plan

Month, day, year

Prepared By:
Name of Author – Name of Contractor

Waste Management Goal

The goal for the ***Project Name*** is to divert more than ***XX%*** of the construction waste from the landfill. This goal will be achieved by reducing, reusing and recycling.

Education and Awareness

To ensure that all Subcontractors are aware of the Construction Waste Management Plan (CWMP) requirements for this project, CWM training has been incorporated into the mandatory safety training for all workers on site.

The Waste Management Coordinator (WMC) for the project is ***Name of WMC from Contractors company.***

The WMC is responsible to make sure all waste is brought to the recycling area and sorted as required. Bins will be provided for all materials and each bin will be clearly marked for what materials are to go in each.

A copy of the Construction Waste Management Plan will be posted in the site trailer.

Recycling Facility

All waste will be stored on site in marked bins and will be collected and taken to ***Location or Company*** to be recycled. ***Location or Company*** will provide the weight of the waste in metric tonnes on each invoice and will provide waybills for each load picked up (see examples of waybills and invoice attached).

Any waste that is reused will be weighed and a reuse form will be filled out stating what the material will be used for and where it's going.

Below is a letter from the Recycling Facility where the materials will be diverted to describing how they will be diverted.

Collect the following waste types, recycle, and record weights for each by: ***Location or Company***.

Type of Waste	Recycler – End Use
General Waste	Taken to local landfill
Cardboard	Shipped to a Winnipeg processor
Drywall	Used as an additive for the composting process
Metal	Shipped to a scrap steel recycler in Winnipeg
Wood	Processed into mulch for landscaping
Concrete/Brick	Crushed and used as road base
Plastic	Baled and shipped to a Winnipeg processor

Tracking

CWM will be tracked using a table similar to the one shown below.

Date of Haul	Type of Waste	Receiving Facility	Amount of Waste (Metric Tonnes)	Diversion Rate (%)	Amount Diverted

Total Waste =
Total Diverted Materials =
% Diverted =
Total Credits Documents =

Location or Company
Address
Address
Address
Phone #

Contractor
Address
Address
Address
Phone #

Attention: ***Contractor***

Re: Material End Use

Company waste management process is to collect source separated materials and weigh each individual load by material type. A scale ticket will be provided for each individual load hauled and it will not be with any other companies' materials. Material is then brought to the ***Company*** yard where it will be either processed for an end use or shipped to a processor/recycler in ***Location***.

Company will be processing and retailing ***materials*** at our site in ***Location***. The ***materials*** are processed into …..*[describe what happens to the materials]*

Example Scale tickets are attached.

Sincerely,

Company

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Procedures preceding Substantial Performance and Total Performance of the Work.

1.2 RELATED SECTIONS

.1 Section 01 78 00 - Closeout Submittals.

.2 Section 01 91 10 – General Commissioning Requirements

1.3 SUBSTANTIAL PERFORMANCE

.1 Contractor's Checklist: Prior to requesting the Contract Administrator's site observation for Substantial Performance, the Contractor shall notify the Contract Administrator in writing that the Contractor and all Subcontractors have inspected the Work to determine the following:

.1 The Work conforms with the Contract Documents and is sufficiently complete to meet the intent of Substantial Performance (as defined below), and shall deliver to the Contract Administrator and to The City a comprehensive list of items to be completed or corrected. All items in the Work related to life safety, health, and building code are fully complete.
.2 *Performance of the Work* or substantial performance of the designated portion of the *Work*
.3 Equipment/systems are tested, adjusted, and balanced, and are fully operational as per section 01 91 10.
.4 All required and applicable certificates have been submitted to the Contract Administrator, including the fire alarm report and verification, Schedule A fire alarm monitoring, sprinkler system test report, elevator/lift use permits, and fire damper/balancing reports.
.5 Arrangements have been made for inspection by all local authorities having jurisdiction, for an occupancy permit.

.2 Contract Administrator's Observation: The Contract Administrator and Contractor will observe the Work together to identify all deficiencies and incompletions, including seasonal deficiencies; these items will be assigned a fair value by the Contract Administrator and this separate deficiency (double the value) and incompletion amount will held back until the Contract Administrator is satisfied that each item has been satisfactorily corrected or completed.

.3 Declaration of Substantial Performance: following the Contractor's application for Substantial Performance and when the Contract Administrator and The City agree that the building could be occupied for its intended use.

.4 Commencement of lien and warranty periods begin following the Date of Substantial Performance, unless noted otherwise in Builder's lien legislation at the Place of Work. Upon expiration of the lien period legislated at the Place of the Work, the Contractor may apply for payment of the lien holdback amount.

