



FACILITIES MANAGEMENT

OPEN CALL FOR BIDS

FOR

**VAR-505-23: St Johns
Campus Arc Flash
Corrective Work
Package #1**

Request for Open Call Number: **TFM-045-26**

Issued: September 10, 2026

Submission Deadline: **Thursday, October 8, 2026
@ 3:00PM NST**

REQUEST FOR OPEN CALL FOR BIDS INFORMATION SHEET

Request for Open Call			
Title:	VAR-505-23: St Johns Campus Arc Flash Corrective Work Package #1		
Open Call #:	TFM-045-26	Issue Date:	September 10, 2026
Non-Mandatory Site Visit:	Location: 14 Phelan Rd, St. John's, NL A1B 1T5, Room: FM- 2032, 10am NST		September 24, 2026
Questions Deadline:	Seven (7) days prior to closing time, at 3:00pm (NST).	Closing Date & Time: Bid Submission Format: Opening Date, Time & Location:	Thursday October 8, 2026 @ 3:00 pm NST opencalls@mun.ca Thursday, October 8, 2026 @ 3:30 pm NST Via Conference line: 1-416-915-6530 (toll free) Access Code: 2774 352 7444 Attendee ID: Please press Pound(#)
Bids Irrevocable Period after Submission Deadline:			60 days (See section 1.6)
Bid Submission: Responses to this solicitation must be submitted by email to opencalls@mun.ca Email subject line must read: <u>BID SUBMISSION: TFM-045-26 VAR-505-23: St Johns Campus Arc Flash Corrective Work Package #1</u> PLEASE NOTE 1. Addition of Section 1.11 in Part 1. 2. The Stipulated Price Contract has been updated as of January 2026. Vendors are encouraged to take note of these updates.			
Inquiries and Communication			

Inquiries and communication: Strategic Procurement Office, Memorial University of Newfoundland, opencalls@mun.ca. Inquiries accepted only via email. No phone calls will be accepted. **Please reference** open call Title and Open Call # from above, ie: TFM-045-26 VAR-505-23: St Johns Campus Arc Flash Corrective Work Package #1 in subject line. Emails not containing this requirement information in the subject line will NOT receive a response.
Bids submitted by fax, mail, courier, drop off or by any other means of delivery other than by email stated above shall not be accepted.

ABOUT MEMORIAL UNIVERSITY

As Newfoundland and Labrador's only university, Memorial has a special obligation to the people of this province. Established as a memorial to the Newfoundlanders who lost their lives on active service during the First and Second World Wars, Memorial University draws inspiration from these shattering sacrifices of the past as we help to build a better future for our province, our country and our world.

We are a multi-campus, multi-disciplinary, public university committed to excellence in teaching and learning, research and scholarship, and to public engagement and service. We strive to have national and global impact, while fulfilling our social mandate to provide access to university education for the people of the province and to contribute to the social, cultural, scientific and economic development of Newfoundland and Labrador and beyond.

The Memorial experience goes beyond academics; it invites a discovery of self, community and place. At Memorial, we celebrate our unique identity through the stories of our people – the work of scholars and educators, the ingenuity of students, the achievements of alumni – and the impact we collectively make in the province, the country and the world. Memorial is the natural place where people and ideas become.

Memorial University has more than 18,500 students and 3,600 faculty and staff spread across four campuses and nearly 100,000 alumni active throughout the world. From local endeavors to research projects of national importance, Memorial's impact is felt far and wide.

Mission, Vision and Values

Vision

Memorial University will be one of the most distinguished public universities in Canada and beyond, and will fulfill its special obligation to the people of Newfoundland and Labrador.

Mission

Memorial University is an inclusive community dedicated to innovation and excellence in teaching and learning, research, scholarship, creative activity, service and public engagement.

Memorial welcomes and supports students and scholars from all over the world and contributes knowledge and expertise locally, nationally and internationally.

Values

Excellence: Encouraging and promoting excellence through innovation and creativity, rigor and pragmatism.

Integrity: Being honest and ethical in all interactions, maintaining the highest ethical standards in teaching, research, public engagement and service.

Collegiality: Engaging others with respect, openness and trust in pursuit of a common purpose, having regard for individuals, ideals and the institution as a whole.

Inclusiveness and diversity: Embracing and acting on responsibility to guarantee diversity and equity.

Responsiveness: Being receptive to individuals and communities.

Accountability: Accepting responsibility for achievement of common goals and objectives.

Freedom and Discovery: Supporting the freedom to pursue knowledge that is based on individual and collective intelligence, curiosity, ingenuity and creativity.

Recognition: Acknowledging, tangibly, all aspects of university enterprise including teaching and learning, research, scholarship, creative activity and public engagement.

Responsibility to place: Valuing and fulfilling the special obligation to the people of Newfoundland and Labrador by supporting and building capacity for excellence that:

- addresses needs and opportunities for Newfoundland and Labrador;
- engages the university community on matters of national and international significance;
- produces and delivers academic programs of national and international calibre; and,
- Recognizes the dynamic opportunities presented by a multi-campus institution.

Responsibility to learners: Recognizing students as a first priority and providing the environment and support to ensure their academic and personal success.

Interdisciplinary collaboration: Supporting overarching themes in all pursuits that cut across academic units and address significant opportunities and challenges for which Memorial is particularly well positioned to build nationally and internationally recognized capacity.

Sustainability: Acting in a manner that is environmentally, economically and socially sustainable in administration, academic and research programs.

Memorial's exceptional staff and students contribute to the vitality and positive environment of the university through active community engagement. Memorial University has always been a publicly engaged institution. Since the founding of the University in 1949, the work of many of Memorial's students, faculty and staff has emphasized the importance of strong, sustained partnerships with members of the public of Newfoundland and Labrador and beyond.

Faculty and Staff

Memorial is one of the largest employers in the province, with approximately 3,600 faculty and staff. Memorial has been recognized as an Employer of Distinction by the Newfoundland and Labrador Employers' Council, which is reflective of its investment in comprehensive benefits, services such as childcare and recreation facilities, emphasis on work-life balance, and its vibrant work environment.

Governance and Administration

The management, administration and control of the property, revenue, business and affairs of the University are vested in a Board of Regents. The Board is appointed under the *Memorial University Act* and is responsible for the management, administration, and control of the property, revenue, business and affairs of the university. Matters of an academic character are in general charge of the Senate of the University.

For more information on Memorial University of Newfoundland, please visit:
Memorial's home page: <http://www.mun.ca/>

Territory Acknowledgements at Memorial:

We acknowledge that the lands on which Memorial University's Campus are situated are in the traditional territories of diverse Indigenous groups and we acknowledge with respect the diverse histories and cultures of the Beothuk, *Mi'kmaq*, *Innu*, and *Inuit of this province*.

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END OF SECTION

PART 1 – SUBMISSION INSTRUCTIONS

1.1 Bids to be Submitted on Time

Bids must be submitted as set out above on or before the Submission Deadline. Bids submitted after the Submission Deadline will be rejected. Onus and responsibility rest solely with the bidder to submit its bid to the email indicated in the Open Call for Bids on or before the Submission Deadline. The Owner does not accept any responsibility for any bids submitted by means other than the email listed above. Bidders making submissions near the deadline do so at their own risk due server availability. The time for the closing will be determined according to the inbox, time stamp on opencalls@mun.ca.

Bids received after the closing time based on this time stamp, will NOT be considered.

1.2 Bids to be Submitted in Prescribed Format

- Bidders should submit **one (1)** email submission in PDF format.
- **Please note: File size cannot exceed 15 MB. Otherwise server may reject bid submission due to size.**
- **Bids submitted by fax, mail, courier, drop off or by any other means of delivery other than by email stated above shall not be accepted.**

1.3 Amendment/Revision of Bids

Bidders shall amend their bids after they have been submitted if, and only if, the amendment is emailed prior to the Submission Deadline marked **BID SUBMISSION AMENDMENT** followed by open call number and name. Previous submissions shall be cancelled and the bid submission with the most recent date and time shall be considered the final bid.

Bidders shall revise **APPENDIX C- Pricing form** only by submitting an updated **Pricing Form** prior to submission deadline. The revised **Pricing Form** shall replace the **Pricing Form** received with the original bid submission.

PLEASE NOTE: **APPENDIX C – Pricing Form** is the only section of the bid that can be revised independently. All other amendments/revisions shall require completing a new bid submission.

Bidders may revise their bid by email: opencalls@mun.ca

The Owner does not accept any responsibility for amendments submitted by means other than the email listed above. Bidders making submission near the deadline do so at their own risk due to service availability. The time for the closing will be determined according to the inbox, time stamp on opencalls@mun.ca. Amendments to bids received after the closing time base on this times stamp, will NOT be considered.

Email inquiries and requests for clarification shall be accepted up to **seven (7) days (3:00pm NST)** prior to the closing time. Inquiries and requests for clarification received after this date shall not be addressed. The Strategic Procurement Office will be the only official source of

information regarding this Open Call for Bids and information from any other source shall be considered unofficial and may not be correct.

1.4 Amendment of Open Call for Bid Documents

To ensure consistency and quality in the information provided to bidders the Owner shall provide, by way of amendment to this Open Call for Bids, in the form of an addendum, any relevant information with respect to the Open Call inquiries received in writing without revealing the source of those inquiries. Bidders are cautioned that it is their responsibility to ensure that they receive all information relevant to this Open Call. The Owner shall not be responsible for bidders who fail to inform themselves regarding the scope and nature of the work. The Owner shall publish all amendments on Memorial University's current service providers: MERX: www.merx.com, BIDS: www.bids.ca and PODS: www.pods.net. In addition, all amendments will be published on https://www.mun.ca/finance/strategic_procurement/. Bidders should check on a regular basis for Open Call updates. Bidders are solely responsible for ensuring they are aware of and have complied with all amendments by tender closing time. In the event there is a discrepancy between MERX, BIDS, and PODS and the official website https://www.mun.ca/finance/strategic_procurement/ website, the https://www.mun.ca/finance/strategic_procurement/ is the official website. Bidders are welcome to register their email address through opencalls@mun.ca to receive addendum notifications from Open Calls as a matter of courtesy. This does not relieve any Bidder of their responsibility to ensure all addenda has been received.

1.5 Withdrawal of Bids

Bidders may withdraw their bids prior to the Submission Deadline. To withdraw a bid, a notice of withdrawal must be sent to the opencalls@mun.ca email address prior to the Submission Deadline. The Owner is under no obligation to return withdrawn bids.

1.6 Bids Irrevocable after Submission Deadline

Bids shall be irrevocable for a period of **60** days running from the moment that the Submission Deadline passes.

1.7 Delivery

Time is of the essence and delivery schedule(s) are legally binding. Memorial University reserves the right to assess penalties or cancel awards to Bidders who fail to meet the stated delivery or completion dates. Delivery of all materials and services must be DAP (delivered at place) or DDP (delivered duty paid (all locations) and local environs).

1.8 Signature

Memorial University, in consideration of section 11 of the Electronic Commerce Act, confirms its acceptance of electronic signatures, or other acceptable form of electronic consent, in satisfaction of the signature requirement for bid submissions. The electronic form of signature or consent must be directly related to the relevant bid submission at issue and must be reliable, in a manner as determined by Memorial University, for the purpose of identifying the person submitting the bid response. By submitting a bid under this process, the bidder confirms that the signatory has the appropriate and proper authority to bind the bidder to its submission, a confirmation upon which Memorial University relies in the

processing of the bid submission.

Bidders must complete Appendix B –Submission Form. Any bids received without Appendix B completed will be deemed non-complaint.

1.9 Closure

In the event that the University is closed earlier than normally expected prior to a scheduled open calls closing for that day, or for the full day, the closing date for those open calls will be extended to the next business day for the University at the same time as listed originally.

1.10 Corporations Act

The Corporations Act of Newfoundland and Labrador requires that an extra-provincial company be registered before it begins or carries on business in the Province. If your company is not registered, please apply for the appropriate forms and procedures to:

Commercial Registrations Division
Dept of Government Services, PO Box 8700 St John's, NL Canada A1B 4J6
Phone: 709-729-3317, Fax: 709-729-0232
Website: http://www.gs.gov.nl.ca/registries/companies/corp_art_inc.html

1.11 Stipulated Price Contract

The successful bidder will be required to sign the *Department of Facilities Management General Conditions and Agreement Between Owner and Contractor for the Stipulated Price Contract* upon receipt of the pre-award letter.

[End of Part 1]

PART 2 – EVALUATION AND AWARD

2.0 Stages of Evaluation

The Owner will conduct the evaluation of bids in the following stages:

2.1.0 Stage I – Mandatory Submission Requirements

Stage I will consist of a review to determine which bids comply with all of the mandatory submission requirements. Bids that do not comply with all of the mandatory submission requirements as of the Submission Deadline will, subject to the express and implied rights of the Owner, be disqualified and not evaluated further.

2.1.1 Stage II – Mandatory Technical Requirements

Stage II will consist of a review to determine which bids comply with all of the mandatory technical requirements. Bids that do not comply with all of the mandatory technical requirements as of the Submission Deadline will, subject to the express and implied rights of the Owner, be disqualified and not evaluated further. The mandatory technical requirements are listed in Appendix A - Specifications.

2.1.2 Stage III – Pricing

Stage III will consist of a scoring of the submitted pricing of each compliant bid in accordance with the evaluation method set out in the Pricing Form (Appendix C). The evaluation of price will be undertaken after the evaluation of mandatory requirements has been completed.

2.2 No Amendment to Forms

Other than inserting the information requested on the mandatory submission forms set out in the Open Call, a bidder may not make any changes to any of the forms. Any bid containing any such changes, whether on the face of the form or elsewhere in the bid, shall be disqualified.

2.3 Selection of Lowest Compliant Bidder as Preferred Supplier

Subject to the Owner's reserved rights, the compliant bidder with the lowest pricing will be the preferred supplier, and will be selected to enter into the Agreement in accordance with the following section. In the event of a tie, the preferred supplier will be determined by way of a coin toss, in accordance with the Public Procurement Policy. Provincial suppliers, suppliers with a place of business in Newfoundland and Labrador, will be given provincial supplier preference provision. This mandates an allowance of ten percent for provincial suppliers for all procurement below trade agreement thresholds.

Please note, the supplier preference does not apply when the estimated value of the commodity is above the trade agreement threshold shown in the following table.

Public Body	Thresholds			
	Goods	Services	Public Works	Lease of Space
Memorial University	\$139,000	\$139,000	\$347,400	\$100,000

2.4 Notice to Bidder and Execution of Agreement

Notice of selection by the Owner to the preferred supplier shall be in writing. The preferred supplier shall execute the Agreement, the form and content of which will be mutually agreed upon between the parties and satisfy any other applicable conditions of this open call within fifteen (15) days of notice of selection. This provision is solely for the benefit of the Owner and may be waived by the Owner.

2.5 Failure to Enter into Agreement

If a selected bidder fails to execute the Agreement or satisfy the pre-conditions of award listed in the Open Call Particulars within fifteen (15) days of notice of selection the Owner may, without incurring any liability, proceed with the selection of another bidder and pursue all remedies available to the Owner.

2.6 Payment Terms

The University's standard payment terms are net 30 days after delivery of goods, or net 15 days after successful completion of installation as applicable. In the case of services, payment terms are also net 30 days after successful completion of the service. These terms shall also apply in the case of sub-contracted items. Prepayments will not be considered unless the supplier provides an irrevocable standby letter of credit, or the supplier provides a credit reference from its banker (in conjunction with a 50% materials and labour bond and a 50% performance bond) satisfactory to the Director of Financial and Administrative Services.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE OCB PROCESS

3.1 Open Call Incorporated into Bid

All of the provisions of this Open call are deemed to be accepted by each bidder and incorporated into each bidder's bid. A bidder who submits conditions, options, variations or contingent statements to the terms as set out in this Open call, either as part of its bid or after receiving notice of selection, unless otherwise indicated, shall be disqualified.

3.2 Bidders to Follow Instructions

Bidders should structure their bids in accordance with the instructions in this Open call. Where information is requested in this Open Call, any response made in a bid should reference the applicable section numbers of this Open Call.

3.3 Bids in English

All bids are to be in English only.

3.4 No Incorporation by Reference

The entire content of the bidder's bid should be submitted in a fixed form, and links to the content of websites or other external documents referred to in the bidder's bid but not attached will not be considered to form part of its bid.

3.5 References and Past Performance

In the evaluation process, the Owner may consider information provided by the bidder's references and may also consider the bidder's past performance or conduct on previous contracts with the Owner or other institutions.

3.6 Information in Open Call Only an Estimate

The Owner and its advisors make no representation, warranty or guarantee as to the accuracy of the information contained in this Open Call or issued by way of addenda. Any quantities shown or data contained in this Open Call or provided by way of addenda are estimates only, and are for the sole purpose of indicating to bidders the general scale and scope of the Deliverables. It is the bidder's responsibility to obtain all the information necessary to prepare a bid in response to this Open Call.

3.7 Bidders to Bear Their Own Costs

The bidder will bear all costs associated with or incurred in the preparation and presentation of its bid, including, if applicable, costs incurred for interviews or demonstrations.

3.8 Bid to be Retained by the Owner

The Owner will not return the bid or any accompanying documentation or samples submitted by a bidder.

3.9 Trade Agreements

Bidders should note that procurements falling within the scope of the Canadian Free Trade Agreement, and/or the Canada-European Union Comprehensive Economic Trade Agreement are subject to those trade agreements but that the rights and obligations of the parties will be governed by the specific terms of this Open Call.

3.10 No Guarantee of Volume of Work or Exclusivity of Contract

The Owner makes no guarantee of the value or volume of work to be assigned to the preferred supplier. The Agreement will not be an exclusive contract for the provision of the described Deliverables. The Owner may contract with others for goods and services the same as or similar to the Deliverables or may obtain such goods and services internally.

3.11 Communication After Issuance of Open Call

Bidders shall promptly examine all of the documents comprising this Open Call, and

- (a) shall report any errors, omissions or ambiguities; and
- (b) may direct questions or seek additional information in writing by email to opencalls@mun.ca on or before the Deadline for Questions. All questions or comments submitted by bidders by email to the Open Call Contact shall be deemed to be received once the email has entered into the Open Call Contact's email inbox. No such communications are to be directed to anyone other than the Open Call Contact, and the Owner shall not be responsible for any information provided by or obtained from any source other than the Strategic Procurement Office. The Owner is under no obligation to provide additional information. It is the responsibility of the bidder to seek clarification from the Open Call Contact on any matter it considers to be unclear. The Owner shall not be responsible for any misunderstanding on the part of the bidder concerning this Open Call or its process.

3.12 All New Information to Bidders by Way of Addenda

This Open Call may be amended only by addendum in accordance with this section. If the Owner, for any reason, determines that it is necessary to provide additional information relating to this Open Call, such information will be communicated to all bidders by addenda. Each addendum forms an integral part of this Open Call and may contain important information, including significant changes to this Open Call. Bidders are responsible for obtaining all addenda issued by the Owner. In the Submission Form (Appendix B), bidders MUST confirm their receipt of all addenda by setting out the number of each addendum in the space provided.

3.13 Addenda and Extension of Submission Deadline

Any addendum issued within three (3) calendar days of the Open Call for Bids closing (Including on closing day) will extend closing by a reasonable period to be determined by Memorial University.

When evaluating bids, the Owner may request further information from the bidder or third parties in order to verify, clarify or supplement the information provided in the bidder's bid. The response received by the Owner shall, if accepted by the Owner, form an integral part of the bidder's bid.

3.14 Notification to Other Bidders

In accordance with section 30 of the *Public Procurement Regulations*, once the Agreement is awarded by the Owner, the outcome of the Open Call will be publicly posted at https://www.mun.ca/finance/strategic_procurement/. There will be no issuing of regret letters.

3.15 Debriefing

In accordance with the Public Procurement Act and Regulations, unsuccessful bidders may request a debriefing within ten (10) business days after the award has been posted. The request must be sent in writing to the Open call contact. The intent of the debriefing information session is to provide the bidder an overview of their bid and why it was unsuccessful and to help the bidder in presenting a better bid in subsequent procurement opportunities. The debriefing process is not for the purpose of providing an opportunity to challenge the procurement process or its outcome. A debriefing shall not disclose information regarding another bidder's bid.

3.16 Supplier Complaint Process

If a bidder wishes to register a complaint with respect to the Open Call process, the complaint should be provided in writing and within the parameters established by section 25 of the Public Procurement Regulations, as amended. The notice must provide a detailed explanation of the bidder's concerns with the procurement process or its outcome, in addition to such other information as may be required by the *Regulations*. Bidders should note that these complaint procedures are separate and distinct from any dispute resolution processes that may be provided for under applicable trade agreements. If a bidder wishes to dispute a matter under an applicable trade agreement, the bidder must follow the process set out in the trade agreement.

3.17 Conflict of Interest and Prohibited Conduct

The Owner may disqualify a bidder for any conduct, situation or circumstances, determined by the Owner, in its sole and absolute discretion, that constitutes a conflict of interest.

The Owner reserves the right to disqualify any bidder that in the Owner's sole opinion has an actual or potential conflict of interest or an unfair advantage.

For the purposes of this Open Call, the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where in relation to the Open Call process, the bidder has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to: (i) having, or having access to, confidential information of the Owner in the preparation of its bid that is not available to other bidders, (ii) communicating with any person with a view to influencing preferred treatment in the Open Call process (including but not limited to the lobbying of decision makers involved in the Open Call process), or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive Open Call process or render that process non-competitive or unfair.

Bidders are required to disclose, to the Open Call Contact, any potential or perceived conflict of interest issues prior to Open Call closing date and time.

3.18 Disqualification for Prohibited Conduct

The Owner may disqualify a bidder, rescind a notification of selection or terminate a contract subsequently entered into if the Owner determines that the bidder has engaged in any conduct prohibited by this Open Call.

3.19 Bidder Not to Communicate with Media

Bidders must not at any time directly or indirectly communicate with the media in relation to this Open Call or any agreement entered into pursuant to this Open Call without first obtaining the written permission of the Open Call Contact.

3.20 No Lobbying

Bidders must not, in relation to this Open Call or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful bidder(s).

3.21 Illegal or Unethical Conduct

Bidders must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion or collusion. Bidders must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any employees, officers, agents, elected or appointed officials or other representatives of the Owner; deceitfulness; submitting bids containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this Open Call.

3.22 Past Performance or Past Conduct

The Owner may prohibit a supplier from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, including but not limited to the following:

- (a) illegal or unethical conduct as described above;
- (b) the refusal of the supplier to honor submitted pricing or other commitments; or
- (c) any conduct, situation or circumstance determined by the Owner, in its sole and absolute discretion, to have constituted a Conflict of Interest.
- (d) performance on other contracts, including the efficiency and workmanship as well as the extent to which the Bidders performed the Work in accordance with the contractual clauses and conditions, is sufficiently poor to jeopardize the successful completion of the project being bid on, by way of previous contractor performance evaluations.

In addition, the Owner may suspend the bidding privileges of a supplier with regard to non-compliant or substandard performance in accordance with section 26 of the *Public Procurement Regulations*.

3.23 Confidential Information of the Owner

All information provided by or obtained from the Owner in any form in connection with this Open Call either before or after the issuance of this Open Call:

- (a) is the sole property of the Owner and must be treated as confidential;
- (b) is not to be used for any purpose other than replying to this Open Call and the performance of the Agreement;
- (c) must not be disclosed without prior written authorization from the Owner; and
- (d) must be returned by the bidder to the Owner immediately upon the request of the Owner.

3.24 Confidential Information of Proponent

This procurement process is subject to the *Access to Information and Protection of Privacy Act, 2015 (ATIPPA, 2015)*. A Proponent must identify any information in its Proposal or any accompanying documentation supplied in confidence for which confidentiality is requested to be maintained by the Owner. The confidentiality of such information will be maintained by the Owner, except as otherwise required by law or by order of a court or tribunal. Proponents are advised that their Proposal will, as necessary, be disclosed, on a confidential basis, to advisers retained by the Owner to advise or assist with the Request for Proposal process, including the evaluation of Proposals.

The Proponent agrees that any specific information in its submission that may qualify for an exemption from disclosure under subsection 39(1) of the *ATIPPA, 2015* has been identified in its submission. If no specific information has been identified it is assumed that, in the opinion of the Proponent, there is no specific information that qualifies for an exemption under the subsection 39(1) of the *ATIPPA, 2015*.

Contracting with the Owner is a public process. Information provided through this process will be disclosed when requested under the *ATIPPA, 2015*, except where disclosure of that information is harmful to the business' interests, as set out in the three-part test in the *ATIPPA, 2015*.

Information, including the financial value of a contract resulting from this procurement process, will be publicly released as part of the award notification process, in accordance with section 30 of the *Public Procurement Regulations*.

If a Proponent has any questions about the collection and use of personal information pursuant to this Request for Proposal, questions are to be submitted to the Request for Proposal Contact. Further information relating to subsection 39(1) of the *ATIPPA, 2015* is provided in guidance documents available through the Office of the Information and Privacy Commissioner at <https://oipc.nl.ca/guidance/documents>.

3.25 Reserved Rights of the Owner

The Owner reserves the right to:

- (a) make public the names of any or all bidders as well as bid price and value of contract;
- (b) make changes, including substantial changes, to this Open Call provided that those changes are issued by way of addendum in the manner set out in this Open Call; request written clarification or the submission of supplementary written information in relation to the clarification request from any bidder and incorporate a bidder's response to that request for clarification into the bidder's bid. This shall not be an opportunity for bid repair;
- (c) assess a bidder's bid on the basis of: (i) a financial analysis determining the actual cost of the bid when considering factors including quality, service, price and transition costs arising from the replacement of existing goods, services, practices, methodologies and infrastructure (howsoever originally established); and (ii) in addition to any other evaluation criteria or considerations set out in this Open Call consider any other relevant information that arises during this Open call process; and (iii) Unbalanced bids, as determined by the Owner, will be rejected (i.e. prices must fairly represent proper compensation for various items of work to be done).
- (d) waive minor irregularities and formalities and accept bids that substantially comply with the requirements of this Open Call ;
- (e) verify with any bidder or with a third party any information set out in a bid;
- (f) check references other than those provided by any bidder;
- (g) disqualify a bidder, rescind a notice of selection or terminate a contract subsequently entered into if the bidder has engaged in any conduct that breaches the process rules or otherwise compromises or may be seen to compromise the competitive process;
- (h) cancel this Open Call process at any stage;
- (i) cancel this Open Call process at any stage and issue a new Open Call for the same or similar deliverables;
- (j) accept any bid in whole or in part; or
- (k) reject any or all bids;
- (l) not necessarily select the lowest or any bidder;

And these reserved rights are in addition to any other express rights or any other rights that may be implied in the circumstances.

3.26 Limitation of Liability

By submitting a bid, each bidder agrees that:

- (a) neither the Owner nor any of its employees, officers, agents, elected or appointed officials,

advisors or representatives will be liable, under any circumstances, for any claim arising out of this Open Call process including but not limited to costs of preparation of the bid, loss of profits, loss of opportunity or for any other claim; and

- (b) the bidder waives any right to or claim for any compensation of any kind whatsoever, including claims for costs of preparation of the bid, loss of profit or loss of opportunity by reason of the Owner's decision not to accept the bid submitted by the bidder for any reason, the Owner's decision to enter into an agreement with any other bidder or to cancel this bidding process, and the bidder shall be deemed to have agreed to waive such right or claim.

3.31 Governing Law and Interpretation

These Terms and Conditions of the Open Call Process:

- (a) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);
- (b) are non-exhaustive and shall not be construed as intending to limit the pre-existing rights of the Owner; and
- (c) are to be governed by and construed in accordance with the laws of the Province of Newfoundland & Labrador and the federal laws of Canada applicable therein.

3.32 Facility Compliance Requirement

- (a) Equipment, power tools, instruments and appliances intended for use within Memorial University's facilities must comply with all regulatory requirements related to use and/or installation in University facilities. This includes but is not limited to certification/listing by recognized agencies, Pressure Vessel Act of Newfoundland and Labrador and similar.
- (b) Items provided related to this open call that receive power from the University's electrical system must be certified or listed for use within Canada by a recognized agency such as Canadian Standards Association (CSA) or Underwriter Laboratories Canada (ULC). A full list of agencies recognized by Memorial University is available upon request.
- (c) Equipment, tools, instruments and appliances that generate pressure may require registration as a pressure system with the Province of Newfoundland and Labrador. Compliance with the Boiler, Pressure Vessel and Compressed Gas Regulations under the Public Safety Act of Newfoundland and Labrador and the Boiler, Pressure Vessel, and Pressure Piping Code CSA B51:19 shall be demonstrated.
- (d) The vendor is responsible for all costs associated with ensuring the system is compliant with legislative requirements and for the application and registration processes. Field certifications may be considered but all costs and efforts for such scenarios are the responsibility of the vendor.

[End of Part 3]

PART 4 – ENVIRONMENTAL HEALTH AND SAFETY REQUIREMENTS

- 4.1** Maintaining a healthy and safe environment for all members of the campus community, as well as visitors, is a priority with the University. This involves a commitment from all sectors of the campus community and extends to outside agencies having occasion to come on campus to conduct business.

The following requirements will apply to all work undertaken by contractors and service personnel on any University property or for any work undertaken on behalf of the Owner.

4.1.0 Regulations, Codes and Standards

Contractors shall be familiar with and abide by provisions of various safety codes and standards applicable to the work performed and should refer to:

The Contractor shall be completely responsible for the safety of the Work as it applies to protection of the public and property and construction of the Work.

The codes that must be followed and enforced for safety are:

- (a) The National Building Code, Part 8, Safety Measures at Construction and Demolition Sites (Latest Edition);
- (b) Canadian Code for Construction Safety (Latest Edition) as issued by the Associate Committee of the National Building Code;
- (c) The Occupational Health and Safety Act of Newfoundland and Labrador (most current version) and Regulations.

In particular, strict adherence to the Provincial Occupational Health and Safety Act and Regulations and with the National Building Code of Canada, Part 8 is required.

4.2.0 General Health and Safety Regulations

- (a) Contractors/service agencies shall ensure that members of the campus community are not endangered by any work or process in which they may be engaged. Work areas shall be adequately barricaded, and if dust or fumes are generated, suitable enclosures shall be installed to contain such emissions.
- (b) No material shall be stored in such a way as to obstruct walkways or represent a danger to pedestrian or vehicular traffic.
- (c) Adequate protection shall be provided to prevent the possibility of goods falling from scaffolding or elevated areas. Areas where goods are being loaded or off loaded shall be barricaded or otherwise protected to prevent unauthorized entry. Appropriate warning signs must be posted.
- (d) The work areas must be kept reasonably clean and free from debris which could constitute a fire hazard. Care must be taken to ensure that the work process does not activate fire

alarm detection devices. (Generation of dust and fumes can activate smoke detectors causing a false alarm).

- (e) Due consideration shall be given to fire safety in buildings. Flammable goods must be kept away from sources of ignition. No work involving the use of open flame devices must be undertaken around flammable solvents or gases.
- (f) Some University buildings contain asbestos and other hazardous materials. Do not alter or disturb any goods believed to contain asbestos (unless this is a duly authorized part of the project). Consult with University officials before proceeding with any work.
- (g) Safety Data Sheets shall be procured for any hazardous product used on campus. Such sheets shall be made readily available for consultation as required under the Workplace Hazardous Materials Information System (WHMIS).
- (h) Contractors are required to complete the online training module for Memorials Zero Energy Isolation Program (ZEIP) before mobilizing on site. Training can be accessed via the link: <https://ooc.citl.mun.ca/enrol/index.php?id=21>.
 - First time users must create an account. Click 'Create new account'. Enter required information and click 'Create my new account'.
 - A confirmation email will be sent to the email you entered when creating your account. Open that email and click the link it contains.
 - Click 'Zero energy isolation Program for Contractors'.
 - To enroll in the training, enter the enrollment key: 7653. Click 'Enroll me'.
 - Complete the training according to the instructions provided in the course.
 - Successful completion certificates shall be available during auditing by Environmental Health & Safety.

NOTE: The above requirements are not to be considered all-inclusive and are considered to be complementary to the safety requirements outlined in the agreement between the University and Supplier. Certain conditions and circumstances may require adherence to additional safety requirements.

As a general requirement, contract/service personnel are expected to conduct all work on campus in a professional and safe manner and to give priority to the safety and welfare of members of the campus community.

4.3.0 Contractor Safety Management

- 4.3.1** All Contractors and Subcontractors to be used by the Contractor in the execution of the Contract shall be required to submit confirmation of a current third party occupational health and safety program certification (Letter of Assurance). These may include, but not be limited to, Certificate of Recognition (COR), OHSAS 18001, and CSA Z.1000.
- 4.3.2** All Contractors and Subcontractors shall be required to review and follow all requirements of sections 4.4.5.2. below.

4.3.3 Prior to Contract award, the Contractor will be required to provide the Information requested in 4.4.5.2. below.

4.3.4 The University reserves the right to stop any work or portion of work where no documentation can be produced on site which identifies the hazards presented by a piece of work, safe work procedures for work or certification of employees performing work. The Contractor is liable for any costs incurred by affected parties associated with such a stoppage.

4.4.0 Contractor Safety Management Element

4.4.1 Purpose

This element establishes the requirements for the administration and monitoring of contractor health and safety programs and activities at Memorial University. These measures shall ensure that contractors understand their collective responsibility with respect to the Occupational Health & Safety Act and Regulations, Memorial University policy and this element.

4.4.2 Scope

This procedure shall apply to all work done for Memorial University of Newfoundland with respect to the provision of services as outlined below. Memorial University reserves the right to exempt a Contractor from this element, in whole or in part, based upon an evaluation of the risk of the work being conducted. This evaluation must comply with the hazard identification and risk management element.

4.4.3 Definitions

Act: Newfoundland & Labrador Occupational Health & Safety Act, latest edition.

Contract: A documented agreement between Memorial University and a contractor.

Contractor: The principal contractor, person, partnership, or corporation bound to execute the work under the contract and defined as such in the agreement is responsible for the supervision of the work so as to ensure the work is carried out in accordance with the contract.

Project Management Team: The group assigned by the University to act on behalf of the owner with respect to the execution of Contractor work.

Principal Contractor: The person primarily responsible for the carrying out of a contract.

Regulations: Newfoundland & Labrador Occupational Health & Safety Regulations, latest edition.

Subcontractor: A person, firm or corporation having a direct contract with the Contractor or subcontractor(s) to perform a part or parts of the work included in the contract, or to supply products worked to a special design according to the contract documents, but does not include one who merely supplies products not so worked.

Owner: The Owner, Engineer/Architect are the persons, firms or corporation identified as such in the Contract. The term Owner, Engineer/Architect means, respectively, each of the Owner, Engineer/Architect and their authorized representatives as designated by each such party in writing.

Work: The services and job procedure completion that is described in the contract.

4.4.4 Roles and Responsibilities

4.4.4.1 Project Management Team, including Environmental Health & Safety

Will monitor the Contractor's performance for health and safety compliance. Monitoring activities may include but are not limited to:

- planned and unplanned workplace inspections;
- attendance of meetings;
- communications of safety related issues and topics, as deemed necessary;
- review of contractor records, inspections, work practices and documentation; and
- complete audits to verify that contractors and subcontractors are meeting their legislative, procedural and contractual responsibilities.

4.4.4.2 Contractors

Will comply with applicable Federal and Provincial legislation and applicable MUN safety procedures. Contractor responsibilities include but not limited to:

- report all incidents immediately to the required University project team followed by a written incident report within 24 hours;
- be responsible for the safety of subcontractors including those not under their employ;
- stop work if the conditions are such that work cannot be performed safely;
- perform evaluation, monitoring of the workplace to identify potential hazards and associated risks and ensure corrective actions are implemented;
- ensure daily task specific hazard assessments are completed; and
- maintain the accountability of persons responsible for the reporting and correction of hazards.

4.4.5 Procedure

4.4.5.1 Considerations prior to signing of contract

Prior to signing of contract, the preferred General Contractor shall provide proof of compliance with 4.4.4.2. within seven (7) calendar days. After a pre-signing start up meeting, the General Contractor shall provide proof of compliance of themselves and their subcontractors with 4.4.4.2. as well as the information requested in Section 4.4.4.2.(a)(b).

4.4.5.2 Requirements

All Contractors, and their Subcontractors, shall be required to submit confirmation of a current third party occupational health and safety program certification (Letter of Assurance). These may include, but not be limited to, Certificate of Recognition (COR), OHSAS 18001, and CSA Z.1000.

Contractors shall also provide the following:

- (a) health and safety policy statement;
- (b) safety program table of contents; and
- (c) site hazard assessment;

The hazard assessment shall be updated by the General Contractor and re-submitted whenever the conditions, work practices or work forces change to the extent that new hazards can be identified.

In lieu of a Subcontractors 3rd party program, Contractors shall be required to integrate the Subcontractor(s) into the Contractors program and provide proof of same.

Memorial reserves the right to request and audit the full safety program of Contractors and Subcontractors and their associated documentation. This documentation may include, but not be limited to the following:

- (a) safety program and/or manual
- (b) applicable documented safe work practices;
- (c) inspection reports and schedules;
- (d) required employee safety training certifications and qualifications; and
- (e) updated list of OHS Committee and/or a worker health and safety representative, or workplace health and safety designate.

Request for submission shall be complied with within 7 calendar days of a written request from Memorial's Environmental Health and Safety unit.

Memorial reserves the right to:

- (a) Reject any Contractor that fails to meet the requirements or schedules outlined herein;
- (b) The University reserves the right to stop any work or portion of work where the risk presents an immediate danger.

4.4.5.3 Schedule of Submissions

General Contractors and their sub-contractors who have complied with 5.1.1 will be permitted to commence physical work on the site however no work shall be performed by the General Contractor, their sub-contractors until such a time as they comply with 5.1.1.

4.4.6 Post-Contract Evaluation

Environmental Health & Safety will determine the extent of the evaluation of the Contractor's safety performance at the completion of the contract. This evaluation will be conducted by way of a standard contractor safety evaluation form and will be supported by objective evidence documented during the term of the Contract. The records of the evaluation must be retained with the project owner.

4.5 Access To Site

4.5.1 All Contractors and Subcontractors to be used in the execution of the Contract shall give advance notification of when they will be on site. Any work to be performed outside of Regular Time must have advance approval of the Owner.

Any discontinuation of the Work which causes a Contractor or their Subcontractors to suspend operations onsite will require the following:

- Contractor/Subcontractors shall notify the Owner of the stop work date.
- Contractor/Subcontractors shall ensure the site is left in a safe and secure condition.
- Contractor/Subcontractors shall ensure that locks and tags on mechanical and/or electrical systems are removed and, where necessary, replaced by the University.
- Contractor/Subcontractors shall not return to site without expressed prior permission from the Owner.

[End of Part 4]

PART 5– GENERAL CONDITIONS

- 5.1** I/We hereby authorize the Owner to release names of Subcontractors, Suppliers and Manufacturers used in my/our Bid including those as listed in Appendix "D", where such information is requested from the Owner.
- 5.2** I/We understand that Bids that do not list major Subcontractors and Suppliers and Manufacturers where required in Appendix "D" may be rejected.
- 5.3** I/We reserve the right to substitute other Subcontractors and/or Suppliers and/or Manufacturers for any Subcontractor or Suppliers or Manufacturer withdrawing their Bid or becoming bankrupt after the date hereof. Any such substitutes shall be subject to the approval of the Owner and contingent upon evidence of withdrawal or bankruptcy satisfactory to the Owner.
- 5.4** I/We agree that upon approval by the Engineer/Architect, the Owner shall have the right to take possession of any part of the work upon its completion, except for minor deficiency items, and that such possession shall not necessarily constitute acceptance of that part of the work.
- 5.5** I/We understand and agree that the Owner may order changes to the work in the form of additions or deletions in accordance with the General Conditions, Supplementary General Conditions and the intent of the Contract Documents.
- 5.6** I/We understand and agree that the Unit Price Table in Appendix "C2" must be completed where indicated and the total amount included in my/our stipulated price for the total performance of the work under Part 4 of the Bid and Acceptance form. I/We understand that the Unit Prices include all costs and charges of every kind, including overhead and profit, to perform the items of work listed in Appendix "A". I/We also understand that these same Unit Prices will be used for additions or deletions to the actual measured quantities.
- 5.7** When Appendix "E" is included in the Open Call, I/we understand that bids which do not list project references, where required in Appendix "E", will be rejected.

5.8 Corporations Act

The Corporations Act of Newfoundland and Labrador requires that an extra-provincial company be registered before it begins or carries on business in the Province. If your company is not registered, please apply for the appropriate forms and procedures to:

Commercial Registrations Division
Dept. of Government Services, PO Box 8700
St John's, NL Canada A1B 4J6
Phone: 709-729-3317, Fax: 709-729-0232
Website: http://www.gs.gov.nl.ca/registries/companies/corp_art_inc.html

[End of Part 5]

Part 6 – Supplementary Terms and Conditions

- 6.1** The open call document consist of the Open Call and Acceptance Form, General Conditions of Contract, Supplementary General Conditions of Contract, Special Conditions, Campus Safety and Health Regulations, Contractors Performance Evaluation, Drawings, Specifications and any Addenda to the Contract Documents issued before the open call closing period.

6.2 Surety

6.2.1 Bid Surety

Bids shall be accompanied by a copy of a bid security by way of a Bid Bond from a surety company acceptable to the Owner and which is licensed to do business in the Province of Newfoundland and Labrador or a copy of a cheque in the amount of 10 percent of the bid price. Originals to be delivered to Memorial University post tender closing. Bid security will not be required for a total contract value of \$100,000 or less (**HST Excluded**), unless specifically called for in the contract documents. The bid security will be returned to the bidder upon receipt of the required Performance Bond and Labour and Materials Payment Bond as per 6.2.2 below.

The terms of the bid security will be invoked and the amount retained by the Owner if: the Tenderer fails to enter into a formal agreement, where one is specified, when notified of the award of the Contract within the tender validity period; or fails to provide the required Performance Bond and Labour and Materials Payment Bond within the time specified

6.2.2 Public Work's Surety

Within seven (7) days of the issuance of the letter of acceptance, the preferred Bidder shall obtain and deliver to the Owner a Performance Bond in the amount of 50 percent of the bid price (**HST Excluded**) which guarantees the successful and complete performance of the Work. The Performance Bond is required as a condition of bid award. In lieu of a Performance Bond an approved certified cheque in the amount of 10 percent of the bid price may, at their option, be accepted for retention by the Owner until the successful completion of the Contract. The certified cheque will be retained until satisfactory completion of the Work including the warranty period after which it will be returned to the Contractor. Performance Bond or other such security will not be required for a contract value of \$100,000 or less. No Work is to be undertaken while the above performance security remains outstanding.

Within seven (7) days of issuance of the letter of acceptance, the preferred Bidder shall obtain and deliver to the Owner a Labour and Materials Payment Bond in the amount of 50 percent of the bid price (**HST Excluded**). The Labour and Materials Payment Bond is required as a condition of the bid award. In lieu of a Labour and Materials Payment Bond, an approved certified cheque in the amount 10 percent of the bid price may, at their option, be accepted for retention by the Owner until successful completion of the Contract. The certified cheque will be retained until substantial completion of the Work as defined by the Mechanics Lien Act and upon receipt of an acceptable statutory declaration form stating that all labour and material obligations due and payable under the Work have been discharged, after which it will then be returned to the Contractor. Labour and Materials

Payment Bond or other such security will not be required for a contract value of \$100,000 or less. No Work is to be undertaken while the above labour and materials security remains outstanding.

No interest will be paid to the preferred Bidder for any certified cheques on deposit during the period of retention.

The cost of all bid, performance and labour and materials security shall be included in the bid price

6.3 Site Visit

A site visit may occur at the time and location identified on the Request for Open Calls for Bids Information Sheet.

Questions will not be answered at the site visit.

Before submitting a bid, Bidders may carefully examine the site of the Proposed Work and fully inform themselves of the existing condition and limitations. It is the responsibility of the Bidder to report any unsatisfactory conditions in writing which may adversely affect the proper completion of the work, to opencalls@mun.ca, at least **eight (8)** days before the open call closing date. Submission of a bid shall imply acceptance of previously completed Work and the conditions of the site, and the Contractor shall, therefore, be fully responsible for executing the Work in accordance with the Contract Documents.

6.4 Substitution of Materials

6.4.1 The open call shall be based upon using the materials or products as specified without substitution, unless there is an "or approved alternate" clause. Where two or more brand names are specified, the choice shall be left to the bidder. Where only one brand name is stated, there shall be no substitution.

6.4.2 Where the Specifications include the "or approved alternate" clause, substitutions may be proposed provided that the request for a substitution is received in writing at least eight (8) days (3:00pm NST) prior to the open call closing date and shall clearly define and describe the product for which the substitution is requested. Submissions shall compare in tabular form, to the characteristics and performance criteria of the specified material.

6.4.3 It is the Bidder's responsibility to ensure that the substituted article is equivalent to the specified article with regard to design, function, appearance, durability, operation and quality.

6.4.4 Request for substitutions made after the award of the contract will be subject to the requirements of Clause 2.37.0 MATERIALS AND SUBSTITUTIONS in the General Conditions of the Contract and will only be considered under special circumstances or where it is clear, at the Engineer's/Architect's discretion, that proposed substitution will provide a substantial benefit to the Owner.

6.4.5 Approval of the substitution shall be in the form of an addendum to the Specifications.

The decision on substitutions will be final.

6.5 Completion date

- 6.5.1** Bidders shall state the time required to complete the Contract from time of open call award. The bidder shall, within seven (7) days after the Contract is award submit a preliminary construction schedule indicating as closely as possible the starting and completion date for the major sections of the Work.

[End of Part 6]

APPENDIX A – SPECIFICATIONS AND DRAWINGS

**SPECIFICATIONS AND DRAWINGS
LOCATED AT THE END OF THIS DOCUMENT**

APPENDIX B – SUBMISSION FORM

1. Bidder Information

Please fill out the following form, naming one person to be the bidder's contact for the Open Call process and for any clarifications or communication that might be necessary.	
Full Legal Name of Bidder:	
Any Other Relevant Name under which Bidder Carries on Business:	
Street Address:	
City, Province/State:	
Postal Code:	
Phone Number:	
Fax Number:	
Company Website (if any):	
Bidder Contact Name and Title:	
Bidder Contact Phone:	
Bidder Contact Fax:	
Bidder Contact Email:	

2. Offer

The bidder has carefully examined the Open Call documents and has a clear and comprehensive knowledge of the Deliverables required under the Open Call. By submitting a bid, the bidder agrees and consents to the terms, conditions and provisions of the Open Call, including the Form of Agreement, and offers to provide the Deliverables in accordance therewith at the rates set out in the completed Pricing Form (Appendix C1 and/or C2 and/or C3).

3. Rates

The bidder has submitted its rates in accordance with the instructions in the Open Call and in the Pricing Form (Appendix C1 and/or C2 and/or C3). The bidder confirms that it has factored all of the provisions of Appendix A, including insurance and indemnity requirements, into its pricing assumptions and calculations.

4. Addenda

- 4.1** The bidder is deemed to have read and accepted all addenda issued by the Owner. The onus is on bidders to make any necessary amendments to their bids based on the addenda. The bidder is required to confirm that it has received all addenda by listing the addenda numbers in table below: **(Listing of individually the numbers of each Addendum received in the blank space)**

NOTE: FAILURE TO COMPLETE “TABLE: ADDENDA RECEIVED” LOCATED BELOW SHALL RESULT IN BID DISQUALIFICATION:

TABLE 1.10: ADDENDA RECEIVED

Bidders who fail to complete the above table will be deemed to have not received all posted addenda and shall be deemed **non-compliant**.

5. No Prohibited Conduct

The bidder declares that it has not engaged in any conduct prohibited by this Open Call.

6. Disclosure of Information

The bidder hereby agrees that any information provided in this bid, even if it is identified as being supplied in confidence, may be disclosed where required by law or by order of a court or tribunal. The bidder hereby consents to the disclosure, on a confidential basis, of this bid by the Owner to the advisers retained by the Owner to advise or assist with the Open Call process, including with respect to the evaluation of this bid.

7. Bid Irrevocable

The bidder agrees that its tender shall be irrevocable for a period of **60** days running from the moment that the Submission Deadline passes.

8. Execution of Agreement

The bidder agrees that in the event its bid is selected by the Owner, in whole or in part, it will finalize and execute the Agreement in the form set out in Appendix A (or in a form mutually acceptable to the parties) to this Open Call in accordance with the terms of this Open Call . Failure to submit this signature section will render the proposal NON-COMPLIANT and the proposal will be disqualified.

BIDDER SIGNATURE FORM:

BIDDERS MUST COMPLETE THE BIDDER SIGNATURE FORM. ANY BIDS RECEIVED WITHOUT THE BIDDER CONTACT FORM COMPLETED WILL BE DEEMED NON- COMPLIANT

(See Part 1 section 1.8 for Electronic Signature acceptance)

Signature of Witness

Signature of Bidder Representative

Name of Witness

Name of Bidder Representative

Title of Bidder Representative

Date

I have the authority to bind the bidder.

**IN SIGNING THIS PAGE AND
SUBMITTING YOUR PROPOSAL, THE
PROPOSER ACKNOWLEDGES
HAVING READ, UNDERSTOOD AND
AGREED TO THE TERMS AND
CONDITIONS OF THIS DOCUMENT**

APPENDIX C1 – PRICING FORM

1. INSTRUCTIONS ON HOW TO COMPLETE THE PRICING FORM

- Rates must be provided in Canadian Dollars
- Rates quoted by the bidder must be all-inclusive and must include all labor and material costs, all travel and carriage costs, all insurance costs, all costs of delivery to the Owner, all costs of installation and set-up, including any pre-delivery inspection charges, and all other overhead, including any fees or other charges required by law
- Owner: Having carefully examined the site and all conditions affecting the proposed work as well as the Bid Documents including the Drawings and Specifications, all Addenda and the Instructions to bidders, I/We, the undersigned, hereby offer to furnish all necessary labour, materials, superintendence, plant, tools, equipment, etc., required to complete all work requisite and necessary for the proper execution of this Contract, expeditiously and in the satisfactory manner and accept in full payment therefore a stipulated sum of:

The scope of work for Price A, Price B and Price C is outlined in the contract documents - see specification section 01 11 00 Summary of Works. The Owner reserves the right to delete any or all parts of this tender and award individual and/or combined parts.		
	Contract Bid (HST Excluded)	
Price A: Subtotal		HST EXCLUDED
Price B: Sum of Allowances (Section 01 21 00)	\$10,000	HST EXCLUDED
Price C: Total: [\$(A+B)]		HST EXCLUDED

I/We agree to commence work within two (2) weeks after the acceptance of my/our Bid and complete the work in _____ weeks from the acceptance of the Bid and to coordinate the scheduling of our work with that of all Subcontractors working on the Project. The time of completion indicated herein is required and will be a significant factor in assessing bids.

2. THE DELIVERABLES:

St. John's Campus
Arc Flash Corrective Work
Package #1
as per specifications listed in Appendix A

3. MANDATORY SUBMISSION REQUIREMENTS

(a) Submission Form (Appendix B)

Each bid must include a Submission Form (Appendix B) completed and signed by an authorized representative of the bidder.

(b) Each bid must include Pricing Form (Appendix C1) as per instructions on form.

(c) Where Appendix C2 and C3 are required, they must be included in bid submission.

APPENDIX C2 – UNIT RATES

<Page intentionally left blank, appendix not used>

APPENDIX C3 - FURNITURE BIDDING TABLE
<Page intentionally left blank, appendix not used>

APPENDIX D - LIST OF SUBCONTRACTORS

Herewith is the list of Subcontractors, Suppliers and/or Manufacturers referred to in Section no. **5.1 of Part 5 of the Open Call and Acceptance Form**. The Subcontractors and Suppliers whose bids have been used in the preparation of this Bid must be listed in full including work to be done by own forces (B.O.F.). By Own Forces will be considered valid and satisfactory only if, prior to award, the supplier provides three (3) current (< 3 years) references of satisfactory completion of trade work of similar **scale, scope and complexity** as that described within the Bid documents. Trade certifications may be requested in addition to the references above. The determination of suitability is entirely at the discretion of the owner and shall be based on submitted documentation. The owner may use their knowledge and understanding of experience and performance of the Contractor on past work in lieu of this submission. The list will be subject to the approval of the Owner.

NOTE: FAILURE TO COMPLETE THIS PORTION OF THE BID SUBMISSION SHALL RESULT IN DISQUALIFICATION.

The trades below, if listed, have been identified by the owner, however it is the Bidder's responsibility to identify all applicable subtrades.

TRADE/DIVISION	SUBCONTRACTOR - SUPPLIER - MANUFACTURER
Electrical	
ADD TRADES AS REQUIRED	



DEPARTMENT OF FACILITIES MANAGEMENT

GENERAL CONDITIONS

AND

AGREEMENT BETWEEN OWNER AND CONTRACTOR

FOR

THE STIPULATED PRICE CONTRACT

JANUARY 2026

DEPARTMENT OF FACILITIES MANAGEMENT
GENERAL CONDITIONS AND AGREEMENT
BETWEEN OWNER AND CONTRACTOR FOR THE STIPULATED PRICE CONTRACT

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1.0 DEFINITIONS

1.1.1 Contract Documents

The Contract Documents consist of the Instructions to bidders, Executed Agreement between the Owner and the Contractor, General Conditions of Contract, Supplementary General Conditions of Contract, Special Conditions, Campus Safety and Health Regulation, , Specifications, Drawings and such other documents forming part of the open call, including all amendments thereto incorporated before their execution and subsequent amendments thereto made pursuant to the provisions of the Contract or agreed upon between the parties. The successful bid and any Addenda to the Specifications issued during the bidding period shall also form part of the Contract Documents.

1.1.2 Owner, Engineer/Architect, Contractor

The Owner, Engineer/Architect and Contractor are the persons, firms or corporation identified as such in the Agreement. The term Owner, Engineer/Architect and Contractor means the Owner, Engineer/Architect and Contractor or their authorized representatives as designated by each party in writing.

1.1.3 Subcontractors

A Subcontractor is a person, firm or corporation having a direct contract with the Contractor to perform a part or parts of the Work included in the Contract, or to supply products worked to a special design according to the Contract Documents but does not include one who merely supplies products not so worked.

1.1.4 The Project

The Project is the total construction contemplated of which the Work performed under the Contract Documents may be the whole or a part.

1.1.5 The Work

The Work means the total construction and related services required by the Contract Documents.

1.1.6 Place of Work

The Place of Work is the designated site or location of the project of which the Work may be the whole or a part.

1.1.7 Products/Materials/Equipment

The term Products/Materials/Equipment means all materials, machinery, equipment and fixtures forming the Work as required by the Contract Documents but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work and normally referred to as construction machinery and equipment.

1.1.8 Other Contractor

The term Other Contractor means any persons, firm or corporation employed by or having a separate contract directly or indirectly with the Owner for Work other than that required by the Contract Documents.

1.1.9 Time

- a) The Contract Time is the time stated in the Open Call for Bid and Acceptance Form for substantial performance of the Work.
- b) The date of substantial performance of the Work is the date certified by the Engineer/Architect.
- c) The term day, as used in the Contract Documents, shall mean the calendar day.
- d) The term working day means any day observed by the construction industry in the area of the place of the Work.

1.1.10 Substantial Performance of the Work

A Contract shall be deemed to be substantially performed:

- a) When the Work or a substantial part thereof is ready for use or is being used for the purpose intended; and
- b) When the Work to be done under the Contract is capable of completion or correction at a cost of not more than:
 - (i) 3% (Three per centum) of the first two hundred and fifty thousand dollars (\$250,000) of the Contract Price;
 - (ii) 2% (Two per centum) of the next two hundred and fifty thousand dollars (\$250,000) of the Contract Price; and
 - (iii) 1% (One per centum) of the balance of the Contract Price.

- c) When the Work or a substantial part thereof is ready for use or is being used for the purpose intended and where the Work cannot be completed expeditiously for reasons beyond the control of the Contractor, the value of the remaining Work to be completed shall be deducted from the Contract Price in determining substantial performance. As per Section 4.19.0, Substantial Performance will not be issued until the final commissioning of the Work has been successfully completed.
- d) In all cases, time is of the essence regarding substantial performance.

1.1.11 Total Performance of the Work

Total Performance of the Work shall mean when the entire Work except those items arising from the provision **2.26.0 WARRANTY** has been performed to the requirements of the Contract Documents and is so certified by the Engineer/Architect.

1.1.12 Changes in the Work

Changes in the Work means additions, deletions or other revisions to the Work within the general scope of Work as contemplated by the Contract Documents.

1.1.13 Extra Work

Extra Work means any additional work or service, the performance of which is beyond the scope of Work as contemplated by the Contract Documents.

2.0 GENERAL CONDITIONS

2.1.0 INTENTIONALLY LEFT BLANK

2.2.0 DOCUMENTS

2.2.1 The Contract Documents shall be signed by the Owner and by the Contractor, in accordance with Part 1 – Submission Instructions, Open Call for Bids. A digital copy of the executed Stipulated Price Contract will be provided to the Contractor.

2.2.2 Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

2.2.3 In the event of conflicts between Contract Documents, the following shall apply:

- a) Documents of later date shall govern;
- b) Figured dimensions shown on the drawings shall govern even though they may differ from scaled dimensions on the same drawing;
- c) Drawings of larger scale shall govern over those of smaller scale of the same date;
- d) Specifications shall govern over drawings;
- e) Special Conditions shall govern over Specifications;
- f) The General Conditions of Contract shall govern over Specifications;
- g) Supplementary General Conditions shall govern over the General Conditions of the Contract;
- h) The Executed Agreement between the Owner and the Contractor shall govern over all documents.

2.2.4 The Contractor will be provided, without charge, up to three (3) sets of Contract Documents or parts thereof as are reasonably necessary for the performance of the Work. A .pdf version of the contract documents will also be provided, at the Contractor's request.

2.2.5 The Contractor shall keep a copy of all current Contract Documents and shop drawings on the site, in good order and available to the Engineer/Architect and or their representatives.

2.2.6 Drawings, specifications, models and copies thereof furnished to the Contractor are to be used only with respect to the Work. Such documents and models are

not to be otherwise used or revised in any manner without the written authorization of the Owner.

2.2.7 Models furnished by the Contractor at the Owner's request and expense are the property of the Owner.

2.2.8 Models furnished by the Contractor that have not been requested by the Owner are at the expense of the Contractor.

2.3.0 ADDITIONAL INSTRUCTIONS AND SCHEDULE OF WORK

2.3.1 During the progress of the Work, the Engineer/Architect shall furnish to the Contractor such additional instructions as may be necessary to supplement the Contract Documents. All such instructions shall be consistent with the intent of the Contract Documents.

2.3.2 Additional instructions may include minor changes to the Work which affect neither the Contract Price nor the Contract Time.

2.3.3 Additional instructions may be in the form of drawings, samples, models or written instructions.

2.3.4 Additional instructions will be issued by the Engineer/Architect with reasonable promptness and in accordance with any schedule agreed upon for such instructions.

2.3.5 The Contractor shall prepare and update, as required, a construction schedule indicating the timing of major activities of the Work. The schedule shall be designed to conform with the Contract Time. The schedule shall be submitted to the Engineer/Architect within seven (7) days of the date of the Owner's letter of award. The Contractor shall monitor the progress of the Work relative to the schedule and advise the Engineer/Architect of any revisions required as a result of delays, as provided for in 2.5.0 DELAYS, and indicating what action will be taken to complete the Work within the Contract Time.

2.4.0 ENGINEER/ARCHITECT'S DECISIONS

2.4.1 The Engineer/Architect, in the first instance, shall decide on questions arising under the contract Documents and interpret the requirements therein. Such decisions shall be given in writing.

2.4.2 The Contractor shall notify the Engineer/Architect in writing within fourteen (14) days of receipt of a decision of the Engineer/Architect referred to in 2.4.1, if the Contractor believes that a decision by the Engineer/Architect is in error and/or at variance with the Contract Documents. Unless the Contractor fulfils this requirement, subsequent claims by them for extra compensation arising out of the decision will not be accepted.

- 2.4.3** If the question of error and/or variance is not resolved immediately, and the Engineer/Architect decides that the disputed work shall be carried out, the Contractor shall act according to the Engineer/Architect's written decision and carry out the disputed work.

Any questions of change in Contract Price and/or extension of Contract Time due to such error and/or variance shall be decided as provided in **2.11.0 DISPUTES**.

In the absence of an Engineer/Architect, the Owner's decisions will prevail.

2.5.0 DELAYS

- 2.5.1** If it can be clearly shown that the Contractor is delayed in the performance of the Work by any act or fault of the Owner, Engineer/Architect, then the Contract Time shall be extended for such reasonable time as the Engineer/Architect may decide in consultation with the Owner and the Contractor. The Contractor shall be entitled to be reimbursed for any costs incurred by them as a result of such a delay occasioned by the act or fault, provided that it can be clearly shown that the Contractor's forces cannot work efficiently elsewhere on the project and that the incurred cost is limited to that which could not reasonably have been avoided.
- 2.5.2** If the Contractor is delayed in the performance of the Work by a Stop Work Order issued by any court or other public authority and providing that such order was not issued as the result of any act or fault of the Contractor or of anyone employed by them directly or indirectly then the Contract Time shall be extended for such reasonable time as the Engineer/Architect may decide in consultation with the Contractor.
- 2.5.3** If the Contractor is delayed in the performance of the Work by civil disorders, labour disputes, strikes, lockouts, (including lockouts decreed or recommended for its members by a recognized Contractor's Association, of which the Contractor is a member) fire, unusual delay by common carriers or unavoidable casualties, or without limit to any of the foregoing, by any cause of any kind whatsoever beyond the Contractor's control, then the Contract Time shall be extended for such reasonable time as may be decided by the Engineer/Architect in consultation with the Owner and the Contractor, but in no case shall the extension of time be less than the time lost as the result of the event causing the delay, unless such shorter extension of time be agreed to by the Contractor.
- 2.5.4** No extension shall be made for delays unless written notice of claims is given to the Engineer/Architect within fourteen (14) days of its commencement, providing that in the case of the continuing cause of delay one notice shall be necessary.
- 2.5.5** If no schedule is provided under **2.3.0 ADDITIONAL INSTRUCTIONS AND SCHEDULE OF WORK**, no claim for delay will be considered because of failure to furnish instructions until fourteen (14) days after a demand for such instructions had been made and not then unless such claim is reasonable.

No extension shall be made for delays unless written notice of claims is given to the Engineer/Architect within fourteen (14) days of its commencement, providing that in the case of the continuing cause of delay one notice shall be necessary.

If no schedule is provided under **2.3.0 ADDITIONAL INSTRUCTIONS AND SCHEDULE OF WORK**, no claim for delay will be considered because of failure to furnish instructions until fourteen (14) days after a demand for such instructions had been made and not then unless such claim is reasonable.

2.6.0 OWNER'S RIGHT TO PERFORM WORK, STOP WORK AND/OR TERMINATE CONTRACT

2.6.1 If the Contractor should be adjudged bankrupt or makes a general assignment for the benefit of creditors because of their insolvency or if a Receiver is appointed on account of their insolvency, the Owner may, without prejudice to any other right or remedy they may have, by giving the Contractor or Receiver or Trustee in Bankruptcy written notice, terminate the Contract. If a Performance Bond has been provided by the Contractor guaranteeing faithful performance of the Work, the Owner shall give written notice to the Surety invoking the terms of the bond.

2.6.2 The Owner may notify the Contractor in writing that they are in default of their contractual obligations, if the Contractor:

- a) Fails to proceed regularly and diligently with the Work; or
- b) Without reasonable cause wholly suspends the carrying out of the Work before the completion thereof; or
- c) Fails to maintain or manage the construction schedule as required by 2.3.5 above; or
- d) Refuses or fails to supply sufficient, properly skilled workers for proper workmanship, products or construction machinery and equipment for the scheduled performance of the Work within five (5) working days of receiving written notice from the Engineer/Architect except in those cases provided in **2.5.0 DELAYS**; or
- e) Fails to make payments due to their Subcontractors, their Suppliers for their workers, or fails to comply with the procedures around Progress Payments in accordance with 2.15.8 and 2.15.9; or
- f) Persistently disregards laws or ordinances, or the Engineer/Architect's instructions; or
- g) Otherwise violates the provisions of their Contract to a substantial degree.

Such written notice by the Owner shall instruct the Contractor to correct the default within five (5) working days from the receipt of the written notice. If a Performance Bond has been provided by the Contractor, a copy of such written notice will be provided to the Surety.

2.6.3 If the correction of the default cannot be completed within the five (5) working days specified, the Contractor shall be considered to be in compliance with the Owner's instruction if they:

- a) Commence the correction of the default within the specified time; and
- b) Provide the Owner with an acceptable schedule for such correction; and
- c) Complete the correction in accordance with such schedule.

2.6.4 If the Contractor fails to correct the default within the time specified or subsequently agreed upon, the Owner may, without prejudice to any other right or remedy they may have:

- a) Correct such default and deduct the cost thereof as certified by the Engineer/Architect from any payment due under the Contract; or
- b) Terminate the Contract by written notice to the Contractor. If a Performance Bond has been provided by the Contractor, the Owner will provide the Surety with a copy of such notice.

2.6.5 If the Owner terminates the Contract under the conditions set out above, they are entitled to:

- a) Take possession of the premises and products and utilize the temporary buildings, plants, tools, construction machinery and equipment, goods and materials, intended for, delivered to and placed on or adjacent to the Work and may complete the Work by whatever method they may deem expedient but without undue delay or expense;
- b) Withhold any further payments to the Contractor until the Work is finished;
- c) Upon total performance of the Work, charge the Contractor the amount by which the full cost of finishing the Work as certified by the Engineer/Architect including compensation to the Engineer/Architect for their additional services and a reasonable allowance to cover the cost of any corrections required by **2.26.0 WARRANTY** exceeds the unpaid balance of the Contract Price; or if such cost of finishing the Work is less than the unpaid balance of the Contract Price, pay the Contractor the difference;
- d) On expiry of the warranty period, charge the Contractor the amount by which the cost of corrections under **2.26.0 WARRANTY** exceeds the allowance

provided for such corrections, or if the cost of such corrections is less than the allowance, pay the Contractor the difference;

- e) Invoke the terms of the Performance Bond if such Bond has been provided under the Contract.

2.6.6 The Contractor's obligation under the Contract as to the performance of the Work up to the time of termination will remain in force after such termination.

2.7.0 CONTRACTOR'S RIGHT TO STOP WORK AND/OR TERMINATE CONTRACT

2.7.1 If the Owner should be adjudged bankrupt or makes a general assignment for the benefit of creditors or if a Receiver is appointed on account of their insolvency, the Contractor may, without prejudice to any other right or remedy they may have, by giving the Owner written notice, terminate the Contract.

2.7.2 If the Work should be stopped or otherwise delayed for a period of thirty (30) days or more under an order of any court or other public authority and providing that such order was not issued as the result of any act or fault of the Contractor or of anyone directly or indirectly employed by him, the Contractor may, without prejudice to any other right or remedy they may have, by giving the Owner fifteen (15) days' written notice, terminate the Contract.

2.7.3 The Contractor may notify the Owner in writing that the Owner is in default of their contractual obligations if:

The Engineer/Architect fails to issue a certificate in accordance with **2.16.0 CERTIFICATES AND PAYMENTS**;

- a) The Owner fails to pay the Contractor when due any amount certified by the Engineer/Architect and verified by the audit of the Owner;
- b) The Owner violates the provisions of the Contract to a substantial degree.

Such written notice shall advise the Owner that if such default is not corrected within fifteen (15) days from the receipt of the written notice, the Contractor may, without prejudice to any other right or remedy they may have, stop the Work and/or terminate the Contract.

2.7.4 If the Contractor terminates the Contract under the conditions set out above, they shall be entitled to be paid for all work performed including reasonable overhead and profit and for any loss sustained upon products, construction machinery and equipment and other damages as the Contractor may have sustained as a result of the termination of the Contract.

2.8.0 OTHER CONTRACTORS

2.8.1 The Owner reserves the right to let separate contracts in connection with the project of which the Work is part or do certain work by their own forces.

2.8.2 The Owner shall, in such cases, coordinate the Work and insurance coverage of other Contractors as it affects the Work of this Contract.

2.8.3 The Contractor shall coordinate their work with that of other Contractors and connect as specified or shown in the Contract Documents. Any change in the costs incurred by the Contractor in the planning and performance of such work which was not shown or included in the Contract Documents as of the date of signing the Contract, shall be evaluated as provided under 2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK and authorized as provided in 2.13.0 CHANGES IN THE WORK AND EXTRA WORK.

2.8.4 The Contractor shall report to the Engineer/Architect any apparent deficiencies in other Contractor's work which would affect this Contract immediately as they come to their attention and shall confirm such report in writing. Failure by the Contractor to so report shall invalidate any claims against the Owner by reason of the deficiencies of other Contractor's work except as to those of which they were not reasonably aware.

2.9.0 ASSIGNMENT

2.9.1 The Contractor shall not assign the Contract or any part thereof or any benefit or interest therein or thereunder without the written consent of the Owner.

2.10.0 SUBCONTRACTORS

2.10.1 The Contractor agrees to preserve and protect the rights of the Owner under the Contract with respect to any work to be performed under subcontract. The Contractor shall:

- a) Require their Subcontractors to perform their work in accordance with and subject to the terms and conditions of the Contract Documents; and
- b) Be fully responsible to the Owner for acts and omissions of their Subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by them.

The Contractor, therefore, agrees that they will incorporate all the terms and conditions of the Contract Documents into all Subcontractor Agreements they enter into with their Subcontractors.

2.10.2 The Contractor shall employ those Subcontractors proposed by them in writing and accepted by the Owner prior to the signing of the Contract for such portions of the Work as may be designated in the bidding requirements.

- 2.10.3** The Owner may, for reasonable cause, object to the use of a proposed Subcontractor and require the Contractor to employ one of the other Subcontractors
- 2.10.4** In the event that the Owner requires a change from any proposed Subcontractor, the Contract price shall be adjusted by the difference in cost occasioned by such required change.
- 2.10.5** The Contractor shall not be required to employ as a Subcontractor any person or firm to whom they may reasonably object.
- 2.10.6** The Engineer/Architect may, upon reasonable request and at their discretion, provide to a Subcontractor information as to the percentage of the Subcontractor's work which has been certified for payment.
- 2.10.7** Nothing contained in the Contract Documents shall create any contractual relationship between any Subcontractor and the Owner.

2.11.0 DISPUTES

- 2.11.1** Differences between the parties to the Contract as to the interpretation, application or administration of this Contract or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved in the first instances by decision of the Engineer/Architect pursuant to the provisions of **2.4.0 ENGINEER/ARCHITECT'S DECISIONS** shall be settled in accordance with the requirement of the General Conditions.
- 2.11.2** The Claimant shall give written notice of such dispute to the other party no later than fourteen (14) days after the receipt of the Engineer/Architect's decisions given under **2.4.0 ENGINEER/ARCHITECT'S DECISIONS**. Such notice shall set forth particulars of the matters in dispute, the probable scope, extent and value of the dispute and relevant provisions of the Contract Documents. The other party shall reply to such notice no later than fourteen (14) days after they receive or are considered to have received it, setting out in such reply their grounds and other relevant provisions of the Contract Documents.
- 2.11.3** Pending settlement of the dispute, the Engineer/Architect will give such instructions as, in their opinion, are necessary for the proper performance of the Work or to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim they may have. If it is subsequently determined that such instructions were in error or at variance with the Contract Documents, the Owner shall pay the Contractor cost incurred by the Contractor in carrying out such instructions which they were required to do beyond what the Contract Documents correctly understood and interpreted would have required

them to do, including costs resulting from interruption of the Work.

2.11.4 It is agreed that no act by either party shall be construed as a renunciation or waiver of any of their rights or recourse, provided they have given the notices in accordance with Paragraph 2.11.2 and have carried out the instructions as provided in Paragraph 2.11.3.

2.11.5 If the dispute or claim cannot be resolved to the satisfaction of both parties, either party may refer the matter to such tribunal as the circumstances require.

2.11.6 In recognition of the obligation of the Contractor to perform the disputed work as provided in Paragraph 2.11.3, it is agreed that settlement of dispute proceedings may be commenced immediately following the dispute in accordance with the foregoing settlement of dispute procedures.

2.12.0 INDEMNIFICATION

2.12.1 The Contractor shall be liable for and shall indemnify and hold harmless the Owner and the Engineer/Architect, their agents and employees from and against all claims, demands, losses, costs, damages, actions, suits or proceedings whatsoever arising under any statute or Common law.

- a) In respect of personal injury to or the death of any person whomsoever arising out of or in the course of or caused by the carrying out of the Work; and
- b) In respect of any injury or damage whatsoever to any property, real or personal or any chattel real, insofar as such injury or damage arises out of or in the course of or by reason of the carrying out of the Work.

2.12.2 The Contractor shall not be liable under Paragraph 2.12.1 if the injury, death, loss or damage is due to any act or neglect of the Owner or Engineer/Architect, their agents or employees.

2.13.0 CHANGES IN THE WORK AND EXTRA WORK

2.13.1 The Owner may, without invalidating the Contract, make changes by altering, adding to or deducting from the Work, with the Contract Price and the Contract Time being adjusted accordingly; and

2.13.2 No change in the Work shall be made by the Contractor without prior written order from the Owner, and no claim for an addition or deduction to the Contract Price or change in the Contract Time shall be valid unless so ordered and at the same time valued or agreed to be valued as provided in **2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK**. Signed faxed copies are acceptable at the discretion of the Owner.

2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK

2.14.1 The value of any change shall be determined in one or more of the following methods:

- a) By estimate and acceptance in a lump sum;
- b) By unit prices subsequently agreed upon;
- c) By cost and a fixed or percentage fee.

In the case of changes in the Work valued as outlined in Paragraph 2.14.1(a) (as will be the usual case), the Contractor will submit an itemized estimate of all materials and labour (including Subcontractor's work) to complete the change.

In the case of changes in the Work as valued in Paragraph 2.14.1 (c), the Contractor shall submit detailed invoices, vouchers and time sheets for all materials and labour to complete the change.

The submissions in both cases shall be in the manner acceptable to the Engineer/Architect and will show separately the following percentages for overhead and profit:

- (i) The Contractor shall include, in the breakdown, their 15 percent mark-up (10 percent of the estimated cost for the overhead and 5 percent for profit on their portion of the Work
- (ii) When work is performed by one of the Contractor's Subcontractors, the Subcontractor's markup shall be 10 percent of the estimated cost for overhead and 5 percent for profit.
- (iii) The Contractor shall add 10 percent to the Subcontractor's pricing for their own profit and overhead combined.

Mark-ups for both the Contractor and Subcontractors shall be limited to and considered full compensation for:

- (a) all head office costs including salaries (specifically including the costs of superintendence pursuant to **2.28 PROJECT MANAGEMENT & SUPERINTENDENCE**), financing, overhead, profit and risk of undertaking the work.
- (b) all normal administration, communications, supervision and coordination generally associated with routine change orders.
- (c) all costs associated with the normal preparation of the change order

quotation such as investigation and estimating time, miscellaneous discussions and coordination and negotiations.

(d) costs related to:

- i. the purchase or rental of material, plant and equipment;
- ii. small tools and supplies;
- iii. incidental or routine safety and protective measures, except not including labor and materials associated with special safety processes and procedures;
- iv. permits, bonds, insurance, engineering, as-built drawings, project record documents, commissioning and site office facilities. The Contractor will be compensated, without markup, at the end of the Contract, upon presentation of specific invoices or supporting documentation, clearly demonstrating the additional costs incurred for permits, bonds, and insurance associated with the net value of all change order work;
- v. and fines and any insurance deductibles payable upon fault of the Contractor in performance of the Work.

2.14.2 Notwithstanding the provisions of Paragraph 2.14.1, in case of changes in the Work, the amount charged for equipment rentals shall be that provided in the rental Contract, and no additional amount shall be paid as markup for overhead or profit for the Contractor or Subcontractor.

When a change in the Work is proposed or required, the Contractor shall present to the Engineer/Architect for approval their claim for the change in the Contract Price and/or change in the Contract Time in a form acceptable to the Engineer/Architect and including the appropriate documentation. The Engineer/Architect shall satisfy themselves as to the correctness of such claim, and when approved by the Owner, a change order will be issued to the Contractor to proceed with the change. The value of Work performed in the change shall be included for payment with the regular certificates for payment. Once a change has been approved as to time, there may be no future claim for time due to this change.

2.14.3 In the case of changes in the Work to be paid for under methods (b) and (c) of Paragraph 2.14.1, the form of presentation of costs and methods of measurement shall be agreed to by the Engineer/Architect and Contractor before proceeding with the change. The Contractor shall keep accurate records, as agreed upon, of quantities or costs and present an account of the cost of the change in the Work, together with vouchers where applicable.

2.14.4 If the method of valuation, measurement and the change in Contract Price and/or

change in Contract Time cannot be promptly agreed upon, and the change is required to be proceeded with, then the valuation, measurement and the change in Contract Price and/or Contract Time will be subject to final determination in the manner set out in **2.11.0 DISPUTES**. In this case, the Engineer/Architect shall, with the consent of the Owner, issue a written authorization for the change setting out the method of valuation and, if by lump sum, their valuation of the change in Contract Price and/or Contract Time.

2.14.5 In the case of a dispute in the valuation of a change authorized in the Work and pending final determination of such value, the Engineer/Architect shall certify the value of the Work performed in accordance with their own evaluation of the change and include the amount with the regular certificates for payment. The Contractor shall keep accurate records of quantities and cost of such work.

2.14.6 It is intended in all matters referred to above that both the Engineer/Architect and Contractor shall act promptly.

2.14.7 Should the Owner direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Document, an equitable deduction from the Contract amount by the Architect/Engineer shall be made to compensate the Owner for the uncorrected or uncompleted work.

2.14.8 Credits will be based on the net cost of material and labour or the net difference in the unit price quantities.

2.15.0 APPLICATION FOR PAYMENT

2.15.1 Applications for payment on account may be made monthly as the Work progresses.

2.15.2 Applications for payment shall be made monthly on a date to be agreed upon between the Owner and the Contractor, and the amount claimed shall be for the value proportionate to the amount of the Contract, of the Work performed and products delivered to the site at that date.

2.15.3 The Contractor shall submit to the Engineer/Architect, before the first application for payment, a schedule of values of the various parts of the Work aggregating the total amount of the Contract Price and divided so as to facilitate evaluation of applications for payment.

2.15.4 This schedule shall be made out in such form and supported by such evidence as to its correctness as the Engineer/Architect may reasonably direct and, when approved by the Engineer/Architect, shall be used as the basis for application for payment.

2.15.5 When making application for payment, the Contractor shall submit a statement based upon this schedule. Claims for products delivered to the site but not yet

incorporated into the Work shall be supported by such evidence as the Engineer/Architect may reasonably require to establish the value and delivery of the products.

2.15.6 With each monthly claim for payment, except the first, the Contractor shall submit a Statutory Declaration attesting that they have made all payments to Subcontractors, Suppliers, and workers on behalf of whom amounts were included in the previous claim for payment.

2.15.7 Applications for release of holdback monies following the substantial performance of the Work and the application for final payment shall be made at the time in the manner set forth in **2.16.0 CERTIFICATES AND PAYMENTS**.

2.15.8 For all projects, it should be clearly understood that the University's policy is as follows:

- a) Each Progress Claim must be accompanied by a breakdown indicating amounts included for each Subcontractor;
- b) When the University makes a Progress Payment, it is made in prorated amounts on behalf of those Subcontractors for whom amounts have been included in the corresponding Progress Claim;
- c) The Contractor submitting the Progress Claim **must** make payment of the amounts included for the various Subcontractors to the various Subcontractors within ten (10) working days of issuance of the Progress Payment by the University. A failure to do so that results in a mechanics lien being filed against the University will result in no future Progress Claims being paid until the lien is vacated.
- d) Monthly payment amounts are not final or conclusive as to their value or quality of work performed and are subject to reopening and readjustment

2.15.9 Contractors not following the above procedures will be considered to be in default of their Contract, and the University may proceed in accordance with **Article 2.6.0 OWNER'S RIGHT TO PERFORM WORK, STOP WORK AND/OR TERMINATE CONTRACT** Subsection **2.6.2 (d)** of the General Conditions.

2.16.0 CERTIFICATES AND PAYMENTS

2.16.1 The Engineer/Architect shall, within ten (10) days of receipt of an application for payment from the Contractor submitted in accordance with **2.15.0 APPLICATION FOR PAYMENT**, issue a certificate for payment in the amount applied for or such amount as they shall determine to be properly due. If the Engineer/Architect amends the application, they shall promptly notify the Contractor in writing, giving their reason(s) for the amendment.

2.16.2 The Owner shall, within thirty (30) days of receipt and approval by the Owner of a certificate for payment from the Engineer/Architect, make payment to the Contractor on account.

2.16.3 Notwithstanding any other provisions of the Contract:

- a) Where legislation permits and where, upon application by the Contractor, the Engineer/Architect has certified that a Subcontract has been totally performed to their satisfaction prior to the Substantial Performance of this Contract, the Owner may, at their discretion, pay the Contractor the holdback retained for such Subcontractor on the day following the expiration of the Statutory Limitations Period stipulated in the Mechanic's Lien Act applicable to the place of the Work and subject to the following conditions:
 - (i) A copy of the Contract between the Subcontractor and the General Contractor must be submitted.
 - (ii) The Subcontract is completed without deficiencies.
 - (iii) The warranty for the Subcontract will not start until Substantial Performance of the General Contract.
 - (iv) The General Contractor provides an approved Statutory Declaration that all monies have been paid to the said Subcontractor.
 - (v) The General Contractor provides an approved Waiver of Lien from this Subcontractor.
 - (vi) The Contractor and the Subcontractor provide an approved Waiver of Claim for all work associated with this Subcontractor.
 - (vii) A certificate is issued by the Engineer/Architect indicating that the Subcontract has been totally completed to their satisfaction.
 - (viii) The Owner will, at that time, release the total amount specified on the Subcontractor's Contract.

2.16.4 Notwithstanding the provisions of Paragraph 16.3 (a) and notwithstanding the wording of such certificate, the Contractor shall ensure that such work is protected pending the Total Performance of the Contract and be responsible for the correction of any defects in it regardless of whether or not they were apparent when such certificates were issued.

2.16.5 The Engineer/Architect shall within ten (10) days of receipt of an application from the Contractor for a Certificate of Substantial Performance make an inspection and assessment of the Work to verify the validity of the application. The Engineer/Architect shall within seven (7) days of their inspection notify the

Contractor of their approval or the reasons for their disapproval of the application. When the Engineer/Architect finds the Work to be substantially performed, they shall issue such a certificate. The date of this certificate shall be the date of Substantial Performance of the Contract. Immediately following the issuance of the Certificate of Substantial Performance, the Engineer/Architect, in consultation with the Contractor, shall establish a reasonable date for the Total Performance of the Contract.

- 2.16.6** Following the issuance of the Certificate of Substantial Performance and upon receipt from the Contractor of all documentation called for in the Contract Documents, the Engineer/Architect shall issue a Certificate for Payment of holdback monies, providing that no lien or privilege claims against the Work exists, that the Contractor has submitted to the Owner a sworn statement that all accounts for labour, Subcontracts, products, construction machinery and equipment and any other indebtedness which may have been incurred by the Contractor in the Substantial Performance of the Work and for which the Owner might in any way be held responsible, have been paid in full and that the Contractor has submitted to the Owner a waiver of all claims associated with this project except holdback monies properly retained. The holdback monies will become due and payable on the day following the expiration of the Statutory Limitation Period stipulated in the Mechanic's Lien Act applicable to the place of buildings. The Owner may retain out of such holdback monies any sum required by law to satisfy any liens against the Work or other monetary claims against the Contractor which may be enforceable against the Owner.
- 2.16.7** The Engineer/Architect shall, within ten (10) days of receipt of an application from the Contractor for payment upon Total Performance of the Contract, make an inspection and assessment of the Work to verify the validity of the application. The Engineer/Architect shall, within seven (7) days of their inspection, notify the Contractor of their approval or the reasons for their disapproval of the application. When the Engineer/Architect finds the Work to be totally performed to their satisfaction, they shall issue a Certificate of Total Performance and certify for payment the remaining monies due to the Contractor under the Contract, less any holdback monies which are required to be retained. The date of this certificate shall be the date of Total Performance of the Contract. The Owner shall, within thirty (30) days of issuance of such certificate, make payment to the Contractor in accordance with the provisions of the Contract.
- 2.16.8** The release of any remaining holdback monies shall become due and payable on the day following the expiration of the Statutory Limitation period stipulated in the Mechanics' Lien Act of the place of building provided that no claims against the Work exists and that the Contractor has submitted to the Owner a sworn statement that all accounts for labour, Subcontractors, products, construction machinery and equipment and any other indebtedness which may have been incurred by the Contractor in the Total Performance of the Work and for which the Owner might in any way be held responsible have been paid in full, except holdback monies properly retained.

- 2.16.9** No certificate for payment, any payment made thereunder or any partial or entire use of occupancy of the Work by the Owner shall constitute an acceptance of any work or products not in accordance with the Contract Documents.
- 2.16.10** As of the date of Total Performance of the Work as set out in the Certificate of Total Performance of the Work, the Owner expressly waives and releases the Contractor from all claims against the Contractor including, without limitation, those that might arise from the negligence or breach of Contract by the Contractor except one or more of the following:
- a) Those made in writing prior to the date of the Total Performance of the Work and still unsettled;
 - b) Those arising from the provisions of **2.12.0 INDEMNIFICATION** or **2.26.0 WARRANTY**;
 - c) Those made in writing within a period of six (6) years from the date of Substantial Performance of the Work, as set out in the Certificate of Substantial Performance of the Work or within such shorter period as may be prescribed by any Limitation Statute of the Province of Newfoundland and Labrador and arising from any liability of the Contractor for damages resulting from their performance of the Contract with respect to substantial defects or deficiencies in the Work for which the Contractor is proven responsible.

As used herein, "substantial defects or deficiencies" means those defects or deficiencies in the Work which affect the Work to such an extent or in such manner that a significant part or the whole of the Work is unfit for the purpose intended by the Contract Documents.

- 2.16.11** As of the date of Total Performance of the Work, as set out in the Certificate of Total Performance of Work, the Contractor expressly waives and releases the Owner from all claims against the Owner including, without limitation, those that might arise from the negligence or breach of Contract by the Owner except those made in writing prior to the Contractor's application for payment upon Total Performance of the Work and still unsettled.
- 2.16.12** In the event of conflict between the provisions of the General Conditions and **2.24.0 DAMAGES AND MUTUAL RESPONSIBILITY**, the provisions of this General Condition shall govern.
- 2.16.13** The holdback to be used by the Engineer/Architect when issuing certificates of payment will be ten (10) percent of the value of the Work completed at the date of Contractor's claim.
- 2.16.14** Notwithstanding any other provision of this Contract, the Owner may:

- a) In the event of a claim by the Owner against the Contractor for damages arising out of the performance or non-performance of the Contract, withhold payment of any amount equal to the alleged damages until the liability for damages is established, and no amount of interest will be paid on amounts held under this Clause;
- b) Set-off amounts owing by the Contractor to the Owner;
- c) Following the issuance of the Certificate of Substantial Performance, withhold payment of an amount equal to twice the cost as estimated by the Engineer/Architect of remedying deficiencies until the issuance of a Certificate of Total Performance, and no amount of interest will be paid on amounts held under this Clause.

2.17.0 TAXES AND DUTIES

2.17.1 Unless otherwise stated in the Supplementary General Conditions, the Contractor shall pay all applicable government sales taxes, goods and services taxes, customs duties and excise taxes with respect to the Contract.

2.17.2 Any increase or decrease in costs to the Contractor due to changes in such taxes and duties after the date of the Agreement and up to the agreed date of completion shall increase or decrease the Contract Price accordingly. For further clarity, changes to legislation or regulations that purport to decrease speed limits of vehicles (including trains or sailing vessels) do not constitute a tax or duty. If the Owner so desires, the Contractor is to cooperate with the Engineer/Architect and Owner and permit access to books and records in order to establish the amount of such taxes involved.

2.17.3 The Contractor shall maintain full records of their estimates and of actual costs to them of the Work, together with all proper open calls, quotations, contracts, correspondence, invoices, receipts, payments to Subcontractors and Suppliers and vouchers relating thereto and shall make them available to audit and inspection by the Owner, the Auditor General for Newfoundland and Labrador or by persons acting on their behalf and shall furnish them with any information which they may require from time to time in connection with such records.

2.18.0 LAWS, NOTICES, PERMITS AND FEES

2.18.1 The laws of the Province of Newfoundland and Labrador shall govern the Work.

2.18.2 The Contractor shall obtain all permits, licenses and certificates and pay all fees required for the performance of the Work which are in force at the date of open call closing with the following exceptions:

- a) The Contractor shall obtain building permits for the Work but are not required to pay for said permits.

- b) The Contractor shall not include the obtaining of permanent easements or rights of servitude.

2.18.3 The Contractor shall give all required notices and comply with all laws, ordinances, rules, regulations, codes and order of all authorities having jurisdiction relating to the Work, to the preservation of the public health and construction safety which are or become in force during the performance of the Work.

2.18.4 The Contractor shall not be responsible for verifying that the Contract Documents are in compliance with the applicable laws, ordinances, rules, regulations and codes relating to the Work. If the Contract Documents are a variance therewith or changes which necessitate modifications to the Contract Documents are required by the authorities having jurisdiction subsequent to the Open call closing date, the Contractor shall notify the Engineer/Architect in writing requesting direction immediately when any such variance or change is observed by them. The Engineer/Architect will make the changes required to the Contract Documents, and the Contract Price and/or Contract Time shall be adjusted in accordance with **2.13.0 CHANGES IN THE WORK AND EXTRA WORK** and evaluated in accordance with **2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK**.

2.18.5 If the Contractor fails to notify the Engineer/Architect in writing and obtain their direction as required in 2.18.4 and performs any work knowing it to be contrary to any laws, ordinances, rules, regulation, codes and orders of any authority having jurisdiction, they shall be responsible for and shall correct any violations thereof and shall bear all costs, expense and damages, attributable to their failure to comply with the provisions of such laws, ordinances, rules, regulations, codes and orders.

2.19.0 PATENT FEES

2.19.1 The Contractor shall pay all royalties and patent license fees required for the performance of the Contract and such royalties or fees shall be deemed to have been included in the Contract Price. They shall hold the Owner harmless from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the Contractor's performance of the Contract which are attributable to an infringement or an alleged infringement of any patent or invention by the Contractor or anyone for whose acts they may be liable.

2.19.2 The Owner shall hold the Contractor harmless against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the Contractor's performance of the Contract which are attributable to an infringement or an alleged

infringement of any patent or invention in executing anything for the purpose of the Contract, the model, plan or design of which was supplied to the Contractor by the Owner.

2.20.0 WORKERS' COMPENSATION

2.20.1 The Contractor shall be registered with and shall remain in good standing with the Workplace Health and Safety Compensation Commission during the term of their Contract.

2.20.2 At any time during the term of the Contract when requested by the Owner, the Contractor shall provide evidence of compliance by themselves and any or all of their Subcontractors.

2.21.0 LIABILITY INSURANCE

2.21.1 Comprehensive General Liability Insurance

- a) Without restricting the generality of **2.12.0 INDEMNIFICATION**, the Contractor shall provide and maintain, either by way of a separate policy or by an endorsement to their existing policy, Comprehensive General Liability Insurance acceptable to the Owner and subject to limits set out in detail below, inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof.
- b) The insurance shall be in the joint names of the Contractor and the Owner. It shall also cover as Additional Insureds all Subcontractors and anyone employed directly or indirectly by the Contractor or their Subcontractors to perform a part or parts of the Work but excluding Suppliers whose only function is to supply and/or transport products to the project site.
- c) The insurance shall also include as Additional Insureds the architectural and engineering consultants of the Owner and Engineer/Architect.
- d) The insurance shall preclude subrogation claims by the Insurer against anyone insured thereunder.
- e) The Comprehensive General Liability Insurance will not be limited to, but shall include coverage for:
 - (i) Premises and Operations Liability
 - (ii) Products or Completed Operations Liability
 - (iii) Blanket Contractual Liability
 - (iv) Cross Liability
 - (v) Elevator and Hoist Liability

- (vi) Contingent Employer's Liability
- (vii) Personal Injury Liability arising out of false arrest, detention or imprisonment or malicious prosecution, libel, slander or defamation of character, invasion of privacy or wrongful entry
- (viii) Shoring, blasting, excavating, underpinning, demolition, pile driving and caisson work, work below ground surface, tunnelling and grading, as applicable
- (ix) Liability with respect to non-owned, licensed vehicles.

2.21.2 The Contractor shall provide and maintain liability insurance in respect of owned licensed vehicles subject to limits set out in detail in Article **2.21.0 LIABILITY INSURANCE** subsection **2.21.6**.

2.21.3 All liability insurance shall be maintained continuously until twelve (12) months after the date the Engineer/Architect issues a Certificate of Substantial Performance.

2.21.4 The Contractor shall provide the Owner with evidence of all liability insurance prior to the commencement of the Work and shall promptly provide the Owner with a certified true copy of each insurance certificate.

2.21.5 All liability insurance policies shall contain an endorsement to provide all Additional Insureds with prior notice of changes and cancellations. Such endorsements shall be in the following form:

"It is understood and agreed that the coverage provided by this policy will not be changed or amended in any way nor cancelled until thirty (30) days after written notice of such change or cancellation shall have been given to all Additional Insureds."

2.21.6 The Contractor shall protect themselves and indemnify and save the Owner harmless from any and all claims which may arise from the Contractor's performance or failure of performance of the Contract and for this purpose shall, without restricting the generality of the foregoing, maintain insurance acceptable to the Owner to the following limits:

- a) Where the contract value exceeds \$100,000 (inclusive of HST)
 - Comprehensive General Liability = \$10,000,000.00;
 - Standard Automobile Policy Liability = \$5,000,000.00;
 - Contractor's Pollution Liability = \$5,000,000.00 per occurrence.

And if used directly or indirectly in the performance of The Work:

- Manned Aircraft and Watercraft Liability = \$10,000,000.00;

- Unmanned Aerial Vehicle (drone) Liability = \$5,000,000.00;
- b) Where the contract value is less than \$100,000 (inclusive of HST)
 - Comprehensive General Liability = \$5,000,000.00;
 - Standard Automobile Policy Liability = \$3,000,000.00;
 - Contractor's Pollution Liability = \$3,000,000.00 per occurrence.

And if used directly or indirectly in the performance of The Work:

- Manned Aircraft and Watercraft Liability = \$10,000,000.00;
- Unmanned Aerial Vehicle (drone) Liability = \$5,000,000.00.

Prior to the commencement of any work hereunder, the Contractor shall file with the Owner a copy of each insurance policy and certificate required.

2.22.0 PROPERTY INSURANCE

2.22.1 Property Insurance is required to be provided by the Contractor if one of the following criteria is met:

- a) The contract value exceeds \$5,000,000.00 (inclusive of HST).
- b) The contract is for a new building or extension, regardless of the contract value.
- c) The contract is for a renovation and will expose the interior elements of a building to the elements of weather, regardless of the contract value. Including, but not limited to, windows or roofing replacement projects.

2.22.2 The Contractor shall provide and maintain property insurance acceptable to the Owner insuring the full value of the Work in the amount of the replacement cost or the Contract value, whichever is greater, and the full value as stated of products for incorporation into the Work. The insurance shall be in the joint names of the Contractor, the Owner, the Subcontractors as Unnamed Insured or, if they specifically request, as Named Insured. The policies shall preclude subrogation claims by the Insurer against anyone insured thereunder.

2.22.3 Such coverage shall be provided by EITHER an ALL-RISKS Builders' Risk Policy OR by a combination of a Coverage and Malicious Damage Endorsements and a Builder's Risk Difference in Conditions Policy providing equivalent coverage of Piers, Wharves and Docks, Government Structures Policy.

2.22.4 The policies shall insure against all risks of direct loss or damage. Such coverage shall apply to:

- a) All products, labour and supplies of any nature whatsoever, the property of

the Insureds or of others for which the Insureds may have assumed responsibility, to be used in or pertaining to the site preparations, demolition of existing structures, erections and/or fabrication and/or reconstruction and/or repair of the insured project, while on the site or in transit, subject to the exclusion of the property specified.

- b) The installation, testing and any subsequent use of machinery and equipment including boilers, pressure vessels or vessels under vacuum.
- c) Damage to the Work caused by an accident to and/or the explosion of any boiler(s) or pressure vessel(s) forming part of the Work.

Such coverage shall exclude construction machinery, equipment, temporary structural and other temporary facilities, tools and supplies used in the construction of the Work and which are not expendable under the Contract.

- 2.22.5** The Contractor shall provide the Owner with evidence of all insurance prior to the commencement of the Work and shall promptly provide the Owner with a certified true copy of each insurance policy.

Policies provided shall contain an endorsement to provide all Named Insureds with prior notice of changes and cancellations. Such endorsements shall be in the following form:

"It is understood and agreed that the coverage provided by this policy will not be changed or amended in any way or cancelled until thirty (30) days after written notice of such change or cancellation shall have been given to all Named Insureds."

- 2.22.6** All such insurance shall be maintained continuously until ten (10) days after the date the Engineer/Architect issues a certificate of Substantial Performance. All such insurance shall provide for the Owner to take occupancy of the Work or any part thereof during the terms of this insurance. Any increase in the cost of this insurance arising out of such occupancy shall be at the Owner's expense.

- 2.22.7** The policies shall provide that, in the event of a loss, payment for damage to the Work shall be made to the Owner and the Contractor as their respective interests may appear. Damage shall not affect the rights and obligations of either party under the Contract except that the Contractor shall be entitled to such reasonable extension of time for Substantial and Total Performance of the Work as the Engineer/Architect may decide.

- 2.22.8** The Contractor and/or their Subcontractors, as may be applicable, shall be responsible for any deductible amounts under the policies and for providing such additional insurance as may be required to protect the Insureds against loss on items excluded from the policies.

2.22.9 When this Contract pertains to a new building or structure with a total bid amount greater than \$25,000.00, the Contractor shall maintain All Risk Builder's Risk Insurance acceptable to the Owner in the joint names of the Owner and Contractor in the amount of 100 percent of the total value of the Work done and material delivered to the site and payable to the Owner and Contractor as their respective interest may appear.

2.23.0 PROTECTION OF WORK AND PROPERTY

2.23.1 The Contractor shall protect the property adjacent to the project site from damage as the result of their operations under the Contract.

2.23.2 The Contractor shall protect the Work and the Owner's property from damage and shall be responsible for any damage which may arise as the result of their operations under the Contract except damage which occurs as the result of:

- a) Errors in the Contract documents; and/or
- b) Acts or omissions by the Owner, their agents, employees or other Contractors

2.23.3 Should the Contractor, in the performance of this Contract, damage the Work and/or Owner's property and/or property adjacent to the place of the Work, the Contractor shall be responsible for making good such damage at their own expense or pay all costs incurred by others in making good such damage.

2.23.4 Should any damage occur to the Work and/or Owner's property for which the Contractor is not responsible as provided in of **2.12.0 INDEMNIFICATION**, they shall make good such damage to the Work and, if the Owner so directs, to the Owner's property, and the contract Price and Contract Time shall be adjusted in accordance with in **2.13.0 CHANGES IN THE WORK AND EXTRA WORK** and evaluated in accordance with in **2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK**.

2.23.5 The Contractor shall be completely responsible for the safety of the Work as it applies to protection of the public and property and construction of the Work.

The codes that must be followed and enforced for safety are:

- a) The National Building Code, Part 8, Safety Measures at Construction and Demolition Sites (Latest Edition);
- b) Canadian Code for Construction Safety (Latest Edition) as issued by the Associate Committee of the National Building Code;
- c) The Occupational Health and Safety Act (1979) and Regulations.

2.23.6 Any person not following stipulated safety regulations shall be dismissed.

2.24.0 DAMAGES AND MUTUAL RESPONSIBILITY

- 2.24.1** If either party to this Contract should suffer damage in any manner because of any wrongful act or neglect of the other party or anyone employed by them then they shall be reimbursed by the other party for such damages. The party reimbursing the other party shall be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party.
- 2.24.2** Claims under this Contract shall be made in writing to the party liable within a maximum of thirty (30) days after the first observance of such damage and may be adjusted by agreement or in the manner set out in **2.11.0 DISPUTES**.
- 2.24.3** If the Contractor has caused damage to any other Contractor on the Work, the Contractor agrees upon due notice to settle with such other Contractor by agreement or arbitration, if they will so settle. If such other Contractor sues the Owner on account of any damage alleged to have been sustained, the Contractor agrees to fully indemnify the Owner to the extent that the Owner is adjudicated to pay any of the damages. The Owner shall notify the Contractor and may require the Contractor to defend the action at the Contractor's expense. If any final order or judgment against the Owner arises therefrom, the Contractor shall pay or satisfy it and pay all costs incurred by the Owner.
- 2.24.4** If the Contractor becomes liable to pay or satisfy any final order, judgment or award against the Owner then the Contractor, upon undertaking to indemnify the Owner against any and all liability for costs, shall have the right to appeal in the name of the Owner such final order or judgment to any and all courts of competent jurisdiction.
- 2.24.5** Should the Contractor fail to meet the date to substantially perform the Work, as indicated in the Agreement between the Owner and the Contractor, and is unable to provide justification acceptable to the Owner for the delay then the Contractor will be held liable for any liquidated damage amount indicated in **3.0 SUPPLEMENTARY GENERAL CONDITIONS** and may be held liable for payment to the Owner for other damages and losses suffered by the Owner as a result of the Contractor's delay including additional costs for Engineering/Architectural supervision.

2.25.0 BONDS

- 2.25.1** The Contractor shall promptly provide the Owner the surety bonds called for in the Open call Documents.
- 2.25.2** All such bonds shall be issued by a duly incorporated surety company approved by the Owner and authorized to transact a business or surety-ship in the Province of Newfoundland and Labrador.

2.25.3 If bonds are called for in the and Acceptance form, Instructions to Bidders or Supplementary General Conditions, the costs attributable to providing such bonds shall be included in the bid price.

2.25.4 Should the Owner require the provision of a bond or bonds by the Contractor other than those provided for under 2.25.3, the Contract Price shall be increased by all costs attributable to providing such bonds.

2.26.0 WARRANTY

2.26.1 The Contractor shall be responsible for the proper performance of the Work to the extend that the design and specifications permit such performance.

2.26.2 Subject to Paragraph 2.26.1, the Contractor agrees to correct promptly, at their own expense, defects or deficiencies in the Work which appear prior to and during the period of one (1) year from the date of Substantial Performance of the Work or such longer periods as may be specified for certain products or work.

2.26.3 The Contractor shall correct and/or pay for any damage to other work resulting from any corrections required under the conditions of Paragraph 2.26.2.

2.26.4 Neither the Engineer/Architect's final certificate nor payment thereunder shall relieve the Contractor from their responsibility hereunder.

2.26.5 The Owner and/or Engineer/Architect shall give the Contractor written notice of observed defects promptly.

2.27.0 CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK

2.27.1 The Contractor shall have complete control of the Work and shall effectively direct and supervise the Work so as to ensure conformance with the requirements of the Contract Documents. They shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all parts of the Work under the Contract.

2.27.2 The Contractor shall have the sole responsibility for the design, erection, operation, maintenance and removal of temporary structural and other temporary facilities and the design and execution of construction methods required in their use. The Contractor shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform these functions where required by law or by the Contract Documents and, in all cases, where such temporary facilities and their method of construction are of such a nature that professional engineering skill is required to produce safe and satisfactory results.

2.27.3 Notwithstanding the provision of Paragraphs 2.27.1 and 2.27.2 above or any provisions to the contrary elsewhere in the Contract Documents where such Contract Documents include designs for temporary structural and other temporary facilities or specify a method of construction in whole or in part, such facilities and methods shall be deemed to comprise part of the overall design of the Work, and the Contractor shall not be held responsible for that part of the design or the specified method of construction. The Contractor shall, however, be responsible for the execution of such design or specified method of construction in the same manner that they are responsible for the execution of the Work.

2.27.4 The Contractor shall carefully examine the Contract Documents and shall promptly report to the Engineer/Architect any error, inconsistency or omission they may discover. The Contractor shall not be held liable for any damage resulting from any such errors, inconsistencies or omissions in the Contract Documents which they may discover, and they shall not proceed with the Work affected until they have received corrected or missing information from the Engineer/Architect.

2.28.0 PROJECT MANAGEMENT AND SUPERINTENDENCE

2.28.1 The Contractor shall employ a competent Project Manager and necessary project team. It is the Contractor's responsibility to ensure their project team is qualified and capable of executing the project work.

2.28.2 The Project Manager shall be satisfactory to the Engineer/Architect and shall not be changed except for good reason and only then after consultation with an agreement by the Engineer/Architect.

For projects with a bid value greater than \$5 million dollars, excluding HST, the Project Manager shall have a minimum of ten (10) years' experience on construction projects of similar scale, complexity, type and value.

At the Owner's request, the project manager shall be required to submit a resume and cover letter outlining their work experience. The owner reserves its right to refuse the Contractor's suggested Project Manager in the event that the suggested project manager does not meet the above requirements. Such refusal shall not be exercised unreasonably by the Owner.

2.28.3 The Contractor shall employ a competent Superintendent and necessary assistants who shall be in attendance at the Work site at all times while the Work is being performed.

The Superintendent shall represent the Contractor at the place of work and instructions given to them by the Engineer/Architect shall be held to have been given to the Contractor. Important instructions shall be confirmed to the Contractor in writing, other instructions will be so confirmed if requested.

For projects with a bid value greater than \$5 million dollars, excluding HST, the Superintendent shall have a minimum of ten (10) years' experience on construction projects of similar scale, complexity, type and value. The Owner reserves its right to refuse the Contractor's suggested Superintendent in the event that the suggested Superintendent does not meet the above requirements. Such refusal shall not be exercised unreasonably by the Owner.

At the Owner's request, the Superintendent shall be required to submit a resume outlining their work experience.

2.29.0 LABOUR AND PRODUCTS

- 2.29.1** Unless otherwise stipulated elsewhere in the Contract Documents, the Contractor shall provide and pay for all labour, products, tools, construction equipment and machinery, water, heat, light, power, transportation and other facilities and services necessary for the requirements of the Contract Documents.
- 2.29.2** All products provided shall be new unless otherwise specified in the Contract Documents. Any products which are not specified shall be of a quality best suited to the purpose required, and their use shall be subject to the approval of the Engineer/Architect.
- 2.29.3** In carrying out their duties under this Contract, the Contractor shall comply with all Provincial and Federal legislation respecting labour and the employment of labour, where applicable, including the Labour Standards Code and shall not operate in conflict with the Human Rights legislation. In the employment of labour, preference should be given to persons normally residing in Newfoundland and Labrador.
- 2.29.4** The Contractor and Subcontractors shall maintain and keep available for inspection by the Owner, a record of the names and addresses of all persons employed on the project.
- 2.29.5** The Contractor shall maintain good order and discipline among their employees engaged on the Work and shall employ on the Work only employees skilled in their various trades.
- 2.29.6** There shall be no discrimination in the selection of workers for employment on the project in respect to race, religion, views or political affiliation or any other enumerated ground contained in the *Human Rights Act, 2010* of Newfoundland and Labrador, and the office of the Canada Manpower will be used in the recruitment of workers wherever possible.
- 2.29.7** The Contractor shall pay fair wages and shall pay rates of wages and allowances to the various classes of labour not less favourable than those prevailing in the area where the Work is being performed.

2.29.8 The Contractor shall be aware that the majority of hourly-paid and maintenance workers employed within the University are unionized. It is of utmost importance that any labour force used by the Contractor neither disrupts or be disrupted by any labour conditions existing on the University campus. Failure by the Contractor to familiarize themselves with labour conditions on Campus or disruptions to the Contractor's own labour force because of labour conditions on Campus will not relieve them of their obligations to furnish all labour and materials necessary to carry out the requirements of the Contract.

2.30.0 SUBSURFACE CONDITIONS

2.30.1 The Contractor shall promptly notify the Engineer/Architect in writing if, in their opinion, the subsurface conditions at the project site differ materially from that indicated or reasonably inferred from the Contract Documents.

2.30.2 After prompt investigation, should the Engineer/Architect determine that conditions do differ materially, they shall issue appropriate instructions for changes in the Work as provided for in **2.13.0 CHANGES IN THE WORK AND EXTRA WORK**.

2.31.0 USE OF THE WORK

2.31.1 The Contractor shall confine their apparatus, the storage of products and the operations of their employees to limits indicated by laws, ordinances, permits or by instructions of the Engineer/Architect and shall not unreasonably encumber the premises with their products.

2.31.2 The Contractor shall not load or permit to be loaded any part of the Work with a weight or force that will endanger its safety.

2.31.3 Unless otherwise provided, the Contractor shall, at their own expense and without expense to the Owner, make suitable provision to accommodate all traffic, either pedestrian or vehicular, over or around the project upon which work is being performed in a manner satisfactory to the Engineer/Architect.

2.31.4 The Contractor shall provide and maintain at their own expense such fences, barriers, signs, lights and watchmen as may be necessary to prevent avoidable accidents to University Users or to the public generally.

2.31.5 All work shall be executed with the least possible interference with or disturbance to personnel and the Public. The Contractor shall cooperate with the person in charge of the premises. The Contractor shall ascertain from the Owner's representative the hours during which the work shall be performed, conform to the directions of the representative and to the directions of the said representative in determining the order in which the work shall be done.

2.31.6 The Contractor shall carry out all work required to maintain the building services and to provide necessary access for personnel and vehicles whenever new work affects occupied portions of the building.

2.31.7 Before final completion of the work, the Owner shall be entitled to make use of any portion of the work which is completed and fit for use for the installation of equipment, storage and furniture, supplies, etc., and for occupancy, if such can be arranged without interfering with the progress of the work.

2.32.0 CUTTING AND REMEDIAL WORK

2.32.1 The Contractor shall do all cutting and remedial work that may be required to make the several parts of the Work come together properly and shall coordinate the Work to ensure that this requirement is kept to a minimum.

2.32.2 Should the Owner, the Engineer/Architect, other contractors or anyone employed by them, be responsible for ill-timed work necessitating additional cutting and/or remedial work to be performed, it shall be valued as provided in **2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK** and added to the Contract Price.

2.32.3 Cutting and remedial work shall be performed by specialists familiar with the materials affected and shall be performed in a manner to neither damage nor endanger any work.

2.33.0 INSPECTION OF WORK

2.33.1 The Owner, the Engineer/Architect and their authorized representatives shall have access to the Work for inspection wherever it is in preparation or progress. The Contractor shall cooperate to provide reasonable facilities for such access.

2.33.2 If parts of the Work are designated for special tests, inspections or approvals in the Contract Documents or by the Engineer/Architect's instructions or the laws or ordinances of the place of the Work, the Contractor shall give the Engineer/Architect timely notice requesting inspection. Inspection by the Engineer/Architect shall be made promptly. The Contractor shall arrange for inspections by other authorities and shall notify the Engineer/Architect with timely notice of the date and time.

2.33.3 If the Contractor covers or permits to be covered any of the Work that is designated for special tests, inspections or approvals, before such special tests, the Contractor shall, if so instructed by the Engineer/Architect, uncover the Work, have the inspection satisfactorily completed and make good the Work at their own expense.

2.33.4 The Engineer/Architect may order any part of the Work to be specifically examined, should they believe such work not to be in accordance with the

requirements of the Contract Documents. If upon examination such work is found not to be in accordance with the requirements of the Contract Documents, the Contractor shall correct such work and pay the cost of examination and correction. If such work is found to be in accordance with the requirements of the Contract Documents, the Owner will pay the cost of examination and replacement.

- 2.33.5** The Contractors shall furnish promptly to the Engineer/Architect two (2) copies of all certificates and inspection reports relating to the Work.

2.34.0 REJECTED WORK

- 2.34.1** Defective work, whether the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the Contractor and whether incorporated in the Work or not which has been rejected by the Engineer/Architect as failing to conform to the Contract Documents, shall be removed promptly from the premises by the Contractor and replaced and/or re-executed promptly in accordance with the Contract Documents at the Contractor's expense.

- 2.34.2** Other contractors' work destroyed or damaged by such removals or replacements shall be made good promptly at the Contractor's expense.

- 2.34.3** If, in the opinion of the Engineer/Architect, it is not expedient to correct defective work not done in accordance with the Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work as done and that called for by the Contract, the amount of which shall be determined in the first instance by the Engineer/Architect.

2.35.0 SHOP DRAWINGS AND SAMPLES

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

- 2.35.2** The Contractor shall arrange for the preparation of clearly identified shop drawings as called for by the Contract Documents or as the Engineer/Architect may reasonably request.

- 2.35.3** Prior to submission to the Engineer/Architect, the Contractor shall review all shop drawings. By this review, the Contractor represents that they have determined and verified all field measurements, field construction criteria, materials, catalogue numbers and similar data, or will do so, and that they have checked and coordinated each shop drawing with the requirements of the Work and of the Contract Documents. The Contractor's review of each shop drawing shall be indicated by stamp, date and signature of a responsible person.

The Contractor shall submit shop drawings to the Engineer/Architect for their review with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the Work of other contractors. If either the Contractor or the Engineer/Architect so requests, they shall jointly prepare a schedule fixing the dates for submission and return of shop drawings. Shop drawings shall be submitted in the form of reproducible transparencies or prints as the Engineer/Architect may direct. At the time of the submission, the Contractor shall notify the Engineer/Architect in writing of any deviations in the shop drawings from the requirements of the Contract Documents.

2.35.4 The Engineer/Architect will review and return shop drawings in accordance with any schedule agreed upon or otherwise with reasonable promptness so as to cause no delay. The Engineer/Architect's review will be for conformity to the design concept and for general arrangements only, and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the Contract Documents unless a deviation on the shop drawings has been approved in writing by the Engineers/Architects.

2.35.5 The Contractor shall make any changes in shop drawings which the Engineer/Architect may require consistent with the Contract Documents and resubmit, unless otherwise directed by the Engineer/Architect. When resubmitting, the Contractor shall notify the Engineer/Architect in writing of any deviations other than those requested by the Engineer/Architect. Any required resubmission of shop drawings shall be at the sole expense of the Contractor.

2.35.6 The Contractor shall submit for the Engineer/Architect's approval such standard manufacturer's samples as the Engineer/Architect may reasonably require. Samples shall be labeled as to origin and intended use in the Work and shall conform to the requirements of the Contract Documents.

2.35.7 The Contractor shall provide samples of special products, assemblies or components when so specified. The cost of such samples not specified shall be authorized as an addition to the Contract Price as provided in **2.13.0 CHANGES IN THE WORK AND EXTRA WORK**.

2.36.0 TESTS AND MIX DESIGNS

2.36.1 The Contractor shall furnish to the Engineer/Architect test results and mix designs as may be requested. The testing company must first be approved by the Engineer/Architect.

2.36.2 The cost of tests and mix designs beyond those called for in the Contract Documents or beyond those required by law, ordinances, rules and regulations relating to the Work and the preservation of public health, shall be authorized as an addition to the Contract Price as provided in **2.13.0 CHANGES IN THE WORK**

AND EXTRA WORK.

2.37.0 MATERIALS AND SUBSTITUTIONS

Materials described and named in the specifications with "or approved equal" clause after the Manufacturer's name are so described as to the establish quality only, and substitutions of a similar materials may be made before the award of the Contract provided the Engineer/Architect's approval is obtained. Substitutions after the award may be considered under special circumstances as indicated in ***Strategic Procurement Part 6 – Supplementary Terms & Conditions, Clause 6.4.4.***

- 2.37.1** Requests for substitutions must be accompanied by sufficient information in the form of shop drawings, manufacturer's literature, samples and other data to permit proper investigation of the substitutes proposed, together with any increase or decrease in price.
- 2.37.2** Whenever a substitute is proposed for approval, the Contractor shall guarantee that such proposed substitute will not adversely affect the space requirements allocated on the drawings for the material specified, and they shall agree to bear any additional expense incurred due to their use of the proposed substitute.
- 2.37.3** The Engineer/Architect may accept or reject any or all of the proposed substitutions as they see fit, and their decision on a question of equality shall be final.

2.38.0 TIME OF ESSENCE AND SCHEDULE

- 2.38.1** Time is of the essence of the Contract.

2.39.0 CASH ALLOWANCE

- 2.39.1** The Contract Price includes cash allowances, if any, stated in the Contract Documents.
- 2.39.2** Cash allowances, unless otherwise specified, cover the entire cost to the Contractor of services, products, construction machinery and equipment, freight, unloading, handling, storage, installation and other authorized expenses incurred in performing the Work stipulated under the cash allowances. This also includes the Contractors overhead and profit in connection with such cash allowance.
- 2.39.3** The cash allowance shall not include HST.
- 2.39.4** Where costs under a cash allowance exceed the amount of the allowance, the Contractor shall be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in **2.14.0 VALUATION AND**

CERTIFICATION OF CHANGES IN THE WORK.

- 2.39.5** The Contract Price shall be adjusted by change order to provide for any excess or deficit to each cash allowance.
- 2.39.6** Progress payments on account of Work authorized under cash allowance shall be included in the Engineer/Architect's monthly certificates for payment.
- 2.39.7** A schedule shall be prepared jointly by the Engineer/Architect and Contractor to show the items called for under Cash Allowances. They must be authorized by the Owner for ordering purposes so that the progress of the Work will not be delayed.

2.40.0 CLEANUP AND FINAL CLEANING OF THE WORK

- 2.40.1** The Contractor shall maintain the Work in a tidy condition and free from the accumulation of waste products and debris, other than that caused by the Owner, other contractors or their employees.
- 2.40.2** When the Work is substantially performed, the Contractor shall remove their surplus products, tools, construction machinery and equipment not required for the performance of the remaining Work. They shall also remove waste products and debris, other than that caused by the Owner, other contractors or their employees, and leave the Work clean and suitable for occupancy by the Owner, unless otherwise specified.
- 2.40.3** When the Work is totally performed, the Contractor shall remove their surplus products, tools, construction machinery and equipment. They shall also remove waste products and debris other than that caused by the Owner, other contractors or their employees.

3.0 SUPPLEMENTARY GENERAL CONDITIONS

This page is intentionally left blank.

4.0 SPECIAL CONDITIONS

ALL SECTIONS STRUCK OUT IN SECTION 4.0 ARE NOT INCLUDED IN THE CONTRACT

4.1.0 LAYOUT OF WORK

4.1.1 Other than the original lot lines and a benchmark, both shown on the drawings, establish and maintain all grades, lines, levels and well-built batter boards at all corners of the building. As work progresses, lay out on the forms or rough flooring the exact location of all partitions as a guide to all trades.

4.1.2 Verify all grades, lines, levels and dimensions as shown on the drawings and report any errors or inconsistencies in the above to the Engineer/Architect before commencing Work.

4.2.0 ~~JOB SIGN~~

~~**4.2.1** At the start of the job, erect two painted signs as detailed and where located by the Engineer/Architect. This will be the only sign or advertisement permitted on the site unless instructed otherwise by the Engineer/Architect.~~

~~**4.2.2** The signs shall be 8'0" x 8'0" plywood, properly supported. It shall be painted and shall show the names of the building, Owner, Prime Consultant, Major Subconsultants, Contractor and Major Subcontractors. A drawing of the signs to be erected will be supplied by the Engineer/Architect.~~

4.3.0 TEMPORARY OFFICES AND SHEDS

4.3.1 Construct and maintain, until completion of the Contract temporary offices and storage sheds in approved locations on site for the use of staff.

4.3.2 Buildings shall be of weatherproof wood stud and plywood construction completely equipped with adequate lighting, heating and ventilation, and in addition, the Contractor's office shall be fully furnished with desks, plan tables, storage cabinets, file drawers, chairs, stools and plan racks.

4.3.3 Provide storage sheds for small tools, equipment, perishable materials, etc., as necessary. All buildings shall be equipped with windows for natural light and doors properly fitted and equipped with locks.

4.3.4 Maintain offices and storage sheds in good condition to the approval of the Engineer/Architect from start of Work until final completion of Work or, when directed by the Engineer/Architect, remove offices and sheds from the site and leave areas free of debris and waste materials and in a clean and tidy condition.

4.3.5 Offices and storage sheds required by Trade Contractors, such as mechanical and electrical, shall be provided by the trade requiring them.

~~**4.3.6** Provide an office approximately 120 square feet for the absolute use of the Owner or their representative(s). It shall be properly fitted and furnished with light, heat, telephone, lock and key, shelving, table and chairs and plan rack. The building shall be removed from the site at the completion of the Work.~~

4.4.0 TEMPORARY SERVICES

4.4.1 Light and Power

Furnish all temporary light and power required to provide such intensity of light and sufficient power as necessary for the Work to be carried out under the best conditions. Obtain and pay for all permits and inspection tests required by Provincial and/or Municipal authorities. Pay all charges and maintain fixtures and equipment in good working order. This shall include electric heat.

~~**4.4.2 Telephone**~~

~~Install and pay for the operation of one job telephone and one telephone for the use of the Engineer/Architect for the duration of the Contract. Subcontractors requiring individual telephones shall have them installed at their expense. Long distance calls will be at the expense of the party making the calls.~~

4.4.3 Toilets

At the start of operations, provide and maintain in sanitary condition sufficient temporary toilets and washing facilities for the use of personnel on the job. Conform to requirements of the Department of Health and other authorities having jurisdiction. Supply adequate quantities of disinfectant and toilet paper. When building toilets and washing facilities are operable, they may be used under the same conditions as the temporary toilets with the latter being removed, leaving all surfaces and areas hygienically clean and in immaculate condition.

4.4.4 Heat

Provide and maintain in good condition a temporary heating system for use when the building is closed in until the project has been handed over to the Owner. Pay for fuel and maintenance of the system. Maintain temperatures at a minimum of 50° F, (higher if required for special trades). Heating equipment not adequately protected or operated in conditions other than those intended by the manufacturer shall be regarded as temporary. Remove all such equipment and replace with new permanent equipment.

When ready for operation, the permanent heating equipment may be used for temporary heating purposes, subject to the conditions of the Mechanical Division of

the specifications. Protect all permanent heating equipment used for temporary heating purposes. Provide satisfactory site conditions for the proper operation of this equipment.

4.4.5 Water Supply

Provide in two convenient locations outside the building line a fresh water supply for the use of all trades.

Where connection cannot be made to an existing water supply, provide adequate size tanks and keep them filled for use of all trades.

4.5.0 PLANT AND MACHINERY

4.5.1 Provide all framework, scaffolding, ladders, cranes, derricks, planks, screens, gantries, tarpaulins, tools, equipment and machinery for the proper execution of the Work. Scaffolding shall be erected without damage of the structure or the finishes, be removed to suit the installation of work of other trades and be promptly removed at completion.

4.5.2 Where it is the normal practice for the trade to provide its own scaffolding, it shall be included in the Subcontract.

4.6.0 PROTECTION OF PUBLIC AND WORKMEN

4.6.1 Part 8 of the National Building Code of Canada, latest edition, shall apply to this project in its entirety. This covers fencing, barricades, Fire protection, excavation, use of streets or public property, control of vehicular traffic and mechanical methods of demolition.

4.6.2 The latest edition of Canadian Construction Safety Code shall also apply to all phases of this project.

4.6.3 The Workplace Health, Safety and Compensation Commission Regulations shall also apply to all phases of this project.

4.7.0 CONSTRUCTION SCHEDULE

4.7.1 The Contractor shall, within seven (7) days after the Contract is awarded, prepare for the use of the Engineer/Architect and Owner, a construction schedule. It shall indicate as closely as possible the starting and completion dates for the major sections of the Work, together with the Subcontractors' names.

4.7.2 With each monthly progress claim, submit one (1) copy of the original construction schedule marked in red to show the actual construction progress on the date of the submission of the claim. When necessary, provide an updated construction schedule superseding the original.

4.8.0 OPERATIONS AND MAINTENANCE DATA

- 4.8.1** On completion of the project, submit to the Engineer/Architect one (1) copy of Operations and Maintenance Data and one (1) electronic copy as original editable format.
- a) Title page, labelled "Operation and Maintenance Data", project number, project name, date and list of contents.
 - b) Organize contents into applicable sections of work to parallel project specifications breakdown.
 - c) Provide electronic document in an acceptable file transfer method (external hard drive or file share), including all original and editable files or, at the direction of the Owner, pdf format.
- 4.8.2** Include the following information plus data specified in the technical specifications:
- a) Maintenance instruction for finished surface and materials.
 - b) Copy of hardware schedules.
 - c) Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size capacity and serial number.
 - d) Names, addresses, email and phone numbers of Subcontractors and Suppliers.
 - e) Guarantees, warranties and bonds showing:
 - (i) Name and address of project.
 - (ii) Guarantee commencement date (date of Final Certification of Completion).
 - (iii) Duration of guarantee.
 - (iv) Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
 - (v) Signature and Seal of Contractor.
 - f) Additional materials used in project listed under various sections showing name of manufacturer and source of supply.

4.8.3 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.

4.8.4 The final certificate will not be issued until requirements of section 4.8 have been received and approved by the Engineer/Architect.

4.9.0 COORDINATION OF WORK

4.9.1 The Contractor will coordinate the Work of their Subcontractors and provide necessary instructions and scheduling so as to permit continuous progress in the Work by all trades. They will coordinate work between the Subcontractors on the site to ensure that anchor bolts, plates, attachments, etc., are provided and set in place in a timely manner. They will lay out partitions and assist Subcontractors in establishing the actual location of the fixtures, pipes, outlets, duct conduit, etc., so as to limit the interference of one trade with another. Locations shown on the drawings are approximate. If interference problems are encountered which cannot be resolved on the site, advise the Engineer/Architect before proceeding with the Work. Conceal all mechanical and electrical work unless otherwise indicated.

4.10.0 TRAFFIC MAINTENANCE

4.10.1 Do not close or obstruct streets, sidewalks, driveways, etc., without permission from authorities having jurisdiction. Do not place or store materials in street, sidewalks, parking areas, etc., unless so authorized.

4.11.0 FIRE PROTECTION

4.11.1 The Contractor's fire protection measures shall include:

- a) An adequate fire alarm signal, the use of fire-resistant tarpaulins, the daily inspection of temporary heating system by competent staff and regular fire patrol;
- b) All temporary wiring shall be done by electricians qualified under the applicable local regulations;
- c) Supply and maintenance of fifteen (15) pounds dry chemicals and/or five (5) gallons soda-acid fire extinguishers in such locations that no working crew has to travel more than fifty (50) feet to an extinguisher station. In any case, there shall be not less than one (1) fully charged extinguisher(s) at the job at any time.

4.12.0 JOB MEETINGS

4.12.1 Where the value of the contract exceeds \$100,000 (HST excluded) job meetings

shall occur at definitely prescribed times (minimum twice a month), which will be determined after commencement of work, the Contractor shall organize job meetings and send out notices stating time and place to the Owner's representative, the Engineer/Architect, Subconsultants, to all Subcontractors and to other persons whose presences are required at the meetings. They shall take note of all persons attending these meetings and shall, within one (1) week after each job meeting, submit to the Owner, the Engineer/Architect, the Subconsultants and others present, minutes of the meeting which must show any major decisions made and any instructions or information required.

- 4.12.2** Where the value of the contract is less than \$100,000 (HST excluded) job meetings shall occur at the discretion of the Owner's representative but shall not occur fewer than once per month.

4.13.0 AS-BUILT DRAWINGS

- 4.13.1** The Engineer/Architect will issue to the Contractor three (3) sets of prints of Issued for Construction drawings for the sole purpose of providing "as- built" drawings. The Contractor shall pass these to the relevant Subcontractor who shall keep two (2) sets in their office and one (1) set on the job. As changes occur, the Subcontractor shall make them on the field set. Upon completion of the project, the Subcontractor shall accurately transfer all changes to the two (2) office sets in red ink and pass them to the Engineer/Architect, through the Contractor, for approval. If they are not approved, the Subcontractor shall prepare new sets for resubmission (purchasing additional white prints for this purpose).

- 14.13.2** As-built drawings shall be digital and shall indicate any and all changes in the contract work.

- 14.13.3** Provide electronic as-builts in an acceptable file transfer method (external hard drive or file share)or, at the direction of the Owner, pdf format.

- 14.13.4** The Certificate of Total Performance will not be issued until such drawings have been received and approved.

4.14.0 COMPLETION TIME

- 4.14.1** The project shall be ready for the use and occupancy by the Owner within the time stated in the Contract Documents. Time is and continues to be of the essence.

- 4.14.2** Prior to the acceptance by the Owner of the Substantial Performance, the Contractor and the Owner shall agree on a list of deficiencies as prepared by the Engineer/Architect for prompt correction and/or completion.

4.15.0 CLOSE DOWN OF WORK

- 4.15.1** Should the Work be closed down for any cause, the Contractor shall assume all responsibility for its proper protection during such period. They must protect all foundation work and other work liable to be damaged.

4.16.0 BROKEN GLASS

- 4.16.1** The Contractor shall be held responsible for any damaged, broken or scratched glass and at completion shall replace all such glass at no additional cost to the Owner.

4.17.0 HOARDING

- 4.17.1** Before starting excavating, construct and thereafter the Contractor shall maintain all necessary hoarding required by Municipal or Provincial regulations or by other authorities having jurisdiction.

4.18.0 COMMISSIONING

- 4.18.1** The Contractor is responsible for commissioning the Work to ensure that the various parts are operating in a manner as intended by the Contract Documents. Even through individual components and/or parts of the Work may have been tested and approved prior to the substantial completion, the Contractor must coordinate a final commissioning of the complete Work, including at the place of the Work all their major Subcontractors and Suppliers. The final commissioning will be carried out by the appropriate trades working together in a complementary manner such that the successful operation of the whole Work is completed properly to the satisfaction of the Engineer/Architect. **The Substantial Performance Certificate will not be issued until the final commissioning of the Work has been successfully completed.**

4.19.0 FINAL CLEAN-UP

- 4.19.1** At the end of the job, thoroughly clean the building of all rubbish and surplus materials.
- 4.19.2** Make good all damaged areas in the building caused as a result of the Work of this Contract.
- 4.19.3** Do final cleaning, waxing and polishing of resilient flooring.

5.0 CAMPUS SAFETY AND HEALTH REGULATIONS

Maintaining a healthy and safe environment for all members of the campus community, as well as visitors, is a priority with the University. This involves a commitment from all sectors of the campus community and extends to outside agencies having occasion to come on campus to conduct business.

The following regulations will apply to all work undertaken by contractors and service personnel on any University property.

5.1.0 REGULATIONS, CODES AND STANDARDS

Contractors shall be familiar with and abide by provisions of various safety codes and standards applicable to the work performed and should refer to Article **23. PROTECTION OF WORK AND PROPERTY** in the **General Conditions**.

In particular, strict adherence shall be required to the Provincial Occupational Health and Safety Act and Regulations and the National Building Code of Canada, Part 8.

5.2.0 GENERAL SAFETY REGULATIONS

- a) Contractors/service agencies shall ensure that members of the campus community are not endangered by any work or process in which they may be engaged. Work areas shall be adequately barricaded, and if dust or fumes are generated, suitable enclosures shall be installed to contain such emissions.
- b) No material shall be stored in such a way as to obstruct walkways or represent a danger to pedestrian traffic.
- c) Adequate protection shall be provided to prevent the possibility of materials falling from scaffolding or elevated areas. Areas where materials are being loaded or offloaded shall be barricaded or otherwise protected to prevent unauthorized entry. Where necessary, appropriate warning signs shall be posted.
- d) The work areas must be kept reasonably clean and free from debris which could constitute a fire hazard. Care must be taken to ensure that the work process does not activate fire alarm detection devices. (Generation of dust and fumes can activate smoke detectors causing a false alarm).
- e) Due consideration shall be given to fire safety in buildings. Flammable materials must be kept away from sources of ignition. No work involving the use of open flame devices must be undertaken around flammable solvents or gases.
- f) Do not alter or disturb any materials believed to contain asbestos materials (unless this is a duly authorized part of the project). Should suspect materials be encountered, consult with University officials before proceeding.

- g) Material Safety Data Sheets shall be procured for any hazardous product used on campus. Such sheets shall be made readily available for consultation as required under the Workplace Hazardous Materials Information System.

NOTE: The above regulations are not to be considered all-inclusive and are considered to be complementary to the safety requirements outlined in the agreement between the Owner and the Contractor/Service Agency. Certain conditions and circumstances may require adherence to additional safety regulations.

As a general requirement, contract/service personnel are expected to conduct all work on campus in a professional and safe manner and to give priority to the welfare of members of the campus community.

6.0 CONTRACTOR PERFORMANCE EVALUATION

- 6.1.0** The purpose of this process is to maintain an acceptable level of performance with external contractors carrying out work for the Department of Facilities Management.
- 6.2.0** A record of the performance of external contractors will be maintained to identify the following:
- a) Those contractors who by virtue of satisfactory performance will continue to be eligible to submit bids for work at the University;
 - b) Those contractors whose performance is considered unsatisfactory and will be advised of the need to improve performance to remain eligible to submit bids for work at the University;
 - c) Those contractors whose record of unsatisfactory performance will render them ineligible to submit bids for work at the University.
- 6.3.0** Contractors' performance will be evaluated on a points rating system relative to quality of work performed, timeliness in completing work and management/administration of contracts/work and safety parameters.

7.0 SIGNATURE PAGE

Open Call for Bid for: Memorial University (the Owner) Open Call Number: _____

Project Name: _____ Project Number: _____

Contractor's Full Business Name:

Contractor's Full Business Mailing Address:

Phone Number: _____ Email: _____

Signature(s)

Title(s)

Contractor:

Signature

Print Name

I have authority to bind the corporation.

Witness:

Signature

Print Name

Signed of Behalf of Memorial University (the Owner):

Signature

Print Name

I have authority to bind the corporation.

Witness:

Signature

Print Name

This Stipulated Price Contract is signed at St. John's, NL on this ____ day of _____, 20 ____.

SPECIFICATIONS



**MEMORIAL UNIVERSITY
ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1**

PROJECT NO: VAR-505-23

SEPTEMBER 3, 2026

0	2026/09/03	Issued for Tender	DC	DC
A	2026/04/17	Issued for 99% Review	DC	DC
Rev.	Date yyyy/mm/dd	Description	Checked/ Reviewed By	Approved By

JBC-25-C-024
Memorial University
St. John's Campus
Arc Flash Corrective Work
Package #1
Discipline Sign Off

Issued 09/2026

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PROVINCE OF NEWFOUNDLAND AND LABRADOR



PERMIT HOLDER
This Permit Allows

JEWEL BAILEY CONSULTANTS ULC

MIRC:

To practice Professional Engineering
in Newfoundland and Labrador.
Permit No. as issued by PEG N0540
which is valid for the year 2026.

JBC-25-C-024
Memorial University
St. John's Campus
Arc Flash Corrective Work
Package #1

Issued 09/2026

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Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings
Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings
Section 26 05 43.01 - Installation of Cables in Trenches and in Ducts
Section 26 12 16.01 - Dry Type Transformers Up to 600 V Primary
Section 26 12 19 - Pad Mounted, Liquid Filled Medium Voltage Transformers
Section 26 24 16.01 - Panelboards – Breaker Type
Section 26 28 16.02- Moulded Case Circuit Breakers
Section 26 80 00 - Commissioning of Electrical Systems

LIST OF DRAWINGS

ELECTRICAL

- E1 MEMORIAL UNIVERSITY PARTIAL SOUTH CAMPUS
- E2 SCHOOL OF MUSIC GROUND FLOOR PLAN
- E3 SCHOOL OF MUSIC EXISTING AND REVISED ELECTRICAL SINGLE LINE
DIAGRAM
- E4 FACILITIES MANAGEMENT PART FLOOR PLANS
- E5 FACILITIES MANAGEMENT EXISTING ELECTRICAL SINGLE LINE DIAGRAM
- E6 FACILITIES MANAGEMENT REVISED ELECTRICAL SINGLE LINE DIAGRAM
- E7 PHYSICAL EDUCATION BUILDING FLOOR PLAN
- E8 PHYSICAL EDUCATION BUILDING EXISTING ELECTRICAL SINGLE LINE
DIAGRAM
- E9 PHYSICAL EDUCATION BUILDING REVISED ELECTRICAL SINGLE LINE
DIAGRAM

FORM OF ADDENDUM

1. PRECEDENCE

Addenda shall form an integral part of the Specification and to be read in conjunction therewith. Addenda shall take precedence over all forms of the aforementioned Specifications and Drawings with which it may prove to be at variance or may otherwise be qualified in writing by authorized personnel.

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2. **GENERAL**

The General Conditions and all documents issued with this Specification shall apply and govern all phases of the Work covered by Addenda.

Contractors are advised to acknowledge receipt of all Addenda on the Tender Form when submitting a bid.

3. **PURPOSE**

The Purpose of this Addenda is to inform bidders of clarifications, changes and additions to the Contract Documents and Drawings.

LIST OF ADDENDA (as issued during the Tender Period)

TECHNICAL SPECIFICATIONS

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Section 01 11 00 – Summary of Works

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Title and description of Work.
- .2 Contractor use of premises.
- .3 Owner occupancy.

1.2 **WORK COVERED BY CONTRACT DOCUMENTS**

- .1 Work of this Contract comprises: new padmount transformers, medium and low voltage feeders and terminations, new dry type transformers, and arc flash reduction and mitigation equipment. The work is located at MUN campus in St. John's, NL. The scope of work noted above is intended as a general description. The contractor shall refer to the full set of contract specifications and drawings to determine the full extent of the work.
- .2 Work covered by the contract documents includes Commissioning of the facility as per Section 01 91 13 – Commissioning (Cx) Requirements.
- .3 The contractor is required to develop and implement temporary power procedures and cutover sequences by making use of existing equipment, temporary equipment and new equipment. These procedures and sequences shall be submitted with a workplan prior to starting work on site.
- .4 Buildings must remain fully operational at all times during this project.
- .5 Work must be substantially complete within 12 months of contract award.

1.3 **CONTRACTOR USE OF PREMISES**

- .1 Contractor has restricted use of site.
- .2 Coordinate use of premises under direction of Owner's Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

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- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Owner's Representative.

1.4 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.5 RELATED WORK

- .1 The following specification sections are referenced to indicate work responsibilities as specified and carried in other versions.
 - .1 Section 26 05 00 – Common Work Results – Electrical.

1.6 ON-SITE DOCUMENTS

- .1 Maintain at job site documents as indicated in Section 01 31 00 – Project Management and Coordination.

1.7 CONTRACT DOCUMENTS

- .1 Legends and schedules in the Issued for Tender Drawings take precedence over the Technical Specifications with respect to products and materials identified.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Section – 01 14 00 Work Restrictions

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Connecting to existing services.
- .2 Special scheduling requirements.

1.2 **RELATED SECTIONS**

- .1 Section 01 32 00 – Construct Progress Documentation.
- .2 Section 01 56 00 - Temporary Barriers and Enclosures.

1.3 **EXISTING SERVICES**

- .1 Notify Owner's Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Owner's Representative a notice of three (3) working days for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for pedestrian and vehicular traffic.

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Section 01 21 00 – Allowances

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PART 1 **GENERAL**

1.1 **CASH ALLOWANCES**

- .1 Include in Contract Price, cash allowances as stated herein:
 - .1 Ten thousand dollars (\$10,000.00) – Existing Conditions.
- .2 Expend each allowance as directed by Owner's Representative.
- .3 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
- .4 Each cash allowance will be adjusted to actual cost as defined hereunder and contract price will be amended accordingly by written order.
- .5 Contract Price will be adjusted by written order to provide for an excess or deficit to each cash allowance.
- .6 Progress payments for work and material authorized under cash allowances will be made in accordance with contract terms of payment.
- .7 The Contract Price and not cash allowance, includes contractor's overhead and profit in connection with such cash allowance.
- .8 Progress payments on accounts of work authorized under cash allowances shall be included in monthly certificate for payment.
- .9 Schedule shall be prepared jointly by Owner's Representative and Contractor to show when items called for under cash allowances must be authorized by Owner's Representative for ordering purposes so that progress of work will not be delayed.

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PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Section 01 25 00 – Substitution Procedures

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PART 1 **GENERAL**

1.1 **RELATED DOCUMENTS**

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 **SUMMARY**

- .1 Section includes administrative and procedural requirements for substitutions.

1.3 **RELATED SECTIONS**

- .1 Section 01 61 00 – Common Product Requirements.

1.4 **DEFINITIONS**

- .1 Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by General Contractor.
- .2 Substitutions for Cause: Changes proposed by General Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
- .3 Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to General Contractor or Owner. No substitutions for convenience are permitted.

1.5 **ACTION SUBMITTALS**

- .1 Substitution Requests: Submit one (1) copy of each request, in PDF format, for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section Number and Title, and Drawing Numbers and Titles.
 - .1 Substitution Request Form: Use form provided at the end of this section.

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- .2 Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - .1 Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - .2 Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - .3 Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - .4 Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - .5 Samples, where applicable or requested.
 - .6 Certificates and qualification data, where applicable or requested.
 - .7 List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - .8 Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - .9 Detailed comparison of General Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - .10 Cost information, including a proposal of change, if any, in the Contract Sum.
 - .11 General Contractor's certification that proposed substitution complies with requirements in the Contract Documents

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except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

- .12 General Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

- .3 Owner's Representative Action: If necessary, Owner's Representative will request additional information or documentation for evaluation within five (5) working days of receipt of a request for substitution. Owner's Representative will notify General Contractor of acceptance or rejection of proposed substitution within ten (10) working days of receipt of request, or five (5) working days of receipt of additional information or documentation, whichever is later.

- .1 Forms of Acceptance: Change Order, Construction Change Order, or Owner's Representative Supplemental Instructions for minor changes in the Work.
- .2 Use product specified if Owner's Representative does not issue a decision on use of a proposed substitution within time allocated.

1.6 QUALITY ASSURANCE

- .1 Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.7 PROCEDURES

- .1 Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 PRODUCTS

2.1 SUBSTITUTIONS

- .1 Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen (15) days prior to the time required for preparation and review of related submittals.

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- .1 Conditions: Owner's representative will consider General Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner's Representative will return requests without action, except to record noncompliance with these requirements:
 - .1 Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - .2 Requested substitution provides sustainable design characteristics that specified product provided.
 - .3 Substitution request is fully documented and properly submitted.
 - .4 Requested substitution will not adversely affect General Contractor's construction schedule.
 - .5 Requested substitution has received necessary approvals of authorities having jurisdiction.
 - .6 Requested substitution is compatible with other portions of the Work.
 - .7 Requested substitution has been coordinated with other portions of the Work.
 - .8 Requested substitution provides specified warranty.
 - .9 If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- .2 Substitutions for Convenience: Not permitted.

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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**Equal or Substitute
Product Request Form**

Request Received on (Date): _____

Owner’s Representative Review – This Substitution is:

- ☐ Approved.
(Submittals in accordance with Section 01 33 00 – Submittal Procedures)
- ☐ Approved as Noted.
(Submittals in accordance with Section 01 33 00 – Submittal Procedures)
- ☐ Rejected.
(Use Specified Materials)
- ☐ Rejected:
(Request Not Received Within Specified Time Period – Use Specified Materials)

Review Issued By: _____

(Print Name)

(Signature)

(Date)

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PART 1 **GENERAL**

1.1 **RELATED DOCUMENTS**

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- .2 The General Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - .1 General Conditions of Stipulated Price Contract.
 - .2 Supplementary General Conditions.

1.2 **SUMMARY**

- .1 Section includes administrative and procedural requirements for handling and processing Contract modifications. Contractor shall develop and implement a system acceptable to Owner's Representative for the preparation, review and processing of Proposed Change Orders, contingency and allowance expenditure authorizations, Change Orders, and requests for information.

1.3 **RELATED SECTIONS**

- .1 Section 01 25 00 - Substitution Procedures.

1.4 **DEFINITIONS**

- .1 Free Float – the maximum amount of time a scheduled activity can be delayed without delaying the early start date of any succeeding activities or violating a schedule restraint, (or the range an activity can move around without affecting the start of any activity after it.)
- .2 Total Float – the maximum amount of time a scheduled activity can be delayed or extended from its early start date without delaying the project finish date or violating a schedule restraint, (the range an activity can move around without affecting the end date of the project.)

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1.5 MINOR CHANGES IN THE WORK

- .1 Owner's Representative will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.6 OWNER INITIATED PROPOSAL CHANGES

- .1 Owner's Representative may issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - .1 Work Proposed Change Orders issued by Owner's Representative are not instructions either to stop work in progress or to execute the proposed change.
 - .2 Within time specified in Proposed Change Order or ten (10) working days, when not otherwise specified, after receipt of Proposed Change Order, submit a quotation for cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - .1 Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - .2 Include costs of labor and supervision directly attributable to the change.
 - .3 Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.7 GENERAL CONTRACTOR INITIATED PROPOSED CHANGES

- .1 If latent or changed conditions require modifications to the Contract, the General Contractor may initiate a claim by submitting a request for a change to Owner's Representative.
 - .1 Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the

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proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

- .2 Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
- .3 Indicate applicable delivery charges, equipment rental, and amounts of trade discounts.
- .4 Include costs of labor and supervision directly attributable to the change.
- .5 Include an updated General Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- .6 Comply with requirements in Section 01 25 00 - Substitution Procedures if the proposed change requires substitution of one product or system for product or system specified.

1.8 CHANGE ORDER PROCEDURES

- .1 On approval of a Proposed Change Order for the Work, Owner's Representative will issue a Contract Change Order signed by the Owner's Representative and must be signed by the General Contractor and returned to the Owner's Representative.

1.9 CONSTRUCTION CHANGE DIRECTIVE

- .1 Owner's Representative may issue a Construction Change Directive.
- .2 A Construction Change Directive
 - .1 Instructs Contractor to proceed with a change in the Work, for potential inclusion in a Change Order.
 - .2 Contains a complete description of change in the Work.
 - .3 Designates method to be followed to determine change in the Contract Sum or the Contract Time.
- .3 Documentation:
 - .1 Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

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- .2 After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.10 REQUESTS FOR INFORMATION (RFI)

- .1 In the event that the General Contractor or any Subcontractor involved in the Work, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Owner's Representative, the General Contractor shall submit a Request for Information (RFI) in writing to the Owner's Representative.
- .2 RFI's may only be submitted by the General Contractor and shall only be submitted on the RFI Form as required by the Owner's Representative. Any RFI's submitted, not on the official RFI Form will be returned to the Contractor unreviewed.
- .3 In the RFI, the General Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Owner's Representative.
- .4 In the RFI, the General Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.
- .5 The Owner's Representative will review all RFI's to determine whether they are valid RFI's. If it is determined that the document is not a valid RFI, it will be returned to the General Contractor, unreviewed, with an explanation why it was deemed not valid.
- .6 A RFI Response shall be issued within ten (10) working days of receipt of the request from the General Contractor unless the Owner's Representative determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner's Representative, the Owner's Representative will, within five (5) working days of receipt of the request, notify the General Contractor of the anticipated response time.
- .7 If the General Contractor submits a RFI on an activity with ten (10) working days or less of float on the current project schedule, the General Contractor shall not be entitled to any time extension due to the time it takes the Owner's Representative to respond to the request provided that

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the Owner's Representative responds within the ten (10) working days set forth above.

- .8 A RFI Response from Owner's Representative will not change any requirement of the Contract Documents. In the event the General Contractor believes that the RFI Response will cause a change to the requirements of the Contract Documents, the General Contractor shall within five (5) working days give written notice to the Owner's Representative stating that the General Contractor believes the RFI Response will result in a Change Order and the Contractor intends to submit a "Proposed Change Order" request. Failure to give such written notice of five (5) working days shall waive the General Contractor's right to seek additional time or cost under the requirements of the Contract Documents.

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Request For Information (RFI)

RFI No.: _____ Page No.: _____ Date Requested: _____

Project Name: _____

Project Location: _____

Project No.: _____ Contract No.: _____

Contractor: _____

CONTRACTOR'S REQUEST FOR INFORMATION

RFI Subject: _____

References: Specification(s): Section(s): _____ Paragraph(s): _____

Drawings(s): Drawing No(s): _____ Detail No(s): _____

Potential Cost Impact: _____

Potential Schedule Impact: _____

Request By: _____

(Print Name)

(Signature)

Information Requested:

General Contractor's Recommendation:

Request For Information (RFI)

OWNER'S REPRESENTATIVE RESPONSE

Date Received: _____ Date Answered: _____

Request Reviewed By: _____
 (Print Name) (Signature)

(Date)

Owner's Representative Response to Contractor:

Attachments From Owner's Representative:

Note: The RFI system is intended to provide an efficient mechanism for responding to General Contractor's Requests for Information. It does not provide authority to proceed with additional work. If the General Contractor considers the RFI response a changed condition, provide written notice to the Owner's Representative in accordance with Contract provisions.

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Section 01 29 83 – Payment Procedures:
Testing Laboratory Services

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Inspecting and testing by inspecting firms or testing laboratories designated by Owner's Representative

1.2 **RELATED REQUIREMENTS SPECIFIED ELSEWHERE**

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Owner's Representative are specified under various sections.

1.3 **APPOINTMENT AND PAYMENT**

- .1 Owner's Representative will appoint and pay for services of testing laboratory except as follows:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests specified to be carried out by Contractor under the supervision of Owner's Representative.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Owner's Representative to verify acceptability of corrected work.

1.4 **CONTRACTOR'S RESPONSIBILITIES**

- .1 Provide labour, equipment and facilities to:
 - .1 Provide access to Work to be inspected and tested.
 - .2 Facilitate inspections and tests.
 - .3 Make good Work disturbed by inspection and test.

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Testing Laboratory Services

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- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Owner's Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Owner's Representative.

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Section 01 31 00 - Project Management
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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Coordination work with other contractors and subcontractors under administration of Owner's Representative.
- .2 Scheduled project meetings.

1.2 **RELATED SECTIONS**

- .1 Section 01 11 00 - Summary of Work.
- .2 Section 01 91 13 – General Commissioning (Cx) Requirements.

1.3 **DESCRIPTION**

- .1 Coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other contractors and subcontractors under instructions of Owner's Representative.

1.4 **PROJECT MEETINGS**

- .1 Project meetings to be held at times and locations as determined by Owner's Representative.
- .2 Owner's Representative will arrange project meetings and record and distribute minutes.

1.5 **CONSTRUCTION ORGANIZATION AND START-UP**

- .1 Within ten (10) working days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Establish time and location of meetings and notify parties concerned minimum five (5) days before meeting.
- .3 Agenda to include following:
 - .1 Appointment of official representative of participants in Work.

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- .2 Schedule of Work, progress scheduling in accordance with Section 01 32 00 - Construction Progress Documentation.
- .3 Schedule of submission of shop drawings, samples, colour chips in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00 - Temporary Utilities.
- .5 Delivery schedule of specified equipment in accordance with Section 01 32 00 - Construction Progress Documentation.
- .6 Site security in accordance with Section 01 52 00 - Construction Facilities.
- .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .8 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.
- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, and warranties in accordance with Section 01 77 00 - Closeout Procedures and 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .12 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 - Quality Control.
- .13 Insurances and transcript of policies.
- .4 Comply with Owner's Representative's allocation of mobilization areas of site; for field offices and sheds, for access, traffic, and parking facilities.
- .5 During construction coordinate use of site and facilities through Owner's Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .6 Comply with instructions of Owner's Representative for use of temporary utilities and construction facilities.

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1.6 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed shop drawings.
 - .5 List of outstanding shop drawings.
 - .6 Change orders.
 - .7 Other modifications to Contract.
 - .8 Field test reports.
 - .9 Copy of approved Work schedule.
 - .10 Health and Safety Plan and other Safety related documents.
 - .11 Manufacturers' installation and application instructions.
 - .12 Labour conditions and wage schedules.
 - .13 Other documents as specified.

1.7 SCHEDULES

- .1 Submit preliminary construction progress schedule in accordance with Section 01 32 00 - Construction Progress Documents to Owner's Representative coordinated with Owner's Representative's project schedule. Schedule to show anticipated progress stages and final completion of work within time period required by contract documents.
- .2 After review, revise and resubmit schedule to comply with project schedule requirements.
- .3 During progress of Work revise and resubmit at project progress meetings or as directed by Owner's Representative.

1.8 SUBMITTALS

- .1 Make submittal to Owner's Representative for review.
- .2 Submit preliminary shop drawings, product data and samples in accordance with Section 01 33 00 – Submittal Procedures for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of

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other contracts. After review, revise and resubmit for transmittal to Owner's Representative.

- .3 Submit requests for payment for review to Owner's Representative.
- .4 Submit requests for interpretation of Contract Documents, and obtain instructions through Owner's Representative.
- .5 Process change orders through Owner's Representative.
- .6 Deliver closeout submittals for review by Owner's Representative.

1.9 COORDINATION

- .1 Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.
- .2 Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection and operation.
- .3 Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
- .4 Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair of all components, mechanical, electrical, and otherwise,
 - .1 Provide adequate clearances for installation and maintenance of equipment.
 - .2 Install work to permit removal of parts requiring periodic replacement or maintenance.
 - .3 Arrange pipes, ducts, raceways and equipment to permit ready access to valves, cocks, traps, starters, motors, and control components.
 - .4 Doors and access panels shall be kept clear.
 - .5 Utilize space efficiently so that adequate accessibility is retained for future maintenance, repairs, modifications and additions.

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- .6 Check the locations selected for all sprinkler heads and check the Architectural reflected ceiling plans to prevent conflicts between the trades.
- .7 Contractor is cautioned that, where specific dimensions are not indicated or where Drawings are schematic in nature, as with most Electrical and Mechanical Drawings, Contractor shall have sole responsibility to coordinate the work to meet this requirement.
- .5 Make adequate provisions to accommodate items scheduled for later installation.
- .6 Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work and completion within the specified Contract duration. Such administrative activities include, but are not limited to, the following:
 - .1 Preparation of Contractor's Construction Schedule.
 - .2 Installation and removal of temporary facilities and controls.
 - .3 Delivery and processing of submittals.
 - .4 Progress meetings.
 - .5 Start-up, check-out, and final acceptance of systems.
 - .6 Project closeout activities.
 - .7 Protection of existing and new work.
- .7 Changes required in the Work of the Contract, caused by the Contractor's neglect to coordinate the work with others shall be made at the Contractor's own expense.

1.10 COORDINATION DRAWINGS

- .1 Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
- .2 Contractor to submit to the Owner's Representative, in AutoCAD format, coordination drawings, drawn accurately to a scale large enough to indicate and resolve conflicts.

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- .3 Indicating the functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
- .4 Do not base coordination drawings on standard printed data.
- .5 Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
- .6 Show location and size of access doors required for access to concealed dampers, valves, and other controls.
- .7 Indicate required installation sequences.
- .8 Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
- .9 Minor dimension changes and difficult installations will not be considered changes to the Contract.
- .10 Owner's Representative will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination. If Owner's Representative determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Owner's Representative will so inform Contractor, who shall make changes as directed and resubmit.

1.11 CLOSEOUT PROCEDURES

- .1 Notify Owner's Representative when Work is considered ready for Substantial Performance.
- .2 Accompany Owner's Representative on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with Owner's Representative's instructions for correction of items of Work listed in executed certificate of Substantial Performance and for access to Owner-occupied areas.
- .4 Notify Owner's Representative of instructions of items of Work determined in Owner's Representative's final inspection.

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PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 77 00 - Closeout Procedures.

1.2 **SCHEDULES REQUIRED**

- .1 Submit schedules as follows:
 - .1 Construction Progress Schedule.
 - .2 Submittal Schedule for Shop Drawings and Product Data.
 - .3 Submittal Schedule for Samples.
 - .4 Product Delivery Schedule.
 - .5 Cash Allowance Schedule for purchasing Products.
 - .6 Shutdown or closure activity.

1.3 **FORMAT**

- .1 Prepare schedule in form of a horizontal bar chart.
- .2 Provide a separate bar for each major item of work, trade or operation.
- .3 Split horizontally for projected and actual performance.
- .4 Provide horizontal time scale identifying first work day of each week.
- .5 Format for listings: chronological order of start of each item of work.
- .6 Identification of listings: By Systems description.

1.4 **SUBMISSION**

- .1 Submit initial format of schedules within 15 working days after award of Contract.
- .2 Submit schedules in electronic format, forward on disc as PDF files.
- .3 Submit one opaque reproduction, plus 2 copies to be retained by Owner's Representative.
- .4 Owner's Representative will review schedule and return review copy within ten (10) working days after receipt.

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- .5 Resubmit finalized schedule within seven (7) working days after return of review copy.
- .6 Submit revised progress schedule with each application for payment.
- .7 Distribute copies of revised schedule to:
 - .1 Job site office.
 - .2 Subcontractors.
 - .3 Other concerned parties.
- .8 Instruct recipients to report to Contractor within ten (10) working days, any problems anticipated by timetable shown in schedule.

1.5 CRITICAL PATH SCHEDULING

- .1 Include complete sequence of construction activities.
- .2 Include dates for commencement and completion of each major element of construction as follows.
 - .1 Site clearing.
 - .2 Site utilities.
 - .3 Foundation Work.
 - .4 Structural framing.
 - .5 Special Subcontractor Work.
 - .6 Equipment Installations.
 - .7 Finishes.
- .3 Show projected percentage of completion of each item as of first day of month.
- .4 Indicate progress of each activity to date of submission schedule.
- .5 Show changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised projections of progress and completion.
 - .4 Other identifiable changes.
- .6 Provide a narrative report to define:
 - .1 Problem areas, anticipated delays, and impact on schedule.
 - .2 Corrective action recommended and its effect.

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.3 Effect of changes on schedules of other prime contractors.

1.6 SUBMITTALS SCHEDULE

.1 Include schedule for submitting shop drawings, product data, and samples.

.2 Indicate dates for submitting, review time, resubmission time, last date for meeting fabrication schedule.

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PART 1 **GENERAL**

1.1 **SECTIONS INCLUDE**

- .1 Shop drawings and product data.
- .2 Samples.
- .3 Certificates and transcripts.

1.2 **RELATED SECTIONS**

- .1 Section 01 32 00 – Construction Progress Documentation.
- .2 Section 01 45 00 – Quality Control
- .3 Section 01 78 00 – Closeout Submittals

1.3 **ADMINISTRATIVE**

- .1 This section specifies general requirements and procedures for contractor's submissions of shop drawings, product data, samples and mock-ups to Owner's Representative 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 an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with work until relevant submissions are reviewed by Owner's Representative.
- .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 Owner's Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

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- .6 Notify Owner's 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 Owner's Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Owner's Representative review of submission, unless Owner's Representative gives written acceptance of specific deviations.
- .10 Make any changes in submissions which Owner's Representative may require consistent with Contract Documents and resubmit as directed by Owner's Representative. When resubmitting, notify Owner's Representative in writing of revisions other than those requested.
- .11 Notify Owner's Representative, in writing, when resubmitting, of any revisions other than those requested by Owner's Representative.
- .12 Keep one reviewed copy of each submission on site.

1.4 SUBMITTALS

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.
- .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.

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- .4 Allow ten (10) working days for Owner's Representative review of each submission.
- .5 Adjustments made on shop drawings by Owner's Representative are not intended to change contract price. If adjustments affect value of Work, state such in writing to Owner's Representative immediately after receipt of approval of shop drawings. If value of work is to change a change order must be issued prior to proceeding with work.
- .6 Structural Attachments:
 - .1 Make changes in shop drawings as Owner's Representative may require, consistent with Contract Documents. When resubmitting, notify Owner's Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.

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- .4 Capacities.
- .5 Performance characteristics.
- .6 Standards.
- .7 Operating weight.
- .8 Wiring diagrams.
- .9 Single line and schematic diagrams.
- .10 Relationship to adjacent work.
- .9 After Owner's Representative review, distribute copies.
- .10 Submit 3 prints plus one electronic copy in PDF format of shop drawings for each requirement requested in specification Sections and as Owner's Representative may reasonably request.
- .11 Submit electronic copy in PDF format of product data sheets or brochures for requirements requested in Specification Sections and as requested by Owner's Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Delete information not applicable to project.
- .13 Supplement standard information to provide details applicable to project.
- .14 Cross-reference product data information to applicable portions of Contract Documents.
- .15 If upon review by Owner's Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of work may proceed.
- .16 Samples: examples of materials, equipment, quality, finishes, workmanship. Label samples with origin and intended use.
- .17 Notify Owner's Representative in writing, at time of submission of deviations in samples from requirements of contract documents.
- .18 Where colour, pattern or texture is criterion, submit full range of samples.

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- .19 Adjustments made on samples by Owner's Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Owner's Representative prior to proceeding with Work.
- .20 Make changes in samples, which Owner's Representative may require, consistent with Contract Documents.
- .21 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.
- .22 Submit drawings stamped and signed by Professional Engineer registered or licensed in the Province of Newfoundland and Labrador.

1.5 PROGRESS PHOTOGRAPHS

- .1 Progress photograph to be electronically formatted and labelled as to location and view.

1.6 SHOP DRAWINGS REVIEW

- .1 The review of shop drawings by Owner's Representative is for the sole purpose of ascertaining conformance with the general concept. This review shall not mean that Owner's Representative approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents. Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades.

1.7 STRUCTURAL ATTACHMENTS

- .1 Contractor to engage a third party Professional Structural Engineer, licensed to practice in the Province of Newfoundland and Labrador, for submission of stamped and signed shop drawings indicating acceptable mounting procedures for all equipment which is suspended, mounted or otherwise attached, as per Section 01 91 13 – Commissioning (Cx) Requirements. The Structural Engineer to also verify correct installation of the equipment.

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PART 1 **GENERAL**

1.1 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-Z259.1 Body Belts and Saddles for Work Positioning and Travel Restraint.
 - .2 CAN/CSA-Z259.10 Full body Harnesses.
 - .3 CAN/CSA-Z259.11 Energy Absorbers and Lanyards.
 - .4 CAN/CSA-Z259.2.1 Fall Arresters, Vertical Lifelines and Rails.
 - .5 FCC No. 301 Standard for Construction Operations.
 - .6 CSA Z275.2 Occupational Safety Code for Diving Operations.
 - .7 CSA Z275.4 Competency Standard for Divers Operations.
 - .8 CSA Z797, Code of Practice for Access Scaffold.
- .2 FCC No. 302 Standard for Welding and Cutting.
- .3 Transportation of Dangerous Goods Act Regulations.
- .4 Newfoundland Occupational Health and Safety Act, Amended
- .5 Consolidated Newfoundland and Regulations 1149 WMIS Regulations Under the Occupational Health and Safety Act
- .6 Consolidated Newfoundland and Regulations Occupational Health and Safety Regulations under the Occupational Health and Safety Act.
- .7 Canada Labour Code, Part 2.
- .8 National Building Code of Canada.
- .9 Department of Transportation and Infrastructure Occupational Health and Safety Manual.

1.2 **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 35 43 - Environmental Procedures.

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- .3 Section 01 41 00 - Regulatory Requirements.
- .4 Section 02 82 00.02 – Asbestos Abatement.

1.3 SUBMITTALS

- .1 At least 10 (ten) working days prior to commencing any site work: submit to Owner's Representative copies of:
 - .1 A complete Site Specific Health and Safety Plan.
 - .2 If work entails blasting, submit the following:
 - .1 Valid Blaster's Certificate and Certificates of Qualification acceptable to the OHS Regulations 5/12 under section 419 identifying the Level of Qualification for the project requirements (Journey Persons Blaster Certificate will still be accepted). An acceptable letter of extension of blasters certificate from the Industrial Training Division of the Provincial Department of Education is required when certificate expires (5 years max.). Certificate numbers and names are required for all blasters proposed for the project.
 - .2 Temporary Magazine License, when required issued, by Natural Resources Canada.
 - .3 Explosives Vehicle Certificate, when required, issued by Transport Canada for transport of explosives regulated under the Transportation of Dangerous Good Act.
 - .4 Blaster resume which clearly states and demonstrates:
 - .1 Minimum five (5) years of experience in handling, storage and detonation of explosives.
 - .2 Training at a blaster's school which is acceptable to the provincial government.
 - .3 If work entails diving, submit the following:
 - .1 Diver(s) and dive supervisor (s).
 - .1 Copy of valid Diving Certificate and Supervisor Certificate from the Diving Certification Board of Canada (or equivalent) for the required work on the project. (i.e. Restricted SCUBA Diver, Unrestricted SCUBA Diver, SCUBA Supervisor, Restricted Surface-Supplied Diver, Unrestricted Surface-Supplied Diver, etc. (See www.divercertification.com)

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- .2 Resume which clearly demonstrates years of experience for the specific type (SCUBA, Surface Supplied Air, etc.) of diving to be performed at the site and projects completed to achieve minimum number of logged bottom time, hours and
 - .3 First aid and CPT Training Certification.
- .2 Dive tender(s) resume which clearly states relevant training (including first aid and (CPR) and experience for the specific task (i.e. dive tender log book).
- .3 Current (less than one year) medical examination certificate (s) from a licensed medical doctor in the Province of Newfoundland and Labrador who is knowledgeable and competent in diving and hyperbaric medicine for all dives.
- .4 Certificates of Analysis for quality/purity of breathing air to be used by diver(s).
- .5 Documentation showing that diving life support equipment is in good working order and properly maintained.
- .6 Copies of documentation shall be submitted to show:
 - .1 An up-to-date dive site listing of the contact Hyperbaric facility and phone numbers for each location.
 - .2 Written arrangements with standby physician(s) specializing in diving/hyperbaric medicine for contingent emergency response and post dive follow-up for 48 hours after dive is completed.
 - .3 Effective means of communication between the diving supervisor and physician are available.
 - .4 The name, location and telephone number of the hospital and emergency department nearest the dive site.
- .4 If work entails confined space, submit the following:
 - .1 Copies of current confined space entry training certificates acceptable to WHSCC, as well as copies of confined space entry programs, confined space assessment, safe work practices and rescue plans.
- .2 Acceptance of the Site Specific Health and Safety Plan and other submitted documents by the Owner's Representative shall only be

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viewed as acknowledgement that the contractor has submitted the required documentation under this specification section.

- .3 Owner's Representative makes no representation and provides no warranty for the accuracy, completeness and legislative compliance of the Site Specific Health and Safety Plan and other submitted documents by this acceptance.
- .4 Responsibility for errors and omissions in the Site Specific Health and Safety Plan and other submitted documents is not relieved by acceptance by Owner's Representative.

1.4 OCCUPATIONAL HEALTH AND SAFETY (SITE SPECIFIC HEALTH AND SAFETY PLANS)

- .1 Conduct operations in accordance with latest edition of the Newfoundland Occupational Health and Safety (OH&S) Act and Regulations, with specific reference to codes and standards referenced therein, and the Department of Transportation and Infrastructure Occupational Health and Safety Manual (http://www.tw.gov.nl.ca/publications/ohs_full.pdf).
- .2 Prepare a detailed Site Specific Health and Safety Plan that shall identify, evaluate and control job specific hazards and the necessary control measures to be implemented for managing hazards.
- .3 Provide a copy of the Site Specific Health and Safety Plan upon request to Occupational Health and Safety Branch, Services NL, Province of Newfoundland and Labrador and the Owner's Representative.
- .4 The written Site Specific Health and Safety Plan shall incorporate the following:
 - .1 Hazard assessment results.
 - .2 Engineering and administrative demonstrative controls (work-practices and procedures) to be implemented for managing identified and potential hazards, and comply with applicable federal and provincial legislation and more stringent requirements that have been specified in these specifications.
 - .3 An organizational structure which shall establish the specific chain of command and specify the overall responsibilities of contractor's employees at the work site.
 - .4 A comprehensive work plan which shall:

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- .1 define work tasks and objectives of site activities/operations and the logistics and resources required to reach these tasks and objectives.
- .2 establish personnel requirements for implementing the plan.
- .5 A personal protected equipment (PPE) Program which shall detail PPE:
 - .1 Selection criteria based on site hazards.
 - .2 Use, maintenance, inspection and storage requirements and procedures.
 - .3 Decontamination and disposal procedures.
 - .4 Inspection procedures prior to, during and after use, and other appropriate medical considerations.
 - .5 Limitations during temperature extremes, heat stress and other appropriate medical consideration.
- .6 An emergency response procedure, refer to Clause 1.5 Supervision and Emergency Response Procedure of this section for requirements.
- .7 A hazard communication program for informing workers, visitors and individuals outside of the work area as required. This will include but not be limited to a visitor safety and orientation policy and program that will include education on hazards, required PPE and accompaniment while on site.
- .8 A hearing conservation program in accordance with the OHS Regulations.
- .9 A recent (current year) inspection form for all powered mobile equipment that will be used in fulfilling the terms of the contract. The inspection form shall, at a minimum, state that the equipment is in a safe operating condition.
- .10 A complete listing of employee names, their driver's license classification, expiry date, endorsements and the type of equipment that they are qualified to operate for the complete scope of work for this project. The Driver's License Number should not be provided as this is confidential information. Provision of the License Number may breach *PIPEDA* - the Personal Information Protection and Electronic Documents Act. (Federal Act) or *ATIPPA* - *Access to Information and Protection of Privacy Act* - Part IV. (Provincial Act of Newfoundland and Labrador). This shall also include documentation where required of certification in power line hazards.

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- .11 An acceptable parking policy for all powered mobile equipment to be used on this project. The policy shall, at a minimum, be based on a hazard assessment that considers factors such as equipment type, potential for roll over, load capacity of the parking area, pedestrian and vehicular traffic, and potential for equipment tampering, equipment energy, and equipment contact with power lines.
- .12 A diving program which shall contain standard operating procedures to be followed in the diving operation.
- .13 A health and safety training program which includes a safety training matrix.
- .14 General safety rules.
- .5 Periodically review and modify as required each component of the Site Specific Health and Safety Plan when a new hazard is identified during completion of work and when an error or omission is identified in any part of the Site Specific Health and Safety Plan.
- .6 Review the completeness of the hazard assessment immediately prior to commencing work, when a new hazard is identified during completion of work and when an error or omission is identified.
 - .1 Be solely responsible for investigating, evaluating and managing any report of actual or potential hazards.
 - .2 Clearly define accident incident investigation procedures.
 - .3 Clearly define policy and processes for early and safe return to work.
 - .4 Retain copies of all completed hazard assessments at the project site and make available to the Owner's Representative immediately upon request.
- .7 Implement all requirements of the Site Specific Health and Safety Plan.
 - .1 Ensure that every person entering the project site is informed of requirements under the Site Specific Health and Safety Plan.
 - .2 Take all necessary measures to immediately implement any engineering controls, administrative controls, personal protective equipment required or termination of work procedures to ensure compliance with the Site Specific Health and Safety Plan.

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1.5 SUPERVISION AND EMERGENCY RESCUE PROCEDURE

- .1 Carry out work under the direct supervision of competent persons responsible for safety by ensuring the work complies with the appropriate section of OH&S Act and Regulations
- .2 Assign a sufficient number of supervisory personnel to the work site.
 - .1 Any person assigned to supervisory duties shall not conduct significant work in relation to the contract that inhibits them from the ability to properly supervise the work site.
- .3 Provide a suitable means of communications and check-in for workers required to work alone.
- .4 Develop an emergency rescue plan for the job site and ensure that supervisors and workers are trained in the emergency rescue plan.
- .5 The emergency response plan shall address, as a minimum:
 - .1 Pre-emergency planning.
 - .2 Personnel roles, lines of authority and communication.
 - .3 Emergency recognition and prevention.
 - .4 Safe distances and places of refuge.
 - .5 Site security and control
 - .6 Evacuation routes and procedures
 - .7 Decontamination procedures which are not covered by the site specific safety and health plan.
 - .8 Emergency medical treatment and first aid.
 - .9 Emergency alarm, notification and response procedures including procedures for reporting incidents to local, provincial and federal government departments.
 - .10 PPE and emergency equipment.
 - .11 Procedures for handling emergency incidents.
 - .12 Site specific emergency response training requirements and schedules.
 - .13 For diving operation, include procedures for:
 - .1 Managing deteriorating environmental conditions.
 - .2 Managing unexpected weather or sea-state condition.

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- .3 Evacuation of diver(s) under pressures greater than atmospheric pressure.
 - .4 In-water emergency transfers.
 - .5 Managing failing of equipment below the surface that impairs the ability of a diver to complete a dive.
 - .6 Managing failure of any major component of diving plant or equipment.
 - .7 Emergency signalling between divers involved in the diving program and between the diver(s) and the attendants using umbilical, tethers or other suitable methods.
 - .8 Mobilizing stand-by divers.
 - .9 Mobilizing crafts, stand-by boats and any other devices to be used for rescue.
 - .10 Contacting evacuation, rescue, treatment facilities and medical services that will be used in the diving program.
 - .11 Operation of emergency power and lighting facilities.
- .6 The emergency response procedures shall be rehearsed regularly as part of the overall training program.
- .7 Provide adequate first aid facilities for the jobsite and ensure that a minimum number of workers are trained in first aid in accordance with the Occupational Health and Safety First Aid Regulations.

1.6 CONTRACTORS SAFETY REPRESENTATIVE

- .1 The contractor shall employ a Contractor's Safety Representative (CSR) who shall have as a minimum successfully completed the following training, and must have current credentials for those that have expiration dates:
- .1 Training in hazardous materials management and response/protocols.
 - .2 Training in the use, maintenance of fall protection systems certified by WHSCC at a minimum.
 - .3 Training in the inspection of scaffolding in accordance with CSA Z797.
 - .4 Training in confined space entry protocols, techniques and rescue plans, certified by WHSCC at a minimum.
 - .5 Supervisory training.

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- .6 Training in records and statistics.
- .7 Training is hazard identification, inspections, analysis and control.
- .8 Training in WHMIS.
- .9 Training in health and safety program content.
- .10 Training in investigations and reporting.
- .11 Training in occupational health/hygiene.
- .12 Training in employee training and communication.
- .13 Training in Emergency Preparedness and First Aid.
- .14 A working knowledge of, and experience satisfactory to the Department, using the occupational safety and health legislation and regulations specific to Newfoundland and Labrador.
- .15 Experience, satisfactory to the Department, with the safe work practices required for execution of the work and operation of equipment specific to the project.
- .16 Experience, satisfactory to the Department, in developing and monitoring site safety and housekeeping policies.
- .17 Experience, satisfactory to the Department, in developing and monitoring a preventative maintenance and inspection program for Construction Site Equipment.
- .2 The CSR shall:
 - .1 Be responsible for developing, implementing, daily enforcement, monitoring and updating of the Site Specific Health and Safety Plan.
 - .2 Be responsible for the delivery of the site safety orientation and ensure that the personnel who have not been orientated are not permitted to enter the site. This applies to workers, inspectors and visitors.
 - .3 Report directly to and be under direction of the Site Superintendent or Contractor's Project Manager.
 - .4 Prior to mobilization on-site, hold an orientation meeting with the contractors, subcontractors and Owner's Representative to review project occupational health and safety. Include but not limit meeting to a review of:
 - .1 Site Specific Health and Safety Plan.
 - .2 Construction Safety Measures.
 - .3 Supervision and Emergency Rescue Procedures.
 - .4 Hazard Assessments

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- .5 Maintain a daily log of inspections, meetings, infractions and mitigating measures. Log is to be filed daily and copies to be provided to the Site Superintendent and Owner's Representative.
- .6 The CSR may have the designation of National Construction Safety Officer (NCSO), Construction Safety Officer (CSO), Canadian Registered Safety Professional (CRSP), or Certified Health and Safety Consultant (CHSC), or other similar designation.

1.7 HEALTH AND SAFETY COMMITTEE

- .1 Establish an Occupational Health and Safety Committee where ten or more workers are employed on the job site as per the OH&S Act and Regulations.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with Site Specific Health and Safety Plan.
- .3 Where safety risks exist, the contractor must stop the work until such time as the risk can be mitigated to a safe level.
- .4 Take appropriate steps to ensure that the hazards are mitigated to a safe level, workers are notified of the hazards and how to protect themselves. As well, workers must be provided with any new safe work practices or information regarding mitigation of the risk.

1.9 UNFORSEEN HAZARDS

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

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1.10 INSTRUCTION AND TRAINING

- .1 Workers shall not participate in or supervise any activity on the work site until they have been trained to a level required by this job function and responsibility. Training shall as a minimum thoroughly cover the following:
 - .1 Federal and Provincial Health and Safety Legislation requirements including roles and responsibilities of workers and person(s) responsible for implementing, monitoring and enforcing health and safety requirements.
 - .2 Safety and health hazards associated with working on a contaminated site including recognition of symptoms and signs which might indicate over exposure to hazards.
 - .3 Limitations, use, maintenance and disinfection-decontamination of personal protective equipment associated with completing work.
 - .4 Limitations, use, maintenance and care of engineering controls and equipment.
 - .5 Limitations and use of emergency notifications and response equipment including emergency response protocol.
 - .6 Work practices and procedures to minimize the risk of an accident and hazardous occurrence from exposure to a hazard.
- .2 Provide and maintain training of workers, as required, by Federal and Provincial legislation.
- .3 Provide copies of all training certificates to Owner's Representative for review, before a worker is to enter the work site.
- .4 Authorized visitors shall not access the work site until they have been:
 - .1 Notified of the names of persons responsible for implementing, monitoring and enforcing the Site Specific Health and Safety Plan.
 - .2 Briefed on safety and health hazards present on the site.
 - .3 Instructed in the proper use and limitations of personal protective equipment.
 - .4 Briefed as the emergency response protocol including notification and evacuation process.
 - .5 Informed of practices and procedures to minimize risks from hazards and applicable to activities performed by visitors.
 - .6 Accompanied while on site, and provided with the appropriate PPE.

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- .5 All workers will be instructed and trained on the hazards associated with work they will perform and how to protect themselves. This will include a review of all safe work practices, the reporting and documentation of hazards, reporting accidents and injuries as well as, formal training in areas of high risk (i.e. fall protection, power line hazards, traffic control persons training).
- .6 The work site shall have the appropriate number of persons trained in emergency and Standard First Aid according to the First Aid Regulations.

1.11 CONSTRUCTION SAFETY MEASURES

- .1 Observe construction safety measures of National Building Code, latest edition, Provincial Government, OH&S Act and Regulations, Workplace Health and Safety Compensation Commission and Municipal Authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.
- .2 Administer the project in a manner that will ensure, at all times, full compliance with Federal and Provincial Acts, regulations and applicable safety codes and the Site Specific Health and Safety Plan.
- .3 Provide Owner's Representative with copies of all orders, directions and any other documentation, issued by the Occupational Health and Safety Branch, Services NL, immediately after receipt.

1.12 POSTING OF DOCUMENTS

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

1.13 HEALTH AND SAFETY MONITORING

- .1 Periodic inspections of the contractor's work may be carried out by the Owner's Representative to maintain compliance with the Health and Safety Program. Inspections will include visual inspections as well as testing and sampling as required.

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- .2 The contractor shall be responsible for any and all costs associated with delays as a result of contractor's failure to comply with the requirements outlined in this section.

1.14 NOTIFICATION

- .1 For projects exceeding thirty (30) days or more, the contractor shall, prior to the commencement of work, notify in writing the Occupational Health and Safety Branch, Services NL with the following information:
 - .1 Name and location of construction site.
 - .2 Company name and mailing address of contractor doing the work.
 - .3 The number of workers to be employed.
 - .4 A copy of the Site Specific Health and Safety Plan if requested.

1.15 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owner's Representative.
- .2 Provide Owner's Representative with written report of action taken to correct non-compliance of health and safety issues identified within ten (10) working days.
- .3 Owner's Representative may stop work if non-compliance of health and safety regulations is not corrected.

1.16 WHMIS

- .1 Ensure that all controlled products are in accordance with the Workplace Hazardous Materials Information System (WHMIS) Regulations and Chemical Substances of the OH&S Act and Regulations regarding use, handling, labelling, storage, and disposal of hazardous materials.
- .2 Deliver copies of relevant Material Safety Data Sheets (MSDS) to job site and the Owner's Representative. The MSDS must be acceptable to Labour Canada and Health and Welfare Canada for all controlled products that will be used in the performance of this work. All MSDS should be located in accessible locations for all workers and visitors throughout the site, bound and organized in binders.

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- .3 Train workers required to use or work in close proximity to controlled products as per OH&S Act and Regulations.
- .4 Label controlled products at jobsite as per OH&S and Regulations and WHMIS.
- .5 Provide appropriate emergency facilities as specified in the MSDS where workers might be exposed to contact with chemicals, e.g. eye-wash facilities, emergency shower.
 - .1 Workers to be trained in use of such emergency equipment.
- .6 Contractor shall provide appropriate personal protective equipment as specified in the MSDS where workers are required to use controlled products.
 - .1 Properly fit workers for personal protective equipment
 - .2 Train workers in care, use and maintenance of personal protective equipment.
- .7 No controlled products are to be brought on-site without prior approved MSDS.
- .8 The MSDS are to remain on site at all times.

1.17 OVERLOADING

- .1 The Contractor's Full Time CSR and/or Site Superintendent shall ensure no part of work or associated equipment is subjected to loading that will endanger its safety or will cause permanent deformation.

1.18 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1.

1.19 SCAFFOLDING

- .1 Design, erect, inspect, operate, modify, and dismantle scaffolding in accordance with CSA Z797, the OH&S Act and Regulations, and the scaffold manufacturer's written instructions.
- .2 Provide trained and certified Competent Scaffold Erectors for all scaffold erection, modification and dismantling. Training certification must be valid at time of erection, modification and dismantling of scaffold.

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- .3 Conduct and document daily inspections of scaffolding by trained and certified Competent Scaffold Inspectors or Erectors. Training certification must be valid at the time of inspection.
- .4 Provide a scaffold tagging system as described in CSA Z797.
- .5 Ensure that all industry best practices for safe scaffold usage, including fall protection, proper loading, safe access, electrical hazards, exit door management and other concerns are strictly adhered to.

1.20 WORKING AT HEIGHTS

- .1 Ensure that fall restraint or fall arrest devices are used by all workers working at elevations greater than 3.05 meters above grade or floor level in accordance with CSA Z259, where alternate fall protection systems are not provided in accordance with Occupational Health and Safety Act and Regulations.
- .2 All workers performing work at height and who will be required to utilize a fall arrest system must be trained in a fall protection program certified by the WHSCC. Training must be current and valid at the time of use.
- .3 Prior to working at height workers shall be instructed in a Contractor Safe Work Practice for working at height and associated Rescue Plan for working at heights, developed specific to the work to be performed, locations and risks.

1.21 PERSONAL PROTECTIVE EQUIPMENT

- .1 Ensure workers on the jobsite use personal protective equipment appropriate to the hazards identified in the Site Specific Health and Safety Plan and those workers are trained in the proper care, use, and maintenance of such equipment.
- .2 PPE selections shall be based on an evaluation of the performance characteristics of the PPE relative to the requirements and limitations of the site, task-specific conditions, duration and hazards and potential hazards identified on site. PPE must also be fitted for the worker.
- .3 Provide workers and visitors to the site with proper respiratory protection equipment.

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- .1 No work shall be performed in an area where an airborne contaminant exceeds recommendations of the ACGIH, do not meet the appropriate standards for the specific contaminants or are not in accordance with the OHS regulations..
- .2 Respiratory protection shall be provided in accordance with the requirements of the Occupational Health and Safety Branch, Services NL and these specifications.
- .3 Establish, implement and maintain a respirator inspection and maintenance program in accordance with the CSA standard identified in the OHS Regulations.
- .4 Copies of all respirator owners' maintenance manuals shall be kept at all times at the contractor's site office.
- .4 Provide and maintain a supply of dermal protection equipment to allow visitors and all workers proper dermal protection.
 - .1 Dermal protection shall be sufficient to act as a protective barrier between the skin and an airborne contaminant or hazardous material. Dermal protection shall also be provided for all physical hazards.
 - .2 Dermal protection equipment shall not be used after exceeding 75% of the break through time. The break through time shall be based on the contaminant which requires the least amount of time to break through the protective equipment
 - .3 Copies of all dermal protection user specifications, owners and maintenance manuals shall be kept at all times at the contractor's site office.
 - .4 Establish, implement and maintain air inspection program to ensure proper dermal protection in accordance with CSA, NIOSH, U.S. EPA and manufacturer's requirements.
- .5 Provide all workers and up to five (5) visitors to the site with proper hearing protection. Workers and visitors shall not be exposed to noise levels greater than 85 dB (A) over an eight hour shift without proper hearing protection, in accordance with the Hearing Conservation Program.
- .6 Provide all workers and up to five (5) visitors to the site with CSA approved eye protection sufficient to act as a protective barrier between the eye and airborne contaminants, hazardous materials and physical hazard.

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- .7 Provide workers and up to five (5) visitors to the site with CSA approved hard hats meeting the CSA Z94.1.
- .8 Provide high visibility apparel as defined in Occupational Health and Safety Regulations.
- .9 Provide CSA approved safety boots meeting CSA Z195.
- .10 Provide other personal protective equipment, as may be required by the owner, depending on duties being performed.

1.22 TRAFFIC CONTROL

- .1 Provide traffic control measures when working on, or adjacent to, roadways in accordance with the "Traffic Control Manual for Roadwork Operations", Department of Transportation and Infrastructure.

1.23 EXCAVATION SAFETY

- .1 Protect excavations more than 1.25 metres deep against cave-ins or wall collapse by side wall sloping to the appropriate angle of repose, an engineered shoring/sheathing system or an approved trench box.
 - .1 Provide a ladder which can extend from the bottom of the excavation to at least 0.91 metres above the top of the excavation.
- .2 Ensure that all excavations less than 1.25 metres deep are effectively protected when hazardous ground movement may be expected.
- .3 Design trench boxes, certified by a registered Professional Engineer, and fabricated by a reputable manufacturer. Provide the manufacturer's Depth Certificate Statement permanently affixed. Use trench boxes in strict accordance with manufacturer's instructions and depth certification data.
- .4 For excavations deeper than six (6) metres, provide a certificate from a registered Professional Engineer stating that the protection methods proposed have been properly designed in accordance with accepted engineering practice. The engineer's certificate shall verify that the trench boxes, if used, are properly designed and constructed to suit the depth and soil conditions.

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- .5 Ensure that the superintendent and every crew chief, foreperson and lead hand engaged in trenching operations or working in trenches have in his/her possession a copy of Occupational Health and Safety Regulations: Part XVII: Construction, Excavation and Demolition and Part XVIII: Excavation, Underground Work and Rock Crushing.

1.24 BLASTING OPERATIONS

- .1 Ensure blasting operations are carried out under the direct visual supervision of a certified Blaster either registered with the Industrial Training Division of the Department of Education or has been issued a certificate from completion of a program approved by Service NL. Ensure that the certificate level is appropriate for the blasting activities which will occur. Comply with the requirements of:
 - .1 Explosives Act.
 - .2 Explosives Regulations.
 - .3 Newfoundland Regulation 5/12, Occupational Health and Safety Regulations.
 - .4 Role of certified blaster set out in section 419 of the Occupational Health and Safety Regulations 5/12.
- .2 Store explosives in accordance with the “Explosives Act (Canada)” and transport, handle and use in the manner prescribed by the manufacturer of the substance and subject to specific regulations. An inventory of explosives shall be kept.
- .3 Ensure that workers required to transport explosives have a valid Transportation of Dangerous Goods Training Certification in accordance with the “Act to Promote Public Safety in the Transportation of Dangerous Goods, and the “Explosives Act (Canada)”. Vehicle used to transport explosives on site shall be placarded and explosives shall be transported in containers lined with wood (reference section 428 of the Occupational Health and Safety Regulations 5/12 comply with section 42. Detonators shall not be placed in a magazine or daybox with other types of explosives or in a compartment of a vehicle with another type of explosive.
- .4 Use of explosives on site shall comply with the Occupational Health and Safety Regulations 5/12 General Blasting requirements set out in Part XIX of the Regulations.

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- .5 Loaded holes shall be clearly identified with barricades put in place to prevent access to the holes. Drilling shall not be done closer to a loaded bore hole than a distance half the total depth of the hole being drilled and in no case shall drilling be conducted at a distance closer than 6.0 m from a loaded borehole. Drill cuttings shall not be used as stemming material.
- .6 Advise the public by suitable public notices, advertisements, house to house contacts etc. for blasting operations in close proximity to areas occupied by the public. Advise of the warning device to be sounded and the procedure to be used before detonation of individual blasts. Roads and approaches to the danger area to be guarded or barricaded to prevent anyone from entering. Loaded holes which have not been fired by the end of the day shall not be left unattended.
- .7 Prior to detonation of a blast, give sufficient warning in every direction and ensure that all persons have reached a place of safety before the blast is fired.
- .8 File an Emergency Response Assistance Plan with the Explosives Branch, Natural Resources Canada.
- .9 Blaster shall:
 - .1 Be solely responsible for implementation of the Explosives Management Program.
 - .2 Have a valid blaster's safety certificate from the Department of Education Division of Institutions and Industrial Education, and have a valid temporary Magazine License, when required issued by Natural Resources Canada, for storage and explosives.
 - .3 Possess a thorough working knowledge of the Federal Explosives Act and Provincial Regulations.
 - .4 Possess a specialized training in handling storage and detonation of explosives.
 - .5 Keep a field journal concerning the blast activities.

1.25 CONFINED SPACE WORK

- .1 Comply with the Newfoundland and Labrador Occupational Health and Safety Regulations.
- .2 Ensure a hazard assessment has been conducted related to the confined space and the work to be performed within the space.

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- .3 Provide approved air monitoring equipment where workers are working in confined spaces and ensure any test equipment to be used is calibrated, in good working order and used by trained persons.
- .4 Ensure all required PPE is provided to the workers and workers are trained in its use, care and selection.
- .5 Develop a confined space entry (CSE) program specific to the nature of work performed and in accordance with OH&S Act and Regulations and ensure supervisors and workers are trained in the confined space entry program. This shall include training on the CSE permit system, rescue plan, testing, communication equipment and all equipment and safe work procedures conducted in and around the confined space.
 - .1 Ensure that personal protective equipment and emergency rescue equipment appropriate to the nature of the work being performed is provided and used.
- .6 Provide and maintain training of workers through a provider certified by the WHSCC.
- .7 Provide Owner's Representative with a copy of an "Entry Permit" for each entry into the confined space to ensure compliance Provincial Legislation.

1.26 HAZARDOUS MATERIALS

- .1 Should material resembling hazardous materials (e.g. asbestos/mould) not previously identified/documentated be encountered during the execution of work, stop work and notify Owner's Representative. Do not proceed until written instructions have been received from Owner's Representative.
- .2 Unless otherwise noted the services of a recognized Environmental Consultant to provide all air monitoring and testing services required by regulatory requirements for hazardous materials abatement and repair.

1.27 HEAVY EQUIPMENT

- .1 Ensure mobile equipment used on jobsite is of the type specified in OH&S Act and Regulations fitted with a Roll Over Protective (ROP) Structure and Falling Object Protective (FOP) Structure.

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- .2 Provide certificate of training in Power Line Hazards for operators of heavy equipment.
- .3 Obtain written clearance from the power utility where equipment is used in close proximity to (within 5.5 metres) overhead or underground power lines.
- .4 Equip cranes with:
 - .1 A mechanism which will effectively prevent the hook assembly from running into the top boom pulley.
 - .2 A legible load chart.
 - .3 A maintenance log book.

1.28 TREE AND BRUSH CLEARING

- .1 Ensure workers using chain saws wear the following safety equipment:
 - .1 CSA safety hat.
 - .2 Hearing protection, e.g. ear muffs.
 - .3 CSA approved chain saw pants.
 - .4 CSA approved chain saw boots.
 - .5 CSA approved eye protection.
- .2 Ensure that all workers using brush saws wear the following safety equipment:
 - .1 CSA approved safety hat fitted with face screen or shield or approved safety glasses.
 - .2 Hearing protection, e.g. ear muffs.
 - .3 CSA approved safety footwear.
- .3 Equip chain saws with a safety chain break.
- .4 A safe work practice (SWP) must be developed, implemented and all workers trained in the SWP prior to undertaking such tasks and utilizing tree and brush clearing equipment.

1.29 DIVING OPERATIONS

- .1 Ensure diving operations conform to CSA Z275.2 - Occupational Safety Code for Diving Operations and CSA Z275.4 - Competency Standard for Diving Operations.

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- .2 Sampling:
 - .1 Prior to commencing diving activities, sample water and analyze sample(s) for:
 - .1 Fecal Coliforms (*Escherichia coli*).
 - .2 Total Coliforms.
 - .3 Any health hazard identified during the site specific hazard assessment.
 - .4 Any parameter as directed by the Service NL, Government of Newfoundland and Labrador.
 - .2 Water will be designated a contaminant if the chemical concentration of a contaminant exceeds:
 - .1 200 fecal Coliforms (*Escherichia coli*) per 1000 milliliter of water.
 - .2 100 times the guidelines concentration established in the most recent Guidelines of Canadian Drinking Water Quality.
 - .3 Any other criteria established by the Service NL, Government of Newfoundland and Labrador.
 - .3 Sample analysis is to be completed by a laboratory that is accredited by the Canadian Associates of Environmental and Analytical Laboratories (CAEAL) or other national equivalent.
 - .4 Dive personnel must meet the minimum competency requirements of CSA 275.4.
 - .1 The Dive supervisor(s) shall as a minimum:
 - .1 Possess a Valid Category 1 Diving Certificate, or equivalent, for a minimum of three (3) years for the type of diving to be performed.
 - .2 Have completed one hundred and fifty (150) hours of logged diving time for the type of diving to be performed.
 - .3 Have completed fifty (50) hours of dive supervision for the type of diving to be performed.
 - .2 Diver(s) shall as a minimum:
 - .1 Possess a valid Category 1 Diving Certificate or equivalent, for the type of diving to be performed.
 - .2 Have completed fifty (50) hours of logged dive time for the type of diving to be performed.

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- .5 A diving operation shall be interrupted or discontinued or not commenced when:
 - .1 Continuation of the diving operation would or is likely to compromise the safety of any person involved in the diving operation.
 - .2 The water currents at the underwater work site are likely to compromise the safety of any person involved in the diving operation.
 - .3 Combustible material is stored too close for safety to any diving plant and equipment used in the diving operation.
- .6 A diving operation shall:
 - .1 Not be conducted in the vicinity for any other activity that might pose a danger to any person involved in the diving operation.
 - .2 Not use any craft that has insufficient power or stability for the safe continuity of the diving operation.
 - .3 Provide measures for making work area boundary and stopping unauthorized entry into the work area.
 - .4 Provide adequate illumination of the dive site and the underwater work site of the diving operation.
- .7 Provide, at the worksite while completing diving operations, a diving operations log book that is permanently bound and has numbered pages.
 - .1 Produce on request, any log books, records or other documentation associated with the diving operation, for inspection by Owner's Representative.
 - .2 As a minimum, for each diving operation enter into the diving operation logbook:
 - .1 date and time the diving operation commenced and terminated including any time the diving operation was interrupted
 - .2 name of supervisor; names of all other persons involved
 - .3 the procedures followed
 - .4 the decompression table and the schedule in that the decompression table was used

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- .5 the maximum depth, bottom time, dive time and total dive time for each dive
- .6 the type of diving plant and equipment and the type of breathing mixture used
- .7 the type of discomfort, injury or illness including decompression sickness, suffered by any person involved
- .8 any environmental conditions that affected or might have affected the diving operation
- .9 any other factors relevant to the safety to health of any person involved
- .8 Diving in free swim mode is not permitted at the work site.
- .9 Provide separate first aid supplies for dive operation. All dive team personnel shall be trained in first aid and cardiopulmonary resuscitation (CPR).
- .10 Provide medical oxygen for emergency response at work site. The dive supervisor shall be trained in administering medical oxygen.

1.30 WORK STOPPAGE

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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PART 1 **GENERAL**

1.1 **FIRES**

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

1.2 **DISPOSAL OF WASTES**

- .1 Do not bury rubbish and waste materials on site.
- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 **DRAINAGE**

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 **SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Owner's Representative.

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1.5 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- .7 Do not blast under water or within 100 m of indicated spawning beds.

1.6 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.7 NOTIFICATION

- .1 Owner's Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of environmental protection. Contractor: after receipt of such notice, inform Owner's Representative of proposed corrective action and take such action as approved by Owner's Representative.
- .2 Owner's Representative may issue stop order of work until satisfactory corrective action has been taken.

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- .3 No time extensions will be granted or equitable adjustments allowed to Contractor for such suspensions.

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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PART 1 **GENERAL**

1.1 **SUMMARY**

- .1 Where building related projects involve work that could potentially disturb asbestos or lead based paints, disturbances must be carefully controlled by registered abatement contractors in accordance with the Occupational Health and Safety Regulations (OHS) and other applicable Sections in this Contract. The purpose of this procedure is to ensure that nuisance dust, not containing asbestos or lead, is controlled in an effective manner.
- .2 Section includes:
 - .1 Ensuring any maintenance, repair, construction or renovation activity that impacts building materials or creates dust is performed in such a way as to eliminate, minimize, contain and clean up any and all dust generated by the activity. This applies to work preparation, work activities and post-work activities.
 - .2 This applies to, but is not limited to, the following types of dust generating activities:
 - .1 Disturbing gypsum board, plaster or other surfacing materials.
 - .2 Disturbing concrete or wood containing materials.
 - .3 Handling or disturbing fibrous building insulation.
 - .4 Generating welding fumes: in addition to the requirements of this procedure, a hot work permit is also required to be completed by the contractor and submitted to the Owner's Representative for review if hot work is required in an occupied building.

1.2 **RELATED WORK**

- .1 Division 1 – General Requirements.

1.3 **REFERENCES**

- .1 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.205, Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .2 Canadian Standards Association (CSA)

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- .1 CAN/CSA Z317.13-F07, Infection Control During Construction, Renovation and Maintenance of Health Care Facilities.

PART 2 **PRODUCTS**

2.1 **MATERIALS**

- .1 Polyethylene sheets.
- .2 Wood studs for stand-alone barriers.

PART 3 **EXECUTION**

3.1 **PRE-WORK ACTIVITIES**

- .1 The contractor shall ensure the following prior to commencing work:
 - .1 Specific dust generating activities and associated controls shall be addressed in the Site Specific Health and Safety Plan.
 - .2 Workforce, including sub-contractors, must be made aware of the site dust control requirements.
 - .3 Check the various work zones within the building and adjacent areas to confirm the area are clean.
 - .4 Access to all active work areas shall be restricted to authorized contractors.
 - .5 For occupied buildings, dust generating activities shall be performed after normal hours of operations, unless prior permission if received from the Owner's Representative.

3.2 **WORK ACTIVITIES**

- .1 Dust producing projects shall be classified as small scale, medium scale or large scale projects, as detailed in paragraph 3.3.
- .2 For all dust generating activities, Contractor is required to have Site Safety Officer present to ensure dust control procedures are properly followed.
- .3 Any dust related complaints brought to the Contractors attention, must be immediately reported to Owner's Representative, and an incident investigation must be initiated to prevent reoccurrence.

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- .4 Where practical, dust generation should be eliminated or minimized through the use of proper engineering controls (i.e. containment at source such as drilling wall surface through a wet sponge, wet suppression, use of HEPA vacuum equipped tools, etc).
- .5 Dust generating power tools shall be equipped with HEPA filtered dust collectors where practical. Power tools capable of generating dust without dust collection shall only be used in conjunction with suitable work area containment and with Owner's Representative approval.
- .6 Walk-off mats shall be employed for medium and large scale dust generating projects at all worker entrances/exits. Purpose of these mats is to trap dust from equipment and shoes of personnel leaving the dust contaminated work zone. Mats shall be vacuumed daily, or more frequently as necessary, using HEPA filtered vacuums. Mats shall be of sufficient size to place both feet on mat at once.

3.3 PROJECT CLASSIFICATION

- .1 Class A - Small Scale Project: (Dust producing activities disturbing less than one (1) linear meter or one (1) square meter of material. These are small scale, short duration jobs generating minimal dust.
 - .1 Some examples include:
 - .1 Installing wires or cables, sanding/repairing small section of wall, cutting out gypsum board to install receptacles.
 - .2 Carry out Work as follows:
 - .1 Remove all furniture, fixtures and belongings from the work area to a minimum of 1.5 m in all directions.
 - .2 Restrict access to immediate work area. Keep all doors closed where practical. Post "Dust Hazard Area – Do Not Enter" signs at all entrances to work area. In common areas use barrier tape to establish the regulated area.
 - .3 Place a drop cloth of polyethylene sheeting immediately underneath the work area extending a minimum of 1.5 m in each direction (unless flooring is easily cleanable).
 - .4 Cover all air return or exhaust vents if within 1.5 m of the work area with polyethylene sheeting and duct tape.
 - .5 Complete the task, minimizing dust production, as prescribed in paragraph 3.2 - Work Activities.

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- .6 When the work is completed, wet-wipe polyethylene sheeting and flooring and if necessary, other areas close by with a damp rag.
 - .7 Visually inspect the area for any remaining dust and wet wipe as necessary.
 - .8 If installed, remove polyethylene sheeting from air return and exhaust vents.
 - .9 Where practical, transport debris after hours using least congested and most direct routes. If any debris is spilled outside the work area, immediately wet-wipe debris.
 - .10 Clean all tools and equipment before removal from the work area.
- .2 .Class B - Medium Scale Project (Dust producing activities disturbing greater than one (1) square meter and less than 30 square meters of material) with anticipated moderate dust levels that are typically one shift or more in duration.
- .1 Examples include:
 - .1 Sanding several sheets of gypsum board.
 - .2 Electrical work above ceiling tiles where general debris is known above the ceiling.
 - .3 Removing numerous ceiling tiles in an area.
 - .4 New wall construction.
 - .2 Carry out the Work as follows:
 - .1 Determine the most effective way of isolating the work area from occupants (i.e. using plastic barriers or by sealing off doors).
 - .2 Complete all items specified under small scale projects.
 - .3 While performing the work, limit the dust generated by removing the materials in sections, lightly misting the material as necessary. Debris shall be bagged immediately for disposal. In addition to wet wiping, HEPA filtered vacuum systems shall be employed where practical to limit airborne dust.
 - .4 When the task is completed, HEPA vacuum and/or wet wipe the polyethylene sheeting.
 - .5 Prior to removing any temporary wall partitions from floor to ceiling or polyethylene barriers, a final inspection shall be preformed by the Site Safety Officer or designate to

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ensure proper clean up has been completed. This inspection shall be documented by the Contractor and made available at the request of the Owner's Representative.

- .6 Establishment of containment may result in the accumulation of dust within the enclosure. As such, the need for respiratory protection and decontamination would be greater than for small scale projects (i.e. N95 half face respirator with tyvek body covering).
- .3 Class C - Large Scale Projects (Dust Producing Activities disturbing greater than 30 meters of material with anticipated high dust levels and typically involves multiple work shifts.
 - .1 Examples include:
 - .1 Major demolition or construction.
 - .2 Extensive renovations to wall or ceiling surfaces.
 - .3 Generating significant amounts of concrete dust.
 - .2 Carry out the Work as follows:
 - .1 Complete all items as prescribed under the Medium Scale Projects section.
 - .2 If the work produces dust that cannot be limited by removal in sections or misting and the work area configuration allows, use HEPA filtered negative air units with the intake directly across from the dust generating activity. Exhaust the HEPA unit outside the building.
 - .3 If using a disposal cart or container to transport debris within the building, ensure the lid is tightly secured and the wheels are clean prior to exiting the work area.
 - .4 If local source capture is employed (i.e. HEPA filtered power tool) and no significant debris anticipated then treat as a medium scale project.
 - .5 Negative air units shall be left operating at the completion of cleanup, for the duration stipulated in Table 4, CAN/CSA Z317.13-F07.
 - .6 Windows, doors, exhaust vents and supply intakes shall be sealed off in dust generating areas. Upper seals must be employed where necessary to prevent the spread of dust into adjacent areas.

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- .7 The contractor must be able to show that the work zone is negatively pressurized in relation to adjacent occupied areas.

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PART 1 **GENERAL**

1.1 **REFERENCES AND CODES**

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code:
 - .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 **HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: stop work immediately should materials believed to contain asbestos be encountered in during the execution of the work and notify Owner's Representative. Do not proceed until written instructions have been received from Owner's Representative. Perform asbestos abatement and repair in accordance with Newfoundland and Labrador Asbestos Abatement Regulations, Latest Edition.
- .2 Mould: stop work immediately should material resembling mould be encountered during the execution of work and notify Owner's Representative. Do not proceed until written instructions have been received from Owner's Representative.

1.3 **BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions.

1.4 **RELICS AND ANTIQUITIES**

- .1 Protect relics, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of work.

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- .2 Give immediate notice to Owner's Representative and await Owner's Representative's written instructions before proceeding with work in this area.
- .3 Relics, antiquities and items of historical or scientific interest remain Her Majesty's property.

1.5 TRAINING

- .1 Contractor's working on Provincial Government property shall be responsible to be COR trained and certified.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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PART 1 **GENERAL**

1.1 **RELATED DOCUMENTS**

- .1 Drawings and general provisions of this contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 **INDUSTRY STANDARDS**

- .1 Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made part of the Contract Documents by reference.
- .2 All construction industry standards referenced in this specification to meet the edition of the standard referenced by the National Building Code of Canada (NBC). If the construction industry standard is not referenced in the National Building Code of Canada (NBC), the latest edition of the standard shall apply.
- .3 Each entity engaged in construction on this Project must be familiar with construction industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Construction Documents.
 - .1 Where copies of construction industry standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available upon request.

1.3 **ABBREVIATIONS AND ACRONYMS FOR INDUSTRY ORGANIZATIONS**

- .1 Where abbreviations and acronyms are used, they shall mean the recognized name of the entities in the following list. Names are believed to be accurate and up-to-date as of the date of the Contract Documents.
- .2 Industry Organizations:
 - .1 Air Conditioning and Mechanical Contractors Association (AMCA).
 - .2 Air Conditioning and Refrigeration Institute (ARI).

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- .3 Americans with Disability Act (ADA).
- .4 Air Movement and Control Association (AMCA).
- .5 The Aluminum Association, Inc. (AA).
- .6 American Architectural Manufacturers Association (AAMA).
- .7 American Association of State Highway and Transportation Officials (AASHTO).
- .8 American Association of Textile Chemists and Colourists (AATCC).
- .9 American Bearing Manufacturers Association (ABMA).
- .10 American Boiler Manufacturer's Association (ABMA).
- .11 American Concrete Institute (ACI).
- .12 American Industrial Hygiene Association (AIHA).
- .13 American Institute of Steel Construction (AISC).
- .14 American Iron & Steel Institute (AISI).
- .15 American National Standards Institute (ANSI).
- .16 American Petroleum Institute (API).
- .17 American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).
- .18 American Society of Mechanical Engineers (ASME).
- .19 American Society of Sanitary Engineer's (ASSE).
- .20 American Society for Testing and Materials (ASTM).
- .21 American Water Works Association (AWWA).
- .22 American Welding Society (AWS).
- .23 American Wood-Preservers' Association (AWPA).
- .24 Architectural Woodwork Institute (AWI).
- .25 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
- .26 Asphalt Institute (AI).
- .27 Associated Air Balance Council (AABC).
- .28 Association of the Wall and Ceilings Industries International (AWEI).
- .29 Atomic Energy Control Board Regulations.
- .30 Brick Industry Association (BIA).
- .31 Building Industry Consulting Services International (BICSI).
- .32 Canada Green Building Council (CaGCB).
- .33 Canada Labour Code.

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- .34 Canadian Council of Ministers of the Environment (CCME).
- .35 Canadian Code for Preferred Packaging.
- .36 Canadian Construction Materials Centre (CCMC).
- .37 Canadian Environmental Protection Act (CEPA).
- .38 Canadian Gas Association (CGA).
- .39 Canadian General Standards Board (CGSB).
- .40 Canadian Institute of Steel Construction (CISC).
- .41 Canadian Nursery Landscape Association (CNLA).
- .42 Canadian Paint Manufacturer's Association (CPMA).
- .43 Canadian Roofing Contractors' Association (CRCA).
- .44 Canadian Sheet Steel Building Institute (CSSBI).
- .45 Canadian Standards Association (CSA).
- .46 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
- .47 Canadian Urethane Foam Contractors' Association Inc. (CUFCA).
- .48 Carpet and Rug Institute (CRI).
- .49 Ceramic Tile Institute (CTI).
- .50 Consumer Electronics Association (CEA).
- .51 Cooling Technology Institute (CTI).
- .52 Department of Justice Canada (Jus).
- .53 Electrical and Electronic Manufacturers' Association of Canada (EEMAC).
- .54 Electronic Industries Alliance (EIA).
- .55 Environment Canada (EC).
- .56 The Environmental Choice Program.
- .57 Environmental Protection Agency (EPA).
- .58 Environmental Protection Services (EPS).
- .59 ETL Listing Laboratories (ETL).
- .60 Factory Mutual (FM).
- .61 Federal Communications Commission (FCC).
- .62 Flat Glass Manufacturers Association (FGMA).
- .63 Green Seal Environmental Standards.
- .64 Health Canada - Workplace Hazardous Materials Information System (WHMIS).
- .65 Hydraulics Institute (HI).

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- .66 Hydronic Institute of Boiler and Radiator Manufacturers (IBR).
- .67 Industry Canada - Terminal Attachment Program.
- .68 Institute of Electrical and Electronics Engineers (IEEE).
- .69 Institute for Research in Construction (IRC).
- .70 Insulated Cable Engineers Association (ICEA).
- .71 International ElectroTechnical Commission (IEC).
- .72 International Masonry Industry All-Weather Council (IMIAC).
- .73 International Standards Organization (ISO).
- .74 Laminators Safety Glass Association (LSGA).
- .75 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
- .76 Master Painters Institute (MPI).
- .77 National Energy Code of Canada for Buildings (NECB).
- .78 National Association of Architectural Metal Manufactures (NAAMM).
- .79 National Association of Corrosion Engineers (NACE).
- .80 National Building Code of Canada (NBC).
- .81 National Bureau of Standards/Products Standard (NBS/PS).
- .82 National Electrical Manufacturers Association (NEMA).
- .83 National Environmental Balancing Bureau (NEBB).
- .84 National Fire Code of Canada (NFC).
- .85 National Fire Protection Association (NFPA).
- .86 National Floor Covering Association (NFCA).
- .87 National Hardwood Lumber Association (NHLA).
- .88 National Lumber Grades Authority (NLGA).
- .89 National Plumbing Code of Canada (NPC).
- .90 National Research Council Canada (NRC).
- .91 National Roofing Contractors Association (NRCA).
- .92 National Sanitation Foundation (NSF).
- .93 Newfoundland Occupational Health and Safety Act.
- .94 Plumbing and Drainage Institute (PDI).
- .95 Province of Newfoundland and Labrador Building Accessibility Regulations.
- .96 Provincial Boiler, Pressure Vessel and Compressed Gas Regulations.

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- .97 Scientific Equipment and Furniture Association (SEFA).
- .98 Sealant and Waterproofer's Institute.
- .99 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
- .100 Society of Automotive Engineers (SAE).
- .101 The Society for Protective Coatings (SSPC).
- .102 South Coast Air Quality Management District (SCAQMD).
- .103 Telecommunications Distribution Methods Manual (TDMM).
- .104 Telecommunications Industries Association (TIA).
- .105 Terrazzo Tile and Marble Association of Canada (TTMAC).
- .106 Thermal Insulation Association of Canada (TIAC).
- .107 Transport Canada (TC).
- .108 Transport Canada - Marine Safety (TCMS).
- .109 Treasury Board of Canada (TB).
- .110 Treasury Board Information Technology Standard (TBITS).
- .111 Truss Plate Institute of Canada (TPIC).
- .112 Underwriters' Laboratories Inc. (UL).
- .113 Underwriter's Laboratories of Canada (ULC).
- .114 United States Federal Trade Commission (US Federal Trade Commission).
- .115 U.S. Coast Guard Equipment List (USCG).
- .116 U.S. Department of Transportation (DOT).
- .117 National Fireproofing Contractors Association (NFCA).

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

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Section 01 45 00 – Quality Control

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PART 1 **GENERAL**

1.1 **SECTIONS INCLUDE**

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Tests.
- .3 Equipment and system adjust and balance.

1.2 **RELATED SECTIONS**

- .1 Section 01 21 00 – Allowances.
- .2 Section 01 33 00 – Submittal Procedures
- .3 Section 01 78 00 – Closeout Submittals

1.3 **INSPECTION**

- .1 Allow Owner's 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 48 hours notice requesting inspection if Work is designated for special tests, inspections or approvals by Owner's Representative instructions.
- .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 Owner's Representative may order any 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, Owner's Representative shall pay cost of examination and replacement.

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1.4 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Owner's Representative for purpose of inspecting and/or testing portions of Work.
- .2 Allocated costs: to Section 01 21 00 – Allowances and Section 01 29 83 – Payment Procedures: Testing Laboratory Services.
- .3 Provide equipment required for executing inspection and testing by appointed agencies.
- .4 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .5 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Owner's Representative at no cost to Owner's Representative. Pay costs for retesting and reinspection.

1.5 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.6 PROCEDURES

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

1.7 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not,

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which has been rejected by Owner's 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 Owner's Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Owner's Representative.

1.8 REPORTS

- .1 Submit 3 copies of inspection and test reports to Owner's Representative, plus electronic copies in PDF format.
- .2 Provide copy to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.
- .3 Include copy of all inspection and test reports in Commissioning Manuals.

1.9 EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for electrical and building equipment systems.
- .2 Electrical – Coordinate with electrical division.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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Section 01 51 00 – Temporary Utilities

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 52 00 - Construction Facilities.
- .2 Section 01 56 00 - Temporary Barriers and Enclosures.

1.2 **INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.3 **DEWATERING**

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

1.4 **FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

1.5 **SANITARY FACILITIES**

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.6 **SITE SIGN AND NOTICES**

- .1 Contractor is responsible for the construction of job sign frame and the installation of the plywood job sign. Timber frame shall be constructed as specified and detailed on "Job Sign Support Frame Detail". Plywood job sign shall be as per layout on "Job Sign Detail". These drawings documents are published at <http://www.tw.gov.nl.ca/works> under the Project Signs Link and is to be picked up by contractor at the Sign Shop,

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Dept of Transportation and Infrastructure, White Hills, St. John's, Newfoundland and Labrador. Plywood job sign and timber frame shall remain the property of the Owner and shall be disposed of at the discretion of the Owner.

- .2 Locate job sign as directed by Owner's Representative so as to ensure good visibility by passing traffic.
- .3 Construct timber job sign frame using two (2) 140 x 140mm timber posts set vertically in concrete to a ground depth of 1000mm or below the frost line, whichever is greater. Install three (3) 38 x 89mm horizontal timber braces, all as shown on "Job Sign Support Frame Detail" published at <http://www.tw.gov.nl.ca/works> under the Project Signs Link. Attach plywood sign to timber frame using galvanized nails. Paint timber frame with two (2) coats of white paint if using untreated timber. Backfill compact and level ground around job sign frame to the satisfaction of the Owner's Representative.

1.7 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Owner's Representative.
- .2 When project is closed down at end of construction season keep temporary facilities operational until close down or removal is approved by Owner's Representative.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Construction aids.
- .2 Office and sheds.
- .3 Parking.
- .4 Project identification.

1.2 **RELATED SECTIONS**

- .1 Section 01 35 29.06 – Health and Safety Requirements
- .2 Section 01 51 00 - Temporary Utilities.
- .3 Section 01 56 00 - Temporary Barriers and Enclosures.

1.3 **INSTALLATION AND REMOVAL**

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.4 **SCAFFOLDING**

- .1 Provide and maintain scaffolding in rigid, secure and safe manner.
- .2 Erect scaffolding independent of walls. Remove promptly when no longer required. Refer to Section 01 35 29.06 – Health and Safety Requirements.

1.5 **HOISTING**

- .1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
- .2 Hoists cranes shall be operated by certified operator.

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1.6 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.7 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not disrupt performance of work.
- .2 Provide and maintain adequate access to project site.
- .3 Build and maintain temporary roads where indicated or directed by Owner's Representative and provide snow removal during period of Work.
- .4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.

1.8 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.9 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 CLEAN-UP

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

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- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Section 01 56 00 Temporary Barriers
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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Barriers.
- .2 Environmental Controls.
- .3 Traffic Controls.
- .4 Fire Routes.

1.2 **RELATED SECTIONS**

- .1 Section 01 51 00 – Temporary Utilities.
- .2 Section 01 52 00 – Construction Facilities.

1.3 **INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.4 **HOARDING**

- .1 Erect temporary site enclosures using 38 x 89 mm construction grade lumber framing at 600 mm centres, installed on 89 x 89 mm wood posts at 2400 mm centres or 50 mm dia. steel posts at 2400 mm centres. Posts to be place in post holes filled with concrete to minimum 900 mm depth. Finish temporary site enclosures with 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121 or chain link fence fabric to Section 32 31 13 – Chain Link Fences and Gates.
- .2 Apply plywood panels or chain link fence fabric vertically flush and butt jointed.
- .3 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

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- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .5 Paint public side of site enclosure in selected colours with one coat primer to CGSB 1.189M and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.
- .6 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.5 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Provide as required by governing authorities.

1.6 WEATHER ENCLOSURES

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Erect enclosures to allow access for installation of materials and working inside enclosure.
- .4 Design enclosures to withstand wind pressure and snow loading.

1.7 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.8 ACCESS TO SITE

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

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- .2 Build and maintain temporary roads where indicated or directed and provide snow removal during period on work.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.

1.9 PUBLIC TRAFFIC FLOW

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

1.10 FIRE ROUTES

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

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.12 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Owner's Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

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PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Section 01 61 00 – Common Product
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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Product quality, availability, storage, handling, protection, and transportation.
- .2 Manufacturer's instructions.
- .3 Quality of Work, coordination and fastenings.

1.2 **RELATED SECTIONS**

- .1 Section 01 45 00 – Quality Control.
- .2 Section 01 73 00 – Execution.

1.3 **REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .2 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.

1.4 **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.

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- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Owner's Representative based upon requirements of Contract Documents.
- .4 Within seven (7) working days of written request by Owner's Representative, submit following information for material and equipment proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 trade name, model and catalogue number,
 - .3 performance, descriptive and test data,
 - .4 manufacturer's installation or application instructions,
 - .5 evidence of arrangements to procure.
- .5 Use products of one manufacturer for material and equipment of same type or classification unless otherwise specified.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Owner's 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 event of failure to notify Owner's Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Owner's Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.6 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.

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

1.7 TRANSPORTATION

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

1.8 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Owner's Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Owner's Representative may establish course of action.

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

1.9 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 Owner's Representative if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Owner's Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Owner's Representative, whose decision is final.

1.10 CO-ORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.11 CONCEALMENT

- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Owner's Representative if there is interference. Install as directed by Owner's Representative.

1.12 REMEDIAL WORK

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

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

1.13 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Owner's Representative of conflicting installation. Install as directed.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Owner's Representative.

1.14 FASTENINGS GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work, unless stainless steel or other material is specifically requested in affected specification section.
- .2 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood plugs are not acceptable.
- .3 Conceal fasteners where indicated. Space evenly and lay out neatly.
- .4 Fastenings which cause Spalding or cracking are not acceptable.
- .5 Obtain Owner's Representative's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166.

1.15 FASTENINGS - EQUIPMENT

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

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- .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 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Owner's 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.
- .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.
- .3 Submit schedule to and obtain approval from Owner's Representative for any shut-down or closure of active services or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Where unknown services are encountered, immediately advise Owner's Representative and confirm findings in writing.
- .5 Remove abandoned services lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Owner's Representative.

1.18 SELECTION OF MATERIAL AND EQUIPMENT

- .1 Material and equipment will be specified in the tender documents, and selected by Contractor, by one or more of the following methods:

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- .1 Specification by reference to a relevant Standard, such as CSA, ASTM, ULC, etc., select any material or equipment that meets or exceeds the specified.
 - .2 Specification by reference to an accepted product evaluation publication, such as the CGSB “Qualified Products List”, or CCMC Registry of Product Evaluations”, - select any manufacturer’s product so listed.
 - .3 Specification by Prescriptive or Performance specification – select any material or equipment meeting or exceeding specification.
 - .4 Specification by identification of one or more Manufacturer’s specific product(s) as an “Acceptable Product”, along with a listing of other manufacturers who may offer equivalent products – select any product so named, or select from equivalent product(s) of other listed manufacturers.
- .2 “Acceptable Product” is deemed to be a complete and working commodity as described by a manufacturer’s name, catalogue number, trade name, or any combination thereof, and will constitute the minimum standard of acceptance.
- .3 Owner’s Representative will determine acceptability of Contractor’s selection of material and equipment at time of Shop Drawing review.
- .4 When material or equipment is specified by a Standard, Prescriptive or Performance specification, upon request of the Owner’s Representative, obtain from manufacturer an independent laboratory reporting, showing that material or equipment meets or exceeds the specified requirements.

1.19 SUBSTITUTION OF MATERIAL AND EQUIPMENT

- .1 Substitution prior to Tender closing will be considered by Owner’s Representative only if the conditions of Section 01 25 00 – Substitution Procedures are met.
- .2 **After Contract award** substitutions of material or equipment, other than as selected by Contractor from those specified, will be considered by Owner’s Representative only if the conditions of Section 01 25 00 – Substitution Procedures are met.
- .3 Requests for substitutions after Contract award must be accompanied by sufficient information in the form of shop drawings, manufacturer’s literature, samples or other data to permit proper investigation of the

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substitutes used. Requests must also include statements of respective costs of material or equipment originally specified and the proposed substitution.

- .4 Should a proposed substitution be accepted after Contract award either in part or in whole, assume full responsibility and costs when substitution affects other work on Project. Contractor to pay for design or drawing changes required as a result of the substitution.
- .5 Amounts of all credits arising from approval of substitutions after Contract award will be determined by Owner's Representative and the Contract amount will be reduced accordingly.

PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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Section 01 71 00 – Examination and Preparation

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Field engineering survey services to measure and stake site.
- .2 Survey services to establish and confirm inverts for Work.
- .3 Recording of subsurface conditions found.

1.2 **QUALIFICATIONS OF SURVEYOR**

- .1 Qualified registered land surveyor, licensed to practise in the Province of Newfoundland and Labrador.

1.3 **SURVEY REFERENCE POINTS**

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Owner's Representative.
- .4 Report to Owner's Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.4 **SURVEY REQUIREMENTS**

- .1 Establish permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- .2 Establish lines and levels, locate and lay out, by instrumentation.
- .3 Stake for grading, fill placement.

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- .4 Establish pipe invert elevations.
- .5 Stake batter boards for foundations.
- .6 Establish foundation column locations and floor elevations.
- .7 Establish lines and levels for mechanical and electrical work.

1.5 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by authorities having jurisdiction, with minimum of disturbance to pedestrian and vehicular traffic.
- .2 Before commencing work, establish location and extent of service lines in area of Work and notify Owner's Representative of findings.
- .3 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Owner's Representative.

1.6 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Owner's Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Owner's Representative.

1.7 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Record locations of maintained, re-routed and abandoned service lines.

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1.8 SUBMITTALS

- .1 Submit name and address of Surveyor to Owner's Representative.
- .2 On request of Owner's Representative, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.9 SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Owner's Representative determine that conditions do differ materially, instructions will be issued for changes in Work.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Section 01 73 00 – Execution

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Requirements and limitations for cutting and patching the Work.

1.2 **RELATED SECTIONS**

- .1 Section 01 11 00 - Summary of Work.
- .2 Section 01 33 00 - Submittal Procedures.

1.3 **SUBMITTALS**

- .1 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of any element of Project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of any operational element.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner or separate contractor.
- .2 Include in request:
 - .1 Identification of Project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.4 **PREPARATION**

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

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- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.
- .6 Obtain Owner's Representative's approval before cutting, boring or sleeving load-bearing members.

1.5 EXECUTION

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

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- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.
- .14 Make cuts with clean, true, smooth edges.
- .15 Where new work connects with existing, and where existing work is altered, cut, patch and make good to match existing work.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Section 01 74 00 – Cleaning

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PART 1 **GENERAL**

1.1 **GENERAL**

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use for building ventilation systems is not permitted for this purpose.

1.2 **RELATED SECTION**

- .1 Section 01 77 00 - Closeout Procedures.

1.3 **PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials and debris from site at the end of each working day. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

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- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .11 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.

1.4 FINAL CLEANING

- .1 Refer to General Conditions.
- .2 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .4 When the Work is Totally Performed, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris other than that caused by the Owner or other Contractors.
- .5 Remove waste materials from the site at regularly scheduled times or dispose of as directed by the Owner's Representative. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Leave the work broom clean before the inspection process commences.
- .8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.
- .10 Clean lighting reflectors, lenses, and other lighting surfaces.
- .11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

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- .12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .15 Remove dirt and other disfiguration from exterior surfaces.
- .16 Clean roofs, gutters, downspouts and drainage systems. Clean areaways and sunken wells.
- .17 Sweep and wash clean paved areas.
- .18 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.
- .19 Remove snow and ice from access to building.
- .20 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Section 01 74 21 – Construction/Demolition Waste

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Management and Disposal

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Text, schedules and procedures for systematic Waste Management Program for construction, deconstruction, demolition, and renovation projects, including:
 - .1 Diversion of Materials.
 - .2 Waste Audit (WA) - Schedule A.
 - .3 Waste Reduction Workplan (WRW) - Schedule B.
 - .4 Demolition Waste Audit (DWA) - Schedule C.
 - .5 Cost/Revenue Analysis Workplan (CRAW) - Schedule D.
 - .6 Materials Source Separation Program (MSSP).
 - .7 Canadian Governmental Responsibility for the Environment Resources - Schedule E.

1.2 **DEFINITIONS**

- .1 Demolition Waste Audit (DWA): Relates to actual waste generated from project.
- .2 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .3 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
- .4 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .5 Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .6 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:

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- .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
- .2 Returning reusable items including pallets or unused products to vendors.
- .7 Salvage: Removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .8 Separate Condition: Refers to waste sorted into individual types.
- .9 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

1.3 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by authorities having jurisdiction.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.
- .7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.
 - .1 Transport to recycling facility.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Unless specified otherwise, materials for removal become Contractor's property.
- .2 Protect, stockpile, store and catalogue salvaged items.

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- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to approved local facility.
- .4 Protect structural components not removed for demolition from movement or damage.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify Department having jurisdiction.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Separate and store materials produced during dismantling of structures in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
- .1 On-site source separation is recommended.

1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of any waste into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.6 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Provide security measures approved by Owner's Representative.

1.7 SCHEDULING

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

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PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION**

3.1 **APPLICATION**

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

3.2 **CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.3 **DIVERSION OF MATERIALS**

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Owner's Representative and consistent with applicable fire regulations.
 - .1 Mark containers or stockpile areas.
 - .2 Provide instruction on disposal practices.
- .2 On-site sale or distribution of salvaged materials to third parties is not permitted.

END OF SECTION

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 74 00 - Cleaning.
- .2 Section 01 78 00 - Closeout Submittals.
- .3 Section 01 91 13.13 - General Commissioning (Cx) Requirements.

1.2 **FINAL INSPECTION AND DECLARATION PROCEDURES**

- .1 Contractor's Inspection: The Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects; repair as required. Notify the Owner's Representative in writing of satisfactory completion of the Contractor's Inspection and that corrections have been made. Request an Owner's Representative's Consultant's Inspection.
- .2 Owner's Representative's Inspection: Owner's Representative and the Contractor will perform an inspection of the Work to identify obvious defects or deficiencies. The contractor shall correct Work accordingly.
- .3 Completion: submit written certificate that the 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 Fire Commissioner, Utility companies have been submitted.
 - .5 Operation of systems have been demonstrated to Owner's personnel.
 - .6 Commissioning of building systems: completed in accordance with section 01 91 13 – Commissioning (Cx) Requirements and copies of final Commissioning Report submitted to Owner's Representative.
 - .7 Work is complete and ready for Final Inspection.

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- .4 Final Inspection: When items noted above are completed, request final inspection of Work by the Owner's Representative, representative of DTW and the Contractor. If Work is deemed incomplete by the Owner's Representative, complete outstanding items and request a reinspection.
- .5 Declaration of Substantial Performance: When the Owner's 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. Refer to General Conditions for specifics to application.
- .6 Commencement of Lien and Warranty Periods: The date of DTW acceptance of the submitted declaration of Substantial Performance shall be the date for commencement for the warranty period and commencement of the lien period.
- .7 Declaration of Total Performance: When the Owner's Representative considers final deficiencies and defects have been corrected and it appears requirements of the Contract have been totally performed, make application for certificate of Total Performance. Refer to General Conditions for specifics to application. If Work is deemed incomplete by the Consultant, complete the outstanding items and request a reinspection.

1.3 REINSPECTION

- .1 Should status of work require reinspection by Owner's Representative due to failure of work to comply with Contractor's claims for inspection, Owner will deduct amount of compensation for reinspection services from payment to Contractor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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PART 1 **GENERAL**

1.1 **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.

1.2 **RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 45 00 - Quality Control.
- .3 Section 01 71 00 – Examination and Preparation.
- .4 Section 01 77 00 - Closeout Procedures.
- .5 Section 01 91 13 – General Commissioning (Cx) Requirements.

1.3 **SUBMISSION**

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Submit one copy of completed volumes in final form 15 days prior to final inspection.
- .3 Copy will be returned after final inspection, with Owner's Representative's comments.
- .4 Revise content of documents as required prior to final submittal.

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- .5 Two weeks prior to Substantial Performance of the Work, submit to the Owner's Representative, two final copies of operating and maintenance manuals.
- .6 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.
- .7 If requested, furnish evidence as to type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.

1.4 FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. 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 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.
- .9 Provide CAD files in DWG format on CD. Also provide electronic files in PDF format.

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1.5 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; 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 specified in Section 01 45 00 - Quality Control.
- .6 Training: Refer to Section 01 91 13 – General Commissioning (Cx) Requirements.

1.6 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Owner's Representative 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.

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- .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 inspection by Owner's Representative.

1.7 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of blue line opaque drawings, provided by Owner's Representative.
- .2 Provide felt tip marking pens, maintaining red color pens 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 depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: 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.

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- .6 Other Documents: submit manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 At completion of project, provide all recorded information on print drawings. Transfer recorded information to AutoCAD files in DWG format. Submit DWG files, also with electronic files in PDF format as part of the Closeout Submittals.

1.8 FINAL SURVEY

- .1 Submit final site survey certificate certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.9 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, 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.

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- .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.

1.10 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

1.11 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site location as directed; place and store.

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- .4 Receive and catalogue all items. Submit inventory listing to Owner's Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.12 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site location as directed; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Owner's Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.13 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to project site place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Owner's Representative. Include approved listings in Maintenance Manual.

1.14 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.

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- .5 Remove and replace damaged products at own expense and to satisfaction of Owner's Representative.

1.15 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan to Owner's Representative's approval.
- .3 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
 - .4 Except for items put into use with Owner'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.
- .6 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as fire

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protection, alarm systems, sprinkler systems, lightning protection systems.

- .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
- .4 Procedure and status of tagging of equipment covered by extended warranties.
- .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .7 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .8 Written verification will follow oral instructions. Failure to respond will be cause for the Owner's Representative to proceed with action against Contractor.

1.16 PRE-WARRANTY CONFERENCE

- .1 Meet with Owner's Representative to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Owner's Representative.

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- .2 Owner's Representative will establish communication procedures for:
 - .1 Notification of construction warranty defects.
 - .2 Determine priorities for type of defect.
 - .3 Determine reasonable time for response.

1.17 WARRANTY TAGS

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Owner's Representative.
- .2 Leave date of acceptance until project is accepted for occupancy.
- .3 Indicate following information on tag:
 - .1 Type of product/material.
 - .2 Model number.
 - .3 Serial number.
 - .4 Contract number.
 - .5 Warranty period.
 - .6 Inspector's signature.
 - .7 Construction Contractor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES:**

- .1 This Section specifies roles and responsibilities of Commissioning Training.

1.2 **RELATED SECTIONS:**

- .1 Section 01 78 00 – Closeout Submittals.
- .2 Section 01 91 13.13 – Commissioning (Cx) Requirements.
- .3 Section 01 91 13.16 – Commissioning (Cx) Forms.

1.3 **TRAINEES**

- .1 Trainees: personnel selected for operating and maintaining this facility including, but not limited to, Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2 Trainees may be available for training during any stage of construction.

1.4 **INSTRUCTORS**

- .1 The Cx Manual will contain:
 - .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 and maintenance of equipment, components and systems.
 - .2 Control features and 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 Training to be completed after Installation and Performance Verification are completed.

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1.5 TRAINING OBJECTIVES

- .1 Training to be detailed and of sufficient 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, trouble-shooting and maintenance.
 - .4 Ability to update documentation.
 - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.6 TRAINING MATERIALS

- .1 Instructors to be responsible for content and quality. Provide copies for all those in attendance.
- .2 Training materials to include:
 - .1 "As-Built" Contract Documents.
 - .2 Operating Manual.
 - .3 Maintenance Manual.
 - .4 Testing, adjusting and balancing and performance verification reports where applicable.
- .3 Owner's Representative will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to the same degree of detail with or without the instructor.

1.7 SCHEDULING

- .1 Contractor to include in schedule time for training. Provide a detailed commissioning schedule indicating all Cx tasks and training.
- .2 Deliver training during regular working hours, training sessions to be determined in Commissioning meetings.
- .3 Training to be completed prior to Substantial Completion.

1.8 RESPONSIBILITIES

- .1 Be responsible for:

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- .1 Implementation of training activities,
- .2 Coordination among instructors,
- .3 Quality of training, training materials,
- .2 Owner's Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Owner's Representative. Include list of those in attendance. The Cx manual will provide templates for these submittals.

1.9 TRAINING CONTENT

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
 - .1 Review of facility and occupancy profile.
 - .2 Functional requirements.
 - .3 System philosophy, limitations of systems and emergency procedures.
 - .4 Review of system layout, equipment, components and controls.
 - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
 - .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
 - .7 Maintenance and servicing.
 - .8 Trouble-shooting diagnosis.
 - .9 Inter-Action among systems during integrated operation.
 - .10 Review of O&M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

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Requirements

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PART 1 **GENERAL**

1.1 **SUMMARY**

- .1 Section Includes
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements for Installation Verification and Performance Verification of components, equipment, sub-systems, systems, and integrated systems.
- .2 Acronyms
 - .1 CxA – Commissioning Authority.
 - .2 Cx – Commissioning.
 - .3 EMCS – Energy Monitoring and Control Systems.
 - .4 O&M – Operation and Maintenance.
 - .5 PV – Performance Verification.
 - .6 TAB – Testing, Adjusting and Balancing.
 - .7 GC – General Contractor
 - .8 TSI – Technical Services Inspector
 - .9 LEED - Leadership in Energy and Environmental Design

1.2 **COMMISSIONING INTENT**

- .1 Undertake Cx to bring the facility to a fully operational state and free of deficiencies in the most effective and timely manner available, ensuring the design intent is met by all systems.
- .2 Cx incorporates inspection and quality assurance activities as construction progresses, including start up, installation verification, performance verification, fine tuning, and operator training.
- .3 Bear all costs associated with the required personnel and test equipment as outlined in specification sections and Cx Manual and all costs with organizing and managing the activities of the applicable subtrades as identified in this section.
- .4 Fully document all tests and inspections performed during the construction, at start up, installation verification and performance

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verification and fine tuning. Incorporate into final commissioning documentation.

- .5 Provide direct training to designated staff responsible for the operation and maintenance of the building equipment and systems.

1.3 RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 77 00 - Closeout Procedures.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 01 79 00.13 – Demonstration and Training for Building Commissioning.
- .5 Section 01 91 13.16 - Commissioning (Cx) Forms.

1.4 COMMISSIONING OVERVIEW

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished project.
- .2 Cx is an intensive quality assurance process that begins at the beginning of the project and continues through to the first year of occupancy. The process focuses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the Owners Project Requirements.
- .3 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .4 Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.
- .5 Complete inspection and verification activities as required by the specifications and Cx Manual as construction progresses.

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- .6 Take responsibility to:
 - .1 Review the Cx manual with the commissioning team.
 - .2 Complete all items as identified in the Cx manual. This includes work by subcontractors, test agencies, equipment representatives and manufacturer agents.
 - .3 Review Contract Documents and inspect the Work to ensure completeness of the Work and compliance with the Contract Documents.
 - .4 Correct deficiencies resulting from installation and performance verifications.
 - .5 Test, adjust and balance equipment and systems identified in Divisions 2-44.
 - .6 Submit the completed manual and project record documents as specified.
 - .7 Update the documentation manuals prior to each project meeting.
- .7 The Substantial Completion Certificate will not be issued until the commissioning process is completed and the final reports and commissioning documentation are received.
- .8 The Cx Manual provides direction for the Cx process during design and construction, provides resolution for issues such as scheduling, roles and responsibilities, lines of communication and reporting, approvals and coordination.

1.5 COMMISSIONING TEAM

- .1 The commissioning team shall consist of: *(as applicable to project)*
 - .1 Department Representative(s):
 - .1 Design Manager (DM).
 - .2 Construction Manager (CM).
 - .3 Project Coordinator (PC).
 - .4 Engineer/Architect/Consultant (AE).
 - .5 Technical Services Inspectors (TSI).
 - .2 User Representatives/Owner.
 - .3 General Contractor (GC):
 - .1 Electrical Contractor.
 - .4 Commissioning Authority (CxA).

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- .5 Manufacturer's Technicians.
- .6 Testing Agencies.
- .7 Building Manager (BM).
- .8 Design Consultant (DC).
- .2 Roles of the commissioning team shall be as follows:
 - .1 CxA (Commissioning Authority):
 - .1 Reviews Owner's Project Requirements, Basis of Design and design documents at all stages of submittal and provides comments to the DM.
 - .2 Records all comments as history for the project commissioning.
 - .3 Produces the Commissioning Manual for review by the DM and DC, and modifies based on their comments as necessary.
 - .4 Provides "Issued for Construction" Commissioning Manual to the DM.
 - .5 Provides guidance on the Commissioning Process, and responsibilities of Commissioning Team members.
 - .6 Reviews contractor shop drawings for related commissioning information.
 - .7 Coordinates and chairs (in person or via teleconference) the commissioning kick-off meeting and progress meetings.
 - .8 Prepares and distributes the meeting agenda and minutes.
 - .9 Attends when necessary Installation Verification.
 - .10 Reviews completed Installation Verification checklists and signs off.
 - .11 Attends Performance Verification and signs off on check lists.
 - .12 Attends owner training sessions.
 - .13 Verifies that training is complete.
 - .14 Reviews completed Cx manual as submitted by the contractor.
 - .15 Prepares Summary Commissioning Report and submits to the CM.
 - .16 Prepares letter for CM indicating acceptance of the completed commissioning activities.

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- .17 Verifies that seasonal or deferred Commissioning is completed.
- .18 Coordinates ten (10) month building review and issues occupant survey.
- .2 DM (Design Manager):
 - .1 Reviews Owner's Project Requirements, Basis of Design and design documents at all stages of submittal. Compiles all comments from all reviewers and submits to document originator.
 - .2 Submits all documentation required by the CxA in a timely manner.
 - .3 Identifies Cx team members.
 - .4 Provides a list of equipment and systems included in the design to the CxA for inclusion in preliminary manual.
 - .5 Reviews Cx manual in draft and final revisions. Provides comments to the CxA as necessary on the Commissioning Manual.
 - .6 Forwards the Cx Manual for review by the DC, receives comments and issues them to the CxA.
 - .7 Ensures that the Cx Manual is issued with the tender documents.
 - .8 Issues IFC Cx Manual to the CM.
 - .9 Reviews contractor shop drawings and provide comments to the CM.
 - .10 Attends Cx kick-off meeting during the design phase.
 - .11 Attends commissioning progress meetings as required.
 - .12 Attends Installation Verification as required.
 - .13 Attends Cx Performance Verification or provides representative.
 - .14 Attends training sessions or sends representative knowledgeable in the design.
 - .15 Assists with ten (10) month building review.
- .3 CM (Construction Manager):
 - .1 Main contact for CxA during construction phase.
 - .2 Distributes "Issued for Construction" Cx Manual to GC.

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- .3 Notifies CxA of any Cx related issues raised during construction (i.e. change orders).
- .4 Provides times during any project meetings to discuss Cx with the entire team.
- .5 Attends Cx meetings (construction phase).
- .6 Coordinates Cx schedule for Installation Verification and Performance Verification with GC and ensures all TW representatives are available to witness testing as required for Installation Verification and Performance Verification.
- .7 Attend Performance Verification.
- .8 Ensures Cx Team is following/completing Cx Manual.
- .9 Coordinates training schedules, and arranges for video recording of sessions if required.
- .10 Reviews project record documents.
- .11 Ensures that O&M manuals, maintenance materials, as-built drawings and warranties have been submitted and reviewed.
- .12 Provides CxA with reviewed As Built documents, O&M Manuals, and Warranties for inclusion in the Summary Commissioning Report.
- .13 Receives the completed Cx Manual from the GC and submits to the CxA for review.
- .14 Receives the Summary Commissioning Report from the CxA and submits to the Owner.
- .15 Coordinates ten (10) month building review and issues occupant survey.
- .16 Verifies that all maintenance materials, spare parts and tools are received from the GC as per specifications.
- .4 BM (Building Manager):
 - .1 Reviews the Basis of Design developed by the DC and provides comments to the DM.
 - .2 Reviews all design documents and provides comments to the DM.
 - .3 Coordinates maintenance staff participation in Cx activities.
 - .4 Reviews O&M documentation and attends training.
 - .5 Attends all training sessions.
 - .6 Receives and retains a copy of the Commissioning Summary Report.

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- .7 Provides maintenance representatives to facilitate the 10 month building review as necessary.
- .8 Attends commissioning meetings as necessary.
- .5 GC (General Contractor):
 - .1 Maintains as-built drawings on site during construction.
 - .2 Submits shop drawing in accordance with the specifications.
 - .3 Ensures the Cx Manual is on site and being completed and kept up to date by all sub-trades.
 - .4 Executes the Cx process ensuring that sub-trades perform their responsibilities and integrate Cx into the construction process.
 - .5 Ensures equipment manufacturers and vendors provide documentation to facilitate the Commissioning work and perform startups.
 - .6 Coordinates and schedules Cx activities, submits schedule for review and comment by TW staff.
 - .7 Conducts Installation Verification and signs off checklists.
 - .8 Provides written confirmation all systems are operational prior to start of Performance Verification.
 - .9 Conducts Performance Verification with all required Commissioning Team members present.
 - .10 Ensures that all required personnel are available for the verification.
 - .11 Maintains an up to date version of the Cx manual on site with checklists completed on installed/operational systems.
 - .12 Provides all required training.
 - .13 Coordinates location, schedule.
 - .14 Provides facilities (location, materials).
 - .15 Ensures qualified factory trained technicians are available to facilitate training.
 - .16 Provides copies of all training material.
 - .17 Obtains occupancy approvals/permits.
 - .18 Submits completed manual to CM.
 - .19 Provides the following information for inclusion in the Commissioning Summary Report.
 - .20 Training Records.

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- .21 Operation and Maintenance Manuals.
- .22 Warranties.
- .23 Completed commissioning Checklists.
- .24 List of spare parts turned over.
- .25 Supplies maintenance materials and tools as per specification.
- .26 Attends all commissioning meetings.
- .6 PC (Project Coordinator):
 - .1 If there is no PC assigned to the project, then these duties are completed by the CM.
 - .2 Attends Installation Verification and Performance Verification demonstrations.
 - .3 Ensures Cx manual is on site and kept up to date by the GC.
 - .4 Verifies maintenance materials are provided by the GC as per the contract documents.
 - .5 Ensures GC is maintaining as-built drawings on site during construction.
 - .6 Attends training sessions as necessary and directed by the CM.
 - .7 Attends all commissioning meetings.
- .7 TSI (Technical Services Inspector):
 - .1 Attends Installation Verification and Performance Verification for equipment within their discipline.
 - .2 Signs off on commissioning checklists within their discipline.
 - .3 Attends training sessions as necessary and directed by the CM.
 - .4 Attends all commissioning meetings.
- .8 Sub Trades:
 - .1 Demonstrates correct system performance.
 - .2 Perform commissioning duties as directed by the GC.
- .9 DC (Design Consultant):
 - .1 Reviews the Owner Project Requirements and provides comment to the DM.
 - .2 Produces the Basis of Design and submits to the DM for review and comment. Revise as necessary based on comments and changes in Owner Project Requirements.

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- .3 Develops system descriptions and forwards to the CxA, for inclusion in the Cx Manual.
- .4 Reviews drafts of the Cx Manual, including the installation and Performance Verification checklists, and provides comments to the DM.
- .5 Provides project narrative for inclusion in the Cx Manual.
- .6 The DC shall provide to the CxA a complete list of all equipment and information required to populate the commissioning checklists with the following information:
 - .1 identification number.
 - .2 location.
 - .3 type, proposed manufacture, make, model.
 - .4 operating parameter (max, normal, min).
 - .5 electrical requirements.
 - .6 control comments.
 - .7 other pertinent information.
- .7 Incorporates commissioning specification into the project documents.
- .8 Reviews contractor shop drawing submittals.
- .9 Attends periodic site visits to ensure systems meet the design intent and operate as outline in the specifications.
- .10 Attends and signs off checklist for Installation Verification.
- .11 Attends Performance Verification and signs off on checklists for the appropriate discipline.
- .12 Develops and submits Systems Manuals to the CM (these will be included in the Commissioning Summary Report).
- .13 Provides system overview during training.
- .14 Attends training as required.
- .15 Attends commissioning meetings.
- .16 Attends ten (10) month building review activities.
- .10 Owner:
 - .1 Produces the Owner Project Requirements and submits to the DM.
 - .2 Reviews the Basis of Design developed by the DC and provides comments to the DM.

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- .3 Reviews all design documents and provides comments to the DM.
- .4 Coordinates maintenance staff participation in Cx activities.
- .5 Reviews O&M documentation and attends training.
- .6 Attends all training sessions.
- .7 Receives and retains a copy of the Commissioning Summary Report.
- .8 Provides maintenance representatives to facilitate the ten (10) month building review as necessary.
- .9 Attends commissioning meetings as necessary.

1.6 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 During Cx, should equipment, system components, and associated controls be identified as incorrectly installed, malfunctioning or not performing as per specifications, the contractor shall correct deficiencies, re-verify equipment and components within the system, including related systems as deemed necessary by Engineer/Architect, to ensure effective and accurate operation.
- .2 Minor deficiencies may be corrected at the time of identification. For systems requiring major repairs, the Commissioning Team shall move on to the next system to be commissioning. The Contractor shall notify the CM when the work is complete.
- .3 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor.

1.7 CONFLICTS

- .1 Report conflicts between requirements of this section, other sections, and the Cx Manual to the CM to obtain clarification prior to the start of work.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.8 SUBMITTALS

- .1 Prior to starting Cx the Contractor shall provide a set of equipment and system submittals. These submittals are supplemented by the installation

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and start-up procedures, O&M data, performance data, control drawings and any changes that may affect commissioned systems.

- .2 Submit no later than four (4) weeks after award of Contract:
 - .1 Name of Contractor's Cx coordinator.
 - .2 Preliminary Cx schedule. Submit final Cx schedule to CxA for review prior to performance verification.
 - .3 Submit the names of all personnel for approval by the CxA. Designate who has managerial responsibilities for coordination of installation verification and performance verification.
 - .4 Submit documentation to confirm personnel compliance with quality assurance provisions.
- .3 Any changes to the information submitted must be re-submitted. Ensure certified trades persons, certified testing agencies and/or factory authorized personnel participate in commissioning tasks.
- .4 Prior to start of Performance Verification:
 - .1 Submit TAB report to CxA for review.
 - .2 Submit start-up documentation to CxA for review.
 - .3 Submit completed Installation Verification checklists.
- .5 Fifteen (15) days prior to application for Substantial Completion:
 - .1 Submit three (3) copies of final commissioning manual and applicable forms to the CM for review.
 - .2 Submit reports of performance verifications postponed due to seasonal, climatic, occupancy, or other reasons beyond the Contractor's control, promptly after execution of those services.
- .6 Ensure each form bears the required signatures as indicated on the form.
- .7 Submit as-built drawings, schematics, O&M manuals, maintenance materials and warranties to CM for review.

1.9 COMMISSIONING DOCUMENTATION

- .1 Refer to Section 01 91 13.16 - Commissioning (Cx) Forms for requirements and instructions for use as well as the Cx Manual

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- .2 Checklists will be provided to the Contractor by the CM during the construction stage.
- .3 Installing subcontractors are to date and initial the checklists as construction and verifications are completed.
- .4 The general contractor is to submit completed checklists to the CxA for review and acceptance.
- .5 Once all documents have been reviewed and accepted the general contractor shall submit final commissioning documents in electronic form (PDF) and original signed copies.

1.10 COMMISSIONING SCHEDULE

- .1 Submit preliminary Cx schedule in Gantt Chart format to CxA no later than four (4) weeks after award of contract. A sample Cx Schedule is provided in the Cx Manual.
- .2 Submit final Cx schedule in Gantt Chart format to CxA for review four (4) weeks prior to performance verification. A sample Cx Schedule is provided in the Cx Manual.
- .3 Provide adequate time for Cx activities prescribed in technical sections, commissioning sections and the Cx manual including all on site activities as well as documentation procedures. Time should be allowed for re-verification should any system be rejected upon completion of initial verification.
- .4 Provide adequate time for training.

1.11 COMMISSIONING MEETINGS

- .1 The CM will convene Cx meeting consisting of all members of the design and construction teams to address building systems to be commissioned. Items to be discussed will include commissioning requirements, completion and start-up schedules, and roles and responsibilities.
- .2 CxA to make necessary updates and changes to the CxManual and deliver to the CM who will distribute to all other parties as necessary.
- .3 Convene Cx meetings following project meetings and as specified herein to resolve issues, monitor progress and identify deficiencies relating to Cx.

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- .4 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .5 At 60% construction completion stage CxA to call a separate Cx meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .6 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .7 Meetings will be chaired by the CxA or CM, meeting minutes will be prepared and issued by the CxA or CM. Clarifications to the minutes must be submitted within 5 days of issue, after which, the issued set becomes the official project record.
- .8 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.12 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections, including disassembly and re-assembly after approval, starting, testing and adjusting, and supply of testing equipment, and all associated costs of installation and performance verification.

1.13 WITNESSING OF STARTING AND TESTING

- .1 Provide twenty eight (28) days' notice prior to commencement.
- .2 Owner's Representative to witness start-up and testing.
- .3 Contractor's Cx Coordinator to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

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1.14 MANUFACTURER'S INVOLVEMENT

- .1 The Contractor shall obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems..
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .2 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
- .3 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 Ability to report results in clear, concise, logical manner.

1.15 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting Performance Verification.
- .2 Conduct Commissioning in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of product information report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Installation Verification: follow accepted start-up procedures.
 - .3 Performance Verification: document equipment performance. Include repetition of tests after correcting deficiencies.
 - .4 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from CxA after distinct phases have been completed and before commencing next phase.

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- .4 Document required tests on checklists provided in the Cx Manual as well on any supplied Manufacturer forms.
- .5 Failure to follow accepted Commissioning Processes will result in re-evaluation of equipment by an independent testing agency selected by CxA. If results reveal that equipment Commissioning Process was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Minor equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by CxA.
 - .2 Major equipment/systems: If evaluation report concludes that major damage has occurred, CxA shall reject equipment to be removed from site and replaced with new.
 - .3 Subject new equipment/systems to specified Commissioning Process

1.16 COMMISSIONING DOCUMENTATION

- .1 Assemble Installation Verification documentation and submit to CxA for approval before commencement of Performance Verification.
- .2 Installation Verification documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Inspection reports.
 - .3 Signed Installation Verification check lists.
 - .4 Start-up reports.
 - .5 Step-by-step description of complete start-up procedures, to permit the contractor or CxA to repeat start-up at any time.

1.17 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After Performance Verification, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit to CxA for approval before implementation.
- .3 Operate and maintain systems for minimum twenty one (21) days for commissioning to be completed.

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- .4 After completion of commissioning, operate and maintain systems until issuance of Substantial Completion

1.18 TEST RESULTS

- .1 If start-up, testing and/or performance verification produce unacceptable results, repair, replace or repeat specified starting and/or performance verification procedures until acceptable results are achieved.
- .2 Provide personnel, resources and materials, assume all costs for re-verification.

1.19 INSTRUMENTS / EQUIPMENT

- .1 Submit to CxA for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide all required equipment to complete commissioning.
- .3 Provide all Arc Flash Personal Protective Equipment as required. Provide commissioning personnel with the appropriate Arc Flash Protection training.

1.20 PERFORMANCE VERIFICATION

- .1 Notify CxA at least twenty eight (28) days prior to start of Performance Verifications.
- .2 Start Performance Verification after elements of building affecting start-up and performance verification of systems have been completed.
- .3 Ensure all HVAC systems have been thoroughly cleaned.
- .4 Conduct performance verification once identified pre-requisite activities are completed for a system and approved by the CxA.
- .5 Test all building systems including architectural, structural, civil, mechanical and electrical components and operating procedures by challenging these systems to realistic operating conditions and train operational staff.

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- .6 Run systems through all sequences of operation and verify response of components.
- .7 Notwithstanding all-inclusive requirements specified in this section, additional separate commissioning may be required at a later date for equipment and systems whose full operation is dependent on seasonal conditions. Job conditions for Peak Performance Verification are as follows:
 - .1 Summer sequence commissioning to take place between June 1st and September 15th when outside ambient temperatures are at least 22°C;
 - .2 Winter sequence commissioning to take place between November 1st and March 31st when outside ambient temperature is no greater than minus 10°C.
- .8 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .9 Cx procedures to be repeatable and reported results are to be verifiable.
- .10 Follow equipment manufacturer's operating instructions.
- .11 EMCS trending to be available as supporting documentation for performance verification.
- .12 Contractor to obtain all documentation, including updated points list, controls sequences and setpoints, and submit documentation to commissioning authority for review. At completion of commissioning, scan completed manuals to electronic format on CD(s) in PDF format as required and submit to CxA.

1.21 WITNESSING COMMISSIONING

- .1 CxA along with designated representatives to witness activities and verify results.

1.22 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for

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authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

- .2 If the CxA is not available to witness, the certificates of approval from the Authority Having Jurisdiction will be accepted as adequate.
- .3 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .4 Provide copies to CxA within five (5) working days of test and with Cx report.

1.23 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Owner's Commissioning representatives for second and subsequent verifications where:
 - .1 Verification of reported results fails to receive CxA's approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 CxA deems Contractor's request for second verification was premature.

1.24 DEFICIENCIES, FAULTS, DEFECTS

- .1 Report problems, faults or defects affecting Cx to Engineer/Architect in writing. Stop Cx until problems are rectified. Proceed with written approval from CxA.
- .2 Correct deficiencies found during start-up and Cx to satisfaction of CxA.

1.25 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities, complete Cx prior to application for Substantial Completion.
- .3 Cx to be considered complete when all Cx deliverables have been submitted and accepted by CxA.
- .4 The CxA is to compile a Final Commissioning Report summarizing all tasks, findings and documentation of the commissioning process. The Final Commissioning Report is to incorporate all test reports by sub-

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contractors, manufacturer's and controlling authorities including the following list. The Contractor shall turn over all materials per this specification.

- .1 Evaluation of operating condition of the systems at the time of functional test completion.
- .2 Deficiencies that were discovered and measures taken to correct them.
- .3 Functional test procedures and results.
- .4 Documentation of all commissioning field activities as they progressed.
- .5 Description and estimated schedule of required deferred testing.
- .5 The Contractor to provide O&M manuals, maintenance materials, warranties and training records.

1.26 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process notify the CxA. The CxA will update and provide Cx forms for affected item.

1.27 TRAINING

- .1 In accordance with Section 01 79 00.13 – Demonstration and Training for Building Commissioning, the Cx Manual and respective technical sections.

1.28 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract. Provide transmittal documenting all materials provided.

1.29 OCCUPANCY

- .1 Cooperate fully with CxA during stages of acceptance and occupancy of facility.

1.30 PERFORMANCE VERIFICATION TOLERANCES

- .1 Application tolerances:

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- .1 Specified range of acceptable deviations of measured values from specified values or specified design criteria, except for special areas, to be within +/- 5 % of specified values.
- .2 Instrument accuracy tolerances:
 - .1 To be of higher order of magnitude than equipment or system being tested.
- .3 Measurement tolerances during verification:
 - .1 Unless otherwise identified, recorded values to be within +/- 2 % of specified values.

1.31 OWNER'S PERFORMANCE TESTING

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

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 SCHEDULE

- .1 Provide a detailed schedule as per this section for on-site verification activities by the commissioning team based on the Cx Manual provided by the CxA. Be responsible for resource allocation respecting the exact number and duration for personnel required to perform the tasks required.
- .2 This schedule shall be submitted with the general construction schedule monthly. The level of detail shall increase as the construction progresses.

3.2 COMMISSIONING TASKS

- .1 Refer to the Cx Manual provided by the CxA for a list of tasks to be conducted for the commissioning process. Further specifics are provided within applicable specification sections.

END OF SECTION

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

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

1.2 **RELATED SECTIONS**

- .1 Section 01 78 00 – Closeout Submittals.
- .2 Section 01 79 00.13 – Demonstration and Training for Building Commissioning.
- .3 Section 01 91 13.13 – Commissioning (Cx) Requirements.

1.3 **INSTALLATION VERIFICATION CHECK LISTS**

- .1 Prior to initiation of Performance Verification the CxA will develop and provide to the contractor the required project specific Cx Manual which will include the Installation Verification check lists.
- .2 Completed Installation Verification Checklists to be submitted to CxA for review and approval.
- .3 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 in conjunction with installation verification check lists forming part of the Cx manual. Manufacturer's check sheets used must be attached to final document submittals.
- .5 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Completed check lists to be submitted by the contractor at completion of the Commissioning Process.
- .6 Use of check lists will be considered part of commissioning process.

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1.4 PERFORMANCE VERIFICATION CHECK LISTS

- .1 The CxA will develop and provide to the Contractor the required project specific Cx Manual including the Performance Verification check lists.
- .2 Completed Performance Verification Checklists to be submitted to CxA for review and approval.
- .3 Strategy for Use:
 - .1 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
 - .2 Confirm operation as per design criteria and intent.
 - .3 Identify variances between design and operation and reasons for variances.
 - .4 Verify operation in specified normal and emergency modes and under specified load conditions.
 - .5 Record analytical and substantiating data.
 - .6 Verify reported results.
 - .7 Form to bear signatures of recording technician and reviewed and signed off by General Contractor, Installing Contractor, Consultant, DTW Representative, and the Commissioning Agent.
 - .8 Reported results in true measured SI (metric) unit values.
 - .9 Maintain copy on site during start-up, testing and commissioning period.
 - .10 Forms to be both hard copy and electronic format.
- .4 Upon completion of Performance Verification the contractor shall submit all completed checklists to the CxA.
- .5 Final submittal shall include all Installation Verification, Performance Verification check lists, training records, maintenance materials transmittals, written warranties and a list of all Cx activities postponed due to seasonal, climatic, occupancy, or other reasons beyond the contractor's control.

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PART 2 **PRODUCTS (NOT APPLICABLE)**

PART 3 **EXECUTION (NOT APPLICABLE)**

END OF SECTION

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PART 1 **GENERAL**

1.1 **GENERAL**

- .1 This Section covers items common to Sections of Division 26.

1.2 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.1, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
 - .2 CAN/CSA-22.3 No. 1, Overhead Systems.
 - .3 CAN3-C235, Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
 - .4 CAN/CSA-C22.3 No. 7 Underground Systems.
- .2 All codes and references referred to in this specification refer to the latest edition thereof.

1.3 **CARE, OPERATION AND START-UP**

- .1 Instruct Owner's Representative and operating personnel in the operation, care and maintenance of systems, system equipment and components.
- .2 Operating instructions to include following:
 - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
 - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
 - .3 Safety precautions.
 - .4 Procedures to be followed in event of equipment failure.
 - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.
- .3 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

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- .4 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.4 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.5 SUBMITTALS

- .1 Submit drawings stamped and signed by the contractor registered or licensed in Province of Newfoundland and Labrador, Canada.
- .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure coordinated installation.
- .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
- .4 Indicate on drawings clearances for operation, maintenance, and replacement of operating equipment devices.
- .5 Quality Control:
 - .1 Provide CSA certified equipment and material. Where CSA certified equipment and material is not available, submit such equipment and material to authority having jurisdiction for approval before delivery to site.
 - .2 Submit test results of installed electrical systems and instrumentation.
 - .3 Submit, upon completion of Work, load balance report as described in sentence 3.5.4.
 - .4 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Owner's Representative.

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- .6 Manufacturer's Field Reports: submit to Owner's Representative within seven (7) working days of review, verifying compliance of Work and electrical system and instrumentation testing, as described in paragraph 3.5- FIELD QUALITY CONTROL.
- .7 Single Line Electrical Diagrams
 - .1 Provide single line electrical diagrams in glazed frames as follows:
 - .1 Electrical distribution system: locate one in the main electrical room for each building.
- .8 Shop Drawings:
 - .1 Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or materials.
 - .2 Where applicable, indicate wiring, single line and schematic diagrams.
 - .3 Include wiring drawings or diagrams showing interconnection with work of other sections.
 - .4 Each shop drawing will be stamped and signed by the Contractor before submitting, stating that he has checked the drawings against the requirements as called for in the Contract Documents and also in the case where the equipment is attached to or connects to other equipment, that it has been properly coordinated with this equipment, whether supplied under Division 26 or under other Divisions.
 - .5 Each shop drawing for non-catalogue items shall be prepared specifically for this project. If brochures are submitted for catalogue items, the brochures shall be marked deficiently indicating the item or items to be supplied.
 - .6 Work shall not be proceeded with on any of the equipment until final review of shop drawings received by the Contractor.
 - .7 Shop drawing review is for general compliance with Contract Documents. No responsibility is assumed by the Owner's Representative for correctness of dimensions or details. Corrections or comments, or lack thereof, made on the shop drawings during the Owner Representative's review does not relieve the Contractor from compliance with the requirements of the drawings and specifications.

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- .8 If changes are required, notify Owner's Representative of these changes before they are made.
- .9 Operation and Maintenance Data:
 - .1 Provide operation and maintenance data for incorporation into operation and maintenance manuals. Manuals shall be supplied to the Owner.
 - .2 Include in operations and maintenance data:
 - .1 Details of design elements, construction features, component function and maintenance requirements to permit effective start-up operation, maintenance, repair, modification, extension and expansion of any portion or feature of installation.
 - .2 Technical data, product data, supplemented by bulletins, exploded views, technical description of items and part lists. Advertising or sales literature not acceptable.
 - .3 Wiring and schematic diagrams and performance curves.
 - .4 Names and addresses of local suppliers for items included in maintenance manuals.
 - .5 Copy of reviewed shop drawings.
- .10 As-Built Drawings: Submit to Owner.

1.6 PERMITS, FEES AND INSPECTION

- .1 Submit to Electrical Inspection Division and Supply Authority necessary number of drawings and specifications for examination and approval prior to commencement of work.
- .2 Pay associated fees.
- .3 Owner's Representative will provide drawings and specifications required by Electrical Inspection Division and Supply Authority at no cost.
- .4 Notify Owner's Representative of changes required by Electrical Inspection Division prior to making changes.
- .5 Furnish Certificates of Acceptance from Electrical Inspection Division or authorities having jurisdiction on completion of work to Owner's Representative.

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1.7 CO-ORDINATION

- .1 Co-ordinate work with work of other divisions to avoid conflict.
- .2 Locate distribution systems, equipment, and materials to provide minimum interference and maximum usable space.
- .3 Locate all existing underground services and make all parties aware of their existence and location. The contractor is responsible to complete locates and scans to identify all existing services prior to excavation.
- .4 Where interference occurs, Owner's Representative must approve relocation of equipment and materials regardless of installation order.
- .5 Notwithstanding the review of shop drawings, this division may be required to relocate electrical equipment which interferes with the equipment of other trades, due to lack of co-ordination by this Division. The cost of this relocation shall be the responsibility of this Division. The Owner's Representative shall decide the extent of relocation required.

1.8 CUTTING AND PATCHING

- .1 Inform all other divisions in time, concerning required openings. The contractor is responsible for all openings, bear the cost of all cutting. Obtain written approval of Structural engineer before drilling any beams or floors.

1.9 PROTECTION

- .1 Protect exposed live equipment during construction for personnel safety.
- .2 Shield and mark all live parts "LIVE 120 VOLTS", or with appropriate voltage in English.
- .3 Arrange for installation of temporary doors for rooms containing electrical distribution equipment. Keep these doors locked except when under direct supervision of electrician.

1.10 RECORD DRAWINGS

- .1 Obtain and pay for three sets of white prints. As the job progresses, mark these prints to accurately indicate installed work. Have the white prints available for inspection at the site at all times and present for scrutiny at each job meeting.

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- .2 Show on the record drawings the installed inverts of all services entering and leaving the building and the property. Dimension underground services at key points of every run in relation to the structure and building.
- .3 Indicate exact location of all services for future work. Show and dimension all work embedded in the structure.
- .4 Submit record drawings within 30 days prior to start of commissioning.

1.11 INSPECTION OF WORK

- .1 The Owner will make periodic visits to the site during construction to ascertain reasonable conformity to plans and specifications but will not execute quality control. The Contractor shall be responsible for the execution of his work in conformity with the construction documents and with the requirements of the inspection authority.

1.12 SCHEDULING OF WORK

- .1 Work shall be scheduled in phases as per the contractor's workplan.
- .2 Become familiar with the phasing requirements for the work and comply with these conditions.
- .3 No additional monies will be paid for contractor's requirement to comply with work phasing conditions.
- .4 The building shall be occupied for the entire duration of construction. Provide temporary generators, equipment and cabling, and a sequencing plan to support this requirement.

1.13 FIRE RATING OF PENETRATIONS

- .1 Maintain fire ratings around conduits passing through floors, ceilings and fire rated walls.
- .2 Use 3M brand or equal fire barrier products at each penetration.
- .3 Acceptable products for fire barrier products shall be 3M #CP25 fire barrier caulk, #303 putty, #FS 195 wrap and #CS195 sheet.
- .4 Acceptable manufacturers: Nelson, Fire Stop Systems, 3M or approved equal. Material of same manufacturer to be used throughout project.

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1.14 DELIVERY, STORAGE AND HANDLING

- .1 Material Delivery Schedule: provide Owner's Representative with schedule within 2 weeks after award of Contract.

1.15 SYSTEM START-UP

- .1 Instruct Owner's Representative and operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

1.16 WASTE MANAGEMENT & DISPOSAL

- .1 Separate and recycle waste materials.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal: paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.
- .4 Divert unused wiring and metal materials from landfill to metal recycling facility as approved by Owner's Representative.
- .5 Place materials defined as hazardous or toxic waste in designated containers.
- .6 Ensure emptied containers are sealed and stored safely for disposal.
- .7 Unused materials must not be disposed of into sewer system, streams, lakes, onto ground or in other locations, where it will pose health or environmental hazard.
- .8 Do not dispose of preservative treated wood through incineration. Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Owner's Representative.

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- .9 Divert unused batteries and antifreeze to appropriate recycling facilities as approved by Owner's Representative.

1.17 EQUIPMENT SUPPORTS AND HOUSEKEEPING PADS

- .1 Equipment supports supplied by equipment manufacturer are specified elsewhere in Division 26.
- .2 Fabricate equipment supports not supplied by equipment manufacturer from structural grade steel. Submit structural calculations with shop drawings. Ensure that supports meet the requirements of the National Building Code.
- .3 Mount base mounted equipment on chamfered edge housekeeping pads, minimum of 100 mm high and 50 mm larger than equipment dimensions all around.

1.18 ANCHOR BOLTS AND TEMPLATES

- .1 Supply anchor bolts and templates for installation by other divisions.

1.19 ACCESS DOORS

- .1 Supply access doors for concealed electrical equipment to allow operation, inspection, adjusting and servicing.
- .2 Use flush mounted 600 x 600 mm for body entry and 300 x 300 mm for hand entry unless otherwise noted. Doors to open 180, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.
- .3 Material:
 - .1 Use stainless steel with brushed satin or polished finish in special areas such as tiled or marble surfaces and as directed by Owner's Representative.
 - .2 In remaining areas, use prime coated steel.
 - .3 Use ULC rated access doors in fire rated walls and ceilings.
- .4 Installation
 - .1 Locate so that concealed items are accessible.
 - .2 Locate so that hand or body entry (as applicable) is achieved.
 - .3 Installation is specified in applicable sections.

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PART 2 PRODUCTS

2.1 EQUIPMENT AND CONTROLS

- .1 Supplier and installer responsibility is indicated in electrical specifications and on electrical drawings.
- .2 Control wiring and conduit shall be supplied and installed by Electrical, regardless of voltage.

2.2 MATERIALS AND EQUIPMENT

- .1 Provide materials and equipment.
- .2 Equipment and material to be CSA certified. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Electrical Inspection Division.
- .3 Factory assemble control panels and component assemblies.

2.3 FINISHES

- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
 - .1 Paint indoor switchgear and distribution enclosures to EEMAC 2Y-1. This also includes panelboards, indoor transformers and disconnects.
 - .2 Confirm exact product material and sheen prior to ordering equipment.
 - .3 Electrical equipment colours as follows:
 - .1 Normal 208V: Pantone P 167-4 C Light Green.
 - .2 Normal 600V: Pantone 304 U. Light Blue.
 - .3 Emergency 208V: Pantone 2308 XGC Dark Green.
 - .4 Emergency 600V: Pantone 2152 XGC Dark Blue.
 - .5 15 kV: Pantone 12-0752 TPG Buttercup.
 - .4 Paint outdoor electrical equipment to EEMAC Y1-1.

2.4 WARNING SIGNS

- .1 As specified and to meet requirements of Electrical Inspection Department and Owner's Representative.

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- .2 Porcelain enamel decal signs, minimum size 175 x 250 mm.
- .3 Install adhesive backed polyester arc flash hazard labels on all electrical equipment including the Automatic Transfer Switches, switchgear, panelboards and disconnects. Refer to Section 26 05 73 – Power System Studies for further details.

2.5 WIRING TERMINATIONS

- .1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

2.6 EQUIPMENT IDENTIFICATION

- .1 Identify electrical equipment with nameplates and labels as follows:
 - .1 Nameplates: Lamicoid 3 mm thick plastic engraving sheet, black face, white core, mechanically attached with self tapping screws.
 - .2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels:
 - .1 Embossed plastic labels with 6 mm high letters unless specified otherwise.

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- .3 Wording on nameplates and labels to be approved by Owner's Representative prior to manufacture.
- .4 Allow for average of twenty-five (25) letters per nameplate and label.
- .5 Identification to be English.
- .6 Nameplates for terminal cabinets and junction boxes to indicate system name and voltage characteristics.
- .7 Disconnects: indicate equipment being controlled and voltage.
- .8 Pull boxes: indicate system name and voltage.
- .9 Panelboards: indicate voltage, phases, wires and source breaker.
- .10 Transformers: indicate primary and secondary voltage and source breaker.
- .11 In addition to lamicoid labels, the contractor shall also install adhesive sticker labels on all equipment that include the name and bar code information. The contractor shall be provided with a spreadsheet program to create the specific bar code for each piece of equipment. Using the program to create the bar codes, and the supply and installation of the labels is the contractor's responsibility

2.7 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
- .2 Maintain phase sequence and colour coding throughout.
- .3 Colour code: to CSA C22.1, Canadian Electrical Code.
- .4 Use colour coded wires in communication cables, matched throughout system.

2.8 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.

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- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide colour. To match colours used for distribution equipment depending on voltage and source type.

2.9 MATERIAL SPECIFIED

- .1 Where additional manufacturers are named under Articles entitled "Approved Manufacturers", the selection of a named manufacturer, in reference to a particular article, shall be the Contractor's responsibility.
- .2 Materials or products specified without the clauses "or approved equal" or "approved manufacturers" shall be supplied as specified and no proposed substitution will be considered.
- .3 Where approvals are granted for the use of other equipment, any and all changes or additions required for the installation or operation of the approved equipment will be made by the Contractor at their own expense and no claims will be approved for any such changes, notwithstanding approval of shop drawings. Equipment that is accepted and installed and then does not perform as represented by original submitted data shall be replaced by the Contractor with equipment as specified at no charge to the Owner.
- .4 Trade names are given as a standard of quality and configuration.

2.10 EXAMINATION OF OTHER WORK

- .1 This Division requires the examination of the material and work for all other Divisions under which the work of this Section depends for proper completion. Any defect in work, levels or materials shall be reported to the Owner's Representative. The work of this Division shall not commence until such defects have been corrected. This also applied to existing work installed under other Contracts.

2.11 CUTTING, PATCHING, SLEEVES AND PLATES

- .1 All drilling for hangers, rod, inserts and work of similar nature shall be done by Division 26.
- .2 Have core drilled openings installed in foundation walls to accommodate the work of this Division. Seal conduit or cable through the cored opening

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using industrial duty round compression seals sized to suit diameter of conduit or cable. Cable seals to be Roxtec RS type or approved equal.

2.12 HANGERS AND EQUIPMENT SUPPORTS

- .1 All equipment provided under the Electrical Division shall be complete with all necessary supports and hangers required for a safe and workmanlike installation and to avoid strain on conduit, etc. Auxiliary supports where required shall be provided under this Division.
- .2 Hammer driven hanger supports, eg. staples, nails, etc. will not be used.
- .3 Expansion bolts, inserted after concrete has been poured are acceptable.
- .4 Paint all hangers, eg. U-bolts, trapeze hangers, etc. BEFORE INSTALLATION.
- .5 Wire is not an acceptable conduit support.
- .6 Conduit is not an acceptable conduit support.

2.13 TESTING, ACCEPTANCE AND GUARANTEE

- .1 The work of this Contract shall be tested and installed and any defects in operation shall be remedied immediately. Tests required by local authorities shall be the responsibility of the Contractor. When the work is completed, it shall be tested in its entirety and shall be in good working order before the Owner's Certificate of Acceptance shall be issued.
- .2 A written guarantee shall be supplied to the Owner by the Contractor covering the prompt making good of any and all defects in material and workmanship for the period of one (1) year from the date of acceptance and the making good of any such defects shall be completely the responsibility of the Contractor.

PART 3 EXECUTION

3.1 NAMEPLATES AND LABELS

- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

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3.2 CONDUIT AND CABLE INSTALLATION

- .1 Install conduit and sleeves prior to pouring of concrete. Sleeves through concrete: schedule 40 steel pipe, sized for free passage of conduit, and protruding 50 mm.
- .2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- .3 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

3.3 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise.
- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

3.4 CO-ORDINATION OF PROTECTIVE DEVICES

- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

3.5 FIELD QUALITY CONTROL

- .1 All electrical work to be carried out by qualified, licensed electricians or apprentices as per the conditions of the Provincial Act respecting manpower vocational training and qualification. Employees registered in a provincial apprentices program shall be permitted, under the direct supervision of a qualified licensed electrician, to perform specific tasks – the activities permitted shall be determined based on the level of training attained and the demonstration of ability to perform specific duties.
- .2 The work of this division to be carried out by a contractor who holds a valid Code 1 Electrical Contractor License as issued by the Province.
- .3 Perform tests on all new equipment.
- .4 Load Balance:
 - .1 Measure phase current to panelboard with normal loads (lighting) operating at time of acceptance. Adjust branch circuit connections

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- as required to obtain best balance of current between phases and record changes.
- .2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.
- .3 Submit, at completion of work, report listing phase and neutral currents on panelboards, dry-core transformers and motor control centres, operating under normal load. State hour and date on which each load was measured, and voltage at time of test.
- .5 Contractor to conduct the following tests:
 - .1 Power distribution system including phasing, voltage, grounding and load balancing.
 - .2 Control equipment including sequenced operations of systems where applicable.
- .6 Furnish manufacturer's certificate or letter confirming that entire installation as it pertains to each system has been installed to manufacturer's instructions.
- .7 Insulation resistance testing.
 - .1 Measure and record circuits, feeders and equipment up to 350 V with a 500 V instrument.
 - .2 Measure and record 350 – 600 V circuits, feeders and equipment with a 1000 V instrument.
 - .3 Check resistance to ground before energizing and record value.
- .8 Carry out tests in presence of Owner's Representative.
- .9 Provide instruments, meters, equipment and personnel required to conduct tests during and conclusion of project.
- .10 Submit test results for Owner's Representative's review and include in Commissioning Manuals.

3.6 PREPERATION FOR FIRESTOPPING

- .1 Prepare the space between conduits and adjacent sleeve or fire separation for the use of fire proofing material.
- .2 Where cables or conduits pass through fire rated walls or ceilings, sleeve with steel conduit and prepare the opening for fire and smoke sealing and seal with proper fire and smoke rated material.

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- .3 Where conduits pass through fire or smoke rated partitions, install a junction box in the conduit just prior to exiting the space. Use this junction box to install smoke stopping material.

3.7 PAINTING

- .1 Apply at least one coat of corrosion resistant primer paint to ferrous supports and site fabricated work.
- .2 Prime and touch up marred finished paintwork to match original.
- .3 Restore to new condition, finishes that have been damaged too extensively to be primed and touched up.

3.8 TRIAL USAGE

- .1 Owner may use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Trial usage to apply to following equipment and systems:
 - .1 Power distribution system.

3.9 TESTS

- .1 Give 24 h written notice of date for tests. Conceal work only after testing and approval by Consultant. Conduct tests in presence of Consultant. Bear costs including re-testing and making good.
- .2 Equipment: test as specified in relevant sections.
- .3 Prior to tests, isolate all equipment or other parts that are not designed to withstand test pressures or test medium.

3.10 DRAWINGS, CHANGES, ACCESSIBILITY

- .1 The drawings shall be considered to show the general character and scope of work and not the exact details of the installation.
- .2 The installation shall be complete with all supports and accessories required for a complete operative and satisfactory installation.
- .3 The location, arrangement and connection of equipment and materials as shown on the drawings represent a close approximation to the intent and requirements of the Contract.

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- .4 The right is reserved by the Owner's Representative to make reasonable changes required to accommodate conditions arising during the progress of the work. Such changes shall be done at no extra cost to the Owner unless the location, arrangement or connection is more than 3.0 m from that shown.
- .5 Actual location of existing services shall be verified in the field where necessary before work is commenced.
- .6 Changes and modifications necessary to ensure co-ordination and to avoid interference or conflicts with other trades, or to accommodate existing conditions, shall be made at no extra cost to the Owner.
- .7 The contractor is responsible to supply equipment that does not exceed the physical size shown on the drawing. If supplied equipment exceeds that shown, the contractor shall pay all costs associated with the changes and implications.

3.11 CLEANING

- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
- .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.
- .3 Complete final cleaning of equipment and work area as acceptable to Owner's Representative.
- .4 At time of final cleaning, clean lighting, reflectors, lenses and other lighting surfaces that have been exposed to construction dust and dirt.

END OF SECTION

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Section 26 05 20 - Wire and Box
Connectors 0-1000 V

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Materials and installation for wire and box connectors.

1.2 **RELATED SECTIONS**

- .1 Section 26 05 00 – Common Work Results - Electrical.

1.3 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-C22.2 No.18, Outlet Boxes, Conduit Boxes and Fittings.
 - .2 CAN/CSA-C22.2 No.65, Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).
- .2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)
 - .1 EEMAC 1Y-2, Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).
- .3 National Electrical Manufacturers Association (NEMA)

PART 2 **PRODUCTS**

2.1 **MATERIALS**

- .1 Pressure type wire connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors as required.
- .2 Fixture type splicing connectors to: CSA C22.2 No.65, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.
- .3 Bushing stud connectors: to EEMAC 1Y-2 to consist of:
 - .1 Connector body and stud clamp for stranded copper conductors.
 - .2 Clamp for copper bar.
 - .3 Stud clamp bolts.
 - .4 Bolts for copper bar.
 - .5 Sized for conductors and bars as indicated.

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- .4 Clamps or connectors for flexible conduit, as required to: CAN/CSA-C22.2 No.18.

PART 3 **EXECUTION**

3.1 **INSTALLATION**

- .1 Remove insulation carefully from ends of conductors and:
 - .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65.
 - .2 Install fixture type connectors and tighten. Replace insulating cap.
 - .3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

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Section 26 05 21 – Wire and Cables (0-1000V)

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.
- .2 Refer to drawings for wiring type required under different applications.

1.2 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.2 No .0.3, Test Methods for Electrical Wires and Cables.

PART 2 **PRODUCTS**

2.1 **BUILDING WIRES**

- .1 Conductors: stranded for 8 AWG and larger. Minimum size: 12 AWG.
- .2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE.
- .3 Copper conductors: size as indicated, with thermoplastic insulation type TWH rated at 600 V, typically used for insulated ground wires.

PART 3 **EXECUTION**

3.1 **FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.
- .2 Perform tests using method appropriate to site conditions and to approval of Owner's Representative and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.
- .4 No splices permitted for any feeders, unless indicated otherwise.

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3.2 GENERAL CABLE INSTALLATION

- .1 Terminate cables in accordance with Section 26 05 20 - Wire and Box Connectors - (0-1000 V).
- .2 Cable Colour Coding: to Section 26 05 00 Common Work Results for Electrical.
- .3 Conductor length for parallel feeders to be identical.
- .4 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.
- .5 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.
- .6 Branch circuit wiring for surge suppression receptacles and permanently wired computer and electronic equipment to be 2-wire circuits only, i.e. common neutrals not permitted.
- .7 Provide numbered wire collars for control wiring. Numbers to correspond to control shop drawing legend. Obtain wiring diagram for control wiring.
- .8 All circuits shall have dedicated neutrals.

3.3 INSTALLATION OF BUILDING WIRES

- .1 Install wiring as follows:
 - .1 In conduit systems in accordance with Section 26 05 34- Conduits, Fastenings and Fittings.

END OF SECTION

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Section 26 05 28 – Grounding – Secondary

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 91 13.13 – Commissioning (Cx) Requirements.
- .2 Section 26 05 00 – Common Work Results - Electrical.
- .3 Grounding conductors for all distribution grounding to be insulated copper, uninsulated where in contact with earth.

1.2 **REFERENCES**

- .1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)
- .2 Canadian Standards Association, (CSA)

PART 2 **PRODUCTS**

2.1 **EQUIPMENT**

- .1 Clamps for grounding of conductor: size as indicated to electrically conductive underground water pipe.
- .2 Rod electrodes: copper clad steel 19 mm dia by 3.0 m long.
- .3 Grounding conductors: bare stranded copper, soft annealed, size as indicated.
- .4 Insulated grounding conductors: green, type TW.
- .5 Ground bus: copper, size as indicated, complete with insulated supports, fastenings, connectors.
- .6 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:
 - .1 Grounding and bonding bushings.
 - .2 Protective type clamps.
 - .3 Bolted type conductor connectors, as required by local authority having jurisdiction.
 - .4 Thermit welded type conductor connectors, as indicated.
 - .5 Bonding jumpers, straps.

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- .6 Pressure wire connectors.

PART 3 EXECUTION

3.1 INSTALLATION GENERAL

- .1 Install complete permanent, continuous grounding system including, electrodes, conductors, connectors, accessories. Where conduit is used, run insulated copper ground wire in conduit.
- .2 Install connectors in accordance with manufacturer's instructions.
- .3 Protect exposed grounding conductors from mechanical injury.
- .4 Make buried connections, and connections to conductive water main, electrodes, using copper welding by thermit process.
- .5 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .6 Soldered joints not permitted.
- .7 Install bonding wire for flexible conduit, connected at both ends to grounding bushing, solderless lug, clamp or cup washer and screw. Neatly cleat bonding wire to exterior of flexible conduit.
- .8 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

3.2 ELECTRODES

- .1 Make ground connections to continuously conductive underground water pipe on street side of water meter.
- .2 Install rod electrodes and make grounding connections.
- .3 Bond separate, multiple electrodes together.
- .4 Use size copper conductors as indicated for connections to electrodes.
- .5 Make special provision for installing electrodes that will give acceptable resistance to ground value where rock or sand terrain prevails. Ground as indicated.

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3.3 SYSTEM AND CIRCUIT GROUNDING

- .1 Install system and circuit grounding connections to neutral of transformer secondaries.

3.4 EQUIPMENT GROUNDING

- .1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Service equipment, transformers, distribution panels.

3.5 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 – Common Work Results - Electrical and Section 01 19 13.13 – Commissioning (Cx) Requirements.
- .2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Owner and Engineer.
- .3 Perform tests before energizing electrical system.
- .4 Disconnect ground fault indicator during tests.

END OF SECTION

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Section 26 05 29 – Hangers and Supports
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PART 1 **GENERAL (NOT APPLICABLE)**

PART 2 **PRODUCTS**

2.1 **SUPPORT CHANNELS**

- .1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted, suspended or set in poured concrete walls and ceilings as required.
- .2 Acceptable materials:
 - .1 Thomas and Betts Superstrut.
 - .2 B-line.
 - .3 Unistrut.

PART 3 **EXECUTION**

3.1 **INSTALLATION**

- .1 Secure equipment to hollow or solid masonry, tile and plaster surfaces with lead anchors or nylon shields.
- .2 Secure equipment to poured concrete with expandable inserts.
- .3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.
- .4 Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.
- .5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .6 Fasten exposed conduit or cables to building construction or support system using straps.
 - .1 One-hole steel straps to secure surface conduits and cables 50 mm and smaller.

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- .2 Two-hole steel straps for conduits and cables larger than 50 mm.
- .3 Beam clamps to secure conduit to exposed steel work.
- .7 Suspended support systems.
 - .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
 - .2 Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.
- .8 For surface mounting of two or more conduits use channels at 1.5 m on centre spacing.
- .9 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .10 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .11 Do not use wire lashing, wood blocking, plastic strap or perforated strap to support or secure raceways or cables.
- .12 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Owner's Representative.
- .13 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

END OF SECTION

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Section 26 05 31 - Splitters, Junction, Pull
Boxes and Cabinets

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 26 05 00 – Common Work Results – Electrical.

1.2 **SUBMITTALS**

- .1 Submit shop drawings and product data for junction boxes and splice kits.
- .2 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

PART 2 **PRODUCTS**

2.1 **JUNCTION AND PULL BOXES**

- .1 Welded steel construction with screw-on flat covers for surface mounting.
- .2 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.

PART 3 **EXECUTION**

3.1 **JUNCTION AND PULL BOXES INSTALLATION**

- .1 Install pull boxes in inconspicuous but accessible locations.
- .2 Install pull boxes so as not to exceed 30 m of conduit run between pull boxes.
- .3 Ensure all electrical boxes above drywall ceilings are accessible via a properly sized access door installed directly below the box in drywall ceilings. Temporary removal of electrical light fixtures are not considered safe access to above ceiling electrical boxes and shall not be permitted.

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3.2 IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 – Common Work Results - Electrical.
- .2 Install size 2 identification labels indicating system name, voltage and phase.

END OF SECTION

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Section 26 05 32 – Outlet Boxes, Conduit
Boxes and Fittings

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 26 05 00 – Common Work Results – Electrical.
- .2 Section 26 05 29 – Hangers and Supports for Electrical Systems.
- .3 Section 26 05 34 – Conduits, Conduit Fastenings and Fittings.

1.2 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.1, Canadian Electrical Code, Part 1.

PART 2 **PRODUCTS**

2.1 **CONDUIT BOXES GENERAL**

- .1 Size boxes in accordance with CSA C22.1.

2.2 **FITTINGS - GENERAL**

- .1 Bushing and connectors with nylon insulated throats.
- .2 Knock-out fillers to prevent entry of debris.
- .3 Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.
- .4 Double locknuts and insulated bushings on sheet metal boxes.

PART 3 **EXECUTION**

3.1 **INSTALLATION**

- .1 Support boxes independently of connecting conduits.

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- .2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.
- .3 Provide correct size of openings in boxes for conduit. Reducing washers are not allowed.
- .4 Vacuum clean interior of boxes before installation of wiring.
- .5 Identify systems for boxes as required.

END OF SECTION

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Section 26 05 34 – Conduits, Conduit Fastenings
and Conduit Fittings

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PART 1 **GENERAL**

1.1 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, and Fittings and Associated Hardware, a National Standard of Canada.
 - .2 CSA C22.2 No. 45, Rigid Metal Conduit.
 - .3 CSA C22.2 No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
 - .4 CSA C22.2 No. 83, Electrical Metallic Tubing.
 - .5 CSA C22.2 No. 211.2, Rigid PVC (Unplasticized) Conduit.

1.2 **SUBMITTALS**

- .1 Product data: submit manufacturer's printed product literature, specifications and datasheets.
 - .1 Submit cable manufacturing data.
- .2 Quality assurance submittals:
 - .1 Test reports: submit certified test reports.
 - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Instructions: submit manufacturer's installation instructions.

PART 2 **PRODUCTS**

2.1 **CONDUITS**

- .1 Rigid metal conduit: to CSA C22.2 No. 45, hot dipped galvanized steel threaded.
- .2 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .3 Rigid PVC conduit: to CSA C22.2 No. 211.2.

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2.2 CONDUIT FASTENINGS

- .1 One hole steel straps to secure surface conduits 53 mm and smaller. Two hole steel straps for conduits larger than 53 mm.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits at 1.5 m oc.
- .4 Threaded rods, 6 mm dia., to support suspended channels.

2.3 CONDUIT FITTINGS

- .1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.
- .2 Factory "ells" where 90°, 45 ° or 22.5 ° bends are required for 27 mm and larger conduits.
- .3 Ensure conduit bends other than factory "ells" are made with an approved bender. Making offsets and other bends by cutting and rejoining 90 degree bends are not permitted.
- .4 Raintight connectors and couplings for EMT installed in areas exposed to sprinkler heads. Steel set-screw type connectors and couplings for EMT in all other locations.

2.4 EXPANSION FITTINGS FOR RIGID CONDUIT

- .1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.
- .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection in all directions.
- .3 Weatherproof expansion fittings for linear expansion at entry to panel.

2.5 FISH CORD

- .1 Polypropylene.

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PART 3 **EXECUTION**

3.1 **MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 **INSTALLATION**

- .1 Install all conduit, conduit fittings and accessories in accordance with the latest edition of the Canadian Electrical Code in a manner that does not alter, change or violate any part of the installed system components or the CSA/UL certification of these components.
- .2 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
- .3 Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.
- .4 Surface mount conduits except in finished areas or as indicated.
- .5 Use rigid hot dipped galvanized steel threaded conduit for exposed work below 2.4 m above finished floor.
- .6 Use rigid galvanized steel conduit for exterior above grade conduit.
- .7 Use electrical metallic tubing (EMT) except in cast concrete and above 2.4 m not subject to mechanical injury, as well as concealed work in masonry construction.
- .8 Use rigid PVC conduit underground and buried under concrete slab on grade. Use expansion couplings on all PVC conduits where they protrude above grade.
- .9 Minimum conduit size for controls: 27 mm.
- .10 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.
- .11 Mechanically bend steel conduit over 21 mm dia.

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- .12 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
- .13 Install fish cord in empty conduits.
- .14 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.
- .15 Dry conduits out before installing wire.
- .16 Conduit shall be installed to maintain a minimum of 100 mm from the roof deck in any location. Do not fasten conduit to the roof deck.

3.3 SURFACE CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Run conduits in flanged portion of structural steel.
- .3 Group conduits wherever possible on suspended channels.
- .4 Do not pass conduits through structural members.
- .5 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.4 CONCEALED CONDUITS

- .1 Run parallel or perpendicular to building lines.
- .2 Do not install horizontal runs in masonry walls.
- .3 Do not install conduits in terrazzo or concrete toppings.

3.5 CONDUITS UNDERGROUND

- .1 Slope conduits to provide drainage.
- .2 Waterproof joints (PVC excepted) with heavy coat of bituminous paint.

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 00 – Cleaning.

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- .2 On Completion and verification of performance of installation, remove surplus materials, excess materials rubbish, tools and equipment.

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Section 26 05 43.01 – Installation of Cables in
Trenches and in Ducts

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PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Section 01 91 13.13 - Commissioning (Cx) Requirements.
- .3 Section 26 05 00 - Common Work Results - Electrical.

1.2 **REFERENCES**

- .1 Canadian Standards Association, (CSA)
- .2 Insulated Cable Engineers Association, Inc. (ICEA)

PART 2 **PRODUCTS**

2.1 **MARKERS**

- .1 Provide 150 mm wide, 4 mil, polyethylene marker tape in all trenches. Use red coloured tape. Install at depth as per drawings.

PART 3 **EXECUTION**

3.1 **CABLE INSTALLATION IN DUCTS**

- .1 Install cables as indicated in ducts.
 - .1 Do not pull spliced cables inside ducts.
- .2 Install multiple cables in duct simultaneously.
- .3 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.
- .4 To facilitate matching of colour coded multiconductor control cables reel off in same direction during installation.

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- .5 Before pulling cable into ducts and until cables are properly terminated, seal ends of lead covered cables with wiping solder; seal ends of non-leaded cables with moisture seal tape.
- .6 After installation of cables, seal duct ends with duct sealing compound.

3.2 MARKERS

- .1 Install markers for full length of run.
- .2 Do not splice underground.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical and Section 01 91 13.13 – Commissioning (Cx) Requirements.
- .2 Perform tests using qualified personnel. Provide necessary instruments and equipment.
- .3 Check phase rotation and identify each phase conductor of each feeder.
- .4 Check each feeder for continuity, short circuits and grounds. Ensure resistance to ground of circuits is not less than 50 megohms.
- .5 Pre-acceptance tests.
 - .1 After installing cable but before splicing and terminating, perform insulation resistance test with 1000 V megger on each phase conductor.
 - .2 Check insulation resistance after each splice and/or termination to ensure that cable system is ready for acceptance testing.
- .6 Provide Owner with list of test results showing location at which each test was made, circuit tested and result of each test. Include results in Commissioning Manual.
- .7 Remove and replace entire length of cable if cable fails to meet any of test criteria.

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Section 26 12 16.01 – Dry Type Transformers
Up to 600 V Primary

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PART 1 **GENERAL**

1.1 **RELATED DOCUMENTS**

- .1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 **SECTION INCLUDES**

- .1 Materials and components for dry type transformers up to 600 V primary, equipment identification and transformer installation.
- .2 This Section includes the following types of dry-type transformers rated 600 V and less, with capacities up to 1000 kVA:
 - .1 Distribution transformers.

1.3 **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 91 13.13 – General Commissioning (Cx) Requirements.
- .3 Section 26 05 00 – Common Work Results - Electrical.

1.4 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-C22.2 No.47, Air-Cooled Transformers (Dry Type).
 - .2 CSA C9, Dry-Type Transformers.
- .2 National Electrical Manufacturers Association (NEMA)

1.5 **SUBMITTALS**

- .1 Product Data for each type and size of transformer indicated.
 - .1 Physical: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features.
 - .2 Product warranty.
 - .3 Efficiency Data

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- .1 No load and full load losses.
- .2 Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - .1 Wiring Diagrams: Power, signal, and control wiring.
- .3 Qualification Data: For testing agency.
- .4 Source quality-control test reports.
- .5 Field quality-control test reports.
- .6 Operation and Maintenance Data: For transformers to include in emergency, operation, and maintenance manuals.
- .7 Contractor is responsible to ensure that the proposed transformers are not larger than the existing, and fit onto the existing housekeeping pad.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Temporary Heating: Apply temporary heat according to manufacturer's written instructions within the enclosure of each ventilated-type unit, throughout periods during which equipment is not energized and when transformer is not in a space that is continuously under normal control of temperature and humidity.

1.7 COORDINATION

- .1 Coordinate size and location of concrete bases with actual transformer provided. Drill anchor-bolt inserts into bases. Concrete, reinforcement, and form work requirements in accordance with industry standards. Modify and extend existing pad as required to accommodate new transformers.

Part 2 PRODUCTS

2.1 GENERAL TRANSFORMER REQUIREMENTS

- .1 Description: Factory-assembled and tested, air-cooled units for 60 Hz service
- .2 Cores: Grain-oriented, non-aging silicon steel.

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- .3 Coils: Continuous windings without splices except for taps.
 - .1 Internal Coil Connections: Brazed or pressure type.
 - .2 Coil Material: Copper.

2.2 DISTRIBUTION TRANSFORMERS

- .1 Provide a 25-year pro-rated product Warranty.
- .2 Comply with NEMA ST 20, and list and label as complying with UL 1561.
- .3 Cores: One leg per phase.
- .4 Enclosure: Ventilated, sprinklerproof, Type 3R.
 - .1 Core and coil shall be impregnated within resin compound, sealing out moisture and air.
- .5 Transformer Enclosure Finish: Comply with NEMA 250.
 - .1 Finish Color: custom colour, as per Section 26 05 00.
- .6 Taps for Transformers smaller than 3 kVA: None.
- .7 Taps for Transformers 7.5 to 24 kVA: One 5 percent tap above and one 5 percent tap below normal full capacity.
- .8 Taps for Transformers 25 kVA and larger: Two 2.5 percent taps above and four 2.0 percent taps below normal full capacity.
- .9 Insulation Class: 220 deg C, UL-component-recognized insulation system with a maximum of 115 deg C rise above 40 deg C ambient temperature.
- .10 Energy Efficiency for Transformers Rated 15 kVA and larger:
 - .1 Comply with 10 CFR Part 430, July 29, 2004, FEDERAL Register – US Department of Energy, Office of Energy Efficiency and Renewable Energy. Energy Conservation Program for Commercial and Industrial Equipment: Energy Conservation Standards for Distribution Transformers; Proposed Rule.
 - .2 Meet or exceed DOE 10 CFR Part 430 CSL3 Efficiency
- .11 K-Factor Rating: Transformers shall be K-Factor 7 or higher rated and comply with UL 1561 requirements for non-sinusoidal load current-handling capability to the degree defined by designated K-factor.

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- .1 Unit shall not overheat when carrying full-load current with harmonic distortion corresponding to designated K-factor.
- .2 Indicate value of K-factor on transformer nameplate.
- .3 200% rated neutral with double lugs.
- .12 Electrostatic Shielding: Each winding shall have an independent, single, full-width copper electrostatic shield arranged to minimize inter-winding capacitance.
 - .1 Arrange coil leads and terminal strips to minimize capacitive coupling between input and output terminals.
 - .2 Include special terminal for grounding the shield.
 - .3 Shield Effectiveness:
 - .1 Capacitance between Primary and Secondary Windings: Not to exceed 33 picofarads over a frequency range of 20 Hz to 1 MHz.
 - .2 Common-Mode Noise Attenuation: Minimum of minus 120 dB at 0.5 to 1.5 kHz; minimum of minus 65 dB at 1.5 to 100 kHz.
 - .3 Normal-Mode Noise Attenuation: Minimum of minus 52 dB at 1.5 to 10 kHz.
- .13 Fungus Proofing: Permanent fungicidal treatment for coil and core.
- .14 Low-Sound-Level Requirements: NEMA ST 20 standard sound levels when factory tested according to IEEE C57.12.91.
- .15 Basic Impulse Level (BIL): Standard.
- .16 Hipot: Standard.
- .17 Impedance at 170°C:
 - .1 For 150 kVA transformer: 3.5%.
 - .2 For 225 kVA transformer: 5.0%.
 - .3 For 45 kVA transformer: 2.6%.
- .18 Mounting as indicated on drawing.
- .19 With lifting eyes for two point lift.

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2.3 REQUIRED FEATURES

- .1 Transformers to be breaker integrated transformer (BIT) type with a built in secondary breaker that helps reduce arc flash incident energy at the downstream panel. Breakers must be accessible through small access doors.
- .2 Integrated Infrared Inspection Window
 - .1 Allows Safe External Thermal Imaging of Fully Energized Electrical Components without removing the transformer cover.
 - .2 IP65/NEMA 4 rated both open and closed.
- .3 Lockable Hinged Front Access Doors
 - .1 Allows safe and rapid access to the transformer without the need to undo multiple screws and handle heavy metal cover plates that are in close proximity to live electrical points.
 - .2 Doors shall be able to be secured using a padlock.

2.4 IDENTIFICATION DEVICES

- .1 Nameplates: Engraved, laminated-plastic or metal nameplate for each distribution transformer, mounted with corrosion-resistant screws. Name-plated label products are specified in Division 26 Section "Identification for Electrical Systems".

2.5 SOURCE QUALITY CONTROL

- .1 Test and inspect transformers according to IEEE C57.12.91.
- .2 Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project.

Part 3 EXECUTION

3.1 EXAMINATION

- .1 Examine conditions for compliance with enclosure and ambient temperature requirements for each transformer.
- .2 Verify that field measurements are as needed to maintain working clearances required by CEC and manufacturer's written instructions.

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- .3 Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
- .4 Verify that ground connections are in place and requirements in Division 26 have been met. Maximum ground resistance shall be 5 ohms at location of transformer.
- .5 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- .1 Construct, modify and extend existing concrete bases and anchor floor-mounting transformers according to manufacturer's written instructions. Supply and install additional 100 mm housekeeping pad and dowel into existing pad for all floor mounted transformers.

3.3 CONNECTIONS

- .1 Ground equipment.
- .2 Connect wiring.

3.4 FIELD QUALITY CONTROL

- .1 Perform tests and inspections and prepare test reports.
 - .1 Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- .2 Tests and Inspections:
 - .1 Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- .3 Remove and replace units that do not pass tests or inspections and retest as specified above.
- .4 Infrared Scanning: Two months after Substantial Completion, perform an infrared scan of transformer connections.

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- .1 Use an infrared-scanning device designed to measure temperature or detect significant deviations from normal values. Provide documentation of device calibration.
- .2 Perform 2 follow-up infrared scans of transformers, one at 4 months and the other at 11 months after Substantial Completion.
- .3 Prepare a certified report identifying transformer checked and describing results of scanning. Include notation of deficiencies detected, remedial action taken, and scanning observations after remedial action.
- .5 Test Labelling: On completion of satisfactory testing of each unit, attach a dated and signed "Satisfactory Test" label to tested component.

3.5 ADJUSTING

- .1 Record transformer secondary voltage at each unit for at least 48 hours of typical occupancy period. Adjust transformer taps to provide optimum voltage conditions at secondary terminals. Optimum is defined as not exceeding name plate voltage plus 10 percent and not being lower than name plate voltage minus 3 percent at maximum load conditions. Submit recording and tap settings as test results.
- .2 Connect transformers to provide name plate voltage of equipment being served, plus or minus 5 percent, at secondary terminals.
- .3 Output Settings Report: Prepare a written report recording output voltages and tap settings.

3.6 CLEANING

- .1 Vacuum dirt and debris; do not use compressed air to assist in cleaning.

END OF SECTION

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PART 1 **GENERAL**

1.1 **RELATED WORK**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 11 - Cleaning.
- .3 Section 01 91 13 - General Commissioning (Cx) Requirements.

1.2 **REFERENCES**

- .1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers, Inc. (IEEE)
 - .1 ANSI/IEEE 386, Separable Insulated Connector Systems for Power Distribution Systems above 600 V.
 - .2 ANSI/IEEE C57.12.28 standard for Pad-Mounted Equipment Enclosure Integrity.
- .2 Canadian Standards Association (CSA)
 - .1 CAN/CSA-C2, Single-Phase and Three Phase Distribution Transformers, Types ONAN and LNAN.
 - .2 CSA C227.4, Three-Phase Dead Front Pad-Mounted Distribution Transformers.
 - .3 Federal Register – US Department of Energy, Office of Energy Efficiency and Renewable Energy. 10 CFR Part 30.
 - .4 ANSI/NEMA TP-2 – Standard Test Method for Measuring Energy Consumption of Distribution Transformers.
 - .5 ASTM D66871-03 Standard Specification for Natural (vegetable oil) Ester Fluids used in Electrical Apparatus.

1.3 **SOURCE QUALITY CONTROL**

- .1 Submit to Owner's Representative standard factory test certificates of each transformer and type test of each transformer with high voltage accessories in accordance with CSA C2.
- .2 Factory Tests: Perform the following factory-certified tests on each transformer:

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- .1 Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.
- .2 Ratios on rated-voltage connection and on tap extreme connections.
- .3 Polarity and phase relation on rated-voltage connection.
- .4 No-load loss at rated voltage on rated-voltage connection.
- .5 Excitation current at rated voltage on rated-voltage connection.
- .6 Impedance and load loss at rated current on rated-voltage connection and on tap extreme connections.
- .7 Applied potential.
- .8 Induced potential.
- .9 Full-wave impulse test.
- .10 Mechanical leak test.
- .11 Owner may witness all required factory tests. Notify Engineer at least 14 days before date of tests and indicate their approximate duration.

1.4 SUBMITTALS

- .1 Indicate:
 - .1 Anchoring method and dimensioned foundation template.
 - .2 Dimensioned cable entry locations.
 - .3 Dimensioned cable termination and pothead height.
- .2 Identified internal and external component layout on assembly drawing.
- .3 Insulating liquid capacity.
- .4 Submit primary fuse and secondary breaker/fuse time-current characteristics.
- .5 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, and limitations.
- .6 Submit shop drawings showing enclosure, compartment doors, mounting devices, terminals, taps, internal and external component layout.
- .7 Technical data:

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- .1 kVA rating
- .2 Primary and secondary voltages.
- .3 Frequency.
- .4 Full load efficiency.
- .5 BIL for HV sections.
- .6 Impedance.
- .7 Maximum losses, no load and load.
- .8 Equipment manufacturer shall provide technical information and a simplified ETAP model showing the new transformer and downstream switchboard with simulation and output report that shows the transformer will clear transformer secondary faults within 4 cycles to the line side of the main switchboard, but will maintain system coordination by not operating before the breakers in the main switchboard.

1.5 OPERATION AND MAINTENANCE DATA

- .1 Provide operation and maintenance data for pad mounted distribution transformers for incorporation into manual specified in Section 01 78 00 – Closeout Submittals.
- .2 Include insulating liquid maintenance data.

1.6 WARRANTY

- .1 Provide manufacturer product warranty against defects in operation and material for a period of one (1) year from date of Substantial Completion.

PART 2 PRODUCTS

2.1 EQUIPMENT

- .1 Three phase dead front pad mounted distribution transformers: to CSA C227.4. Complete with two lockable cable compartment doors.
- .2 Separable insulated connectors for power distribution systems above 600 V: to ANSI/IEEE 386.
- .3 Oil filled pad mounted dead front distribution transformers complete with steel barrier between primary and secondary cable compartments (Suitable for loop feed configuration on the high voltage side). Options and

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accessories to form complete factory assembled, self contained, steel fabricated unit for mounting on concrete pad.

- .4 High voltage universal-type bushing wells for dead front bushing-well inserts for connection to distribution system through separable insulated connectors for dead front operation.
- .5 Separable insulated connectors.
- .6 Primary cable terminals with hole for 9.5 mm dia 16 thread bolt for attachment of solder lug or clamp connector in vertical plane.
- .7 Spade type low voltage terminals.
- .8 Connectors for primary and secondary cables.
- .9 Primary overcurrent breaker, activated by internal current transformer differential based on current measuring and monitoring. A control panel specific to this application shall be located on the enclosure to monitor all CTs and activate breaker if required. Equipment must be capable of detecting a secondary fault and operating the primary breaker within 4 cycles of the fault. Complete with an external disconnect capable of opening the primary, interlocked with the fuse compartment to prevent opening of fuse compartment unless disconnect is open. Disconnect to have a viewing window capable of seeing switch position. The protection relay used shall have an adjustable fault clearing time adjustment from 4 cycles up to 5 seconds.
- .10 Primary protection oil immersed fuse, and internal current limiting fuse. Access to fuses to be located in a separate compartment from other devices.
- .11 Separate padlocking for primary compartment door.
- .12 Load break inserts for elbow connectors.
- .13 Stays to hold compartment doors in 110° open position.

2.2 TRANSFORMER CHARACTERISTICS

- .1 Primary voltage: 12,470GrdY/7200V, 60 Hz, wye connected, 3 phase, neutral grounded.
- .2 Secondary voltage:

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- .1 For Physical Education: 480Y/277V, wye connected, 3 phase, impedance = 5.28%.
- .2 For Facilities Management: 600Y/347V, wye connected, 3 phase, impedance = 5.5%.
- .3 Capacity: 500kVA.
- .4 Basic impulse level: 95kV.
- .5 Fault withstand rating: 35 kA.
- .6 Transformer efficiency shall meet class CSL 3 requirements of DOE 10 CFR Part 430.
- .7 Transformer shall be tested per NEMA TP-2, and test report signed by a professional engineer documenting compliance with the efficiency requirement shall be submitted at time of shipment.
- .8 Average temperature rise: 65°C, ONAN. Preference is for no exterior cooling fins, cooling tubes or radiators.

2.3 VOLTAGE TAPS

- .1 Four-2.5% taps, 2-FCAN, 2-FCBN.

2.4 TAP CHANGER

- .1 Internally operated tap changer, with provision for padlocking.

2.5 ACCESSORIES

- .1 Liquid temperature thermometer with one sets of contacts.
- .2 Liquid level gauge with one set of contacts.
- .3 20 mm drain valve with sampler.
- .4 25 mm filler plug.
- .5 Tap switch.
- .6 Rapid rise relay with alarm contacts.
- .7 Pressure vacuum gauge.

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2.6 GROUNDING

- .1 Copper grounding bus size 6 x 50 mm.
- .2 Connectors for grounding conductor size 4/0 AWG.
- .3 Grounding bus shall be provided in both high and low voltage compartments, extending full width of compartments.
- .4 High voltage neutral point shall be solidly connected to ground at the transformer.
- .5 Ground strap from the LV compartment ground bus to the secondary neutral LV spade terminal.

2.7 CONSTRUCTION

- .1 The equipment shall be designed to minimize areas where water and corrosive elements can accumulate.
- .2 Excessive welding and/or discontinuous or “skip” welds shall be avoided. Weld spatter shall be ground down to case level.
- .3 The transformer shall have a hinged compartment door and sill arrangement to provide access to the terminating compartment. Stainless steel hinges shall be provided. The hinges shall be continuously welded to the tank and lid. The doors are to be equipped with stops for latching in the 110° open position and shall be designed for removal by lifting off when in the open position.
- .4 The compartments shall be separated by a barrier of metal of other rigid material suitable to prevent access to the primary compartment. The transformer tank and compartments shall be assembled as an integral unit suitable for flush mounting on a flat rigid surface.
- .5 The high voltage and low voltage compartment shall be located side by side. When viewing from the front, the low voltage compartment shall be on the right.
- .6 In addition to the regular locking provisions, all access doors or hood shall be secured by a recessed, captive, pentahead bolt and padlock provisions.

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- .7 Lifting inserts shall be of corrosion resistant material and so arranged to provide a suitable balance lift for the completely assembled unit. Lifting bolts shall be supplied with each unit.
- .8 The transformer(s) shall be of sealed tank construction of sufficient strength to withstand a pressure of 7 PSI without permanent distortion. In addition, the minimum tank withstand pressure shall be in accordance with ANSI standards, 15 PSIG. At the minimum tank withstand pressure, no oil leak shall be initiated and no component or bushing shall be expelled from the unit. If there is deformation, the unit shall remain tamperproof and it shall be possible to open the compartment for access to the cable terminations.
- .9 The pad mounted equipment shall meet the requirements for tamper resistance as set forth in ANSI C57.12.28.
- .10 Transformer shall be complete with six (6) bushing inserts (35,000 ampere rated) Suitable for loop feed on the high voltage side.
- .11 A durable metal nameplate made of stainless steel or anodized aluminum material and conforming to CSA C2 shall be affixed to transformer and contain all essential data, year of manufacture, serial number, and clearly state insulating oil is NON-PCB.
- .12 Noise level shall not exceed ANSI/CSA standards for distribution class transformers.
- .13 Transformer shall be furnished with grounding lugs.
- .14 A self-actuating qualitrol pressure relief device and oil drain plug shall be provided.
- .15 Transformer to be complete with infrared inspection viewing windows for infrared scanning of all secondary transformer connections without having to open cabinet doors. Standard of Acceptance: Square D H.VIR Comet. All windows to be rated for exterior installations. Provide multiple windows where required to permit accurate scanning of all secondary terminals.
- .16 Seismic anchor provisions.
- .17 Tank base complete with jacking and rolling capabilities.

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2.8 HIGH VOLTAGE TERMINATIONS

- .1 The high voltage bushings shall consist of bushing wells and load break bushing inserts, 400 Amp, 15 KV and compatible with existing terminators. The high voltage bushing shall be covered with a dust cover, which shall remain on the high voltage bushing during handling and storage.
- .2 The transformer terminals shall be spaced and arranged so that the transformer compartment door and its tamper-resistant barriers do not violate or reduce the minimum spacing and clearances required. This requirement includes all compartment door positions from fully open to fully closed.
- .3 Bushing wells provided shall be in accordance with ANSI/IEEE Standards 383, or latest revision thereof. Minimum of six (6) parking stand position are required making it suitable for loop feeding.

2.9 HIGH VOLTAGE PROTECTIVE DEVICES

- .1 Bayonet-type fuse holder(s) for oil immersed, fuse(s) shall be provided. The Bayonet device shall be rated to make or break full load current rating of the transformer. A high-voltage bushing, a non-conducting drip shield shall be provided. Fuses shall be included at time of order.
- .2 The circuit location of the primary fuse shall be shown in the nameplate schematic.
- .3 Fuse information of catalogue number shall be stenciled inside the door in 1" high yellow letters. Fuse information shall be provided in the outline drawing provided with transformer design.

2.10 LOW VOLTAGE TERMINATIONS

- .1 The low voltage bushing shall be the spade type with a minimum of eight (8) holes per spade. The low voltage bushing shall be staggered.
- .2 Low voltage section must be capable of handling 4 runs per phase up to 600 MCM.

2.11 FINISH

- .1 All welds shall be ground smooth and all surfaces scrubbed clean in a hot phosphate wash prior to prime painting.

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- .2 Finish coat to be specially compounded, corrosion resistant satin finish vinyl paint, "Seafoam Green" in color.
- .3 A corrosion preventative undercoating shall be applied to all surfaces that are in contact with the pad and shall include the lower 4" of the tank or cabinet walls and base sill. Paint shall be of such quality as to resist rust, fading etc., for a minimum 15-year (exposed to the elements) period. Color shall be "Seafoam Green".
- .4 All paint and/or coatings including topcoats, intermediate coats and primers shall be free of lead.

2.12 NAMEPLATE INFORMATION

- .1 Transformer nameplate shall be made of stainless steel or anodized aluminum, conform in all respects to Nameplate A, as described in ANSI/IEEE C57.12.00 (latest version), and indicate the following:
 - .1 kVA, high voltage, and low voltage.
 - .2 BIL rating.
 - .3 Transformer weight.
 - .4 Month and year of manufacture.
 - .5 Serial number.
 - .6 PCB Content.

2.13 INSULATING OIL

- .1 High fire seed oil insulating fluid for use as a dielectric and cooling medium.
- .2 Natural insulating fluid is to be an agricultural product derived from seed oils rather than refined from petroleum base stocks or synthesized from organic precursors.
- .3 Fluid to be compatible with materials of construction of apparatus and satisfactory maintain its functional characteristic in this application.
- .4 The dielectric coolant shall be non-toxic, non-bio accumulating and be readily and completely biodegradable per EPA OPPTS 835.3100.
- .5 The base fluid shall be 100% derived from edible seed oil and food grade performance enhanced additives.

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- .6 The fluid shall not require genetically altered seeds for its base oil. The fluid shall result in zero mortality when tested on trout fry (per OECD G.L.203).
- .7 The fluid shall be certified to comply with the US EPA Environmental Technology Verification (ETV) requirements, and tested for compatibility with transformer components.
- .8 The fluid shall be Factory Mutual Approved, UL Classified Dielectric Medium (UL-EOUV) and UL Classified Transformer Fluid (UL-EOVK), Envirotemp FR3 Fluid.

2.14 WARNING SIGNS

- .1 Provide and install 300 mm square self-adhesive, digital vinyl waterproof, fade resistant electrical hazard warning signs on transformers supplied under this contract.
- .2 Labels to be installed on front cover of transformer reading "Warning loop fed equipment wired from two sources".
- .3 Arc flash labeling.

2.15 CONSTRUCTION

- .1 316 L stainless steel construction for entire unit including tank, cabinet, sill and radiator.

2.16 STANDARD OF ACCEPTANCE

- .1 Eaton AR-VFI Series.

PART 3 EXECUTION

3.1 INSPECTION

- .1 Check factory made connections of transformer unit for mechanical security and electrical continuity. Check electrical ratings for compliance with specifications and shop drawings.
- .2 Check transformer insulating liquid for correct quantity and specification according to manufacturer's instructions. Check for any leakage.

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3.2 INSTALLATION

- .1 Prior to installation, contractor shall extend the existing pad to accommodate the new transformer. Dowel into the existing pad. New sections to be the same thickness, rebar re-enforced, to match existing. Set and secure transformer unit in place, rigid, plumb and square, on concrete pad.
- .2 Make connections.
- .3 Connect transformer unit ground bus to system ground.
- .4 Wire one set of contacts on liquid temperature thermometer, liquid level gauge, to sound alarm when unsafe condition reached.
- .5 Ensure care is taken to prevent contamination of liquid and components when field filling transformers.
- .6 Use only metal hose when field-filling transformer with oil: never, under any circumstances, use rubber hose. Filling must be performed by transformer manufacturer.
- .7 Set taps to produce rated secondary voltage at no-load.
- .8 Connect transformer ground bus to ground loop.
- .9 Primary cables to have shields bonded to ground bus in HV compartment using #4 AWG. Confirm with Engineer if this shall be completed and connected prior to proceeding.

3.3 FIELD QUALITY CONTROL

- .1 Perform tests in accordance with Section 26 05 00 – Common Work Results - Electrical and Section 01 91 13 – General Commissioning (Cx) Requirements.
- .2 Carry out following insulation tests using megger with 20,000 megohm scale and resulting insulation resistance corrected to base of 20 ° Celsius.
 - .1 High voltage to ground with secondary grounded for duration of test.
 - .2 Low voltage to ground with primary grounded for duration of test.
 - .3 High to low voltage.

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- .3 Inspect primary and secondary connections for tightness and for signs of overheating.
- .4 Inspect and clean bushings and insulators.
- .5 Check oil level and temperature indicators.
- .6 Set transformer taps to rated voltage as specified.
- .7 Inspect for oil leaks and excessive rusting.
- .8 Inspect oil level.
- .9 Check fuses for correctness of type and size.
- .10 Check for grounding continuity between primary and secondary circuits of transformer.
- .11 Complete TTR test and report by manufacturer's approved testing agency to ANSI C57.12.90 and shall be inserted into operation manual as follows:
 - .1 Resistance tests of all windings
 - .2 Ratio tests on the rated voltage and all tap connections.
 - .3 Polarity and phase relation tests at rated voltage.
 - .4 No load loss at rated voltage.
 - .5 Exciting current at rated voltage
 - .6 Impedance and load losses.
 - .7 Applied voltage test.
 - .8 Induce voltage test.
 - .9 Full-wave impulse test.
 - .10 Mechanical leak test.
- .12 Equipment manufacturer shall provide technical support after equipment installation to ensure the internal overcurrent/differential relay is only clearing faults at the main switchboard and is not clearing faults further downstream prior to the existing distribution breakers. Manufacturer shall collect information on the existing downstream breakers to ensure this can be achieved.

3.4 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.

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- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.5 FOLLOW-UP SERVICE

- .1 Voltage Monitoring and Adjusting: Perform the following voltage monitoring after Substantial Completion but not more than six months after Final Acceptance:
 - .1 During a period of normal load cycles as evaluated by Owner, perform seven days of three-phase voltage recording at secondary terminals of each transformer. Use voltmeters with calibration traceable to National Institute of Science and Technology standards and with a chart speed of not less than (25 mm) per hour. Voltage unbalance greater than 1 percent between phases, or deviation of any phase voltage from nominal value by more than plus or minus 5 percent during test period, is unacceptable.
 - .2 Corrective Actions: If test results are unacceptable, perform the following corrective actions, as appropriate:
 - .1 Adjust transformer taps.
- .2 Complete a vacuum test to verify that the pressure and oil liquid level has not changed since substantial.

END OF SECTION

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PART 1 **GENERAL**

1.1 **SECTION INCLUDES**

- .1 Materials and installation for panelboards.

1.2 **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 91 13 – General Commissioning (Cx) Requirements.
- .3 Section 26 05 00 – Common Work Results - Electrical.
- .4 Section 26 28 16.02 - Moulded Case Circuit Breakers.

1.3 **REFERENCES**

- .1 Canadian Standards Association (CSA)
 - .1 CSA C22.2 No.29, Panelboards and enclosed Panelboards.

1.4 **SUBMITTALS**

- .1 Drawings to include electrical detail of panel, branch breaker type, quantity, ampacity and enclosure dimension.

PART 2 **PRODUCTS**

2.1 **PANELBOARDS**

- .1 Panelboards: to CSA C22.2 No.29 and product of one manufacturer.
 - .1 Install circuit breakers in panelboards before shipment.
 - .2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.
- .2 250 and 600 V panelboards: bus and breakers rated for minimum interrupting capacity as indicated on electrical drawings, or in equipment specification sections.

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- .3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.
- .4 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.
- .5 Two keys for each panelboard and key panelboards alike.
- .6 Tin plated aluminum bus with neutral of same ampere rating as mains.
- .7 Mains: suitable for bolt-on breakers.
- .8 Trim with concealed front bolts and hinges.
- .9 Trim and door finish: baked grey enamel.
- .10 Provide an arc flash and shock hazard label on panel.
- .11 Sprinklerproof.
- .12 Half size (or mini) breakers are not acceptable.

2.2 BREAKERS

- .1 Breakers: to Section 26 28 16.02 - Moulded Case Circuit Breakers.
- .2 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.
- .3 Main breaker: separately mounted on top or bottom of panel to suit cable entry. When mounted vertically, down position should open breaker.

2.3 EQUIPMENT IDENTIFICATION

- .1 Provide equipment identification in accordance with Section 26 05 00 – Common Work Results - Electrical.
- .2 Nameplate for each panelboard size 4 engraved as indicated.
- .3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.

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Section 26 24 16.01 – Panelboards - Breaker Type

Page 3 of 3

- .4 Complete circuit directory with typewritten legend showing location and load of each circuit.

PART 3 **EXECUTION**

3.1 **INSTALLATION**

- .1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.
- .2 Install surface mounted panelboards on plywood backboards. Where practical, group panelboards on common backboard.
- .3 Mount panelboards to height specified in Section 26 05 00 – Common Work Results - Electrical or as indicated.
- .4 Connect loads to circuits.
- .5 Connect neutral conductors to common neutral bus with respective neutral identified.

END OF SECTION

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Page 1 of 2

PART 1 **GENERAL**

1.1 **RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 91 13 - General Commissioning (Cx) Requirements.
- .3 Section 26 05 00 - Common Work Results – Electrical.

1.2 **SUBMITTALS**

- .1 Include time-current characteristic curves for breakers with ampacity of 600 A and over or with interrupting capacity of 22,000 A symmetrical (rms) and over at system voltage or with solid state trip units.

PART 2 **PRODUCTS**

2.1 **BREAKERS GENERAL**

- .1 Bolt-on moulded case circuit breaker: quick- make, quick-break type, for manual and automatic operation with temperature compensation for 40°C ambient.
- .2 Common-trip breakers: with single handle for multi-pole applications.
- .3 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting. Trip settings on breakers with adjustable trips to range from 3-8 times current rating.
- .4 Circuit breakers with interchangeable trips as indicated.
- .5 Circuit breakers to have minimum symmetrical rms interrupting capacity rating as indicated on drawings or in equipment specification sections.

2.2 **THERMAL MAGNETIC BREAKERS**

- .1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

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Page 2 of 2

2.3 SOLID STATE TRIP BREAKERS

- .1 Moulded case circuit breaker to operate by means of a solid-state trip unit with associated current monitors and self-powered shunt trip to provide inverse time current trip under overload condition, and long time short time, instantaneous tripping for phase and ground fault short circuit protection

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Install circuit breakers as indicated.

END OF SECTION

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Section 26 80 00 – Commissioning of
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Page 1 of 4

PART 1 **GENERAL**

1.1 **SCOPE OF WORK**

- .1 Testing and commissioning are called for throughout the individual specifications. This does not relieve this trade from providing all testing and commissioning necessary to ensure that systems and equipment operate as required and that they interface with other systems and equipment as required.

1.2 **SECTION INCLUDES**

- .1 Commissioning of all building electrical systems and component including:
 - .1 Testing and adjustment.
 - .2 Demonstrations and Training.
 - .3 Instructions of all procedures for Owner's personnel.
 - .4 Updating as-built data.
 - .5 Co-ordination of Operation and Maintenance material.

1.3 **RELATED SECTION**

- .1 Section 26 05 00 – Common Work Results - Electrical.

1.4 **REFERENCES**

- .1 CSA (Canadian Standards Association).
- .2 Underwriters Laboratories of Canada.

1.5 **QUALITY ASSURANCE**

- .1 Provide qualified trades persons, certified testing agencies, factory trained and approved by the Commissioning Team Leader.
- .2 Submit the names of all personnel to be used during the Commissioning activities for Owner Approval.

1.6 **COMMISSIONING**

- .1 The purpose of the commissioning process is to fully test all building systems electrical components and operating procedures by challenging these systems to realistic operation conditions.

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Section 26 80 00 – Commissioning of
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Page 2 of 4

- .2 The Commissioning activities shall be co-ordinated by the General Contractor.
- .3 Commissioning activities for the electrical systems must have available up to date as-built drawing information and accurate Operations and Maintenance Manuals. These documents shall be a major part of this activity.
- .4 Contractor shall be responsible to update all documentation with information and any changes duly noted during the Commissioning exercise.
- .5 Contractor shall arrange for all outside suppliers, equipment manufacturers, test agencies and others as identified in the commissioning sections of this specification. The cost associated with this requirement shall be included as part of the tender price.

1.7 SUBMITTALS

- .1 A commissioning document shall be prepared by the Owner's Representative prior to conducting these activities for use by the Commissioning Team.
- .2 The electrical sub-contractor shall be responsible for ensuring all activities are properly documented in this manual and co-ordinated through the General Contractor.
- .3 As-built drawings and data books must be available two weeks prior to commissioning for review and use by the consultant and Commissioning Team prior to the start of the commissioning activities.

1.8 PREPARATION

- .1 Provide test instruments required for all activities as defined in the commissioning documents.
- .2 Verify all systems are in compliance with the requirements of the commissioning documents prior to the precommissioning check out operation.
- .3 Confirm all scheduled activities have identified personnel available.
- .4 Where systems or equipment do not operate as required, make the necessary corrections or modifications, re-test and re-commission.

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Section 26 80 00 – Commissioning of
Electrical System

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1.9 SYSTEM DESCRIPTION

- .1 Perform all start up operations, control adjustment, trouble shooting, servicing and maintenance of each item of equipment as defined in the commissioning documentation.
- .2 Owner will provide list of personnel to receive instructions and will co-ordinate their attendance at agreed upon times.
- .3 Prepare and insert additional data in the operations and maintenance manuals and update as-built drawings when need for additional data becomes apparent during the commissioning exercise.
- .4 Where instruction is specified in the commissioning manual, instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.
- .5 Conduct presentation on Owner's premises. Owner will provide space.

1.10 FINAL REPORT

- .1 This trade shall assemble all testing data and commissioning reports and submit them to the Owner.
- .2 Each form shall bear signature of recorder, and that of supervisor of reporting organizer.

1.11 SCHEDULE OF ACTIVITIES

- .1 Commissioning activities shall be conducted based on pre-established schedule with all members of the commissioning team.
- .2 In addition, there will be two meetings held through the contract duration to introduce the parties of the commissioning team, establish the schedules and deadlines for the various activities and review the Commissioning Manual.
- .3 Adhering to the established schedule is very important as the co-ordination and scheduling of the participants will be difficult to alter once this is established. Close co-ordination of this schedule is important.
- .4 In the event project cannot be commissioned in the allotted time slot, the contractor shall pay for all costs associated with assembling the Commissioning Team at a later date. If the contractor has not performed his duties to reach commissioning stage as outlined earlier, he will incur all

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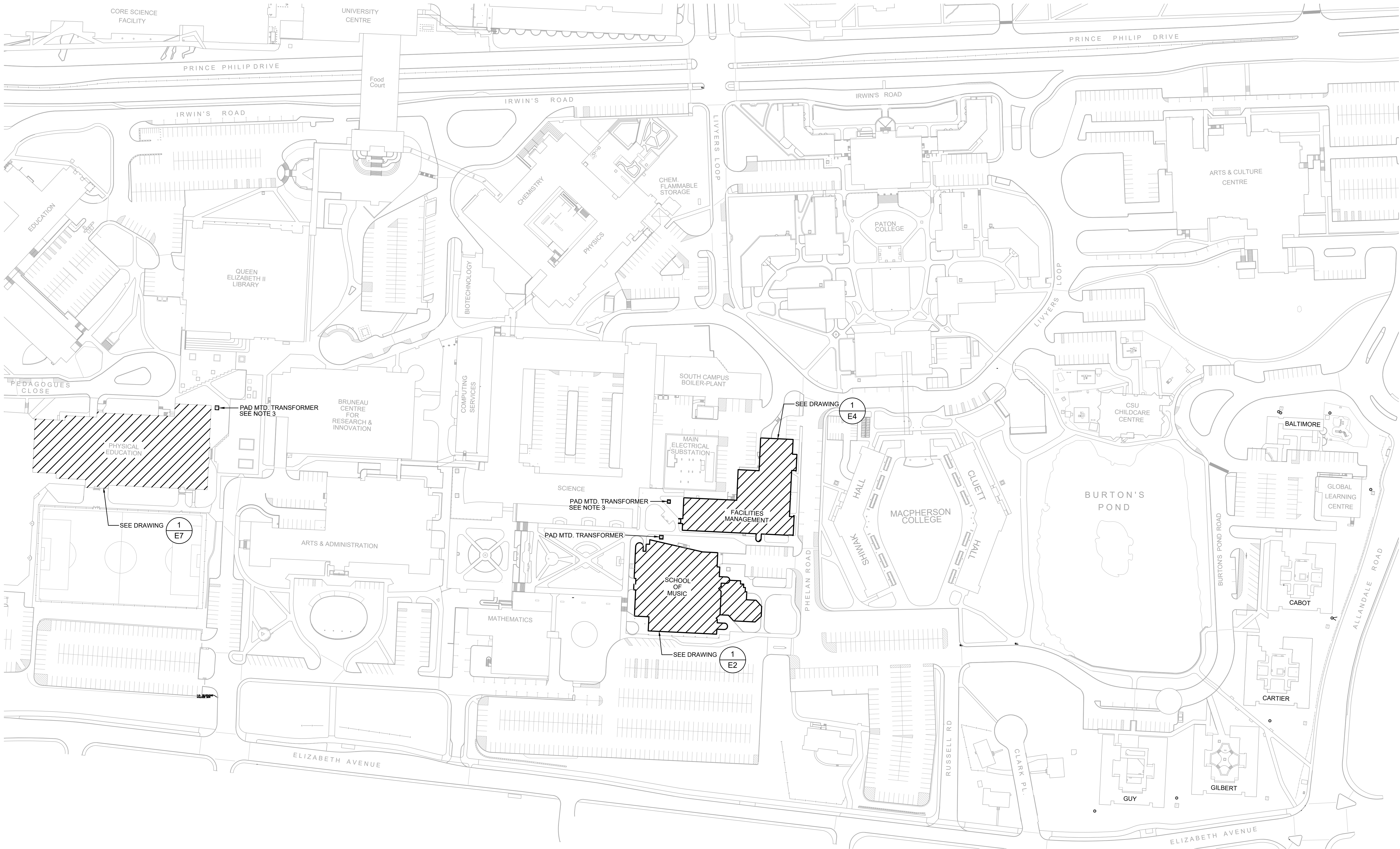
Section 26 80 00 – Commissioning of
Electrical System

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Page 4 of 4

expenses of other trades and the Commissioning Team due to his non-compliance.

END OF SECTION



1 E1 SITE PLAN - MEMORIAL UNIVERSITY PARTIAL SOUTH CAMPUS

LIST OF ELECTRICAL DRAWINGS

- E1 MEMORIAL UNIVERSITY PARTIAL SOUTH CAMPUS
- E2 SCHOOL OF MUSIC GROUND FLOOR PLAN
- E3 SCHOOL OF MUSIC EXISTING AND REVISED ELECTRICAL SINGLE LINE DIAGRAM
- E4 FACILITIES MANAGEMENT PART FLOOR PLANS
- E5 FACILITIES MANAGEMENT EXISTING ELECTRICAL SINGLE LINE DIAGRAM
- E6 FACILITIES MANAGEMENT REVISED ELECTRICAL SINGLE LINE DIAGRAM
- E7 PHYSICAL EDUCATION BUILDING FLOOR PLAN
- E8 PHYSICAL EDUCATION BUILDING EXISTING ELECTRICAL SINGLE LINE DIAGRAM
- E9 PHYSICAL EDUCATION BUILDING REVISED ELECTRICAL SINGLE LINE DIAGRAM



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- NOTES
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 - OWNER HAS FIRST RIGHT OF REFUSEL ON ALL EQUIPMENT AND FEEDERS BEING REMOVED. IF OWNER DOES NOT WANT POSSESSION OF EXISTING EQUIPMENT OR FEEDERS, CONTRACTOR IS RESPONSIBLE FOR DISPOSAL.
 - PAD MOUNTED TRANSFORMER TO BE REPLACED WITH NEW IN THE SAME LOCATION.
 - CONTRACTOR SHALL MEASURE THE TRANSFORMER PADS AT THE PHYSICAL EDUCATION AND FACILITIES MANAGEMENT BUILDINGS, AND THE LOCATION OF THE OPENINGS. NEW PAD MOUNTED TRANSFORMERS MUST FIT ON THE SAME PADS, UTILIZING THE EXISTING OPENINGS AND EXISTING PRIMARY, SECONDARY AND GROUNDING CABLES.

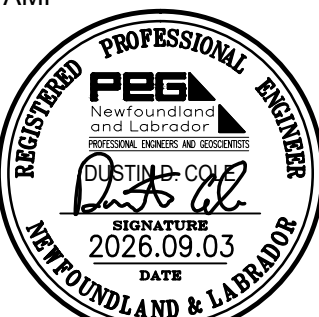
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A	ISSUED FOR 66% REVIEW	2025.12.01	GS

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THIS PERMIT ALLOWS

JEWEL BAILEY CONSULTANTS ULC.

MIRC.

2025.06

To practice Professional Engineering in Newfoundland and Labrador.

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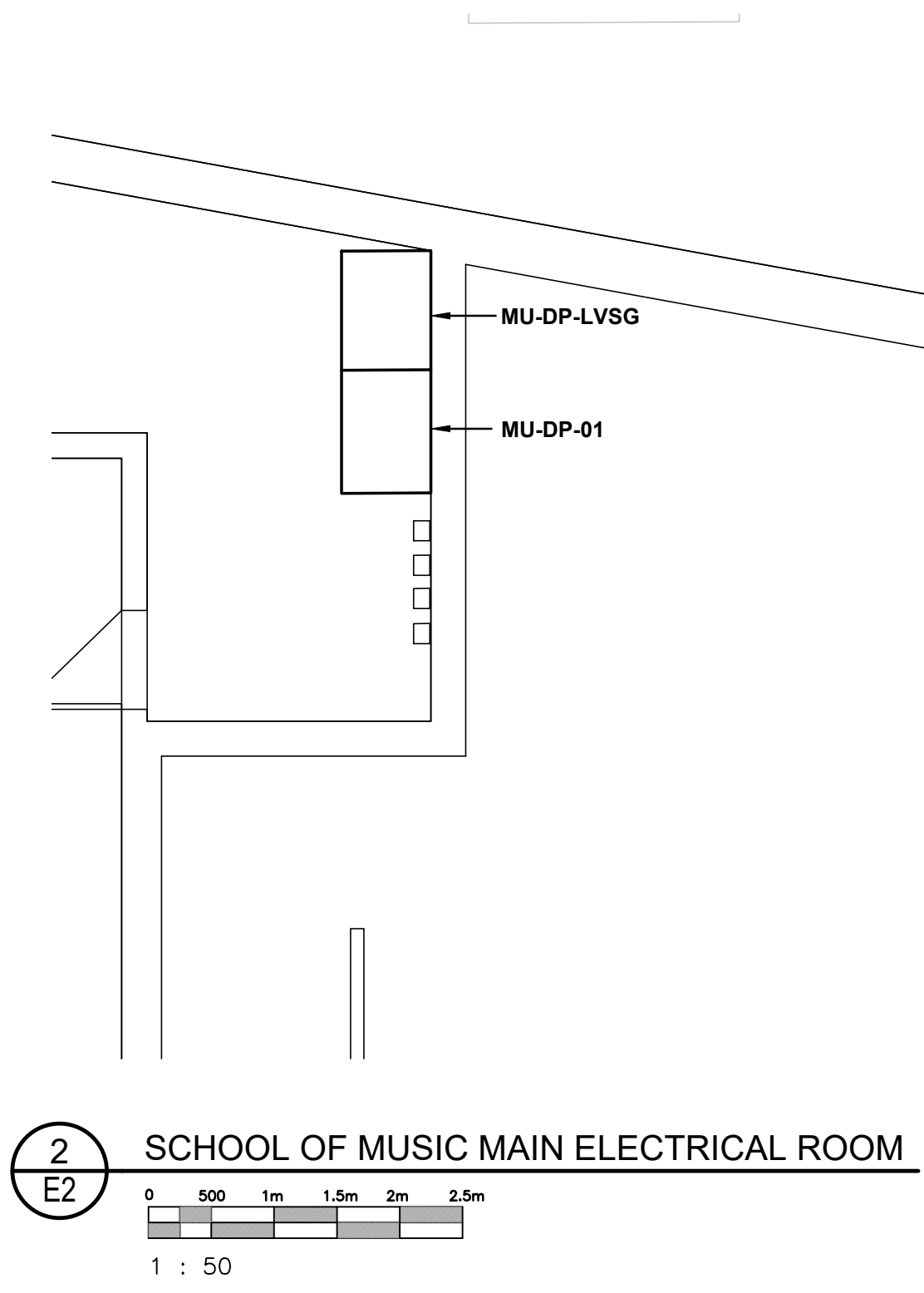
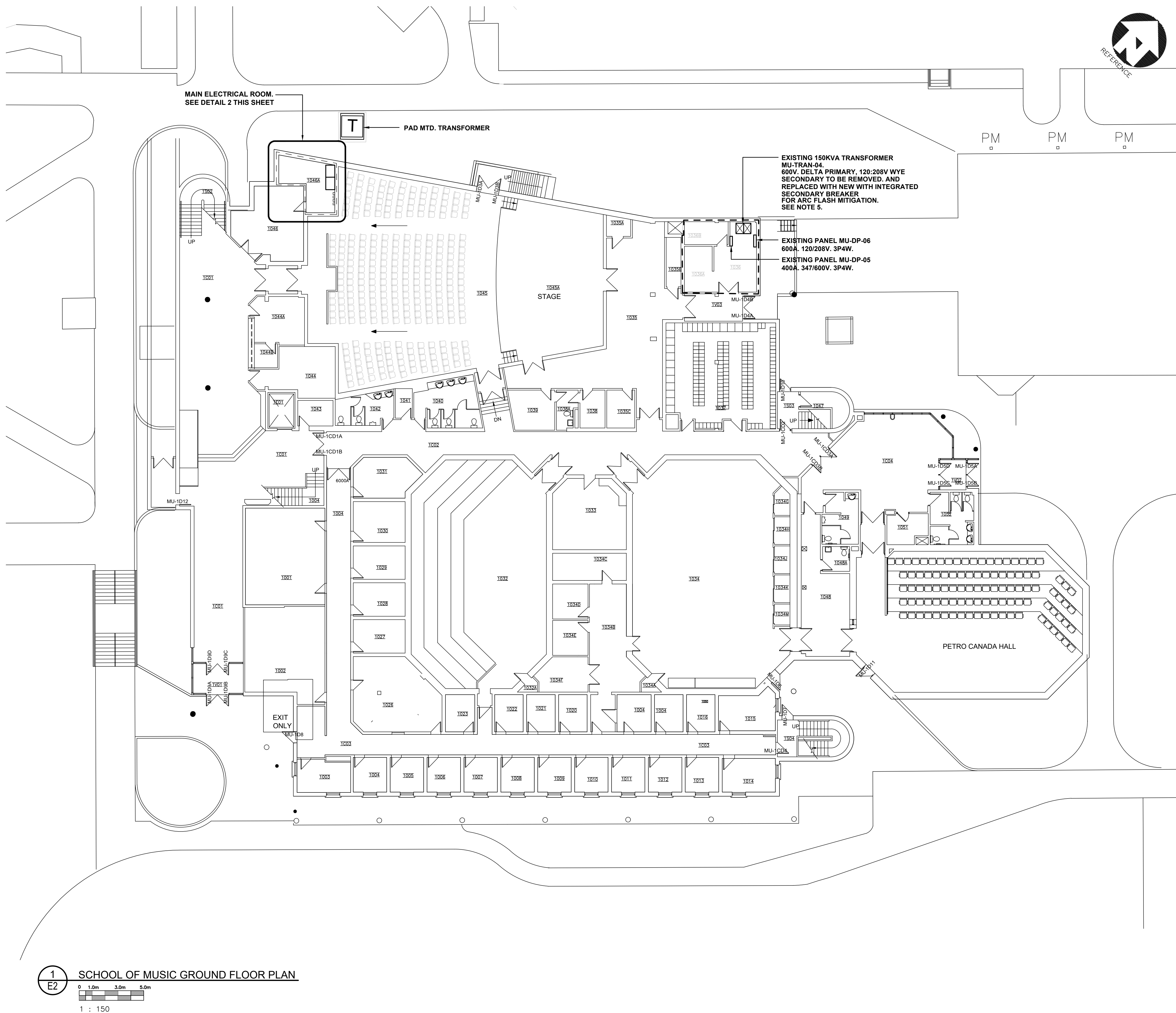
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STRUCTURAL / MECHANICAL / ELECTRICAL

PROJECT

VAR-505-23
MEMORIAL UNIVERSITY
ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1

DRAWING			
MEMORIAL UNIVERSITY PARTIAL SOUTH CAMPUS			
DRAWN BY	CHECKED BY	APPROVED BY	
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	JBC-25-C-024		
DATE	SCALE	DRAWING NO.	REV.
08/2025	AS NOTED	E1	0



- KEYNOTES:**
- CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL WORK AND SHUTDOWNS WITH MUN. CONTRACTOR SHALL PLAN AND SEQUENCE THE WORK SUCH THAT DOWNTIME WILL BE MINIMIZED. ALL POSSIBLE WORK TO BE COMPLETED BEFORE POWER IS REMOVED FROM EXISTING TRANSFORMER.
 - EXISTING WALL MOUNTED EQUIPMENT TO REMAIN, BUT SHALL BE TEMPORARILY REMOVED AS REQUIRED TO FACILITATE THE REMOVAL OF EXISTING EQUIPMENT AND INSTALLATION OF NEW.
 - EXISTING DOORS, FRAMES AND WALLS TO REMAIN, BUT SHALL BE TEMPORARILY REMOVED AS REQUIRED TO FACILITATE THE REMOVAL OF EXISTING EQUIPMENT AND INSTALLATION OF NEW.
 - PRIOR TO SUBMITTING A BID, CONTRACTOR IS RESPONSIBLE TO WALK THE ROUTE TO DETERMINE THE EXTENT OF WORK REQUIRED TO REMOVE EXISTING EQUIPMENT AND TRANSPORT NEW EQUIPMENT TO THE ELECTRICAL ROOM. EQUIPMENT SHALL BE REMOVED AND/OR INSTALLED IN SECTIONS AS REQUIRED. REMOVE AND RE-INSTATE DOORS, FRAMES AND WALLS AS REQUIRED.
 - CONTRACTOR TO VERIFY THAT EXISTING CONCRETE TRANSFORMER PAD IS ADEQUATE IN SIZE FOR NEW DRY TYPE TRANSFORMER. MAKE CONCRETE LARGER AS NECESSARY TO FACILITATE NEW TRANSFORMERS FOOTPRINT AND DOWEL NEW CONCRETE INTO EXISTING. EXTENDING THE PAD IS LIMITED DUE TO OTHER EXISTING EQUIPMENT. CONTRACTOR IS RESPONSIBLE TO MEASURE AND ENSURE NEW EQUIPMENT WILL NOT ENCROACH ON ANY CEC MAINTENANCE CLEARANCES.



- NOTES**
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MIRC: *[Signature]*

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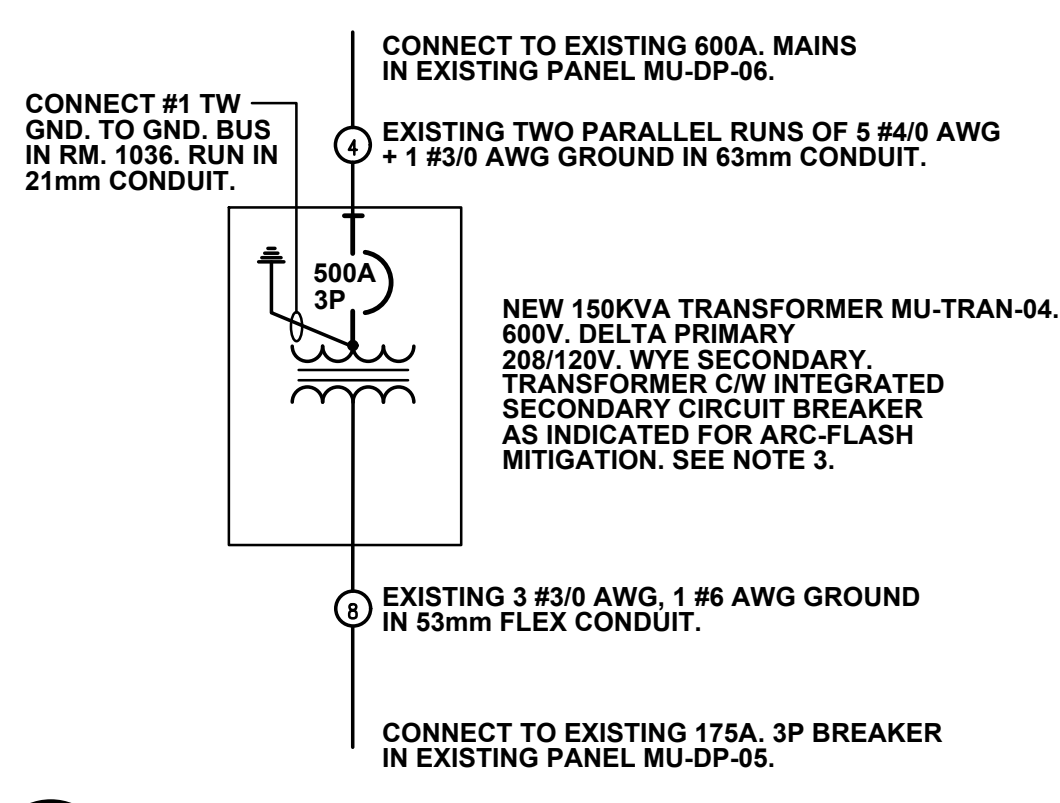
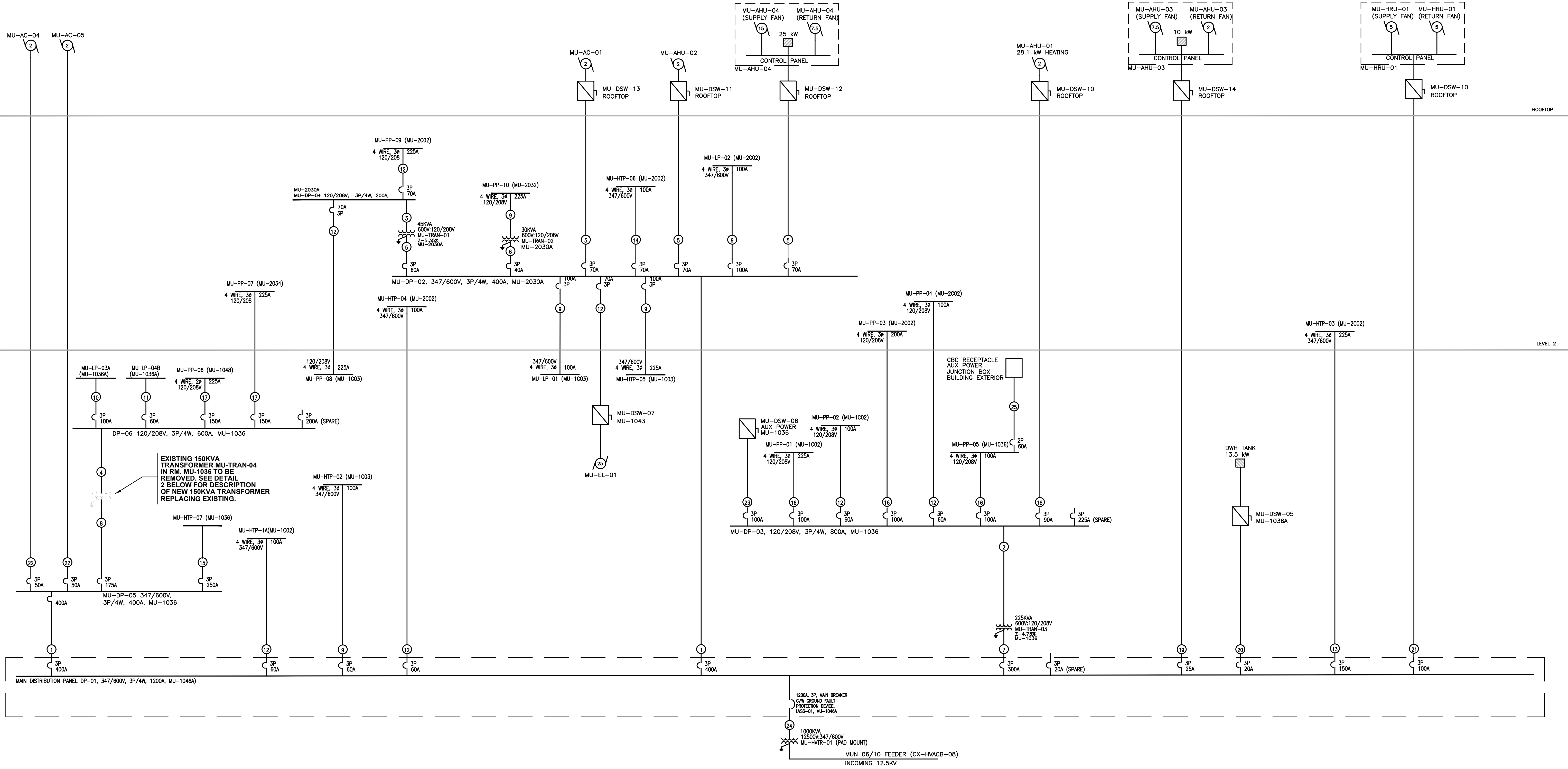
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DRAWING			
SCHOOL OF MUSIC			
GROUND FLOOR PLAN			
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	JBC-25-C-024		
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2 E3 NEW REPLACEMENT 150KVA TRANSFORMER
N.T.S.

1 E3 SCHOOL OF MUSIC EXISTING ELECTRICAL SINGLE LINE
DIAGRAM WITH REVISIONS
N.T.S.

- NOTES:**
1. RECONNECT EXISTING FEEDERS TO PRIMARY AND SECONDARY OF NEW TRANSFORMER MU-TRAN-04 AS INDICATED. ALLOW 3 METERS OF NEW CONDUCTORS AND CONDUIT FOR THE EXTENSION TO EACH EXISTING CONDUCTOR. INSTALL ADDITIONAL FEEDER LENGTH TO EXISTING FEEDER CONDUCTORS USING COMPRESSION TYPE BUTT CONNECTORS. NEW FEEDER LENGTHS TO ALLOW FOR FINAL CONNECTIONS TO TRANSFORMER. SPLICE SHALL BE COMPLETED WITH A WALL MOUNTED JUNCTION BOX ADJACENT TO TRANSFORMER.
 2. EXISTING TRANSFORMER GROUND TO BE DISCONNECTED AND REMOVED.
 3. SECONDARY BREAKER MUST BE CAPABLE OF CLEARING A DOWNSTREAM FAULT WITHIN 2 CYCLES BASED ON A PRIMARY FAULT LEVEL OF 8.9KA. BREAKER SHALL HAVE AN LSI SOLID STATE TRIP UNIT AND ADJUSTABLE MAGNETIC TRIP UNIT. MANUFACTURER MUST BE ABLE TO DEMONSTRATE VIA SHOP DRAWING SUBMITTALS THAT THE BREAKER WILL OPERATE AS REQUIRED.



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MIRC: *D. S. B.*

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PROJECT

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ST. JOHN'S CAMPUS

ARC FLASH CORRECTIVE WORK

PACKAGE #1

ST. JOHN'S, NL.

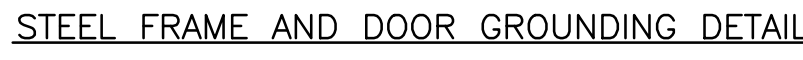
DRAWING

SCHOOL OF MUSIC EXISTING

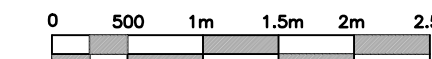
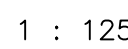
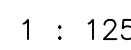
AND REVISED ELECTRICAL

SINGLE LINE DIAGRAM

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GS/SB	DC	
CLIENT PROJECT NO.	JBC PROJECT NO.	DWG FILE NO.
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DATE	SCALE	DRAWING NO.
08/2025	AS NOTED	E3
		REV. 0



N.T.S.



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2. CONTRACTOR IS RESPONSIBLE TO PROVIDE AND MAINTAIN A PORTABLE GENERATOR ON SITE. REMAIN ONSITE FOR THE DURATION OF THE PROJECT. THE LOCKOUT/TAGOUT PROCEDURE SHALL BE FOLLOWED. PORTABLE GENERATOR TO BE RATED FOR 300KW, 120/208V, 3Ø, 4W.
3. CONTRACTOR TO PROVIDE TEMPORARY TEEB CABLE FOR CONNECTING INTO THE EXISTING 208V. MAIN DISCONNECT. TEMPORARY PENETRATIONS IN BUILDING TO BE REPAIRED TO EXISTING CONDITIONS UPON REMOVAL OF TEMPORARY GENERATOR FROM SITE.
4. EXISTING DOORS, FRAME AND WALL TO REMAIN, BUT SHALL BE TEMPORARILY REMOVED AS REQUIRED TO FACILITATE THE REMOVAL OF EXISTING EQUIPMENT AND INSTALLATION OF NEW.
5. PRIOR TO SUBMITTING A BID, CONTRACTOR IS RESPONSIBLE TO WALK THE SITE TO DETERMINE THE EXTENT OF WORK REQUIRED TO REMOVE EXISTING EQUIPMENT AND TRANSPORT NEW EQUIPMENT TO THE ELECTRICAL ROOM. EQUIPMENT SHALL BE REMOVED AND/OR INSTALLED IN SECTIONS AS REQUIRED. REMOVE AND RE-INSTALL DOORS, FRAMES AND WALLS AS REQUIRED.
6. SUPPLY AND INSTALL NEW CONCRETE HOUSE KEEPING PAD FOR TRANSFORMERS.
7. CONTRACTOR SHALL SUPPLY AND INSTALL A HEAT RELIEF SYSTEM FOR THE MAIN ELECTRICAL ROOM, WHICH SHALL CONSIST OF AN OUTSIDE AIR INTAKE WITH MOTORIZED DAMPER, EXHAUST FAN WITH DUCT TO THE EXTERIOR, AND A REVERSE FLOW EXHAUST SYSTEM. SYSTEM SHALL BE DESIGNED TO HANDLE THE LOSS FROM THE TWO TRANSFORMERS, MAIN SWITCHBOARD, PLUS 25% ADDITIONAL HEAT. SYSTEM TO BE A DELEGATED DESIGN, COMPLETED BY A MECHANICAL ENGINEER, STAMPED AND SIGNED, SUBMITTED AS A SHOP DRAWING. CONTRACTORS TENDER SHALL INCLUDE ALL ENGINEERING AND SHOP DRAWING COSTS ASSOCIATED WITH THIS SYSTEM.

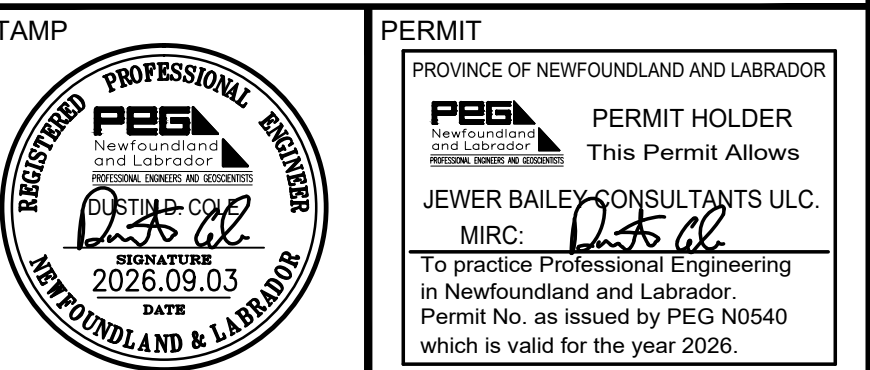


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PROJECT
VAR-505-23
MEMORIAL UNIVERSITY
ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1
ST. JOHN'S, NL.

DRAWING

FACILITIES MANAGEMENT
PART FLOOR PLANS

DRAWN BY GS/SB		CHECKED BY DC		APPROVED BY	
CLIENT PROJECT NO.		JBC PROJECT NO. JBC-25-C-024		DWG FILE NO.	
DATE 08/2025	SCALE AS NOTED		DRAWING NO. E4		REV. 0

CLIENT



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PROJECT

VAR-505-23
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ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1
ST. JOHN'S, NL.

DRAWING

FACILITIES MANAGEMENT
EXISTING ELECTRICAL SINGLE
LINE DIAGRAM

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CLIENT PROJECT NO. JBC-25-C-024	JBC PROJECT NO. JBC-25-C-024	DWG FILE NO.
DATE 08/2025	SCALE AS NOTED	DRAWING NO. E5 REV. 0

LEGEND

- EXISTING ELECTRICAL EQUIPMENT AND OR FEEDER TO BE REMOVED.
- EXISTING BREAKER TYPE PANELBOARD TO REMAIN.
- EXISTING FEEDER SIZE NUMBER. REFER TO WIRE AND CONDUIT INFORMATION TABLE THIS SHEET.
- EXISTING CTS. COORDINATE WITH MUN ELECTRICAL DEPT. FOR THEIR REMOVAL AND SUBSEQUENT INSTALLATION IN NEW BREAKER TYPE SWITCHBOARD.

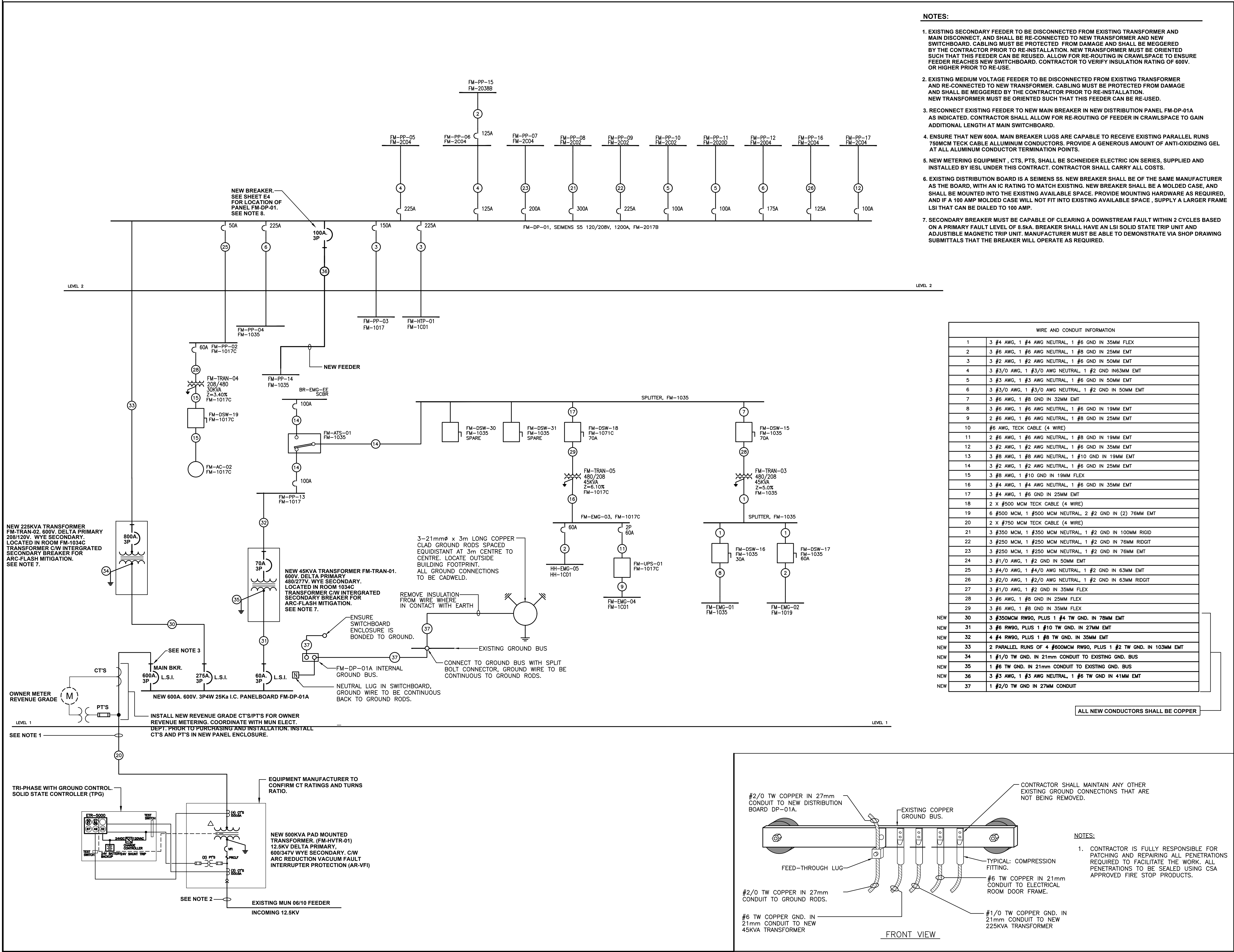
WIRE AND CONDUIT INFORMATION	
1	3 #4 AWG, 1 #4 AWG NEUTRAL, 1 #6 GND IN 35MM FLEX
2	3 #6 AWG, 1 #6 AWG NEUTRAL, 1 #8 GND IN 25MM EMT
3	3 #2 AWG, 1 #2 AWG NEUTRAL, 1 #6 GND IN 50MM EMT
4	3 #3/0 AWG, 1 #3/0 AWG NEUTRAL, 1 #2 GND IN 63MM EMT
5	3 #3 AWG, 1 #3 AWG NEUTRAL, 1 #6 GND IN 50MM EMT
6	3 #3/0 AWG, 1 #3/0 AWG NEUTRAL, 1 #2 GND IN 50MM EMT
7	3 #6 AWG, 1 #6 GND IN 32MM EMT
8	3 #6 AWG, 1 #6 AWG NEUTRAL, 1 #6 GND IN 19MM EMT
9	2 #6 AWG, 1 #6 AWG NEUTRAL, 1 #8 GND IN 25MM EMT
10	#6 AWG, TECK CABLE (4 WIRE)
11	2 #6 AWG, 1 #6 AWG NEUTRAL, 1 #8 GND IN 19MM EMT
12	3 #2 AWG, 1 #2 AWG NEUTRAL, 1 #6 GND IN 35MM EMT
13	3 #8 AWG, 1 #8 AWG NEUTRAL, 1 #10 GND IN 19MM EMT
14	3 #2 AWG, 1 #2 AWG NEUTRAL, 1 #6 GND IN 25MM EMT
15	3 #8 AWG, 1 #10 GND IN 19MM FLEX
16	3 #4 AWG, 1 #4 AWG NEUTRAL, 1 #6 GND IN 35MM EMT
17	3 #4 AWG, 1 #6 GND IN 25MM EMT
18	2 X #500 MCM TECK CABLE (4 WIRE)
19	6 #500 MCM, 1 #500 MCM NEUTRAL, 2 #2 GND IN (2) 76MM EMT
20	2 X #750 MCM TECK CABLE (4 WIRE)
21	3 #350 MCM, 1 #350 MCM NEUTRAL, 1 #2 GND IN 100MM RIDGIT
22	3 #250 MCM, 1 #250 MCM NEUTRAL, 1 #2 GND IN 76MM RIDGIT
23	3 #250 MCM, 1 #250 MCM NEUTRAL, 1 #2 GND IN 76MM EMT
24	3 #1/0 AWG, 1 #2 GND IN 50MM EMT
25	3 #4/0 AWG, 1 #4/0 AWG NEUTRAL, 1 #2 GND IN 63MM EMT
26	3 #2/0 AWG, 1 #2/0 AWG NEUTRAL, 1 #2 GND IN 63MM RIDGIT
27	3 #1/0 AWG, 1 #2 GND IN 35MM FLEX
28	3 #6 AWG, 1 #8 GND IN 25MM FLEX
29	3 #6 AWG, 1 #8 GND IN 35MM FLEX

NOTES:

- EXISTING SECONDARY FEEDER TO BE DISCONNECTED FROM EXISTING TRANSFORMER AND MAIN DISCONNECT, AND SHALL BE RE-CONNECTED TO NEW TRANSFORMER AND NEW SWITCHBOARD. CABLING MUST BE PROTECTED FROM DAMAGE AND SHALL BE MEGGERED BY THE CONTRACTOR PRIOR TO RE-INSTALLATION. NEW TRANSFORMER MUST BE ORIENTED SUCH THAT THIS FEEDER CAN BE REUSED, ALLOW FOR RE-ROUTING IN CRAWLSPACE TO ENSURE FEEDER REACHES NEW SWITCHBOARD. CONTRACTOR TO VERIFY INSULATION RATING OF 600V. OR HIGHER PRIOR TO RE-USE.
- EXISTING MEDIUM VOLTAGE FEEDER TO BE DISCONNECTED FROM EXISTING TRANSFORMER AND RE-CONNECTED TO NEW TRANSFORMER. CABLING MUST BE PROTECTED FROM DAMAGE AND SHALL BE MEGGERED BY THE CONTRACTOR PRIOR TO RE-INSTALLATION. NEW TRANSFORMER MUST BE ORIENTED SUCH THAT THIS FEEDER CAN BE RE-USED.
- EXISTING TRANSFORMER TO BE DISCONNECTED AND REMOVED. CONTRACTOR SHALL COORDINATE WITH MUN TO LOCKOUT AND DE-ENERGIZE ALL SOURCES OF POWER. PROVIDE A 300KW GENERATOR TO SUPPLY TEMPORARY POWER FOR THE DURATION OF THE TRANSFORMER REPLACEMENT PHASE.
- TEMPORARY GENERATOR SHALL BE CONNECTED TO MAIN DISCONNECT AT THIS LOCATION. CONTRACTOR SHALL ROUTE TEMPORARY CABLING TO THIS LOCATION. REPAIR ANY HOLES OR OPENINGS MADE UPON REMOVAL OF CABLING.
- CONTRACTOR SHALL TEMPORARILY RELOCATE EXISTING DISCONNECTS, SPLITTER AND FEEDERS IN THE MAIN ELECTRICAL ROOM TO ALLOW FOR TEMPORARY POWER TO BE PROVIDED WHILE THE NEW SERVICE EQUIPMENT IS BEING INSTALLED.
- EXISTING PRIMARY AND SECONDARY CABLING TO BE DISCONNECTED AND REMOVED, INCLUDING GROUNDING.
- EXISTING DISCONNECT SWITCHES AND SPLITTER TO BE DISCONNECTED AND REMOVED.
- EXISTING FEEDER TO BE DISCONNECTED AND REMOVED.

1
E5

FACILITIES MANAGEMENT EXISTING ELECTRICAL SINGLE LINE DIAGRAM
N.T.S.



CLIENT



NOTES

- CONTRACTOR MUST VERIFY ALL DIMENSIONS & CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. DO NOT SCALE FROM DRAWING.
- OWNER HAS FIRST RIGHT OF REFUSEL ON ALL EQUIPMENT AND FEEDERS BEING REMOVED. IF OWNER DOES NOT WANT POSSESSION OF EXISTING EQUIPMENT OR FEEDERS, CONTRACTOR IS RESPONSIBLE FOR DISPOSAL.

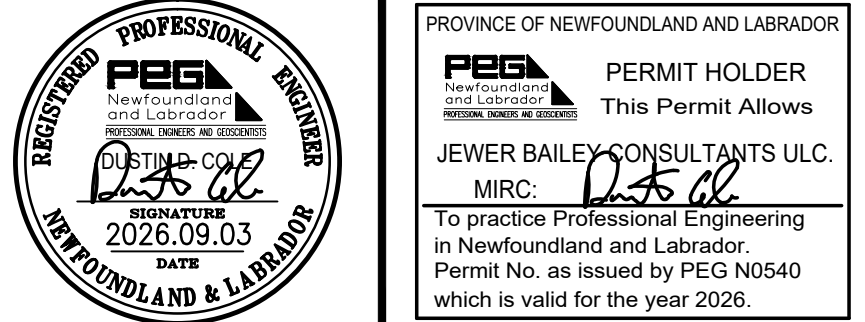
NOT FOR CONSTRUCTION

NO.	DESCRIPTION	DATE	BY
0	ISSUED FOR TENDER	2026.09.03	GS
B	ISSUED FOR 99% REVIEW	2026.04.17	GS
A	ISSUED FOR 66% REVIEW	2025.12.01	GS

REVISIONS

A	A - PLAN, SECTION, ELEVATION, OR DETAIL NO.
B	B - NO. OF DRAWING WHERE ABOVE IS DRAWN

STAMP



PRIME CONSULTANT



STRUCTURAL / MECHANICAL / ELECTRICAL

STRUCTURAL / MECHANICAL / ELECTRICAL

PROJECT
VAR-505-23
MEMORIAL UNIVERSITY
ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1
ST. JOHN'S, NL.

DRAWING
FACILITIES MANAGEMENT
REVISED ELECTRICAL SINGLE
LINE DIAGRAM

DRAWN BY GS/SB	CHECKED BY DC	APPROVED BY
CLIENT PROJECT NO. JBC-25-C-024	DWG FILE NO.	
DATE 08/2025	SCALE AS NOTED	DRAWING NO. E6
		REV. 0



NOTES

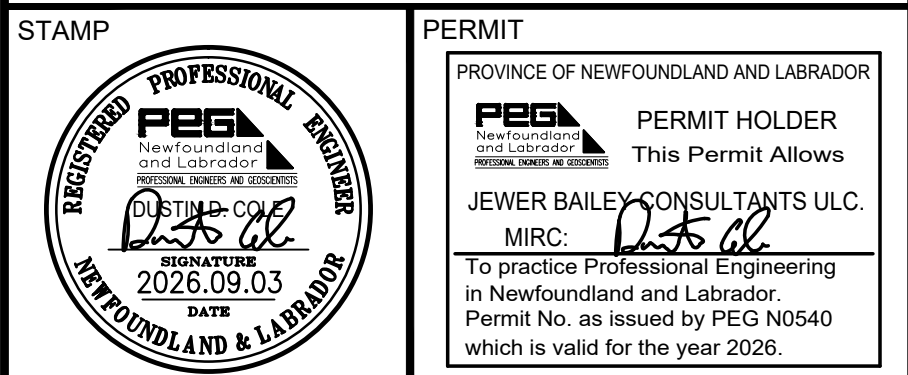
1. CONTRACTOR MUST VERIFY ALL DIMENSIONS & CONDITIONS ON SITE BEFORE PROCEEDING WITH ANY PORTION OF THIS WORK. DO NOT SCALE FROM DRAWING.
2. OWNER HAS FIRST RIGHT OF REFUSEL ON ALL EQUIPMENT AND FEEDERS BEING REMOVED. IF OWNER DOES NOT WANT POSSESSION OF EXISTING EQUIPMENT OR FEEDERS, CONTRACTOR IS RESPONSIBLE FOR DISPOSAL.

NOT FOR
CONSTRUCTION

0	ISSUED FOR TENDER	2026.09.03	GS
B	ISSUED FOR 99% REVIEW	2026.04.17	GS
A	ISSUED FOR 66% REVIEW	2025.12.01	GS
NO.	DESCRIPTION	DATE	BY

REVISIONS

A - PLAN, SECTION, ELEVATION, OR DETAIL NO.
B - NO. OF DRAWING WHERE ABOVE IS DRAWN



PRIME CONSULTANT


JBC
JEWELLER BAILEY
CONSULTANTS

STRUCTURAL · MECHANICAL · ELECTRICAL

STRUCTURAL / MECHANICAL / ELECTRICAL

PROJECT
VAR-505-23
MEMORIAL UNIVERSITY
ST. JOHN'S CAMPUS
ARC FLASH CORRECTIVE WORK
PACKAGE #1
ST. JOHN'S, NL.

DRAWING PHYSICAL EDUCATION
BUILDING REVISED
ELECTRICAL SINGLE LINE
DIAGRAM

DRAWN BY GS/SB		CHECKED BY DC		APPROVED BY	
CLIENT PROJECT NO.		JBC PROJECT NO. JBC-25-C-024		DWG FILE NO.	
DATE 08/2025		SCALE AS NOTED		DRAWING NO. E9	REV. 0