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Part 1 General

1.1 REFERENCES

.1 Project Supplementary Conditions

1.2 CASH ALLOWANCES

.1 Include in Contract Price specified cash allowances.

.2 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.

.3 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.

.4 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.

.5 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.

.6 Include progress payments on accounts of work authorized under cash allowances in monthly certificate for payment.

.7 Prepare schedule jointly with Contract Administrator and Contractor to show when items called for under cash allowances must be authorized by Contract Administrator for ordering purposes so that progress of Work will not be delayed.

.8 Amount of each allowance:

.1 Short Circuit and Coordination Study: $3,500.

.2 Utility Contributions (Electrical): $30,000.

.3 Concrete testing: $3,000.

.4 Piling inspections and testing: $12,000.

.5 Compaction testing for exterior concrete: $750.

END OF SECTION

1.1 RELATED REQUIREMENTS SPECIFIED ELSEWHERE

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Contract Administrator are specified under various sections.

1.2 APPOINTMENT AND PAYMENT

.1 Contract Administrator will appoint and pay for services of testing laboratory except follows:

- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
- .4 Mill tests and certificates of compliance.
- .5 Tests specified to be carried out by Contractor under the supervision of Contract Administrator.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Contract Administrator to verify acceptability of corrected work.

1.3 CONTRACTOR RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:

- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Contract Administrator sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Contract Administrator.

1.4 SCHEDULE:

.1 As included in the specifications. Review testing requirements and intent with Contract Administrator prior to proceeding.

.2 Testing includes but is not limited to:

- .1 Air Barrier testing – One inspection and testing to NABA approval – Section 07 27 00.01 – Air Barriers.

.2 Concrete Testing – Section 03 30 00 – Cast In Place Concrete.

.3 Roofing inspections: Inspections by product manufacturer approved roofing inspector – Section 07 52 00 – Modified Bituminous Roofing.

.4 Bored Concrete Piles: Goetechnical inspections and concrete testing in accordance with Section 31 63 23 – Bored Concrete Piles.

.5 Compaction testing for exterior concrete.

END OF SECTION

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Contract Administrator.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Contract Administrator.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants, affected parties not in attendance and Contract Administrator.

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

1.2 PRECONSTRUCTION MEETING

.1 Within 7 days after receipt of Letter of Intent from the Award Authority authorizing commencement of work, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Contract Administrator, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work.

.3 LEED strategy and requirements.

.4 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.5 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.6 Delivery schedule of specified equipment.

.7 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.9 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.12 Monthly progress claims, administrative procedures, photographs, hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work, schedule progress meetings bi-weekly or as determined by the Contract Administrator.

.2 Contractor, major Subcontractors involved in Work and Contract Administrator are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Submit to Contract Administrator submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

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

.5 Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify 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 co-ordinated.

.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.

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Manitoba, Canada.

.3 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 co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 14 days for Contract Administrator's review of each submission.

.5 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 the City prior to proceeding with Work.

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

.7 Accompany submissions with transmittal letter, in duplicate, 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.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .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.

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

.10 Submit 6 prints or electronic copy of shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.

.11 Submit 3 prints or electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit 3 prints or electronic copies of test reports for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 1 years of date of contract award for project.

.13 Submit 3 prints or electronic copies of certificates for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit 3 prints or electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit 3 prints or electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.16 Submit 3 prints or electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Contract Administrator.

.17 Delete information not applicable to project.

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

.19 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.

.20 The review of shop drawings is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that responsibility is assumed for the detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for

errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 LEED SUBMITTALS

.1 Submit documentation in quantities, type and manner required for LEED submittals in accordance with 01 35 21 – LEED Requirements.

1.4 SAMPLES

.1 Submit for review samples in triplicate 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 the City 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.

1.5 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.6 CERTIFICATES AND TRANSCRIPTS

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

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

END OF SECTION

1.1 REFERENCES

.1 American Society of Heating Refrigeration and Air-Conditioning (ASHRAE)

.1 ASHRAE 52.2-99, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size (ANSI approved).

.2 Canada Green Building Council (CaGBC)

.1 LEED Green Building Rating System - For New Construction and Major Renovations. LEED Canada-NC - Version 1.0 - December 2004.

.3 Carpet and Rug Institute (CRI)

.1 CRI Green Label Indoor Air Quality Test Program - Green Label Testing Program.

.4 United States Forest Stewardship Council

.1 Principles and Criteria for Forest Stewardship-00.

.5 Green Seal Environmental Standards

.1 Standard GC-03-93, Anti-Corrosive Paints.

.2 Standard GS-11-97, Architectural Paints.

.6 South Coast Air Quality Management District (SCAQMD), California State

.1 SCAQMD Rule 1113-04, Architectural Coatings.

.2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

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

.1 IAQ Guideline for Occupied Buildings Under Construction.

.8 United States Federal Trade Commission (US Federal Trade Commission)

.1 16 CFR 260.7 Trade Commission Guidelines for the Use of Environmental Marketing Claims.

1.2 DEFINITIONS

.1 FSC - Forest Stewardship Council.

.2 SFM - Sustainable Forest Management.

.3 CAGBC – Canada Green Building Council.

.4 CFC - Chlorofluorocarbons.

.5 Chain-of-Custody Certification - certificates signed by manufacturers certifying that wood used to make products was obtained from FSC certified forests. Certificates include evidence that mill is certified for chain-of-custody by FSC-accredited certification body.

.6 HCFC - Hydro Chlorofluorocarbons.

.7 LEED - Leadership in Energy and Environmental Design.

.8 IAQ - Indoor Air Quality.

.9 MNECB – Model National Energy Code for Buildings.

.10 Rapidly Renewable Materials - materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include but are not limited to products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, and wool.

.11 Regionally Manufactured Materials - materials that are manufactured within a radius of 800 km from project location if transported by truck, or within a radius of 2400 km from project location if transported by rail. Manufacturing refers to the final assembly of components into the building product that is installed at project site.

.12 Recycled Content - percentage by weight of constituents that have been recovered or otherwise diverted from solid waste stream, either pre-consumer or post-consumer.

.1 Wastes and scraps from manufacturing process that are combined with other materials after minimal amount of reprocessing for use in further production of same product are not recycled materials.

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

1.3 DESCRIPTION OF OBJECTIVES AND INTENT

.1 Sinclair Park Community Centre is pursuing a LEED Silver Certification.

.2 Targeted LEED credits: See attached LEED target checklist.

.3 Design and construction to be in strict accordance with:

.1 Manitoba Powersmart: Mandatory and Performance requirements as per design and documentation intent.

.2 Model National Energy Code for Buildings (MNECB): Mandatory and Performance requirements, as per design and documentation intent.

1.4 LEED COORDINATOR

.1 The Contractor shall appoint a LEED Coordinator to ensure compliance with LEED objectives and requirements.

.1 The Coordinator shall have adequate experience and training to perform construction phase LEED administration, documentation and coordination.

.2 The Coordinator shall ensure that LEED requirements and intent is understood and implemented as a whole by the construction team.

.3 The Coordinator shall track, document and enforce construction phase LEED requirements.

.4 The Coordinator shall take all necessary steps to ensure that the construction team is educated and monitored to the extent required to ensure compliance with the LEED objectives.

.5 The Coordinator shall review all products for LEED compliance prior to purchasing or ordering products. Where specified products are found to be in conflict with LEED goals the Contract Administrator should be notified immediately.

1.5 CONTRACTOR LEED ACTION SUMMARY

.1 Summary of LEED credits requiring specific action from the Construction Team:

.1 Sustainable Sites:

.1 SS Prerequisite 1: Erosion and Sedimentation Control Plan: Implement, monitor and document Erosion and Sedimentation Control measures in accordance with Section 31 25 00 - Erosion and Sedimentation Control and the Erosion and Sedimentation Control Plan.

.2 Water Efficiency:

.1 WE Credit 3.1 & 3.2: Water Use Reduction: Provide product documentation for all installed water consuming fixtures.

.3 Energy and Atmosphere:

.1 EA Prerequisite 1 and Credit 3: Fundamental and Best Practise Commissioning: Coordinate with the Commissioning Authority to ensure that all building systems are installed and calibrated to function as intended. See Section 01 91 00 – LEED Commissioning.

.2 EA Prerequisite 2 and Credit 1: Minimum Energy Performance and Optimize Energy Performance: Ensure construction complies with the Construction Documents so as to meet MNECB and Powersmart requirements.

.3 EA Prerequisite 3 and Credit 4: CFC and HCFC reduction in HVAC&R Equipment and elimination of Halons: Provide product documentation stating that CFC, HCFC and Halons are not used.

.4 EA Credit 5 Measurement and Verification: Provide data and systems diagrams to document compliance.

.4 Materials and Resources:

.1 MR Credit 2.1 & 2.2: Construction Waste Management: Prepare Construction Waste Management Plan. Implement, track and document construction waste management procedures in accordance with Section 01 74 21 – Construction / Demolition Waste Management and Disposal.

.2 MR Credit 3.1 & 3.2: Resource Reuse: Provide product and material submittals documenting re-used content.

.3 MR Credit 4.1 & 4.2: Recycled Content: Provide product and material submittals documenting recycled content.

.4 MR Credit 5.1 & 5.2: Regional Materials: Provide product and material submittals documenting regional materials.

.5 MR Credit 6.1 & 6.2: Rapidly Renewable Materials: Provide product and material submittals documenting rapidly renewable content.

.6 MR Credit 7: (Separate Price) Certified Wood: Source FSC certified wood products and provide documentation certifying FSC Chain of Custody.

.5 Indoor Environmental Quality:

.1 EQ Credit 1: Carbon Dioxide Monitoring: Provide cut sheets of installed carbon dioxide monitoring devices.

.2 EQ Credit 3.1 & 3.2 Construction Indoor Air Quality management plan – During Construction and Testing Before Occupancy: Prepare IAQ plan and implement, track and document IAQ management procedures in accordance with Section 01 81 19 – Indoor Air Quality Requirements.

.3 EQ Credit 4.1 through 4.4 Low Emitting Materials: Ensure that all products meet VOC requirements and provide manufacturer cut sheets, MSDS, and other information as required to document that all VOCs are within maximum allowable limits of the referenced standards.

.4 EQ Credit 5 Indoor Chemical and Pollutant Source Control: Completely air-seal main floor and basement floor janitor rooms in accordance with the construction documents.

1.6 SUBMITTALS

.1 Provide submittals, shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit required letters, calculations, spreadsheets and templates prepared by the Contract Administrator for submittal to CaGBC.

.1 Fill-out LEED letter templates to provide tracking of credits and products. See attached LEED letter templates.

.2 Provide filled-out template product information sheets for each product installed or used during construction. See attached product information template form.

.3 Provide MSDS, cut sheets, brochures, manufacturer letters and calculations, etc. as required to document and substantiate product LEED information.

.4 See attached matrix listing current LEED credit targets for each Section and Product. Approved equivalent products are to meet or better currently specified product LEED attributes. Sufficient product / supplier documentation shall be provided to substantiate product LEED claims.

.3 Submit additional LEED submittal requirements included in other sections, in accordance with Section 01 33 00 - Submittal Procedures.

.1 When LEED submitted items are in duplicate to those submitted for compliance with other requirements, submit duplicate copies as separate submittals for compliance with indicated LEED requirements.

.4 Submit Project Materials and Cost Data: provide statement for total cost for building materials used for the Project. Include statement indicating total cost of mechanical and electrical components.

.5 **Submit: LEED Action Plan:** provide preliminary submittals within 14 days of date for Award of contract indicating how the following requirements will be met.

.1 Sustainable Sites Prerequisite 1: Erosion and Sedimentation Control Plan.

.1 Prepare implementation strategy to meet requirements of Erosion and Sedimentation Control plan. Prepare in accordance with Section 31 25 00 -

Erosion and Sedimentation Control and the Erosion and Sedimentation Control Plan.

.2 Materials and Resources Credit MR 2.1&2.2 Construction Waste Management: Divert 75% From Landfill.

.1 Submit Construction Waste Management plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Environment Quality Credit IEQ-3.1 Construction IAQ Management Plan.

.1 Submit Indoor Air Quality Management Plan. Prepare in accordance with Section 01 81 19 – Indoor Air Quality Requirements.

.6 **Submit LEED Progress Reports:** with Applications for Progress Payments, submit reports comparing actual construction and purchasing activities with LEED targets and action plans.

.7 LEED Documentation Submittals:

.1 Provide submittals for SS – Prerequisite 1: Erosion and Sedimentation Control. Include a list of measures implemented during construction and photographs documenting installed sediment and erosion control measures.

.2 Submit product data for plumbing fixtures for Water Efficiency Credits WE-2 Innovative Wastewater Technologies, WE-3.1 Water Use Reduction: 20% Reduction and WE-3.2 Water Use Reduction: 30% Reduction. Submit Data for plumbing fixtures indicating water consumption.

.3 Submit product data for Energy and Atmosphere Prerequisite EA-3 CFC Reduction in HVAC&R Equipment and Elimination of Halons. Include product data for new HVAC equipment indicating absence of CFC refrigerants.

.4 Submit product data for Energy and Atmosphere Credit EA-4 Ozone Protection. Submit product data for new HVAC equipment indicating absence of HCFC refrigerants and for clean-agent fire-extinguishing systems indicating absence of HCFC and Halon.

.5 Submit product data for Energy and Atmosphere Credit EA-5 Measurement and Verification. Submit product data and wiring diagrams for sensors and data collection systems for metering of building energy and water consumption performance.

.6 Submit Construction Waste Management Plan for Materials and Resources Credit MR-2.1 Construction Waste Management: Divert 50% From Landfill and MR 2.2 Construction and Waste Management: Divert 75% From Landfill. Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.7 Submit cost data for salvaged, refurbished or reused materials for Credit MR-3.1 Resource Reuse: 5% and MR-3.2 Resource Reuse: 10%.

.8 Submit product data and certification letters for Materials and Resources Credit MR-4.1 Recycled Content: 7.5% and MR-4.2 Recycled Content: 15%. Submit product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for products having recycled content.

.9 Submit product data for Materials and Resources Credit MR-5.1 Regional Materials: 10% Extracted and Manufactured Regionally and MR-5.2 Regional Materials: 20% Extracted and Manufactured Regionally. Submit product data

indicating location of material manufacturer for regionally manufactured materials. Include the following:

.1 Statement indicating cost, distance and method of transportation from manufacturer to project location for each regionally manufactured material.

.2 Statement indicating cost and distance from point of extraction, harvest, or recovery to project location for each raw material used in regionally manufactured materials.

.2 Submit product data for Materials and Resources Credit MR-6 Rapidly Renewable Materials. Submit product data for rapidly renewable materials.

.1 Include statement indicating quantity by percentage and costs for each rapidly renewable material.

.3 Submit product data and certificates for Materials and Resources Credit MR-7 Certified Wood. (Separate Price.) Submit product data and certificates of chain-of-custody for products containing certified wood.