1.4 TOTAL PERFORMANCE

.1 Contractor's Checklist: Prior to requesting the Contract Administrator's observation for Total Performance, the Contractor and all Subcontractors shall inspect the Work to determine the following. The Contractor shall notify the Contract Administrator in writing that:

.1 The operation of all equipment and systems have been demonstrated to The City's maintenance personnel.

.2 A signed and dated inventory listing to the Contract Administrator that all keys, spare parts, special tools, and maintenance materials, as specified, have been received in good condition by The City.

.3 All Work is now complete in conformance with the Contract Documents, and each incompletion and deficiency listed has been corrected and completed including all work as specified in Section 01 91 10.

.4 As-built drawings, O & M manuals, and all remaining documentation required by the Contract Documents are submitted to the Contract Administrator as per section 01 78 00.

.5 A final occupancy permit is obtained from the authority having jurisdiction and is submitted to the Contract Administrator.

.2 Total Performance: When the conditions above have been met to the satisfaction of the Contract Administrator, the Contractor may apply for final payment.

.3 Deficiency Checklist:

1. The Contract Administrator will undertake a walk-through of all room/suites with the Contractor and The City, with the purpose of identifying deficiencies and incompletions, on a specific date prior to Substantial Performance.

2. The Contract Administrator shall add to or modify the Contractor’s deficiency list, and issue a formal written deficiency list to be sent to the Contractor, for action. Failure to include an item on the list does not alter the responsibility of the Contractor to complete the Contract.

3. The Contactor and sub-trades shall complete each item on this deficiency list, within a reasonable time frame, as agreed by all parties.

4. To confirm when all deficiency work is fully complete, the Contractor shall advise the Contract Administrator in writing, sign off on each item on the deficiency list, and provide signed copies of all sheets to the Contract Administrator

5. The Contract Administrator will then arrange a final walk-through to review for project completion. The Contractor and The City will be notified and a mutually acceptable time will be arranged. Upon mutual satisfaction that all deficiencies are addressed, the project will be deemed fully complete.

6. If deficiencies or incompletions still remain, the Contractor shall complete these to the mutual satisfaction of all parties.

7. Any additional deficiency items discovered after the formal deficiency list was issued, will be recorded onto a Warranty deficiency list, to be addressed by the Contractor during the period of warranty as specified.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 As-built drawings, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final Building Location Certificate.

1.2 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 77 00 - Closeout Procedures

.3 Section 01 91 10 - Commissioning

1.3 AS-BUILT AND O&M DRAFT SUBMISSIONS

.1 Prior to or immediately following the Date of Substantial Performance, submit one hard draft copy of all required Operating and Maintenance manuals and one hard copy of all required draft copy of as-built drawings, plus one digital copy on a CD, for review by the Contract Administrator. All data to be provided in hard copy and digital format – scan all hard copy documents to .pdf file format.

.2 Upon return of the draft copies with the Contract Administrator's review comments, the Contractor shall revise the content as requested for submittal of the final copies. Final copies to be provided in hard copy and digital format – scan all hard copy documents to .pdf file format.

.3 As-built documents shall reflect all changes made in specifications and drawings during the construction process and will show the exact dimensions, geometry and location of all elements of the Work completed under contract.

1.4 OPERATION & MAINTENANCE BINDER FORMAT

.1 Organize all data in the form of an instructional manual.

.2 Each binder shall be hard covered vinyl with a chrome metal spine and 3 'D' rings.

.3 Cover: Identify each binder with a typewritten cover page clearly labeled as 'Project Record Documents', along with the Project Title, Project number, Date, and related discipline/subject matter of contents. When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Arrange the content by systems, under the same Section numbers as the Specification, and coordinate the sequence with a Table of Contents.

.5 Provide a tabbed fly-leaf for each separate product and/or system, with typewritten description of product, system, and major component parts of equipment.

.6 Accompanying drawings: provide these with reinforced punched holes and tabs. Bind in with the text and fold larger drawings to the same size of the text pages.

1.5 OPERATION & MAINTENANCE MANUAL CONTENTS - EACH VOLUME

.1 Table of Contents page, clearly label the following:

.1 Project Title, Project Number, Date of submission

.2 Important contact companies involved in the project (The City, Contract Administrator, Contractor, and Subcontractors) including the contact people, their addresses and telephone numbers.

.3 A complete schedule of products and systems, indexed by Section name and number.

.2 For each product, system. or Section, list the names, addresses and telephone numbers of all Subcontractors and Suppliers involved, including a local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete information not applicable.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: Include complete manufacturer's printed instructions and related data for each Section as per Section 01450 - Quality Control. Organize into a logical sequence of instructions for each procedure.

