MEMORIAL UNIVERSITY

FACILITIES MANAGEMENT

OPEN CALL FOR BIDS

FOR

GRD-503-26: Heating Line Replacement

Request for Open Call Number: **TFM-049-26**

Issued: October 9, 2026

Submission Deadline: **Thursday, October 29, 2026 @ 3:00PM NST**

REQUEST FOR OPEN CALL FOR BIDS INFORMATION SHEET

Request for Open Call			
Title:	**Heating Line Replacement**		
Open Call #:	**TFM-049-26**	Issue Date:	**October 9, 2026**
Non-Mandatory Site Visit:	**Location: N/A**		Click or tap to enter a date.
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 29, 2026 @ 3:00 pm NST** **opencalls@mun.ca** **Thursday, October 29, 2026 @ 3:30 pm NST** **Via Conference line: 1-416-915-6530 (toll free) Access Code: *2773 164 6449* 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: BID SUBMISSION: TFM-049-26 Heating Line Replacement

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-049-26 Heating line Replacement 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.*

PROCUREMENT AND CONTRACTING DOCUMENTS GROUP

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

Open Call for Bids – Cover Sheet 1
Request for Open Call for Bids (OCB) Information Sheet 1
About Memorial University 1
00 01 10 ..... Table of Contents Stipulated Price Contract 3
00 01 15 ..... List of Drawings 1

Open Call for Bids Strategic Procurement Sections

Part 1 – Submission Instructions 3
Part 2 – Evaluation and Award 2
Part 3 – Terms and Conditions of the OCB Process 7
Part 4 – Environmental Health and Safety Requirements 6
Part 5 – General Conditions 1
Part 6 – Supplementary Terms and Conditions 2

Appendix A – Specifications and Drawings 1
Appendix B – Submission Form 3
Appendix C1 – Pricing Form 1
Appendix C2 – Unit Rates 1
Appendix C3 – Furniture Bidding Table 1
Appendix D – List of Subcontractors 1
Appendix E – Project Reference (Roofing projects only) 3

General Conditions and Agreement between Owner and Contractor for the Stipulated Price Contract

Index 2
General Conditions 36
Supplementary General Conditions… 2
Special Conditions 9
Campus Safety and Health Regulations 4
Contractor Performance Evaluation 3

SPECIFICATIONS GROUP

General Requirements Subgroup

DIVISION 01 - GENERAL REQUIREMENTS

01 10 00 ..... Summary 5
01 25 00 ..... Substitution Procedures 3
01 29 00 ..... Payment Procedures 3
01 31 00 ..... Project Management and Coordination 8
01 32 00 ..... Construction Progress Documentation 4
01 33 00 ..... Submittal Procedures 6
01 35 29.06 .... Health and Safety Requirements 10
01 35 43 ..... Environmental Procedures 3
01 40 00 ..... Quality Requirements 8
01 41 00 ..... Regulatory Requirements 1
01 45 00 ..... Quality Control 3

01 50 00 ..... Temporary Facilities and Controls 9
01 60 00 ..... Product Requirements 4
01 74 21 ..... Construction/demolition Waste Management & Di 3
01 77 00 ..... Closeout Procedures 4
01 78 39 ..... Project Record Documents 2

Facility Construction Subgroup

DIVISION 03 - CONCRETE

03 10 00 ..... Concrete Forming and Accessories 3
03 20 00 ..... Concrete Reinforcing 3
03 30 00 ..... Cast-In-Place Concrete 6

Facility Services Subgroup

DIVISION 23 - HEATING VENTILATING AND AIR CONDITIONING

23 05 00 ..... Common Work Results - HVAC 8
23 05 05 ..... Installation of Pipework 4
23 05 17 ..... Pipe Welding 4
23 05 53.01 .... Mechanical Identification 4
23 07 19 ..... HVAC Piping Insulation 6
23 08 02 ..... Cleaning and Start-Up Mechanical Piping Systems 4
23 21 13.02 .... Hydronic System Steel 4

Site and Infrastructure Subgroup

DIVISION 31 - EARTHWORK

31 05 10 ..... Corrected Max Dry Density for Fill 1
31 05 17 ..... Aggregate Materials 4
31 11 00 ..... Clearing and Grubbing 3
31 14 01 ..... Earthwork and Related Work – Short Form 4
31 23 10 ..... Excavating, Trenching and Backfilling 8
31 23 13 ..... Rough Grading 3
31 23 17 ..... Rock Removal 3

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 11 19 ..... Granular Sub-Base 3
32 11 23 ..... Aggregate Base Courses 3
32 12 16 ..... Asphalt Paving 2
32 12 18 ..... Asphalt Paving for Building Sites 7
32 13 15 ..... Concrete Walks, Curbs, and Gutters 4
32 17 23 ..... Pavement Marking 2
32 31 13 ..... Chain Link Fences and Gates (interior storage bins only) 3
32 91 21 ..... Topsoil Placement and Grading 4
32 92 23 ..... Sodding 5

END OF SECTION

PART 1 - GENERAL

1.1 C SERIES DRAWINGS – CIVIL

.1 C-1.0 Location Plan

.2 C-1.1 Morrissey Road Demolition and New Site Plans

.3 C-2.0 Sections and Details

1.2 M SERIES DRAWINGS - MECHANICAL

.1 M-1.1 Mechanical Site Plan – New Piping Installation – Phase 1

.2 M-1.2 Mechanical Demolition and New Piping Hook-Up – Phase 2

.3 M-1.3 Mechanical Installation Details

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 rick 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 it 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 of gases.

(f) Some University buildings contain asbestos and other hazardous materials. Do not alter or disturb any goods believed to contain asbestos goods (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 PROPONENT 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)	$0	HST EXCLUDED
Price C: Total: [$(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:

GRD-503-26 : Heating Line Replacement
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 C2 – UNIT PRICE TABLE

Hereunder is a Unit Price Table that will be used for both credits and additional work as directed by the Owner's Representative. **All items are supply and installation**. The value of any credits or additional work authorized by and measured with the Owner's Representative shall be multiplied by the stated unit prices to determine the value of any credits or additional work performed.

Item No.	Tender Item	Unit	Unit Price (HST Excluded)
1	Curb Removal	M	
2	Curb and Gutter Removal	M	
3	Tree Removal	Ea	
4	Concrete Sidewalk Removal	M2	
5	Landscape Removal	M2	
6	Asphalt Removal	M2	
7	Granular Class A	M2	
8	Granular Class B	M2	
9	Trench Excavation	M2	
10	Concrete Sidewalk	M2	
11	Asphalt (80mm Thickness)	M2	
12	Topsoil and Sod (150mm thick)	M2	

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
Concrete	
Heating Line Install	
Traffic Control	
Earthworks	
Asphalt Placement	
Landscaping	
ADD TRADES AS REQUIRED	

APPENDIX E – PROJECT REFERENCE (ROOFING PROJECTS ONLY)
<Page Intentionally left blank, appendix not used>

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

TABLE OF CONTENTS

1.0 DEFINITIONS 3
2.0 GENERAL CONDITIONS 6
2.1.0 INTENTIONALLY LEFT BLANK 6
2.2.0 DOCUMENTS 6
2.3.0 ADDITIONAL INSTRUCTIONS AND SCHEDULE OF WORK 7
2.4.0 ENGINEER/ARCHITECT'S DECISIONS 7
2.5.0 DELAYS 8
2.6.0 OWNER'S RIGHT TO PERFORM WORK, STOP WORK AND/OR TERMINATE CONTRACT 9
2.7.0 CONTRACTOR'S RIGHT TO STOP WORK AND/OR TERMINATE CONTRACT 11
2.8.0 OTHER CONTRACTORS 11
2.9.0 ASSIGNMENT 12
2.10.0 SUBCONTRACTORS 12
2.11.0 DISPUTES 13
2.12.0 INDEMNIFICATION 14
2.13.0 CHANGES IN THE WORK AND EXTRA WORK 14
2.14.0 VALUATION AND CERTIFICATION OF CHANGES IN THE WORK 15
2.15.0 APPLICATION FOR PAYMENT 17
2.16.0 CERTIFICATES AND PAYMENTS 18
2.17.0 TAXES AND DUTIES 22
2.18.0 LAWS, NOTICES, PERMITS AND FEES 22
2.19.0 PATENT FEES 23
2.20.0 WORKERS' COMPENSATION 24
2.21.0 LIABILITY INSURANCE 24
2.22.0 PROPERTY INSURANCE 26
2.23.0 PROTECTION OF WORK AND PROPERTY 28
2.24.0 DAMAGES AND MUTUAL RESPONSIBILITY 29
2.25.0 BONDS 29
2.26.0 WARRANTY 30
2.27.0 CONTRACTOR'S RESPONSIBILITIES AND CONTROL OF THE WORK 30
2.28.0 PROJECT MANAGEMENT AND SUPERINTENDENCE 31
2.29.0 LABOUR AND PRODUCTS 32
2.30.0 SUBSURFACE CONDITIONS 33
2.31.0 USE OF THE WORK 33
2.32.0 CUTTING AND REMEDIAL WORK 34
2.33.0 INSPECTION OF WORK 34
2.34.0 REJECTED WORK 35
2.35.0 SHOP DRAWINGS AND SAMPLES 35
2.36.0 TESTS AND MIX DESIGNS 36
2.37.0 MATERIALS AND SUBSTITUTIONS 37
2.38.0 TIME OF ESSENCE AND SCHEDULE 37

2.39.0 CASH ALLOWANCE 37
2.40.0 CLEANUP AND FINAL CLEANING OF THE WORK 38
3.0 SUPPLEMENTARY GENERAL CONDITIONS 39
4.0 SPECIAL CONDITIONS 40
4.1.0 LAYOUT OF WORK 40
~~4.2.0 JOB SIGN~~ 40
4.3.0 TEMPORARY OFFICES AND SHEDS 40
4.4.0 TEMPORARY SERVICES 41
4.5.0 PLANT AND MACHINERY 42
4.6.0 PROTECTION OF PUBLIC AND WORKMEN 42
4.7.0 CONSTRUCTION SCHEDULE 42
4.8.0 OPERATIONS AND MAINTENANCE DATA 43
4.9.0 COORDINATION OF WORK 44
4.10.0 TRAFFIC MAINTENANCE 44
4.11.0 FIRE PROTECTION 44
4.12.0 JOB MEETINGS 44
4.13.0 AS-BUILT DRAWINGS 45
4.14.0 COMPLETION TIME 45
4.15.0 CLOSE DOWN OF WORK 46
4.16.0 BROKEN GLASS 46
4.17.0 HOARDING 46
4.18.0 COMMISSIONING 46
4.19.0 FINAL CLEAN-UP 46
5.0 CAMPUS SAFETY AND HEALTH REGULATIONS 56
5.1.0 REGULATIONS, CODES AND STANDARDS 56
5.2.0 GENERAL SAFETY REGULATIONS 56
6.0 CONTRACTOR PERFORMANCE EVALUATION 58
7.0 SIGNATURE PAGE 59

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 INTHE 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 aforegoing 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 CHANGESIN 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 <u>and</u> 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 <u>ARE NOT</u> 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 4.8have 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 ____.

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 Types of items described in this Section:
- .1 Project information.
- .2 Work covered by Contract Documents.
- .3 Phased construction.
- .4 Work by Owner.
- .5 Work under separate contracts.
- .6 Future work.
- .7 Purchase contracts.
- .8 Owner-furnished products.
- .9 Contractor-furnished, Owner-installed products.
- .10 Access to site.
- .11 Coordination with occupants.
- .12 Work restrictions.
- .13 Specification and drawing conventions.

.2 Related Section:
- .1 Division 01 Section *Temporary Facilities and Controls* for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

.1 Project Identification GRD-503-26, Heating Line Replacement.
- .1 Project Location: Main Campus, Memorial University, St. John’s, NL.

.2 Owner: Memorial University of Newfoundland
- .1 Owner's Representative: Facilities Management

1.4 WORK COVERED BY CONTRACT DOCUMENTS

.1 The Work of the Project is defined by the Contract Documents and consists of the following:
- .1 Demolition, removals, excavation, placement of fill and granular materials, concrete works, asphalt placement, landscaping, and installation of a new hydronic heating line from Engineering Building to the Business Building, and other miscellaneous work identified herein and on the drawings.

.2 Type of Contract
- .1 Project will be constructed under a single lump sum contract.

1.5 PHASED CONSTRUCTION

.1 The Work shall be conducted in two phases, with each phase substantially complete as indicated:

Phase 1: Installation of new underground supply and return heating main. Final tie-ins to existing system will not be completed in this phase. The extents of Phase 1 are identified on the mechanical drawing package. This phase to be completed in the Fall/Winter 2026. Piping system to be fully pressure tested prior to backfilling. Pipe ends to be boxed out and protected prior to backfilling. Coordinate exact protection requirements with manufacturer. Pipe supplier to visit site to confirm piping is installed per manufacturer's guidelines prior to backfilling.

Phase 2: Contractor to excavate and complete final connection and tie-in of new piping mains to the existing system. This phase to be completed in the Spring 2027 or as required by owner. Existing piping mains to be abandoned in place.

.2 Before commencing Work of each phase, submit an updated copy of the Contractor's construction schedule showing the sequence, commencement and completion dates, and move-out dates of the owner's personnel, if applicable, and move -in dates of owner's personnel for all phases of the Work.

1.6 WORK BY OWNER

.1 General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

.2 Preceding Work: Owner will perform the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.
.1 No work planned.

.3 Concurrent Work: Owner will perform the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.
.1 No work planned.

.4 Subsequent Work: Owner will perform the following additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.
.1 No work planned

1.7 WORK UNDER SEPARATE CONTRACTS

.1 General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

.2 Preceding Work: Owner has awarded / will award separate contract(s) for the following construction operations at Project site. Those operations are scheduled to be substantially complete before work under this Contract begins.
.1 No proceeding work planned.

.3 Concurrent Work: Owner has awarded / will award separate contract(s) for the following construction operations at Project site. Those operations will be conducted simultaneously with work under this Contract.
.1 No concurrent work planned.

.4 Subsequent Work: Owner has awarded / will award separate contract(s) for the following additional work to be performed at site following Substantial Completion. Completion of that work will depend on successful completion of preparatory work under this Contract.
.1 No subsequent work planned.

1.8 FUTURE WORK

.1 The Contract Documents include requirements that will allow Owner to carry out future work following completion of this Project; provide for the following future work:
.1 No future work planned.

1.9 PURCHASE CONTRACTS

.1 General: Owner has negotiated purchase contracts with suppliers of material and equipment to be incorporated into the Work. Owner will assign these purchase contracts to Contractor. Include costs for purchasing, receiving, handling, storage if required, and installation of material and equipment in the Contract Sum, unless otherwise noted.
.1 Contractor's responsibilities are same as if Contractor had negotiated purchase contracts, including responsibility to renegotiate purchase and to execute final purchasing agreements.

.2 Purchase Contracts Information:
.1 No purchase contracts apply to the Work.

1.10 OWNER-FURNISHED PRODUCTS

.1 Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products and making building services connections as required.

.2 Owner-Furnished Products:
.1 No Owner furnished products.

1.11 CONTRACTOR-FURNISHED, OWNER-INSTALLED PRODUCTS

.1 Contractor shall furnish products indicated. The Work includes unloading, handling, storing, and protecting Contractor-furnished products as directed and turning over to Owner at Project closeout.

.2 Contractor-Furnished, Owner-Installed Products:
.1 No Owner furnished and Owner supplied products..

1.12 ACCESS TO SITE

.1 Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
.1 Where the Work involves site work, the contractor is responsible for limiting site disturbance. Disturbance or destruction of areas outside of the project limits by the contractor must be reinstated to its original condition.
.2 Driveways, Walkways and Entrances: For Work involving renovations to an existing building or adjacent to other buildings then keep driveways and loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
.1 Schedule deliveries to minimize use of driveways and entrances by construction operations.
.2 Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

.2 Condition of Existing Building: Where the Work involves work on an existing building, Maintain portions of the existing building affected by construction operations in a weather tight condition throughout construction period. Repair damage caused by construction operations.

1.13 COORDINATION WITH OCCUPANTS

.1 Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
- .1 Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
- .2 Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- .3 Coordinate the temporary closure of walkways and building exits with the owner as needed.

1.14 WORK RESTRICTIONS

.1 Work Restrictions, General: Comply with restrictions on construction operations.
- .1 Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- .2 The contractor is required to use the appropriate equipment that ensures the existing heating pipe and site infrastructure will not be damaged.

.2 On-Site Work Hours: Limit work in the existing building to normal business working hours of the Owner, Monday through Friday, except as otherwise indicated.
- .1 Weekend Hours: When schedule requires.
- .2 Early Morning Hours: When schedule requires and when nature of work produces excess noise not acceptable to the owner.
- .3 Hours for Utility Shutdowns: Provide owner with 72hrs notice, work to occur before or after normal working hours.

.3 Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
- .1 Notify Owner's Representative not less than two days in advance of proposed utility interruptions.
- .2 Obtain Owner's Representative written permission before proceeding with utility interruptions.
- .3 In event of an unplanned utility service interruption due to the contractor, the contractor is required to provide temporary service until the utility is restored.

.4 Noise, Vibration, and Odours: For work in or near occupied facilities, coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
- .1 Notify Owner's Representative not less than two days in advance of proposed disruptive operations.
- .2 Obtain Owner's Representative's written permission before proceeding with disruptive operations.

.5 Controlled Substances: Use of tobacco products and other controlled substances on the Project site is not permitted.

.6 Employee Identification: Owner may provide identification tags for Contractor personnel working on the Project site. Require personnel to utilize identification tags at all times.

1.15 SPECIFICATION AND DRAWING CONVENTIONS

.1 Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

.1 Imperative mood and streamlined language are generally used in the Specifications. The words *shall*, *shall be*, or *shall comply with*, depending on the context, are implied where a colon (:) is used within a sentence or phrase.

.2 Specification requirements are to be performed by Contractor unless specifically stated otherwise.

.2 Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

.3 Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:

.1 Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.

1.16 MISCELLANEOUS PROVISIONS

.1 None.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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 Types of items described in this Section:
  .1 Administrative and procedural requirements for substitutions.

.2 Types of items you will not find described in this Section:
  .1 Products selected under an allowance.
  .2 Requirements for submitting comparable product submittals for products by listed manufacturers.
  .3 Divisions 02 through 49 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

.1 Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  .1 Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  .2 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 Contractor or Owner.

1.4 SUBMITTALS

.1 Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  .1 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 modifications 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 Owner's Representatives and owners.
    .8 Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
    .9 Research reports evidencing compliance with building code in effect for Project.

.10 Detailed comparison of 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.

.11 Cost information, including a proposal of change, if any, in the Contract Sum.

.12 Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.

.13 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.

.2 Owner's Representative's Action: If necessary, Owner's Representative will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Owner's Representative will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

.1 Forms of Acceptance: Change Order, Construction Change Directive, or Owner's Representative's 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.

1.5 QUALITY ASSURANCE

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

1.6 PROCEDURES

.1 Coordination: Modify 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 upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

.1 Conditions: Owner's Representative will consider 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 Substitution request is fully documented and properly submitted.

.3 Requested substitution will not adversely affect Contractor's construction schedule.

.4 Requested substitution has received necessary approvals of authorities having jurisdiction.

.5 Requested substitution is compatible with other portions of the Work.

.6 Requested substitution has been coordinated with other portions of the Work.

.7 Requested substitution provides specified warranty.

.8 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: Owner's Representative will consider requests for substitution if received within 60 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Owner's Representative.

.1 Conditions: Owner's Representative will consider 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 offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Owner's Representative for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- .2 Requested substitution does not require extensive revisions to the Contract Documents.
- .3 Requested substitution is consistent with the Contract Documents and will produce indicated results.
- .4 Substitution request is fully documented and properly submitted.
- .5 Requested substitution will not adversely affect Contractor's construction schedule.
- .6 Requested substitution has received necessary approvals of authorities having jurisdiction.
- .7 Requested substitution is compatible with other portions of the Work.
- .8 Requested substitution has been coordinated with other portions of the Work.
- .9 Requested substitution provides specified warranty.
- .10 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.

PART 3 - EXECUTION (Not Used)

END OF SECTION

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 Types of items described in this Section:
  .1 Administrative and procedural requirements necessary to prepare and process Applications for Payment.

.2 Types of items you will not find described in this Section:
  .1 Procedural requirements governing the handling and processing of allowances.
  .2 Administrative procedures for handling changes to the contract.
  .3 Administrative requirements governing the preparation and submittal of the contractor's construction schedule.
  .4 Administrative requirements governing the preparation and submittal of the submittal schedule.
  .5 Administrative requirements governing submittal of cost breakdown information required for leed documentation.

1.3 DEFINITIONS

.1 Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

.1 Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
  .1 Correlate line items in the schedule of values with other required administrative forms and schedules, including the following:
    .1 Application for Payment forms with continuation sheets.
    .2 Submittal schedule.
    .3 Items required to be indicated as separate activities in Contractor's construction schedule.
  .2 Submit the schedule of values to Owner's Representative at earliest possible date but no later than seven days before the date scheduled for submittal of initial Applications for Payment.

.2 Format and Content: Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
  .1 Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
    .1 Related Specification Section or Division.
    .2 Description of the Work.
    .3 Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  .2 Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of Contract Sum.

.1 Include separate line items under principal subcontracts for sustainability documentation for LEED certification, if applicable, and other project closeout requirements in an amount totalling not less than five percent of the Contract Sum and subcontract amount.

.3 Round amounts to nearest whole dollar; total shall equal the Contract Sum.

.4 Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

.1 Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.

.5 Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

.6 Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

.1 Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.

.7 Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

.1 Each Application for Payment shall be consistent with previous applications and payments as certified by Owner's Representative and paid for by Owner.

.1 Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

.2 Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

.3 Application for Payment Forms: Use forms acceptable to Owner's Representative and Owner for Applications for Payment. Submit forms for approval with initial submittal of schedule of values.

.4 Application Preparation: Complete every entry on form. Execute by a person authorized to sign legal documents on behalf of Contractor. Owner's Representative will return incomplete applications without action.

.1 Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

.2 Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.

.3 Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

.4 Indicate separate amounts for work being carried out under Owner-requested project acceleration.

.5 Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

.1 Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.

.2 Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.

.3 Provide summary documentation for stored materials indicating the following:

.1 Materials previously stored and included in previous Applications for Payment.

.2 Work completed for this Application utilizing previously stored materials.

.3 Additional materials stored with this Application.
.4 Total materials remaining stored, including materials with this Application.

.6 Transmittal: Submit two signed original copies of each Application for Payment to Owner's Representative by a method ensuring receipt within 24 hours. Provide current Letter of Good Standing from Work Place Health and Safety authority.
.1 Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

.7 Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
.1 List of subcontractors.
.2 Schedule of values.
.3 Contractor's construction schedule (preliminary if not final).
.4 Products list (preliminary if not final).
.5 Schedule of unit prices.
.6 Submittal schedule (preliminary if not final).
.7 List of Contractor's staff assignments.
.8 List of Contractor's principal consultants.
.9 Copies of building permits.
.10 Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
.11 Initial progress report.
.12 Report of preconstruction conference.

.8 Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
.1 Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

.9 Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
.1 Evidence of completion of Project closeout requirements.
.2 Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
.3 Updated final statement, accounting for final changes to the Contract Sum.
.4 Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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 Types of items described in this Section:
  .1 Administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
    .1 General project coordination procedures.
    .2 Administrative and supervisory personnel.
    .3 Coordination drawings.
    .4 Requests for Information (RFIs).
    .5 Project Web Site.
    .6 Project meetings.

.2 Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

.3 Types of items you will not find described in this Section:
  .1 Description of the division of work among separate contracts and responsibility for coordination activities not in this Section.
  .2 Preparing and submitting Contractor's construction schedule.
  .3 Procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  .4 Coordinating closeout of the Contract.
  .5 Coordinating the Work with Owner's commissioning authority.

1.3 DEFINITIONS

.1 RFI: Request from Owner, Owner's Representative, or Contractor seeking information from each other during construction.

1.4 COORDINATION

.1 Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  .1 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.
  .2 Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  .3 Make adequate provisions to accommodate items scheduled for later installation.

.2 Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  .1 Preparation of Contractor's construction schedule.

.2 Preparation of the schedule of values.
.3 Installation and removal of temporary facilities and controls.
.4 Delivery and processing of submittals.
.5 Progress meetings.
.6 Preinstallation conferences.
.7 Project closeout activities.
.8 Startup and adjustment of systems.
.9 Project closeout activities.

.3 Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
.1 Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 COORDINATION DRAWINGS

.1 Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, 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.
.1 Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
.1 Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
.2 Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
.3 Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
.4 Show location and size of access doors required for access to concealed dampers, valves, and other controls.
.5 Indicate required installation sequences.
.6 Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Owner's Representative indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

.2 Coordination Drawing Organization: Organize coordination drawings as follows:
.1 Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
.2 Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
.3 Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
.4 Structural Penetrations: Indicate penetrations and openings required for all disciplines.
.5 Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
.6 Mechanical and Plumbing Work: Show the following:

.1 Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
.2 Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
.3 Fire-rated enclosures around ductwork.

.7 Electrical Work: Show the following:
.1 Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
.2 Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
.3 Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
.4 Location of pull boxes and junction boxes, dimensioned from column center lines.

.8 Fire Protection System: Show the following:
.1 Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

.9 Review: Owner's Representative will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Owner's Representative determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Owner's Representative will so inform the Contractor, who shall make changes as directed and resubmit.

.10 Coordination Drawing Prints: Prepare coordination drawing prints in accordance with requirements of Division 01 Section *Submittal Procedures*.

1.6 KEY PERSONNEL

.1 Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
.1 Post copies of list in project meeting rooms, in any temporary field office, and by any and all temporary telephones. Keep list current at all times.

1.7 REQUESTS FOR INFORMATION (RFIs)

.1 General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
.1 Owner's Representative will return RFIs submitted to Owner's Representative by other entities controlled by Contractor with no response.
.2 Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

.2 Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
.1 Project name.
.2 Project number.
.3 Date.
.4 Name of Contractor.
.5 Name of Owner's Representative.
.6 RFI number, numbered sequentially.
.7 RFI subject.
.8 Specification Section number and title and related paragraphs, as appropriate.
.9 Drawing number and detail references, as appropriate.
.10 Field dimensions and conditions, as appropriate.

.11 Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
.12 Contractor's signature.
.13 Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
.1 Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

.3 RFI Forms: Contractor's form acceptable to the Owner's Representative.

.4 Owner's Representative's Action: Owner's Representative will review each RFI, determine action required, and respond. Allow seven working days for Owner's Representative's response for each RFI. RFIs received by Owner's Representative after 1:00 p.m. will be considered as received the following working day.
.1 The following RFIs will be returned without action:
.1 Requests for approval of submittals.
.2 Requests for approval of substitutions.
.3 Requests for coordination information already indicated in the Contract Documents.
.4 Requests for adjustments in the Contract Time or the Contract Sum.
.5 Requests for interpretation of Owner's Representative's actions on submittals.
.6 Incomplete RFIs or inaccurately prepared RFIs.
.2 Owner's Representative's action may include a request for additional information, in which case Owner's Representative's time for response will date from time of receipt of additional information.
.3 Owner's Representative's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section *Contract Modification Procedures*.
.1 If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Owner's Representative in writing within 10 days of receipt of the RFI response.

.5 On receipt of Owner's Representative's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Owner's Representative within seven days if Contractor disagrees with response.

1.8 PROJECT MEETINGS

.1 General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
.1 Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Owner's Representative of scheduled meeting dates and times.
.2 Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
.3 Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Owner's Representative, within three days of the meeting.

.2 Preconstruction Conference: Owner's Representative will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Owner's Representative, but no later than 15 days after execution of the Agreement.
.1 Conduct the conference to review responsibilities and personnel assignments.
.2 Attendees: Authorized representatives of Owner, Owner's Commissioning Authority if applicable, Owner's Representative, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
.3 Agenda: Discuss items of significance that could affect progress, including the following:
.1 Tentative construction schedule.

.2 Phasing.
.3 Critical work sequencing and long-lead items.
.4 Designation of key personnel and their duties.
.5 Lines of communications.
.6 Procedures for processing field decisions and Change Orders.
.7 Procedures for RFIs.
.8 Procedures for testing and inspecting.
.9 Procedures for processing Applications for Payment.
.10 Distribution of the Contract Documents.
.11 Submittal procedures.
.12 Sustainable design requirements.
.13 Preparation of record documents.
.14 Use of the premises and existing building.
.15 Work restrictions.
.16 Working hours.
.17 Owner's occupancy requirements.
.18 Responsibility for temporary facilities and controls.
.19 Procedures for moisture and mold control.
.20 Procedures for disruptions and shutdowns.
.21 Construction waste management and recycling.
.22 Parking availability.
.23 Office, work, and storage areas.
.24 Equipment deliveries and priorities.
.25 First aid.
.26 Security.
.27 Progress cleaning.

.4 Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

.3 Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

.1 Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner's Representative , and Owner's Commissioning Authority if applicable, of scheduled meeting dates.

.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

.1 Contract Documents.
.2 Options.
.3 Related RFIs.
.4 Related Change Orders.
.5 Purchases.
.6 Deliveries.
.7 Submittals.
.8 Review of mockups.
.9 Possible conflicts.
.10 Compatibility problems.
.11 Time schedules.
.12 Weather limitations.
.13 Manufacturer's written recommendations.
.14 Warranty requirements.
.15 Compatibility of materials.

.16 Acceptability of substrates.
.17 Temporary facilities and controls.
.18 Space and access limitations.
.19 Regulations of authorities having jurisdiction.
.20 Testing and inspecting requirements.
.21 Installation procedures.
.22 Coordination with other work.
.23 Required performance results.
.24 Protection of adjacent work.
.25 Protection of construction and personnel.

.3 Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

.5 Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

.4 Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner and Owner's Representative, but no later than thirty days prior to the scheduled date of Substantial Completion.

.1 Conduct the conference to review requirements and responsibilities related to Project closeout.

.2 Attendees: Authorized representatives of Owner, Owner's Commissioning Authority if applicable, Owner's Representative, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

.3 Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

.1 Preparation of record documents.
.2 Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
.3 Submittal of written warranties.
.4 Requirements for preparing sustainable design documentation.
.5 Requirements for preparing operations and maintenance data.
.6 Requirements for demonstration and training.
.7 Preparation of Contractor's punch list.
.8 Procedures for processing Applications for Payment at Substantial Completion and for final payment.
.9 Submittal procedures.
.10 Coordination of separate contracts.
.11 Owner's partial occupancy requirements.
.12 Installation of Owner's furniture, fixtures, and equipment.
.13 Responsibility for removing temporary facilities and controls.

.4 Minutes: Entity conducting meeting will record and distribute meeting minutes.

.5 Progress Meetings: Conduct progress meetings at monthly intervals.

.1 Coordinate dates of meetings with preparation of payment requests.

.2 Attendees: In addition to representatives of Owner, Owner's Commissioning Authority if applicable and Owner's Representative, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

.3 Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

.1 Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
  .1 Review schedule for next period.

