Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises fit-up of an interior office space, approximately 1185 m^2, located at 4th Floor, 5101 – 50 Avenue, Yellowknife, NT.

1.2 CONTRACT METHOD

.1 Construct Work under single stipulated price contract.

1.3 SUPPLEMENTARY INFORMATION FOR PROGRESS PAYMENTS

.1 Successful Contractor will be required to submit a detailed breakdown of costs for each elemental section into three funding accountabilities within 5 business days of Contract Award and with every change to the project. The funding accountability will be detailed as directed, and on a form provided by the Departmental Representative, for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of application for payments. After review by Departmental Representative, cost breakdown will be used as basis for progress payment.

1.4 CONTRACTOR USE OF PREMISES

.1 Unrestricted use of site until Substantial Performance.

.2 Co-ordinate use of premises under direction of Departmental Representative.

.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.4 Remove or alter existing work to prevent injury or damage to portions of existing work that remain.

.5 Repair or replace portions of existing work that have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.

.6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.6 EXISTING SERVICES

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

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours' notice for necessary interruption of

mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to tenant operations.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.

.4 Submit schedule to and obtain approval from Departmental Representative for shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.

.5 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.

.6 Provide adequate bridging over trenches that cross sidewalks or roads to permit normal traffic.

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

.8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

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

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

1.7 DOCUMENTS REQUIRED

.1 Successful bidding Contractor is to obtain required sets of Contract Documents for construction purposes, which includes two (2) sets for "as-built" and record purposes.

.1 Contractor is responsible for costs of printing, handling, and shipping of Contract Documents.

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

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Reviewed Shop Drawings.

.5 List of Outstanding Shop Drawings.

.6 Change Orders.

.7 Other Modifications to Contract.

.8 Field Test Reports.

.9 Copy of Approved Work Schedule.

.10 Health and Safety Plan and Other Safety Related Documents.

.11 Other documents as specified.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

.1 Design, construct, and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps, ladders, and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial, and other regulations.

1.2 USE OF SITE AND FACILITIES

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

.2 Maintain existing services to building and provide for personnel and vehicle access.

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

.4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

.5 Use only elevators existing in building for moving workers and material.

.1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.

.2 Accept liability for damage, safety of equipment and overloading of existing equipment.

.6 Closures: Protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.4 EXISTING SERVICES

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

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours’ notice for necessary interruption of mechanical or electrical service. Keep duration of interruptions to a minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel and pedestrian and vehicular traffic.

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

1.5 SPECIAL REQUIREMENTS

.1 Carry out noise generating Work Monday to Friday from 18:00 to 07:00 hours, and on Saturdays, Sundays, and statutory holidays.

.2 Submit schedule in accordance with Section 01 32 16 - Construction Progress Schedule - Bar (GANTT) Chart.

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

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

1.6 SECURITY

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

.2 Security clearances:

.1 Personnel employed on this project will be subject to security check.

.2 Obtain requisite clearance, as instructed, for each individual requiring entry to premises.

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

.4 Engage and pay for security for escort for personnel without reliability status, and for personnel performing work after hours.

.1 Right of first refusal for security provision is to be given to the Canadian Corps of Commissionaires.

1.7 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

.2 Smoking is not permitted inside building.

.3 Confirm, with building management, outdoor locations where personnel may smoke.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.

.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; transmit to Departmental Representative, meeting participants, and affected parties not in attendance.

.8 Representatives 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 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors, and supervisors will be in attendance.

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

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

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

.2 Schedule of Work: in accordance with Section 01 32 16 - Construction Progress Schedules - Bar (GANTT) Chart.

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

.4 Requirements for temporary facilities, offices, storage sheds, in accordance with Section 01 52 00 - Construction Facilities.

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

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

.7 Departmental Representative-provided products.

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

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

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

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

.12 Appointment of inspection and testing agencies or firms.

1.3 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule progress meetings bi-weekly.

.2 Contractor, major Subcontractors involved in Work, and Departmental Representative are to be in attendance.

.3 Notify parties minimum three days prior to meetings.

.4 Record minutes of meetings; circulate to attending parties and affected parties not in attendance within three 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 that 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 and expedite as required.

.10 Maintenance of quality standards.

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

.12 Other business.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

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

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

.3 Baseline: Original approved plan (for project, work package, or activity), plus or minus approved scope changes.

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

.5 Duration: Number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

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

.7 Milestone: Significant event in project, usually completion of major deliverable.

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

.9 Project Planning, Monitoring and Control System: Overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

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

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

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

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

1.3 SUBMITTALS

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

.2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

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

.2 Departmental Representative will review and return revised schedules within 5 working days.

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

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

1.5 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

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

.1 Award.
.2 Shop Drawings, Samples.
.3 Permits.
.4 Mobilization.
.5 Structural Steel.
.6 Interior Architecture (Walls, Floors and Ceiling).
.7 Plumbing.
.8 Lighting.
.9 Electrical.
.10 Piping.
.11 Controls.
.12 Heating, Ventilating, and Air Conditioning.
.13 Millwork.
.14 Fire Systems.
.15 Testing and Commissioning.
.16 Supplied equipment long delivery items.
.17 Departmental Representative-supplied equipment required dates.

1.6 PROJECT SCHEDULE REPORTING

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

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

1.7 PROJECT MEETINGS

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

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

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

.1 Provide submittals listed for review to Departmental Representative. 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 for 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 are not produced in SI Metric units, converted values are acceptable.

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

.6 Notify Departmental Representative at time of submission, in writing, 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 Departmental Representative's review of submittals.

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

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

.2 Submit drawings stamped and signed by professional engineer registered or licensed in The Northwest Territories.

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

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

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

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.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 Departmental Representative's review, distribute copies.

.10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental

Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

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

.2 Testing must have been within 3 years of date of contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.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 electronic copies of manufacturers' instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.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 electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative:

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

.16 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.17 Delete information not applicable to project.

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

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

.20 The review of shop drawings by Public Services and Procurement Canada (PSPC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PSPC approves 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 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative's business address.

.3 Notify Departmental Representative, 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 Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples that Departmental Representative may require, consistent with Contract Documents.

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

1.4 MOCK-UPS

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

1.5 PHOTOGRAPHIC DOCUMENTATION

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

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

.3 Number of viewpoints: 2 locations.

.1 Viewpoints and location: As determined by Departmental Representative.

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

.1 Upon completion of framing and services before concealment, and as directed by Departmental Representative.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

.2 Government of the Northwest Territories

.1 Safety Act: Occupational Health and Safety Regulations, 2015.

1.2 SAFETY PLAN

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

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

1.3 RESPONSIBILITY

.1 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

.2 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Territory having jurisdiction. Advise Departmental Representative verbally and in writing.

1.4 SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site-specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operation.

.3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports weekly to Departmental Representative.

.4 Submit copies of reports or directions issued by Federal and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets for products used on project.

.7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

.8 Departmental Representative review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

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

.10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

1.5 FILING OF NOTICE

.1 Where required, file Notice of Project with Territorial authorities prior to beginning of Work.

1.6 SAFETY ASSESSMENT

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

1.7 MEETINGS

.1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.8 REGULATORY REQUIREMENTS

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

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with Northwest Territories Occupational Health and Safety Regulations, 2015.

.2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, advise Health and Safety co-ordinator, follow procedures in accordance with Acts and Regulations of Territory having jurisdiction, and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have working knowledge of occupational safety and health regulations.

.2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.4 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.12 POSTING OF DOCUMENTS

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

1.13 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

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

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

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

1.15 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.16 WORK STOPPAGE

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

1.17 FIRE PROTECTION

.1 Comply with requirements of the local Fire Commissioner's Office.

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

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

.4 Maintain placed or installed firestopping to protect the portions of the Work during construction.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

.1 Perform Work in accordance with 2015 National Building Code of Canada (NBC) including amendments up to tender closing date, and other codes of Territorial/Provincial or local application; in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of specified standards, codes and referenced documents.

1.2 LAWS, NOTICES, PERMITS AND FEES

.1 Plans will be submitted by Departmental Representative to the City of Yellowknife Planning Office for the plans examination. The Contractor will be required to pick-up the Building Permit from the Planning Office and pay the cost based on the tender amount. Include the cost in the Bid Price.

1.3 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work wherever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals whether by Departmental Representative instructions, or by 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 Departmental Representative 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 Work and pay cost of examination and correction. If Work is found in accordance with Contract Documents, cost of examination and replacement will be borne by Departmental Representative.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies may be engaged by Departmental Representative for purpose of inspecting and testing portions of Work. Cost of such services will be borne by Departmental Representative.

.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 testing, appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

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 Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples 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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

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

.3 If, in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative 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 Departmental Representative.

1.6 REPORTS

.1 Submit three hard copies and one electronic copy of inspection and test reports to Departmental Representative.

.2 Provide copies to subcontractor of work being inspected or tested and 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 Departmental Representative 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 Departmental Representative.

.3 Prepare mock-ups for Departmental Representative’s 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 due to such default will be allowed.

.5 If requested, Departmental Representative 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.

1.10 EQUIPMENT AND SYSTEMS

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

.2 Refer to Section 01 91 31 – Commissioning Plan for definitive requirements.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CAN/CSA S269.2-M87 (R2003), Access Scaffolding for Construction Purposes.

.2 CAN/CSA Z321-96 (R2006), Signs and Symbols for the Workplace.

.2 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 SUBMITTALS

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

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 to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities to execute work expeditiously.

.5 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Scaffolding: In accordance with CSA S269.2.

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

1.5 HOISTING

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

.2 Hoists 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 not be permitted on site.

.2 Provide and maintain adequate access to project site.

.3 Clean runways and taxi areas where used by Contractor's equipment.

1.8 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.

.3 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.

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

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

1.9 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

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.2 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors.

.2 Provide as required by governing authorities.

1.3 DUST TIGHT SCREENS

.1 Provide dust tight screens or 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.

.3 Coordinate location and security measures with Departmental Representative on Site.

1.4 FIRE ROUTES

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

1.5 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.

1.6 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 locations and installation schedule with Departmental Representative, minimum 3 days prior to installation.

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

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.

.2 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.3 Cost for such testing will be borne by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY OF PRODUCTS

.1 Products, materials, equipment, and articles incorporated in Work are to be new, not damaged nor 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 Departmental Representative 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 In event of failure to notify Departmental Representative at commencement of Work, and should it subsequently appear that Work may be delayed for such reason, Departmental Representative 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 and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

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

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over nameplates.

1.5 TRANSPORTATION

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

.2 Transportation cost of products supplied by Departmental Representative will be paid by Departmental Representative. 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 Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative 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

Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative 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 Departmental Representative, 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 Departmental Representative if there is interference. Install as directed by Departmental Representative.

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. Perform in a manner to neither damage nor put at risk any portion of Work.

.2 For remedial work, employ specialists familiar with materials affected.

1.11 LOCATION OF FIXTURES

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

.2 Inform Departmental Representative 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 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 Departmental Representative.

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, and building occupants.

.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

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

1.2 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 Departmental Representative 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 Departmental Representative.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

.1 Submit 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 Departmental Representative 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 Departmental Representative or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.2 MATERIALS

.1 As 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 that are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching to complete Work.