.1 Include statement indicating costs for products containing certified wood.

.2 Include statement indicating total cost for wood-based materials used for project, including non-rented temporary construction.

.4 Submit product data and shop drawing for Indoor Environmental Quality Credit EQ-1 Carbon Dioxide (CO2) Monitoring. Submit product data and shop drawings for carbon dioxide monitoring system.

.5 Provide submittals for Indoor Environmental Quality Credit EQ-3.1 Construction IAQ Management Plan. Include the following:

.1 Construction indoor air quality management plan.

.2 Product data for temporary filtration media.

.3 Product data for filtration media used during occupancy.

.4 Construction documentation: submit 6 photographs at 3 different times during construction along with description of utilized IAQ measures in accordance with SMACNA, documenting protection of ducts and on-site stored or installed absorptive materials from moisture.

.6 Provide submittals for Indoor Environmental Quality Credit EQ-3.2 Construction IAQ Management plan, Testing Before Occupancy. Include the following:

.1 Signed statement describing building air flush-out procedures including start and completion dates of flush out and statement that filtration media was replaced after flush-out.

.2 Product data for filtration media used during flush-out and during occupancy.

.3 Report from testing and inspecting agency indicating results of IAQ testing and documentation showing conformance with IAQ testing procedures and requirements.

.7 Submit product data for Indoor Environmental Quality Credit EQ-4.1 Low-Emitting Materials: Adhesives and Sealants. Submit product data for interior adhesives and sealants indicating VOC content of products used. Indicate VOC content in g/L calculated in accordance with SCAQMD Rule 1168.

.8 Submit product data for Indoor Environmental Quality Credit EQ-4.2 Low-Emitting Materials: Paints and Coatings. Submit product data for interior paints and coatings

indicating chemical composition and VOC content for products used. Indicate VOC content in g/L calculated in accordance with Green Seal's Standard GS-11 and Green Seal's Standard GC-03 and SCAQMD Rule 1113.

.9 Submit product data for indoor Environmental Quality Credit EQ-4.3 Low-Emitting Materials: Carpet. Submit product data for carpet products indicating VOC content in accordance with CRI Green Label Indoor Air Quality Test Program.

.10 Submit product data for Indoor Environmental Quality Credit EQ-4.4 Low-Emitting Materials: Composite Wood and Laminates Adhesives. Submit product data for composite wood and agrifiber products indicating products contain no added urea-formaldehyde resins and that adhesives used in the fabrication of laminated assemblies contain no urea-formaldehyde.

.11 Submit product data and shop drawings for Indoor Environmental Quality Credit EQ-7.2 Thermal Comfort: Monitoring. Submit product data and shop drawings for permanent monitoring sensors and controls system for temperature and humidity.

Part 2 Products

2.1 RESOURCE REUSE

.1 Where specified, salvage and reuse existing deconstructed materials in accordance with Credit MR-3.1 Resource Reuse: 5% and MR-3.2 Resource Reuse: 10%.

2.2 RECYCLED CONTENT OF MATERIALS

.1 Where specified, supply building materials with recycled materials in accordance with Materials and Resources Credits MR4-1 Recycled Content: 7.5% (post-consumer + 1/2 post industrial) and MR4-2 Recycled Content: 15% (post-consumer + 1/2 post industrial).

.1 Cost of post-consumer recycled content of material will be determined by dividing weight of post-consumer recycled content in material by total weight of materials and multiplying by cost of material.

.2 Cost of post consumer recycled content plus one-half of pre-consumer recycled content of materials will be determined by dividing weight of post-consumer recycled content plus one-half of pre-consumer recycled content in material by total weight of material and multiplying by cost of material.

.3 Do not include mechanical and electrical components in calculations.

.4 Recycled content of materials in accordance with Federal Trade Commission's Guide for the Use of Environmental Marketing Claims, 16 CFR 260.7.

2.3 REGIONAL MATERIALS

.1 Where specified, supply building materials that are regionally extracted, harvested, or recovered in accordance Materials and Resources Credit MR5-1 Regional Materials: 10% Extracted and Manufactured Regionally and Credit MR5-2 Regional Materials: 20% Extracted and Manufactured Regionally.

2.4 RAPIDLY RENEWABLE MATERIAL

.1 Where specified, supply building materials that contain rapidly renewable content in accordance with Materials and Resources Credit MR-6 Rapidly Renewable Materials.

2.5 CERTIFIED WOOD

.1 To be provided as a separate price.

.2 Materials and Resources Credit MR-7 Certified Wood. Supply a minimum of 50% (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC Principles and Criteria.

.1 Wood-based materials include but not limited to the following materials when made from made wood, engineered wood products, or wood-based panel products:

.1 Rough carpentry.

.2 Miscellaneous carpentry.

.3 Heavy timber construction.

.4 Wood decking.

.5 Metal-plate-connected wood trusses.

.6 Structural glued-laminated timber.

.7 Finish carpentry.

.8 Architectural woodwork.

.9 Wood panelling.

.10 Wood veneer wall covering.

.11 Wood flooring.

.12 Wood lockers.

.13 Wood cabinets.

.14 Non-rented temporary construction, including bracing, concrete formwork, pedestrian barriers, and temporary protection.

2.6 LOW-EMITTING MATERIALS

.1 'Interior applications' refers to all products and work on the interior side of the building bituminous air barrier and roofing membranes.

.2 Indoor Environmental Quality Credit EQ4-1 Low-Emitting Materials: Adhesives and Sealants. Interior applications requiring adhesives, sealants and sealant primers must comply with the following content limits for VOC of the State of California's South Coast Air Quality Management District (SCAQMD) Rule 1168, latest edition.

.1 Wood Glues: 30 g/L.

.2 Structural Wood Member Adhesive: 140 g/L.

.3 Metal to Metal Adhesives: 30 g/L.

.4 Adhesives for Porous Materials (Except Wood): 50 g/L.

.5 Subfloor Adhesives: 50 g/L.

.6 Plastic Foam Adhesives: 50 g/L.

.7 Carpet Adhesives: 50 g/L.

.8 Carpet Pad Adhesives: 50 g/L.

.9 VCT and Asphalt Tile Adhesives: 50 g/L.

.10 Cove Base Adhesives: 50 g/L.

.11 Gypsum Board and Panel Adhesives: 50 g/L.

.12 Rubber Floor Adhesives: 60 g/L.

.13 Ceramic Tile Adhesives: 65 g/L.

.14 Multipurpose Construction Adhesives: 70 g/L.

.15 Fiberglass Adhesives: 80 g/L.

.16 Structural Glazing Adhesives: 100 g/L.

.17 Wood Flooring Adhesive: 100 g/L.

.18 Contact Adhesive: 80 g/L.

.19 Special Purpose Contact Adhesive: 250 g/L.

.20 Plastic Cement Welding Compounds: 250 g/L.

.21 ABS Welding Compounds: 325 g/L.

.22 CPVC Welding Compounds: 490 g/L.

.23 PVC Welding Compounds: 510 g/L.

.24 Adhesive Primer for Plastic: 550 g/L.

.25 Sealants: 250 g/L.

.26 Sealant Primers for Nonporous Substrates: 250 g/L.

.27 Sealant Primers for Porous Substrates: 775 g/L.

.28 Modified Bituminous Sealant Primers: 500 g/L.

.29 Single Ply Roof Membrane Adhesives: 250 g/L.

.30 Single Ply Roof Membrane Sealants: 450 g/L.

.3 Indoor Environmental Quality Credit EQ4-2 Low-Emitting Materials: Paints and Coatings. Interior applications use paints and coatings must comply with the following limits for VOC content when calculated according to Green Seal Standard GS-11 and Green Seal Standard GS-03 and SCAQMD Rule 1113. (Latest editions.)

.1 Architectural paints, coatings and primers applied to interior walls and ceilings to Green Seal Standard GS-11, latest edition:

.1 Flat Paints and Coatings: VOC not more than 50 g/L.

.2 Non-Flat Paints and Coatings: VOC not more than 150 g/L.

.2 Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates to Green Seal Standard GS-03, latest edition:

.1 Anti-Corrosive Coatings: VOC not more than 250 g/L.

.3 Clear wood finishes, floor coatings, stains and shellacs applied to interior elements to SCAQMD Rule 1113, latest edition:

.1 Clear wood finishes: varnish & lacquers: VOC not more than 275 g/L.

.2 Floor coatings: VOC not more than 50 g/L.

.3 Sealers:

.1 Waterproofing sealers, VOC not more than 100 g/L.

.2 Sanding sealers, VOC not more than 275 g/L.

.3 Other sealers, VOC not more than 100 g/L.

.4 Shellacs:

.1 Clear: VOC not more than 730 g/L.

.2 Pigmented: VOC not more than 550 g/L.

.5 Stains: VOC not more than 100 g/L.

.4 Aromatic Compounds: paints and coatings not to contain more than 1.0% by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

.5 Restricted Components: paints and coatings not to contain the following:

.1 Acrolein.

.2 Acrylonitrile.

.3 Antimony.

.4 Benzene.

.5 Butyl benzyl phthalate.

.6 Cadmium.

.7 Di (2-ethylhexyl) phthalate.

.8 Di-n-butyl phthalate.

.9 Di-n-octyl phthalate

.10 1,2-dichlorobenzene.

.11 Diethyl phthalate.

.12 Dimethyl phthalate.

.13 Ethylbenzene.

.14 Formaldehyde.

.15 Hexavalent chromium.

.16 Isophorone.

.17 Lead.

.18 Mercury.

.19 Methyl ethyl ketone.

.20 Methyl isobutyl ketone.

.21 Methylene chloride.

.22 Naphthalene.

.23 Toluene (methylbenzene).

.24 1,1,1-trichloroethane.

.25 Vinyl chloride.

.4 Indoor Environmental Quality Credit EQ4-3 Low-Emitting Materials: Carpet. Carpet systems must meet or exceed the requirements of the Carpet and Rug Institute's Green Label indoor Air Quality Test Program.

.5 Indoor Environmental Quality Credit EQ4-4 Low Emitting Materials: Composite Wood and Laminate Adhesives. Do not use composite wood and agrifiber products that contain added urea-formaldehyde resin. Adhesives used to fabricate laminated assemblies containing these products must contain no urea-formaldehyde.

Part 3 Execution

3.1 EROSION AND SEDIMENTATION CONTROL

.1 Sustainable Sites Prerequisite 1: Erosion and Sedimentation control plan. Comply with Section 31 25 00 – Erosion and Sedimentation Control and Erosion and Sedimentation Control Plan.

3.2 COMMISSIONING

.1 Energy and Atmosphere Prerequisite 1 and Credit 3: Fundamental and Best Practise Commissioning. Comply with Section 01 91 00 – LEED Commissioning.

3.3 CONSTRUCTION WASTE MANAGEMENT

.1 Credit MR-2.1&2.2 Construction Waste Management: Divert 75% From Landfill. Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

3.4 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

.1 Credit EQ3-1 Construction IAQ Management Plan: During Construction. Follow SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3. Comply with Section 01 81 19 – Indoor Air Quality Requirements.

.2 Obtain written approval from Contract Administrator to operate permanent HVAC systems during construction. Operate permanent HVAC systems in accordance with Section 23 05 01 - Use of HVAC Systems During Construction and Section 01 81 19 – Indoor Air Quality Requirements. Install MERV-8 filter media in accordance with ASHRAE 52.2 at return-air inlets

.1 Replace air filters immediately prior to building air flush-out and again immediately before occupancy. Replacement air filters to be MERV-13 in accordance with ASHRAE 52.2.

.3 Credit EQ-3.2 Construction IAQ Management Plan: Testing Before Occupancy.

.1 Conduct building flush-out upon construction completion in accordance with Section 01 81 19 – Indoor Air Quality Requirements. Replace air filters after air flush-out. Replacement air filters to have a MERV 13 according to ASHRAE 52.2.

.2 The City will optionally conduct baseline indoor air quality testing program consistent with EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.

.1 Payment for testing in accordance with Section 01 29 83 - Payment Procedures for Testing Laboratory Services Testing services will be paid by Contract Administrator.

.2 Employ independent testing and inspecting agency to conduct IAQ Testing.

