

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises the furnishing of all labour, materials, equipment and supervision required for the lighting upgrade at several buildings at the facility for the Stony Mountain Institute located in Manitoba.

1.02 DEFINITIONS

- .1 The word "provide" means "supply and install".
- .2 The term "Occupant" means the organization who is, or will be, occupying the building site.

1.03 WORK SEQUENCE

- .1 Contractor to apply for permit to the Office of the Fire Commissioner and register the installations as major alterations and obtain and pay for all government permits and licenses.
- .2 Construct Work to accommodate continuous use of premises by the Occupants and by the public where access by the public is permitted, during construction. Do not close off public usage of facilities until temporary barrier, directional signage and swing space reception is set up.
- .3 The work shall be accomplished in phases. The sequence of work in different areas shall be approved by the PSPC and the Departmental Representative. Work on the parking lot areas shall be coordinated with the Departmental Representative to ensure coordinated work schedule as not to interrupt normal service.
- .4 Work initiated in any one area shall continue uninterrupted until completion prior to initiating work in another area. All buildings will remain occupied throughout the duration of this project. Disruptions to ongoing operations shall be minimized. In some areas, such as open office areas, work will have to occur afterhours or during weekend to facilitate uninterrupted operation.
- .5 In buildings, work will have to occur under guidance of the security personnel and with all required measures to protect and ongoing functional systems in buildings.
- .6 The buildings will continue to be occupied during the entire phased renovation. The fire alarm must be kept operational and exits must be clear and free of all obstructions during working hours.
- .7 Coordinate Progress Schedule with Consultant and Departmental Representative during construction.
- .8 Maintain fire access/control.

1.04 TIME OF COMPLETION

- .1 Work under this contract is to be performed in a timely manner. Commence planning and preparatory work immediately upon receipt of official notification of acceptance of Contract and complete the work within time stipulated in the Construction Tender.

- .2 Before work is undertaken to specific areas, ensure that all materials and trades required are available to finish work in as short a period as possible.

1.05 INTERPRETATION OF DOCUMENTS

- .1 In the event of discrepancies or conflicts in interpreting the Plans (drawings) and Specifications,
 - .1 Division 01 Sections take precedence over technical specification sections in other Divisions.
 - .2 Specifications take precedence over drawings bound with specifications.
 - .3 Specifications take precedence over schedules, whether they are bound with the specifications or integral with the drawings.
 - .4 Schedules take precedence over drawings, whether they are bound with the specifications or integral with the drawings.
- .2 Plans (drawings) and Specifications are complementary. When work is shown or mentioned on the drawings but is not indicated in the Specifications, or when work is indicated in the Specifications but is not shown or mentioned on the Drawings, it shall nevertheless be included in the Contract.
- .3 The sub-division of the Specification into sections, identified by title and number, is for convenience only and does not modify the singularity of the document, nor does it operate to make or imply that the Consultant is an arbiter to establish the limits or extent of contract between Contractor and Subcontractors or to determine the limits or extents of work that may be decided by trade unions or contractors' organizations. Extras to the Contract will not be considered on the grounds of differences in interpretation of the Specification and/or Plans (drawings) as to which trade performs the work.

1.06 SUBCONTRACTORS

- .1 Within 48 hours of tender acceptance submit a list of subcontractors.

1.07 SUPPLEMENTARY INFORMATION FOR PROGRESS PAYMENTS

- .1 Submit to PSPC's representative, within five working days of Contract Award, cost breakdown, in detail as directed, and on form provided, by Departmental Representative, for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment. After approval by Departmental Representative, cost breakdown will be used as basis for progress payments.
- .2 Show separately cost of equipment purchased exempt from Retail Sales Tax under contractor's Sales Tax license number.

1.08 CONTRACTOR USE OF PREMISES

- .1 Contractor shall limit use of premises for Work, for storage, and for access, to allow;
 - .1 Occupancy.
 - .2 Partial occupancy.
 - .3 Occupancy of other facilities on site and deliveries.
 - .4 Public usage.
- .2 Provide a list of personnel accessing site
- .3 Submit tool lists weekly to site security staff

- .4 Cell phones are not to be used and or carried on site.
- .5 Contractor shall check into security facility daily while on site.
- .6 Refer to Section 01 52 00 – Construction Facilities.
- .7 Coordinate use of premises under direction of Departmental Representative.
- .8 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .9 Do not unreasonably encumber the site with materials and equipment.
- .10 Assume full responsibility for protection and safekeeping of products under this Contract.
- .11 Move stored products or equipment which interfere with operations of Occupants.

1.09 OCCUPANCY

- .1 Premises will be occupied during entire construction period for execution of normal operations.
- .2 Cooperate with Departmental Representative, Consultant and Occupants, and Security in scheduling operations to minimize conflict and to facilitate Occupant usage.
- .3 The existing buildings must remain legally accessible and kept operational at all times.
- .4 PWGSC shall have access to all parts of the site to do minor maintenance and repairs to the existing building within the area of construction. The PWGSC and Departmental Representative will co-ordinate the scheduling of Occupant's work with the Contractor.

1.10 CONTRACTOR'S WEEKLY SUBMISSION REPORT

- .1 Each week for the duration of the contract, complete all applicable information required on Contractor's Submission Sheet and submit to the Departmental Representative on every Thursday of each week.

1.11 SECURITY CLEARANCE

- .1 Personnel employed on this project will be subject to security check.
- .2 Obtain requisite clearance as instructed by Departmental Representative.
- .3 On award of Contract the Departmental Representative will provide 'Personnel Screening Request and Authorization' form; 'Declaration Regarding Criminal Convictions' form and 'Security Screening Certificate and Briefing Form' to the Contractor.
- .4 These forms must be filled out for each person who will have access to the work area.

1.12 SECURITY REQUIREMENTS

- .1 Contractors must apply for and obtain a contractor security pass prior to work in the facility.
- .2 Security clearance or supervision by a person with adequate security clearance will be required for all Contractor personnel and Subcontractors working in the areas affected by

this project. In the absence of adequate security clearance, pay for and engage an approved commissioner to accompany personnel without adequate security clearance.

- .3 Level of security clearance required for this project: Reliability Status.

END OF SECTION

1.01 EXISTING SERVICES

- .1 Notify Departmental Representative, Facility Manager 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 of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions to a minimum. At no time shall facilities be rendered without power, site roadway access and all power outages shall be coordinated with facilities management prior to any shutdown.
- .3 Construct roadway barriers in accordance with Federal safety standards.
- .4 Contractor to provide access to electrical service panel at all times keep panel energized and accessible). Panel may be off line during business hours.

1.02 SPECIAL REQUIREMENTS

- .1 All construction will occur during regular business hours Monday to Friday (6:00 am -6:00 pm), unless otherwise noted.
- .2 Carry out noise generating work Monday to Friday from 7:00 am to 5:00 pm hours
 - .1 Loud noise generating operations defined as coring, drilling, use of pneumatic hammers, etc.
 - .2 Other work as may be directed by Departmental Representative.

1.03 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Confirm all dimensions on site. Assume all risks associated with scaling of drawings.
- .2 Maintain integrity of exits at all times.
- .3 Maintain fire access/control.
- .4 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .5 Make good any damage to existing finishes or furniture caused by work under the contract. Making good means restoration to at least original condition in terms of strength, workmanship and appearance. Protect all furniture and belongings of users.
- .6 Execute work with least possible interference or disturbance to occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .7 Existing operations must remain in service without interruption during construction period.
- .8 Provide tacky mats (soil walk off type temporary carpets) to prevent traffic from carrying construction debris into other parts of the building.

- .9 Bag or otherwise protect all smoke detectors in the construction area during activities which create dust. Vacuum or otherwise clean smoke detectors on completion of each construction activity.
- .10 Provide plywood cover on common area ceramic tile floors to remain. Protect these floors from damage and clear on completion.
- .11 Retract existing window covering – bag or otherwise protect from harm during activities which create dust. Vacuum or otherwise clean upon completion of each construction activity/phase.