.2 Review present and future needs of each entity present, including the following:
  .1 Interface requirements.
  .2 Sequence of operations.
  .3 Status of submittals.
  .4 Deliveries.
  .5 Off-site fabrication.
  .6 Access.
  .7 Site utilization.
  .8 Temporary facilities and controls.
  .9 Progress cleaning.
  .10 Quality and work standards.
  .11 Status of correction of deficient items.
  .12 Field observations.
  .13 Status of RFIs.
  .14 Status of proposal requests.
  .15 Pending changes.
  .16 Status of Change Orders.
  .17 Pending claims and disputes.
  .18 Documentation of information for payment requests.

.4 Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
  .1 Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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 Types of items described in this Section:
  .1 Administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
    .1 Start-up construction schedule.
    .2 Contractor's construction schedule.
    .3 Daily construction reports.
    .4 Material location reports.
    .5 Field condition reports.
    .6 Special reports.

.2 Types of items you will not find described in this Section:
  .1 Procedures for submitting schedules and reports.
  .2 Requirements for submitting a schedule of tests and inspections.

1.3 SUBMITTALS

.1 Format for Submittals: Submit required submittals in the following format:
  .1 Three paper copies, one pdf and one editable copy.

.2 Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

.3 Daily Construction Reports: Submit at weekly intervals.

.4 Field Condition Reports: Submit at time of discovery of differing conditions.

.5 Special Reports: Submit at time of unusual event.

1.4 COORDINATION

.1 Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  .1 Secure time commitments for performing critical elements of the Work from entities involved.
  .2 Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

.1 Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.

.1 Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

.2 Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
- .1 Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Owner's Representative.
- .2 Procurement Activities: Include procurement process activities for any long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
- .3 Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section *Submittal Procedures* in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
- .4 Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner's Representative's administrative procedures necessary for certification of Substantial Completion.
- .5 Punch List and Final Completion: Include not more than 30 days for punch list and final completion.

.3 Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
- .1 Phasing: Arrange list of activities on schedule by phase.
- .2 Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
- .3 Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section *Summary*. Delivery dates indicated stipulate the earliest possible delivery date.
- .4 Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section *Summary*. Delivery dates indicated stipulate the earliest possible delivery date.
- .5 Work Stages: Indicate important stages of construction for each major portion of the Work

.4 Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, Construction Start Date, Substantial Completion, and final completion.

2.2 START-UP CONSTRUCTION SCHEDULE

.1 Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.

.2 Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

.1 Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's construction schedule within 30 days of date established for commencement of the Work. Base schedule on the start-up construction schedule and additional information received since the start of Project.

.2 Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
- .1 For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.4 REPORTS

.1 Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
- .1 List of subcontractors at Project site.
- .2 List of separate contractors at Project site.
- .3 Approximate count of personnel at Project site.
- .4 Equipment at Project site.
- .5 Material deliveries.
- .6 High and low temperatures and general weather conditions, including presence of rain or snow.
- .7 Accidents.
- .8 Meetings and significant decisions.
- .9 Unusual events (refer to special reports).
- .10 Stoppages, delays, shortages, and losses.
- .11 Meter readings and similar recordings.
- .12 Emergency procedures.
- .13 Orders and requests of authorities having jurisdiction.
- .14 Change Orders received and implemented.
- .15 Construction Change Directives received and implemented.
- .16 Services connected and disconnected.
- .17 Equipment or system tests and startups.
- .18 Partial completions and occupancies.
- .19 Substantial Completions authorized.

.2 Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

.1 General: Submit special reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

.2 Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

.1 Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule before each regularly scheduled progress meeting.
- .1 Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
- .2 Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
- .3 As the Work progresses, indicate final completion percentage for each activity.

.2 Distribution: Distribute copies of approved schedule to Owner's Representative Owner, inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
- .1 Post copies in Project meeting rooms and temporary field offices.

.2 When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

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 requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

.2 Related Sections:
- .1 Division 01 Section *Payment Procedures* for submitting Applications for Payment and the schedule of values.
- .2 Division 01 Section *Construction Progress Documentation* for submitting schedules and reports, including Contractor's construction schedule.
- .3 Division 01 Section *Operation and Maintenance Data* for submitting operation and maintenance manuals.
- .4 Division 01 Section *Project Record Documents* for submitting record Drawings, record Specifications, and record Product Data.
- .5 Division 01 Section *Demonstration and Training* for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

.1 Action Submittals: Written and graphic information and physical samples that require Owner's Representative's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.

.2 Informational Submittals: Written and graphic information and physical samples that do not require Owner's Representative's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.

.3 File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

.4 Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

.1 Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Owner's Representative and additional time for handling and reviewing submittals required by those corrections.
- .1 Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.

.2 Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

.3 Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

.1 Submit revised submittal schedule to reflect changes in current status and timing for submittals.

.4 Format: Arrange the following information in a tabular format:

.1 Scheduled date for first submittal.

.2 Specification Section number and title.

.3 Submittal category: Action, informational.

.4 Name of subcontractor.

.5 Description of the Work covered.

.6 Scheduled date for Owner's Representative's final release or approval.

.7 Scheduled dates for purchasing.

.8 Scheduled dates for installation.

.9 Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

.1 Owner's Representative's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Owner's Representative for Contractor's use in preparing submittals.

.1 Owner's Representative will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.

.1 Owner's Representative makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

.2 Digital Drawing Software Program: The Contract Drawings are available in Autodesk AutoCAD 2014 format.

.3 Only the following plot files will by furnished for each appropriate discipline:

.1 Floor plans.

.2 Reflected ceiling plans.

.2 Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

.1 Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

.2 Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.

.3 Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

.3 Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner's Representative's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

.1 Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner's Representative will advise Contractor when a submittal being processed must be delayed for coordination.

.2 Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

.3 Resubmittal Review: Allow 15 days for review of each resubmittal.

.4 Sequential Review: Where sequential review of submittals by Owner's Representative's consultants, Owner, or other parties is required, allow 21 days for initial review of each submittal.

.4 Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.

.1 Indicate name of firm or entity that prepared each submittal on label or title block.
.2 Include the following information for processing and recording action taken:
.1 Project name.
.2 Date.
.3 Name of Owner's Representative.
.4 Name of Contractor.
.5 Name of subcontractor.
.6 Name of supplier.
.7 Name of manufacturer.
.8 Submittal number or other unique identifier, including revision identifier.
.1 Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06 10 00.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06 10 00.01.A).
.9 Number and title of appropriate Specification Section.
.10 Drawing number and detail references, as appropriate.
.11 Location(s) where product is to be installed, as appropriate.
.12 Other necessary identification.

.5 Options: Identify options requiring selection by the Owner's Representative.

.6 Deviations: Identify deviations from the Contract Documents on submittals.

.7 Additional Paper Copies: Unless additional copies are required for final submittal, and unless Owner's Representative observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

.8 Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Owner's Representative will discard submittals received from sources other than Contractor.
.1 Transmittal Form: Provide locations on form for the following information:
.1 Project name.
.2 Date.
.3 Category and type of submittal.
.4 Submittal purpose and description.
.5 Specification Section number and title.
.6 Indication of full or partial submittal.
.7 Remarks.
.8 Signature of transmitter.
.2 On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Owner's Representative on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

.9 Resubmittals: Make resubmittal in same form and number of copies as initial submittal.
.1 Note date and content of previous submittal.
.2 Note date and content of revision in label or title block and clearly indicate extent of revision.
.3 Resubmit submittals until they are marked with approval notation from Owner's Representative's action stamp.

.10 Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

.11 Use for Construction: Use only final submittals that are marked with approval notation from Owner's Representative's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

.1 General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
- .1 Submittals in General; Submit three paper copies of each submittal, unless otherwise indicated. Owner's Representative will return no copies but will instead post a scanned version of the document in PDF to the project web Site and notify the Contractor of same via e-mail notice.
- .2 Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section *Closeout Procedures*.
- .3 Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section *Quality Requirements*.

.2 Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
- .1 If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
- .2 Mark each copy of each submittal to show which products and options are applicable.
- .3 Include the following information, as applicable:
  - .1 Manufacturer's catalog cuts.
  - .2 Manufacturer's product specifications.
  - .3 Standard color charts.
  - .4 Statement of compliance with specified referenced standards.
  - .5 Testing by recognized testing agency.
  - .6 Application of testing agency labels and seals.
  - .7 Notation of coordination requirements.
  - .8 Availability and delivery time information.
- .4 For equipment, include the following in addition to the above, as applicable:
  - .1 Wiring diagrams showing factory-installed wiring.
  - .2 Printed performance curves.
  - .3 Operational range diagrams.
  - .4 Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- .5 Submit Product Data before or concurrent with Samples.

.3 Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- .1 Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
  - .1 Identification of products.
  - .2 Schedules.
  - .3 Compliance with specified standards.
  - .4 Notation of coordination requirements.
  - .5 Notation of dimensions established by field measurement.
  - .6 Relationship and attachment to adjoining construction clearly indicated.
  - .7 Seal and signature of professional engineer if specified.
- .2 Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings whenever possible on sheets not larger than 11 x17"

.4 Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
- .1 Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
- .2 Identification: Attach label on unexposed side of Samples that includes the following:
  - .1 Generic description of Sample.
  - .2 Product name and name of manufacturer.
  - .3 Sample source.
  - .4 Number and title of applicable Specification Section.
- .3 Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
  - .1 Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
  - .2 Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- .4 Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
  - .1 Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Owner's Representative will return submittal with options selected.
- .5 Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
  - .1 Number of Samples: Submit two sets of Samples. Owner's Representative will retain two Sample sets; remainder will be returned a PDF scan of the sample.
    - .1 Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    - .2 If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least two sets of paired units that show approximate limits of variations.

.5 Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section *Construction Progress Documentation*.

.6 Application for Payment: Comply with requirements specified in Division 01 Section *Payment Procedures*.

.7 Schedule of Values: Comply with requirements specified in Division 01 Section *Payment Procedures*.

.8 Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
- .1 Name, address, and telephone number of entity performing subcontract or supplying products.
- .2 Number and title of related Specification Section(s) covered by subcontract.
- .3 Drawing number and detail references, as appropriate, covered by subcontract.

.9 Sustainability Submittals: Comply with requirements specified in Division 01 Section *Sustainable Design Requirements*.

.10 Coordination Drawings: Comply with requirements specified in Division 01 Section *Project Management and Coordination*.

.11 Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section *Quality Requirements*.

.12 Maintenance Data: Comply with requirements specified in Division 01 Section *Operation and Maintenance Data*.

2.2 DELEGATED-DESIGN SERVICES

.1 Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

.1 If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Owner's Representative.

.2 Provide submittals and certificates sealed with by a professional identified by the Section who is licensed to practice in the project's jurisdiction; signifying compliance with the performance and design criteria in the Contract Documents. Indicate list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

.1 Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner's Representative .

.2 Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section *Closeout Procedures*.

.3 Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 OWNER'S REPRESENTATIVE'S ACTION

.1 General: Owner's Representative will not review submittals that do not bear Contractor's approval stamp and will return them without action.

.2 Action Submittals: Owner's Representative will review each submittal, make marks to indicate corrections or modifications required, and return it. Owner's Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

.3 Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, incluxding General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Types of items described in this Section:

1. Health and safety requirements for projects located in Newfoundland and Labrador.

1.3 REFERENCES

A. Code and standards referenced in this section refer to the latest edition thereof.

B. Canadian Standards Association (CSA)

1. CSA S269.1 Falsework for Construction Purposes.
2. CAN/CSA-Z259.1 Safety Belts and Lanyards.
3. CAN/CSA-Z259.10 Full body Harnesses.
4. CAN/CSA-Z259.11 Shock Absorbers for Personal Fall Arrest Systems.
5. CAN/CSA-Z259.2, Fall Arresting Devices, Personnel Lowering Devices and Lifelines.
6. FCC No. 301 Standard for Construction Operations.
7. CSA Z275.2 Occupational Safety Code for Diving Operations.
8. CSA Z275.4 Competency Standard for Divers Operations.

C. FCC No. 302 Standard for Welding and Cutting.

D. Transportation of Dangerous Goods Act Regulations.

E. Newfoundland Occupational Health and Safety Act, Amended

F. Consolidated Newfoundland and Regulations 1149 WMIS Regulations Under the Occupational Health and Safety Act

G. Consolidated Newfoundland and Regulations 1165 Occupational Health and Safety Regulations under the Occupational Health and Safety Act.

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

I. National Building Code of Canada.

1.4 SUBMITTALS

A. At least 10 (ten) working days prior to commencing any site work: submit to Owner's Representative copies of:

1. A complete Site Specific Hazard Assessment and Safety Program Table of Contents.
2. **Including requirments as outlined by the Department of Envrionmental Health & Safety, See APPENDIX A.**

B. Acceptance of the Project Health and Safety Hazard Assessment and Management Plan and other submitted documents by the Owner's Representative shall only be viewed as acknowledgement that the contractor has submitted the required documentation under this specification section.

C. Owner's Representative makes no representation and provides no warranty for the accuracy, completeness and legislative compliance of the Project Health and Safety Hazard Management Plan and other submitted documents by this acceptance.

D. Responsibility for errors and omissions in the Project Health and Safety Hazard Assessment and Management Plan and other submitted documents is not relieved by acceptance by Owner's Representative.

1.5 OCCUPATIONAL HEALTH AND SAFETY (PROJECT HEALTH AND SAFETY HAZARD ASSESSMENT AND MANAGEMENT PLANS)

A. Conduct operations in accordance with latest edition of the Newfoundland Occupational Health and Safety (OH&S) Act and Regulations.

B. Prepare a detailed Project Health and Safety Hazard Assessment and Management Plan for the Owner. Assessment shall identify, evaluate and control job specific hazards and the necessary control measures to be implemented for managing hazards.

C. Provide a copy of the Project Health and Safety Hazard Assessment and Management Plan upon request to Occupational Health and Safety Branch, Department of Labour, Province of Newfoundland and Labrador and the Owner.

D. The written Health and Safety Hazard Assessment and Management Plan shall incorporate the following:

1. A site-specific health and safety plan, refer to clause 1.6 Site-Specific Health and Safety Hazard Assessment and Management Plan of this section for requirements.
2. An organizational structure which shall establish the specific chain of command and specify the overall responsibilities of contractor's employees at the work site.
3. A comprehensive work plan which shall:

   a. define work tasks and objectives of site activities/operations and the logistics and resources required to reach these tasks and objectives
   b. establish personnel requirements for implementing the plan, and
   c. establish site specific training and notification requirements and schedules.

4. A personal protected equipment (PPE) Program which shall detail PPE:

   a. Selection criteria based on site hazards.
   b. Use, maintenance, inspection and storage requirements and procedures.

c. Decontamination and disposal procedures.
d. Inspection procedures prior to during and after use, and other appropriate medical considerations.
e. Limitations during temperature extremes, heat stress and other appropriate medical consideration.

5. An emergency response procedure, refer to Clause 1.7 Supervision and Emergency Response Procedure of this section for requirements.
6. A hazard communication program for informing workers, visitors and individuals outside of the work area as required.
7. A diving program which shall contain standard operating procedures to be followed in the diving operation.
8. A health and safety training program.
9. General safety rules.

E. Periodically review and modify as required each component of the Project Health and Safety Hazard Assessment and Management Plan when a new hazard is identified during completion of work and when an error or omission is identified in any part of the Project Health and Safety Hazard Assessment and Management Plan.

F. Implement all requirements of the Project Health and Safety Hazard Assessment and Management Plan.

1. Ensure that every person entering the project site is informed of requirements under the Project Health and Safety Hazard Assessment and Management Plan.
2. Take all necessary measures to immediately implement any engineering controls, administrative contacts, personal protective equipment required or termination of work procedures to ensure compliance with the Project Health and Safety Hazard Assessment and Management Plan.

1.6 SITE SPECIFIC HEALTH AND SAFETY PLAN

A. Prepare a detailed site Specific Project Health and Safety Plan which shall:

1. Contain certain hazard assessment results.
2. Identify 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.

B. Review for completeness the hazard assessment results 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, evaluation and managing any report of actual or potential hazards.
2. Retain copies of all completed hazard assessments at the project site and make available to the Owner's Representative immediately upon request.

1.7 SUPERVISION AND EMERGENCY RESCUE PROCEDURE

A. 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

B. Assign a sufficient number of supervisory personnel to the work site.

C. Provide a suitable means of communications for workers required to work alone.

D. Develop an emergency rescue plan for the job site and ensure that supervisors and workers are trained in the emergency rescue plan.

E. 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:

    a. Managing deteriorating environmental conditions.
    b. Managing unexpected weather or sea-state condition.
    c. Evacuation of diver(s) under pressures greater that atmospheric pressure.
    d. In-water emergency transfers.
    e. Managing failing of equipment below the surface that impairs the ability of a diver to complete a dive.
    f. Managing failure of any major component of diving plant or equipment.
    g. Emergency signalling between divers involved in the diving program and between the diver(s) and the attendants using umbilical, tethers or other suitable methods.
    h. Mobilizing stand-by divers.
    i. Mobilizing crafts, stand-by boats and any other devices to be used for rescue.
    j. Contacting evacuation, rescue, treatment facilities and medical services that will be used in the diving program.
    k. Operation of emergency power and lighting facilities.

F. The emergency response procedures shall be rehearsed regularly as part of the overall training program.

G. 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 First Aid Regulations.

1.8 CONTRACTORS SAFETY OFFICER

A. The contractor's Safety Officer will be solely responsible for the implementation and monitoring of the Project Health and Safety Hazard Assessment and Management Plan, and will have the authority to implement health and safety changes as directed by the Owner's Representative. The Safety Officer shall have as a minimum:

1. Completed training in hazardous occurrence management and response/protocols.
2. Completed training in the use, maintenance of fall protection systems.
3. Completed training in the design and construction of scaffolding.
4. Completed training in confined space entry protocols and techniques.
5. Completed training in First Aid.

6. Have working knowledge of occupational safety and health regulations.
7. Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
8. Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
9. Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.9 HEALTH AND SAFETY COMMITTEE

A. 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.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.

C. 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.

1.10 RESPONSIBILITY

A. 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.

B. 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.

1.11 UNFORESEEN HAZARDS

A. 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.

1.12 INSTRUCTION AND TRAINING

A. 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.

B. Provide and maintain training of workers, as required, by Federal and Provincial legislation.

C. Provide copies of all safety training certificates, upon request, to Owner's Representative for review, and to be maintained on the worker when they enter the work site.

D. 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 Health and Safety Hazard Assessment and Management 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.

1.13 CONSTRUCTION SAFETY MEASURES

A. Observe construction safety measures of National Building Code, latest edition, Provincial Government, OH&S Act and Regulations, Workplace Health and Safety and Compensation Commission and Municipal Authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.

B. 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 Health and Safety Hazard Assessment and Management Plan.

C. Provide Owner's Representative with copies of all orders, directions and any other documentation, issued by the Provincial Department of Government Services, Occupational Health and Safety branch immediately after receipt.

1.14 POSTING OF DOCUMENTS

A. 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.

1.15 HEALTH AND SAFETY MONITORING

A. 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.

B. 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.

1.16 CORRECTION OF NON-COMPLIANCE

A. Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owner's Representative.

B. Provide Owner's Representative with written report of action taken to correct non-compliance of health and safety issues identified.

C. Owner's Representative may stop work if non-compliance of health and safety regulations is not corrected.

1.17 WHMIS

A. 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.

B. Deliver copies of relevant (Material) Safety Data Sheets (SDS) to job site and the Owner's Representative. The SDS 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.

C. Train workers required to use or work in close proximity to controlled products as per OH&S Act and Regulations.

D. Label controlled products at jobsite as per OH&S and Regulations.

E. Provide appropriate emergency facilities as specified in the SDS 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.

F. Contractor shall provide appropriate personal protective equipment as specified in the SDS 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.

G. No controlled products are to be brought on-site without prior approved SDS.

H. The SDS are to remain on site at all times.

1.18 OVERLOADING

A. Ensure no part of work or associated equipment is subjected to loading that will endanger its safety or will cause permanent deformation.

1.19 FALSEWORK

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

1.20 SCAFFOLDING

A. Design, erect and maintain scaffolding in accordance with CSA S269.2 and Sections 91-97 of the OH&S Act and Regulations.

B. Ensure that fall-restraint or fall-arrest devices are used by all workers working at elevations greater than 3.05 metres above grade or floor level in accordance with CSA Z259.

1.21 PERSONAL PROTECTIVE EQUIPMENT

A. Ensure workers on the jobsite use personal protective equipment appropriate to the hazards identified in the Hazard Assessment and Management Plan and those workers are trained in the proper care, use, and maintenance of such equipment.

B. 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.

C. Provide workers and visitors to the site with proper respiratory protection equipment.

1. No work shall be performed in an area where an airborne contaminant exceeds one half (½) the IDLH concentration.
2. Respiratory protection shall be provided in accordance with the requirements of the Occupational Health and Safety Branch, Department of Labour of the Province of Newfoundland and Labrador and these specifications.
3. Establish, implement and maintain a respirator inspection and maintenance program.
4. Copies of all respirator owners' maintenance manuals shall be kept at all times at the contractor's site office.

D. 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.

E. Provide all workers and up to two (2) 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.

F. Provide all workers and up to two (2) 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.

G. Provide workers and up to two (2) visitors to the site with CSA approved hard hats.

1.22 EXCAVATION SAFETY

A. 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.

B. Ensure that all excavations less than 1.25 metres deep are effectively protected when hazardous ground movement may be expected.

C. 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.

D. 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.

1. 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 the Department of Labour's "Trench Excavation Safety Guide".

1.23 CONFINED SPACE WORK

A. Comply with requirements of Canada Occupational Safety and Health Regulations, Part XI and Consolidated Regulations Newfoundland and Labrador (CRNL) OH&S 1165/96.

B. 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.

C. Develop a confined space entry 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.

1. Ensure that personal protective equipment and emergency rescue equipment appropriate to the nature of the work being performed is provided and used.

D. Provide and maintain training of workers, as required by the Federal and Provincial Legislation.

E. Provide Owner's Representative with a copy of an "Entry Permit" for each entry into the confined space to ensure compliance with Federal and Provincial Legislation.

1.24 HAZARDOUS MATERIALS

A. Should material resembling hazardous materials (asbestos/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.

B. Unless otherwise noted, for hazardous materials abatement and repair, employ the services of a recognized Environmental Consultant to provide all air monitoring and testing services for regulatory requirements.

1.25 HEAVY EQUIPMENT

A. 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.

B. Provide certificate of training in Power Line Hazards for operators of heavy equipment.

C. Obtain written clearance from the power utility where equipment is used in close proximity to (within 5.5 metres) overhead or underground power lines.

D. 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.

1.26 WORK STOPPAGE

A. 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)

EXECUTION (NOT APPLICABLE)

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 DEFINITIONS

.1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

1.3 FIRES

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

1.4 HAZARDOUS MATERIAL HANDLING

.1 Store and handle hazardous materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment

.2 Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.

.3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.

.4 Store and handle flammable and combustible materials in accordance with National Fire Code.

.5 Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.

1.5 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site. Dispose in accordance with project waste management requirements

.2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

.3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

1.6 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 governing regulations and requirements.

.4 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent lands. Maintain in good order for duration of work.

1.7 SITE 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.

1.8 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 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environmental regulations.

.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 100 m of spawning beds.

.8 Do not refuel any type of equipment within 100 meters of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

1.9 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 and around entire construction site.

.5 Have appropriate emergency spill response equipment and rapid clean-up kit on site located adjacent to hazardous materials storage area. Provide personal protective equipment required for clean-up.

.6 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.

.7 Notify Owner's Representative and submit a written spill report to Owner's Representative within 24 hours of occurrence.

1.10 WILDLIFE PROTECTION

.1 Should nests of migratory birds in wetlands be encountered during work, immediately notify Owner's Representative for directives to be followed.
   .1 Do not disturb nest site and neighbouring vegetation until nesting is completed.
   .2 Minimize work immediately adjacent to such areas until nesting is completed.
   .3 Protect these areas by following recommendations of Canadian Wildlife Service.

END OF SECTION 01 35 43

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 Types of items described in this Section:
  .1 Administrative and procedural requirements for quality assurance and quality control.

.2 Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  .1 Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  .2 Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  .3 Requirements for Contractor to provide quality-assurance and -control services required by Owner's Representative, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

.3 Types of items you will not find described in this Section:
  .1 Allowances for testing and inspecting allowances.
  .2 Developing a schedule of required tests and inspections.
  .3 Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

.1 Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

.2 Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Owner's Representative.

.3 Mock-ups: Full size physical assemblies that are constructed on-site. Mock-ups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mock-ups are not Samples. Unless otherwise indicated, approved mock-ups establish the standard by which the Work will be judged.

.4 Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

.5 Product Testing: Tests and inspections that are performed by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

.6 Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

.7 Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

.8 Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

.9 Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

.1 Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.

.10 Experienced: When used with an entity or individual, *experienced* means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

.1 Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Owner's Representative for a decision before proceeding.

.2 Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Owner's Representative for a decision before proceeding.

1.5 SUBMITTALS

.1 Shop Drawings: For laboratory mock-ups, provide plans, sections, and elevations, indicating materials and size of mock-up construction.

.1 Indicate manufacturer and model number of individual components.

.2 Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 SUBMITTALS

.1 Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

.2 Contractor's Quality-Control Manager Qualifications: For supervisory personnel.

.3 Testing Agency Qualifications: For testing agencies specified in *Quality Assurance* Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

.4 Schedule of Tests and Inspections: Prepare in tabular form and include the following:

.1 Specification Section number and title.
.2 Entity responsible for performing tests and inspections.
.3 Description of test and inspection.
.4 Identification of applicable standards.
.5 Identification of test and inspection methods.
.6 Number of tests and inspections required.
.7 Time schedule or time span for tests and inspections.
.8 Requirements for obtaining samples.
.9 Unique characteristics of each quality-control service.

1.7 CONTRACTOR'S QUALITY-CONTROL PLAN

.1 Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice of Award, and not less than five days prior to preconstruction conference. Submit in format acceptable to Owner's Representative. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities. Coordinate with Contractor's construction schedule.

.2 Quality-Control Personnel Qualifications: Engage qualified full-time personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
.1 Project quality-control manager may also serve as Project superintendent .

.3 Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

.4 Testing and Inspection: Include in quality-control plan a comprehensive schedule of Work requiring testing or inspection, including the following:
.1 Contractor-performed tests and inspections including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections.
.2 Owner-performed tests and inspections indicated in the Contract Documents, including tests and inspections indicated to be performed by the Commissioning Authority, if applicable.

.5 Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements and approved mock-ups.

.6 Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Owner's Representative has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.8 REPORTS AND DOCUMENTS

.1 Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
.1 Date of issue.
.2 Project title and number.
.3 Name, address, and telephone number of testing agency.
.4 Dates and locations of samples and tests or inspections.
.5 Names of individuals making tests and inspections.
.6 Description of the Work and test and inspection method.

.7 Identification of product and Specification Section.
.8 Complete test or inspection data.
.9 Test and inspection results and an interpretation of test results.
.10 Record of temperature and weather conditions at time of sample taking and testing and inspecting.
.11 Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
.12 Name and signature of laboratory inspector.
.13 Recommendations on retesting and reinspecting.

.2 Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
.1 Name, address, and telephone number of technical representative making report.
.2 Statement on condition of substrates and their acceptability for installation of product.
.3 Statement that products at Project site comply with requirements.
.4 Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
.5 Results of operational and other tests and a statement of whether observed performance complies with requirements.
.6 Statement whether conditions, products, and installation will affect warranty.
.7 Other required items indicated in individual Specification Sections.

.3 Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
.1 Name, address, and telephone number of factory-authorized service representative making report.
.2 Statement that equipment complies with requirements.
.3 Results of operational and other tests and a statement of whether observed performance complies with requirements.
.4 Statement whether conditions, products, and installation will affect warranty.
.5 Other required items indicated in individual Specification Sections.

.4 Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.9 QUALITY ASSURANCE

.1 General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

.2 Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

.3 Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

.4 Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

.5 Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

.6 Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
- .1 Requirements of authorities having jurisdiction shall supersede requirements for specialists.

.7 Testing Agency Qualifications: An independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

.8 Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

.9 Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

.10 Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
- .1 Contractor responsibilities include the following:
  - .1 Provide test specimens representative of proposed products and construction.
  - .2 Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
  - .3 Provide sizes and configurations of test assemblies, mock-ups, and laboratory mock-ups to adequately demonstrate capability of products to comply with performance requirements.
  - .4 Build site-assembled test assemblies and mock-ups using installers who will perform same tasks for Project.
  - .5 Build laboratory mock-ups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
  - .6 When testing is complete, remove test specimens, assemblies, mock-ups; do not reuse products on Project.
- .2 Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Owner's Representative, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

.11 Mock-ups: Before installing portions of the Work requiring mock-ups, build mock-ups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
- .1 Build mock-ups in location and of size indicated or, if not indicated, as directed by Owner's Representative.
- .2 Notify Owner's Representative seven days in advance of dates and times when mock-ups will be constructed.
- .3 Employ supervisory personnel who will oversee mock-up construction. Employ workers that will be employed during the construction at the Project.
- .4 Demonstrate the proposed range of aesthetic effects and workmanship.
- .5 Obtain Owner's Representative's approval of mock-ups before starting work, fabrication, or construction.
  - .1 Allow seven days for initial review and each re-review of each mock-up.

.6 Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed Work.

.7 Demolish and remove mock-ups when directed, unless otherwise indicated.

1.10 QUALITY CONTROL

.1 Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

.1 Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

.2 Payment for these services will be made from testing and inspecting allowances, as authorized by Change Orders; or made directly by the Owner.

.3 Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

.2 Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

.1 Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

.2 Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.

.1 Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

.3 Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.

.4 Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in triplicate, of each quality-control service.

.5 Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.

.6 Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

.3 Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section *Submittal Procedures*.

.4 Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

.5 Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

.6 Testing Agency Responsibilities: Cooperate with Owner's Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

.1 Notify Owner's Representative and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

.2 Determine the location from which test samples will be taken and in which in-situ tests are conducted.

.3 Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
.4 Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
.5 Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
.6 Do not perform any duties of Contractor.

.7 Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
.1 Access to the Work.
.2 Incidental labor and facilities necessary to facilitate tests and inspections.
.3 Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
.4 Facilities for storage and field curing of test samples.
.5 Preliminary design mix proposed for use for material mixes that require control by testing agency.
.6 Security and protection for samples and for testing and inspecting equipment at Project site.

.8 Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
.1 Schedule times for tests, inspections, obtaining samples, and similar activities.

.9 Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses. .
.1 Distribution: Distribute schedule to Owner, Owner's Representative, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

.1 Prepare a record of tests and inspections. Include the following:
.1 Date test or inspection was conducted.
.2 Description of the Work tested or inspected.
.3 Date test or inspection results were transmitted to Owner's Representative.
.4 Identification of testing agency or special inspector conducting test or inspection.

.2 Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Owner's Representative's reference during normal working hours.

3.2 REPAIR AND PROTECTION

.1 General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
.1 Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining

areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section *Execution*.

.2 Protect construction exposed by or for quality-control service activities.

.3 Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Types of items described in this Section:
   1. References and Codes.

1.3 REFERENCES AND CODES

A. Perform Work in accordance with National Building Code of Canada (NBCC) 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.