.2 Fit 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 If requested, 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 that will provide proper surfaces to receive patching and finishing.

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

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

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

.11 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.

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

.13 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 Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

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

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

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

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

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

.6 Dispose of waste materials and debris off site.

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

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

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

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

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

1.2 FINAL CLEANING

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

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

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

.4 Remove waste products and debris other than that caused by Departmental Representative or other Contractors.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

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

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, laminate, window blinds, 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, and screens.

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

.12 Inspect finishes, fitments, and equipment and ensure specified quality of work and operation.

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

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

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

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

.2 Accomplish maximum control of solid construction waste.

.3 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

.13 Waste Audit (WA): Detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during

construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

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

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

1.3 DOCUMENTS

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

.1 Waste Audit.

.2 Waste Reduction Workplan.

.3 Material Source Separation Plan.

.4 Schedules A, B, C, and D completed for project.

1.4 SUBMITTALS

.1 Submit 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, co-mingled and separated off-site or disposed.

.3 For each material reused, sold or recycled from project, include amount and destination.

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

1.5 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.

1.6 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials listed.

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

.4 Describe management of waste.

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

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

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

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

1.7 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.

1.8 COST/REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Prepare CRAW: Schedule D.

1.9 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

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

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.

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

.4 Provide containers to deposit reusable and recyclable materials.

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

.6 Locate separated materials in areas that minimize material damage.

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

.1 Transport to approved and authorized recycling facility.

.8 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.

1.10 STORAGE, HANDLING AND PROTECTION

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

.2 Unless specified otherwise, materials for removal 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 Departmental Representative.

.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.

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

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

1.12 USE OF SITE AND FACILITIES

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

.2 Provide temporary security measures approved by Departmental Representative.

1.13 SCHEDULING

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

Part 2 Products

Not used.

Part 3 Execution

3.1 APPLICATION

.1 Perform Work in compliance with WRW.

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

3.2 CLEANING

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

.2 Clean-up work area as work progresses.

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

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 Departmental Representative, and consistent with applicable fire regulations.

.1 Mark containers or stockpile areas.

.2 Provide instruction on disposal practices.

.2 On-site sale of salvaged, recovered, reusable, and recyclable material is not permitted.

.3 Demolition Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Acoustic Tile	50	
Acoustical Insulation	100	
Carpet	100	
De-mountable Partitions	80	
Doors and Frames	100	
Electrical Equipment	80	
Furnishings	80	
Mechanical Equipment	100	
Metals	100	
Rubble	100	
Wood (uncontaminated)	100	
Other		

.4 Construction Waste:

Material Type	Recommended Diversion %	Actual Diversion %
Cardboard	100	
Plastic Packaging	100	
Rubble	100	
Steel	100	
Wood (uncontaminated)	100	
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						
Off-cuts						
Warped Pallet Forms						
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 Packaging							
Card-board Packaging							
Other							
Doors and Windows Material Description							
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 (cumulative)	(6) Weight (cumulative)	(7) Remarks and Assumptions
Wood						
Wood Stud						
Plywood						
Baseboard-Wood						
Door Trim - Wood						
Cabinet						
Doors and Windows						
Panel Regular						
Slab Regular						
Wood Laminate						
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 (cumulative)	(4) Weight (cumulative)	(5) Disposal Cost/Credit $(+/-)	(6) Category Sub-Total $(+/-)
Wood					
Wood Stud					
Plywood					
Baseboard - Wood					
Door Trim - Wood					
Cabinet					
Doors and Windows					
Panel Regular					
Slab Regular					
Wood Laminate					
Glazing					
		(7) Cost (-) / Revenue (+)			

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection:

.1 Contractor: Conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Departmental Representative, in writing, of satisfactory completion of Contractor's inspection; submit verification that corrections have been made.

.3 Request Departmental Representative inspection.

.2 Departmental Representative Inspection:

.1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: Submit written certificates, in English, indicating 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, balanced, and fully operational.

.4 Certificates required by Fire Commissioner, Utility companies: Submitted.

.5 Operation of systems: Demonstrated to designated personnel.

.6 Commissioning of mechanical systems: completed in accordance with 01 91 13 - General Commissioning (Cx) Requirements, and final Commissioning Report submitted to Departmental Representative.

.7 Work: Complete and ready for final inspection.

.4 Final Inspection:

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

.2 When Work is incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

1.2 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: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with Contractor's Representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify Project requirements.

.2 Review warranty requirements.

.2 Departmental Representative 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.

1.2 SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit two electronic final copies of operating and maintenance manuals in English, to the Departmental Representative.

.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.

1.3 O&M MANUAL FORMAT

.1 Assemble in 25 mm (1 inch) or greater, 3 ring binders; and one electronic copy provided on CD or DVD.

.2 Binder Cover and Binder Edge:

.1 Include Building Name, address, project name, project number (GOC#), completed date.

.3 Title Page

.1 O&M Manual for (*insert project name*)

.2 Building name, address, date;

.3 General Contractor information: name, address, phone number.

.4 Consultant name, address, phone number.

.5 Table of contents indicating each binder's contents.

.4 Index and tabs:

.1 Dividers with permanently marked tabs separate each section and sub section.

.2 Tab labels typewritten.

.3 Main tab for each specification section.

.5 Tab A: Contact information

.1 Included contact information for Consultant, General Contractor and all sub-contractors.

.2 Contractor information to include:

.1 Name, address, telephone number of manufacturer, installing contractor

.2 24-hour number for emergency service for all equipment in this section identified by equipment.

.6 Tab B: Signed letter of Warranty

.1 Date

.2 Project name

.3 Project number (GOC#)

.4 Building Location

.5 Warranty start date and end, to be from date of substantial as declared by Consultant

.6 All Manufacturer and extended warranties.

.7 Include all warranties from all contractors in this section.

.7 Tab C: Shop Drawings

.1 Copy of all shop drawings reviewed by the Consultant and/or 3rd party Commissioning Agent

.8 Tab D: All Reports and Permits

.1 TAB reports.

.2 Pre-functional tests.

.3 Start up reports.

.4 Completed performance verification forms (found in the Tender Documents).

.5 All permits or certifications from Authorities Having Jurisdictions.

.9 Tab E: Sequence of Operation

.1 Provide Designers and/or the manufactures operating instructions and sequence of operations.

.10 Tab F: Maintenance and Service Procedures

.1 Specific service and maintenance manuals, preventative and corrective maintenance, with service procedures and schedules.

.11 Tab G: As-Built Drawings

.1 Marked in red ink, by contractor, and reviewed by Consultant.

.12 Tab H: CMMS Data Sheets

.1 A copy of all completed CMMS Data Sheets for all equipment which is to be deleted, removed, added, or replaced.

.13 Tab I: Letter, signed by the Consultant or Commissioning Provider

.1 Indicating whether the Project included a system or modification to system susceptible to Legionella and whether the Facility Legionella Binder as per MD-15161 was updated in particular the Facility Checklist LBCMP-1, Contact List LBCMP-2 and Schematic Drawings, and whether the update was completed.

.14 Last Tab: Miscellaneous Items

.1 Health and Safety submittals including: site specific hazard assessment, safety manual TOC and company safety policy, MSDS sheets (if applicable) signed site orientations for worker, copy of first aid certificate, copy of emergency plan and muster location.

.2 Special requirements for equipment, not to be used for reports.

1.4 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.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative 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 as-built documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

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

.1 Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.

.4 Maintain as-built documents in clean, dry and legible condition.

.1 Do not use as-built documents for construction purposes.

.5 Keep as-built documents and samples available for inspection by Departmental Representative.

.6 Record as-built information on drawings and in designated copy of Project Manual provided by Departmental Representative.

.7 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.8 Maintain information during construction on project site drawings and accurately record deviations of newly installed or existing works from Contract documents.

.9 Use red felt tip marking pens for recording information.

.10 Mark on one set of prints and at completion of project and prior to final inspection; neatly transfer notations to second set.

.11 Ensure but do not limit recording of following information on as-built drawings:

.1 Locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
.2 Changes made by Change Order.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.
.5 Details not on original Contract Drawings.
.6 References to related shop drawings and modifications.

.12 Incorporate as-built information into CAD drawings.

.13 Submit as-built drawings to Departmental Representative.

.1 Provide in electronic form as CAD dwg format, on CD or DVD.

.14 Specifications: Mark each item to record actual construction, including:

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

.2 Changes made by Addenda and change orders.

1.6 RECORD DOCUMENTS

.1 Prior to Substantial Performance of the Work, provide on CD or DVD the marked-up information from the as-built documents transferred to a master set of drawing files provided by the Departmental Representative.

.2 Mark revised documents as "RECORD DOCUMENTS". Include all revisions.

.3 Indicate changes on the electronic set of record drawings. Provide updated record drawings in .dwg format.

.4 Submit completed record documents to Departmental Representative on CD or DVD.

1.7 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 91 13 - General Commissioning (Cx) Requirements.

.15 Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.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.

1.9 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 Departmental Representative.

.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 Departmental Representative.

.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 Departmental Representative.

.2 Include approved listings in Maintenance Manual.

1.10 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 Departmental Representative.

1.11 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.

.3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

.6 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.

.7 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Conduct joint 9 month warranty inspection, measured from time of acceptance by Departmental Representative.

.9 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 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.

.3 Contractor's plans for attendance at 9 month post-construction warranty inspections.

.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.

.10 Respond in timely manner to oral or written notification of required construction warranty repair work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.12 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.

.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

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate operation and maintenance of equipment and systems to designated personnel two weeks prior to date of substantial performance.

.2 Departmental Representative: 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 with Section 01 91 13 – General Commissioning Requirements.

.4 Ensure testing, adjusting, and balancing have been performed in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements 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 provided for instruction of each item of equipment or system is adequate for full orientation and training of designated personnel.

1.2 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 Departmental Representative'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 designated personnel.

.2 Provide written report that demonstration and instructions have been completed.

Part 2 Products

Not used.

Part 3 Execution

Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 CSA Z320-11 (R2016) – Building Commissioning Standard.

1.2 SUMMARY

.1 Section Includes:

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

.2 Acronyms:

.1 Cx - Commissioning.
.2 EMCS - Energy Monitoring and Control Systems.
.3 FPT – Functional Performance Testing.
.4 O & M - Operation and Maintenance.
.5 TAB - Testing, Adjusting, and Balancing.

1.3 GENERAL

.1 Cx is a planned program of tests, procedures, and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Functional Performance Testing responsibilities have been completed. Objectives:

.1 Verify installed equipment, systems, and integrated systems operate in accordance with contract documents, and design criteria and intent.
.2 Effectively train O & M staff.

.2 Basis of Design - The basis of design is the documentation of the primary thought processes and assumptions behind design decisions that were made to meet the Owner’s Project Requirements. The basis of design describes the systems, components, conditions and methods chosen to meet the intent. Some reiterating of the Owner’s Project Requirements may be included.

.3 Owner’s Project Requirements: Dynamic document that provides the explanation of the ideas, concepts and criteria that are considered to be very important to the Owner. It is initially the outcome of the programming and conceptual design phases.

.4 Contractor to appoint internal commissioning representative and assist in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.