1.6 KEEPING OF AS-BUILT DRAWINGS AND SAMPLES

.1 As-Built drawings (Architectural, Structural, Mechanical, Electrical): The Contractor shall submit 1 set of accurate and legible marked-up red line drawings to the Contract Administrator. (Refer to 1.3 Draft Submission) In addition to requirements in General Conditions, maintain one “Project Record” copy, clearly labelled, at the Site of the following:

.1 Contract Drawing set.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to the Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Label these documents and file in Section numbers to match the listings on the Table of Contents for the project manuals. Clearly label each document "**PROJECT RECORD**" in neat, large, printed letters.

.3 Securely store these Project Record documents and samples in the field office in clean, dry, and legible condition, separate from other documents used for construction. Do not use project record documents for construction purposes.

.4 Keep record documents and samples available for viewing by the Contract Administrator.

.5 At the end of the project submit as-built drawings as per 1.3 above.

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 The Contractor shall record any and all site information, revisions, and discoveries directly onto the "**PROJECT RECORD**" drawing set, in a timely and accurate way. **Record information concurrently with the construction progress** and do not conceal Work until required information is recorded.

.2 Use felt tip marking pens of separate colours to indicate major systems.

.3 As-built drawings: legibly record each item to reflect the actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and other items, as referenced to permanent surface improvements.

.3 Measured locations of internal utilities and other items, as referenced to visible and accessible features of construction.

.4 Field changes of dimensions and/or details.

.5 Changes from approved Change Orders.

.6 Additional details and Supplemental Instructions.

.7 References to related shop drawings and modifications.

.4 Specifications: legibly record each item to reflect the actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and Change Orders.

.5 O & M binders: maintain and file manufacturer's data, certifications, and field test records as required by individual specifications sections.

.6 Permits:

.1 Attach copies of occupancy permits.

1.8 BUILDING LOCATION CERTIFICATE

.1 Once the project has all roof overhangs in place, the Contractor shall provide a final Building Location Certificate, surveyed and sealed by a Registered Land Surveyor in the province of the Work, in a hard copy original and in PDF format. This Certificate shall indicate the dimensions from the exterior walls of the building to property lines on each side, dimensions of all roof overhangs, and dimensions to other adjacent critical items.

1.9 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions.

Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, communications, and installed colour coded wiring diagrams.

.3 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.4 Maintenance Requirements: include routine procedures and guides for trouble-shooting, instructions for disassembly, repair, reassembly, alignment, adjusting, balancing, and checking. Also provide servicing and lubrication schedule, and list of lubricants required.

.5 Include manufacturer's printed operation and maintenance instructions.

.6 Include sequence of operation by Controls manufacturer.

.7 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.8 Provide installed control diagrams by controls manufacturer.

.9 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.10 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.11 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.12 Include test and balancing reports as specified in Section 01450 - Quality Control.

.13 Additional requirements as specified in individual specification Sections.

1.10 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements as specified in individual specifications Sections.

1.11 SPARE PARTS, SPECIAL TOOLS, AND MAINTENANCE MATERIALS

.1 Provide these items in quantities as specified in individual specification Sections. Ensure these items are new, undamaged, operational, and of the same quality and manufacture as those specified and provided in the Work. Any substandard products shall be replaced at the Contractor’s expense.

.2 Receive and catalogue all required items. Submit a signed and dated inventory listing to the Contract Administrator that these items have been received in good condition by The City.

1.12 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in a manner to prevent damage or deterioration. Store components subject to damage from weather in weatherproof enclosures and store paints and freezable materials in a heated and ventilated room.

.2 Store items in original and undamaged condition with manufacturer's seal and labels intact.

.3 Deliver, place, and store on-site at locations as directed by The City.

.4 Remove and replace any damaged products at Contractor's own expense, to the satisfaction of the Contract Administrator.

1.13 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds to the requirements as specified in each Section, and in duplicate from applicable Subcontractors, Suppliers, and Manufacturers, within ten days after completion of the applicable item of Work.

.4 Except for items put into use with The City's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, are signed, dated, and notarized.

.6 Safely retain warranties and bonds until they are organized into the Project manual binders and submitted.

END OF SECTION

Part 1 GENERAL

1.1 DESCRIPTION

.1 Demonstrate scheduled operation and maintenance of any new equipment and systems to The City, at least two weeks prior to Date of Substantial Performance.

.2 The City will provide a list of maintenance personnel, who will receive this information and attend any coordination meetings.