B. Meet or exceed requirements of:
   1. Contract documents.
   2. Specified standards, codes, and referenced documents.

1.4 NATIONAL PARKS ACT

A. For projects located within boundaries of a National Park, perform Work in accordance with National Parks Act.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 This Section describes administrative and procedural requirements for reactive activities to verify that completed Work conforms to Contract Documents requirements.

.2 Having inspection and testing agencies by Contractor or Owner does not relieve the Contractor of their responsibility to perform Work in accordance with Contract Documents.

1.2 RELATED REQUIREMENTS

.1 Section 01 21 00 - Allowances.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 78 00 0 Closeout Submittals.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Cash Allowances for independent inspection and testing services to be retained and paid for by the Contractor as described in Section 01 21 00 – Allowances. This Cash Allowance(s) excludes any inspection and testing that is for the Contractor's own quality control, and excludes inspection and testing required by authority having jurisdiction.

.2 Allow and coordinate access to Work on site, manufacturing off site, and fabrication off site with inspection and testing agencies.

.3 Retain and pay for inspection and testing that are designated for Contractor's own quality control plan, and when testing and inspection are required by AHJ..

.4 Give advanced notice to Departmental Representative and to each inspection/testing agency for inspection and testing required by Contract Documents or by AHJ.

.5 In advance of each test, notify appropriate agency and Departmental Representative in the order that attendance arrangements can be made.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit schedule of testing and inspection activities to Departmental Representative, Owner, applicable Subcontractors, testing agencies, and other affected parties. Include the following:

.1 List each testing and inspection agency

.2 Identify types of tests and inspections for each agency, and cross reference to applicable specification Section number-title in Contract Documents

.3 Description of test and inspection

.4 Identify applicable reference standard

.5 Identify test and inspection method

.6 Indicate number of each test and inspection required

.3 Submit one digital copy of each quality assurance inspection and test report to Departmental Representative, except where a technical specification Section indicates otherwise.

.4 Submit reports for inspection and testing required by Contract Documents or by AHJ and performed by Contractor-retained inspection and testing agencies within ten days after inspection or test is completed, except where a technical specification Section indicates a different time period.

.5 Submit one digital copy and one hardcopy of each quality control inspection and test report to Departmental Representative, except where a technical specification Section indicates otherwise.

.6 Deliver copies of quality control reports to Subcontractor of work being inspected or tested.

1.5 SITE QUALITY CONTROL PROCEDURES

.1 Provide labour, Construction Equipment, and temporary facilities to obtain and handle test samples and materials on site. Arrange for sufficient space to store and cure test samples.

.2 Deliver samples and materials required for testing, as requested in technical specification Sections. Submit with reasonable promptness and in an orderly sequence to avoid delays in Work.

1.6 TESTING AND INSPECTION SERVICES

.1 Owner will retain and pay for independent inspection and testing agencies to inspect, test, or perform other quality control reviews of parts of the work, except where indicated otherwise.

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

.3 Correct defects and deficiencies when they are revealed during inspection or testing as advised by Departmental Representative at no change to Contract Price or Contract Time. Pay costs for retesting and re-inspection. Appointed agency will request additional inspections or tests to ensure full degree of defects or deficiencies are revealed and corrected.

.4 Quality control testing and inspection reports to include the following:

.1 Project name and number

.2 Testing/Inspection agency's name, address, telephone number, and website

.3 Date of issuing report

.4 Dates and locations of tests, inspections, or samples

.5 Description of the Work and test and inspection method

.6 Numbers and titles of associated specification Sections

.7 Test and inspection data and interpretation of test results (e.g., pass or fail)

.8 Ambient conditions at time of test, inspection, or sampling

.9 Recommendations on re-testing and re-inspecting, if applicable

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 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 Types of items described in this Section:
  .1 Requirements for temporary utilities, support facilities, and security and protection facilities.

.2 Types of items you will not find described in this Section:
  .1 Work restrictions and limitations on utility interruptions.
  .2 Disposal of ground water at project site.
  .3 Construction and maintenance of cement concrete pavement for temporary roads and paved areas.

1.3 USE CHARGES

.1 General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's Representative, occupants of Project, testing agencies, and authorities having jurisdiction.

.2 Sewer Service: If Contractor provides his own sewer hock-up, pay usage by all entities for construction operations.

.3 Water Service: If Contractor provides his own water service hock-up, pay use charges for water used by all entities for construction operations.

.4 Electric Power Service: If Contractor provides his own electric power service hock-up, pay electric power service use charges for electricity used by all entities for construction operations.

.5 Water and Sewer Service from Existing System: If the Owner has an existing waters system available to use, it is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

.6 Electric Power Service from Existing System: If the Owner has an existing electric power system available to use, it is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.4 SUBMITTALS

.1 Site Plan: For projects requiring onsite trailers and temporary utility hook-ups, show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

.2 Erosion- and Sedimentation-Control Plan: Show compliance with requirements of authorities having jurisdiction.

.3 Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage, including delivery, handling, and storage provisions for materials subject to water absorption or water damage, discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water damaged Work.

.1 Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

.4 Dust-Control and HVAC-Control Plan: Submit coordination drawing and narrative as required to describe the dust-control and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
.1 Locations of dust-control partitions at each phase of the work.
.2 Other dust-control measures.
.3 Waste management plan.

1.5 QUALITY ASSURANCE

.1 Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

.2 Accessible Temporary Egress: For Work on existing buildings that current has wheel chair access, maintain access.

1.6 PROJECT CONDITIONS

.1 Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Chain-Link Fencing: Minimum 50 mm , 3.8 mm thick, galvanized steel, chain-link fabric fencing; minimum 1.8 m high with galvanized steel pipe posts; minimum 60 mm OD line posts and 73 mm OD corner and pull posts.

.2 Portable Chain-Link Fencing: Minimum 50 mm , 3.8 mm thick, galvanized steel, chain-link fabric fencing; minimum 1.8 m high with galvanized steel pipe posts; minimum 60 mm OD line posts and 73 mm OD corner and pull posts, with 42 mm OD top and bottom rails. Provide concrete bases for supporting posts.

.3 Wood Enclosure Fence: Plywood, 2.4 m high, framed with four 50-by-100 mm rails, wood posts spaced not more than 2.4 m apart.

.4 Polyethylene Sheet: Reinforced, fire-resistive sheet, 0.25 mm minimum thickness, with flame-spread rating of 15 or less per ASTM E 84.

.5 Dust Control Adhesive-Surface Walk-off Mats: Provide mats minimum 914 by 1624 mm.

.6 Insulation: Unfaced mineral-fibre blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

.1 Storage and Fabrication Sheds: for all projects involving the construction of new buildings and when required by the Contractor provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  .1 Store combustible materials apart from building.

2.3 EQUIPMENT

.1 Fire Extinguishers: Portable, ULC rated; with class and extinguishing agent as required by locations and classes of fire exposures.

.2 HVAC Equipment: for all projects involving the construction of new buildings and when required by the Contractor, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control, unless Owner authorizes use of permanent HVAC system.
  .1 Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
  .2 Heating Units: Listed and labelled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
  .3 Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section *Closeout Procedures*.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

.1 Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
  .1 Locate facilities to limit site disturbance as specified in Division 01 Section *Summary*.

.2 Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

.1 General: Install temporary service or connect to existing service.
  .1 Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

.2 Sewers and Drainage:
  .1 For work on existing buildings equipped with sufficient sewers and drainage to meet the Owner's needs and the needs for construction, connect to Owner's existing sewers as required.
  .2 For all other projects: Provide service of size and capacity needed for construction to remove effluent lawfully.

.3 Water Service: Install water distribution piping in sizes and pressures adequate for construction.
  .1 For work on existing buildings equipped with an water service to meet the Owner's needs and the needs for construction, connect to Owner's existing water service as required.
  .2 For all other projects: Provide water service of size and pressures adequate for construction.

.4 Sanitary Facilities:

.1 For work on existing buildings with adequate sanitary facilities to meet the Owner's need and the needs for construction, Use of Owner's existing sanitary facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner.

.2 For all other projects: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

.5 Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

.6 Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.

.1 Prior to commencing work, isolate the HVAC system in area where work is to be performed in accordance with approved coordination drawings.

.1 Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.

.2 Maintain negative air pressure within work area using HEPA-equipped air filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

.2 Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust containment devices.

.3 Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

.7 Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

.1 Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

.8 Electric Power Service: Provide electric power distribution system of sufficient size, capacity, and power characteristics required for construction operations.

.1 For work on existing buildings equipped with an adequate electric service to meet the Owner's needs and the needs for construction, connect to Owner's existing electric power service and maintain equipment in a condition acceptable to Owner.

.2 For all other projects: Provide electric power service of sufficient size, capacity, and power characteristics required for construction operations.

.1 Install electric power service overhead, unless otherwise indicated.

.9 Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

.1 Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

.1 General: Comply with the following:

.1 Provide construction for temporary offices, shops, and sheds located within construction area or within 9 m of building lines.

.2 Maintain support facilities until Owner's Representative schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

.2 Temporary Roads and Paved Areas: For construction projects located on sites not currently provided with road access, construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits.
- .1 Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust.

.3 Traffic Controls: Comply with requirements of authorities having jurisdiction.
- .1 Protect existing site improvements to remain including curbs, pavement, and utilities.
- .2 Maintain access for fire-fighting equipment and access to fire hydrants.

.4 Parking: Owner does not provide parking for construction personnel. Provide temporary parking areas for construction personnel as needed.

.5 Dewatering Facilities and Drains: For projects involving site work or interior excavations comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
- .1 Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
- .2 Remove snow and ice as required to minimize accumulations.

.6 Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
- .1 Identification Signs - New buildings, exterior building renovations, and building expansions: Provide 1200 x 2400 mm professionally painted plywood site sign to design provided by Owner's Representative, unless otherwise indicated.
- .2 Identification Signs - Interior Renovations: Provide 300 x 600 mm professionally painted plastic site sign to design provided by Owner's Representative at each entrance into work area, unless otherwise indicated.
- .3 Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
- .4 Maintain and touch-up signs so they are legible at all times.

.7 Waste Disposal Facilities: Comply with requirements specified in Division 01 Section *Construction Waste Management and Disposal*.

.8 Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel as needed.
- .1 Truck cranes and similar devices used for hoisting materials are considered *tools and equipment* and not temporary facilities.

.9 Temporary Use of New Elevators: For projects involving the installation of new elevators, refer to Division 14 Sections for temporary use of new elevators.

.10 Existing Elevators: For projects within existing buildings having elevators, the use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
- .1 Do not load elevators beyond their rated weight capacity.
- .2 Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

.11 Temporary Stairs: For multi-level building projects where construction of permanent stairs is included in the scope of work, provide temporary stairs where ladders are not adequate, until permanent stairs are available, .

.12 Use of Existing Stairs: For projects where the use of existing stairs is desirable, use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.

.1 Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

.13 Requirements for Temporary Use of Any New Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

.1 Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

.1 Comply with work restrictions specified in Division 01 Section *Summary*.

.2 Temporary Erosion and Sedimentation Control: For projects involving site work, provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of \ authorities having jurisdiction and what is indicated on drawings, whichever is more stringent.

.1 Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.

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

.3 Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.

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

.3 Stormwater Control: For projects involving site work, comply with requirements of authorities having jurisdiction. Provide barriers in and around any excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

.4 Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

.5 Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

.1 Provide only if required.

.6 Site Enclosure Fence: for projects involving the construction of new buildings or foundations or when required by the either authorities having jurisdiction or the Contractor, and before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.

.1 Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.

.2 Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

.7 Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

.8 Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as may be required by authorities having jurisdiction.

.9 Covered Walkway: Where the Owner or members of the public must walk immediately adjacent to or through the construction work site and in other locations specifically indicated or required by authorities having jurisdiction erect protective covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction.
- .1 Construct covered walkways using scaffold or shoring framing.
- .2 Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
- .3 Paint and maintain appearance of walkway for duration of the Work.

.10 Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- .1 Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.

.11 Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
- .1 In only locations specifically indicated construct dustproof partitions with gypsum wallboard with joints taped on occupied side.
- .2 In all other locations construct dustproof partitions with one layer of 0.15 mm polyethylene sheet. Overlap and tape full length of joints.
- .3 Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
- .4 Protect air-handling equipment.
- .5 Provide walk-off mats at each entrance through temporary partition.

.12 Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
- .1 Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
- .2 Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 MOISTURE AND MOLD CONTROL

.1 Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

.2 Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
- .1 Protect porous materials from water damage.
- .2 Protect stored and installed material from flowing or standing water.
- .3 Keep porous and organic materials from coming into prolonged contact with concrete.
- .4 Remove standing water from decks.

.5 Keep deck openings covered or dammed.

.3 Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
- .1 Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
- .2 Keep interior spaces reasonably clean and protected from water damage.
- .3 Periodically collect and remove waste containing cellulose or other organic matter.
- .4 Discard or replace water-damaged material.
- .5 Do not install material that is wet.
- .6 Discard, replace or clean stored or installed material that begins to grow mold.
- .7 Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

.4 Controlled Construction Phase of Construction: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
- .1 Control moisture and humidity inside building by maintaining effective dry-in conditions.
- .2 Use permanent HVAC system to control humidity.
- .3 Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
  - .1 Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48hours are considered defective.
  - .2 Remove materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.6 OPERATION, TERMINATION, AND REMOVAL

.1 Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

.2 Maintenance: Maintain facilities in good operating condition until removal.
- .1 Maintain operation of temporary enclosures, heating, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

.3 Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

.4 Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
- .1 Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
- .2 Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

.3 At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section *Closeout Procedures*.

END OF SECTION

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 Types of items described in this Section:
- .1 Administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

.2 Types of items you will not find described in this Section:
- .1 Products selected under an allowance.
- .2 Procedures for requests for substitutions.
- .3 Applicable industry standards for products specified.

1.3 DEFINITIONS

.1 Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term *product* includes the terms *material*, *equipment*, *system*, and terms of similar intent.
- .1 Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
- .2 New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
- .3 Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

.2 Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words *basis-of-design product*, including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 SUBMITTALS

.1 Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- .1 Include data to indicate compliance with the requirements specified in *Comparable Products* Article.
- .2 Owner's Representative's Action: If necessary, Owner's Representative will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Owner's Representative will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
  - .1 Form of Approval: As specified in Division 01 Section *Submittal Procedures*.

.2 Use product specified if Owner's Representative does not issue a decision on use of a comparable product request within time allocated.

.2 Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section *Submittal Procedures*. Show compliance with requirements.

1.5 QUALITY ASSURANCE

.1 Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

.2 Delivery and Handling:
- .1 Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
- .2 Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
- .3 Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- .4 Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

.3 Storage:
- .1 Store products to allow for inspection and measurement of quantity or counting of units.
- .2 Store materials in a manner that will not endanger Project structure.
- .3 Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
- .4 Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
- .5 Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
- .6 Protect stored products from damage and liquids from freezing.
- .7 Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

.1 Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- .1 Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- .2 Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

.2 Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
- .1 Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

.2 Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

.3 Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.

.3 Submittal Time: Comply with requirements in Division 01 Section *Closeout Procedures*.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

.1 General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

.1 Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

.2 Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

.3 Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

.4 Where products are accompanied by the term *as selected*, Owner's Representative will make selection.

.5 Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

.6 Or Equal: For products specified by name and accompanied by the term *or equal*, or *or approved equal*, or *or approved*, comply with requirements in *Comparable Products* Article to obtain approval for use of an unnamed product.

.2 Product Selection Procedures:

.1 Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

.2 Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

.3 Products:

.1 Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience may be considered at the sole discretion of the Owner's Representative.

.2 Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in *Comparable Products* Article for consideration of an unnamed product.

.4 Manufacturers:

.1 Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience may be considered at the sole discretion of the Owner's Representative.

.2 Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in *Comparable Products* Article for consideration of an unnamed manufacturer's product.

.5 Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in *Comparable Products* Article for consideration of an unnamed product by one of the other named manufacturers.

.3 Visual Matching Specification: Where Specifications require *match Owner's Representative's sample*, provide a product that complies with requirements and matches Owner's Representative's sample. Owner's Representative's decision will be final on whether a proposed product matches.

.1 If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section *Substitution Procedures* for proposal of product.

.4 Visual Selection Specification: Where Specifications include the phrase *as selected by Owner's Representative from manufacturer's full range* or similar phrase, select a product that complies with requirements. Owner's Representative will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

.1 Conditions for Consideration: Owner's Representative will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Owner's Representative may return requests without action, except to record noncompliance with these requirements:

.1 Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

.2 Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

.3 Evidence that proposed product provides specified warranty.

.4 List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

.5 Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 Types of items described in this Section:
- .1 Requirement to carry out work placing maximum emphasis on the areas of:
  - .1 Waste reduction;
  - .2 Diversion of waste from landfill; and
  - .3 Material Recycling.

.2 Types of items you will not find described in this Section:
- .1 Environment Procedures.

1.2 WASTE MANAGEMENT PLAN

.1 Prior to commencement of work, prepare waste Management Workplan.

.2 Workplan to include:
- .1 Waste audit.
- .2 Waste reduction practices.
- .3 Material source separation process.
- .4 Procedures for sending recyclables to recycling facilities.
- .5 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
- .6 Training and supervising workforce on waste management at site.

.3 Workplan to incorporate waste management requirements specified herein and in other sections of the Specifications.

.4 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.

.5 Implement and manage all aspects of Waste Management Workplan for duration of work.

.6 Revise Plan as work progresses addressing new opportunities for diversion of waste from landfill.

1.3 WASTE AUDIT

.1 At project start-up, conduct waste audit of:
- .1 Site conditions identifying salvageable and non-salvageable items and waste resulting from demolition and removal work.
- .2 Projected waste resulting from product packaging and from material leftover after installation work.

.2 Develop written list. Record type, composition, and quantity of various salvageable items and waste anticipated reasons for waste generation and operational factors which contribute to waste.

1.4 WASTE REDUCTION

.1 Based on waste audit, develop waste reduction program.

.2 Structure program to prioritize actions, with waste reduction as first priority, followed by salvage and recycling effort, then disposal as solid waste.

.3 Identify materials and equipment to be:
- .1 Protected and turned over to Owner's Representative when indicated.
- .2 Salvaged for resale by Contractor.
- .3 Sent to recycling facility.
- .4 Sent to waste processing/landfill site for their recycling effort
- .5 Disposed of in approved landfill site.

.4 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:
- .1 Use of a central cutting area to allow for easy access to off-cuts;
- .2 Use of off-cuts for blocking and bridging elsewhere.
- .3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials (such as gypsum board, plywood, ceiling tiles, insulation etc...) to allow for easy incorporation into work whenever possible avoiding unnecessary waste.

.5 Develop other strategies and innovative procedures to reduce waste such as minimizing the extent of packaging used for delivery of materials to site etc...

1.5 MATERIAL SOURCE SEPARATION PROCESS

.1 Develop and implement material source separation process at commencement of work as part of mobilization and waste management at site.

.2 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable, and recyclable materials.
- .1 Use suitable containers for individual collection of items based on intended purpose.
- .2 Locate to facilitate deposit but without hindering daily operations of existing building tenants.
- .3 Clearly mark containers and stockpiles as to purpose and use.

.3 Perform demolition and removal of existing building components and equipment following a systematic deconstruction process.
- .1 Separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
  - .1 Reinstallation into the work where indicated.
  - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties. Sale of such items not permitted on site.
  - .3 Sending as many items as possible to locally available recycling facility.
  - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a *non-mixed state* as recommended by waste processing/landfill sites.

.4 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.

.5 Send leftover material resulting from installation work for recycling whenever possible.

.6 Establish methods whereby hazardous and toxic waste materials, and their containers, encountered or used in the course work are properly isolated, stored on site and disposed in accordance with applicable laws and regulations from authorities having jurisdiction.

.7 Isolate and store existing materials and equipment identified for re-incorporation into the Work. Protect against damage.

1.6 WORKER TRAINING AND SUPERVISION

.1 Provide adequate training to workforce, through meetings and demonstrations, to emphasize purpose and worker responsibilities in carrying out the Waste Management Plan.

.2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of Waste Management Plan to:
- .1 Oversee and supervise waste management during work.
- .2 Provide instructions and directions to all workers and subcontractors on waste reduction, source separation and disposal practices.

.3 Post a copy of Plan in a prominent location on site for review by workers.

1.7 CERTIFICATION OF MATERIAL DIVERSION

.1 Submit to Owner's Representative, copies of certified weigh bills from authorized waste processing sites and sale receipts from recycling/reuse facilities confirming receipt of building materials and quantity of waste diverted from landfill.

.2 Submit data at pre-determined project milestones as determined by Owner's Representative.

.3 Compare actual quantities diverted from landfill with projections made during waste audit.

1.8 DISPOSAL REQUIREMENTS

.1 Burying or burning of rubbish and waste materials is prohibited.

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

.3 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.

.4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.

.5 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.

.6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.

.7 Sale of salvaged items by Contractor to other parties not permitted on site.

END OF SECTION

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 Types of items described in this Section:
- .1 Administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - .1 Substantial Completion procedures.
  - .2 Final completion procedures.
  - .3 Warranties.
  - .4 Final cleaning.

.2 Types of items you will not find described in this Section:
- .1 Submitting final completion construction photographic documentation.
- .2 Progress cleaning of project site.
- .3 Operation and maintenance manual requirements.
- .4 Submitting record drawings, record specifications, and record product data.
- .5 Requirements for instructing owner's personnel.
- .6 Divisions 02 through 49 sections for specific closeout and special cleaning requirements for the work in those Sections.

1.3 SUBSTANTIAL COMPLETION

.1 Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
- .1 Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
- .2 Advise Owner of pending insurance changeover requirements.
- .3 Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
- .4 Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
- .5 Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
- .6 Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
- .7 Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
- .8 Complete startup testing of systems.
- .9 Submit test/adjust/balance records.
- .10 Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
- .11 Advise Owner of changeover in heat and other utilities.
- .12 Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- .13 Complete final cleaning requirements, including touchup painting.
- .14 Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

.15 Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

.2 Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner's Representative will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Owner's Representative, that must be completed or corrected before certificate will be issued.
- .1 Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- .2 Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION

.1 Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
- .1 Submit a final Application for Payment according to Division 01 Section *Payment Procedures*.
- .2 Submit certified copy of Owner's Representative's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

.2 Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner's Representative will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
- .1 Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

.1 Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
- .1 Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
- .2 Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
- .3 Include the following information at the top of each page:
  - .1 Project name.
  - .2 Date.
  - .3 Name of Owner's Representative.
  - .4 Name of Contractor.
  - .5 Page number.
- .4 Submit list of incomplete items in the following format:
  - .1 Three paper copies of product schedule or list, unless otherwise indicated.

1.6 WARRANTIES

.1 Submittal Time: Submit written warranties on request of Owner's Representative for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

.2 Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

.1 Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 215-by-280-mm paper.

.2 Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

.3 Identify each binder on the front and spine with the typed or printed title *WARRANTIES*, Project name, and name of Contractor.

.3 Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

.1 Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

.1 General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

.2 Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

.1 Complete the following cleaning operations, as applicable to the project, before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

.1 Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

.2 Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

.3 Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

.4 Remove tools, construction equipment, machinery, and surplus material from Project site.

.5 Remove snow and ice to provide safe access to building.

.6 Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

.7 Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

.8 Sweep concrete floors broom clean in unoccupied spaces.

.9 Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

.10 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

.11 Remove labels that are not permanent.

.12 Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

.1 Do not paint over *ULC* and other required labels and identification, including mechanical and electrical nameplates.

.13 Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

.14 Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

.15 Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

.16 Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

.17 Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.

.1 Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report upon completion of cleaning upon request.

.18 Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

.19 Leave Project clean and ready for occupancy.

.20 If final cleaning is not to a standard acceptable to the owner, the owner, with prior notice to the contractor, may opt to have owners cleaning staff perform final cleaning at a cost to the contractor. Full owner burden rates will apply.

.3 Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests if pest problems are suspected by the Owner's Representative. Prepare a report.

.4 Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section *Construction Waste Management and Disposal*.

END OF SECTION

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 Types of items described in this Section:
  .1 Administrative and procedural requirements for project record documents, including the following:
    .1 Record Drawings.

.2 Types of items you will not find described in this Section:
  .1 Record specifications.
  .2 Record product data.
  .3 Miscellaneous record submittals.
  .4 Final property survey.
  .5 General closeout procedures.
  .6 Operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

.1 Record Drawings: Comply with the following:
  .1 Number of Copies: Submit two set(s) of marked-up record prints.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

.1 Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.
  .1 Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    .1 Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    .2 Accurately record information in an acceptable drawing technique.
    .3 Record data as soon as possible after obtaining it.
    .4 Record and check the markup before enclosing concealed installations.
    .5 Cross-reference record prints to corresponding archive photographic documentation.
  .2 Content: Types of items requiring marking include, but are not limited to, the following:
    .1 Dimensional changes to Drawings.
    .2 Revisions to details shown on Drawings.
    .3 Depths of foundations below first floor.
    .4 Locations and depths of underground utilities.
    .5 Revisions to routing of piping and conduits.
    .6 Revisions to electrical circuitry.
    .7 Actual equipment locations.
    .8 Duct size and routing.

.9 Locations of concealed internal utilities.
.10 Changes made by Change Order or Construction Change Directive.
.11 Changes made following Owner’s Representative's written orders.
.12 Details not on the original Contract Drawings.
.13 Field records for variable and concealed conditions.
.14 Record information on the Work that is shown only schematically.

.3 Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.

.4 Mark record sets with erasable, red-coloured pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

.5 Mark important additional information that was either shown schematically or omitted from original Drawings.

.6 Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

.2 Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

.1 Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner’s Representative's reference during normal working hours.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 19 – Construction/Demolition Waste Management And Disposal.

.2 Section 03 20 00 - Concrete Reinforcing.

.3 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

.1 Codes and Standards referenced in this section refers to the latest edition t h e r e o f .

.2 Canadian Standards Association (CSA)

.1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.
.2 CAN/CSA-O86.1, Engineering Design in Wood (Limit States Design).
.3 CSA O121, Douglas Fir Plywood.
.4 CSA O151, Canadian Softwood Plywood.
.5 CSA S269.1, Falsework for Construction Purposes.
.6 CAN/CSA-S269.3, Concrete Formwork.

1.3 SUBMITTALS

.1 Submit shop drawings for formwork and falsework in accordance with Section 01330 • Submittal Procedures.

.2 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings. Comply with CAN/CSA-S269.3, for formwork drawings.

.3 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.

.4 Indicate sequence of erection and removal of formwork/falsework as directed by Engineer/Architect.

.5 Each shop drawing submission shall bear stamp and signature of qualified professional engineer registered or licensed in Province of Newfoundland and Labrador, Canada.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Formwork materials:

.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121.

.2 For concrete with special architectural features, use formwork materials to CAN/CSA-A23.1.

.2 Tubular column forms: round, spirally wound laminated fiber forms, internally treated with release material. Spiral pattern to show in hardened concrete.

.3 Form ties:

.1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface.

.2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.

.4 Form liner:

.1 Plywood: medium density overlay Douglas Fir to CSA O121, Canadian Softwood Plywood to CSA O151, T and G thickness as indicated.

.5 Form release agent: chemically active release agents containing compounds that react with free lime in concrete resulting in water insoluble soaps, non-toxic, biodegradable.

.6 Falsework materials: to CSA-S269.1.

.7 Sealant: to Section 07 92 10 - Joint Sealing.

PART 3 - EXECUTION

3.1 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Fabricate and erect falsework in accordance with CSA S269.1.

.3 Refer to architectural drawings for concrete members requiring architectural exposed finishes.

.4 Do not place shores and mud sills on frozen ground.

.5 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.6 Fabricate and erect formwork in accordance with CAN/CSA-S269.3, Latest Edition, to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1.

.7 Align form joints and make watertight. Keep form joints to minimum.

.8 Locate horizontal form joints for exposed columns 2400 mm above finished floor elevation.

.9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.11 Construct forms for architectural concrete, and place ties as indicated and/or as directed. Joint pattern not necessarily based on using standard size panels or maximum permissible spacing of ties.

.12 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.13 Clean formwork in accordance with CAN/CSA-A23.1, before placing concrete.

3.2 REMOVAL AND RESHORING

.1 Leave formwork in place for following minimum periods of time after placing concrete.

.1 3 days for walls and sides of beams.

.2 5 days for columns.

.3 1 day for footings and abutments.

.2 Provide all necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.3 Space reshoring in each principal direction at not more than 3000 mm apart.

.4 Re-use formwork and falsework subject to requirements of CAN/CSA-A23.1.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 19 - Construction/Demolition Waste Management And Disposal.

.2 Section 03 10 00 - Concrete Forming and Accessories.

.3 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

.1 Codes and Standards referenced in this section refers to the latest edition thereof.

.2 ACI 315R, Manual of Engineering and Placing Drawings for Reinforced Concrete Structure.

.3 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

.4 CAN3-A23.3, Design of Concrete Structures for Buildings.

.5 CSA G30.3, Cold Drawn Steel Wire for Concrete Reinforcement.

.6 CSA G30.5, Welded Steel Wire Fabric for Concrete Reinforcement.

.7 CAN/CSA-G30.18, Billet-Steel Bars for Concrete Reinforcement.

.8 CSA G30.14, Welded Deformed Steel Wire for Concrete Reinforcement.

.9 CAN/CSA-G40.21, Structural Quality Steels.

.10 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.11 CSA W186-, Welding of Reinforcing Bars in Reinforced Concrete Construction.

.12 ANSI/ACI 315, Details and Detailing of Concrete Reinforcement.

1.3 SHOP DRAWINGS

.1 Submit shop drawings including placing of reinforcement in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate on shop drawings, bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and mechanical splices if approved by Engineer/Architect, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada. ANSI/ACI 315 and ACI 315R, Manual of Engineering and Placing Drawings.

.3 Detail lap lengths and bar development lengths to CAN3-A23.3, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Substitute different size bars only if permitted in writing by Engineer/Architect.

.2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

.3 Cold-drawn annealed steel wire ties: to CSA G30.3,

.4 Welded steel wire fabric: to CSA G30.5. Provide in flat sheets only.

.5 Chairs, bolsters, bar supports, spacers: to CAN/CSA-A23.1.

.6 Mechanical splices: subject to approval of Engineer/Architect.

.7 Plain round bars: to CAN/CSA-G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CAN/CSA-A23.1, ANSI/ACI 315, Latest Edition and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

.2 Obtain Engineer's/Architect approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Engineer/Architect, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Engineer/Architect with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcing work.

.2 Upon request inform Engineer/Architect of proposed source of material to be supplied.

PART 3 - EXECUTION

3.1 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by Engineer/Architect.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars which develop cracks or splits.

3.2 PLACING REINFORCEMENT

.1 Place reinforcing steel as indicated on reviewed placing drawings and in accordance with CAN/CSA-A23.1.

.2 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply a thick even film of mineral lubricating grease.

.3 Prior to placing concrete, obtain Engineer/Architect approval of reinforcing material and placement.

.4 Ensure cover to reinforcement is maintained during concrete pour.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 19 – Construction/Demolition Waste Management And Disposal

.2 Section 03 10 00 - Concrete Forming and Accessories.

.3 Section 03 20 00 - Concrete Reinforcing

.4 Section 03 35 05 - Concrete Floor Hardeners.

.5 Section 03 35 00 - Concrete Finishing.