END OF SECTION

LEED Canada-NC 1.0 Project Checklist

Sinclair Community Centre Renovation and Expansion

Winnipeg, MB

Yes	?	No				
7	0	7	**Sustainable Sites**			14 Points
Y			Prereq 1	**Erosion & Sedimentation Control**		Required
1			Credit 1	**Site Selection**		1
		1	Credit 2	**Development Density**		1
		1	Credit 3	**Redevelopment of Contaminated Site**		1
1			Credit 4.1	**Alternative Transportation**, Public Transportation Access		1
1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms		1
1			Credit 4.3	**Alternative Transportation**, Alternative Fuel Vehicles		1
1			Credit 4.4	**Alternative Transportation**, Parking Capacity		1
		1	Credit 5.1	**Reduced Site Disturbance**, Protect or Restore Open Space		1
1			Credit 5.2	**Reduced Site Disturbance**, Development Footprint		1
1			Credit 6.1	**Stormwater Management**, Rate and Quantity		1
		1	Credit 6.2	**Stormwater Management**, Treatment		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				
3	1	1	**Water Efficiency**			5 Points
1			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%		1
1			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation		1
		1	Credit 2	**Innovative Wastewater Technologies**		1
1			Credit 3.1	**Water Use Reduction**, 20% Reduction		1
	?		Credit 3.2	**Water Use Reduction**, 30% Reduction		1
Yes	?	No				
8	0	4	**Energy & Atmosphere**			17 Points
Y			Prereq 1	**Fundamental Building Systems Commissioning**		Required
Y			Prereq 2	**Minimum Energy Performance**		Required
Y			Prereq 3	**CFC Reduction in HVAC&R Equipment**		Required
5			Credit 1	**Optimize Energy Performance**		1 to 10
		1	Credit 2.1	**Renewable Energy**, 5%		1
		1	Credit 2.2	**Renewable Energy**, 10%		1
		1	Credit 2.3	**Renewable Energy**, 20%		1
1			Credit 3	**Best Practice Commissioning**		1
1			Credit 4	**Ozone Protection**		1
1			Credit 5	**Measurement & Verification**		1
		1	Credit 6	**Green Power**		1
Yes	?	No				
6	3	0	**Materials & Resources**			14 Points
Y			Prereq 1	**Storage & Collection of Recyclables**		Required
		1	Credit 1.1	**Building Reuse:** Maintain 75% of Existing Walls, Floors, and Roof		1
		1	Credit 1.2	**Building Reuse:** Maintain 95% of Existing Walls, Floors, and Roof		1
		1	Credit 1.3	**Building Reuse:** Maintain 50% of Interior Non-Structural Elements		1
1			Credit 2.1	**Construction Waste Management:** Divert 50% from Landfill		1
1			Credit 2.2	**Construction Waste Management:** Divert 75% from Landfill		1
	?		Credit 3.1	**Resource Reuse:** 5%		1
		1	Credit 3.2	**Resource Reuse:** 10%		1
1			Credit 4.1	**Recycled Content:** 7.5% (post-consumer + ½ post-industrial)		1
1			Credit 4.2	**Recycled Content:** 15% (post-consumer + ½ post-industrial)		1
1			Credit 5.1	**Regional Materials:** 10% Extracted and Manufactured Regionally		1
1			Credit 5.2	**Regional Materials:** 20% Extracted and Manufactured Regionally		1
	?		Credit 6	**Rapidly Renewable Materials**		1
	?		Credit 7	**Certified Wood**		1
		1	Credit 8	**Durable Building**		1
Yes	?	No				
10	2	3	**Indoor Environmental Quality**			15 Points
Y			Prereq 1	**Minimum IAQ Performance**		Required
Y			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**		Required
1			Credit 1	**Carbon Dioxide (CO_2) Monitoring**		1
		1	Credit 2	**Ventilation Effectiveness**		1
1			Credit 3.1	**Construction IAQ Management Plan:** During Construction		1
1			Credit 3.2	**Construction IAQ Management Plan:** Testing Before Occupancy		1
1			Credit 4.1	**Low-Emitting Materials:** Adhesives & Sealants		1
1			Credit 4.2	**Low-Emitting Materials:** Paints and Coating		1
1			Credit 4.3	**Low-Emitting Materials:** Carpet		1
1			Credit 4.4	**Low-Emitting Materials:** Composite Wood and Laminate Adhesives		1
1			Credit 5	**Indoor Chemical & Pollutant Source Control**		1
		1	Credit 6.1	**Controllability of Systems:** Perimeter Spaces		1
		1	Credit 6.2	**Controllability of Systems:** Non-Perimeter Spaces		1
1			Credit 7.1	**Thermal Comfort:** Compliance		1
1			Credit 7.2	**Thermal Comfort:** Monitoring		1
	?		Credit 8.1	**Daylight & Views:** Daylight 75% of Spaces		1
	?		Credit 8.2	**Daylight & Views:** Views 90% of Spaces		1
Yes	?	No				
5	0	0	**Innovation & Design Process**			5 Points
1			Credit 1.1	**Innovation in Design / Reuse 30% Furniture & Furnishings - Adapted from LEED CI - MR Credit 3.3**		1
1			Credit 1.2	**Innovation in Design / Green Cleaning Policy or Green Cleaning - Adapted from LEED EB**		1
1			Credit 1.3	**Innovation in Design / Educational Program - to teach the surrounding community about LEED**		1
1			Credit 1.4	**Pending....**		1
1			Credit 2	**LEED® Accredited Professional**		1
Yes	?	No				
39	6	15	**Project Totals** (pre-certification estimates)			70 Points

Certified 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-70 points

SINCLAIR PARK COMMUNITY CENTRE - LEED DATA TARGET MATRIX

GENERAL NOTES:

- THIS MATRIX IS PROVIDED AS A SUMMARY OF SPECIFIED LEED DATA IN THE SPECIFICATIONS. IF A DISCREPANCY IS FOUND BETWEEN THE MATRIX AND THE SPECIFICATIONS THEN THE DEPARTMENTAL REPRESENTATIVE SHOULD BE NOTIFIED, WHOM WILL THEN CONFIRM INTENT.
- SPECIFIED RECYCLED CONTENT, REGIONAL MATERIALS AND RAPIDLY RENEWABLE CONTENT IS INTENDED AS A MINIMUM GUIDELINE. THE CONTRACTOR IS ENCOURAGED TO SOURCE MATERIALS THAT CONTRIBUTE TOWARDS LEED TARGETS.

CREDIT SPECIFIC NOTES

- ALL RECYCLED CONTENT PERCENTAGES ARE BASED ON THE LEED CALCULATION METHOD (POST CONSUMER CONTENT + 1/2 POST INDUSTRIAL CONTENT) UNLESS INDICATED OTHERWISE.
- ALL PRODUCTS INSIDE THE BUILDING'S WEATHERPROOFING (PER LEED DEFINITION) TO MEET THE REQUIREMENTS OF LEED E.Q. CREDITS 4.1 - 4.4.
- WHERE SPECIFIED AND POSSIBLE, EXTERIOR PRODUCTS SHOULD ALSO MEET THE INTENT OF LEED E.Q. CREDIT 4.
- CREDIT 7 - PROVIDE A SEPARATE PRICE FOR MINIMUM 50% FSC CERTIFIED WOOD FOR ALL WOOD PRODUCTS. NOTE THAT THIS CALCULATION MUST INCLUDE THE EXTERIOR WOOD FIBRE PANELS, WHICH ARE NOT FSC CERTIFIED.
- PORTLAND CEMENT REDUCTION TO ACHIEVE MIN 30% AVERAGE FOR CONCRETE PRODUCTS. ACHIEVE MAXIMUM PORLAND CEMENT REDUCTION WITHIN APPLICATION SPECIFIC STRUCTURAL LIMITATIONS.

SPCC LEED CREDIT MATRIX

LEED CREDIT		PRODUCT	RECYCLED CONTENT	REGIONAL	RAPIDLY RENEWABLE
SPEC SECTION					
03 20 00		Steel Reinforcing	≥ 35%	yes	-
03 30 00		Concrete Fabrications	Portland Cement Reduction ≥ 30%*	yes	-
03 35 05		BASF - Kure-N-Harden	n/a	yes	-
03 48 00		Barkman - Precast Pebblestone Snuffer	-	yes	-
04 04 99		Concrete Block Masonry Units	Portland Cement Reduction ≥ 60%	yes	-
05 12 23		Structural Steel	≥ 35%	yes	-
05 21 00		OWSJ	≥ 35%	yes	-
05 31 00		Steel Decking	≥ 35%	yes	-
05 41 00					
05 50 00		All Metal Fabrications	≥ 35%	yes	-
05 51 29					
06 10 00		Lumber / Plywood	-	yes	-
		OSB	-	yes	100%
06 40 00		MDF & Particle Board	50%	yes	-
06 47 00		Wilsonart Plastic Laminate	20%	-	10%
07 21 13		Board Insulation	≥ 10%	yes	-
07 21 16		Roxul - Comfortbatt R22	≥ 13%	yes	-
		Roxul or equivalent	≥ 13%	yes	-
		Owns Corning - Quiet Zone	≥ 35%	yes	-
		Roxual - mineral wool or equivalent	≥ 13%	yes	-
07 21 29. 03		BASF - Spraytite	-	yes	-
07 44 56		KWP - Naturetech Panel	39%	yes	-
		Fry Reglet - Reveal Trim	25%	-	-
		GreenE-board	15%	-	-
07 46 13		Vicwest - 7/8" Corrugated Sheet	≥ 15%	yes	-

LEED CREDIT		PRODUCT	RECYCLED CONTENT	REGIONAL	RAPIDLY RENEWABLE
07 52 00		Soprema Roofing Products	-	yes	-
07 62 00		All Sheet Metal & Flashing	≥ 25%	yes	-
08 11 00		Metal Doors & Frames	≥ 35% - steel content	yes	-
08 11 16		Aluminum Doors & Frames	-	-	-
08 31 00. 01					
08 33 13		Cookson - CD8-1	≥ 50%	-	n/a
08 50 00		Duxton - Sovereign FG 325 / FG 450	-	yes - glass content.	n/a
08 70 05		Hafele - various products	-	-	n/a
08 80 50		All Glazing	-	yes	n/a
08 90 00		Louvers & Vents	-	-	n/a
09 21 16		Certainteed Proroc CGC Fiberock	> 50%	yes	-
09 22 14					
09 22 16		Studs, Floor Tracks & Ceiling Tracks	≥ 35%	yes by rail	-
09 30 13		Crossville - Eco Cycle	≥ 20%	yes by rail	-
09 51 13		Armstrong - Ultima	≥ 45%	-	-
09 65 16		Mondo - Gym Multi.	> 12%	yes by rail	7%
		Armstrong - Marmorette	17.50%	-	36%
		Roppe - Pinnacle R.B.	-	yes	10%
09 65 19		Armstrong - Biobased Tile	5%	yes by rail	2%
		Roppe - Rop-Cord	90%	-	-
		Johnsonite - Triump	26.50%	yes by rail	7%
		Roppe - Pinnacle R.B.	-	yes	10%
09 68 00		Mannington - Elemental Brights	≥ 20%	-	-
09 80 00		Certain Teed - Architectural Solutions 800	≥ 22%	-	-
10 21 13. 19		Scranton - Toilet Partitions	100%	yes by rail	n/a
32 37 00		Maglin - MLB 400 BM Bench	≥ 30%	yes by rail	n/a

harold funk architect inc.

401-55 Donald Street, Winnipeg, Manitoba, Canada R3C 1L8
(204) 943-5087 fax. (204) 949-9231
info@funkarchitect.com

product information

LEED product information tracking sheet:

Date:

PRODUCT NAME:

Company Name:
Distributor Name:

Material Cost:

MATERIAL REUSE & SALVAGE:

- Is this material (in whole or in part) salvaged, refurbished or reused?: ☐ yes ☐ no
- What is the cost of the salvaged, refurbished or reused portion of this material?: $_____
- Provide documentation stating cost.

Comments:

RECYCLED CONTENT:

- Does this material contain recycled content?: ☐ yes ☐ no
- If so, please fill in the following details:
  - Percentage (by weight) of post-consumer recycled content: _____%
  - Percentage (by weight) of post-industrial recycled content portion: _____%
- Recycled content information source (describe and attach):

Comments:

RAPIDLY RENEWABLE MATERIAL:

- Is this material made from a rapidly renewable resource?: ☐ yes ☐ no
- What is the percentage (by weight) of rapidly renewable content in this material?: _____%
- Rapidly renewable content information source (describe and attach):

Comments:

REGIONAL MANUFACTURE & HARVEST OF MATERIALS:

- Is this material manufactured within 800km (by truck) or 2400km (by rail) radius of the project?: ☐ yes ☐ no
- Distance between project location and manufacturer location (km): _____km
  - Was the product transported by truck or rail?: _____

- Is a minimum of 80% of the raw material in this product harvested and/or extracted locally, within 800km (by truck) or 2400km (by rail) radius of the project?: ☐ yes ☐ no
  - Distance between the harvest/extraction site and the project site (km): _____km
- Regional manufacture and harvest information source(s) (describe and attach):

Comments:

LOW-EMITTING MATERIALS:

- All products used or installed on the interior side of the building's 'weatherproofing' layer (per LEED definition) MUST meet the following requirements.
- If this material is an adhesive, sealant or sealant primer, does it meet the requirements of SCAQMD Rule #1168? ☐ yes ☐ no
- If this material is a paint, coating or primer, does it meet the requirements of Green Seal Standard GS-11? ☐ yes ☐ no
- If this material is an anti-corrosive or anti-rust paint, does it meet the requirements of Green Seal Standard GC-03? ☐ yes ☐ no
- If this material is a clear wood finish, floor coating, stain or shellac, does it meet the requirements of SCAQMD Rule 1113, Architectural Coatings? ☐ yes ☐ no
- If this material is part of a carpet system, does it meet the requirements of the Carpet and Rug Institute's Green Label Indoor AIr Quality Test Program? ☐ yes ☐ no
- If this material is a composite wood or agrifibre product, is it free of added urea-formaldehyde resin and are adhesives free of urea-formaldehyde? ☐ yes ☐ no
- What is the VOC level of the material?: _____g/L
- Low emitting material information source(s) (describe and attach):

Comments:

Prepared by:

_____ _____

name and title of person signing *signature*

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MR Credit 2.1 - 2.2: Construction Waste Management

Declaration not made
(Owner, Architect, Contractor or Responsible Party)
I, ____ , certify that this project has implemented a waste management plan and diverted the following quantities of construction, demolition and land-clearing waste to uses other than landfill.

The type of waste, receiving facility, amount and diversion ratio are listed below. Material sent to landfill is considered to have a diversion ratio of 0% with fully recycled/salvaged waste materials equivalent to 100%.

Waste material measured in: ________________________

Type of Waste (wood, steel, landfill)	Receiving Facility	Amount of Waste []	Diversion Rate [%]	Amount Diverted []
			0%	0%
			0%	0%
			0%	0%
			0%	0%
			0%	0%
			0%	0%
			0%	0%
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			0%	0%
			0%	0%

Total quantity of waste diverted from landfill:	**0%**
Total quantity of waste taken offsite:	**0**
Percentage of waste diverted	**0**

	Points Documented
MR Cr 2.1 (1 point): Diverted from landfill >= 50%	0
MR Cr 2.2 (1 additional point): Diverted from landfill >=75%	0
Total Points Documented	0

Name: ____

Organization: ____

Role in project: ____

Signature: ____

Date: ____

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MR Credit 3.1 - 3.2: Resource Reuse

Declaration not made

(Owner, Architect, Contractor or Responsible Party)

I, _____, declare that this project used the salvaged, refurbished or reused materials, products and furnishings listed below, and that the typical replacement value of these materials as shown in the table below is equivalent to at least 5% of the value of the total materials for the project.

Total Construction Cost:	$0	<-- Please Enter TCC in Project Info
Default Materials Cost:	$0	<-- Please Enter Cost in Project Info

Product Name	Company	Product Value [$]

Sub-total salvaged or reused value	**$0**
Reused value as a percentage of total cost	**0.00%**

	Points Documented
MR Cr 3.1 (1 point): Salvaged/Reused >= 5%	0
MR Cr 3.2 (1 additional point): Salvaged/Reused >=10%	0
Total Points Documented	0

Name: _____

Organization: _____

Role in project: _____

Signature: _____

Date: _____

LETTERHEAD for
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MR Credits 4.1 - 4.2: Recycled Content

Declaration not made
(Owner, Architect, Contractor or Responsible Party)
I, ____ , declare that this project uses materials with recycled content so that the sum of the post-consumer recycled content plus one-half of the post-industrial recycled content constitutes at least 7.5% of the total value of materials in the project.

Total Construction Cost:	$0	<-- Please Enter TCC in Project Info
Default Materials Cost:	$0	<-- Please Enter Cost in Project Info

Product Name	Company	Product Cost [$]	Assembly as % of Product	% Post-Consumer	% Post-Industrial	Recycled content information source
Concrete - SCM Cement	<Enter Concrete Supplier>	$0	100%	0.00%	0.00%	
			100%			
			100%			
			100%			
			100%			
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			100%			
Product Cost Subtotal		$ -				

Total value of post-consumer content	**$0**
Total value of post-consumer content as a percentage of total cost of all materials	**0.00%**
Total value of post-industrial content	**$0**
Total value of post-industrial content as a percentage of total cost of all materials	**0.00%**
Combined value of post-consumer and half of post-industrial content	**$0**
Combined value (post-consumer + 1/2 post-industrial content) as a percentage of total cost	**0.00%**

	Points Documented
MR Cr 4.1 (1 point): Combined Post Consumer plus one-half Post Industrial >=7.5%	0
MR Cr 4.2 (1 additional point): Combined Post Consumer plus one-half Post Industrial >=15%	0
Total Points Documented	0

Name: ________________________________

Organization: ________________________________

Role in project: ________________________________

Signature: ________________________________

Date: ________________________________

MR Credits 4.1 - 4.2: Recycled Content - Calculations for Post-Industrial Recycled Content for SCMs in Concrete

Calculation of %Post-Industrial Recycled Content of Concrete Containing SCMs to Partially Replace Portland Cement
(I.e., total reduction in Portland cement for all the concrete used on the project)

Enter the Mix No., Concrete Design Strength, whether concrete is Air-Entrained, actual Portland Cement Used in the mix and Volume of Mix (I.e., fill in the empty white cells).