1.2 QUALITY CONTROL

.1 When individual Sections specify that a product or system manufacturer is to provide an authorized representative is to be involved, the Contractor shall coordinate with this person to: attend the demonstration of such equipment and systems, instruct The City, and provide a written report that equipment/system demonstration and instructions have been performed to The City's satisfaction.

1.3 SUBMITTALS

.1 All submittals to be in accordance with Section 01 33 00.

.2 Submit a schedule for times and dates for each demonstration(s) of each piece of equipment or system, at least two weeks before the scheduled dates, to the Contract Administrator.

.3 The Contractor shall professionally videotape demonstration(s) of equipment/system operations, including microphones attached to the demonstrator, who is giving a detailed analysis of each component.

.4 The Contractor shall submit a written report of the demonstration, within one week after the demonstration, and confirm that the demonstration(s) and instructions have been satisfactorily completed with The City. List the time, date, and full attendance list of all persons present. Include a final version of the video on a DVD, with two (2) copies to The City.

1.4 CONDITIONS FOR DEMONSTRATIONS

.1 All equipment/systems have been inspected by the appropriate authorities and Contract Administrators, and fully operational as intended, in accordance with Section 01 91 13.

.2 Testing, adjusting, and air balancing has been performed and written reports have been submitted to the Contract Administrator for review, at least 2 weeks prior to the demonstration.

.3 Upon acceptance of these reports by the Contract Administrator, provide copies of these final reports at the scheduled demonstration and include the final reports in the Project Operation and Maintenance manuals.

1.5 PREPARATION

.1 Verify that conditions for demonstration and instructions comply with the above requirements.

.2 Verify that the critical personnel to attend the demonstration and are present.

1.6 DEMONSTRATION AND INSTRUCTIONS

.1 During the demonstration, clearly explain the start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each piece of equipment /system, and provide a proposed schedule of when critical maintenance items should be performed. Ensure that sufficient time is scheduled to properly explain these processes and confirm The City's understanding. More than one demonstration meeting may be required.

.2 Instruct personnel in phases of operation and maintenance using the Project Operation and Maintenance manuals as the basis for instruction.

.3 Review the contents of these manuals in detail and explain critical aspects of the operation and maintenance.

.4 Prepare and insert additional data into the Project Operation and Maintenance manuals, as needed, before the final submission of these manuals to the Contract Administrator.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 The City may hire an independent Building Envelope Commissioning Agency and it remains the Contractor's responsibility to provide access to the Work, and to schedule/coordinate the performance testing of building envelope systems specified in this Section.

1.2 SYSTEMS TO BE COMMISSIONED

.1 Work to be commissioned include, but are not limited to, all materials, products, assemblies, and building envelope systems that are: directly or indirectly, governed by Part 5 of the National Building Code (latest edition) including continuity between Sections. Performance values are described within each relevant Section.

1.3 COMMISSIONING TEAM

.1 The City
.2 Contract Administrator
.3 Building Envelope Commissioning Agency (BECA)
.4 The Contractor
.5 Building Envelope Subcontractor(s) and their sub-subcontractor(s) (BESC)
.6 Specialty Subcontractors and any other related suppliers of materials or systems.

1.4 Contractor and BESC RESPONSIBILITIES

.1 Contractor and their related Subcontractors (BESC) shall:

.1 Submit any related data sheets, product sheets, commissioning documentation, and complete shop drawings for products and systems specified. The Contractor shall first review that submittals are complete to the requirements of Contract Documents. Upon satisfaction of this, the Contractor shall stamp these submittals as reviewed and forward them to the Contract Administrator and BECA, for review.
.2 Attend a pre-installation meeting, as necessary to coordinate the construction and commissioning process.
.3 Provide mock-ups as specified in each respective Section.
.4 Arrange for any necessary manufacturer's representatives to be present during functional testing, for sufficient duration to observe the testing, and for adjustments or contributions to problem solving.
.5 Promptly follow up on each report from the BECA and address all deficiencies, modifications, and corrections to the building envelope system, as required to the satisfaction of the BECA and the Contract Administrator, and to pass the next performance test if required.

1.5 BECA RESPONSIBILITIES

.1 Review of related detailed drawings, shop drawings, and specification sections: including review of any products/details related to the building envelope assembly for compliance to project documents, for compliance to Building Codes, and for continuity of air/vapour barriers, thermal protection, and drainage planes.

.2 Pre-Installation Meetings: Prior to the start of a related scope of the Work, the BECA will arrange and chair a meeting for attendance by all, to cover topics such as: periodic site visits,

testing procedures, review of plans and specifications, shop drawings, construction schedule and sequencing, material selection and compatibility, and any other related concerns.