1.2 MEASUREMENT PROCEDURES

.1 Cast-in-place concrete will not be measured but will be paid for as a fixed price item.

1.3 REFERENCES

.1 Codes and Standards referenced in this section refers to the latest edition t h e r e o f .

.2 ASTM C260, Specification for Air-entraining Admixtures for Concrete.

.3 ASTM C309, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.4 ASTM C494, Specification for Chemical Admixtures for Concrete.

.5 ASTM D1751, Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (No extruding and Resilient Bituminous Types).

.6 CAN/CGSB-51.34, Vapor Barrier, Polyethylene Sheet for Use in Building Construction.

.7 CAN/CSA-A5, Portland Cement.

.8 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

.9 CAN/CSA-A23.2, Methods of Test for Concrete.

.10 CAN3-A266.4, Guidelines for the Use of Admixtures in concrete.

1.4 SAMPLES

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

.2 At least 4 weeks prior to commencing work, inform Engineer/Architect of proposed source of aggregates and provide access for sampling.

1.5 CERTIFICATES

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

.2 Minimum 4 weeks prior to starting concrete work submit to Engineer/Architect manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:

.1 Portland cement.
.2 Blended hydraulic cement.
.3 Supplementary cementing materials.
.4 Grout.
.5 Admixtures.
.6 Aggregates.
.7 Water.
.8 Waterstops.
.9 Waterstop joints.
.10 Joint filler.

.3 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1.

.4 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1.

1.6 SOURCE QUALITY CONTROL

.1 Have all concrete produced and delivered by a ready-mix plant that is a member of the Atlantic Provinces Ready Mixed Concrete Association (APRMCA) and holds a current “Certificate of Ready Mixed Concrete Production Facilities” issued by the Association. Submit a copy of this certificate to the Engineer/Architect for approval.

1.7 QUALITY ASSURANCE

.1 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures in accordance with Section 01 45 00 - Quality Control for Engineer's/Architect approval for following items:

.1 Falsework erection.
.2 Hot weather concrete.
.3 Cold weather concrete.
.4 Curing.
.5 Finishes.
.6 Formwork removal.
.7 Joints.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Portland cement: to CAN/CSA-A5.

.2 Water: to CAN/CSA-A23.1.

.3 Aggregates: to CAN/CSA-A23.1. Coarse aggregates to be normal density.

.4 Air entraining admixture: to ASTM C260.

.5 Chemical admixtures: to ASTM C494, Engineer/Architect to approve accelerating or set retarding admixtures during cold and hot weather placing.

.6 Non-premixed dry pack grout: composition of non-metallic aggregate Portland cement with sufficient water for the mixture to retain its shape when made into a ball by hand and capable of developing compressive strength of 50 MPa at 28 days.

.7 Ribbed waterstops: extruded PVC of sizes indicated shop welded corner and intersecting pieces.

.1 Tensile strength: to ASTM D412, method A, Die "C".
.2 Elongation: to ASTM D412, method A, Die "C", minimum 275%.
.3 Tear resistance: to ASTM D624, method A, Die "B".

.8 Pre-molded joint fillers:

.1 Bituminous impregnated fiber board: to ASTM D1751.

.9 Polyethylene film: minimum mm thickness to ASTM C171.

.10 Bonding adhesive: as approved by Engineer/Architect.

2.2 MIXES

.1 Proportion normal density concrete in accordance with CAN/CSA-A23.1, Alternative 1 to give following quality and yield for all concrete.

.1 Cement:
.1 Type 10 Portland cement.
.2 Minimum compressive strength at 28 days: 25 MPa, 20 MPa for interior floor slabs.

.3 Minimum cement content: 300 kg/m3 of concrete.
.4 Class of exposure: C-2.
.5 Nominal size of coarse aggregate: 20 mm.
.6 Slump at time and point of discharge: 75 to 100 mm.
.7 Air content: 5 to 8 %.
.8 Chemical admixtures: admixtures in accordance with ASTM C494.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Obtain Engineer's/Architect's approval before placing concrete. Provide 24 h notice prior to placing of concrete.

.2 Pumping of concrete is permitted only after approval of equipment and mix.

.3 Ensure reinforcement and inserts are not disturbed during concrete placement.

.4 Prior to placing of concrete obtain Engineer's/Architect's approval of proposed method for protection of concrete during placing and curing in adverse weather.

.5 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.6 Do not place load upon new concrete until authorized by Engineer/Architect.

3.2 CONSTRUCTION

.1 Complete cast-in-place concrete work in accordance with CAN/CSA-A23.1.

.2 Sleeves and inserts.

.1 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated or approved by Engineer/Architect.

.2 Where approved by Engineer/Architect, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 x 100 mm not indicated, must be approved by Engineer/Architect.

.3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Engineer/Architect before placing of concrete.

.4 Check locations and sizes of sleeves and openings shown on drawings.

.5 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

.3 Anchor bolts.

.1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.

.2 With approval of Engineer/Architect, grout anchor bolts in preformed holes or holes drilled after concrete has set. Formed holes to be minimum 100 mm diameter. Drilled holes to be manufacturer's recommendations.

.3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.

.4 Set bolts and fill holes with shrinkage compensating grout.

.5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.

.4 Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100 % contact over grouted area.

.5 Finishing.

.1 Finish concrete in accordance with CAN/CSA-A23.1.

.2 Use procedures acceptable to Engineer/Architect or those noted in CAN/CSA-A23.1, to remove excess bleed water. Ensure surface is not damaged.

.3 Wet cure using polyethylene sheets placed over sufficiently hardened concrete to prevent damage. Overlap adjacent edges 150 mm and tightly seal with sand on wood planks. Weigh sheets down to maintain close contact with concrete during the entire curing period.

.4 Where burlap is used for moist curing, place two pre-wetted layers on concrete surface and keep continuously wet during curing period.

.5 Finish concrete floor to meet requirements of CGSB 81-GP-1M.

.6 Concrete floor to have finish hardness equal or greater than Mohs hardness in accordance with CAN/CSA-A23.1.

.7 Provide swirl-troweled finish for exterior walks, ramps, pads.

.8 Provide float finish for interior floor slabs.

.9 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radius edges unless otherwise indicated.

.6 Waterstops.

.1 Install waterstops to provide continuous water seal. Do not distort or pierce waterstop in such a way as to hamper performance. Do not displace reinforcement when installing waterstops. Use equipment to manufacturer's requirements to field splice waterstops. Tie waterstops rigidly in place.

.2 Use only straight heat sealed butt joints in field. Use factory welded corners and intersections unless otherwise approved by Engineer/Architect.

.7 Joint fillers.

.1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Engineer/Architect. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

.2 Locate and form, isolation, construction and expansion joints as indicated. Install joint filler.

.3 Use 12 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 12 mm of finished slab surface unless indicated otherwise.

.8 Damp-proof membrane.

.1 Install damp-proof membrane under concrete slabs-on-grade inside building.

.2 Lap damp-proof membrane minimum 150 mm at joints and seal.

.3 Seal punctures in damp-proof membrane before placing concrete. Use patching material at least 150 mm larger than puncture and seal.

3.3 SITE TOLERANCE

.1 Concrete tolerance in accordance with CAN/CSA-A23.1, straight edge method Ff =30 Fl = 20.

3.4 FIELD QUALITY CONTROL

.1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Engineer/Architect in accordance with CAN/CSA-A23.1, and Section 01 45 00 - Quality Control.

.2 Engineer/Architect will pay for costs of tests as specified in Section 01 29 83 - Payment Procedures: Testing Laboratory Services. Costs of retesting due to deficient work will be paid for by contractor, by credit change order.

.3 Engineer/Architect will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.4 Non-destructive Methods for Testing Concrete shall be in accordance with CAN/CSA-A23.2.

.5 Provide Certificate of Field Quality Inspection and Testing to Engineer/Architect for inclusion in Commissioning Manual.

.6 Inspection or testing by Engineer/Architect will not augment or replace Contractor quality control nor relieve the Contractor of his contractual responsibility.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 21 05 01 – Common Work Results - Mechanical

1.2 SUMMARY OF WORK

.1 This Contract involves the installation of a new underground supply and return heating main between the engineering and business buildings on the Memorial University of Newfoundland St. John's campus.

.2 This project will take place in two (2) phases:

.1 Phase 1: Installation of new underground supply and return heating main. Final tie-ins to existing system will not be completed in this phase. The extents of Phase 1 are identified on the mechanical drawing package. This phase to be completed in the Fall/Winter 2026. Piping system to be fully pressure tested prior to backfilling. Pipe ends to be boxed out and protected prior to backfilling. Coordinate exact protection requirements with manufacturer. Pipe supplier to visit site to confirm piping is installed per manufacturer's guidelines prior to backfilling.

.2 Phase 2: Contractor to excavate and complete final connection and tie-in of new piping mains to the existing system. This phase to be completed in the Spring 2027. Existing piping mains to be abandoned in place.

.3 Contractor to include all excavation, backfilling, paving, concrete/sidewalk/curb reinstallation per Civil package.

1.3 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 – Submittal Procedures. All mechanical submissions shall be electronic searchable and editable (non-locked) PDF's.

.2 Shop drawings; submit drawings stamped and signed for approval by Owner's Representative.

.3 Shop drawings to show:

.1 Mounting arrangements.

.2 Operating and maintenance clearances.

.4 Shop drawings and product data accompanied by:

.1 Detailed drawings of bases, supports, and anchor bolts.

.2 Acoustical sound power data, where applicable.

.3 Points of operation on performance curves.

.4 Manufacturer to certify current model production.

.5 Certification of compliance to applicable codes.

.5 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.

.6 Closeout Submittals:

.1 Provide operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Operation and maintenance manual approved by, and final copies deposited with, Owner's Representative before final inspection.

.3 Operation data to include:

.1 Control schematics for systems including environmental controls.

.2 Description of systems and their controls.

.3 Description of operation of systems at various loads together with reset schedules and seasonal variances.

.4 Operation instruction for systems and component.

.5 Description of actions to be taken in event of equipment failure.

.6 Valves schedule and flow diagram.

.7 Colour coding chart.

.4 Maintenance data to include:

.1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.

.2 Data to include schedules of tasks, frequency, tools required and task time.

.5 Performance data to include:

.1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.

.2 Equipment performance verification test results.

.3 Special performance data as specified.

.4 Testing, adjusting and balancing reports as specified in Section 23 05 93 - Testing, Adjusting and Balancing for HVAC.

.6 Approvals:

.1 Submit 2 copies of draft Operation and Maintenance Manual to Owner's Representative for approval. Submission of individual data will not be accepted unless directed by Owner's Representative.

.2 Make changes as required and re-submit as directed by Owner's Representative.

.7 Additional data:

.1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.

.2 Provide a detailed trouble shooting and fault location guide to facilitate quick return of malfunctioning equipment to operation.

.3 In addition to manufacturers data sheets provide typed text descriptions and diagrams as required to supplement product data. Provide logical sequence fo instructions for each procedure, incorporating manufacturers instructions as required. This shall address proper start up and shut down of each piece of equipment to facilitate all maintenance

.4 Provide flow diagrams for all systems.

.5 Start up reports for all systems.

.8 Site records:

.1 Owner's Representative will provide 1 set of reproducible mechanical drawings or AutoCAD files. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.

.2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.

.3 Use different colour for each service.

.4 Make available for reference purposes and inspection.

.9 As-built drawings:

.1 Prior to start of Testing, Adjusting and Balancing for HVAC, finalize production of as-built drawings.

.2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).

.3 Submit to Owner's Representative for approval and make corrections as directed.

.4 Perform testing, adjusting and balancing for HVAC using as-built drawings.

.5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.

.10 Submit copies of as-built drawings for inclusion in final TAB report.

1.4 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Refer to Section 21 05 01 – Common Work Results - Mechanical

.3 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.4 Mock ups: Complete mock-ups of all installations for each room for approval prior to completing installation. Contractor shall not proceed with any work until installation is acceptable to owner. Quality of installation will be paramount and only the highest quality installation will be acceptable. All required re-work shall be completed at the cost of the contractor until installation is deemed acceptable.

.5 Provide all materials and equipment and perform all labor required to install complete and operable mechanical systems as indicated on the drawings, as specified, and as required by code.

.6 Contract document drawings for mechanical work (HVAC, plumbing, fire protection, and controls) are diagrammatic and are intended to convey sizing, scope and general arrangement only.

.7 Install all mechanical equipment and appurtenances in accordance with manufacturers' recommendations, contract documents, and applicable codes and regulations.

.8 Provide vibration isolation for all mechanical equipment to prevent transmission of vibration to building structure. Provide vibration isolators for all piping supports connected to, and within 15m of, isolated equipment (except at base elbow supports and anchor points) throughout mechanical equipment rooms. Unless otherwise noted isolators shall be type H1 Section 23 05 48 – Vibration and Seismic Controls for HVAC Piping and Equipment. Ceiling suspended fans and equipment shall have

.9 Coordinate construction of all mechanical work with architectural, structural, civil, electrical work, etc., shown on other contract document drawings

.10 All tests shall be completed before any mechanical equipment or piping insulation is applied.

.11 Locate all temperature, pressure, and flow measuring devices in accessible locations with the straight section of pipe or duct up- and downstream as recommended by the manufacturer for good accuracy.

.12 Coordinate all equipment connections with manufacturers' certified drawings. Coordinate and provide all duct and piping transitions required for final equipment connections to furnished equipment. Field verify and coordinate all duct and piping dimensions before fabrication.

.13 Concrete housekeeping pads to suit mechanical equipment shall be sized and located by the mechanical contractor. Minimum concrete pad thickness shall be 150mm. Pad shall extend beyond the equipment a minimum of 150 mm on each side. Concrete housekeeping pads shall be provided by the general contractor. It shall be the responsibility of the mechanical contractor to coordinate the size and location of concrete housekeeping pads with the general contractor.

.14 When mechanical work (HVAC, plumbing, sheet metal, fire protection, controls, balancing etc.) is subcontracted, it shall be the mechanical contractor's responsibility to coordinate subcontractors and the associated contracts.

.15 The locations of all items shown on the drawings or called for in the specifications that are not definitely fixed by dimensions are approximate only. The exact locations necessary to secure the best conditions and results must be determined by the project site conditions. Do not scale drawings.

.16 All miscellaneous steel required to ensure proper installation and as shown in details for piping, ductwork, and equipment (unless otherwise noted) shall be furnished and installed by the mechanical contractor.

.17 All equipment, piping, ductwork, etc., shall be supported as detailed, specified, and required to provide a vibration-free installation.

.18 All ductwork, piping, and equipment supported from structural steel shall be coordinated with the general contractor.

.19 Locations and sizes of all floor, wall, and roof openings shall be coordinated with all other trades involved.

.20 Refer to typical details for ductwork, piping, and equipment installation.

.21 Install piping so all valves, strainers, unions, traps, flanges, and other appurtenances requiring access are accessible.

.22 All valves shall be installed so that the valve remains in service when equipment or piping on the equipment side of the valve is removed.

.23 Provide chainwheel operators for all valves in equipment rooms mounted greater than 2.1 m" above floor level; chain shall extend to 2.1m above floor level.

.24 Unions and/or flanges shall be installed at each piece of equipment, in bypasses, and in long piping runs (30 m or more) to permit disassembly for alteration and repairs.

.25 All piping work shall be coordinated with all trades involved. Offsets in piping around obstructions shall be provided at no additional cost to the owner.

.26 Certain items such as rises and drops in ductwork, access doors, volume dampers, etc., are indicated on the contract document drawings for clarity for a specific location requirement and shall not be interpreted as the extent of the requirements for these items.

.27 Coordinate diffuser, register, and grille locations with architectural reflected ceiling plans, lighting, and other ceiling items and make minor duct modifications to suit.

.28 Provide flexible connections in all ductwork systems (supply, return, and exhaust) connected to air handling units, fans, and other equipment that require vibration isolation. Flexible connections shall be provided at the point of connection to the equipment unless otherwise indicated.

.29 All ductwork shall be coordinated with all trades involved. Offsets in ducts, including divided ducts and transitions around obstructions, shall be provided at no additional cost to the owner.

.30 Provide access doors in ductwork to provide access for all smoke detectors, fire dampers, smoke dampers, volume dampers, humidifiers, coils, and other items located in the ductwork that require service and/or inspection.

.31 Smoke detectors shall be furnished and wired by the electrical contractor. The mechanical contractor shall be responsible for coordinating with the electrical contractor and in accordance with the manufacturer's printed instructions to ensure proper operation of smoke detectors

.32 Louver sizes, locations, and attachment details shall be coordinated with the general contractor. Refer to specification.

.33 All equipment provided by Div 21, 22, 23, 25 and shall be started up a factory trained and experienced journeyman or approved equal. All equipment shall have start up reports provided in an organized PDF with bookmarks. (Mech Addendum 2)

1.5 MAINTENANCE

.1 Furnish spare parts in accordance with Section 01 78 00 - Closeout Submittals as follows:

.1 One set of packing for each pump.

.2 One casing joint gasket for each size pump.

.3 One head gasket set for each heat exchanger.

.4 One glass for each gauge glass.

.5 One filter cartridge or set of filter media for each filter or filter bank in addition to final operating set.

.2 Provide one set of special tools required to service equipment as recommended by manufacturers and in accordance with Section 01 78 00 - Closeout Submittals.

.3 Furnish one commercial quality grease gun, grease and adapters to suit different types of grease and grease fittings.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Waste Management and Disposal:

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

PART 2 PRODUCTS

2.1 MATERIALS

.1 All materials used on this project shall be new and CSA approved unless noted otherwise.

.2 Access Doors

.1 Access doors for concealed equipment, valves to allow for operation, inspection adjusting, and servicing shall be provided by general contractor in accordance with requirements of architectural specifications. Mechanical to coordinate size, location and quantity.

.3

PART 3 EXECUTION

3.1 INSTALLATION

.1 Install all work in keeping to trade and industry practice with all work completed and overseen by journeymen experienced in the relevant trade.

.2 All work to be completed to the requirement of manufacturers with direct involvement for manufacturer trained technicians to ensure the equipment is installed and commissioned properly.

.3 Plan and coordinate all work to maintain set project schedule.

.4 Coordinate all work with other trades to plan all installation prior to starting and fabrication work or installation works. Failure to do so and resulting interferences will require re-work at the contractor's expense.

.5 All ceiling mounted equipment requiring service access shall have locations planned to allow for ease of access from ceiling hatches/tiles. Any equipment not deemed easily accessible by owner/engineer will be required to be removed and reinstalled to allow proper access. This would include but not be limited to VAV boxes, reheat coils, valves, dampers, etc.

3.2 PAINTING, REPAIRS AND RESTORATION

.1 Do painting in accordance with Section 09 91 23 - Interior Painting.

.2 Prime and touch up marred finished paintwork to match original.

.3 Restore to new condition, finishes which have been damaged.

3.3 CLEANING

.1 Clean interior and exterior of all systems including strainers. Protect open ends of ducts, diffusers, grilles and registers during construction to prevent ingress of dust and dirt into interior of ducts. If dust or dirt is detected prior to startup, vacuum interior of all ducts and air handling units. Prior to vacuuming use video camera to record condition of ductwork. Also use video camera to record condition of ducts after cleaning.

3.4 FIELD QUALITY CONTROL

.1 Site Tests: conduct following tests in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - SUBMITTALS.

.1 Submit tests as specified in other sections of this specification.

.2 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.5 DEMONSTRATION

.1 Owner's Representative will use equipment and systems for test purposes prior to acceptance. Contractor to supply labour, material, and instruments required for testing.

.2 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.

.3 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.

.4 Instruction duration time requirements as specified in appropriate sections.

.5 Owner's Representative may record these demonstrations on video tape for future reference.

3.6 PROTECTION

.1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 11 – Cleaning.

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

.3 Section 07 84 00 – Firestopping.

.4 Section 23 08 02 – Cleaning and Start-up of Mechanical Piping Systems.

1.2 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Owner's Representative.

1.3 QUALITY ASSURANCE

.1 Installers to be certified to journeyperson.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CONNECTIONS TO EQUIPMENT

.1 In accordance with manufacturer's instructions unless otherwise indicated.

3.2 CLEARANCES

.1 Provide clearance around supply and return piping systems and insulation as per manufacturer's recommendations.

.2 Provide space for disassembly, removal of equipment and components as recommended by manufacturer or as indicated (whichever is greater) without interrupting operation of other system, equipment, components.

3.3 DRAINS

.1 Install piping with grade in direction of supply water flow except as indicated.

.2 Install drain valve at low points in piping systems, at equipment and at section isolating valves.

.3 Drain valves: NPS 3/4 gate or globe valves unless indicated otherwise, with hose end male thread, cap and chain. Install new drain valve in manhole/pit located outside the engineering building.

3.4 DIELECTRIC WATERWAY FITTINGS AND COUPLINGS

.1 General: Compatible with system, to suit pressure rating of system.

.2 Locations: Where dissimilar metals are joined.

.3 NPS 2 and under: Isolating waterway fittings, unions or bronze valves.

.1 Waterway fittings shall be complete with thermoplastic liner.

.4 Over NPS 2: Isolating waterway fittings and flanges.

.1 Waterway fittings shall be complete with thermoplastic liner.

3.5 PIPEWORK INSTALLATION

.1 Installation by certified journeyperson.

.2 Screwed fittings jointed with Teflon tape or pipe dope as recommended by manufacturer.

.3 Protect openings against entry of foreign material.

.4 Assemble piping using fittings manufactured to ANSI standards.

.5 Install concealed pipework to minimize furring space, maximize headroom, conserve space.

.6 Slope piping, except where indicated, in direction of flow for positive drainage and venting.

.7 Install, except where indicated, to permit separate thermal insulation of each pipe.

.8 Group piping wherever possible and as indicated.

.9 Ream pipes, remove scale and other foreign material before assembly.

.10 Use eccentric reducers at pipe size changes to ensure positive drainage and venting.

.11 Provide for thermal expansion as indicated.

.12 Pipe Bedding:

.1 Maximum Grain Size: <32mm
.2 Maximum 9% Weight: 0.075mm
.3 0r 3% Weight: 0.020mm
.4 Non Uniformity Figure: d60/d10 > 1.8
.5 The excavated material can be used immediately in the friction fixated stretches after elimination of objects greater than 60mm. The backfilling material must not contain more

than 2% organic material. It must be compressed to such an extent that the requirements for surface stability are maintained.

.6 Pack the backfilling with a shovel and compact the gravel around the pipes by hand. The pipes must be covered by a minimum 100mm of backfilling material.

.7 As the backfilling progresses, any supports under the piping shall be removed.

.8 Compaction 200-500mm above the pipes can be carried out using a flat-bed vibrator with a maximum ground pressure of 100kPa.

3.6 THERMAL EXPANSION ABSOPRTION PADS

.1 Provide LOGSTOR, ETHAFOAM, or other manufacturer approved foam pads composed of crosslinked PE with closed cells to absorb expansion movements in locations noted on drawings.

.2 The foam pads are available in one size and are site-adjusted to the actual casing diameter.

.3 Provide number of pads and place in locations approved by the manufacturer.

.4 The location and number of pads shown on drawings is diagrammatic and exact number and configuration shall be approved by the manufacturer prior to installation.

.5 The foam pads shall be wrapped in a geotextile plastic fabric to protect the foam pads during backfilling. The product type and installation method to be coordinated with the manufacturer prior to installation.

3.7 SLEEVES

.1 General: Install where pipes pass through masonry, concrete structures, fire rated assemblies, and elsewhere as indicated.

.2 Material: Schedule 40 black steel pipe.

.3 Construction: Foundation walls and where sleeves extend above finished floors to have annular fins continuously welded on at mid-point.

.4 Sizes: 6 mm minimum clearance between sleeve and uninsulated pipe or between sleeve and insulation.

.5 Installation:

.1 Concrete, masonry walls, concrete floors on grade: Terminate flush with finished surface.

.2 Other floors: Terminate 25 mm above finished floor.

.3 Before installation, paint exposed exterior surfaces with heavy application of zinc-rich paint.

.6 Sealing:

.1 Foundation walls, below grade floors, and manhole entry: Waterproof non-hardening mastic. Link Seal or approved alternate.

.2 Sleeves installed for future use: Fill with lime plaster or other easily removable filler.

.3 Ensure no contact between copper pipe or tube and sleeve.

3.8 FLUSHING OUT OF PIPING SYSTEMS

.1 In accordance with Section 23 08 02 - Cleaning and Start-up of Mechanical Piping Systems.

.2 Before start-up, clean interior of piping systems in accordance with requirements of Section 01 74 11 - Cleaning supplemented as specified in relevant sections of other Divisions.

.3 Preparatory to acceptance, clean and refurbish equipment and leave in operating condition, including replacement of filters in piping systems.

3.9 PRESSURE TESTING OF EQUIPMENT AND PIPEWORK

.1 Advise Owner's Representative, 48 hours minimum prior to performance of pressure tests.

.2 Pipework: Test as specified in relevant sections of other sections or Divisions.

.3 Maintain specified test pressure without loss for 4 hours minimum unless specified for longer period of time in relevant sections of other Divisions.

.4 Prior to tests, isolate equipment and other parts which are not designed to withstand test pressure or media.

.5 Conduct tests in presence of Owner's Representative. Work to be carried out in off hours after 5 p.m., weekends or holidays.

.6 Pay costs for repairs or replacement, retesting, and making good. Owner's Representative to determine whether repair or replacement is appropriate.

.7 Insulate or conceal work only after approval and certification of tests by Owner's Representative.

3.10 EXISTING SYSTEMS

.1 Connect into existing piping systems at times approved by Owner's Representative.

.2 Request written approval ten (10) working days minimum, prior to commencement of work.

.3 Be responsible for damage to existing plant by this work.

.4 Ensure daily clean-up of existing areas.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.2 Section 23 05 05 - Installation of Pipework.

.3 Section 23 21 13.02 - Hydronic Systems: Steel

1.2 REFERENCES

.1 American National Standards Institute/American Society of Mechanical Engineers. (ANSI/ASME)

- .1 ANSI/ASME B31.1, Power Piping.
- .2 ANSI/ASME B31.3, Process Piping.
- .3 ANSI/ASME B31.5 – Refrigeration Piping and Heat Transfer Components.
- .4 ANSI/ASME B31.9 Building Services.
- .5 ANSI/ASME Boiler and Pressure Vessel Code
  - .1 Section I: Power Boilers.
  - .2 Section V: Nondestructive Examination.
  - .3 Section IX: Welding and Brazing Qualifications.

.2 American National Standards Institute/American Water Works Association (ANSI/AWWA)

- .1 ANSI/AWWA C206, Field Welding of Steel Water Pipe.

.3 American Welding Society (AWS)

- .1 AWS C1.1, Recommended Practices for Resistance Welding.
- .2 AWS Z49.1, Safety Welding, Cutting and Allied Process.
- .3 AWS W1, Welding Inspection Handbook.

.4 Canadian General Standards Board

- .1 CAN/CGSB-48.2, Spot Radiography of Welded Butt Joints in Ferrous Materials.

.5 Canadian Standards Association (CSA International)

- .1 CSA W47.2, Certification of Companies for Fusion Welding of Aluminum.
- .2 CSA W48 series-, Filler Metals and Allied Materials for Metal Arc Welding.
- .3 CSA B51, Boiler, Pressure Vessel and Pressure Piping Code.
- .4 CSA B52 Mechanical Refrigeration Code.
- .5 CSA W117.2, Safety in Welding, Cutting and Allied Processes.
- .6 CSA W178.1, Certification of Welding Inspection Organizations.
- .7 CSA W178.2, Certification of Welding Inspectors.

.6 Provincial regulations: Boiler, Pressure Vessel and Compressed Gas Regulations.

1.3 QUALIFICATIONS

.1 Welders

.1 Welding qualifications in accordance with CSA B51

.2 Use qualified and licensed welders possessing certificate for each procedure performed from authority having jurisdiction.

.3 Furnish welder's qualifications to Owner's Representative.

.4 Each welder to possess identification symbol issued by authority having jurisdiction.

.5 Certification of companies for fusion welding of aluminum in accordance with CSA W47.2.

.2 Inspectors

.1 Inspectors qualified to CSA W178.2.

1.4 QUALITY ASSURANCE

.1 Registration of welding procedures in accordance with CSA B51, CSA B52 and provincial regulations.

.2 Copy of welding procedures available for inspection.

.3 Safety in welding, cutting and allied processes in accordance with CSA-W117.2.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction / Demolition Waste Management and Disposal, and with the Waste Reduction Workplan.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility as approved by Owner's Representative.

PART 2 PRODUCTS

2.1 ELECTRODES

.1 Electrodes: in accordance with CSA W48 Series.

PART 3 EXECUTION

3.1 WORKMANSHIP

.1 Welding: in accordance with ANSI/ASME B31.1 B31.3, B 31.5, B31.9, ANSI/ASME Boiler and Pressure Vessel Code, Sections I and IX and ANSI/AWWA C206, using procedures conforming to

AWS C1.1, and special procedures specified elsewhere in Mechanical Division and applicable requirements of provincial authority having jurisdiction.

3.2 INSTALLATION REQUIREMENTS

.1 Identify each weld with welder's identification symbol.

.2 Backing rings:

.1 Where used, fit to minimize gaps between ring and pipe bore.

.2 Do not install at orifice flanges.

.3 Fittings:

.1 NPS 2 and smaller: install welding type sockets.

.2 Branch connections: install welding tees or forged branch outlet fittings.

3.3 INSPECTION AND TESTS - GENERAL REQUIREMENTS

.1 Review weld quality requirements and defect limits of applicable codes and standards with Owner's Representative before work is started.

.2 Formulate "Inspection and Test Plan" in co-operation with Owner's Representative.

.3 Do not conceal welds until they have been inspected, tested and approved by inspector.

.4 Provide for inspector to visually inspect welds during early stages of welding procedures in accordance with Welding Inspection Handbook. Repair or replace defects as required by codes and as specified.

3.4 SPECIALIST EXAMINATIONS AND TESTS

.1 General

.1 Perform examinations and tests by specialist engaged by contractor, qualified in accordance with CSA W178.1 and CSA W178.2 and approved by Owner's Representative.

.2 To ANSI/ASME Boiler and Pressure Vessels Code, Section V, CSA B51 and requirements of authority having jurisdiction.

.3 Inspect and test welds in accordance with "Inspection and Test Plan" by non-destructive visual examination and magnetic particle (hereinafter referred to as "particle") tests and/or spot or full gamma ray radiographic (hereinafter referred to as "radiography") tests. As per applicable reference standard or as specified.

.2 Hydrostatically test welds to requirements of ANSI/ASME B31.1.

.3 Visual examinations: include entire circumference of weld externally and wherever possible internally.

.4 Failure of visual examinations:

.1 Upon failure of welds by visual examination, perform additional testing as directed by Owner's Representative of total of up to 10 % of welds, selected at random by Owner's Representative by radiographic tests.

.5 Full radiographic tests for piping systems.

.1 Spot radiography to CAN/CGSB-48.2.

.1 Conduct spot radiographic tests of up to 50% of welds, selected at random by Owner's Representative from welds which would be most difficult to repair in event of failure after system is operational.

.2 Radiographic film:

.1 Identify each radiographic film with date, location, name of welder, and submit to Owner's Representative. Replace film if rejected because of poor quality.

.3 Interpretation of radiographic films:

.1 By qualified radiographer.

.4 Failure of radiographic tests:

.1 Extend tests to welds by welder responsible when those welds fail tests.

.6 Magnetic particle tests for piping systems as indicated.

3.5 DEFECTS CAUSING REJECTION

.1 As described in ANSI/ASME B31.1 and ANSI/ASME Boiler and Pressure Vessels Code.

3.6 REPAIR OF WELDS WHICH FAILED TESTS

.1 Re-inspect and re-test repaired or re-worked welds at Contractor's expense.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Materials and requirements for the identification of piping systems, duct work, valves and controllers, including the installation and location of identification systems.

.2 Sustainable requirements for construction and verification.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

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

.3 Section 09 91 23 - Interior Painting.

1.3 REFERENCES

.1 Canadian Gas Association (CGA)

.1 CSA/CGA B149.1, Natural Gas and Propane Installation Code.

.2 CSAZ7396.1 Medical Gas pipeline Systems – Part 1: Pipelines for medical gases and vacuum.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-24.3, Identification of Piping Systems.

.3 National Fire Protection Association (NFPA)

.1 NFPA 13, Standard for the Installation of Sprinkler Systems.

.2 NFPA 14, Standard for the Standpipe and Hose Systems.

1.4 SUBMITTALS

.1 Product Data:

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

.2 Product data to include paint colour chips, other products specified in this section.

.3 Samples:

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

.2 Samples to include nameplates, labels, tags, lists of proposed legends.

1.5 QUALITY ASSURANCE

.1 Quality assurance submittals: submit following in accordance with Section 01 33 00 – Submittal Procedures.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with Section 01 61 00 – Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Waste Management and Disposal:

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

.2 Dispose of unused paint coating material at official hazardous material collections site approved by Owner's Representative.

.3 Do not dispose of unused paint coating material into sewer system, into streams, lakes, onto ground or in locations where it will pose health or environmental hazard.

PART 2 PRODUCTS

2.1 SYSTEM NAMEPLATES

.1 Colours:

.1 Hazardous: red letters, white background.

.2 Elsewhere: black letters, white background (except where required otherwise by applicable codes).

.2 Construction:

.1 3 mm thick laminated plastic or white anodized aluminum, matte finish, with square corners, letters accurately aligned and machine engraved into core.

.3 Sizes:

.1 Conform to following table:

Size # mm	Sizes (mm)	No. of Lines	Height of Letters (mm)
1	10 x 50	1	3
2	13 x 75	1	5
3	13 x 75	2	3
4	20 x 100	1	8
5	20 x 100	2	5
6	20 x 200	1	8
7	25 x 125	1	12
8	25 x 125	2	8

Size # mm	Sizes (mm)	No. of Lines	Height of Letters (mm)
9	35 x 200	1	20

.2 Use maximum of 25 letters/numbers per line.

.4 Locations:

.1 Terminal cabinets, control panels: Use size # 5.

.2 Equipment in Mechanical Rooms: Use size # 9.

2.2 EXISTING IDENTIFICATION SYSTEMS

.1 Apply existing identification system to new work.

.2 Where existing identification system does not cover for new work, use identification system specified this section.

.3 Before starting work, obtain written approval of identification system from Owner's Representative. Identification tagging subject to change.

2.3 VALVES, CONTROLLERS

.1 Brass tags 12 mm diameter with stamped identification data filled with black paint.

.2 Include flow diagrams for each system, of approved size, showing charts and schedules with identification of each tagged item, valve type, service, function, normal position, location of tagged item.

2.4 LANGUAGE

.1 Identification to be in English.

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 datasheet.

3.2 INSTALLATION

.1 Perform work in accordance with CAN/CGSB-24.3 except as specified otherwise.

.2 Provide ULC and/or CSA registration plates as required by respective agency.

3.3 NAMEPLATES

.1 Locations:

.1 In conspicuous location to facilitate easy reading and identification from operating floor.

.2 Standoffs:

.1 Provide for nameplates on hot and/or insulated surfaces.

.3 Protection

.1 Do not paint, insulate or cover in any way.

3.4 VALVES, CONTROLLERS

.1 Valves and operating controllers, except at plumbing fixtures, radiation, or where in plain sight of equipment they serve: Secure tags with non-ferrous chains or closed "S"hooks.

.2 Install one copy of flow diagrams, valve schedules mounted in frame behind non-glare glass where directed by Owner's Representative. Provide one copy (reduced in size if required) in each operating and maintenance manual.

.3 Number valves in each system consecutively. Identification shall start with "ER" prefix followed by valve number.

3.5 CLEANING

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, rubbish, tools and equipment.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Thermal insulation for piping and piping accessories in commercial type applications.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

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

.3 Section 07 92 00 – Joint Sealing.

.4 Section 23 07 16 – HVAC Equipment Insulation.

.5 Section 23 05 53.01 – Mechanical Identification.

1.3 REFERENCES

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

.1 ASHRAE Standard 90.1, Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings (Including all Addenda).

.2 American Society for Testing and Materials (ASTM)

.1 ASTM B209M, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate Metric.

.2 ASTM C335, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.

.3 ASTM C411, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.

.4 ASTM C449/C449M, Standard Specification for Mineral Fibre-Hydraulic-Setting Thermal Insulating and Finishing Cement.

.5 ASTM C533 Standard specification for Calium Silicate Insulation Block and Pipe.

.6 ASTM C547 Standard Specification for Mineral Fibre Pipe Insulation.

.7 ASTM C795, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.

.8 ASTM C921, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.

.9 ASTM D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

.3 Canadian General Standards Board (CGSB)

.1 CGSB 51-GP-52Ma, Vapour Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.

.2 CAN/CGSB-51.53, Poly (Vinyl Chloride) Jacketting Sheet, for Insulated Pipes, Vessels and Round Ducts

.4 Department of Justice Canada (Jus)

.1 Canadian Environmental Assessment Act (CEAA), c. 37.

.2 Canadian Environmental Protection Act, (CEPA), c. 33.

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

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

.1 Material Safety Data Sheets.

.6 Manufacturer's Trade Associations

.1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards.

.7 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.

.8 National Energy Code of Canada for Buildings (NECB).

1.4 DEFINITIONS

.1 For purposes of this section:

.1 "CONCEALED" - insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.

.2 "EXPOSED" - will mean "not concealed" as defined herein.

.2 TIAC ss:

.1 CRF: Commercial Rectangular Finish

.2 CPF: Commercial Piping Finish.

1.5 SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.

.3 Shop Drawings:

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

.4 Samples:

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

.2 Submit for approval: complete assembly of each type of insulation system, insulation, coating, and adhesive proposed. Mount sample on 12 mm plywood board. Affix label beneath sample indicating service.

.5 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.

.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.2 Instructions: submit manufacturer's installation instructions to Owner's Representative.

1.6 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: certified in performing work of this Section, and have at least 5 years successful experience in this size and type of project, qualified to standards of TIAC.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.3 Deliver materials to site in original factory packaging, labeled with manufacturer's name, address.

.2 Storage and Protection:

.1 Protect from weather, construction traffic.

.2 Protect against damage.

.3 Store at temperatures and conditions required by manufacturer.

.3 Waste Management and Disposal:

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

.2 Place excess or unused insulation and insulation accessory materials in designated containers.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Owner's Representative.

.4 Dispose of unused adhesive material at official hazardous material collections site approved by Owner's Representative.

PART 2 PRODUCTS

2.1 GENERAL

.1 The new underground heating pipe shall be insulated using the unique U.I.P factory insulation process, as supplied by GF Urecon Ltd., complete with black polyethylene jacket with UV inhibitor.

2.2 INSULATION

.1 Material: Rigid polyurethane foam, factory applied.

.2 Thickness: 50.8mm (“)

.3 Density: (ASTM D1622) 35 to 48 kg/m^3 (2.2 to 3.0 lbs/ft^3).

.4 Closed cell content: (ASTM D6226) 90%, minimum.

.5 Water absorption: (ASTM D2842) maximum 4.0% by volume.

.6 Thermal Conductivity: (ASTM C518) 0.020 to 0.025 W/m°C. (0.14 to 0.17 Btu-in/ft^2-hr-°F)

.7 Temperature range: Cryogenic to 93.3°C (200°F)

2.3 JACKETS

.1 The outer protective jacket shall consist of a Tape Wrap System:

.1 Jacket Material: Scapa #366 polyethylene, UV inhibited, formulated for superior cold environment properties.

.2 Sealant: Butyl rubber and resin, applied hot in 0.63 mm (25 mils) multiple layers providing a shrink tightened waterproof bond throughout it’s entire length.

.3 Minimum elongation: (ASTM D1000) 300%, 6 month test.

.4 Tensile Strength: (ASTM D1000) 6.83kg/cm wide (38 lbs/in wide).

2.4 INSULATED PIPE JOINTS

.1 Butt-fused and welded joints:

.1 Insulated pipe joints shall be completed using the pre-fabricated rigid polyisocyanurate or polyurethane foam half shells and sealed with the application of suitable wrap around adhesive lined heat shrink sleeves as supplied by GF Urecon. The heat shrink sleeves shall overlap the insulation jacket by a minimum of 75.2mm (3in) on either side of the joint.

.2 Nominal 50mm thick, 305mm long insulation kit supplied with a heat shrinkable cover, slipjoint protective sheet and accessories to be field installed.

2.5 INSULATION KITS FOR FITTINGS

.1 Insulation kits for fittings shall consist of polyisocyunurate or polyurethan foam half shells with a fully bonded polymer protective coating on all exterior and interior surfaces, including ends. All

insulation kits shall be supplied complete with silicone caulking for seams, stainless bands and gear clamps.

.2 Insulation for elbows shall be factory installed and fitted with extension legs. Factory insulated short radius elbows shall be fitted with 50mm standard Urecon U.I.P urethane foam and heavy polymer coating outer jacket GF-Urecon BL-85-20EP waterproof assembly.

2.6 EXPANSION ABSORPTION FOAM PADS

.1 Provide LOGSTOR, ETHAFOAM, or other manufacturer approved foam pads composed of crosslinked PE with closed cells to absorb expansion movements in locations noted on drawings.

.2 The foam pads are available in one size and are site-adjusted to the actual casing diameter.

.3 Provide number of pads and place in locations approved by the manufacturer.

PART 3 EXECUTION

3.1 MANUFACTURE'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

.2 Follow manufacturer's Installation Instruction #16E for the handling and installation of GF Urecon U.I.P Pre-Insulated Steel Piping System.

.3 Contractor shall allow, at minimum, one site visit per Phase for the manufacturer to review and confirm site installation prior to backfilling.

3.2 PRE- INSTALLATION REQUIREMENT

.1 Pressure testing of piping systems and adjacent equipment to be complete, witnessed and certified.

.2 Surfaces to be clean, dry, free from foreign material. Pipe shall be cleaned of surface dust or dirt to ensure adhesion of the foam to the pipe.

3.3 INSTALLATION

.1 Install in accordance with TIAC National Standards.

.2 Apply materials in accordance with manufacturers instructions and this specification.

.3 GF Urecon provides suitable urethane half shells with accessories to insulate the cut-back area of the pipe joints once they have been welded.

.4 Pre-insulated steel piping should be laid and continuously supported on undisturbed or well compacted soil. The width of the excavation shall be sufficient to allow for the proper specified compaction of the side fill.

.5 Clean backfill should surround the pipe to at least 100mm above the pipe.

.6 LOGSTOR expansion absorption pads can be used to absorb expansion movements. Follow specific manufacturer's guidelines to ensure compliance.

3.4 CLEANING

.1 Proceed in accordance with Manufacturer's Recommendations.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Procedures and cleaning solutions for cleaning mechanical piping systems.

1.2 RELATED SECTIONS

.1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

.2 Section 23 05 93 - Testing, Adjusting and Balancing of HVAC

.3 Section 23 25 00 - HVAC Water Treatment Systems.

1.3 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

.1 ASTM E202 – Standard Test Methods for Analysis of Ethylene Glycols and Propylene Glycols.

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

.1 Material Safety Data Sheets (MSDS).

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 – Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.2 Submit plan for cleaning and sample report showing information that will be provided.

.3 Quality assurance submittals: submit following in accordance with Section 01 33 00 – Submittal Procedures.

.1 Instructions: submit manufacturer's installation instructions.

.1 Owner's Representative will make available one (1) copy of systems supplier installation instructions.

1.5 QUALITY ASSURANCE

.1 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling and unloading.

.1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 61 00 – Common Product Requirements.

.2 Waste Management and Disposal:

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

PART 2 PRODUCTS

2.1 CLEANING SOLUTIONS

.1 Low foaming detergent at all temperatures

.2 No pH neutralization required

.3 Designed for use on most metals including aluminium

.4 Bio-degradable

.5 Phosphate Free

.6 Nitrite Free

PART 3 EXECUTION

3.1 CLEANING HYDRONIC SYSTEMS

.1 Timing

.1 Systems to be operational, hydrostatically tested and with safety devices functional, before cleaning is carried out.

.2 Cleaning Agency:

.1 Retain qualified water treatment specialist to perform system cleaning.

.3 Cleaning procedures:

.1 Provide detailed report outlining proposed cleaning procedures at least 4 weeks prior to proposed starting date. Report to include:

.1 Cleaning procedures, flow rates, elapsed time.

.2 Chemicals and concentrations to be used.

.3 Inhibitors and concentrations.

.4 Specific requirements for completion of work.

.5 Special precautions for protecting piping system materials and components.

.6 Complete analysis of water to be used to ensure water will not damage systems or equipment.

.4 Conditions at time of cleaning of systems

.1 Systems to be free from construction debris, dirt and other foreign material.

.2 Control valves to be operational, fully open to ensure that terminal units can be cleaned properly.

.3 Strainers to be clean prior to initial fill.

.4 Install temporary filters on pumps not equipped with permanent filters.

.5 Install pressure gauges on strainers to detect plugging.

.5 Report on Completion of Cleaning

.1 When cleaning is completed, submit report, complete with certificate of compliance with specifications of cleaning component supplier.

.6 Hydronic Systems:

.1 Flush system thoroughly with water, back flush pump, strainers, blow down drain valves and risers to remove all loose debris. Remove accumulated sludge in boilers if necessary.

.2 Then add 2% solution of low foaming detergent to the system through a by-pass feeder or another feeding device.

.3 Circulate for 36 hours at 82° C.

.4 During recirculation, back flush strainers, drain valves and risers at their lowest point once every 8 hours.

.5 Drain cleaning water completely.

.6 Then fill and drain system several times. Circulate 30 minutes every time the system is refilled.

.7 Bleed system at several points until water is clear and non-foaming. Clean pump strainers.

.8 Draw a water sample from the system and send it to out laboratory for analysis.

.9 If the laboratory report is satisfactory, the system must then be treated with the appropriate formula.

3.2 START-UP OF HYDRONIC SYSTEMS

.1 After cleaning is completed and system is filled:

.1 Establish circulation and expansion tank level, set pressure controls.

.2 Ensure air is removed.

.3 Check pumps to be free from air, debris, possibility of cavitation when system is at design temperature.

.4 Dismantle system pumps used for cleaning, inspect, replace worn parts, install new gaskets and new set of seals.

.5 Clean out strainers repeatedly until system is clean.

.6 Check water level in expansion tank with cold water with circulating pumps OFF and again with pumps ON.

.7 Repeat with water at design temperature.

.8 Check pressurization to ensure proper operation and to prevent water hammer, flashing, cavitation. Eliminate water hammer and other noises.

.9 Bring system up to design temperature and pressure slowly over a 48 hour period.

.10 Adjust pipe supports, hangers, springs as necessary.

.11 Monitor pipe movement, performance of expansion joints, loops, guides, anchors.

.12 If sliding type expansion joints bind or if bellows type expansion joints flex incorrectly, shut down system, re-align, repeat start-up procedures.

.13 Re-tighten bolts, etc. using torque wrench, to compensate for heat-caused relaxation. Repeat several times during commissioning.

.14 Check operation of drain valves.

.15 Adjust valve stem packings as systems settle down.

.16 Fully open all balancing valves (except those that are factory-set).

.17 Check operation of over-temperature protection devices on circulating pumps.

.18 Adjust alignment of piping at pumps to ensure flexibility, adequacy of pipe movement, absence of noise or vibration transmission.

3.3 CLEANING

.1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.2 At an application for substantial completion the sections of the system shall be clean and clear. The contractor shall engage two water treatment companies to take their own sample and provide an analysis, the results of which are to be provided to the owner.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes.

.1 Materials and installation for steel piping, valves and fittings for hydronic systems in building services piping.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME).

.1 ASME B16.1,Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

.2 ASME B16.3, Malleable Iron Threaded Fittings: Classes 150 and 300.

.3 ASME B16.5, Pipe Flanges and Flanged Fittings: NPS through NPS 24 Metric/Inch Standard.

.4 ASME B16.9, Factory-Made Wrought Buttwelding Fittings.

.5 ASME B18.2.1, Square Hex, Heavy Hex and Askew Head Bolts and Hex, Heavy Hex, Hex Flange. Loded Head and Lag Screws (Inch Series).

.6 ASME B18.2.2, Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series).

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM A47/A47M, Standard Specification for Ferritic Malleable Iron Castings.

.2 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.

.3 ASTM A536, Standard Specification for Ductile Iron Castings.

.4 ASTM B61, Standard Specification for Steam or Valve Bronze Castings.

.5 ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings.

.6 ASTM E202, Standard Test Method for Analysis of Ethylene Glycols and Propylene Glycols.

.3 American Water Works Association (AWWA).

.1 AWWA C111, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.4 Canadian Standards Association (CSA International).

.1 CSA B242, Groove and Shoulder Type Mechanical Pipe Couplings.

.2 CAN/CSA W48, Filler Metals and Allied Materials for Metal Arc Welding.

.5 Manufacturer's Standardization of the Valve and Fittings Industry (MSS).

.1 MSS-SP-67, Butterfly Valves.

.2 MSS-SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.

.3 MSS-SP-71, Cast Iron Swing Check Valves Flanged and Threaded Ends.

.4 MSS-SP-80, Bronze Gate, Globe, Angle and Check Valves.

.5 MSS-SP-85, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

.6 Province of Newfoundland and Labrador Boiler, Pressure Vessel and Compressed Gas Regulations.

1.3 SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures.

.2 Closeout Submittals.

.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 – Closeout Submittals, and include the following:

.1 Special servicing requirements.

1.4 QUALITY ASSURANCE

.1 Health and Safety.

.1 Do construction occupational health and safety in accordance with Section 01 35 29.06 – Health and Safety Requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal.

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Fold up metal and plastic banding, flatten and place in designated area for recycling.

PART 2 PRODUCTS

2.1 CANADIAN REGISTRATION NUMBERS (CRN)

.1 All hydronic piping and components DN 25 or larger carrying water at 66°C or higher shall be considered pressure piping and shall be in accordance with the province of Newfoundland and Labrador Boiler, Pressure Vessel and Compressed Gas Regulations.

.2 All hydronic pressure piping, pressure fittings, and pressure piping system components shall be required to carry C.R.N for the Province of Newfoundland and Labrador. Submit shop drawings of pressure piping components clearly showing applicable C.R.N.

2.2 PIPE

.1 Steel pipe: to ASTM A53/A53M, Grade B as follows:

.1 To NPS 6: schedule 40.

.2 NPS 8 and 10: schedule 40.

.3 NPS 12 and over, 10 mm wall thickness.

2.3 PIPE JOINTS

.1 NPS 2 and under: screwed fittings with PTFE tape or lead-free pipe dope.

.2 NPS 2-1/2 and over: welding fittings and flanges to CAN/CSA W48.

.3 Flanges: plain ASME, B16.1, raised face, slip-on or weld neck to ASME B16.5.

.4 Orifice flanges: slip-on raised face, 2100 kPa.

.5 Flange gaskets: to AWWA C111

.6 Pipe thread: taper.

.7 Bolts and nuts: to ASME B18.2.1 and ASME B18.2.2.

2.4 FITTINGS

.1 Screwed fittings: malleable iron, to ASME B16.3, Class 150.

.2 Butt-welding fittings: steel, to ASME B16.9.

2.5 VALVES

.1 Connections:

.1 NPS2 and smaller: screwed ends.

.2 NPS2.1/2 and larger: Flanged or grooved ends.

.2 Drain valves: Gate, Class 125 non-rising stem, solid wedge disc.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

.1 Install pipework in accordance with Section 23 05 05 – Installation of Pipework by certified journeyperson and authority having jurisdiction.

.2 Pipe and fittings shall be shipped to Urecon's facility for installation of insulation at the factory. Coordinate piping lengths, fittings, etc. on site and with MUN FM prior to ordering.

3.2 CLEANING, FLUSHING AND START-UP

.1 In accordance with Section 23 08 02 – Cleaning and Start-up of Mechanical Piping Systems.

3.3 TESTING

.1 Test system in accordance with Section 21 05 01 – Common Work Results - Mechanical. Minimum 1.5 times working pressure or 1000 kPa.

3.4 PERFORMANCE VERIFICATION

.1 In accordance with Section 23 08 01 – Performance Verification of Mechanical Systems.

.2 Provide copies of test reports for Commissioning Manuals.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 This Section defines correction to maximum dry density to take into account aggregate particles larger than 4.75 mm.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.ASTM C127-88, Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate.

.3 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³) (600kN•m/m³).

.4 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³).

.5 ASTM D4253, Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

1.3 DEFINITIONS

.1 Corrected maximum dry density is defined as:

.1 D =(D1xD2)(F1 x D2) + (F2 x D1)

.2 Where: D = corrected maximum dry density kg/m^3.

.1 F1 = fraction (decimal) of total field sample passing 4.75 mm sieve.

.2 F2 = fraction (decimal) of total field sample retained on 4.75 mm sieve (equal to 1.00 • F1)

.3 D1 = maximum dry density, kg/m3of material passing 4.75 mm sieve determined in accordance with Method A C of ASTM D698.

.4 D2 = bulk density, kg/m3, of material retained on 4.75 mm sieve, equal to 1000G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127.

.3 For free draining aggregates, determine D1 (maximum dry density) to ASTM D4253, dry method when directed by Engineer/Architect.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 31 23 10 - Excavating, Trenching and Backfilling

.3 Section 32 11 23 - Aggregate Base Courses

.4 Section 32 11 19 - Granular Sub- base

.5 Section 32 12 18 - Asphalt Paving for Building Sites

.6 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.

.2 American Society for Testing and Materials (ASTM International).

.1 ASTM D4791, Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.3 SOURCE QUALITY CONTROL

.1 Source of materials to be incorporated into work or stockpiles requires approval.

.2 Inform Engineer/Architect of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing production.

.3 If, in opinion of Engineer/Architect, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.

.4 Should a change of material source be proposed advise Engineer/Architect 4 weeks in advance of proposed change to allow sampling and testing.

.5 Acceptance of material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if its field performance is found to be satisfactory.

1.4 SAMPLES

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

.2 Aggregate will be subject to continual sampling by Engineer/Architect during production.

.3 Provide Engineer/Architect with access to source and processed material for sampling and testing.

.4 Bear the cost of sampling and testing of aggregates which fail to meet specified requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.

.2 Flat and elongated particles of coarse aggregate: to ASTM D4791.

.1 Greatest dimension to exceed five times least dimension.

.3 Fine aggregates satisfying requirements of applicable section to be one, or blend of following:

.1 Natural sand.

.2 Manufactured sand.

.3 Screenings produced in crushing of quarried rock, boulders, gravel or slag.

.4 Coarse aggregates satisfying requirements of applicable section to be one of or blend of following:

.1 Crushed rock or slag.

.2 Gravel and crushed gravel composed of naturally formed particles of stone.

PART 3 - EXECUTION

3.1 TOPSOIL STRIPPING

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.

.2 Commence topsoil stripping of areas as indicated after area has been cleared and removed from site.

.3 Strip topsoil to depths as indicated. Avoid mixing topsoil with subsoil.

.4 Stockpile in locations as directed by Engineer/Architect. Stockpile height not to exceed 2.0 m.

3.2 DEVELOPMENT OF AGGREGATE SOURCE

.1 Contractor to produce aggregates off site.

.2 Contractor to develop aggregate source to prevent contamination of aggregates stockpiled.

3.3 PROCESSING

.1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.

.2 Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by Engineer/Architect.

.3 Wash aggregates, if required to meet specifications. Use only equipment approved by Engineer /Architect.

.4 When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.

3.4 HANDLING

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

3.5 STOCKPILING

.1 Stockpile aggregates on site in locations as indicated unless directed otherwise by Engineer/Architect. Do not stockpile on completed pavement surfaces.

.2 Stockpile aggregates in sufficient quantities to meet Project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Engineer/Architect within 48 h of rejection.

.7 Stockpile materials in uniform layers of thickness as follows:

.1 Max 1.0 m for coarse aggregate and base course materials.

.2 Max 2.0 m for fine aggregate and sub-base materials.

.3 Max 1.5 m for other materials.

.8 Complete each layer over entire stockpile area before beginning next layer.

.9 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

.10 Do not cone piles or spill material over edges of piles.

.11 Do not use conveying stackers.

.12 During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.6 CLEANING

.1 Leave aggregate stockpile site in tidy, well drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 35 43 - Environmental Procedures.

.2 Section 31 23 10 - Excavation, Trenching and Backfilling.

.3 Section 31 23 17 - Rock Removal.

1.2 DEFINITIONS

.1 Clearing consists of cutting off trees and brush vegetative growth to not more than a specified height above ground and disposing of felled trees, previously uprooted trees and stumps, and surface debris.

.2 Close-cut clearing consists of cutting off standing trees, brush, scrub, roots, stumps and embedded logs, removing at, or close to, existing grade and disposing of fallen timber and surface debris.

.3 Clearing isolated trees consists of cutting off to not more than specified height above ground of designated trees, and disposing of felled trees and debris.

.4 Underbrush clearing consists of removal from treed areas of undergrowth, deadwood, and trees smaller than 50 mm trunk diameter and disposing of all fallen timber and surface debris.

.5 Grubbing consists of excavation and disposal of stumps and roots boulders and rock fragments of specified size to not less than a specified depth below existing ground surface.

1.3 STORAGE AND PROTECTION

.1 Prevent damage to fencing, trees, landscaping, natural features, bench marks, existing buildings, existing pavement, utility lines, site appurtenances, water courses, root systems of trees which are to remain.

.2 Repair any damaged items to approval of Engineer/Architect. Replace any trees designated to remain, if damaged, as directed by Engineer /Architect.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PREPARATION

.1 Inspect site and verify with Engineer/Architect, items designated to remain.

.2 Locate and protect utility lines. Preserve in operating condition active utilities traversing site.

.3 Notify utility authorities before starting clearing and grubbing.

3.2 CLEARING

.1 Clear as directed by Engineer/Architect, by cutting at a height of not more than 300 mm above ground. In areas to be subsequently grubbed, height of stumps left from clearing operations to be not more than 1000 mm above ground surface.

.2 Cut off branches and cut down trees overhanging area cleared as directed by Engineer/Architect.

.3 Cut off unsound branches on trees designated to remain as directed by Engineer/Architect.

3.3 CLOSE CUT CLEARING

.1 Close cut clearing to ground level.

.2 Cut off branches down trees overhanging area cleared as directed by Engineer/Architect.

.3 Cut off unsound branches on trees designated to remain as directed by Engineer/Architect.

3.4 ISOLATED TREES

.1 Cut off isolated trees as directed by Engineer/Architect at height of not more than 300mm above ground surface.

.2 Grub out isolated tree stumps.

3.5 UNDERBRUSH CLEARING

.1 Clear underbrush from areas as indicated at ground level.

3.6 GRUBBING

.1 Grub out stumps and roots to not less than 200 mm below ground surface.

.2 Grub out visible rock fragments and boulders, greater than 300 mm in greatest dimension, but less than 0.25 m^3.

3.7 REMOVAL AND DISPOSAL

.1 Remove cleared and grubbed materials off site.

.2 Cut timber greater than 125 mm diameter to 3000mm lengths and stockpile as indicated. Unless otherwise notified, stockpiled timber becomes property Owner.

.3 Dispose of cleared and grubbed materials off site.

.4 Remove diseased trees identified by Engineer/Architect and dispose of this material to approval of Engineer/Architect.

3.8 FINISHED SURFACE

.1 Leave ground surface in condition suitable for immediate grading operations stripping of topsoil to approval of Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.

.2 ASTM D 698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft-lbf/ft³) (600kN-m/m³).

.3 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

1.2 SOIL REPORT

.1 Examine soil report available from Engineer/Architect.

1.3 REGULATIONS

.1 Shore and brace excavations, protect slopes and banks and perform all work in accordance with Provincial and Municipal regulations whichever is more stringent.

.2 Comply with Explosives Act of Canada R.S., c.E-15, s.1. Perform blasting in accordance with Provincial and Municipal regulations. Repair damage to approval of Engineer/Architect. No blasting will be permitted within 3 m of any building and where damage would result.

1.4 TESTS AND INSPECTIONS

.1 Testing of materials and compaction of backfill and fill will be carried out by testing laboratory designated by Engineer/Architect.

.2 Not later than one week before backfilling or filling, provide to designated testing agency, 23 kg sample of backfill for fill material proposed for use.

.3 Do not begin backfilling or filling operations until material has been approved for use by Engineer/Architect.

.4 Not later than 48 h ours before backfilling or filling with approved material, notify Engineer/Architect so that compaction tests can be carried out by designated testing agency.

.5 Before commencing work, conduct, with Engineer/Architect, condition survey of existing structures, trees and other plants, lawns, fencing, service poles, wires, rail tracks and paving, survey bench marks and monuments which may be affected by work.

1.5 BURIED SERVICES

.1 Before commencing work verify the location of all buried services on and adjacent to the site.

.2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.

.3 Remove obsolete buried services within 2 m of foundations. Cap cut-offs.

1.6 PROTECTION

.1 Protect excavations from freezing.

.2 Keep excavations clean, free of standing water, and loose soil.

.3 Where soil is subject to significant volume change due to change in moisture content, cover and protect to Engineer/Architect's Consultants approval.

.4 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.

.5 Protect buried services that are required to remain undisturbed.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular B-Type I, B-Type II, Select Subgrade to OPSS1010. Sand to OPSS1004.

.2 Crushed Granular to CCDG14.02.

.3 Unshrinkable fill: proportioned and mixed to provide:

.1 Maximum compressive strength of 0.4 MPa at 28 days.
.2 Maximum Portland cement content of 25 kg/m ^{3}.
.3 Minimum strength of 0.07 MPa at 24 h.
.4 Concrete aggregates: to CAN/CSA-A23.1,
.5 Portland cement: Type 10.
.6 Slump: 160 to 200 mm.

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

.1 Remove trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, exposed boulders and debris within areas designated on drawings.

.2 Remove stumps and tree roots below footings, slabs, and paving, and to 600 mm below finished grade elsewhere.

.3 Dispose of cleared and grubbed material off site daily to disposal areas acceptable to authority having jurisdiction.

3.2 EXCAVATION

.1 Strip topsoil over areas to be covered by new construction, over areas where grade changes are required, and so that excavated material may be stockpiled without covering topsoil. Stockpile topsoil on site for later use.

.2 Excavate as required to carry out work, in all materials met. Do not disturb soil or rock below bearing surfaces. Notify Engineer/Architect when excavations are complete. If bearings are unsatisfactory, additional excavation will be authorized in writing and paid for as additional work. Excavation taken below depths shown without Engineer/Architect written authorization to be filled with concrete of same strength as for footings at Contractor's expense.

.3 Excavate trenches to provide uniform continuous bearing and support for 150 mm thickness of pipe bedding material on solid and undisturbed ground. Trench widths below point 150 mm above pipe not to exceed diameter of pipe plus 600 mm.

.4 Excavate for slabs and paving to subgrade levels. In addition, remove all topsoil, organic matter, debris and other loose and harmful matter encountered at subgrade level.

3.3 BACKFILLING

.1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by Engineer/Architect.

.2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.

.3 Lateral support: maintain even levels of backfill around structures as work progresses, to equalize earth pressures.

.4 Compaction of subgrade: compact existing subgrade under walks, paving, and slabs on grade, to same compaction as specified for fill. Fill excavated areas with selected subgrade material or gravel and sand compacted as specified for fill.

.5 Placing:

.1 Place backfill, fill and base course material in 150 mm lifts. Add water as required to achieve specified density.

.6 Compaction: compact each layer of material to following densities for material to ASTM D698,

.1 To underside of base courses: 95%.

.2 Base courses: 100%.

.3 Elsewhere: 90%.

.7 In trenches:

.1 Up to 300 mm above pipe or conduit: sand placed by hand.

.2 Over 300 mm above pipe or conduit: native material approved by Engineer/Architect.

.8 Under seeded and sodded areas: use site excavated material to bottom of topsoil except in trenches and within 600 mm of foundations.

.9 Blown rock material, not capable of fine grading, is not acceptable, imported material must be placed on this type of material.

.10 Against foundations (except as applicable to trenches and under slabs and paving): excavated material or imported material with no stones larger than 200 mm diameter within 600 mm of structures.

.11 Underground tanks: use sand to bottom of granular base courses or to bottom of topsoil, as applicable.

3.4 GRADING

.1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by the Engineer/Architect. Grade to be gradual between finished spot elevations shown on drawings.

3.5 SHORTAGE AND SURPLUS

.1 Supply all necessary fill to meet backfilling and grading requirements and with minimum and maximum rough grade variance.

.2 Dispose of surplus material off site.

END OF SECTION

PART 1- GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

.3 Section 01 35 43 - Environmental Procedures.

.4 Section 02 41 16 - Structure Demolition.

.5 Section 31 23 13 - Rough Grading.

.6 Section 31 23 17 - Rock Removal.

.7 Section 33 11 17 - Site Water Utility Distribution Piping.

.8 Section 33 31 13 - Public Sanitary Utility Sewerage Piping.

.9 Section 33 46 20 - Foundation and Underslab Drainage.

.10 Section 33 44 00 - Storm Utility Drains

.11 Section 31 05 17 - Aggregate Materials.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.

.2 American Society for Testing and Materials (ASTM).

.1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3) (600 kN-m/m^3).

.4 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3) (2,700 kN-m/m^3).

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.

.2 CA/CGSB-8.2, Sieves, Testing, Woven Wire, Metric

.4 Canadian General Standards Association (CSA)

.1 CAN/CSA-A23.1, Concrete Materials and Methods of Concrete Construction.

1.3 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having individual volume in excess of 1 m3. Frozen material not classified as rock.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in work.

.3 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.4 Waste material: excavated material unsuitable for use in work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of work.

.6 Unsuitable materials:

.1 Weak and compressible materials under excavated areas.

.2 Frost susceptible materials under excavated areas.

.3 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136: Sieve sizes to CAN/CGSB-8.1.

Sieve Designation	% Passing
2.00 mm	100
0.10 mm	45-100
0.02 mm	10-80
0.005 mm	0-45

.2 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.

1.4 SUBMITTALS

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

.2 Inform Engineer/Architect at least 4 weeks prior to commencing work, of proposed source of fill materials and provide access for sampling.

.3 Submit 70 kg samples of type of fill specified including representative samples of excavated material.

.4 Ship samples as directed by Engineer/Architect in tightly closed containers to prevent contamination.

1.5 QUALITY ASSURANCE

.1 Submit design and supporting data at least 2 weeks prior to commencing work.

.2 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in the province of Newfoundland and Labrador.

.3 Keep design and supporting data on site.

.4 Engage services of qualified professional engineer who is registered or licensed in Province of Newfoundland and Labrador to design and inspect cofferdams, shoring, bracing and underpinning required for work.

1.6 PROTECTION OF EXISTING FEATURES

.1 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.

.2 Existing buried utilities and structures:

.1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are

.2 Prior to commencing excavation work, notify applicable Owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures.
Owners or authorities having jurisdiction to clearly mark such locations to

.3 Confirm locations of buried utilities by careful test excavations.

.4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.

.5 Where utility lines or structures exist in area of excavation, obtain direction of Engineer/Architect before removing or re-routing.

.6 Record location of maintained, re-routed and abandoned underground

.7 Confirm locations of recent excavations adjacent to area of excavation.

.3 Existing buildings and surface features:

.1 Conduct, with Engineer/Architect condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by

.2 Protect existing buildings and surface features from damage while work is in progress. In event of damage, immediately make repair to approval of Engineer/Architect.

.3 Where required for excavation, cut roots or branches as approved by Engineer/Architect.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 .1 Backfill Type 1 and Type 2 fill: properties to Section 31 05 17 - Aggregate Materials and the following requirements:

.1 Crushed, pit run or screened stone, gravel or sand.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.

Sieve Designation	%Passing Type1	Type
75 mm	-	100
50 mm	-	-
37.5 mm	-	-
25 mm	100	-
19 mm	75-100	-
12.5 mm	-	-
9.5 mm	50-100	-
4.75 mm	30-70	22-85
2.00 mm	20-45	-
0.425 mm	10-25	5-30
0.180 mm	-	-
0.075 mm	3-8	0-10

.2 .2 Type 3 fill: selected material from excavation or other sources, approved by Engineer/Architect for use intended, unfrozen and free from rocks larger than 75 mm, cinders, ashes, sods, refuse or other deleterious materials.

PART 3 - EXECUTION

3.1 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

3.2 STRIPPING OF TOPSOIL

.1 Commence topsoil stripping of areas as indicated by Engineer/Architect after area has been cleared of brush, weeds and grasses and removed from site.

.2 Strip topsoil to depths as indicated by Engineer/Architect. Do not mix topsoil with subsoil.

.3 Stockpile in locations as directed by Engineer/Architect. Stockpile height not to exceed 2 m.

.4 Dispose of unused topsoil as directed by Engineer/Architect.

3.3 STOCKPILING

.1 Stockpile fill materials in areas designated by Engineer/Architect.
Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

3.4 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Obtain permit from authority having jurisdiction for temporary diversion of water course.

.2 Construct temporary works to depths, heights and locations as indicated or approved by Engineer/Architect.

.3 During backfill operation:

.1 Unless otherwise as indicated or as directed by Engineer/Architect remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.

.4 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.5 Upon completion of substructure construction:

.1 Remove cofferdams, shoring and bracing.

.2 Remove excess materials from site and restore water courses as indicated and as directed by Engineer/Architect.

3.5 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while work is in progress.

.2 Submit for Engineer/Architect's review details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut-offs.

.3 Avoid excavation below groundwater table if quick condition or heave is likely to occur.
Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.4 Protect open excavations against flooding and damage due to surface run-off.

.5 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or any portion of work completed or under construction.

.6 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, water courses or drainage areas.

3.6 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions as indicated by Engineer/Architect.

.2 Remove concrete, masonry, paving, walks, demolished foundations and rubble and other obstructions encountered during excavation in accordance with Section 02 41 23 – Selective Site Demolition and Removal.

.3 Excavation must not interfere with bearing capacity of adjacent foundations.

.4 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.5 For trench excavation, unless otherwise authorized by Engineer/Architect in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

.6 Keep excavated and stockpiled materials a safe distance away from edge of trench as directed by Engineer/Architect.

.7 Restrict vehicle operations directly adjacent to open trenches.

.8 Dispose of surplus and unsuitable excavated material off site.

.9 Do not obstruct flow of surface drainage or natural watercourses.

.10 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.11 Notify Engineer/Architect when bottom of excavation is reached.

.12 Obtain Engineer/Architect approval of completed excavation.

.13 Remove unsuitable material from trench bottom to extent and depth as directed by Engineer/Architect.

.14 Correct unauthorized over-excavation as follows:

.1 Fill under bearing surfaces and footings with concrete specified for footings.

.2 Fill under other areas with Type 2 fill compacted to not less than 95% of corrected maximum dry density.

.15 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Engineer/Architect.

3.7 FILL TYPES AND COMPACTION

.1 Use fill of types as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D698 corrected maximum dry density.

.1 Exterior side of perimeter walls: use Type 3 fill to subgrade level. Compact to 95%.

.2 Within building area: use Type 2 to underside of base course for floor slabs. Compact to 98%.

.3 Under concrete slabs: provide 150 mm compacted thickness base course of Type 1 fill to underside of slab. Compact base course to 100%.

.4 Retaining walls: use Type 2 fill to subgrade level on high side for minimum 95%.

.5 To correct over excavation in trenches: use Type 2 fill to underside of sand bedding compacted to 95%.

3.8 BEDDING AND SURROUND OF UNDERGROUND SERVICES

.1 Place and compact granular material for bedding and surround of underground services as indicated.

.2 Place bedding and surround material in unfrozen condition.

3.9 BACKFILLING

.1 Vibratory compaction equipment: approved by Engineer/Architect.

.2 Do not proceed with backfilling operations until Engineer/Architect has inspected and approved installations.

.3 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.4 Do not use backfill material which is frozen or contains ice, snow or debris.

.5 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.6 Backfill around installations.

.1 Place bedding and surround material as specified elsewhere.

.2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.

.3 Place layers simultaneously on both sides of installed work to equalize loading.

.4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures.

.1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure, and approval obtained from Engineer/Architect, or

.2 If approved by Engineer/Architect, erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Engineer/Architect.

3.10 RESTORATION

.1 Upon completion of work, remove waste materials and debris, trim slopes, and correct defects as directed by Engineer/Architect.

.2 Replace topsoil as indicated by Engineer/Architect.

.3 Reinstate lawns to elevation which existed before excavation.

.4 Reinstate pavement and sidewalks distributed by excavation to thickness, structure, and elevation which existed before excavation.

.5 Clean and reinstate areas affected by work as directed by Engineer/Architect.

.6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 h.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 11 00 - Clearing and Grubbing.

.2 Section 31 23 10 - Excavation, Trenching and Backfilling.

.3 Section 31 23 17 - Rock Removal.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition t h e r e o f .

.2 ASTM D698-91, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600kN-m/m³),

1.3 EXISTING CONDITIONS

.1 Examine subsurface investigation report which is available for inspection from Engineer/Architect.

.2 Known underground and surface utility lines and buried objects are as indicated on site plan.

.3 Refer to dewatering in Section 31 23 10 - Excavating Trenching and Backfilling.

1.4 PROTECTION

.1 Protect and/or transplant existing fencing trees, landscaping, natural features, bench marks, buildings, pavement, surface or underground utility lines which are to remain as directed by Engineer/Architect. If damaged, restore to original or better condition unless directed otherwise.

.2 Maintain access roads to prevent accumulation of construction related debris on roads.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Fill material: Type 3 in accordance with of Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Engineer/Architect.

PART 3 EXECUTION

3.1 STRIPPING OF TOPSOIL

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Engineer/Architect.

.2 Commence topsoil stripping of areas as indicated after area has been cleared of brush, weeds and grasses and removed from site.

.3 Strip topsoil to depths as indicated. Avoid mixing topsoil with subsoil.

.4 Stockpile in locations as directed by Engineer/Architect. Stockpile height not to exceed 2 m.

.5 Dispose of unused topsoil as directed by Engineer/Architect.

3.2 GRADING

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Rough grade to following depths below finish grades:

.1 250mm for concrete slabs and walks precast paving units.

.3 Slope rough grade away from building 1:50 minimum.

.4 Grade ditches to depth as indicated.

.5 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.6 Compact filled and disturbed areas to corrected maximum dry density to ASTM D698, as follows:

.1 85% under landscaped areas.

.2 95% under paved and walk areas.

.7 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 TESTING

.1 Inspection and testing of soil compaction will be carried out by testing laboratory designated by Engineer/Architect. Refer to Sections 01 29 83 - Payment Procedures for Testing Laboratory Services and 01 45 00 – Quality Control.

.2 Submit testing procedure, frequency of tests, to Engineer/Architect for approval.

3.4 SURPLUS MATERIAL

.1 Remove surplus material and material unsuitable for fill, grading or landscaping as directed by Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedure.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

.3 Section 01 35 29.06 - Health and Safety Requirements

.4 Section 31 23 10 - Excavating, Trenching and Backfilling.

1.2 DEFINITION

.1 Rock: any solid material in excess of 1.0m^3 and which cannot be removed by means of mechanical excavating equipment having 0.95 to 1.15m^3 bucket. Frozen material not classified as rock.

.2 PPV: peal particle velocity.

1.3 MEASUREMENT PROCEDURES

.1 Mass rock:

.1 Rock quantities will be taken from cross section showing original rock surface and actual grade line set by Engineer/Architect, except that minimum depth or rock required to be excavated to be considered as 300 mm.

.2 Volume of individual boulders and rock fragments will be determined by measuring three maximum mutually perpendicular dimensions.

.2 Trench rock: rock quantities measured will be actual volume removed within following limits:

.1 Width for trench excavation as indicated.

.2 Width for excavation for structures to be bounded by vertical planes up to 500 mm outside and parallel to neat lines for footings as indicated.

.3 Depth from rock surface elevations immediately prior to excavation, to elevation as indicated.

.4 Where design elevation is less than 300 mm below original rock surface depth will be considered to be 300 mm blow original rock surface.

.3 Replacement imported fill: Imported fill quantities will be measured in cubic meters, compacted in place.

.4 Quantities for measurement purposes are indicated in Tender Form. If no quantities are provided, rock removal and fill replacement considered inclusive to the work and will not be measured.

.5 Contractors shall provide all survey equipment needed and provide assistance to Engineer/Architect in taking cross sections. Sections shall be taken at 5 m intervals for mass and trench rock excavation. Sections will be submitted to contractor's site representative for verification. Additional sections shall be taken at points or significant change in elevation or at any other locations as determined by Engineer/Architect.
Contractor to schedule work to allow sufficient time for Engineer/Architect to take necessary sections.

1.4 SUBMITTALS

.1 Blasting Operation

.1 Submit to Engineer/Architect and local authorities having jurisdiction for approval, written proposal of operations for removal of rock by blasting, in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate proposed method of carrying out work types and quantities of explosives to be used, loading charts and drill hole patterns, type of caps, blasting techniques, blast protection measures for items such as flying rock, vibration, dust and noise control. Include details on protective measures, time of blasting and other pertinent details.

.3 Submit records to Engineer/Architect at end of each shift. Maintain complete and accurate records for drilling and blasting operations.

.4 Prior to any blasting operations, the contractor shall carry out a pre-blast survey. This survey will be conducted by an independent agency. The survey report will be submitted to the Engineer/Architect for review/

.5 No blasting shall take place without a minimum of 48 hours' notice to the Engineer/Architect.

1.5 QUALIFICATIONS

.1 Retain licensed explosives expert to program and supervise blasting work, to interpret recommendations of pre-blasting report, and to determine precautions, preparation and operations techniques.

1.6 BLASTING AND VIBRATION CONTROL

.1 Reduce ground vibrations to avoid damage to structures or remaining rock mass.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PROTECTION

.1 Prevent damage to surroundings and injury to persons in accordance with Section 01 56 00 - Temporary Barriers and Enclosures. Sound warnings and display signs when blasting to take place.

3.2 ROCK REMOVAL

.1 Coordinate this Section with Section 01 35 29.06 - Health and Safety Requirements.

.2 Remove rock to alignments, profiles, and cross sections as indicated.

.3 Explosive blasting is not permitted at locations indicated.

.4 Do blasting operations in accordance with local and provincial codes, requirements of authority having jurisdiction.

.5 Use rock removal procedures to produce uniform and stable excavation surfaces. Minimize over break, and to avoid damage to adjacent structures.

.6 Excavate rock to horizontal surfaces.

.7 Scale, pressure wash and broom clean rock surfaces which are to bond to c o n c r e t e .

.8 Excavate trenches to lines and grades to minimum of 300 mm below pipe invert indicated. Provide recesses for bell and spigot pipe to ensure bearing will occur uniformly along barrel of pipe.

.9 Cut trenches to widths as indicated.

.10 Use pre-shearing, cushion blasting or other smooth wall drilling and blasting techniques directed by Engineer/Architect.

.11 Remove boulders and fragments which may slide or roll into excavated areas.

.12 Correct unauthorized rock removal at no extra cost, in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

3.3 ROCK DISPOSAL

.1 Dispose of surplus removed rock off site. Dispose in locations acceptable to authorities having jurisdiction and Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Section 31 05 17 - Aggregate Materials.

.3 Section 32 11 23 - Aggregate Base Courses.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.

.2 American Society for Testing and Materials (ASTM).

.1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3) (600 kN-m/m^3).

.4 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3) (2,700 kN-m/m^3).

.5 ASTM D4318, Standard Test Methods for Liquid Unit, Plastic Unit and Plasticity Index of Soils.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch series.

.2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular sub-base material to Section 31 05 17 – Aggregate Materials and following requirements:

.1 Crushed pit run or screened stone, gravel or sand.

.2 Granulations to be within limits specified when tested to ASTM C136 and ASTM C117 - sieve sizes to CAN/CGSB-8.1.

.1 Granulation to:

Sieve Designation	% Passing (Base Type 2)
100 mm	-
75 mm	-
50 mm	100
37.5 mm	-
25 mm	60-100
19 mm	-
12.5 mm	38-70
9.5 mm	-
4.75 mm	25-55
2.00 mm	13-42
0.425 mm	5-28
0.180 mm	-
0.075 mm	2-10

.3 Other properties as follows:

.1 Liquid limit: to ASTM D4318, maximum 25

.2 Plasticity index: to ASTM D4318, maximum 6

PART 3 - EXECUTION

3.1 PLACING

.1 Place granular sub-base after subgrade is inspected and approved by Engineer/Architect.

.2 Construct granular sub-base to depth and grade in areas indicated.

.3 Ensure no frozen material is placed.

.4 Place material only on clean unfrozen surface, free from snow or ice.

.5 Place granular sub-base materials using methods which do not lead to segregation or degradation.

.6 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Engineer/Architect may authorize thicker lifts (layers) if specified compaction can be achieved.

.7 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.8 Remove and replace portion of layer in which material has become segregated during spreading.

3.2 COMPACTION

.1 Compaction equipment to be capable of obtaining required material densities.

.2 Compact to density of not less than 98% corrected maximum dry density ASTM D698.

.3 Shape and roll alternately to obtain smooth, even and uniformly compacted sub-base.

.4 Apply water as necessary during compaction to obtain specified density.

.5 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Engineer/Architect.

.6 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.3 SITE TOLERANCES

.1 Finished sub-base surface to be within 10 mm of elevation as indicated but not uniformly high or low.

3.4 PROTECTION

.1 Maintain finished sub-base in condition conforming to this section until succeeding base is constructed, or until granular sub-base is accepted by Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 05 17 - Aggregate Materials

.2 Section 32 11 19 - Granular Sub-base.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition thereof.

.2 American Society for Testing and Materials (ASTM).

.1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm Sieve in Mineral Aggregates by Washing.

.2 ASTM C136, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles M a c h i n e .

.3 ASTM D136, Standard Test Method for Sieve Analysis of Fine and Course Aggregated.

.4 ASTM D698, Stand Test Methods for Laboratory Compaction Characteristics of Soil Using standard Effort (12,400 ft-lbf/ft^3)1557•00, (2,700 kN-m/m^3).

.5 ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3) (2,700 kN-m/m^3).

.6 ASTTM D 1883, Standard Test Method of CBR (California Bearing Ratio) of Laboratory Compacted Soil.

.7 ASTM D4318, Standard Test Methods for Liquid Unit, Plastic Unit and Plasticity Index of Soils.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1, Sieves, Testing, Woven-Wire, Inch Series.

.2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and stockpile aggregates in accordance with Section 31 05 17 - Aggregate Materials. Stockpile minimum 50% of total aggregate required prior to commencing operation.

.2 Store cement in weathertight bins or silos that provide protection from dampness and easy access for inspection and identification of each shipment.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular base: material to Section 31 05 17 - Aggregate Materials and the following requirements:

.1 Crushed stone or gravel.

.2 Granulations to be within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.

.1 Granulation to:

Sieve Designation	% Passing (Base Type 1)
100 mm	-
75 mm	-
50 mm	-
37.5 mm	-
25 mm	-
19 mm	100
12.5 mm	70-100
9.5 mm	-
4.75 mm	40-70
2.00 mm	23-50
0.425 mm	7-25
0.180 mm	-
0.075 mm	3-8

.3 .Liquid limit: to ASTM D4318, maximum 25

.4 Plasticity index: to ASTM D4318 maximum 6

.5 Los Angeles degranulation: to ASTM C131. Maximum % loss by weight 45.

.6 Crushed particles: at least 60% of particles by mass within each of following sieve designation ranges to have at least 1 (one) freshly fractured face. Materials to be divided into ranges using methods of ASTM C136.

Passing	Retained on	
50 mm	to	25 mm
25 mm	to	19 mm
19 mm	to	4.75 mm

.7 Soaked CBR to ASTMD1833, min 100 when compacted to 100% of ASTM D1557.

PART 3 - EXECUTION

3.1 SEQUENCE OF OPERATION

.1 Place granular base after granular sub base surface is inspected and approved by Engineer/Architect.

.1 Construct granular base to depth and grade in areas indicated.

.2 Ensure no frozen material is placed.

.3 Place material only on clean unfrozen surface, free from snow and ice. slope.

.4 Place material using methods which do not lead to segregation or degradation of aggregate.

.5 Place material to full width in uniform layers not exceeding 150 mm compacted thickness. Engineer/Architect may authorize thicker lifts (layers) if specified compaction can be achieved.

.6 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.

.7 Remove and replace that portion of layer in which material becomes segregated during spreading.

.2 Compaction Equipment

.1 Compaction equipment to be capable of obtaining required material densities.

.3 Compacting

.1 Compact to density not less than 100% corrected maximum dry density ASTM D698

.2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.

.3 Apply water as necessary during compacting to obtain specified density.

.4 In areas not accessible to rolling equipment, compact to specified density with mechanical tampers approved by Engineer/Architect.

.5 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.

3.2 SITE TOLERANCES

.1 Finished base surface to be within plus or minus 10 mm of established grade and cross section but not uniformly high or low.

3.3 PROTECTION

.1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by Engineer/Architect.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for asphalt concrete pavement for car park areas, driveways to buildings, and walks or play areas.

1.2 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 01 45 00 – Quality Control.

.3 Section 31 05 16 – Aggregate Materials.

.4 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

.5 Section 32 16 15 – Concrete Walks, Curbs and Gutters.

.6 Section 32 17 23 – Pavement Marking.

1.3 REFERENCES

.1 Codes and Standards referenced in this section refer to the latest edition thereof.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-8.1, Sieves Testing, Woven Wire, Inch Series.
- .2 CAN/CGSB-8.2, Sieves Testing, Woven Wire, Metric.
- .3 CAN/CGSB-16.1, Cutback Asphalts for Road Purposes.
- .4 CAN/CGSB-16.2, Emulsified Asphalts, Anionic Type, for Road Purposes.
- .5 CAN/CGSB-16.3, Asphalt Cements for Road Purposes.

.3 American Society for Testing and Materials International, (ASTM)

- .1 ASTM C88, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- .2 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- .3 ASTM C123, Standard Test Method for Lightweight Particles in Aggregate.
- .4 ASTM C127, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
- .5 ASTM C128, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.
- .6 ASTM C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- .7 ASTM C136, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.

.8 ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3) (600 kN-m/m^3).

.9 ASTM D995, Standard Specification for Requirements Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.

.10 ASTM D2419, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

.11 ASTM D3203, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.

.12 ASTM D4318, Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.13 ASTM D4791, Standard Test Method for Flat Particles or Elongated Particles in Coarse Aggregate.

.4 Asphalt Institute (AI)

.1 Asphalt Institute MS-2-1993 Sixth Edition, Mix Design Methods for Asphalt Concrete.

1.4 SUBMITTALS

.1 Submit asphalt concrete mix design to Owner's Representative for approval.

.2 Materials to be tested by testing laboratory approved by Owner's Representative.

.3 Submit test certificates showing suitability of materials at least 4 weeks prior to commencing work.

.4 Inform Owner's Representative of proposed source of aggregates and provide access for sampling at least 4 weeks prior to commencing work.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Granular base and sub-base material: to Section 31 05 16 – Aggregate Materials and following requirements:

.1 Crushed or screened stone, gravel or sand.

.2 Gradations: within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1.

.3 Table:

Sieve Designation	Granular Base	Granular Sub-Base
200 mm	-	-
75 mm	-	100
50 mm	100	
38.1 m	70-100	-
25 mm	-	55-100
19 mm	50-75	-
12.5 mm	-	-
9.5 mm	40-65	-
4.75 mm	30-50	25-100

Sieve Designation	Granular Base	Granular Sub-Base
2.00 mm	-	15-80
0.425 mm	10-30	4-50
0.180 mm	-	-
	3-8	0-8

.4 Granular base aggregates:

.1 Crushed particles: at least 50 % of particles by mass retained on 4.75 mm sieve to have at least 1 freshly fractured face.

.2 Asphalt concrete aggregates:

.1 Coarse aggregate is aggregate retained on 4.75 mm sieve and fine aggregate is aggregate passing 4.75 mm sieve when tested to ASTM C117.

.2 When dryer drum plant or plant without hot screening is used, process fine aggregate through 4.75 mm sieve and stockpile separately from coarse aggregate.

.3 Separate stock piles for coarse and fine aggregate are not required for sheet asphalt.

.4 Do not use aggregates having known polishing characteristics in mixes for surface courses.

.5 Aggregate: material to Section 31 05 16 – Aggregate Materials and following requirements:

.1 Crushed stone or gravel.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117, Latest Edition. Sieve sizes to CAN/CGSB-8.1, Latest Edition.

Sieve Designation	% Passing
(Type 1) Base	(Base Type 2)
19.0 mm	100
9.5 mm	60-80
4.75 mm	40-65
2.00 mm	30-50
0.180 mm	5-20
0.075 mm	3-8

.3 Sand equivalent: to ASTM D2419, Minimum 50.

.4 Magnesium Sulphate soundness: to ASTM C88. Max % loss by weight: coarse aggregate 12, fine aggregate 16.

.5 Los Angeles Degradation: to ASTM C131, Max % loss by weight: coarse aggregate, 35.

.6 Absorption: to ASTM C127, Max % by weight: coarse aggregate, 1.75.

.7 Lightweight particles: to ASTM C123, Max % by mass, with less than 1.95. Relative density (formally Specific Gravity): 1.5.

.8 Flat and elongated particles: to ASTM D4791, (with length to thickness ratio greater than 5): Max % by weight: coarse aggregate, 15.

.9 Crushed particles: at least 60 % of particles by mass within each of following sieve designation ranges to have at least 1 freshly fractured face. Material to be divided into ranges using methods of ASTM C136,

Passing	Retained on

Passing		Retained on
19 mm	to	9.5 mm
9.5 mm	to	4.75 mm

.10 Regardless of compliance with specified physical requirements, fine aggregates may be accepted or rejected on basis of past field performance.

.3 Mineral filler for asphalt concrete:

.1 Finely ground particles of limestone, hydrated lime, Portland cement or other approved non-plastic mineral matter, thoroughly dry and free from lumps.

.2 Add mineral filler when necessary to meet job mix aggregate gradation or as directed by Owner's Representative to improve mix properties.

.4 Asphalt cement: to CAN/CGSB-16.3, grade 120-150.

.5 Asphalt prime: to CAN/CGSB-16.2, SS-1.

.6 Sand blotter: clean granular material passing 4.75 mm sieve and free from organic matter or other deleterious materials.

.7 Asphalt tack coat: to CAN/CGSB-16.2, grade SS-1.

2.2 MIX DESIGN

.1 Job mix formula to be approved by Owner's Representative.

.2 Design of mix: by Marshall Method to requirements below:

.1 Compaction blows on each face of test specimens: 50.

.2 Mix physical requirements:

Property	Asphalt / Concrete
Marshall Stability at 60˚kN minimum	5.5
Flow Value, mm.	2 - 4
Air Voids in Mixture, %	3 - 5
Voids in Mineral Aggregate, % minimum	15
Index of Retained Stability, % minimum	75

.3 Measure physical requirements as follows:

.1 Marshall Load and flow value.

.2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM C127, and ASTM C128. Make allowance for volume of asphalt absorbed into pores of aggregate.

.3 Air voids: to ASTM D3203.

.4 Voids in mineral aggregate: to Asphalt Institute, MS-2 chapter 4.

.5 Index of Retained Stability.

.4 Do not change job-mix without prior approval of Owner's Representative. When change in material source proposed, new job-mix formula to be approved by Owner's Representative.

.5 Return plant dust collected during processing to mix in quantities acceptable to Owner's Representative.

2.3 EQUIPMENT

.1 Pavers: mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.

.2 Rollers: sufficient number of rollers of type and weight to obtain specified density of compacted mix.

.3 Vibratory rollers for parking lots and driveway:

.1 Minimum drum diameter: 750mm.

.2 Maximum amplitude of vibration (machine setting): 0.5mm for lifts less than 40mm thick.

.4 Haul trucks: of sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:

.1 Boxes with tight metal bottoms.

.2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.

.3 In cool weather or for long hauls, insulate entire contact area of each truck box.

.5 Suitable hand tools

PART 3 - EXECUTION

3.1 SUBGRADE SURFACE PREPARATION AND INSPECTION

.1 Verify grades of subgrade drains and other items set in paving area for conformity with elevations and sections before placing granular base material.

.2 Obtain approval of subgrade by Owner's Representative before placing granular base.

3.2 GRANULAR BASE AND GRANULAR SUBBASE

.1 Place granular base and sub-base material on clean unfrozen surface, free from snow and ice.

.2 Place granular base and sub-base to compacted thicknesses as indicated. Do not place frozen material.

.3 Place in layers not exceeding 150 mm compacted thickness. Compact to density not less than 98 % maximum dry density in accordance with ASTM D698.

.4 Finished base surface to be within 10 mm of specified grade, but not uniformly high or low.

3.3 ASPHALT PRIME

.1 Emulsified asphalt:

.1 Dilute asphalt emulsion with clean water at 1:1 ratio for application. Mix thoroughly by pumping or other method approved by Owner's Representative.

.2 Apply diluted asphalt emulsion at rate directed by Owner's Representative but do not exceed 5 L/m^2.

.3 Apply on damp surface unless otherwise directed by Owner's Representative.

.2 Do not apply prime when air temperature is less than 5˚C or when rain is forecast within 2 hours.

.3 If asphalt prime fails to set within 24 hours, spread sand blotter material in amounts required to absorb excess material. Sweep and remove excess blotter material.

3.4 PLANT AND MIXING REQUIREMENTS

.1 To ASTM D995.

3.5 ASPHALT CONCRETE PAVING

.1 Obtain approval of primer from Owner's Representative before placing asphalt mix.

.2 Place asphalt mix only when base or previous course is dry and air temperature is above 5˚C.

.3 Place asphalt concrete in compacted layers not exceeding 50 mm.

.4 Minimum 135˚C mix temperature required when spreading.

.5 Maximum 160˚C mix temperature permitted at any time.

.6 Compact each course with roller as soon as it can support roller weight without undue cracking or displacement.

.7 Compact parking lot and driveway asphalt concrete to density not less than 95 % of density obtained with Marshall Specimens prepared in accordance with ASTM D1559, ion from samples of mix being used. Roll until roller marks are eliminated.

.8 Keep roller speed slow enough to avoid mix displacement and do not stop roller on fresh pavement.

.9 Moisten roller wheels with water to prevent pick up of material.

.10 Compact mix with hot tampers or other equipment approved by Owner's Representative in areas inaccessible to roller.

.11 Finish surface to be within 10 mm of design elevation and with no irregularities greater than 10 mm in 4.5 m.

.12 Repair areas showing checking, rippling or segregation as directed by Owner's Representative.

3.6 JOINTS

.1 Remove surplus material from surface of previously laid strip. Do not deposit on surface of freshly laid strip.

.2 Paint contact surfaces of existing structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.

.3 For cold joints, cut back to full depth vertical face and tack face with hot asphalt.

.4 For longitudinal joints, overlap previously laid strip with spreader by 25 to 50 mm.

3.7 TESTING

.1 Inspection and testing of asphalt pavement will be carried out by designated testing laboratory. Refer to Sections 01 29 83 – Payment Procedures for Testing Laboratory Services and Section 01 45 00 - Quality Control.

.2 Costs of tests will be paid under Section 01 21 00 – Allowances.

3.8 PROTECTION

.1 Keep vehicular traffic off newly paved areas until paving surface temperature has cooled below 38˚C. Do not permit stationary loads on pavement until 24 hours after placement.

.2 Provide access to buildings as required. Arrange paving schedule so as not to interfere with normal use of premises.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Section 32 11 23 - Aggregate Base Course.

.3 Section 32 12 18 - Asphalt Paving for Building Sites.

.4 Section 03 10 00 - Concrete Forming and Accessories.

.5 Section 03 20 00 - Concrete Reinforcing.

.6 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REFERENCES

.1 Codes and standards referenced in this section refers to the latest edition t h e r e o f .

.2 Canadian Standards Association (CSA).

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

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.2, Boiled Linseed Oil.

.2 CAN/CGSB-3.3, Kerosene.

.4 American Society for Testing and Materials (ASTM).

.1 ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft•lbf/ft^3) (600kN•m/m^3).

1.3 TESTING

.1 Testing of concrete to CAN3•A23.1•M94 and requirements of Section 03 30 00 - Cast-in-Place Concrete.

1.4 ENVIRONMENTAL CONDITIONS

.1 If temperature is below 5°C or if Engineer/Architect anticipates a temperature drop below this value within the next 24 hours, take all necessary measures to protect concrete from freezing.

.2 Do not place concrete on frozen base.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Concrete mixes and materials: to Section 03 30 00 - Cast-in-Place Concrete mix designed to produce a minimum compressive strength at 28 days of 25 MPa and containing 19mm maximum size, 6mm minimum size course aggregate, with water/cement ratio to CAN3-A23.1-M94, Table 7 for Class A exposure and 60mm slump at time and point of deposit, air entrainment to CAN3-A23.1-M94, Table 8.

.2 Reinforcing steel: to Section 03 20 00 - Concrete Reinforcing

.3 Joint filler to Section 03 30 00 – Cast-in-Place Concrete and to ASTM D1751-73 (1978), 20 mm performed, non-extruding, resilient bituminous type.

.4 Granular base: to Section 32 11 23 - Aggregate Base Courses and to Section 31 23 10 - Excavating, Trenching and Backfilling.

.5 Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap.

.6 Fill material: to Section 31 23 10 - Excavating, Trenching and Backfilling.

.7 Clear, polyethylene film to ASTM C171, minimum thickness 0.10 mm.

PART 3 - EXECUTION

3.1 GRADE PREPARATION

.1 Do grade preparation work in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Construct embankments using excavated material free from organic matter or other objectionable materials. Dispose of surplus and unsuitable excavated material off site.

.3 Place fill in maximum 150 mm layers and compact to at least 95% of maximum density to ASTM D698.

.4 Ensure that Sub Grade, Granular Sub Base and Granular Base preparation has been inspected and approved by Engineer/Architect before commencing work.

3.2 GRANULAR SUB-BASE

.1 Obtain Engineer's/Architect's approval of subgrade before placing granular sub- base.

.2 Place granular base material to lines, widths, and depths as indicated.

.3 Compact granular sub base to at least 100% of maximum dry density to ASTM D698.

3.3 FORMING

.1 Form vertical surfaces to full depth using forming material that will not deform under loading by plastic concrete.

.2 Securely position forms to required lines and grades.

.3 Coat forms with form release agent.

.4 Obtain approval of forms before placing concrete.

.5 Install metal fabrication as required.

3.4 CONCRETE

.1 Obtain Engineer's/Architect's approval of granular base and reinforcing steel prior to placing concrete.

.2 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete.

.3 Finish exposed surface to a smooth, uniform finish, free of open texturing and exposed aggregate. Do not work more mortar to the surface that required. Do not use neat cement as a dryer to facilitate finishing.

.4 Wood float finish surface to provide no-skid texture.

.5 Immediately after floating, give sidewalk surface uniform finish to produce regular corrugations not exceeding 2 mm deep, by drawing broom in direction normal to centre line.

.6 Provide edging as indicated with 10 mm radius edging tool.

.7 Cure and protect concrete in accordance with CAN3-A23.1-M77.

3.5 TOLERANCES

.1 Finish surfaces to within 3mm in 3m as measured with 3m straightedge placed on surface.

3.6 EXPANSION AND CONTRACTION JOINTS

.1 Install tooled transverse contraction joints after floating, when concrete is stiff, but still plastic, at intervals of 1.5 m.

.2 Install expansion joints at intervals of 6 m.

.3 Install expansion joints around manholes and catch basins and along length adjacent to concrete curbs, catch basins, buildings, or permanent structure.

.4 When sidewalk is adjacent to curb, make joints of curb, gutters and sidewalk coincide.

.5 Install joint filler in expansion joints as indicated.

3.7 ISOLATION JOINTS

.1 Install isolation joints around manholes and catch basins and along length adjacent to concrete curbs, catch basins, buildings, or permanent structure.

.2 Install joint filler in isolation joints as indicated.

3.8 CURING

.1 Cure concrete by adding moisture continuously in accordance with CAN/CSA-A23.1, to exposed finished surfaces for at least 1 day after placing.

.2 Where polyethylene sheets are used for moist curing, place polyethylene over sufficiently hardened concrete to prevent drainage. Overlap adjacent edges 150 mm and tightly seal with sand or wood planks. Weigh sheets down to maintain close contact with concrete during the entire curing period.

.3 Where burlap is used for moist curing, place two pre-wetted layers on concrete surface and keep continuously wet during curing period.

3.9 BACKFILL

.1 Allow concrete to cure for 7 days prior to backfilling.

.2 Backfill to designated elevations with material approved by Engineer/Architect. Compact and shape to required contours as indicated or as directed by Engineer/Architect.

END OF SECTION

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 SUMMARY

.1 Types of items described in this Section:
.1 Pavement-marking paint.

.2 Types of items you will not find described in this Section:
.1 Asphalt paving.

1.3 SUBMITTALS

.1 Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

1.4 QUALITY ASSURANCE

.1 Preinstallation Conference: Conduct conference at Project site.
.1 Review marking layout, colours, and dimensions.

.2 Equipment Requirements
.1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

.2 Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.6 PROJECT CONDITIONS

.1 Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 4.4 deg C for oil-based materials 12.8 deg C for water-based materials, and not exceeding 35 deg C.

PART 2 - PRODUCTS

2.1 PAINT

.1 Paint: To CGSB1-GP-74M, alkyd traffic paint.
.1 Colour: to CGSB1-GP-12C,
.1 General Markings: white 513-301.

.2 Barrier Free Markings: blue, colour acceptable to authorities having jurisdiction.

.2 Thinner: to CAN/CGSB-1.5.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Do not apply pavement-marking paint until layout, colours, and placement have been verified with Owner's Representative.

.2 Allow paving to age for 30 days before starting pavement marking.

.3 Pavement surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials. Sweep and clean surface to eliminate loose material and dust.

3.2 APPLICATION

.1 Lay out pavement markings.

.2 Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges.

.3 Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 0.4 mm.

.4 Unless otherwise approved by Owner's Representative, apply paint only when air temperature is above 10ºC, wind speed is less than 60km/h and no rain is forecast within next 4h.

.5 Do not thin paint unless approved by Owner's Representative.

.6 Symbols and letters to conform to dimensions indicated. Where sizes are not given, then to sizes directed by the Owner's Representative.

.7 Produce painted of uniform colour and density with sharp edges.

.8 Thoroughly clean distributor tank before refilling with paint of different colour.

3.3 TOLERANCE

.1 Paint markings to be within plus or minus 12mm of dimensions indicated.

.2 Remove incorrect markings as directed by Owner's Representative.

3.4 PROTECTION OF COMPLETED WORK

.1 Protect pavement markings until dry.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 31 11 00 - Clearing and Grubbing.

.2 Section 31 23 13 - Rough Grading.

1.2 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

1.3 SOURCE QUALITY CONTROL

.1 Advise Engineer/Architect of sources of topsoil to be utilized 7 days in advance of stating time.

.2 Contractor is responsible for soil analysis and requirements for amendments to supply topsoil as specified.

.3 Soil testing by recognized testing facility for PH, P and K, and organic matter.

PART 2 - PRODUCTS

2.1 TOPSOIL

.1 Topsoil for seeded areas: mixture of mineral particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.

.1 Soil texture based on The Canadian System of Soil Classification, to consist of 20% to 70% sand, minimum 7% clay, and contain 2 to 10 % organic matter by weight.

.2 Contain no toxic elements or growth inhibiting materials.

.3 Free from:

.1 Debris and stones over 50 mm diameter.

.2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.

.4 Consistence: friable when moist.

2.2 SOIL AMENDMENTS

.1 Fertilizer:

.1 Fertility: major soil nutrients present in following amounts:

.2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.

.3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.

.4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.

.5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.

.6 pH value: 6.5 to 8.0.

.2 Peatmoss:

.1 Derived from partially decomposed species of Sphagnum Mosses.

.2 Elastic and homogeneous, brown in colour.

.3 Free of wood and deleterious material which could prohibit growth.

.4 Shredded particle minimum size: 5 mm.

.3 Sand: washed coarse silica sand, medium to course textured.

.4 Limestone:

.1 Ground agricultural limestone.

.2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.

.5 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

PART 3 - EXECUTION

3.1 STRIPPING OF TOPSOIL

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.

.2 Commence topsoil stripping of areas as indicated after area has been cleared of brush weeds and grasses and removed from site.

.3 Strip topsoil to depths as indicated. Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.

.4 Stockpile in locations as directed by Engineer/Architect. Stockpile height not to exceed 2 m.

.5 Disposal of unused topsoil as directed by Engineer/Architect.

.6 Protect stockpiles from contamination and compaction.

3.2 PREPARATION OF EXISTING GRADE

.1 Verify that grades are correct. If discrepancies occur, notify Engineer/Architect and do not commence work until instructed by Engineer/Architect.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.

.4 Course cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

.1 Place topsoil after Engineer/Architect has accepted subgrade.

.2 Spread topsoil in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water.

.3 For sodded areas keep topsoil 50/100 mm below finished grade.

.4 Spread topsoil as indicated to following minimum depths after settlement and 80% compaction:

.1 150 mm for seeded areas.
.2 135 mm for sodded areas.
.3 300 mm for flower beds.
.4 500 mm for shrub beds.

.5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.4 FINISH GRADING

.1 Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.

.2 Consolidate topsoil to required bulk density using equipment approved by Engineer/Architect. Leave surfaces smooth, uniform and firm against deep foot printing.

3.5 ACCEPTANCE

.1 Engineer/Architect will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading. Approval of topsoil material subject to soil testing and analysis.

.2 Testing of topsoil will be carried out by testing laboratory designated by Engineer/Architect. Soil sampling, testing and analysis to be in accordance with Provincial regulations and standards. Engineer/Architect will pay for cost of tests as specified in Section 01 45 00 - Quality Control.

3.6 RESTORATION OF STOCKPILE SITES

.1 Restore stockpile sites acceptable to Engineer/Architect.

3.7 SURPLUS MATERIAL

.1 Dispose of materials not required where directed by Engineer/Architect.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 32 91 21 - Topsoil Placement and Grading.

1.2 SUBMITTALS

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

.2 Submit:

.1 Sod for each type specified.

.1 Install approved samples in one square meter mock-ups and maintain in accordance with maintenance requirements during establishment period.

.2 Bio-degradable geotextile fabric.

.3 Obtain approval of samples by Engineer/Architect.

1.3 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

1.4 SCHEDULING

.1 Schedule sod installation when frost has left ground and Before June 15 or between August 15 and September 30.

.2 Schedule sod laying to coincide with preparation of soil surface.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Number One Turf Grass Nursery Sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.

.1 Number one Named Cultivars: Nursery Sod grown from certified seed.

.2 Turf Grass Nursery Sod Quality:

.1 Not more than 2 broadleaf weeds on 10 other weds per 40 square meters.

.2 Density of sod sufficient so that no soil is visible from height of 1500 mm when mown to height of 50 mm.

.3 Mowing height limit: 35 to 65 mm.

.4 Soil portion of sod: 6 to 15 mm in thickness.

.2 Commercial Grade Turf Grass Nursery: Sod that has not been grown as Turfgrass Nursery Sod crop.

.1 Mow sod at height directed by Engineer/Architect within 36 hours prior to lifting, and remove clippings.

.3 Sod establishment support:

.1 Geotextile fabric: biodegradable, 25 mm square mesh.

.2 Wooden pegs: 17 x 8 x 250 mm.

.4 Water:

.1 Supplied by Engineer/Architect at designated source.

.2 Potable, free of impurities.

.5 Fertilizer:

.1 To Canada "Fertilizers Act" and "Fertilizers Regulations".

.2 Complete, synthetic, slow release with 65% of nitrogen content in water• insoluble form.

2.2 SOURCE QUALITY CONTROL

.1 Obtain approval from Engineer/Architect of sod at source.

.2 When proposed source of sod is approved, use no other source without written authorization.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Verify that grades are correct and prepared in accordance with Section 32 91 21 - Topsoil Placement and Grading. If discrepancies occur, notify Engineer/Architect.

.2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.

.3 Fine grade surface free of humps and hollows to smooth, even grade, to contours and elevations indicated, to tolerance of plus or minus 8 mm, for Turfgrass Nursery Sod, and plus or minus 15 mm for commercial grade Turfgrass nursery, surface to drain naturally.

.4 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site in location as directed by Engineer/Architect.

.5 Cultivate fine grade approved by Engineer/Architect to 25mm depth immediately prior to sodding.

3.2 SOD PLACEMENT

.1 Lay sod within 24 hours of being lifted.

.2 Lay sod sections in rows, longitudinally, along contours of slopes, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.

.3 Roll sod as directed by Engineer/Architect. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

3.3 SOD PLACEMENT ON SLOPES AND PEGGING

.1 Install and secure geotextile fabric in areas indicated, in accordance with manufacturer's instructions.

.2 Start laying sod at bottom of slopes.

.3 Lay sod sections longitudinally, along contours of slopes as indicated.

.4 Peg sod on slopes steeper than 3 horizontal to 1 vertical, within 1 m of catch basins and within 1 m of drainage channels and ditches to following pattern:

.1 100 mm below top edge at 200 mm on centre for first sod sections along contours of slopes.

.2 Not less than 9 pegs per square meter.

.3 Not less than 12 pegs per square meter in drainage structures. Adjust pattern as directed by Engineer/Architect.

.4 Drive pegs to 20 mm above soil surface of sod sections.

3.4 FERTILIZING PROGRAM

.1 Fertilize during establishment and warranty periods to following program agreed to by Engineer/Architect.

3.5 MAINTENANCE DURING ESTABLISHMENT PERIOD

.1 Perform following operations from time of installation until acceptance.

.2 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.

.3 Cut grass to 50 mm when or prior to it reaching height of 75 mm. Remove clippings as directed by Engineer/Architect.

.4 Maintain sodded areas weed free.

.5 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.

3.6 ACCEPTANCE

.1 Turf Grass Nursery Sod areas will be accepted by Engineer/Architect provided that:

.1 Sodded areas are properly established.

.2 Sod is free of bare and dead spots, and without weeds.

.3 No surface soil is visible from height of 1500 mm when grass has been cut to height of 50 mm.

.4 Sodded areas have been cut minimum 2 times, and within 24 h prior to acceptance.

.5 Fertilizing in accordance with fertilizer program has been carried out at least once.

.2 Sodded Commercial Grade Turf Grass Nursery Sod areas will be accepted by Engineer/Architect provided that:

.1 Sodded areas are properly established.

.2 Extent of surface soil visible when grass has been cut to height of 60 mm is acceptable.

.3 Sod is free of bare or dead spots and extent of weeds.

.4 Sodded areas have been cut minimum 2 times prior to acceptance.

.5 Fertilizing in accordance with fertilizer program has been carried out at least once.

.3 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

3.7 MAINTENANCE DURING WARRANTY PERIOD

.1 Perform following operations from time of acceptance until end of warranty period:

.1 Water sodded Turf Grass Nursery Sod and Commercial Grade Turf Grass Nursery Sod areas at weekly intervals to obtain optimum soil moisture conditions to depth of 100 mm.

.2 Repair and re-sod dead or bare spots to satisfaction of Engineer/Architect.

.3 Cut grass and remove clippings as directed by Engineer/Architect.

.1 Turf Grass Nursery Sod:

.1 50 mm during normal growing conditions.

.2 Commercial Grade Turfgrass Nursery Sod :

.1 60 mm during normal growing conditions.

.3 Cut grass as directed by Engineer/Architect but at intervals so that approximately one third of growth is removed in single cut.

.4 Fertilize areas in accordance with fertilizing program. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.

.5 Eliminate weeds by mechanical means to extent acceptable to Engineer/Architect.

3.8 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Memorial University of Newfoundland

HEATING LINE REPLACEMENT

GRD-503-26

ST.JOHN'S CAMPUS

OCTOBER 9,2026

ISSUED FOR TENDER

LIST OF DRAWINGS

C-1.0 - LOCATION PLAN
C-1.1 - BUSINESS TO ENGINEERING DEMOLITION AND NEW SITE PLANS
C-2.0 - SECTIONS AND DETAILS
M-1.1 - MECHANICAL SITE PLAN - NEW PIPING INSTALLATION - PHASE 1
M-1.2 - MECHANICAL DEMOLITION AND NEW PIPING HOOK-UP - PHASE 2
M-1.3 - MECHANICAL INSTALLATION DETAILS

GRD-503-26 ISSUED FOR TENDER

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

MEMORIAL UNIVERSITY

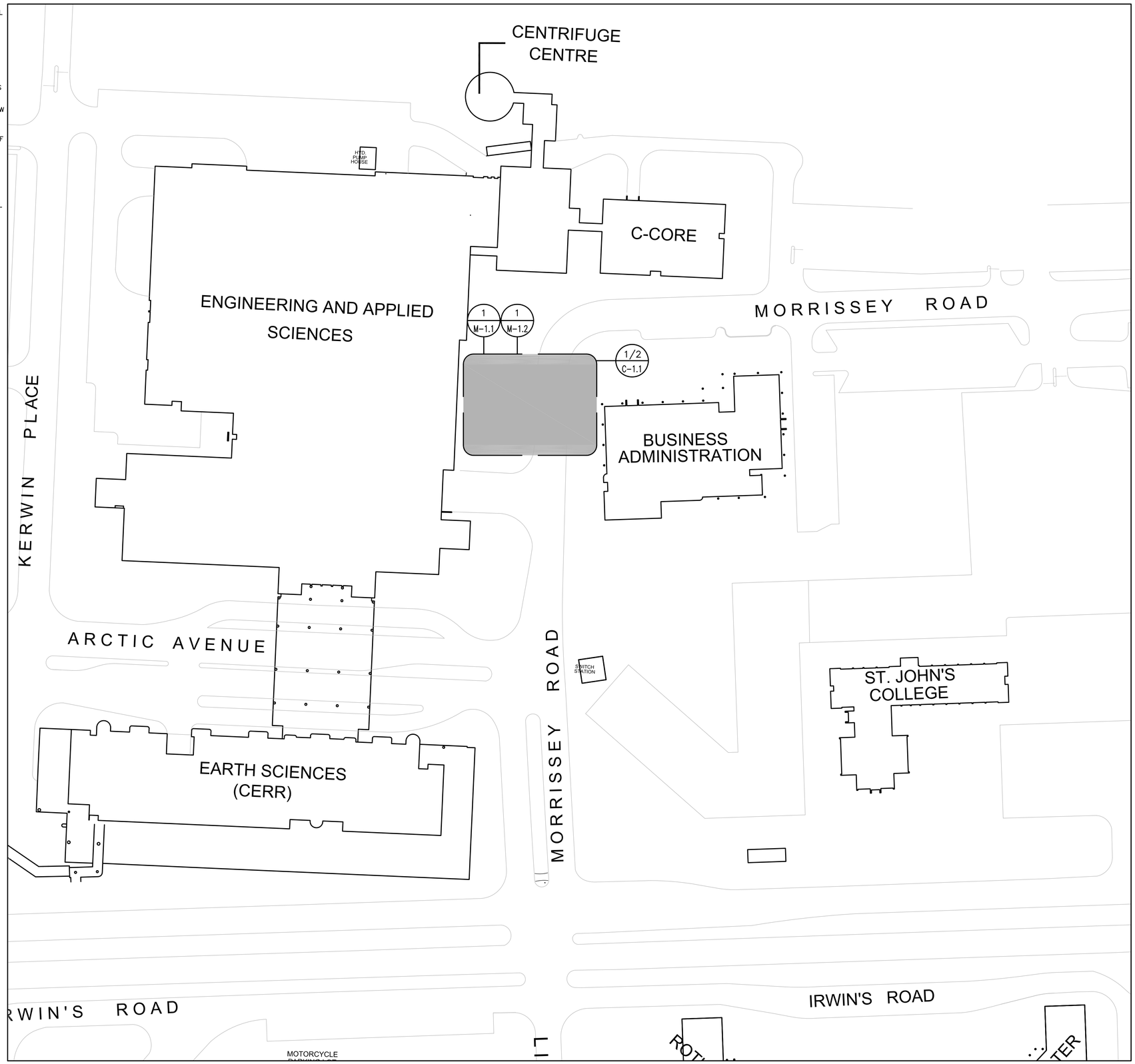
FACILITIES MANAGEMENT

CONSTRUCTION NOTES (APPLIES TO ALL DRAWINGS)

1. ALL WORK TO BE PERFORMED TO IN ACCORDANCE WITH MEMORIAL UNIVERSITY OF NEWFOUNDLAND SPECIFCATIONS, AND CITY OF ST.JOHN'S CONSTRUCTION SPECIFICATIONS.
2. COORDINATE ALL DEMOLITION WITH OWNER'S REPRESENTATIVE PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR TO HAVE ALL UNDERGROUND SERVICES LOCATED PRIOR TO START OF CONSTRUCTION.
4. ALL EXISTING CONCRETE AND ASPHALT TO BE SAW CUT AT LIMITS OF CONSTRUCTION PRIOR TO DEMOLITION AND REINSTATEMENT.
5. EXCAVATE AS REQUIRED TO ACCOMMODATE CONSTRUCTION OF NEW CURB, GUTTER, SIDEWALK, ROADWAY, ETC. AS PER DETAILS
6. ALL CONCRETE CURB, GUTTER, AND SIDEWALK TO BE CLASS C–2 EXPOSURE WITH MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 32MPa.
7 ALL CONCRETE WALKWAYS TO BE A 150mm IN THICKNESS.
8. INSTALL EXPANSION JOINTS ALONG LENGTH ADJACENT TO CONCRETE CURBS AND ADJACENT TO EXISTING CONCRETE WALKWAYS.
10. NEW LINE PAINTING TO BE COMPLETED AS SHOWN. REINSTATE ALL EXISTING LINE PAINTING AFFECTED BY CONSTRUCTION.
11. CONTRACTOR TO REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES AT NO COST TO OWNER.
12. INSTALL EXPANSION JOIN AT INTERVALS OF 6m IN NEW CONCRETE SIDEWALKS/WALKWAYS.
13. INSTALL CONCRETE SAW CUTS AT 2.1m MAX OR AS SHOWN ON DRAWINGS IN NEW CONCRETE SIDEWALKS/WALKWAYS.
14. REINSTATE LANDSCAPING ALONG EDGE OF NEW CONCRETE SIDEWALKS AND CURB. MIN 0.5m WIDTH.

LEGEND

- REMOVAL
- NEW LANDSCAPING
- NEW ASPHALT
- NEW CONCRETE
- NEW TOPSOIL
- FENCE LINE
- WATER MAIN LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- EL — UNDERGROUND ELECTICAL CONDUIT
- EP — UNDERGROUND HIGHVOLTAGE DUCT BANK
- GRADE DIRECTION
- LIGHT STANDARD
- MH — MANHOLE
- VALVE
- CATCH BASIN
- FIRE HYDRANT
- T — TRANSFORMER



LOCATION PLAN
SCALE: N.T.S

1
C–1.0

A – DETAIL
B – LOCATION/DRAWING No.
C – DRAWING No.

No.	REVISION	DATE
R1	ISSUED FOR TENDER	OCT, 2026
R0	ISSUED FOR REVIEW	SEPT, 2026

GENERAL NOTES

1. DRAWINGS TO BE READ AS A SET.
2. DO NOT SCALE FROM DRAWINGS.
3. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

NORTH

MEMORIAL UNIVERSITY
FACILITIES MANAGEMENT

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

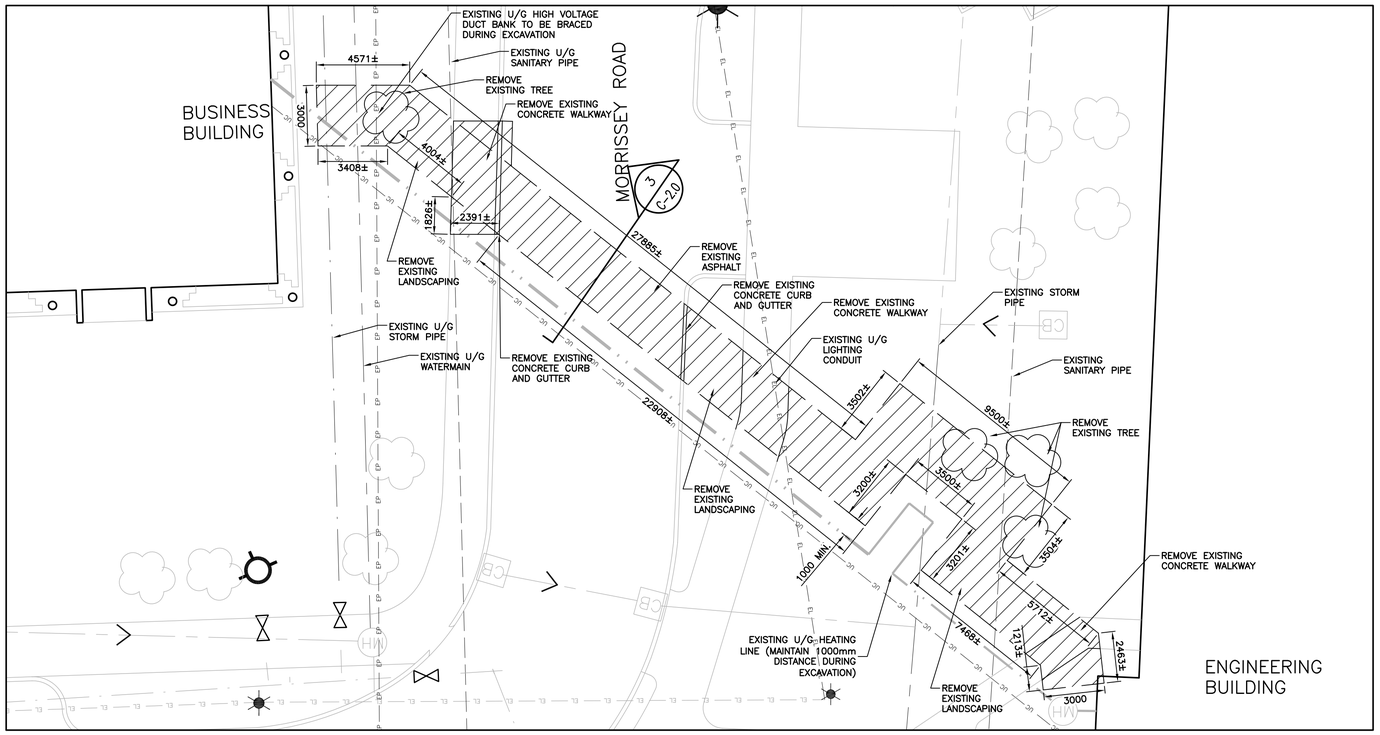
PROJECT NAME:

HEATING LINE REPLACEMENT
Project #: GRD-503-26

DRAWING TITLE:

LOCATION PLAN

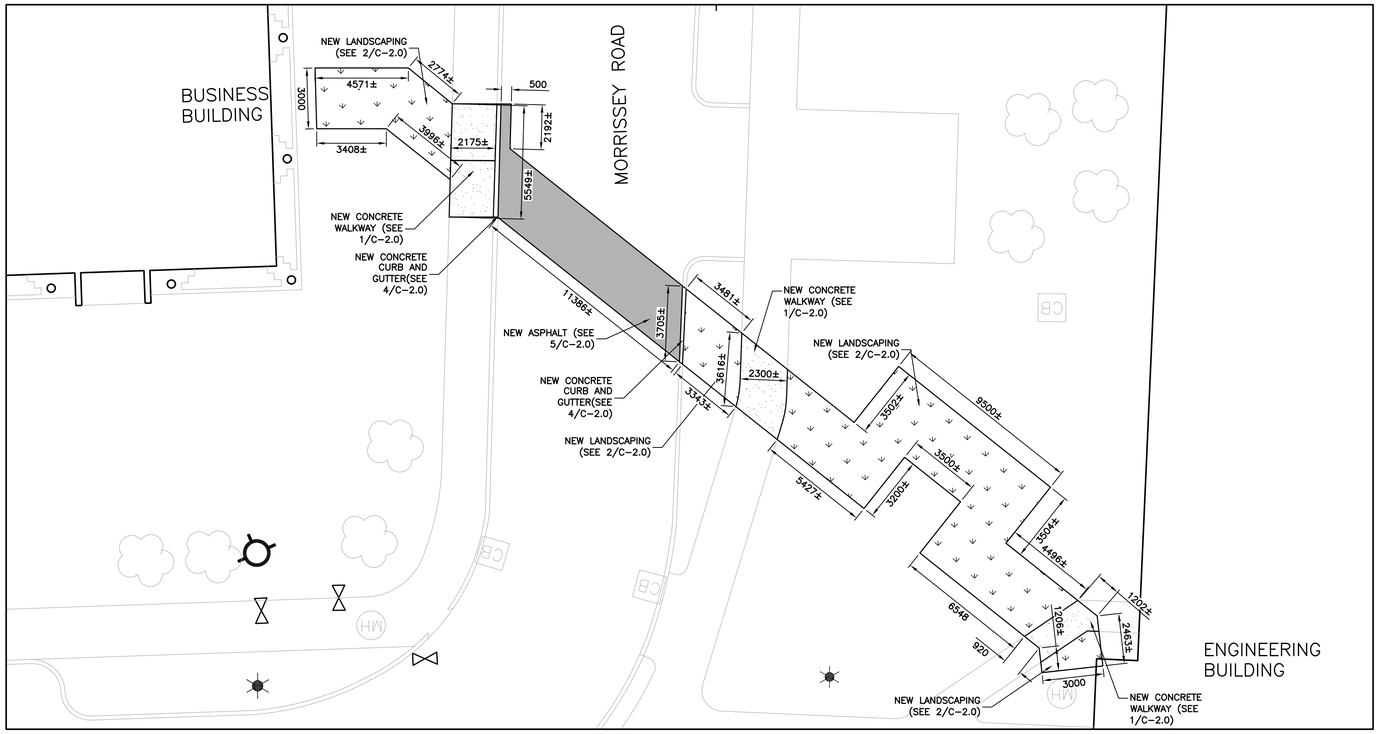
DESIGNED: S.C	DRAWN: S.C
REVIEWED:	APPROVED:
SCALE: AS SHOWN	DATE: OCT, 2026
PROJECT No. GRD-503-26	DRAWING No. C-1.0



BUSINESS TO ENGINEERING DEMOLITION PLAN

SCALE: 1:150

1 C-1.1



BUSINESS TO ENGINEERING NEW SITE PLAN

SCALE: 1:150

2 C-1.1

A – DETAIL
B – LOCATION/DRAWING No.
C – DRAWING No.