Mix No.	Concrete Design Strength @28d (MPa)	Air-Entrained (Y/N)	Base Portland Cement (kg/m3)	Portland Cement Used (kg/m3)	Volume of Mix (m3)
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		
			0		
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			0		
			0		
			0		
			0		

Total % Post-Industrial Recycled Content: **0.00**

Calculation of Total Cost of Concrete (including formwork)

Enter the Materials Cost of Concrete and the Cost of Formwork on the project (I.e., fill in the empty white cells).

Cost Type	Cost ($)
Materials Cost of Concrete	
Cost of Form Materials	

Total Cost of Concrete: **$0.00**

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MR Credit 5.1 - 5.2: Regional Materials

Declaration not made
(Owner, Architect, Contractor or Responsible Party)
I, ____, declare that a minimum of 10% of the materials that are extracted, processed and manufactured regionally within a 800 km (500 mile) radius OR a minimum of 10% of building materials that are extracted, processed and manufactured are shipped primarily by rail or water within a radius of 2400 km (1,500 miles), OR a minimum of 10% of building materials that reflects a combination of the above criteria.

Total Construction Cost:	$0	<-- Please Enter TCC in Project Info
Default Materials Cost:	$0	<-- Please Enter Cost in Project Info

Product Name	Company or Manufacturer	Product Cost [$]	Distance between project and manufacturer [km]	% of Product manufactured locally	Distance between project and extraction site [km]	% of Product extracted locally	Mode of Transport	Regional content information source
				100%		100%		
				100%		100%		
				100%		100%		
				100%		100%		
				100%		100%		
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				100%		100%		
Product Cost Subtotal		$ -						

Total cost of regionally manufactured materials	**$0**
Cost of regionally manufactured materials as a percentage of the totals	**0.00%**
Total cost of regionally extracted materials	**$0**
Cost of regionally extracted materials as a percentage of the total	**0.00%**

	Points Documented
MR Cr 5.1 (1 point): Regional Materials >= 10%	0
MR Cr 5.2 (1 additional point): Regional Materials >= 20%	0
Total Points Documented	0

Name: ______________________________

Organization: ______________________________

Role in project: ______________________________

Signature: ______________________________

Date: ______________________________

LETTERHEAD for
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MR Credit 6: Rapidly Renewable Materials

Declaration not made

(Owner, Architect, Contractor or Responsible Party)

I, _____, declare that rapidly renewable building materials and products (made from plants that are typically harvested within a ten-year or shorter cycle) were specified/used for 5% of the total value of all building materials and products used in the project.

Total Construction Cost:	$0	<-- Please Enter TCC in Project Info
Default Materials Cost:	$0	<-- Please Enter Cost in Project Info

Product Name	Company	Product Cost [$]	Renewable Content [%]	Renewable content information source

Product Cost Subtotal $0

Total value of rapidly renewable products	**$0**
Value of rapidly renewable materials as a percentage of the total material cost	**0.00%**

	Points Documented
MR Cr 6 (1 point): Rapidly Renewable Materials >= 5%	0

Name: _____

Organization: _____

Role in project: _____

Signature: _____

Date: _____

LETTERHEAD for
Please set margins in File/Page Setup/Margins(tab)/top

EQ Credit 4.1 - 4.4: Low-Emitting Materials

EQc4.1: Adhesives & Sealants

Declaration not made

(Architect, Interior Designer, Contractor or Responsible Party)

I, _____, declare that the VOC levels in all adhesives and sealants used in the project do not exceed the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, AND all sealants used as fillers meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51. AND the VOC content of all primers, under-coatings, sealers, clear wood finishes, used must be less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule# 1113, AND the VOC content of anti-corrosive coatings used must be less than the current VOC content limits of GS-03.

☐ I have provided a list of all adhesives and sealants used in the project and have indicated the VOC content for each product.

Credits Awarded: 0

EQc4.2: Paints & Coatings

Declaration not made

(Architect, Interior Designer, Contractor or Responsible Party)

I, _____, declare that the VOC levels in all interior paints and coatings addressed by Green Seal Standard GS-11 do not exceed the VOC and chemical component limits of the standard.

☐ I have provided a list of all interior paints and coatings used in the project that are addressed by the referenced standard and have stated the VOC content for each product.

Credits Awarded: 0

EQc4.3: Carpet

Declaration not made

(Architect, Interior Designer, Contractor or Responsible Party)

I, _____, declare that all carpet systems meet or exceed the current VOC limits of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.

☐ I have provided a list of all carpet systems used in the project.

Credits Awarded: 0

EQc4.4: Composite Wood and Agrifiber Products

Declaration not made

(Architect, Interior Designer, Contractor or Responsible Party)

I, _____, declare that all composite wood and agrifiber products used in the building contain no added urea-formaldehyde resins in the core or adhesive products.

☐ I have provided a list of all composite wood and agrifiber products used in the project.

Credits Awarded: 0

	Points Documented
EQ Cr 4.1 - 4.4 (4 points possible): Low-Emitting Materials	0

Name: _____

Organization: _____

Role in project: _____

Signature: _____

Date: _____

EQ Credit 3.1: Construction IAQ Management Plan, During Construction

Declaration not made

(Contractor, HVAC Engineer, or Responsible Party)

I, _____, declare that an Indoor Air Quality (IAQ) Management Plan has been developed following SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3 and implemented for the construction and pre-occupancy phases of the building. The following actions were implemented:

☐ Absorptive materials were stored, and protected after installation, from moisture damage.

☐ I have completed the table below summarizing performance of filters installed in each system operated during construction.

Filtration Media Used	Manufacturer	Model Number	MERV Value
Installed during construction:			

☐ Building and HVAC systems were inspected for deficiencies that could adversely affect the IAQ and corrected before occupancy (e.g. moisture in HVAC system, water damaged walls, construction debris in ceiling spaces, materials stored near air intakes, etc.).

☐ I have provided the following additional documentation to support the declaration:

EITHER

☐ 18 photographs—six photographs taken on three different occasions during construction

AND

☐ Identification of the SMACNA approach featured by each photograph, in order to show consistent adherence to the credit requirements.

OR

☐ I certify that the five Design Approaches of SMACNA IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3, were used during building construction.

AND

☐ I have included a brief description of some of the important design approaches employed.

	Points Documented
EQ Cr 3.1 (1 point): Construction IAQ Management Plan, During Construction	0

Name: _____

Organization: _____

Role in project: Contractor

Signature: _____

Date: _____

EQ Credit 3.2: Construction IAQ Management Plan, Testing Before Occupancy

OPTION 1: Building Flush Prior to Occupancy

Declaration not made

HVAC Engineer, Contractor or Responsible Party)

I, _____, declare that a minimum two-week building flush-out was conducted prior to occupancy, with installation of new Minimum Efficiency Reporting Value (MERV) 13 filtration media before and after the flush; and providing a total outdoor air volume of 4,300m3 per m2 of floor area (14,100 ft3 of outdoor air per ft2 of floor area).

☐ To support the declaration, I have provided a description of the building flush out procedures.

Please enter Building Floor Area in Project Info section

_____ Flush-out start date

_____ Total Volume of Flush Air (>=4,300m3/m2 floor area)

_____ Flush-out end date

OPTION 2: Building Flush Overlapping with Occupancy

Declaration not made

HVAC Engineer, Contractor or Responsible Party)

I, _____, declare that after construction, a building flush-out was completed before and during occupancy, that included:

- installation of new Minimum Efficiency Reporting Value (MERV) 13 filtration media before and after the flush;
- spaces occupied only after delivery of at least 1,075m3 of outdoor air per m2 of floor area (3,530 ft3 of outdoor air per ft2 of floor
- supplying at least 0.045 m3/m2 (0.15 ft3/ft2) of outside air to all occupied spaces for at least three hours prior to each occupancy;
- during occupancy, providing the greater of 0.045 m3/m2 (0.15 ft3/ft2) or the design minimum outside air supply;
- maintaining the flush-out schedule until at least 4,300 m3 of outdoor air was provided per m2 of floor area (14,100 ft3 of outdoor air

☐ To support the declaration, I have provided a description of the building flush out procedures.

Please enter Building Floor Area in Project Info section

_____ Flush-out start date

_____ Total Volume of Flush Air (>=4,300m3/m2 floor area)

_____ Flush-out end date

OPTION 3: IAQ Testing Prior to Occupancy

Declaration not made

HVAC Engineer or Responsible Party)

I, _____, declare that Baseline IAQ Testing has been completed in accordance with the Compendium of Methods for the Determination of Air Pollutants in Indoor Air IAQ testing protocol has been followed.

	Points Documented
EQ Cr 3.2 (1 point): Construction IAQ Management Plan, Testing Before Occupancy	0

Name: _____

Organization: _____

Role in project: Contractor

Signature: _____

Date: _____

Part 1 General

1.1 REFERENCES

.1 Definitions:

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

.2 Reference Standards:

.1 Canada Green Building Council (CaGBC)

.1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.

.2 Rating System Addenda for New Construction and Major Renovations LEED Canada-NC Version 1.0-Addendum 2007.

.3 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

.2 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008 Stipulated Price Contract.

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

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

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Sustainable Design Submittals:

.1 LEED Submittals: in accordance with Section 01 35 21 - LEED Requirements.

.3 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review and approval by Contract Administrator.

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

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

.6 Include in Environmental Protection Plan:

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

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

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

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3 requirements.

.6 Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Ensure plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

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

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

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

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

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

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

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

1.3 FIRES

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

1.4 DRAINAGE

.1 Adhere to Erosion and Sediment Control Plan – See Section 31 25 00 – Erosiona and Sedimentation Control and Erosion and Sedimentation Control Plan. Meet 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, EPA 832/R-92-005, Chapter 3 requirements.

.2 Provide temporary drainage and pumping required to keep excavations and site free from water.

.3 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

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

1.5 SITE CLEARING AND PLANT PROTECTION

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

.3 Protect roots of designated trees to dripline 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.

.1 Provide temporary enclosures where directed by Contract Administrator.

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

1.7 NOTIFICATION

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

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

.1 Do not take action until after receipt of written approval by Contract Administrator.

.3 Contract Administrator will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 CLEANING

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

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and 01 35 21 - LEED Requirements.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Green Building Council (CaGBC)

.1 LEED Canada-NC Version 1.0-December 2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.

.2 Federal Legislation

.1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).

.2 Canadian Environmental Assessment Act, 1992, c. 37 (CEAA).

.3 Transportation of Dangerous Goods Act 1992, c. 34 (TDGA).

.4 Motor Vehicle Safety Act 1993, c. 16 (MVSA).

1.2 DEFINITIONS

.1 Alternate Disposal: reuse and recycling of materials by designated facility, user or receiving organization which has valid Certificate of Approval to operate. Alternative to landfill disposal.

.2 Deconstruction: systematic dismantling of structure to salvage materials for reuse. What cannot be reused is considered subsequently for recycling. Ultimate objective is to recover potentially valuable resources while diverting from landfill what has traditionally been significant portion of waste stream.

.3 Demolition: rapid destruction of structure with or without prior removal of hazardous materials.

.4 Disassembly: physical detachment of materials from structure and may include: prying, pulling, cutting, unscrewing.

.5 Hauler: company (possessing appropriate and valid Certificate of Approval) contracted to transport waste, reusable or recyclable materials off site to designated facility, user or receiving organization.

.6 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

.7 Processing: tasks which are subsequent to disassembly and may include: moving materials, denailing, cleaning, separating and stacking.

.8 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.

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

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

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

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

.2 Returning reusable items may include pallets and unused products to vendors.

.12 Salvage: removal of structural and non-structural structure materials from industrial, commercial and institutional structure deconstruction/disassembly projects for purpose of reuse or recycling.

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

.14 Used Building Material Receipt: receipt issued at end destination for materials designated for alternate disposal.

.15 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying (by volume or weight) amounts of materials and wastes generated during deconstruction. Indicates quantities of reuse, recycling and landfill.

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

.17 Waste Reduction Workplan (WRW): written report which outlines actions to be taken to reduce, reuse and recycle materials during course of deconstruction. Actions based on finding of the Waste Audit (WA).

.18 Weigh Bill: receipt received from recycling facility indicating weight and content of each load/bin of material.

1.3 SUBMITTALS

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

.2 WMC is responsible for fulfillment of reporting requirements.

.3 Prior to start of Work on site, submit detailed Waste Audit indicating descriptions of and anticipated quantities of materials to be reused, recycled and landfilled in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.4 Based on findings of Waste Audit submit Waste Reduction Workplan indicating schedule of selective demolition, material descriptions and quantities to be salvaged, number and location of bins, anticipated frequency of tippage, and names and addresses of haulers,

facilities, receiving organizations in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.5 Submit copies of certified weigh bills, bills of lading, used building material receipts from authorized disposal sites and reuse and recycling facilities for material removed from site to Contract Administrator on weekly basis or upon request.

.1 Written authorization from Contract Administrator is required to deviate from haulers, facilities, receiving organizations listed in Waste Reduction Workplan.

.6 Workers, haulers and subcontractors must possess current, applicable Certificates of Approval / permits to remove, handle and dispose of wastes categorized as hazardous.

.1 Provide proof of compliance within 24 hours upon receipt of written request of Contract Administrator.

.7 Keep copies of submittals on file for minimum of five years after completion of project.

1.4 DECONSTRUCTION DRAWINGS

.1 Where required by authorities having jurisdiction, submit for approval, drawings, diagrams and details showing sequence of deconstruction work, materials designated for salvage and support of structures and underpinning.

.1 Submit drawings stamped and signed by qualified professional Engineer registered or licensed in the Province of Manitoba, Canada.

1.5 QUALITY ASSURANCE

.1 Qualifications: provide adequate workforce training through meetings and demonstrations. Have someone on site with deconstruction experience throughout project for consultation and supervision purposes.

.2 Regulatory Requirements: ensure Work is performed in compliance with CEPA, CEAA, TDGA, MVSA, and applicable Provincial/Territorial regulations.