.1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to

be interactively with each other as intended in accordance with Contract Documents and design criteria.

.2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.

.5 Design Criteria: Client's requirements or determined by Consultant. To meet Project functional and operational requirements.

1.4 COMMISSIONING OVERVIEW

.1 Section 01 91 31 - Commissioning (Cx) Plan.

.2 For Cx responsibilities refer to Section 01 91 31 - Commissioning (Cx) Plan.

.3 Cx to be a line item of Contractor's cost breakdown.

.4 Cx activities supplement field quality and testing procedures described in relevant technical sections.

.5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages that are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.

.6 Design Consultant will issue Interim Acceptance Certificate when:

.1 Completed Cx documentation has been received and reviewed for suitability by Departmental Representative.

.2 Equipment, components, systems and integrated systems have been fully commissioned and functional as per design intent within the context of the Owner Requirements.

.3 Final O&M and Training Manual received, reviewed and approved by Design Consultant for suitability.

.4 Completion of training session to Operation and Maintenance Staff.

1.5 NON-CONFORMANCE TO FUNCTIONAL PERFORMANCE REQUIREMENTS

.1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the non-functional system, including related systems as deemed required by Departmental Representative to ensure effective performance.

.2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Costs to be in form of progress payment reductions or hold-back assessments.

1.6 PRE-CX REVIEW

.1 Before Construction:

.1 Review contract documents, confirm by writing to Departmental Representative:

.1 Adequacy of provisions for Cx.

.2 Aspects of design and installation pertinent to success of Cx.

.2 During Construction:

.1 Co-ordinate provision, location and installation of provisions for Cx.

.3 Before start of Cx:

.1 Have completed Cx Plan up-to-date.

.2 Ensure installation of related components, equipment, sub-systems, and systems is complete.

.3 Fully understand Cx requirements and procedures.

.4 Have Cx documentation shelf-ready.

.5 Understand completely design criteria and intent and special features.

.6 Submit complete start-up documentation to Departmental Representative.

.7 Have Cx schedules up-to-date.

.8 Ensure systems have been cleaned thoroughly.

.9 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.

.10 Ensure "As-Built" system schematics are available.

.4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.7 CONFLICTS

.1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.

.2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.8 SUBMITTALS

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

.1 Submit no later than 8 weeks after award of Contract:

.1 Draft Cx documentation.

.2 Preliminary Cx schedule.

.2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.

.3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 8 weeks prior to start of Cx.

.4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.9 COMMISSIONING DOCUMENTATION

.1 Refer to Section 01 91 33 - Commissioning (Cx) Forms for requirements and instructions for use.

.2 Departmental Representative to review and approve Cx documentation.

.3 Provide completed and approved Cx documentation to Departmental Representative.

1.10 COMMISSIONING SCHEDULE

.1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16 - Construction Progress Schedules - Bar (GANTT) Chart. Update schedule as necessary during the work to reflect progress on components and systems.

.2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:

.1 Approval of Cx reports.

.2 Verification of reported results.

.3 Repairs, retesting, re-commissioning, re-verification.

.4 Training.

1.11 COMMISSIONING MEETINGS

.1 Convene Cx meetings following project meetings: Section 01 32 16 - Construction Progress Schedules - Bar (GANTT) Chart and as specified.

.2 Purpose: Resolve issues, monitor progress, identify deficiencies, relating to Cx.

.3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.

.4 At 60% construction completion stage, Departmental representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:

.1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.

.2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.

.5 Thereafter, Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.

.6 Meeting will be chaired by Departmental Representative, who will record and distribute minutes.

.7 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.12 STARTING AND TESTING

.1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.13 WITNESSING OF STARTING AND TESTING

.1 Provide 14 days notice prior to commencement.

.2 Departmental Representative to witness of start-up and testing if desired.

.3 Departmental Representative to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.14 MANUFACTURER'S INVOLVEMENT

.1 Factory testing: Manufacturer to:

.1 Coordinate time and location of testing.

.2 Provide testing documentation for approval by Departmental Representative.

.3 Arrange for Departmental Representative to witness tests.

.4 Confirm review of test results and documentation from Departmental Representative before delivery to site.

.2 Obtain manufacturers' installation, start-up, and operations instructions and review with Departmental Representative prior to start-up of components, equipment, and systems.

.1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.

.2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.

.3 Integrity of warranties:

.1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.

.2 Verify with manufacturer that testing as specified will not void warranties.

.4 Qualifications of manufacturer's personnel:

.1 Experienced in design, installation, and operation of equipment and systems.

.2 Ability to interpret test results accurately.

.3 To report results in clear, concise, logical manner.

1.15 PROCEDURES

.1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing, and Cx.

.2 Conduct start-up and testing in following distinct phases:

.1 Included in delivery and installation:

.1 Verification of conformity to specification, approved shop drawings and completion of static verification report forms.

.2 Visual inspection of quality of installation.

.2 Start-up: Follow accepted start-up procedures.

.3 Pre-functional testing: Provide completed FPTs as a pre-functional test prior to formal testing.

.4 System functional performance testing: Include repetition of tests after correcting deficiencies.

.5 Post-substantial verification: Include fine-tuning.

.3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.

.4 Document required tests on approved functional performance testing forms.

.5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:

.1 Minor equipment/systems: Implement corrective measures approved by Departmental Representative.

.2 Major equipment/systems: If evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.

.3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.

.1 Rejected equipment to be removed from site and replaced with new.

.2 Subject new equipment/systems to specified start-up procedures.

1.16 START-UP DOCUMENTATION

.1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.

.2 Start-up documentation to include:

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

.2 Pre-start-up inspection reports.

.3 Signed installation/start-up check lists.

.4 Start-up reports.

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

1.17 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

.1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.

.2 With assistance of manufacturer develop written maintenance program and submit to Departmental Representative for approval before implementation.

.3 Operate and maintain systems for length of time required for commissioning to be completed.

.4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.18 TEST RESULTS

.1 If start-up, testing, or functional performance testing produce unacceptable results, repair, replace, or repeat specified startup or functional performance testing procedures until acceptable results are achieved.

.2 Provide labour and materials, assume costs for re-commissioning including Commissioning Authority's costs.

1.19 START OF COMMISSIONING

.1 Notify Departmental Representative at least 21 days prior to start of Cx.

.2 Start Cx after elements of building affecting start-up and functional performance testing of systems have been completed.

1.20 INSTRUMENTS / EQUIPMENT

.1 Submit to Departmental Representative for review:

.1 Complete list of instruments proposed to be used.

.2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date, and calibration accuracy.

.2 Provide the following equipment as required:

.1 2-way radios.

.2 Ladders.

.3 Equipment as required to complete work.

1.21 COMMISSIONING FUNCTIONAL PERFORMANCE TESTING

.1 Carry out Cx:

.1 Under actual operating conditions, over entire operating range, in all modes.

.2 On independent systems and interacting systems.

.2 Cx procedures to be repeatable, and reported results are to be verifiable.

.3 Follow equipment manufacturer's operating instructions.

.4 EMCS trending to be available as supporting documentation for functional performance testing.

1.22 WITNESSING COMMISSIONING

.1 Departmental Representative to witness activities and verify results.

1.23 AUTHORITIES HAVING JURISDICTION

.1 Where specified start-up, testing, or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

.2 Obtain certificates of approval, acceptance, and compliance with rules and regulation of authority having jurisdiction.

.3 Provide copies to Departmental Representative within 5 days of test.

1.24 COMMISSIONING CONSTRAINTS

.1 Since access into secure or sensitive areas will be very difficult after occupancy it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems in these areas before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.

1.25 EXTRAPOLATION OF RESULTS

.1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.26 EXTENT OF VERIFICATION

.1 Conduct tests repeated during verification under same conditions as original tests, using same test equipment and instrumentation.

.2 Review and repeat commissioning of systems if inconsistencies are found in more than 20% of reported results.

.3 Perform additional commissioning until results are acceptable to Departmental Representative.

1.27 REPEAT VERIFICATIONS

.1 Assume costs incurred by Departmental Representative and Commissioning Authority for third and subsequent verifications where:

.1 Verification of reported results fail to receive Departmental Representative's approval.

.2 Repetition of second verification again fails to receive approval.

.3 Departmental Representative and/or Commissioning Authority deems Contractor's request for second verification was premature.

1.28 SUNDRY CHECKS AND ADJUSTMENTS

.1 Make adjustments and changes that become apparent as Cx proceeds.

.2 Perform static and operational checks as applicable and as required.

1.29 DEFICIENCIES, FAULTS, DEFECTS

.1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.

.2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.30 COMPLETION OF COMMISSIONING

.1 Upon completion of Cx leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.31 ACTIVITIES UPON COMPLETION OF COMMISSIONING

.1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.32 TRAINING

.1 In accordance with Section 01 91 41 - Commissioning (Cx) - Training.

1.33 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

.1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.34 OCCUPANCY

.1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.

1.35 INSTALLED INSTRUMENTATION

.1 Use instruments installed under Contract for TAB and functional performance testing if:

.1 Accuracy complies with these specifications.

.2 Calibration certificates have been deposited with Departmental Representative.

.2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.36 FUNCTIONAL PERFORMANCE TESTING TOLERANCES

.1 Application tolerances:

.1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10% of specified values.

.2 Instrument accuracy tolerances:

.1 To be of higher order of magnitude than equipment or system being tested.

.3 Measurement tolerances during verification:

.1 Unless otherwise specified actual values to be within +/- 2% of recorded values.

1.37 OWNER'S PERFORMANCE TESTING

.1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Description of overall structure of Cx Plan and roles and responsibilities of Cx team.

1.2 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CSA Z320-11, Building Commissioning.

1.3 GENERAL

.1 Provide a fully functional facility:

.1 Systems, equipment, and components meet user's functional requirements before date of acceptance, and operate consistently at peak efficiencies and within specified energy budgets under normal loads.

.2 Facility user and O & M personnel have been fully trained in aspects of installed systems.

.3 Optimized life cycle costs.

.4 Complete documentation relating to installed equipment and systems.

.2 Term "Cx" in this section means "Commissioning".

.3 Use this Cx Plan as master planning document for Cx:

.1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.

.2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.

.3 Sets out deliverables relating to O & M, process and administration of Cx.

.4 Describes process of verification of how built works meet design requirements.

.5 Produces a complete functional system prior to issuance of Certificate of Occupancy.

.6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:

.1 Overview of Cx.

.2 General description of elements that make up Cx Plan.

.3 Process and methodology for successful Cx.

.4 Acronyms:

.1 Cx - Commissioning.

.2 EMCS - Energy Monitoring and Control Systems.

.3 FPT – Functional Performance Testing.

.4 MSDS - Material Safety Data Sheets.

.5 TAB - Testing, Adjusting and Balancing.

.6 WHMIS - Workplace Hazardous Materials Information System.

.5 Commissioning terms used in this Section:

.1 Bumping: short term start-up to prove ability to start and prove correct rotation.

.2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.4 DEVELOPMENT OF 100% CX PLAN

.1 Cx Plan to be 95% completed by the Departmental Representative and transmitted to the Contractor.

.2 Cx Plan to be 100% completed within 8 weeks of award of contract to take into account:

.1 Approved shop drawings and product data.