.3 Mock-up Reviews: shall be performed on areas specified to have a mock-up and will include review of any products/details related to the building envelope assembly and continuity of air/vapour barriers, thermal protection, and drainage planes. Tests may conducted on such mock-ups if they are considered a sufficiently complete and ready.

.4 Periodic Site Visits: Each site visit may include review of air/vapour barrier membranes, windows and curtain walls, thermal protection and drainage planes, for compliance to: project documents, Building Codes, manufacturer's written instructions, and reviewed mock-ups accepted. Tests conducted will be determined by the BECA to be the most appropriate for the project and may include, but are not limited to the following:

.1 Adhesion tests: Membrane-substrate adhesion tests using a Com-Ten hand-operated digital tester to measure tensile adhesion between air barrier and substrate. Testing in conformance with ASTM D 4541 Standard Test Method for Pull-Off Strength of Coating using Portable Adhesion Testers. Each test sample approx. 12 square inches in area and scored to isolate them from the adjacent substrate. Each test to consist of 3 samples.

.2 Airtightness tests on air/vapour barrier including fasteners and penetrations: Using an Air-Sure Leak Detection unit, testing to be in accordance with ASTM E 1186, Standard Practices for Air Leakage Site Detection in Building Envelopes, and Air Retarder Systems (method 4.2.7 Chamber Depressurization in Conjunction with Leak Detection Liquid).

.3 Airtightness 'Smoke' tests on window and curtain wall units: Testing to be in accordance with ASTM E 1186 (method 4.2.2. or 4.2.6.)

.4 Quantified Airtightness tests on window and curtain wall units including adjoining assemblies: Testing to be in accordance with ASTM E 783-02 (2010), Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

.5 Water Penetration Tests on window and curtain wall units (possibly including adjacent opaque wall sections): Testing to be in accordance with ASTM E 331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference, or ASTM E 1105, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

.5 A written report, in PDF format, will be issued by the BECA to the Contract Administrator and Contractor, within two business days after each site visit conducted. Reports shall include relevant photographs, test results, and an ongoing deficiency list.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 General requirements relating to commissioning of project's components and systems, specifying general requirements to performance verification of components, equipment, sub-systems, systems, and integrated systems.

.2 Acronyms:

.1 Cx - Commissioning
.2 CxA - Commissioning Authority
.3 O&M - Operation and Maintenance
.4 CVF - Component Verification Form
.5 FT – Functional Test
.6 TAB - Testing, Adjusting and Balancing

1.2 GENERAL

.1 Commissioning is a formal, systematic process of ensuring that building systems perform interactively according to the design intent and The City's operational needs.

.2 Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:

.1 Applicable equipment and systems are installed according to the manufacturer's recommendations and to industry accepted standards and that they receive adequate operational checkout by installing contractors.
.2 Proper performance of equipment and systems is documented.
.3 O&M documentation left on site is complete.
.4 The City's operating personnel are adequately trained.

.3 The Contractor is responsible for demonstrating equipment and systems, troubleshooting and making adjustments as required to the satisfaction of the CxA.

.1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively tested with each other as intended in accordance with Contract Documents and design criteria.
.2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

1.3 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, the Contractor shall correct deficiencies, re-verify equipment and components within the non-functional system, including

related systems as deemed required by the CxA and/or related design authority, to ensure effective performance.

.2 Contractor costs for corrective work, additional tests, and inspections to ensure proper performance of such items to be borne by Contractor.

.3 Contractor shall pay for CxA labour associated with excessive retesting of systems.

1.4 COORDINATION

.1 The following are members of the commissioning team:

.1 The City
.2 Commissioning Authority (CxA)
.3 Contract Administrator(s)
.4 Contractor
.5 Mechanical Subcontractor
.6 Electrical Subcontractor
.7 TAB representative
.8 Controls Subcontractor
.9 Any other installing subcontractors or suppliers of equipment.

1.5 CONFLICTS (BETWEEN SPECIFICATION SECTIONS)

.1 Report conflicts between requirements of this section and other specification sections to the Contractor before start-up and obtain clarification.

.2 Failure to report conflict and obtain clarification (through RFI process) will result in application of the design authority's intent on the issue.

1.6 COMMISSIONING SCHEDULE

.1 The Contractor will provide Cx schedule to CxA for review and comment.

.2 The Contractor will provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:

.1 Commissioning site visits
.2 Component verification completion
.3 Startup and pre-functional activities
.4 Functional testing dates
.5 Training for The City
.6 Seasonal or deferred testing.