No.	REVISION	DATE
R1	ISSUE FOR TENDER	OCT,2026
R0	ISSUE FOR REVIEW	OCT,2026

GENERAL NOTES

1. DRAWINGS TO BE READ AS A SET.
2. DO NOT SCALE FROM DRAWINGS.
3. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

LEGEND

- REMOVAL
- NEW LANDSCAPING
- NEW ASPHALT
- NEW CONCRETE
- NEW TOPSOIL
- WATER MAIN LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- EL — UNDERGROUND ELECTICAL CONDUIT
- EP — UNDERGROUND HIGHVOLTAGE DUCT BANK
- GRADE DIRECTION
- LIGHT STANDARD
- MH — MANHOLE
- VALVE
- C.B — CATCH BASIN
- FIRE HYDRANT
- T — TRANSFORMER

NORTH

MEMORIAL UNIVERSITY
FACILITIES MANAGEMENT

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

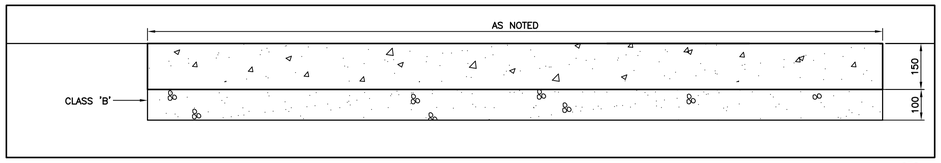
PROJECT NAME:

HEATING LINE REPLACEMENT
Project #: GRD-503-26

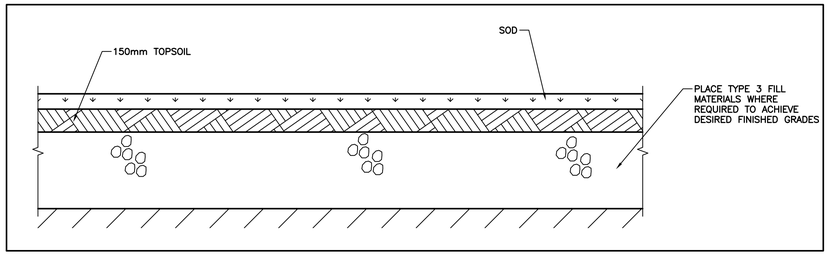
DRAWING TITLE:

MORRISSEY ROAD
DEMOLITION AND NEW
SITE PLANS

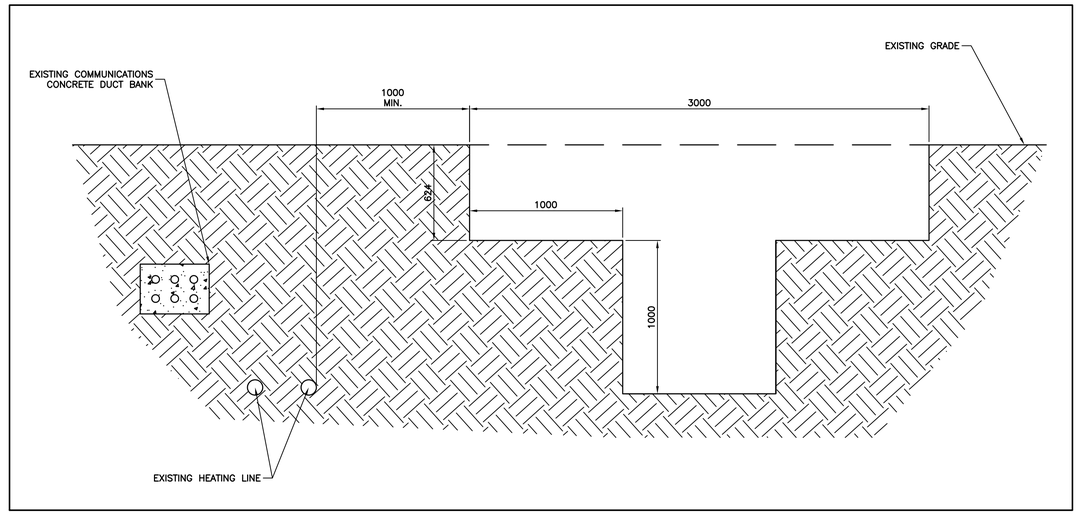
DESIGNED: S.C	DRAWN: S.C
REVIEWED: N.H	APPROVED: N.H
SCALE: AS SHOWN	DATE: OCT, 2026
PROJECT No. GRD-503-26	DRAWING No. C-1.1



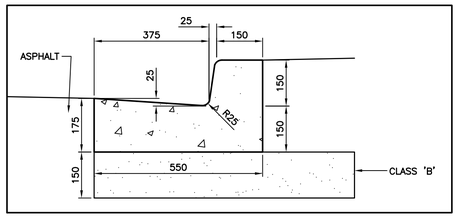
CONCRETE WALKWAY DETAIL
SCALE: 1:10
1 / C-2.0



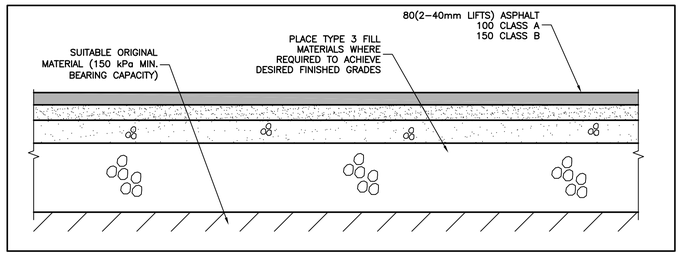
LANDSCAPING DETAIL
SCALE: 1:10
2 / C-2.0



EXCAVATION SECTION
SCALE: 1:20
3 / C-2.0



TYPICAL CURB DETAIL
SCALE: 1:10
4 / C-2.0



ASPHALT DETAIL
SCALE: 1:20
5 / C-2.0

No.	REVISION	DATE
R1	ISSUED FOR TENDER	OCT, 2026
R0	ISSUED FOR REVIEW	SEPT, 2026

GENERAL NOTES

1. DO NOT SCALE FROM DRAWINGS.
2. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
4. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

MEMORIAL UNIVERSITY
FACILITIES MANAGEMENT

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

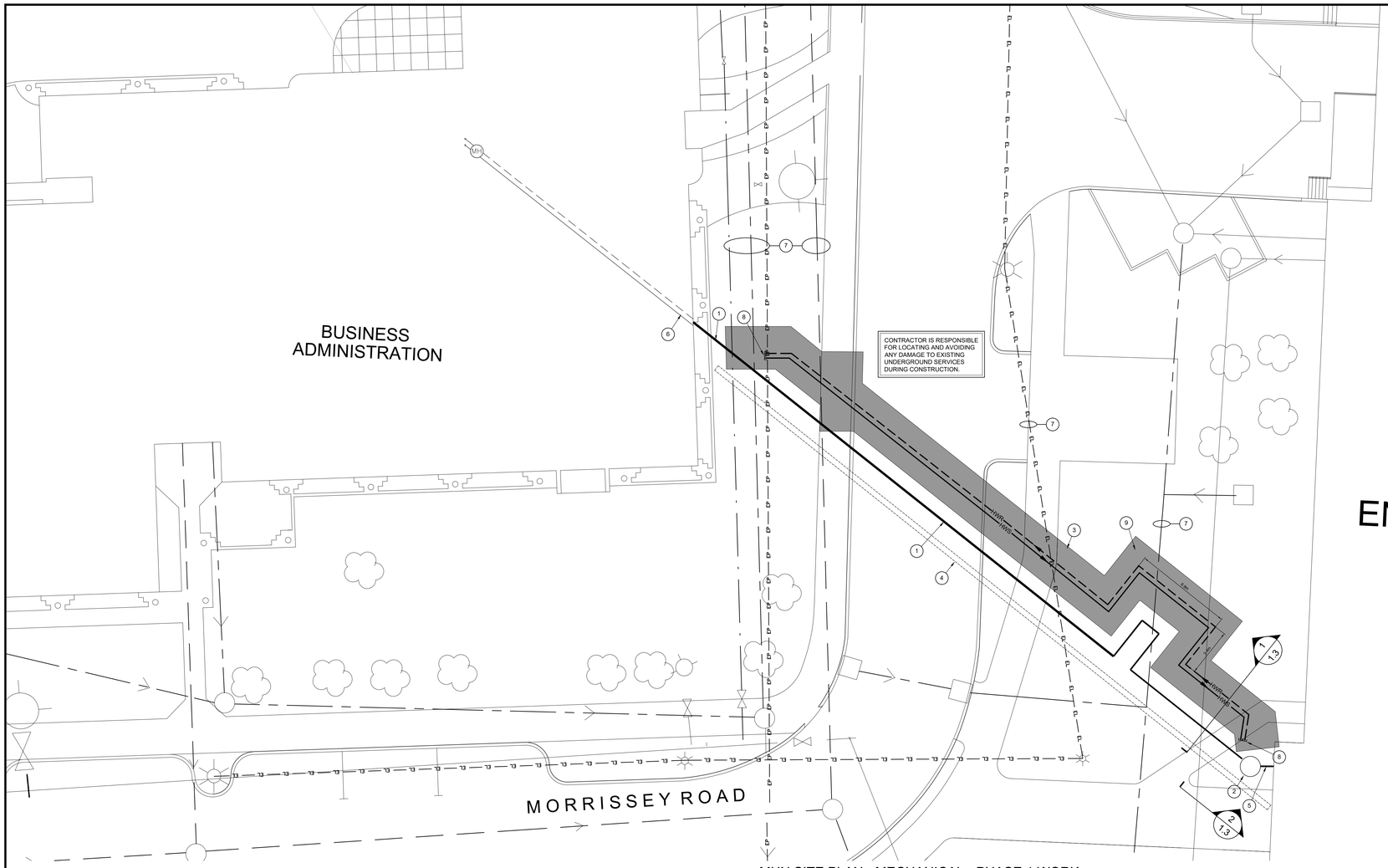
PROJECT NAME:

HEATING LINE REPAIR
Project #: GRD-503-26

DRAWING TITLE:

SECTIONS AND DETAILS

DESIGNED: S.C	DRAWN: S.C
REVIEWED:	APPROVED:
SCALE: AS SHOWN	DATE: OCT, 2026
PROJECT No. **GRD-503-26**	DRAWING No. **C-2.0**



MUN SITE PLAN - MECHANICAL - PHASE 1 WORK

SCALE : 1:150

0m 5m 10m 15m

GENERAL NOTES

1. PROVIDE ANY OFFSETS REQUIRED TO AVOID BUILDING STRUCTURE & COORDINATE INSTALLATION WITH OTHER TRADES.
2. ALLOW FOR EXTRA PIPE & FITTINGS AS REQUIRED TO AVOID INTERFERENCES TO COMPLETE INSTALLATION.
3. ALL DRAINAGE PIPING TO BE SLOPED 2% UNLESS OTHERWISE NOTED.
4. CONTRACTOR TO COORDINATE ALL WORK WITH BUILDING OWNER AND SCHEDULE WORK TO AVOID ANY DISRUPTION TO REMAINDER OF BUILDING. ALL EXISTING SYSTEMS OUTSIDE THIS AREA OF WORK SHALL REMAIN FULLY OPERATIONAL. PROVIDE TEMPORARY PIPING AS NEEDED TO MAINTAIN SYSTEMS OPERATIONS AND COORDINATE WITH OWNER.

DRAWING NOTES

1. EXISTING 100mm BURIED HEATING WATER SUPPLY AND RETURN LINES TO REMAIN DURING PHASE 1 WORK.
2. EXISTING MANHOLE TO REMAIN.
3. GREYED AREA REPRESENTS APPROXIMATE EXTENTS OF EXCAVATION REQUIRED FOR NEW PIPE AND EXPANSION LOOP INSTALLATION IN PHASE 1. EXACT EXTENTS OF TRENCHING, EXCAVATION AND INFRASTRUCTURE DEMOLITION TO BE DETERMINED ON SITE. COORDINATE WITH OWNER. SEE CIVIL DWGS.
4. EXISTING BURIED CONCRETE CONDUIT BANK TO REMAIN.
5. EXISTING HWS AND HWR MAINS LEAVING EXISTING MANHOLE TO REMAIN.
6. EXISTING HWS AND HWR MAINS INSIDE BUSINESS ADMINISTRATION BUILDING TO REMAIN.
7. APPROXIMATE LOCATION OF EXISTING UNDERGROUND SERVICES. EXACT LOCATION AND SIZE TO BE CONFIRMED ON SITE. SEE CIVIL DWGS.
8. DURING PHASE 1 WORK, NEW HWS/HWR MAINS TO BE PROTECTED AND CAPPED IN TRENCH FOR FUTURE CONNECTION IN PHASE 2. SEE DRAWING M-1.2. SEE DETAIL 1/1.3
9. INSTALL NEW EXPANSION LOOPS IN BOTH NEW MAINS. DIMENSIONS AND CONFIGURATION OF EXPANSION LOOP AS INDICATED. PROVIDE PRE-INSULATED ELBOWS, INSULATED PIPE JOINT KITS, AND ETHAFOAM PADS AT EACH CHANGE IN DIRECTION. WRAP FOAM PADS IN GEOTEXTILE OR TAPE PRIOR TO BACKFILLING. COORDINATE EXACT REQUIREMENTS WITH MANUFACTURER PRIOR TO INSTALLATION. SEE DETAIL 4/1.3

ENGINEERING AND APPLIED SCIENCES

No.	REVISION	DATE (YY/MM/DD)
0	ISSUED FOR TENDER	2026.10.09

GENERAL NOTES

1. DO NOT SCALE FROM DRAWINGS.
2. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
3. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

Preliminary
NOT FOR CONSTRUCTION

CONSULTANT:

CORE ENGINEERING INC.
A MEMBER OF BPA

STAMP:

REGISTERED PROFESSIONAL ENGINEER
PEGL Newfoundland & Labrador
NEIL L. CRAWLEY
Date: October 9, 2026
NEWFOUNDLAND & LABRADOR

PERMIT:

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MRC: 03823
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as Issued by PEGNL D0309 which is valid for the year 2026.

MEMORIAL UNIVERSITY

Department of Facilities Management

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

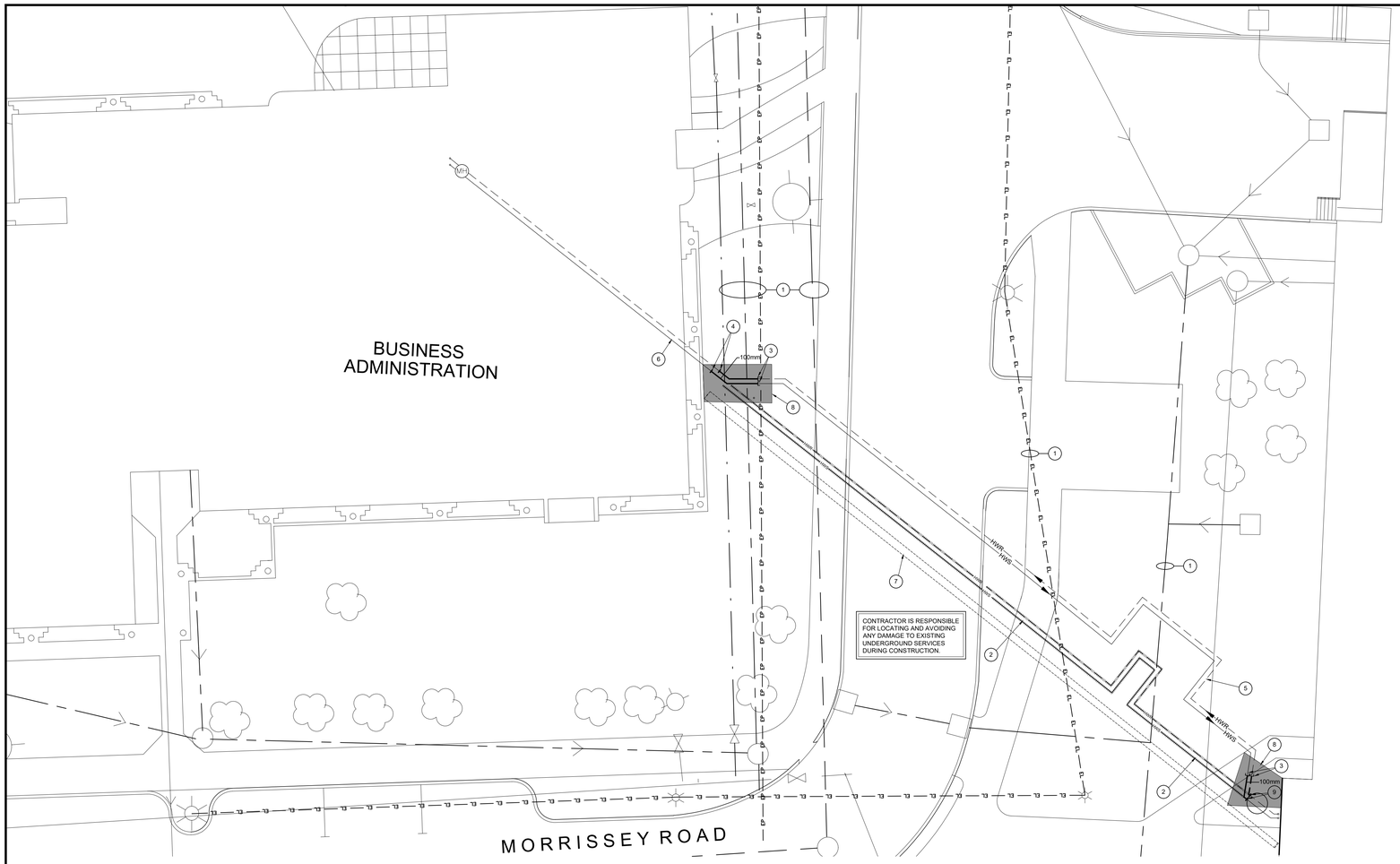
PROJECT NAME:

MUN
HEATING LINE REPLACEMENT

DRAWING TITLE:

Mechanical
Site Plan - New Piping Installation - Phase 1

DESIGNED: J.C.	DRAWN: D.B
REVIEWED: J.C.	APPROVED: J.C.
SCALE: AS NOTED	DATE: 26.09.30
MUN PROJECT No. GRD-503-26	DRAWING No. M-1.1 R0



MUN SITE SITE PLAN - PHASE 2 WORK

SCALE : 1:150

0m 0m 5m 5m 10m 10m 15m 15m

GENERAL NOTES

1. PROVIDE ANY OFFSETS REQUIRED TO AVOID BUILDING STRUCTURE & COORDINATE INSTALLATION WITH OTHER TRADES.
2. ALLOW FOR EXTRA PIPE & FITTINGS AS REQUIRED TO AVOID INTERFERENCES TO COMPLETE INSTALLATION.
3. CONTRACTOR TO COORDINATE ALL WORK WITH BUILDING OWNER AND SCHEDULE WORK TO AVOID ANY DISRUPTION TO REMAINDER OF BUILDING. ALL EXISTING SYSTEMS OUTSIDE THIS AREA OF WORK SHALL REMAIN FULLY OPERATIONAL. PROVIDE TEMPORARY PIPING AS NEEDED TO MAINTAIN SYSTEMS OPERATIONS AND COORDINATE WITH OWNER.
4. PIPING TO BE INSULATED USING THE U.I.P. VOID FREE FACTORY INSULATION PROCESS, AS SUPPLIED BY GF-URECON LTD. THE INSULATION OF ASSOCIATED JOINTS, FITTINGS AND ACCESSORIES SHALL BE AS PER URECONS RECOMMENDATIONS. THE PRODUCT SHALL BE MANUFACTURED IN ACCORDANCE TO ISO 9001 STANDARDS. INSTALLATION MUST BE PERFORMED FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.

DRAWING NOTES

1. APPROXIMATE LOCATION OF EXISTING UNDERGROUND SERVICES. EXACT LOCATION AND SIZE TO BE CONFIRMED ON SITE.
2. APPROXIMATE LOCATION OF EXISTING 100mm HWS/HWR PIPING MAINS TO BE ABANDONED IN PLACE DURING PHASE 2.
3. CONNECT NEW 100mm HWR/HWS PIPING MAINS TO EXISTING CAPPED MAINS INSTALLED IN PHASE 1. SEE DRAWING M-1.1. CONTRACTOR TO CONFIRM EXISTING PIPE ARRANGEMENT AND COORDINATE FINAL INSULATION / JACKETING / HEAT SHRINK CONNECTION DETAIL WITH ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION.
4. CONNECT NEW 100mm HWR/HWS PIPING MAINS TO EXISTING CUT MAINS TO REMAIN. SEE PHASE 1 WORK ON DRAWING M-1.1. COORDINATE FINAL INSULATION / JACKETING / HEAT SHRINK CONNECTION DETAIL WITH ENGINEER AND MANUFACTURER PRIOR TO INSTALLATION.
5. NEW 100mm HWS AND HWR LINES BURIED IN TRENCH DURING PHASE 1. INSTALL INSULATED PIPE POINT KITS AT EACH WELDED PIPE LOCATION. ENSURE SEPARATION DISTANCE MEETS MANUFACTURER'S GUIDELINES. EXACT DEPTH OF EXISTING PIPING MAINS TO BE CONFIRMED ON SITE. SEE DETAILS 1/1.3 3/1.3
6. EXISTING HWS AND HWR MAINS UNDER BUSINESS ADMINISTRATION BUILDING TO REMAIN.
7. EXISTING CONCRETE ELECTRICAL CONDUIT BANK TO REMAIN AS IS.
8. GREYED AREA REPRESENTS APPROXIMATE EXTENTS OF EXCAVATION REQUIRED FOR NEW PIPE SECTIONS INSTALLATION AND CONNECTION TO EXISTING IN PHASE 2. EXACT EXTENTS OF TRENCHING, EXCAVATION AND INFRASTRUCTURE DEMOLITION TO BE DETERMINED ON SITE. COORDINATE WITH OWNER.
9. CONNECT NEW 100mm HWR/HWS PIPING MAINS TO EXISTING CUT MAINS OUTSIDE EXISTING MANHOLE. SEE PHASE 1 WORK ON DRAWING M-1.1. PROVIDE NEW PIPE SECTIONS AND FITTINGS REQUIRED TO MAKE CONNECTIONS. ENSURE MAINS CAN BE CONNECTED WITHOUT DAMAGE OR UNDERMINING EXISTING MANHOLE. SEE DETAIL 2/1.3

No.	REVISION	DATE (YY/MM/DD)
0	ISSUED FOR TENDER	2026.10.09

GENERAL NOTES

1. DO NOT SCALE FROM DRAWINGS.
2. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
3. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

Preliminary
NOT FOR CONSTRUCTION

CONSULTANT:

CORE ENGINEERING INC.
A MEMBER OF BPA

STAMP:

PROFESSIONAL ENGINEER
PEGNL
Newfoundland
Labrador
REGISTERED
JASON L. CRAWLEY
Registrant
October 9, 2026
Date
NEWFOUNDLAND & LABRADOR

PERMIT:

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MRC: 03823
To practice Professional Engineering in Newfoundland and Labrador. Permit No. as issued by PEGNL D0209 which is valid for the year 2026.

MEMORIAL UNIVERSITY

Department of Facilities Management

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

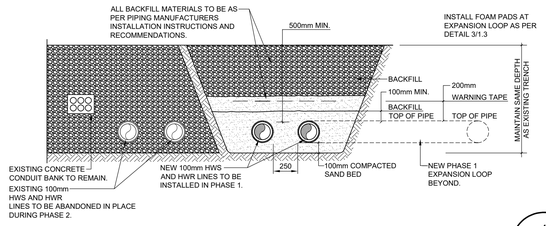
PROJECT NAME:

MUN
HEATING LINE REPLACEMENT

DRAWING TITLE:

Mechanical
Demolition and New Piping Hook-Up - Phase 2

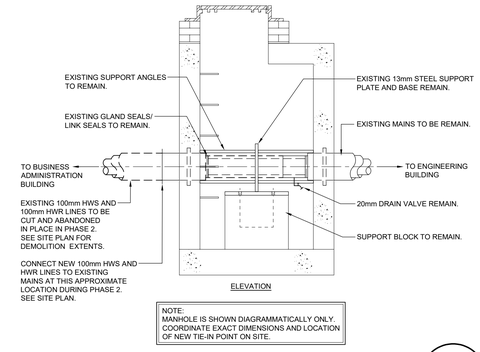
DESIGNED: J.C.	DRAWN: D.B
REVIEWED: J.C.	APPROVED: J.C.
SCALE: AS NOTED	DATE: 26.09.30
MUN PROJECT No. GRD-503-26	DRAWING No. M-1.2 R0



BURIED PIPING DETAIL

SCALE: N.T.S.

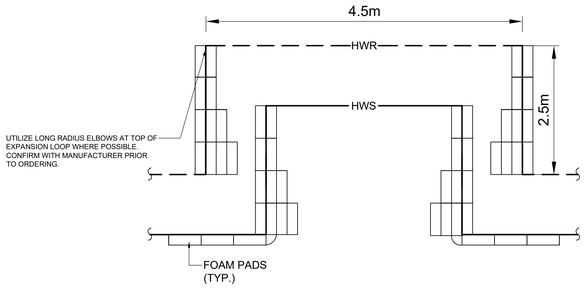
1 / 1.3



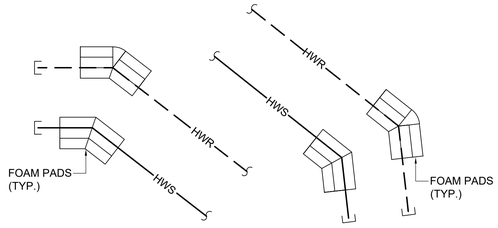
DETAIL - DEMOLITION AT EXISTING MANHOLE

SCALE: N.T.S.

2 / 1.3



AT NEW EXPANSION LOOP



AT NEW CAPPED ENDS

FOAM PAD INSTALLATION

SCALE: N.T.S.

3 / 1.3

No.	REVISION	DATE (YY/MM/DD)
0	ISSUED FOR TENDER	2026.10.09

GENERAL NOTES

1. DO NOT SCALE FROM DRAWINGS.
2. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO SUBMISSION OF TENDERS.
3. ALL DEFICIENCIES FOUND IN THIS DRAWING IS TO BE BROUGHT TO THE ATTENTION OF THE FACILITIES ENGINEERING AND DEVELOPMENT OFFICE OF THE DEPARTMENT OF FACILITIES MANAGEMENT, MEMORIAL UNIVERSITY OF NEWFOUNDLAND, PRIOR TO THE SUBMISSION OF THE TENDERS.

Preliminary
NOT FOR CONSTRUCTION

CONSULTANT:

CORE ENGINEERING INC.

A MEMBER OF BPA

STAMP:

REGISTERED PROFESSIONAL ENGINEER
PEGNL
Newfoundland and Labrador
NEWFOUNDLAND & LABRADOR
JASON L. CRAWLEY
Registered
October 3, 2026
DATE
NEWFOUNDLAND & LABRADOR

PERMIT:

PROVINCE OF NEWFOUNDLAND
pegnl
PERMIT HOLDER
This Permit Allows
CORE ENGINEERING INC.
MIRC: 03823
To practice Professional Engineering in Newfoundland and Labrador.
Permit No. as issued by PEGNL D0209 which is valid for the year 2026.

MEMORIAL UNIVERSITY

Department of Facilities Management

This University was raised by the people of Newfoundland as a memorial to the fallen in the great wars, 1914-1918, 1939-1945, that in freedom of learning, their cause and sacrifice might not be forgotten.

- Dedication plaque, Arts & Administration Building, St. John's Campus

PROJECT NAME:

MUN
HEATING LINE REPLACEMENT

DRAWING TITLE:

Mechanical
Installation Details

DESIGNED: J.C.	DRAWN: D.B
REVIEWED: J.C.	APPROVED: J.C.
SCALE: AS NOTED	DATE: 26.09.30
MUN PROJECT No. GRD-503-26	DRAWING No. M-1.3 R0