END OF SECTION

PRODUCT SUBSTITUTION REQUEST FORM

FILL IN FOR PRODUCT SUBSTITUTION DURING TENDER PERIOD OR DURING CONSTRUCTION PERIOD:

APPLICANT: _____ ADDRESS: _____ _____ _____ _____ SUBMITTED BY: _____ E-MAIL ADDRESS: _____ FAX NO.: _____ TELEPHONE NO.: _____ SUBMITTAL DATE: _____ TENDER CLOSING DATE: _____	PROJECT: _____ STANTEC PROJECT NO: _____ PROJECT DESCRIPTION: _____ _____ _____ _____ _____ LOCATION: _____ _____
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List below items being offered. Give manufacturers Name, Model, Catalogue number, Type, etc. Detailed description and Specifications to be attached as "Supporting Data"	Contract Specification No.	Reference Section	List below items shown in the contract specifications. One reference for each item.	Consultant	
	(Indicate Contract Drawing No. if applicable)			"A" Accepted	"R" Rejected

FILL IN ONLY IF PRODUCT SUBSTITUTION IS DURING CONSTRUCTION PERIOD:

(refer to Section 01 25 13 PRODUCT SUBSTITUTION PROCEDURES)

Savings to Owner for accepting Substitution:	No <input type="checkbox"/> Yes <input type="checkbox"/>	ADD [DEDUCT]	\$	
Proposed Substitution changes to Contract Time:	No <input type="checkbox"/> Yes <input type="checkbox"/>	ADD [DEDUCT]		Days

REVIEWER:

Date Request Received:	Date Reviewed:	Review Endorsed By:
_____	_____	_____

REVIEWER'S COMMENTS: (in case of rejection or of cost or time implication)

1.01 SECTION INCLUDES

- .1 Product/system substitution requests after award of Contract (after bids have closed).
- .2 Use the Product Substitution Request Form appended to this section.

1.02 RELATED REQUIREMENTS

- .1 Section 00 26 00 – Procurement Substitution Procedures: substitution requests before contract award (bidding period).
- .2 This section describes requirements applicable to all Sections within this Project Manual.

1.03 SUBSTITUTIONS

- .1 Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- .2 Should substitutions be required because of unavailability the Departmental Representative will consider proposals to substitute specified products/materials with alternative products/materials.
- .3 Substitutions are not permitted unless application has been made to and prior approval has been granted by the Departmental Representative in writing.
- .4 Only substitution requests from the Contractor will be considered. Requests from Subcontractors or suppliers will not be accepted.
- .5 Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- .6 A request constitutes a representation that the Contractor:
 - .1 Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - .2 Will provide the same warranty for the Substitution as for the specified Product.
 - .3 Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - .4 Waives claims for additional costs or time extension which may subsequently become apparent.
 - .5 Will reimburse Owner for review or redesign services associated with re-approval by authorities.
- .7 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- .8 Substitution Submittal Procedure:
 - .1 Submit one digital copy in PDF format, of each request for substitution. Limit each request to one proposed substitution.
 - .2 Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
 - .3 The Departmental Representative will notify Contractor in writing of decision to accept or reject request.

- .9 Product Substitution Request Form:
 - .1 Submit proposed substitutions on the "Product Substitution Request Form" a sample copy of which is included in the Project Manual appended to Section 01 25 13.
 - .2 Requests submitted without the form will not be considered.
- .10 Each proposal must:
 - .1 Include sufficient information to enable the Departmental Representative to properly evaluate the material. Such information shall include manufacturer's product data, specifications, drawings, and other pertinent data to completely describe the substitution.
 - .2 Identify changes required in the Work of the Contractor, other Subcontractors and suppliers which would become necessary to accommodate the substitution.
- .11 The Departmental Representative reserves the right to accept or reject any proposal without prejudice for any reason whatsoever and reserves the right to disclose or not to disclose his reasons for such rejection.
- .12 In submittal of a request for substitution it is hereby understood that the Contractor is certifying that the proposed substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule.

END OF SECTION

1.01 REQUESTS FOR INFORMATION

- .1 General: Immediately upon discovery of the need for interpretation of the Contract Documents, prepare and submit a Request for Information (RFI) to the Departmental Representative in the form specified herein.
 - .1 Coordinate and submit RFIs in a prompt manner so as to avoid delays in the Work.
 - .2 Keep each RFI to one specific item only. Do not combine several items requiring interpretation into one RFI.
 - .3 For RFIs submitted by email include project name, RFI reference number and RFI subject in the email heading.
- .2 Departmental Representative will only consider RFIs submitted by the Contractor. Departmental Representative will not accept, review, or reply to RFIs submitted by Subcontractors, Suppliers or other entities under Contract with the Contractor.
- .3 Content of the RFI: Include a detailed, legible description of item needing interpretation and include the following:
 - .1 Project name
 - .2 Project number
 - .3 Date
 - .4 Name of Contractor
 - .5 Name of Departmental Representative
 - .6 RFI reference number, numbered sequentially starting with "001".
 - .7 A subject line that briefly describes the RFI.
 - .8 Full description of the item requiring interpretation.
 - .9 References to specification Section number and title, including related Articles and Paragraphs, as appropriate.
 - .10 Reference drawing number and details, as appropriate.
 - .11 Field dimensions and conditions, as appropriate.
 - .12 Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Price, state the impact in the RFI.
 - .13 Contractor's signature or the signature of his designated representative.
 - .14 Attachments:
 - .1 Include detail drawings, sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to describe items requiring interpretation.
 - .2 Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached drawings and sketches.

1.02 RFI SUBMITTAL FORM

- .1 Provide own RFI submittal form, acceptable to Departmental Representative, and include all content specified in this Section.
- .2 Submit RFI form and attachments as electronic files in Adobe Acrobat PDF format.

1.03 NUISANCE OR REDUNDANT RFI

- .1 Departmental Representative will not respond to nor reply to the following Contractor-generated nuisance or redundant RFI's.

- .1 Requests for approval of submittals.
 - .2 Requests for approval of substitutions.
 - .3 Requests for approval of Contractor's means and methods.
 - .4 Requests for approval of corrective actions for deficient Work.
 - .5 Requests for coordination information already indicated in the Contract Documents.
 - .6 Requests for adjustments in the Contract Time or the Contract Price.
 - .7 Requests for interpretation of Departmental Representative's response on submittals.
 - .8 Incomplete or inaccurately prepared RFIs.
- .2 Do not list nuisance and redundant RFI's in the RFI log.

1.04 DEPARTMENTAL REPRESENTATIVE'S RESPONSE

- .1 Departmental Representative will review each RFI, determine action (or no action) required, and submit his reply back to the Contractor.
- .2 Allow [ten] working days for Departmental Representative's response time for each RFI. RFI's that are received by the Departmental Representative after [1:00 pm] on working days will be considered as have been received on the next working day.
- .3 Departmental Representative's failure to reply to any RFI within the time period specified above or within a reasonable time period, as determine by the Departmental Representative, will not be considered a reason for a delay claim by the Contractor.
- .4 The Departmental Representative may extend the response time for any RFI at his discretion. Reasons may include, but not necessarily be limited to, the following:
 - .1 Too many RFIs submitted on the same day or within a short time period.
 - .2 RFI's which require extensive review and research by the Departmental Representative, which may include requests for additional information from other sources, the timing of which the Departmental Representative has no control.
 - .3 RFIs which, in the Departmental Representative's opinion, will have no significant impact on the construction progress schedule and therefore may be deferred for a reasonable period of time.
- .5 Departmental Representative's action may include a request for additional information, in which case Departmental Representative's response time will be re-adjusted to the date when the additional information is received by the Departmental Representative.
- .6 If Contractor believes the Departmental Representative's RFI response warrants a change in the Contract Time or the Contract Price, notify the Departmental Representative in writing within ten days of receipt of the Departmental Representative's RFI response.

1.05 CONTRACTOR'S RESPONSE

- .1 On receipt of Departmental Representative's response to an RFI:
 - .1 Update RFI log as specified herein.
 - .2 Review response and, submit a reply to the Departmental Representative, within ten working days of receipt of Departmental Representative response, stating whether the Departmental Representative's response is either acceptable or not acceptable.
- .2 If Departmental Representative's response is acceptable:
 - .1 Distribute the response to affected parties and proceed accordingly.
- .3 If Departmental Representative's response is considered not acceptable:
 - .1 Resubmit the RFI and include reason(s) for disagreement.

- .2 Departmental Representative will review and submit a reply to the Contractor within ten working days of receipt of resubmittal, notwithstanding the Departmental Representatives extension of response time as specified herein.

1.06 REQUESTS FOR INTERPRETATION (RFI) LOG

- .1 Prepare, maintain, and submit a tabular log of RFIs organized by the RFI reference number.
- .2 Submit RFI log with project meeting minutes.
- .3 Include the following:
 - .1 Project name.
 - .2 Name and address of Contractor.
 - .3 Name and address of Departmental Representative.
 - .4 RFI reference number including RFIs that were returned without action or withdrawn.
 - .5 RFI description/subject.
 - .6 Date the RFI was submitted.
 - .7 Date Departmental Representative's response was received.
 - .8 Date Departmental Representative requested additional information.
 - .9 Date RFI was closed.

END OF SECTION

1.01 RELATED REQUIREMENTS

- .1 Builders' Liens Act (Manitoba).