1.6 SITE CONDITIONS

.1 Existing Conditions:

.1 Should materials resembling spray or trowel applied asbestos or other designated substance listed as hazardous be encountered in course of deconstruction, stop work, take preventative measures, and notify Contract Administrator immediately. Do not proceed until written instructions have been received.

.2 Base structures to be deconstructed on their condition on date of contract award. Be responsible for provision of services required for deconstruction.

.2 Storage:

.1 Store materials salvaged for reuse and recycling or designated for alternate disposal in locations as outlined in Waste Reduction Workplan.

.2 Maximum permitted duration of material storage on site determined in consultation with Contract Administrator.

1.7 ENVIRONMENTAL PROTECTION

.1 Ensure Work is done in accordance with Section 01 35 43 - Environmental Procedures.

.2 Ensure deconstruction work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air noise pollution.

.3 Fires and burning of waste or materials is not permitted on site.

.4 Do not bury waste or materials on site unless approved in writing by Contract Administrator.

.5 Do not dispose of waste or volatile materials into watercourses, storm or sanitary sewers.

.1 Ensure proper disposal procedures in accordance with CEPA, TDGA, and applicable Provincial/Territorial regulations.

.6 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties in accordance with authorities having jurisdiction.

.7 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with as directed by Contract Administrator.

.8 Protect trees, plants and foliage on site and adjacent properties.

.9 Prevent extraneous materials from contaminating air beyond deconstruction area, by providing temporary enclosures during Work.

.10 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on temporary roads.

.11 Employ reasonable means necessary to protect salvaged materials from vandalism, theft, adverse weather, or inadvertent damage by heavy machinery.

.12 Use natural lighting to do Work where possible.

.1 Shut off lighting except those required for security purposes at end of each day.

.13 Organize site and workers in manner which promotes efficient flow of materials through disassembly, processing, stockpiling, and removal.

1.8 SCHEDULING

.1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion. In event of unforeseen delay notify Contract Administrator in writing.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

.1 Employ necessary means to assess site conditions and structure to determine quantity and locations of hazardous materials.

.2 Investigate site and structure to determine dismantling, processing and storage logistics required prior to beginning of Work.

.3 Develop strategy for deconstruction to facilitate optimum salvage of reusable and recyclable materials.

3.2 PREPARATION

.1 Obtain necessary permits and approvals.

.1 Provide copies to Contract Administrator prior to start of Work on site.

.2 Post signs in visible locations and appropriate languages which indicate to workers, subcontractors, haulers, and public, location of processing and stockpiling of each material, bin location and use e.g. ("CLEAN WOOD ONLY").

3.3 STOCKPILING

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Locate stockpiled materials convenient for use in new construction. Eliminate double handling wherever possible.

.4 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

.5 Supply separate, clearly marked disposal bins for categories of waste material. Recycling and waste to be processed in accordance with Section 01 74 21 – Waste Management and Disposal.

3.4 REMOVAL FROM SITE

.1 Remove stockpiles of like materials by alternate disposal option once collection of materials is complete. See Section 01 74 21 – Waste Management and Disposal.

.2 Transport material designated for alternate disposal using approved haulers, facilities, receiving organizations listed in Waste Reduction Workplan and in accordance with applicable regulations.

.1 Written authorization from Contract Administrator is required to deviate from haulers, facilities, receiving organizations listed in Waste Reduction Workplan.

.3 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

.1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.

.2 Written authorization from Contract Administrator is required to deviate from disposal facilities listed in Waste Reduction Workplan.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

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

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

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. Notify Contract Administrator. Refer to Occupational Hygiene Report.

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

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

1.3 CITY OF WINNIPEG REQUIREMENTS

.1 Minimum 48hrs notification to City of Winnipeg Public Works Building Services Department is required for placing of any piles or concrete work or any critical construction technique. All construction work will be halted if notice is not adhered to.

.2 Promptly report all accidents and potential liability claims to the Contract Administrator.

1.4 BUILDING SMOKING ENVIRONMENT

.1 Smoking is not permitted inside or within 10 metres of the building.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INSPECTION

.1 Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Contract Administrator shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Contract Administrator for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Contract Administrator.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Contract Administrator at no cost to the City. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

.1 Notify appropriate agency and Contract Administrator in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

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

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

.3 If in opinion of Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Contract Administrator.

1.6 REPORTS

.1 Submit 4 copies of inspection and test reports to Contract Administrator.

.2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Contract Administrator and may be authorized as recoverable.

1.8 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to Contract Administrator or as specified in specific Section.

.3 Prepare mock-ups for Contract Administrator review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Contract Administrator will assist in preparing schedule fixing dates for preparation.

.6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.9 MILL TESTS

.1 Submit mill test certificates as requested or as required of specification Sections.

1.10 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Green Building Council (CaGBC)

.1 LEED Canada-NC Version 1.0-December 2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.

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

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 SUBMITTALS

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

.2 LEED Submittals:

.1 Submit erosion and sedimentation control plan for Credit SSp1 in accordance with LEED Canada-NC.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.4 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.5 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

.3 Pay for utility charges at prevailing rates.

1.6 TEMPORARY HEATING AND VENTILATION

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

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

.3 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Protect Work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

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

.5 Provide adequate ventilation to meet health regulations for safe working environment.

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

.5 Ventilating:

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

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

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

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

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

.6 Permanent heating system of building, not to be used when available, unless explicitly permitted by Contract Administrator. Be responsible for damage to heating system if use is permitted. Use by Contractor does not constitute commencement of warranty time-frame.

.7 On completion of Work for which permanent heating system is used, replace filters, clean and inspect.

.8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Contract Administrator.

.9 Pay costs for maintaining temporary heat, when using permanent heating system.

.10 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.11 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.7 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

.3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contract Administrator.

.4 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.5 Existing building power supply is available and will be provided for construction use at current cost rates. Connect to existing power supply in accordance with Canadian Electrical Code and provide meters and switching.

.6 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Contract Administrator, provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.8 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax, data hook up, lines, equipment necessary for own use.

1.9 FIRE PROTECTION

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

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 See Section 31 25 00 – Erosion and Sedimentation Control and Erosion and Sedimentation Control Plan.

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent

properties and walkways, according to requirements of authorities having jurisdiction, sediment and erosion control drawings, sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Green Building Council (CaGBC)

.1 LEED Canada-NC Version 1.0-December 2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.

.2 Canadian General Standards Board (CGSB)

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

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

.3 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121-M1978(R2003), Douglas Fir Plywood.

.3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

.4 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

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

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 SUBMITTALS

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

.2 LEED Submittals:

.1 Submit erosion and sedimentation control plan for Credit SSp1 in accordance with LEED Canada-NC.

1.3 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms temporary stairs.

1.5 HOISTING

.1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists cranes to be operated by qualified operator.

1.6 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

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

1.7 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

1.8 SECURITY

.1 Be responsible for security to site and contents of site after working hours and during holidays.

1.9 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.11 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Contract Administrator.

1.12 CONSTRUCTION SIGNAGE

.1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Contract Administrator.

.2 Construction sign 1.2 x 2.4 m wide, of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.

.3 Sign to indicate names and logos of:

.1 The City of Winnipeg
.2 The Province of Manitoba
.3 The Federal Government
.4 The General Council of Winnipeg Community Centres
.5 The Prime Consultant
.6 The General Contractor

.4 Locate project identification sign as directed by Contract Administrator and construct as follows:

.1 Build concrete foundation, erect framework, and attach signboard to framing.
.2 Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.
.3 Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.

.5 Direct requests for approval to erect Consultant/Contractor signboard to Contract Administrator.

.6 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

.7 Maintain approved signs and notices in good condition for duration of project, and return to the City's upon completion of project.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.

.2 Protect travelling public from damage to person and property.

.3 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.4 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.5 Construct access and haul roads necessary.

.6 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

.7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.8 Dust control: adequate to ensure safe operation at all times.

.9 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Contract Administrator.

.10 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.11 Provide snow removal during period of Work.

.12 Remove, upon completion of work, haul roads designated by Contract Administrator.

1.14 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)

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

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

.2 Canadian Standards Association (CSA International)

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

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.2 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.3 HOARDING

.1 Erect temporary site enclosure using new 1.2 m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4 m on centre. Provide one lockable truck gate. Maintain fence in good repair.

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

1.4 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, and all areas that may pose a risk.

.2 Provide as required by governing authorities and as indicated.

1.5 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.6 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.7 ACCESS TO SITE

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

1.8 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.9 FIRE ROUTES

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

1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

.2 Be responsible for damage incurred.

1.11 PROTECTION OF BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Contract Administrator locations and installation schedule 3 days prior to installation.

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

1.12 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-94, Stipulated Price Contract.

.2 DOC 14-2000, Design-Build Stipulated Price Contract.

.3 DOC 15-2000, Design-Builder/ Consultant Contract.

.2 Within text of each specifications section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.4 If there are questions as to whether products or systems are in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.

.5 Cost for such testing will be born by the City in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Contract Administrator of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Contract Administrator at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Contract Administrator reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

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

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in 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 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber and panels 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 damaged products at own expense and to satisfaction of Contract Administrator.

.9 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by the City will be paid for by the City. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, 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 manufacturers.

.2 Notify Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that Contract Administrator will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract Administrator if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Contract Administrator reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

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

1.9 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Contract Administrator if there is interference. Install as directed by Contract Administrator.

1.10 REMEDIAL WORK

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

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Contract Administrator of conflicting installation. Install as directed.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

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

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

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

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

1.14 PROTECTION OF WORK IN PROGRESS

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

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 The City's identification of existing survey control points and property limits.

1.2 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practice in Place of Work, acceptable to Contract Administrator.

1.3 SURVEY REFERENCE POINTS

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

.2 On request of Contract Administrator, submit documentation to verify accuracy of field engineering work.

.3 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 Consultant in writing if subsurface conditions at 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 Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of the City or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of the City or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit 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 Remove samples of installed Work for testing.

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

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

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

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

.10 Restore work with new products in accordance with requirements of Contract Documents.

.11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, full thickness of the construction element.

.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C", In Effect as Of: May 14, 2004.

1.2 PROJECT CLEANLINESS

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

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

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

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

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

.6 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

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

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

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

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

1.3 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris other than that caused by the City or other Contractors.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site, unless approved by Contract Administrator.

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

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.9 Clean lighting reflectors, lenses, and other lighting surfaces.

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

.11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.14 Remove dirt and other disfiguration from exterior surfaces.

.15 Clean and sweep roofs, gutters, areaways, and sunken wells.

.16 Sweep and wash clean paved areas.

.17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.18 Clean roofs, downspouts, and drainage systems.

.19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.20 Remove snow and ice from access to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 LEED Canadian Green Building Council (CGBC), Green Building Rating System, For New Construction and Major Renovations LEED Canada-NC, Version 1.0 - December 2004.

1.2 DEFINITIONS

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

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

.3 Construction Waste Management Plan (CWMP): Waste management plan that meets the requirements of LEED Credit MR 2.1 & 2.2: Construction Waste Management.

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

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

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

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

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

.9 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.

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

- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.

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

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

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

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

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

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

1.3 CONSTRUCTION WASTE MANAGEMENT PLAN

.1 Waste Management Goal: 75 percent of total Project Waste to be diverted from landfill sites. Provide Contract Administrator documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.2 Prior to start of Work, conduct meeting with Contract Administrator to review and discuss the Construction Waste Management Plan (CWMP) and waste management goals.

.3 The Contractor is to develop and implement a CWMP that is specifically tailored to the project and the Contractor's operational procedures. The CWMP must contain the following components:

.1 Material Source Separation Plan. (MSSP)
.2 Waste Reduction Workplan. (WRW)
.3 Waste Audit (WA) and Demolition Waste Audit (DWA).
.4 Cost Revenue Analysis Workplan. (CRAW)
.5 Schedules A B C D E completed for project.

.4 Maintain at job site, one copy of the CWMP.

1.4 SUBMITTALS

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

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

.1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
.2 Submit 2 copies of completed Waste Reduction Workplan (WRW): Schedule B.
.3 Submit 2 copies of completed Demolition Waste Audit (DWA): Schedule C.
.4 Submit 2 copies of Cost/Revenue Analysis Workplan (CRAW): Schedule D.
.5 Submit 2 copies of Materials Source Separation Program (MSSP) description.

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

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

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

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

.4 For each material land filled or incinerated from project, include amount in tonnes of material and identity of landfill, incinerator or transfer station.

1.5 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 MSSP must present a strategy for separation of reusable and recyclable waste material into material categories from other types of waste at point of generation.

.2 Prepare MSSP and have ready for use prior to project start-up.

.3 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Contract Administrator.

.4 MSSP must include the following as minimum:

.1 Training and signage strategy to ensure that the construction team understands the intent and requirements of the CWMP.

.2 Coordination strategy, including regular meetings and ongoing oversight to ensure compliance.

.3 Clear delineation of responsibilities for implementation of the MSSP.

.4 Designated areas for recycling bins and storage areas.

.5 Recycling program for construction site-office waste.

.5 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.6 Provide containers to deposit reusable and recyclable materials.

.7 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.8 Locate separated materials in areas which minimize material damage.

.9 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

.1 Transport to approved and authorized recycling facility or to users of material for recycling.

.10 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

.1 Ship materials to site operating under Certificate of Approval.

.2 Materials must be immediately separated into required categories for reuse or recycling.

1.6 WASTE REDUCTION WORKPLAN (WRW)

.1 WRW must address opportunities for reduction, reuse, or recycling of materials.

.2 WRW should include but not limited to:

.1 Destination of materials listed.

.2 Deconstruction/disassembly techniques and sequencing.

.3 Schedule for deconstruction/disassembly.

.4 Location.

.5 Security.

.6 Protection.

.7 Clear labelling of storage areas.

.8 Details on materials handling and removal procedures.

.9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.

.3 Describe management of waste.

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

.1 Reduce:

.1 Reduce the amount of packaging by requesting that suppliers eliminate extraneous product or material packaging.

.2 Make efficient use of materials to eliminate unnecessary cutting and waste.

.3 Protect stored or installed products to limit damage.

.2 Salvage:

.1 Deconstruct and sort building materials for reuse on site and elsewhere.

.1 Gravel from removed baseball diamond may be used as fill under structural concrete floors.

.2 Salvage wood for construction of new ceiling trellis.

.3 Salvage concrete block for new non-structural concrete block.

.3 Recycle:

.1 Donate:

.1 Window and door assemblies.

.2 Plumbing and electrical fixtures.

.3 Excess salvaged materials.

.2 Sort & recycle:

.1 Wood

.2 Concrete

.3 Asphalt

.4 Concrete block

.5 Gypsum

.6 Batt insulation

.7 Asphalt shingles.

.8 Finish materials.

.5 Identify local recycling depots for construction waste products.

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

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

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

1.7 WASTE AUDIT (WA)

.1 Conduct WA prior to project start-up.

.2 Prepare WA: Schedule A.

.3 Record, on WA - Schedule A, extent to which materials or products used consist of recycled or reused materials or products.