.2 Approved changes to contract.

.3 Contractor's project schedule.

.4 Cx schedule.

.5 Contractor's, sub-contractor's, suppliers' requirements.

.6 Project construction team's and Cx team's requirements.

.3 Submit completed Cx Plan for review and further obtain Departmental Representative's written approval.

1.5 REFINEMENT OF CX PLAN

.1 During construction phase, revise, refine and update Cx Plan to include:

.1 Changes resulting from Client program modifications.

.2 Approved design and construction changes.

.2 Revise, refine, and update every 4 weeks during construction phase. At each revision, indicate revision number and date.

.3 Submit each revised Cx Plan to Departmental Representative for review and obtain written approval.

.4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

.1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.

.2 Project Manager will select Cx Team consisting of following members:

.1 PSPC Design Quality Review Team: During construction, will conduct periodic site reviews to observe general progress.

.2 PSPC Quality Assurance Commissioning Manager: Confirms Cx processes, forms, and procedures are developed in the Cx Forms by the Departmental Representative to deliver a fully operational project.

.3 Departmental Representative is responsible for:

.1 Review of Cx documentation from operational perspective.

.2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.

.3 Protection of health, safety, and comfort of occupants and O & M personnel.

.4 Monitoring of Cx activities, training, development of Cx documentation.

.5 Work closely with members of Cx Team.

.4 Commissioning Authority is responsible for:

.1 Organizing Cx.

.2 Monitoring operations Cx activities.

.3 Witnessing accuracy of reported results.

.4 Ensuring implementation of final Cx Plan.

.5 Performing verification of performance of installed systems and equipment.

.6 Implementation of Training Plan.

.7 Coordinates and assists Departmental Representative during integrated system verification and testing.

.5 Construction Team: Contractor, sub-contractors, suppliers, and support disciplines; is responsible for construction/installation in accordance with contract documents, including:

.1 TAB.

.2 Performance of Cx activities.

.3 Delivery of training and Cx documentation.

.4 Assigning one person as point of contact with Department Representative and PSPC Cx Manager for administrative and coordination purposes.

.5 Revise, refine and update CX plan.

.6 Demonstrations.

.7 Testing.

.6 Property Manager: Represents lead role in Operation Phase and onwards and is responsible for:

.1 Receiving facility.

.2 Day-to-day operation and maintenance of facility.

1.7 CX PARTICIPANTS

.1 Employ the following Cx participants to verify performance of equipment and systems:

.1 Installation contractor/subcontractor:

.1 Equipment and systems except as noted.

.2 Equipment manufacturer: Equipment specified to be installed and started by manufacturer.

.1 Include functional performance testing.

.3 Specialist subcontractor: Equipment and systems supplied and installed by specialist subcontractor.

.4 Specialist Testing agency:

.1 Possessing specialist qualifications and installations providing environments essential to client's program but are outside scope or expertise of Cx specialists on this project.

.1 Include Acoustic Testing Sub-Contractor

.5 Contractor's TAB agency:

.1 Equipment and systems involving measurement and adjusting of flow rates and pressures to meet indicated or specified values. Includes, but not limited to, ducted air and hydronic systems, fans, pumps, and terminal units.

.2 TAB is a construction contractor's activity that permits Designer to certify results of functional performance testing test of installed design to satisfaction of Departmental Representative.

.2 Ensure that Cx participant:

.1 Could complete work within scheduled time frame.

.2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O & M personnel, including:

.1 Modify ventilation rates to meet changes in off-gassing.

.2 Changes to heating or cooling loads beyond scope of EMCS.

.3 Changes to EMCS control strategies beyond level of training provided to O & M personnel.

.4 Redistribution of electrical services.

.5 Modifications of fire alarm systems.

.6 Modifications to voice communications systems.

.3 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx 3 months prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

.1 The following list outlines the extent of Cx.

.1 Architectural systems:

.1 Acoustic performance (Contractor must provide Acoustic Testing Sub-Contractor for this service).

.2 Doors, related hardware:

.1 New doors and door hardware.

.2 Drop door seals

.2 Mechanical systems and associated equipment:

.1 Plumbing systems:

.1 Electric Hot Water Heater

.2 Drain-water Pump

.3 Plumbing fixtures

.2 HVAC and exhaust systems:

.1 Transfer Fan

.2 Fan Powered Terminal Units

.3 Heating/Chilled Water Piping

.4 VAV Revised Flows

.5 HVAC TAB

.6 Fan Coils

.3 Fire and life safety systems:

.1 Wet pipe sprinkler systems.

.2 Fire dampers.

.3 Fire extinguishers.

.4 EMCS:

.1 DDC Controls in project space

.2 Thermostats in project space

.3 Sensors.

.4 Actuators.

.3 Electrical systems and equipment:

.1 Electrical Distribution

.1 New distribution panels.

.2 Receptacles.

.2 Lighting systems:

.1 Lighting fixtures and devices.

.2 Low-voltage control.

.3 Emergency lighting systems, including battery packs.

.4 Fire exit emergency signage.

.3 Fire alarm systems, equipment:

.1 Fire alarm devices.

.2 Annunciators.

.3 Control panels.

.4 Fire alarm battery banks.

.4 Other systems and equipment:

.1 Intrusion alarm panel and devices.

.2 Video surveillance system and devices.

.3 Access control system and devices.

.4 Sound masking equipment and devices.
.5 Paging system and devices.
.6 Telecommunications systems and devices.

1.9 DELIVERABLES RELATING TO O & M PERSPECTIVES

.1 General requirements:

.1 Compile English documentation.
.2 Documentation to be computer-compatible format ready for inputting for data management.

.2 Provide deliverables:

.1 Warranties.
.2 Project record documentation.
.3 Inventory of spare parts, special tools and maintenance materials.
.4 Maintenance Management System (MMS) identification system used.
.5 WHMIS information.
.6 MSDS data sheets.
.7 Electrical Panel inventory containing detailed inventory of electrical circuitry for each panel board. Duplicate of inventory inside each panel.
.8 Preventative maintenance program.
.9 Contractor’s and sub-contractor’s as-built drawings.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

.1 General:

.1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.

.2 Definitions:

.1 Cx as used in this section includes:

.1 Cx of components, equipment, systems, subsystems, and integrated systems.
.2 Factory inspections and functional performance testing.

.3 Deliverables: provide:

.1 Cx Specifications.
.2 Startup, pre-Cx activities and documentation for systems, and equipment.
.3 Completed static verification forms.
.4 Completed start-up report forms.
.5 Completed functional performance testing report forms.
.6 Results of functional performance testing and Inspections.
.7 Description of Cx activities and documentation.
.8 Description of Cx of integrated systems and documentation.

.9 Tests performed by Departmental Representative.

.10 Training Plans.

.11 Cx Reports.

.12 Prescribed activities during warranty period.

.4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.

.5 Departmental Representative to participate.

.6 Commissioning Authority to witness tests.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Items listed in this Cx Plan include the following:

.1 Pre-Start-Up inspections: by Departmental Representative prior to permission to start up and rectification of deficiencies to Departmental Representative's satisfaction.

.2 Departmental Representative to use approved check lists.

.3 Departmental Representative will monitor some of these pre-start-up inspections.

.4 Include completed documentation with Cx report.

.5 Conduct pre-start-up tests: conduct pressure, static, flushing, cleaning, and "bumping" during construction as specified in technical sections. To be witnessed and certified by Departmental Representative and does not form part of Cx specifications.

.6 Conduct pre-functional tests. Complete FPT forms as pre-functional test prior to formal FTPs.

.7 Departmental Representative will monitor some of these inspections and tests.

.8 Include completed documentation in Cx report.

.2 Pre-Cx activities – ARCHITECTURAL

.1 Acoustic Performance

.1 Testing to include verification of NC ratings by specialist.

.2 New door hardware.

.1 Confirm function of all door hardware.

.3 Drop door seals.

.1 Confirm function of drop door seals.

.3 Pre-Cx activities - MECHANICAL:

.1 Plumbing systems:

.1 "Bump" each item of equipment in its "stand-alone" mode.

.2 Complete pre-start-up checks and complete relevant documentation.

.3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.

.2 HVAC equipment and systems:

.1 "Bump" each item of equipment in its "stand-alone" mode.

.2 At this time, complete pre-start-up checks and complete relevant documentation.

.3 After equipment has been started, test related systems in conjunction with control systems on a system-by-system basis.

.4 Perform TAB on systems. TAB reports to be approved by Departmental Representative and reviewed by CxA.

.3 EMCS:

.1 EMCS trending to be available as supporting documentation for functional performance testing.

.2 Perform point-by-point testing in parallel with start-up.

.3 Demonstrate performance of systems, to be witnessed by Departmental Representative.

.4 Only additional testing after foregoing have been successfully completed to be "Off-Season Tests".

.4 Pre-Cx activities - LIFE SAFETY SYSTEMS

.1 Sprinkler Systems

.1 Testing to include a complete verification in accordance with ULC requirements.

.5 Pre-Cx activities - ELECTRICAL:

.1 Lighting systems:

.1 Emergency lighting systems:

.1 Pre-functional tests to include verification of lighting levels and coverage, initially by disrupting normal power.

.2 Low voltage lighting control system.

.2 Fire alarm systems:

.1 Test after other safety and security systems are completed. Testing to include a complete verification in accordance with ULC requirements.

.3 Other systems: these include:

.1 Intrusion alarm panel and devices.

.2 Video surveillance system and devices

.3 Access control system and devices

.4 Sound masking and paging system.

.5 Telecommunications systems and devices.

1.12 START-UP

.1 Start up components, equipment and systems.

.2 Equipment manufacturer, supplier, installing specialist sub-contractor, as appropriate, to start-up, under Contractor's direction, following equipment, systems:

.1 Plumbing systems:

.1 Electric Hot Water Heater.

.2 Drain-water Pump.

.2 HVAC and exhaust systems:

.1 Fan Powered Terminal Units

.3 Departmental Representative to monitor some of these start-up activities.

.1 Rectify start-up deficiencies to satisfaction of Departmental Representative.

.4 Functional Performance Testing:

.1 Contractor to perform.

.1 Repeat when necessary until results are acceptable to Departmental Representative.

.2 Use procedures modified generic procedures to suit project requirements.

.3 Departmental Representative to witness and certify reported results using approved static verification, start-up, and function performance testing forms.

.4 Departmental Representative reserves right to verify up to 30% of reported results at random.

.5 Failure of randomly selected item shall result in rejection of functional performance testing report or report of system startup and testing.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

.1 Perform Cx using procedures developed and approved by Departmental Representative.

.2 Departmental Representative to monitor Cx activities.

.3 Upon satisfactory completion, Commissioning Authority to prepare Cx Report.

.4 Departmental Representative reserves right to verify a percentage of reported results at no cost to contract.

1.14 CX OF INTEGRATED SYSTEMS AND RELATED DOCUMENTATION

.1 Cx to be performed by Contractor, using procedures developed by Departmental Representative.

.2 Upon satisfactory completion, Commissioning Authority to prepare Cx Report, to be reviewed by Consultant and submitted to Departmental Representative for review.

.3 Departmental Representative reserves right to verify percentage of reported results.