1.02 SCHEDULE OF VALUES

- .1 Refer to General Conditions.
- .2 Submit to Departmental Representative, Schedule of Values, at least 15 days prior to submitting first Application for Payment.
- .3 Use Schedule of Values as basis for Contractor's Progress Claim.
- .4 Form of Submittal:
 - .1 Submit typewritten Schedule of Values on letter size white paper.
 - .2 Use Table of Contents of this Project Manual as basis for format for listing costs of work for Sections under all Divisions.
 - .3 Identify each line item with number and title as listed in Table of Contents of this Project Manual.
- .5 Itemize separate line item cost for work required by each Section of this Project Manual.
- .6 After review by Departmental Representative, revise and resubmit Schedule as directed.

END OF SECTION

1.01 LOCATION

- .1 Meeting location to be confirmed by Owner

1.02 START-UP MEETING

- .1 After award of Contract, but before start of Work, convene a start-up meeting to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of the Consultant, Departmental Representative, Owner, Contractor, major Subcontractors are to attend.
- .3 Agenda:
 - .1 Appointment of official representatives of participants in the work.
 - .2 Schedules of work, progress scheduling.
 - .3 Schedule of submission of shop drawings, product data, samples, mock-ups, spare parts, extra materials, final survey, etc.
 - .4 Requirements for temporary utilities, temporary barriers and controls, construction facilities, lay down areas, site sign and other temporary construction.
 - .5 Record drawings.
 - .6 Maintenance Manuals.
 - .7 Take-over procedures, acceptance, warranties.
 - .8 Monthly progress claims, administrative procedures, holdbacks.
 - .9 Commissioning.
- .4 Establish time and location of meeting and notify all concerned parties within five working days of meeting.
- .5 Chair meeting, record minutes, and distribute minutes to all attending parties within four working days after meeting.

1.03 JOB PROGRESS MEETINGS

- .1 After award of Contract and signing of Agreement, convene job progress meetings at regularly scheduled intervals to ensure proper coordination of the Work.
- .2 Designate times and locations of meetings, and notify all parties concerned, including Subcontractors, to attend.
- .3 Chair meetings, record minutes, and distribute minutes to all attending parties within four working days after meetings.

END OF SECTION

1.01 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 such as Microsoft Project).
- .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 Milestone: Significant event in project, usually completion of major deliverable.
- .7 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.
- .8 Project Planning, Monitoring and Control System: overall system operated by Contractor to enable monitoring of project work in relation to established milestones.

1.02 ADMINISTRATIVE 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 ten working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within five working days of award of Contract.
 - .1 Departmental Representative will review, and return submitted Project Schedule within ten working days.
 - .2 If submitted Project Schedule is indicated as "revise and resubmit", resubmission required within five working days.
 - .3 Accepted Project Schedule is to be used as the baseline for monitoring and reporting on the Work.

- .4 The Departmental Representative will not approve any Progress Payment until the Project Schedule is submitted to the Departmental Representative for review.

1.04 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule as indicated in Section 01 11 00 - Summary of Work.

1.05 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Excavation.
 - .6 Backfill.
 - .7 Building footings.
 - .8 Slab on grade.
 - .9 Structural Steel.
 - .10 Siding and Roofing.
 - .11 Interior Architecture (Walls, Floors and Ceiling).
 - .12 Plumbing.
 - .13 Lighting.
 - .14 Electrical.
 - .15 Piping.
 - .16 Controls.
 - .17 Heating, Ventilating, and Air Conditioning.
 - .18 Millwork.
 - .19 Fire Systems.
 - .20 Testing and Commissioning.
 - .21 Supplied equipment long delivery items.
 - .22 Engineer supplied equipment required dates.

1.06 PROJECT SCHEDULE REPORTING

- .1 Prepare and submit for review two working days before the planned bi-weekly Project Meeting an updated Project Schedule reflecting activity changes and completions, as well as activities in progress.
- .2 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.
- .3 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.

1.07 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.

END OF SECTION

1.01 SECTION INCLUDES

- .1 Photographic documentation of:
 - .1 Project site and surrounding properties to record existing conditions prior to start of Work.
 - .2 Project site during course of construction to record construction progress.
 - .3 Project site at final completion of the Work to record completed work.
 - .4 Other specific items as may be requested by Departmental Representative.
- .2 Provide photographic documentation in accordance with procedures and submission requirements specified in this Section.

1.02 DEFINITIONS

- .1 Within the content of this Section the term "photograph" shall mean "digital image".
- .2 Digital image is a still picture taken with a digital camera which can be viewed on a computer with photo editing/viewing software.

1.03 DIGITAL IMAGES

- .1 Use digital camera with capability of producing digital images at minimum 5.0 megapixels, uncompressed, saved in *.jpeg or *.tif format.
- .2 Copy each set of images onto a thumb drive.
- .3 Identification: Identify each disc with name and number of project, date of exposure, set number.

1.04 DISTRIBUTION

- .1 Keep one set of photographs on site.
- .2 Provide one set of photographs to Departmental Representative.

1.05 PRE-CONSTRUCTION PHOTOGRAPHS

- .1 Provide photographs of existing building(s), site features, and surrounding properties to record existing conditions prior to start of construction work.
- .2 Allow for minimum 24 images for each set.
- .3 Number of Sets Required: One.
- .4 Viewpoints: Interior and exterior viewpoints including close ups of specific details in locations as determined by Departmental Representative.

1.06 CONSTRUCTION PROGRESS PHOTOGRAPHS

- .1 Provide photographs of project site during progress of the Work to record construction progress.
- .2 Provide photographs of remedial work for items of work identified by Departmental Representative as deficient, incomplete or otherwise non-conforming to contract documents.
- .3 Allow for minimum 24 images for each set.
- .4 Number of Sets Required: One.

- .5 Number of Viewpoints: Interior and exterior viewpoints including close ups of specific details, in locations determined by Departmental Representative.
- .6 Frequency: Monthly with progress statement and as requested by Departmental Representative.

1.07 FINAL PHOTOGRAPHS

- .1 Provide photographs of project site at final completion to record completed work.
- .2 Number of Prints Required: Three.
- .3 Allow for minimum 24 images for each set.
- .4 Number of Viewpoints:
 - .1 Each side of building, and other exterior features.
 - .2 Interior of specific rooms as directed by Departmental Representative. Allow for all rooms to be renovated.
 - .3 Close ups of specific details as determined by Departmental Representative.
 - .4 Locations of viewpoints as determined by Departmental Representative.

1.08 PHOTOGRAPH LABELLING CONVENTION

- .1 Provide progress digital images to the Departmental Representative monthly and at final completion of work.
- .2 Label each photograph in accordance with the following naming convention example.

Project Descriptor (see Legend below)	Element Descriptor (see Legend below)	Month	Year	Numerical Descriptor
(four digits max.)	e-ext	12	2019	00001
SMI	Architectural - Exterior			(five digits)

.3 Legend

.1	Project Descriptor						
	<table><tr><td>Stony Mountain Institution</td><td>SMI</td></tr></table>	Stony Mountain Institution	SMI				
Stony Mountain Institution	SMI						
.2	Element Descriptor						
	<table><tr><td>Electrical - Exterior</td><td>e-ext</td></tr><tr><td>Electrical - Interior</td><td>e-int</td></tr><tr><td>Existing</td><td>ex</td></tr></table>	Electrical - Exterior	e-ext	Electrical - Interior	e-int	Existing	ex
Electrical - Exterior	e-ext						
Electrical - Interior	e-int						
Existing	ex						

END OF SECTION

1.01 SECTION INCLUDES

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

1.02 ADMINISTRATIVE REQUIREMENTS

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are coordinated.
- .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

1.03 SHOP DRAWINGS AND PRODUCT DATA

- .1 Shop drawings that do not include the stamp, date, and signature of the person responsible for reviewing the shop drawings before submittal to the Departmental Representative will be rejected and returned without being examined.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Manitoba, Canada where specifically requested in the specifications. Shop drawings not bearing the required Engineer's stamp will be rejected and returned without being examined.
- .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 coordinated, regardless of Section under which

- adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Adjustments made on shop drawings by the Departmental Representative are not intended to change the Contract Price. If it is deemed that such adjustments affect the value of Work, state such in writing to the Departmental Representative prior to proceeding with fabrication or the Work.
 - .5 Make changes in shop drawings that the Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify the Departmental Representative in writing of any revisions other than those requested.
 - .6 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data, and samples.
 - .5 Other pertinent data.
 - .7 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.
 - .8 Submit one digital file in Adobe PDF file format of the following submittals:
 - .1 Shop drawings for each requirement requested in specification sections and as the Departmental Representative may reasonably request.
 - .2 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.

- .3 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 three years of date of contract award for project.
- .4 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.
- .5 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.
- .6 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.
- .9 Delete information not applicable to project.
- .10 Supplement standard information to provide details applicable to project.
- .11 If upon review by the Departmental Representative, no errors or omissions in compliance with the Contract Documents are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If, however, shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .12 No extension of Contract Time will be allow for delays in the Work which may be caused for Departmental Representative's rejection of shop drawings.
- .13 Shop drawings which contain deviations from the Contract Documents which are not presented to the Departmental Representative in writing, as specified in General Condition GC 3.10, will rejected and returned without being examined.

1.04 SAMPLES

- .1 Submit for review samples for each requirement requested in specification sections and as the Departmental Representative may request.
- .2 Label samples as to identify material, manufacturer, make/model number, origin and intended use in the Work.
- .3 Deliver samples prepaid to Departmental Representative's business address or as directed.
- .4 Notify the Departmental Representative in writing, at the time of submission of deviations in samples from requirements of Contract Documents.

- .5 Adjustments made on samples by the Departmental Representative are not intended to change the Contract Price. If adjustments affect the value of Work, state such in writing to the Departmental Representative prior to proceeding with the Work.
- .6 Make changes in samples that the Departmental Representative may require, consistent with Contract Documents.

1.05 CERTIFICATES AND TRANSCRIPTS

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

END OF SECTION

1.01 SECTION INCLUDES

- .1 References and Codes.
- .2 Discovery of Asbestos.
- .3 Polychlorinated Biphenyl (PCB).
- .4 Mould

1.02 REFERENCES AND CODES

- .1 Perform Work in accordance with 2015 National Building Code of Canada (NBC) Manitoba Building Code (MBC) including all amendments up to tender closing date and other codes of provincial, federal or local application provided that in case of conflict or discrepancy,
- .2 Meet or Exceed Requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.
- .3 Wherever codes, standards, regulations are referenced throughout the Contract Documents they shall mean the latest editions including amendments, supplements and revisions as of the date of bid closing.
- .4 The Contractor shall ensure compliance on his part and on the part of all of his Subcontractors with the Manitoba Occupational Health and Safety Act and Regulations thereunder.
- .5 Works to be in accordance with the Canadian Environmental Protection Act.
- .6 Where the Work under this Contract is carried out within the requirements of the Manitoba Public Works Act, the Manitoba Public Works Act shall apply.

1.03 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition work, immediately stop work and notify Departmental Representative.
- .2 Polychlorinated Biphenyl (PCB):
 - .1 The following Subparagraphs are a general guideline only for the identification, removal, storage, and disposal of PCB contaminated items and does not attempt to describe all procedures and precautions as may be required.
 - .2 Polychlorinated biphenyl is a toxic chemical hazardous to health and is scheduled under the Environmental Protection Act as an environmental contaminant.
 - .3 Fluorescent light fixture ballasts and electrical transformers indicated for removal under the Work of this Contract may contain PCBs.
 - .4 Identify, remove, and dispose of PCB contaminated items in accordance with the Provincial Department of Environment and Workplace Safety and Health and authorities having jurisdiction.
 - .5 Obtain and pay for all permits and approvals required and make arrangements for disposal of PCB waste containers at government approved disposal site(s).
 - .6 Inspect ballasts and transformers prior to commencement of removal and positively identify both those items believed to be PCB contaminated and those

items believed to be uncontaminated. If status of items is unknown, assume that it is contaminated and take the appropriate precautions and procedures for removal.

- .7 Prior to commencement of removal of PCB contaminated items review all procedures with the Departmental Representative.
- .8 Keep PCB waste containers (properly labeled and covered) on hand as close as possible to removal area. Remove full containers at regular intervals.
- .9 Do not use Owner's waste containers for removal of PCB contaminated items.
- .3 Mould: Stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

1.04 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions.

1.05 BURNING

- .1 Comply with restrictions of federal, provincial and municipal authorities and obtain permits from authorities having jurisdiction.

END OF SECTION

1.01 SECTION INCLUDES

- .1 Section includes administrative and procedural requirements for quality assurance and quality control.
- .2 Inspection and testing, administrative, and enforcement requirements.
 - .1 Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - .1 Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - .2 Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - .3 Requirements for Contractor to provide quality-assurance and quality-control services required by Departmental Representative or authorities having jurisdiction are not limited by provisions of this Section.
 - .4 Specific test and inspection requirements are not specified in this Section.
 - .3 Equipment/system adjust and balance.

1.02 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures: For submission of samples to confirm product quality
- .2 Section 01 61 00 - Common Product Requirements: For material and workmanship quality, and reference standards.

1.03 DEFINITIONS

- .1 Experienced: When used with an entity or individual, "experienced" unless otherwise further described means; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- .2 Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- .3 Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
- .4 Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- .5 Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

- .6 Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- .7 Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- .8 Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Departmental Representative.
- .9 Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.
- .10 Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.04 DELEGATED-DESIGN SERVICES

- .1 Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - .1 If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Departmental Representative.

1.05 CONFLICTING REQUIREMENTS

- .1 Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Departmental Representative for direction before proceeding.
- .2 Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Departmental Representative for a decision before proceeding.

1.06 ACTION SUBMITTALS

- .1 Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.07 INFORMATIONAL SUBMITTALS

- .1 Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- .2 Qualification Data: For Contractor's quality-control personnel.
- .3 Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- .4 Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 - .1 Specification Section number and title.
 - .2 Entity responsible for performing tests and inspections.
 - .3 Description of test and inspection.
 - .4 Identification of applicable standards.
 - .5 Identification of test and inspection methods.
 - .6 Number of tests and inspections required.
 - .7 Time schedule or time span for tests and inspections.
 - .8 Requirements for obtaining samples.
 - .9 Unique characteristics of each quality-control service.
- .5 Reports: Prepare and submit certified written reports and documents as specified.
- .6 Permits, Licenses, and Certificates: For Departmental Representative's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.08 CONTRACTOR'S QUALITY-CONTROL PLAN

- .1 Quality-Control Plan, General: Submit quality-control plan within ten days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Departmental Representative. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's Construction Schedule.
- .2 All Quality Control (QC) testing required to meet specifications is to be conducted by a certified material testing laboratory that is engaged and paid by the contractor. Departmental representative may engage an independent material laboratory for random Quality Assurance (QA) testing paid for by the Owner.
- .3 Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - .1 Project quality-control manager may also serve as Project superintendent.
- .4 Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- .5 Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:

- .1 Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
- .2 Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
- .3 Departmental Representative-performed tests and inspections indicated in the Contract Documents.
- .6 Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mock-ups.
- .7 Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Departmental Representative has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.09 REVIEW AND INSPECTION OF THE WORK

- .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 whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 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 such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.
- .5 Test and Inspection Reports: Prepare and submit to the Departmental Representative one electronic copy of written reports specified in other Sections. Include the following:
 - .1 Date of issue.
 - .2 Project title and number.
 - .3 Name, address, telephone number, and email address of testing agency.
 - .4 Dates and locations of samples and tests or inspections.
 - .5 Names of individuals making tests and inspections.
 - .6 Description of the Work and test and inspection method.
 - .7 Identification of product and Specification Section.
 - .8 Complete test or inspection data.
 - .9 Test and inspection results and an interpretation of test results.
 - .10 Record of temperature and weather conditions at time of sample taking and testing and inspection.

- .11 Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
- .12 Name and signature of laboratory inspector.
- .13 Recommendations on retesting and reinspection.
- .6 Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - .1 Name, address, telephone number, and email address of technical representative making report.
 - .2 Statement on condition of substrates and their acceptability for installation of product.
 - .3 Statement that products at Project site comply with requirements.
 - .4 Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - .5 Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - .6 Statement whether conditions, products, and installation will affect warranty.
 - .7 Other required items indicated in individual Specification Sections.
- .7 Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - .1 Name, address, telephone number, and email address of factory-authorized service representative making report.
 - .2 Statement that equipment complies with requirements.
 - .3 Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - .4 Statement whether conditions, products, and installation will affect warranty.
 - .5 Other required items indicated in individual Specification Sections.
- .8 Provide copies to Subcontractor of work being inspected/tested and manufacturer/fabricator of material being inspected/tested.

1.10 INDEPENDENT INSPECTION/TESTING AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by the Departmental Representative for the purpose of inspecting and/or testing portions of Work.
- .2 The testing requirements are specified under various sections of the specifications. Test Results to be submitted to the Departmental Representative.
- .3 Costs for independent inspection agencies shall be included in the bid price.
- .4 Provide equipment required for executing inspection and testing by the appointed agencies.
- .5 Employment of inspection/testing agencies does not relax the responsibility to perform Work in accordance with the Contract Documents.
- .6 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defects and irregularities as advised by Departmental Representative at no cost to the Departmental Representative. Pay costs for retesting and re-inspection.

1.11 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to the Work, offsite manufacturing, and fabrication plants.
- .2 Cooperate to provide reasonable facilities for such access.

1.12 PROCEDURES

- .1 Notify the appropriate agency and Departmental Representative in advance of the requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing as specifically requested in specification Sections or as may be requested by Departmental Representative. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.13 DEFECTIVE 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.

1.14 REPORTS

- .1 Submit electronic copies of quality control and test reports directly from the testing agency promptly to the Departmental Representative.
- .2 Provide copies to Subcontractor of work being inspected/tested and manufacturer/fabricator of material being inspected/tested.

1.15 EQUIPMENT AND SYSTEMS

- .1 Submit four copies of adjustment and balancing reports for mechanical, electrical building equipment and systems.

END OF SECTION

1.01 SECTION INCLUDES

- .1 Construction aids.
- .2 Mechanical Room – within Renovation area
- .3 Parking.

1.02 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.03 INSTALLATION AND REMOVAL

- .1 Prepare plan indicating proposed location of screening to be used by Contractor.
- .2 Indicate use of supplemental or other staging areas.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.

1.04 STAGING AREA

- .1 Departmental Representative will designate a staging area for Contractor's use after award of Contract – in areas of renovation.

1.05 SITE STORAGE/LOADING

- .1 Confine work and operations of employees to areas defined by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.
- .3 Deliver materials and tools required for interior Work through the facility deliveries area (loading dock).

1.06 CONSTRUCTION PARKING

- .1 Make arrangements with Departmental Representative for parking that may be required.

1.07 OFFICES

- .1 Contractor may provide himself with a site office at his discretion. Locate in construction staging area.
- .2 Departmental Representative site meetings will be held in the rooms within the existing building as designated by the Departmental Representative.

1.08 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a clean and orderly condition, lockable units for storage of tools, equipment and materials.
- .2 Locate materials in a manner to cause least interference with work activities.

1.09 SANITARY FACILITIES

- .1 Designated sanitary facilities within the building will be available for worker use. Keep premises clean and sanitary at all times.
- .2 Sanitary facilities are for personal worker use only. Do not use washrooms for dumping of liquids or for cleaning tools such as paint brushes.

1.10 CONSTRUCTION SIGNAGE

- .1 Project sign not required.
- .2 Company signs or signs for advertisements, other than warning signs, are not permitted on site.
- .3 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN3-Z321.
- .4 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

END OF SECTION

1.01 SECTION INCLUDES

- .1 Product quality, availability, storage, handling, protection, and transportation.
- .2 Procedures for product substitution.
- .3 Manufacturer's instructions.
- .4 Quality of Work, coordination and fastenings.
- .5 Prevention of dust and mould contamination of products and materials during delivery, storage and handling.

1.02 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-Z317.13, Infection Control during Construction, Renovation, and Maintenance of Health Care Facilities.
- .2 Within text of each specifications section, reference may be made to reference standards.
- .3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .4 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .5 Cost for such testing will be borne by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.
- .6 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.03 QUALITY

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 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.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 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.

1.04 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of materials, equipment or articles are foreseeable, notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In the event of failure to notify the Departmental Representative at commencement of Work, and should it subsequently appear that Work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.05 SUBSTITUTIONS

- .1 The Work is based on the materials and methods specified in the specifications.
- .2 Substitutions are not permitted unless application has been made to and prior approval has been granted by the Departmental Representative, in writing.
- .3 Substitution Requests During Bidding: Refer to Section 00 26 00 – Procurement Substitution Procedures.
- .4 Substitution Requests During Construction: Refer to Section 00 25 13 – Product Substitution Procedures.

1.06 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber 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 name plates.
- .10 Remove and replace damaged products at own expense and to the satisfaction of the Departmental Representative.
- .11 Comply with CAN/CSA Z317.13 when shipping, handling and storing products susceptible to mould and dust contamination. Protect products from weather; take all precautions to prevent moisture or dust contamination.

- .1 Wrap products in waterproof covers at plant or distribution centre prior to shipping.
- .2 Load products in indoor facilities, and ship to project site in enclosed vehicles only. Do not use flat-bed trucks exposed to the elements.
- .3 Unload products at project site only during dry weather.
- .4 Store products indoors in dry location, off concrete floors.
- .5 Products that become damp, wet or contaminated with mould, dust and dirt shall be designated as defective work and replaced at no additional cost to the Contract.

1.07 TRANSPORTATION

- .1 Pay the costs of transportation of products required in the performance of Work.
- .2 Transportation costs of products supplied by the Owner will be paid for by Owner, unless specified otherwise. Unload, handle and store such products, unless otherwise specified.

1.08 MANUFACTURERS' INSTRUCTIONS

- .1 Unless otherwise indicated in the specifications, install or erect all products in accordance with manufacturer's recommendations. Do not rely on labels or enclosures that are provided with products. Obtain instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing of any conflicts between the Specifications and manufacturer's instructions so that the Departmental Representative may establish the course of action to follow.
- .3 Improper installation or erection of products due to failure in complying with these requirements authorizes the Departmental Representative to require any removal and re-installation that may be considered necessary, at no increases in Contract Price or Contract Time.

1.09 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 Enforce discipline and good order among workers.
- .3 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .4 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.10 COORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Ensure Work of various Subcontractors does not conflict or create interference.
- .3 Be responsible for the proper coordination and placement of openings, sleeves, and accessories.
- .4 Supply all items required to be built in as and when required, together with templates, measurements and shop drawings.

- .5 Ensure all workers examine the drawings and specifications covering the Work of others that may affect the performance of their own Work. Examine the Work of others and report to the Departmental Representative, in writing, any defects, or deficiencies that may affect the Work. In the absence of any report, the Contractor shall be held to have waived all claims for damage to or defects in such Work.
- .6 Ensure that components requiring foundations or openings that are required for the installation of Work is coordinated. Furnish the necessary information to the Sections concerned in ample time to permit allowance for such items. Failure to comply with this requirement does not relieve the party at fault of the cost of cutting or drilling at a later date and subsequent patching.

1.11 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.

1.12 REMEDIAL WORK

- .1 Refer to General Conditions and Section 01 35 16 - Alteration Project Procedures.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.13 LOCATION OF FIXTURES

- .1 Consider the location of fixtures, outlets and other mechanical and electrical items indicated on drawings as approximate.
- .2 Inform the Departmental Representative of an impending installation. Install as directed.

1.14 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless otherwise indicated.
- .2 Prevent electrolytic action between dissimilar metal and materials.
- .3 Use non-corrosive hot dip galvanized fasteners and anchors for securing exterior Work, unless stainless steel or other material is specifically requested in the affected Specification Section.
- .4 Space anchors within their load limit or shear capacity and ensure they provide positive permanent anchorage. Plugs of wood or any other organic material 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.

1.15 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.

1.16 PROTECTION OF WORK IN PROGRESS

- .1 Protect Work completed or in progress.
- .2 Prevent overloading of any part of the building. Do not cut, drill, or otherwise sleeve any load bearing structural member unless specifically indicated on drawings or in Specifications without written approval of the Departmental Representative.

1.17 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/or building occupants and pedestrian and vehicular traffic.
- .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.

END OF SECTION

1.01 GENERAL

- .1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Management Plan.
- .2 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .3 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .4 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .5 Remove waste materials and debris from the site at regularly scheduled times or dispose of as otherwise directed by the Departmental Representative. Do not burn or bury waste materials or debris on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

1.02 MATERIALS

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

1.03 CLEANING DURING CONSTRUCTION

- .1 Provide on-site containers for collection of waste materials, and debris.
- .2 Dispose of waste materials and debris off site at regularly scheduled intervals.
- .3 Maintain the Work in tidy condition, free from accumulation of waste products and debris.
- .4 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .5 Clean interior areas prior to start of finish work; maintain areas free of dust and other contaminants during finishing operations.

1.04 FINAL CLEANING

- .1 When the Work is complete, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris and leave the Work clean and suitable for occupancy by the Owner.
- .2 Leave the work 'broom clean' before the inspection process commences.
- .3 Clean lighting reflectors, lenses, and other lighting surfaces.
- .4 Remove stains, spots, marks, and dirt from electrical and mechanical fixtures, furniture fitments, walls and floors.
- .5 Vacuum clean and dust building interiors, behind grilles, louvers and screens.
- .6 Clean equipment and fixtures to a sanitary condition, clean or replace filters of mechanical equipment.
- .7 Inspect finishes, fitments and equipment and ensure proper workmanship and operation.
- .8 Broom clean and wash exterior walks, steps and platforms.
- .9 Remove dirt and other disfigurations from exterior surfaces.
- .10 Sweep and wash clean paved areas as applicable.

1.05 SNOW REMOVAL

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

END OF SECTION

Part 1 General**1.01 SECTION INCLUDES**

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

1.02 DEFINITIONS

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

1.03 SUSTAINABILITY OBJECTIVES

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

1.04 ACTION SUBMITTALS

- .1 Submit draft waste management plan to the Departmental Representative prior to project start up meeting.

1.05 INFORMATIONAL SUBMITTALS

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

1.06 WASTE MANAGEMENT PLAN

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

- .5 Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1.07 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal do not become Contractor's property.
- .3 Protect, 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, storm sewers, sanitary sewers, and utility services from damage and blockage.

1.08 SCHEDULING

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

Part 2 Products

2.01 NOT USED

- .1 Not Used.

Part 3 Execution

3.01 PREPARATION

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

3.02 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises and adjacent property owners.
- .2 Maintain security measures established by existing facility.
- .3 Provide temporary security measures as approved by Departmental Representative.

3.03 WASTE MANAGEMENT PLAN IMPLEMENTATION

- .1 Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

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

.7 Amount of any money paid or received for the recycled or salvaged material.

.8 Net total cost or savings of salvage or recycling each material.

.3 Attach manifests, weight tickets, receipts, and invoices.

3.04 DISPOSAL OF WASTE

.1 Burying of rubbish and waste materials is prohibited unless approved by the Departmental Representative.

.2 Disposal of waste, volatile materials, mineral spirits, oil paint, thinner into waterways, storm, or sanitary sewers is prohibited.

3.05 CLEANING

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

.2 Clean-up work area as work progresses.

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

3.06 SPECIAL PROGRAMS

.1 Be responsible for final implementation of programs involving tax credits or rebates or similar incentives related to recycling, if applicable to the Project.

.2 Revenues or other savings obtained for recycling or returns to accrue to Owner.

.3 Obtain information packets relevant to all of the above listed programs prior to starting work on the Project, and confirm facility's ability to accept waste from Project.

.4 Document work methods, recycled materials, alternate disposal methods that qualify for tax credits, rebates, and other savings under programs listed by authority having jurisdiction.

END OF SECTION

1.01 SECTION INCLUDES

- .1 Administrative procedures preceding preliminary and final inspections of Work.

1.02 RELATED SECTIONS

- .1 Section 01 78 00 - Closeout Submittals.

1.03 INSPECTION AND DECLARATION FOR SUBSTANTIAL PERFORMANCE OF THE WORK

- .1 Contractor's Inspection: Prior to application for Certificate of Substantial Performance of the Work Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made and that the building is clean and in condition ready for occupancy.
 - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Departmental Representative shall prepare a list of defects deficiencies and provide a signed copy to the Contractor.
- .3 Contractor shall correct Work accordingly.
- .4 Declaration of Substantial Performance: When Departmental Representative considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance of the Work.
- .5 Commencement of Lien and Warranty Periods: Date of Owner's acceptance of submitted declaration of Total Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
- .6 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount.

1.04 INSPECTION AND DECLARATION FOR FINAL COMPLETION

- .1 When satisfied that the entire work is complete, make a final inspection of the Work to ensure that it is complete.
- .2 Completion: Submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
 - .4 Certificates required by the Office of the Fire Commissioner have been submitted.
 - .5 Operation of systems have been demonstrated to Owner's personnel.
 - .6 Building and premises are clean and ready for occupancy.

- .7 Work is complete and ready for Final Inspection.
- .3 Final Inspection: When items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. The Departmental Representative's final review of the Work will be completed within ten days of the Departmental Representative's receipt of the written request from the Contractor. The final review will constitute the review precedent to the issuance of the Final Certificate for Payment.
- .4 Departmental Representative will list defects or deficiencies determined by this review, and will provide a copy to the Contractor. The list will be recognized as a final list for acceptance of the Work under the Contract. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection, in writing.
- .5 If a re-inspection is required Departmental Representative shall conduct the re-inspection within seven days of date of the request. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection. If Work is deemed complete by the Departmental Representative submit invoice for final payment.
- Final Payment: When Departmental Representative considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment.

END OF SECTION

1.01 SECTION INCLUDES

- .1 As-built, samples, and specifications.
- .2 Equipment and systems.
- .3 Product data, materials and finishes, and related information.
- .4 Operation and maintenance data.
- .5 Spare parts, special tools and maintenance materials.
- .6 Warranties and bonds.
- .7 Final site survey.

1.02 RELATED REQUIREMENTS

- .1 Section 01 77 00 - Closeout Procedures.

1.03 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Consultant's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, four final copies of operating and maintenance manuals in English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.04 FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf, letter size format with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.05 CONTENTS - EACH VOLUME

- .1 Table of Contents: 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 clearly 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. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.06 AS-BUILTS AND SAMPLES

- .1 Maintain at the site for Consultant one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for review by Consultant.

1.07 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on three sets of black line opaque drawings, and in copy of Project Manual which shall be provided by Consultant.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

- .1 Measured horizontal and vertical locations of main piping runs and appurtenances, referenced to permanent surfaces, visible and accessible features of construction.
- .2 Field changes of dimension and detail.
- .3 Changes made by change orders.
- .4 Details not on original Contract Drawings.
- .5 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.08 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: Include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel Board Circuit Directories: Provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .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 coordination 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.
- .15 Additional requirements: As specified in individual specification sections.

1.09 WARRANTIES AND BONDS

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

- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

END OF SECTION

Part 1 General

1.01 SECTION INCLUDES

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

1.02 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 91 31 - Commissioning Plan.
- .3 Section 01 91 33 – Commissioning Forms
- .4 Section 01 91 41 – Commissioning Training

1.03 ACRONYMS

- .1 Cx - Commissioning.
- .2 CxA- Commissioning Authority.
- .3 EMCS - Energy Management and Control Systems.
- .4 O&M - Operation and Maintenance.
- .5 PI - Product Information.
- .6 FPT - Functional Performance Testing.

1.04 DEFINITIONS

- .1 Refer to Section 01 91 31 - Commissioning Plan.

1.05 SUMMARY

- .1 The Commissioning Authority (CxA) is to lead, review and oversee the completion of the commissioning process activities to meet the intent of ASHRAE Guideline 0-2005.
- .2 Commissioning during the construction phase is intended to achieve the following specific objectives according to the Contract Documents:
 - .1 Provide direction for the commissioning process during construction, particularly to provide resolution to issues and details not fully developed during design (ex: participation of various parties, scheduling, lines of communication and reports, approvals, coordination, etc.)
 - .2 Verify that applicable equipment and systems are installed properly according to the contract documents, manufacturer's recommendations, and that they receive adequate operational checkout by installing contactors, dynamic pre-functional and functional performance testing.
 - .3 Verify and document performance of equipment and systems.
 - .4 Verify that O&M documentation left on site is complete.
 - .5 Verify that Departmental Representative's operating personnel are adequately trained.

1.06 GENERAL

- .1 Commissioning is a systematic verification, documentation and training process applied to all activities during the design, construction, Installation verification procedures(Including static verification, start-up), pre-functional and functional performance testing of equipment and systems in a facility to ensure that the facility operates in conformity with the Departmental Representative's project requirements, the basis of design and the contract documents. Objectives:
 - .1 Static Verification: The commissioning team shall verify and document that all identified commissionable equipment are in accordance with the design requirements and correctly installed, orientated, connected and labelled.
 - .2 Start-up: The commissioning team shall witness and document contractor start-up activities.
 - .3 Functional Performance Testing: The commissioning team shall verify and document that the equipment and systems have been installed and activated in accordance the contract documents and manufacturer's instructions. Verification shall be completed and accepted before equipment or systems are handed over and or interim acceptance.
 - .4 Effectively train O&M staff.
- .2 The commissioning process does not take away from or reduce the responsibility of the system designers or installing contractors to provide a finished, fully functioning product.
- .3 The Commissioning Authority (CxA) is not responsible for primary quality assurance or quality control on the project. The role of the CxA is supplementary to the QA/QC role supplied by the Contractor Team.
- .4 The Commissioning Authority (CxA) is not responsible for the design concept, design criteria, compliance with codes design or general construction scheduling, cost estimating or construction management.
- .5 The Commissioning Authority (CxA) is not responsible for system evaluations; adequacy of systems to meet Departmental Representative's project requirements, capacity of systems, quality control checks, or any other elements and recommended final acceptance of systems to the Departmental Representative resides with the Consultant of Record.
- .6 Corrective repairs should be completed prior to any scheduled testing.

1.07 SCOPE OF WORK

- .1 The General Scope of Commissioning Includes:
 - .1 New Lamp Base and Lamp Stand Installation
 - .2 New Electrical systems
 - .3 Lighting and daylighting controls
 - .4 Power:
 - .1 Distribution
 - .2 Lighting Controls
 - .3 Grounding
- .2 Detailed testing shall be performed on identified commissionable installed equipment and systems to ensure that operation and performance conform to contract documents. All tests shall be performed by the responsible trade contractor, evaluated and witnessed by Commissioning Authority.

- .3 Once a system(s) has been completed and passed all functional tests it will be ready for evaluation by the CxA and Engineer of Record, with recommendation for the Departmental Representative. The following testing is required as part of the commissioning process and is the responsibility of the appropriate trade contractor:
 - .1 Pre-Installation Checklists - completed for all equipment inspections for damage or compliance with an approved submittal upon arrival at the site from the supplier. Checklists are provided and completed and submitted by the respective manufacturer and/or contractor.
 - .2 Installation Checklists are comprised of checks developed to verify that all commissionable systems were installed correctly. This includes completed piping, electrical is tied in and completed and all accessories are installed. Checklists are provided and completed and submitted by the respective manufacturer and/or contractor.
 - .3 Pre-functional checklists are comprised of checks developed to verify that all commissionable systems were installed correctly. Following the installation and vendor start-up, the installing contractor along with the manufacturer's representative are required to perform a series of physical installation checks, instrumentation inspections and control wiring verifications to ensure that the equipment is installed in accordance with the manufacturers recommendations, and all components, equipment, systems and interfaces between systems operate in accordance with the contract documents. This includes completed piping, electrical is tied-in and completed, all accessories are installed, interlocks verified. Balancing is required prior to pre-functional testing.
 - .4 Functional Performance Tests (FPT) – Functional testing will not be permitted if any of the previously noted checks are not completed as part of the start-up and pre-functional phases of the project. Functional performance testing phase is where the integration of control sequences is married with equipment to prove operation according to the contract documentation. This will include operation of the various components of the equipment as a complete system under load conditions in all operating modes, and determine if the mechanical and electrical systems are providing the required services in accordance with the finalized design intent. These tests shall also determine the installed capacity of the cooling and heating plant and the individual heat transfer components.
- .4 Comprehensive training of O&M personnel shall be performed by the Contractor and where appropriate by other subcontractors and factory trained manufacturer's / vendor technicians prior to turnover of building to the Departmental Representative. The training shall include on-site classroom instruction, along with hands-on instruction on the installed equipment and systems.

1.08 COMMISSIONING OVERVIEW

- .1 The CxA shall develop the Commissioning Plan. The Draft Commissioning Plan has been included as part of the Contract Documents, refer to Section 01 91 31. Contractor to assist the Commissioning Authority in preparing and up-dating the Commissioning Plan by providing necessary information pertaining to the actual commissionable equipment and installation. If Contractor initiated system changes have been made that alter the commissioning process; the Commissioning Authority shall notify the Contractor and Departmental Representative. The Commissioning Plan can be modified based on the construction schedule and can be done so after consultation with the Departmental Representative, at the discretion of the CxA.

1.09 SUBMITTALS

- .1 The CxA will provide a specific request for the type of submittal documentation the CxA requires for facilitating the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum, the request will include the manufacturer and model number, the manufacturer's printed installation and detailed start-up procedures, full sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details of Departmental Representative contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted to the CxA.

1.10 COMMISSIONING SCHEDULE

- .1 The Commissioning Authority will update the Commissioning Schedule on regular intervals to show commissioning progress and whenever significant changes occur to the dates provided for commissioning activities. The Commissioning Schedules are sent to the Departmental Representative to be distributed.

1.11 COMMISSIONING MEETINGS

- .1 Meetings will be scheduled and chaired by Contractor, who will record and distribute minutes.

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.
- .2 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for CxA to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.
- .3 Provide 14 days' notice prior to commencement.
- .4 Start-up and Checkout Plan: The CxA will assist the project commissioning team members responsible for start-up of any equipment. The primary role of the CxA in this process is to ensure that there is written documentation that each of the manufacturer-recommended procedures has been completed. The CxA shall provide installation verification forms/check-sheets and start-up shall be identified in the commissioning scoping meeting and on the installation verification forms/check-sheets.
 - .1 Demonstration and Training – Contractors, their sub-contractors, equipment manufacturers and vendors will provide demonstration and training plan as required by the specification and these commissioning requirements. A complete training plan and schedule must be submitted by the Contractor to the CxA four (4) weeks prior to any training. A training agenda for each training session must be submitted to the CxA two (2) weeks prior to the training session.

1.13 FUNCTIONAL PERFORMANCE TESTING (FPT)

- .1 Functional performance testing shall demonstrate that each system is operating according to the documented design intent and contract documents. Functional performance testing facilitates bringing the systems from a state of individual substantial completion to full dynamic operation. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.

1.14 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 The CxA will observe and document the results of all pre-functional and functional performance tests performed by the trade contractors using the test procedural forms developed for that purpose.
 - .1 When there is no dispute on the deficiency and the contractor accepts responsibility to correct it.
 - .1 The CxA will document the deficiency and the contractor's response and intentions or corrections. The CxA and contractor then proceed to another test or sequence. The contractor corrects the issues, and confirms that equipment is ready to be retested.
 - .2 Once the contractor corrects the deficiency, the test is rescheduled and repeated in the anticipation of correct operation or function. If the deficiency has not been corrected, or a new one is identified, the cost of additional retesting will be borne by the responsible Contractor at no additional cost to the Departmental Representative. The responsible contractor shall bare the labour, time and materials cost for the CxA.

Part 2 Products

2.01 TEST EQUIPMENT

- .1 All standard testing equipment required for the mechanical, electrical, plumbing, controls, TAB, fire alarm, etc. shall be furnished by the contractor responsible for the equipment and/or systems being tested. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance within the tolerances specified in the specifications.

2.02 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 Engineer for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.

Part 3 Execution

3.01 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.01 SUMMARY

- .1 Appended is a Commissioning Plan describing requirements and processes pertaining to the commissioning of this project.

1.02 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 91 13 - General Commissioning Requirements
- .3 Section 01 91 41 - Commissioning Training

END OF SECTION

Lighting Controller

Site Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001

DATE:
CONTACT: STANTEC

A. INSTALLED GENERAL INFORMATION –

- | | |
|------------------------------|-------|
| 1. Manufacturer | _____ |
| 2. Model No. | _____ |
| 3. Lamacoid installed | _____ |
| 5. Relays Numbers Identified | _____ |
| 6. Photo cell location | _____ |
| 7. Date of Installation | _____ |

B. STATIC/DYNAMIC CHECK:

	COMPLETE	INCOMPLETE
1. Controller installed and mounted secure.	<input type="checkbox"/>	<input type="checkbox"/>
2. Class 1 and 2 Circuit Divider installed	<input type="checkbox"/>	<input type="checkbox"/>
3. Manual Switch and Override Function confirmed	<input type="checkbox"/>	<input type="checkbox"/>
4. Photo cell operation confirmed.	<input type="checkbox"/>	<input type="checkbox"/>
5. LCD user interface functional	<input type="checkbox"/>	<input type="checkbox"/>
6. Reset to automatic operation after 24hrs of manual override, functional.	<input type="checkbox"/>	<input type="checkbox"/>

Nonconformance descriptions: _____

COMMENTS: _____

Witnessed By: _____ Company: _____ Date: _____

Lighting Controller

Site Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001

DATE:
CONTACT: STANTEC

A. INSTALLED GENERAL INFORMATION

- | | |
|---|-------|
| 1. Mounting bracket secure | _____ |
| 2. Wire size and type confirmed | _____ |
| 3. Source power supply identified | _____ |
| 4. Site Lighting Layout provided. | _____ |
| 5. Owners manual provided with installation | _____ |
| 6. Door hinge and lock operational | _____ |

B. STATIC/DYNAMIC CHECK:

	COMPLETE	INCOMPLETE
1. Unit clean and secure.	<input type="checkbox"/>	<input type="checkbox"/>
2. Display clear and operational	<input type="checkbox"/>	<input type="checkbox"/>
3. Power and control connections made.	<input type="checkbox"/>	<input type="checkbox"/>
4. All fixtures operational when called to operate.	<input type="checkbox"/>	<input type="checkbox"/>
5. Quiet operation of relays.	<input type="checkbox"/>	<input type="checkbox"/>
6. Control/programing operate fixtures satisfactorily.	<input type="checkbox"/>	<input type="checkbox"/>