.3 All parties are responsible to address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

1.7 SYSTEMS TO BE COMMISSIONED

.1 The following systems will be commissioned for this project (if applicable):

Electrical
Lighting, Occupancy and Daylighting Control
Plumbing

Recirculation pumps
Expansion tanks
HVAC
Air Handling Units (Gas and Hydronic)
Heat Recovery Ventilators
Return Fans
Boilers
Hydronic Pumps
Heat Pipe
Reheat coils
Testing, Adjusting and Balancing Work
Unit Heaters & Cabinet Unit Heaters
Variable Air Volume boxes
Direct Digital Controls (DDC)
Central Building Automation System

1.8 MEETINGS

.1 Commissioning Kickoff Meeting. The CxA will schedule, plan and conduct a commissioning scoping meeting with the entire commissioning team in attendance.

.2 Miscellaneous Meetings. Other meetings will be planned and conducted by the CxA at the discretion of the CxA as construction progresses. These meetings will cover coordination, deficiency resolution and planning issues with particular Subcontractors.

1.9 SUBMITTALS (SHOP DRAWINGS)

.1 The CxA requires submittal documentation for facilitating the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team.

.2 These submittals to the CxA do not constitute compliance for O&M manual documentation. The O&M manuals are the responsibility of the Contractor, though the CxA will review them and provide feedback, where in the opinion of the CxA, correction is required. O&M manuals must be submitted in electronic (pdf) format.

1.10 COMPONENT VERIFICATION FORM CHECKLISTS and INITIAL CHECKOUT

.1 The following procedures apply to all equipment to be commissioned (see Section 1.7 for list of equipment and systems).

.2 Component Verification Forms (CVF). CVF checklists document that the equipment and systems are installed as per the design intent and good practice. Component Verification Forms for a given system must be successfully completed prior to functional testing.

.1 CVFs will be developed in an electronic format (pdf) by the CxA and electronic copies will be provided to Contractors. Contractors are responsible to execute and document the CVF checklist on Site, and return to the CxA for inclusion in the final report. The CxA will verify the installation and accuracy of the CVFs using an audit process.

.2 CVFs are used to track and document that the proper equipment has been specified, submitted and installed. The forms capture typical

maintenance information such as tag #, model, service, location, nameplate data, static submittal data, etc.

.3 A Sample CVF has been attached (Section 1.11) for bid purposes.

.3 Issues identified during commissioning inspections will be documented by the CxA on the issue tracking log.

.1 Contractors shall respond to issues and ensure correction.

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1.11 SAMPLE COMPONENT VERIFICATION FORM

Project Name — Component Verification Form

Owner
City, Province

Unit Tag: **AHU-1**
Equipment Type: Air Handling Unit
System: HVAC
Location: Mech Rm
Area Serviced: Open Office

This box for IDI use only.
CxA reviewer: _____
Form Auditted? YES ☐ NO ☐

Contractor (include company and print name)	Signature	Date	IDI Audit Verification
Mechanical:			
Electrical:			
Controls:			
General:			

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	AHU Maker		☐	☐
Model	AHU 12AB-34CD		☐	☐
Supply fan flow [cfm]	5000		☐	☐
Supply Fan Motor HP	5		☐	☐
Return fan flow (cfm)	5000		☐	☐
Exhaust Fan Motor HP	5		☐	☐
Motor Volts	575/3/60		☐	☐
Glycol Cooling Coil (# coils, # Rows)	1, 8		☐	☐
Glycol Heating Coils (# coils, # rows)	1, 2		☐	☐

Details/Notes:
Sample AHU unit

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed on motors		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Record the MERV rating of the filters in the unit		☐	☐
Shipping mounts are removed		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Smoke and fire dampers are properly installed according to contract documents		☐	☐
Electrical Installation			
Verify that overload breakers are installed and sized correctly		☐	☐
Local disconnects are installed and labelled		☐	☐
VFDs for fans installed per contract documents		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Control actuators and sensors labelled per contract documents		☐	☐
Insulation & Labelling			
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Ducts and piping are labelled per contract documents and direction of flow is indicated		☐	☐

1.12 SYSTEM START-UP

.1 Start-up Plan. The Contractor will provide a detailed startup plan for all commissioned equipment for review by the CxA.

.2 The startup plan will include blank startups forms (provided by manufacturer, or otherwise) for commissioned systems.

.1 The CxA may attend startups at their discretion to ensure that startup documentation and procedures are being followed as required.

.2 The Contractors and vendors shall execute start-up.

.3 Provide the CxA with a signed and dated copy of the completed start-up report.

.3 Start-up documentation to include:

.1 Factory and on-site test certificates for specified equipment.

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up check lists.

.4 Start-up reports,

.5 Step-by-step description of complete start-up procedures, to permit Contract Administrator to repeat start-up at any time.

.4 Submit required startup documentation including, but not limited to:

.1 Mechanical Systems

.1 Major equipment manufacturers startup reports (AHUs, Boilers, Chillers, Heat Pumps, etc.)

.2 Piping pressure tests

.3 Sprinkler verification reports

.4 TAB report

.2 Electrical Systems

.1 Electrical equipment test reports (megger tests, harmonic distortion testing)

.2 Low voltage lighting system test report

.3 Fire Alarm verification report.

.3 Controls

.1 Control point end-to-end verification report

.2 CO/NOx sensor calibration reports

1.13 FUNCTIONAL TESTING

.1 Refer to Section 1.7 for the list of systems to be commissioned.

.2 Functional testing demonstrates that each system is operating according to the documented design intent and Contract documents. Each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part and full load). Verifying the sequences of operation is required for all modes. Proper responses to modes and conditions such as power failure, freeze conditions, fire alarm conditions, equipment failure, etc. may also be tested.

.3 Functional Tests will be developed in an electronic format (pdf) by the CxA and electronic copies will be provided to Contractors.

.4 The CVFs for a given systems equipment must be completed prior to the functional test.

.5 The Contractors and/or vendors shall execute the functional tests as a pre-functional test to verify correct system operation and provide the CxA with a signed and dated copy of the completed tests prior to formal functional testing with the CxA present.

.6 Issues identified during functional testing will be documented by the CxA on the issue tracking log.

.1 Contractors shall respond to issues and ensure correction.

.7 A Sample functional test has been attached (Section 1.14) for bid purposes.

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1.14 SAMPLE FUNCTIONAL TEST

Functional Testing for AHU-1, ERV-1 and Reheat

Line #	Test	Expectation	First Test Status	Re-Test Status	Completed By	Date
AHU-1.F01	System Off	BMS commands system off during unoccupied mode - unit dampers close to outdoor air, supply fan is off. Verify by operational check.				
AHU-1.F02	Startup	When in occupied mode, BMS commands dampers to full return position, supply fans starts. Verify by operational check and trends.				
AHU-1.F03	Occupancy Schedule	Verify schedule with Owner. *Occupied schedule should be same for ERV-1, except for morning warm up periods, tests below.*				
AHU-1.F04	Morning Warm Up/Cool Down	AHU will operate in a warm up/cool down mode to bring the space under temperature control prior to occupancy. AHU will operate on full return in this mode, with ERV-1 off.				
AHU-1.F05	Supply Air Temperature Control: Heating	Hydronic Heating coil and modulating valve heat supply air when called to control zone temperature. Verify by operational check and trends.				
AHU-1.F06	Supply Air Temperature Control: Free Cooling	When OAT allows, free cooling mode on the AHU is enabled to maintain supply temperature at setpoint. Outdoor air damper modulates open to control supply air temperature. This sequence is to be staged and integrated with ERV-1 free-cooling. Relief Damper to open during this mode. Verify by operational check and trends.				
AHU-1.F07	Supply Air Temperature Control: Hydronic Cooling	Hydronic Cooling coil and modulating valve cool supply air when called to control zone temperature. Verify by operational check and trends.				
AHU-1.F08	Zone Temperature Control	Verify that AHU adequately controls *average* zone temperature to setpoint, nominally 72°F (22°C), adjustable.				
AHU-1.F09	Zone Temperature Control: Unoccupied Mode	Verify that AHU adequately controls *average* zone temperature on fields to setpoint, nominally 78°F (25.5°C), adjustable, in cooling mode. Unoccupied heating mode setpoint to be 60°F (15.5°C), adjustable.				
AHU-1.F10	Graphics & Trends	Verify graphics indicate space temperature and setpoint, AHU enable status, AHU fan status and speed, heating/cooling valve positions, mixed air temperature, OA and return air enthalpy, supply temp SP, and supply air temperature. Trends to be enabled on all points.				

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Functional Testing for AHU-1, ERV-1 and Reheat

Line #	Test	Expectation	First Test Status	Re-Test Status	Completed By	Date
AHU-1.F11	Alarms	BMS to alarm on: - supply fan failure (x2) - supply air temperature differential from setpoint - high filter differential pressure (nominal 0.7"wc, adjustable) - freezestat alarm with shutdown at 40°F (4.4°C), heating valve opens fully, requiring manual restart				
ERV-1.F01	System Off	BMS commands system off during unoccupied mode - unit dampers close to outdoor air, supply and exhaust fans are off. This includes morning warmup periods. Verify by operational check.				
ERV-1.F02	Startup	When in occupied mode, BMS commands dampers open, supply and exhaust fans start (constant speed fans). Verify by operational check and trends.				
ERV-1.F03	Supply Air Temperature Control: Free Cooling	When OAT allows, and in sequence with AHU-1 free cooling, free cooling mode on the ERV is enabled by BMS. Dampers remain fixed during this mode, switching only once every 3 hours.				
ERV-1.F04	Supply Air Temperature Control: Heat Recovery	When OAT allows, and in sequence with AHU-1, heat recovery mode on the ERV is enabled by BMS. Dampers operate routinely during this mode, reversing flow every 2 minutes. Verify by operational check and trends.				
ERV-1.F05	Graphics & Trends	Verify graphics indicate space temperature and humidity, ERV enable status, ERV mode command, supply and exhaust fan status, heating valve positions, supply temp SP, supply temperature, and exhaust air temperature.				
ERV-1.F06	Alarms	BMS to alarm on: - supply fan failure - exhaust fan failure - supply air temperature differential from setpoint - high filter differential pressure (nominal 0.7"wc, adjustable)				

1.15 SEVEN (7) DAY INTEGRATED SYSTEM TESTING

.1 A 7-Day Integrated Systems Test will be completed to ensure proper building performance and operation. An additional test will be completed during seasonal testing.

.2 General Acceptance requires that the systems operate as one entity as intended and that documentation is provided indicating such.

.3 Issues identified during seven day testing will be documented by the CxA on the issue tracking log.

.1 Contractors shall respond to issues and ensure correction.

1.16 DEFERRED/SEASONAL TESTING

.1 Functional tests requiring specific environmental conditions (seasonal tests) will be deferred until after occupancy

.2 The Contractors and/or vendors shall execute the deferred/seasonal tests as a pre-functional test to verify correct system operation and provide the CxA with a signed and dated copy of the completed tests prior to formal functional testing with the CxA present.

.3 Issues identified during deferred/seasonal testing will be documented by the CxA on the issue tracking log.

.1 Contractors shall respond to issues and ensure correction.

1.17 ISSUE TRACKING LOG

.1 Contractors shall respond to issues noted on the issue tracking log within 7 days indicating the corrective action taken.

.2 CxA may request the contractor demonstrate successful resolution of items noted on the tracking log.

1.18 TRAINING FOR THE CITY

.1 The Contractor is responsible for training of O & M staff to ensure they have all information necessary to operate and maintain commissioned features and systems.

.2 Submit a training plan and schedule to CxA for review.

.3 Training plan will address the following topics (at a minimum)

.1 Design intent
.2 Use of Operations and Maintenance (O&M) Manuals
.3 Control Drawings and Schematics
.4 Startup and Shutdown
.5 Unoccupied operations
.6 Seasonal changeover
.7 Manual operations
.8 Alarms
.9 System interactions
.10 Energy conservation optimizations

.11 Health and safety

.12 Special maintenance or replacement

.13 Occupant interaction

.14 Systems response to operating conditions

.15 Contractor shall document training exercises with attendance sheets and implementation of training surveys.

.16 A training evaluation form has been attached (Section 1.19) for bid purposes.

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1.19 SAMPLE TRAINING EVALUATION FORM

integrated DESIGNS
Commissioning Project Management Services

420 – 70 Arthur St.
Winnipeg, MB, R3B 1G7
Tel: 204.669.6818
Fax: 204.944.1123
www.i-designs.ca

Sample Project Name
City, Province

Training Survey

Date:

Name:

Training Covered:

1. Was the Instructor familiar with the equipment? **Yes ☐ No ☐**

2. Was the topic covered completely? **Yes ☐ No ☐**

3. Were your questions answered? **Yes ☐ No ☐**
(if No, list questions?)

4. Overall, are you satisfied? **Yes ☐ No ☐**
Comments

1.20 SYSTEMS MANUAL

.1 Contractor to provide the following documentation to the CxA for inclusion in the systems manual:

.1 As-built architectural drawings (electronic copy)

.2 As-built mechanical drawings (electronic copy)

.3 As-built electrical drawings (electronic copy)

.4 As-built controls drawings and cut sheets (electronic copy)

.5 Operations and Maintenance manuals (electronic copy)

.6 Occupancy permit.

1.21 AUTHORITIES HAVING JURISDICTION (I.E. GOVERNMENT AND UTILITY AUTHORITIES)

.1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for CxA to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

.2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.

.3 Provide copies to Contract Administrator and CxA within 5 days of test.

Part 2 Products

2.1 Not used.

Part 3 Execution

3.1 Not used.