1.8 DEMOLITION WASTE AUDIT (DWA)

.1 Prepare DWA prior to project start-up.

.2 Complete DWA: Schedule C.

.3 Provide inventory of quantities of materials to be salvaged for reuse, recycling, or disposal.

1.9 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Prepare CRAW: Schedule D.

1.10 STORAGE, HANDLING AND PROTECTION

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

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

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

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

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Contract Administrator.

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

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

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

.1 On-site source separation is recommended.

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

.3 Provide waybills for separated materials.

1.11 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

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

.3 Keep records of construction waste 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 Costs for disposal or sale.

.4 All weight should be measured in tonnes.

.1 Other units of measurement must be converted to tonnes.

.5 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

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

1.12 SCHEDULING

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

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 APPLICATION

.1 Do Work in compliance with CWMP.

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

3.2 CLEANING

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

.2 Clean-up work area as work progresses.

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

3.3 DIVERSION OF MATERIALS

.1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Contract Administrator, and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

.2 Demolition Waste: - See Section 02 41 21 – Deconstruction of Structures.

Material Type	Recommended Diversion %	Actual Diversion %
Batt Insulation	50	___
Carpet	50	___
Doors and Windows	100	___
Electrical Equipment	45	___
Mechanical Equipment	45	___
Metals	100	___
Brick/Masonry	75	___
Rubble	100	___
Clean Uncontaminated Wood	100	___
Cardboard	100	___
Plastic Packaging	75	___
Overall Diversion Targets	75	___

.3 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	___
Plastic Packaging	75	___
Rubble	100	___
Steel	100	___
Wood (uncontaminated)	75	___
Other		___

3.4 WASTE AUDIT (WA)

.1 Schedule A - Waste Audit (WA):

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Wood and Plastics Material Description Off-cuts Warped Pallet Forms						

(1) Material Category	(2) Material Quantity Unit	(3) Estimated Waste %	(4) Total Quantity of Waste (unit)	(5) Generation Point	(6) % Recycled	(7) % Reused
Plastic Packaging						
Cardboard Packaging						
Other						
Doors and Windows Material Description						
Painted Frames						
Glass						
Wood						
Metal						
Other						

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B:

(1) Material Category	(2) Person(s) Respon-sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destina-tion
Wood and Plastics Material Description							
Chutes Warped Pallet Forms							
Plastic Packag ing							
Card-board Packag ing							
Other							
Doors and Windows Material Description							

(1) Material Category	(2) Person(s) Respon-sible	(3) Total Quantity of Waste (unit)	(4) Reused Amount (units) Projected	Actual	(5) Recycled Amount (unit) Projected	Actual	(6) Material(s) Destina-tion
Painted							
Frames							
Glass							
Wood							
Metal							
Other							

3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C - Demolition Waste Audit (DWA):

(1) Material Description	(2) Quantity	(3) Unit	(4) Total	(5) Volume (cum)	(6) Weight (cum)	(7) Remarks and Assumptions
Wood						
Wood Stud						
Plywood						
Baseboard-Wood						
Door Trim - Wood						
Cabinet Doors and Windows						
Panel Regular						
Slab Regular Wood Laminate						
Byfold - Closet						
Glazing						

3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Schedule D - Cost/Revenue Analysis Workplan (CRAW):

(1) Material Description	(2) Total Quantity (unit)	(3) Volume (cum)	(4) Weight (cum)	(5) Disposal Cost/Credit $(+/-)	(6) Category Sub-Total $(+/-)
Wood					
Wood Stud					
Plywood					
Baseboard - Wood					
Door Trim - Wood					

(1) Material Description	(2) Total Quantity (unit)	(3) Volume (cum)	(4) Weight (cum)	(5) Disposal Cost/Credit $(+/-)	(6) Category Sub-Total $(+/-)
Cabinet Doors and Windows Panel Regular Slab Regular Wood Laminate Byfold - Closet Glazing					$
					$
		(7) Cost (-) / Revenue (+)			$

3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E - Government Chief Responsibility for the Environment:

Province	Address	General Inquires	Fax
Manitoba	Manitoba Environment Building 2, 139 Tuxedo Avenue, Winnipeg, MB R3N 0H6	204-945-7100	

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Contract Administrator in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Contract Administrator inspection.

.2 Contract Administrator Inspection:

.1 Contract Administrator and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, adjusted and balanced and fully operational.

.4 Certificates required by Boiler Inspection Branch, Fire Commissioner Utility companies: submitted.

.5 Operation of systems: demonstrated to the City's personnel.

.6 Commissioning of mechanical systems: completed in accordance with 01 91 00 – LEED Commissioning and copies of final Commissioning Report submitted to Contract Administrator.

.7 Work: complete and ready for final inspection.

.8 LEED Requirements: That all LEED requirements have been implemented and all submittals have been prepared and handed over to Contract Administrator. See Section 01 35 21 – LEED Requirements.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Contract Administrator, and Contractor.

.2 When Work incomplete according to Contract Administrator, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of the City's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment:

.1 When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 When Work deemed incomplete by Contract Administrator, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

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

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

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and 01 35 21 - LEED Requirements.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with contractor's representative and Contract Administrator, to:

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.2 Contract Administrator to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.4 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

1.5 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

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

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

.6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.6 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Contract Administrator one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

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

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Contract Administrator.

1.7 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Contract Administrator.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record 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 appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record 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.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.8 FINAL SURVEY

.1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.9 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 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, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

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

.8 Include sequence of operation by controls manufacturer.

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

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

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

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

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.

.15 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.

.1 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 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to site; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Contract Administrator.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to site; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Contract Administrator.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.
.2 Provide items with tags identifying their associated function and equipment.
.3 Deliver to site; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Contract Administrator.
.2 Include approved listings in Maintenance Manual.

1.12 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

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

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

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Contract Administrator.

1.13 WARRANTIES AND BONDS

.1 Refer to Subsection C13. Warranty of Part C – City of Winnipeg: General Conditions for Construction. NOTE: All information in mentioned document supersedes any conflicting information that may be stated here within this section.

.2 Refer to Subsection D 25. Warranty of Part D – City of Winnipeg: Supplemental Conditions. NOTE: All information in mentioned document supersedes any conflicting information that ma be stated here within this section.

.3 Develop warranty management plan to contain information relevant to Warranties.

.4 Submit warranty management plan, 30 days before planned pre-warranty conference, to Contract Administrator approval.

.5 Warranty management plan to include required actions and documents to assure that Contract Administrator receives warranties to which it is entitled.

.6 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.7 Submit, warranty information made available during construction phase, to Contract Administrator for approval prior to each monthly pay estimate.

.8 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.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, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

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

.10 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as fire protection, alarm systems, sprinkler systems, lightning protection systems, .

.3 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.11 Respond in timely manner to oral or written notification of required construction warranty repair work.

.12 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Contract Administrator to proceed with action against Contractor.

1.14 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Contract Administrator.

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of acceptance until project is accepted for occupancy.

.4 Indicate following information on tag:

.1 Type of product/material.
.2 Model number.
.3 Serial number.
.4 Contract number.
.5 Warranty period.
.6 Inspector's signature.
.7 Construction Contractor.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate scheduled operation and maintenance of equipment and systems to City of Winnipeg and Community Centre representatives two weeks prior to date of substantial performance.

.2 City of Winnipeg: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.

.3 Preparation:

.1 Verify conditions for demonstration and instructions comply with requirements.

.2 Verify designated personnel are present.

.3 Ensure equipment has been inspected and put into operation in accordance Contract Documents.

.4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 00 - LEED Commissioning (Cx) and equipment and systems are fully operational.

.4 Demonstration and Instructions:

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.

.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

.3 Review contents of manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

.5 Time Allocated for Instructions: ensure amount of time required for instruction of each item of equipment or system as follows:

.1 Mechanical Systems – 8 hours of instruction.

.2 Electrical Systems – 4 hours of instruction.

.3 Windows, coiling counter doors, and other architectural systems – 2 hours of instruction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Contract Administrator's approval.

.3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Give time and date of each demonstration, with list of persons present.

.5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:

.1 Instruct the City's personnel.

.2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 GENERAL

1.1 OVERVIEW

.1 This section provides a draft Indoor Air Quality (IAQ) management plan with minimum standards for implementation during construction.

.2 It is the responsibility of the Contractor to develop and implement the final IAQ management plan, which should be specifically tailored to the project and the Contractor's operational procedures.

.3 The IAQ management plan must meet the requirements of LEED Credit EQ 3.1 – Construction IAQ Management Plan: During Construction:

.1 *During construction, meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.* (Note: This standard must be followed regardless of whether the building is occupied.)

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

.3 *If air handlers must be used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.*

.4 *Make provisions for inspections of building and HVAC systems for deficiencies that could adversely affect the IAQ (e.g. moisture in HVAC system, water damaged walls, construction debris in ceiling spaces, materials stored near air intakes, etc.) and the correction of any deficiencies found from building inspections.*

.4 Building flushout procedures must meet the requirements of LEED Credit EQ 3.2 – Construction IAQ Management Plan: Testing Before Occupancy:

.1 *Option 1: Building Flush Prior to Occupancy: Prior to occupancy, and after construction ends and all interior finishes are installed, install new filtration media, and flush-out the building by supplying a total air volume of 4,300m^3 of outdoor air per m^2 of floor area while maintaining an internal temperature of at least 16 degrees C and, where mechanical cooling is operated, relative humidity no higher than 60%.*

.2 *Option 2: Building Flush Overlapping with Occupancy: After construction ends and all interior finishes installed, install new filtration media and flush-out the building by supplying a minimum of 0.76L/s/m^2 of outside air to all occupied spaces for at least three hours prior to each occupancy; and during occupancy, the greater of 0.76L/s/m^2 or the design minimum outside air supply, for the duration of the flush-out period. Spaces may only be occupied following delivery of a minimum of 1,075m^3 of outdoor air per m2 of floor area. Continue the flush-out until a total air volume of 4,300m^3 of outdoor air per m^2 of floor area has been provided.*

1.2 REFERENCES

.1 SMACNA IAQ Guideline for occupied buildings under construction, 1995. (Sheet Metal and Air Conditioning Contractor's National Association.)

.2 ANSI/ASHRAE 52.2-1999: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

1.3 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT PLAN

.1 This plan has been established to clearly define minimum practices which must be employed to assure a healthy work environment during construction and healthy indoor air quality (IAQ) for the eventual building occupants.

.1 This project will follow the steps outlined in this Plan to assure the project keeps indoor air and mechanical equipment as clean as possible.

.2 This Plan is based on the recommended Design Approaches from the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3 and will be used in conjunction with Job Specific Safety Requirements.

.2 The construction employees on the jobsite and the eventual occupants of the building will expect a pollutant-free workspace as referenced in the Canadian Green Building Council's LEED for New Construction Program.

.1 The Plan defines the strategies and project specific requirements to ensure the best possible indoor environment.

.2 The existence of construction dirt, dust, toxins and objectionable odours in the occupant's workspace is unacceptable. It is for these reasons that this *Construction Indoor Air Quality Management Plan* is to be implemented.

1.4 OBJECTIVES

.1 The objective of this Plan is to create a safe working environment during construction and after construction at no cost premium to the project.

.2 Each construction employee on the jobsite will be trained on the *Construction Indoor Air Quality Management Plan* for this project.

.1 Indication of training will include a GREEN helmet sticker displayed on the construction employee's hardhat.

.2 Any construction employee or visitor to this jobsite may notify the General Contractor when an observation of a violation of this Plan has occurred. The General Contractor will be responsible for immediate remediation of the violation. This Plan will be displayed in the construction jobsite trailer at all times.

1.5 HVAC PROTECTION-DURING CONSTRUCTION

.1 Ductwork on site will be protected and enclosed as outlined in "*Job Specific Requirements"*. Construction employees are to keep all supply, return and exhaust ductwork free of dust, dirt, mold, and air-borne contaminants. All open ends of installed supply, return, exhaust ductwork or return air shaft openings are to be sealed by the mechanical contractor with

plastic materials to prevent contamination until start-up or testing/operation of system. Refer to *Job Specific Requirements* for additional ductwork protection procedures.

.2 Where the air distribution systems will be operating during construction, temporary filtration media will be installed on all return air openings and will be checked and replaced during construction as necessary by the mechanical contractor.

.3 The mechanical contractor will be responsible for keeping the return air ductwork clean during all construction activities. All return air systems are to be shut down during the heaviest periods of construction to avoid dust and odours from entering the system and being released throughout the building. Filtration media will be replaced with new materials at the end of construction, prior to occupancy. MERV ratings of filters used during construction will meet LEED IAQ Credit requirements.

.4 All return air openings are to be covered during construction to prevent dust and debris from settling in the ductwork. The central filtration system shall be monitored and clean filters will be installed by the mechanical contractor during heavy construction.

.5 Steps are to be made to upgrade or change filters frequently to maintain air quality. Daily monitoring of filters during heavy construction activity shall be performed by mechanical contractor.

.6 The supply side of the HVAC system is to be kept clean. When the HVAC system is off, all ducts and diffusers are to be covered, inspected and cleaned as necessary. During start up, it will be common for some dirt to be discharged, however if it is a considerable amount of debris the filters are to be changed until the proper indoor air quality level is restored.

.7 Ductwork and/or insulation, which contain moisture, shall not to be installed. Ductwork and/or insulation which become wet after installation shall be removed and replaced. All piping, ductwork and conduit system openings are to be closed at the end of each work day.

.8 All VAV and FTU boxes while in storage are to be wrapped in plastic and covered completely.

.9 All fresh air intake louvers, openings, ductwork, etc. for indoor air handling units, perimeter louvers, exhaust openings, etc. are to be covered with plywood and plastic until ready for operation. Openings are to be closed at the end of each work day when HVAC equipment is shut off.

.10 All condensate drain flows from mechanical equipment are to be constantly monitored for proper flow and blockage prevention.

.11 Where there are special minimum or maximum indoor humidity level requirements for preparation or installation of millwork, casework, wood finishes, and furnishings, etc. project construction team will collectively plan means and methods to achieve specified humidity levels.

1.6 SOURCE CONTROL-DURING CONSTRUCTION

.1 The use of HVAC equipment during construction will affect the IAQ. A good faith effort will be made to utilize electric equipment in lieu of fuel-powered equipment to limit combustion discharge into the construction site.

.2 Exhausting all contaminants out of the building and away from air intakes will improve IAQ levels. Objectionable odours created as a part of the construction process, such as installation of epoxy flooring, etc., will be properly identified before construction and signage will be posted to advise workers of potential hazards or personal protective equipment requirements. Alternatively, a local system which re-circulates air by filtering out odours and dust may be employed. All filters are to be properly selected for the materials they will be controlling. Determination of odour control and ventilation means will be made by and at the expense of the installing subcontractor.