.4 Integrated systems to include:

.1 HVAC and associated systems forming part of integrated HVAC systems:

.1 EMCS

.2 Fire and life safety systems:

.1 Wet-Pipe sprinkler system.

.3 Fire alarm systems.

.4 Intrusion alarm system.

.5 Video surveillance system.

.6 Access control system.

.7 Sound masking and paging systems.

.8 Telecommunications system.

.9 Emergency lighting systems.

.5 Identification:

.1 In later stages of Cx, before hand-over and acceptance, Departmental Representative, Consultant, Contractor, Project Manager, Property Manager and Cx Manager to co-operate to complete inventory data sheets and provide assistance to PWGSC in full implementation of MMS identification system of components, equipment, sub-systems, systems.

1.15 STATIC VERIFICATION/START-UP FORMS

.1 Refer to Section 01 91 33 – Commissioning (Cx) Forms.

1.16 AFD SERVICE PROVIDOR FORMS

.1 Refer to Section 01 91 33 – Commissioning (Cx) Forms.

1.17 FUNCTIONAL PERFORMANCE TESTING FORMS

.1 Refer to Section 01 91 33 – Commissioning (Cx) Forms.

1.18 DELIVERABLES RELATING TO ADMINISTRATION OF CX

.1 General:

.1 Because of risk assessment, complete Cx of occupancy, weather and seasonal-sensitive equipment and systems in these areas before building is occupied.

1.19 CX SCHEDULES

.1 Prepare detailed critical path Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule. Include:

.1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems.

.2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to Department Representative.

.3 Include seasonal commissioning in schedule for all seasons of operation.

.2 After approval, incorporate Cx Schedule into Construction Schedule.

.3 Contractor, Consultant, and Departmental Representative will monitor progress of Cx against this schedule.

1.20 TEST REPORTS

.1 Submit reports of tests to Departmental Representative and Consultant.

1.21 ACTIVITIES DURING WARRANTY PERIOD

.1 Cx activities must be completed before issuance of Interim Certificate. It is anticipated that certain Cx activities may be necessary during Warranty Period, including:

.1 Fine tuning of HVAC systems.

.2 Seasonal testing.

.3 Adjustment of ventilation rates to promote good indoor air quality and reduce deleterious effects of VOCs generated by off-gassing from construction materials and furnishings.

1.22 TRAINING PLANS

.1 Refer to Section 01 91 41 - Commissioning (Cx) - Training.

1.23 FINAL SETTINGS

.1 Upon completion of Cx to satisfaction of Departmental Representative, lock control devices in their final positions, indelibly mark settings, and include in Cx Reports.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Commissioning forms to be completed for equipment, system and integrated system.

1.2 STATIC VERIFICATION/START-UP CHECK LISTS

.1 Include the following data:

.1 Data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks necessary to prepare for start-up and functional performance testing, and used during operation and maintenance of equipment.

.2 Product manufacturer's installation instructions and recommended checks.

.3 Special procedures as specified in relevant technical sections.

.4 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Prior to functional performance testing of systems, complete items on static verification and start-up forms related to systems.

.3 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Commissioning Authority and Departmental Representative, supplemental additional data lists will be required for specific project conditions.

.4 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.

.5 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Commissioning Authority. Check lists will be required during Commissioning and will be included in O & M at completion of project.

.6 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 FUNCTIONAL PERFORMANCE TESTING FORMS

.1 Functional performance testing to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.

.2 Functional performance testing forms, including those developed by Contractor records measured data and readings taken during functional testing and functional performance testing procedures.

.3 Prior to functional performance testing of integrated system, complete functional performance testing forms of related systems and obtain Departmental Representative's approval.

1.4 AFD SERVICE PROVIDER FORMS

.1 Complete AFD service provider Equipment Data Collection Form for all equipment that will be the responsibility of AFD service provider to perform planned maintenance.

.2 A sample form is attached to this section.

1.5 SAMPLES OF COMMISSIONING FORMS

.1 Commissioning Authority will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.

.2 Commissioning forms are attached to this section.

.1 Forms are subject to modifications upon receipt of approved shop drawings.

1.6 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

.1 When additional forms are required, but are not available from Commissioning Authority, develop appropriate verification forms and submit to Departmental Representative for approval prior to use.

.1 Additional commissioning forms to be in same format as provided by Commissioning Authority.

.2 Additional forms and tests may be provided as submittal documentation is received and finalized.

1.7 COMMISSIONING FORMS

.1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.

.2 Strategy for Use:

.1 Commissioning Authority provides Contractor project-specific Commissioning forms with Specification data included.

.2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.

.3 Confirm operation to design criteria and intent.

.4 Identify variances between design and operation, and reasons for variances.

.5 Verify operation in specified normal and emergency modes and under specified load conditions.

.6 Record analytical and substantiating data.

.7 Verify reported results.

.8 Form to bear signatures of recording technician.

.9 Submit immediately after tests are performed.

.10 Report results in true measured SI unit values.

.11 Provide Commissioning Authority with originals of completed forms.

.12 Maintain copy on site during start-up, testing, and commissioning period.

1.8 LANGUAGE

.1 To suit the language profile of the awarded contract.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Brookfield Global Integrated Solutions — INSPIRING BETTER BUSINESS PERFORMANCE

RP1 - Equipment Data Collection Form (DCF) - Ver 1.3

SECTION A - GENERAL INFORMATION

GENERAL INFORMATION

BUILDING NAME: _____ PROJECT NAME: _____

GOC BUILDING NUMBER: _____ PROJECT NUMBER: _____

BUILDING ADDRESS: _____ PROJECT MGR: _____

☐ NEW EQUIPMENT	☐ REMOVED EQUIPMENT	☐ REPLACED EQUIPMENT
☐ UPDATED EQUIPMENT	☐ CRITICAL SPARES	☐ TENANT

SECTION B - EQUIPMENT INFORMATION

EQUIPMENT INFORMATION

SYSTEM (PLEASE CIRCLE THE BOX WHICH APPLIES)

05-Electrical Low Voltage	06 -Electrical High Voltage	10 - Electrical Auxiliary & Standby Power	15 - Control Monitoring System	20 - Heating	25 - Refrigeration	30 - Ventilation	40 -Compress Air, Auxiliary & Process	50 - Water Supply	55- Plumbing & Drainage
60 - Fire Protection	65 -Transportation Device	70 - Security	72 - Environmental	75 - Special Purpose		79 - Energy	80 - Architectural Structural	85 - Grounds	90 - Cafeteria (Excluding Refrigeration)

EQUIPMENT DESCRIPTION _____

LOCATION FLOOR: _____ ROOM: _____

SPECIFIC LOCATION: _____

MANUFACTURER: _____ MODEL NUMBER: _____

SERIAL NUMBER: _____ CMMS LABEL ON EQUIPMENT BEING REPLACED: _____

DATE OF INSTALLATION (YY/MM/DD): _____ PURCHASE PRICE (without GST): _____ PURCHASE DATE (YY/MM/DD): _____

SECTION C - SPECIFIC EQUIPMENT INFORMATION

SPECIFIC EQUIPMENT INFORMATION

ELECTRICAL VOLTS: _____ PHASE: _____ AMPS/FLA: _____ PARENT NUMBER: _____

MECHANICAL C.F.M/G.P.M _____ Capacity _____ Belt Size _____ Quantity: _____ Filter Size _____ Quantity _____ Type _____

FIRE SUPPRESSION TYPE: _____ CAPACITY: _____ MANUFACTURER DATE: _____

COOLING CAPACITY: _____ REFRIGERANT TYPE: _____ CHARGE (KG): _____

FUEL STORAGE TANKS: _____ ABOVEGROUND _____ UNDERGROUND STORAGE VOLUME: _____ DOUBLE WALLED: YES _____ NO _____

ENERGY SOURCE: ☒ NATURAL GAS ☐ OIL ☐ PROPANE ☐ ELECTRIC ☐ STEAM ☐ HOT WATER ☐ COLD WATER

ENVIRONMENT DOCUMENTS ATTACHED: YES _____ NO _____

SECTION D - WARRANTY

WARRANTY

WARRANTOR NAME: _____ WARRANTY START DATE (YY/MM/DD): _____

COMMENTS

COMMENTS

_____

_____

_____

FOR CMMS USE ONLY

FOR CMMS USE ONLY

SCHEDULING: ANNUAL _____ NEW EQUIPMENT NUMBER: _____

EQUIPMENT NUMBER LABEL PROVIDED: _____ TENANT WA# _____

EQUIPMENT ADDED TO ASSET GROUP: ☐ YES ☐ NO

A) PLEASE SEND COMPLETED FORMS TO YOUR CMMS COORDINATOR FOR PROCESSING

B) PLACE COMPLETED FORM IN PROJECT O&M BINDER IF APPLICABLE

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
400													
401A													
401B													
401EX													
402													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
404													
405													
406													
407													
408													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
409													
410													
412													
413													
413													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
414													
415													
416													
417													
418													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
419													
420													
421													
422													
424													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
425													
426													
427													
428													
429													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
430													
431													
432													
433													
435A													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
435B													
437													
438													
440													
441													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
442													
443													
444													
445													
446													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
447													
450													
454													
455													
456													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
457													
458													
459													
462													
463													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Door Hardware

	Static Verification*				Functional Performance Tests*						Contractor		
					Applies to secured doors								
Door #	Record Hardware Type	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Check each door utilizing a meter to confirm each card reader function.	Verify sentivity of readers and application of cards.	Verify Card reader pad operates as required. Confirm function via authorized and non authorized access cards.	Verify panic bar operation and associated alarm	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
464													
465													
466													
467													
468													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **HWT-1**
Equipment Type: Electric Tank Water Heater
System: DHW
Location: Ceiling Space
Area Serviced: Domestic Hot Water

This box for IDI use only.

CxA reviewer: _____

Form Auditted? YES ☐ NO ☐

Contractor (include company and print name)	Signature	Date
Mechanical:		
Electrical:		
General:		

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer			☐	☐
Model			☐	☐
Capacity [Gal]	6		☐	☐
Output [kW]	3		☐	☐
Electrical [V/Ph/Hz]			☐	☐

Details/Notes:

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is accessible for service and maintenance		☐	☐
Equipment is properly mounted and level		☐	☐
Equipment is clean and free of debris		☐	☐
Piping Installation			
Piping layout matches drawings and associated components (isolation valves, check valves, thermostats, pressure gauges, drains, heat traps) are installed.		☐	☐
Piping is properly supported		☐	☐
Temp/Pressure relief is piped to floor drain.		☐	☐
Drip tray installed and tray drain piped to floor drain		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnect is installed and labelled		☐	☐
Insulation & Labelling			
Thermal Insulation complete as per contract documents		☐	☐
Labeling is complete and direction of flow is indicated		☐	☐

Unit Tag: **TF-1**
Equipment Type: Transfer Fan
System: HVAC
Location: Equipment Closet
Area Serviced: Equipment Closet

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

IDI Audit Verification

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

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Greenheck		☐	☐
Model	CSP-A410		☐	☐
Airflow (cfm)	240		☐	☐
Motor Power	Fractional		☐	☐
Electrical [V/Ph/Hz]			☐	☐

Details/Notes:

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed		☐	☐
Equipment is accessible for service and maintenance		☐	☐
Equipment is labelled		☐	☐
Duct Installation			
Duct layout matches drawings, duct are securely mounted and connections are sealed		☐	☐
Motorized dampers or back draft dampers are installed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Control components and sensors labelled per contract documents		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **SP-1**
Equipment Type: Drainwater Pump
System: HVAC
Location: Kitchen 436
Area Serviced: Sink Drainage

This box for IDI use only.