Nonconformance descriptions: _____

COMMENTS: _____

Witnessed By: _____ Company: _____ Date: _____

PanelboardSite Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001**DATE:** 2019-08-16
CONTACT: STANTEC

Bldg. & Tag No. _____

A. GENERAL INFORMATION

- | | | | |
|------------------|-------|---------------------|-------|
| 1. LOCATION: | _____ | 6. FED FROM: | _____ |
| 2. MODEL NO.: | _____ | 7. MAIN: | _____ |
| 3. MANUFACTURER: | _____ | 8. NO. OF WIRES: | _____ |
| 4. VOLTS: | _____ | 9. NO. OF CIRCUITS: | _____ |
| 5. PHASE: | _____ | | |

B. OPERATIONAL CHECK:

- | | Test OK | Nonconformance |
|--|--------------------------|--------------------------|
| 1. Unit clean, secure, plumb | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Feeder circuit correct size and installed | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Correct number and rating of circuit breakers installed | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Lock-on devices in place | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Panel schedule in place | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | |
|-----------------|---------------------|---------------------|
| 6. CHECK PANEL: | <u>ON NAMEPLATE</u> | <u>ACTUAL</u> |
| VOLTAGE: | _____ | PHASE A-B _____ A-N |
| | | PHASE B-C _____ B-N |
| | | PHASE C-A _____ C-N |
| CURRENT: | _____ | PHASE A _____ |
| | | PHASE B _____ |
| | | PHASE C _____ |
| | | NEUTRAL _____ |

NOTE: Reading should be scheduled with all normal loads ON.
Example - lighting, motors, etc.

Date of Reading: _____

Nonconformance descriptions: _____

Disposition: _____

COMMENTS: _____

Witnessed By: _____ Company: _____ Date: _____

Owner Representative: _____ Date: _____

Panelboard

Site Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001

DATE: 2019-08-16
CONTACT: STANTEC

Bldg. & Tag No. _____

[illegible]

Witnessed By: _____ Company: _____ Date: _____

Owner Representative: _____ Date: _____

Lighting

Site Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001

DATE: 2019-07-16
CONTACT: STANTEC

A. INSTALLED GENERAL INFORMATION – TYPE A

- | | |
|--------------------------|-------|
| 1. AREA ILLUMINATED | _____ |
| 2. LAMP TYPE AND WATTAGE | _____ |
| 3. BALLAST TYPE | _____ |
| 4. LUMINAIRE TYPE | _____ |
| 5. LENS TYPE | _____ |
| 6. SYSTEM VOLTAGE | _____ |
| 7. TYPE OF CONTROL | _____ |

B. STATIC/DYNAMIC CHECK:

	COMPLETE	INCOMPLETE
1. Fixtures clean and secure.	<input type="checkbox"/>	<input type="checkbox"/>
2. All lamps installed.	<input type="checkbox"/>	<input type="checkbox"/>
3. Power and control connections made.	<input type="checkbox"/>	<input type="checkbox"/>
4. All fixtures operational when called to operate.	<input type="checkbox"/>	<input type="checkbox"/>
5. Quiet operation of ballasts.	<input type="checkbox"/>	<input type="checkbox"/>
6. Controls operate fixtures satisfactorily.	<input type="checkbox"/>	<input type="checkbox"/>

Nonconformance descriptions: _____

COMMENTS: _____

Witnessed By: _____ Company: _____ Date: _____

Lighting

Site Parking Lot Lighting Upgrade
Stony Mountain Institution, MB
R100856.001

DATE: 2019-07-16
CONTACT: STANTEC

A. INSTALLED GENERAL INFORMATION – TYPE B

- | | |
|--------------------------|-------|
| 1. AREA ILLUMINATED | _____ |
| 2. LAMP TYPE AND WATTAGE | _____ |
| 3. BALLAST TYPE | _____ |
| 4. LUMINAIRE TYPE | _____ |
| 5. LENS TYPE | _____ |
| 6. SYSTEM VOLTAGE | _____ |
| 7. TYPE OF CONTROL | _____ |

B. STATIC/DYNAMIC CHECK:

	COMPLETE	INCOMPLETE
1. Fixtures clean and secure.	<input type="checkbox"/>	<input type="checkbox"/>
2. All lamps installed.	<input type="checkbox"/>	<input type="checkbox"/>
3. Power and control connections made.	<input type="checkbox"/>	<input type="checkbox"/>
4. All fixtures operational when called to operate.	<input type="checkbox"/>	<input type="checkbox"/>
5. Quiet operation of ballasts.	<input type="checkbox"/>	<input type="checkbox"/>
6. Controls operate fixtures satisfactorily.	<input type="checkbox"/>	<input type="checkbox"/>

Nonconformance descriptions: _____

COMMENTS: _____

Witnessed By: _____ Company: _____ Date: _____

1.01 SUMMARY

- .1 Section Includes:
 - .1 Commissioning forms to be completed for equipment, system and integrated system.

1.02 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 91 13 – General Commissioning Requirements
- .3 Section 01 91 31 - Commissioning Plan
- .4 Section 01 91 41 – Commissioning Training

1.03 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
 - .4 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by the Commissioning Authority (CxA) supplemental additional data lists will be required for specific project conditions.
 - .5 Use check lists for equipment installation. Document check list verifying checks have been made; indicate deficiencies and corrective action taken.
 - .6 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to the CxA. Check lists will be required during Commissioning and will be included in the final Commissioning Report at completion of project.

1.04 INSTALLATION VERIFICATION FORMS/CHECK-SHEETS

- .1 Installation verification forms/check-sheets compiles gathered 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 that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the final Commissioning Report at completion of project.
 - .1 Prior to Functional Performance Testing (FPT) of systems complete items on Installation verification forms/check-sheets related to systems and obtain CxA approval.

1.05 SAMPLES OF COMMISSIONING FORMS

- .1 The CxA will develop and provide to the Contractor required project-specific Commissioning forms complete with specification data.
- .2 Revise items on Commissioning forms to suit project requirements.
- .3 Samples of Commissioning form attached to this section 01 91 33.13 Cx Plan.

1.06 CHANGES AND DEVELOPMENT OF NEW REPORT FORMS

- 1.1.1 When additional forms are required, but are not available from the CxA develop appropriate verification forms and submit to CxA for approval prior to use.

1.07 COMMISSIONING FORMS

- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
- .2 Strategy for Use:
 - .1 CxA provides 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 as per 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 and reviewed and signed off by CxA.
 - .9 Submit immediately after tests are performed.
 - .10 Reported results in true measured SI unit values.
 - .11 Provide CxA with originals of completed forms.
 - .12 Maintain copy on site during start-up, testing and commissioning period.

1.08 LANGUAGE

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

END OF SECTION

Part 1 General

1.01 SUMMARY

- .1 Section Includes:
 - .1 Roles and responsibilities of Commissioning Training.

1.02 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal Procedures: For Owner's product requirements.
- .2 Section 01 91 13 – General Commissioning Requirements
- .3 Section 01 91 33 – Commissioning Forms

1.03 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this 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.

1.04 INSTRUCTORS

- .1 Departmental Representative 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.
 - .4 Contractor and equipment manufacturer to provide instruction on:
 - .5 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.05 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.

1.06 TRAINING MATERIALS

- .1 Instructors to be responsible for content and quality.
- .2 Training materials to include:
 - .1 "Record" Contract Documents.
 - .2 Operating Manual.
 - .3 Maintenance Manual.
 - .4 Management Manual.
 - .5 TAB and PV 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.
 - .1 Supplement training materials:
 - .2 Transparencies for overhead projectors.
 - .3 Multimedia presentations.
 - .4 Manufacturer's training videos.
 - .5 Equipment models.

1.07 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours.
- .3 Training to be completed prior to acceptance of facility.

1.08 RESPONSIBILITIES

- .1 Be responsible for:
 - .1 Implementation of training activities,
 - .2 Coordination among instructors,
 - .3 Quality of training, training materials,
 - .4 Commissioning Authority (CxA) will evaluate training and materials.
- .2 Upon completion of training, provide written report, signed by Instructors, witnessed by Commissioning Authority (CxA).

1.09 TRAINING CONTENT

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
 - .1 Content includes:
 - .2 Review of facility and occupancy profile.
 - .3 Functional requirements.
 - .4 System philosophy, limitations of systems and emergency procedures.

- .5 Review of system layout, equipment, components and controls.
 - .6 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
 - .7 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.
 - .8 Maintenance and servicing.
 - .9 Trouble-shooting diagnosis.
 - .10 Inter-Action among systems during integrated operation.
 - .11 Review of O&M documentation.
- .2 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

END OF SECTION