.3 Construction areas that create a large amount of contaminants as defined in the (SMACNA) IAQ Guideline for Occupied Buildings under Construction and OSHA Guidelines are to be properly ventilated away from other construction activities to reduce the transfer of contaminants from one work area to another. Temporary exhaust fans directed to the building exterior are to be provided at the expense of the installing subcontractor.

.4 All finish materials (i.e. carpet, ceramic tile, paints, stains, etc.) are to be covered or contained prior to installation and after installation. The subcontractor will inspect construction activities for visible moisture when installing drywall. Upon identification of moisture in drywall the subcontractor, with the assistance of the General Contractor, will verify and eliminate the source of the moisture, and specific measures will be implemented to remediate. No materials will be covered up which are wet or can absorb moisture. Wall vapour barriers will be checked constantly by the installing subcontractor for proper installation.

1.7 PATHWAY INTERRUPTION-DURING CONSTRUCTION

.1 All project equipment and material staging areas will be located away from critical air flow pathways. Mechanical rooms and air handling equipment areas will not be used as storage space for construction materials and waste.

.2 Isolate areas of work to prevent contamination of clean spaces. Separate work areas from non-work areas through use of temporary barriers.

.3 Ventilate with 100% outdoor air to exhaust contaminated air to the outside instead of recirculating into the building.

1.8 HOUSEKEEPING-DURING CONSTRUCTION

.1 Construction waste, debris and rubbish are to be cleaned up during all phases of construction.

.2 All lunch papers, cups and other litter will be placed into trash/recycling receptacles. Cigarette smoking, cigar smoking or chewing tobacco will not be allowed in the building interior.

.3 Each construction entry location will have pedi-mats or clean gravel to limit foot traffic dirt from migrating into the building.

.4 Before sealing up a vertical shaft or chase, the installing subcontractor shall clean the bottom area and all surfaces of trash, dust, dirt and debris. Loose insulation material is to be controlled and monitored by the installing subcontractor to prevent fibre discharge or particle release.

.5 Store and open all building materials in a clean area.

.6 Clean all mechanical equipment (coils, fans, etc.) prior to occupancy.

1.9 SCHEDULING

.1 Scheduling of activities will prove to be key in helping control indoor air quality.

.2 The installation of all sealants, caulks, paints, etc. will be sequenced such that proper venting of objectionable odours will be accomplished to keep levels below acceptable levels.

.3 All absorptive materials, such as ceiling tiles, carpets, insulation and gypsum products should be installed only after VOCs have off gassed.

1.10 JOB SPECIFIC REQUIREMENTS

.1 Rooftop openings to rooftop units and exhaust fans are to remain covered with plywood and sealed with plastic at all times until installation of equipment. Openings for all HVAC air moving equipment located within the building will be wrapped and protected with plastic prior to start-up. Mechanical contractor shall be responsible for covering, protection, securing, maintaining, removal and disposal of protection equipment.

.2 Prior to arriving on site, ductwork will have all ends of each section or fitting covered with plastic coverings.

.3 Prior to installation, ductwork and equipment on site is to be physically protected and absorptive insulating materials are to be weather protected from moisture damage.

.4 Ductwork sections, fittings, fan terminal units, VAV boxes, air valves, etc. on site will be staged in a clear area, free from other construction activities, on wood blocking supports, at a minimum of 4 inches off the work floor surface and protected with plastic, shrink wrap or tarps until installed.

.5 Ductwork, after installation, shall be kept clean. All open ends of installed supply, return, exhaust ductwork, or return air shaft openings are to be sealed by the mechanical contractor with plastic materials to prevent contamination until start-up or testing.

.6 If any HVAC equipment will be operated during construction, temporary air filters with a minimum MERV-8 rating are to be used on all return air openings within the air handing equipment. 100% outdoor makeup air will be used in lieu of return air from construction spaces. Central filtration media are to be changed on a regular basis by the mechanical contractor in conformance with SMACNA Standards and to meet LEED-NC requirements.

.7 At completion of construction and prior to occupancy, temporary filtration media are to be removed and replaced with permanent filters with a minimum MERV-13 rating unless specified permanent filtration media is as good or a better rating, in accordance with LEED Requirements.

1.11 INDOOR AIR QUALITY - POST CONSTRUCTION, PRIOR TO OCCUPANCY

.1 If construction is completed at a time of year when it is feasible to conduct a building flush-out, as approved by the City, a flush out will be completed either BEFORE occupancy, or CONCURRENT with occupancy.

.1 When scheduling allows, a minimum 2-week flush-out will be completed before occupancy, and after all interior construction activities and finishes have been installed.

.1 New compliant MERV 13 filtration media will be installed prior to occupancy

.2 A total of 4,300 m^3 per m^2 of floor space (14,100 ft^3 per ft^2) of outdoor air will be supplied while maintaining an internal temperature of at least 16ºC (60ºF) with a maximum humidity of 60%.

.3 New compliant MERV 13 filtration media will be installed following flush-out.

.4 Flush-out procedure will be described in terms of start and stop dates, outdoor airflow volumes and durations, and total volumes of flush air. This report will be provided to the Contract Administrator following completion.

.2 When flush-out cannot be completed prior to occupancy, flush out will occur for three hours prior to each occupancy starting from the first day of occupancy, and will continue for at least 2 weeks, and until the following requirements have been met:

.1 New compliant MERV 13 filtration media will be installed prior to occupancy

.2 Prior to initial occupancy, supply a total of 1,075 m^3 per m^2 of floor space (3,530 ft^3 per ft^2) of outdoor air to the building.

.3 Supply a minimum 0.045m^3/m^2 (0.15cfm/ft^2) of outside air to all occupied spaces for three hours prior to each occupancy, and the greater of either the design minimum outside air, or 0.045m^3/m^2 outside air during occupancy until a total of 4,300 m^3 per m^2 of floor space (14,100 ft^3 per ft^2) of outdoor air has been supplied to the building.

.4 New compliant MERV 13 filtration media will be installed following flush-out

.5 Flush-out procedure will be described in terms of start and stop dates, outdoor airflow volumes and durations, and total volumes of flush air. This report will be provided to the Contract Administrator following completion.

.3 When building flush out is not feasible, indoor air quality will be measured using the following procedure:

.1 Upon completion of the project and prior to occupancy, the General Contractor will contract with an independent agency to perform a complete hygienic test of indoor air quality by a qualified IAQ testing contractor who is also LEED accredited. Hygienic testing will be in accordance with the

Canadian Green Building Council Criteria and referenced EPA Standards "Compendium of Methods for the Determination of Air Pollutants in Indoor Air" and will include testing for formaldehyde, particulates (PM10), total volatile organic compounds, carbon monoxide, and 4-phenylcyclohexane (4-PC). Testing shall be completed over the course of one normal operating day when all HVAC systems are fully operational. Indoor operational temperatures and humidity levels should also be noted at the time of testing.

.2 The Canadian Green Building Council Criteria also includes guidelines for carbon dioxide which will either be measured when the building is fully occupied or will be calculated based on ventilation measurements. Testing of carbon dioxide levels will be included in hygienic testing.

.3 IAQ samples will be taken between 1200mm (4 feet) and 2100 mm (7 feet) from the floor in locations evenly distributed throughout the building. A minimum of one sample on each floor will be taken, for a total of at least six (6) indoor samples. In addition, at least one outdoor sample should be taken near to an outdoor air intake on each day of testing.

.4 Independently documented results, which compare the sample results to the Canadian Green Building Council Guidelines, will be provided. Maximum allowable concentrations of IAQ pollutants are illustrated below:

Contaminant	**Maximum Concentration**
Particulate matter (PM10)	50 ug/m^3
Formaldehyde	50 parts per billion
Total Volatile Organic Compound	500 ug/m^3
Carbon Monoxide	9 parts per million (2 parts per million outdoors)
4-Phenylcyclohexener (4-PC)	6.5 ug/m^3

.5 Where concentrations are above the allowable concentrations, an Action Plan for corrective measures will be used to verify the source of the unfavourable readings; remediate or eliminate the source; perform ventilation flush-out; and perform additional testing at the expense of the contractor responsible for the installation or introduction of the source of the unfavourable readings.

END OF SECTION

Part 1 GENERAL

1.1 COMMISSIONING REQUIREMENTS

.1 This section contains general requirements for commissioning the facility's systems and components.

1.2 DESCRIPTION

.1 The purpose of the Commissioning process is to provide the City with the assurance that the building systems have been installed according to the Contract Documents and will operate within the performance guidelines set out in the Design Intent and the Specifications. The Commissioning process does not reduce the responsibility of the installing Contractors to provide a fully functional finished product in accordance with the Contract Documents.

.2 Commissioning is intended to enhance the quality of system start-up and aid in the orderly completion of system installation for the benefit of the City.

.3 Commissioning shall ensure that systems operate according to design specifications and are capable of meeting all objectives under all resulting operating conditions.

.4 All Contractors and related subcontractors shall be responsible for cooperating and coordinating their work with the commissioning team. They shall be responsible for carrying out all the physical activities required for the initial installation of components and systems, and for operating the systems as required during the commissioning process as instructed by the Commissioning Team.

.5 Commissioning practices will fulfill the requirements of both LEED® "Fundamental Commissioning", and LEED® "Best Practice Commissioning" credits as described in the LEED® NC 1.0 Reference Guide.

1.3 REFERENCES

.1 Associated Air Balance Council (AABC): National Standards for Field Measurements and Instrumentation, Total Systems Balance, Air Distribution-Hydronics Systems.

1.4 QUALITY ASSURANCE

.1 Cooperate with testing organization services under provisions specified in Section 01450 — Quality Control.

.2 Testing organization: current member in good standing of AABC certified to perform specified services.

.3 Comply with applicable procedures and standards of the certification sponsoring association.

.4 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

.5 Equipment shall not be started up for temporary use until pre-start-up checklists and procedures from the manufacturer have been completed, and moisture, dust, and other environmental/building integrity issues have been addressed.

.6 Functional performance testing will be completed under observation of the Commissioning Authority, following the completion of all pre-functional, start-up, and testing & air-balancing procedures for the entire system.

.7 Equipment and its associated controls will be functionally tested following the calibration and completion of pre-functional checklists for the entire system.

1.5 SYSTEMS TO BE COMMISSIONED

.1 HVAC

- .1 Air handling units
- .2 Make up air unit
- .3 Condensing units
- .4 Ducted systems and terminal units; fan coils
- .5 Control devices and system integrations (DDC)
- .6 Electric heating sources
- .7 Heat recovery ventilators

.2 Hydronic System

- .1 Pumps
- .2 Heat exchangers
- .3 Glycol feed
- .4 Valves
- .5 Coils

.3 Plumbing & Water Using Systems

- .1 Domestic hot water heating systems
- .2 Recirculation systems
- .3 Water closets and urinals
- .4 Lavatories and sinks
- .5 Sump pumps
- .6 Irrigation equipment

.4 Electrical equipment

- .1 Lighting and related controls

1.6 RESPONSIBILITIES OF THE COMMISSIONING TEAM

~~.1 The commissioning team will include:~~

~~.1 The Commissioning Agent appointed by the City,~~

~~.2 The City's Representative,~~

~~.3 The City's facility management staff/building operator,~~

~~.4 Mechanical and Electrical representatives appointed by the Contract Administrator,~~

~~.5 Contractor and Subcontractor(s).~~

.1 The commissioning team will include:

.1 The Commissioning Agent appointed by the City,

.2 The City's Representative,

.3 The City's facility management staff/building operator,

.4 Mechanical and Electrical representatives appointed by the Contract Administrator,

.5 Contractor and Subcontractor(s).

.2 A brief description of the roles of these various team members is outlined below.

.1 Commissioning Agent appointed by the City:

.1 Compile the City's Requirements Document in consultation with the City.

.2 Review the Schematic Design submission and report findings to the City.

.3 Prepare a Commissioning Plan which defines the process which will be used to verify conformance to the contract and the City's requirements.

.4 Review the Contract Documents prior to tender to verify that Commissioning has been adequately specified and the City's requirements will be met.

.5 Work with the Mechanical Engineer to provide a Commissioning Specification to be included in the Contract Documents.

.6 Review all Contractor bid documents for adherence to the City's Requirements.

.7 Attend all commissioning meetings.

.8 Review the commissioning schedules prepared by the Consultants.

.9 Prepare or approve commissioning forms and construction checklists for each piece of equipment.

.10 Observe Functional Performance Testing and system start-up procedures, as performed by the installing Contractor.

.11 Review O&M Documentation for completeness.

.12 Verify satisfactory completion of the City training.

.13 Submit the final commissioning report and all supporting documents to the City.

.14 Coordinate all commissioning requirements required for LEED® "Fundamental" and "Best Practices" Commissioning.

.15 Coordinate seasonal testing, as needed.

.2 The City / The City's Representative / Building Operations Staff:

.1 Review design submissions for maintenance requirements which may not meet the City's Requirements.

.2 Attend training sessions conducted by all contractors and equipment suppliers in order to build a familiarity with the systems they will need to maintain.

.3 Commissioning and time spent with the Subcontractors and/or Commissioning staff shall not substitute nor count towards training hours, although observation of the commissioning process and functional performance testing is encouraged.

.3 Contract Administrator:

.1 Coordinate with the City to provide/consult with the Commissioning Agent in regards to the City's Requirements.

.2 Provide the Commissioning Agent with the Basis of Design.

.3 Provide the Commissioning Agent with all architectural drawings, addenda and change order notices which may affect systems being commissioned.

.4 Deliver a product which meets the design intent, the City's Requirements, and time constraints of the project.

.5 Provide the commissioning schedule for all the City's-supplied equipment that is integrated with the mechanical and/or electrical systems of the new facility.

.6 Ensure the City provides the necessary labour and materials to carry out commissioning of the City-supplied equipment within the approved project schedule.

.7 Review design submissions.

.8 Witness commissioning tests, as required.

.9 Coordinate technical requirements of the City/Building Operator training.

.4 Engineering representatives appointed by the Contract Administrator:

.1 Provide mechanical/electrical component of the Basis of Design.

.2 Review commissioning forms collected by the Commissioning Agent for each piece of equipment.

.3 Review compliance of commissioning work with the requirements of the contract documents.

~~.6 Deliver a product which meets the design intent, the City's Requirements, and time constraints of the project.~~

~~.7 Provide the commissioning schedule for all the City's-supplied equipment that is integrated with the mechanical and/or electrical systems of the new facility.~~

~~.8 Ensure the City provides the necessary labour and materials to carry out commissioning of the City-supplied equipment within the approved project schedule.~~

~~.9 Review design submissions.~~

~~.10 Witness commissioning tests, as required.~~

~~.11 Coordinate technical requirements of the City/Building Operator training.~~

.5 Contractors and Subcontractors

.1 Adhere to commissioning requirements as described in the terms of the contract.

.2 Supply all labour, equipment, and qualified personnel required to complete all Commissioning Activities.

.3 Include time in the construction schedule for Commissioning Activities.

.4 Provide the Commissioning Agent with manufacturer's recommended installation and start-up checklists for equipment and systems prior to the commencement of installation.

.5 Complete all construction checklists, equipment installation forms, and start-up forms as provided by the manufacturer.

.6 Allow reasonable notification of start-up schedules to Commissioning Agent.

.7 Perform Functional Performance Tests in coordination with the Commissioning Agent.

.8 Make adjustments and corrections and repeat unsuccessful tests to the satisfaction of the Commissioning Agent.

.9 Sign off completion of Functional Performance Testing when tests are completed to the satisfaction of the Commissioning Agent.

.10 Provide the completed forms and as-built shop drawings for incorporation into the Commissioning Report.

.11 Provide system information and trend data to the Commissioning Agent as requested.

.12 Provide the Commissioning Agent with a staff training plan.

.13 Provide the City with staff training as per the training plan.

.14 Provide appropriate and sufficient documentation for the O&M manual to the Project Manager.

~~.7~~.6 Testing, Adjusting and Balancing (TAB) Subcontractor

.1 Perform all required tests outlined in the TAB section of the Mechanical Specification under the direction of the ~~General~~ Contractor.

.2 Provide completed Balancing Reports to the Commissioning Agent for review.

.3 Acronyms: Acronyms used throughout the following text for commissioning team members is as follows:

~~.1CA – Commissioning Agent~~

~~.2CAd – Contract Administrator.~~

~~.3CAd-M – Contract Administrator appointed mechanical representative.~~

~~.4CAd-E – Contract Administrator appointed electrical representative.~~

~~.5MC – Mechanical Contractor~~

~~.6EC – Electrical Contractor~~

~~.7TAB – Testing & Balancing Contractor~~

.1 CA – Commissioning Agent

.2 CAd – Contract Administrator.

.3 CAd-M – Contract Administrator appointed mechanical representative.

.4 CAd-E – Contract Administrator appointed electrical representative.

.5 MC – Mechanical Contractor

.6 EC – Electrical Contractor

.7 TAB – Testing & Balancing Contractor

1.7 COMMISSIONING TEAM MEETINGS

.1 Meetings will be scheduled by the ~~Contractor~~CA, in coordination with the ~~CA~~CAd.

.2 Coordination meetings will include the full commissioning team, and will be used to plan, discuss, and review commissioning activities. Meetings shall take place until work has been completed, or as appropriate.

.3 The construction schedule, commissioning schedule, and the commissioning plan shall be reviewed and updated as required. Upcoming tests and equipment start-ups will be reviewed and completed test results will be evaluated.

.4 The CA will arrange for the minutes of the meetings to be compiled and distributed following each meeting.

1.8 COMMISSIONING DOCUMENTATION

.1 The CA will prepare a Schematic Design Report, to be submitted to the City.

.2 The CA will prepare a Construction Document Report.

.3 The CA will prepare a Contractor's Submittal Report to review and verify adherence to the City's Requirements.

.4 The CA will prepare the Commissioning Plan Schedule in relation to the construction schedule, to be approved by the Contractor. The Commissioning Plan Schedule will be updated monthly.

.5 The CA will submit an interim Commissioning Report prior to building acceptance.

.6 The final Commissioning Report will be submitted on completion of all seasonal testing requirements.

.7 The Contractor, or applicable sub-contractor, shall be responsible for completion of all system verification forms, equipment start-up forms, functional performance test forms and all related witnessed testing. As required, the TAB Contractor will provide information necessary for form completion.

.8 Sub-contractors are responsible for the submission of all appropriate manufacturer's data for inclusion in the O&M Manual.

.9 Contractors will demonstrate system operation in cooperation with the CA to complete all commissioning work.

.10 The ~~PM~~ Contractor shall supply the CA with a full copy of all shop drawings following review and approval by the CAd.

.11 The ~~MC~~ CAd-M will supply single-line schematic Control Drawings and written Sequences of Operation for all commissioned systems/equipment to the CA.

1.9 SYSTEM PREPARATION

.1 The Contractor will be tasked with effectively preparing all systems for commissioning. Tasks include, but are not limited to ensuring that:

.1 Shipping stops have been removed.

.2 Equipment nameplates are clean and accessible.

.3 Factory startups have been completed and submitted to the CA.

.4 Initial lubrication of equipment is complete according to Manufacturer's recommendations.

.5 Bearings are lubricated as per Manufacturer's recommendations.

.6 Drive screws and keyways are tight.

.7 Vibration isolators are properly aligned and adjusted. Vibration isolators are in their proper locations and have correctly sized springs.

.8 Flex connections are aligned.

.9 Equipment is secured in place.

.10 V-belt drives are correctly installed and properly aligned.

.11 Belts are adjusted and belt guards & safety shields are in place.

.12 All systems are properly filled with operating liquid/medium.

.13 Pressure and temperature gauges are installed and are reading correctly.

.14 All water piping is located in spaces which are heated to prevent freezing.

.15 Air filters and strainers are clean.

.16 All ductwork is installed, connected and insulated/lined as per the Contract Documents.

.17 All roof-mounted equipment is properly flashed as per the Contract Documents.

.18 Filters are in place and provide proper seals around edges.

.19 Fire dampers are properly installed and linked, and have been checked by the TAB Subcontractor.

.20 All test stations and flow devices are installed and are operating properly.

.21 All equipment is installed properly as per the Contract Documents.

.22 All rooftop heating and cooling equipment is operating as per

.23 Manufacturer's recommendations.

.24 The DDC system is completely calibrated as per the Sequence of Operations, and is operating in automatic mode with no hardware or software points commanded to a manual value.

.25 Non-DDC controls such as thermostats, and VAV boxes are calibrated and are able to control the appropriate equipment as per the Sequence of Operations.

.26 Pneumatic systems have been tested and have no air leaks.

.27 All hardware and software interlocks are wired and verified.

.28 All valves, dampers and their operators are properly installed and operating. Dampers close tightly, operate smoothly, and stroke fully.

.29 Motor rotations for all fans and pumps are correct.

.30 Voltages and phasing match nameplate data.

.31 Thermal overloads have been installed as per the Contract Documents.

.32 Motors are not overloaded.

1.10 INSPECTION REQUIREMENTS

.1 Once equipment is running, the contractor shall check that the equipment is operating according to specifications, including:

.1 No excessive vibration or noise

.2 No loose components

.3 All initial control set points are set as per Specification, or have been adjusted to suit actual conditions

.4 Motor amperages are as per Specification

.5 Heat build-up in motors, bearings, etc. is within Manufacturer's recommendations

.6 Control system components are properly calibrated and system is functioning as per Specification

.2 The Contractor will promptly adjust, repair, or correct all items that are found not to be operating according to Specification.

.3 All mechanical systems will be observed under actual operating conditions for sufficient time to ensure proper operation under varying conditions.

.4 The Contractor shall periodically check the following items and make corrections, adjustments, or repairs, as required:

.1 Strainers and filters are in place and are changed as specified

.2 Control system is functioning as per the Sequence of Operations

.3 Safety valves and seals are tight and fully operational; there are no system leaks

.4 All mechanical equipment is operating with pressures and temperatures within Manufacturer's recommendations.

.5 All gauges are adjusted and reading properly

.6 Excessive oil and grease is cleaned on a regular basis

.7 Dampers and valves close tightly and stroke fully

1.11 FUNCTIONAL PERFORMANCE TESTING

.1 Functional Performance Tests are to be done to verify the performance of individual systems, as well as the interactions between systems as they operate together.

.2 Functional Performance Testing shall begin when all mechanical testing; start-up checklists; and testing, adjusting, and balancing required by the Contract have been completed, and when the CA has acknowledged that the physical installation of components and systems being tested is substantially installed in accordance with the Contract Documents.

.3 The CA may use the DDC System or any other instrumentation necessary for mechanical systems testing. The DDC System shall be programmed by the Controls Subcontractor to record trend data over a time period specified by the CA.

.4 The CA may use trend data to evaluate the performance of the systems in conjunction with other recorded data.

.5 Tests shall be conducted systematically, starting from the primary energy system through to the system components and controls.

Part 2 PRODUCTS

2.1 Not Used

Part 3 EXECUTION

3.1 COMMISSIONING FORM COMPLETION

.1 GENERAL

.1 The appropriate designated sub-contractor shall complete installation checklists, start-up checklists, and functional performance testing forms for all installed mechanical equipment.

.2 System verification shall be completed to verify the static condition of all system components, while testing shall be used to monitor and optimize system interactions.

.3 Completed checklists and forms shall be promptly forwarded to the CA.

.4 All forms and tests are completed with the objective of verifying that installed equipment meets the intent of the design, and functional performance meets the design specifications and the City's requirements.

.5 Leakage tests are to be completed as construction progresses, according to the Construction Schedule, and witnessed by the ~~PM~~CAd.

.2 INSTALLATION CHECKLISTS

.1 The related installation subcontractor shall complete installation checklists as provided by the manufacturer or supplier

.2 The CA shall approve use of all manufacturer's checklists prior to use. Commissioning Agent shall update checklists or provide supplementary forms when required.

.3 The subcontractor shall provide the CA with all completed and signed forms

.4 The CA shall verify installation and sign the completed forms.

.3 START-UP CHECKLISTS

.1 The related installation subcontractor shall complete all start-up checklists as provided by the manufacturer or supplier

.2 The CA shall approve use of all manufacturer's checklists prior to use. CA shall update checklists or provide supplementary forms when required.

.3 The sub-contractor shall submit manufacturer's data/product information sheets for each installed component for inclusion in the O&M manual.

.4 The CA shall witness system start-up procedures for all equipment within a system, whenever feasible, and will verify that start-up was conducted according to manufacturer's recommendations and the Contract Documents.

.5 Contractors will do their best to coordinate start-ups in order to minimize the number of necessary site visits.

.6 The subcontractor shall provide the CA with all completed and signed start-up checklists.

.7 The TAB subcontractor shall provide information and test results from testing, adjusting, and air balancing, as required.

.8 The CA will sign all completed forms.

.4 FUNCTIONAL PERFORMANCE TEST FORMS

.1 The Mechanical Subcontractor shall work in consultation with the CA, ~~PM,~~ CAd and related Subcontractor to complete functional performance testing for all installed equipment and systems.

.2 The CA shall provide supplementary forms as required for commissioning equipment.

.3 The Subcontractor shall provide test equipment, and demonstrate system operation to the CA as deemed necessary.

.4 The CA and ~~PM~~ CAd shall maintain communications with all Subcontractors to witness testing as required.

.5 The Mechanical Subcontractor shall report all test failures to the ~~PM~~ CAd and CA.

.6 Unsuccessful tests will be repeated until they are successful, at no additional cost to the contract.

.7 The CA shall witness all repeated tests as deemed necessary by the CA.

.8 The CA shall sign the completed forms.

.5 SHOP DRAWINGS

.1 A copy of all approved shop drawings associated with equipment to be commissioned shall be forwarded to the CA after review by the ~~GC~~Contractor, Mechanical Subcontractor, and the ~~PM~~CAd.

.2 The CA shall review the Shop Drawings, and make comments to the ~~PM~~ CAd as necessary

.6 SYSTEM ACCEPTANCE

.1 All test forms shall be completed and signed promptly after testing, and submitted to the CA for review and approval.

.2 Prior to final project completion, the CA shall assemble the completed testing forms into a single document.

.3 Where equipment does not meet the design intent or the City's Requirements, the system will be adjusted and re-tested until performance is acceptable.

.4 Where necessary, the ~~PM~~ CAd shall issue corrective measures if acceptable performance is not achieved.

.5 The CA shall review the results of the Functional Performance Tests and shall submit a report on the findings to the ~~PM~~CAd. This report shall make recommendations for improving system performance whenever possible.

3.2 SEASONAL/DEFERRED COMMISSIONING

.1 GENERAL

.1 A schedule for the deferred commissioning will be drawn up at the time of construction completion which will identify all performance testing which could not be undertaken due to season, lack of occupancy, or for any other reason.

.2 All seasonally deferred testing will be completed at the discretion of the CA, and will be coordinated with the City.

.3 The CA will arrange with the City to prepare a schedule for seasonal commissioning which allows the systems to be tested under varying operating conditions, including extreme heat and cold.

.4 Seasonal and other deferred Commissioning must be completed within 12 months of building acceptance.

.5 A report on the results of all deferred commissioning shall be submitted to the City.

.6 Any problems which are uncovered during testing shall be reported to the City, including suggestions for corrective actions to be taken to resolve the problem.

.2 PROCEDURES

.1 Following System Acceptance, a list of deferred commissioning items will be identified. Reason for deferral, including seasonal limitations, or lack of occupancy, shall be recorded, and a schedule for completing each task shall be drawn up.

.2 Seasonal performance tests will include the demonstration of the following, depending on season:

.3 Start-up/shutdown

.4 Occupied/unoccupied modes

.5 Modulation of device range or capacity

.6 Power failure

.7 Alarms

.8 Equipment staging

.9 Interlocks with other equipment

.10 Sensor and actuator calibrations

.11 Functional Performance Testing Procedures identified in section 1.10 shall be followed for all deferred commissioning.

.12 Deferred commissioning activities will be conducted by the related Subcontractor in the presence of the CA and with the assistance of the building operating personnel and/or the City.

3.3 OPERATIONS & MAINTENANCE MANUALS

.1 O&M DOCUMENTATION

.1 The project team, contractors, and subcontractors shall coordinate to supply the CA with equipment documentation and product data for inclusion in the O&M submissions.

.2 The CA will compile the information received into an O&M manual which meets the LEED criteria as follows:

.1 Information is complete and applicable

.2 The O&M document is bound and labeled as per the Mechanical Specification

.3 Instructions for installation, maintenance, replacement, and start-up instructions are included

.4 A list of replacement parts, special tools required, and local sources is included

.5 Warranty information is identified

.6 As-built controls package for all sequences and modes of operation are included

.7 A description of each sequence of operation has been written

.8 Single-line schematic control drawings have been included

3.4 TRAINING AND ORIENTATION

.1 BUILDING OPERATOR'S TRAINING

.1 Staff training shall be provided by the appropriate Contractor under the supervision of the ~~GC~~ Contractor and the CA, as per the Mechanical specification.

.2 Training will continue until the City is satisfied that adequate training has been provided.

.3 Training sessions may be videotaped for future reference.

.4 Training sessions will fulfill all requirements for LEED Best Practices Commissioning, including:

.1 Identification of the general purpose of system

.2 Instruction on how to use the O&M Manuals

.3 Review of as-built control drawings and schematics

.4 Demonstration of start-up/shutdown, occupied/unoccupied modes, modulation of device range of capacity, power failure, alarms, equipment staging, interlocks with other equipment, sensor and actuator calibrations

.5 Demonstration of interactions between systems, and optimized methods for energy conservation

.6 Identification of health and safety issues

.7 A discussion of tenant interactions issues

.8 A discussion of how each feature or system is environmentally responsive

END OF SECTION