CxA reviewer: _____

Form Auditted? YES ☐ NO ☐

IDI Audit Verification

Contractor (include company and print name)	Signature	Date
Mechanical:		
Electrical:		
General:		

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Saniflo		☐	☐
Model	Sanivite		☐	☐
Flow rate [gpm]	18		☐	☐
Head [ft]	16		☐	☐
Power [hp]			☐	☐
Electrical [V/Ph/Hz]			☐	☐

Details/Notes:

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is accessible for service and maintenance		☐	☐
Equipment is clean and free of debris		☐	☐
Piping Installation			
Discharge piping is adequately supported		☐	☐
Check valves and isolation valves are installed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Controls Installation			
Pump controller installed and labelled		☐	☐
Control wiring installed and properly supported		☐	☐
Float valves and high level alarms are installed		☐	☐

Unit Tag: **FTU-01**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 432

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	229		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-02**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 431

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	229		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Unit Tag: **FTU-03**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 430

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	229		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-04**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 429

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	229		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-05**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 428

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

IDI Audit Verification

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

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	229		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-06**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 427

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	227		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up

Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-07**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 426

This box for IDI use only. Form Auditted? YES ☐ NO ☐

CxA reviewer: ______________________

IDI Audit Verification

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

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	227		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Unit Tag: **FTU-08**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 425

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

IDI Audit Verification

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

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	227		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-09**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 424

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	227		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-10**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 422

This box for IDI use only. Form Auditted? YES ☐ NO ☐

CxA reviewer: ______________________

IDI Audit Verification

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

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-11**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 421

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up | Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-12**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 420

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag:	**FTU-13**
Equipment Type:	Fan Powered Terminal Unit
System:	HVAC
Location:	Underfloor Plenum
Area Serviced:	419

This box for IDI use only. Form Auditted? YES ☐ NO ☐

CxA reviewer: ______________________

Contractor (include company and print name)	**Signature**	**Date**
Mechanical:		
Electrical:		
Controls:		
General:		

IDI Audit Verification

Nameplate Data

	Submitted	**Installed** *note any changes*	**Installer Verify**	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	**Installer Verify**	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-14**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 417

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	159		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-15**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 416

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

IDI Audit Verification

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

Nameplate Data

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	212		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

Inspection Items	Comments	Installer Verify	IDI
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Unit Tag: **FTU-16**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 415

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	159		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-17**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 414

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	212		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-18**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 406

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	136		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-19**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 408

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	212		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-20**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 409

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	136		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-21**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 413

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

Contractor (include company and print name)	**Signature**	**Date**
Mechanical:		
Electrical:		
Controls:		
General:		

IDI Audit Verification

Nameplate Data

	Submitted	**Installed** *note any changes*	**Installer Verify**	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	212		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	**Installer Verify**	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-22**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 412

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	318		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-23**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 401

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

IDI Audit Verification

Contractor (include company and print name)	**Signature**	**Date**
Mechanical:		
Electrical:		
Controls:		
General:		

Nameplate Data

	Submitted	**Installed** *note any changes*	**Installer Verify**	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	**Installer Verify**	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-24**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: Open Office

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	191		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-25**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 459

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	276		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-26**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 458

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	276		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-27**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 457

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	276		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Unit Tag: **FTU-28**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 456

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	276		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-29**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 455

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	297		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-30**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 454

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	297		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Unit Tag: **FTU-31**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 450

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	297		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-32**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 448d

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	297		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-33**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 447

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	170		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-34**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 446

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	254		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-35**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 468

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	30		☐	☐
Airflow (cfm)	636		☐	☐
Motor [HP]			☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-36**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 445

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	254		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-37**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 467

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	191		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-38**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 444

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

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	254		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-39**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 466

This box for IDI use only.

CxA reviewer: _____

Form Auditted? YES ☐ NO ☐

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)	191		☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-40**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 443

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-41**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 465

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-42**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 442

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-43**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 464

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

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

IDI Audit Verification

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-44**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 441

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

IDI Audit Verification

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

Nameplate Data

	Submitted	Installed *note any changes*	Installer Verify	
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:

Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items

	Comments	Installer Verify	
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-45**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 463

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-46**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 440

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-47**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 438

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

4th Floor Tenant Fit-up Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **FTU-48**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced: 437

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-49**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced:

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greeenstone Building
Government of Canada

Unit Tag: **FTU-50**
Equipment Type: Fan Powered Terminal Unit
System: HVAC
Location: Underfloor Plenum
Area Serviced:

This box for IDI use only.

Form Auditted? YES ☐ NO ☐

CxA reviewer: _____

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

IDI Audit Verification

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer	Price		☐	☐
Model	FDBU		☐	☐
Size	10		☐	☐
Airflow (cfm)			☐	☐
Motor [HP]	1/8		☐	☐
Electrical [V/Ph/Hz]	120/1/60		☐	☐

Details/Notes:
Incl. ECM motor, wall mount Temperature and C02 sensor.

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Equipment is clean and free of debris		☐	☐
Equipment is properly mounted and vibration isolation equipment is installed.		☐	☐
Service hatches & filter access is not hindered by surrounding equipment		☐	☐
Thermal Insulation complete as per contract documents		☐	☐
Unit is correctly labelled		☐	☐
Duct Installation			
Duct layout matches drawings and duct connections are sealed		☐	☐
Electrical Installation			
Wiring complete and electrical connections are tight		☐	☐
Local disconnects are installed and labelled		☐	☐
Controls Installation			
Controls wiring complete and electical connections are tight		☐	☐
Thermostat is located away from external temperature influences		☐	☐
Thermostat is correctly labelled		☐	☐

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Drainwater Pump

integrated DESIGNS
Partnering for a sustainable advantage

Rev: 4/24/2017

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
	Info only	**Drainwater pump operates on internal switch to pump drainwater from sink to sanitary drain.**				
DRAIN_PUMP.F01	Pump Operation	Pump activates when called by float/level sensor. Verify through wet test by filling sink and draining.				
DRAIN_PUMP.F02	Operation Meets Generally Accepted Good Practice	Record any discrepancies noted in installation, noise, vibration, or operation of equipment.				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Domestic Hot Water

integrated DESIGNS
Partnering for a sustainable advantage

Rev: 4/24/2017

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
		Water heater operates under internal controller to maintain leaving water temperature at operator adjustable temperature.				
DHW.F01	Supply Temperature Control	Packaged hot water tank controller monitors hot water supply temperature. Verify supply temperature setpoint and stability at nominal 60ºC. Hot water tanks modulate as required to maintain supply water temperature. Field confirm tank temperature is set to 60°C.				
DHW.F02	Fixture Delivery Temperature	Review SK-1 to ensure temperature is regulated to delivery temperature per contract documents.				
DHW.F03	Operation Meets Generally Accepted Good Practice	Record any discrepancies noted in stability of supply temperature control, heater staging, or operation of equipment.				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Plenum Control - Fan Coils VAVs

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Rev: *2017-05-19*

Note: This test is typical of multiple fan coil and VAV pairs. As tests are completed record pass/fail below. Append additional notes.

Existing Fan Coil	VAV	Associated FTUs*	Pass/ Fail	Date	Completed by
FC 1-4	VAV 1-4				
FC 2-4	VAV 2-4				
FC 3-4	VAV 3-4				
FC 4-4	VAV 4-4				
FC 5-4	VAV 5-4				
FC 6-4	VAV 6-4				
FC 7-4	VAV 7-4				
FC 8-4	VAV 8-4				
FC 9-4	VAV 9-4				
FC 10-4	VAV 10-4				
FC 11-4	VAV 11-4				
FC 12-4	VAV 12-4				
FC 13-4	VAV 13-4				
FC 14-4	VAV 14-4				
FC 15-4	VAV 15-4				
FC 16-4	VAV 16-4				

*Associated FTUs to be recorded upon submission of controls shop drawings and updated during site commissioning

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F01	System Off	When system is off, verify fans are off and dampers are closed to minimum position. Verify by operational check.				
PLENUM.F02	Occupancy Schedule	Schedule programmed at BMS. Verify with Owner. Record schedule in BMS:				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F03	Unoccupied Mode	Fan coils are started up in unoccupied mode if zone temperature does not satisfy unoccupied setpoint. Fan coil to be called on and cooling or heating coil to be modulated to maintain unoccupied setback temperature and then shut down. VAVs to remain closed in unoccupied mode. Verify by operational check and trends.				
PLENUM.F04	Occupied Mode	Supply fan shall be called on in occupied mode at constant speed. Bypass damper shall be modulated to control pressure read in plenum (neutral pressure to room). Verify by operational check and trends.				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F05	Occupied Mode - CO2 control	VAV damper shall be modulated from minimum position to maximum to maintain all space C02 sensor readings below 1000 ppm (adj.). Verify by operational check (simulated reading or altered setpoint) and trends. Verify stable plenum pressure is maintained as VAV damper position is modified.				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F06	Supply Air Temperature Control - Heating	A call for heating shall be determined by polling of room thermostats. On a call for heat BMS modulates heating coil valve on fan coil to maintain supply air temperature. Verify cooling valve is locked out in heating mode. See reset schedule below. Verify by operational check (seasonal) and trends.				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F07	Supply Air Temperature Control - Heating Reset	Supply Air Temperature will be reset based on average zone thermostat reading. Reset range provided below as a starting point to be modified during commissioning as required or directed by mechanical designer. Supply air temperature range: 20ºC to 30ºC Record Final Reset Range: _____				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F08	Supply Air Temperature Control - Cooling	A call for cooling shall be determined by polling of room thermostats. On a call for cooling BMS modulates cooling coil valve on fan coil to maintain supply air temperature. See reset schedule below. Verify heating valve is locked out in cooling mode. Verify by operational check (seasonal) and trends.				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F09	Supply Air Temperature Control - Cooling Reset	Supply Air Temperature will be reset based on average zone thermostat reading. Reset range provided below as a starting point to be modified during commissioning as required or directed by mechanical designer. Supply air temperature range: 15ºC to 20ºC Record Final Reset Range: _____				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F10	Graphics - Trends	Trends to include: - occupied/unoccupied mode - supply fan status & command - plenum supply air temp & setpoint - mode of operation (heating or cooling) - Heating & Cooling Valve position - Zone C02 & setpoint (all zones applicable to FC/VAV pair) - Zone temperature & setpoint (all zones applicable to FC/VAV pair) - supply plenum pressure & setpoint - bypass damper position				
PLENUM.F11	Fan Fail Alarm	Verify BMS alarms on failure of Supply Fan				
PLENUM.F12	Supply Air Temperature Differential	Verify BMS alarm on differential between supply and setpoint temperatures ±5ºC.				
PLENUM.F13	Zone C02	Verify BMS alarm on C02 exceeding setpoint by 20% for more than 15 mins.				

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
PLENUM.F14	Plenum pressure	Verify BMS alarm on differential between supply plenum pressure ±25% from setpoint.				
PLENUM.F15	Installation Meets Generally Accepted Good Practice	Record any discrepancies noted in installation of equipment				

Note: This form is typical and to be used in conjunction with attached test matrix (outlines specific equipment/zones to be tested.

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

Rev: *2017-05-19*

Note: This test is typical of multiple fan terminal units. As tests are completed record pass/fail below. Append additional notes.

FTU	Zone Served	Pass/ Fail	Date	Completed by	Notes
FTU-01	432				
FTU-02	431				
FTU-03	430				
FTU-04	429				
FTU-05	428				
FTU-06	427				
FTU-07	426				
FTU-08	425				
FTU-09	424				
FTU-10	422				
FTU-11	421				
FTU-12	420				
FTU-13	419				
FTU-14	417				
FTU-15	416				
FTU-16	415				
FTU-17	414				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

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FTU	Zone Served	Pass/ Fail	Date	Completed by	Notes
FTU-18	406				
FTU-19	408				
FTU-20	409				
FTU-21	413				
FTU-22	412				
FTU-23	401				
FTU-24	Open Office				
FTU-25	459				
FTU-26	458				
FTU-27	457				
FTU-28	456				
FTU-29	455				
FTU-30	454				
FTU-31	450				
FTU-32	448d				
FTU-33	447				
FTU-34	446				
FTU-35	468				
FTU-36	445				
FTU-37	467				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

FTU	Zone Served	Pass/ Fail	Date	Completed by	Notes
FTU-38	444				
FTU-39	466				
FTU-40	443				
FTU-41	465				
FTU-42	442				
FTU-43	464				
FTU-44	441				
FTU-45	463				
FTU-46	440				
FTU-47	438				
FTU-48	437				
FTU-49					
FTU-50					

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

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Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
FTU__.FO1	Unoccupied mode	FTU shall be off in unoccupied mode unless called on to maintain setback temperature.				
FTU__.FO2	Occupied Mode	In occupied mode FTU shall run at minimum 20% speed. Should space temperature deviate from setpoint by more than 3°C fan is to shut off. Verify by operation and change of setpoint.				
FTU__.FO3	Occupied Mode *Heating*	On a call for heating as determined by room thermostat AND fan coils are in heating mode, FTU speed shall be increased to satisfy room temeprature. Verify if fan coil is in cooling (contrary call), fan speed is not increased (to avoid overcooling when heat is not available). Verify by change of setpoint.				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
FTU__.FO4	Occupied Mode *Cooling*	On a call for cooling as determined by room thermostat AND fan coils are in cooling mode, FTU speed shall be increased to satisfy room temeprature. Verify if fan coil is in heating (contrary call), fan speed is not increased (to avoid overheating when coolilng is not available). Verify by change of setpoint.				
FTU__.FO5	Graphics & Trends	Graphics to include: -Occupied/Unoccupied status -Zone temp and setpoint -CO2 reading and alarm -Fan speed & status -Plenum temperature All points to be trended.				
FTU__.FO6	Alarm - Space Temperature Differential	Verify BMS alarm on differential between space temperature and setpoint greater than ±2°C.				

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Zone Control - Fan Terminal Units

Rev: 2017-05-19

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
FTU__.FO7	Installation Meets Generally Accepted Good Practice	Record any discrepancies noted in installation or operation of equipment				

Note: This form is typical and to be used in conjunction with attached test matrix (outlines specific equipment/zones to be tested.

Greenstone Building, 4th Floor Fit-up - Functional Performance Testing
Transfer Fan

Rev: 4/24/2017

Line #	Test	Expectation	First Test Status	Re-Test Status (if required)	Completed By	Date
	Info Only Scope of Testing	Transfer fan is mounted in equipment room and controls temperature in the space.				
TF-1.F01	Enable	Exhaust fan will be enabled by wall mounted temperature sensor. Verify by operation and trends.				
TF-1.F02	Graphics	Graphics to include: -Fan status & command -Alarm on fan failure All points to be trended.				

4th Floor Tenant Fit-up — Static Verification Form

Greeenstone Building
Government of Canada

Unit Tag: **4D**
Equipment Type: Electrical Panelboard
System: Electrical
Location: Electrical Room
Area Serviced: New & Existing Mechanical Equipment

This box for IDI use only.

CxA reviewer: _____

Form Auditted? YES ☐ NO ☐

IDI Audit Verification

Contractor (include company and print name)	Signature	Date
Electrical:		
General:		

Nameplate Data	Submitted	Installed *note any changes*	Installer Verify	IDI Audit Verification
Manufacturer			☐	☐
Voltage	120/208		☐	☐
Phase	3		☐	☐
Circuits	60		☐	☐
Short Circuit Rating (kA)			☐	☐
Main Bus Current (A)	225		☐	☐
Power Source	CDP-2B		☐	☐

Details/Notes:

Inspection Items	Comments	Installer Verify	IDI Audit Verification
General Installation & Cleanliness			
Location matches drawings		☐	☐
Equipment is accessible for service and maintenance		☐	☐
Panel directory provided.		☐	☐
No obvious defects or damage		☐	☐
Equipment is clean and free of debris		☐	☐
Panel is labelled (equipment ID, feeder circuit, etc.)		☐	☐
Electrical Installation			
Proper grounding (per dwgs & CEC)		☐	☐
Feeders properly sized		☐	☐
Wiring complete		☐	☐

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Waiting	400											
Interview	401											
Child Play	402											
Shared Equipment	403											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Reception	404											
Workstation	404b											
Workstation	404c											
File Room	405											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Small Meeting	406											
Medium Meeting	407											
Small Office	408											
Small Office	409											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Corridor	410											
Small Office	412											
Small Office	413											
Small Office	414											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Small Office	415											
Small Office	416											
Small Office	417											
Corridor	418											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	419											
Office	420											
Office	421											
Office	422											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	423											
Office	424											
Office	425											
Office	426											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	427											
Office	428											
Office	429											
Office	430											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	431											
Office	432											
Open Work Station	433											
Open Work Station	434											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Equipment Closet	435											
Kitchen	436											
Quiet Room	438											
Entry	437											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Corridor	439											
Office	440											
Office	441											
Office	442											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	443											
Office	444											
Office	445											
Office	446											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	447											
Small Office	450											
Open Work Station	448											
Open Work Station	449											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Corridor	451											
Shared Equipment	452											
Corridor	453											
Office	454											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	455											
Office	456											
Office	457											
Office	458											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	459											
Open Work Station	460											
Corridor	461											
Small Meeting	462											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Case Prep	463											
Secure Case Prep	464											
Case Prep	465											
Case Prep	466											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Electrical Receptacles

		Static Verification			Functional Performance Tests					Electrical Contractor		
Room	Room #	Record Receptacle Type (duplex, GFCI, etc.), Counts, and Circuit ID	Verify Electrical Installation Complete and Circuit is Labelled	Verify receptacles are clean and free of damage.	Verify voltage is within allowable range	Verify Ground Fault Function (where applicable)	Confirm wiring is correct through receptace tester.	Verify breaker correctly disconnects power at receptacle	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
USS File Room	467											
Case Prep	468											

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Waiting	400	1														
Interview	401	2														
Child Play	402	3														
Shared Equipment	403	4														
Shared Equipment	403	4														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Reception	404	5														
Reception	404a	5														
Workstation	404b	5														
Workstation	404c	5														
File Room	405	6														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
File Room	405	6														
Small Meeting	406	7														
Small Meeting	406	8														
Medium Meeting	407	9														
Medium Meeting	407	10														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Small Office	408	11														
Small Office	409	12														
Corridor	410	13														
Corridor	410	13														
Small Office	412	14														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Small Office	413	15														
Small Office	414	16														
Small Office	415	17														
Small Office	416	18														
Small Office	417	19														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Corridor	418	20														
Corridor	418	20														
Office	419	21														
Office	420	22														
Office	421	23														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	422	24														
Office	423	25														
Office	424	26														
Office	425	27														
Office	426	28														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	427	29														
Office	428	30														
Office	429	31														
Office	430	32														
Office	431	33														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	432	34														
Open Work Station	433	35														
Open Work Station	434	35														
Open Work Station	433	36														
Open Work Station	434	36														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Open Work Station	434	36														
Equipment Closet	435	37														
Kitchen	436	38														
Kitchen	436	38														
Quiet Room	438	39														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Entry	437	40														
Corridor	439	40														
Corridor	439	40														
Office	440	41														
Office	441	42														

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4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	442	43														
Office	443	44														
Office	444	45														
Office	445	46														
Office	446	47														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	447	48														
Small Office	450	49														
Open Work Station	448 & 449	50														
Corridor	451	51														
Corridor	451	51														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Shared Equipment	452	52														
Corridor	453	53														
Corridor	453	53														
Office	454	54														
Office	455	55														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Office	456	56														
Office	457	57														
Office	458	58														
Office	459	59														
Open Work Station	460	60														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Corridor	461	61														
Corridor	461	61														
Small Meeting	462	62														
Small Meeting	462	63														
Case Prep	463	64														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Interior Lighting

			Static Verification*				Functional Performance Tests*							Electrical Contractor		
Room	Room #	Relay #	Record Fixture Type, Lamp Type, and Counts	Record Control Device Type and Counts	Verify Electrical Installation Complete and Control Device Circuit is Labelled	Verify fixtures and control devices are clean and free of damage.	Verify Lighting Operates when swithed ON (locally or from Central System)	Verify Lighting operates on Occupancy Sensor if applicable	Verify Lighting operates on Daylighting Sensors if applicable	Verify Nightlighting operates according to schedule.	Verify Lighting Control conforms to plan	No unacceptable noise or flickering	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
Secure Case Prep	464	65														
Case Prep	465	66														
Case Prep	466	67														
USS File Room	467	68														
Case Prep	468	69														

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Intrusion Alarm

	Static Verification*				Functional Performance Tests*						Contractor		
Zone #	Record Intrusion Detection Device Types & Count	Record Access Control Device Type (where applicable)	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and control devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Verify sensitivity and aiming of devices.	Verify intrustion detection devices in all locations in all modes of operation.	Verify visible and audible alarm devices (strobes, chimes, etc.)	Verify all external alarm reporting (Central monitoring station, remote panels, remote IP based monitoring, dial-out, etc.)	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
1													
2													
3													
4													
5													

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Paging & Sound Masking

	Static Verification*			Functional Performance Tests*					Contractor		
Zone #	Record Device Types & Count	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Verify calibration and setup of all input and output devices.	Verify operation of sound masking system including adjustment to changing noise levels.	Verify paging function for all devices in all zones. Verify sound masking system returns to normal operation following paging.	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments
1											
2											
3											
4											

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

4th Floor Tenant Fit-up, Greenstone Building

Equipment: Paging & Sound Masking

	Static Verification*			Functional Performance Tests*					Contractor		
Zone #	Record Device Types & Count	Verify device location and type matches reviewed shop drawings and/or contract documents.	Verify hardware and devices are clean and free of damage.	Perform operational test of each subsystem to verify equipment is properly connected, interfaced and functionally operational.	Verify calibration and setup of all input and output devices.	Verify operation of sound masking system including adjustment to changing noise levels.	Verify paging function for all devices in all zones. Verify sound masking system returns to normal operation following paging.	Operation meets generally accepted good practice	Date Verified	Verified By:	Comments

*Specifc equipment and related tests to be confirmed upon receipt of submitted shop drawings post-tender.

Brookfield Global Integrated Solutions — INSPIRING BETTER BUSINESS PERFORMANCE

RP1 - Equipment Data Collection Form (DCF) - Ver 1.3

SECTION A - GENERAL INFORMATION

GENERAL INFORMATION

BUILDING NAME: _____ PROJECT NAME: _____

GOC BUILDING NUMBER: _____ PROJECT NUMBER: _____

BUILDING ADDRESS: _____ PROJECT MGR: _____

☐ NEW EQUIPMENT	☐ REMOVED EQUIPMENT	☐ REPLACED EQUIPMENT
☐ UPDATED EQUIPMENT	☐ CRITICAL SPARES	☐ TENANT

SECTION B - EQUIPMENT INFORMATION

EQUIPMENT INFORMATION

SYSTEM (PLEASE CIRCLE THE BOX WHICH APPLIES)

05-Electrical Low Voltage	06 -Electrical High Voltage	10 - Electrical Auxiliary & Standby Power	15 - Control Monitoring System	20 - Heating	25 - Refrigeration	30 - Ventilation	40 -Compress Air, Auxiliary & Process	50 - Water Supply	55- Plumbing & Drainage
60 - Fire Protection	65 -Transportation Device	70 - Security	72 - Environmental	75 - Special Purpose		79 - Energy	80 - Architectural Structural	85 - Grounds	90 - Cafeteria (Excluding Refrigeration)

EQUIPMENT DESCRIPTION _____

LOCATION FLOOR: _____ ROOM: _____

SPECIFIC LOCATION: _____

MANUFACTURER: _____ MODEL NUMBER: _____

SERIAL NUMBER: _____ CMMS LABEL ON EQUIPMENT BEING REPLACED: _____

DATE OF INSTALLATION (YY/MM/DD): _____ PURCHASE PRICE (without GST): _____ PURCHASE DATE (YY/MM/DD): _____

SECTION C - SPECIFIC EQUIPMENT INFORMATION

SPECIFIC EQUIPMENT INFORMATION

ELECTRICAL VOLTS: _____ PHASE: _____ AMPS/FLA: _____ PARENT NUMBER: _____

MECHANICAL C.F.M/G.P.M _____ Capacity _____ Belt Size _____ Quantity: _____ Filter Size _____ Quantity _____ Type _____

FIRE SUPPRESSION TYPE: _____ CAPACITY: _____ MANUFACTURER DATE: _____

COOLING CAPACITY: _____ REFRIGERANT TYPE: _____ CHARGE (KG): _____

FUEL STORAGE TANKS: _____ ABOVEGROUND _____ UNDERGROUND STORAGE VOLUME: _____ DOUBLE WALLED: YES _____ NO _____

ENERGY SOURCE: ☒ NATURAL GAS ☐ OIL ☐ PROPANE ☐ ELECTRIC ☐ STEAM ☐ HOT WATER ☐ COLD WATER

ENVIRONMENT DOCUMENTS ATTACHED: YES _____ NO _____

SECTION D - WARRANTY

WARRANTY

WARRANTOR NAME: _____ WARRANTY START DATE (YY/MM/DD): _____

COMMENTS

COMMENTS

_____

_____

_____

FOR CMMS USE ONLY

FOR CMMS USE ONLY

SCHEDULING: ANNUAL _____ NEW EQUIPMENT NUMBER: _____

EQUIPMENT NUMBER LABEL PROVIDED: _____ TENANT WA# _____

EQUIPMENT ADDED TO ASSET GROUP: ☐ YES ☐ NO

A) PLEASE SEND COMPLETED FORMS TO YOUR CMMS COORDINATOR FOR PROCESSING

B) PLACE COMPLETED FORM IN PROJECT O&M BINDER IF APPLICABLE

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 This Section specifies roles and responsibilities of Commissioning Training.

1.2 TRAINEES

.1 Trainees: Personnel selected for operating and maintaining facility; includes Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.

.2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.3 INSTRUCTORS

.1 Consultant will provide:

.1 Descriptions of systems.

.2 Instruction on design philosophy, design criteria, and design intent.

.2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:

.1 Start-up, operation, shut-down of equipment, components and systems.

.2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.

.3 Instructions on servicing, maintenance, and adjustment of systems, equipment, and components.

.3 Contractor and equipment manufacturer to provide instruction on:

.1 Start-up, operation, maintenance, and shut-down of equipment they have certified installation, started up and carried out functional performance tests.

1.4 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:

.1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.

.2 Effective on-going inspection, measurements of system performance.

.3 Proper preventive maintenance, diagnosis, and trouble-shooting.

.4 Ability to update documentation.

.5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.5 TRAINING MATERIALS

.1 Instructors to be responsible for content and quality.

.2 Training materials to include:

- .1 "As-Built" Contract Documents.
- .2 O&M Manuals.
- .3 TAB and Functional Performance Testing Reports.

.3 Project Manager, Commissioning Manager, and Facility Manager will review training manuals.

.4 Training materials to be in a format that permits future training procedures to same degree of detail.

.5 Supplement training materials:

- .1 Multimedia presentations.
- .2 Manufacturer's training videos.
- .3 Equipment models.

1.6 SCHEDULING

.1 Include in Commissioning Schedule time for training.

.2 Deliver training during regular working hours, training sessions to be 3 hours in length.

.3 Training to be completed prior to acceptance of facility.

1.7 RESPONSIBILITIES

.1 Be responsible for:

- .1 Implementation of training activities,
- .2 Coordination among instructors,
- .3 Quality of training, training materials,

.2 Departmental Representative will evaluate training and materials.

.3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

- .1 Use attached Training and Orientation Record to document training.

1.8 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.

.2 Content includes:

- .1 Review of facility and occupancy profile.
- .2 Functional requirements.
- .3 System philosophy, limitations of systems and emergency procedures.
- .4 Review of system layout, equipment, components and controls.

.5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.

.6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.

.7 Maintenance and servicing.

.8 Trouble-shooting diagnosis.

.9 Interaction among systems during integrated operation.

.10 Review of O & M documentation.

.3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.9 VIDEO-BASED TRAINING

.1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.

.2 On-Site training videos:

.1 Videotape training sessions for use during future training.

.2 To be performed after systems are fully commissioned.

.3 Organize into several short modules to permit incorporation of changes.

.3 Production methods to be professional and high quality.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Portfolio	Portfolio Name	Date
RP1		April 24, 2017
Building ID	**Building Name**	
Project #	**Project Name**	
GOC		

Trainer's Name	Company	Position/Qualifications

Participant's Name	Job Title	Initials

Brookfield GIS Commissioning Oversight Manager/Specialist	Signature	Date

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 This section is limited to portions of the Systems Operation Manual (SOM) provided to Departmental Representative by Contractor.

.2 Acronyms:

.1 Cx - Commissioning.
.2 FPT - Functional Performance Testing.
.3 HVAC - Heating, Ventilation and Air Conditioning.
.4 SOM – Systems Operation Manual.
.5 TAB - Testing, Adjusting, and Balancing.
.6 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

.1 Standard letter size paper 216 mm x 279 mm.

.2 Methodology used to facilitate updating.

.3 Drawings, diagrams and schematics to be professionally developed.

.4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.3 APPROVALS

.1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Departmental Representative.

1.4 GENERAL INFORMATION

.1 Provide Departmental Representative the following for insertion into appropriate Part and Section of SOM:

.1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of SOM.

.2 Summary of architectural, structural, fire protection, mechanical, and electrical systems installed and commissioned - as indicated in Section 1.4 of SOM.

.1 Include sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of SOM.

.3 Description of building operation under conditions of heightened security and emergencies as indicated in Section 2.0 of SOM.

.4 System, equipment, and components Maintenance Management System (MMS) identification - Section 2.1 of SOM.

.5 Information on operation and maintenance of architectural systems and equipment installed and commissioned - Section 2.0 of SOM.

.6 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of SOM.

.7 Information on operation and maintenance of mechanical systems and equipment installed and commissioned - Section 2.0 of SOM.

.8 Operating and maintenance manual - Section 3.2 of SOM.

.9 Final commissioning plan as actually implemented.

.10 Completed commissioning checklists.

.11 Commissioning test procedures employed.

.12 Completed Static Verification (SV) and Functional Performance Testing (FPT) report forms, reviewed by Departmental Representative.

.13 Commissioning reports.

1.5 CONTENTS OF OPERATING AND MAINTENANCE MANUAL

.1 Departmental Representative to review and approve format and organization within 6 weeks of award of contract.

.2 Include original manufacturers' brochures and written information on products and equipment installed on this project.

.3 Record and organize for easy access and retrieval of information contained in SOM.

.4 Include completed static verification report forms, data, and information from other sources as required.

.5 Inventory directory relating to information on installed systems, equipment and components.

.6 Approved project shop-drawings, product, and maintenance data.

.7 Manufacturers' data and recommendations relating manufacturing process, installation, commissioning, start-up, O & M, shutdown, and training materials.

.8 Inventory and location of spare parts, special tools, and maintenance materials.

.9 Warranty information.

.10 Inspection certificates with expiration dates, that require on-going re-certification inspections.

.11 Maintenance program supporting information including:

.1 Recommended maintenance procedures and schedule.

.2 Information to removal and replacement of equipment including, required equipment, points of lift, and means of entry and egress.

1.6 LIFE SAFETY COMPLIANCE (LSC) MANUAL

.1 Samples of LSC Manual will be available from Departmental Representative.

.2 Content of Manual:

.1 All possible Emergency situations modes including: Presence of fire and smoke, power failure, lose of water or pressure, chemical spills, and refrigerant release.

.2 HVAC emergencies and fuel supply failures.

.3 Intrusion and security breach.

.4 Emergency provisions for natural disasters, bomb threats, and other disruptive situations.

.5 Dedicated emergency generators.

.6 Emergency control procedures for fire, power, and major equipment failure.

.7 Emergency contacts and numbers.

.8 Manual to be readily available and comprehensible to non-technical readers.

1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES

.1 Provide Departmental Representative with supporting documentation relating to installed equipment and system, including:

.1 General:

.1 Finalized commissioning plan.

.2 WHMIS information manual.

.3 Approved record drawings and specifications.

.4 Procedures used during commissioning.

.5 Cross-reference to specification sections.

.2 Architectural and structural:

.1 Inspection certificates, construction permits.

.2 FPT reports.

.3 Mechanical:

.1 Installation permits, inspection certificates.

.2 FPT reports.

.3 Copies of posted instructions.

.4 Electrical:

.1 Installation permits, inspection certificates.

.2 FPT reports.

.3 Electrical work log book.

.4 Charts and schedules.

.5 Locations of cables and components.

.6 Copies of posted instructions.

.2 Assist Departmental Representative with preparation of SOM.

1.8 LANGUAGE

.1 English will be used for the Manual.

1.9 USE OF CURRENT TECHNOLOGY

.1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.

.2 Obtain Departmental Representative's approval before starting Work.

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION